Chalmit lighting

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HAZARDOUS

HAZARDOUS AREA LIGHTING

PRODUCT GUIDE

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

CHALMIT LIGHTING A LEADING LIGHT FOR TODAY'S INTERNATIONAL HAZARDOUS AREA REQUIREMENTS

Chalmit Lighting, formerly known as Andrew Chalmers and Mitchell was formed in 1910 as a supplier of marine equipment to shipyards in the west of Scotland. Today the company is one of the largest and most respected hazardous area and marine lighting companies in the world and supplies product internationally through sales offices and agents located in over 40 countries.

In 1998 Chalmit joined the Hubbell group allowing Chalmit and Killark to team up and offer a global range of competitive IEC and NEC products suitable for hazardous area lighting and apparatus installations on any continent and complying with all international codes and standards.

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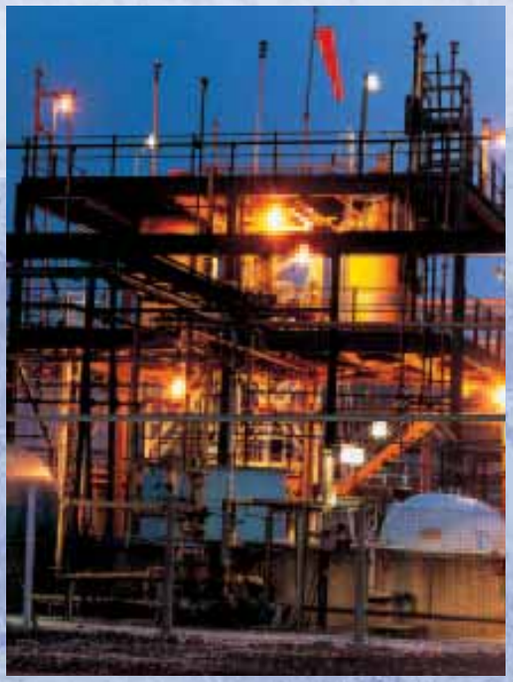
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com



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TECHNICAL INTRODUCTION

This technical guide outlines the design and use of equipment protected against the ignition of hazardous atmospheres formed from gases, vapours or dusts. The information given applies specifically to Chalmit products and is also a general guide.

The guide refers to equipment and methods complying with safety practices being used throughout the world. This material is included both for completeness and because Chalmit operates throughout the world supplying all lighting requirements in conjunction with group company Killark located in the US. Chalmit hazardous area products are designed and manufactured in accordance with good engineering practices and to well established construction standards for explosion protected apparatus. The equipment must be selected, installed, maintained and disposed of in accordance with any regulation or legislation appropriate to its use. Reference must be made to the data sheets and the certification applying to each individual product.

The guide also refers to construction standards and application codes. The correct application of protected apparatus is a specialist subject and these notes must be treated as being only informative. In addition to the Chalmit technical information users must themselves study the relevant codes of practice and construction standards.

Installation operation and maintenance manuals (IOM) are enclosed with each product and are available on request. These contain information essential to the safe use of the apparatus and must be read and understood by installers and users before putting equipment into service. Much of the information is also available on the Chalmit web site. Usually this will be for the latest version of a particular range. If detailed information on superseded product is needed Chalmit should be contacted directly.

National Regional and International Standards
In the text, reference is generally made to European standards, Euro-normes [EN] which are prepared by CENELEC. Almost all work on hazardous area and equipment standards is now being carried out by IEC and those Euronormes which are not already technically identical to IEC will become so in their next editions. The EN series EN 50014 etc will be renumbered in the IEC 60079-series. In this edition of the catalogue, the EN references are retained for uniformity although in many cases the EN is already technically identical to the IEC equivalent. Where appropriate the IEC number is given in brackets but the IEC standard referenced may not be exactly identical to the EN.

Index to Technical Introduction

Methods of explosion protection for electrical equipment in explosive gas atmospheres

This catalogue contains a selection of lighting and ancillary equipment suitable for use in areas where explosive atmospheres may occur.

Explosive atmospheres can be ignited by sparks or hot surfaces arising from the use of electrical power.

Other possible sources of ignition are electrostatic discharges and frictional sparking. The hot surfaces can be those of enclosures, components and light sources. Under fault conditions electrical connections may become over-heated and cause arcs or sparks. In addition, sparks may be the result of the inadvertent discharge of stored energy or from switching contacts.

A number of methods of protecting against ignition have been established and these have been codified in construction standards. These codes enable manufacturers to design apparatus of a uniform type and have it tested by certification authorities for compliance with the standards.

The basic methods of protection are summarised in Table 1.

Method	Type Of Protection
Designed to prevent any means of ignition arising	Ex e Increased Safety Ex nA (or Ex N) Non Sparking
Designed to limit the ignition energy of the circuit	Ex i Intrinsic Safety Ex nL Energy Limitation
Designed to prevent the explosive mixture reaching a means of ignition	Ex m Encapsulation Ex p Pressurisation Ex o Oil immersion Ex nR (or Ex N) Restricted Breathing
Designed to prevent any ignition from spreading outside of the apparatus	Ex d Flameproof Enclosure Ex q Powder Filling Ex nC Non Incendive

Table 1 Methods of explosion protection

General requirements EN 50014 [IEC 60079-0]

The standard EN 50014 contains general requirements common to most of the series of standards for the protection sub-groups. Apparatus will comply with the general requirements except where they are excluded or varied by the individual protection standard. Where standards are independent, some requirements of EN 50014 are often incorporated directly or cross-referenced.

Ex o “Oil immersion” Protection EN 50015 [IEC 60079-6]

This is a technique primarily used for oil filled switch-gear. The spark is formed under oil, and venting is controlled. The oil acts as an insulating medium.

Ex p “Pressurised Apparatus” Protection EN 50016 [IEC 60079-2]

One type of pressurisation maintains a positive static pressure inside the apparatus to prevent entry of gas and another maintains a continuous flow of air or inert gas to neutralise or carry away any explosive mixture entering or being formed within the enclosure. Essential to these methods are continuous monitoring systems to ensure their reliability and purging schedules on installation and following opening.

Ex q “Powder Filling” Protection EN 50017 [IEC 60079-5]

This technique involves the mounting of potentially incendive components in an enclosure filled with sand or similar inert powder. The sand prevents explosive ignition. It was originally developed to protect heavy duty traction batteries. It is now primarily of use where the incendive action is the abnormal release of electrical energy by the rupture of fuses or failure of components used in electronic apparatus. The likelihood of possible incendive failure of the components is assessed and precautions taken to minimise it. Usually Ex q is used for discrete sub-assemblies and components inside Ex e apparatus.

Ex d “Flameproof Enclosure” Protection EN 50018 [IEC 60079-1]

The potentially incendive parts are contained within an enclosure into which the explosive atmosphere can enter but which will contain any resultant explosion and prevent its transmission outside of the enclosure.

Ex e “Increased Safety” Protection EN 50019 [IEC 60079-7]

Normally sparking components are excluded. Other components are designed to substantially reduce the likelihood of the occurrence of fault conditions which could cause ignition. This is done by reducing and controlling working temperatures, ensuring the electrical connections are reliable, increasing insulation effectiveness and reducing the probability of contamination by dirt and moisture ingress.

Ex i “Intrinsic Safety” Protection EN 50020 [IEC 60079-11]

The circuit parameters are reliably controlled to reduce potential spark energy below that which will ignite the specific gas mixture. This includes the occurrence of one (coded ib) or two (coded ia) component faults and consequent failures in the circuit. It should be noted that this method does not entirely protect against the local over-heating of damaged connections or conductors. These should be kept sound and suitably enclosed against damage.

Ex m “Encapsulation” Protection EN 50028 [IEC 60079-18]

Potentially incendive components are encapsulated, usually by organic resins, which exclude the explosive atmosphere and control the surface temperature under normal and fault conditions. The likelihood of overheating and disruptive failure of the components is assessed and precautions taken to minimise any effect on the protection.

Ex s “Special” Protection

This method, being by definition special, has no specific rules. In effect it is any method which can be shown to have the required degree of safety in use. Much early apparatus having Ex s protection was designed with encapsulation and this has now been incorporated into EN 50028. In addition, the Ex s coding is often used when apparatus has been assessed to one of the individual parts of the CENELEC series but does not exactly comply with it whilst achieving equivalent safety. Ex s protection has been commonly used for Zone 0 and Zone 1 applications and its use was contained in BS 5345, the now superseded UK code of practice. Ex s is a coding referenced in IEC 60079-0.

Ex n “Non Sparking” Protection EN 50021 [IEC 60079-15] [Ex N “Non Sparking” Protection BS 4533 Section 102.51 (Luminaires) and BS 4683 Part 3]

Precautions are taken with connections and wiring to increase reliability, though not to as high a degree as for Ex e. Where internal surfaces are hotter than the desired T rating they can be tightly enclosed to prevent the ready ingress of an explosive atmosphere. This is the “restricted breathing enclosure” technique. Its employment also means that high ingress protection ratings of IP65 and above are built into the design.
When made to EN 50021 the coding Ex nR denotes that the protection method employs a restricted breathing enclosure. The restricted enclosure may be confined to the part of the apparatus containing the hot components such as lamps. Where the normal non-sparking construction is used the coding is nA. There are other sub codes nL, energy limitation and nC non incendive, which refer to simplified forms of other protection methods listed above. The codes are used individually. EN 50021 is free standing and is not a sub section of EN 50014. The Ex n [Ex N] methods have been developed specifically for the design of apparatus used in the remotely hazardous area, Zone 2. Ex n meets the basic requirements for ATEX category 3.

Enclosures protecting against the ignition of atmospheres containing dusts.

At present the protection methods used against the ignition of explosive atmospheres formed by air and dust do not have specific protection codes but work is going on in IEC and individual protection concept standards for dust hazards are in preparation. The Ex prefix is not used. For more detail refer to the section specifically concerning dusts. Most of the gas protection techniques will in practice protect against dust ignition but the enclosure method, where dust is effectively excluded and the external surface temperature defined, is generally used for lighting. In the product data this is referred to as “dust protected enclosure”.
Work on the establishment of sub codes and their defining standards is underway in IEC and should be expected to eventually result in identical CENELEC standards with sub coding designating the dust protection methods.

Classification of hazardous areas and the use of protected apparatus

Codes of practice have been established for the classification of the potential hazards, the selection of suitable equipment to protect against the hazard and its installation and maintenance. The codes of practice list the methods of protection which, used individually or in combination, may be employed to achieve an acceptable margin of safety.
What follows mainly concerns the use of apparatus protected against the ignition of hazardous atmospheres formed from gases and vapours in air at normal atmospheric pressures. Dust is treated separately in a later section.

The hazardous areas are classified in Table 2 according to EN 60079-10.

Zone	Description
Zone 0	An area in which an explosive atmosphere is continuously present or for long periods.
Zone I	An area in which an explosive atmosphere is likely to occur in normal operation.
Zone 2	An area in which an explosive atmosphere is not likely to occur in normal operation and if it occurs it will exist only for a short time. (Zone 2 is often described as the 'remotely hazardous' area.)

Table 2 Hazardous Areas Classification

The deployment of protected apparatus in hazardous areas classified to EN 60079-10 is summarised according to EN 60079-14 in table 3

Zone	Type of Protection Assigned to Apparatus
0	Ex ia and types of protection suitable for Zone 0 as constructed to EN 50284.
1	Any type of protection suitable for Zone 0 and Ex d, Ex ib, Ex p, Ex e, Ex q and Ex m (Also see notes on Ex s protection)
2	Any type of protection suitable for Zone 0 or 1 and Ex n, Ex N and Ex o (Also see notes on Ex s protection)

Table 3 Selection of Protected Apparatus in Hazardous Areas generally according to EN 60079-14

The EU ATEX directives

The relevant directives of the EU are:

- 94/9/EC Equipment and protective systems intended for use in potentially explosive atmospheres.
- 99/92/EC Minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres.

The directives are adopted into national law by the individual member states. Some candidate entrant states have also aligned their national regulations with ATEX.

ATEX covers hazards arising from the use of both electrical and mechanical equipment in potentially explosive atmospheres. The ATEX equipment directive and the accompanying health and safety directive, specifying the protection of workers, apply to the European Union and are in operation from July 2003. The safety directive requires hazardous areas to be subjected to a risk analysis, classified into Zones and suitably equipped.

The manufacturer must make a declaration of compliance with the equipment directive and apply the CE mark before the product can be placed on the market in the EU. The individual governments of the member states appoint "notified bodies" to carry out testing and certification. Apparatus is divided into Equipment Groups (I for mining and II non-mining), the ignitable component of the explosive atmosphere, Gas (G) and Dust (D) and Categories 1, 2 and 3. The Categories provide respectively, very high, high and normal levels of protection against ignition. The Categories should be considered as achieving the level of protection obtained by applying the existing protection techniques (Ex d, Ex e etc). Alternatively, the existing techniques can be replaced or supplemented by new concepts and engineering judgements made by the manufacturers in the design and construction of the apparatus. Where required, this would be validated by notified bodies performing an EC type examination of the product.

In practice, the Categories are equated to suitability for Zones. The actual category of apparatus specified by the user for a Zone will depend on the overall risk assessment. The Zoning considers only the probability of the occurrence of an explosive atmosphere, its extent and duration. It does not consider the consequential effects of an ignition having taken place or of the environment. Apparatus will be marked with the Grouping and Category in addition to the marking required by the individual protection standards.
The Chalmit range of products falls within Group II for industrial applications and covers designation as Category 2 or 3. This means that products will generally be suitable for use in Zone 1 and 2 areas as defined by the codes of practice for zoning such as EN 60079-10 (IEC 60079-10) and selection, EN 60079-14 (IEC 60079-14) etc.
Currently EN 60079-14 does not refer to categories so the protection code of the apparatus is used as listed in the standard or the category can be equated as being suitable for a specific Zone as detailed in the directive. These codes of practice provide the user with guidance in selecting apparatus needed to obtain the degree of safety that is required for the particular hazardous area application.

The EU ATEX directives (Continued)

The Euro-normes (EN) have been updated for ATEX but as the updating mainly consisted of a cross reference to the ATEX categories this did not affect the standards technically except where co-incidental technical amendments were made. Compliance with the Euro-norme gives a presumption of compliance with those aspects of the directive covered by the standard. These are "The Essential Health and Safety Requirements" EHSR's. Lists of standards giving a presumption of compliance with the directive are published in the official journal (OJ) of the EU. The European Commission web site contains a large quantity of material concerning the directives along with the actual directive itself and the guidelines for its application.

An EC type examination by a notified body is mandatory for Category 1 and 2 electrical equipment but not for Category 3. Chalmit have chosen to obtain a certificate of compliance from a third party for Category 3 equipment in order to promote customer confidence and continue the long standing practice that Chalmit has used for Ex N apparatus. The designation EC can not be used for certification of Category 3 apparatus. In the data the term "type examination" rather than "EC type examination" is used for Category 3 apparatus.

The relationship between Categories and applications is shown in Table 4.

Category	Degree of Safety	Design Requirement	Application	Expected Zone of Use
1	Very high level of Safety	Two independent means of protection or safe with two independent faults	Where explosive atmospheres are present continuously or for lengthy periods	Zone 0 (gas) and Zone 20 (dust)
2	High level of Safety	Safe with frequently occurring disturbances or with a normal operating fault	Where explosive atmospheres are likely to occur	Zone 1 (gas) and Zone 21 (dust)
3	Normal level of Safety	Safe in normal operation	Where explosive atmospheres are likely to occur infrequently and be of short duration	Zone 2 (gas) and Zone 22 (dust)

Table 4 ATEX Categories and Applications

Marking of ATEX product and CE mark

The product carries the ATEX marking which includes the CE mark, CE ⟨Ex⟩, the Group, the Category and the Category sub-group G or D. The product also carries the normal coding, Ex d etc. and the surface temperature and ambient temperature (Tamb) ratings. The Group also forms part of the marking in the product standards and pre-dates ATEX. The Category is additional to the previous marking. This means that all of the familiar marking is still present. All products carry the general product safety and electromagnetic compatibility CE mark on the product, installation manual or packaging, as appropriate. The marking attests that the product meets the requirements of the Low Voltage and Electro-Magnetic Compatibility (EMC) directives of the EU as transposed into UK law. If the product carries the CE mark for ATEX it is not repeated. The scope of compliance is given in the IOM. Products exported directly outside of the European Community are not required to carry any CE marking but local marking regulations may apply.

Surface temperature rating and gas grouping

Any explosive mixture can be classified for explosion protection under two main characteristics, temperature of ignition by a hot surface and the spark energy to ignite it. The spark energy of ignition is also related to the intensity of the explosion. This latter property is crucial to the design of the joints in flameproof enclosures (Ex d) and the energy level limit of intrinsically safe (Ex i) and energy limited circuits. Other important subsidiary characteristics are the specific gravity and flash point, which are used in the determination of the area classification.

Surface temperature for ignition

The surface temperature rating is measured in the most onerous design attitude at the most severe supply voltage condition within the design tolerance. Usually this is +10% of rated voltage for lighting and with any fault or overload condition which could normally occur in service. A normal overload condition for motors is the starting or stalled condition and, for luminaires, the end of life of a lamp. In the case of Ex d, Ex m, Ex q and also restricted breathing Ex nR and dust proof enclosure methods, the maximum temperature is measured on the external surface. In other methods of protection the maximum internal temperature of the apparatus is measured. The explosive mixtures are allocated into broad bands giving the Temperature Classes shown in Table 5.

Temperature Class	Maximum Surface Temperature °C
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

Table 5 Classification of maximum surface temperatures for electrical apparatus EN 50014

For dust protection using the enclosure methods the surface temperature is limited to a given value in °C, the T grouping is not used.

Gas Group

The gas and vapour mixtures are classified as shown in Table 6. The possible number of chemical compounds is very extensive and the list shown is only representative. The classification shown is that associated with the IEC and CENELEC harmonised standards. The apparatus sub-groupings, A, B and C are only applicable to the design and marking of flameproof, intrinsically safe, energy limited and non incendive apparatus.

Group	Representative Gases
I	All Underground Coal Mining. Firedamp (methane)
IIA	Industrial methane, propane, petrol and the majority of industrial gases
IIB	Ethylene, coke oven gas and other industrial gases
IIC	Hydrogen, acetylene, carbon disulphide

Table 6 Gas Grouping for Electrical Apparatus EN 50014 and IEC 60079-0

Protection against the ignition of explosive atmospheres formed from ignitable dust

In this catalogue are products for use with ignitable dusts. Explosives dusts i.e. those not requiring the presence of air to ignite are outside the scope of ignitable dust protection.

With respect to the formation of an explosive atmosphere, the nature of dust is very different to that of gas or vapour. Dust, unlike gas does not disperse, it remains until cleared away by manual means or ventilation and can form layers. Layers of dust can ignite at much lower temperatures than clouds. This is because layers can insulate and increase the temperature and also because layers of some dust are prone to spontaneous combustion. The ignition of layers results in burning which can subsequently translate into an explosion. Layers have the potential to be disturbed and form clouds. Ignition data for dusts is given for clouds and layers. Typically, dust in a cloud form is harder to ignite than gas either by a hot surface or a spark. The maximum allowable surface temperature for apparatus present in dust clouds is de-rated from the actual surface temperature of ignition of the dust. The allowable surface temperature for layers is subject to further de-rating where layers exceed 5mm thick and extra heavy layers require special laboratory investigation by the specifier or user.

When installing floodlights, care must be taken to ensure that the face of the glass is positioned at such an angle that dust can not settle.

Ignitable atmospheres caused by dust may be prevented from arising by ventilation, containment and by good housekeeping. The area classification for dust is similar to that for gas, namely, Zone 20, Zone 21 and Zone 22, depending on the likelihood of a hazardous dust atmosphere being present. As a generality, the zones are smaller than those for gas. Equipment may be marked as suitable for both gas and dust hazards. If the apparatus carries marking for both dust and gas this does not mean both at the same time. The simultaneous presence of ignitable dust and gas is subject to special consideration and its potential for ignition must be investigated by a qualified person.

Protection against the ignition of explosive atmospheres formed from ignitable dust (continued)

The dust ignition protection method for products in this catalogue is by enclosure to IP6X or IP5X as appropriate. IP6X is required for ATEX Category 1 and 2 and for conducting dusts in any Category. Conducting dust ingress can cause incendive insulation failure. IP5X is a minimum for Category 3. The surface temperature is limited to a given value in ºC and the T grouping is not used. Currently the most recent enclosure standard is EN 50281-1-1 and is used for Chalmit apparatus to ATEX. The selection standard is EN 50281-1-2. and the area classification standard EN 50281-3.

It should be noted that the dust protection methods for the EU after ATEX comes into force are not identical with those of the rest of the world. The reference standards are set by the user and may be EN, IEC or a USA standard. Chalmit apparatus will generally comply with the IEC 61241 series of standards for Practice A. The user must specify to which standard the product is required to comply. The standards are under further development and significant changes will take place during the period when this catalogue is current.

Reference is also made in this catalogue to products for use in NEC Class II and Class III locations. NEC dust protected products are to UL 844. The construction and testing is different to that specified in the Euro-norme but is very similar to the alternative Practice B given in the IEC standard. The main differences are gasket dimensions, thermal testing with a layer of dust and ingress testing using a heating and cooling cycling method.

International Standards

Two distinct groups of apparatus standards used world-wide are the IEC/EN (Euronorme) series of standards and those used in the USA and areas influenced by US practice. Almost all work on hazardous area and equipment standards is now being carried out by IEC and those Euronormes which are not already technically identical to IEC will become so in their next editions. The EN series EN 50014 etc will be renumbered in the IEC 60079-series. Many countries which have their own national standards have adopted the IEC standards in their entirety or incorporated material from them.
The practice in the US is different because it developed separately from the rest of the world. The US engineering practice, legal requirements, regulations and the use of approval organisations such as UL, FM and ISA mean that, whilst the safety principles are much the same as in the rest of the world, the detail is significantly different. The US code of practice is the National Electrical Code NEC) and the 'standard' exclusively used, until recently, for luminaires is ANSI/UL844. This standard integrates the designation of the hazardous area in which apparatus is designed to be used and the protection method. For lighting purposes the types of protection are a flameproof type and a non-sparking type. These are used in Class 1 Division 1, and Class 1 Division 2 areas which are broadly equivalent to Zone 1 and Zone 2 respectively. Dust and fibre hazards are Classes II and III.

The only basic technical difference between these and the equivalent IEC/EN standards is that the ANSI/UL844 'non-sparking' technique, known as 'enclosed and gasketed', does not use the restricted breathing method. This is one factor which accounts for the generally higher surface temperature ratings of ANSI/UL844 listed apparatus and the practical need for a greater number of temperature sub-divisions. Another factor is that the standard specifies higher test pressures for flameproof equipment. In the case of HID luminaires this results in the lampglass being smaller and the surface temperature inevitably hotter.
The construction and testing of dust protected enclosures is different to EN but is currently partially incorporated as an additional alternative in the IEC standards.
In both codes the gases and compounds are classified by surface temperature of ignition and grouped into ignition groups for the dimensioning of flameproof joints and for intrinsic safety. The classification and grouping are broadly similar to IEC/EN but differ in detail. The classification and protection cannot be mixed and must be used as complementary pairs. A general comparison between IEC/EN and NEC practice for gas hazard protection is shown in Tables 7 and 8. The US standards are also influenced by the use of conduit wiring systems which, in contrast to cable, form a flameproof distribution method for Class 1 Division 1 and a damage and ingress protected distribution method for Division 2.
The NEC has now introduced the Zone classification concept for gas hazards as an alternative to the Division method. The wiring methods currently remain unchanged. To support this. UL and ISA have now introduced their own IEC based protection standards for use in the alternative Zones. These standards are intended to become single ANSI documents. The objective is that the two systems will run in parallel until the older US system becomes obsolete. This will take many years. The new US standards, although based on IEC, may differ substantially from IEC. Certification to IEC based US standards can not be considered as being the same as to IEC.
Products may be marked for both divisions and zones. Where product complies with the US standard based on IEC the designation AEx is applied on the marking.

The Canadian practice has been a hybrid of US and European. The mining industry in Canada was much influenced by Europe which led to the use of European methods elsewhere. Through the joint accreditation system with the US (NRTL) there is a degree of overlap but the detail of this can not be addressed properly in this introduction. Canada has now adopted the zone system for new construction.

Chalmit is a subsidiary of Hubbell Inc and sells the products of sister company Killark. This means that Chalmit can supply products to US and Canadian standards and codes. The range is comprehensive and encompasses the vast majority of lighting products needed to satisfy applications in hazardous areas throughout the world.

Maximum Temperature °C	Surface Temperature Classification	
	EN 50014	ANSI/UL844
450	T1	T1
300	T2	T2
280	280ºC (T2)	T2A
260	260ºC (T2)	T2B
230	230ºC (T2)	T2C
210	215ºC (T2)	T2D
200	T3	T3
180	180ºC (T3)	T3A
160	165ºC (T3)	T3B
160	160ºC (T3)	T3C
130	T4	T4
120	120ºC (T4)	T4A
100	T5	T5
850	T6	T6

Table 7 Comparison of Surface Temperature Classification IEC and NEC

Representative Gas	Explosion Group IEC 60079-0	Explosion Group National Electrical Code
Acetylene	IIC	A
Carbon disulphide	IIC	B
Hydrogen	IIC	B
Ethylene oxide	IIB	B
Hydrogen sulphide	IIB	C
Ethylene	IIB	C
Acrylo-nitrile	IIA	D
Industrial Methane	IIA	D
Propane	IIA	D
Ethyl acetate	IIA	D

Table 8 Comparison of Representative Gases in CENELEC and NEC Gas Groups

The IEC Ex Scheme

The IEC has introduced an international certification scheme based on the use of IEC standards. This is now becoming established and has an increasingly large group of participants including all the major manufacturing countries. In each member country, test laboratories and certification bodies are being vetted and are joining the scheme. These organisations will accept each other's test reports prepared under the scheme and, in due course, where appropriate, issue certificates of conformity with IEC standards. The certificates will carry the IEC certification mark. The ultimate objective is the acceptance of one certificate regardless of origin to show that explosion proof apparatus is safe for use. The growth of the scheme is driving forward the process of changing the IEC standards to become uniformly acceptable.

Ingress protection

The surface temperature classification and gas grouping are the primary safety considerations. A major secondary parameter is protection against the ingress of solid bodies and liquids. In some cases the degree of ingress protection (IP) forms part of the standard requirement of the explosion protection method.
Where apparatus is used in dirty or wet conditions, high resistance to ingress contributes to the reliability of explosion protection in that electrical faults within the apparatus are often the result of water ingress.
Where Chalmit products are concerned, the appropriate standard is EN 60529 (IEC 60529).
The definitions of the IP code are summarised in Table 9. It will be noted that many Chalmit luminaires have both IP66 and IP67 ratings. This is because the IP66 test can be more severe than IP67 for some constructions. The US has a system using the ANSI/NEMA 250 code which is similar but also contains tests for corrosion resistance.

First Digit Numeral	Degree of Protection (Foreign Bodies)	Second Digit Numeral	Degree of Protection (Liquids)
0	No protection	0	No protection
1	Protection against ingress of large solid foreign bodies	1	Protection against drops of water
2	Protection against ingress of medium sized solid foreign bodies	2	Protection against drops of liquid falling at any angle up to 15º from vertical
3	Protection against ingress of small solid foreign bodies greater in diameter than 2.5mm	3	Protection against rain falling at any angle up to 60º from the vertical
4	Protection against ingress of small solid foreign bodies greater in diameter than 1mm	4	Protection against splashing. Liquid splashed from any direction shall have no harmful effect
5	Protection against the ingress of dust in an amount sufficient to interfere with satisfactory operation of the enclosed equipment	5	Protection against water projected by nozzle from any direction
6	Complete protection against ingress of dust	6	Protection against powerful water jets
		7	Protection against temporary immersion in water
		8	Protection against indefinite immersion in water. Tests to be agreed between supplier and customer.

Table 9 Definition of Ingress Protection

Resistance to mechanical damage

The individual protection standards also contain minimum levels of resistance to mechanical damage as measured by test methods producing an impact energy measured in Joules or Newton metres. The tests are conducted at both below the lowest permitted ambient temperature and above the highest. 10 Joules is equivalent to 1 Kilogram dropped from a height of 1 metre. A 25 mm diameter hemispherical steel impact piece is used. Chalmit equipment usually exceeds the minimum level by a substantial margin.

The standards usually contain two levels of impact resistance these being appropriate to high and low risk of impact. The selection will depend on the mounting position. If the apparatus is only suitable for low impact the certificate is suffixed X or the information is included in the installation information.

Part of apparatus tested	Impact energy in Joules			
	EN 50014		EN 50021 (1999)	
	High risk of mechanical danger	Low risk of mechanical danger	High risk of mechanical danger	Low risk of mechanical danger
Enclosures and Guards	7	4	3.5	2
Light transmitting parts without guard	4	2	2	1
Light transmitting parts with guard when tested without guard	2	1	1	0.5

Table 10 Impact Energy Requirements for EN 50014 and EN 50021 Group II Apparatus

Compliance with general product standards

Luminaires are designed to comply with normal product construction standards, such as EN 60598, where the requirements do not conflict with those in the Ex protection standard. This also applies to internal components such as lampholders, terminals and control gear. Apparatus complying with the individual product standard will have its internal components operating within their rated performance when operated at the maximum rated ambient temperature. This contributes to the reliability and, ultimately, the safety of the installation.
Compliance with product standards is the normal method of claiming compliance with the Low Voltage Directive of the EU.

Operational temperatures

The operational temperature limits, Tamb, are based on both product function and the Ex protection standards. As a general guide the normal upper limit is 40ºC but some equipment is rated at other temperatures which may be linked to the surface temperature rating or the temperature limit of operation. The normal lower limit for Ex products is -20ºC unless otherwise noted on the certificate or data. 40ºC to -20ºC is the standard level given in EN 50014 and if these are the limits, the product does not need to be marked with the Tamb.

Where the range is other than 40ºC to -20ºC the upper and lower limits are both marked. The lowest certified Tamb is not always the actual lowest temperature for functional operation, especially for luminaires where the lamp may not be suitable because of temperature limitation. In some cases the lowest temperature for Ex use is lower than that at which the lamp will start or the product will function properly. The lower limits of operation and starting for lamps and for batteries can be obtained from Chalmit. A guide is -40ºC for HPS, -30ºC for Metal halide, -25ºC for Mercury vapour, as low as -30ºC for fluorescent depending on the control gear used and -10ºC for battery operated equipment.

'X' suffix on certificate

Some products carry a suffix 'X' after the certificate number. This denotes "special certification conditions". These are given on the certificate and in the installation manual. The conditions usually relate to cable entry, operation, lamps, orientation, installation position and location, impact level or maintenance. They must be observed by the user.

Delayed opening

In those cases where internal temperatures are greater than the T rating or where energy is stored in electrical components, a delay before opening is marked on the apparatus. This will give a minimum time limit to be observed following the interruption of electrical power. This allows for cooling and discharge of energy. It applies most practically to Ex d apparatus.

For Category 3 apparatus, opening times are not usually given as it is inferred that an explosive atmosphere is unlikely to occur during maintenance operations.

Cabling and cable glands

Ex d floodlights and well-glass luminaires in this catalogue feature indirect entry via Ex e terminal enclosures. This means that the terminal chamber is separated from the main chamber by a flameproof barrier. Cable glands must satisfy the requirements for Ex e entry with reference to IP rating and impact. The cables must satisfy any requirement laid down in an installation code of practice. Where the entry is via an indirect Ex d terminal chamber or directly into an Ex d enclosure, Ex d cable glands must be used. The method for selecting cable gland types for Ex d is set out in the code of practice EN 60079-14.

Where glands are fitted as part of the apparatus, the diameter of the supply cables used must be suitable for accommodation within the cable glands supplied. If not correct they must be replaced by the user. The terminal size and looping facility available is shown in the product data sheets and IOM. Where there is an option, the requirement must be stated on the order. Apparatus is usually despatched with one or more permanent entry plug(s) and one travel plug which will keep out moisture during transport, storage and initial installation. Ex nR and Ex N apparatus with a restricted breathing enclosure is provided with a means of achieving the gas-tight seal needed to attain the protection method. It is the responsibility of the user to ensure that the cable entry system is satisfactory.

In relation to cable temperature, some products require to be supplied by cables with temperature ratings above 70ºC (ordinary PVC), particularly where the product is rated for higher ambient temperatures. The cable temperature is shown on the rating plate and in the installation manual. The rating is based on the maximum rated ambient. Where cable temperatures exceed 70ºC at the maximum rated ambient, Chalmit now gives the actual temperature rise at the cable entry. The user can relate this to the actual operating condition and select appropriate cables. At their own discretion users may choose to adjust the cable temperature ratings of those products with specific cable temperatures on this basis.

For Ex nR luminaires in this catalogue complying with EN 50021 [IEC 60079-15] the cable glands which may be used are listed in the certificate pertaining to that piece of apparatus. This is to ensure that the restricted breathing properties are maintained. A list of suitable cable glands is given in the installation leaflet supplied with the product and available on request from Chalmit.

Where cables do not enter directly into the restricted breathing enclosure the designation is Ex nA nR and special glands are not required, however the ingress protection and impact requirements must be met. Information on this can be found in the individual product installation leaflet.

Lamps and control gear

Lamps fall into two broad categories, incandescent lamps where the light is generated by a hot wire element and discharge lamps where the light is generated by an electrical discharge enclosed in a containment vessel usually referred to as the arc tube. Discharge lamps either produce light directly from the hot gas discharge, as is the case with high pressure sodium and metal halide, or by conversion from UV to visible light using a phosphor which absorbs one wavelength and emits another. Phosphors are used in fluorescent and mercury vapour lamps. Apart from some specialist “induction” lamps where the plasma is generated by an external magnetic field, the electrical arc in discharge lamps is formed between electrodes within a vessel or arc tube. Discharge lamps are divided into two types. Low pressure lamps with an evacuated glass vessel filled with inert gas at low pressure and a small amount of metal, usually mercury, and high pressure types where the quartz or ceramic arc tube is filled with sodium, mercury and sometimes a cocktail of rare earth metals which vapourise at high temperature.

The high pressure types have an outer evacuated enclosure to reduce heat loss and protect against the severe corrosion which would occur if the hot arc tube were to be exposed to the atmosphere. The electric arc is unstable so control gear is needed to stabilise it, hence the common term “ballast”. Some discharge lamps are designed so that they can be initiated at normal mains supply voltage but the optimisation of output and efficiency usually means that an enhanced voltage is needed to initiate the arc. Depending on the requirement, this is produced by resonant circuits which boost the voltage during starting or by a separate ignitor producing a high voltage pulse. Fluorescent lamps have cathodes which are usually pre-heated providing ionisation to aid initiation of the arc.

Light emitting diodes (LED) produce light directly by using solid state technology. These are being developed rapidly and have now reached output levels and efficiency where they can be used for illumination rather than decoration and indication. The efficiency is still low but the life can be very long.

The different types of lamps have various characteristics: instant light-slow run up; instant re-strike-long delay: good-poor colour rendering (colour rendering is a method of comparing colours as they appear under a given lamp with their appearance in natural daylight); long-medium life; high-low efficiency; cost; size; fragility; ability to run at low or high temperature; vibration resistance; maximum power; etc. Some lamps are so hot or so bulky that their use must be confined to certain types of Ex protection.

No single lamp type is ideal for all lighting applications but a combination of fluorescent and powerful high intensity discharge lamps will accomplish most tasks. The user must select the combination of light source and protection which suits the application. Table 10 gives a summary of lamp characteristics and their application as applied to general Ex usage. It must be stressed that this is a broad summary and that considerations of lamp economics are both complex and subjective. This applies especially to views on economical life.

The lamp output shown is given in lumens. The lumen is a unit of light which quantifies the amount of luminous power in the visible range. Large diffuse light sources such as fluorescent and coated HID types can not readily be focussed. The ability of the lamp and luminaire to deliver the light to a working surface varies considerably with the lamp type, reflector and luminaire design.

As a generality, the smaller power lamps of each type have lower efficiency and shorter lives, often significantly so. The lamp manufacturers provide large amounts of data but the tables of lamp mortality combined with the reduction of output over the lamp life (lumen depreciation) need to be studied carefully to make a refined judgement. The amount of switching is also an important factor.

Lamp Type	Tubular Fluorescent and 2 leg compact	Compact Fluorescent	High pressure sodium	Metal Halide	Mercury vapour	Incandescent. GLS and Tungsten-halogen
Lamp Power range W	18 to 58W	9 to 55W	70 to 1 kW	70 to 2kW	80 to 400W	40 to 200W
Output range Lumens	up to 6000	up to 4800	6000/130000	5000/200000	3400/22000	375/3100
Physical size	Long	Small	Small to medium	Small to medium	Medium	Medium
Temperature of lamp	Cool	Cool	Hot	Very hot	Medium	Medium to very high
Efficiency lumens per circuit watt	up to 90	Up to 85	Up to 125	Up to 90	Up to 70	Up to 21
Instant light	Yes	Yes	No *(2)	No	No	Yes
Lumen depreciation	Slow	Slow	Negligible	Quick	Slow	Negligible
Colour rendering Ra	Good up to 90	Good up to 90	Poor up to 40	Good up to 90	Fair up to 65	V Good 95/100
Economical life max (hours)	40000*(1)	12000	30000	12000	10000	1000
Ability to be focussed for floodlighting	No	Limited	Good (tubular)	Good (tubular)	Limited	Some (tubular linear)
Emergency operation	Easy	Easy	No	No	No	Very easy (but inefficient)
Vibration resistance	Medium	Medium	Good	Good	Good	Poor
Most common Ex protection methods	Ex nA Ex e	Ex n Ex d	Ex d Ex nR	Ex d Ex nR	Ex d Ex nR	Ex e Ex d Ex nR
T amb range ˚C	-20 to 55	-20 to 55	-50 to 60	-30 to 55	-20 to 55	-50 to 60
Common T ratings	T6 to T4	T6 to T4	T4 to T2	T4 to T2	T4 to T2	T6 to T2

Table 11 Summary of Lamp Characteristics and their Application

* (1) Most fluorescent lamps have an economical life of 15000 hrs but some higher specification lamps are available which can run economically for up to 40000 hours

* (2) HPS lamps are available which have two arc tubes in parallel inside the same envelope and are commonly known as “twin arc” lamps. They give 15% light output immediately after a brief supply interruption which extinguishes the lamp. They also give a longer service life.

Lamp standardisation

Most IEC type lamps are now standardised in form and cap dimensions even when, as newly developed lamps, they are not included in a standard.

The US type lamps are generally somewhat different and are designed for use with US control gear. Some US fluorescent lamps are superficially identical to IEC lamps but may not run reliably on IEC control gear and vice versa. Some US HPS lamps are identical in operating characteristics with IEC lamps but others have different operating characteristics. US and IEC lamp-cap sizes are often different.

US metal halide lamps usually have quite different operating characteristics to European lamps and there are many varieties. Most must be operated on US control gear and sometimes a specific make of control gear if warranties are to be valid. Great care must be taken with the use of all metal halide lamps and details of their application will be found in the instruction manuals.

Most products for IEC applications in the catalogue are designed to use metal halide lamps compatible with HPS (SON) ballasts. Lamps will also run satisfactorily provided they are compatible with both HPS and MBFU ballast impedances. In all cases check control gear for compatibility. If in doubt with metal halide lamps refer to Chalmit.

Care must also be taken with the specification of compact fluorescent lamps, particularly whether they need to have a starting switch in the lamp. Most of the luminaires in the catalogue use 4-pin compact fluorescent lamps without internal starter switches. HPS/SON lamps with internal ignitors must not be used in Ex n or Ex N equipment. All Chalmit HID luminaires are suitable for use with twin arc HPS/SON lamps.

Please consult Chalmit if there are any uncertainties concerning lamps.

Lamp disposal

Lamp disposal is not regulated in the UK. Although lamps contain some mercury they are not currently in any category of special waste. Lamps should be broken up in an enclosed vessel before being sent for further disposal. There may be local regulations on waste disposal. In due course there will be an EU directive on waste re-cycling which will apply to lamps. In anticipation of this, a scheme for re-cycling bulk quantities of lamps is available in the UK, details of where lamps can be disposed of can be obtained from Chalmit.

Control gear and electrical supplies

Incandescent, tungsten-halogen and MBTF(self ballasted discharge) lamps are matched to the supply available and must be ordered accordingly. Discharge lamps are matched to the supply by the use of control gear. The control gear may be suitable for a single rated voltage or, by having taps or by a 'universal' or regulating design, may be suitable for a range of rated voltages. Usually discharge lamps will be standardised, refer to the section on lamps for possible miss-match. Supplies will have a tolerance on the rated or nominal voltage and, in general, the lamps will have a shorter life and produce more light when the actual voltage is higher than rated. This effect is reduced or eliminated with full regulation, usually by electronic control. Electronic control is now common for fluorescent lamps and this gives additional benefits in efficiency and lamp life. There are technical and operational problems with the use of electronic control for HID lamps. In particular these concern the temperature limitations of economical electronic power supplies. Also the efficiency benefits are proportionately much lower than for fluorescent lamps. For these reasons electronic control for high power HID lamps is some way in the future. Operation above rated voltage will also reduce the life of control gear and enclosures, especially where operation is continuous and at the maximum allowable Tamb. The product standards are currently based on having a normal maximum variation of +/- 6% and an extreme variation of +/-10% of rated voltage.

There is a problem in the UK caused by the rationalisation of nominal supply to 230V throughout the EU. The nominal supply in the UK is now 230V whereas the actual measured supply usually remains at or near 240V. Most Chalmit products will have a number of taps which can be selected to match the actual average supply voltage. Continuous operation at more than 6% above of the nominal control gear setting is not advised. To avoid this occurring the ordering of equipment for the actual site voltage or with taps or the use of control gear having regulated operation is required. Most Chalmit products with wound control gear are power factor corrected to values greater than 0.85 depending on the lamp and supply voltage and frequency. PFC can be omitted where supplies have large harmonic components which could damage capacitors. Products with electronic control gear have a power factor near unity. Further information is contained in the product installation manuals.

Most Chalmit control gear for high pressure discharge lamps now has thermal protection against the possible effects of rare faults occurring when lamps reach the end of their life.

Emergency lighting

Some luminaires for emergency lighting are contained in the catalogue. Where remote battery supplies are available these can supply tungsten or tungsten-halogen lamps of appropriate rating from dc supplies. Luminaires such as Protecta, Acclaim, 216, and Sterling having electronic ballasts, can power fluorescent lamps from dc supplies. Most of the remaining range can be run at mains ac voltage from a UPS but the characteristics of the UPS must be compatible with those of the luminaire. For details of operation where full information is not included in the catalogue refer to Chalmit. The Protecta, 261E, Acclaim and Sterling luminaires are also available with integral, self contained nickel-cadmium batteries to provide illumination on ac mains failure. The output is a given percentage of the full luminaire output depending on the lamp size chosen and the duration required.

Applications

The Chalmit range of lighting products uses a wide range of lamps, each of which is suited to its particular application. The use of high intensity discharge lamps in floodlighting and high bay applications reduces the number of luminaires required with a consequential reduction in the amount of installation and maintenance time as well as cost. The Chalmit range also includes a number of luminaires for single point or local illumination and those using fluorescent lamps provide instant illumination of good light quality using low cost sources. The HID sources allow a compact luminaire construction that will reliably attain a high degree of ingress protection. Many fluorescent sources and the smaller HID sources can be housed in luminaires having plastic enclosures and these have additional applications in certain corrosive environments. The wide range of products and lamps ensures that Chalmit can supply the correct luminaire for the application.

GLOSSARY

ANSI	American National Standards Institute
ATEX	Abr. Directive 94/9/EC Equipment and protective systems intended for use in potentially explosive atmospheres
BASEEFA	British Approvals Service for Electrical Equipment in Explosive Atmospheres. This was a government organisation that is now closed
BASEEFA 2001	A private organisation which has taken on much of the work of BASEEFA
BSI	British Standards Institution
CAA	Civil Aviation Authority (UK)
CEN	Committee European de Normalisation
CENELEC	Committee European de Normalisation Electrique
CIE	Commision Internationale de Leclairage
CSA	Canadian Standards Association
EC	European Communities
EECS	Electrical Equipment Certification Service (UK). Parent organisation of BASEEFA, now closed
ERA	The Electrical Research Association (hazardous area testing section became part of ITS)
EU	The European Union
FM	Factory Mutual (US)
IEC	International Electro-technical Commission
IP	Ingress Protection
ISA	Instrument Society of America
ITS	Intertek Testing Services (formerly part of ERA)
KEMA	Netherlands Testing Laboratory
NEMA	National Electrical Manufacturers Association (US)
NRTL	Nationally Recognised Testing Laboratories (US)
SCS	SIRA Certification Service (UK)
SOLAS	Safety of Life at Sea (convention)
T	Surface Temperature (Max)
Ta/Tamb	Ambient Temperature
UL	Underwriters Laboratory Inc.

LAMP TYPES

HID	High intensity discharge
CFL	Compact fluorescent
MBFU	Mercury vapour
MBI/HQI	Metal Halide
MBTF	Blended mercury vapour
SON/HPS	High pressure sodium
TH	Tungsten-halogen

PROTECTA III

Ex e FLUORESCENT

ATEX CATEGORY 2 ZONE 1 APPLICATIONS

The Protecta III luminaire for tubular fluorescent lamps is rugged and high quality.
It is constructed using a glass reinforced polyester (GRP) body and polycarbonate diffuser which resist saline and other corrosive environments.
Major features of the luminaire are the strength of the enclosure and mounting points together wih the very high degree of ingress protection afforded by the simple reliable construction.
All the control gear is mounted on a gear tray.
The ease of access to lamps and control gear ensures that installation and maintenance will be completed quickly and efficiently.

Standard Specification

Type of Protection:	**Ex eqm (Increased safety Powder filling Encapsulation)**
ATEX Classification:	**Group II Category 2 G**
Area Classification:	**Zone 1 and 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50014 EN 50017 EN 50019 EN 50028**
Certificate:	**EC Type Examination Certificate KEMA98ATEX3045**
Coding:	**Ⓔx II 2 G Ex eqm II T4 Tamb 55ºC**
Enclosure:	**GRP body with polycarbonate cover and brass suspension points**
Reflector/Geartray:	**White polyester painted zinc coated steel**
Entry:	**4 x M20 cable entries, 2 at each end**
Termination:	**4 core 6mm² max. conductor with looping and 16A rating through wiring**
Installation:	**Two M8 tapped brass inserts located on rear of body.**
Control Gear:	**High Frequency**
Relamping:	**Quick release diffuser clamp and hinged cover**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**T8 tubular fluorescent**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply	**220V - 254V 50/60Hz 220 - 300V dc**

Features

Simple rugged construction

Full length easy access diffuser clamp

Hinged cover

Standard fixing centres

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output

Automatic lamp de-energisation on opening

Screwless mains terminals

Shell/ERA deluge tested

Resistant to voltage fluctuations

Vibration tested to comply with Lloyds/DNV

Gost Approved

Cepel Approved

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Std. Cat No.	Part No.	Wattage	Weight
PRGE/118/BI	500131	1x18W	4.0kg
PRGE/218/BI	500231	2x18W	4.2kg
PRGE/136/BI	500331	1x36W	9.6kg
PRGE/236/BI	500431	2x36W	9.8kg
PRGE/258/BI	500831	2x58W	12.0kg
PRGE/118/MO	500139	1x18W	4.0kg
PRGE/218/MO	500239	2x18W	4.2kg
PRGE/136/MO	500339	1x36W	9.6kg
PRGE/236/MO	500439	2x36W	9.8kg
PRGE/258/MO	500839	2x58W	12.0kg

Options - Suffix to Catalogue No.	
/120	Specific voltage (110/120)
/SE	Spigot entry 18W only
/M25	M25 Entries
/3P	3 phase termination facility (Not available if looping required)
/EL	Extra live termination facility (to match emergency circuit)
/SB	Stainless steel mounting bush
/D	Dust Protected Zone 21 (In combination with Zone 1 gas version)

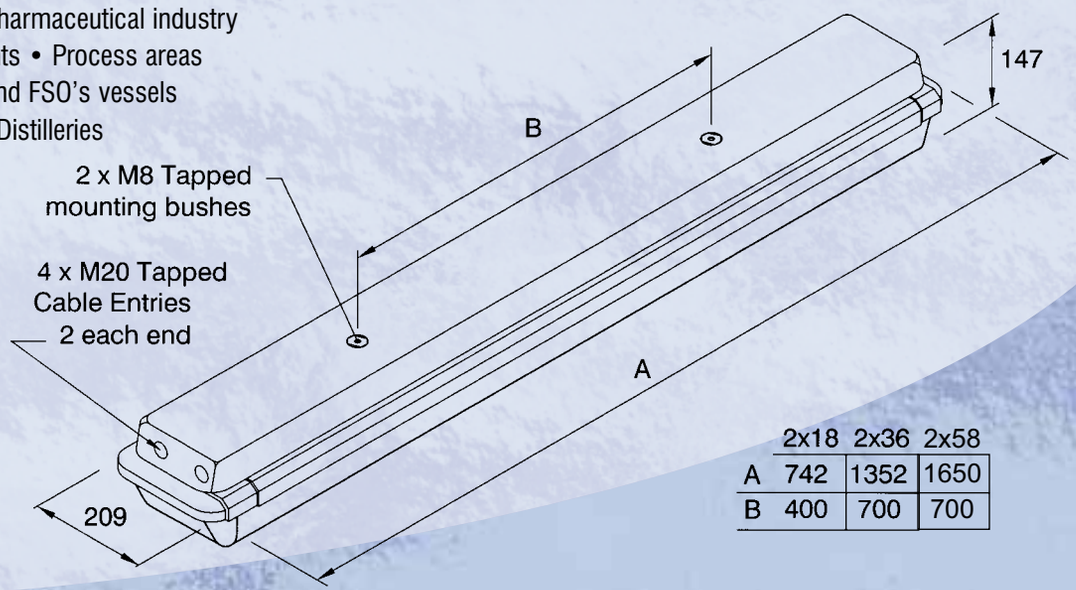
MO - Mono-pin Lamps

Mono-pin Coding; EEx eqd IIC

Dust only version (PRGD/___) available.
Contact sales for information.

Applications

- Zone 1 and 2 hazardous areas • Offshore oil and gas platforms
- Chemical industry • Pharmaceutical industry
- Sewage treatment plants • Process areas
- Walkways • FPSO's and FSO's vessels
- M.O.D. installations • Distilleries
- Gas pumping stations



	2x18	2x36	2x58
A	742	1352	1650
B	400	700	700

Accessories (Should be ordered separately)	**Catalogue Order Code**
Offset ceiling bracket assembly	**SPRO4-0002**
Pole mounting bracket assembly (38/50 diameter poles)	**SPRO4-0003**
C' form hook type ceiling bracket assembly	**SPRO4-0005**
Flush mounted wall bracket assembly	**SPRO4-0006**
Wall mounting outreach bracket (18W spigot entry version)	**NPRO4-0007**
18W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0008**
36W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0012**
Eyebolt set	**SPRO5-0005**
Looping Kit (Allows looping from both ends of luminaire)	**SPROT-0021**

KEMA
REGISTERED QUALITY

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 98ATEX3045**

(4) Equipment or protective system: **Luminaires for mono-pin and bi-pin tubular fluorescent lamps, with and without emergency lighting, Type PROTECTA, 18/20W or 36/40W**

(5) Manufacturer: **Chalmit Lighting Limited**

(6) Address: **388 Hillington Road, Glasgow G52 4BL, Scotland**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA, notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. 83045.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1992 + prA1
EN 50019:1994 + prA1 + prAA
EN 50018:1994 + prA1
EN 50028:1987

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

(12) The marking of the equipment or protective system shall include the following:

⟨Ex⟩ **II 2G EEx edm IIC T4** or ⟨Ex⟩ **II 2G EEx eqd IIC T4**

Arnhem, 24 February 2000
by order of the Board of Directors of N.V. KEMA

L.M.J. Vries
Certification Manager

N.V. KEMA
Utrechtseweg 310, 6812 AR Arnhem
P.O. Box 9035, 6800 ET Arnhem, The Netherlands
Telephone + 31 26 3 56 34 28, Telefax + 31 26 3 52 58 00

ACCREDITED BY
THE DUTCH COUNCIL
FOR ACCREDITATION

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 98ATEX3045**

(15) **Description**

The luminaires for mono-pin and bi-pin tubular fluorescent lamps, with and without emergency lighting, Type PROTECTA, 18/20W or 36/40W consist of a housing with a transparent polycarbonate cover and a polyester body, in which one or two tubular fluorescent lamps are fitted. The luminaires are fitted with single-pin lamp caps type Fa6 or bi-pin lamp caps type G13, according to IEC 60061-1.
For emergency lighting, the luminaire is provided with a Nickel-Cadmium battery.

Ambient temperature range -20 °C ... +40 °C.

Electrical data

Luminaire type	Power		Rated voltage of the luminaire
500239.A***	2x18/20W	)	
500439.A***	2x36/40W	)	220...277 V, 47...63 Hz or
502239.A***	2x18/20W	)	150...300 V dc
502439.A***	2x36/40W	)	
500639.A***	2x18/20W	)	
500239.G***	2x18/20W	)	
500339.G***	1x36/40W	)	220...254 V, 47...63 Hz or
500439.G***	2x36/40W	)	264...306 V dc
500639.G***	2x18/20W	)	
500239.G**1	2x18/20W	)	
500339.G**1	1x36/40W	)	110...120 V, 47...63 Hz or
500439.G**1	2x36/40W	)	134...153 V dc
500639.G**1	2x18/20W	)	
500231.A***	2x18/20W	)	
500431.A***	2x36/40W	)	220...277 V, 47...63 Hz or
502231.A***	2x18/20W	)	150...300 V dc
502431.A***	2x36/40W	)	
500631.A***	2x18/20W	)	
500231.G***	2x18/20W	)	
500331.G***	1x36/40W	)	220...254 V, 47...63 Hz or
500431.G***	2x36/40W	)	264...306 V dc
500631.G***	2x18/20W	)	
500231.G**1	2x18/20W	)	
500331.G**1	1x36/40W	)	110...120 V, 47...63 Hz or
500431.G**1	2x36/40W	)	134...153 V dc
500631.G**1	2x18/20W	)	

Installation instruction

The degree of protection of at least IP 54 to EN 60529 is only achieved if certified cable entries and blanking elements are used that are suitable for the application and correctly installed.

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX3045**

Routine test

Each luminaire must be submitted to the routine electric strength test according to Clause 7.1 of EN 50019.

(16) **Report**

KEMA No. 83045

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by standards listed at (9)	
Clause	Subject
1.0.5	Marking
1.0.6.b	Instructions

These Essential Health and Safety Requirements are examined and positively judged. The results are laid down in the report listed at (16).

(19) **Test documentation**

1. EC-Type Examination Certificates KEMA 99ATEX4934 U
   PTB 98ATEX1032 U
   PTB 98ATEX3125 U
   PTB 99ATEX1011 U
   BAS 99ATEX2123 U
   Component Certificates KEMA No. Ex-92.C.8151 U
   KEMA No. Ex-92.C.8307 U
   KEMA No. Ex-93.C.9593 U
   KEMA No. Ex-97.E.3853 U

signed

2. Description (8 pages) 07.02.2000

3. Drawing No. A 6346, rev.02)
   A 6347)
   A 6350, rev. 01)
   A 6351, rev. 01)
   A 6401, rev. 01)
   A 6402, rev. 01) 04.10.1999
   B 833)
   B 834)
   B 835)
   B 836)

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 98ATEX3045**

(19) **Test documentation** (continued)

		signed
Drawing No.	B 965, rev. 02)	
	B 1037, rev. 02)	
	B 1038, rev. 02)	
	B 1094)	
	C 661)	
	C 731, rev. 01)	
	C 768)	
	D 1783, rev. 02)	
	D 1857, rev. 02)	04.10.1999
	D 1858, rev. 02)	
	D 1925 (2 sheets))	
	D 1926)	
	D 1927)	
	D 1929 (2 sheets))	
	D 1930)	
	D 1931)	
	D 1934)	
	B 964, rev. 03	05.10.1999
	B 1092, rev. 01)	
	B 1093, rev. 01)	
	D 1924, rev. 01)	22.12.1999
	D 1928, rev. 01)	
	D 1936, rev. 01)	
	C 767, rev. 01)	

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

KEMA

AMENDMENT 1

to EC-Type Examination Certificate KEMA 98ATEX3045

Manufacturer:

Chalmit Lighting
388 Hillington Road
Glasgow G52 4BL
Scotland

Description

In future the Luminaires for mono-pin and bi-pin tubular fluorescent lamps, with and without emergency lighting, Types PROTECTA 18/20W or 36/40W, may also be constructed in accordance with the documentation stated below.

The modifications concern:
- the inclusion of the CNEVA and LEVA control gear incorporating a de-energising sensor, certified with EC-type-examination certificate KEMA 00ATEX2121U
- the inclusion of a new battery connection
- the inclusion of an alternative type of terminal block
- the inclusion of a new type of bi-pin lampholder
- the extension of the ambient temperature range to -20 °C...+55 °C.

Code:

For the following bi-pin luminaire models using the LEVA ballast, the code is:

II 2G Ex eqm II T4

- Model 500231.H***	- Model 500231.H**1
- Model 500331.H***	- Model 500331.H**1
- Model 500431.H***	- Model 500431.H**1
- Model 500631.H***	- Model 500631.H**1

For the following bi-pin luminaire models using the CNEVA ballast, the code is:

II 2G Ex eqm II T4

- Model 502231.J***	- Model 502231.J**1
- Model 502431.J***	- Model 502431.J**1
- Model 502631.J***	- Model 502631.J**1

For the following mono-pin luminaire models using the LEVA ballast, the code is:

II 2G EEx eqd IIC T4, or **II 2G Ex eqm II T4**

- Model 500239.H***	- Model 500239.H**1
- Model 500339.H***	- Model 500339.H**1
- Model 500439.H***	- Model 500439.H**1
- Model 500639.H***	- Model 500639.H**1

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AMENDMENT 1

to EC-Type Examination Certificate KEMA 98ATEX3045

Code (continued)

For the following mono-pin luminaire models using the CNEVA ballast, the code is:

⟨Ex⟩ **II 2G Ex eqdm IIC T4**

- Model 502239.J*** - Model 502239.J**1
- Model 502439.J*** - Model 502439.J**1
- Model 502639.J*** - Model 502639.J**1

Electrical data

Mono-pin luminaire type:	Rated voltage of the luminaire
500239.H.xxx) 500339.H.xxx) 500439.H.xxx) 500639.H.xxx)	220-254 V, 47-63 Hz or 220-300 Vdc
500239.H.xx1) 500339.H.xx1) 500439.H.xx1) 500639.H.xx1)	110-120 V, 47-63 Hz or 110-150 Vdc
502239.J.xxx) 502439.J.xxx) 502639.J.xxx)	220/254 V, 50...60 Hz
502239.J.xx1) 502439.J.xx1) 502639.J.xx1)	110/120 V, 50...60 Hz
Bi-pin luminaire type:	
500231.H.xxx) 500331.H.xxx) 500431.H.xxx) 500631.H.xxx)	220-254 V, 47-63 Hz or 220-300 Vdc
500231.H.xx1) 500331.H.xx1) 500431.H.xx1) 500631.H.xx1)	110-120 V, 47-63 Hz or 110-150 Vdc
502231.J.xxx) 502431.J.xxx) 502631.J.xxx)	220/254 V, 50...60 Hz
502231.J.xx1) 502431.J.xx1) 502631.J.xx1)	110/120 V, 50...60 Hz

All other data remain unchanged.

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AMENDMENT 1

to EC-Type Examination Certificate KEMA 98ATEX3045

Routine tests

Each luminaire must be submitted to the routine electric strength test according to Clause 7.1 of EN 50019.

Special condition for safe use:

For use with the ambient temperature range of -20 °C...+55 °C, the following 18/20 W bi-pin and mono-pin luminaire models can only be used in places where there is a low risk of mechanical damage:

- Model 500231.H***
- Model 500631.H***
- Model 500231.H**1
- Model 500631.H**1
- Model 502231.J***
- Model 502231.J**1

- Model 500239.H***
- Model 500639.H***
- Model 500239.H**1
- Model 500639.H**1
- Model 502239.J***
- Model 502239.J**1

For these models an "X" must be added to the certificate number: **KEMA 98ATEX3045 X**.

Test documentation

1. EC-Type Examination Certificate KEMA 00ATEX2121 U
   EC-Type Examination Certificate PTB 98 ATEX 3125 U

2. Drawing No.

		signed
A6852 issue 00	)	
B1143 issue 00	)	
B1144 issue 00	)	
B1145 issue 00	)	
B1146 issue 00	)	
B1147 issue 01	)	
B1148 issue 00	)	06.12.2000
B1149 issue 00	)	
B1150 issue 00	)	
D1954 issue 00	)	
D1955 sheet 1/3 issue 00	)	
D1955 sheet 3/3 issue 00	)	
D1956 (3 sheets) issue 00	)	
B1151 issue 02	)	
B1180 issue 01	)	13.02.2001
C792 issue 00	)	
C793 issue 03	)	

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AMENDMENT 1

to EC-Type Examination Certificate KEMA 98ATEX3045

Test documentation (continued)

			signed
Drawing No.	C808 issue 00	)	
	D1924 issue 02	)	
	D1928 issue 02	)	13.02.2001
	D1957 issue 04	)	
	D1955 sheet 2/3 issue 00	)	

3. Samples

Arnhem, 09 March 2001
By order of the Board of Directors of N.V. KEMA

L.M.J. Vries
Certification Manager

Code:  **II 2G EEx edm IIC T4** or  **II 2G EEx eqd IIC T4** or

 **II 2G Ex eqmd IIC T4** or  **II 2G Ex eqm II T4** [2002824]

KEMA

AMENDMENT 2

to EC-Type Examination Certificate KEMA 98ATEX3045

Manufacturer: Chalmit Lighting

Adress: 388 Hillington Road, Glasgow G52 4BL, Scotland

Description

In future the Luminaires for mono-pin and bi-pin tubular fluorescent lamps, with and without emergency lighting, Types PROTECTA 18/20W or 36/40W, may also be constructed in accordance with the documentation stated below.

The modification concerns:
- the use of a stainless steel body.

Marking:

For the following bi-pin luminaire models using the LEVA ballast, for the temperature range -20 °C...+55 °C, the marking will be:

Ex II 2G Ex eqm II T4:

- Model 510231.H*** - Model 510231.H**1
- Model 510331.H*** - Model 510331.H**1
- Model 510431.H*** - Model 510431.H**1

For the following bi-pin luminaire models using the CNEVA ballast, for the temperature range -20 °C...+45 °C, the marking will be:

Ex II 2G Ex eqm II T4:

- Model 512231.J*** - Model 512231.J**1
- Model 512431.J*** - Model 512431.J**1

For the following mono-pin luminaire models using the LEVA ballast, for the temperature range -20 °C...+55 °C, the marking will be:

Ex II 2G EEx eqd IIC T4, or **Ex II 2G Ex eqm II T4**:

- Model 510239.H*** - Model 510239.H**1
- Model 510339.H*** - Model 510339.H**1
- Model 510439.H*** - Model 510439.H**1

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AMENDMENT 2

to EC-Type Examination Certificate KEMA 98ATEX3045

Marking (continued)

For the following mono-pin luminaire models using the CNEVA ballast, for the temperature range -20 °C...+45 °C, the marking will be:

⟨Ex⟩ **II 2G Ex eqdm IIC T4**:

- Model 512239.J*** - Model 512239.J**1
- Model 512439.J*** - Model 512439.J**1

All other data remain unchanged.

Electrical data

Refer to drawing no. D1924 rev.02 and D1928 rev. 02 for details.

Mono-pin luminaire type:	Rated voltage of the luminaire
510239.H.xxx) 510339.H.xxx) 510439.H.xxx)	220-254 V, 47-63 Hz or 220-300 Vdc
510239.H.xx1) 510339.H.xx1) 510439.H.xx1)	110-120 V, 47-63 Hz or 110-150 Vdc
512239.J.xxx) 512439.J.xxx)	220/254 V, 50...60 Hz
512239.J.xx1) 512439.J.xx1)	110/120 V, 50...60 Hz
Bi-pin luminaire type:	
510231.H.xxx) 510331.H.xxx) 510431.H.xxx)	220-254 V, 47-63 Hz or 220-300 Vdc
510231.H.xx1) 510331.H.xx1) 510431.H.xx1)	110-120 V, 47-63 Hz or 110-150 Vdc
512231.J.xxx) 512431.J.xxx)	220/254 V, 50...60 Hz
512231.J.xx1) 512431.J.xx1)	110/120 V, 50...60 Hz

Routine tests

Each luminaire must be submitted to the routine electric strength test according to Clause 7.1 of EN 50019.

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AMENDMENT 2

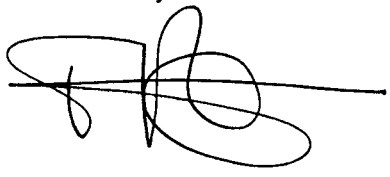
to EC-Type Examination Certificate KEMA 98ATEX3045

Test documentation

		signed
1. Drawing No. A6578 issue 00	)	
A6961 issue 02	)	
B1154 issue 00	)	26.09.2001
D2048 issue 00	)	
D2055 issue 00	)	

2. Samples

Arnhem, 3 March 2002
KEMA Quality B.V.



T. Pijpker
Certification Manager

[2014765]

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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AMENDMENT 3

to EC-Type Examination Certificate KEMA 98ATEX3045

Manufacturer: **Chalmit Lighting Ltd.**

Address: **388 Hillington Road, Glasgow G52 4BL, Scotland**

Description

In future the Luminaire, type PROTECTA, may also be constructed in accordance with the documentation stated below.

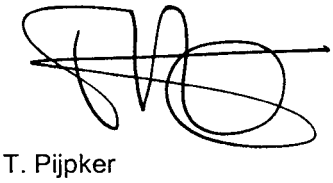
The modification concerns the connection method of the lampholder wiring.

All other data remain unchanged.

Test documentation

		dated
1.	Drawing No. D1955 (2 sheets), issue 01	07.08.2002

Arnhem, 24 September 2002
KEMA Quality B.V.



T. Pijpker
Certification Manager

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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AMENDMENT 4

to EC-Type Examination Certificate KEMA 98ATEX3045

Manufacturer: **Chalmit Lighting Ltd.**

Address: **388 Hillington Road, Glasgow G52 4BL, Scotland**

Description

In future the luminaire, type PROTECTA, may also be constructed in accordance with the documentation stated below.

The modifications concern:

-the inclusion of the ILB control gear incorporating a de-energising sensor, certified with EC-Type Examination certificate KEMA 00ATEX2121U for the following mono-pin and bi-pin tubular fluorescent lamps types:

Mono-pin		
Luminaire type	Voltage	Output
510239.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 18/20W
510239.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 18/20W
510439.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 36/40W
510439.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 36/40W
500239.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 18/20W
500239.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 18/20W
500639.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 18/20W
500639.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 18/20W
510439.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 36/40W
510439.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 36/40W

Temperature range -20 °C...+55 °C

The marking will be :  **II 2G Ex eqd IIC T4**

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Bi-pin		
Luminaire type	Voltage	Output
510231.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 18/20W
510231.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 18/20W
510431.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 36/40W
510431.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 36/40W
500231.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 18/20W
500231.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 18/20W
500631.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 18/20W
500631.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 18/20W
500431.P**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	2 x 36/40W
500431.P***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	2 x 36/40W

Temperature range -20 °C...+55 °C

The marking will be : Ⓔx **II 2G Ex eqm IIC T4**

-the inclusion of the following mono-pin and bi-pin tubular fluorescent lamps types:

Mono-pin		
Luminaire type	Voltage	Output
510139.H**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	1 x 18/20W
510139.H***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	1 x 18/20W
500139.H**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	1 x 18W
500139.H***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	1 x 18W
500539.H**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	1 x 18/20W
500539.H***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	1 x 18/20W

Temperature range -20 °C...+55 °C

The marking will be : Ⓔx **II 2G Ex eqd IIC T4**

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AMENDMENT 4

to EC-Type Examination Certificate KEMA 98ATEX3045

Bi-pin		
Luminaire type	Voltage	Output
510131.H**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	1 x 18/20W
510131.H***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	1 x 18/20W
500131.H**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	1 x 18W
500131.H***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	1 x 18W
500531.H**1	110 ... 120 Vac, 47 ...63 Hz or 110 ... 150 Vdc	1 x 18/20W
500531.H***	220 ... 254 Vac, 47 ...63 Hz or 220 ... 300 Vdc	1 x 18/20W

Temperature range -20 °C...+55 °C

The marking will be : Ⓔx **II 2G Ex eqm IIC T4**

- the inclusion of the following emergency luminaire types:

Mono-pin		
Luminaire type	Battery	Output
512239.J***	6 V, 4Ah	2 x 18/20W
512439.N***	6 V, 4Ah	2 x 36/40W
512239.J**1	6 V, 4Ah	2 x 18/20W
512439.N**1	6 V, 4Ah	2 x 36/40W
502439.N**1	6 V, 4Ah	2 x 36/40W
502439.N***	6 V, 4Ah	2 x 36/40W

Temperature range -20 °C...+45 °C for the luminaire types 51..... and
Temperature range -20 °C...+55 °C for the luminaire types 50.....

The marking will be : Ⓔx **II 2G Ex eqdm IIC T4**

- the inclusion of the following emergency luminaire types:

Bi-pin		
Luminaire type	Battery	Output
512231.J***	6 V, 4Ah	2 x 18/20W
512431.N***	6 V, 4Ah	2 x 36/40W
512231.J**1	6 V, 4Ah	2 x 18/20W
512431.N**1	6 V, 4Ah	2 x 36/40W
502431.N**1	6 V, 4Ah	2 x 36/40W
502431.N***	6 V, 4Ah	2 x 36/40W

Temperature range -20 °C...+45 °C for the luminaire types 51..... and
Temperature range -20 °C...+55 °C for the luminaire types 50.....

The marking will be : Ⓔx **II 2G Ex eqm IIC T4**

-the inclusion of the following new model code PRSE/... and PRGE/...for the existing luminaire models 51..... and 50.....

All other data remain unchanged.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077l; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

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AMENDMENT 4

to EC-Type Examination Certificate KEMA 98ATEX3045

Test documentation

1. EC-Type Examination certificate KEMA 00ATEX2121U

		dated
2.	Drawing No. D2055 (2 sheets), issue 01	10.01.2003
	D1924 (2 sheets), issue 03	09.01.2003
	D1928 (2 sheets), issue 03	09.01.2003
	B1321	09.01.2003
	D1857, issue 03	10.01.2003
	D1956, issue 01	10.01.2003
	D1955, (2 sheets), issue 02	10.01.2003
	D2048, issue 01	10.01.2003
	B1143, issue 1	10.01.2003
	D1858, issue 03	10.01.2003

Arnhem, 11 June 2003
KEMA Quality B.V.

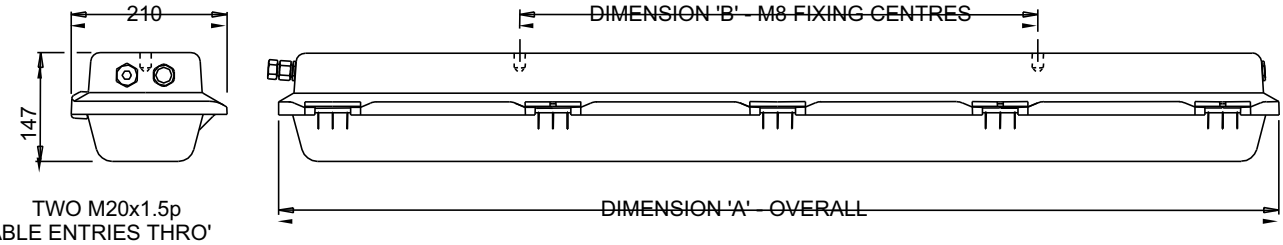
T. Pijpker
Certification Manager

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077!; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

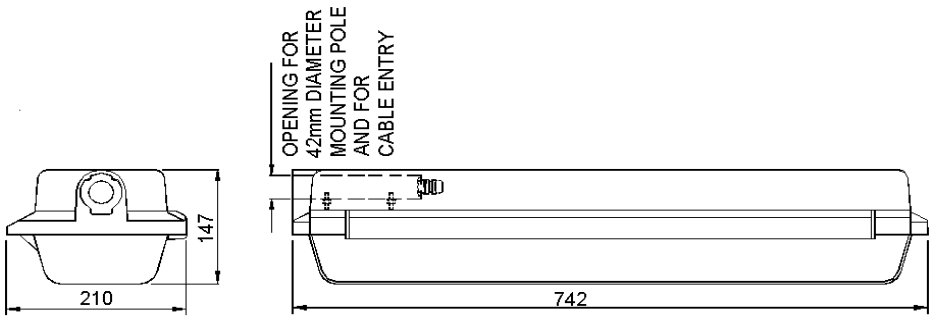
Protecta III GRP ATEX

Important : **The emergency luminaire has automatic test functions and the emergency lamp will operate on mains after delays up to one minute.**
Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



TWO M20x1.5p CABLE ENTRIES THRO' GLAND PLATES AS STANDARD AT EITHER END OF THE BODY

MODEL SIZE	DIMENSION 'A'	DIMENSION 'B'
18W	742	400
36W	1352	700



SIDE ENTRY 18/20W MODEL

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

0.0 Specification and ATEX Declaration

Type(s) of protection	Ex e Increased safety, Ex q Powder filling, Ex d Flameproof, Ex m Encapsulation
Protection standards	EN 50014, EN 50017, EN 50018, EN 50019, EN 50028
Area of application	Zone 1 and Zone 2 areas to EN 60079-10 and installation to EN 60079-14
ATEX equipment Classification	Group II Category 2 G
Equipment coding	Ⓔx II 2 G Ex eqm II T4 bi-pin lamps or EEx eqd and Ex eqmd IIC T4 mono-pin lamps Tamb -20/+55°C
Certificate	EC Type Examination Certificate KEMA98ATEX3045
CE Marking CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the EC Type Examination based on the harmonised standards listed above.
Ingress Protection	IP66/67 to EN 60529

1.0 Introduction – Protecta GRP ATEX Model

This installation leaflet covers the range of ATEX Protecta GRP luminaire models with the Ex q control gear, electronic safety sensor and micro-processor controlled emergency functions. These luminaires are mainly used in harsh environments and are constructed using a corrosion resistant glass reinforced polyester body and polycarbonate diffuser. Refer to the current catalogue for information on product references. The range is available for use with both T8 bi-pin lamps to IEC81 and T8 mono-pin lamps with Fa6 caps to EN 60061-1. The appropriate lamp cap should be specified when ordering. The luminaires are available in 1 x 18W, 2 x 18W, 1 x 36W and 2 x 36W sizes, and also in 2 x 18W and 2 x 36W sizes for emergency use.

Note: *The ATEX EC Type Examination does not cover suitability for dust applications. The equipment will meet the requirements of IEC 61241-1-1.1999. For details refer to the technical department.*

2.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

These instructions should be read fully and carefully before attempting to install the luminaire. For details of servicing operations, opening etc. see section 6.0.

Copies of these instructions should be held in a safe place for future reference. It is the responsibility of the installer to ensure that the apparatus selected is fit for its intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice.
There are no health hazards associated with this product whilst in normal use, however, care should be exercised during the following operations.
Installation should be carried out in accordance with *EN 60079-14* or with a local hazardous area code of practice, whichever is appropriate. Any specific installation instructions must be referred to. In the UK the requirements of the *Health and Safety at Work Act* must be met and electrical work associated with this product must be in accordance with the *"Manual Handling Operations Regulations"* and "*Electricity at Works Regulations 1989".* Disposal instructions should be complied with.
The luminaires should be considered Class 1 to EN 60598 and effectively earthed.
The polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required without notice.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

3.2 Tools

3mm and 4mm flat blade screwdriver and large crosshead screwdriver. Suitable spanners for installing cable glands. Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

Luminaires are supplied with control gear suitable for the following rated supplies:

Emergency 110-120V or 220-254V ac +/-10% 50/60Hz +/- 5%
Non-emergency 220-254V ac +/-10% 50/60Hz +/- 5% and 220-300V dc +/-10%
Non-emergency 110-120V ac +/-10% 50/60Hz +/- 5% and 110-150V dc

The safety limit for surface temperature (T rating) is +/-10% on the rated voltage. Equipment should not be operated continuously at more than +10/-10% of the rated voltage of the control gear. The power factor correction gives a minimum of 0.95 lagging. The lamp supply is regulated therefore the change in light output over the supply range is substantially unchanged.

3.4 Lamps

The lamps used in the range can be T8 bi-pin fluorescent with G13 cap or T8 mono-pin fluorescent with Fa6 caps. Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081. Please note that this luminaire is suitable for IEC lamps only. Do not use American specification lamps.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with lighting design information. Refer to the note in 3.1 concerning electrostatic charge.

The 18W luminaire is only suitable for areas where the risk of mechanical damage is reduced. Refer to Chalmit sales department for any questions concerning this aspect of application.

The standard suspension is via two M8 tapped holes in brass bushes in the top of the body. (At 400mm centres for 18/20W and 700mm centres for the 36/40W model). Various adaptors, pole clamps and suspension brackets are available to order. The 2x18W model is available with integral side entry for 42 mm diameter poles.

3.6 Cabling and Cable Glands

The temperature conditions at the supply cable entry point are such that 70°C (ordinary PVC) cable can be used. Cable glands and sealing plugs must be “E generation” certified or have ATEX component approval. The cable and gland assembly when installed must maintain a minimum IP54 rating.

The pole mounted version has a cable gland fitted which will seal onto cables in the range 13 to 18 mm OD. The gland does not have provision for armour clamping.

Where the cable ***is not reliably clamped*** externally to the apparatus the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm.

Four entries are provided. Three entries are fitted with suitably approved blanking plugs, the fourth entry with a transit plug. M20 x 1.5 entries are standard, other sizes are available on request. The standard entry configuration is with an earthed metal plate with tapped holes mounted in the body.

3.7 Electrical Connections and Testing

If work other than re-lamping is to be done on any luminaire already connected to the electrical system, the luminaire must be isolated from the system.

The diffuser cover is swung down and removed, if necessary, by swivelling back as far as possible then lifting off. The reflector/gear tray is swung down by loosening the four fixing screws and sliding over the keyhole slots. This gives access to the mains terminals.

Luminaires are supplied suitable for looping and through wiring. The terminals for looping are at the left hand end looking on the clamp bar and those for through wiring terminal at the right hand end.

The through current rating is 16A. 4mm² terminals are standard (6mm² wiring can be used in the terminals in accordance with the luminaire certificate).

Screw type or screw-less “cage clamp” terminals are fitted in the range of luminaires. Mains terminal blocks are marked L N Earth.

Mains terminal blocks on the emergency luminaires are marked Lc Ls N Earth.

Luminaires can also be supplied with three phase wiring to special order. The marking is L1 L2 L3 (L s) N Earth

The emergency units can be connected as switched, un-switched or non-maintained units. The switching facility is to allow the luminaire to be switched off whilst still charging the battery. Where switching is required, the un-switched line (Lc) is connected to the continuous mains supply. A link is fitted during assembly between Lc and switched line (Ls); this is removed for the switch-able mode. If the link is removed and Ls not supplied, the unit will only operate on emergency.

If the emergency luminaire is on a three phase system the switched line can be on any phase, it does not need to be on the phase connected to the un-switched line.

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If local emergency inhibition (see 4.3) is required the luminaire should be ordered with the connections for this feature built in. The emergency inhibition function is connected via terminals, which must be specified to be included when ordering. The inhibition terminals are marked Ext Sw 1 and 2, see wiring diagram.
The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. The switch should be of 5 VA rating and, if in the hazardous area, Ex protected.
The switch must have contacts which will reliably conduct small currents (10 mA levels) at low (6V) voltage. For information on suitable surface mount switches refer to Chalmit sales department. Closed circuit is normal, off inhibits the emergency function. Up to ten luminaires and 500m of cable can be connected in parallel to one switch. *If the polarity is crossed the emergency function will work but can not be inhibited*.
If the inhibition is connected into a circuit with CEAG emergency luminaires having an inhibition connection the Protecta must be connected as follows EXTSW1 should be connected to CEAG "2" EXTSW2 should be connected to CEAG "3".
The looping terminals for this function are at the right hand end. As there are four entries, four core cable must be used for looping the inhibition terminals if the mains through wire connection is to also be used. If any other configuration is needed it must be specially ordered or the internal wiring pack changed on site.
The cabling is made off to the correct length in the normal manner. Care should be taken not to cut the insulation back too far. The maximum amount of insulation allowed beyond the throat of the terminal is 1mm. The normal method of insulation testing is to connect Live and Neutral together and test between this point and Earth to prevent the risk of damage to the electronic control gear. However, if this is not possible luminaires can be tested with an insulation tester that complies with IEC 364 or BS 7671 with a maximum output current of 1mA and output voltage of 500V dc. The inhibition circuit can be tested at 500V dc whilst connected to the luminaire terminals. (Units damaged by incorrect insulation testing can be detected).
Before completing the wiring, ensure that all the connections are correctly introduced into place before reassembling the luminaire. Following cabling, lamps can be fitted. New lamps should be used.

4.0 Emergency Operation

4.1 General description of emergency unit and operation

The integrated unit consists of a mains supplied ballast for feeding the fluorescent lamps in normal situations, a battery pack, an emergency circuit that charges the battery and powers the lamp in an emergency situation, and a micro-controller based supervisory circuit that controls the charging, monitors the emergency functions and displays the results of self test and emergency unit status by means of a red and green LED.
The unit can be connected to an external switch that can inhibit the emergency functions when the mains power is on or off and restart the emergency functions with or without mains power being applied. The terminals for this feature must be specified when ordering. (See 3.7).
By switching the voltage on a connection Ls the lamps can be switched on and off without the emergency function being activated. The Ls connection is insulated from L and has a signal function only drawing a very small current.
The luminaire will go seamlessly into emergency mode at not less than 60% rated supply voltage and will remain in mains mode above 85% of rated supply voltage.
On restoration of the mains supply there will be a **60 sec delay** before the emergency lamp is restored to mains operation. This feature is not common on emergency luminaires and should be noted. The feature is provided to increase reliability when operating in bad supply conditions.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a control gear fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low discharge current mode.

4.2 Automatic Self testing

A manual test of emergency duration can only be made by manually de-energising the luminaire and timing the discharge. The LED must be constant green to show that charging has been completed before commencing this test. The LED indication will show if the emergency battery duration is too low.
The electronic ballast continuously monitors all charging functions.
The unit will carry out a short self test every 13 days. This short self test is to check battery emergency operation. The test will commence at a random point in the 13 day cycle, starting at the first mains energisation after the battery is connected or re-connected. During the 13 day self test the unit will test for function including lamp condition. The test will last 9 minutes with one lamp being energised at emergency level during the test period, the other lamp will remain on. If Ls is off, the short test is delayed until Ls is re-energised.
The unit will perform a complete battery discharge every 102 days and will check for minimum emergency duration as stated above. The start of the first complete battery discharge is at a random point between 0 and 102 days after applying mains voltage. The test will be repeated at fixed 102 day intervals. The unit will also

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complete a full self test after completing a commissioning cycle to full charge and after battery replacement. The full commissioning cycle takes about 50 hours after which the battery will then be re-charged.
The test will be delayed if the battery is not fully charged or the operating temperature at the time is too high to give a proper result. The test is also carried out after the initial installation and energisation and a full charge cycle completed. During the test one lamp remains energised at normal mains output. The long test will also take place once the charge period is complete after a battery is changed or disconnected then re-connected.
The emergency lamp condition is monitored during every lamp start. If the lamp ignition is not correct the LED will display repeated red flashes. This will happen even if the lamp does ignite and run at the normal light level as the system predicts imminent failure before it occurs.
If the self-test detects a failure it is indicated as per the table below by the LED. At the start of the automatic long test the emergency lamp will switch off for 9 mins so that it can cool down and make the starting test valid.
Refer to the Table 1 below.
Emergency lamp defective: continuous red flashing.
Battery defective or low capacity: two red flashes, followed by a pause.
Emergency unit defective: three red flashes followed by a pause.
If the charge condition is known, the unit will re-charge from empty to approximately 80% charge in 14 hours. Afterwards a reduced current post charge will be applied to complete the charge. If the battery charge condition in unknown (e.g. first connection) a reduced charge is applied for 44 hours.
For battery temperatures below 10°C charge current is reduced and charge time increased.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low battery discharge mode which maintains the memory and monitoring function. The control contains dedicated features which prevent any unsafe condition arising if the micro-processor were to malfunction.

LED display

The status is displayed by means of red and green LED signals.
The green LED will flash slowly, if the batteries are being charged, and all emergency functions were found to be OK during the last self-test.
The green will be steady at full charge.
The red will flash if there is a fault or a warning.

Table 1 Monitoring function indication

GREEN	RED	MODE	REMARKS
Fast flash ½ sec on, sec off		Charge C/10	
Slow flash 1 sec on, 1 sec off		Charge C/20	Charging currents at low temperatures reduced
Steady		Fully charged	
Fast Flashing alternate Red-Green	Fast flashing alternate Red-Green	Less than one ½ hour duration left (during emergency operation only). Also see 5.2.2	One lamp at emergency light level
	fast flashing	Emergency lamp near end of life	Both lamps on or off
	2 red flashes repeating	Battery faulty or battery not connected or low duration after long test	Minimum duration limit during long test not met
	3 red flashes repeating	Fault in electronics of power supply	
Slow flash or steady	Periodic short flash once per 4 secs	Emergency inhibited	
None	None	Defective display	Lamps on
None	None	Mains off, battery discharged, or mains off inhibited or total unit defective	Lamps off

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4.3 Inhibition (also see 3.7)
If local emergency inhibition is required the luminaire should be ordered with the connections for this feature built in. The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. Closed circuit is normal, open inhibits the emergency function. Up to ten luminaires can be connected in parallel to one switch and using 500m of cable.
The inhibit as well as de-inhibit functions can start with normal mains power present as well as without mains power, the emergency light can be switched on while the whole system power is still dead.
Inhibition is not possible with a completely discharged battery and no mains being present. The emergency function can be inhibited and de-inhibited whilst in emergency operation. Return to emergency operation is instant. The change to lamp off when put into inhibited mode may be delayed for up to 60 secs,

5.0 Commissioning (Refer to section 6.0 for access)
The units will only be fully operational and give completely correct indication after the completion of a full charge, self-test discharge and recharge cycle, approx. 80-100 hours. Once this is complete the unit will have it's full operating parameters installed in the memory. Provided the battery is not disconnected indication will function correctly. Non-emergency luminaires are energised after the lamps are fitted and the luminaire closed if the mains is on. Both lamps should light. Opening the cover will put the lamps out.

5.1 Commissioning Emergency

5.2.1 Commissioning with no mains power available.
After inserting the lamps and closing the cover, the unit will go onto emergency mode until discharged if the initial battery voltage is high enough. (> 5.5V).
If the emergency inhibition switch is in the blocked condition the lamp will go on for 60 seconds unless there is not enough charge in the battery to sustain it for that time.

5.2.2 Commissioning with mains power available.
If a local light switch is connected put it on.
After inserting the lamps and closing the cover the unit will light on battery as above. At power up the mains lamp will light and emergency lamp will light fully after 60 secs. This feature is designed to increase reliability in very frequent mains on and off situations or irregular supply such as may occur during commissioning.
The initial charge will be indicated by a green flashing LED.
If an emergency blocking switch is present a short red flash every 4 sec will be displayed if the switch is in the blocked state.
If the battery charge condition in unknown (e.g. first connection) a reduced current charge is applied for 44 hours. The long self test takes place after the initial installation and energisation has been made and a full charge cycle completed. The test will be delayed if the operating temperature at the time is too high to give a proper result or if Ls is off. One lamp remains energised at normal mains output. **See 4.2**. After the test the unit will fast charge to 80% then post charge to fully charged and the indication will then be steady green.
Until the full charge and test cycle has been completed the unit will indicate low battery on any emergency discharge.

5.2.3 Low Temperature Operation
At battery temperatures below 10°C charge current is reduced and charge time increased. This temperature is equivalent to the luminaire operating at -5°C with the lamps on or at +5°C with the lamps off.
Under operating conditions where the ambient temperature is below 0°C for long periods the luminaire should preferably be used in maintained mode so that the mains supplied lamps warm up the battery to a normal working temperature.

6.0 Servicing and Operation
The bi-pin luminaire incorporates an electronic safety de-energiser for maximum reliability and utility of the emergency monitoring function. The electronic sensor is operated by the actuating plate on the diffuser. This provides for the safe opening and carrying out of re-lamping.
The mono-pin non emergency has a micro-switch which interrupts the mains supply to the control when the cover is opened.
The mono-pin emergency has an electronic de-energiser and a micro-switch.
Safe servicing behind the gear tray requires the mains supply to be isolated, and battery connections must be treated with care, see 6.10.

6.1 Opening and Closing the Cover
The procedure for opening the cover is as follows :
Insert a screwdriver into one of the slots in the clamping bar with the end of the tool located into the outer flange of the body as a fulcrum point, a wide blade screwdriver is recommended.

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Gently lever the tool away from the diffuser, the clamping bar will begin to open.
Insert the tool in the other clamping bar slot and gently lever away from the diffuser, the clamping bar will open and the cover will be retained by the hinge. Should difficulty be experienced, reinsert the tool in the first slot and repeat the procedure.
The procedure for closing and securing the cover is as follows :
Ensure the hinge mechanism is clear of any obstruction and then swing the diffuser into the closed position. Support the diffuser in position whilst pushing the clamp bar over the edge of the diffuser. Apply even pressure at both ends of the bar and press the bar over centre making sure that it goes fully into position.
To remove and replace the diffuser open the diffuser to 180° and it will lift out. When replacing ensure that all the hinges are into place before attempting to close.

6.2 Removal and Replacement of Clamping Bar (if required)

Open the luminaire as above and remove the diffuser or let it swing down. Press the clamping bar towards the closed position, tip forward beyond the closed position and the clamping bar will be released from the body. To replace the clamping bar, put in position on the body with the front edge pointing as far inwards as it will go. Click the bar outwards and bring back to the normal closed position. The clamping bar should then be secured in position, open the clamping bar fully by using hand or screwdriver pressure (avoid damaging the gasket), the clamping bar is then ready to accept the normal closure of the diffuser.

6.3 Fitting lamps and Re-Lamping

IMPORTANT - If the luminaire is maintained with the power on, the lamps will go out when the cover is opened. If this does not happen there is a fault. Do not remove the lamps. The control gear will be damaged if the lamps are removed without being de-energised and there is an ignition risk. This could occur if the sensor arrangement is faulty or has been defeated. The luminaire must be de-energised the control gear checked and electronic sensor assembly must be replaced if faulty, see 6.9.
Lamps which are not operating or appear dim should be replaced as soon as practical. The control gear is designed to withstand end of life conditions of lamps. The emergency unit will indicate in advance that the lamp is approaching end of life. Always replace both lamps.
The bi-pin lamps are fitted in lampholders with a rotating section. The lamp must be pushed firmly down into the lampholder and rotated 90°. The contact is biased to remain in the 90° position. If the lamp does not rotate, check that it is completely positioned into the lampholder. The Fa6 cap lamps are fitted in the spring loaded lamp-holders which are pulled out to allow the introduction of the lamp. Before inserting bi-pin or mono-pin lamps ensure the lamp pins are not damaged or slack in the end cap.

6.4 Releasing the Reflector/Gear Tray

Loosen the four fixing screws retaining the reflector/gear tray far enough for it to slide over keyhole slots. The tray will hang on the retaining cords without stressing the wiring between body and tray. Replace in reverse order.
The lampholder assemblies can be removed from the gear tray, if necessary, by removing the fixing screw and pushing up the click finger at the end of the gear tray and pushing the lampholder assembly forward towards the centre of the tray.
Re-assembly is a reversal of the above, ensure the lampholder assembly fully clicks into place on the gear tray.
Lampholder assemblies have the connecting receptacles and are specific to each model. If they are being replaced the correct spare assembly must be ordered.

6.5 Removal of Reflector/Gear Tray c/w Lampholder Assemblies

Release gear tray from body and hang on retaining cords, as explained above. Disconnect the cables from the gear tray to the mains terminal block, unhook retaining cord from gear tray and lift clear. With disconnection made at the screw-less terminals the luminaire is safe when re-closed without the tray.

6.6 Servicing Behind the Gear Tray

The release of the gear tray exposes live mains terminals. Any work behind the gear tray requires that the supply is isolated to avoid ignition risk and damage to components.

6.7 Replacement of Ballast or Emergency Control

The ballast contains no replaceable parts. Should it be found necessary to replace the ballast, the following procedure should be adopted:
Ensure that the luminaire is isolated from the mains supply.
Remove gear tray from body and swing down as previously explained. Undo the battery plug on emergency luminaires.
Ballasts use 6mm tab connectors which are locked and are released when the black cover sleeve is pulled away axially. When replaced a 'click' will be heard as the lock locates. **On no account should the quick release connectors be replaced with proprietary items.**

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Disconnect the leads to the ballast, note the connections. When removing the connections **always disconnect** the sensor and LED connections (LED1 LED2 PRPT1 and PROT2) **last** and reconnect them **first**. Remove the ballast retaining screws and remove ballast from tray.
Replacement of the units is in the reverse order. **The sensor is connected first and the battery last**. Check the connections carefully before re-energising. The lamp leads on the emergency are marked as pairs. Take care to connect correctly. The unit is **not** protected against reverse battery polarity. The yellow leads are the high voltage ones. Miss-connection of the units will be very likely to result in damage. **Care and checking during replacement can not be over emphasised.**

6.8 Replacement of Micro Switch if fitted

Before carrying out any work ensure that the unit is isolated from the mains. Identify the four micro switch wires and disconnect from the terminal block. Free the leads from the retaining connections, remove the two screws holding the switch in position. Replace the micro switch and reconnect. Check the connections and terminal polarity against either a circuit diagram or a note made prior to dismantling. A complete new assembly including the connecting receptacles for the model must be used.

6.9 Replacement of sensor with or without LED assembly

It is very unlikely that this assembly will need replacement other than as a result of mechanical damage.
Isolate the mains. Disconnect the battery, disconnect the sensor and note the connections. Undo the two screws and replace the unit using the nuts from the old unit. Reconnect and carefully check the connections before re-energising.

6.10 Replacement of battery

The battery is accessed by releasing the gear tray fixing screws sliding the tray and hinging it down.
The battery is connected to the control using a plug and socket arrangement. The battery load is disconnected by the electronic sensor device. The screws holding the battery pack are loosened and the battery pack slid axially one way then the other in order to release. The battery pack is not intended to be opened and is replaced as a unit. The battery is potentially incendive but is protected during removal by the IP30 construction which covers live parts. The battery assembly must be protected from damage and water ingress then **removed from any potentially hazardous area as soon as practical.**
The replacement battery is slid axially one way then the other in order to insert then the screws are tightened. The socket is then inserted. The luminaire must not be operated without the battery connected. If the battery is removed and not replaced the control gear supply must be disconnect at the mains terminal block and secured.

6.11 Checking of Battery separately

The easiest way of checking the battery is in a known serviceable luminaire against the rated duration.
If the battery is to be checked separately, it should be charged using a **constant current charger** at 200/400mA for 30/15 hours for the 4Ah (18W or 36W) or 350/700mA for 30/15 hours for the 7Ah (36W). Discharge measurement is not easy as the current is proportional to the voltage for resistance loads, so it has to be averaged. Discharge the battery at 1 to 2A and multiply current by time. Do not discharge below 1 volt per cell, that is 5V. The capacity should be 75% or more of normal.

7.0 Routine Maintenance

Visual tests and checks should be carried out at intervals described by the appropriate regulations, EN 60079-17, and should include the following:
Check that the lamps are working or appear badly aged. Blackening at the lamp ends is a good indication of length of use.
Check for mechanical damage/corrosion.
Check for loose connections including earthing.
Check for undue accumulations of dust or dirt.
Verification of tightness of fixing, glands, blanking plugs etc.
Check for unauthorised modifications.
Check condition of enclosure gasket and fastenings.
Check for any accumulation of moisture.
Periodic inspection of the enclosure seal should be carried out to ensure that the seal is sound. The seal can be replaced and, if necessary, secured in position by the application of a **very** small amount of rubber adhesive and using the joining piece. This job should be carried out in the workshop.
If the luminaire has been subject to abnormal conditions, for example, severe mechanical impact or chemical spillage, it must be de-energised until it has been inspected by an authorised and competent person. If in doubt, the unit should be returned to Chalmit for examination and, if necessary, replacement.

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7.1 Fault finding

For emergency units this concerns faults other than ones that are properly indicated, refer to the indication table.

7.1.1 Non emergency

The lamps will run until they are worn out. New lamps should be fitted in pairs even if one appears to be still working. If the result is not satisfactory, check continuity to the ballast. If still no result, check the continuity to lampholders after disconnecting leads from ballast. If no fault found replace ballast. If still no result, disconnect the connection to the sensor. If the lamps light this would indicate a faulty sensor, see 6.9, but as this is most unlikely, check all connections before replacing.

7.1.2 Emergency

Check for operation of the LED. **If the LED is red** refer to the table which shows the fault diagnostics. If the unit does not work on the mains with Ls energised carry out the checks in 7.1.1. If mains operation can not be restored replace the control unit.

A service operation, that is opening and closing the cover, will often re-set faulty lamp indication but the indication will reoccur so the lamp must be changed.

If fault finding is done on an emergency unit before a full commissioning cycle has been completed care must be taken to ensure that the faults are real. Check that the inhibition circuit is complete, see 3.7 and 4.3.

With faults occurring later the first action is always to fit new lamps. If the unit does not work on mains with both lamps, 60 sec delay on emergency lamp, and Ls is powered there is a fault. The second action is to fit a new battery *with some charge in it*. These actions can be done with the luminaire installed. If the result appears positive leave the luminaire in place for a charging period. Work after this would be expected to be done by removing the gear tray to the workshop. It will be easier to work using a complete luminaire and put the gear tray into it. When working this way do not lie the tray in the diffuser as the sensor may be activated inadvertently.

In general, installations of luminaires have a number of units on site and fault finding is done by substituting known healthy components. If changing batteries always use one with some charge, A voltage of 6.0V will be enough to avoid problems. See 6.11.

Except for checking continuity to the supply and ballast input connections there is little that can be done to fault find using instruments. Care is needed in the workshop as mis-connection will damage units. Always check connections carefully. Live testing and use of meters on high frequency units in a workshop will gain little information and may damage healthy components.

The usual first service operation with emergency units which appear to work normally on mains but not on emergency is to energise for a few minutes before checking emergency operation. If no result, check that the inhibit connection is closed circuit. If the unit works on emergency let it discharge fully. The unit should then be energised for 60 mins and the discharge re-checked.

If the unit runs for a few minutes it is charging. If not, change the battery and repeat the full discharge and short charge test. If okay, give the unit a full 48 hour charge and check the duration. If there are still fault indications replace the control unit.

7.2 Cleaning

The body of the luminaire may be cleaned with a mild solution of household detergent and water, after cleaning the body should be washed and wiped with clean water. **The diffuser should not be polished or wiped with a dry cloth as a risk of ignition due to electrostatic discharge may result**. Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

8.0 Fuse and MCB Ratings

It is recommended that for selection of MCB's users should consult the MCB manufacturer as this unit contains electronic control gear. MCB ratings can vary depending on the manufacturer and type and the size of the installation, i.e. impedance of conductors. The electronic control gear has an inrush current of 30A for 500µs on 230V, emergency and non-emergency, 45A for 350µs on 110V, non-emergency, and 35A for 250µs on 110V, emergency. These figures are for low resistance connections with short cables and low impedance supplies.

9.0 Disposal of Material

General

The unit is made from combustible materials. The control gear contains plastic parts and electronic components. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

9.1 Lamps

Fluorescent lamps in modest quantities are not "special waste". They should be broken up in a container to avoid injury, avoid inhaling dust.

Important : *Do not incinerate lamps.*

9.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the person disposing needs to observe a 'duty of care'.

Batteries can be returned to the manufacturers for recycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting, or otherwise ensure that there can be no release of stored energy in transit. For further details refer to our Technical Department.

Table 2 Nominal Lamp Power and Supply Current

Supply Voltage	Lamps	Power W	Current A
230V, 50/60Hz	1 x 18W	21	0.10
	2 x 18W	35	0.17
	2 x 18W Emergency	40	0.19
	1 x 36W	42	0.20
	2 x 36W	70	0.32
	2 x 36W Emergency	77	0.36
110V, 50/60Hz	1 x 18W	21	0.20
	2 x 18W	35	0.34
	2 x 18W Emergency	40	0.38
	1 x 36W	42	0.40
	2 x 36W	70	0.65
	2 x 36W Emergency	77	0.73

Power Factor >0.98. Power is constant over voltage range.

Tamb Storage	-40°C to +80°C
EMC	EN 50081-2 (emission) EN 50082-2 (immunity) EN 61000-3-2 (harmonics generated)
Over voltage	400V ac for 1 min EN 61000-4-5 > 4kV
Batteries	6V 4Ah NiCd (18W or 36W) 6V 7Ah NiCd (36W)
Emergency Duration	90 minutes or 3 hours depending on model specified
Emergency Output	1200mm lamp 25% of normal single lamp output 600mm lamp 30% of normal single lamp output

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office

Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note

Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

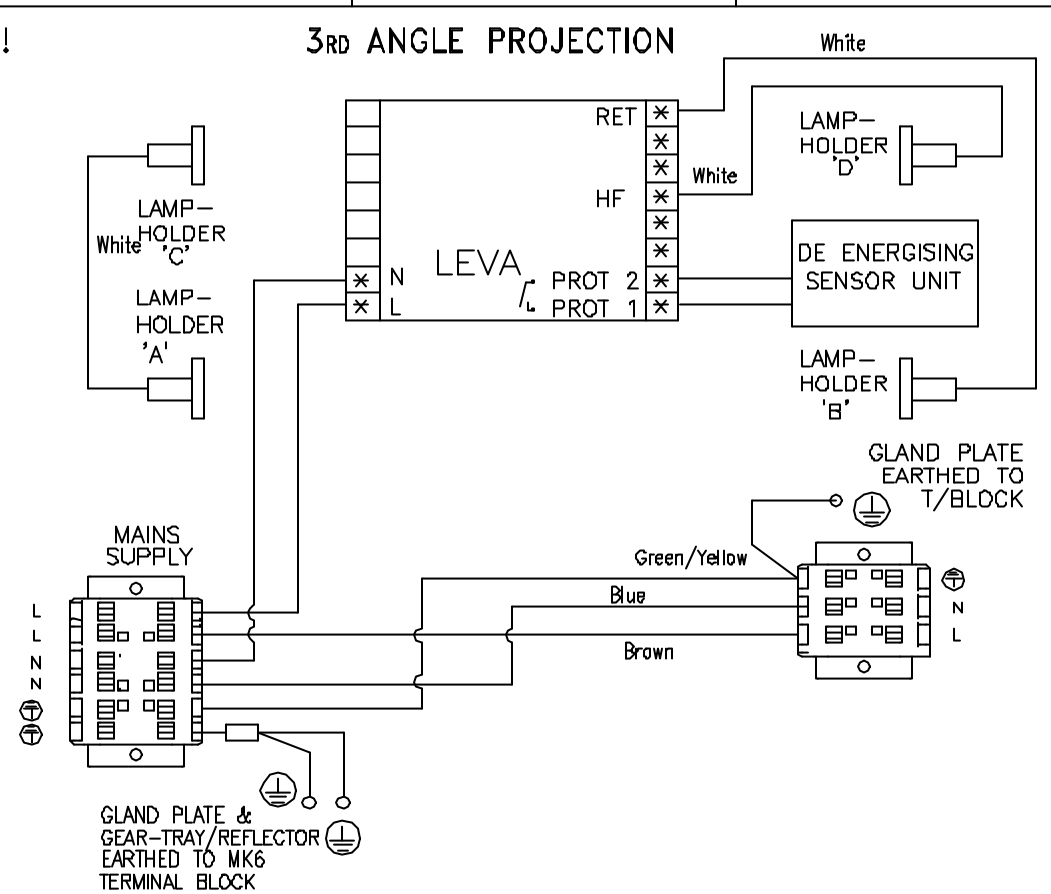
Hubbell Lighting Inc.

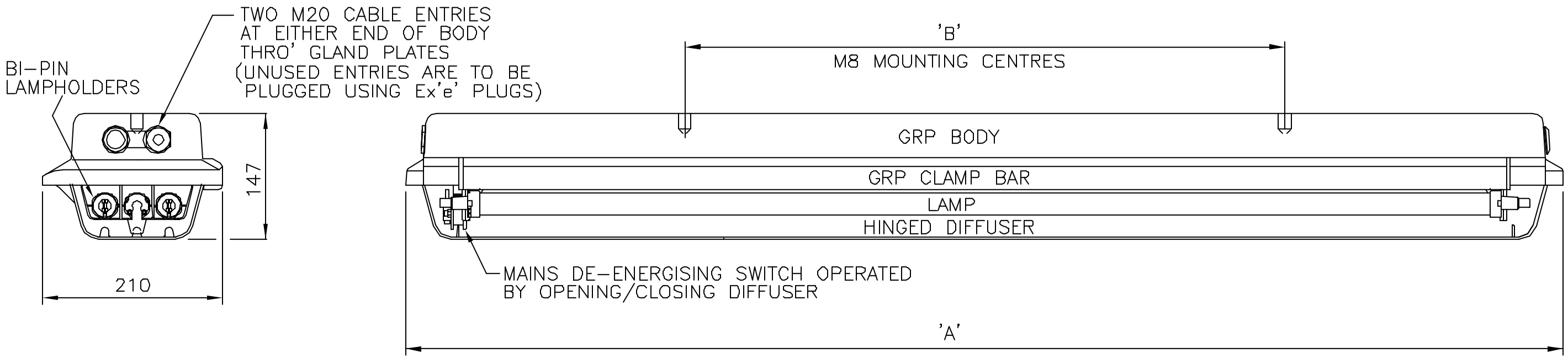
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

1	2	3	4	5	6	7	8
DRAWING NUMBER/SHEET NUMBER F898	REMOVE ALL BURRS & SHARP EDGES			IF IN DOUBT ASK!		3RD ANGLE PROJECTION	

NOTES

i) IP 66/67 RATING
ii) SUITABLE FOR 3 CORE 6mm SQ. INCOMING CABLE AS STANDARD.
iii) THRO' WIRING IS STANDARD ON ALL MODELS.
iv) THERE ARE TWO M8 THREADED BRASS BUSHES INSERTED INTO GRP BODY FOR MOUNTING TO CEILING.(SEE DIMENSION 'B')
v) BI-PIN LAMPHOLDERS ARE STANDARD.
vi) EC Type Examination Certificate KEMA98ATEX3045





MODEL	'A'	'B'	CODING
2x18/20W	742	400	II 2 G Ex eqm II T4 AMB. -20°C to 55°C
2x36/40W	1352	700	II 2 G Ex eqm II T4 AMB. -20°C to 55°C

DOC No	MOD BY	CHANGE	ISSUE	DATE
	JTC	WIRING DIAGRAM ALTERED	02	12.02.02
			01	10.05.01

DRAWN	J.T.C.
CHECKED	J.T.C.
APPROVED	J.T.C.
DATE	01/10/2001

REF. DRGS.-

MATERIAL	GRP & POLYCARBONATE
FINISH	SELF
DIMS. IN	MM
TOLERANCE	
SURFACE ROUGHNESS	
SCALE	-

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE: PRO 2x18/20W LEVA WITH WIRING DIAGRAM

DRAWING NUMBER/SHEET NUMBER: F898 1 OF 1

EC-TYPE EXAMINATION CERTIFICATE

1

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS02ATEX2180**

4 Equipment or Protective System: **PROTECTA 2D RANGE OF FLUORESCENT LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

BASEEFA Certification Report No. 02(C)0162 dated 9 July 2002

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50281-1-1: 1998

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II 2D T95°C **T_{amb} (see schedule)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/049

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

I M CLEARE
DIRECTOR
30 July 2002

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS02ATEX2180**

15 **Description of Equipment or Protective System**

The Protecta 2D Range of Fluorescent Luminaires comprises single and twin units of 18W and 36W in emergency and non-emergency units. The luminaire body is of glass reinforced polyester resin or stainless steel with a polycarbonate diffuser. Ingress protection of at least *IP66/67* is maintained by a gasket between the diffuser and the body The gasket is made from EPDM on GRP bodied luminaires and silicone rubber on steel bodied models. The gasket is fixed by adhesive into a moulded groove in the body. The diffuser is hinged at one side and held at the other side by a quick release snap-on channel along the entire length of the luminaire. A side entry 42mm diameter 'spigot mounting' option is available. The enclosure has already been ATEX approved for category 2G use by certificates KEMA99ATEX4934U and KEMA98ATEX3045 .

The control gear and components are mounted on a removable steel gear tray attached to the body by moulded inserts. Any ballast or inverter meeting the requirements of EN 60928 and EN 60924 may be installed. Category 2G or 3G approved components may also be used.

Through wiring, if fitted, uses either 2.5mm² or 4mm² high temperature PVC cable rated for at least 110°C and a maximum current of 16A. Terminal blocks must be suitable for wiring up to 6mm².

The following models are included in the range:

Catalogue number	Model number	Body Material	T_{amb} °C	Lamp(s)	Note
From rating schedule A sheet 1					
PRGD/118/BI/SE	500531.E***	GRP	-20 to +40	1x18W G13	Side entry
PRGD/218/BI/SE	500631.E***	"	"	2x18W G13	" "
PRGD/118/BI	500131.E***	"	-20 to +55*	1x18W G13	----------
PRGD/218/BI	500231.E***	"	"*	2x18W G13	----------
PRGD/136/BI	500331.E***	"	"	1x36W G13	----------
PRGD/236/BI	500431.E***	"	"	2x36W G13	----------
From rating schedule B sheet 1					
PRSD/118/BI	510131.E***	STEEL	"*	1x18W G13	----------
PRSD/218/BI	510231.E***	"	"*	2x18W G13	----------
PRSD/136/BI	510331.E***	"	"	1x36W G13	----------
PRSD/236/BI	510431.E***	"	"	2x36W G13	----------
From rating schedule C sheet 1					
PRGD/118/BI/EM	502131.E***	GRP	-20 to +45*	1x18W G13	Emergency
PRGD/218/BI/EM	502231.E***	"	"*	2x18W G13	"
PRGD/136/BI/EM	502331.E***	"	"	1x36W G13	"
PRGD/236/BI/EM	512431.E***	"	"	2x36W G13	"
From rating schedule D sheet 4					
PRSD/118/BI/EM	512131.E***	STEEL	"*	1x18W G13	"
PRSD/218/BI/EM	512231.E***	"	"*	2x18W G13	"
PRSD/136/BI/EM	512331.E***	"	"	1x36W G13	"
PRSD/236/BI/EM	512431.E***	"	"	2x36W G13	"
PRSE/218/BI/D	510231.H***	"	-20 to +55*	2x18W G13	----------
PRSE/136/BI/D	510331.H***	"	"	1x36W G13	----------
PRSE/236/BI/D	510431.H***	"	"	2x36W G13	----------
PRSE/218/BI/120/D	510231.H**1	"	"*	2x18W G13	----------
PRSE/136/BI/120/D	510331.H**1	"	"	1x36W G13	----------

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13 Schedule

14 EC-TYPE EXAMINATION CERTIFICATE N° BAS02ATEX2180

Catalogue number	Model number	Body Material	T_{amb} °C	Lamp(s)	Note
PRSE/236/BI/120/D	510431.H**1	''	''	2x36W G13	----------
PRSE/218/BI/EM/D	512231.J***	''	-20 to +45*	2x18W G13	Emergency
PRSE/236/BI/EM/D	512431.J***	''	''	2x36W G13	''
PRSE/218/BI/EM/120/D	512231.J**1	''	''*	2x18W G13	''
PRSE/236/BI/EM/120/D	512431.J**1	''	''	2x36W G13	''
From rating schedule E sheet 4					
PRGE/218/BI/D	500231.H***	GRP	-20 to +55*	2x18W G13	----------
PRGE/136/BI/D	500331.H***	''	''	1x36W G13	----------
PRGE/236/BI/D	500431.H***	''	''	2x36W G13	----------
PRGE/218/BI/SE/D	500631.H***	''	''*	2x18W G13	Side entry
PRGE/218/BI/120/D	500231.H**1	''	''*	2x18W G13	----------
PRGE/136/BI/120/D	500331.H**1	''	''	1x36W G13	----------
PRGE/236/BI/120/D	500431.H**1	''	''	2x36W G13	----------
PRGE/218/BI/120/SE/D	500631.H**1	''	''*	2x18W G13	Side entry
PRGE/218/BI/EM/D	502231.J***	''	''*	2x18W G13	Emergency
PRGE/236/BI/EM/D	502431.J***	''	''	2x36W G13	''
PRGE/218/BI/EM/SE/D	502631.J***	''	''*	2x18W G13	Side entry & Emergency
PRGE/218/BI/EM/120/D	502231.J**1	''	''*	2x18W G13	Emergency
PRGE/236/BI/EM/120/D	502431.J**1	''	''	2x36W G13	''
PRGE/218/BI/EM/120/D	502631.J**1	''	''	2x18W G13	''
From rating schedule F sheet 4					
PRSE/218/MO/D	510231.H***	STEEL	''*	2x18W Fa6	----------
PRSE/136/MO/D	510331.H***	''	''	1x36W Fa6	----------
PRSE/236/MO/D	510431.H***	''	''	2x36W Fa6	----------
PRSE/218/MO/120/D	510231.H**1	''	''*	2x18W Fa6	----------
PRSE/136/MO/120/D	510331.H**1	''	''	1x36W Fa6	----------
PRSE/236/MO/120/D	510431.H**1	''	''	2x36W Fa6	----------
PRSE/218/MO/EM/D	512231.J***	''	-20 to +45*	2x18W Fa6	Emergency
PRSE/236/MO/EM/D	512431.J***	''	''	2x36W Fa6	''
PRSE/218/MO/EM/120/D	512231.J**1	''	''*	2x18W Fa6	''
PRSE/236/MO/EM/120/D	512431.J**1	''	''	2x36W Fa6	''
From rating schedule G sheet 4					
PRGE/218/MO/D	500239.H***	GRP	-20 to +55*	2x18W Fa6	----------
PRGE/136/MO/D	500339.H***	''	''	1x36W Fa6	----------
PRGE/236/MO/D	500439.H***	''	''	2x36W Fa6	----------
PRGE/218/MO/SE/D	500639.H***	''	''*	2x18W Fa6	----------
PRGE/218/MO/120/D	500239.H**1	''	''*	2x18W Fa6	----------
PRGE/136/MO/120/D	500339.H**1	''	''	1x36W Fa6	----------
PRGE/236/MO/120/D	500439.H**1	''	''	2x36W Fa6	----------
PRGE/218/MO/120/SE/D	500639.H**1	''	''*	2x18W Fa6	Side entry
PRGE/218/MO/EM/D	502239.J***	''	''*	2x18W Fa6	Emergency
PRGE/236/MO/EM/D	502439.J***	''	''	2x36W Fa6	''
PRGE/218/MO/EM/SE/D	502639.J***	''	''*	2x18W Fa6	Side entry & Emergency
PRGE/218/MO/EM/120/D	502239.J**1	''	''*	2x18W Fa6	Emergency
PRGE/236/MO/EM/120/D	502439.J**1	''	''	2x36W Fa6	''
PRGE/218/MO/EM/120/D	502639.J**1	''	''*	2x18W Fa6	''

* See variation 1.

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13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS02ATEX2180**

16 **Report No.**

02(C)0162

17 **Special Conditions For Safe Use**

1. None.

18 **Essential Health and Safety Requirements**

All requirements are covered by compliance with harmonised standard EN 50281-1-1: 1998.

19 **DRAWINGS**

Number	Issue	Sheet	Date	Description
D2089	0	1 to 4	22/2/02	Protecta 2D Range of Luminaires

VARIATION 1.

When 18W luminaries are used at an ambient temperature above 40°C they are only suitable for use in areas with a low risk of impact, the certificate number must include an 'x'.

Special Conditions For Safe Use

1. When 18W luminaires are used at an ambient temperature above 40°C they are only suitable for use in areas with a low risk of impact.

BASEEFA List Keywords
2FLUOLOM

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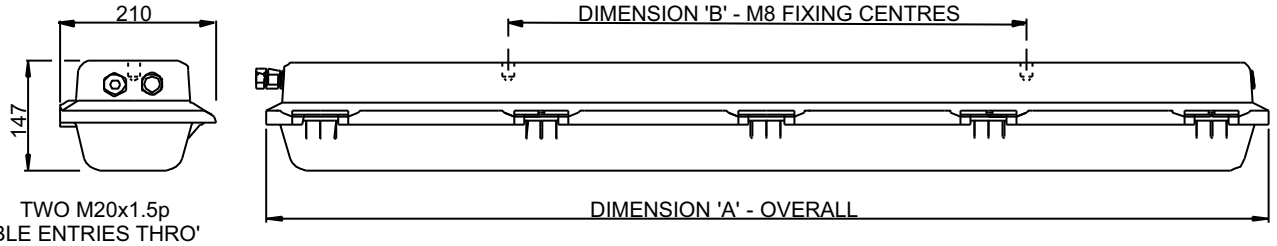
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

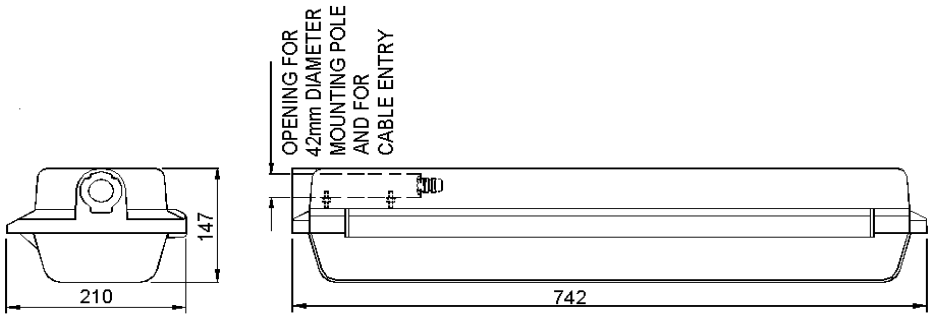
Protecta GRP ATEX Category 2 D
Models 50….H and 50….J

Important : **The emergency luminaire has automatic test functions and the emergency lamp will operate on mains after delays up to one minute.**
Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



TWO M20x1.5p CABLE ENTRIES THRO' GLAND PLATES AS STANDARD AT EITHER END OF THE BODY

MODEL SIZE	DIMENSION 'A'	DIMENSION 'B'
18W	742	400
36W	1352	700



SIDE ENTRY 18/20W MODEL

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Chalmit lighting

0.0 Specification and ATEX Declaration

Dust Standard	EN 50281-1-1
Area of application	Zone 21 areas to EN 50281-3 and installation to EN 50281-1-2 and EN 60079-14
ATEX equipment Classification	Group II Category 2 D
Equipment coding	Ⓔx II 2 D T95°C Tamb –20 = Ta = +55°C
Certificate	EC Type Examination Certificate BAS02ATEX2180
CE Marking CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the EC Type Examination based on the harmonised standards listed above.
Ingress Protection	IP66/67 to EN 60529

1.0 Introduction – Protecta GRP ATEX Category 2 D Model

This installation leaflet covers the range of ATEX Protecta GRP dust protected luminaire with the Ex q control gear, electronic safety sensor and microprocessor controlled emergency functions. These luminaires are mainly used in harsh environments and are constructed using a corrosion resistant glass reinforced polyester body and polycarbonate diffuser. Refer to the current catalogue for information on product references. The range is available for use with both T8 bi-pin lamps to IEC81 and T8 mono-pin lamps with Fa6 caps to EN 60061-1. The appropriate lamp cap should be specified when ordering. The luminaires are available in 2 x 18W, 1 x 36W and 2 x 36W sizes, and also in 2 x 18W and 2 x 36W sizes for emergency use.

2.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

These instructions should be read fully and carefully before attempting to install the luminaire. For details of servicing operations, opening etc. see section 6.0.

Copies of these instructions should be held in a safe place for future reference. It is the responsibility of the installer to ensure that the apparatus selected is fit for its intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice.
There are no health hazards associated with this product whilst in normal use, however, care should be exercised during the following operations.
Installation should be carried out in accordance with *EN 60079-14* or with a local hazardous area code of practice, whichever is appropriate. Any specific installation instructions must be referred to. In the UK the requirements of the *Health and Safety at Work Act* must be met and electrical work associated with this product must be in accordance with the *"Manual Handling Operations Regulations"* and *"Electricity at Works Regulations 1989".*
Disposal instructions should be complied with.
The luminaires should be considered Class 1 to EN 60598 and effectively earthed.
The polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required without notice.

3.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in combustible dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate

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on the fitting surface and good housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures.
Refer to EN50281-1-2 for additional details of selection, installation and maintenance.

3.2 Tools

3mm and 4mm flat blade screwdriver and large crosshead screwdriver. Suitable spanners for installing cable glands. Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

Luminaires are supplied with control gear suitable for the following rated supplies:

Emergency 110-120V or 220-254V ac +/-10% 50/60Hz +/- 5%
Non-emergency 220-254V ac +/-10% 50/60Hz +/- 5% and 220-300V dc +/-10%
Non-emergency 110-120V ac +/-10% 50/60Hz +/- 5% and 110-150V dc

The safety limit for surface temperature (T rating) is +/-10% on the rated voltage. Equipment should not be operated continuously at more than +10/-10% of the rated voltage of the control gear. The power factor correction gives a minimum of 0.95 lagging. The lamp supply is regulated therefore the change in light output over the supply range is substantially unchanged.

3.4 Lamps

The lamps used in the range can be T8 bi-pin fluorescent with G13 cap or T8 mono-pin fluorescent with Fa6 caps. Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081. Please note that this luminaire is suitable for IEC lamps only. Do not use American specification lamps.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with lighting design information. Refer to the note in 3.1 concerning electrostatic charge.
The 18W luminaire is only suitable for areas where the risk of mechanical damage is reduced. Refer to Chalmit sales department for any questions concerning this aspect of application.
The standard suspension is via two M8 tapped holes in brass bushes in the top of the body. (At 400mm centres for 18/20W and 700mm centres for the 36/40W model). Various adaptors, pole clamps and suspension brackets are available to order. The 2x18W model is available with integral side entry for 42 mm diameter poles.

3.6 Cabling and Cable Glands

The temperature conditions at the supply cable entry point are such that 70°C (ordinary PVC) cable can be used. Cable glands and sealing plugs must be “E generation” certified or have ATEX component approval. The cable and gland assembly when installed must maintain a minimum IP6X for category 2 D.
The pole mounted version has a cable gland fitted which will seal onto cables in the range 13 to 18 mm OD. The gland does not have provision for armour clamping.
Where the cable ***is not reliably clamped*** externally to the apparatus the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm.
Four entries are provided. Three entries are fitted with suitably approved blanking plugs, the fourth entry with a transit plug. M20 x 1.5 entries are standard, other sizes are available on request. The standard entry configuration is with an earthed metal plate with tapped holes mounted in the body.

3.7 Electrical Connections and Testing

If work other than re-lamping is to be done on any luminaire already connected to the electrical system, the luminaire must be isolated from the system.
The diffuser cover is swung down and removed, if necessary, by swivelling back as far as possible then lifting off. The reflector/gear tray is swung down by loosening the four fixing screws and sliding over the keyhole slots. This gives access to the mains terminals.
Luminaires are supplied suitable for looping and through wiring. The terminals for looping are at the left hand end looking on the clamp bar and those for through wiring terminal at the right hand end.
The through current rating is 16A. 4mm² terminals are standard (6mm² wiring can be used in the terminals in accordance with the luminaire certificate).
Screw type or screw-less “cage clamp” terminals are fitted in the range of luminaires. Mains terminal blocks are marked L N Earth.
Mains terminal blocks on the emergency luminaires are marked Lc Ls N Earth.
Luminaires can also be supplied with three phase wiring to special order. The marking is L1 L2 L3 (L s) N Earth
The emergency units can be connected as switched, un-switched or non-maintained units. The switching facility is to allow the luminaire to be switched off whilst still charging the battery. Where switching is required, the un-switched line (Lc) is connected to the continuous mains supply. A link is fitted during assembly between Lc and switched line (Ls); this is removed for the switch-able mode. If the link is removed and Ls not supplied, the unit will only operate on emergency.

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If the emergency luminaire is on a three phase system the switched line can be on any phase, it does not need to be on the phase connected to the un-switched line.
If local emergency inhibition (see 4.3) is required the luminaire should be ordered with the connections for this feature built in. The emergency inhibition function is connected via terminals, which must be specified to be included when ordering. The inhibition terminals are marked Ext Sw 1 and 2, see wiring diagram.
The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. The switch should be of 5 VA rating and, if in the hazardous area, Ex protected.
The switch must have contacts which will reliably conduct small currents (10 mA levels) at low (6V) voltage. For information on suitable surface mount switches refer to Chalmit sales department. Closed circuit is normal, off inhibits the emergency function. Up to ten luminaires and 500m of cable can be connected in parallel to one switch. *If the polarity is crossed the emergency function will work but can not be inhibited*.
If the inhibition is connected into a circuit with CEAG emergency luminaires having an inhibition connection the Protecta must be connected as follows EXTSW1 should be connected to CEAG "2" EXTSW2 should be connected to CEAG "3".
The looping terminals for this function are at the right hand end. As there are four entries, four core cable must be used for looping the inhibition terminals if the mains through wire connection is to also be used. If any other configuration is needed it must be specially ordered or the internal wiring pack changed on site.
The cabling is made off to the correct length in the normal manner. Care should be taken not to cut the insulation back too far. The maximum amount of insulation allowed beyond the throat of the terminal is 1mm. The normal method of insulation testing is to connect Live and Neutral together and test between this point and Earth to prevent the risk of damage to the electronic control gear. However, if this is not possible luminaires can be tested with an insulation tester that complies with IEC 364 or BS 7671 with a maximum output current of 1mA and output voltage of 500V dc. The inhibition circuit can be tested at 500V dc with a maximum output current of 1mA whilst connected to the luminaire terminals. (Units damaged by incorrect insulation testing can be detected).
Before completing the wiring, ensure that all the connections are correctly introduced into place before reassembling the luminaire. Following cabling, lamps can be fitted. New lamps should be used.

4.0 Emergency Operation

4.1 General description of microprocessor controlled emergency unit and operation

The integrated unit consists of a mains supplied ballast for feeding the fluorescent lamps in normal situations, a battery pack, an emergency circuit that charges the battery and powers the lamp in an emergency situation, and a micro-controller based supervisory circuit that controls the charging, monitors the emergency functions and displays the results of self test and emergency unit status by means of a red and green LED.
The unit can be connected to an external switch that can inhibit the emergency functions when the mains power is on or off and restart the emergency functions with or without mains power being applied. The terminals for this feature must be specified when ordering. (See 3.7).
By switching the voltage on a connection Ls the lamps can be switched on and off without the emergency function being activated. The Ls connection is insulated from L and has a signal function only drawing a very small current.
The luminaire will go seamlessly into emergency mode at not less than 60% rated supply voltage and will remain in mains mode above 85% of rated supply voltage.
On restoration of the mains supply there will be a **60 sec delay** before the emergency lamp is restored to mains operation. This feature is not common on emergency luminaires and should be noted. The feature is provided to increase reliability when operating in bad supply conditions.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a control gear fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low discharge current mode.

4.2 Self testing

An immediate full test of capacity can only be made by manually de-energising the installation and timing the discharge. The LED indication will show if the duration is less than 2.5 hours or 2 hours if the temperature during the test is very high or very low. 45°C < T amb <-5°C, with mains lamps operating normally prior to test).
The control continuously monitors all charging functions.
The unit will self test for a short period every 13 days. The short self testing is for emergency function. The initial starting time for the self test routines is at a random point in the 13 day cycle, starting at the first mains energisation after the battery is connected or re-connected. During the 13 day self test the unit will test for function including lamp condition. The test will last 9 minutes with one lamp being energised at emergency level during the test period, the other lamp will remain on. If Ls is off, the short test is delayed until Ls is re-energised.
The unit will perform a complete battery discharge every "3" months (102 days) and will check for minimum emergency duration as stated above. The start of the first complete battery discharge is at a random point between

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0 and 102 days after applying mains voltage. The test will be repeated at fixed 102 day intervals. The unit will also complete a full self test after completing a commissioning cycle to full charge and after battery replacement. The full commissioning cycle takes about 50 hours.
The test will be delayed if the battery is not fully charged or the operating temperature at the time is too high to give a proper result or Ls is off. The test is also made after the initial installation and energisation and a full charge cycle completed. One lamp remains energised at normal mains output. The long test will also take place once the charge period is complete after a battery is changed or disconnected then re-connected.
The emergency lamp condition is monitored during every lamp start. If the lamp ignition is not correct the LED will display repeated red flashes. This will happen even if the lamp does ignite and run at the normal light level.
If the self-test detects a failure it is indicated as follows. At the start of the automatic long test the emergency lamp will switch off for 9 mins so that it can cool down and make the starting test fully valid.
Refer to the Table 1 below.
Emergency lamp defective: continuous red flashing.
Battery defective or low capacity: two red flashes, followed by a pause.
Emergency unit defective: three red flashes followed by a pause.
If the charge condition is known, the unit will re-charge from empty to approximately 80% charge in 14 hours. Afterwards a reduced current post charge will be applied to complete the charge. If the battery charge condition in unknown (e.g. first connection) a reduced charge is applied for 44 hours.
For battery temperatures below 10°C charge current is reduced and charge time increased.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low battery discharge mode which maintains the memory and monitoring function. The control contains dedicated features which prevent any unsafe condition arising if the micro-processor were to malfunction.

LED display

The status is displayed by means of red and green LED signals.
The green LED will flash slowly, if the batteries are being charged, and all emergency functions were found to be OK during the last self-test.
The green will be steady at full charge.
The red will flash if there is a fault or a warning.

Table 1 Monitoring function indication

GREEN	RED	MODE	REMARKS
Fast flash ½ sec on, sec off		Charge C/10	
Slow flash 1 sec on, 1 sec off		Charge C/20	Charging currents at low temperatures reduced
Steady		Fully charged	
Fast Flashing alternate Red-Green	Fast flashing alternate Red-Green	Less than one ½ hour duration left during emergency operation. Also see 5.2.2	One lamp at emergency light level
	fast flashing	Emergency lamp near end of life	Both lamps on or off
	2 red flashes repeating	Battery faulty or battery not connected or low duration after long test	Minimum duration limit during long test not met
	3 red flashes repeating	Fault in electronics of power supply	
Slow flash or steady	Periodic short flash once per 4 secs	Mains on emergency inhibited	
None	None	Defective display	Lamps on
None	None	Mains off, battery discharged, or mains off inhibited or	Lamps off

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		total unit defective	

4.3 Inhibition (also see 3.7)
If local emergency inhibition is required the luminaire should be ordered with the connections for this feature built in. The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. Closed circuit is normal, open inhibits the emergency function. Up to ten luminaires can be connected in parallel to one switch and using 500m of cable.
The inhibit as well as de-inhibit functions can start with normal mains power present as well as without mains power, the emergency light can be switched on while the whole power system is still dead.
Inhibition is not possible with a completely discharged battery and no mains being present. The emergency function can be inhibited and de-inhibited whilst in emergency operation. Return to emergency operation is instant. The change to lamp off when put into inhibited mode may be delayed for up to 60 secs,

5.0 Commissioning (Refer to section 6.0 for access)
The units will only be fully operational and give completely correct indication after the completion of a full charge, self-test discharge and recharge cycle, approx. 100 hours. Once this is complete the unit will have it's full operating parameters installed in the memory. Provided the battery is not disconnected indication will function correctly.

5.1 Non-emergency luminaires are energised after the lamps are fitted and the luminaire closed. Both lamps should light. Open the cover the lamps will go out.

5.2 Commissioning Emergency

5.2.1 Commissioning with no mains power available.
After inserting the lamps and closing the cover, the unit will go onto emergency mode until discharged if the initial battery voltage is high enough. (> 5.5V).
If the emergency inhibition switch is in the blocked condition the lamp will go on for 60 seconds unless there is not enough charge in the battery to sustain it for that time.

5.2.2 Commissioning with mains power available.
If a local light switch is connected put it on.
After inserting the lamps and closing the cover the unit will light on battery as above. At power up the mains lamp will light and emergency lamp will light fully after 60 secs. This feature is designed to increase reliability in very frequent mains on and off situations or irregular supply such as may occur during commissioning.
The initial charge will be indicated by a green flashing LED.
If an emergency blocking switch is present a short red flash every 4 sec will be displayed if the switch is in the blocked state.
If the battery charge condition in unknown (e.g. first connection) a reduced current charge is applied for 44 hours. The long self test takes place after the initial installation and energisation has been made and a full charge cycle completed. The test will be delayed if the operating temperature at the time is too high to give a proper result or if Ls is off. One lamp remains energised at normal mains output. **See 4.2**. After the test the unit will fast charge to 80% then post charge to fully charged and the indication will then be steady green.
Until the full charge and test cycle has been completed the unit will indicate low battery on any emergency discharge.

5.2.3 Low Temperature Operation
At battery temperatures below 10°C charge current is reduced and charge time increased. This temperature is equivalent to the luminaire operating at -5°C with the lamps on or at +5°C with the lamps off.
Under operating conditions where the ambient temperature is below 0°C for long periods the luminaire should preferably be used in maintained mode so that the mains supplied lamps warm up the battery to a normal working temperature.

6.0 Servicing and Operation
The bi-pin luminaire incorporates an electronic safety de-energiser for maximum reliability and utility of the emergency monitoring function. The electronic sensor is operated by the actuating plate on the diffuser. This provides for the safe opening and carrying out of re-lamping.
The mono-pin non-emergency has a micro-switch which interrupts the mains supply to the control when the cover is opened.
The mono-pin emergency has an electronic de-energiser and a micro-switch.
Safe servicing behind the gear tray requires the mains supply to be isolated, and battery connections must be treated with care, see 6.10.

6.1 Opening and Closing the Cover
The procedure for opening the cover is as follows:

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Insert a screwdriver into one of the slots in the clamping bar with the end of the tool located into the outer flange of the body as a fulcrum point, a wide blade screwdriver is recommended.
Gently lever the tool away from the diffuser; the clamping bar will begin to open.
Insert the tool in the other clamping bar slot and gently lever away from the diffuser, the clamping bar will open and the cover will be retained by the hinge. Should difficulty be experienced, reinsert the tool in the first slot and repeat the procedure.
The procedure for closing and securing the cover is as follows:
Ensure the hinge mechanism is clear of any obstruction and then swing the diffuser into the closed position. Support the diffuser in position whilst pushing the clamp bar over the edge of the diffuser. Apply even pressure at both ends of the bar and press the bar over centre making sure that it goes fully into position.
To remove and replace the diffuser open the diffuser to 180° and it will lift out. When replacing ensure that all the hinges are into place before attempting to close.

6.2 Removal and Replacement of Clamping Bar (if required)

Open the luminaire as above and remove the diffuser or let it swing down. Press the clamping bar towards the closed position, tip forward beyond the closed position and the clamping bar will be released from the body. To replace the clamping bar, put in position on the body with the front edge pointing as far inwards as it will go. Click the bar outwards and bring back to the normal closed position. The clamping bar should then be secured in position, open the clamping bar fully by using hand or screwdriver pressure (avoid damaging the gasket), the clamping bar is then ready to accept the normal closure of the diffuser.

6.3 Fitting lamps and Re-Lamping

IMPORTANT - If the luminaire is maintained with the power on, the lamps will go out when the cover is opened. If this does not happen there is a fault. Do not remove the lamps. The control gear will be damaged if the lamps are removed without being de-energised and there is an ignition risk. This could occur if the sensor arrangement is faulty or has been defeated. The luminaire must be de-energised the control gear checked and electronic sensor assembly must be replaced if faulty, see 6.9.
Lamps that are not operating or appear dim should be replaced as soon as practical. The control gear is designed to withstand end of life conditions of lamps. The emergency unit will indicate in advance that the lamp is approaching end of life. Always replace both lamps.
The bi-pin lamps are fitted in lampholders with a rotating section. The lamp must be pushed firmly down into the lampholder and rotated 90°. The contact is biased to remain in the 90° position. If the lamp does not rotate, check that it is completely positioned into the lampholder. The Fa6 cap lamps are fitted in the spring loaded lamp-holders which are pulled out to allow the introduction of the lamp. Before inserting bi-pin or mono-pin lamps ensure the lamp pins are not damaged or slack in the end cap.

6.4 Releasing the Reflector/Gear Tray

Loosen the four fixing screws retaining the reflector/gear tray far enough for it to slide over keyhole slots. The tray will hang on the retaining cords without stressing the wiring between body and tray. Replace in reverse order.
The lampholder assemblies can be removed from the gear tray, if necessary, by removing the fixing screw and pushing up the click finger at the end of the gear tray and pushing the lampholder assembly forward towards the centre of the tray.
Re-assembly is a reversal of the above; ensure the lampholder assembly fully clicks into place on the gear tray.
Lampholder assemblies have the connecting receptacles and are specific to each model. If they are being replaced the correct spare assembly must be ordered.

6.5 Removal of Reflector/Gear Tray c/w Lampholder Assemblies

Release gear tray from body and hang on retaining cords, as explained above. Disconnect the cables from the gear tray to the mains terminal block, unhook retaining cord from gear tray and lift clear. With disconnection made at the screw-less terminals the luminaire is safe when re-closed without the tray.

6.6 Servicing Behind the Gear Tray

The release of the gear tray exposes live mains terminals. Any work behind the gear tray requires that the supply is isolated to avoid ignition risk and damage to components.

6.7 Replacement of Ballast or Emergency Control

The ballast contains no replaceable parts. Should it be found necessary to replace the ballast, the following procedure should be adopted:
Ensure that the luminaire is isolated from the mains supply.
Remove gear tray from body and swing down as previously explained. Undo the battery plug on emergency luminaires.

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Ballasts use 6mm tab connectors which are locked and are released when the black cover sleeve is pulled away axially. When replaced a 'click' will be heard as the lock locates. **On no account should the quick release connectors be replaced with proprietary items.**

Disconnect the leads to the ballast, note the connections. When removing the connections **always disconnect** the sensor and LED connections (LED1 LED2 PRPT1 and PROT2) **last** and reconnect them **first**. Remove the ballast retaining screws and remove ballast from tray.

Replacement of the units is in the reverse order. **The sensor is connected first and the battery last**. Check the connections carefully before re-energising. The lamp leads on the emergency are marked as pairs. Take care to connect correctly. The unit is **not** protected against reverse battery polarity. The yellow leads are the high voltage ones. Miss-connection of the units will be very likely to result in damage. **Care and checking during replacement can not be over emphasised.**

6.8 Replacement of Micro Switch if fitted

Before carrying out any work ensure that the unit is isolated from the mains. Identify the four micro switch wires and disconnect from the terminal block. Free the leads from the retaining connections, remove the two screws holding the switch in position. Replace the micro switch and reconnect. Check the connections and terminal polarity against either a circuit diagram or a note made prior to dismantling. A complete new assembly including the connecting receptacles for the model must be used.

6.9 Replacement of sensor with or without LED assembly

It is very unlikely that this assembly will need replacement other than as a result of mechanical damage.

Isolate the mains. Disconnect the battery, disconnect the sensor and note the connections. Undo the two screws and replace the unit using the nuts from the old unit. Reconnect and carefully check the connections before re-energising.

6.10 Replacement of battery

The battery is accessed by releasing the gear tray fixing screws sliding the tray and hinging it down.

The battery is connected to the control using a plug and socket arrangement. The battery load is disconnected by the electronic sensor device. The screws holding the battery pack are loosened and the battery pack slid axially one way then the other in order to release. The battery pack is not intended to be opened and is replaced as a unit. The battery is potentially incendive but is protected during removal by the IP30 construction which covers live parts. The battery assembly must be protected from damage and water ingress then **removed from any potentially hazardous area as soon as practical.**

The replacement battery is slid axially one way then the other in order to insert then the screws are tightened. The socket is then inserted. The luminaire must not be operated without the battery connected. If the battery is removed and not replaced the control gear supply must be disconnect at the mains terminal block and secured.

6.11 Checking of Battery separately

The easiest way of checking the battery is in a known serviceable luminaire against the rated duration.

If the battery is to be checked separately, it should be charged using a **constant current charger** at 200/400mA for 30/15 hours for the 4Ah (18W) or 350/700mA for 30/15 hours for the 7Ah (36W). Discharge measurement is not easy as the current is proportional to the voltage for resistance loads, so it has to be averaged. Discharge the battery at 1 to 2A and multiply current by time. Do not discharge below 1 volt per cell, that is 5V. The capacity should be 70% or more of normal.

7.0 Routine Maintenance

Visual tests and checks should be carried out at intervals described by the appropriate regulations, EN 60079-17, and should include the following:

Check that the lamps are working or appear badly aged. Blackening at the lamp ends is a good indication of length of use.

Check for mechanical damage/corrosion.

Check for loose connections including earthing.

Check for undue accumulations of dust or dirt.

Verification of tightness of fixings, glands, blanking plugs etc.

Check for unauthorised modifications.

Check condition of enclosure gasket and fastenings.

Check for any accumulation of moisture.

Periodic inspection of the enclosure seal should be carried out to ensure that the seal is sound. The seal can be replaced and, if necessary, secured in position by the application of a **very** small amount of rubber adhesive and using the joining piece. This job should be carried out in the workshop.

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If the luminaire has been subject to abnormal conditions, for example, severe mechanical impact or chemical spillage, it must be de-energised until it has been inspected by an authorised and competent person. If in doubt the unit should be returned to Chalmit for examination and if necessary replacement.

7.1 Fault finding

For emergency units this concerns faults other than ones that are properly indicated, refer to the indication table.

7.1.1 Non emergency

The lamps will run until one fails to strike. Fit new lamps. If the result is not satisfactory, check continuity to the ballast. If still no result, check the continuity to lampholders after disconnecting leads from ballast. If no fault found replace ballast. If still no result, disconnect the connection to the sensor. If the lamps light this would indicate a faulty sensor, see 6.9, but as this is most unlikely, check all connections before replacing.

7.1.2 Emergency

Check for operation of the LED. **If the LED is red** refer to the table that shows the fault diagnostics. If the unit does not work on the mains with Ls energised carry out the checks in 7.1.1. If mains operation cannot be restored replace the control unit.

A service operation, that is opening and closing the cover, will often re-set faulty lamp indication but the indication will reoccur so the lamp must be changed.

If fault finding is done on an emergency unit before a full commissioning cycle has been completed care must be taken to ensure that the faults are real. Check that the inhibition circuit is complete; see 3.7 and 4.3.

With faults occurring later the first action is always to fit new lamps. If the unit does not work on mains with both lamps, 60 sec delay on emergency lamp, and Ls is powered there is a fault. The second action is to fit a new battery *with some charge in it*. These actions can be done with the luminaire installed. If the result appears positive leave the luminaire in place for a charging period. Work after this would be expected to be done by removing the gear tray to the workshop. It will be easier to work using a complete luminaire and put the gear tray into it. When working this way do not lie the tray in the diffuser as the sensor may be activated inadvertently.

In general, installations of luminaires have a number of units on site and fault finding is done by substituting known healthy components. If changing batteries always use one with some charge, a voltage of 6.0V will be enough to avoid problems. See 6.11.

Except for checking continuity to the supply and ballast input connections there is little that can be done to fault find using instruments. Care is needed in the workshop as miss-connection will damage units. Always check connections carefully. Live testing and use of meters on high frequency units in a workshop will gain little information and may damage healthy components.

The usual first service operation with emergency units which appear to work normally on mains but not on emergency is to energise for a few minutes before checking emergency operation. If no result, check that the inhibit connection is closed circuit. If the unit works on emergency let it discharge fully. The unit should then be energised for 60 mins and the discharge re-checked.

If the unit runs for a few minutes it is charging. If not, change the battery and repeat the full discharge and short charge test. If okay, give the unit a full 48 hour charge and check the duration. If there are still fault indications replace the control unit.

7.2 Cleaning

The body of the luminaire may be cleaned with a mild solution of household detergent and water, after cleaning the body should be washed and wiped with clean water. **The diffuser <u>must not</u> be polished or wiped with a dry cloth as a risk of ignition due to electrostatic discharge may result**. Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

8.0 Fuse and MCB Ratings

It is recommended that for selection of MCB's users should consult the MCB manufacturer as this unit contains electronic control gear. MCB ratings can vary depending on the manufacturer and type and the size of the installation, i.e. impedance of conductors. The electronic control gear has an inrush current of 30A for 500µs on 230V, emergency and non-emergency, 45A for 350µs on 110V, non-emergency, and 35A for 250µs on 110V, emergency. These figures are for low resistance connections with short cables and low impedance supplies.

9.0 Disposal of Material

General

The unit is made from combustible materials. The control gear contains plastic parts and electronic components. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

9.1 Lamps

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Fluorescent lamps in modest quantities are not "special waste". They should be broken up in a container to avoid injury, avoid inhaling dust.
Important : *Do not incinerate lamps.*

9.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the person disposing needs to observe a 'duty of care'.
Batteries can be returned to the manufacturers for recycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting, or otherwise ensure that there can be no release of stored energy in transit. For further details refer to our Technical Department.

Table 2 Nominal Lamp Power and Supply Current

Supply Voltage	Lamps	Power W	Current A
230V, 50/60Hz	2 x 18W	35	0.17
	2 x 18W Emergency	40	0.19
	2 x 36W	70	0.32
	2 x 36W Emergency	77	0.36
110V, 50/60Hz	2 x 18W	35	0.34
	2 x 18W Emergency	40	0.38
	2 x 36W	70	0.65
	2 x 36W Emergency	77	0.73

Power Factor > 0.98. Power is constant over voltage range.

Tamb Storage -40°C to +80°C

EMC EN 50081-2 (emission)
EN 50082-2 (immunity)
EN 61000-3-2 (harmonics generated)

Over voltage 400V ac for 1 min
EN 61000-4-5 > 4kV

Batteries 6V 7Ah NiCd (36W)
6V 4Ah NiCd (18W)

Emergency Duration 3 hours to EN 60598 2-22 @ Tamb 25°C
(The standard requires the 3 hour duration after 4 years of operation)

Emergency Output 1200mm lamp 25% of normal single lamp output
600mm lamp 30% of normal single lamp output

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Chalmit Lighting

388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone : +44 (0)141 882 5555
Fax : +44 (0)141 883 3704
Email : Info@chalmit.com
Website : www.chalmit.com

Registered Office

Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note

Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

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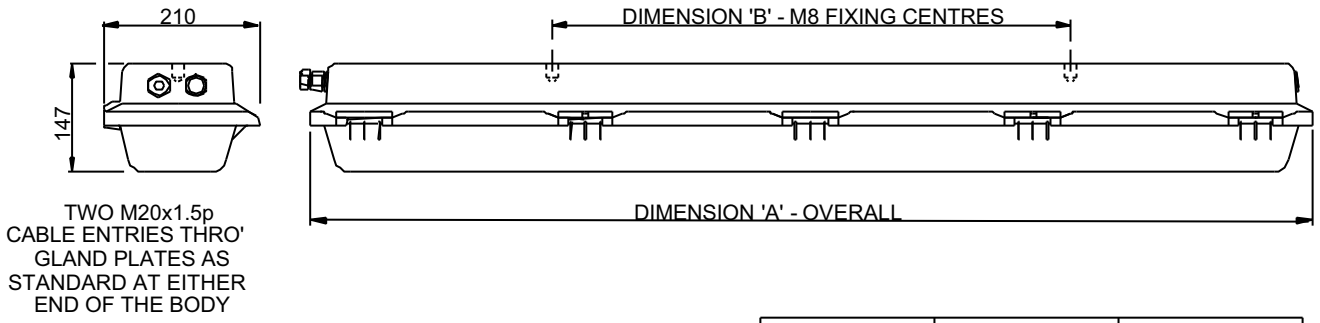
Issue 00

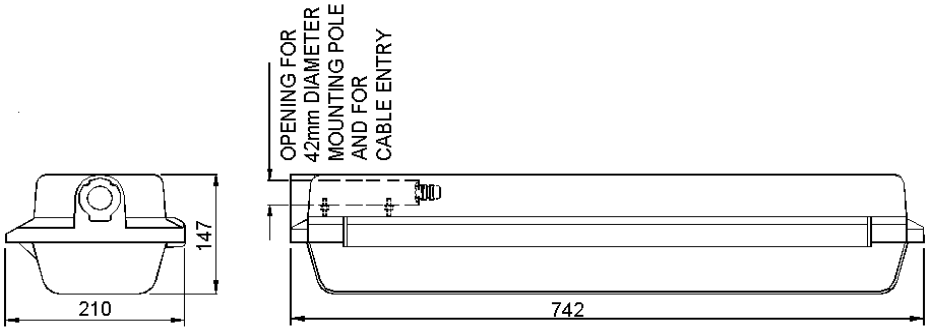
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Protecta Category 2 D ATEX Luminaire

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



MODEL SIZE	DIMENSION 'A'	DIMENSION 'B'
18W	742	400
36W	1352	700



SIDE ENTRY 18/20W MODEL

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Specification and ATEX Declaration

Dust Standard	EN 50281-1-1.
Area of Application	Zone 21 areas refer to EN 50281-3 and installation EN 50281-1-2.
ATEX Equipment Classification	Group II Category 2 D
Equipment Coding	Ex II 2 D T95°C
Certificate	Type Examination BAS02ATEX2180
Ingress Protection	IP66/67 to BS EN 60529
CE Mark CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and protective systems intended for use in Explosive Atmospheres regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction – Protecta Category 2D Dust Protected Fluorescent Luminaire

1.1 General

1.0 Introduction – Protecta GRP Category 2 D ATEX Model

This installation leaflet covers the range of ATEX Protecta GRP dust protected luminaire. These luminaires are mainly used in harsh environments and are constructed using a corrosion resistant glass reinforced polyester body and polycarbonate diffuser. Refer to the current catalogue for information on product references. The range is available for use with both T8 bi-pin lamps to IEC81 and T8 mono-pin lamps with Fa6 caps to EN 60061-1. The appropriate lamp cap should be specified when ordering. The luminaires are available in 2 x 18W, 1 x 36W and 2 x 36W sizes, and also in 2 x 18W and 2 x 36W sizes for emergency use.

Note:

The ratings are listed in TABLES 1-4.

2.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.0 Installation and Safety

3.1 General

These instructions should be read fully and carefully before attempting to install the luminaire.

Copies of these instructions should be held in a safe place for future reference. It is the responsibility of the installer to ensure that the apparatus selected is fit for its intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice.

There are no health hazards associated with this product whilst in normal use, however, care should be exercised during the following operations.

Installation should be carried out in accordance with *EN 60079-14* or with a local hazardous area code of practice whichever is appropriate. Any specific installation instructions must be referred to. In the UK the requirements of the *Health and Safety at Work Act* must be met and electrical work associated with this product must be in accordance with the *"Manual Handling Operations Regulations"* and *"Electricity at Works Regulations 1989".* Disposal instructions should be complied with.

The luminaires should be considered Class 1 to EN 60598 and effectively earthed.

The polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.

Certification details on the rating plate must be verified against the application requirements before installation.

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The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required without notice.

3.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in combustible dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate on the fitting surface and good housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures.

Refer to EN50281-1-2 for additional details of selection, installation and maintenance.

3.2 Tools

3mm and 4mm flat blade screwdriver and large cross-head screwdriver.

Suitable spanners for installing cable glands. Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear. ***Care is needed connecting to the nominal 230V UK public supply.*** The user must determine the actual underlying site supply and purchase or adjust accordingly. If the equipment is located in high or low voltage sections of the system an appropriate voltage tap should be selected but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side.

3.4 Lamps

The lamps used in the range can be T8 bi-pin fluorescent with G13 cap or T8 mono-pin fluorescent with Fa6 caps. Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The standard suspension is via two M8 tapped holes in brass bushes in the top of the body. (At 400mm centres for 18W and 700mm centres for the 36W model). Various adaptors, pole clamps and suspension brackets are available to order. The 2x18W model is available with integral side entry for 42 mm diameter poles.

3.5.1 Opening and Closing the Cover

The procedure for opening the cover is as follows:

Insert the tool into one of the slots in the clamping bar with the end of the tool located into the outer flange of the body as a fulcrum point, a wide blade screwdriver is recommended. Gently lever the tool away from the diffuser; the clamping bar will begin to open. Insert the tool in the other clamping bar slot and gently lever away from the diffuser, the clamping bar will open and the hinge will retain the cover. Should difficulty be experienced, reinsert the tool in the first slot and repeat the procedure.

The procedure for closing and securing the cover is as follows:

Ensure the hinge mechanism is clear of any obstruction and then swing the diffuser into the closed position. Support the diffuser in position whilst pushing the clamp bar over the edge of the diffuser. Apply even pressure at both ends of the bar and press the bar over centre.

3.6 Cabling and Cable Glands

3.6.1 Cables

The Protecta series have the facility both looping and through wiring.

The temperature conditions of the supply cable entry point are such that 70ºC (ordinary PVC) cable can be used in most luminaire models. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The standard maximum looping size is 4mm². An internal earth tag can be fitted to the cable gland.

The pole-mounted version has a cable gland fitted that will seal onto cables in the range 13 to 18 mm OD. The gland does not have provision for armour clamping.

Note : *Through wiring when used, is subject to a maximum current of 16A.*

3.6.2 Cable Gland Types

The temperature conditions at the supply cable entry point are such that 70°C (ordinary PVC) cable can be used. Cable glands and sealing plugs must be “E generation” certified or have ATEX component approval. The cable and gland assembly when installed must maintain a minimum IP6X for category 2 D.

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

The pole mounted version has a cable gland fitted which will seal onto cables in the range 13 to 18 mm OD. The gland does not have provision for armour clamping.
Where the cable ***is not reliably clamped*** externally to the apparatus the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm.
Four entries are provided. Three entries are fitted with suitably approved blanking plugs, the fourth entry with a transit plug. M20 x 1.5 entries are standard, other sizes are available on request. The standard entry configuration is with an earthed metal plate with tapped holes mounted in the body.

3.7 Cabling

Access for cabling is via the hinged diffuser cover. The reflector/gear tray is swung down by loosening the four fixing screws and sliding over the keyhole slots. This gives access to the mains terminals. The tray can be removed by undoing the spring clips on the suspension cables. Any earth tag connections should be fitted. The connecting terminals are identified and the conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more that 1mm beyond the terminal. Unused terminal screws should be tightened. The cores must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. The through current rating is 16A. 4mm² terminals are standard (6mm² wiring can be used in the terminals in accordance with the luminaire certificate).
Screw type or screw-less “cage clamp” terminals are fitted in the range of luminaires. Mains terminal blocks are marked L N Earth.

3.7.1 Fitting Lamps

Before opening the diffuser cover ensure that the luminaire is de-energised or isolated from mains supply. Access for re-lamping is via the diffuser cover; care is to be taken, as there is no suspension facility for the diffuser cover. Make sure that the correct lamp is selected. The lampholders are tombstone type, place the lamp in the lampholder and rotate 90º in lampholder. When inserting new lamps ensure pins and lampholder connection is centralised. Replace diffuser cover and snap clips into place.

3.7.2 Fused Terminal Blocks

When a fused terminal block has been fitted, it is essential that the metal clamp supplied retain the fuse holder.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

1 Ensure lamps are lit when energised by mains supply.
2 Visually check diffuser cover for damage. This should only be cleaned using a damp cloth to avoid static and only use recommended detergents for polycarbonate. If the polycarbonate is discoloured or damaged, a new diffuser cover must be fitted.
3 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are any signs of water ingress, the luminaire should be opened up, dried and any likely ingress points eliminated by re-gasketting or other replacements.
4 Check cable gland for tightness and nip up if required.
5 Check any external and internal earths.
6 Check all terminations are firmly screwed down, tighten if necessary.
7 If it has been suspected that the luminaire has suffered mechanical damage, a stringent workshop check on all components should be made. All components can be removed from the luminaire for inspection.
8 Avoid the build up of dust layers by regular cleaning and again clean only using a damp cloth.

3.8.2 Routine Testing of Emergency Lighting Functions

Users should ensure that the performance of emergency lighting remains adequate for their purposes by conducting periodic tests and recording the results. Requirements will differ between countries, applications and organisations. In the United Kingdom BS 5266 Pt1 gives guidance on testing.

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.

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Any live fault finding must be done by a competent electrician and, if carried out with luminaire in place, under a permit to work. Where the control gear is copper and iron, the fitting can be tested for continuity of connections. When electronic high frequency gear is fitted do not megger.

If lamps go out repeatedly, and replacement lamps do not work or expected life is reduced, where applicable replacement starters should be tried. However, if this does not correct the fault the control gear should be returned for replacement/testing. The high frequency ballast will cut out if lamps are defective. On re-assembly, all faulty/damaged wiring should be replaced and connections checked.

3.9.1 Battery Check and Replacement

Do not open luminaire when a hazardous atmosphere is present. Isolate before opening. The battery is detached at the plug and socket. Remove the two screws to release the battery. Re-assembly is in reverse order.

Important : *Care must be taken not to short the leads together as this can cause sparking which, in turn, could lead to a fire.*

The emergency duration is 3 hours. This is in accordance with EN 60598 2-22. The battery must be replaced when the duration is not acceptable.

Protect the batteries from water ingress and mechanical damage then transport from the hazardous area as soon as practical. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit.

4.0 Overhaul

The unit is largely made of materials that are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 0.8mm² solid core, HTPVC insulated. All the spares required are available. Please state the model number and lamp details. The seal is between the polycarbonate diffuser and the base. The diffuser is retained by the clamp bar. Periodic inspection of the enclosure seal should be carried out to ensure that the seal is sound. The seal can be replaced and, if necessary, secured in position by the application of a **very** small amount of rubber adhesive and using the joining piece. The seal can be obtained from Chalmit. This job should be carried out in the workshop.

4.1 Cleaning

The body of the luminaire may be cleaned with a mild solution of household detergent and water, after cleaning the body should be washed and wiped with clean water. **The diffuser <u>should not</u> be polished or wiped with a dry cloth as a risk of ignition due to electrostatic discharge may result**. Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

4.2 Removal and Replacement of Clamping Bar (if required)

Open the luminaire as above and remove the diffuser or let it swing down. Press the clamping bar towards the closed position; tip forward beyond the closed position and the clamping bar will be released from the body. To replace the clamping bar, put in position on the body with the front edge pointing as far inwards as it will go. Click the bar outwards and bring back to the normal closed position. The clamping bar should then be secured in position, open the clamping bar fully by using hand or screwdriver pressure (avoid damaging the gasket), the clamping bar is then ready to accept the normal closure of the diffuser.

5.0 Fuse Ratings

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The inrush current can be calculated where circuit conditions are known. The inrush currents can be obtained from Chalmit.

The fuse ratings for fluorescent lamp circuits need to take account of three components of circuit current. The current inrush can be up to 25 x the rated current and last 1-2milli seconds the inrush current can be calculated where circuit conditions are known. All calculations must satisfy wiring regulations.

Note : *Line currents for 240V, 50Hz are as indicated in Table 4.*

6.0 Disposal of Material

The unit is made from combustible materials. The control gear contains plastic parts and polyester resin. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Fluorescent lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation. Avoid inhaling dust. This applies to the UK; there may be other regulations on disposal operating in other countries.

Important: *Do not incinerate lamps.*

6.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the user needs to observe a 'duty of care'.

Batteries can be returned to the manufacturers for re-cycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit. For further details refer to Technical Department.

Table 1 | 1.0

Model	Lamps	Voltage Range	Ambient Temp ºC Range	Max Surface Temp ºC
PRGD/136/BI	1 x 36W T8	220-240V 50/60/0Hz	-20≤0≤50	95°C
PRGD/236/BI	2 x 36W T8			
PRGD/118/BI	1 x 18W T8			
PRGD/218/BI	2 x 18W T8			
PRGD/118/BI/SE*	1 x 18W T8		-20≤0≤40	
PRGD/218/BI/SE*	2 x 18W T8			

*Pole mount type.

Table 2 | Ratings For High Frequency Emergency

Model	Lamps	Voltage Range	BLF	Ambient Temp ºC	Max Surface Temp ºC
PRGD/136/BI/EM**	1 x 36W T8	220/240V, 50/60Hz	10%	0≤0≤50	95
PRGD/236/BI/EM	2 x 36W T8				

** Non-maintained.

Table 3

No. Off Lamp	Gear Type	Lamp W	Nominal Circuit Power W	Line Current
1	HF	18	20	0.09
2		18	38	0.17
1		36	36	0.16
2		36	72	0.32

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone : +44 (0)141 882 5555
Fax : +44 (0)141 883 3704
Email : Info@chalmit.com
Website : www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

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TECHNOLOGY

Certificate of Compliance

Issued to: SIMPLEX LIGHTING LIMITED

Apparatus: TYPE 502431 LUMINAIRE

This is to certify that a sample of the equipment defined above has been tested by ERA Technology Limited and found to comply with the following requirements:

ERA Document Reference DTS 01 : 1991
Test Schedule for Electrical Equipment to be Installed in Areas Subject to Water Deluge Systems

Full details are given in Report No. 5046/401 *dated* May 1995

Certificate prepared by
G D Lightfoot
Technician

Certificate approved by
G R Oliver
Manager

Certificate No 5046/C401
Dated 23rd May 1995
GDL2/C1202

CEPEL

OCP-0007

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA

Organismo de Certificação Credenciado pelo INMETRO

INMETRO

Certificado de Conformidade

Certificate of Conformity / Certificado de Conformidad

Número: *Number / Número* **CEPEL-EX-071/2001X** **Emissão:** *Issue / Expedición* **05/12/2001** **Validade:** *Validity / Validez* **04/12/2003**

Produto: *Product / Producto* **LUMINÁRIAS PARA LÂMPADAS FLUORESCENTES BI-PINO**

Tipo / Modelo: *Type - Model / Tipo - Modelo* **PROTECTA Tipos 50____.H___ e 50____.J___.**

Número de Série: *Serial Number / Número de Serie* ---

Número do Lote: *Batch Number / Número del Lote* ---

Solicitante / Endereço: *Requester - Address / Solicitante - Dirección*

CHALMIT LIGHTING
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Fabricante / Endereço: *Manufacturer - Address / Fabricante - Dirección*

CHALMIT LIGHTING
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Norma(s) Aplicável(eis): *Suitable Standard(s) / Norma(s) de Aplicación*

Equipamentos elétricos para atmosferas explosivas
NBR 9518/97 - Requisitos gerais
NBR 9883/95 - Segurança aumentada - Tipo de proteção 'e'.
NBR 6146/80 - Invólucros de equipamentos elétricos – Proteção
IEC 60079-18/92 - Electrical apparatus with type of protection 'm' (encapsulation);
IEC 60079-5/97 – Electrical apparatus for explosive gas atmospheres – Sand-filled apparatus.

Laboratório de Ensaio: *Testing Laboratory / Laboratório de Ensayo*

CEPEL - Centro de Pesquisas de Energia Elétrica
Laboratório de Acionamentos e Segurança em Equipamentos Eletroeletrônicos - AP4

Número do Relatório de Ensaio: *Test Report Number / Número del Informe de Ensayo*

UNIAP-EX-1062/2001X
MARCAÇÃO: BR-Ex eqm II T4 IP66 (vide Anexo)

Condições de Emissão: *Conditions of Issue / Condiciones de Expedición*

Com base na Portaria INMETRO Nº 176/2000, de 17/07/2000. Processo aprovado conforme ítem 2.13 da 55ª Reunião Ordinária da Comissão de Certificação de Equipamentos Elétricos para Atmosferas Explosivas - CCEX, em 29/11/2001.

1ª via - CLIENTE

Observações: *Remarks / Observaciones*

1) Este Certificado só é válido acompanhado do seu Anexo.

Henrique Burd

SIGNATÁRIO AUTORIZADO
Authorized Signatory / Persona Autorizada

Escritório de Certificação de Produtos e Serviços - ECPS - Av. Olinda s/nº - Adrianópolis - CEP 26053-121 - Nova Iguaçu - RJ - Brasil
End. Postal CEPEL - Cx. Postal 68007 - CEP 21944-970 - Rio de Janeiro - RJ - Brasil - Tel. (55XXX21) 2667-2111 / 2667-8631 - Fax (55XXX21) 2667-8630

INMETRO CEPEL OCP-0007

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ANEXO

AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-071/2001X

As **LUMINÁRIAS MODELO PROTECTA TIPOS 50 _ _ _ _.H _ _ _ e 50 _ _ _ _. J _ _ _** fabricadas pela **CHALMIT LIGHTING** são qualificadas em termos de suas especificações, análises e ensaios a que foram submetidas conforme documentação descritiva.

Especificações:

A luminária para lâmpadas fluorescentes tubulares bi-pino, com e sem iluminação de emergência, modelo PROTECTA, 18/20 W ou 36/40 W é composta de um invólucro com uma tampa em policarbonato transparente e um corpo em poliéster reforçado com fibra de vidro. A tampa é presa ao corpo através de uma barra de abertura rápida.

As luminárias tipo **50 _ _ _ _.H _ _ _** são para iluminação convencional e as do tipo **50 _ _ _ _. J _ _ _** são para iluminação de emergência.

As características dos diversos tipos de luminárias estão apresentadas na Tabela 1.

Tabela 1 - Características da Luminária **PROTECTA**

Tipo	Tamb Max. (°C)	110-120 V 47-63 Hz 110-150 V cc	220-254 V 47-63 Hz 220-300 V cc	110/120 V 50/60 Hz	220/254 V 50-60 Hz	Bateria	Potência (W)
500231.H _ _ _	55 (A)	N/A	*	N/A	N/A	N/A	2x18/20
500331.H _ _ _	55	N/A	*	N/A	N/A	N/A	1x36/40
500431.H _ _ _	55	N/A	*	N/A	N/A	N/A	2x36/40
500631.H _ _ _	55 (A)	N/A	*	N/A	N/A	N/A	2x18/20 p
500231.H _ _ 1	55 (A)	*	N/A	N/A	N/A	N/A	2x18/20
500331.H _ _ 1	55	*	N/A	N/A	N/A	N/A	1x36/40
500431.H _ _ 1	55	*	N/A	N/A	N/A	N/A	2x36/40
500631.H _ _ 1	55 (A)	*	N/A	N/A	N/A	N/A	2x18/20 p
502231.J _ _ _	55 (A)	N/A	N/A	N/A	*	4 Ah 6 V	2x18/20
502431.J _ _ _	55	N/A	N/A	N/A	*	7 Ah 6 V	2x36/40
502631.J _ _ _	40	N/A	N/A	N/A	*	4 Ah 6 V	2x18/20 p
502231.J _ _ 1	55 (A)	N/A	N/A	*	N/A	4 Ah 6 V	2x18/20
502431.J _ _ 1	55	N/A	N/A	*	N/A	7 Ah 6 V	2x36/40
502631.J _ _ 1	40	N/A	N/A	*	N/A	4 Ah 6 V	2x18/20 p

p = montagem em poste * = aplicável N/A = não aplicável

(A) luminárias de 2 x 18/20 W para máxima temperatura ambiente de 55 °C montagem convencional, emergência ou em poste só podem ser usadas em locais onde exista uma baixa probabilidade de dano mecânico.

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Unidade Adrianópolis: Av. Olinda s/n° - Adrianópolis - Nova Iguaçu - RJ - Brasil - 26053-121 - Tel.: 21 2667-2111 - Fax: 21 2667-8630
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ANEXO AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-071/2001X

As luminárias são equipadas com soquetes para lâmpada bi-pino tipo G13, reator eletrônico montado na parte interna da placa refletora com tipo de proteção "Ex q", sensor de abertura com tipo de proteção "Ex m", bornes de ligação com tipo de proteção "Ex e".

Na versão para iluminação de emergência a luminária é equipada com bateria de níquel-cádmio. O conjunto da bateria consiste de um tubo de plástico com as células, as terminações, um isolamento em neoprene e os terminais em disco metálico montados em seu interior. O conjunto possui um soquete para interligação com grau de proteção IP30 e é montado através de parafusos na placa de suporte do reator.

As características dos componentes são apresentadas na Tabela 2.

Tabela 2 – Características dos Componentes

Componente	Fabricante	Tipo de Proteção	Certificado	Características
Soquete	Chalmit	Ex s	KEMA 98ATEX3045	Para lâmpada bi-pino tipo G13
Reator eletrônico	Nedap	Ex qe	KEMA 00ATEX2121U	Com conversor na versão de emergência
Sensor de abertura	Nedap	Ex m	KEMA 00ATEX2121U	Sensor de proximidade
Bornes de ligação	Wago ou Weidmuller	Ex e	PTB Ex-97.D.3116U BAS 99ATEX2123U	Terminais de ligação
Conjunto da bateria	Chalmit	Ex e	KEMA 98ATEX3045	Níquel cádmio (6V - 4 Ah ou 7 Ah)

A faixa de temperatura ambiente é de –20 a 55 °C exceto para as luminárias de poste com montagem de emergência que é de -20 a 40 °C.

Para garantir o grau de proteção IP66 devem ser montados prensa-cabos certificados nas entradas de cabos disponíveis no corpo da luminária.

Análises e ensaios realizados:

- Análise construtiva (NBR 9518, NBR 9883, IEC 60079-18 e IEC 60079-5);
- Ensaio de elevação de temperatura (NBR 9518 item 23.4.6.1) – ver a Tabela 1 com a temperatura ambiente máxima;
- Resistência térmica ao calor e ao frio (NBR 9518 item 9.7.1) – 4 semanas a 93 °C e 90% de UR e 1 dia a -25 °C (amostras do corpo); 4 semanas a 81 °C e 90% de UR e 1 dia a -25 °C (amostras do difusor);
- Ensaio de impacto (NBR 9518 item 9.4.3.1) – 4 J a –20 °C e a +68 °C no difusor e 7 J a –20 °C e a +68 °C no corpo (para luminárias de 36/40 W) e 4 J a –20 °C e a +68 °C no difusor e no corpo (para luminárias de 18/20 W);
- Ensaio de grau de proteção (NBR 6146 itens 8 e 9) – ensaiado para o grau de proteção IP66;
- Ensaio de resistência a luz (NBR 9518 item 23.4.7.5) para corpo (poliester reforçado com fibra de vidro – GRP, fabricação Menzolit) e tampa (transmissora de luz, material Lexan);
- Distância de escoamento e isolação (NBR 9883 item 4.3 e 4.4);
- Ensaio de tensão aplicada (NBR 9883 item 6.1.1) – 1600 V durante 1 minuto;
- Ensaio de pressão no invólucro do reator (IEC 60079-5 item 5.1.1) – 0,5 bar durante 1 minuto;

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ANEXO AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-071/2001X

- Ensaio de grau de proteção no invólucro do reator (IEC 60079-5 item 5.1.2) – ensaiado para o grau de proteção IP4X;
- Ensaio de tensão aplicada no material de enchimento (IEC 60079-5 item 5.2.2) – 1000 V cc, corrente menor que 1 μA.

Documentação descritiva do equipamento:
Desenhos construtivos, características de componentes e materiais são relacionados na "Lista de Documentos" apresentada no Relatório de Ensaio UNIAP-EX-1062/2001X.

Marcação:
Na marcação das **LUMINÁRIAS MODELO PROTECTA TIPOS 50 _ _ _ _.H _ _ _ e 50 _ _ _ _. J _ _ _** deverão constar as seguintes informações:

BR-Ex eqm II T4 IP66
Tamb = -20 a * (ver Tabela 1) °C

Observações:

1. A tampa da luminária deve ter as seguintes advertências:
   - NÃO ABRA ENQUANTO ENERGIZADO;
   - DEVIDO A POSSIBILIDADE DE FORMAÇÃO DE CARGA ELETROSTÁTICA LIMPAR SOMENTE COM PANO ÚMIDO.

2. O certificado é terminado pela letra "X" para indicar que as luminárias de 2 x 18/20 W para máxima temperatura ambiente de 55 °C montagem convencional, emergência ou em poste só podem ser usadas em locais onde exista uma baixa probabilidade de dano mecânico.

3. Para garantir o grau de proteção IP66 devem ser instalados prensa-cabos ou tampões compatíveis e certificados nas entradas de cabos disponíveis no corpo da luminária.

4. Este certificado é válido apenas para os equipamentos de modelo, tipo e série idênticos ao protótipo efetivamente ensaiado. Qualquer modificação no projeto, bem como a utilização de componentes ou materiais diferentes daqueles definidos pela documentação descritiva do equipamento, sem a prévia autorização do CEPEL, invalidará este certificado.

5. É responsabilidade da **CHALMIT LIGHTING** assegurar que os equipamentos fornecidos ao mercado nacional estejam de acordo com as especificações e documentação descritiva do protótipo ensaiado e que tenham sido submetidos com sucesso ao ensaio de rotina de tensão aplicada com 1600 V durante 1 minuto.

6. É responsabilidade do usuário assegurar que o produto será instalado em atendimento às normas pertinentes para instalações elétricas em atmosferas potencialmente explosivas.

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA *(EMPRESA DO SISTEMA ELETROBRÁS)*
Sede: Av. Um s/n° - Ilha da Cidade Universitária - Rio de Janeiro - RJ - Brasil - 21941-590 - Tel.: 21 2598-6000- Fax: 21 2260-1340
Unidade Adrianópolis: Av. Olinda s/n° - Adrianópolis - Nova Iguaçu - RJ - Brasil - 26053-121 - Tel.: 21 2667-2111 - Fax: 21 2667-8630
Endereço Postal: CEPEL - Caixa Postal 68007 - 21944-970 - Rio de Janeiro - RJ - Brasil

ANEXO AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-071/2001X

7. A marcação deve ser executada conforme a norma NBR 9518 e a Regra Específica de Certificação de Equipamentos Elétricos para Atmosferas Potencialmente Explosivas (NIE-DINQP 096) e fixada na superfície externa do equipamento em local visível. Esta marcação deve ser legível e durável, levando-se em conta possível corrosão química.

Nova Iguaçu, 10 de dezembro de 2001.

Carlos Azevedo Sanguedo
Laboratório de Acionamento e Segurança em
Equipamentos Eletro-Eletrônicos

Henrique Burd
Escritório de Certificação de
Produtos e Serviços

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SUPLEMENTO 1

AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-071/2001X

O Certificado de Conformidade **CEPEL-EX-071/2001X** emitido para **CHALMIT LIGHTING** para o produto **LUMINÁRIAS MODELO PROTECTA TIPOS 50 _ _ _ _.H _ _ _ e 50 _ _ _ _. J _ _ _** é ampliado para englobar a inclusão de novos tipos de luminárias.

Especificações:
O novo tipo de versão da luminária incorpora reatores independentes para cada lâmpada a fim de permitir a alimentação de cada conjunto lâmpada-reator por fontes de energia diferentes. Cada alimentação incorpora sua chave de desligamento para o caso de abertura do difusor. Os componentes são idênticos aos já certificados.

Na Tabela 1 acrescentam-se os seguintes tipos de luminárias:

Tipo	Tamb Max. (ºC)	110-120 V 47-63 Hz 110-150 V cc	220-254 V 47-63 Hz 220-300 V cc	110/120 V 50/60 Hz	220/254 V 50-60 Hz	Bateria	Potência (W)
500431.GG_ _ _	55	N/A	*	N/A	N/A	N/A	2x36
500431.GG_ _ 1	55	*	N/A	N/A	N/A	N/A	2x36

* = aplicável N/A = não aplicável

Análises e ensaios realizados:
- Ensaio de elevação de temperatura (NBR 9518 item 23.4.6.1): máxima temperatura obtida de 81 °C no reator e 95 °C na lâmpada.

Documentação descritiva:
- Relatório de ensaio de elevação de temperatura referência 02/02/01 revisão 2 de 10/07/02 da Chalmit Lighting;
- Desenho D2100, “Protecta CEPEL certification twin independent ballast configurations”, folhas 1 e 2, de 03/05/02;
- Desenho D1929, “Typical general assembly of 18/20 W & 36/40 W ATEX compliant surface-mounted, GRP bi-pin Protecta models”, folhas 1 e 2, de 26/07/99.

Marcação:
Na marcação das **LUMINÁRIAS MODELO PROTECTA tipos 500431.GG_ _ _ e 500431.GG_ _ 1** deverão constar as seguintes informações:

BR-Ex eqm II T4 IP 66
Tamb = -20 a 55 °C

Nova Iguaçu, 29 de julho de 2002.

Carlos Azevedo Sanguedo
Laboratório de Acionamento e Segurança em Equipamentos Eletro-Eletrônicos

Henrique Burd
Escritório de Certificação de Produtos e Serviços

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA *(EMPRESA DO SISTEMA ELETROBRÁS)*
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CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1280724 **Master Contract:** 201067

Project: 1280724 (Edition 1) **Date Issued:** September 3rd, 2002

Issued to: **Chalmit Lighting, A Division of Hubbell Lighting Ltd.**
388 Hillington Road
Glasgow, G52 4BL
UNITED KINGDOM

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'

C US

Issued by: D. Adams, P. Eng.
Certification Specialist

Authorized by: John Verwey, P.Eng.
Operations Manager

CLASS

3428 03 - Fixtures and Fittings - For Hazardous Locations
3428 83 - Fixtures and Fittings - For Hazardous Locations - To US Requirements

PRODUCTS

Ex edm IIC T4; Ex eqd IIC T4; Ex eqm II T4; Ex eqdm IIC T4; Tamb -20°C to +55°C; CSA Enclosure Type 4: Class I, Zone 1, AEx edm IIC T4; AEx eqd IIC T4; AEx eqm II T4; AEx eqdm IIC T4; Tamb -20°C to +55°C; NEMA 4:

"PROTECTA" Series Luminaires, Model Number's 50abcd-efghij, for mono-pin and bi-pin tubular fluorescent lamps, with and without emergency lighting, Max rated 277Vac/306Vdc, 47 - 63 Hz, 40W. Specific methods of protection and electrical ratings are listed below.

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognised to perform certification to U.S. Standards.

DQD 507WD 2001/07/20

CSA INTERNATIONAL

Certificate: 1280724
Project: 1280724

Master Contract: 201067
Date: September 3rd, 2002

Ex edm IIC T4 or Ex eqd IIC T4		
Luminaire Type	**Power**	**Electrical Ratings**
500239.A***	2x18/20W	220 - 277 Vac, 47 - 63 Hz or 150 - 300 Vdc
500439.A***	2x36/40W	
502239.A***	2x18/20W	
502439.A***	2x36/40W	
500639.A***	2x18/20W	
500239.G***	2x18/20W	220 - 254 Vac, 47 - 63 Hz or 264 - 306 Vdc
500339.G***	1x36/40W	
500439.G***	2x36/40W	
500639.G***	2x18/20W	
500239.G**1	2x18/20W	110 - 120 Vac, 47 - 63 Hz or 134 - 153 Vdc
500339.G**1	1x36/40W	
500439.G**1	2x36/40W	
500639.G**1	2x18/20W	
500231.A***	2x18/20W	220 - 277 Vac, 47 - 63 Hz or 150 - 300 Vdc
500431.A***	2x36/40W	
502231.A***	2x18/20W	
502431.A***	2x36/40W	
500631.A***	2x18/20W	
500231.G***	2x18/20W	220 - 254 Vac, 47 - 63 Hz or 264 - 306 Vdc
500331.G***	1x36/40W	
500431.G***	2x36/40W	
500631.G***	2x18/20W	
500231.G**1	2x18/20W	110 - 120 Vac, 47 - 63 Hz or 134 - 153 Vdc
500331.G**1	1x36/40W	
500431.G**1	2x36/40W	
500631.G**1	2x18/20W	

CSA INTERNATIONAL

Certificate: 1280724
Project: 1280724

Master Contract: 201067
Date: September 3rd, 2002

Method of Protection	Luminaire Type	Power	Electrical Ratings
Ex eqd IIC T4 or Ex eqm IIC T4	500239.H***	2x18W	220 - 254 Vac, 47 - 63 Hz or 220 - 300 Vdc
	500339.H***	1x36W	
	500439.H***	2x36W	
	500639.H***	2x18W	
	500239.H**1	2x18W	110 - 120 Vac, 47 - 63 Hz or 110 - 150 Vdc
	500339.H**1	1x36W	
	500439.H**1	2x36W	
	500639.H**1	2x18W	
Ex eqm IIC T4	502231.J***	2x18W	220 - 254 Vac, 50 - 60 Hz
	502431.J***	2x36W	
	502631.J***	2x18W	
	502231.J**1	2x18W	110 - 120 Vac, 50 - 60 Hz
	502431.J**1	2x36W	
	502631.J**1	2x18W	
Ex eqm IIC T4	500231.H***	2x18W	220 - 254 Vac, 47 - 63 Hz or 220 - 300 Vdc
	500331.H***	1x36W	
	500431.H***	2x36W	
	500631.H***	2x18W	
	500231.H**1	2x18W	110 - 120 Vac, 47 - 63 Hz or 110 - 150 Vdc
	500331.H**1	1x36W	
	500431.H**1	2x36W	
	500631.H**1	2x18W	
Ex eqdm IIC T4	502239.J***	2x18W	220 - 254 Vac, 50 - 60 Hz
	502439.J***	2x36W	
	502639.J***	2x18W	
	502239.J**1	2x18W	110 - 120 Vac, 50 - 60 Hz
	502439.J**1	2x36W	
	502639.J**1	2x18W	

DQD 507WD 2001/07/20

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

CSA INTERNATIONAL

Certificate: 1280724 **Master Contract:** 201067

Project: 1280724 **Date:** September 3rd, 2002

APPLICABLE REQUIREMENTS

CSA Standard C22.2 No 0-M1991 - General Requirements - Canadian Electrical Code Part II.
CSA Standard C22.2 No 137-M1981 - Electric Luminaires for Use in Hazardous Locations.
CAN/CSA E79-0-95 - Electrical apparatus for explosive gas atmospheres. PART 0: General requirements.
E79-1-95 - Electrical apparatus for explosive gas atmospheres. PART 1: Construction and verification test of flameproof enclosures of electrical apparatus.
E79-5-95 - Electrical apparatus for explosive gas atmospheres. Part 5: Sand-filled apparatus.
E79-7-95 - Electrical apparatus for explosive gas atmospheres. Part 7: Increased Safety 'e'.
E79-18-95 - Electrical apparatus for explosive gas atmospheres. Part 18: Encapsulation "m".

UL 2279 - UL Standard for Safety for Electrical Equipment for Use in Class I, Zone 0,1,2 Hazardous Locations.
ANSI/UL 844 - Standard for Electric Lighting Fixtures for Use in Hazardous (Classified) Locations.

CSA INTERNATIONAL

Supplement to Certificate of Compliance

Certificate: 1280724 **Master Contract:** 201067

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1280724	September 3, 2002	Original Certification of "PROTECTA" Series Luminaires, Model Number's 50abcd-efghij, for mono-pin and bi-pin tubular fluorescent lamps, with and without emergency lighting.

DQD 507WD 2001/07/20

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-6649
This Certificate consists of 3 pages

This is to certify that the
Light Fitting
with type designation(s)
PROTECTA III and III E

Manufactured by
Chalmit Lighting
Glasgow G52 4BL, United Kingdom

is found to comply with
Det Norske Veritas' Rules for Classification of Ships and Mobile Offshore Units

Application
Applications where Ex Certified equipment is required will in general be subject to approval case by case based on documentation as required in the DNV Rules.

Vibration class	A
Enclosure class	IP 66/67
Class	I
Temp. class	T4
Voltage class	110 or 230 V, 50 or 60 Hz
Ex class	EEx eqdm IIC T4

Place and date
Høvik, 2003-05-05
for DET NORSKE VERITAS AS

Gro Elisabeth Paulsrud
Head of Section

Local Office
DNV Glasgow

This Certificate is valid until
2007-06-30

Nicolay Horn
Surveyor

Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Type:	PROTECTA III and III E
Voltage:	220 V-254 V or 110-120 V, 50 or 60 Hz
Power:	2 x 18 W, 1 x 36 W and 2 x 36 W
Enclosure type:	IP 66/67
Certified safe-type:	EEx eqm II C T4 / EEx eqd II C T4 / EEx eqmd II C T4
Body material:	GRP with polycarbonate cover and brass suspension points

Type designation	Power & Type Description
PRGE/218/BI/EM	2 x 18W ex eqm, emergency w/ battery back up
PRGE/236/BI/EM	2 x 36W ex eqm, emergency w/ battery back up
PRGE/218/MO/EM	2 x 18W ex eqdm, emergency w/ battery back up
PRGE/236/MO/EM	2 x 36W ex eqdm, emergency w/ battery back up
PRGE/218/BI	2 x 18W ex eqm
PRGE/136/BI	1 x 36W ex eqm
PRGE/236/BI	2 x 36W ex eqm
PRGE/218/MO	2 x 18W ex eqd
PRGE/136/MO	1 x 36W ex eqd
PRGE/236/MO	2 x 36W ex eqd

Application/Limitation

The information related to Ex certification fram recognised test institution is given as information only.

Applications where Ex Certified equipment is required will in general be subject to approval case by case based on documentation as required in the DNV Rules.

Type Approval documentation

Datasheet for PROTECTA III and III E.

Arrangements drawings, drawing number D1955 (3 sheets)and D1956 (3 sheets), issued 2000-04-11.

KEMA EC Type Examination Certificate no. 98 ATEX 3045, issued 2000-02-24.
KEMA test report no. 98.3045.50 (lamp holder), issued 1999-12-23.
University of Strathclyde Test certificate issued 2001-05-18.
Thermal test reports (Chalmit) nos. 96/09/2.
ITS test reports nos. 01006063 and 01405B dated Jan. 02 and Aug. 00.

Cert. No.: E-6649
File No.: 826.10

Tests carried out

Type tests in according to IEC 60598-1 (partly), IEC 60598-2-22 (partly), EN 50017 and EN 50019, EN 60400 (lamp holder), Vibration test.

Marking of product

Chalmit Protecta III – Type designation – Ex class.

Certificate retention survey

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at renewal only.

END OF CERTIFICATE

UNIVERSITY OF STRATHCLYDE

TEST CERTIFICATE

TEST OBJECT: A Chalmit Protecta III 2 x 36 watt Emergency Luminaire Unit serial number: W0050997.

THE SUPPLIER: Chalmit Lighting, 388 Hillington Road, GLASGOW, G52 4BL, Scotland, UK.

THE TESTS: Det Norske Veritas Classification AS. Environmental and test specification for instrumentation and automation equipment, May 1995 (pages 8 and 9). Frequency minimum 5Hz.

DATE OF TESTS: March 2001.

RESULTS OF TESTS: Performance satisfactory.

The vibration amplification factors were as follows:

*Axis	Resonant Frequency (Hz)	Amplification Factor (ratio)
X	29	4.7
Y	91	4.3
Z	none	--------

TEST SUPERVISOR: John S. Fleming BSc PhD CEng FIMechE MInstR Member ASHRAE
Reader in the Department of Mechanical Engineering
University of Strathclyde
GLASGOW
G1 1XJ
Tel: 0141 548 2691
Fax: 0141 552 5105
Email: jfleming@mecheng.strath.ac.uk

18th May 2001.

Test details and equipment etc given in the report on the vibration tests.

DEPARTMENT OF MECHANICAL ENGINEERING
James Weir Building
75 Montrose Street
Glasgow G1 1XJ
Scotland
Tel: 0141-548 2311
Fax: 0141-552 5105

Professor J T Boyle
BSc PhD DSc Cmath MIMA
Head of Department

UNIVERSITY OF STRATHCLYDE

TEST CERTIFICATE

TEST OBJECT: A Chalmit Protecta III 2 x 36 watt Emergency Luminaire Unit serial number: W0050997.

THE SUPPLIER: Chalmit Lighting, 388 Hillington Road, GLASGOW, G52 4BL, Scotland, UK.

THE TESTS: Lloyds Register Type Approval System, Test Specification Number 1, 1996.

DATE OF TESTS: March 2001.

RESULTS OF TESTS: Performance satisfactory.

The vibration amplification factors were as follows:

*Axis	Resonant Frequency (Hz)	Amplification Factor (ratio)
X	29	4.7
Y	91	4.3
Z	none	--------

TEST SUPERVISOR: John S. Fleming BSc PhD CEng FIMechE MInstR Member ASHRAE
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18th May 2001.

Test details and equipment etc given in the report on the vibration tests.

PROTECTA III E

Ex e EMERGENCY FLUORESCENT

ATEX CATEGORY 2 ZONE 1 APPLICATIONS

The Protecta III emergency luminaire for tubular fluorescent lamps is rugged, technically advanced and high quality. It incorporates comprehensive self testing and an internal battery with the control gear mounted on a gear tray. The emergency light output and duration is outstanding. Protecta is constructed using a glass reinforced polyester (GRP) body and polycarbonate diffuser which resist saline and other corrosive environments. Major features of the luminaire are the strength of the enclosure and mounting points together wih the very high degree of ingress protection afforded by the simple reliable construction.
The ease of access to lamps and control gear means that installation and maintenance will be completed quickly and efficiently.

Standard Specification

Type of Protection:	**Ex eqm (Increased safety Powder filling Encapsulation)**
ATEX Classification:	**Group II Category 2 G**
Area Classification:	**Zone 1 and 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50014 EN 50017 EN 50019 EN 50028**
Certificate:	**EC Type Examination Certificate KEMA98ATEX3045**
Coding:	**Ⓔx II 2 G Ex eqm II T4 Tamb 55ºC**
Enclosure:	**GRP body with polycarbonate cover and brass suspension points**
Reflector/Geartray:	**White polyester painted zinc coated steel**
Entry:	**4 x M20 cable entries, 2 at each end**
Termination:	**4 core 6mm² max. conductor with looping and 16A rating through wiring**
Installation:	**Two M8 tapped brass inserts located on rear of body**
Control Gear:	**High Frequency**
Relamping:	**Quick release diffuser clamp and hinged cover**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**T8 tubular fluorescent**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220V - 254V 50/60Hz**
Battery:	**Internal Ni-Cd Battery (6V 4 Ah - 18W, 6V 7Ah - 36W)**
Duration:	**90 minutes to EN60598-2-22**
Emergency Output:	**30% of one lamp (18W), 25% of one lamp (36W)**

Features

- **Battery management, monitoring and automatic self test**
- **Simple rugged construction**
- **Full length easy access diffuser clamp**
- **Standard fixing centres**
- **High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output**
- **Automatic lamp de-energisation on opening**
- **Screwless mains terminals**
- **Shell/ERA deluge tested**
- **Vibration tested to comply with Lloyds/DNV**
- **Resistant to voltage fluctuations**
- **Emergency inhibition and mains power off re-start**
- **Ability to detect and indicate impending end of emergency lamp life before actual failure**
- **Gost Approved**
- **Cepel Approved**

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Std. Cat No.	Part No.	Wattage	Weight
PRGE/218/BI/EM	502231	2x18W	8.3kg
PRGE/236/BI/EM	502431	2x36W	12.4kg
PRGE/218/MO/EM	502239	2x18W	8.3kg
PRGE/236/MO/EM	502439	2x36W	12.4kg

MO - Mono-pin lamps

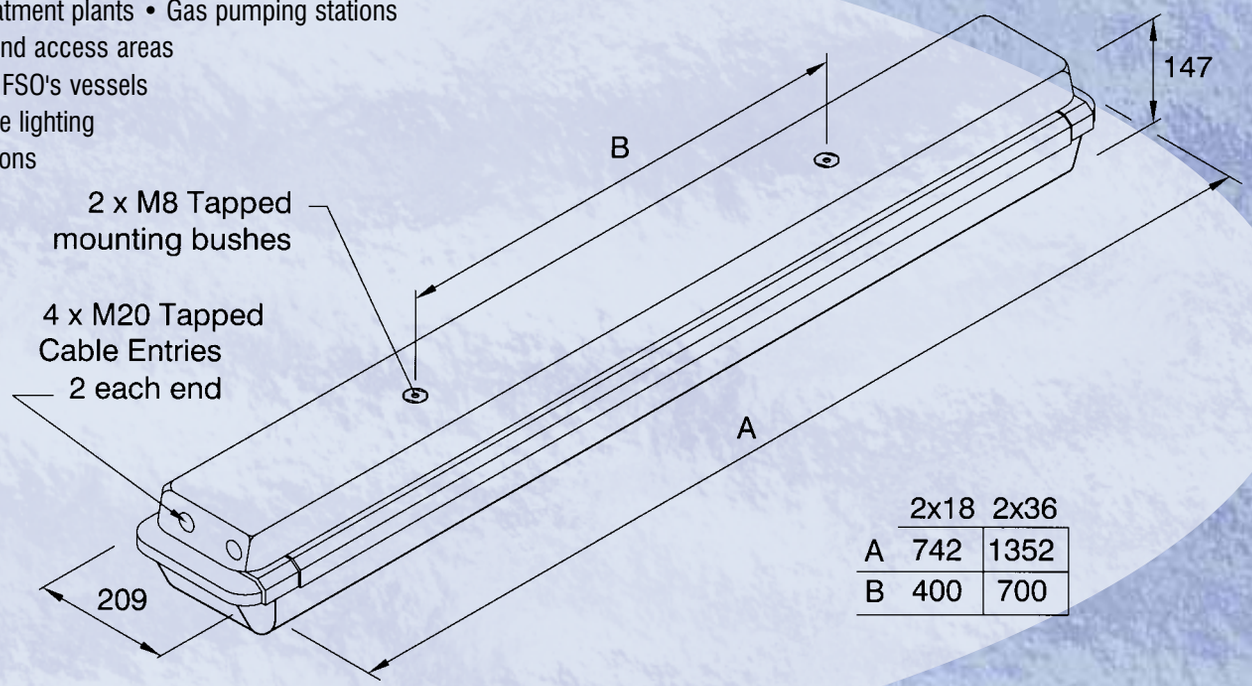
Mono-pin coding: Ex eqdm II

Dust only version (PRGD/___) available.
Contact sales for information.

Options - Suffix to Catalogue No.	
/120	Specific voltage (110/120)
/M25	M25 Entries
/RI	Remote emergency inhibition facility (External switch ordered separately)
/3P	3 phase termination facility (Not available if looping required)
/SB	Stainless steel mounting bush
/D	Dust Protected Zone 21 (In combination with Zone 1 gas version)
/3H	3 hour battery

Applications

- Zone 1 and 2 hazardous areas • Offshore oil and gas platforms
- Pharmaceutical industry • Petrochemical industry
- Sewage treatment plants • Gas pumping stations
- Walkways and access areas
- FPSO's and FSO's vessels
- Escape route lighting
- Muster stations
- Distilleries



	2x18	2x36
A	742	1352
B	400	700

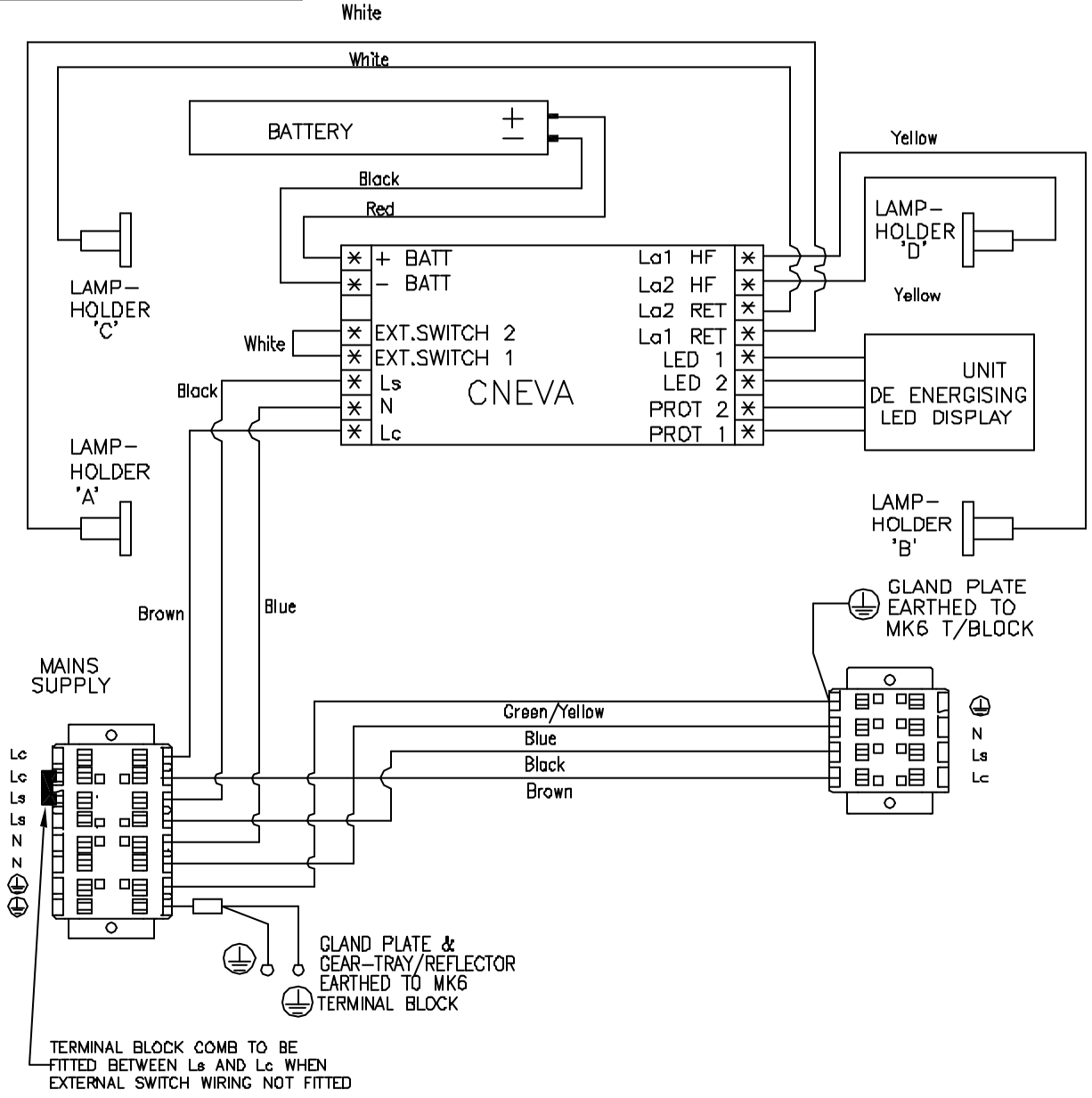
Accessories (Should be ordered separately)	**Catalogue Order Code**
Offset ceiling bracket assembly kit	**SPRO4-0002**
Pole mounting bracket assembly (38/50mm diameter poles)	**SPRO4-0003**
C' form hook type ceiling bracket assembly kit	**SPRO4-0005**
Flush mounted wall bracket assembly kit	**SPRO4-0006**
18W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0008**
36W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0012**
Eyebolt set	**SPRO5-0005**
Looping Kit (Allows looping from both ends of luminaire)	**SPROT-0021**
Remote Ex switch for emergency inhibition (1 switch controls up to 10 luminaires)	**SPROT-0033**

DRAWING NUMBER/SHEET NUMBER
F1050

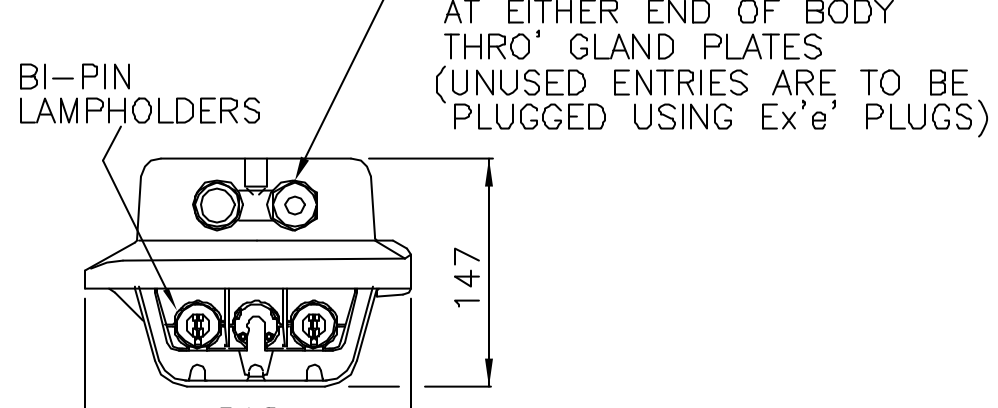
REMOVE ALL BURRS & SHARP EDGES

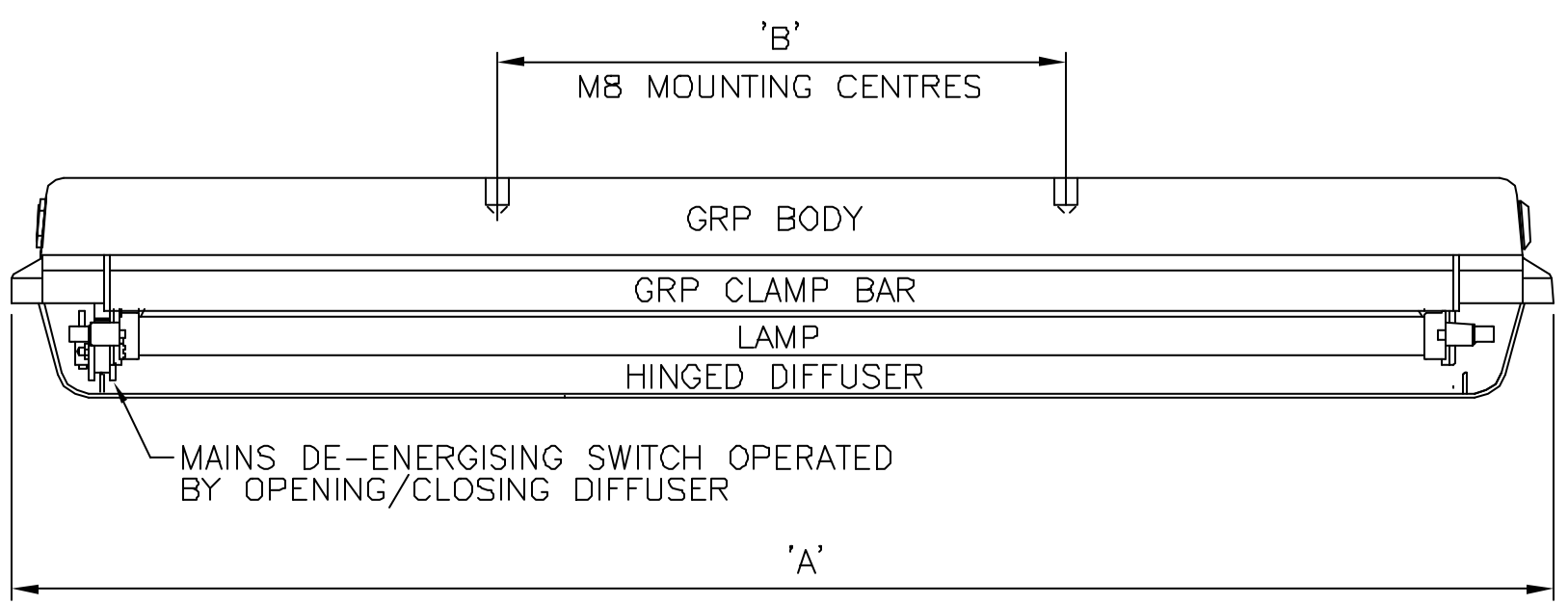
IF IN DOUBT ASK!

3RD ANGLE PROJECTION



MODEL	'A'	'B'	CODING
2x18/20W (EMERGENCY)	742	400	II 2 G Ex eqm II T4 AMB. −20°C to 55°C
2x36/40W (EMERGENCY)	1352	700	II 2 G Ex eqm II T4 AMB. −20°C to 55°C





NOTES

1) THE TERMINAL BLOCKS SHOWN ON THE WIRING DIAGRAM ALLOW FOR SINGLE ENTRY,LOOPING & THRO' WIRING FOR MAINS SUPPLY. THE REMOTE INHIBITING FACILITY CAN BE LOOPED IF REQUIRED.
2) THE VOLTAGE SUPPLY IS 220–254V (−10%/+10%) 50/60Hz
3) IP 66/67 RATING
4) SUITABLE FOR 4 CORE 6mm SQ. INCOMING CABLE AS STANDARD.
5) THRO' WIRING IS STANDARD ON ALL MODELS.
6) BATTERY IS CONTAINED INSIDE THE BODY.
7) THERE ARE TWO M8 THREADED BRASS BUSHES INSERTED INTO GRP BODY FOR MOUNTING TO CEILING.(SEE DIMENSION 'B')
8) BI–PIN LAMPHOLDERS ARE STANDARD.
9) EC Type Examination Certificate KEMA98ATEX3045

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	J.T.C.
CHECKED	J.T.C.
APPROVED	J.T.C.
DATE	10/06/2002

REF. DRGS.–

MATERIAL: GRP & POLYCARBONATE
TOLERANCE:
FINISH: SELF
SURFACE ROUGHNESS:
DIMS. IN: MM
SCALE: –

Chalmit Lighting
Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
PROTECTA 2x18/36W CNEVA
C/W WIRING DIAGRAM
NO INHIBITION

DRAWING NUMBER/SHEET NUMBER
F1050 1 OF 1

1	2	3	4	5	6	7	8

DRAWING NUMBER/SHEET NUMBER
F922

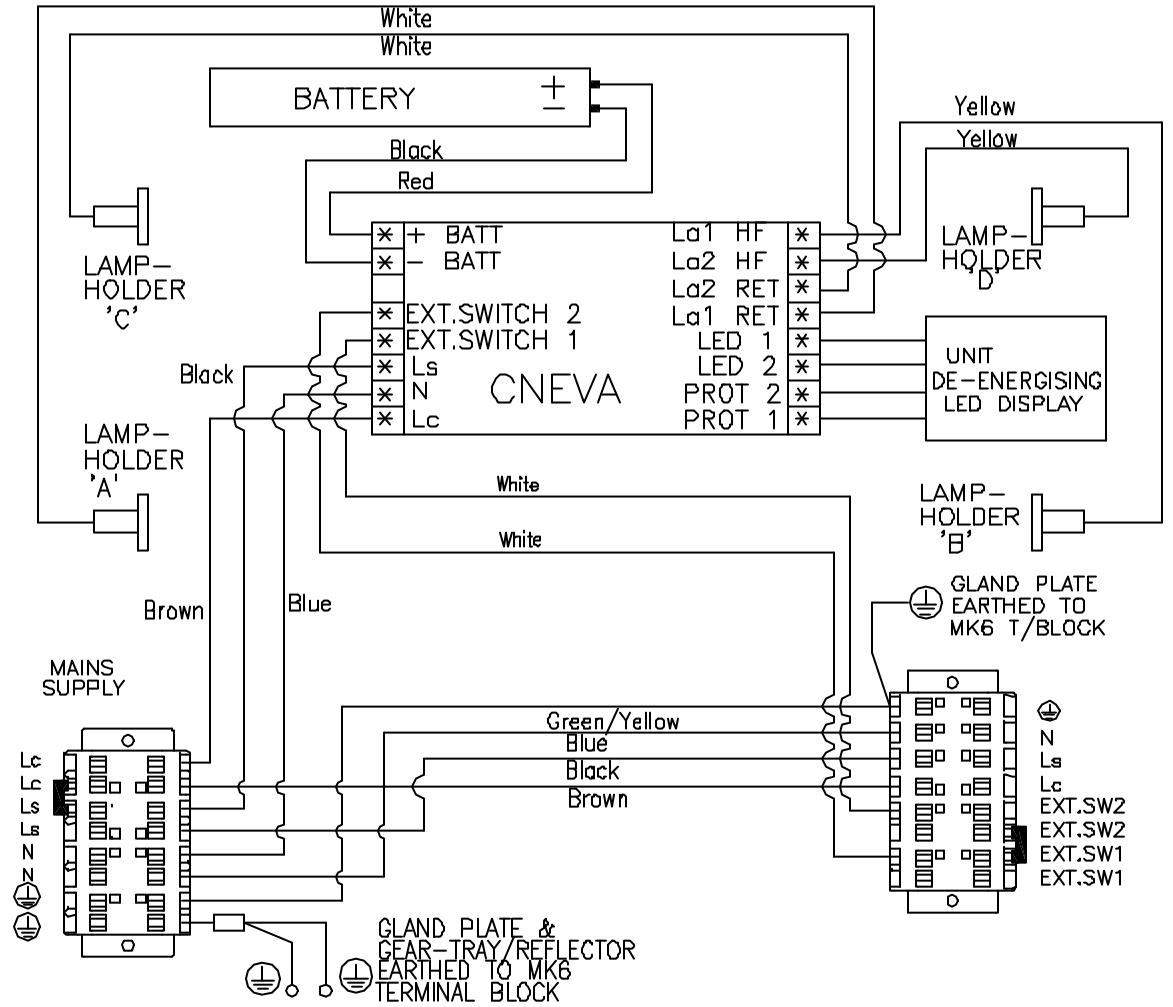
REMOVE ALL BURRS & SHARP EDGES

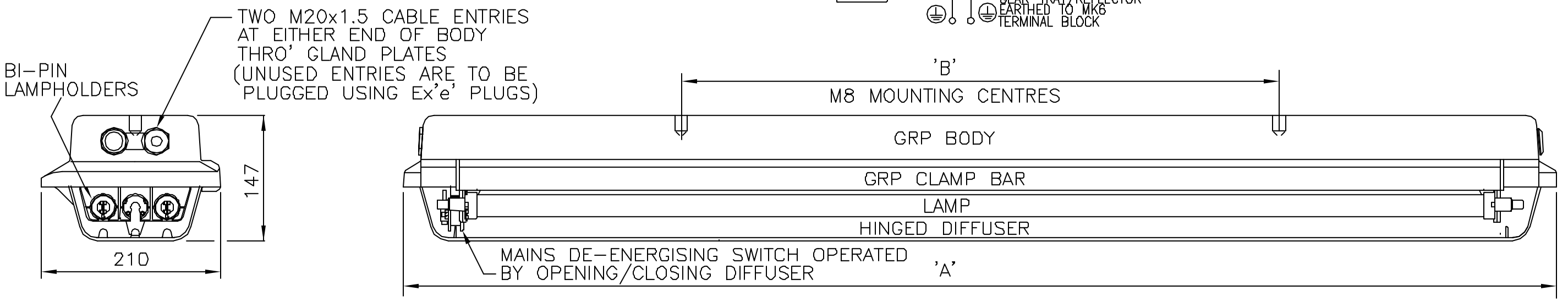
IF IN DOUBT ASK!

3RD ANGLE PROJECTION

NOTES

1) THE TERMINAL BLOCKS SHOWN ON THE WIRING DIAGRAM ALLOW FOR SINGLE ENTRY,LOOPING & THRO' WIRING FOR MAINS SUPPLY. THE REMOTE INHIBITING FACILITY CAN BE LOOPED IF REQUIRED.
2) THE VOLTAGE SUPPLY IS 220–254V (–10%/+10%) 50/60Hz
3) IP 66/67 RATING
4) SUITABLE FOR 4 CORE 6mm SQ. INCOMING CABLE AS STANDARD.
5) THRO' WIRING IS STANDARD ON ALL MODELS.
6) BATTERY IS CONTAINED INSIDE THE BODY.
7) THERE ARE TWO M8 THREADED BRASS BUSHES INSERTED INTO GRP BODY FOR MOUNTING TO CEILING.(SEE DIMENSION 'B')
8) BI–PIN LAMPHOLDERS ARE STANDARD.
9) EC Type Examination Certificate KEMA98ATEX3045





MODEL	'A'	'B'	CODING
2x18/20W (EMERGENCY)	742	400	II 2 G Ex eqm II T4 AMB. –20°C to 55°C
2x36/40W (EMERGENCY)	1352	700	II 2 G Ex eqm II T4 AMB. –20°C to 55°C

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	M.E.
CHECKED	Michael Easton
APPROVED	Michael Easton
DATE	08/11/2001
REF. DRGS.–	

MATERIAL	GRP & POLYCARBONATE
FINISH	SELF
DIMS. IN	MM
TOLERANCE	
SURFACE ROUGHNESS	
SCALE	–

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
PRO 2x18/36W CNEVA C/W WIRING DIAGRAM WAGO TERMINAL BLOCKS

DRAWING NUMBER/SHEET NUMBER
F922 1 OF 1

PROTECTA III STAINLESS

Ex e FLUORESCENT

ATEX CATEGORY 2 ZONE 1 APPLICATIONS

The Protecta III luminaire for tubular fluorescent lamps is also made with a stainless steel body. This version shares the technical features of the GRP bodied range being rugged and technically advanced. The emergency version has comprehensive self testing and an internal battery with all the control gear mounted together on a gear tray.

Protecta Stainless has excellent durability as it is constructed using 316S31 stainless steel and a polycarbonate diffuser. The product is intended for applications where chemical agents which could attack GRP are present.
The strong, simple and reliable enclosure affords a high degree of ingress protection. The ease of access to lamps and control gear ensures that installation and maintenance will be completed quickly and efficiently.

Standard Specification

Type of Protection:	**Ex eqm (Increased safety Powder filling Encapsulation)**
ATEX Classification:	**Group II Category 2 G**
Area Classification:	**Zone 1 and Zone 2 areas to EN60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50014 EN 50017 EN 50019 EN 50028**
Certificate:	**EC Type Examination Certificate KEMA98ATEX3045**
Coding:	**Ⓔx II 2 G Ex eqm II T4 Tamb 55ºC (45ºC for emergency version)**
Enclosure:	**Stainless steel 316S31 body with polycarbonate cover**
Reflector/Geartray:	**White polyester painted zinc coated steel**
Entry:	**4 x M20 cable entries, 2 at each end**
Termination:	**3 core 6mm² max. conductor with looping and 16A rating through wiring (4 core for emergency)**
Installation:	**Two M8 tapped stainless steel inserts located on rear of body**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**T8 tubular fluorescent**
Control Gear:	**High Frequency**
Relamping:	**Quick release diffuser clamps and hinged cover**
Burning Position:	**Universal**
Ingress Protection:	**IP66 to EN 60529**
Electrical Supply:	**220V - 254V 50/60Hz, and 220V - 300V dc non-emergency only**
Battery:	**Internal Ni-Cd Battery (6V 4 Ah - 18W, 6V 7Ah - 36W)**
Duration:	**90 minutes to EN60598-2-22**
Emergency Output:	**30% of one lamp (18W), 25% of one lamp (36W)**

Features

Simple rugged construction

Hinged cover with easily removeable cover clamps

Standard fixing centres

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output

Automatic lamp de-energisation on opening

Screwless mains terminals

Resistance to voltage fluctuations

Battery management, monitoring and automatic self test

dc operation (non-emergency only)

Ability to detect and indicate impending end of emergency lamp life before actual failure

Gost Approved

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Std. Cat No.	Part No.	Wattage	Weight
PRSE/118/BI	510131	1x18W	5.8kg
PRSE/218/BI	510231	2x18W	6.0kg
PRSE/136/BI	510331	1x36W	8.2kg
PRSE/236/BI	510431	2x36W	9.6kg
PRSE/258/BI	510831	2x58W	11.8kg
PRSE/218/BI/EM	512231	2x18W	9.1kg
PRSE/236/BI/EM	512431	2x36W	12.5kg
PRSE/118/MO	510139	1x18W	5.8kg
PRSE/218/MO	510239	2x18W	6.0kg
PRSE/136/MO	510339	1x36W	8.2kg
PRSE/236/MO	510439	2x36W	9.6kg
PRSE/258/MO	510839	2x58W	11.8kg
PRSE/218/MO/EM	512239	2x18W	9.1kg
PRSE/236/MO/EM	512439	2x36W	12.5kg

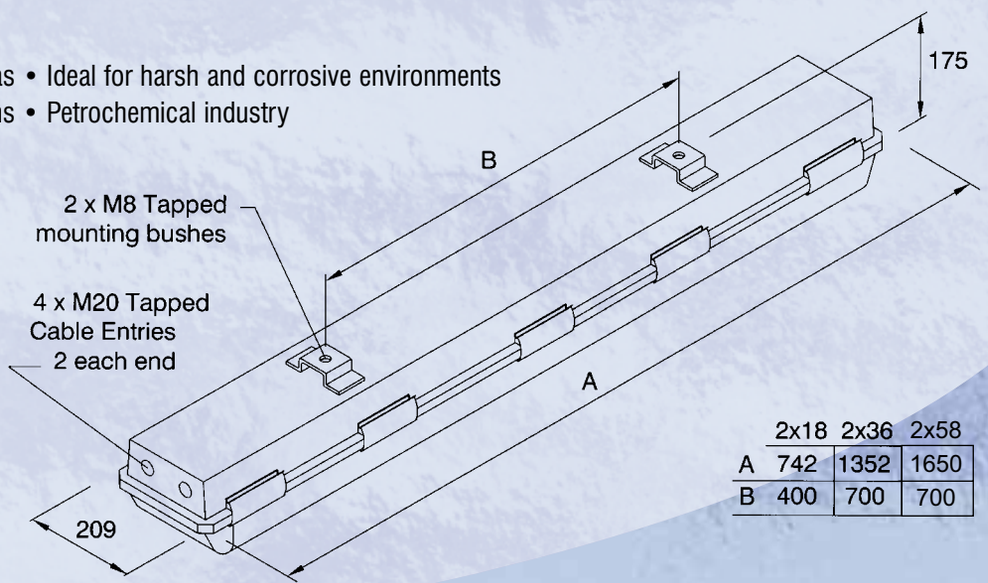
Options - Suffix to Catalogue No.	
/120	120V
/M25	M25 Entries
/3P	3 phase termination facility (Not available if looping required)
/EL	Extra live termination facility (compatible with 4 core switched emergency circuits)
/D	Dust Protected Zone 21 (In combination with Zone 1 gas version)
/3H	3 hour battery duration

MO - Mono-pin lamps
Mono-pin coding: EEx eqd IIC
Mono-pin emergency coding: Ex eqdm IIC

Dust only version (PRSD/___) available.
Contact sales for information.

Applications

- Zone 1 and 2 hazardous areas
- Offshore oil and gas platforms
- Sewage treatment plants
- Walkways and access areas
- FPSO's and FSO's vessels
- Chemical industries
- Distilleries
- Ideal for harsh and corrosive environments
- Petrochemical industry

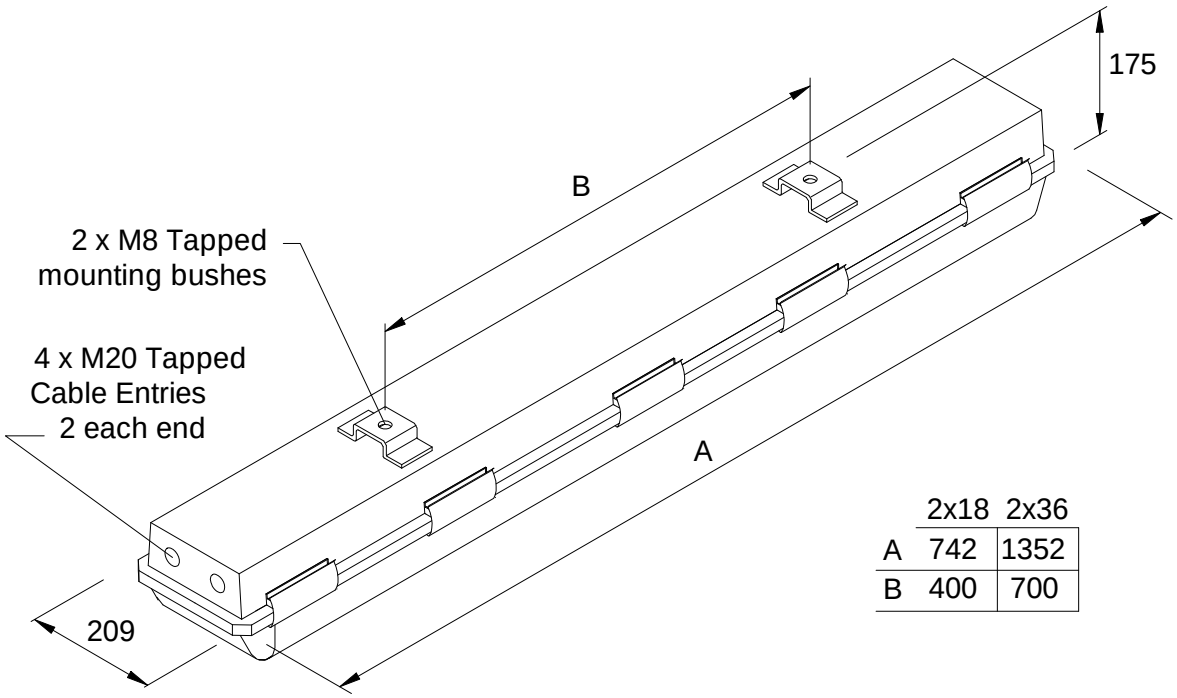


	2x18	2x36	2x58
A	742	1352	1650
B	400	700	700

Accessories (Should be ordered separately)	**Catalogue Order Code**
Offset ceiling bracket assembly kit	**SPRO4-0002**
Pole mounting bracket assembly (38/50mm diameter poles)	**SPRO4-0003**
C' form hook type ceiling bracket assembly kit	**SPRO4-0005**
Flush mounted wall bracket assembly kit	**SPRO4-0006**
18W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0008**
36W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0012**
Eyebolt kit	**SPRO5-0005**
Looping kit (allows looping from both ends of luminaire)	**SPROT-0021**
Remote Ex switch for emergency inhibition (1 switch controls up to 10 luminaires)	**SPROT-0033**

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS
Protecta III STAINLESS ATEX

Important : **The emergency luminaire has automatic test functions and the emergency lamp will operate on mains after delays up to one minute.**
Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



	2x18	2x36
A	742	1352
B	400	700

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0.0 Specification and ATEX Declaration

Type(s) of protection	Ex e Increased safety, Ex q Powder filling, Ex d Flameproof, Ex m Encapsulation
Protection standards	EN 50014, EN 50017, EN 50018, EN 50019, EN 50028
Area of application	Zone 1 and Zone 2 areas to EN 60079-10 and installation to EN 60079-14
ATEX equipment Classification	Group II Category 2 G
Equipment coding	Ⓔx II 2 G Ex eqm II T4 bi-pin lamps or EEx eqd and Ex eqmd IIC T4 mono-pin lamps Tamb -20/+55°C non-emergency units, Tamb -20/+45° emergency units.
Certificate	EC Type Examination Certificate KEMA98ATEX3045
CE Marking CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the EC Type Examination based on the harmonised standards listed above.
Ingress Protection	IP66/67 to EN 60529

1.0 Introduction – Protecta Stainless Steel ATEX Model

This installation leaflet covers the range of ATEX Protecta ST.ST. luminaire models with the Ex q control gear, electronic safety sensor and micro-processor controlled emergency functions. These luminaires are mainly used in harsh environments and are constructed using a stainless steel body and polycarbonate diffuser. Refer to the current catalogue for information on product references. The range is available for use with both T8 bi-pin lamps to IEC81 and T8 mono-pin lamps with Fa6 caps to EN 60061-1. The appropriate lamp cap should be specified when ordering. The luminaires are available in 1 x 18W, 2 x 18W, 1 x 36W and 2 x 36W sizes, and also in 2 x 18W and 2 x 36W sizes for emergency use.

Note: *The ATEX EC Type Examination does not cover suitability for dust applications. The equipment will meet the requirements of IEC 61241-1-1.1999. For details refer to the technical department.*

2.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

These instructions should be read fully and carefully before attempting to install the luminaire. For details of servicing operations, opening etc. see section 6.0.

Copies of these instructions should be held in a safe place for future reference. It is the responsibility of the installer to ensure that the apparatus selected is fit for its intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice.
There are no health hazards associated with this product whilst in normal use, however, care should be exercised during the following operations.
Installation should be carried out in accordance with *EN 60079-14* or with a local hazardous area code of practice, whichever is appropriate. Any specific installation instructions must be referred to. In the UK the requirements of the *Health and Safety at Work Act* must be met and electrical work associated with this product must be in accordance with the *"Manual Handling Operations Regulations"* and "*Electricity at Works Regulations 1989".* Disposal instructions should be complied with.
The luminaires should be considered Class 1 to EN 60598 and effectively earthed.
The polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required without notice.

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3.2 Tools

3mm and 4mm flat blade screwdriver and large cross-head screwdriver. Suitable spanners for installing cable glands. Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

Luminaires are supplied with control gear suitable for the following rated supplies:

Emergency 110-120V or 220-254V ac +/-10% 50/60Hz +/- 5%
Non-emergency 220-254V ac +/-10% 50/60Hz +/- 5% and 220-300V dc +/-10%
Non-emergency 110-120V ac +/-10% 50/60Hz +/- 5% and 110-150V dc

The safety limit for surface temperature (T rating) is +/-10% on the rated voltage. Equipment should not be operated continuously at more than +10/-10% of the rated voltage of the control gear. The power factor correction gives a minimum of 0.95 lagging. The lamp supply is regulated therefore the change in light output over the supply range is substantially unchanged.

3.4 Lamps

The lamps used in the range can be T8 bi-pin fluorescent with G13 cap or T8 mono-pin fluorescent with Fa6 caps.

Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with lighting design information. Refer to the note in 3.1 concerning electrostatic charge.

The standard suspension is via two M8 tapped holes in brackets on the top of the body. (At 400mm centres for 18/20W and 700mm centres for the 36/40W model). Various adapters and suspension brackets are available to order.

3.6 Cabling and Cable Glands

The temperature conditions at the supply cable entry point are such that 70°C (ordinary PVC) cable can be used. Cable glands and sealing plugs must be “E generation” certified or have ATEX component approval. The cable and gland assembly when installed must maintain a minimum IP54 rating.

Where the cable ***is not reliably clamped*** externally to the apparatus the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm.

Four entries are provided. Three entries are fitted with suitably approved blanking plugs, the fourth entry with a transit plug. M20 x 1.5 entries are standard, other sizes are available on request. The standard entry configuration is with an earthed metal plate with tapped holes mounted in the body.

3.7 Electrical Connections and Testing

If work other than re-lamping is to be done on any luminaire already connected to the electrical system, the luminaire must be isolated from the system.

The diffuser cover is swung down and removed, if necessary, by swivelling back as far as possible then lifting off. The reflector/gear tray is swung down by loosening the four fixing screws and sliding over the keyhole slots. This gives access to the mains terminals.

Luminaires are supplied suitable for looping and through wiring. The terminals for looping are at the left hand end looking on the clamps and those for through wiring terminal at the right hand end.

The through current rating is 16A. 4mm² terminals are standard (6mm² wiring can be used in the terminals in accordance with the luminaire certificate).

Screw type or screw-less “cage clamp” terminals are fitted in the range of luminaires. Mains terminal blocks are marked L N Earth.

Mains terminal blocks on the emergency luminaires are marked Lc Ls N Earth.

Luminaires can also be supplied with three phase wiring to special order. The marking is L1 L2 L3 (L s) N Earth

The emergency units can be connected as switched, un-switched or non-maintained units. The switching facility is to allow the luminaire to be switched off whilst still charging the battery. Where switching is required, the un-switched line (Lc) is connected to the continuous mains supply. A link is fitted during assembly between Lc and switched line (Ls); this is removed for the switch-able mode. If the link is removed and Ls not supplied, the unit will only operate on emergency.

If the emergency luminaire is on a three phase system the switched line can be on any phase, it does not need to be on the phase connected to the un-switched line.

If local emergency inhibition (see 4.3) is required the luminaire should be ordered with the connections for this feature built in. The emergency inhibition function is connected via terminals, which must be specified to be included when ordering. The inhibition terminals are marked Ext Sw 1 and 2, see wiring diagram.

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The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. The switch should be of 5 VA rating and, if in the hazardous area, Ex protected.
The switch must have contacts which will reliably conduct small currents (10 mA levels) at low (6V) voltage. For information on suitable surface mount switches refer to Chalmit sales department. Closed circuit is normal, off inhibits the emergency function. Up to ten luminaires and 500m of cable can be connected in parallel to one switch. *If the polarity is crossed the emergency function will work but can not be inhibited*.
If the inhibition is connected into a circuit with CEAG emergency luminaires having an inhibition connection the Protecta must be connected as follows EXTSW1 should be connected to CEAG "2" EXTSW2 should be connected to CEAG "3".
The looping terminals for this function are at the right hand end. As there are four entries, four core cable must be used for looping the inhibition terminals if the mains through wire connection is to also be used. If any other configuration is needed it must be specially ordered or the internal wiring pack changed on site.
The cabling is made off to the correct length in the normal manner. Care should be taken not to cut the insulation back too far. The maximum amount of insulation allowed beyond the throat of the terminal is 1mm. Luminaires can be tested with a high impedance 500V dc insulation tester to IEC 364 or BS 7671 ***provided all line and neutral connections are solidly connected together*** for the test. The inhibition circuit can be tested at 500V dc whilst connected to the luminaire terminals. (Units damaged by incorrect insulation testing can be detected).
Before completing the wiring, ensure that all the connections are correctly introduced into place before reassembling the luminaire. Following cabling, lamps can be fitted. New lamps should be used.

4.0 Emergency Operation

4.1 General description of emergency unit and operation

The integrated unit consists of a mains supplied ballast for feeding the fluorescent lamps in normal situations, a battery pack, an emergency circuit that charges the battery and powers the lamp in an emergency situation, and a micro-controller based supervisory circuit that controls the charging, monitors the emergency functions and displays the results of self test and emergency unit status by means of a red and green LED.
The unit can be connected to an external switch that can inhibit the emergency functions when the mains power is on or off and restart the emergency functions with or without mains power being applied. The terminals for this feature must be specified when ordering. (See 3.7).
By switching the voltage on a connection Ls the lamps can be switched on and off without the emergency function being activated. The Ls connection is insulated from L and has a signal function only drawing a very small current.
The luminaire will go seamlessly into emergency mode at not less than 60% rated supply voltage and will remain in mains mode above 85% of rated supply voltage.
On restoration of the mains supply there will be a **60 sec delay** before the emergency lamp is restored to mains operation. This feature is not common on emergency luminaires and should be noted. The feature is provided to increase reliability when operating in bad supply conditions.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a control gear fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low discharge current mode.

4.2 Automatic Self testing

A manual test of emergency duration can only be made by manually de-energising the luminaire and timing the discharge. The LED must be constant green to show that charging has been completed before commencing this test. The LED indication will show if the emergency battery duration is too low.
The electronic ballast continuously monitors all charging functions.
The unit will carry out a short self test every 13 days. This short self test is to check battery emergency operation. The test will commence at a random point in the 13 day cycle, starting at the first mains energisation after the battery is connected or re-connected. During the 13 day self test the unit will test for function including lamp condition. The test will last 9 minutes with one lamp being energised at emergency level during the test period, the other lamp will remain on. If Ls is off, the short test is delayed until Ls is re-energised.
The unit will perform a complete battery discharge every 102 days and will check for minimum emergency duration as stated above. The start of the first complete battery discharge is at a random point between 0 and 102 days after applying mains voltage. The test will be repeated at fixed 102 day intervals. The unit will also complete a full self test after completing a commissioning cycle to full charge and after battery replacement. The full commissioning cycle takes about 50 hours after which the battery will then be re-charged.
The test will be delayed if the battery is not fully charged or the operating temperature at the time is too high to give a proper result. The test is also carried out after the initial installation and energisation and a full charge cycle completed. During the test one lamp remains energised at normal mains output. The long test will also take place once the charge period is complete after a battery is changed or disconnected then re-connected.

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The emergency lamp condition is monitored during every lamp start. If the lamp ignition is not correct the LED will display repeated red flashes. This will happen even if the lamp does ignite and run at the normal light level as the system predicts imminent failure before it occurs.
If the self-test detects a failure it is indicated as per the table below by the LED. At the start of the automatic long test the emergency lamp will switch off for 9 mins so that it can cool down and make the starting test valid.
Refer to the Table 1 below.
Emergency lamp defective: continuous red flashing.
Battery defective or low capacity: two red flashes, followed by a pause.
Emergency unit defective: three red flashes followed by a pause.
If the charge condition is known, the unit will re-charge from empty to approximately 80% charge in 14 hours. Afterwards a reduced current post charge will be applied to complete the charge. If the battery charge condition in unknown (e.g. first connection) a reduced charge is applied for 44 hours.
For battery temperatures below 10°C charge current is reduced and charge time increased.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low battery discharge mode which maintains the memory and monitoring function. The control contains dedicated features which prevent any unsafe condition arising if the micro-processor were to malfunction.

LED display
The status is displayed by means of red and green LED signals.
The green LED will flash slowly, if the batteries are being charged, and all emergency functions were found to be OK during the last self-test.
The green will be steady at full charge.
The red will flash if there is a fault or a warning.

Table 1 Monitoring function indication

GREEN	RED	MODE	REMARKS
Fast flash ½ sec on, sec off		Charge C/10	
Slow flash 1 sec on, 1 sec off		Charge C/20	Charging currents at low temperatures reduced
Steady		Fully charged	
Fast Flashing alternate Red-Green	Fast flashing alternate Red-Green	Less than one ½ hour duration left during emergency operation. Also see 5.2.2	one lamp at emergency light level
	fast flashing	Emergency lamp near end of life	Both lamps on or off
	2 red flashes repeating	Battery faulty or battery not connected or low duration after long test	Minimum duration limit during long test not met,
	3 red flashes repeating	fault in electronics of power supply	
Slow flash or steady	Periodic short flash once per 4 secs	Mains on emergency inhibited	
None	None	Defective display	Lamps on
None	None	mains off, battery discharged, or mains off inhibited or total unit defective	Lamps off
None or steady	None	Emergency control faulty	Mains lamp on

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4.3 Inhibition (also see 3.7)
If local emergency inhibition is required the luminaire should be ordered with the connections for this feature built in. The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. Closed circuit is normal, open inhibits the emergency function. Up to ten luminaires can be connected in parallel to one switch and using 500m of cable.
The inhibit as well as de-inhibit functions can start with normal mains power present as well as without mains power, the emergency light can be switched on while the whole power system is still dead.
Inhibition is not possible with a completely discharged battery and no mains being present. The emergency function can be inhibited and de-inhibited whilst in emergency operation. Return to emergency operation is instant. The change to lamp off when put into inhibited mode may be delayed for up to 60 secs,

5.0 Commissioning (Refer to section 6.0 for access)
The units will only be fully operational and give completely correct indication after the completion of a full charge, self-test discharge and recharge cycle, approx. 80-100 hours. Once this is complete the unit will have it's full operating parameters installed in the memory. Provided the battery is not disconnected indication will function correctly. Non-emergency luminaires are energised after the lamps are fitted and the luminaire closed if the mains is on. Both lamps should light. Opening the cover will put the lamps out.

5.1 Commissioning Emergency

5.2.1 Commissioning with no mains power available.
After inserting the lamps and closing the cover, the unit will go onto emergency mode until discharged if the initial battery voltage is high enough. (> 5.5V).
If the emergency inhibition switch is in the blocked condition the lamp will go on for 60 seconds unless there is not enough charge in the battery to sustain it for that time.

5.2.2 Commissioning with mains power available.
If a local light switch is connected put it on.
After inserting the lamps and closing the cover the unit will light on battery as above. At power up the mains lamp will light and emergency lamp will light fully after 60 secs. This feature is designed to increase reliability in very frequent mains on and off situations or irregular supply such as may occur during commissioning.
The initial charge will be indicated by a green flashing LED.
If an emergency blocking switch is present a short red flash every 4 sec will be displayed if the switch is in the blocked state.
If the battery charge condition in unknown (e.g. first connection) a reduced current charge is applied for 44 hours. The long self test takes place after the initial installation and energisation has been made and a full charge cycle completed. The test will be delayed if the operating temperature at the time is too high to give a proper result or if Ls is off. One lamp remains energised at normal mains output. **See 4.2**. After the test the unit will fast charge to 80% then post charge to fully charged and the indication will then be steady green.
Until the full charge and test cycle has been completed the unit will indicate low battery on any emergency discharge.

5.2.3 Low Temperature Operation
At battery temperatures below 10°C charge current is reduced and charge time increased. This temperature is equivalent to the luminaire operating at -5°C with the lamps on or at +5°C with the lamps off.
Under operating conditions where the ambient temperature is below 0°C for long periods the luminaire should preferably be used in maintained mode so that the mains supplied lamps warm up the battery to a normal working temperature.

6.0 Servicing and Operation
The bi-pin luminaire incorporates an electronic safety de-energiser for maximum reliability and utility of the emergency monitoring function. The electronic sensor is operated by the actuating plate on the diffuser. This provides for the safe opening and carrying out of re-lamping.
The mono-pin non emergency has a micro-switch which interrupts the mains supply to the control when the cover is opened.
The mono-pin emergency has an electronic de-energiser and a micro-switch.
Safe servicing behind the gear tray requires the mains supply to be isolated, and battery connections must be treated with care, see 6.10.

6.1 Opening and Closing the Cover
The procedure for opening the cover is as follows :
Insert a screwdriver behind the clamps, a wide blade screwdriver is recommended.

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Gently lever the clamps away from the diffuser. The cover will be retained by the hinges.
The procedure for closing and securing the cover is as follows :
Ensure the hinge mechanism is clear of any obstruction and then swing the diffuser into the closed position. Support the diffuser in position whilst pushing the clamps over the edge of the diffuser. To remove and replace the diffuser open the diffuser to 180° and it will lift out. When replacing ensure that all the hinges are into place before attempting to close.

6.2 Fitting lamps and Re-Lamping
IMPORTANT - If the luminaire is maintained with the power on, the lamps will go out when the cover is opened. If this does not happen there is a fault. Do not remove the lamps. The control gear will be damaged if the lamps are removed without being de-energised and there is an ignition risk. This could occur if the sensor arrangement is faulty or has been defeated. The luminaire must be de-energised the control gear checked and electronic sensor assembly must be replaced if faulty, see 6.9.
Lamps which are not operating or appear dim should be replaced as soon as practical. The control gear is designed to withstand end of life conditions of lamps. The emergency unit will indicate in advance that the lamp is approaching end of life. Always replace both lamps.
The bi-pin lamps are fitted in lampholders with a rotating section. The lamp must be pushed firmly down into the lampholder and rotated 90°. The contact is biased to remain in the 90° position. If the lamp does not rotate, check that it is completely positioned into the lampholder. The Fa6 cap lamps are fitted in the spring loaded lamp-holders which are pulled out to allow the introduction of the lamp. Before inserting bi-pin or mono-pin lamps ensure the lamp pins are not damaged or slack in the end cap.

6.3 Releasing the Reflector/Gear Tray
Loosen the four fixing screws retaining the reflector/gear tray far enough for it to slide over keyhole slots. The tray will hang on the retaining cords without stressing the wiring between body and tray. Replace in reverse order.
The lampholder assemblies can be removed from the gear tray, if necessary, by removing the fixing screw and pushing up the click finger at the end of the gear tray and pushing the lampholder assembly forward towards the centre of the tray.
Re-assembly is a reversal of the above, ensure the lampholder assembly fully clicks into place on the gear tray.
Lampholder assemblies have the connecting receptacles and are specific to each model. If they are being replaced the correct spare assembly must be ordered.

6.4 Removal of Reflector/Gear Tray c/w Lampholder Assemblies
Release gear tray from body and hang on retaining cords, as explained above. Disconnect the cables from the gear tray to the mains terminal block, unhook retaining cord from gear tray and lift clear. With disconnection made at the screw-less terminals the luminaire is safe when re-closed without the tray.

6.5 Servicing Behind the Gear Tray
The release of the gear tray exposes live mains terminals. Any work behind the gear tray requires that the supply is isolated to avoid ignition risk and damage to components.

6.6 Replacement of Ballast or Emergency Control
The ballast contains no replaceable parts. Should it be found necessary to replace the ballast, the following procedure should be adopted:
Ensure that the luminaire is isolated from the mains supply.
Remove gear tray from body and swing down as previously explained. Undo the battery plug on emergency luminaires.
Ballasts use 6mm tab connectors which are locked and are released when the black cover sleeve is pulled away axially. When replaced a 'click' will be heard as the lock locates. **On no account should the quick release connectors be replaced with proprietary items.**
Disconnect the leads to the ballast, note the connections. When removing the connections **always disconnect** the sensor and LED connections (LED1 LED2 PRPT1 and PROT2) **last** and reconnect them **first**. Remove the ballast retaining screws and remove ballast from tray.
Replacement of the units is in the reverse order. **The sensor is connected first and the battery last**. Check the connections carefully before re-energising. The lamp leads on the emergency are marked as pairs. Take care to connect correctly. The unit is **not** protected against reverse battery polarity. The yellow leads are the high

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voltage ones. Miss-connection of the units will be very likely to result in damage. **Care and checking during replacement can not be over emphasised.**

6.7 Replacement of Micro Switch if fitted

Before carrying out any work ensure that the unit is isolated from the mains. Identify the four micro switch wires and disconnect from the terminal block. Free the leads from the retaining connections, remove the two screws holding the switch in position. Replace the micro switch and reconnect. Check the connections and terminal polarity against either a circuit diagram or a note made prior to dismantling. A complete new assembly including the connecting receptacles for the model must be used.

6.8 Replacement of sensor with or without LED assembly

It is very unlikely that this assembly will need replacement other than as a result of mechanical damage.
Isolate the mains. Disconnect the battery, disconnect the sensor and note the connections. Undo the two screws and replace the unit using the nuts from the old unit. Reconnect and carefully check the connections before re-energising.

6.9 Replacement of battery

The battery is accessed by releasing the gear tray fixing screws sliding the tray and hinging it down.
The battery is connected to the control using a plug and socket arrangement. The battery load is disconnected by the electronic sensor device. The screws holding the battery pack are loosened and the battery pack slid axially one way then the other in order to release. The battery pack is not intended to be opened and is replaced as a unit. The battery is potentially incendive but is protected during removal by the IP30 construction which covers live parts. The battery assembly must be protected from damage and water ingress then **removed from any potentially hazardous area as soon as practical.**
The replacement battery is slid axially one way then the other in order to insert then the screws are tightened. The socket is then inserted. The luminaire must not be operated without the battery connected. If the battery is removed and not replaced the control gear supply must be disconnect at the mains terminal block and secured.

6.10 Checking of Battery separately

The easiest way of checking the battery is in a known serviceable luminaire against the rated duration.
If the battery is to be checked separately, it should be charged using a **constant current charger** at 200/400mA for 30/15 hours for the 4Ah (18W or 36W) or 350/700mA for 30/15 hours for the 7Ah (36W). Discharge measurement is not easy as the current is proportional to the voltage for resistance loads, so it has to be averaged. Discharge the battery at 1 to 2A and multiply current by time. Do not discharge below 1 volt per cell, that is 5V. The capacity should be 70% or more of normal.

7.0 Routine Maintenance

Visual tests and checks should be carried out at intervals described by the appropriate regulations, EN 60079-17, and should include the following:
Check that the lamps are working or appear badly aged. Blackening at the lamp ends is a good indication of length of use.
Check for mechanical damage/corrosion.
Check for loose connections including earthing.
Check for undue accumulations of dust or dirt.
Verification of tightness of fixing, glands, blanking plugs etc.
Check for unauthorised modifications.
Check condition of enclosure gasket and fastenings.
Check for any accumulation of moisture.
Periodic inspection of the enclosure seal should be carried out to ensure that the seal is sound. The seal can be replaced and, if necessary, secured in position by the application of a **very** small amount of rubber adhesive and using the joining piece. This job should be carried out in the workshop.
If the luminaire has been subject to abnormal conditions, for example, severe mechanical impact or chemical spillage, it must be de-energised until it has been inspected by an authorised and competent person. If in doubt, the unit should be returned to Chalmit for examination and, if necessary, replacement.

7.1 Fault finding

For emergency units this concerns faults other than ones that are properly indicated, refer to the indication table.

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7.1.1 Non emergency

The lamps will run until they are worn out. New lamps should be fitted in pairs even if one appears to be still working. If the result is not satisfactory, check continuity to the ballast. If still no result, check the continuity to lampholders after disconnecting leads from ballast. If no fault found replace ballast. If still no result, disconnect the connection to the sensor. If the lamps light this would indicate a faulty sensor, see 6.9, but as this is most unlikely, check all connections before replacing.

7.1.2 Emergency

Check for operation of the LED. **If the LED is red** refer to the table which shows the fault diagnostics. If the unit does not work on the mains with Ls energised carry out the checks in 7.1.1. If mains operation can not be restored replace the control unit.

A service operation, that is opening and closing the cover, will often re-set faulty lamp indication but the indication will reoccur so the lamp must be changed.

If fault finding is done on an emergency unit before a full commissioning cycle has been completed care must be taken to ensure that the faults are real. Check that the inhibition circuit is complete, see 3.7 and 4.3.

With faults occurring later the first action is always to fit new lamps. If the unit does not work on mains with both lamps, 60 sec delay on emergency lamp, and Ls is powered there is a fault. The second action is to fit a new battery *with some charge in it*. These actions can be done with the luminaire installed. If the result appears positive leave the luminaire in place for a charging period. Work after this would be expected to be done by removing the gear tray to the workshop. It will be easier to work using a complete luminaire and put the gear tray into it. When working this way do not lie the tray in the diffuser as the sensor may be activated inadvertently.

In general, installations of luminaires have a number of units on site and fault finding is done by substituting known healthy components. If changing batteries always use one with some charge, A voltage of 6.0V will be enough to avoid problems. See 6.11.

Except for checking continuity to the supply and ballast input connections there is little that can be done to fault find using instruments. Care is needed in the workshop as mis-connection will damage units. Always check connections carefully. Live testing and use of meters on high frequency units in a workshop will gain little information and may damage healthy components.

The usual first service operation with emergency units which appear to work normally on mains but not on emergency is to energise for a few minutes before checking emergency operation. If no result, check that the inhibit connection is closed circuit. If the unit works on emergency let it discharge fully. The unit should then be energised for 60 mins and the discharge re-checked.

If the unit runs for a few minutes it is charging. If not, change the battery and repeat the full discharge and short charge test. If okay, give the unit a full 48 hour charge and check the duration. If there are still fault indications replace the control unit.

7.2 Cleaning

The body of the luminaire may be cleaned with a mild solution of household detergent and water, after cleaning the body should be washed and wiped with clean water. **The diffuser should not be polished or wiped with a dry cloth as a risk of ignition due to electrostatic discharge may result**. Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

8.0 Fuse and MCB Ratings

It is recommended that for selection of MCB's users should consult the MCB manufacturer as this unit contains electronic control gear. MCB ratings can vary depending on the manufacturer and type and the size of the installation, i.e. impedance of conductors. The electronic control gear has an inrush current of 30A for 500µs on 230V, emergency and non-emergency, 45A for 350µs on 110V, non-emergency, and 35A for 250µs on 110V, emergency. These figures are for low resistance connections with short cables and low impedance supplies.

9.0 Disposal of Material

General

The unit is made from combustible materials. The control gear contains plastic parts and electronic components. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

9.1 Lamps

Fluorescent lamps in modest quantities are not "special waste". They should be broken up in a container to avoid injury, avoid inhaling dust.

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Important : *Do not incinerate lamps.*

9.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the person disposing needs to observe a 'duty of care'.
Batteries can be returned to the manufacturers for recycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting, or otherwise ensure that there can be no release of stored energy in transit. For further details refer to our Technical Department.

Table 2 Nominal Lamp Power and Supply Current

Supply Voltage	Lamps	Power W	Current A
230V, 50/60Hz	1 x 18W	21	0.10
	2 x 18W	35	0.17
	2 x 18W Emergency	40	0.19
	1 x 36W	42	0.20
	2 x 36W	70	0.32
	2 x 36W Emergency	77	0.36
110V, 50/60Hz	1 x 18W	21	0.20
	2 x 18W	35	0.34
	2 x 18W Emergency	40	0.38
	1 x 36W	42	0.40
	2 x 36W	70	0.65
	2 x 36W Emergency	77	0.73

Power Factor >0.98. Power is constant over voltage range.

Tamb Storage -40°C to +80°C

EMC EN 50081-2 (emission)
EN 50082-2 (immunity)
EN 61000-3-2 (harmonics generated)

Over voltage 400V ac for 1 min
EN 61000-4-5 > 4kV

Batteries 6V 4Ah NiCd (18W or 36W)
6V 7Ah NiCd (36W)

Emergency Duration 90 minutes or 3 hours depending on model specified

Emergency Output 1200mm lamp 25% of normal single lamp output
600mm lamp 30% of normal single lamp output

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A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office

Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note

Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

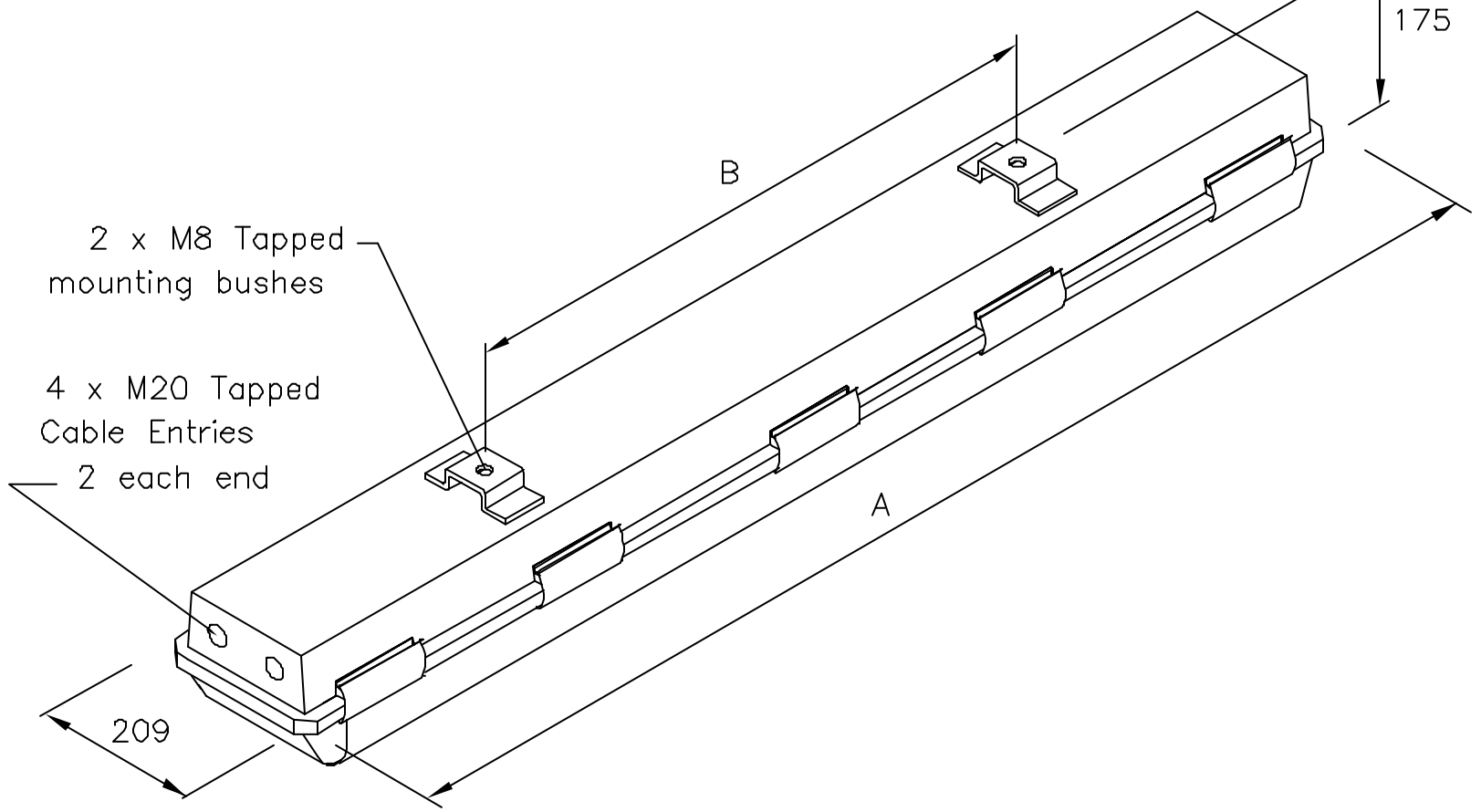
Hubbell Lighting Inc.

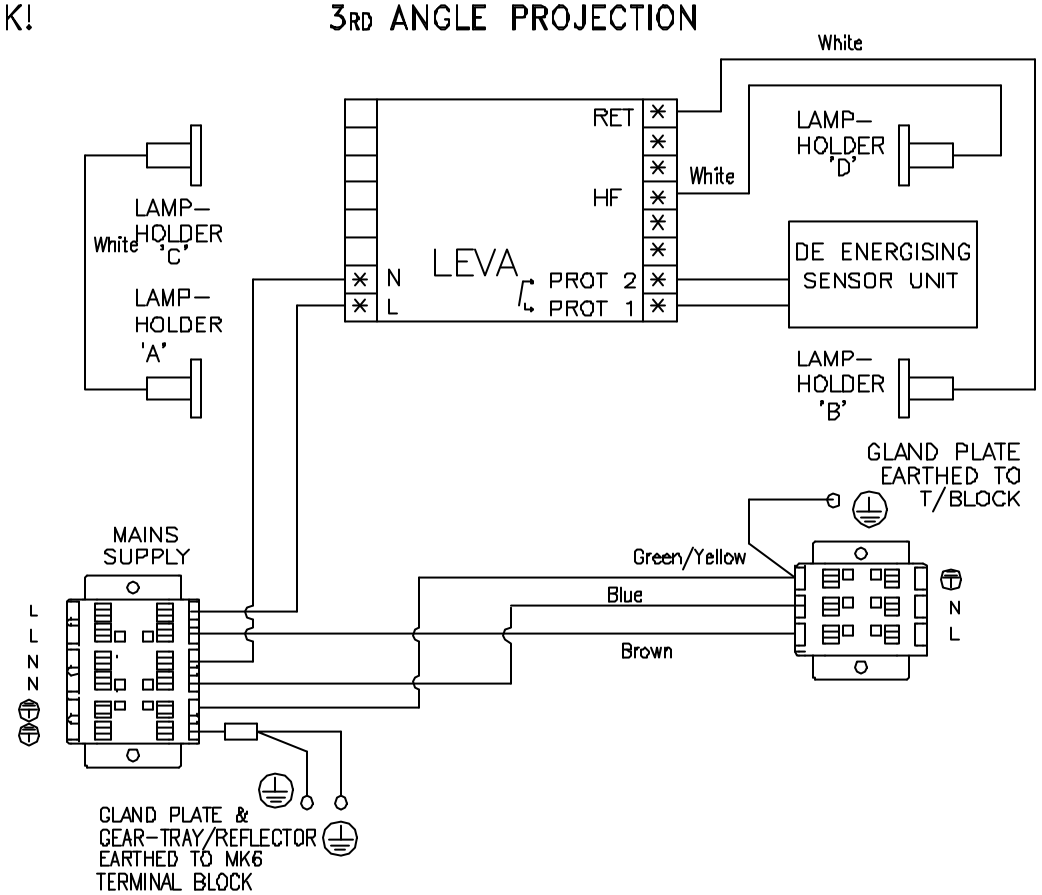
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

1	2	3	4	5	6	7	8
DRAWING NUMBER/SHEET NUMBER F1052	REMOVE ALL BURRS & SHARP EDGES			IF IN DOUBT ASK!		3RD ANGLE PROJECTION	

NOTES

i) IP 66/67 RATING
ii) SUITABLE FOR 3 CORE 6mm SQ. INCOMING CABLE AS STANDARD.
iii) THRO' WIRING IS STANDARD ON ALL MODELS.
iv) THERE ARE TWO M8 THREADED STAINLESS BUSHES INSERTED INTO STAINLESS STEEL BODY FOR MOUNTING TO CEILING.(SEE DIMENSION 'B')
v) BI-PIN LAMPHOLDERS ARE STANDARD.
vi) EC Type Examination Certificate KEMA98ATEX3045





MODEL	'A'	'B'	CODING
2x18/20W	742	400	II 2 G Ex eqm II T4 AMB. -20°C to 55°C
2x36/40W	1352	700	II 2 G Ex eqm II T4 AMB. -20°C to 55°C

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting
Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	10/06/2002

REF. DRGS.-

MATERIAL	ST ST & POLYCARBONATE
FINISH	SELF
DIMS. IN	MM
TOLERANCE	
SURFACE ROUGHNESS	
SCALE	-

TITLE: PRO ST.ST. 2x18/36W LEVA WITH WIRING DIAGRAM

DRAWING NUMBER/SHEET NUMBER: F1052 1 OF 1

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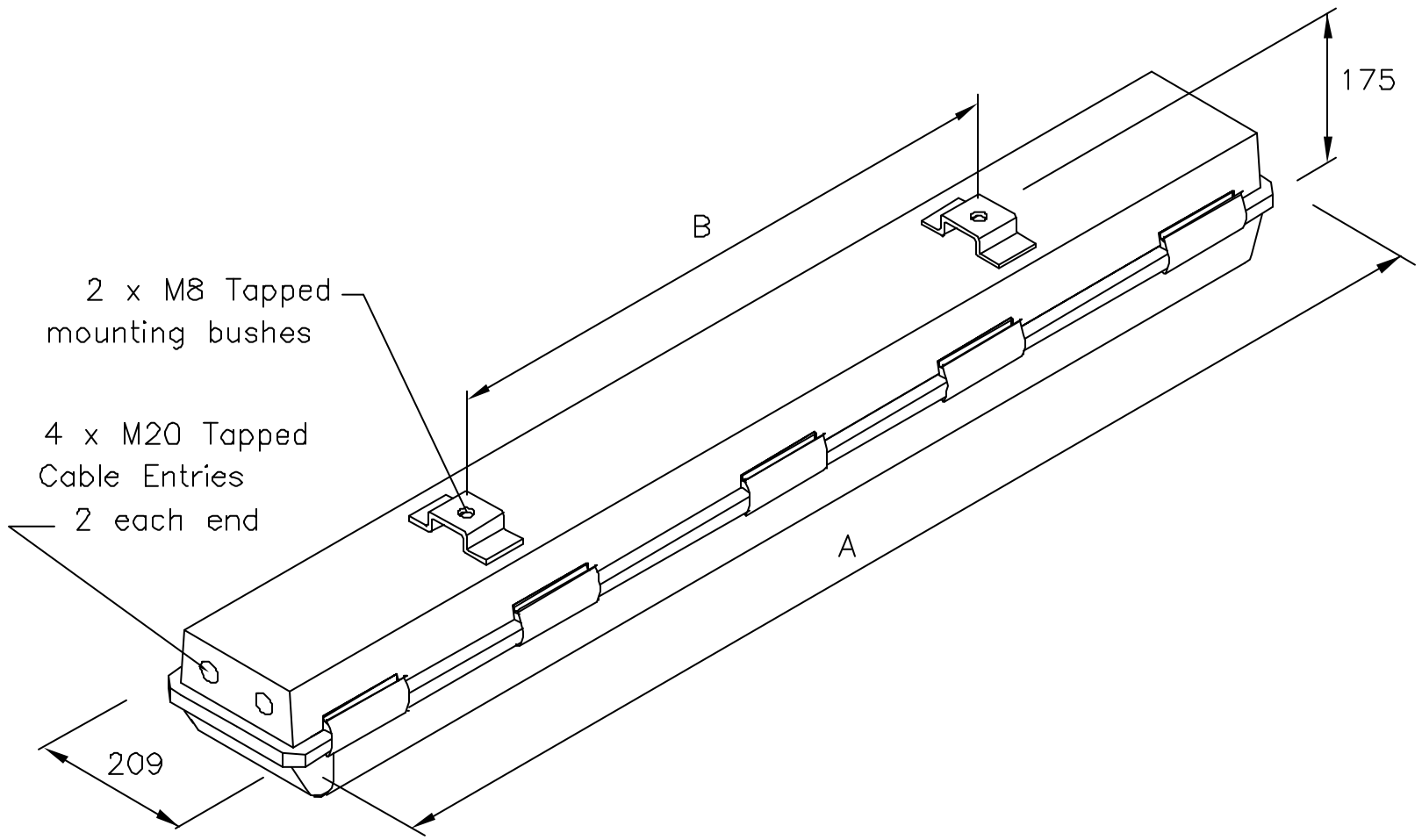
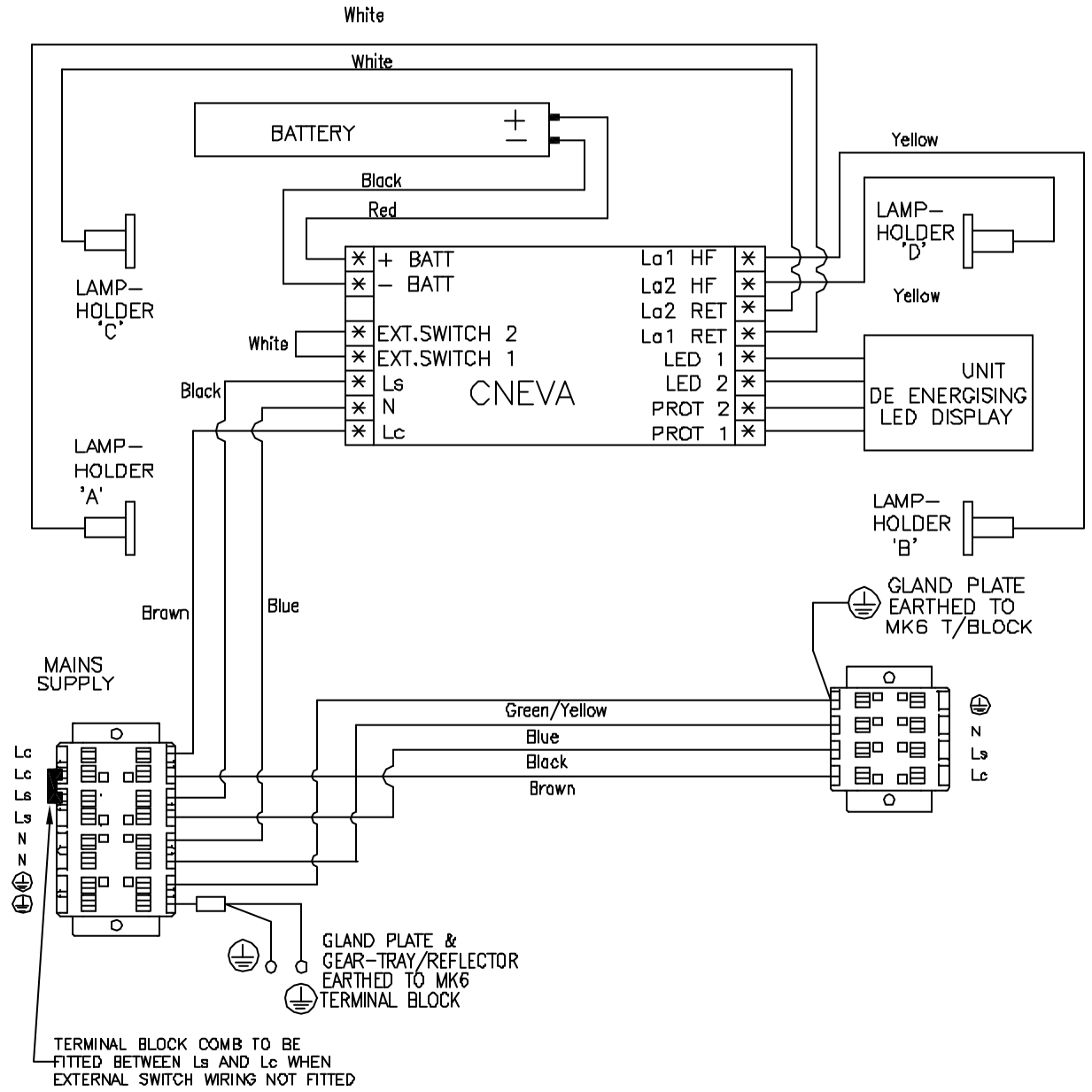
1	2	3	4	5	6	7	8
DRAWING NUMBER/SHEET NUMBER F1053	REMOVE ALL BURRS & SHARP EDGES			IF IN DOUBT ASK!		3RD ANGLE PROJECTION	

NOTES

i) IP 66/67 RATING
ii) SUITABLE FOR 4 CORE 6mm SQ. INCOMING CABLE AS STANDARD.
iii) THRO' WIRING IS STANDARD ON ALL MODELS.
iv) THERE ARE TWO M8 THREADED STAINLESS BUSHES INSERTED INTO STAINLESS STEEL BODY FOR MOUNTING TO CEILING.(SEE DIMENSION 'B')
v) BI-PIN LAMPHOLDERS ARE STANDARD.
vi) EC Type Examination Certificate KEMA98ATEX3045
vii) THE VOLTAGE SUPPLY IS 220-254V (-10%/+10%) 50/60Hz





MODEL	'A'	'B'	CODING
2x18/20W	742	400	II 2 G Ex eqm II T4 AMB. -0°C to 45°C
2x36/40W	1352	700	II 2 G Ex eqm II T4 AMB. 0°C to 45°C

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	10/06/2002

REF. DRGS.-

MATERIAL	ST ST & POLYCARBONATE
TOLERANCE	
FINISH	SELF
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE: PRO ST.ST. EM 2x18/36W WITH WIRING DIAGRAM CNEVA CONTROL

DRAWING NUMBER/SHEET NUMBER: F1053 1 OF 1

1	2	3	4	5	6	7	8

DRAWING NUMBER/SHEET NUMBER
F1055

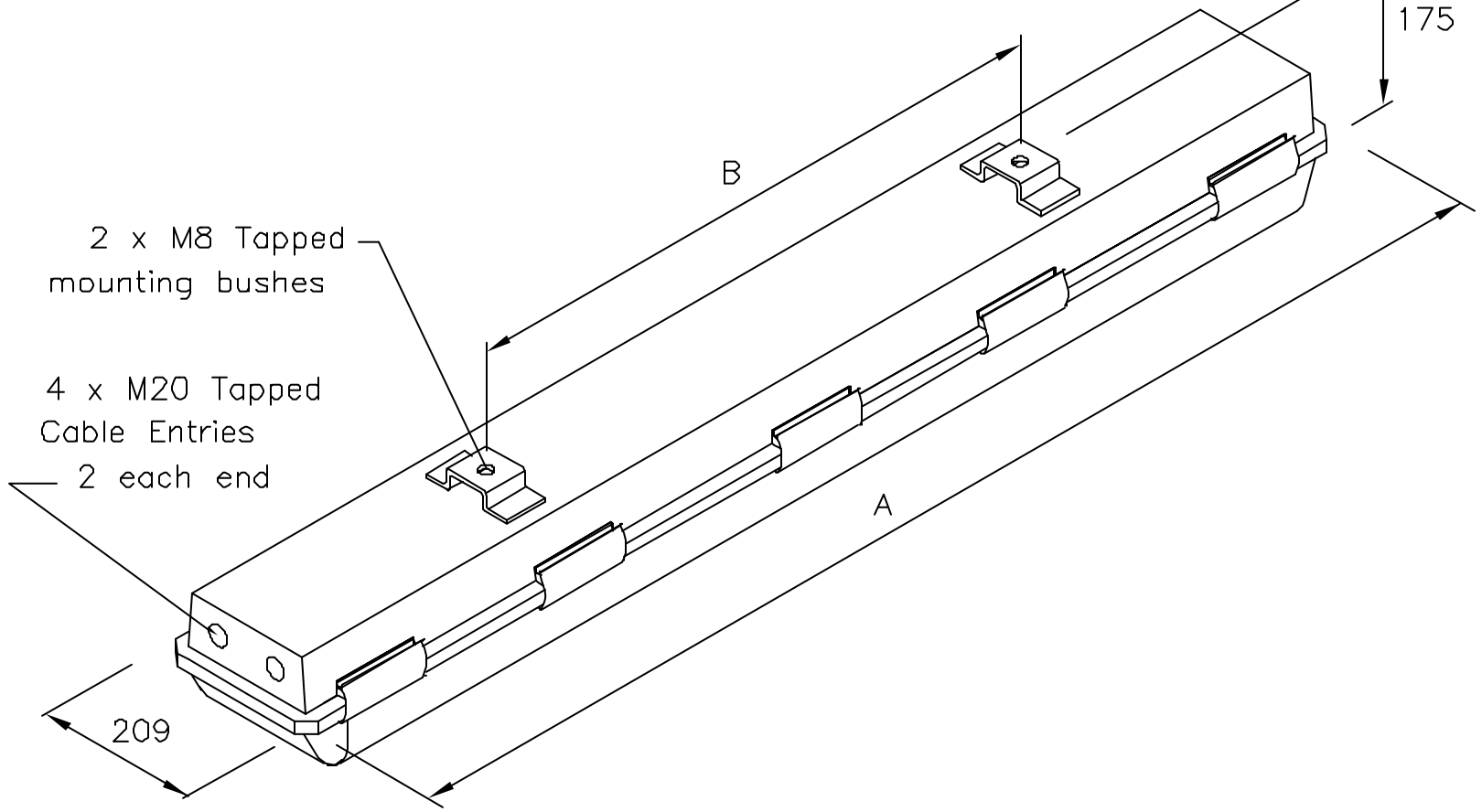
REMOVE ALL BURRS & SHARP EDGES

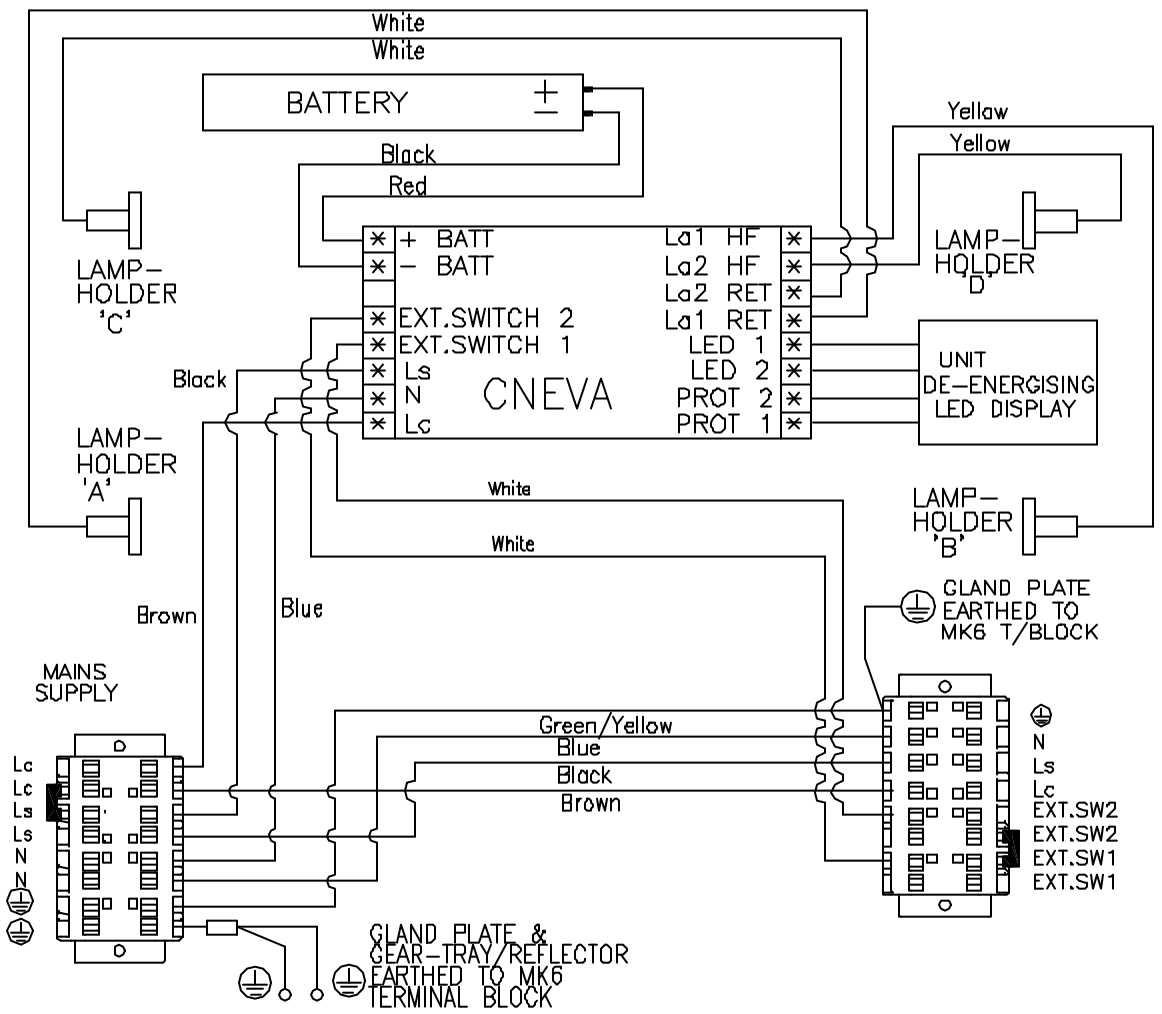
IF IN DOUBT ASK!

3RD ANGLE PROJECTION

NOTES

i) IP 66/67 RATING
ii) SUITABLE FOR 4 CORE 6mm SQ. INCOMING CABLE AS STANDARD.
iii) THRO' WIRING IS STANDARD ON ALL MODELS.
iv) THERE ARE TWO M8 THREADED STAINLESS BUSHES INSERTED INTO STAINLESS STEEL BODY FOR MOUNTING TO CEILING.(SEE DIMENSION 'B')
v) BI-PIN LAMPHOLDERS ARE STANDARD.
vi) EC Type Examination Certificate KEMA98ATEX3045
vii) THE VOLTAGE SUPPLY IS 220-254V (-10%/+10%) 50/60Hz





MODEL	'A'	'B'	CODING
2x18/20W	742	400	II 2 G Ex eqm II T4 AMB. -0°C to 45°C
2x36/40W	1352	700	II 2 G Ex eqm II T4 AMB. 0°C to 45°C

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	10/06/2002

REF. DRGS.-

MATERIAL: ST ST & POLYCARBONATE
TOLERANCE:
FINISH: SELF
SURFACE ROUGHNESS:
DIMS. IN MM
SCALE -

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
PRO ST EM INH 2x18/36W
WITH WIRING DIAGRAM
CNEVA WITH INHIBITION

DRAWING NUMBER/SHEET NUMBER
F1055 1 OF 1

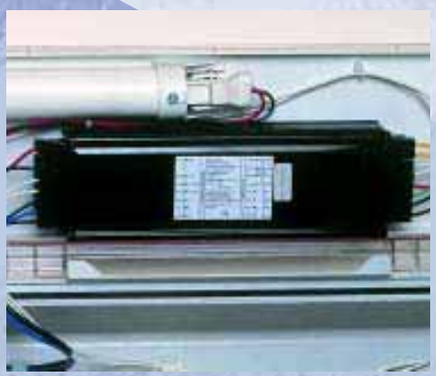
PROTECTA III

Bolted through suspension points & fully compressed gasket

Construction

- Tough glass reinforced polyester body
- Polycarbonate diffuser resistant to UV and stress cracking
- Robust hinges and multipoint compressive clamping of diffuser closure
- EPDM gasket with sealing lip
- Bolted through suspension points for great strength
- IP66/IP67 and ERA deluge test

Easy access to lamps & control gear



Screwless connections to ballast & battery for ease of maintenance

Reliability

- Robust electronics
- Outstanding electrical immunity to mains disturbances including over-voltage, harmonics and spikes
- Vibration tested to DNV/Lloyds requirements
- Functional self test every 13 days with full discharge and recharge self test every 3 months
- Comprehensive charge and discharge control management for maximum battery life
- Continuous monitoring of charge and function with fault indication and diagnosis
- Best quality high temperature Ni-Cd batteries available

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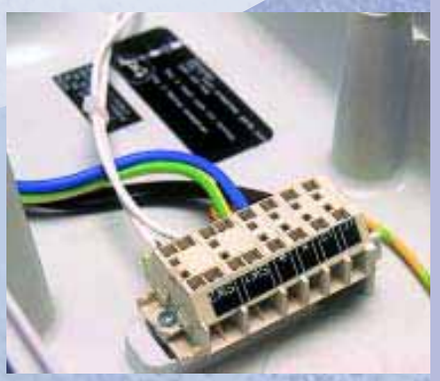
KEY FEATURES

Performance

- Regulated output, light is constant over full supply voltage range
- Very high electrical efficiency > 92%
- Substantially increased emergency light output and duration
- 1200mm lamp 25% of normal single lamp output
- 600mm lamp 30% of normal single lamp output
- 3 hour emergency duration to EN 60598.2.22
- Rapid recharge to 80% capacity
- Remote emergency inhibition

Bi-colour LED indication

Patented automatic lamp de-energisation on opening



Screwless mains terminals

Installation and maintenance

- Standard fixing centres
- All parts mounted on gear tray, can be quickly removed leaving an Ex safe configuration
- Screwless mains terminals for rapid connection, no need for periodic checks
- Can be voltage tested with suitable current limited instruments
- Emergency lamp fault detection before the lamp becomes un-serviceable
- Self testing of battery capacity with low capacity LED indication
- Plug and socket battery connection for quick connection guaranteeing correct polarity
- Patented automatic lamp de-energisation on opening

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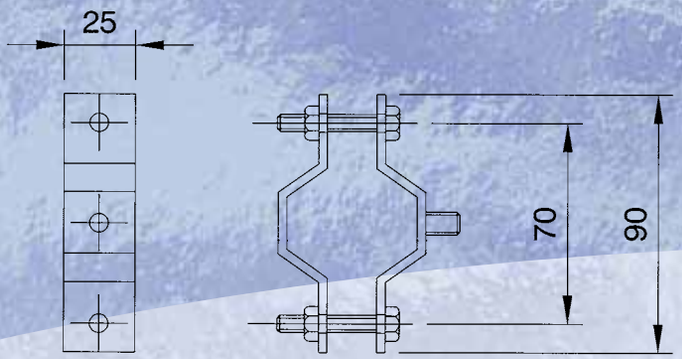
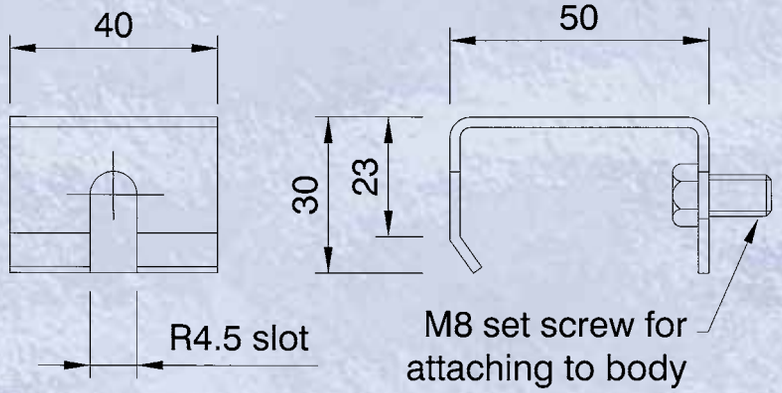
PROTECTA ACCESSORIES

Pole Mounting Bracket — Cat No. SPRO4-0003

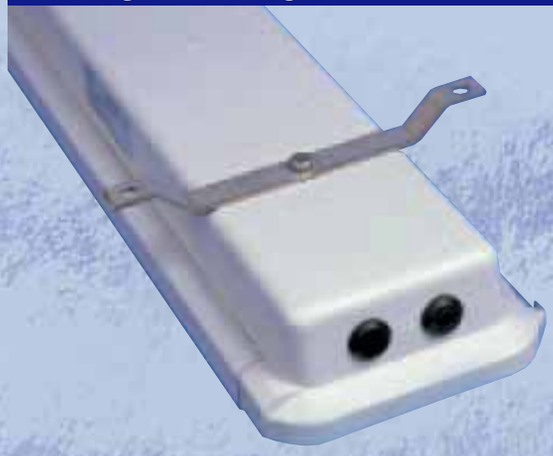


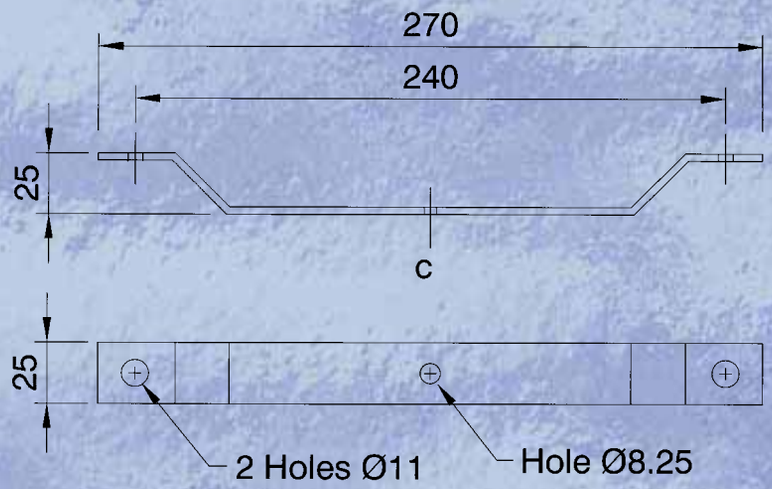
Pole mounting bracket to suit
pole diameter 38mm - 50mm
Cat No. SPRO4-0003
Other sizes available on request.

Hook Type Ceiling Bracket — Cat No. SPRO4-0005



Ceiling Mounting Bracket — Cat No. SPRO4-0002





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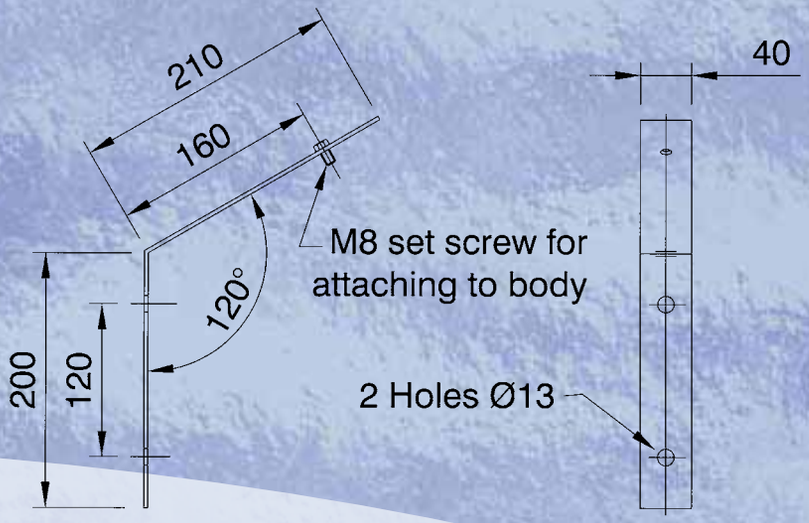
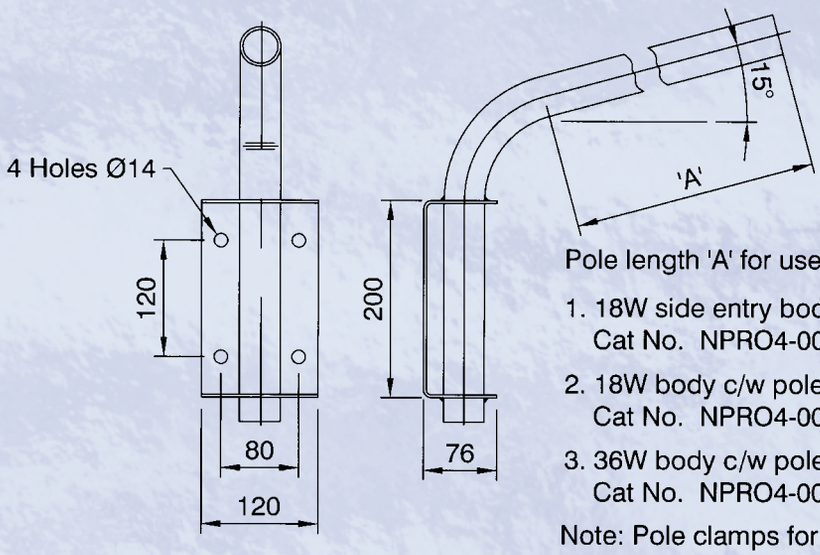
Flush Mounting Wall Bracket — Cat No. SPRO4-0006



Wall Mounting Outreach Bracket

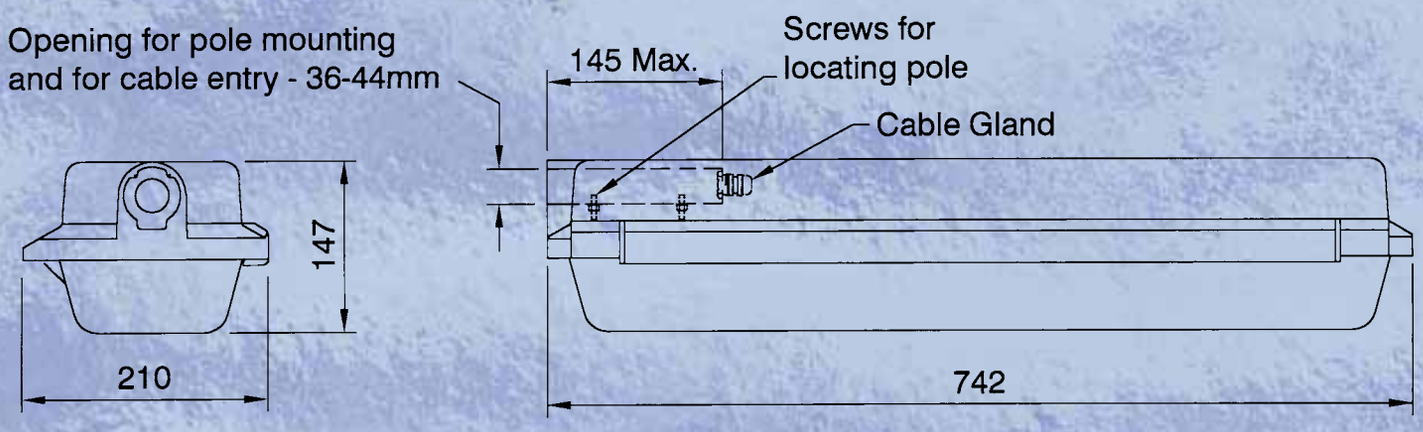


Pole length 'A' for use with the following:

1. 18W side entry body, size A = 250mm
   Cat No. NPRO4-0007
2. 18W body c/w pole clamps, size A = 650mm
   Cat No. NPRO4-0008
3. 36W body c/w pole clamps, size A = 1100mm
   Cat No. NPRO4-0012

Note: Pole clamps for items 2 & 3 must be ordered seperately.

18W Spigot Entry



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ACCLAIM III

Ex e RECESSIBLE

ATEX CATEGORY 2 ZONE 1 APPLICATIONS

The Acclaim range of luminaires for fluorescent lamps is available in standard and emergency versions. It is designed for use in offshore accommodation areas and for the pharmaceutical industry where it provides working, emergency and escape lighting.

Manufactured from zinc coated sheet steel the luminaire is suitable for installation in fire resistant ceilings up to SOLAS B15 rating.

The polycarbonate diffuser is available in clear, prismatic or with a glare control louvre. The mounting and cover details are flexible to allow luminaires to be recessed into a variety of ceiling types.
The control gear and batteries are mounted internally on a gear tray and access for lamp replacement and maintenance is simple and easy.
The emergency version has excellent light output and duration in accordance with emergency lighting standards.
Comprehensive self-testing periodically confirms the availability of sufficient emergency duration.

Standard Specification

Type of Protection:	**Ex eqm (Increased safety Powder filling Encapsulation)**
Area Classification:	**Group II Category 2 G**
ATEX Classification:	**Zone 1 and Zone 2 areas to EN60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50014 EN 50017 EN 50019 EN 50028**
Certificate:	**EC Type Examination Certificate KEMA01ATEX2067**
Coding:	**Ⓔx II 2 G Ex eqm II T4 Tamb 55ºC**
Enclosure:	**White polyester painted zinc coated steel body and frame. Silicone rubber gasket. Clear polycarbonate diffuser**
Reflector/Geartray:	**White polyester painted zinc coated steel**
Entry:	**3 x 20mm holes, two at one end and one at the other end**
Termination:	**3 core 6mm² max conductor with looping and through wiring facility (4 core on emergency)**
Installation:	**Fixed side brackets with swing out arms, with provision for rod mounting**
Lampholder:	**G13 (Bi pin)**
Lamp Type:	**T8 tubular fluorescent**
Control Gear:	**High Frequency**
Relamping:	**Via front cover, secured by pan head slotted screws**
Burning Position:	**Horizontal**
Ingress Protection:	**IP65 to EN 60529**
Electrical Supply:	**220V - 254V 50/60Hz and 220V - 300V dc non-emergency only**
Battery:	**Internal Ni-Cd battery (6V 4 Ah - 18W, 6V 7Ah - 36W)**
Duration:	**3 hours to EN60598-2-22**
Emergency Output:	**30% of one lamp (18W), 25% of one lamp (36W)**

Features

Suitable for various ceiling types

Automatic lamp de-energisation on opening

Screwless mains terminals

Battery management, monitoring and automatic self test

Resistant to voltage fluctuations

Local switching arrangement as standard

Ingress protection to IP65

Electronic control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output

3 hour emergency duration

B15 SOLAS fire rating

Lloyds fire rating approval for specific ceiling types supplied on request

Emergency inhibition and power off re-start

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Std. Cat No.	Wattage	Weight
ACLE/218/BI	2x18W	16kg
ACLE/236/BI	2x36W	23kg
ACLE/218/BI/EM	2x18W	19kg
ACLE/236/BI/EM	2x36W	26kg

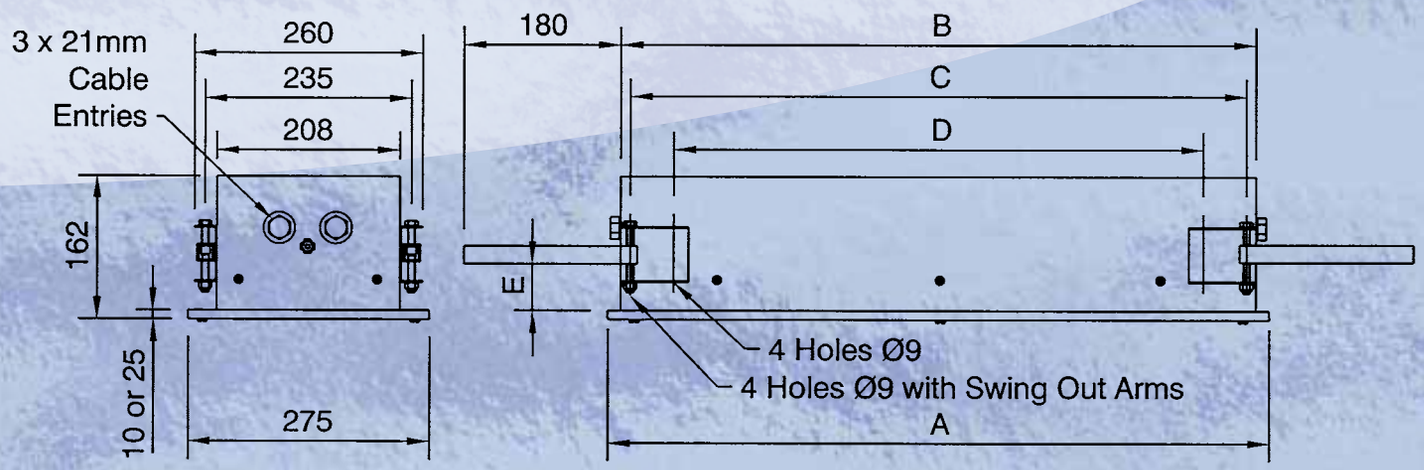
Options - Suffix to Catalogue No.

/120	Specific voltage (110/120)
/25	25mm Entries
/RI	Remote emergency inhibition facility (external switch ordered separately)
/3P	3 phase termination facility (not available if through wiring required)
/EL	Extra live termination facility (compatible with 4 core (switched) emergency circuits)
/LG	Low glare louvre
/PD	Prismatic diffuser
/PC	Plasterboard (solid plank) ceiling

Note: Ceiling type must be stated at time of enquiry/order

Applications

- Zone 1 and 2 hazardous areas
- Offshore accomodation
- Offshore washrooms
- Pharmaceutical dryer rooms
- Process areas



2 x 18W	A	B	C	D	E 10mm Cover	E 25mm Cover
2 x 18W	750	720	699	601	35 to 70	20 to 55
2 x 36W	1365	1335	1314	1216		

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KEMA
REGISTERED QUALITY

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres – Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 01ATEX2067**

(4) Equipment or protective system: **Recessed Luminaire with emergency lighting, type Acclaim III, for bi-pin tubular fluorescent lamps.**

(5) Manufacturer: **Chalmit Lighting**

(6) Address: **388 Hillington Road, Glasgow G52 4BL, Scotland**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA, notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. 2008479.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1997 **EN 50017 : 1998** **EN 50019 : 2000** **EN 50028 : 1987**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

Ex **II 2 G Ex eqm II T4**

Arnhem, 1 May 2001
by order of the Board of Directors of N.V. KEMA

L.M.J. Vries
Certification Manager

KEMA Registered Quality B.V.
Utrechtseweg 310, 6812 AR Arnhem, The Netherlands
P.O. box 9035, 6800 ET Arnhem, The Netherlands
Telephone +31 26 3 56 34 28, Telefax +31 26 3 52 58 00

ACCREDITED BY THE DUTCH COUNCIL FOR ACCREDITATION

KEMA

SCHEDULE

to EC-Type Examination Certificate KEMA 01ATEX2067

Description

The Recessed Luminaire with emergency lighting, type Acclaim III, for bi-pin tubular fluorescent lamps 18/20 W or 36/40 W, for use in insulated or non-insulated recessed ceilings, consists of a painted steel body and a transparant polycarbonate cover, in which one or two tubular fluorescent lamps are fitted.

Ambient temperature range	-20 °C	+45 °C (for insulated installation), or
	-20 °C	+55 °C (for non-insulated installation).

Electrical data

Luminaire type	Power	Rated voltage of the luminaire
ACLE/218/BI	2x18/20W	220...254 V, 47...63 Hz or
ACLE/136/BI	1x36/40W	220...300 V dc
ACLE/236/BI	2x36/40W	
ACLE/218/BI/110	2x18/20W	110...120 V, 47...63 Hz or
ACLE/136/BI/110	1x36/40W	110...150 V dc
ACLE/236/BI/110	2x36/40W	
ACLE/218/BI/EM	2x18/20W	220...254 V, 50...60 Hz
ACLE/236/BI/EM	2x36/40W	
ACLE/218/BI/EM/110	2x18/20W	110...120 V, 50...60 Hz
ACLE/236/BI/EM/110	2x36/40W	

Installation instruction

The degree of protection of at least IP54 to EN 60529 is only achieved if certified cable entries and blanking elements are used that are suitable for the application and correctly installed.

Routine test

Each luminaire must be submitted to the routine electric strength test according to Clause 7.1 of EN 50019.

Report

KEMA No. 2008479.

(17) Special conditions for safe use

None.

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KEMA

SCHEDULE

to EC-Type Examination Certificate KEMA 01ATEX2067

Essential Health and Safety Requirements

Essential Health and Safety Requirements not covered by the standards listed at (9)	
Clause	Subject
1.0.5	Marking
1.0.6 b) and d)	Instructions

These Essential Health and Safety Requirements are examined and positively judged. The results are laid down in the report listed at (16).

Test documentation

1. EC-Type Examination Certificate KEMA 98ATEX3045
   EC-Type Examination Certificate KEMA 00ATEX2121U
   EC-Type Examination Certificate PTB 98ATEX3125 U

signed

2. Drawing No.
   A 6852)
   B 1151, issue 02)
   B 1180, issue 01)
   B 1191)
   B 1192)
   B 1193)
   B 1194) 23.03.2001
   B 1195)
   C 792)
   C 793, issue 03)
   D 1954)
   D 1957, issue 04)
   D 2018 (5 sheets)

3. Samples

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CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1358946 **Master Contract:** 201067

Project: 1358946 (Edition 1) **Date Issued:** September 3rd, 2002

Issued to: **Chalmit Lighting, A Division of Hubbell Lighting Ltd.**
388 Hillington Road
Glasgow, G52 4BL
UNITED KINGDOM

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'

C US

Issued by: D. Adams, P. Eng.
Certification Specialist

Authorized by: John Verwey, P.Eng.
Operations Manager

CLASS

3428 03 - Fixtures and Fittings - For Hazardous Locations
3428 83 - Fixtures and Fittings - For Hazardous Locations - To US Requirements

PRODUCTS

Ex edm IIC T4; Ex eqd IIC T4; Ex eqm II T4; Ex eqdm IIC T4; Tamb -20°C to +55°C; CSA Enclosure Type 4: Class I, Zone 1, AEx edm IIC T4; AEx eqd IIC T4; AEx eqm II T4; AEx eqdm IIC T4; Tamb -20°C to 55°C; NEMA 4:

"ACCLAIM III" Series Luminaires, Model Number's abcdef, for mono-pin and bi-pin tubular fluorescent lamps, with and without emergency lighting, rated 110 - 120Vac; 220 – 254 Vac, 47 – 63 Hz, 40W. Specific model numbers are listed below.

	1st Digit (a)	2nd Digit (b)	3rd Digit (c)	4th Digit (d)	5th & 6th Digits (ef)
A	NEVA Ballast	Can be 0 to 9 dependent on cable entry type.	Can be 0 to 9 dependant on wiring variants	Can be 0 to 9 dependent on Voltage option.	Special requirements
G	LEVA ballast				
H	LEVA new build				
J	CNEVA				

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognised to perform certification to U.S. Standards.

DQD 507WD 2001/07/20

CSA INTERNATIONAL

Certificate: 1358946 **Master Contract:** 201067

Project: 1358946 **Date:** September 3rd, 2002

APPLICABLE REQUIREMENTS

CSA Standard C22.2 No 0-M1991 - General Requirements - Canadian Electrical Code Part II.

CSA Standard C22.2 No137-M1981 - Electric Luminaires for Use in Hazardous Locations.

CAN/CSA E79-0-95 - Electrical apparatus for explosive gas atmospheres. PART 0: General requirements.

E79-1-95 - Electrical apparatus for explosive gas atmospheres. PART 1: Construction and verification test of flameproof enclosures of electrical apparatus.

E79-5-95 - Electrical apparatus for explosive gas atmospheres. Part 5: Sand-filled apparatus.

E79-7-95 - Electrical apparatus for explosive gas atmospheres. Part 7: Increased Safety 'e'.

E79-18-95 - Electrical apparatus for explosive gas atmospheres. Part 18: Encapsulation "m".

UL 2279 - UL Standard for Safety for Electrical Equipment for Use in Class I, Zone 0,1,2 Hazardous Locations.

ANSI/UL 844 - Standard for Electric Lighting Fixtures for Use in Hazardous (Classified) Locations.

CSA INTERNATIONAL

Supplement to Certificate of Compliance

Certificate: 1358946 **Master Contract:** 201067

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1358946	September 3, 2002	Original Certification of "ACCLAIM III" Series Luminaires, Model Number's abcdef, for mono-pin and bi-pin tubular fluorescent lamps, with and without emergency lighting.

DQD 507WD 2001/07/20

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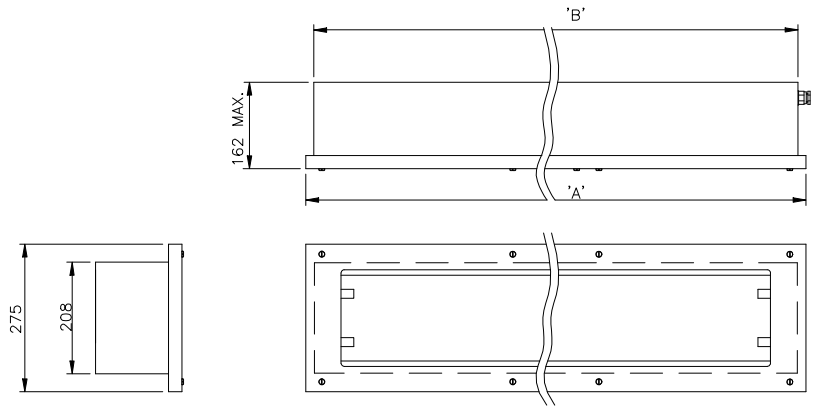
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Acclaim III ATEX Models ACLE/218…..ACLE/236….ACLE/136…..

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



	A	B
2 x 18/20W	750	720
2 x 36/40W	1365	1335

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0.0 Specification and ATEX Declaration

Type(s) of protection	Ex e Increased safety, Ex q Powder filling and Ex m Encapsulation
Protection standards	EN 50014, EN 50017, EN 50019, EN 50028
Area of application	Zone 1 and Zone 2 areas to EN 60079-10 and installation to EN 60079-14
ATEX equipment Classification	Group II Category 2 G
Equipment coding	Ⓔx II 2 G Ex eqm II T4 bi-pin lamps Tamb -20/+45ºC as an insulated recessed unit and Tamb -20/+55ºC as an non-insulated recessed unit.
Certificate	EC Type Examination Certificate KEMA 01ATEX2067
CE Marking CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the EC Type Examination based on the harmonised standards listed above.
Ingress Protection	IP65 to EN 60529

1.0 Introduction – Acclaim III ATEX Model

The Acclaim III EM series is a recess-able luminaire for use with fluorescent lamps with the facility of an internal battery back up for emergency use. The Acclaim III models have Ex q control gear, electronic safety sensor and micro-processor controlled emergency functions. The luminaire can be constructed to interface with fire resistant ceiling systems to maintain a B15 SOLAS fire rating, care must be taken to maintain this classification. When insulated, refer to Chalmit for Tamb ratings, as it affects life and battery performance. Normal operation is mains supply two lamps on, switching to one lamp on battery back up and having local switching of the mains lamps, the emergency lamp only being energised on mains failure.
The luminaires are available in 2 x 18W, 1 x 36W and 2 x 36W sizes, and also in 2 x 18W and 2 x 36W sizes for emergency use.
Refer to the current catalogue for information on product references. The range is available for use with T8 bi-pin lamps to IEC81
Emergency duration to BS EN 60598 2.22 3 hours (4 hour versions are specials).

Note 1. *This range is available in a number of similar but distinctly different versions. Care must be taken to use the correct instructions and spares, if in doubt contact sales or product support.*

Note 2. *The ATEX EC Type Examination does not cover suitability for dust applications. The equipment will meet the requirements of IEC 61241-1-1.1999. For details refer to the technical department.*

2 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3 Installation and Safety

3.1 General

These instructions should be read fully and carefully before attempting to install the luminaire. For details of servicing operations, opening etc. see section 6.
Copies of these instructions should be held in a safe place for future reference. It is the responsibility of the installer to ensure that the apparatus selected is fit for its intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice.
There are no health hazards associated with this product whilst in normal use, however, care should be exercised during the following operations.
Installation should be carried out in accordance with EN 60079-14 or with a local hazardous area code of practice, whichever is appropriate. Any specific installation instructions must be referred to. In the UK the requirements of the *Health and Safety at Work Act* must be met and electrical work associated with this product

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must be in accordance with the *"Manual Handling Operations Regulations"* and "*Electricity at Works Regulations 1989".* Disposal instructions should be complied with.
The luminaires should be considered Class 1 to EN 60598 and effectively earthed.
The polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required without notice.

3.2 **Tools**
12mm , 4mm and 3mm flat blade screwdriver. Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 **Electrical Supplies**
Luminaires are supplied with control gear suitable for the following rated supplies

Emergency 110-120V and 220-254V ac +/-10% 50/60Hz
Non-emergency 110-120V+/-10% 47/63Hz , 110-150V dc.
Non-emergency 220-254V +/-10% 47/63Hz , 220-300V dc.

The safety limit for surface temperature (T rating) is +/-10% on the rated voltage. Equipment should not be operated continuously at more than +10/-10% of the rated voltage of the control gear. The power factor correction gives a minimum of 0.95 lagging. The lamp supply is regulated therefore the change in light output over the supply range is substantially unchanged.

Warning : *Electronic control gear is assessed and/or tested for EMC requirements. This is based on the disposition of entry cables and, where appropriate, through wiring arrangements as supplied or specified. Users must take care not to introduce wiring into parts of the apparatus materially different to that which could be reasonably inferred from the disposition of fixed supply terminals and specified through wiring.*

3.4 **Lamps**
The lamps used in the range can be T8 bi-pin fluorescent with G13 cap. Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081.

3.5 Mounting and Insulation
Luminaires should be installed where access for maintenance is practical and in accordance with lighting design information. Refer to the note in 3.1 concerning electrostatic charge.
When mounting of ceiling support channels, via side arms or adjustable side arms, they must be secured onto channels by fixing screws. When B15 fire rating is a requirement all conditions stated by the ceiling manufacturer and Chalmit must be met.
The luminaire is tested to EN 60598-1:1997. As an insulated recessed unit the Tamb rating is 45ºC as a non-insulated unit in a plain recess the Tamb rating is 55ºC. Therefore the usual mounting in a metal ceiling with 75 mm of insulation at 45ºC is acceptable. If the temperature in an installation is continuously at the limiting level the duration will be reduced and the self-testing will be delayed.

3.6 Cabling and Cable Glands
The temperature conditions at the supply cable entry point are such that 70ºC (ordinary PVC) cable can be used. Cable glands and sealing plugs must be "E generation" certified or have ATEX component approval. The cable and gland assembly when installed must maintain a minimum IP54 rating.
Where the cable ***is not reliably clamped*** externally to the apparatus the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm.
Four entries suitable for M20 are provided**.** Three entries are fitted with suitably approved blanking plugs, the fourth entry with a transit plug. Other sizes are available on request.

3.7. Electrical Connections and Testing
If work other than re-lamping is to be done on any luminaire already connected to the electrical system, the luminaire must be isolated from the system. Access for the cabling is via removal of front cover and lamp tray. The front cover is secured using 6/10 off M6 captive screws, care to be taken as there is no suspension on this, and lampholder tray is secured by M5 screws and keyhole slots, with chain suspension allowing the tray to swing down, giving access to terminal blocks. Install the conductors in the appropriate terminals. Take care not to cut

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the conductor insulation excessively, 1mm of bare conductor outside the terminal throat is a maximum. Before re-fitting lampholder tray and front cover, the cores/cable should be neatly tucked away and a final check made on correct connections.
Luminaires are supplied suitable for looping and through wiring.
The through current rating is 16A. 4mm² terminals are standard (6mm² wiring can be used in the terminals as per the certificate).
Screw type or screw-less “cage clamp” terminals are fitted in the range of luminaires. Mains terminal blocks are marked L N Earth.
Mains terminal blocks on the emergency luminaires are marked Lc Ls N Earth.
Luminaires can also be supplied with three phase wiring to special order. The marking is L1 L2 L3 L s N Earth
The emergency units can be connected as switched, un-switched or non-maintained units. The switching facility is to allow the luminaire to be switched off whilst still charging the battery. Where switching is required, the un-switched line (Lc) is connected to the continuous mains supply. A link is fitted during assembly between Lc and switched line (Ls); this is removed for the switch-able mode. If the link is removed and Ls not supplied, the unit will only operate on emergency.
If the emergency luminaire is on a three phase system the switched line can be on any phase, it does not need to be on the phase connected to the un-switched line.

If local emergency inhibition (see 4.3) is required the luminaire should be ordered with the connections for this feature built in. The emergency inhibition function is connected via terminals, which must be specified to be included when ordering. The inhibition terminals are marked Ext Sw 1 and 2.
The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. The switch should be of 5 VA rating and, if in the hazardous area, Ex protected.
The switch must have contacts which will reliably conduct small currents (10 mA levels) at low (6V) voltage. For information on suitable surface mount switches refer to Chalmit sales department. Closed circuit is normal, off inhibits the emergency function. Up to ten luminaires and 500 m of cable can be connected in parallel to one switch. *If the polarity is crossed the emergency function will work but can not be inhibited*.
If the inhibition is connected into a circuit with CEAG emergency luminaires having an inhibition connection the Acclaim must be connected as follows EXTSW1 should be connected to CEAG “2” EXTSW2 should be connected to CEAG “3”
As there are four entries, four core cable must be used for looping the inhibition terminals if the mains through wire connection is to also be used. If any other configuration is needed it must be specially ordered or the internal wiring pack changed on site.
The cabling is made off to the correct length in the normal manner. Care should be taken not to cut the insulation back too far. The maximum amount of insulation allowed beyond the throat of the terminal is 1mm. Luminaires can be tested with a high impedance 500 V dc insulation tester to IEC 364 or BS 7671 ***provided all line and neutral connections are solidly connected together*** for the test. The inhibition circuit can be tested at 500 V dc whilst connected to the luminaire terminals. (Units damaged by incorrect insulation testing can be detected).
Before completing the wiring, ensure that all the connections are correctly introduced into place before reassembling the luminaire. Following cabling, lamps can be fitted. New lamps should be used.

4.0 Emergency Operation

4.1 General description of emergency unit and operation

The integrated unit consists of a mains supplied ballast for feeding the fluorescent lamps in normal situations, a battery pack, an emergency circuit that charges the battery and powers the lamp in an emergency situation, and a micro-controller based supervisory circuit that controls the charging, monitors the emergency functions and displays the results of self test and emergency unit status by means of a red and green LED.
The unit can be connected to an external switch that can inhibit the emergency functions when the mains power is on or off and restart the emergency functions with or without mains power being applied. The terminals for this feature must be specified when ordering. (See 3.7)
By switching the voltage on a connection Ls the lamps can be switched on and off without the emergency function being activated. The Ls connection is insulated from Lc and has a signal function only drawing a very small current.
The luminaire will go into emergency mode at not less than 60% rated supply voltage and will remain in mains mode above 85% of rated supply voltage.
On restoration of the mains supply there will be a **60 sec delay** before the emergency lamp is restored. This feature is not common on emergency luminaires and should be noted. The feature is provided to increase reliability when operating in bad supply conditions.

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The charging function is monitored continuously. There is a check for over charging and no charging. In case of a control gear fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low discharge current mode.

4.2 Self testing

An immediate full test of capacity can only be made by manually de-energising the installation and timing the discharge. The LED indication will show if the duration is less than 2.5 hours or 2 hours if the temperature during the test is very high or very low. (45ºC < T amb <-5ºC, with mains lamps operating normally prior to test).
The control continuously monitors all charging functions.
The unit will self test for a short period every 13 days. The short self testing is for emergency function. The initial starting time for the self test routines is at a random point in the 13 day cycle, starting at the first mains energisation after the battery is connected or re-connected. During the 13 day self test the unit will test for function including lamp condition. The test will last 9 minutes with one lamp being energised at emergency level during the test period, the other lamp will remain on. If Ls is off, the short test is delayed until Ls is re-energised.
The unit will perform a complete battery discharge every “3” months (102 days) and will check for minimum emergency duration as stated above. The start of the first complete battery discharge is at a random point between 0 and 102 days after applying mains voltage. The test will be repeated at fixed 3 monthly intervals. The unit will also complete a full self test after completing a commissioning cycle to full charge and after battery replacement.
The test will be delayed if the battery is not fully charged or the operating temperature at the time is too high to give a proper result or Ls is off. The test is also made after the initial installation and energisation and a full charge cycle completed. One lamp remains energised at normal mains output. The long test will also take place after a battery is changed or disconnected then re-connected.
The emergency lamp condition is monitored during lamp start. At the start of the long test the emergency lamp is extinguished for 9 minutes to check cold starting performance. If the lamp ignition is not correct the LED will display 3 repeated red flashes. This will happen even if the lamp does ignite and run at the normal light level.
If the self-test detects a failure it is indicated as follows. Refer to the Table 1 below.
Emergency lamp defective: continuous red flashing.
Battery defective or low capacity: two red flashes, followed by a pause.
Emergency unit defective: three red flashes followed by a pause.
If the charge condition is known, the unit will re-charge from empty to approximately 80 % charge in 14 hours,. Afterwards a reduced current post charge period will be applied to complete the charge. If the battery charge condition in unknown (e.g. first connection) a reduced charge is applied for 44 hours.
For battery temperatures below 10°C charge current is reduced and charge time increased.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a fault three red flashes, followed by a pause are displayed.
The control contains dedicated features which prevent any unsafe condition arising if the micro-processor were to malfunction. After a complete battery discharge, the unit will switch over to a low battery discharge mode which maintains the memory and monitoring function.

LED display

The status is displayed by means of red and green LED signals.
The green LED will flash slowly, if the batteries are being charged, and all emergency functions were found to be OK during the last self-test.
The green will be steady at full charge.
The red only will flash if there is a fault.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Table 1 Monitoring function indication

GREEN	RED	MODE	REMARKS
Fast flash ½ sec on, sec off		Charge C/10	
Slow flash 1 sec on, 1 sec off		Charge C/20	Charging currents at low temperatures reduced
Steady		Fully charged	
Fast Flashing alternate Red-Green	Fast flashing alternate Red-Green	Less than one ½ hour duration left during emergency operation	one lamp at emergency light level
	fast flashing	Lamp faulty	Emergency lamp only
	2 red flashes repeating	Battery faulty or battery not connected or low duration after long test	Minimum duration limit during long test not met, limits are temperature and type dependent
	3 red flashes repeating	fault in electronics of power supply	
Slow flash or steady	Periodic short flash once per 4 secs	Mains on emergency inhibited	
None	None	Defective display	Lamps on
None	None	-mains off, battery discharged, or -mains off, emergency inhibited or -total unit defective	Lamps off
None or steady green	None	Emergency control defective	Mains lamp on

4.3 Inhibition (also see 3.7)

If local emergency inhibition is required the luminaire should be ordered with the connections for this feature built in. The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. Closed circuit is normal, off inhibits the emergency function. Up to ten luminaires can be connected in parallel to one switch and using 500m of cable.

The inhibit as well as de-inhibit functions can start with normal mains power present as well as without mains power, the emergency light can be switched on while the whole power system is still dead.

Inhibition is not possible with a completely discharged battery and no mains being present. The emergency function can be inhibited whilst in emergency operation.

5.0 Commissioning (Refer to section 6 for access)

The units will only be fully operational and give completely correct indication after the completion of a full charge, self-test discharge and recharge cycle, approx. 100 hours. Once this is complete the unit will have it's full operating parameters installed in the memory. Provided the battery is not disconnected indication will function correctly.

5.1 Non-emergency luminaires are energised after the lamps are fitted and the luminaire closed. Both lamps should light. Open the cover the lamps will go out.

5.2 Commissioning Emergency

5.2.1 Commissioning with un-powered installation

After inserting the lamps and closing the cover, the unit will go onto emergency mode until discharged if the initial battery voltage is high enough. (> 5.5 V).

If the emergency inhibition switch is in the blocked condition the lamp will go on for 60 seconds unless there is not enough charge in the battery to sustain it for that time.

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5.2.2 Commissioning with mains power applied.

If a local light switch is connected put it to on.

After inserting the lamps and closing the cover the unit will light. At first power up the emergency lamp will light fully after 60 secs. This is done to increase reliability in very frequent mains on and off situations or irregular supply such as may occur during commissioning.

The initial C/20 charge will be indicated by a green flashing LED 1sec on 1 sec off.

If an emergency blocking switch is present a short red flash every 4 sec will be displayed if the switch is in the blocked state.

If the battery charge condition in unknown (e.g. first connection) a reduced current charge is applied for 44 hours. The long self test takes place after the initial installation and energisation has been made and a full charge cycle completed. The test will be delayed if the operating temperature at the time is too high to give a proper result or if Ls is off. One lamp remains energised at normal mains output. After the test the unit will fast charge to 80% then post charge to fully charged and the indication will then be steady green.

5.2.3 Low Temperature Operation

At battery temperatures below 10°C charge current is reduced and charge time increased. This temperature is equivalent to the luminaire operating at -5ºC with the lamps on or at +5ºC with the lamps off.

Under operating conditions where the ambient temperature is below 0ºC for long periods the luminaire should preferably be used in maintained mode so that the mains supplied lamps warm up the battery to a normal working temperature.

6.0 Servicing and Operation

The luminaire incorporates an electronic safety de-energiser for maximum reliability and utility of the emergency monitoring function. The electronic sensor is operated by the actuating plate on the cover. This provides for the safe opening and carrying out of re-lamping.

Safe servicing behind the gear tray requires the mains supply to be isolated, and battery connections must be treated with care, see 6.8.

6.1 Opening and Closing front cover

The front cover is secured using 6/10 off M6 captive screws, care to be taken as there is no suspension on this.

6.2 Fitting lamps and Re-Lamping

IMPORTANT - If the luminaire is maintained with the power on, the lamps will go out when the cover is opened. If this does not happen there is a fault. Do not remove the lamps. The control gear will be damaged if the lamps are removed without being de-energised and there is an ignition risk. This could occur if the sensor arrangement is faulty or has been defeated. The luminaire must be de-energised the control gear checked and electronic sensor assembly must be replaced if faulty, see 6.7.

Lamps which are not operating or appear dim should be replaced as soon as practical. The control gear is designed to withstand end of life conditions of lamps The emergency unit will indicate in advance that the lamp is approaching end of life. Always replace both lamps.

The bi-pin lamps are fitted in lampholders with a rotating section. The lamp must be pushed firmly down into the lampholder and rotated 90º. The contact is biased to remain in the 90º position. If the lamp does not rotate, check that it is completely positioned into the lampholder. Before inserting lamps ensure the lamp pins are not damaged or slack in the end cap.

6.3 Releasing the Reflector/Gear Tray

Loosen the two fixing screws retaining the reflector/gear tray far enough for it to slide over keyhole slots. Check the tray will hang on the retaining chains without stressing the wiring between body and tray. Replace in reverse order.

The lampholder assemblies can be removed from the gear tray, if necessary, by removing the fixing screw and pushing up the click finger at the end of the gear tray and pushing the lampholder assembly forward towards the centre of the tray.

Re-assembly is a reversal of the above, ensure the lampholder assembly fully clicks into place on the gear tray.

Lampholder assemblies have the connecting receptacles and are specific to each model. If they are being replaced the correct spare assembly must be ordered.

6.4 Removal of Reflector/Gear Tray c/w Lampholder Assemblies

Release gear tray from body and hang on retaining cords, as explained above. Disconnect the cables from the gear tray to the mains terminal block, unhook retaining cord from gear tray and lift clear.

6.5 Servicing Behind the Gear Tray

The release of the gear tray exposes live mains terminals. Any work behind the gear tray requires that the supply is isolated to avoid ignition risk and damage to components.

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6.6 Replacement of Ballast or Emergency control

The ballast contains no replaceable parts. Should it be found necessary to replace the ballast, the following procedure should be adopted:

Ensure that the luminaire is isolated from the mains supply.

Remove gear tray from body and swing down as previously explained. Undo the battery plug on emergency luminaires.

Ballasts use 6mm tab connectors which are locked and are released when the black cover sleeve is pulled away axially. When replaced a 'click' will be heard as the lock locates. **On no account should the quick release connectors be replaced with proprietary items.**

Disconnect the leads to the ballast, note the connections. When removing the connections **always** disconnect the sensor and LED connections (LED1 LED2 PRPT1 and PROT2) **last** and reconnect them **first**. Remove the ballast retaining screws and remove ballast from tray.

Replacement of the units is in the reverse order. Check the connections carefully before re-energising. The emergency lamp leads are marked with a plastic sleeve (E). The lamp leads on the emergency are marked as pairs. Take care to connect correctly. . The unit is **not** protected against reverse battery polarity. The yellow leads are the high voltage ones. Miss-connection of the units will be very likely to result in damage. **Care and checking during replacement can not be over emphasised.**

6.7 Replacement of sensor with or without LED assembly

It is very unlikely that this assembly will need replacement other than as a result of mechanical damage**.**

Isolate the mains. Disconnect and note the connections. Undo the two screws and replace the unit using the nuts from the old unit. Reconnect and carefully check the connections before re-energising.

6.8 Replacement of battery

The battery is accessed by releasing the gear tray fixing screws sliding the tray and hinging it down.

The battery is connected to the control using a plug and socket arrangement. The battery load is disconnected by the electronic sensor device. The screws holding the battery pack are loosened and the battery pack slid axially one way then the other in order to release. The battery pack is not intended to be opened and is replaced as a unit. The battery is potentially incendive but is protected during removal by the IP30 construction which covers live parts. The battery assembly must be protected from damage and water ingress then **removed from any potentially hazardous area as soon as practical.**

The replacement battery is slid axially one way then the other in order to insert then the screws are tightened. The socket is then inserted. The luminaire must not be operated without the battery connected. If the battery is removed and not replaced the control gear supply must be disconnected at the mains terminal block and secured.

6.9 Checking of Battery separately

The easiest way of checking the battery is in a known serviceable luminaire against the rated duration.

If the battery is to be checked separately, it should be charged using a **constant current charger** at 200/400mA for 30/15 hours for the 4Ah (18W) or 350/700mA for 30/15 hours for the 7Ah (36W). Discharge measurement is not easy as the current is proportional to the voltage for resistance loads, so it has to be averaged. Discharge the battery at 1 to 2A and multiply current by time. Do not discharge below 1 volt per cell, that is 5V. The capacity should be 70% or more of normal.

7.0 Routine Maintenance

Visual tests and checks should be carried out at intervals described by the appropriate regulations, EN 60079-17, and should include the following:

Check that the lamps are working or appear badly aged. Blackening at the lamp ends is a good indication of length of use.

Check for mechanical damage/corrosion.

Check for loose connections including earthing.

Check for undue accumulations of dust or dirt.

Verification of tightness of fixing, glands, blanking plugs etc.

Check for unauthorised modifications.

Check condition of enclosure gasket and fastenings.

Check for any accumulation of moisture.

Periodic inspection of the enclosure seal should be carried out to ensure that the seal is sound. The seal can be replaced and, if necessary, secured in position by the application of a small amount of silicone RTV adhesive.

If the luminaire has been subject to abnormal conditions, for example, severe mechanical impact or chemical spillage, it must be de-energised until it has been inspected by an authorised and competent person. If in doubt, the unit should be returned to Chalmit for examination and, if necessary, replacement.

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7.1 Fault finding

In general, installations of luminaires have a number of units on site. Once apparently faulty components are in the workshop fault finding is done by substituting known healthy components. Except for checking continuity to the supply and ballast input connections there is little that can be done to fault find using instruments. Live testing and use of meters on high frequency units in a workshop will gain little information and may damage healthy components. Take great care in connecting and disconnecting see 6.7. Use a charged battery wait for 60 seconds for units to respond.

7.1.1 Non emergency

The lamps will run until one fails to strike. Fit new lamps. If the result is not satisfactory, check continuity to the ballast. If still no result, check the continuity to lampholders after disconnecting leads from ballast. If no fault found replace ballast. If still no result, disconnect the connection to the sensor. If the lamps light this would indicate a faulty sensor, see 6.7 but as this is most unlikely check all connections before replacing.

7.1.2 Emergency

Check for operation of the LED. **If the LED is red** refer to the table which shows the fault diagnostics. If the unit does not work on the mains with Ls energised carry out the checks in 7.1.1. If mains operation can not be restored replace the control unit.

The usual first service operation with emergency units which appear to work normally on mains but not on emergency is to energise for a few minutes before checking emergency operation. If no result, check that the inhibit connection is closed circuit. If the unit works on emergency let it discharge fully. The unit should then be energised for 60 mins and the discharge re-checked.

If the unit runs for a few minutes it is charging. If not, change the battery and repeat the full discharge and short charge test. If OK, give the unit a full 48 hour charge and check the duration. If there are still fault indications replace the control unit.

7.2 Cleaning

The diffuser should not be polished or wiped with a dry cloth as a risk of ignition due to electrostatic discharge may result. Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

8.0 Fuse and MCB Ratings

It is recommended that for selection of MCB's users should consult the MCB manufacturer as this unit contains electronic control gear. MCB ratings can vary depending on the manufacturer and type and the size of the installation, i.e. impedance of conductors. The electronic control gear has an inrush current of 30A for 500µs on 230V, emergency and non-emergency, 45A for 350µs on 110V, non-emergency, and 35A for 250µs on 110V, emergency. These figures are for low resistance connections with short cables and low impedance supplies.

9.0 Disposal of Material

General

The body is made from incombustible and combustible materials. The diffuser is plastic and the control gear contains plastic parts and electronic components. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

9.1 Lamps

Fluorescent lamps in modest quantities are not "special waste". They should be broken up in a container to avoid injury, avoid inhaling dust.

Important : *Do not incinerate lamps.*

9.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the person disposing needs to observe a 'duty of care'.

Batteries can be returned to the manufacturers for recycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting, or otherwise ensure that there can be no release of stored energy in transit. For further details refer to our Technical Department.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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Table 2 Nominal Lamp Power and Supply Current

Supply Voltage	Lamps	Power W	Current A
230V, 50/60Hz	2 x 18W / 1 x 36W	35	0.17
	2 x 18W Emergency	40	0.19
	2 x 36W	70	0.32
	2 x 36W Emergency	77	0.36
110V, 50/60Hz	2 x 18W / 1 x 36W	35	0.34
	2 x 18W Emergency	40	0.38
	2 x 36W	70	0.65
	2 x 36W Emergency	77	0.73

Power Factor >0.98. Power is constant over voltage range.

Tamb Storage -40ºC to +80ºC

EMC EN 50081-2 (emission)
EN 50082-2 (immunity)
EN 61000-3-2 (harmonics generated)

Over voltage 400V ac for 1 min
EN 61000-4-5 > 4kV

Batteries 6V 7Ah NiCd (36W)
6V 4Ah NiCd (18W)

Emergency Duration 3 hours to EN 60598 2-22 @ Tamb 25º C
(The standard requires the 3 hour duration after 4 years of operation)
4 hour duration units are special

Emergency Output 1200mm lamp 25% of normal single lamp output
600mm lamp 30% of normal single lamp output
4 hour duration units are special and give80% of these values.

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office

Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note

Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

DRAWING NUMBER/SHEET NUMBER
F1059

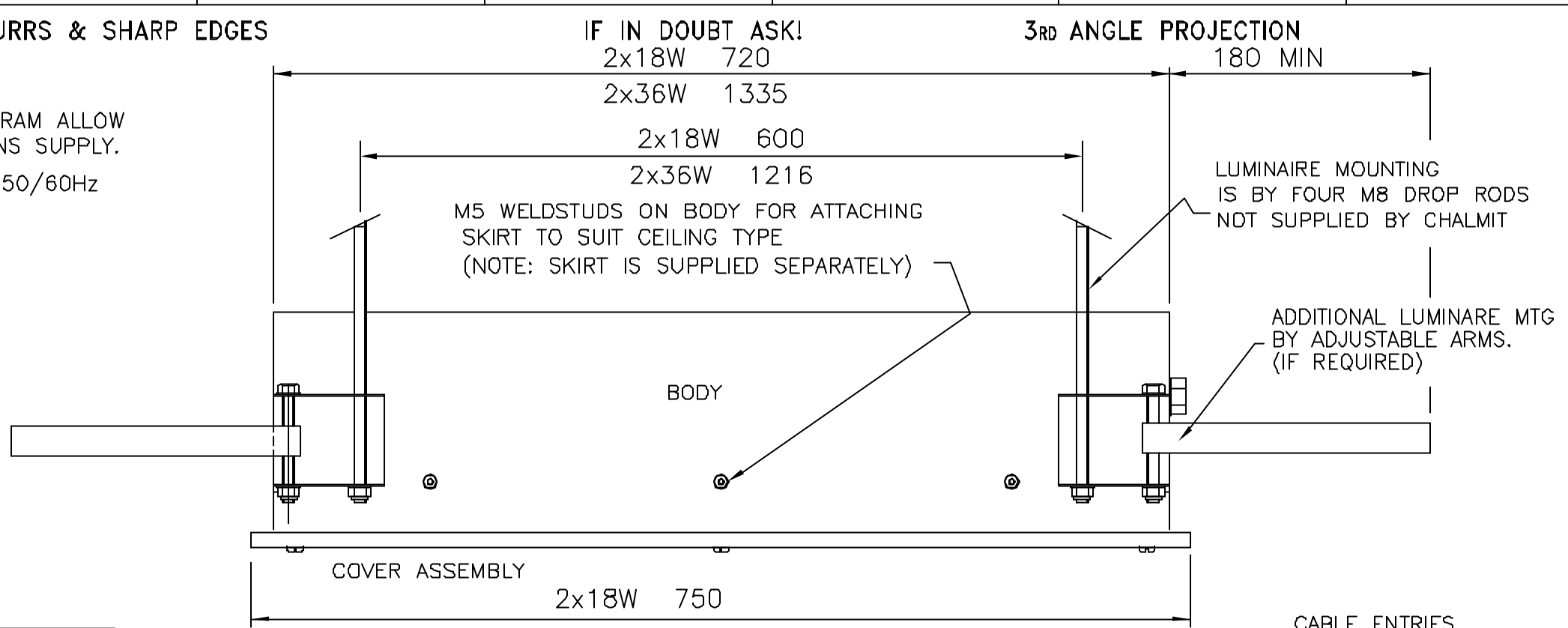
REMOVE ALL BURRS & SHARP EDGES

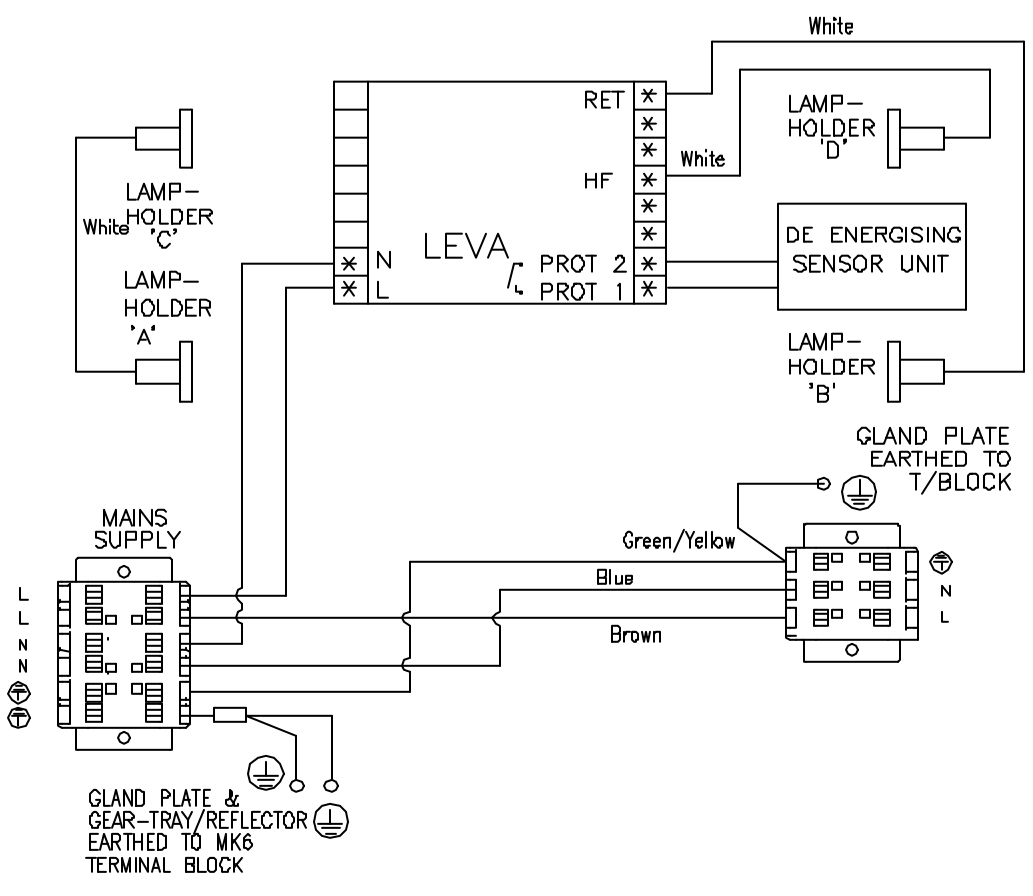
IF IN DOUBT ASK!

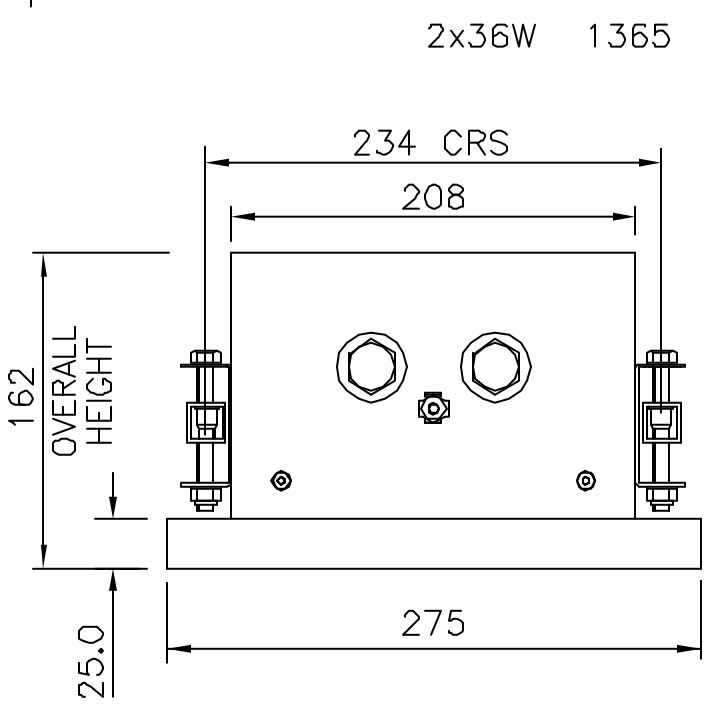
3RD ANGLE PROJECTION

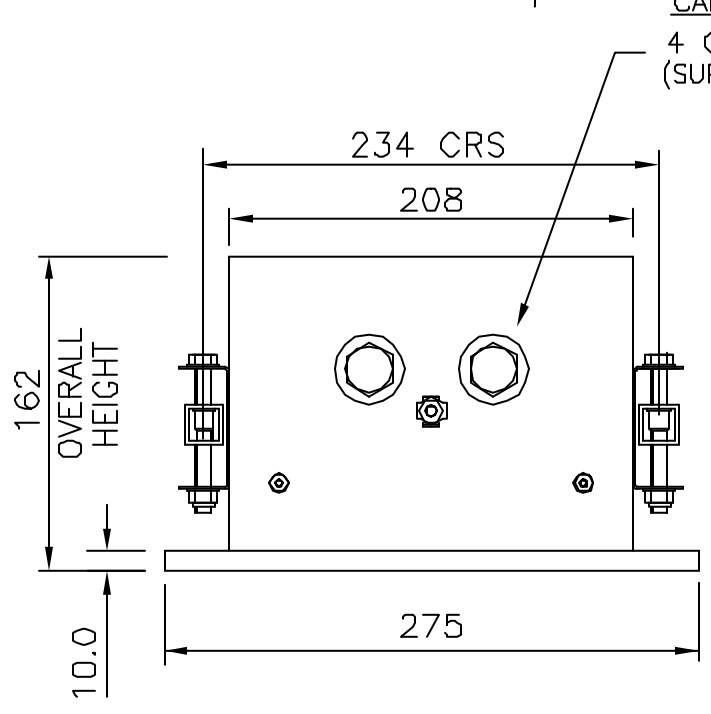
NOTES

1) THE TERMINAL BLOCKS SHOWN ON THE WIRING DIAGRAM ALLOW FOR SINGLE ENTRY,LOOPING & THRO' WIRING FOR MAINS SUPPLY.
2) THE VOLTAGE SUPPLY IS 220–254V (–10%/+10%) 50/60Hz
3) IP 65 RATING
4) SUITABLE FOR 3 CORE 6mm SQ. INCOMING CABLE AS STANDARD.
5) THRO' WIRING IS STANDARD ON ALL MODELS.
6) BI–PIN LAMPHOLDERS ARE STANDARD.
7) EC Type Examination Certificate KEMA01ATEX2067
8) Coding II 2 G Ex eqm II T4 Tamb 55°C









COVER ASSEMBLY – 1.6mm THK ZINTEC FRAME POWDER PAINTED WHITE AND CLEAR POLYCARBONATE DIFFUSER

BODY – 1.2mm THK ZINTEC POWDER PAINTED WHITE.

COVER FIXINGS – M6x20Lg SLOTTED PAN HEAD SCREWS.

CONTROL GEAR –ELECTRONIC CONTROL GEAR C/W EMERG INVERTOR

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	10/06/2002

REF. DRGS.–

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL	TOLERANCE
FINISH	SURFACE ROUGHNESS
DIMS. IN MM	SCALE –

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
Acclaim III Exe
Clear Poly. Diffuser
2x18W & 2x36W

DRAWING NUMBER/SHEET NUMBER
F1059 1 OF 1

DRAWING NUMBER/SHEET NUMBER
F1056

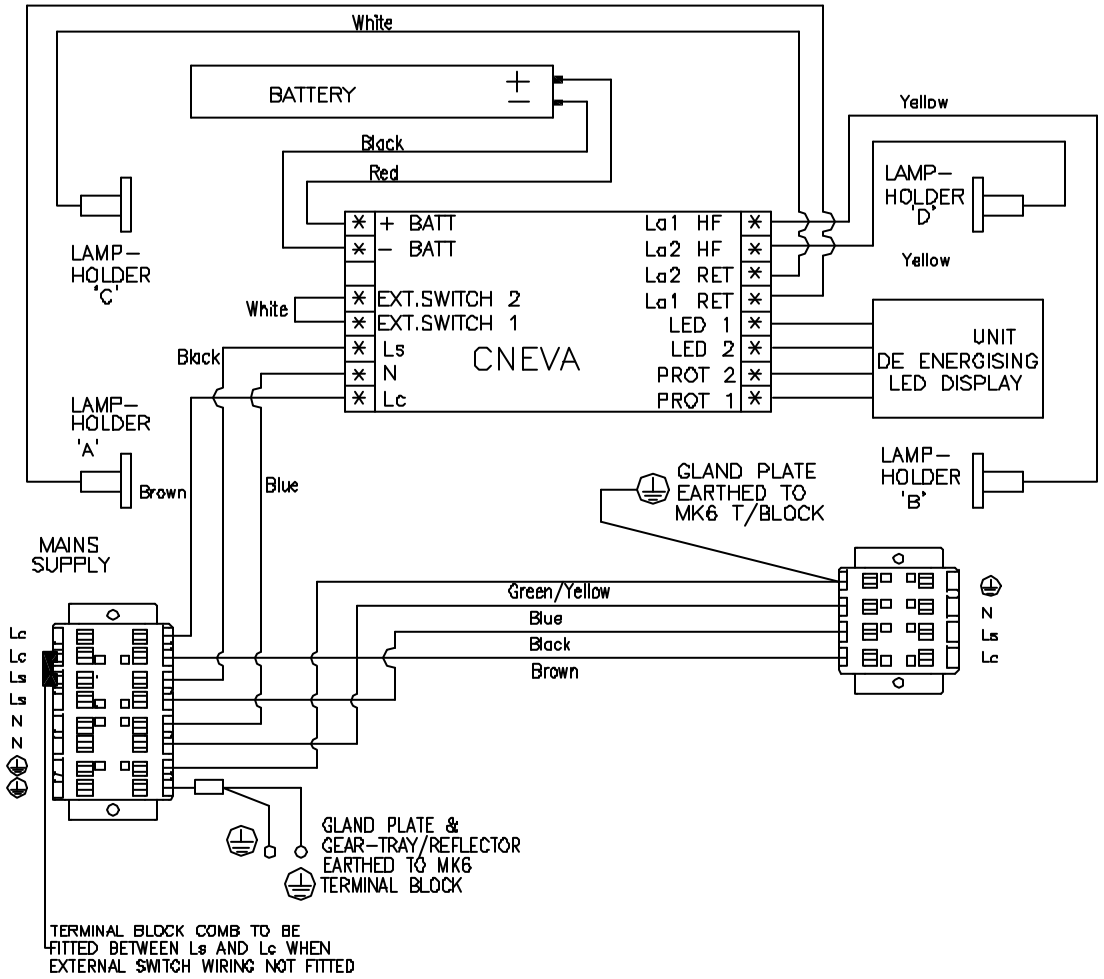
REMOVE ALL BURRS & SHARP EDGES

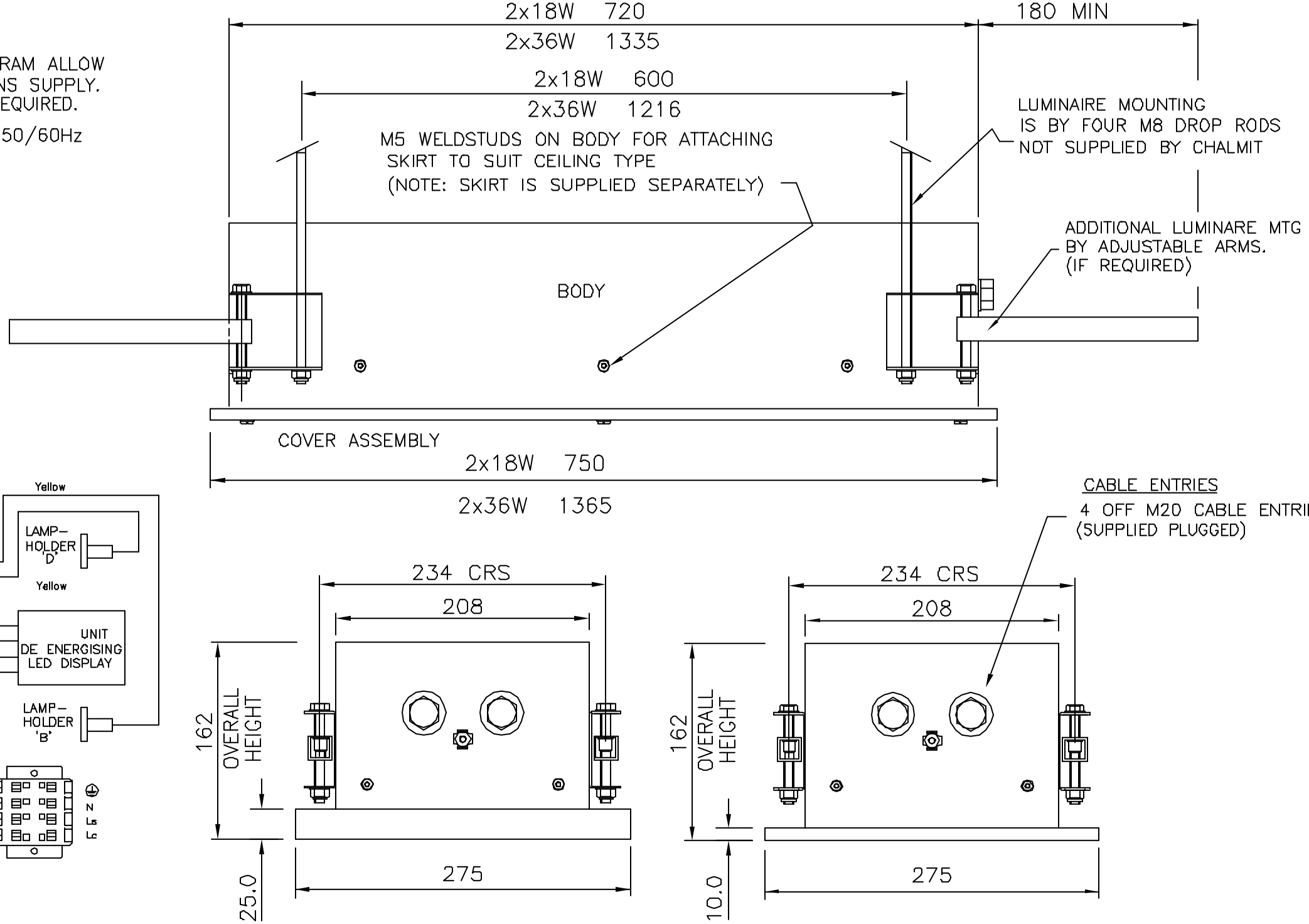
IF IN DOUBT ASK!

3RD ANGLE PROJECTION

NOTES

1) THE TERMINAL BLOCKS SHOWN ON THE WIRING DIAGRAM ALLOW FOR SINGLE ENTRY,LOOPING & THRO' WIRING FOR MAINS SUPPLY. THE REMOTE INHIBITING FACILITY CAN BE LOOPED IF REQUIRED.
2) THE VOLTAGE SUPPLY IS 220–254V (–10%/+10%) 50/60Hz
3) IP 65 RATING
4) SUITABLE FOR 4 CORE 6mm SQ. INCOMING CABLE AS STANDARD.
5) THRO' WIRING IS STANDARD ON ALL MODELS.
6) BATTERY IS CONTAINED INSIDE THE BODY.
7) BI–PIN LAMPHOLDERS ARE STANDARD.
8) EC Type Examination Certificate KEMA01ATEX2067
9) Coding II 2 G Ex eqm II T4 Tamb 55°C





CABLE ENTRIES

4 OFF M20 CABLE ENTRIES (SUPPLIED PLUGGED)

COVER ASSEMBLY – 1.6mm THK ZINTEC FRAME POWDER PAINTED WHITE AND CLEAR POLYCARBONATE DIFFUSER

BODY – 1.2mm THK ZINTEC POWDER PAINTED WHITE.

COVER FIXINGS – M6x20Lg SLOTTED PAN HEAD SCREWS.

CONTROL GEAR –ELECTRONIC CONTROL GEAR C/W EMERG INVERTOR

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	10/06/2002

REF. DRGS.–

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL	TOLERANCE
FINISH	SURFACE ROUGHNESS
DIMS. IN MM	SCALE –

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
Acclaim III Exe Emerg
Clear Poly. Diffuser
2x18W & 2x36W

DRAWING NUMBER/SHEET NUMBER
F1056 1 OF 1

Curie Elite

Ex e RECESSIBLE

ATEX CATEGORY 2
ZONE 1 APPLICATIONS

The Curie Elite range of luminaires for tubular fluorescent lamps is available in normal and emergency versions. It is designed for use in the pharmaceutical industry where it provides working, emergency and escape lighting. The body is made from zinc coated sheet steel and the diffuser from prismatic polycarbonate with the smooth face outwards. Where it meets the ceiling aperture the body is fitted with a flipper seal which caters for irregularities and provides excellent sealing which meets the requirements of FS209D class 100 clean rooms.
The range is flexible to allow luminaires to be recessed into a variety of ceiling types. Versions for standard modular sizes are available.
The control gear and batteries are mounted internally on a gear tray and access for lamp replacement and maintenance is simple and easy.
The emergency version has excellent emergency light output and duration in accordance with emergency lighting standards.
Comprehensive self-testing periodically confirms the availability of sufficient emergency duration.

Standard Specification

Type of Protection:	**Ex eqm (Increased safety Powder filling Encapsulation)**
	Dust protected enclosure
ATEX Classification:	**Group II Category 2 G D**
Area Classification:	**Zone 1 and Zone 2 areas to EN 60079-10 and EN 50281-3 with installation to EN 60079-14 and EN 50281-1-2**
Apparatus Standard:	**EN 50014 EN 50017 EN 50019 EN 50028**
Certificate:	**EC Type Examination Certificate Baseefa02ATEX0117X**
Coding:	**Ⓔx II 2 G D Ex eqm II T4 Tamb 50ºC**
Enclosure:	**White polyester painted zinc coated steel body and aluminium frame. EPDM rubber gasket. Prismatic polycarbonate diffuser.**
Reflector/Geartray:	**White polyester painted zinc coated steel**
Entry:	**3 x 20mm diameter holes for cable entries, 2 at one end and 1 at the other end**
Termination:	**3 core 6mm² max. conductor with looping and through wiring 16A rating. Emergency version 4 core 6mm² max. conductor with looping and 16A rating through wiring**
Installation:	**Fixed side brackets with swing out arms, with provision for rod mounting**
Lamp Type:	**T8 tubular fluorescent**
Lampholder:	**G13 (Bi-pin)**
Control Gear:	**High Frequency**
Relamping:	**Access via front cover secured by screws**
Burning Position:	**Horizontal**
Ingress Protection:	**IP65 to EN 60598-1:2000** **Satisfies the requirements of FS 209D Class 100 Clean Rooms ISO Standard 1997 Class 5**
Electrical Supply:	**220V - 254V 50/60Hz, and 220V - 300V dc non-emergency only**
Battery:	**Internal Ni-Cd battery (6V 4 Ah - 18W, 6V 7Ah - 36W)**
Battery Duration:	**90 minutes to EN60598-2-22**
Emergency Output:	**30% of one lamp (18W), 25% of one lamp (36W)**

Features

Front cover to body seal to IP65

Gasket fitted to body at ceiling aperture for sealing to IP65

Battery management monitoring & automatic self test

Screwless mains terminals

Simple and easy access via front cover for lamp replacement and maintenance

Suspended gear tray for ease of maintenance

Automatic lamp de-energisation on opening

Electronic control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output

Local switching arrangement as standard

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

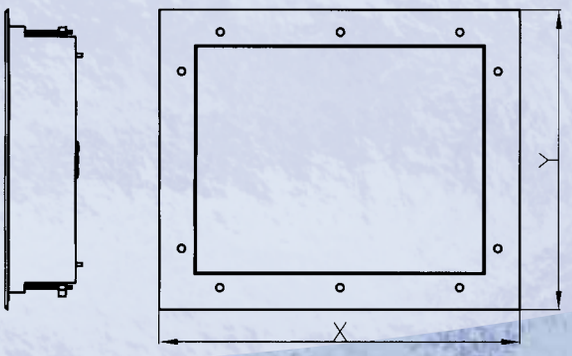
Std. Cat No.	Wattage	Weight
CUEE/218/BI	2x18W	12.5
CUEE/418/BI	4x18W	16.0
CUEE/236/BI	2x36W	16.0
CUEE/436/BI	4x36W	20.0
CUEE/218/BI/EM	2x18W	14.5
CUEE/418/BI/EM	4x18W	18.0
CUEE/236/BI/EM	2x36W	18.0
CUEE/436/BI/EM	4x36W	22.0

Options - Suffix to Catalogue No.

/120	Specific voltage (110/120)
/25	25mm Entries
/EL	Extra live termination facility (to match emergency circuit)
/LG	Low glare louvre
/MET	Modular – Exposed 'T' ceiling
/MST	Modular – Spring 'T' ceiling
/2L	2 lamp emergency mode (only available in 4 lamp models)
/3H	3 hour battery duration

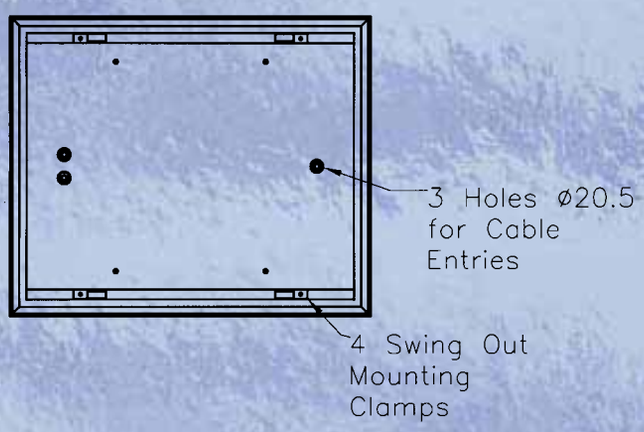
Applications

- Zone 1 and 2 hazardous areas
- Clean rooms
- Pharmaceutical process areas
- Tablet production facilities
- Powder mixing areas
- Laboratories
- Laboratory access corridors
- Food process areas



	2/3/4x18W	2x36W	3/4x36W
DIM X	774	1383	1383
DIM Y	644	402	644
APERTURE	580x710	338x1319	580x1319

NOTE: APERTURE TOLERANCE +5 −0.



NOTE: Contact Sales for dimensional details of modular versions

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1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC - Type Examination Certificate Number: **Baseefa02ATEX0117X**

4 Equipment or Protective System: **THE CURIE RANGE OF RECESSIBLE LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa (2001) Ltd. Notified body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **02(C)0045 dated 14 February 2003**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amendments 1 & 2, EN 50017: 1998, EN 50019: 2000,
EN 50028: 1987 + Amendment 1, EN50281-1-1: 1998

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following :

Ⓔx II 2GD T70°C EEx eqm II T4

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa (2001) Ltd. Customer Reference No. **0068**

Project File No. **02/0045**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

Baseefa (2001) Ltd.
Health and Safety Laboratory Site, Harpur Hill,
Buxton, Derbyshire SK17 9JN
Telephone +44 (0) 1298 28255 Fax +44 (0) 1298 28216
e-mail info@baseefa2001.biz web site www.baseefa2001.biz
Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

13 **Schedule**

14 **Certificate Number Baseefa02ATEX0117X**

15 Description of Equipment or Protective System

The Curie Range of Recessible Luminaires comprises twin, three and four lamp units of 18W and 36W in emergency and non-emergency units. The rectangular luminaire body is fabricated steel with a polycarbonate or glass diffuser held in an aluminium frame. Ingress protection of at least ***IP65*** is maintained by a closed cell silicone rubber gasket between the diffuser and the aluminium frame and between the aluminium frame and the steel body. The gasket is either self adhesive or adhered to one surface with silicone rtv sealant. The diffuser frame is secured to the body using up to 10 M6 screws.

The luminaire is intended for flush ceiling mounting with the body located in a recess in the ceiling. At least four mounting clamps are provided to fasten the luminaire body in place.

The following non-emergency models are included in the range:

Model	Control Gear	Lamps	Voltage (v)	T_{amb} (°C)	T Class	Max Surface temperature (°C)
Non-modular	2 x LEVA CH12	4 x 18W	220-254 (47-63Hz) or 220-300 dc	-20 to 40	T4	70
	1 x LEVA CH14	2 x 36W				
	1 x LEVA CH12 & 1 x LEVA CH14	3 x 36W				
	2 x LEVA CH14	4 x 36W				
	2 x LEVA CH18	4 x 18W	110-120 (47-63Hz) or 110-150 dc			
	1 x LEVA CH20	2 x 36W				
	1 x LEVA CH18 & 1 x LEVA CH20	3 x 36W				
	2 x LEVA CH20	4 x 36W				
Modular	2 x LEVA CH12	4 x 18W	220-254 (47-63Hz) or 200-300 dc			
	1 x LEVA CH14	2 x 36W				
	2 x LEVA CH14	4 x 36W				
	2 x LEVA CH18	4 x 18W	110-120 (47-63Hz) or 110-150 dc			
	1 x LEVA CH20	2 x 36W				
	2 x LEVA CH20	4 x 36W				

The LEVA electronic control gear is ATEX approved by certificate KEMA00ATEX2121U. It is located beneath a white painted gear tray within the luminaire body. The LEVA ballast is interchangeable with the parallel circuit type ILB with certificate number KEMA00ATEX2121U. The same certificate covers CNEVA electronic control gear incorporating an inverter for use on emergency models. Emergency models have a 6 volt battery made up of 5 Nickel-cadmium batteries connected in series rated at either 4 or 7 Ah. Modified 36W CNEVA types may alternatively use 4Ah batteries. The following emergency models are included in the range:

Model	Control Gear	Battery (Ah)	Lamps	Voltage (v)	T_{amb} (°C)	T Class	Max Surface temperature (°C)
Non-modular	1 x LEVA CH12 & 1 x CNEVA CH22	4	4 x 18W	220-254 (47-63Hz)	-20 to 40	T4	70
	2 x CNEVA CH22	2 x 4	4 x 18W				
	1 x CNEVA CH24	7	2 x 36W				
	1 x LEVA CH12 & 1 x CNEVA CH24		3 x 36W				
	1 x LEVA CH14 & 1 x CNEVA CH24		4 x 36W				
	2 x CNEVA CH24	2 x 7	4 x 36W				
	1 x LEVA CH18 & 1 x CNEVA CH21	4	4 x 18W	110-120 (47-63Hz)			
	2 x CNEVA CH21	2 x 4	4 x 18W				
	1 x CNEVA CH23	7	2 x 36W				
	1 x LEVA CH18 & 1 x CNEVA CH23		3 x 36W				
	1 x LEVA CH20 & 1 x CNEVA CH23		4 x 36W				
	2 x CNEVA CH23	2 x 4	4 x 36W				
Modular	1 x LEVA CH12 & 1 x CNEVA CH22	4	4 x 18W	220-254 (47-63Hz)			
	2 x CNEVA CH22	2 x 4	4 x 18W				
	1 x CNEVA CH24	7	2 x 36W				
	1 x LEVA CH14 & 1 x CNEVA CH24		4 x 36W				
	2 x CNEVA CH24	2 x 7	4 x 36W				
	1 x LEVA CH18 & 1 x CNEVA CH21	4	4 x 18W	110-120 (47-63Hz)			
	2 x CNEVA CH21	2 x 4	4 x 18W				
	1 x CNEVA CH23	7	2 x 36W				
	1 x LEVA CH20 & 1 x CNEVA CH23		4 x 36W				
	2 x CNEVA CH23	2 x 7	4 x 36W				

The CNEVA control gear controls the charging and discharging of the battery providing under-voltage and over-voltage protection and preventing reverse polarity charging of the cells.

ATEX EEx e approved terminals covered by certificates BAS99ATEX2123U, SIRA02ATEX3247U or PTB98ATEX2135U are provided for the connection of the external supply using cables with up to 6 mm^2 conductors.

Internal wiring is by 1/0.8 solid copper conductor with heat resistant PVC insulation. Looping cables, where required, are 2.5mm^2 stranded copper conductor with silicone insulation. Through-going wiring is by 2.5mm^2 or 4mm^2 flexible conductor with high temperature PVC insulation and heat resistant oversleeve when required. When two conductors enter one terminal way they are fitted with a crimp-on blade connector.

The enclosure is provided with cable entry holes which must be fitted with ATEX EEx e approved cable glands which maintain the ingress protection of the enclosure. Unused entries must be fitted with ATEX EEx e approved stopping plugs.

16 Report Number

02(C)0045

17 Special Conditions for Safe Use

1. Emergency luminaires must not be powered up without the battery fitted.

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

Drawing	Sheet	Issue	Date	Title
D2072	1	0	4/12/01	Certification details
D2072	2	0	7/12/01	General arrangement
D2072	3	0	7/12/01	Gear tray layout
D2072	4	0	7/12/01	External dimensions
D2072	5	0	8/10/02	Modular type dimensions
D2072	6	0	17/12/02	Non-modular gear tray layout
B1333	1	0	3/2/03	Circuit diagram

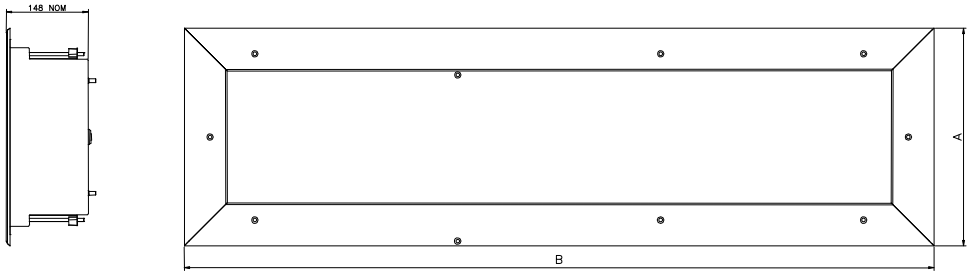
Issue 01

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

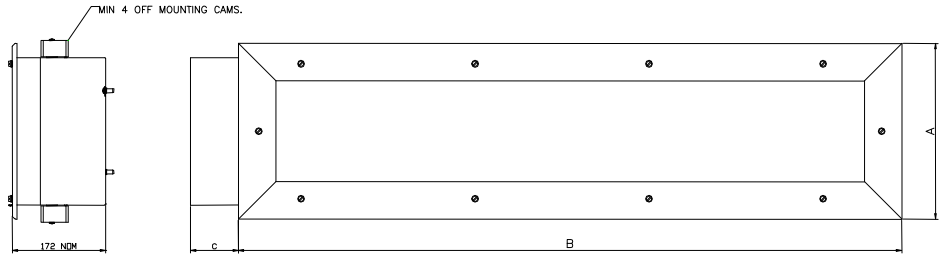
Curie Elite ATEX

RECESSED CLEAN ROOM LUMINAIRE

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



	NON–MODULAR TYPE LUMINAIRES			
	EXPOSED T DIMENSIONS			
DIM	4x18W	2x36W	3x36W	4x36W
A	644	401	644	644
B	774	1383	1383	1383



	MODULAR TYPE LUMINAIRES					
	EXPOSED T DIMENSIONS			SPRING T DIMENSIONS		
DIM	4x18W	2x36W	4x36W	4x18W	2x36W	4x36W
A	624	324	624	599	299	599
B	624	1224	1224	599	1199	1199
C	78	88	88	78	88	88

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0.0 Specification and ATEX Declaration

Type(s) of protection	Ex e Increased safety, Ex q Powder filling and Ex m Encapsulation
Protection standards	EN 50014, EN 50017, EN 50019, EN 50028, EN 50281-1-1.
Area of application	Zone 1 and Zone 2 areas to EN 60079-10 and installation to EN 60079-14 Zone 21 and Zone 22 areas to EN 50281-3 and installation to EN 50281-1-2 and EN 60079-14
ATEX equipment Classification	Group II Category 2 G Group II Category 2 D
Equipment coding	Ⓔx II 2 G Ex eqm II T4 II 2 D T70°C
Certificate	EC Type Examination Certificate Baseefa02ATEX0117X
CE Marking CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the ATEX directive by reason of the EC Type Examination denoted, based on the harmonised standards listed above. J A Lilley Technical Manager Reference D00/08-00 17-12-02
Ingress Protection	IP65 and IP 6X to EN 60529
Clean Room Suitability	Non modular: Suitable for Pharmaceutical clean rooms FS209D Class 1,000 and 100 rooms. Modular: Suitable for class 10,000 and 100,000 rooms with high quality modular ceilings.

1.0 Introduction – Curie Elite ATEX Model

The Curie Elite series is available as non-modular and modular recessed clean area luminaire for use with fluorescent lamps with the facility of an internal battery back up for emergency use. The non-modular is suitable for cut or prepared aperture ceilings. The modular is suitable for Exposed T and Spring T modular grid ceilings.
The Curie Elite models have Ex q control gear, electronic safety sensor and micro-processor controlled emergency functions. Normal operation is mains supply with all lamps on, switching to one lamp on battery back up and having local switching of the mains lamps, the emergency lamp only being energised on mains failure.
Two lamp emergency versions are specials.
The luminaires are available in 4 x 18W, 2 x 36W, 3 x 36W and 4 x 36W sizes non-modular, and in 4 x 18W, 2 x 36W and 4 x 36W sizes modular.
Refer to the current catalogue for information on product references. The range is available for use with T8 bi-pin lamps to IEC81
Emergency duration 90 minutes or 3 hours depending on model specified.

2 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3 Installation and Safety

3.1 General

These instructions should be read fully and carefully before attempting to install the luminaire. For details of servicing operations, opening etc. see section 6.
Copies of these instructions should be held in a safe place for future reference. It is the responsibility of the installer to ensure that the apparatus selected is fit for its intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice.
There are no health hazards associated with this product whilst in normal use, however, care should be exercised during the following operations.
Installation should be carried out in accordance with EN 60079-14 or with a local hazardous area code of practice, whichever is appropriate. Any specific installation instructions must be referred to. In the UK the

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requirements of the *Health and Safety at Work Act* must be met and electrical work associated with this product must be in accordance with the *"Manual Handling Operations Regulations"* and "*Electricity at Works Regulations 1989".* Disposal instructions should be complied with.
The luminaires should be considered Class 1 to EN 60598 and effectively earthed.
The polycarbonate diffuser, if fitted, presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.
To avoid applying static charge or scratching the diffuser:

- Never handle the polycarbonate diffuser with bare hands, use lint free gloves and carry using the frame.
- Never polish the diffuser with a dry cloth.
- If, due to site conditions the diffusers become dirty, they should be cleaned with an airgun. If smears are difficult to remove use an eggcup full of 'Comfort' fabric conditioner in a bucket of lukewarm water and allow to dry naturally with the frame standing vertically. Do not polish dry as this will reapply static charge. Use only the recommended detergent at the stated concentration.

Certification details on the rating plate must be verified against the application requirements before installation.
The luminaire is tested to EN 60598-1:1997. If the temperature in an installation is continuously at the limiting level the duration will be reduced and the self-testing will be delayed.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required without notice.

3.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in combustible dust atmospheres, reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present.
Refer to EN50281-1-2 for additional details of selection, installation and maintenance

3.1.2 Hybrid Mixtures – Gas plus Dust.

Where Hybrid mixtures exist as defined in EN1127 as a potentially explosive atmosphere, consideration should be given to verifying that the maximum surface temperature of the luminaire is below the ignition temperature of the hybrid mixture.

3.2 Tools

12mm, 4mm and 3mm flat blade screwdriver. Socket head torque screwdriver. Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

Luminaires are supplied with control gear suitable for the following rated supplies

Emergency 110-120V and 220-254V ac +/-10% 50/60Hz
Non-emergency 110-120V +/-10% 47/ 63Hz, 110-150V dc.
Non-emergency 220-254V +/-10% 47/ 63Hz, 220-300V dc.

The safety limit for surface temperature (T rating) is +/-10% on the rated voltage. Equipment should not be operated continuously at more than +10/-10% of the rated voltage of the control gear. The power factor correction gives a minimum of 0.95 lagging. The lamp supply is regulated therefore the change in light output over the supply range is substantially unchanged.

Warning : *Electronic control gear is assessed and/or tested for EMC requirements. This is based on the disposition of entry cables and, where appropriate, through wiring arrangements as supplied or specified. Users must take care not to introduce wiring into parts of the apparatus materially different to that which could be reasonably inferred from the disposition of fixed supply terminals and specified through wiring.*

3.4 Lamps

The lamps used in the range can be T8 bi-pin fluorescent with G13 cap. Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with lighting design information. Refer to the note in 3.1 concerning electrostatic charge.
Non-modular types: Prior to mounting remove front cover by undoing screws, releasing the safety chains and removing the gear tray; put front cover into a safe and clean place so as not to accumulate dust. Remove bag

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containing disposable caps from inside the luminaire. Ensure suspension brackets are flush with sides prior to positioning into the ceiling, ensuring that no cable is trapped. Position luminaire until the front flange meets the ceiling face.

Support into position from below. The ceiling suspension is activated from in front of the ceiling using a socket head torque screwdriver. Rotate the suspension bolt heads anticlockwise and the suspension arm will then activate and swing outwards, it then travels down onto the ceiling batten. Once contact has been made gradually tighten until the recommended torque of 1Nm has been reached. Confirm torque of bolts upon completion of this operation. When the assembly is complete fit the plastic caps.

Modular Types: Remove cover and gear tray and put into a safe place**.** Remove ceiling suspension cams from the sides of the luminaire.

Exposed T ceilings: Remove adjacent ceiling tiles from the sides of the luminaire, push the luminaire into the ceiling aperture and whilst supporting, fit two of the cams on diagonally opposite corners and screw in place. The luminaire is now temporarily supported and remaining cams may be now fitted. The cam brackets should now be gradually rotated clockwise until the compression gasket is over half compressed. This should be done in sequence so as not to buckle the ceiling or damage the fitting by over stressing at any point.

Spring T ceilings: Remove the adjacent tiles from the sides where the ceiling suspension mates. Push the body of the luminaire with the spring T integration pan (if being used) into the ceiling aperture ensuring the interface frame sits in the ceiling structure. Push until bottomed out. Fit two of the cams on diagonally opposite corners and screw in place. The luminaire is now temporarily supported and remaining cams may be now fitted. The cam brackets should now be gradually rotated clockwise until the compression gasket is over half compressed. This should be done in sequence so as not to buckle the ceiling or damage the fitting by over stressing at any point.

Cabling and Cable Glands

The temperature conditions at the supply cable entry point are such that 70ºC (ordinary PVC) cable can be used. Cable glands and sealing plugs must be “E generation” certified or have ATEX component approval. The cable and gland assembly when installed must maintain a minimum IP54 rating.

Where the cable ***is not reliably clamped*** externally to the apparatus the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm.

Four entries suitable for M20 are provided**.** Three entries are fitted with suitably approved blanking plugs, the fourth entry with a transit plug. Other sizes are available on request.

3.7. Electrical Connections and Testing

If work other than re-lamping is to be done on any luminaire already connected to the electrical system, the luminaire must be isolated from the system. Access for the cabling is via removal of front cover and lamp tray. The front cover is secured using 6/10 off M6 captive screws, care to be taken as there is no suspension on this, and lampholder tray is secured by M5 screws and keyhole slots, with chain suspension allowing the tray to swing down, giving access to terminal blocks. Install the conductors in the appropriate terminals. Take care not to cut the conductor insulation excessively, 1mm of bare conductor outside the terminal throat is a maximum. Before re-fitting lampholder tray and front cover, the cores/cable should be neatly tucked away and a final check made on correct connections.

Luminaires are supplied suitable for looping and through wiring.

The through current rating is 16A. 4mm² terminals are standard (6mm² wiring can be used in the terminals as per the certificate).

Screw type or screw-less “cage clamp” terminals are fitted in the range of luminaires. Mains terminal blocks are marked L N Earth.

Mains terminal blocks on the emergency luminaires are marked Lc Ls N Earth.

Luminaires can also be supplied with three phase wiring to special order. The marking is L1 L2 L3 L s N Earth

The emergency units can be connected as switched, un-switched or non-maintained units. The switching facility is to allow the luminaire to be switched off whilst still charging the battery. Where switching is required, the un-switched line (Lc) is connected to the continuous mains supply. A link is fitted during assembly between Lc and switched line (Ls); this is removed for the switch-able mode. If the link is removed and Ls not supplied, the unit will only operate on emergency.

If the emergency luminaire is on a three phase system the switched line can be on any phase, it does not need to be on the phase connected to the un-switched line.

If local emergency inhibition (see 4.3) is required the luminaire should be ordered with the connections for this feature built in. The emergency inhibition function is connected via terminals, which must be specified to be included when ordering. The inhibition terminals are marked Ext Sw 1 and 2.

The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. The switch should be of 5 VA rating and, if in the hazardous area, Ex protected.

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The switch must have contacts that will reliably conduct small currents (10 mA levels) at low (6V) voltage. For information on suitable surface mount switches refer to Chalmit sales department. Closed circuit is normal, off inhibits the emergency function. Up to ten luminaires and 500 m of cable can be connected in parallel to one switch. *If the polarity is crossed the emergency function will work but can not be inhibited*.
If the inhibition is connected into a circuit with CEAG emergency luminaires having an inhibition connection the Curie Elite must be connected as follows EXTSW1 should be connected to CEAG "2" EXTSW2 should be connected to CEAG "3"
As there are four entries, four-core cable must be used for looping the inhibition terminals if the mains through wire connection is to also be used. If any other configuration is needed it must be specially ordered or the internal wiring pack changed on site.
The cabling is made off to the correct length in the normal manner. Care should be taken not to cut the insulation back too far. The maximum amount of insulation allowed beyond the throat of the terminal is 1mm. Luminaires can be tested with a high impedance 500 V dc insulation tester to IEC 364 or BS 7671 ***provided all line and neutral connections are solidly connected together*** for the test. The inhibition circuit can be tested at 500 V dc whilst connected to the luminaire terminals. (Units damaged by incorrect insulation testing can be detected).
Before completing the wiring, ensure that all the connections are correctly introduced into place before reassembling the luminaire. Following cabling, lamps can be fitted. New lamps should be used.

4.0 Emergency Operation

4.1 General description of emergency unit and operation

The integrated unit consists of a mains supplied ballast for feeding the fluorescent lamps in normal situations, a battery pack, an emergency circuit that charges the battery and powers the lamp in an emergency situation, and a micro-controller based supervisory circuit that controls the charging, monitors the emergency functions and displays the results of self test and emergency unit status by means of a red and green LED.
The unit can be connected to an external switch that can inhibit the emergency functions when the mains power is on or off and restart the emergency functions with or without mains power being applied. The terminals for this feature must be specified when ordering. (See 3.7).
By switching the voltage on a connection Ls the lamps can be switched on and off without the emergency function being activated. The Ls connection is insulated from L and has a signal function only drawing a very small current.
The luminaire will go seamlessly into emergency mode at not less than 60% rated supply voltage and will remain in mains mode above 85% of rated supply voltage.
On restoration of the mains supply there will be a **60 sec delay** before the emergency lamp is restored to mains operation. This feature is not common on emergency luminaires and should be noted. The feature is provided to increase reliability when operating in bad supply conditions.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a control gear fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low discharge current mode.

4.2 Automatic Self testing

A manual test of emergency duration can only be made by manually de-energising the luminaire and timing the discharge. The LED must be constant green to show that charging has been completed before commencing this test. The LED indication will show if the emergency battery duration is too low.
The electronic ballast continuously monitors all charging functions.
The unit will carry out a short self test every 13 days. This short self test is to check battery emergency operation. The test will commence at a random point in the 13 day cycle, starting at the first mains energisation after the battery is connected or re-connected. During the 13 day self test the unit will test for function including lamp condition. The test will last 9 minutes with one lamp being energised at emergency level during the test period, the other lamp will remain on. If Ls is off, the short test is delayed until Ls is re-energised.
The unit will perform a complete battery discharge every 102 days and will check for minimum emergency duration as stated above. The start of the first complete battery discharge is at a random point between 0 and 102 days after applying mains voltage. The test will be repeated at fixed 102 day intervals. The unit will also complete a full self test after completing a commissioning cycle to full charge and after battery replacement. The full commissioning cycle takes about 50 hours after which the battery will then be re-charged.
The test will be delayed if the battery is not fully charged or the operating temperature at the time is too high to give a proper result. The test is also carried out after the initial installation and energisation and a full charge cycle completed. During the test one lamp remains energised at normal mains output. The long test will also take place once the charge period is complete after a battery is changed or disconnected then re-connected.

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The emergency lamp condition is monitored during every lamp start. If the lamp ignition is not correct the LED will display repeated red flashes. This will happen even if the lamp does ignite and run at the normal light level as the system predicts imminent failure before it occurs.
If the self-test detects a failure it is indicated as per the table below by the LED. At the start of the automatic long test the emergency lamp will switch off for 9 mins so that it can cool down and make the starting test valid.
Refer to the Table 1 below.
Emergency lamp defective: continuous red flashing.
Battery defective or low capacity: two red flashes, followed by a pause.
Emergency unit defective: three red flashes followed by a pause.
If the charge condition is known, the unit will re-charge from empty to approximately 80% charge in 14 hours. Afterwards a reduced current post charge will be applied to complete the charge. If the battery charge condition in unknown (e.g. first connection) a reduced charge is applied for 44 hours.
For battery temperatures below 10°C charge current is reduced and charge time increased.
The charging function is monitored continuously, there is a check for over charging and no charging. In case of a fault three red flashes, followed by a pause are displayed.
After a complete battery discharge, the unit will switch over to a low battery discharge mode which maintains the memory and monitoring function. The control contains dedicated features that prevent any unsafe condition arising if the microprocessor were to malfunction.

LED display

The status is displayed by means of red and green LED signals.
The green LED will flash slowly, if the batteries are being charged, and all emergency functions were found to be OK during the last self-test.
The green will be steady at full charge.
The red only will flash if there is a fault.

Table 1 Monitoring function indication

GREEN	RED	MODE	REMARKS
Fast flash ½ sec on, sec off		Charge C/10	
Slow flash 1 sec on, 1 sec off		Charge C/20	Charging currents at low temperatures reduced
Steady		Fully charged	
Fast Flashing alternate Red-Green	Fast flashing alternate Red-Green	Less than one ½ hour duration left during emergency operation	one lamp at emergency light level
	fast flashing	Lamp faulty	Emergency lamp only
	2 red flashes repeating	Battery faulty or battery not connected or low duration after long test	Minimum duration limit during long test not met, limits are temperature and type dependent
	3 red flashes repeating	fault in electronics of power supply	
Slow flash or steady	Periodic short flash once per 4 secs	Mains on emergency inhibited	
None	None	Defective display	Lamps on
None	None	-mains off, battery discharged, or -mains off, emergency inhibited or -total unit defective	Lamps off
None or steady green	None	Emergency control defective	Mains lamp on

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4.3 Inhibition (also see 3.7)
If local emergency inhibition is required the luminaire should be ordered with the connections for this feature built in. The electrical wiring will consist of two connections to the control gear brought out to an extra terminal block at the mains supply terminals. Closed circuit is normal, off inhibits the emergency function. Up to ten luminaires can be connected in parallel to one switch and using 500m of cable.
The inhibit as well as de-inhibit functions can start with normal mains power present as well as without mains power, the emergency light can be switched on while the whole power system is still dead.
Inhibition is not possible with a completely discharged battery and no mains being present. The emergency function can be inhibited whilst in emergency operation.

5.0 Commissioning (Refer to section 6 for access)
The units will only be fully operational and give completely correct indication after the completion of a full charge, self-test discharge and recharge cycle, approx. 100 hours. Once this is complete the unit will have it's full operating parameters installed in the memory. Provided the battery is not disconnected indication will function correctly.

5.1 Non-emergency luminaires are energised after the lamps are fitted and the luminaire closed. Both lamps should light. Open the cover the lamps will go out.

5.2 Commissioning Emergency

5.2.1 Commissioning with un-powered installation
After inserting the lamps and closing the cover, the unit will go onto emergency mode until discharged if the initial battery voltage is high enough. (> 5.5 V).
If the emergency inhibition switch is in the blocked condition the lamp will go on for 60 seconds unless there is not enough charge in the battery to sustain it for that time.

5.2.2 Commissioning with mains power applied.
If a local light switch is connected put it to on.
After inserting the lamps and closing the cover the unit will light. At first power up the emergency lamp will light fully after 60 secs. This is done to increase reliability in very frequent mains on and off situations or irregular supply such as may occur during commissioning.
The initial C/20 charge will be indicated by a green flashing LED 1sec on 1 sec off.
If an emergency blocking switch is present a short red flash every 4 sec will be displayed if the switch is in the blocked state.
If the battery charge condition in unknown (e.g. first connection) a reduced current charge is applied for 44 hours. The long self test takes place after the initial installation and energisation has been made and a full charge cycle completed. The test will be delayed if the operating temperature at the time is too high to give a proper result or if Ls is off. One lamp remains energised at normal mains output. After the test the unit will fast charge to 80% then post charge to fully charged and the indication will then be steady green.

5.2.3 Low Temperature Operation
At battery temperatures below 10°C charge current is reduced and charge time increased. This temperature is equivalent to the luminaire operating at -5ºC with the lamps on or at +5ºC with the lamps off.
Under operating conditions where the ambient temperature is below 0ºC for long periods the luminaire should preferably be used in maintained mode so that the mains supplied lamps warm up the battery to a normal working temperature.

6.0 Servicing and Operation
The luminaire incorporates an electronic safety de-energiser for maximum reliability and utility of the emergency monitoring function. The electronic sensor is operated by the actuating plate on the cover. This provides for the safe opening and carrying out of re-lamping.
Safe servicing behind the gear tray requires the mains supply to be isolated, and battery connections must be treated with care, see 6.8.

6.1 Opening and Closing front cover
The front cover is secured using up to 10 off M6 captive screws. Do not remove plastic caps on non-modular types by levering with a screwdriver as this will damage the paint finish and create a bacterial trap. Use a self-tapper to screw into the cap and then pull out.

6.2 Fitting lamps and Re-Lamping
IMPORTANT – Isolate mains supply before opening. The control gear will be damaged if the lamps are removed without being de-energised and there is an ignition risk. This could occur if the sensor arrangement is faulty or has been defeated. The luminaire must be de-energised the control gear checked and electronic sensor assembly must be replaced if faulty, see 6.7.

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Lamps that are not operating or appear dim should be replaced as soon as practical. The control gear is designed to withstand end of life conditions of lamps The emergency unit will indicate in advance that the lamp is approaching end of life. Always replace both lamps.
The bi-pin lamps are fitted in lampholders with a rotating section. The lamp must be pushed firmly down into the lampholder and rotated 90º. The contact is biased to remain in the 90º position. If the lamp does not rotate, check that it is completely positioned into the lampholder. Before inserting lamps ensure the lamp pins are not damaged or slack in the end cap.

6.3 Releasing the Reflector/Gear Tray

Loosen the two fixing screws retaining the reflector/gear tray far enough for it to slide over keyhole slots. Check the tray will hang on the retaining chains without stressing the wiring between body and tray. Replace in reverse order.
The lampholder assemblies can be removed from the gear tray, if necessary, by removing the fixing screw and pushing up the click finger at the end of the gear tray and pushing the lampholder assembly forward towards the centre of the tray.
Re-assembly is a reversal of the above, ensure the lampholder assembly fully clicks into place on the gear tray.
Lampholder assemblies have the connecting receptacles and are specific to each model. If they are being replaced the correct spare assembly must be ordered.

6.4 Removal of Reflector/Gear Tray c/w Lampholder Assemblies

Release gear tray from body and hang on retaining cords, as explained above. Disconnect the cables from the gear tray to the mains terminal block, unhook retaining cord from gear tray and lift clear.

6.5 Servicing Behind the Gear Tray

The release of the gear tray exposes live mains terminals. Any work behind the gear tray requires that the supply is isolated to avoid ignition risk and damage to components.

6.6 Replacement of Ballast or Emergency control

The ballast contains no replaceable parts. Should it be found necessary to replace the ballast, the following procedure should be adopted:
Ensure that the luminaire is isolated from the mains supply.
Remove gear tray from body and swing down as previously explained. Undo the battery plug on emergency luminaires.
Ballasts use 6mm tab connectors which are locked and are released when the black cover sleeve is pulled away axially. When replaced a 'click' will be heard as the lock locates. **On no account should the quick release connectors be replaced with proprietary items.**
Disconnect the leads to the ballast, note the connections. When removing the connections **always** disconnect the sensor and LED connections (LED1 LED2 PROT1 and PROT2) **last** and reconnect them **first**. Remove the ballast retaining screws and remove ballast from tray.
Replacement of the units is in the reverse order. Check the connections carefully before re-energising. The emergency lamp leads are marked with a plastic sleeve (E). The lamp leads on the emergency are marked as pairs. Take care to connect correctly. . The unit is **not** protected against reverse battery polarity. The yellow leads are the high voltage ones. Miss-connection of the units will be very likely to result in damage. **Care and checking during replacement can not be over emphasised.**

6.7 Replacement of sensor with or without LED assembly

It is very unlikely that this assembly will need replacement other than as a result of mechanical damage**.**
Isolate the mains. Disconnect and note the connections. Undo the two screws and replace the unit using the nuts from the old unit. Reconnect and carefully check the connections before re-energising.

6.8 Replacement of battery

The battery is accessed by releasing the gear tray fixing screws sliding the tray and hinging it down.
The battery is connected to the control using a plug and socket arrangement. The battery load is disconnected by the electronic sensor device. The screws holding the battery pack are loosened and the battery pack slid axially one way then the other in order to release. The battery pack is not intended to be opened and is replaced as a unit. The battery is potentially incendive but is protected during removal by the IP30 construction which covers live parts. The battery assembly must be protected from damage and water ingress then **removed from any potentially hazardous area as soon as practical.**
The replacement battery is slid axially one way then the other in order to insert then the screws are tightened. The socket is then inserted. The luminaire must not be operated without the battery connected. If the battery is removed and not replaced the control gear supply must be disconnected at the mains terminal block and secured.

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6.9 Checking of Battery separately

The easiest way of checking the battery is in a known serviceable luminaire against the rated duration.
If the battery is to be checked separately, it should be charged using a **constant current charger** at 200/400mA for 30/15 hours for the 4Ah (18W or 36W) or 350/700mA for 30/15 hours for the 7Ah (36W). Discharge measurement is not easy as the current is proportional to the voltage for resistance loads, so it has to be averaged. Discharge the battery at 1 to 2A and multiply current by time. Do not discharge below 1 volt per cell, that is 5V. The capacity should be 70% or more of normal.

7.0 Routine Maintenance

Visual tests and checks should be carried out at intervals described by the appropriate regulations, EN 60079-17, and should include the following:
Check that the lamps are working or appear badly aged. Blackening at the lamp ends is a good indication of length of use.
Check for mechanical damage/corrosion.
Check for loose connections including earthing.
Check for undue accumulations of dust or dirt.
Verification of tightness of fixing, glands, blanking plugs etc.
Check for unauthorised modifications.
Check condition of enclosure gasket and fastenings.
Check for any accumulation of moisture.
Periodic inspection of the enclosure seal should be carried out to ensure that the seal is sound. The seal can be replaced and, if necessary, secured in position by the application of a small amount of silicone RTV adhesive.
If the luminaire has been subject to abnormal conditions, for example, severe mechanical impact or chemical spillage, it must be de-energised until it has been inspected by an authorised and competent person. If in doubt, the unit should be returned to Chalmit for examination and, if necessary, replacement.

7.1 Fault finding

In general, installations of luminaires have a number of units on site. Once apparently faulty components are in the workshop fault finding is done by substituting known healthy components. Except for checking continuity to the supply and ballast input connections there is little that can be done to fault find using instruments. Live testing and use of meters on high frequency units in a workshop will gain little information and may damage healthy components. Take great care in connecting and disconnecting see 6.7. Use a charged battery wait for 60 seconds for units to respond.

7.1.1 Non emergency

The lamps will run until one fails to strike. Fit new lamps. If the result is not satisfactory, check continuity to the ballast. If still no result, check the continuity to lampholders after disconnecting leads from ballast. If no fault found replace ballast. If still no result, disconnect the connection to the sensor. If the lamps light this would indicate a faulty sensor, see 6.7 but as this is most unlikely check all connections before replacing.

7.1.2 Emergency

Check for operation of the LED. **If the LED is red** refer to the table which shows the fault diagnostics. If the unit does not work on the mains with Ls energised carry out the checks in 7.1.1. If mains operation can not be restored replace the control unit.
The usual first service operation with emergency units which appear to work normally on mains but not on emergency is to energise for a few minutes before checking emergency operation. If no result, check that the inhibit connection is closed circuit. If the unit works on emergency let it discharge fully. The unit should then be energised for 60 mins and the discharge re-checked.
If the unit runs for a few minutes it is charging. If not, change the battery and repeat the full discharge and short charge test. If OK, give the unit a full 48 hour charge and check the duration. If there are still fault indications replace the control unit.

7.2 Cleaning

The diffuser should not be polished or wiped with a dry cloth as a risk of ignition due to electrostatic discharge may result. Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

8.0 Fuse and MCB Ratings

It is recommended that for selection of MCB's users should consult the MCB manufacturer as this unit contains electronic control gear. MCB ratings can vary depending on the manufacturer and type and the size of the installation, i.e. impedance of conductors. The electronic control gear has an inrush current of 30A for 500µs on

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230V, emergency and non-emergency, 45A for 350µs on 110V, non-emergency, and 35A for 250µs on 110V, emergency. These figures are for low resistance connections with short cables and low impedance supplies.

9.0 Disposal of Material

General

The body is made from incombustible and combustible materials. The diffuser is plastic and the control gear contains plastic parts and electronic components. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

9.1 Lamps

Fluorescent lamps in modest quantities are not "special waste". They should be broken up in a container to avoid injury, avoid inhaling dust.

Important : *Do not incinerate lamps.*

9.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the person disposing needs to observe a 'duty of care'.

Batteries can be returned to the manufacturers for recycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting, or otherwise ensure that there can be no release of stored energy in transit. For further details refer to our Technical Department.

Table 2 Nominal Lamp Power and Supply Current

Supply Voltage	Lamps	Power W	Current A
230V, 50/60Hz	4 x 18W / 2 x 36W	70	0.32
	4 x 18W Emergency	71	0.32
	2 x 36W Emergency	77	0.36
	3 x 36W	105	0.48
	3 x 36W Emergency	112	0.52
	4 x 36W	140	0.60
	4 x 36W Emergency	140	0.60
110V, 50/60Hz	4 x 18W / 2 x 36W	70	0.64
	4 x 18W Emergency	71	0.64
	2 x 36W Emergency	77	0.71
	3 x 36W	105	0.95
	3 x 36W Emergency	112	1.00
	4 x 36W	140	1.2
	4 x 36W Emergency	140	1.2

Power Factor >0.98. Power is constant over voltage range.

Tamb Storage	-40ºC to +80ºC
EMC	EN 50081-2 (emission) EN 50082-2 (immunity) EN 61000-3-2 (harmonics generated)
Over voltage	400V ac for 1 min EN 61000-4-5 > 4kV
Batteries	6V 4Ah NiCd (18W or 36W) 6V 7Ah NiCd (36W)
Emergency Duration	90 minutes or 3 hours depending on model chosen
Emergency Output	1200mm lamp 25% of normal single lamp output 600mm lamp 30% of normal single lamp output

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A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office — Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note — Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

QUAD-F

Ex d Fluorescent

ATEX CATEGORY 2

ZONE 1 and 21 APPLICATIONS

The QUAD F is a conventional flameproof luminaire for use with linear and compact fluorescent lamps.
Its applications are where white instant light is needed. The aluminium and glass construction is suitable for aggressive chemical environments such as paint spraying, which could otherwise attack plastics.
Single and twin lamp versions can be arranged to give high glare free lighting levels.
Emergency versions are available to run single lamps up to 58W at reduced power. The emergency version with the 8W lamp is particularly suitable for over door lighting.
The design features a single flameproof path giving rapid access for wiring, lamp replacement and to control gear. The cable entry is the simple direct type using flameproof cable glands

Standard Specification

Type of Protection:	**Ex d (flameproof), Ex dm (flameproof encapusulation) emergency version**
ATEX Classification:	**Group II Category 2 G D**
Area Classification:	**Zone 1 and 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50014 EN 50028**
Certificate:	**EC Type Examination Certificate SIRA02ATEX1356**
Coding:	**Ⓔx II 2 G D EEx d IIC (Emer - EEx dm IIC) refer to table for Tamb**
Enclosure:	**Zinc alloy body and lampglass ends, boro-silicate glass overtube, epoxy coated steel mounting rail**
Reflector/Geartray:	**White polyester painted zinc coated steel**
Entry:	**2 x M20 cable entries, (Emergency version 1 x M20)**
Termination:	**3 core 4mm² max. conductor with looping 4 core on emergency version (no looping on emergency)**
Installation:	**Via steel support rail**
Control Gear:	**High Frequency**
Relamping:	**Two socket head screws and tapered spigotted flamepath**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**Tubular fluorescent**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply	**220V - 254V 50/60Hz**

Features

Simple rugged construction

Hinged cover

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output

Resistant to voltage fluctuations

Tapered flamepath for easy access to the lamps and terminal chamber

Lamp glass suspension when re-lamping

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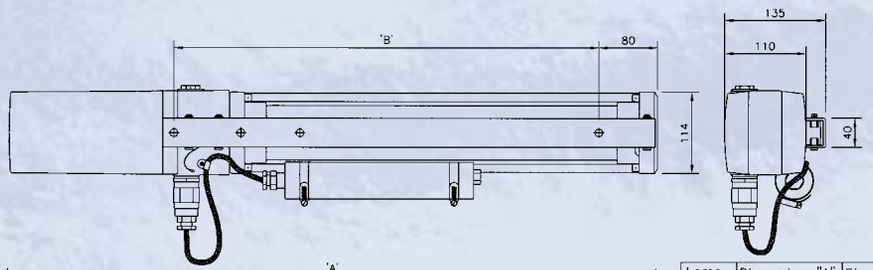
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient ºC	Weight
QUAD/108/BI	1x8W	T5	G5			7.5kg
QUAD/118/BI	1x18W	T8	G13	T6	40	10.0kg
QUAD/218/BI	2x18W	T8	G13	T5	55	10.5kg
QUAD/136/BI	1x36W	T8	G13	T4	70	15.7kg
QUAD/236/BI	2x36W	T8	G13			16.3kg
QUAD/158/BI	1x58W	T8	G13			18.0kg
QUAD/258/BI	2x58W	T8	G13			18.5kg
QUAD/108/BI/EM	1x8W	T5	G5			10.5kg
QUAD/118/BI/EM	1x18W	T8	G13			13.0kg
QUAD/218/BI/EM	2x18W	T8	G13	T5	50	13.5kg
QUAD/136/BI/EM	1x36W	T8	G13	T6	40	20.5kg
QUAD/236/BI/EM	2x36W	T8	G13			20.0kg
QUAD/158/BI/EM	1x58W	T8	G13			21.8kg
QUAD/258/BI/EM	2x58W	T8	G13			22.3kg



(Emergency version shown.)

Lamp	Dimension "A"	Dimension "B"
1x8W	645mm	391mm
1x18W	918mm	661mm
2x18W	918mm	661mm
1x36W	1522mm	1266mm
2x36W	1522mm	1266mm
1x58W	1823mm	1566mm
2x58W	1823mm	1566mm

Options - Suffix to Catalogue No.

/M25	M25 Entries
/SR	Stainless steel support rail

Applications

- Zone 1 and 2 hazardous areas • Paint spraying
- Chemical industry • Munitions storage
- Sewage treatment plants • Engine rooms
- Walkways • Overdoor emergency lighting
- M.O.D. installations • Distilleries
- Gas pumping stations

Accessories (Should be ordered separately)	**Catalogue Order Code**
Wire guard for 8W	**SQUAD-0005**
Wire guard for 18W	**SQUAD-0006**
Wire guard for 36W	**SQUAD-0007**
Wire guard for 58W	**SQUAD-0008**
8W Emergency exit kit assembly (c/w right angle wall brackets, pictogram panel and exit labels)	**SQUAD-0014**
8W Emergency plastic pictogram panel	**SQUAD-0015**
8W Emergency exit labels	**SQUAD-0016**
Right angle wall mounting brackets	**SQUAD-0017**
Pole mounting bracket assembly	**SPRO4-0003**
Flush mounting wall bracket assembly	**SQUAD-0019**
8W Emergency exit kit assembly (c/w flush mounting wall brackets, pictogram panel and exit labels)	**SQUAD-0020**

sira
Certification Service

1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 02ATEX1356

4 Equipment: 'Calstar' (Quad F) Luminaires

5 Applicant: Chalmit Lighting Ltd

6 Address: 388 Hillington Road
Glasgow
G52 4BL
UK

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number R51V9679A.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 (amendments 1 and 2)
EN 50018:1994
EN 50028:1987
EN 50281-1-1:1999

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

II 2 GD

EEx d IIB T6	(Type 500)	EEx d IIC T6	(Type 600)
EEx d IIB T5 (Tamb = 55°C)	(Type 500)	EEx d IIC T5 (Tamb = 55°C)	(Type 600)
EEx d IIB T4 (Tamb = 70°C)	(Type 500)	EEx d IIC T4 (Tamb = 70°C)	(Type 600)
EEx dm IIB T6	(Type 550)	EEx dm IIC T6	(Type 650)
EEx dm IIB T5 (Tamb = 50°C)	(Type 550)	EEx dm IIC T5 (Tamb = 50°C)	(Type 650)

Project Number 51V9679
Date 21 March 2003
C. Index 05

C Ellaby
Certification Officer

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900 Fax: +44 (0) 1244 681330
Email: exhazard@siratc.co.uk
Sira Certification Service is a service of Sira Test & Certification Ltd

SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE Sira 02ATEX1356

13 **DESCRIPTION OF EQUIPMENT**

The equipment comprises a tubular glass lamp enclosure with zinc alloy caps cemented to each end. One cap forms a blank, whilst the other has a tapered spigot joint to allow the fitting of a bolt-on control enclosure. The two enclosures are separated by means of a barrier plate. The lamp enclosure is supported by tie bars or a lamp reflector fixed to the control enclosure.

The lamp enclosure contains single or twin fluorescent tubes and connections. The control enclosure contains control gear and termination facilities. Cables pass between the two enclosures via a potted bushing in the barrier plate.

Cabling to the equipment is by means of up to two threaded cable entry apertures in the control enclosure for the fitting of suitably dimensioned and certified cable entry components.

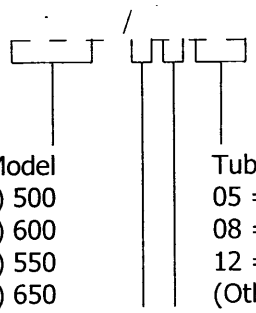
Design Options

The lamp enclosure tube length may accommodate tubes from 1 ft to 5 ft.

As an alternative method of cable entry, the existing apertures can be replaced by an aperture and flange arrangement that allows the fitting of a bolt-on cable box. This box has a bolt-on cover and up to two apertures for the fitting of suitably dimensioned and certified cable entry components.

The equipment may be associated with an emergency battery pack, as Sira 00ATEX5108U. The battery is fitted to the end-cap/tie bar arrangement and utilises the existing cable entry and termination facilities.

Type designations are defined below:



Model	Tube Type
(IIB Model) 500	05 = T5 Tube
(IIC Model) 600	08 = T8 Tube
(IIB Emergency Model) 550	12 = T12 Tube
(IIC Emergency Model) 650	(Other Codes Exist)

Overtube Length	No of Tubes
1 = 1 ft	1 = Single
2 = 2 ft	2 = Twin
4 = 4 ft	3 = Single Double Fitting
5 = 5 ft	4 = Twin Double Fitting

These become the following for the Quad F range of luminaires:

(IIB Model) 500 - Quad F Type 600		(IIB Emergency Model) 550 - Quad F Type 610	
(IIC Model) 600 - Quad F Type A600		(II C Emergency Model) 650 - Quad F Type A610	

The other information is designated by a number code e.g. 031 refers to a 1 x 8 W T5 tube type.

Date 21 March 2003

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900 Fax: +44 (0) 1244 681330
Email: exhazard@siratc.co.uk
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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 02ATEX1356

14 **DESCRIPTIVE DOCUMENTS**

14.1

Drawing No.	Sheet	Rev.	Date	Title
A7054	1 of 1	01	11 Dec 02	Quad F Non Emergency Label
A7055	1 of 1	01	11 Dec 02	Quad F Emergency Label

14.2 Report No. R51V9679

14.3 Certificate number Sira 00ATEX1107 last amended 14 December 2000

15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)

None

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in Report No.R51V9679.

17 **CONDITIONS OF CERTIFICATION**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 Each 4 ft and 5 ft IIC luminaire overtube assembly shall be subjected to a routine pressure test of 16.5 bar for at least 10 s, as required by clause 16.1 of EN 50018:1994. There shall be no damage or deformation as a result of the test.

17.4 This certificate relies on the following previously certified products. When used as part of the Types 550 and 650 'Calstar' Luminaires, the key attributes listed in the table below shall still be maintained by their original certificate.

Description	Certificate No.	Key attributes
Walsall Ltd, Type A Emergency Battery Pack	Sira 00ATEX5108U	EEx m II

17.5 This product shall be uniquely marked with the label identified in section 14.1 of this certificate.

Date 21 March 2003

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900 Fax: +44 (0) 1244 681330
Email: exhazard@siratc.co.uk
Sira Certification Service is a service of Sira Test & Certification Ltd

Certification Service

1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Component intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 02ATEX5357U

4 Component: Type A Emergency Battery Pack

5 Applicant: Chalmit Lighting Ltd

6 Address: 388 Hillington Road
Glasgow
G52 4BL
UK

7 This component and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of component intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number R51V9679A.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 (amendments 1 and 2)
EN 50028:1987
EN 50281-1-1:1998

10 The sign 'U' is placed after the certificate number to indicate that the product assessed is a component and may be subject to further assessment when incorporated into equipment. Any special conditions for safe use are listed in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified component. If applicable, further requirements of this Directive apply to the manufacture and supply of this component.

12 The marking of the component shall include the following:

II 2 GD
EEx m II

Project Number 51V9679
Date 21 March 2003
C. Index 08

C Ellaby
Certification Officer

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900 Fax: +44 (0) 1244 681330
Email: exhazard@siratc.co.uk
Sira Certification Service is a service of Sira Test & Certification Ltd

Certification Service

SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 02ATEX5357U

13 **DESCRIPTION OF COMPONENT**

The Type A Emergency Luminaire Battery Pack comprises an aluminium tube that is capped at both ends. The equipment contains up to six nickel cadmium cells and a fuse board assembly, the cells vent via a breather valve in one end-cap. The enclosure is entirely filled with an encapsulant – Ambersil 'silcopac (2)'.

Cable entry to the enclosure is by means of an aperture in one end cap for the fitting of a suitably dimensioned and certified cable gland.

The equipment is intended to provide auxiliary power to an associated piece of equipment, such as a luminaire, which also contains the battery charging circuit. The charging characteristics are:

Maximum peak charging current: 400 mA
Maximum continuous charging current: 200 mA

14 **DESCRIPTIVE DOCUMENTS**

14.1

Drawing No.	Sheet	Rev.	Date	Title
A7075	1 of 1	-	25 Feb 03	Chalmit Quad F Battery Label

14.2 Report No. R51V9679A

14.3 Certificate number Sira 00ATEX5108U dated 10 August 2000

15 **SPECIAL CONDITIONS FOR SAFE USE**

15.1 The battery unit flying lead may provide a voltage source of up to 8.4 V; therefore, the equipment shall only be installed when a flammable atmosphere is not present.

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in Report No. R51V9679A.

17 **CONDITIONS OF CERTIFICATION**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 Each unit shall be subjected to the visual checks and electric strength tests required by clauses 7.1 and 7.2 of EN 50028:1987.

Date 21 March 2003

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900 Fax: +44 (0) 1244 681330
Email: exhazard@siratc.co.uk
Sira Certification Service is a service of Sira Test & Certification Ltd

CHALMIT QUAD-F LUMINAIRES

INSTALLATION AND WIRING INSTRUCTIONS FOR NON EMERGENCY & EMERGENCY VERSIONS

IMPORTANT – BEFORE PUTTING INTO SERVICE

These instructions cover the Chalmit range of EEx d fluorescent and EEx dm emergency fluorescent luminaries and contain important information for the correct and safe operation of these luminaries. Please read carefully and retain at the installation for future reference.

The luminaries should not be installed until these instructions and the warnings contained in them have been fully understood.

Safe Use

These luminaries are manufactured to comply with BS EN 500014 and BS EN 50018. The certificate number and general limitations to usage with regard to protection, gas grouping and surface temperature classification are listed on the external nameplate. The battery module which forms part of the Emergency Luminaire is designed and manufactured to comply with BS EN 50028.

The apparatus is suitable for installation in zones classified 1 or 2 in accordance with the thermal limitations as defined in the codes of practice BS EN 60079 Part 14 (formerly BS 5345 Parts 1 and 3) and IEC 79 – 10. Additionally the apparatus has been certified to the ATEX Directive (EU Directive 94/9/EC) and carries the mark Ⓔx II 2 GD allowing installation in potentially explosive atmospheres containing gas or dust. The main components of the luminaire and their materials of construction are: -

Luminaire support channel and reflector – painted mild steel. Main body and metallic components of tube assembly – painted zinc alloy (BS 1004).

Overtube – Boroscilicate glass. The Overtube is secured into the end cap and spigot parts by an epoxy resin.

Battery Tube – painted aluminium.

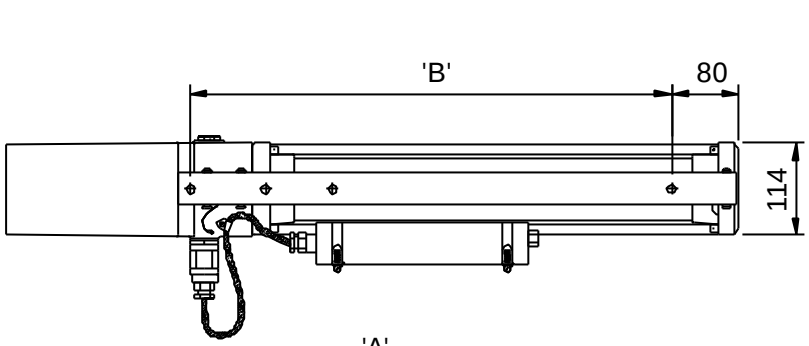
If the environment in which you are intending to mount this luminaire contains aggressive liquids, vapours, dusts or compounds, seek expert advice. It is important to ensure that the luminaire is not likely to have its concepts of protection compromised by any environmental conditions. Stainless steel support channels and reflectors are available to special order as are enhanced paint coating systems for the zinc alloy components.

It is essential that the flameproof integrity and the IP rating of the Luminaire is maintained on installation, repair or overhaul by the use of suitably approved flameproof cable glands.

Assembly & Dismantling

Please read the warning on the external nameplate before attempting to open the luminaire whilst a hazardous area is present. As the emergency luminaires contain a separate power source (the emergency battery) they should not be opened whilst a hazardous area is present and should therefore be connected by a suitably rated and certified plug and socket. The apparatus is supplied fully assembled but is not supplied with fluorescent tubes. To disassemble the apparatus, separate the control housing from the Overtube assembly by unscrewing the two captive screws.

Reassembly is the reverse of disassembly. Ensure that the mating close tolerance flamepath faces are protected from damage during these procedures. (See under installation and lamp replacement for further information).



Lamp	Dim "A"	Dim "B"
1x8W	645mm	391mm
1x18W	918mm	661mm
2x18W	918mm	661mm
1x36W	1522mm	1266mm
2x36W	1522mm	1266mm
1x58W	1823mm	1566mm
2x58W	1823mm	1566mm

Installation

Having ensured the suitability of the apparatus for the potentially hazardous atmosphere, proceed as follows:-

1. Remove the top support rail by removing the 3" Snap Fit" clips and earth wire. Mount the support rail to its operating position using the two 10mm fixing holes. Offer the fitting to the support rail and secure with a pin and clip through the middle-fixing hole, fit the remaining pins and clips and reconnect the earth wire.

2. To make off the electrical connections separate the control housing from the Overtube assembly by unscrewing the two captive screws. The Overtube can be withdrawn and lowered, an internal tie wire will support the tube. On the emergency version the battery cable clip will have to be removed.

3. Ensure that the rated voltage of the luminaire is compatible with the mains supply and connect to the relevant terminals. To ensure full compliance with the EMC directive please ensure that the incoming mains wires are segregated as much as possible from the tube leads. On the emergency version for non-maintained operation connect the un-switched supply to L1, N and E, for maintained operation where the lamp is to be continually alight interconnect L1 and L2. Where a switched facility is required connect the switched mains supply to terminal L2, there should be no link between L1 and L2.

4. Note that the single and twin bi-pin versions utilise standard T8 (26mm) fluorescent tubes, the compact versions utilise the PL-L tube with the 2G 11 lamp holder T12 versions (38mm) are available as single lamp versions only. Insert new fluorescent tubes into the lamp assembly as described later and connect the lamp output connectors together. On the emergency versions connect together the battery and LED connectors. Refit the Overtube assembly into the control housing ensuring it is fully engaged to the "O" ring before tightening the two fixing screws. Refit the cable clip on the emergency version.

5. Switch on the mains supply and ensure that the luminaire operates correctly.

6. On the emergency version ensure that the LED is lit, the tube will either be on or off depending upon the wiring configuration. Switch off after 1 minute and ensure the tube is lit in emergency mode and that the LED is off. Re-establish the mains supply and charge for 24 hours.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Lamp Replacement

1. Withdraw the Overtube assembly from the control housing as previously described. Disconnect the 5 pin plug(s) and turn the locking grubscrew clockwise to release the flameproof barrier this can be removed from the Overtube by rotating it counter clockwise. The 2 pin plug will need disconnecting on the emergency version.

2. Insert fluorescent tube(s) into the lamp holders and rotate through 90°, PL-L versions are a push fit into the socket. Ensure a good contact is made.

3. Insert the Overtube assembly into the Overtube and screw in the flameproof barrier to its limit. Rotate the barrier counter clockwise for approximately half a turn to line up the locking grubscrew with the cut out. To lock the barrier rotate the grubscrew counter clockwise to its limit.

4. Re-connect the plug(s) and refit the Overtube assembly as previously described.

Battery Replacement (Emergency Luminaires Only)

1. Withdraw the tube assembly from the control housing as previously described. Disconnect the 2 pin battery plug and earth connection, remove the battery module from its fixings and release the FLP gland. The new battery module is supplied complete with FLP gland.

2. To replace, insert and tighten up the gland and secure with the fixings. Reconnect the 2 pin battery plug and earth connection and refit the tube assembly as previously described.

Regular Maintenance

It is essential that the luminaires are installed and maintained in such a way as to ensure that the integrity of the protection to which it has been designed is maintained. Part 14 of BS EN 60079 should be studied as it makes reference to initial and periodic inspection. It is recommended that the frequency of inspection should be regular enough as to ensure the luminaires operate correctly and an inspection record should be kept to review and modify the effectiveness of the inspection frequency.
The operation of the emergency luminaire should be checked in accordance with BS 5266 which recommends the luminaires to be tested for 15 minutes every month, for 1 hour every 6 months and for the full duration every 3 years. Subsequently test every year for the full duration.

Safety

The luminaires should not be modified from the original design as it may render the product unsafe and will invalidate any safety/approval marks. Chalmit Lighting will not accept responsibility for any modified products or for the damage caused as a result of their modification.
Only official Chalmit spare parts should be fitted to this product. These parts can be obtained from your local Chalmit stockist or in
case of difficulty contact Chalmit Lighting for advice. Only competent persons should carry out the installation of this product.

The luminaires should not be covered by heat insulating material or by any material, which will prevent proper heat dissipation.

Chalmit Lighting

388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555 0700 CHALMIT
Fax	:	+44 (0)141 883 3704
EMail	:	email@chalmit.com

Registered Office

Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note

Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

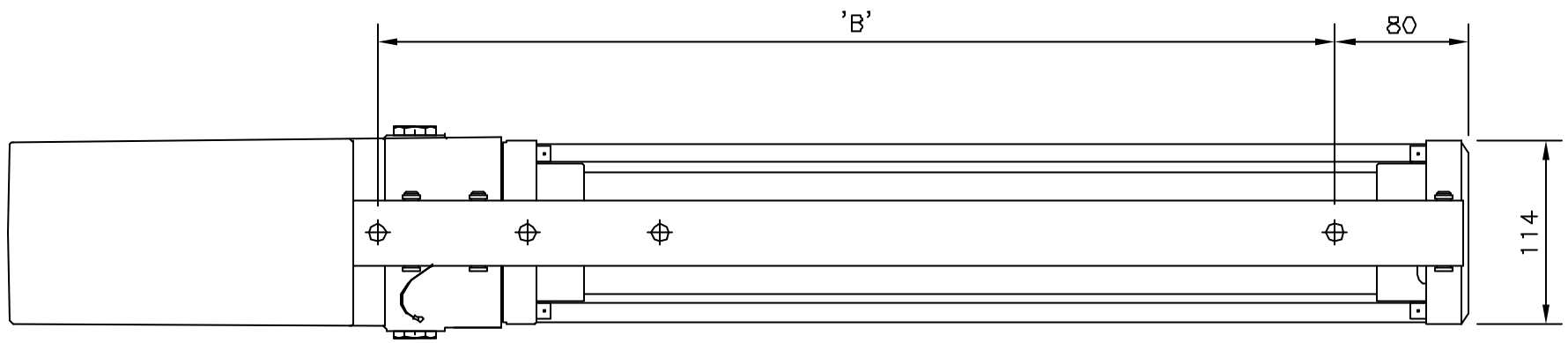
Hubbell Lighting Inc.

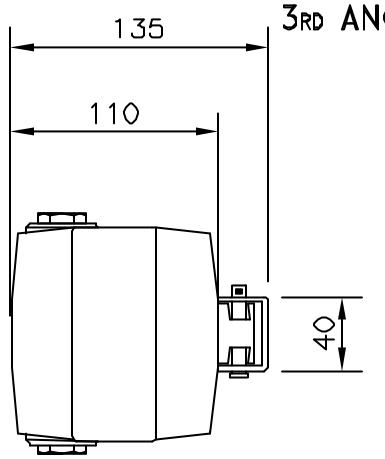
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

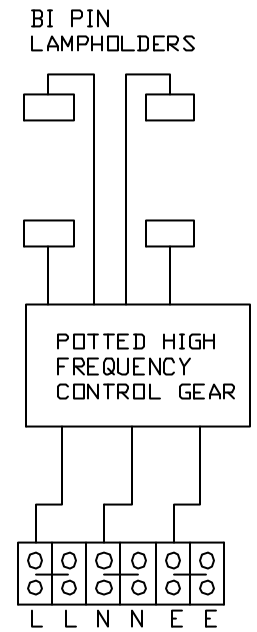
1	2	3	4	5	6	7	8	

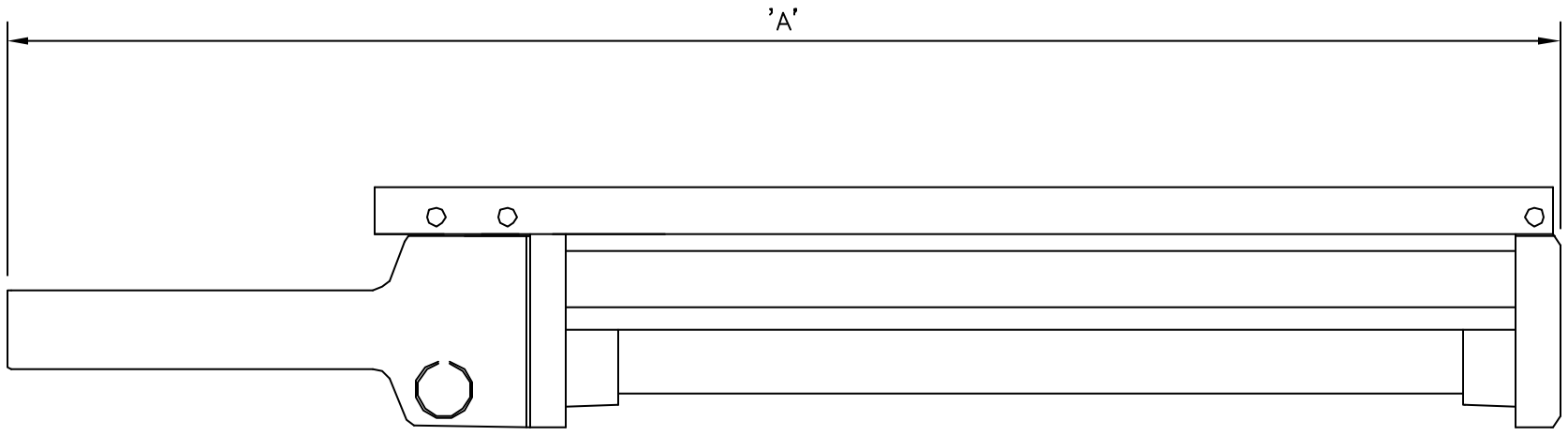
DRAWING NUMBER/SHEET NUMBER
F1224

REMOVE ALL BURRS & SHARP EDGES IF IN DOUBT ASK! 3RD ANGLE PROJECTION









TYPE OF PROTECTION....Ex d FLAMEPROOF
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA & IIB
TO BS EN 60079-14
STANDARD.....BS EN 50014/18
CERTIFICATE.....ATEX TYPE EXAMINATION Sira 00ATEX1107
CODE EEx d IIB T5 (T amb 55°C)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 4mm^2 (3 CORE) FOR LOOPING
CABLE ENTRY 2 IN No. M20 x 1.5p TAPPED ENTRIES
SUPPLY VOLTAGE 220 – 254V 50/60Hz
CONTROL GEAR HIGH FREQUENCY

Lamp	Dimension "A"	Dimension "B"
1x8W	645mm	391mm
1x18W	918mm	661mm
2x18W	918mm	661mm
1x36W	1522mm	1266mm
2x36W	1522mm	1266mm
1x58W	1823mm	1566mm
2x58W	1823mm	1566mm

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	06/12/2002
REF. DRGS.–	

MATERIAL	TOLERANCE
FINISH	SURFACE ROUGHNESS
DIMS. IN MM	SCALE –

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
QUAD F Exe Range
BI PIN FLUORESCENT
HIGH FREQUENCY GEAR

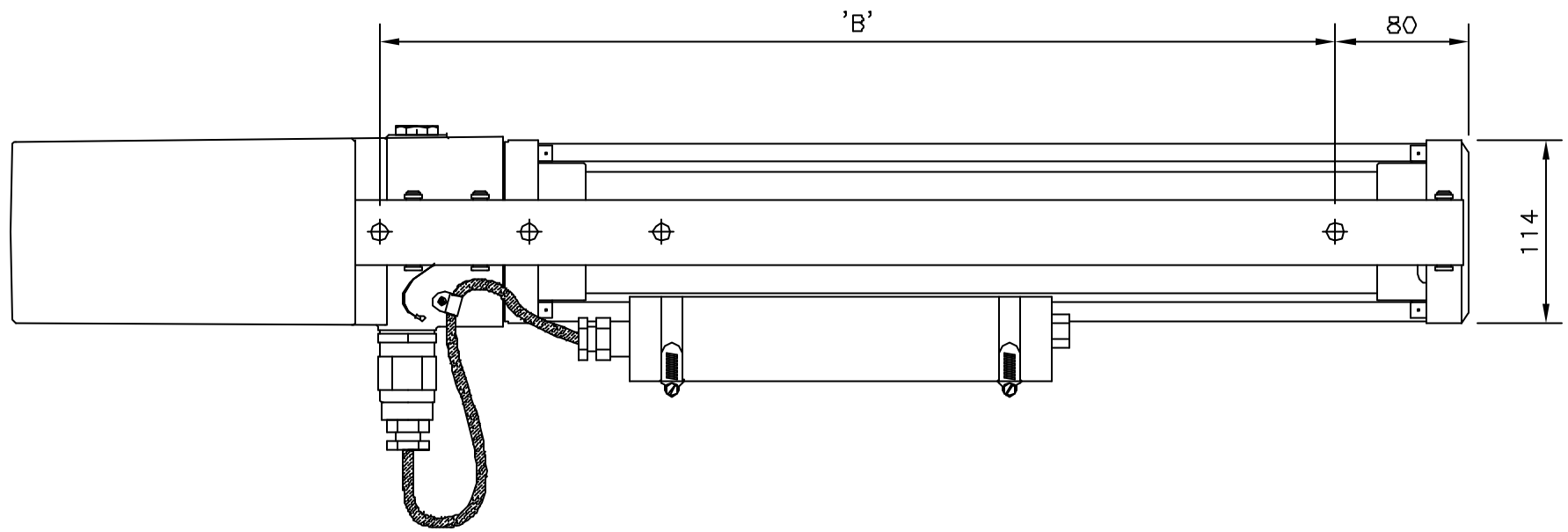
DRAWING NUMBER/SHEET NUMBER
F1224 1 OF 1

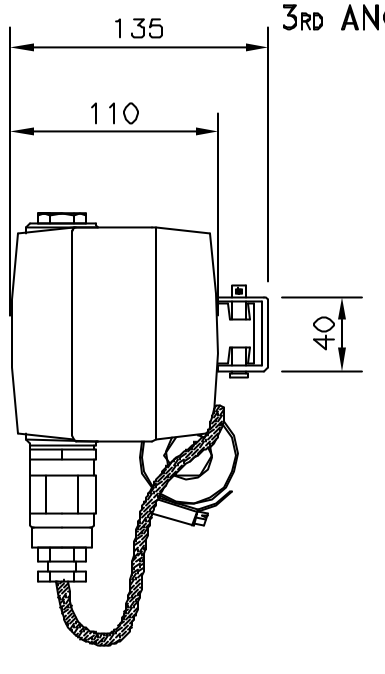
DRAWING NUMBER/SHEET NUMBER
F1226

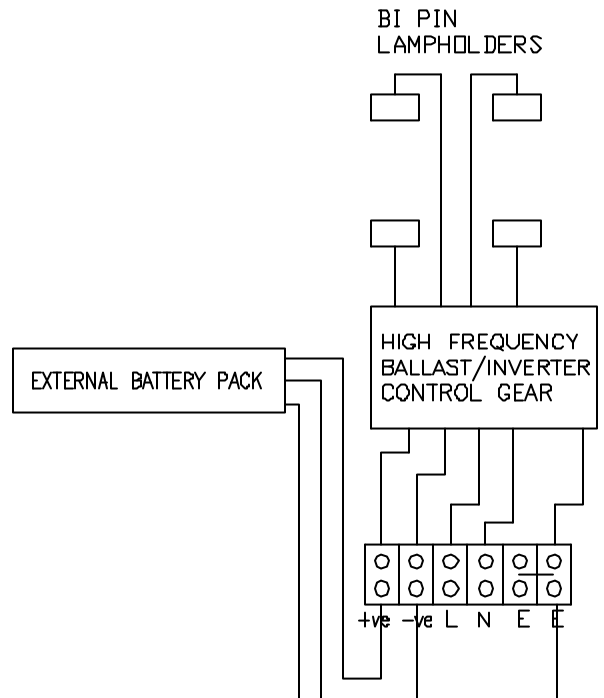
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

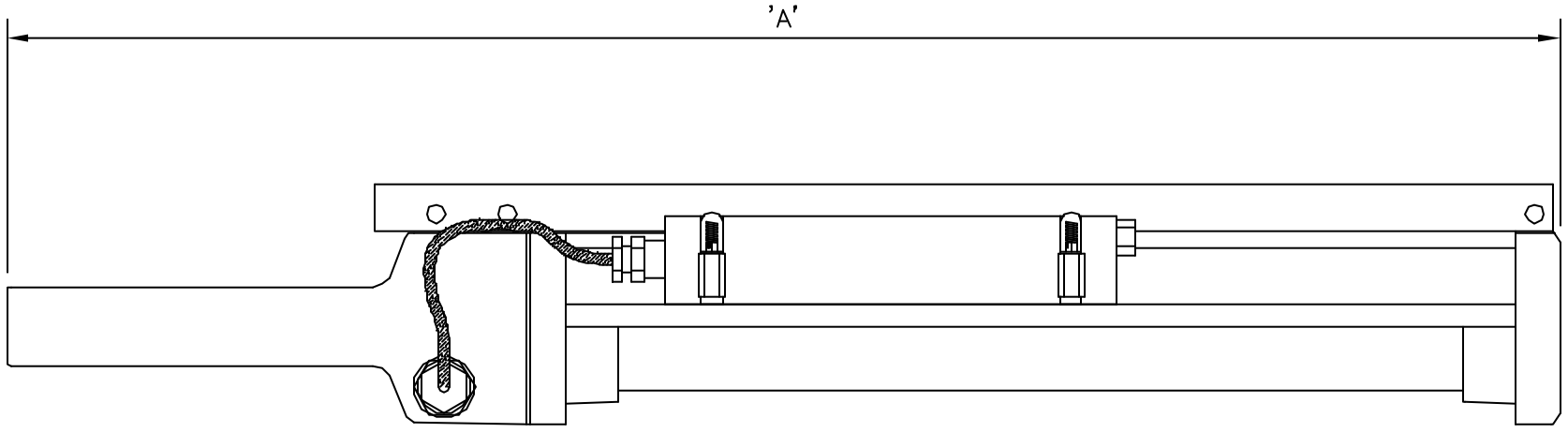
3RD ANGLE PROJECTION







TYPICAL WIRING DIAGRAM



Lamp	Dimension "A"	Dimension "B"
1x8W	645mm	391mm
1x18W	918mm	661mm
2x18W	918mm	661mm
1x36W	1522mm	1266mm
2x36W	1522mm	1266mm
1x58W	1823mm	1566mm
2x58W	1823mm	1566mm

TYPE OF PROTECTION....Ex d FLAMEPROOF
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA & IIB
TO BS EN 60079-14
STANDARD.....BS EN 50014/18/28
CERTIFICATE.....ATEX TYPE EXAMINATION Sira 00ATEX1107
CODE II 2 G D EEx dm IIB T5 (T amb 50°C)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 4mm^2 (3 CORE)
CABLE ENTRY SINGLE M20 x 1.5p TAPPED ENTRY
SUPPLY VOLTAGE 220 - 254V 50/60Hz
CONTROL GEAR HIGH FREQUENCY

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	13/12/2002
REF. DRGS.-	

MATERIAL | TOLERANCE
FINISH | SURFACE ROUGHNESS
DIMS. IN MM | SCALE -

TITLE
Quad F Exe Em Range

DRAWING NUMBER/SHEET NUMBER
F1226 1 OF 1

EVOLUTION

Ex d FLOODLIGHT

ATEX CATEGORY 2

ZONE 1 and 21 APPLICATIONS

The revolutionary Evolution concept is now highly valued for many applications where its use achieves optimum lighting levels with minimum maintenance costs. There are no exposed flameproof paths. The only essential flameproof path at the lampholder spigot is contained within the increased safety control gear and terminal chamber located at the end of the main flameproof lamp enclosure. This is accessed by a single captive screw in the hinged cover.

The protection is Ex de for ignitable gas applications and is dust excluding IP6X for use in ignitable dust applications. The ATEX Categories are 2 G and 2 D. Lamps up to 400W can be used and extended up to 600W with a separate Ex e control gear box.

Explosion protection for gas group IIC (Hydrogen) is standard and a low temperature version for gas group IIB at -50ºC is available.

Ex d Pendant High Bay

The Pendant version has simple mounting points and is designed for use in high bay applications.

Standard Specification

Type of Protection:	**Ex de (Flameproof Increased Safety) Dust protected enclosure**
ATEX Classification:	**Group II Category 2 G D**
Area Classification:	**Zone 1 and Zone 21 areas to EN 60079-10 and EN 50281-3 with installation to EN 60079-14 and EN 50281-1-2 Gas Groups IIA, IIB and IIC**
Apparatus Standard:	**EN 50014 EN 50018 EN 50019 EN 50281-1-1**
Certificate:	**EC Type Examination Certificate BAS98ATEX2373**
Coding:	**Ⓔx II 2 G D EEx de IIC (refer to table for T rating and Ambient)**
Enclosure:	**Aluminium alloy LM6 to BS 1490 All fastenings stainless steel. Toughened glass window**
Reflector:	**Wide beam, high purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Stirrup mounting bracket with aiming quadrant**
Control Gear:	**Internal copper/iron with PFC correction capacitor**
Relamping:	**Access via hinged end cover on release of single screw**
Lampholder:	**E40 (R7s for linear Tungsten-Halogen)**
Lamp Type:	**HPS, Metal Halide or Tungsten-Halogen**
Burning Position:	**Universal for HID, +/-45º on horizontal plain for Tungsten-Halogen lamps**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz HPS & Metal Halide up to 270V Tungsten-Halogen 12V - 250V linear Tungsten-Halogen, 110V - 250V single ended Tungsten-Halogen**

Features

Installation in gas groups IIA, IIB and IIC

Easy and quick access for maintenance

Simple, rapid lamp replacement and flamepath inspection

Reduced maintenance due to no exposed flamepath

Exceptional photometric efficiency

Effective light distribution for many applications

Gost Approved

Cepel Approved

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Std. Cat No.	Wattage	Lamp	Lampholder	T Class (Gas)	T ºC (Dust)	Ambient ºC	Weight
EVOD/150/MS	150W	HPS and Metal Halide	E40	T4 T3	130 175	40 55	28kg
EVOD/250/MS	250W	HPS and Metal Halide	E40	T4 T3	130 175	40 55	28.5kg
EVOD/400/MS	400W	HPS and Metal Halide	E40	T3	175	55	28.5kg
EVOD/600/HS*	600W	HPS	E40	T3	195	35	25kg
EVOD/500/TH	500W	Single Ended T/Halogen	E40	T3	195	40	25kg
EVOD/500/TL	500W	Linear T/Halogen	R7s	T3	195	55	25kg

For Pendant substitute EVPD for EVOD

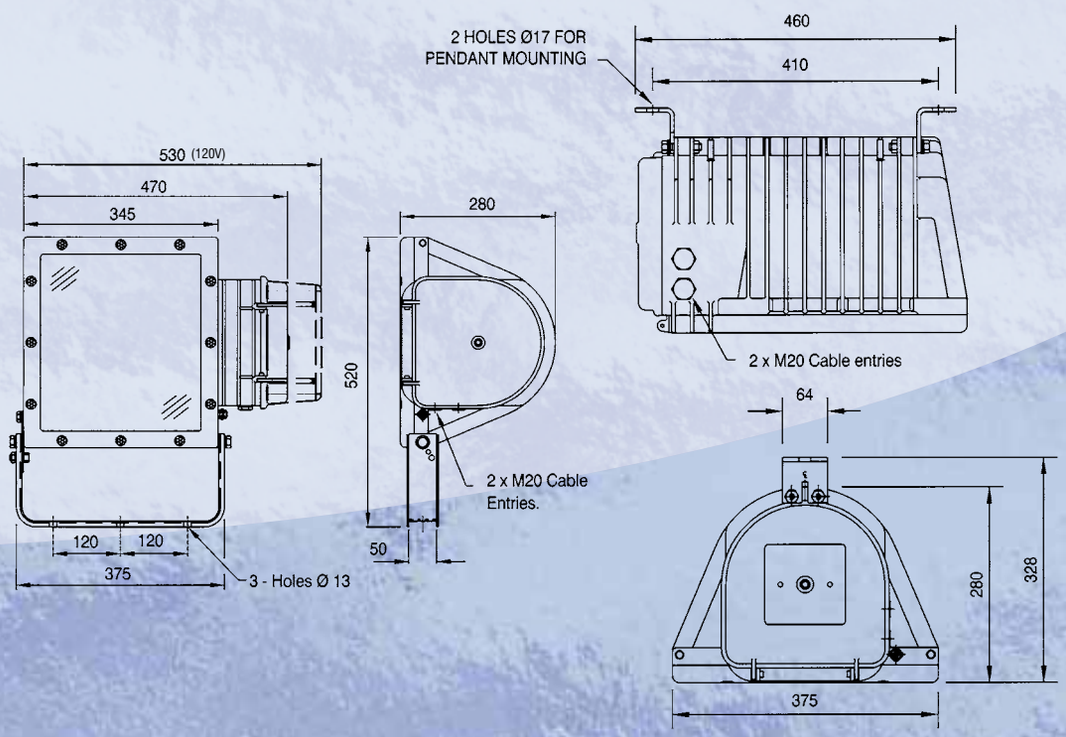
*Ignitor only fitted. Remote gear box required.

Options - Suffix to Catalogue No.

/120	120V (Weight increase of +12kg)
/60	60Hz
/M25	M25 Entries
/N	Narrow beam reflector
/M	Medium beam reflector
/P	PTFE coating
/LT	Low temperature version -50ºC (Gas groups IIA and IIB only)
/HB	Heavy duty stirrup bracket
/TI	Timed ignitor
/D	Dust protected (Only marked for dust when this option is added)

Applications

- Zone 1 and 2 hazardous areas • Aircraft hangers
- Offshore oil and gas platforms • Chemical industry
- Tank farms • Security and perimeter lighting
- Sewage treatment plants • Drum storage areas
- General area floodlighting • Gas pumping stations
- Pharmaceutical industry • Distilleries



Accessories (Should be ordered separately)	**Catalogue Order Code**
284 retrofit bracket (allows Evolution to pick-up 284 fixings)	**SEVO1-0001**
Pole mounting brackets	**SEVO4-0001**
Anti-glare shield	**SEVO4-0002**
Wire guard	**SEVO4-0003**
Swing jib damper assembly	**SEVO1-0015**
Swinging jib bracket assembly	**SEVO4-0009**
120V Swinging jib bracket assembly	**SEVO4-0012**

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

EC-TYPE EXAMINATION CERTIFICATE

Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 EC-Type Examination Certificate Number : **BAS98ATEX2373**

4 Equipment or Protective System: **EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **388 Hillington Road, Glasgow, Scotland, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

BASEEFA Certification Report No. 98(C)0619/1 dated 5 July 1999

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 **EN 50018: 1994** **EN 50019: 1994**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

II 2 G **EEx de IIC T* (T_{amb} = -20°C to **°C)**

Where * is the temperature classification and ** is the maximum ambient temperature as detailed in item 15 of the Schedule.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No. EECS 0068/01/013

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

I M CLEARE
DIRECTOR
15 July 1999

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2373**

15 **Description of Equipment or Protective System**

The Evolution (200 Series Mk III) Floodlight IIC, rated at up to 254V a.c., 50Hz or 277V a.c., 60Hz, having a maximum lamp rating of 600W, comprises a cast aluminium rectangular lamp housing and integral, increased safety control gear housing, which has a cylindrical capacitor housing cast inside. Cemented into a recess in the top of the lamp housing is a glass window, which is retained by a rectangular frame, secured by twelve socket head cap screws, grade A2-70. The heads of the screws are potted during manufacture to prevent removal. The luminaire may optionally be fitted with either an anti-glare shield, a louvered shield or a wire guard. Passing through the rear of the control gear housing, and into the lamp housing is a cast aluminium ignitor and lampholder housing, forming a spigot joint flamepath.

The integral leads from the potted ignitor pass through the sidewall of the ignitor housing into the control gear housing. The cylindrical capacitor housing has a threaded cover, into which is fitted a Bartec line bushing Type 07-9101-H02D, component certificate PTB 97 ATEX 1047U, coded EEx d IIC, and marked ⟨Ex⟩II 2 G, from which the leads are connected into terminals in the control gear housing. Insertion of the ignitor housing into the main enclosure is controlled by two bolts, onto which the ignitor is rotated and located. The cover of the increased safety control gear housing is hinged, and secured by a single, central bolt, which also acts as an anti-rotation device for the ignitor housing.

The increased safety control gear housing contains a ballast and connection facilities. Up to two Klippon Type MK6, six way terminals, BASEEFA Component Certificate BAS Ex 813095U, coded EEx e II, are fitted inside the control gear housing, for internal and external connections.

Internal and external earthing facilities are provided.

Cable entries are provided in the increased safety control gear housing for the fitment of cable glands providing an ingress protection of at least IP54, and capable of withstanding an impact of 7J.

The temperature classification and ambient temperature, and the components which may be fitted within the lamp, capacitor, ignitor, and increased safety housings, are as detailed in the table below.

Electrical Control Gear, Lamp Schedule, Ratings and Temperature Classifications

Lamp Type	Type	Wattage	Voltage	Lamp Cap	Ignitor	Ballast	Capacitor	Cable Temp Rise	T_{amb} (Max)	T Class
Tungsten Halogen	TH	500W Max.	270V Max.	E40	-	-	-	50°C	40°C	T3
Tungsten Halogen	TH	500W Max.	270V Max.	R7s	-	-	-	40°C	55°C	T3

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2373**

Electrical Control Gear, Lamp Schedule, Ratings and Temperature Classifications										
Lamp Type	**Type**	**Wattage**	**Voltage**	**Lamp Cap**	**Ignitor**	**Ballast**	**Capacitor**	**Cable Temp Rise**	**T_{amb} (Max)**	**T Class**
HPS	SON/T	150W	220/230/240/254 50 Hz or 240/250/260/277 50 Hz	E40	Parry S.I.P. PCX40S or equivalent	Parry	20/30µF	40°C	40°C	T4
								35°C	55°C	T3
HPS	SON/T	250W			Parry S.I.P. PCX40S or equivalent		30/40µF	40°C	40°C	T4
								35°C	55°C	T3
HPS	SON/T	400W			Parry S.I.P. PXE000 or equivalent		40/50µF	40°C	40°C	T3
									55°C	T3
HPS	SON/T	600W			Parry S.I.P. PXE000 or equivalent		Remote	55°C	35°C	T3
MBI	MBIT	150W			Parry S.I.P. PCX40S or equivalent		20/30µF	40°C	40°C	T4
								35°C	55°C	T3
MBI	MBIT	250W			Parry S.I.P. PCX40H or equivalent		30/40µF	40°C	40°C	T4
								35°C	55°C	T3
MBI	MBIT	400W			Parry S.I.P. PXE000 or equivalent		40/50µF	40°C	40°C	T3
								35°C	55°C	T3

16 **Report Nos.**

BASEEFA Certification Report No. 98(C)0619/1 dated 15/07/1999

17 **SPECIAL CONDITIONS FOR SAFE USE**

None

18 **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by Standards listed at item 6		
ESR	**Subject**	**Compliance Report**
1.0.2	Analysis of possible operating faults	BASEEFA Report No. 98(C)0619/1
1.0.3	Special checking and maintenance conditions	Not applicable
1.0.4	Surrounding area conditions	BASEEFA Report No. 98(C)0619/1
1.2.2	Components for incorporation or replacement	BASEEFA Report No. 98(C)0619/1
1.2.4	Dust deposits	Not applicable
1.2.5	Additional means of protection	Not applicable
1.2.7	Protection against other hazards	BASEEFA Report No. 98(C)0619/1
1.3.1	Hazards arising from different ignition sources	BASEEFA Report No. 98(C)0619/1

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2373**

Essential Health and Safety Requirements not covered by Standards listed at item 6		
ESR	**Subject**	**Compliance Report**
1.3.5	Hazards arising from pressure compensation operations	Not applicable
1.4.2	Withstanding attack by aggressive substances	BASEEFA Report No. 98(C)0619/1
1.5	General requirements for safety devices	Not applicable
1.6.1	Manual override	Not applicable
1.6.2	Emergency shutdown	Not applicable
1.6.3	Hazards arising from power failure	Not applicable
1.6.5	Placing of warning devices as parts of equipment	Not applicable
2	Category M	Not applicable
2.1	Category 1	Not applicable
2.2.1	Category 2G	BASEEFA Report No. 98(C)0619/1
2.2.2	Category 2D	Not applicable
2.3	Category 3	Not applicable
3	Requirements for protective systems	Not applicable

19 **DRAWINGS**

Number	Issue	Date	Description
D1911 Sheets 1 to 5	-	28.04.99	Evolution (200 Series Mk III) Floodlight IIC

BASEEFA List Keywords
2FLODLUM

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC

3 Supplementary EC-Type Examination Certificate Number: **BAS98ATEX2373/1**

4 Equipment or Protective System: **EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **Glasgow, G52 4BL**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX2373 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

File No: EECS 0068/01/013

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
Internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

I M CLEARE
DIRECTOR
14 March 2002

13 Schedule

14 SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2373/1

Description of the Variation to the Equipment or Protective System

To permit the following:-

A change of cables to Type H07G-K and alternative potting compound Type Hysol E01016, or the use of a certified line bushing to the ignitor housing.

To add a thermal cut-out to the ballast.

To permit the luminaire to be used within a combustible dust atmosphere.

The floodlight is recoded ⟨Ex⟩ II 2 GD EEx de IIC T*°C (T_{amb} =-20°C to +**°C)

Where * is the maximum surface temperature and ** is the maximum ambient temperature as detailed below.

Lamp Type	Maximum External Surface Temperature (*)	Maximum Ambient Temperature (**)
150W SON/T	130°C	40°C
	175°C	55°C
250W SON/T	130°C	40°C
	175°C	55°C
400W SON/T	175°C	40°C
	175°C	55°C
600W SON/T	195°C	35°C
150W MBI/T	130°C	40°C
	175°C	55°C
250W MBI/T	130°C	40°C
	175°C	55°C
250W MBI/T	130°C	40°C
	175°C	55°C
500W T/H E40	195°C	40°C
500W T/H R7s	195°C	55°C

16 Report No.

BASEEFA Certification Report No. 01(C)0090 dated 12 March 2002.

17 Special Conditions For Safe Use

None.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 Schedule

14 SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2373/1

18 Essential Health and Safety Requirements

See original certificate.

19 DRAWINGS

Number	Issue	Date	Description
D1911 Sheets 1 to 5 inc.	1	01.11.01	Evolution (200 Series Mk III) Floodlight IIC

This certificate may only be reproduced in its entirety and without any change, schedule included.

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1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially explosive atmospheres Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS98ATEX2373/2X**

4 Equipment or Protective System: **EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **Glasgow, G52 4BL**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS98ATEX2373 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/013

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
26 July 2002

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28144
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

13 Schedule

14 SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2373/2X

Description of the Variation to the Equipment or Protective System

To include a 110-120 volt version utilising a toroidal step-up transformer located within the EEx e part of the housing.

The following SON/T fittings are included in the 110-120 volt range:

Lamp	Dust Rating (°C)	Gas Rating	Ambient (°C)
150W	130	T4	40
	150	T3	55
250W	130	T4	40
	150	T3	55
400W	175	T3	55

Report No.

BASEEFA Certification Report No. 02(C)0034 dated 24 July 2002

Special Conditions For Safe Use

1. 110-120 volt luminaires must be mounted horizontally, ± 10°.

Essential Health and Safety Requirements

See original certificate.

DRAWING

Number	Issue	Date	Description
*D2091	1	22/3/02	110-120 volt General Arrangement

*This drawing is common to Certificate BAS98ATEX2372/2X

1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS98ATEX2372**

4 Equipment or Protective System: **EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **388 Hillington Road, Glasgow, Scotland, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

BASEEFA Certification Report No. 98(C)0619/2 dated 5 July 1999

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 **EN 50018: 1994** **EN 50019: 1994**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II 2 G **EEx de IIB T* (T_{amb} = -50°C to **°C)**

Where * is the temperature classification and ** is the maximum ambient temperature as detailed in item 15 of the Schedule.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No. EECS 0068/01/013

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

I M CLEARE
DIRECTOR
15 July 1999

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2372**

15 **Description of Equipment or Protective System**

The Evolution (200 Series Mk III) Floodlight IIB, rated at up to 254V a.c., 50Hz or 277V a.c., 60Hz, having a maximum lamp rating of 600W, comprises a cast aluminium rectangular lamp housing and integral, increased safety control gear housing, which has a cylindrical capacitor housing cast inside. Cemented into a recess in the top of the lamp housing is a glass window, which is retained by a rectangular frame, secured by twelve socket head cap screws, grade A2-70. The heads of the screws are potted during manufacture to prevent removal. The luminaire may optionally be fitted with either an anti-glare shield, a louvered shield or a wire guard. Passing through the rear of the control gear housing, and into the lamp housing is a cast aluminium ignitor and lampholder housing, forming a spigot joint flamepath.

The integral leads from the potted ignitor pass through the sidewall of the ignitor housing into the control gear housing. The cylindrical capacitor housing has a threaded cover, into which is fitted a Bartec line bushing Type 07-9101-H02D, component certificate PTB 97 ATEX 1047U, coded EEx d IIC, and marked ⟨Ex⟩ II 2 G, from which the leads are connected into terminals in the control gear housing. Insertion of the ignitor housing into the main enclosure is controlled by two bolts, onto which the ignitor is rotated and located. The cover of the increased safety control gear housing is hinged, and secured by a single, central bolt, which also acts as an anti-rotation device for the ignitor housing.

The increased safety control gear housing contains a ballast and connection facilities. Up to two Klippon Type MK6, six way terminals, BASEEFA Component Certificate BAS Ex 813095U, coded EEx e II, are fitted inside the control gear housing, for internal and external connections.

Internal and external earthing facilities are provided.

Cable entries are provided in the increased safety control gear housing for the fitment of cable glands providing an ingress protection of at least IP54, and capable of withstanding an impact of 7J.

The temperature classification and ambient temperature, and the components which may be fitted within the lamp, capacitor, ignitor, and increased safety housings, are as detailed in the table below.

Electrical Control Gear, Lamp Schedule, Ratings and Temperature Classifications

Lamp Type	Type	Wattage	Voltage	Lamp Cap	Ignitor	Ballast	Capacitor	Cable Temp Rise	T_{amb} (Max)	T Class
Tungsten Halogen	TH	500W Max.	270V Max.	E40	-	-	-	50°C	40°C	T3
Tungsten Halogen	TH	500W Max.	270V Max.	R7s	-	-	-	40°C	55°C	T3

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2372**

Electrical Control Gear, Lamp Schedule, Ratings and Temperature Classifications										
Lamp Type	**Type**	**Wattage**	**Voltage**	**Lamp Cap**	**Ignitor**	**Ballast**	**Capacitor**	**Cable Temp Rise**	**T_{amb} (Max)**	**T Class**
HPS	SON/T	150W	220/230/ 240/254 50 Hz or 240/250/ 260/277 50 Hz	E40	Parry S.I.P. PCX40S or equivalent	Parry	20/30µF	40°C	40°C	T4
								35°C	55°C	T3
HPS	SON/T	250W			Parry S.I.P. PCX40S or equivalent		30/40µF	40°C	40°C	T4
								35°C	55°C	T3
HPS	SON/T	400W			Parry S.I.P. PXE000 or equivalent		40/50µF	40°C	40°C	T3
									55°C	T3
HPS	SON/T	600W			Parry S.I.P. PXE000 or equivalent		Remote	55°C	35°C	T3
MBI	MBIT	150W			Parry S.I.P. PCX40S or equivalent		20/30µF	40°C	40°C	T4
								35°C	55°C	T3
MBI	MBIT	250W			Parry S.I.P. PCX40H or equivalent		30/40µF	40°C	40°C	T4
								35°C	55°C	T3
MBI	MBIT	400W			Parry S.I.P. PXE000 or equivalent		40/50µF	40°C	40°C	T3
								35°C	55°C	T3

16 **Report Nos.**

BASEEFA Certification Report No. 98(C)0619/2 dated 05/07/1999

17 **SPECIAL CONDITIONS FOR SAFE USE**

None

18 **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by Standards listed at item 6		
ESR	**Subject**	**Compliance Report**
1.0.2	Analysis of possible operating faults	BASEEFA Report No. 98(C)0619/2
1.0.3	Special checking and maintenance conditions	Not applicable
1.0.4	Surrounding area conditions	BASEEFA Report No. 98(C)0619/2
1.2.2	Components for incorporation or replacement	BASEEFA Report No. 98(C)0619/2
1.2.4	Dust deposits	Not applicable
1.2.5	Additional means of protection	Not applicable
1.2.7	Protection against other hazards	BASEEFA Report No. 98(C)0619/2
1.3.1	Hazards arising from different ignition sources	BASEEFA Report No. 98(C)0619/2

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS98ATEX2372**

Essential Health and Safety Requirements not covered by Standards listed at item 6		
ESR	**Subject**	**Compliance Report**
1.3.5	Hazards arising from pressure compensation operations	Not applicable
1.4.2	Withstanding attack by aggressive substances	BASEEFA Report No. 98(C)0619/2
1.5	General requirements for safety devices	Not applicable
1.6.1	Manual override	Not applicable
1.6.2	Emergency shutdown	Not applicable
1.6.3	Hazards arising from power failure	Not applicable
1.6.5	Placing of warning devices as parts of equipment	Not applicable
2	Category M	Not applicable
2.1	Category 1	Not applicable
2.2.1	Category 2G	BASEEFA Report No. 98(C)0619/2
2.2.2	Category 2D	Not applicable
2.3	Category 3	Not applicable
3	Requirements for protective systems	Not applicable

19 **DRAWINGS**

Number	Issue	Date	Description
D1910 Sheets 1 to 5	-	26.04.99	Evolution (200 Series Mk III) Floodlight IIB

BASEEFA List Keywords
2FLODLUM

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number :	**BAS98ATEX2372/3**
4	Equipment or protective system:	**Evolution (200 Series MKIII) Floodlight IIB**
5	Manufacturer :	**Chalmit Lighting Limited**
6	Address :	**Glasgow, Scotland G52 4BL**

7 This supplementary certificate, issued by Baseefa (2001) Ltd., Notified Body Number 1180, extends EC - Type Examination Certificate No. BAS98ATEX2372 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate

The Electrical Equipment Certification Service, Notified Body Number 0600, retains responsibility for its original documentation. Baseefa (2001) Ltd. is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate that it has issued.

This certificate may only be reproduced in its entirety, without any change, Schedule included.

Baseefa (2001) Ltd. Customer Reference No. **0068**

Project File No. **02/0524**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

Baseefa (2001) Ltd.
Health and Safety Laboratory Site, Harpur Hill,
Buxton, Derbyshire SK17 9JN
Telephone +44 (0) 1298 28255 Fax +44 (0) 1298 28216
e-mail info@baseefa2001.biz web site www.baseefa2001.biz
Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

Schedule

Description of the variation to the Equipment or Protective System

Variation 3.1

Alternative arrangement of the capacitor enclosure cover fitted with either a threaded line bushing to PTB97ATEX1047U or with potted cables.

Report No.

None

Special Conditions for Safe Use

None

Essential Health and Safety Requirements

See original certificate

Drawings and Documents

Number	Sheet	Issue	Date	Description
B1314	11		11.12.02	"B" Type Capacitor Housing with a Line Bushing
B1315	11		11.12.02	"B" Type Capacitor Housing with Potted Cables

These drawings are common to certificate BAS98ATEX2373

CEPEL

OCP-0007

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA

Organismo de Certificação Credenciado pelo INMETRO

INMETRO

Certificado de Conformidade

Certificate of Conformity / Certificado de Conformidad

Número: *Number / Número* CEPEL-EX-068/2001	**Emissão:** *Issue / Expedición* 05/12/2001	**Validade:** *Validity / Validez* 04/12/2003

Produto: *Product / Producto* **PROJETOR**

Tipo/Modelo: *Type - Model / Tipo - Modelo* **EVOLUTION**

Número de Série: *Serial Number / Número de Serie* ---

Número do Lote: *Batch Number / Número del Lote* ---

Solicitante /Endereço: *Requester - Address / Solicitante - Dirección*
CHALMIT LIGHTING
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Fabricante / Endereço: *Manufacturer - Address / Fabricante - Dirección*
CHALMIT LIGHTING
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Norma(s) Aplicável(eis): *Suitable Standard(s) / Norma(s) de Aplicación*
Equipamentos elétricos para atmosferas explosivas
NBR 9518/97 – Requisitos gerais;
NBR 5363/98 – Invólucros à prova de explosão – Tipo de proteção "d";
NBR 9883/95 – Segurança aumentada – Tipo de proteção "e";
IEC 60079-0/98 – General requiriments.

Laboratório de Ensaio: *Testing Laboratory / Laboratório de Ensayo*
CEPEL - Centro de Pesquisas de Energia Elétrica
Laboratório de Acionamentos e Segurança em Equipamentos Eletroeletrônicos - AP4

Número do Relatório de Ensaio: *Test Report Number / Número del Informe de Ensayo*
UNIAP-EX-1056/2001
MARCAÇÃO: BR-Ex de IIC T* (vide Anexo) IP66

Condições de Emissão: *Conditions of Issue / Condiciones de Expedición*
Com base na Portaria INMETRO Nº 176/2000, de 17/07/2000. Processo aprovado conforme ítem 2.13 da 55ª Reunião Ordinária da Comissão de Certificação de Equipamentos Elétricos para Atmosferas Explosivas - CCEX, em 29/11/2001.

1ª via - CLIENTE

Observações: *Remarks / Observaciones*
1) Este Certificado só é válido acompanhado do seu Anexo.

Henrique Burd

SIGNATÁRIO AUTORIZADO
Authorized Signatory / Persona Autorizada

Escritório de Certificação de Produtos e Serviços - ECPS - Av. Olinda s/nº - Adrianópolis - CEP 26053-121 - Nova Iguaçu - RJ - Brasil
End. Postal CEPEL - Cx. Postal 68007 - CEP 21944-970 - Rio de Janeiro - RJ - Brasil - Tel. (55XXX21) 2667-2111 / 2667-8631 - Fax (55XXX21) 2667-8630

ANEXO

AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-068/2001

Os **PROJETORES MODELO EVOLUTION** fabricados pela **CHALMIT LIGHTING** são qualificados em termos de suas especificações, análises e ensaios a que foram submetidos conforme documentação descritiva.

Especificações:

Projetor para lâmpada de potência até 600 W e tensões até 254 V – 50 Hz ou até 277 V – 60 Hz composto de um invólucro retangular em alumínio fundido à prova de explosão para alojamento da lâmpada e um invólucro para alojamento do reator e régua de terminais com tipo de proteção segurança aumentada. A lente de vidro é colada em uma reentrância existente no invólucro da lâmpada e é presa por uma moldura fixada por doze parafusos tipo Allen. As cabeças dos parafusos são resinadas e tampadas para impedir a remoção.

A luminária pode opcionalmente ser equipada externamente com dispositivo anti-ofuscante ou dois tipos de grade de proteção.

Um invólucro em alumínio fundido contendo o ignitor e a base da lâmpada passa através de um furo existente no invólucro "Ex e" e entra no invólucro "Ex d" (invólucro da lâmpada) formando uma junta à prova de explosão do tipo encaixada.

Os condutores do ignitor passam através da parede lateral do invólucro "Ex d" para dentro do invólucro "Ex e" através de uma selagem direta no corpo do invólucro do ignitor (resina Duracol 4538 ou Hysol E1016).

O capacitor é alojado no interior do invólucro "Ex d". A parte superior do capacitor possui uma tampa que compõe uma junta roscada com o invólucro "Ex d". Nesta tampa é montada uma bucha de passagem modelo 07-9101-H02D fabricada pela Bartec (certificado PTB 97 ATEX 1047U, marcação EEx d IIC), através da qual passam os fios que são conectados nos terminais do invólucro "Ex e".

A tampa do invólucro "Ex e" é articulada e presa por um parafuso central único que também atua como dispositivo anti-rotacional para o invólucro do ignitor.

O invólucro "Ex e" contém um reator e terminais de conexão. Até duas réguas de seis terminais tipo MK6, fabricados pela Weidmuller (certificado de componente BAS 99 ATEX 2123U, marcação EEx e II) são colocadas no invólucro de controle para conexões internas e externas.

As entradas de cabos estão disponíveis no invólucro de segurança aumentada para colocação de prensa-cabos que devem ser certificados e montados de forma a garantir o grau de proteção IP66.

O reator a capacitor para o projetor com lâmpada de 600 W devem ser instalados em caixa adicional remota, que deverá possuir seu próprio certificado de conformidade.

A classe de temperatura, temperatura ambiente e componentes que podem ser instalados nos invólucros da lâmpada, do capacitor, do ignitor e de segurança aumentada estão mostrados na Tabela 1.

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA *(EMPRESA DO SISTEMA ELETROBRÁS)*
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ANEXO AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-068/2001

Tabela 1 - Classe de Temperatura, Temperatura Ambiente e Componentes que Podem Ser Instalados nos Invólucros da Lâmpada, do Capacitor, do Ignitor e de Segurança Aumentada

Tipo de lâmpada	Tipo	Potência (W)	Tensão (V)	Base	Ignitor	Reator	Cap. (µF)	Classe Temp. Isol. Cabo (°C)	Tamb Max. (°C)	Classe Temp.
Halógena	TH	Max. 500	Max. 270	E40	-	-	-	80	40	T3
Halógena	TH	Max. 500	Max. 270	R7s	-	-	-	95	55	T3
HPS	SON/T	150	220/230/240/254 (50 Hz) ou 240/250/260/277 (60 Hz)	E40	Parry S.I.P. PCX40S ou equivalente	Parry HSC 154222P8	20/30	80	40	T4
								90	55	T3
HPS	SON/T	250			Parry S.I.P. PCX40S ou equivalente	Parry HDC 254222P8	30/40	80	40	T4
								90	55	T3
HPS	SON/T	400			Parry S.I.P. PXE000 ou equivalente	Parry HSC 404222P8	40/50	80	40	T3
								95	55	T3
HPS	SON/T	600			Parry S.I.P. PXE000 ou equivalente	Caixa adicional	Caixa adicional	90	35	T3
Vapor Metálico	MBIT	150			Parry S.I.P. PCX40S ou equivalente	Parry HSC 154222P8	20/30	80	40	T4
								90	55	T3
Vapor Metálico	MBIT	250			Parry S.I.P. PCX40H ou equivalente	Parry HDC 254222P8	30/40	80	40	T4
								90	55	T3
Vapor Metálico	MBIT	400			Parry S.I.P. PXE000 ou equivalente	Parry HSC 404222P8	40/50	80	40	T3
								90	55	T3

Análises e ensaios realizados:

- Análise construtiva (NBR 5363 e NBR 9883);
- Ensaio de elevação de temperatura (NBR 9518 item 9.4.6.1) – ver a Tabela 1 com as classes de temperatura;
- Resistência térmica ao calor e ao frio (NBR 9518 item 9.7.1) – 336 h a 95 °C e 90% de UR, 336 h a 100 °C e 24 h a –65/70 °C;
- Ensaio de impacto (NBR 9518 item 9.4.3.1) – 7 J de impacto no corpo e 4 J no vidro;
- Ensaio de choque térmico (NBR 9518 item 9.4.6.2);
- Ensaio de determinação da pressão de referência (NBR 5363 item 18.1.1.1) – invólucro da lâmpada e do ignitor – 8,31 bar, invólucro do capacitor – 9,3 bar;

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- Ensaio de sobrepressão (NBR 5363 item 14.1.1) – ensaiado com uma pressão de 38 bar (invólucro do ignitor e capacitor) e 12,6 bar (invólucro da lâmpada utilizando parafusos com resistência ao alongamento de 450 N/mm^2);
- Propagação de chama (NBR 5363 item 15.2.2.1) – 5 ignições de hidrogênio a 28% seguidas de 5 ignições de acetileno a 7% a –60 °C;
- Ensaio de tração em entrada de cabos selada (IEC 60079-0 item B-3.2.1.2) – aplicada uma carga de 20 vezes o diâmetro da capa externa em newtons por um período de 120 segundos, sem ocorrer o escorregamento;
- Ensaio de grau de proteção (NBR 6146 itens 8 e 9) – ensaiado para o grau de proteção IP66.

Documentação descritiva do equipamento:
Desenhos construtivos, características dos componentes e materiais estão relacionados na "Lista de Documentos" apresentada no Relatório de Ensaio UNIAP-EX-1056/2001.

Marcação:
Na marcação dos **PROJETORES MODELO EVOLUTION** deverão constar as seguintes informações:

BR-Ex de IIC T* (ver Tabela 1)
Tamb = -20 a ** °C (ver Tabela 1)
IP66

Observações:

1. A tampa do invólucro de segurança aumentada deve ter a seguinte advertência: DESENERGIZAR E AGUARDAR 15 MINUTOS ANTES DE ABRIR.

2. Na instalação da luminária devem ser utilizados cabos com classe de temperatura do isolamento de acordo com a Tabela 1.

3. Na junção entre o vidro e a moldura é aplicada externamente uma camada de silicone Arbosil 1081.

4. Devido a característica de resistência ao alongamento, os parafusos de fixação da moldura não podem ser substituídos por outros de características diferentes (utilizados parafusos com resistência ao alongamento de 450 N/mm^2).

5. É responsabilidade da **CHALMIT LIGHTING** assegurar que os equipamentos fornecidos ao mercado nacional estejam de acordo com as especificações e documentação descritiva do protótipo ensaiado relacionadas neste certificado e que o reator e o invólucro da lâmpada tenham sido submetidos com sucesso, respectivamente, aos ensaios de rotina de tensão aplicada com 1600 V durante 1 minuto e sobrepressão de 12,5 bar por 1 minuto.

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INMETRO CEPEL OCP-0007

CEPEL

ANEXO AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-068/2001

6. Este certificado é válido apenas para os equipamentos de modelo, tipo e série idênticos ao protótipo efetivamente ensaiado. Qualquer modificação no projeto, bem como a utilização de componentes ou materiais diferentes daqueles definidos pela documentação descritiva do equipamento, sem a prévia autorização do CEPEL, invalidará este certificado.

7. É responsabilidade do usuário assegurar que o produto será instalado em atendimento às normas pertinentes para instalações elétricas em atmosferas potencialmente explosivas.

8. A marcação deve ser executada conforme a norma NBR 9518 e a Regra Específica de Certificação de Equipamentos Elétricos para Atmosferas Potencialmente Explosivas (NIE-DINQP 096) e fixada na superfície externa do equipamento em local visível. Esta marcação deve ser legível e durável, levando-se em conta possível corrosão química.

Nova Iguaçu, 10 de dezembro de 2001.

Carlos Azevedo Sanguedo
Laboratório de Acionamento e Segurança em
Equipamentos Eletro-Eletrônicos

Henrique Burd
Escritório de Certificação de
Produtos e Serviços

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA *(EMPRESA DO SISTEMA ELETROBRÁS)*
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Endereço Postal: CEPEL - Caixa Postal 68007 - 21944-970 - Rio de Janeiro - RJ - Brasil

CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1023732 **Master Contract:** 201067

Project: 1096791 (Edition 2) **Date Issued:** June 27th, 2000

Issued to: **Chalmit Lighting**
A Division of Hubbell Lighting Ltd.
388 Hillington Rd
Glasgow, G52 4BL
United Kingdom

The products listed below are eligible to bear the CSA Mark shown, with adjacent indicator "C" and "US".

C US

Issued by: Dave Adams, P.Eng.

Signature:

CLASS

3428 03 - Fixtures and Fittings - For Hazardous Locations
3428 83 - Fixtures and Fittings - For Hazardous Locations - To US Requirements

PRODUCTS

Part A:
Ex de IIB (or IIC) (Class I, Zone 1), T*(see note) (Tamb -20 °C to *(see note) °C), CSA Enclosure Type 4:

'Evolution' 200 Series Mk III Luminaire rated up to 254V 50 Hz, or 600 V 60 Hz up to 600 W.

Part B:
Ex d IIC (Class I, Zone 1), T6, CSA Enclosure Type 4:

Type 712 Transformer, Input 110/115/120 Vac, Output 220/240 Vac, 50/60 Hz, 1250 VA.

NOTE

1) The Ambient temperature and Wattage of lamp will impact the Temperature Code Rating (T3 or T4)
2) The 'INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS - EVOLUTION FLOODLIGHT', Rev 00, Dated 5/99 must be provided to end user, and must be followed to maintain the integrity of the installation, not withstanding the requirements of the Canadian Electrical Code Part 1.
3) The difference between IIC and IIB is noted in the Factory Testing and Report.

The "C" and "US" indicator adjacent to the CSA Mark signifies that the product has been evaluated to the applicable ANSI/UL and CSA Standards, for use in the U.S. and Canada. This includes products eligible to bear the NRTL indicator. NRTL, i.e. Nationally Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognized to perform certification to U.S. Standards.

Electrical Control Gear, Lamp Schedule, Ratings, and Temperature Classifications										
Lamp Type	**Type**	**Wattage**	**Voltage**	**Lamp Cap**	**Ignitor**	**Ballast**	**Capacitor**	**Cable Temp Rise**	**T_{amb} - 50°C to**	**T Class**
Tungsten Halogen	TH	500W Max.	270V Max.	E40	-	-	-	50°C	40°C	T3
Tungsten Halogen	TH	500W Max	270V Max.	R7s	-	-	-	40°C	55°C	T3
HPS	SON/T	150W	220/230/240/254 50 Hz or 600V, 60Hz	E40	Parry S.I.P. PCX40S * or CSA Certified Equivalent	Parry	20/30μF	40°C	40°C	T4
								35°C	55°C	T3
HPS	SON/T	250W			Parry S.I.P. PCX40S * or CSA Certified Equivalent		30/40μF	40°C	40°C	T4
								35°C	55°C	T3
HPS	SON/T	400W			Parry S.I.P. PXE000 * or CSA Certified Equivalent		40/50μF	40°C	40°C	T3
									55°C	T3
HPS	SON/T	600W			Parry S.I.P. PXE000 * or CSA Certified Equivalent		Remote	55°C	35°C	T3
MBI	MBI T	150W			Parry S.I.P. PCX40S * or CSA Certified Equivalent		20/30μF	40°C	40°C	T4
								35°C	55°C	T3
MBI	MBI T	250W			Parry S.I.P. PCX40H * or CSA Certified Equivalent		30/40μF	40°C	40°C	T4
								35°C	55°C	T3
MBI	MBI T	400W			Parry S.I.P. PXE000 * or CSA Certified Equivalent		40/50μF	40°C	40°C	T3
								35°C	55°C	T3

APPLICABLE REQUIREMENTS

CSA Standard C22.2 No 0-M1991 - General Requirements - Canadian Electrical Code Part II.
CAN/CSA E79-0-95 - Electrical apparatus for explosive gas atmospheres. PART 0: General requirements.
E79-1-95 - Electrical apparatus for explosive gas atmospheres. PART 1: Construction and verification test of flameproof enclosures of electrical apparatus.
E79-7-95 - Electrical apparatus for explosive gas atmospheres. Part 7: Increased Safety 'e'.
UL 2279 - UL Standard for Saftey for Electrical Equipment for Use in Class I, Zone 0,1,2 Hazardous Locations.
CSA Standard C22.2 No. 137-M1981 - Electric Luminaires for Use in Hazardous Locations.
ANSI/UL 1572, - Standard for High Intensity Discharge Lighting Fixtures
ANSI/UL 595, - Standard for Marine Type Electric Lighting Fixtures.
ANSI/UL 844, - Standard for Electric Lighting Fixtures for Use in Hazardous (Classified) Locations.

CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1023732 **Master Contract:** 201067

Project: 1358604 (Edition 3) **Date Issued:** September 3rd, 2002

Issued to: **Chalmit Lighting, A Division of Hubbell Lighting Ltd.**
388 Hillington Road
Glasgow, G52 4BL
UNITED KINGDOM

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'

C US

Issued by: D. Adams, P. Eng.
Certification Specialist

Authorized by: John Verwey, P.Eng.
Operations Manager

CLASS

3428 03 - Fixtures and Fittings - For Hazardous Locations
3428 83 - Fixtures and Fittings - For Hazardous Locations - To US Requirements

PRODUCTS

Part A:
Ex de IIC (or IIB) T*(see note); Class I, Zone 1, AEx de IIC (IIB);
Class II, Groups E, F and G; Class III; Tamb -50 °C to *(see note) °C, CSA Enclosure Type 4 (IP66/67)

'Evolution' 200 Series Mk III Luminaire rated 110/120 Vac, 50/60-Hz, or up to 254V 50 Hz, or 277 V 60 Hz up to 500 W.

Part B:
Ex de IIB (Class I, Zone 1), T6), CSA Enclosure Type 4

Type 712 Transformer, Input 110/115/120 Vac, Output 220/240 Vac, 50/60 Hz, 1250 VA.

NOTE
1) The Ambient temperature and Wattage of lamp will impact the Temperature Code Rating (T3 or T4)
2) The 'INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS - EVOLUTION FLOODLIGHT', Rev 00, Dated 5/99 must be provided to end user, and must be followed to maintain the integrity of the installation, not withstanding the requirements of the Canadian Electrical Code Part 1.
3) The difference between IIC and IIB is noted in the Factory Testing and Report.

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognised to perform certification to U.S. Standards.

DQD 507WD 2001/07/20

CSA INTERNATIONAL

Certificate: 1023732 **Master Contract:** 201067
Project: 1358604 **Date:** September 3rd, 2002

Electrical Control Gear, Lamp Schedule, Ratings, and Temperature Classifications

Lamp Type	Type	Wattage	Voltage	Lamp Cap	Ignitor	Ballast	Capacitor	Cable Temp Rise	T_{amb} - 50°C to	T Class
Tungsten Halogen	TH	500W Max.	270V Max.	E39 E40	-	-	-	50°C	40°C	T3
Tungsten Halogen	TH	500W Max	270V Max.	R7s	-	-	-	40°C	55°C	T3
HPS	SON/T	150W	220/230/ 240/254 50 Hz or 240/250/ 260/277 50Hz	E39 or E40	Parry S.I.P. PCX40S or equivalent	Parry	20/30µF	40°C	40°C	T4
								35°C	55°C	T3
HPS	SON/T	250W			Parry S.I.P. PCX40S or equivalent		30/40µF	40°C	40°C	T4
								35°C	55°C	T3
HPS	SON/T	400W			Parry S.I.P. PXE000 or equivalent		40/50µF	40°C	40°C	T3
									55°C	T3
HPS	SON/T	600W			Parry S.I.P. PXE000 or equivalent		Remote	55°C	35°C	T3
MBI	MBIT	150W			Parry S.I.P. PCX40S or equivalent		20/30µF	40°C	40°C	T4
								35°C	55°C	T3
MBI	MBIT	250W			Parry S.I.P. PCX40H or equivalent		30/40µF	40°C	40°C	T4
								35°C	55°C	T3
MBI	MBIT	400W			Parry S.I.P. PXE000 or equivalent		40/50µF	40°C	40°C	T3
								35°C	55°C	T3

Note: IIC apparatus Certified for –20°C

DQD 507WD 2001/07/20

CSA INTERNATIONAL

Certificate: 1023732 **Master Contract:** 201067

Project: 1358604 **Date:** September 3rd, 2002

The ratings for the 110/120V types are as follows:

Lamp Type	Type	Wattage	Voltage	Lamp Cap	Ignitor	Cable Temp Rise	Tamb -50 °C to	T Class	Max Surface Temperature.
HPS	SON/T	400	110-120 50/60Hz	E39 E40	Parry S.I.P PXE000 or equivalent	40°C	55°C	T3	175°C
							40°C		
HPS	SON/T	250			Parry S.I.P PXE000 or equivalent	40°C	40°C	T4	130°C
						35°C	55°C	T3	150°C
HPS	SON/T	150			Parry S.I.P PXE000 or equivalent	40°C	40°C	T4	130°C
						35°C	55°C	T3	150°C
MBI	MBI/T	400			Parry S.I.P PXE000 or equivalent	40°C	55°C	T3	175°C
							40°C		
MBI	MBI/T	250			Parry S.I.P PXE000 or equivalent	40°C	40°C	T4	130°C
						35°C	55°C	T3	150°C
MBI	MBI/T	150			Parry S.I.P PXE000 or equivalent	40°C	40°C	T4	130°C
						35°C	55°C	T3	150°C

CSA INTERNATIONAL

Certificate: 1023732 **Master Contract:** 201067

Project: 1358604 **Date:** September 3rd, 2002

APPLICABLE REQUIREMENTS

CSA Standard C22.2 No 0-M1991 -General Requirements - Canadian Electrical Code Part II.

CSA Standard C22.2 No 137-M1981- Electric Luminaires for Use in Hazardous Locations.

CAN/CSA E79-0-95 -Electrical apparatus for explosive gas atmospheres. PART 0: General requirements.

E79-1-95 -Electrical apparatus for explosive gas atmospheres. PART 1: Construction and verification test of flameproof enclosures of electrical apparatus.

E79-7-95 -Electrical apparatus for explosive gas atmospheres. Part 7: Increased Safety 'e'.

E79-18-95 -Electrical apparatus for explosive gas atmospheres. Part 18: Encapsulation "m".

UL 2279 -UL Standard for Safety for Electrical Equipment for Use in Class I, Zone 0,1,2 Hazardous Locations.

ANSI/UL 1572 - Standard for High Intensity Discharge Lighting Fixtures

ANSI/UL 595 -Standard for Marine Type Electric Lighting Fixtures.

ANSI/UL 844 -Standard for Electric Lighting Fixtures for Use in Hazardous (Classified) Locations.

CSA INTERNATIONAL

Supplement to Certificate of Compliance

Certificate: 1023732 **Master Contract:** 201067

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

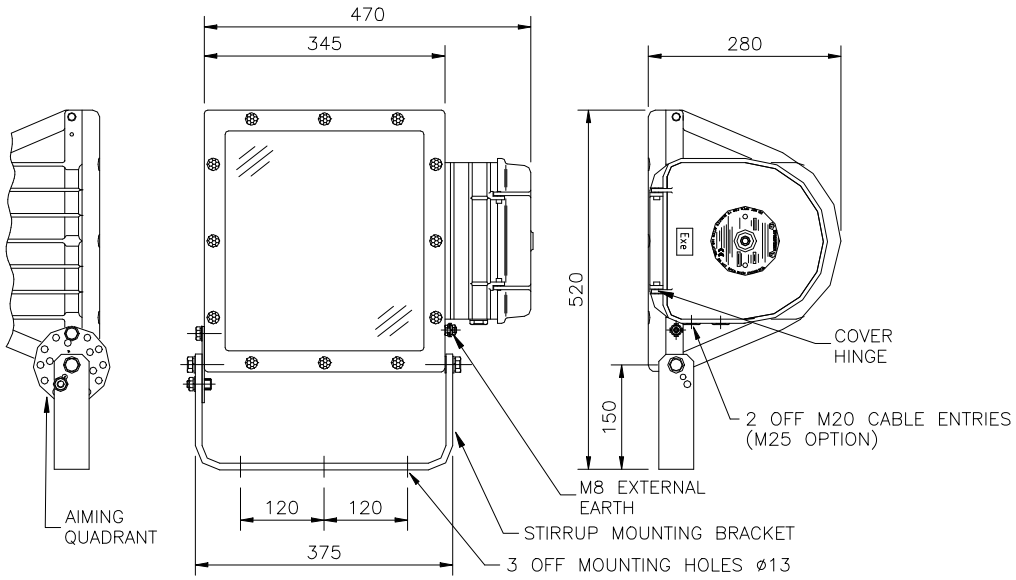
Project	Date	Description
1023732	February 25, 2000	Original Certification of the Evolution 200 Series Luminaire (Originally issued as 2500003322).
1096791	June 27th, 2000	Update to 1023732 to include Type 712 Transformer.
1358604	September 3, 2002	Update to 1023732 to include 110/120 Vac ratings, report corrections.

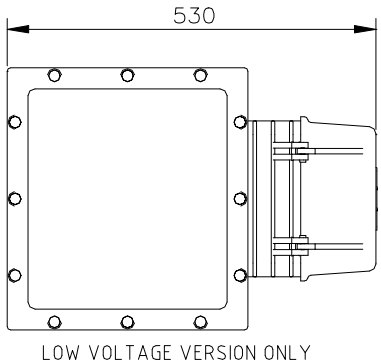
DQD 507WD 2001/07/20

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Evolution Floodlight (ATEX)

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.





LOW VOLTAGE VERSION ONLY

CE

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

0.0 Specification and ATEX Declaration

Type Of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014:1997, EN 50018:1994, EN 50019:1994
ATEX Equipment Classification	Group II Category 2 G
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	EC Type Examination Certificate BAS98ATEX2373 (X applies for 120V version)
Equipment Coding	⟨Ex⟩ II 2 G EEx de IIC T3/T4
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark CE	The CE marking of this product applies to 94/9/EC "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively].
ATEX Declaration	The Equipment as described and identified in these instructions is declared to meet the provisions of the ATEX directive by reason of the EC Type Examination denoted based on the harmonised standards listed above. J A Lilley Technical manager Reference: D00/08-00 dated 8-06-00

1.0 Introduction - Evolution ATEX Floodlight

The "Evolution" is an entirely new design. The lamp is contained in an enclosure with the cover glass permanently attached. The cover retaining screws have their heads filled and must not be removed. (This would invalidate the certificate).

The mains terminals and Ex e protected ballast are contained in an Ex e chamber on the end of the luminaire. This is accessed by a hinged cover held by a single bolt. Inside this chamber is an Ex d enclosure built into the main body casing which contains the correction capacitor.

The ignitor is contained with the lampholder in an Ex d assembly, which is retained in the end wall of the lamp enclosure using a bayonet arrangement locked in place by the chamber fastening screw. The supply to this housing is through a cable, which can also used to select the tapping. The ranges of lamps, which can be catered for, are 150, 250 and 400W SON/T and MBI/T, 600W SON/T with remote ballast and 500W T/HAL with E40 and R7s lamp caps. Wide (mottled), medium (semi-specular) and narrow (specular) beam reflectors are available. This must be specified when ordering.

In addition there is a low voltage version which has a transformer mounted into an enlarged end cap. This allows the use of power supplies in the range 110-120V 50/60 Hz.

Note: *The range of lamps available is as indicated in TABLE 0.*
A range of mounting accessories is also available.

1.1 Special provisions for safe use

The 120V version of this product must only be mounted so that the fastening points are at the same height as each other, i.e. it must be mounted horizontally not on its side. Please refer to the product certificate for further information

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2.0 Storage

Luminaires and control gearboxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with *the 'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'.* Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

8, 6, 5mm A/F socket keys.
3mm and 5mm flat blade screwdriver.
19mm and 17mm A/F spanner.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. ***Care is needed connecting to the nominal UK mains supply.*** The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. In this case, the luminaires have multi-tapped control gear that can be set to a range of 50 and 60 Hz voltages. Different ballasts are used for 50 and 60 Hz. The tappings are shown on the control gear and the limits are shown on the rating plate. They are selected by changing the position of the wire feeding the ballast. The low voltage version feeds the ballast via the transformer and for simplicity the ballast selection tappings are shown as 110/115/120V which represents the incoming mains supply voltage not the volts into the ballast.
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3.4 Lamps

All the HPS lamps used in this range are of a standardised type and there is no preference between makes, or in the case of HPS, colours. The cap is E40. The Evolution uses tubular lamps. If mixed installations are used, care must be taken to ensure that the correct lamp is fitted on installation and replacement. The 250W MBI lamp

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is the 3.A type that runs on a SON ballast. The control gear supplied for the 400W MBI lamp is designed to run the standard "SON compatible" OSRAM lamp which has a current rating of 4.2A. Other SON compatible lamps may be used. ***The obsolete 3.5A 400W Metal halide lamp must not be used in this luminaire***. HPS lamps substantially maintain their light output to the end of their electrical half life, which can be up to 24,000 hours. However, lamp replacement at around 16,000 hours is desirable to avoid piecemeal replacement on a large scale. MBI lamps have a shorter life and higher lumen depreciation, ***HPS and MBI lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling' where the lamp extinguishes then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects on control gear. Also see section 4.0

The above information is current at the time of publication. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the Technical Department or the lamp supplier.

Incandescent lamps and tungsten halogen must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

Important: *HPS and MBI circuits should not be energised without a lamp fitted. HPS & MBI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The mounting arrangements should be secured with lock washers or self locking nuts and bolts.

The luminaire should be mounted with the lamp axis horizontal or with the lamp vertical and the terminal cover downwards.

The luminaire is provided with a mechanism to adjust and ***lock*** the floodlight to 5-degree intervals. The outer ring of holes in the adjustment disc gives increments of 30 degrees, this is the coarse adjustment and is used second. The inner ring has 6 holes giving offsets of plus 0,5,10,15,20 or 25 degree on the 30-degree increments, this setting is used first. The numbers indicate the degrees but the holes are not in order. They can be viewed through the hole in the mounting bracket. The unit is set up with the terminal cover end tightened enough to allow the unit to be moved smoothly. Fine adjustment is made by selecting the correct hole and loosely fixing in the mounting bracket. The pivot bolt is then tightened still, allowing controlled movement. The bolt securing disc to case is unscrewed from the case and reinserted when the coarse adjustment gives the required correct angle. When everything is correct all bolts are fully tightened. Main pivot 30Nm, case bolt 16Nm, bracket bolt 20Nm. Example 1: Inner ring set at '0', then by moving the outer ring, 0º, 30º, 60º angles are achieved. Example 2: Inner ring set at '5', then by moving the outer ring, 5º, 35º, 65º angles are achieved.

When the luminaire is mounted using the pendant mount lowbay bracket arrangement, the brackets must be mounted on a horizontal surface with the luminaire aimed glass downwards. The minimum distance between the luminaire and illuminated surface, directly in front of the luminaire, is 1 metre.

The 110-120V version must only be mounted with the bracket fitted horizontally.

3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient (Tamb). This allows the user to adjust the cable specification for actual maximum site ambient.

The maximum conductor size is 6mm². Internal and external earth points are provided. 300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The standard looping cable size is 6mm². The selection of cable size must be suitable for the fuse rating. Some guidance on this is given below. The fuse ratings apply to the circuit on the supply side of the control gear.

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3.6.2 Cable Glands

This apparatus is certified to *EN 50014: 1997, EN 50018: 1994, EN 50019: 1994.*
Cable glands for entry into Ex e enclosures when fitted with any gland to body sealing method and the supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54. The cable gland must withstand an impact value of 7Nm or 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non-armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.
Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified.
Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request. Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used.

3.7 Cable Connection

The cable connections are made by slackening the end cover bolt and swinging the cover to one side, it can be latched in place by sliding the hinge point. The conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more than 1mm beyond the terminal. Unused terminal screws should be tightened. The core must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. Cover bolt torque 10Nm.

3.7.1 Selecting the Tapping

The tapping is set on the supply side of the ballast terminal block, the supply wire going to the appropriate tap and the voltages are shown on the ballast label. The ignitor connection goes into the two terminals next to the ignitor housing, the blue connection is always to the end neutral terminal, the live brown connection goes into the second terminal. The luminaire is factory set at the highest tapping, or that given with the order. The tapping suitable for the supply is selected or confirmed on installation. The unused connection terminals are to be fully tightened to prevent incorrect selection during initial lamp installation or relamping.

3.8 Fitting lamps

Isolate the supply before opening the end cover.
Make sure the correct lamp is selected as detailed above. Access for fitting lamps is gained through the end hinged cover. The ignitor cable connections are unscrewed and the ignitor housing turned anti-clockwise to release. The ignitor housing fixing screws are thread locked into place and are not designed to be removed in service. The lamp should be firmly screwed into place and the housing replaced. Reconnect the cables, make a final check on the tapping and mains terminals then close the hinged cover and tighten fastening bolt. (The front cover is permanently fixed. The bolts have been covered with a hard setting resin to prevent removal, which would invalidate the certificate). Note that the end cover will not close unless the ignitor/lamp housing is in its correct position.

3.9 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe, refer to *BS EN 60079-17*. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.9.1 Routine Examination

The equipment must be de-energised before opening and note taken of the rated opening delay period, 15 minutes if there is a hazardous atmosphere present.
Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

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1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketing, re-greasing or other replacement.
3 Check the terminal chamber gasket for any damage or permanent set and replace as required, the gasket is held in place by a few spots of silicone RTV.
4 Check the cable gland for tightness and nip up if necessary.
5 Check any external earthing.
6 Examine the front glass for any signs of damage. If thought necessary, the fillet of silicone sealant can be re-sealed with a proprietary brand of clear RTV silicone. ***If the glass is damaged the luminaire must be returned for servicing.***
7 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced.
Cover bolt torque: 10Nm.
8 The ignitor housing flameproof path is cylindrical and can not be readily checked, it will not go out of shape. The ignitor housing securing bolts are designed to be fixed in place and must not be removed. When relamping, make sure the flameproof spigot path is free of dirt and slides into place smoothly. A little molybdenum spray (*Dow Corning MOLYKOTE*) can be used.
9 Check that mountings are secure and the adjusting disc bolts are tight.
10 Clean the lampglass.
11 If it has been suspected that the luminaire has mechanical damage, a stringent workshop overhaul will be required. Where spares are needed, these must be replaced with factory specified parts. No modifications should be made without the knowledge and approval of the manufacturer.

4.0 Electrical Fault Finding and Replacement

Any fault finding must be done by a competent electrician with the luminaire isolated and, if carried out with the luminaire in place, under a permit to work.
With HPS and MBI lamps the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an 'attempt to start' effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs of overheating.
The ballast is fitted with a self-resetting thermal cut-out that will open the circuit if the temperature of the ballast exceeds a safe value. This cut-out will then close when the temperature falls again.
The transformer (if fitted) is also fitted with a thermal cut-out. The operation of this TCO is as per the ballast cut-out except that it will not reset until the mains power has been dis-connected.
Before re-assembling, all connections should be checked and any damaged cable replaced.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current.

1) Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 milliseconds
2) Lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes.
3) Rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other voltages by

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multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations. For T-H inrush use 8 x rated current.
For the low voltage version the use of slow blow type fuses or MCB's are recommended to allow for the inrush of the transformer.

Note : *For starting and running currents for 240V/120v, 50Hz using internal control gear see TABLE 1. Conventional matrix for HBC fuses is outlined in TABLE 2.*

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.
This applies to the UK, there may be other regulations on disposal operating in other countries.
Re-cycling facilities are becoming available.

Important: *Do not incinerate lamps.*

0.0 Tables 0/1/2

Table 0 Maximum Ambient and Temperature Ratings Refer to Section : 1.0

Lamp	Wattage	Tamb ºC	Temp. Rating	Cable Rating ºC	Cable Rise ºC
T/HAL (E40)	500W	40	T3	90	50
T/HAL (R7s)	500W	55	T3	80	40
SON/T	150	40	T4	80	40
SON/T	150	55	T3	90	35
SON/T	250	40	T4	80	40
SON/T	250	55	T3	90	35
SON/T	400	40	T3	80	40
SON/T	400	55	T3	95 (100)	40 (45)
SON/T	600	35	T3	90	55
MBI-T	150	40	T4	80	40
MBI-T	150	55	T3	90	35
MBI-T	250	40	T4	80	40
MBI-T	250	55	T3	90	35
MBI-T	400	40	T3	80	40
MBI-T	400	55	T3	90 (100)	35 (45)

Figures in brackets indicate the values for the low voltage version where they are different to the 240v version

Table 1 Starting and Running Currents Refer to Section : 5.0

Lamp	Lamp A	Start A	Run A	Capacitance µF	Circuit Power (W)
150W HPS	1.8	1.45 (3.1)	0.8 (1.7)	20	175
250W HPS	3.0	2.35 (4.9)	1.3 (2.7)	30	285
400W HPS	4.6	4.0 (7.8)	2.2 (4.3)	45	445
600W HPS	6.8	5.6	3.1	60	645

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150W MBI	1.8	1.6 (3.1)	0.8 (1.7)	20	175
250W MBI	3.0	2.7 (4.9)	1.35 (2.7)	30	285
400W MBI	4.2	4.0 (7.8)	2.2 (4.3)	45	445

Figures in brackets indicate currents for the low voltage version at 120V 50Hz.

Notes: *Minimum power factor correction: 0.85.*
The start and run currents are corrected.

Table 2 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	**Number of Lamps**					
	1	**2**	**3**	**4**	**5**	**6**
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A
600W	16A	20A	25A	32A	32A	40A

For low voltage version increase fuse sizes by a factor of two.

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

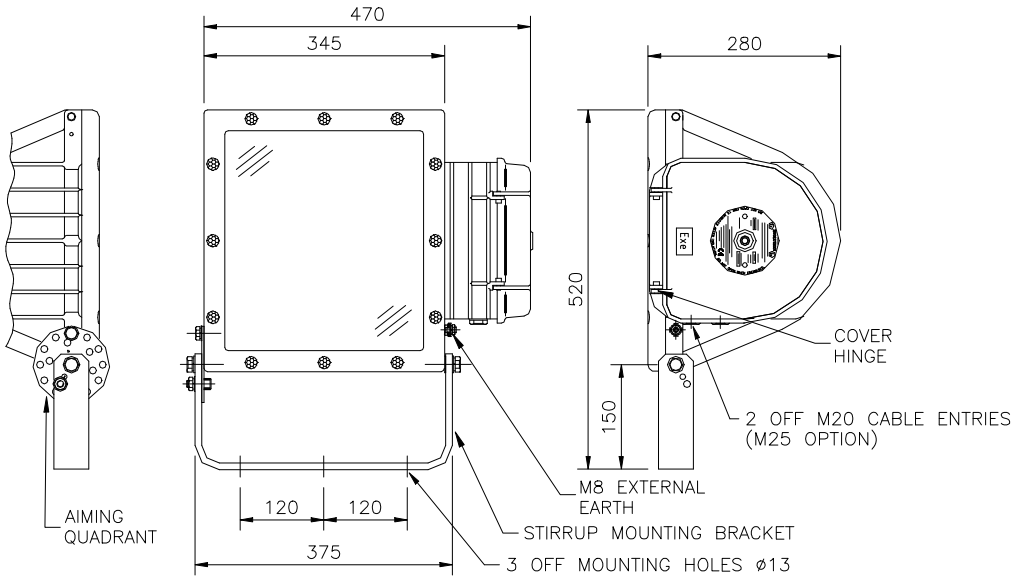
Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

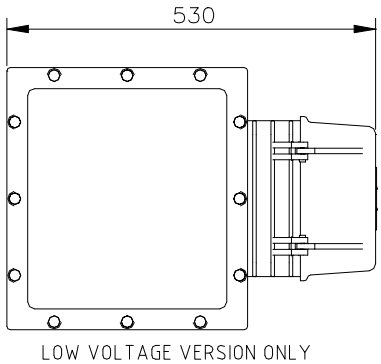
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Evolution Low Temperature Floodlight (ATEX)

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.





LOW VOLTAGE VERSION ONLY

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0.0 Specification and ATEX Declaration

Type Of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014:1997, EN 50018:1994, EN 50019:1994
ATEX Equipment Classification	Group II Category 2 G
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	EC Type Examination Certificate BAS98ATEX2372 (X applies to 120V version) (-50°C model)
Equipment Coding	⟨Ex⟩ II 2 G EEx de IIB T3/T4
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark CE	The CE marking of this product applies to 94/9/EC "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively].
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care must be taken to ensure that the correct lamp is fitted on installation and replacement. The 250W MBI lamp is the 3.A type that runs on a SON ballast. The control gear supplied for the 400W MBI lamp is designed to run the standard "SON compatible" OSRAM lamp which has a current rating of 4.2A. Other SON compatible lamps may be used. ***The obsolete 3.5A 400W Metal halide lamp must not be used in this luminaire***. HPS lamps substantially maintain their light output to the end of their electrical half life, which can be up to 24,000 hours. However, lamp replacement at around 16,000 hours is desirable to avoid piecemeal replacement on a large scale. MBI lamps have a shorter life and higher lumen depreciation, ***HPS and MBI lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling' where the lamp extinguishes then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects on control gear. Also see section 4.0

The above information is current at the time of publication. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the Technical Department or the lamp supplier.

Incandescent lamps and tungsten halogen must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

Important: *HPS and MBI circuits should not be energised without a lamp fitted. HPS & MBI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The mounting arrangements should be secured with lock washers or self locking nuts and bolts.

The luminaire should be mounted with the lamp axis horizontal or with the lamp vertical and the terminal cover downwards.

The luminaire is provided with a mechanism to adjust and ***lock*** the floodlight to 5-degree intervals. The outer ring of holes in the adjustment disc gives increments of 30 degrees, this is the coarse adjustment and is used second. The inner ring has 6 holes giving offsets of plus 0,5,10,15,20 or 25 degree on the 30-degree increments, this setting is used first. The numbers indicate the degrees but the holes are not in order. They can be viewed through the hole in the mounting bracket. The unit is set up with the terminal cover end tightened enough to allow the unit to be moved smoothly. Fine adjustment is made by selecting the correct hole and loosely fixing in the mounting bracket. The pivot bolt is then tightened still, allowing controlled movement. The bolt securing disc to case is unscrewed from the case and reinserted when the coarse adjustment gives the required correct angle. When everything is correct all bolts are fully tightened. Main pivot 30Nm, case bolt 16Nm, bracket bolt 20Nm. Example 1: Inner ring set at '0', then by moving the outer ring, 0º, 30º, 60º angles are achieved. Example 2: Inner ring set at '5', then by moving the outer ring, 5º, 35º, 65º angles are achieved.

When the luminaire is mounted using the pendant mount lowbay bracket arrangement, the brackets must be mounted on a horizontal surface with the luminaire aimed glass downwards. The minimum distance between the luminaire and illuminated surface, directly in front of the luminaire, is 1 metre.

The 110-120V version must only be mounted with the bracket fitted horizontally.

3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient (Tamb). This allows the user to adjust the cable specification for actual maximum site ambient.

The maximum conductor size is 6mm². Internal and external earth points are provided. 300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The standard looping cable size is 6mm². The selection of cable size must be suitable for the fuse rating. Some guidance on this is given below. The fuse ratings apply to the circuit on the supply side of the control gear.

3.6.2 Cable Glands

This apparatus is certified to *EN 50014: 1997, EN 50018: 1994, EN 50019: 1994.*
Cable glands for entry into Ex e enclosures when fitted with any gland to body sealing method and the supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54. The cable gland must withstand an impact value of 7Nm or 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non-armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.
Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified.
Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request. Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used.

3.7 Cable Connection

The cable connections are made by slackening the end cover bolt and swinging the cover to one side, it can be latched in place by sliding the hinge point. The conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more than 1mm beyond the terminal. Unused terminal screws should be tightened. The core must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. Cover bolt torque 10Nm.

3.7.1 Selecting the Tapping

The tapping is set on the supply side of the ballast terminal block, the supply wire going to the appropriate tap and the voltages are shown on the ballast label. The ignitor connection goes into the two terminals next to the ignitor housing, the blue connection is always to the end neutral terminal, the live brown connection goes into the second terminal. The luminaire is factory set at the highest tapping, or that given with the order. The tapping suitable for the supply is selected or confirmed on installation. The unused connection terminals are to be fully tightened to prevent incorrect selection during initial lamp installation or relamping.

3.8 Fitting lamps

Isolate the supply before opening the end cover.
Make sure the correct lamp is selected as detailed above. Access for fitting lamps is gained through the end hinged cover. The ignitor cable connections are unscrewed and the ignitor housing turned anti-clockwise to release. The ignitor housing fixing screws are thread locked into place and are not designed to be removed in service. The lamp should be firmly screwed into place and the housing replaced. Reconnect the cables, make a final check on the tapping and mains terminals then close the hinged cover and tighten fastening bolt. (The front cover is permanently fixed. The bolts have been covered with a hard setting resin to prevent removal, which would invalidate the certificate). Note that the end cover will not close unless the ignitor/lamp housing is in its correct position.

3.9 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe, refer to *BS EN 60079-17*. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.9.1 Routine Examination

The equipment must be de-energised before opening and note taken of the rated opening delay period, 15 minutes if there is a hazardous atmosphere present.
Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

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1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketing, re-greasing or other replacement.
3 Check the terminal chamber gasket for any damage or permanent set and replace as required, the gasket is held in place by a few spots of silicone RTV.
4 Check the cable gland for tightness and nip up if necessary.
5 Check any external earthing.
6 Examine the front glass for any signs of damage. If thought necessary, the fillet of silicone sealant can be re-sealed with a proprietary brand of clear RTV silicone. ***If the glass is damaged the luminaire must be returned for servicing.***
7 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced.
Cover bolt torque: 10Nm.
8 The ignitor housing flameproof path is cylindrical and can not be readily checked, it will not go out of shape. The ignitor housing securing bolts are designed to be fixed in place and must not be removed. When relamping, make sure the flameproof spigot path is free of dirt and slides into place smoothly. A little molybdenum spray (*Dow Corning MOLYKOTE*) can be used.
9 Check that mountings are secure and the adjusting disc bolts are tight.
10 Clean the lampglass.
11 If it has been suspected that the luminaire has mechanical damage, a stringent workshop overhaul will be required. Where spares are needed, these must be replaced with factory specified parts. No modifications should be made without the knowledge and approval of the manufacturer.

4.0 Electrical Fault Finding and Replacement

Any fault finding must be done by a competent electrician with the luminaire isolated and, if carried out with the luminaire in place, under a permit to work.
With HPS and MBI lamps the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an 'attempt to start' effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs of overheating.
The ballast is fitted with a self-resetting thermal cut-out that will open the circuit if the temperature of the ballast exceeds a safe value. This cut-out will then close when the temperature falls again.
The transformer (if fitted) is also fitted with a thermal cut-out. The operation of this TCO is as per the ballast cut-out except that it will not reset until the mains power has been dis-connected.
Before re-assembling, all connections should be checked and any damaged cable replaced.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current.

1) Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 milliseconds
2) Lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes.
3) Rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other voltages by

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multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations. For T-H inrush use 8 x rated current.
For the low voltage version the use of slow blow type fuses or MCB's are recommended to allow for the inrush of the transformer.

Note : *For starting and running currents for 240V/120v, 50Hz using internal control gear see TABLE 1. Conventional matrix for HBC fuses is outlined in TABLE 2.*

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.
This applies to the UK, there may be other regulations on disposal operating in other countries.
Re-cycling facilities are becoming available.

Important: *Do not incinerate lamps.*

0.0 Tables 0/1/2

Table 0 Maximum Ambient and Temperature Ratings Refer to Section : 1.0

Lamp	Wattage	Tamb ºC	Temp. Rating	Cable Rating ºC	Cable Rise ºC
T/HAL (E40)	500W	40	T3	90	50
T/HAL (R7s)	500W	55	T3	80	40
SON/T	150	40	T4	80	40
SON/T	150	55	T3	90	35
SON/T	250	40	T4	80	40
SON/T	250	55	T3	90	35
SON/T	400	40	T3	80	40
SON/T	400	55	T3	95 (100)	40 (45)
SON/T	600	35	T3	90	55
MBI-T	150	40	T4	80	40
MBI-T	150	55	T3	90	35
MBI-T	250	40	T4	80	40
MBI-T	250	55	T3	90	35
MBI-T	400	40	T3	80	40
MBI-T	400	55	T3	90 (100)	35 (45)

Figures in brackets indicate the values for the low voltage version where they are different to the 240v version

Table 1 Starting and Running Currents Refer to Section : 5.0

Lamp	Lamp A	Start A	Run A	Capacitance µF	Circuit Power (W)
150W HPS	1.8	1.45 (3.1)	0.8 (1.7)	20	175
250W HPS	3.0	2.35 (4.9)	1.3 (2.7)	30	285
400W HPS	4.6	4.0 (7.8)	2.2 (4.3)	45	445
600W HPS	6.8	5.6	3.1	60	645

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150W MBI	1.8	1.6 (3.1)	0.8 (1.7)	20	175
250W MBI	3.0	2.7 (4.9)	1.35 (2.7)	30	285
400W MBI	4.2	4.0 (7.8)	2.2 (4.3)	45	445

Figures in brackets indicate currents for the low voltage version at 120V 50Hz.

Notes : *Minimum power factor correction: 0.85.*
The start and run currents are corrected.

Table 2 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	**Number of Lamps**					
	1	**2**	**3**	**4**	**5**	**6**
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A
600W	16A	20A	25A	32A	32A	40A

For low voltage version increase fuse sizes by a factor of two.

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

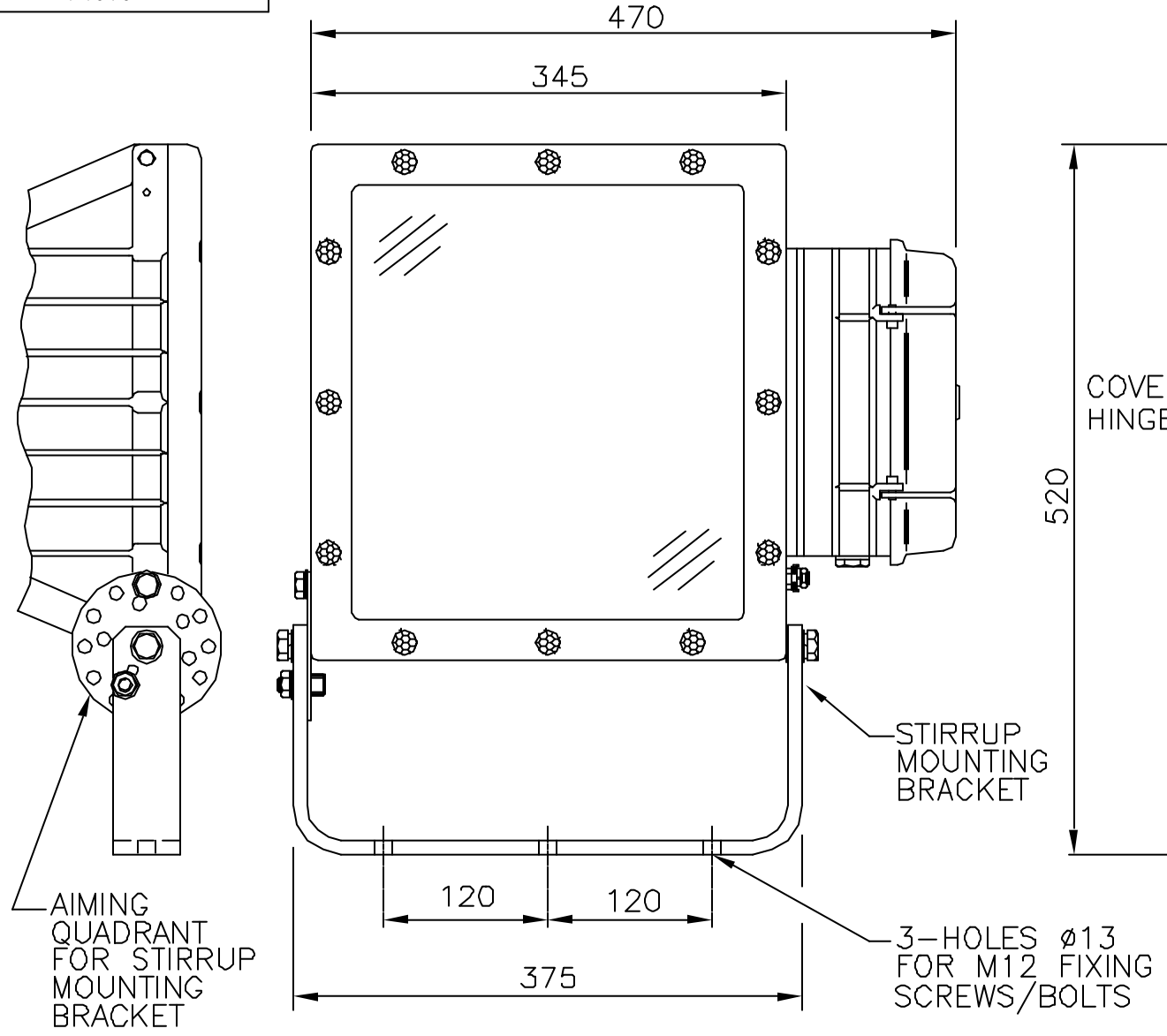
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

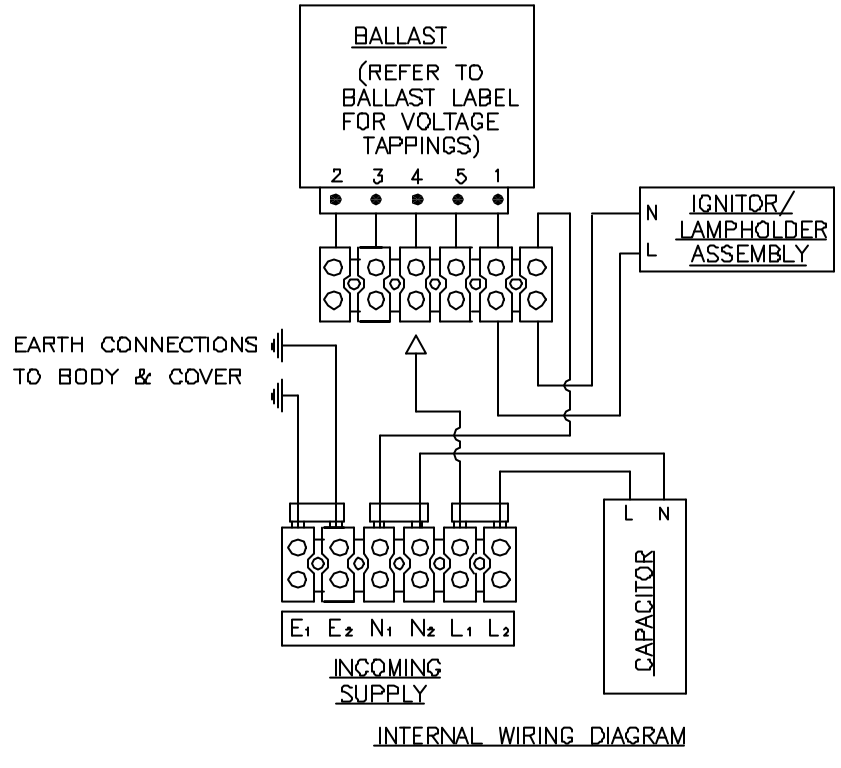
DRAWING NUMBER/SHEET NUMBER
F1060

REMOVE ALL BURRS & SHARP EDGES

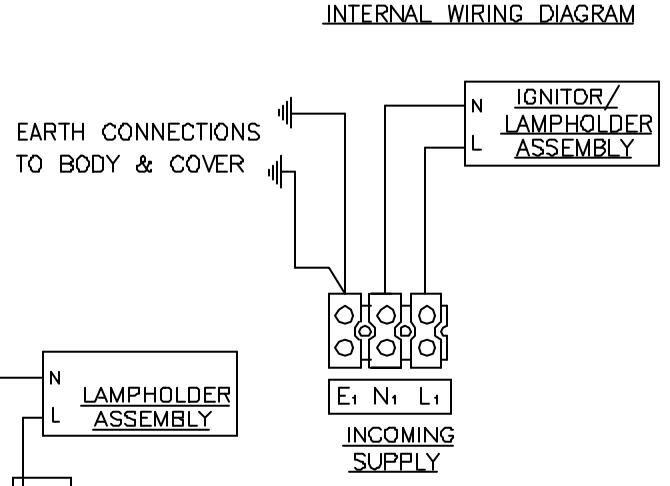
IF IN DOUBT ASK!

3RD ANGLE PROJECTION

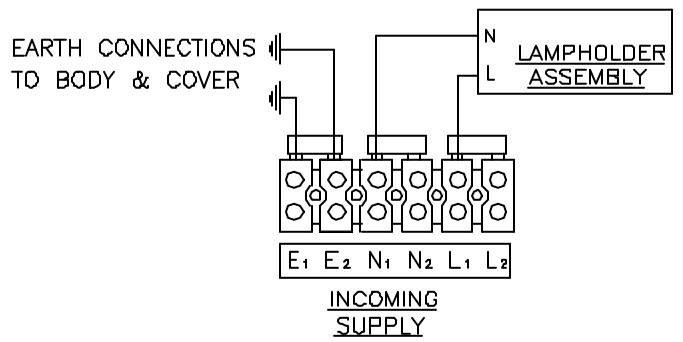




INTERNAL WIRING DIAGRAM



INTERNAL WIRING DIAGRAM
600W IGNITOR ONLY



INTERNAL WIRING DIAGRAM
TUNGSTEN HALOGEN

TYPE OF PROTECTION....Ex de FLAMEPROOF & INCREASED SAFETY
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA,IIB & IIC
TO BS EN 60079-14
STANDARD.....BS EN 50014/18/19
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS98ATEX2373
CODE EEx de IIC T3 Tamb(SEE TABLE)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 6mm^2 (3 CORE) FOR FOR LOOPING
BEAM TYPE WIDE, MEDIUM, NARROW ANGLE

LAMP	SUPPLY	T CLASS	T Amb	LAMPHOLDER	WEIGHT
150W SON-T/MBI-T	220/230/240/254V 50Hz OR 220/230/240/254V 60Hz	T4 T3	40°C 55°C	E40	28Kgs
250W SON-T/MBI-T					28.5Kgs
400W SON-T/MBI-T		T3	55°C		
600W SON-T		T3	35°C		25Kgs
500W S/E T/HAL		T3	40°C		
500W LINEAR T/HAL		T3	55°C	R7s	

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	10/06/2002

REF. DRGS.-

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL	ALUMINIUM LM6
TOLERANCE	
FINISH	SELF
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

Chalmit Lighting
Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
EVO FLOODLIGHT GA
STIRRUP MOUNTING
LAMP RANGE

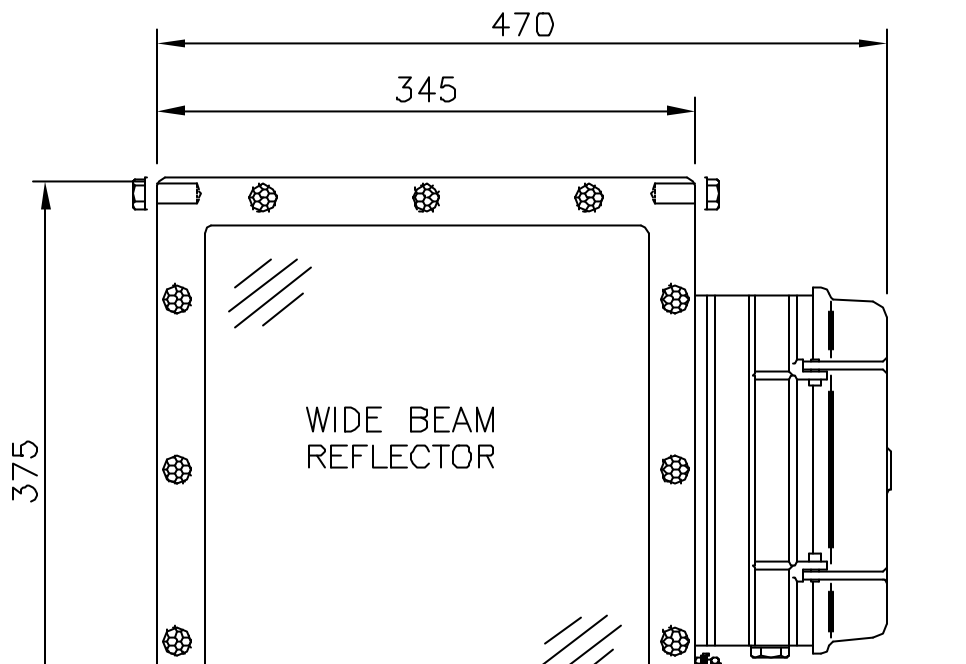
DRAWING NUMBER/SHEET NUMBER
F1060 1 OF 1

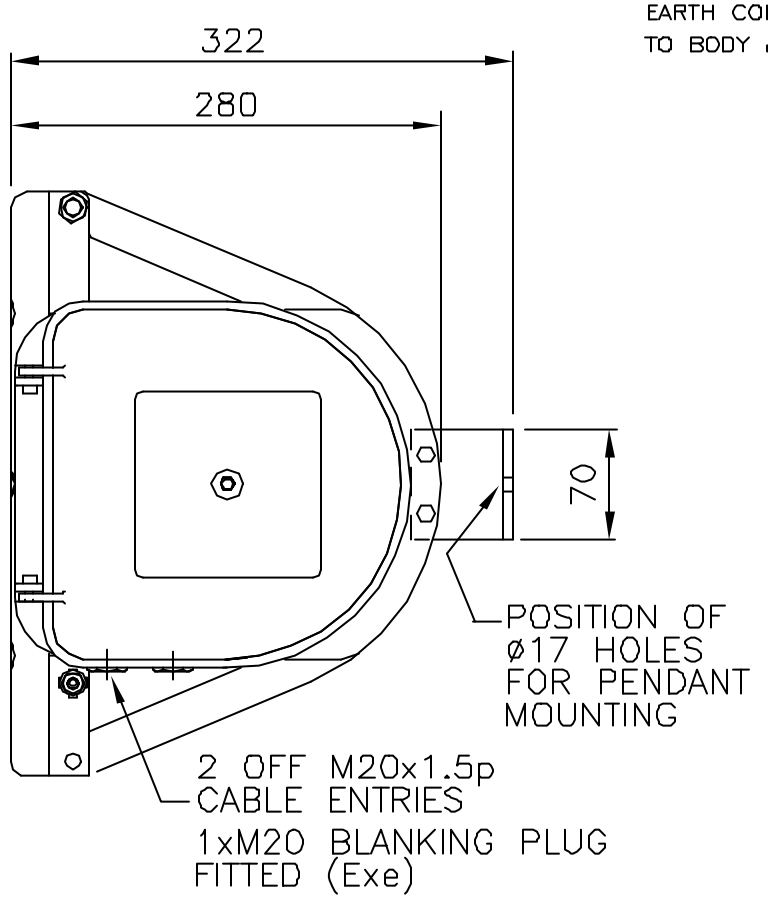
DRAWING NUMBER/SHEET NUMBER
F1063

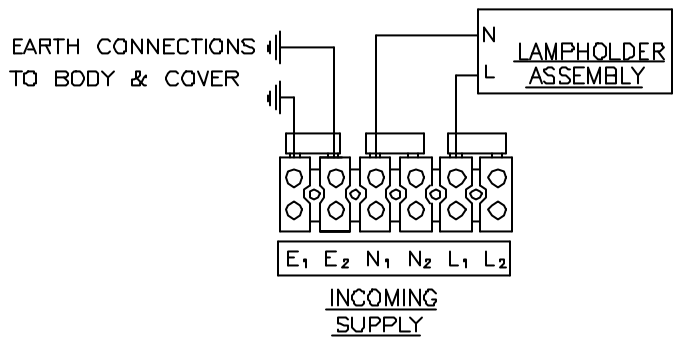
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

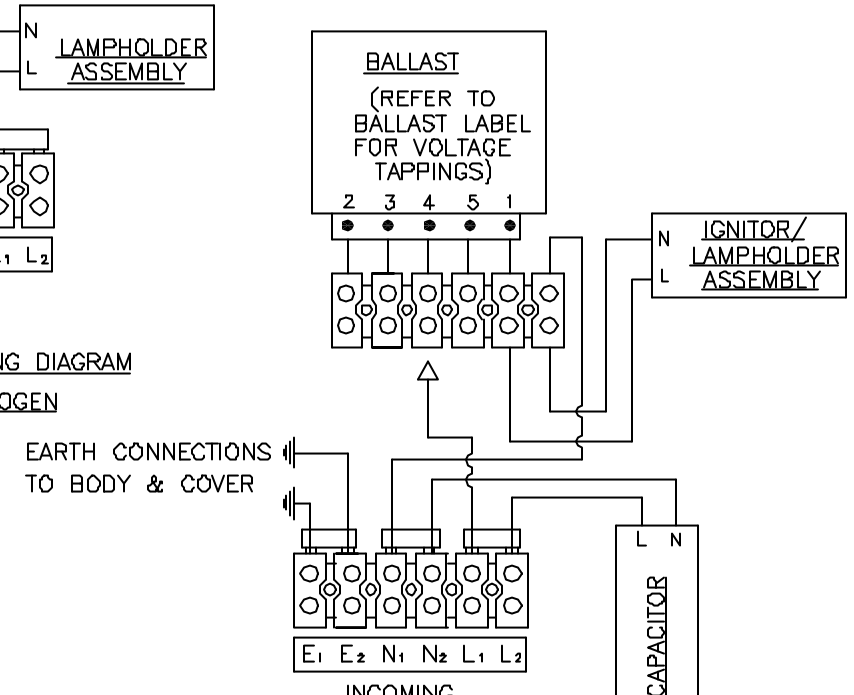
3RD ANGLE PROJECTION



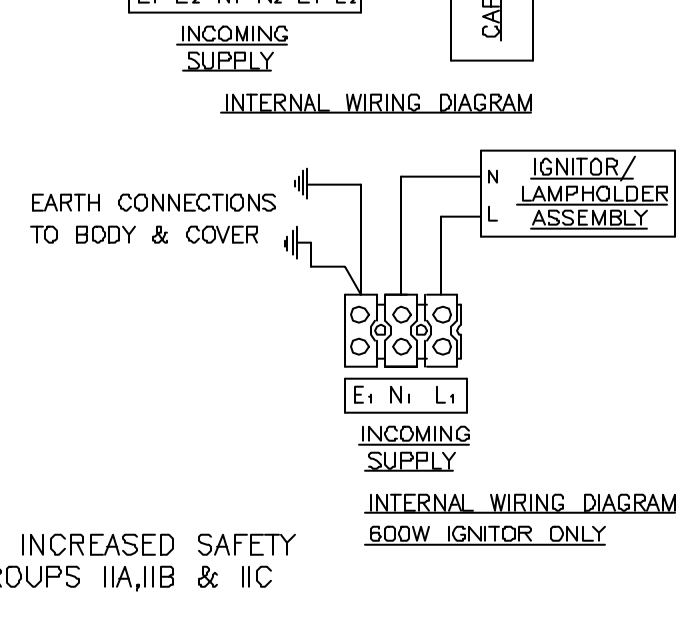




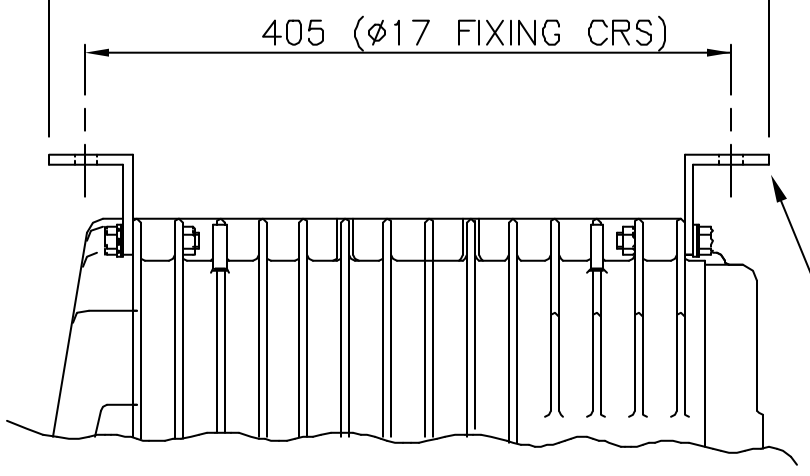
INTERNAL WIRING DIAGRAM
TUNGSTEN HALOGEN



INTERNAL WIRING DIAGRAM



INTERNAL WIRING DIAGRAM
600W IGNITOR ONLY



TYPE OF PROTECTION....Ex de FLAMEPROOF & INCREASED SAFETY
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA,IIB & IIC
TO BS EN 60079-14
STANDARD.....BS EN 50014/18/19
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS98ATEX2373
CODE EEx de IIC T3 Tamb(SEE TABLE)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 6mm^2 (3 CORE) FOR FOR LOOPING
BEAM TYPE WIDE, MEDIUM, NARROW ANGLE

LAMP	SUPPLY	T CLASS	T Amb	LAMPHOLDER	WEIGHT
150W SON-T/MBI-T	220/230/240/254V 50Hz OR 220/230/240/254V 60Hz	T4 T3	40°C 55°C	E40	28Kgs
250W SON-T/MBI-T					28.5Kgs
400W SON-T/MBI-T		T3	55°C		
600W SON-T		T3	35°C		25Kgs
500W S/E T/HAL		T3	40°C		
500W LINEAR T/HAL		T3	55°C	R7s	

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	10/06/2002

REF. DRGS.-

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL	ALUMINIUM LM6
TOLERANCE	
FINISH	SELF
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
EVO FLOODLIGHT GA
PENDANT MOUNTING
LAMP RANGE

DRAWING NUMBER/SHEET NUMBER
F1063 1 OF 1

ITS Intertek Testing Services
ETL SEMKO

Certificate of Compliance

Issued to:	CHALMIT LIGHTING
Certificate No:	C01005969-1
Dated	October 2001
Apparatus:	FLOODLIGHT TYPE EVOLUTION

This is to certify that the equipment identified in the attached schedule have been assessed and where necessary tested and is considered to comply with the relevant requirements of DTS01 as Amended August 1991 "Test Schedule For Electrical Equipment To Be Installed In Areas Subject to Water Deluge Systems".

ITS references: 01005969

Signed: .....

A T Austin
Principal Engineer

Chalmit Lighting
388 Hillington Road
Glasgow
G52 4BL

ITS Testing & Certification Ltd
ITS House, Cleeve Road, Leatherhead, Surrey KT22 7SB
Tel: +44 (0)1372 370900 Fax: +44 (0)1372 370999
Registered No. 3272281 Registered office: 25 Savile Row, London W1X 1AA

ITS Intertek Testing Services
ETL SEMKO

Certificate of Compliance

Issued to:	CHALMIT LIGHTING
Certificate No:	C01005969-2
Dated	October 2001
Apparatus:	FLOODLIGHT TYPE JUNIOR EVOLUTION

This is to certify that the equipment identified in the attached schedule have been assessed and where necessary tested and is considered to comply with the relevant requirements of DTS01 as Amended August 1991 "Test Schedule For Electrical Equipment To Be Installed In Areas Subject to Water Deluge Systems".

ITS references: 01005969

Signed: .....

A T Austin
Principal Engineer

Chalmit Lighting
388 Hillington Road
Glasgow
G52 4BL

ITS Testing & Certification Ltd
ITS House, Cleeve Road, Leatherhead, Surrey KT22 7SB
Tel: +44 (0)1372 370900 Fax: +44 (0)1372 370999
Registered No. 3272281 Registered office: 25 Savile Row, London W1X 1AA

ITS Intertek Testing Services
ETL SEMKO

INDUSTRIAL PRODUCTS DEPARTMENT

Test Report:	**CONFIDENTIAL REPORT OF WATER DELUGE TESTS CARRIED OUT ON TWO FLOODLIGHT LUMINAIRES**
Report Number:	01005969
Report Date:	October 2001
Items Tested:	Floodlight Luminaires Types Evolution and Junior Evolution
Tested on behalf of:	Chalmit Lighting 388 Hillington Road Glasgow G52 4BL
Client Contact:	Mr I McCloud

Prepared by: A T Austin
Principal Engineer

Reviewed by: M Conboy
Manager

THIS DOCUMENT MAY BE REPRODUCED ONLY IN ITS ENTIRETY AND WITHOUT CHANGE

SUMMARY

Two Floodlight Luminaires Types Evolution and Junior Evolution have been subjected to water deluge tests detailed in Deluge test specification DTS01.

No water entered the luminaries as a result of the tests.

CONFIDENTIAL REPORT OF A WATER DELUGE TESTS CARRIED OUT ON TWO FLOODLIGHT LUMINAIRES

1 APPARATUS

Floodlight Luminaires Types Evolution Serial No W0055991 and Junior Evolution Serial No W0052906, Certified by EECS according to Certificate Nos BAS 99ATEX2373 and BAS 99ATEX2228 respectively.

The Evolution luminaire was fitted with a 400 W SON lamp and the Junior Evolution with a 70 W SON lamp for the tests.

2 TESTS

The luminaries were subjected to the water tests detailed in Deluge test specification DTS01. Conditioning tests were not considered necessary as the luminaries were sealed using gaskets and sealant that has been shown not to be affected by similar conditioning tests previously carried out.

3 RESULTS

The tests were carried out on 16th September 2001.

No water entered either luminaire as a result of the tests.

No change in the insulation resistance of either luminaire occurred as a result of the tests.

4 CONCLUSIONS

The two Floodlight Luminaires Types Evolution and Junior Evolution identified in Section 2 above were subjected to and found to comply with the deluge tests requirements as identified in Deluge test specification DTS01.

EVOLUTION JUNIOR

Ex d FLOODLIGHT

ATEX CATEGORY 2 ZONE 1 APPLICATIONS

The Evolution Junior is a lightweight high performance floodlight especially suitable for temporary and transportable lighting.

The design features a revolutionary concept where the essential flame-proof path needed for access to the lamp is inside the increased safety terminal chamber and is entered by a hinged cover with a single captive screw. This feature is very useful in temporary and transportable applications where lamps may need to be replaced frequently. Lamps up to 300W tungsten-halogen can be used. The fixed floodlight version uses tubular HPS and metal halide lamps up to 70W. Explosion protection for gas group IIC (Hydrogen) is standard and a low temperature version for gas group IIB at -50ºC is available.

Standard Specification

Type of Protection:	**Ex de (Flameproof Increased Safety)**
ATEX Classification:	**Group II Category 2 G**
Area Classification:	**Zone 1 and Zone 2 areas to EN 60079-10 with installation to EN 60079-14. Gas Groups IIA, IIB and IIC**
Apparatus Standard:	**EN 50014 EN 50018 EN 50019**
Certificate:	**EC Type Examination Certificate BAS99ATEX2228**
Coding:	**Ⓔx II 2 G EEx de IIC (refer to table for T rating and Ambient)**
Enclosure:	**Aluminium alloy LM6 to BS 1490. All fastenings stainless steel. Toughened glass window**
Reflector:	**Wide beam, high purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Stirrup mounting bracket**
Lamp Type:	**HPS, Metal Halide or Double Ended Linear Tungsten-Halogen**
Lampholder:	**R7s or E27**
Control Gear:	**Internal copper/iron with PFC correction capacitor**
Relamping:	**Access via hinged end cover on release of single screw**
Burning Position:	**Universal for HID, +/-45º on horizontal axis for Tungsten-Halogen Lamps**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz (HID) 12V - 250V (Tungsten-Halogen)**

Features

Installation in gas groups IIA, IIB and IIC

Easy and quick access for maintenance

Simple, rapid lamp replacement and flamepath inspection

Exceptional photometric efficiency

Gost Approved

Cepel Approved

Applications

- Zone 1 and 2 hazardous areas
- Temporary and transportable lighting
- Offshore oil and gas platforms
- Chemical industry • Distilleries
- Aircraft hangers • Tank farms
- Sewage treatment plants
- Security and perimeter lighting
- General area floodlighting
- Gas pumping stations
- Pharmaceutical industry
- Drum storage areas
- Gas line repairs

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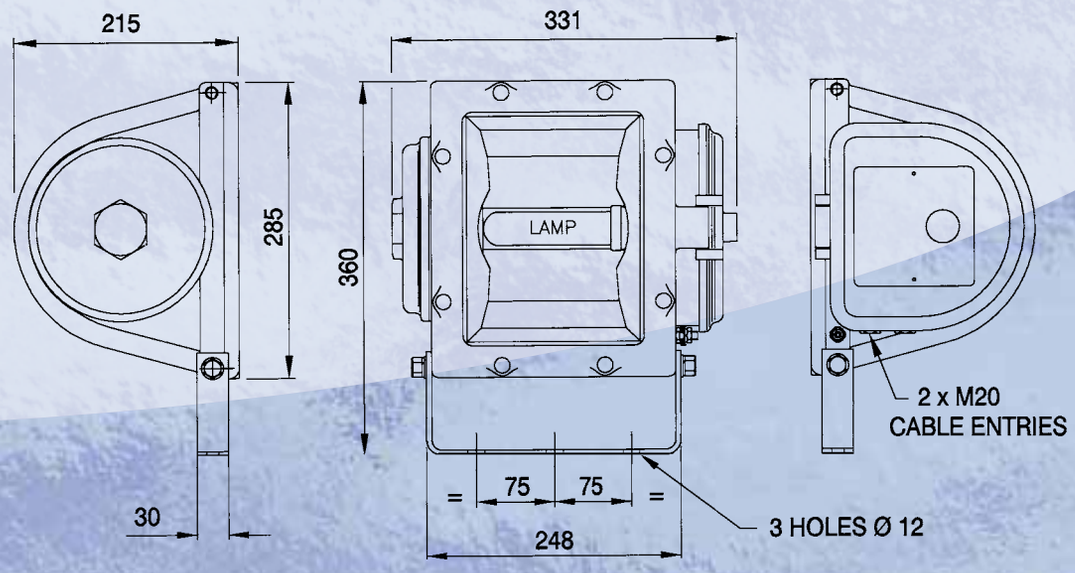
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient ºC	Weight
EVJD/070/MS	70W	HPS and Metal Halide	E27	T4	40	12kg
EVJD/070/MS	70W	HPS and Metal Halide	E27	T3	55	12kg
EVJD/300/TL	150W	Tungsten-Halogen	R7s	T3	55	10kg
EVJD/300/TL	200W	Tungsten-Halogen	R7s	T3	40	10kg
EVJD/300/TL	250W	Tungsten-Halogen	R7s	T3	20	10kg
EVJD/300/TL	250W	Tungsten-Halogen	R7s	T2	50	10kg
EVJD/300/TL	300W	Tungsten-Halogen	R7s	T2	40	10kg
EVJD/150/TL/24	150W 24V	Tungsten-Halogen	R7s	T3	55	10kg
Secondary Glass Shield Cat Nos.						
EVJD/300/TL/GS	150W	Tungsten-Halogen	R7s	T3	55	10kg
EVJD/300/TL/GS	200W	Tungsten-Halogen	R7s	T3	25	10kg
EVJD/300/TL/GS	200W	Tungsten-Halogen	R7s	T2	50	10kg
EVJD/300/TL/GS	250W	Tungsten-Halogen	R7s	T2	40	10kg
EVJD/150/TL/24/GS	150W 24V	Tungsten-Halogen	R7s	T3	55	10kg

Options - Suffix to Catalogue No.

/60	60Hz
/M25	M25 Entries
/P	PTFE coating
/Y	Yellow painted version
/LT	Low temperature version -50ºC
/FS	Suitable for use with floor stand (floor stand should be ordered separately)
/PU	c/w Industrial 110V plug (only when luminaire is supplied with cable fitted)
/CF	Cable and Ex gland fitted (order cable separately)



Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting brackets	**SEVJ4-0003**
Anti-glare shield	**SEVJ4-0001**
Wire guard	**SEVJ4-0002**
Floor stand assembly (to be ordered with floor stand version of foodlight)	**SEVJR-0001**
Tripod stand assembly	**SEVJR-0002**
Cable (ordered per metre)	**E0414-0009**
Ratchet handles (2 off) for adjustable aiming	**SEVJR-0005**
M20 brass, zinc plated Ex e gland	**E0420-2020**

1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS99ATEX2228**

4 Equipment or Protective System: **EVOLUTION JUNIOR FLOODLIGHT IIC**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **Glasgow, Scotland, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

BASEEFA Certification Report 99(C)0312 dated 22 December 1999

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amd 1 & 2 **EN 50018: 1994** **EN 50019: 1994**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II 2 G **EEx de IIC T* (T_{amb} = -20°C to *°C)** ***See Schedule**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/015

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
11 January 2000

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2228**

15 **Description of Equipment or Protective System**

The Evolution Junior Floodlight IIC comprises a sand cast or die cast aluminium rectangular lamp housing with an integral increased safety terminal enclosure at one end and a threaded cover at the other. The luminaire may be fitted with either a 70W SON/T, or a 70W HQI-E lamp. A potted lampholder, containing an ignitor, passes through the wall of the increased safety terminal enclosure into the lamp housing. Leads are passed from the increased safety terminal enclosure into the lampholder, and the lamp housing, via Bartec line bushings Type 07-9101-H02D and Type 07-9101-H03D respectively. The line bushings are to Certificate PTB 97ATEX1047U, coded EEx d IIC, and marked ⟨Ex⟩II 2 G. The lamp housing also contains a ballast located behind the lamp reflector, and a capacitor located behind the threaded cover.

Cemented into a recess in the top of the lamp housing is a glass window, which is retained by a rectangular frame secured by 8 M8 x 15 mm socket head cap screws of grade A2-70 stainless steel. The heads of the screws are potted to prevent removal.

The enclosure may be manufactured from the alternative materials of brass or gunmetal, and various light shields and a window cover guard may be fitted.

Internal and external earth facilities are provided.

An enclosure without the threaded cover, the ballast, the capacitor, or the Bartec bushing from the increased safety terminal enclosure into the lamp housing, is provided for the luminaires when fitted with double ended tungsten halogen lamps of 150, 200, 250 or 300 watts. A secondary glass may be clamped in contact with the cover glass for these fittings.

The installer shall use an appropriate method to ensure a minimum ingress protection of IP54 or higher IP rating to match that on the label at each entry, choosing cable entry devices in accordance with a recognised Code of Practice/Installation Instructions.

The temperature classifications and maximum ambient temperatures for each lamp type are indicated in the table below.

Lamp	Maximum Wattage	Secondary Glass Fitted	Temperature Classification	Maximum Ambient Temperature (°C)
Tungsten Halogen	300	Yes	T2	40
	250	No	T2	50
		Yes	T2	40
		No	T3	20
	200	Yes	T2	50
		No	T3	40
		Yes	T3	25
	150	Yes	T3	55
		No	T3	55

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2228**

Lamp	Maximum Wattage	Secondary Glass Fitted	Temperature Classification	Maximum Ambient Temperature (°C)
SON/T	70	-	T3	55
		-	T4	40
HQI-E	70	-	T3	55
		-	T4	40

16 **Report No.**

BASEEFA Certification Report No. 99(C)0312

17 **Special Conditions For Safe Use**

None

18 **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0.2	Analysis of possible operating faults	BASEEFA Report No. 99(C)0312
1.0.3	Special checking and maintenance conditions	No special requirements
1.0.6	Instructions	BASEEFA Report No. 99(C)0312
1.2.2	Components for incorporation or replacement	See Manufacturer's Instructions
1.2.4	Dust deposits	Certification for gas atmospheres only
1.2.5	Additional means of protection	Not applicable
1.2.7	Protection against other hazards	BASEEFA Report No. 99(C)0312
1.3.5	Hazards arising from pressure compensation	Not applicable
1.5.	General requirements for safety devices	Not applicable
1.6.1	Manual override	Not applicable
1.6.2	Emergency shutdown	Not applicable
1.6.3	Hazards arising from power failure	Not applicable
1.6.5	Placing of warning devices as parts of equipment	Not applicable
2.0.	Category M	Not applicable
2.1.	Category 1	Not applicable
2.2.1	Category 2G	BASEEFA Report No. 99(C)0312
2.2.2	Category 2D	Not applicable
2.3.	Category 3	Not applicable
3.	Requirements for protective systems	Not applicable

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2228**

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D1901	1	-	10.3.99	General Assembly - Evolution Junior (IIC)
D1901	2	-	10.3.99	General Assembly - Evolution Junior (IIC)
D1901	3	-	10.3.99	General Assembly - Evolution Junior (IIC)
D1901	4	-	10.3.99	General Assembly - Evolution Junior (IIC)

BASEEFA List Keywords
2FLODLUM

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

1 # SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially explosive atmospheres Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS99ATEX2228/1**

4 Equipment or Protective System: **EVOLUTION JUNIOR FLOODLIGHT IIC**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **Glasgow, Scotland, G52 4BL**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS99ATEX2228 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/015

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

I M CLEARE
DIRECTOR
7 June 2001

13 **Schedule**

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2228/1**

Description of the Variation to the Equipment or Protective System

VARIATION 1.1

To permit the following changes to the ignitor housing.

a) Replacement of the line bushing with potted cables type H07G-K. (Tungsten halogen lamps only).
b) Addition of an external web.
c) Replacement of the tapped ring with screw bosses for the lampholder. (Tungsten halogen lamps only).
d) Increase in the length of the flamepath.

Report No.

BASEEFA Certification Report No. 01(CI)0288 dated 31 May 2001.

Special Conditions For Safe Use

See original certificate.

Essential Health and Safety Requirements

See original certificate.

19 **DRAWINGS**

Number	Issue	Date	Description
D1901 Sheets 1-4 inc.	1	06.03.01	General Assembly - Evolution Junior (IIC)

1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS99ATEX2227**

4 Equipment or Protective System: **EVOLUTION JUNIOR FLOODLIGHT IIB**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **Glasgow, Scotland, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

BASEEFA Certification Report 99(C)0311 dated 22 December 1999

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amd 1 & 2 **EN 50018: 1994** **EN 50019: 1994**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "**X**" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

⟨Ex⟩ **II 2 G** **EEx de IIB T* (T_{amb} = -50°C to *°C)** ***See Schedule**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/014

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

I M CLEARE
DIRECTOR
11 January 2000

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2227**

15 **Description of Equipment or Protective System**

The Evolution Junior Floodlight IIB comprises a sand cast or die cast aluminium rectangular lamp housing with an integral increased safety terminal enclosure at one end and a threaded cover at the other. The luminaire may be fitted with either a 70W SON/T, or a 70W HQI-E lamp. A potted lampholder, containing an ignitor, passes through the wall of the increased safety terminal enclosure into the lamp housing. Leads are passed from the increased safety terminal enclosure into the lampholder, and the lamp housing, via Bartec line bushings Type 07-9101-H02D and Type 07-9101-H03D respectively. The line bushings are to Certificate PTB 97ATEX1047U, coded EEx d IIC, and marked ⟨Ex⟩ II 2 G. The lamp housing also contains a ballast located behind the lamp reflector, and a capacitor located behind the threaded cover.

Cemented into a recess in the top of the lamp housing is a glass window, which is retained by a rectangular frame secured by 8 M8 x 15 mm socket head cap screws of grade A2-70 stainless steel. The heads of the screws are potted to prevent removal.

The enclosure may be manufactured from the alternative materials of brass or gunmetal, and various light shields and a window cover guard may be fitted.

Internal and external earth facilities are provided.

An enclosure without the threaded cover, the ballast, the capacitor, or the Bartec bushing from the increased safety terminal enclosure into the lamp housing, is provided for the luminaires when fitted with double ended tungsten halogen lamps of 150, 200, 250 or 300 watts. A secondary glass may be clamped in contact with the cover glass for these fittings.

The installer shall use an appropriate method to ensure a minimum ingress protection of IP54 or higher IP rating to match that on the label at each entry, choosing cable entry devices in accordance with a recognised Code of Practice/Installation Instructions.

The temperature classifications and maximum ambient temperatures for each lamp type are indicated in the table below.

Lamp	Maximum Wattage	Secondary Glass Fitted	Temperature Classification	Maximum Ambient Temperature (°C)
Tungsten Halogen	300	Yes	T2	40
	250	No	T2	50
		Yes	T2	40
		No	T3	20
	200	Yes	T2	50
		No	T3	40
		Yes	T3	25
	150	Yes	T3	55
		No	T3	55

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2227**

Lamp	Maximum Wattage	Secondary Glass Fitted	Temperature Classification	Maximum Ambient Temperature (°C)
SON/T	70	-	T3	55
		-	T4	40
HQI-E	70	-	T3	55
		-	T4	40

16 **Report No.**

BASEEFA Certification Report No. 99(C)0311

17 **Special Conditions For Safe Use**

None

18 **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0.2	Analysis of possible operating faults	BASEEFA Report No. 99(C)0311
1.0.3	Special checking and maintenance conditions	No special requirements
1.0.6	Instructions	BASEEFA Report No. 99(C)0311
1.2.2	Components for incorporation or replacement	See Manufacturer's Instructions
1.2.4	Dust deposits	Certification for gas atmospheres only
1.2.5	Additional means of protection	Not applicable
1.2.7	Protection against other hazards	BASEEFA Report No. 99(C)0311
1.3.5	Hazards arising from pressure compensation	Not applicable
1.5.	General requirements for safety devices	Not applicable
1.6.1	Manual override	Not applicable
1.6.2	Emergency shutdown	Not applicable
1.6.3	Hazards arising from power failure	Not applicable
1.6.5	Placing of warning devices as parts of equipment	Not applicable
2.0.	Category M	Not applicable
2.1.	Category 1	Not applicable
2.2.1	Category 2G	BASEEFA Report No. 99(C)0311
2.2.2	Category 2D	Not applicable
2.3.	Category 3	Not applicable
3.	Requirements for protective systems	Not applicable

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2227**

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D1902	1	-	10.3.99	General Assembly - Evolution Junior (IIB)
D1902	2	-	10.3.99	General Assembly - Evolution Junior (IIB)
D1902	3	-	10.3.99	General Assembly - Evolution Junior (IIB)
D1902	4	-	10.3.99	General Assembly - Evolution Junior (IIB)

BASEEFA List Keywords
2FLODLUM

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

1 SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use**
in Potentially explosive atmospheres
Directive 94/9/EC

3 Supplementary EC-Type Examination Certificate Number: **BAS99ATEX2227/1**

4 Equipment or Protective System: **EVOLUTION JUNIOR FLOODLIGHT IIB**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **Glasgow, Scotland, G52 4BL**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS99ATEX2227 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/014

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
7 June 2001

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

13 **Schedule**

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2227/1**

Description of the Variation to the Equipment or Protective System

VARIATION 1.1

To permit the following changes to the ignitor housing.

a) Replacement of the line bushing with potted cables type H07G-K. (Tungsten halogen lamps only.)
b) Addition of an external web.
c) Replacement of the tapped ring with screw bosses for the lampholder. (Tungsten halogen lamps only.)
d) Increase in the length of the flamepath.

16 **Report No.**

BASEEFA Certification Report No. 01(CI)0288 dated 31 May 2001

17 **Special Conditions For Safe Use**

See original certificate.

18 **Essential Health and Safety Requirements**

See original certificate.

19 **DRAWINGS**

Number	Issue	Date	Description
D1902 Sheets 1-4 inc.	1	21.05.01	General Assembly - Evolution Junior (IIB)

1 # SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially explosive atmospheres Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS99ATEX2228/1**

4 Equipment or Protective System: **EVOLUTION JUNIOR FLOODLIGHT IIC**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **Glasgow, Scotland, G52 4BL**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS99ATEX2228 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/015

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

I M CLEARE
DIRECTOR
7 June 2001

13 **Schedule**

14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS99ATEX2228/1**

Description of the Variation to the Equipment or Protective System

VARIATION 1.1

To permit the following changes to the ignitor housing.

a) Replacement of the line bushing with potted cables type H07G-K. (Tungsten halogen lamps only).
b) Addition of an external web.
c) Replacement of the tapped ring with screw bosses for the lampholder. (Tungsten halogen lamps only).
d) Increase in the length of the flamepath.

Report No.

BASEEFA Certification Report No. 01(CI)0288 dated 31 May 2001.

Special Conditions For Safe Use

See original certificate.

Essential Health and Safety Requirements

See original certificate.

19 **DRAWINGS**

Number	Issue	Date	Description
D1901 Sheets 1-4 inc.	1	06.03.01	General Assembly - Evolution Junior (IIC)

CEPEL

OCP-0007

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA

Organismo de Certificação Credenciado pelo INMETRO

INMETRO

Certificado de Conformidade

Certificate of Conformity / Certificado de Conformidad

Número: **CEPEL-EX-069/2001** *Number* *Número*	Emissão: **05/12/2001** *Issue* *Expedición*	Validade: **04/12/2003** *Validity* *Validez*

Produto: **PROJETOR**
Product
Producto

Tipo / Modelo: **EVOLUTION JUNIOR IIC**
Type - Model
Tipo - Modelo

Número de Série: ---
Serial Number
Número de Serie

Número do Lote: ---
Batch Number
Número dei Lote

Solicitante / Endereço: **CHALMIT LIGHTING**
Requester - Address
Solicitante - Dirección
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Fabricante / Endereço: **CHALMIT LIGHTING**
Manufacturer - Address
Fabricante - Dirección
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Norma(s) Aplicável(eis):
Suitable Standard(s)
Norma(s) de Aplicación
Equipamentos elétricos para atmosferas explosivas
NBR 9518/97 – Requisitos gerais;
NBR 5363/98 – Invólucros à prova de explosão – Tipo de proteção "d";
NBR 9883/95 – Segurança aumentada – Tipo de proteção "e";
IEC 60079-0/98 – General requiriments.

Laboratório de Ensaio: CEPEL - Centro de Pesquisas de Energia Elétrica
Testing Laboratory
Laboratório de Ensayo
Laboratório de Acionamentos e Segurança em Equipamentos Eletroeletrônicos - AP4

Número do Relatório de Ensaio: **UNIAP-EX-1058/2001**
Test Report Number
Número del Informe de Ensayo
MARCAÇÃO: BR-Ex de IIC T* (vide Anexo) IP66

Condições de Emissão: Com base na Portaria INMETRO Nº 176/2000, de 17/07/2000. Processo aprovado conforme ítem 2.13 da 55ª Reunião Ordinária da Comissão de Certificação de Equipamentos Elétricos para Atmosferas Explosivas - CCEX, em 29/11/2001.
Conditions of Issue
Condiciones de Expedición

1ª via - CLIENTE

Observações: 1) Este Certificado só é válido acompanhado do seu Anexo.
Remarks
Observaciones

Henrique Burd

SIGNATÁRIO AUTORIZADO
Authorized Signatory
Persona Autorizada

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End. Postal CEPEL - Cx. Postal 68007 - CEP 21944-970 - Rio de Janeiro - RJ - Brasil - Tel. (55XXX21) 2667-2111 / 2667-8631 - Fax (55XXX21) 2667-8630

ANEXO

AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-069/2001

Os **PROJETORES MODELO EVOLUTION JUNIOR IIC** fabricados pela **CHALMIT LIGHTING** são qualificados em termos de suas especificações, análises e ensaios a que foram submetidos conforme documentação descritiva.

Especificações:

Projetor para lâmpada de potência até 300 W e tensões até 254 V – 50 Hz ou até 277 V – 60 Hz composto de um invólucro retangular em alumínio fundido à prova de explosão para alojamento da lâmpada composto por uma junta selada entre o vidro e o corpo da luminária, duas juntas roscadas para montagem de buchas de passagem de cabos, uma junta de encaixe para o alojamento do ignitor e do soquete da lâmpada e de um invólucro para a régua de terminais de ligação com tipo de proteção segurança aumentada.

Adicionalmente, nas luminárias para lâmpadas de 70 W de vapor de sódio ou vapor metálico, uma tampa lateral com junta roscada permite o acesso a um alojamento à prova de explosão para o reator e o capacitor.

A luminária pode ser equipada com lâmpada a vapor de sódio tubular, lâmpada de vapor metálico de 70 W ou lâmpadas halógenas de tungstênio de 150, 200, 250 ou 300 W.

A passagem dos condutores do invólucro "Ex e" para o alojamento do ignitor e do soquete da lâmpada é feita através de buchas de passagem modelo 07-9101-H02D e a passagem dos condutores do invólucro "Ex e" para o interior do invólucro "Ex d" é feita através de buchas de passagem modelo 07-9101-H03D, ambas fabricadas pela Bartec (certificado PTB 97 ATEX 1047U, marcação EEx d IIC). O reator (modelo HSZ070 fabricação Parry) e o capacitor estão localizados atrás do refletor da lâmpada no invólucro "Ex d".

A lente de vidro é colada em uma reentrância existente no invólucro "Ex d" e é presa por uma moldura fixada por oito parafusos tipo Allen M8 x 15 mm em aço inoxidável. As cabeças dos parafusos são resinadas e tampadas para evitar remoção.

A luminária pode opcionalmente ser equipada externamente com dispositivo anti-ofuscante ou dois tipos de grade de proteção

Para luminárias de lâmpadas halógenas de tungstênio é utilizado um invólucro sem tampa roscada, sem reator, sem capacitor e sem a respectiva bucha de passagem de cabos para a caixa terminais de segurança aumentada. A passagem dos cabos para o alojamento do ignitor e do soquete da lâmpada é feita através de selagem direta no corpo do alojamento (resina Duracol 4538 ou Hysol E1016). Para essas aplicações pode ser usado um vidro adicional instalado sobre o vidro de cobertura.

As entradas de cabos estão disponíveis no invólucro de segurança aumentada para colocação de prensa-cabos que devem ser certificados e montados de forma a garantir o grau de proteção IP66.

A classe de temperatura e a máxima temperatura ambiente para cada tipo de lâmpada estão mostrados na Tabela 1.

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Tabela 1 - Classe de Temperatura e Máxima Temperatura Ambiente Para Cada Tipo de Lâmpada

Lâmpada	Potência Máxima (W)	Vidro Adicional	Classe de Temperatura	Classe de Temperatura do Isolamento do Cabo (°C)	Máxima Temperatura Ambiente (°C)
Halógena de Tungstênio	300	Sim	T2	95	40
	250	Não	T2	95	50
		Sim	T2	85	40
	200	Sim	T2	95	50
		Não	T3	85	40
	150	Sim	T3	85	55
		Não	T3	85	55
Vapor de Sódio	70	-	T3	80	55
		-	T4	70	40
Vapor Metálico	70	-	T3	80	55
		-	T4	70	40

Análises e ensaios realizados:

- Análise construtiva (NBR 5363 e NBR 9883);
- Determinação da máxima temperatura da superfície (NBR 9518 item 23.4.6.1);
- Descarga do capacitor (NBR 9518 item 7.1.3) – 2 min 20 s ----0,02 mJ (5 minutos);
- Distância de escoamento (NBR 9883 item 4.4);
- Ensaio de elevação de temperatura (NBR 9518 item 23.4.6.1) – ver a Tabela 1 com as classes de temperatura;
- Resistência térmica ao calor e ao frio (NBR 9518 item 9.7.1) – 336 h a 95 °C e 90% de UR, 336 h a 150 °C (amostras do compartimento da lâmpada), 336 h a 130 °C (amostras do invólucro do ignitor) e 24 h a –65/70 °C;
- Ensaio de impacto (NBR 9518 item 9.4.3.1) – 7 J de impacto no corpo e 4 J no vidro a –50 °C (3 amostras);
- Ensaio de choque térmico (NBR 9518 item 9.4.6.2) – ensaiado para 250 °C;
- Ensaio de determinação da pressão de referência (NBR 5363 item 18.1.1.1) – ensaiado para 8,5 bar;
- Ensaio de sobrepressão (NBR 5363 item 14.1.1) – ensaiado com uma pressão de 14,25 bar (utilizando parafusos com resistência ao alongamento de 450 N/mm^2);
- Propagação de chama (NBR 5363 item 15.2.2.1) – 5 ignições de hidrogênio a 28% seguidas de 5 ignições de acetileno a 7% a –60 °C (interstício aumentado para 0,3 mm);
- Ensaio de tração em entrada de cabos selada (IEC 60079-0 item B-3.2.1.2) – aplicada uma carga de 20 vezes o diâmetro da capa externa em newtons por um período de 120 segundos, sem ocorrer o escorregamento;
- Sobrepressão no invólucro do ignitor (NBR 5363 item 15.1.3.1) – 38 bar (dispensa ensaio de rotina);
- Ensaio de grau de proteção (NBR 6146 itens 8 e 9) – ensaiado para o grau de proteção IP66.

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Documentação descritiva do equipamento:
Desenhos construtivos, características dos componentes e materiais estão relacionados na "Lista de Documentos" apresentada no Relatório de Ensaio UNIAP-EX-1058/2001.

Marcação:
Na marcação dos **PROJETORES MODELO EVOLUTION JUNIOR IIC,** deverão constar as seguintes informações:

BR-Ex de IIC T* (ver Tabela 1)
Tamb = -20 a ** °C (ver Tabela 1)
IP66

Observações:
1. A tampa do invólucro de segurança aumentada deve ter a seguinte advertência: DESENERGIZAR E AGUARDAR 5 MINUTOS ANTES DE ABRIR.

2. Na instalação da luminária devem ser utilizados cabos com classe de temperatura do isolamento de acordo com a Tabela 1.

3. Na junção entre o vidro e a moldura é aplicada externamente uma camada de silicone Arbosil 1081.

4. Devido a característica de resistência ao alongamento, os parafusos de fixação da moldura não podem ser substituídos por outros de características diferentes (utilizados parafusos com resistência ao alongamento de 450 N/mm^2).

5. É responsabilidade da **CHALMIT LIGHTING** assegurar que os equipamentos fornecidos ao mercado nacional estejam de acordo com as especificações e documentação descritiva do protótipo ensaiado relacionadas neste certificado e que o projetor e o invólucro da lâmpada, junto com o alojamento para reator e capacitor, tenham sido submetidos com sucesso, respectivamente, aos ensaios de rotina de tensão aplicada com 1600 V durante 1 minuto e sobrepressão de 12,8 bar por 1 minuto.

6. Este certificado é válido apenas para os equipamentos de modelo, tipo e série idênticos ao protótipo efetivamente ensaiado. Qualquer modificação no projeto, bem como a utilização de componentes ou materiais diferentes daqueles definidos pela documentação descritiva do equipamento, sem a prévia autorização do CEPEL, invalidará este certificado.

7. É responsabilidade do usuário assegurar que o produto será instalado em atendimento às normas pertinentes para instalações elétricas em atmosferas potencialmente explosivas.

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8. A marcação deve ser executada conforme a norma NBR 9518 e a Regra Específica de Certificação de Equipamentos Elétricos para Atmosferas Potencialmente Explosivas (NIE-DINQP 096) e fixada na superfície externa do equipamento em local visível. Esta marcação deve ser legível e durável, levando-se em conta possível corrosão química.

Nova Iguaçu, 10 de dezembro de 2001.

Carlos Azevedo Sanguedo
Laboratório de Acionamento e Segurança em Equipamentos Eletro-Eletrônicos

Henrique Burd
Escritório de Certificação de Produtos e Serviços

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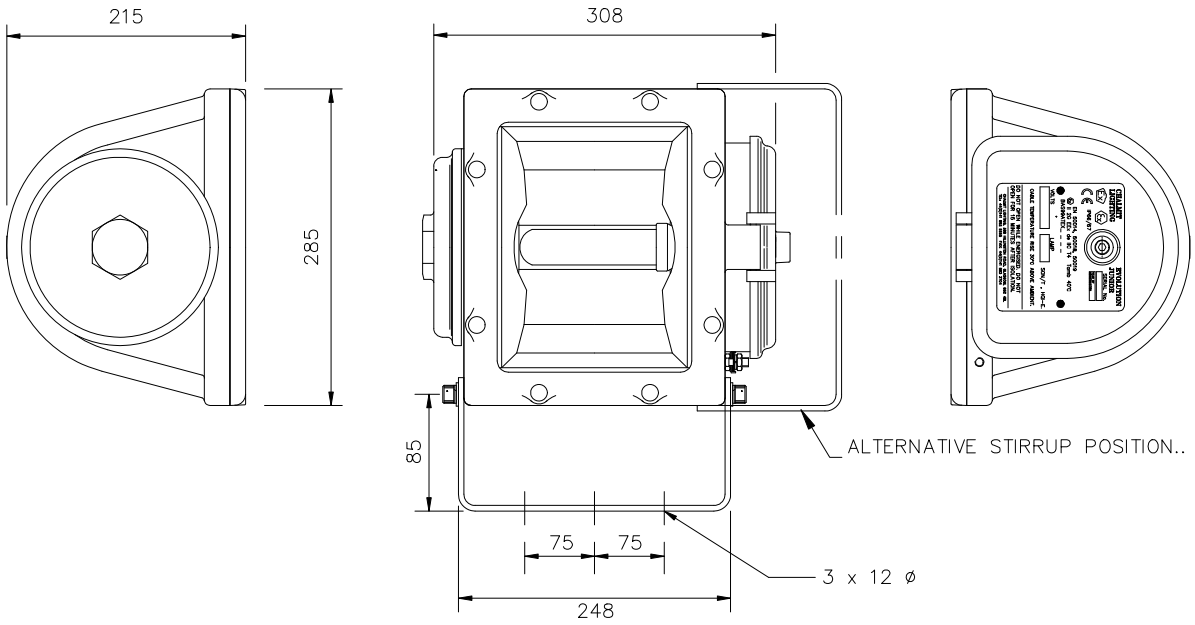
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Evolution Junior Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



WEIGHT OF H.I.D. FLOODLIGHT – 13 Kg

WEIGHT OF T/HAL FLOODLIGHT – 10 Kg

CE

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0.0 Specification and ATEX Declaration

Type Of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014:1997, EN 50018:1994, EN 50019:1994
ATEX Equipment Classification	Group II Category 2 G
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	EC Type Examination Certificate BAS99ATEX2228
Equipment Coding	⟨Ex⟩ II 2G EEx de IIC T2/3/4
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark	The CE marking of this product applies to 94/9/EC, "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the EC Type Examination based on the standards listed above.

1.0 Introduction - Evolution Junior Floodlight

The "Evolution Junior" is a compact floodlight suitable for discharge and tungsten halogen lamps. The lamp is contained in an enclosure with the cover glass permanently attached. The cover retaining screws have their heads filled and must not be removed. (This would invalidate the certificate).
The mains terminals are contained in an Ex e chamber on the end of the luminaire. This is accessed by a hinged cover held by a single bolt. The ignitor is contained with the lampholder in an Ex d assembly, which is retained in the end wall of the lamp enclosure using a bayonet arrangement locked in place by the chamber cover screw. The ballast and capacitor are contained in the 'd' chamber, access via the Ex 'd' screwed cover. The range of lamps which can be catered for are 70W SON/T and HQI/E and 150, 200, 250, 300W linear T/Hal.

Note : *The range of lamps available is as indicated in TABLE 0.*
A range of mounting accessories is also available.

1.1 Temperature Rating (Additional Information)

For lamps in TABLE 0 an (*) in the Temp. Rating column indicates a 4mm secondary glass fitted on top of the primary glass, which can be readily replaced if required.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN 60079-14

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or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

4mm and 6mm A/F socket keys.
3mm and 5mm flat blade screwdriver.
17mm A/F spanner.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. ***Care is needed connecting to the nominal 230V UK supply.*** The user must determine the **actual** underlying site supply and purchase or adjust accordingly. In this case, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. Different ballasts are used for 50 and 60Hz. The tappings are shown on the control gear and the limits are shown on the rating plate. They are selected by the supply cable. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side. 10V Max. drop is desirable for HPS and advised for HQI. The light output will be reduced. The figures given are at the luminaire. Where the HQI lamp is used, the tapping must be set accurately for best performance.
Where shore or construction site supplies are used, which are different to the service supplies, the tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.
Where adverse system conditions occur, luminaires can be supplied without pfc. The circuit current will then be the lamp current, the circuit power does not change.

3.4 Lamps

The 70W HPS lamp used in this range is of a standardised type and there is no preference between make or, in the case of HPS, colour. The Evolution Junior uses a tubular 70W HPS lamp (SON/T) and the cap is E27. If mixed installations are used, care must be taken to ensure that the correct lamp is fitted on installation and replacement. HPS lamps substantially maintain their light output to the end of their electrical half life, which can be up to 24,000 hours. However, lamp replacement at around 16,000 hours is desirable to avoid piecemeal replacement on a large scale. HQI lamps have a shorter life and higher lumen depreciation. ***HPS and HQI lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling', where the lamp extinguishes then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects on control gear.
The above information is current at the time of publication. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the Technical Department or the lamp supplier.

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Tungsten halogen lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

Important : *HPS and HQI circuits should not be energised without a lamp fitted. HPS & HQI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The mounting arrangements should be secured with lock washers or self locking nuts and bolts.
The luminaire should be mounted with the lamp axis horizontal or with the lamp vertical and the terminal cover downwards.
When the luminaire is mounted using the lowbay mounting bracket arrangement, the fitting brackets must be mounted on a horizontal surface with fitting aimed glass downwards. The minimum distance between luminaire and illuminated surface, directly in front of luminaire, is 1 metre.

3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient (Tamb). This allows the user to adjust the cable spec. for actual maximum site ambient.
The maximum conductor size is 6mm². Internal and external earth points are provided. 300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The standard looping cable size is 6mm². The selection of cable size must be suitable for the fuse rating. Some guidance on this is given below. The fuse ratings apply to the circuit on the supply side of the control gear.

3.6.2 Cable Glands

This apparatus is certified to *EN 50014:1997, EN 50018:1994, EN 50019:1994*.
Cable glands for entry into Ex e enclosures when fitted with any gland to body sealing method and the supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54. The cable gland must withstand an impact value of 7Nm or 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.
Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified.
Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request. Where brass cable glands are used in a corrosive environment, cadmium or nickel plating should be used.

3.7 Cable Connection

The cable connections are made by slackening the terminal cover bolt and swinging the cover to one side. The conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more than 1mm beyond the terminal. Unused terminal screws should be tightened. The core must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. Cover bolt torque 10Nm.

3.7.1 Selecting the Tapping

The luminaire is factory set at the highest tapping, or that given with the order. The tapping suitable for the supply is selected or confirmed on installation.

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3.8 Fitting lamps

Isolate the supply before opening the end cover.
Make sure the correct lamp is selected as detailed above. Access for fitting lamps is gained through the end hinged cover. The ignitor cable connections are unscrewed and the ignitor housing turned anti-clockwise to release. The ignitor housing fixing screws are thread locked into place and are not designed to be removed in service. The lamp should be firmly screwed into place and the housing replaced. Reconnect the cables then close the hinged cover and tighten centre bolt. (The front cover is permanently fixed. The bolts have been covered with a hard setting resin to prevent removal, which would invalidate the certificate).

3.9 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe, refer to *BS EN60079-17*. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.9.1 Routine Examination

The equipment must be de-energised before opening and note taken of the rated opening delay period, 15 minutes if there is a hazardous atmosphere present.
Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience :

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting, re-greasing or other replacement.
3 Check the terminal chamber gasket for any damage or permanent set and replace as required, the gasket is held in place by a few spots of silicone RTV.
4 Check the cable gland for tightness and nip up if necessary.
5 Check any external earthing.
6 Examine the front glass for any signs of damage. If thought necessary, the fillet of silicone sealant can be re-sealed with a proprietary brand of clear RTV silicone.

Important : *If the glass is damaged, the luminaire must be returned for servicing*.

7 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced. *Cover bolt torque : 10Nm.*
8 The ignitor housing flameproof path is cylindrical and cannot be readily checked, it will not go out of shape. The ignitor housing securing bolts are designed to be fixed in place and must not be removed. When relamping, make sure the flameproof spigot path is free of dirt and slides into place smoothly. A little molybdenum spray (*Dow Corning MOLYKOTE*) can be used.
9 The Ex 'd' chamber access is via a screwed flamepath and is fitted with an 'o' ring seal which should be checked periodically and examined for cracks and, if necessary, replaced. When replacing the screwed cover, make sure the threads are free of dirt and screws smoothly in the luminaire. A little molybdenum spray (*Dow Corning MOLYKOTE*) can be used.
10 Check that mountings are secure and the adjusting disc bolts are tight.
11 Clean the lampglass.
12 If it has been suspected that the luminaire has mechanical damage, a stringent workshop overhaul will be required. Where spares are needed, these must be replaced with factory specified parts. No modifications should be made without the knowledge and approval of the manufacturer.

4.0 Electrical Fault Finding and Replacement

Any fault finding must be done by a competent electrician with the luminaire isolated and, if carried out with the luminaire in place, under a permit to work.

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With HPS and HQI lamps the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an 'attempt to start' effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs of overheating.
Before re-assembling, all connections should be checked and any damaged cable replaced.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.
With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other voltages by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations. For T/Hal inrush use 8 x rated current.

Note : *Starting and running currents for 240V, 50Hz using internal control gear are outlined in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

0.0 Tables 0/1/2

Table 0 Lamp Ranges, Maximum Ambient and Temperature Ratings Refer to Section : 1.1

Lamp	Wattage	Tamb ºC	Temp. Rating	Cable Rating ºC	Cable Rise ºC
T/HAL	300	40	*T2	95	55
T/HAL	250	20	T3	70	45
T/HAL	250	50	T2	95	45
T/HAL	250	40	*T2	90	50
T/HAL	200	40	T3	85	45
T/HAL	200	25	*T3	70	45
T/HAL	200	50	*T2	90	40
T/HAL	150	55	*T3	85	30
T/HAL	150	55	T3	80	25
SON/T	70	40	T4	70	30
SON/T	70	55	T3	80	25
HQI/E	70	40	T4	70	30
HQI/E	70	55	T3	80	25

Table 1 Starting and Running Currents Refer to Section : 5.0

Lamp	Lamp A	Start A	Run A	Capacitance µF	Circuit Power (W)
70W HPS	1.0	0.7	0.45	10	87
70W HQI	1.0	0.8	0.50	10	96

Notes : *Minimum power factor correction: 0.85.*
The start and run currents are corrected.

Table 2 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	Number of Lamps					
	1	2	3	4	5	6
70W	4A	4A	4A	6A	6A	10A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

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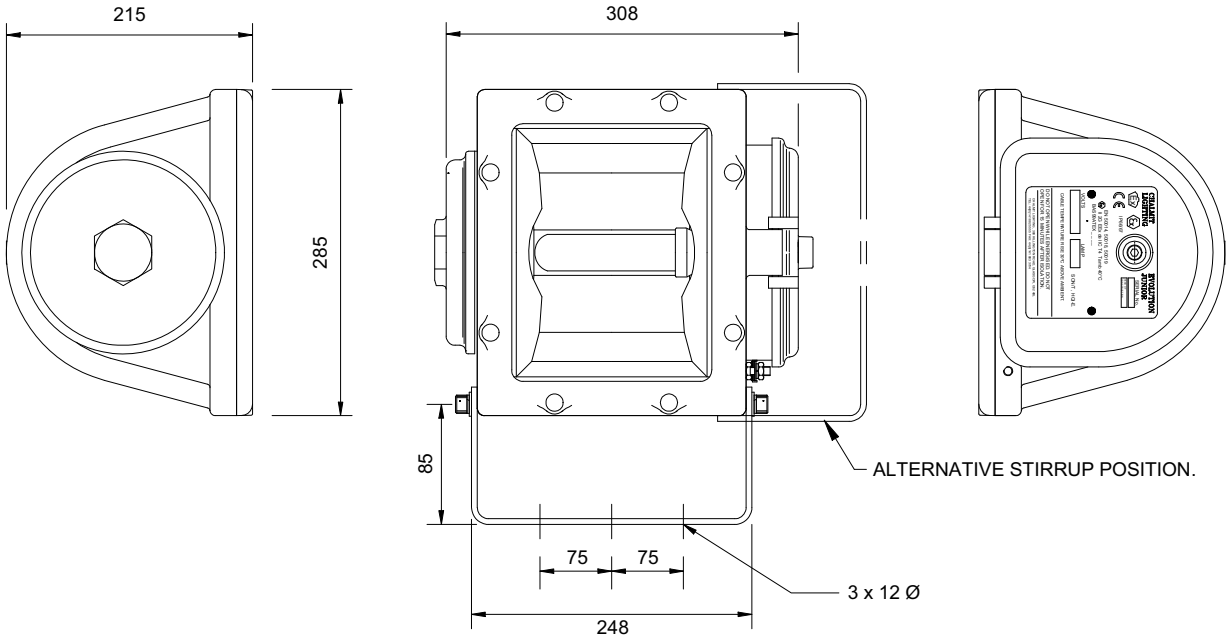
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Evolution Junior Low Temperature Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



WEIGHT OF H.I.D. FLOODLIGHT - 13 Kg

WEIGHT OF T/HAL FLOODLIGHT - 10 Kg

CE

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0.0 Specification and ATEX Declaration

Type of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014:1997, EN 50018:1994, EN 50019:1994
ATEX Equipment Classification	Group II Category 2 G
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	EC Type Examination Certificate BAS99ATEX2227 (-50ºC model)
Equipment Coding	⟨Ex⟩ II 2 G EEx de IIB T2/3/4
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark	The CE marking of this product applies to 94/9/EC, "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the EC Type Examination based on the harmonised standards listed above.

1.0 Introduction - Evolution Junior Low Temperature Floodlight

The "Evolution Junior" is a compact floodlight suitable for discharge and tungsten halogen lamps. The lamp is contained in an enclosure with the cover glass permanently attached. The cover retaining screws have their heads filled and must not be removed. (This would invalidate the certificate).
The mains terminals are contained in an Ex e chamber on the end of the luminaire. This is accessed by a hinged cover held by a single bolt. The ignitor is contained with the lampholder in an Ex d assembly, which is retained in the end wall of the lamp enclosure using a bayonet arrangement locked in place by the chamber cover screw. The ballast and capacitor are contained in the 'd' chamber, access via the Ex 'd' screwed cover. The range of lamps which can be catered for are 70W SON/T and HQI/E and 150, 200, 250, 300W linear T/Hal.

Note : *The range of lamps available is as indicated in TABLE 0.*
A range of mounting accessories is also available.

1.1 Temperature Rating (Additional Information)

For lamps in TABLE 0 an (*) in the Temp. Rating column indicates a 4mm secondary glass fitted on top of the primary glass, which can be readily replaced if required.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN 60079-14

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or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

4mm and 6mm A/F socket keys.
3mm and 5mm flat blade screwdriver.
17mm A/F spanner.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. ***Care is needed connecting to the nominal 230V UK supply.*** The user must determine the **actual** underlying site supply and purchase or adjust accordingly. In this case, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. Different ballasts are used for 50 and 60Hz. The tappings are shown on the control gear and the limits are shown on the rating plate. They are selected by the supply cable. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side. 10V Max. drop is desirable for HPS and advised for HQI. The light output will be reduced. The figures given are at the luminaire. Where the HQI lamp is used, the tapping must be set accurately for best performance.
Where shore or construction site supplies are used, which are different to the service supplies, the tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.
Where adverse system conditions occur, luminaires can be supplied without pfc. The circuit current will then be the lamp current, the circuit power does not change.

3.4 Lamps

The 70W HPS lamp used in this range is of a standardised type and there is no preference between make or, in the case of HPS, colour. The Evolution Junior uses a tubular 70W HPS lamp (SON/T) and the cap is E27. If mixed installations are used, care must be taken to ensure that the correct lamp is fitted on installation and replacement. HPS lamps substantially maintain their light output to the end of their electrical half life, which can be up to 24,000 hours. However, lamp replacement at around 16,000 hours is desirable to avoid piecemeal replacement on a large scale. HQI lamps have a shorter life and higher lumen depreciation. ***HPS and HQI lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling', where the lamp extinguishes then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects on control gear.
The above information is current at the time of publication. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the Technical Department or the lamp supplier.

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Tungsten halogen lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

Important : *HPS and HQI circuits should not be energised without a lamp fitted. HPS & HQI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The mounting arrangements should be secured with lock washers or self locking nuts and bolts.
The luminaire should be mounted with the lamp axis horizontal or with the lamp vertical and the terminal cover downwards.
When the luminaire is mounted using the lowbay mounting bracket arrangement, the fitting brackets must be mounted on a horizontal surface with fitting aimed glass downwards. The minimum distance between luminaire and illuminated surface, directly in front of luminaire, is 1 metre.

3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient (Tamb). This allows the user to adjust the cable spec. for actual maximum site ambient.
The maximum conductor size is 6mm². Internal and external earth points are provided. 300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The standard looping cable size is 6mm². The selection of cable size must be suitable for the fuse rating. Some guidance on this is given below. The fuse ratings apply to the circuit on the supply side of the control gear.

3.6.2 Cable Glands

This apparatus is certified to *EN 50014:1997, EN 50018:1994, EN 50019:1994*.
Cable glands for entry into Ex e enclosures when fitted with any gland to body sealing method and the supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54. The cable gland must withstand an impact value of 7Nm or 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.
Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified.
Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request. Where brass cable glands are used in a corrosive environment, cadmium or nickel plating should be used.

3.7 Cable Connection

The cable connections are made by slackening the terminal cover bolt and swinging the cover to one side. The conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more than 1mm beyond the terminal. Unused terminal screws should be tightened. The core must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. Cover bolt torque 10Nm.

3.7.1 Selecting the Tapping

The luminaire is factory set at the highest tapping, or that given with the order. The tapping suitable for the supply is selected or confirmed on installation.

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3.8 Fitting lamps

Isolate the supply before opening the end cover.
Make sure the correct lamp is selected as detailed above. Access for fitting lamps is gained through the end hinged cover. The ignitor cable connections are unscrewed and the ignitor housing turned anti-clockwise to release. The ignitor housing fixing screws are thread locked into place and are not designed to be removed in service. The lamp should be firmly screwed into place and the housing replaced. Reconnect the cables then close the hinged cover and tighten centre bolt. (The front cover is permanently fixed. The bolts have been covered with a hard setting resin to prevent removal, which would invalidate the certificate).

3.9 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe, refer to *BS EN60079-17*. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.9.1 Routine Examination

The equipment must be de-energised before opening and note taken of the rated opening delay period, 15 minutes if there is a hazardous atmosphere present.
Individual organisations will have their own procedures. What follows are guidelines based on *BS EN60079-17* and on our experience :

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting, re-greasing or other replacement.
3 Check the terminal chamber gasket for any damage or permanent set and replace as required, the gasket is held in place by a few spots of silicone RTV.
4 Check the cable gland for tightness and nip up if necessary.
5 Check any external earthing.
6 Examine the front glass for any signs of damage. If thought necessary, the fillet of silicone sealant can be re-sealed with a proprietary brand of clear RTV silicone.

Important : *If the glass is damaged, the luminaire must be returned for servicing*.

7 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced. *Cover bolt torque : 10Nm.*
8 The ignitor housing flameproof path is cylindrical and cannot be readily checked, it will not go out of shape. The ignitor housing securing bolts are designed to be fixed in place and must not be removed. When relamping, make sure the flameproof spigot path is free of dirt and slides into place smoothly. A little molybdenum spray (*Dow Corning MOLYKOTE*) can be used.
9 The Ex 'd' chamber access is via a screwed flamepath and is fitted with an 'o' ring seal which should be checked periodically and examined for cracks and, if necessary, replaced. When replacing the screwed cover, make sure the threads are free of dirt and screws smoothly in the luminaire. A little molybdenum spray (*Dow Corning MOLYKOTE*) can be used.
10 Check that mountings are secure and the adjusting disc bolts are tight.
11 Clean the lampglass.
12 If it has been suspected that the luminaire has mechanical damage, a stringent workshop overhaul will be required. Where spares are needed, these must be replaced with factory specified parts. No modifications should be made without the knowledge and approval of the manufacturer.

4.0 Electrical Fault Finding and Replacement

Any fault finding must be done by a competent electrician with the luminaire isolated and, if carried out with the luminaire in place, under a permit to work.

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With HPS and HQI lamps the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an 'attempt to start' effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs of overheating.
Before re-assembling, all connections should be checked and any damaged cable replaced.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.
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Note : *Starting and running currents for 240V, 50Hz using internal control gear are outlined in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

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0.0 Tables 0/1/2

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T/HAL	300	40	*T2	95	55
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T/HAL	150	55	T3	80	25
SON/T	70	40	T4	70	30
SON/T	70	55	T3	80	25
HQI/E	70	40	T4	70	30
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Notes : *Minimum power factor correction: 0.85.*
The start and run currents are corrected.

Table 2 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	Number of Lamps					
	1	2	3	4	5	6
70W	4A	4A	4A	6A	6A	10A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
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Telephone	:	+44 (0)141 882 5555
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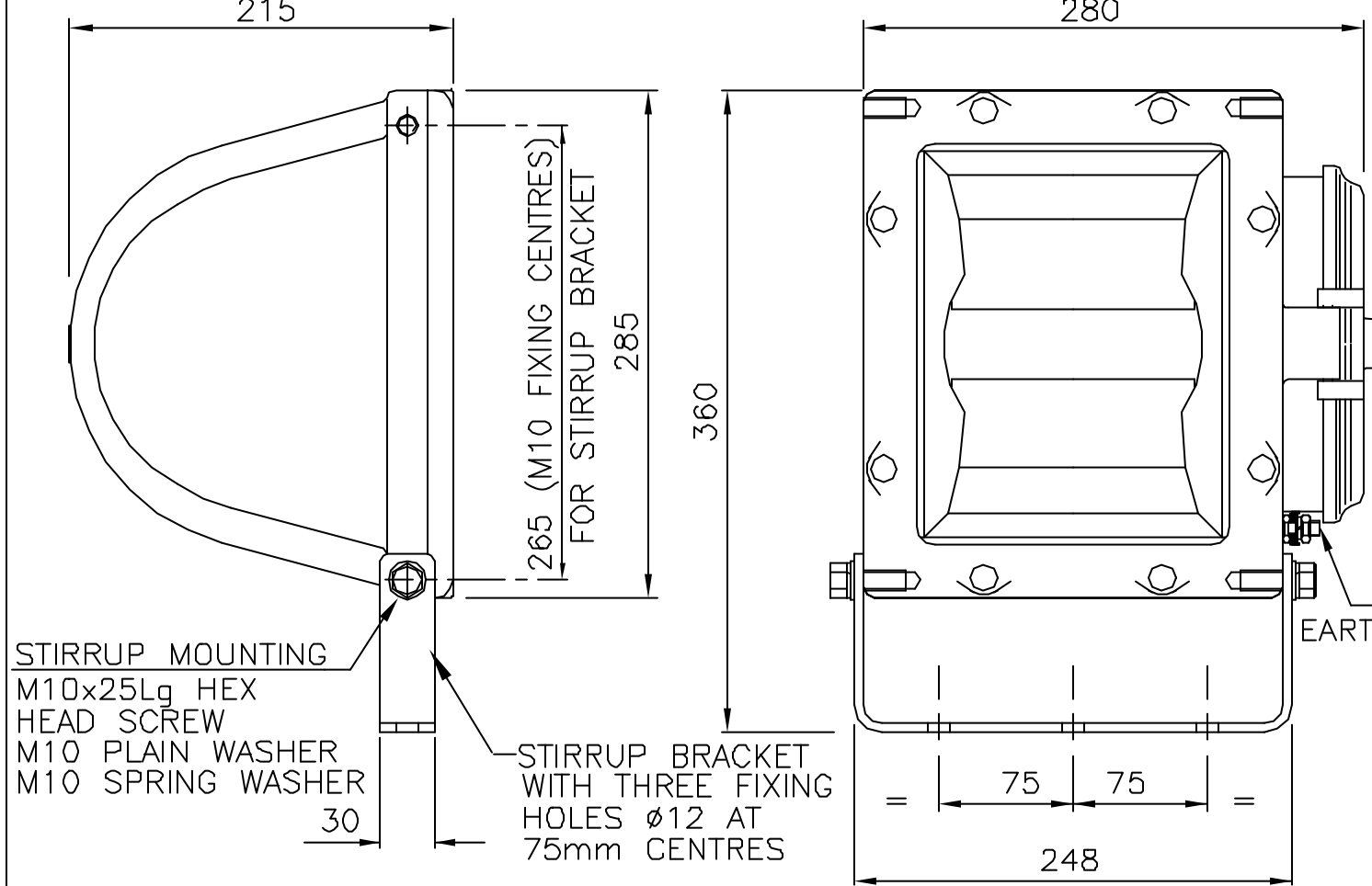
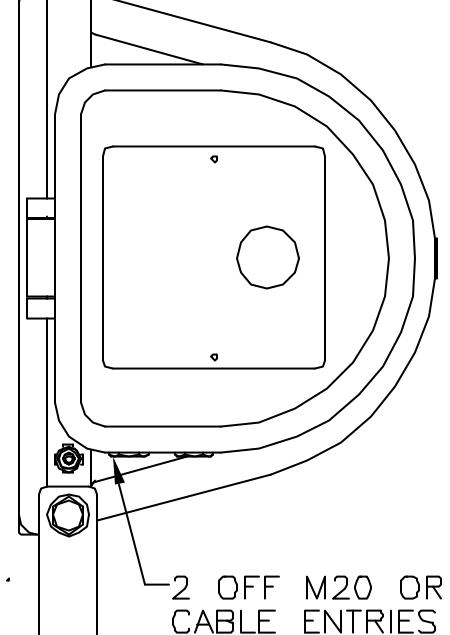
DRAWING NUMBER/SHEET NUMBER
F1065

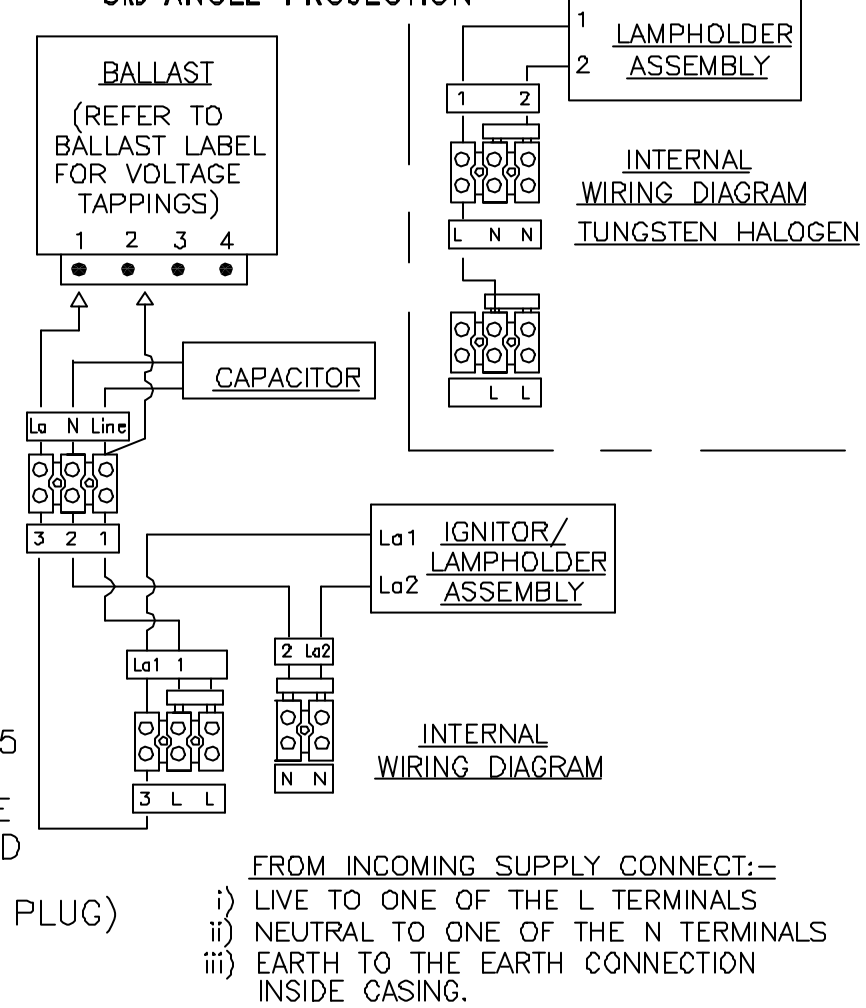
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION







FROM INCOMING SUPPLY CONNECT:–

i) LIVE TO ONE OF THE L TERMINALS
ii) NEUTRAL TO ONE OF THE N TERMINALS
iii) EARTH TO THE EARTH CONNECTION INSIDE CASING.

FLOODLIGHT MODEL	VOLTAGE	T CLASS	T Amb	SECONDARY GLASS FITTED	LAMPHOLDER	WEIGHT
150W MAX T/HAL	UP TO 264V	T3	55°C	NO	R7s	10Kgs
		T3	55°C	YES		
200W MAX T/HAL		T2	50°C	YES		
		T3	25°C	YES		
250W MAX T/HAL		T3	40°C	NO		
		T2	40°C	YES		
		T2	50°C	NO		
		T3	20°C	NO		
300W MAX T/HAL		T2	40°C	YES & NO		
70W SON/T	200/210/220 230/240/254V 260V 50Hz 220/230/240 250/260/270V 277V 60Hz 208V 60Hz	T4	40°C	NO	E27	12Kgs
		T3	55°C			
70W HQI/E		T4	40°C			
		T3	55°C			

TYPE OF PROTECTION....Ex de FLAMEPROOF & INCREASED SAFETY
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA,IIB & IIC TO BS EN 60079-14
STANDARD.....BS EN 50014/18/19
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS99ATEX2228 CODE EEx de IIC T3 Tamb(SEE TABLE)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 6mm^2 (3 CORE) FOR FOR LOOPING
BEAM TYPE WIDE ANGLE

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	10/06/2002

REF. DRGS.–

MATERIAL	ALUMINIUM LM6
TOLERANCE	
FINISH	SELF
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	–

Chalmit Lighting
Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
EVO JNR FLOODLIGHT GA
STIRRUP MOUNTING
LAMP RANGE

DRAWING NUMBER/SHEET NUMBER
F1065 1 OF 1

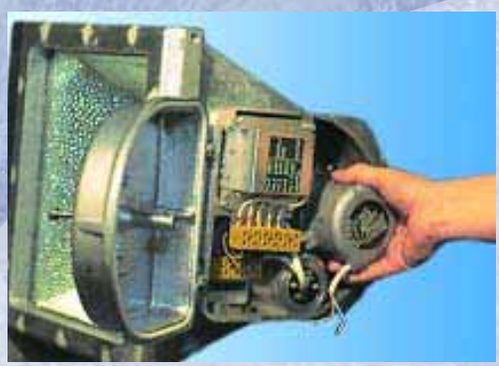
EVOLUTION

SERVICING FEATURES

FLOODLIGHT

Access to control gear and relamping effected by use of single retained socket head cap screw

View shows the complete access afforded by opening the gear cover. The mains terminal block and voltage tappings can be clearly seen and are readily accessible



The lamp enclosure is easily removed by disconnecting the lamp supply cables and rotating the housing to disengage from the locating spigots

The lamp housing can then be withdrawn to allow replacement of the lamp and/or inspection of the flamepath. With this done the lamp housing can be inserted back into the enclosure and located on the spigots and the cables connected. The whole operation from start to finish takes less than 3 minutes

JUNIOR

Access to control gear and relamping effected by use of single retained socket head cap screw

View shows the complete access afforded by opening the gear cover. The mains terminal block can be clearly seen and is readily accessible

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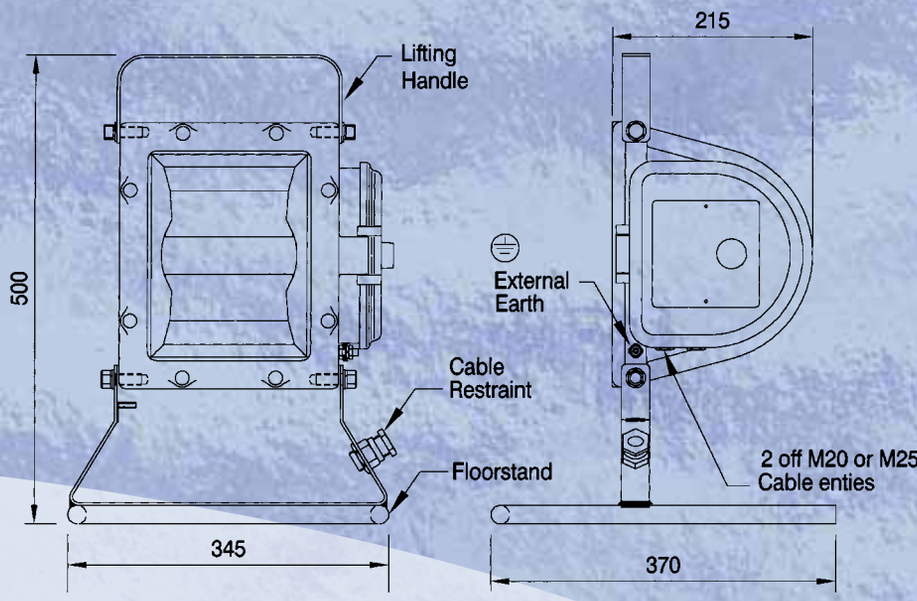
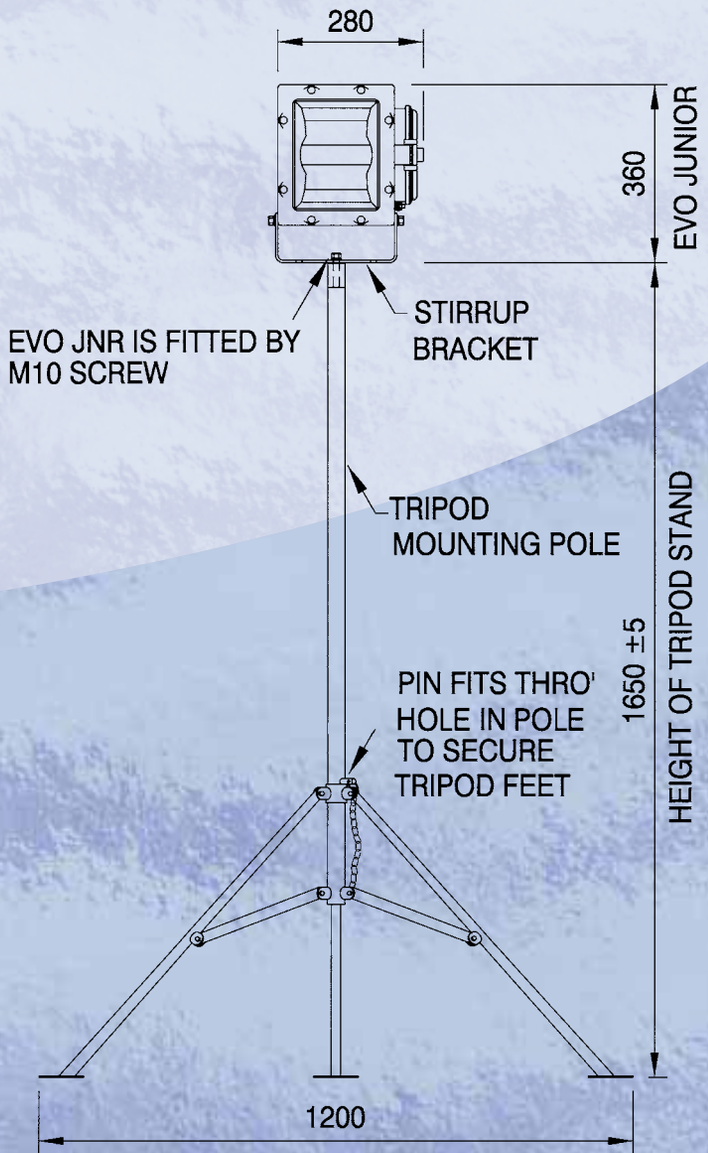
EVOLUTION JUNIOR MOUNTING ACCESSORIES





NEVIS

Ex d Bulkhead

ATEX CATEGORY 2
ZONE 1 APPLICATIONS

The Nevis bulkhead is designed for applications where a low profile robust luminaire is required. It is suitable for mounting on handrails and walls as well as ceilings and in restricted dirty places.
The luminaire is made from corrosion resistant aluminium alloy and toughened boro-silicate glass using stainless steel fastenings. It has an IP66/67 rating.
The luminaire is suitable for high pressure discharge lamps up to 70W HPS and 125W mercury vapour and also compact fluorescent lamps up to 26W, 200W GLS and 55W QL induction lamps. These give an efficient all around light distribution.
The large side mounted increased safety terminal chamber eliminates the need for flameproof glands and allows for flush mounting with easy cable access.

Standard Specification

Type of Protection:	**Ex de (Flameproof Increased Safety)**
ATEX Classification:	**Group II Category 2 G**
Area Classification:	**Zone 1 and Zone 2 areas to EN 60079-10 with installation to EN 60079-14 Gas Groups IIA and IIB**
Apparatus Standard:	**EN 50014 EN 50018 EN 50019**
Certificate:	**EC Type Examination Certificate Baseefa02ATEX0168**
Coding:	**Ⓔx II 2 G EEx de IIB (refer to table for T rating and ambient)**
Enclosure:	**Aluminium alloy LM6 to BS 1490. All fastenings stainless steel. Toughened glass bowl.**
Internal Reflector:	**High purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Flush mounting bracket**
Control Gear:	**Internal copper/iron with PFC correction capacitor**
Relamping:	**Access via hinged front glass cover assembly**
Lampholder:	**E27 for GLS and HID lamps. G24q for compact fluorescent**
Lamp Type:	**HPS, Metal Halide, Mercury Vapour, GLS, Compact Fluorescent, MBTF or QL Induction lamp**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz - 70 HPS/Metal Halide 220, 230, 240V 50Hz - 80 and 125W MBF/U 250V Max GLS/MBTF, 240V - CF, 220-240V QL**

Features

Ex e cable entries and looping as standard

Hinged front cover

High ingress protection

Internal reflector options

Low temperature applications to -55ºC

Compact construction

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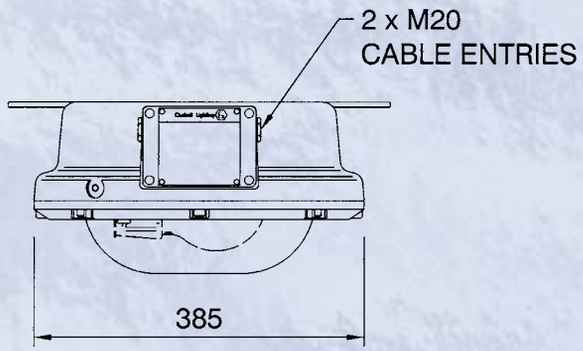
Std. Cat No.	Wattage	Lamp	T Class	Ambient °C	Weight
NEVD/050/MS	50W	HPS and Metal Halide	T4	55	8.5kg
NEVD/070/MS	70W	HPS and Metal Halide	T4	55	8.5kg
NEVD/080/MV	80W	Mercury Vapour	T4	55	8.5kg
NEVD/125/MV	125W	Mercury Vapour	T3	40	8.5kg
NEVD/200/GL	200W	GLS	T3	55	8.5kg
NEVD/118/CF	18W	Compact Fluorescent	T5	55	8.5kg
NEVD/126/CF	26W	Compact Fluorescent	T5	55	7.0kg
NEVD/160/MB	160W	MBTF	T3	40	7.0kg
NEVD/055/QL	55W	QL	T5	55	7.0kg

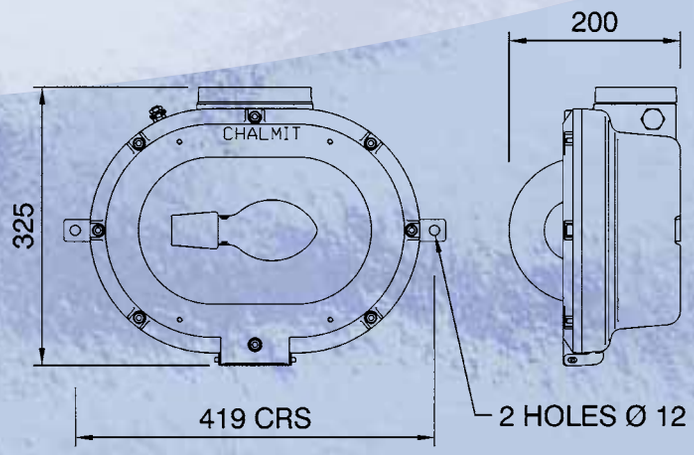
Options - Suffix to Catalogue No.

/___	Specific voltage (12,24,120 CF, 120 QL)
/60	60Hz
/M25	M25 entries
/P	PTFE coating
/TI	Timed ignitor
/NC	No power factor correction capacitors fitted

Applications

- Zone 1 and 2 hazardous areas
- Harsh and low temperature environments
- Offshore oil and gas platforms
- Handrails, walkways and low ceilings
- Petrochemical industry
- Pharmaceutical industry
- Road tanker loading facilities
- Stairwells • Oil jetties • Distilleries





Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting brackets	**SNEV1-0001**
Wire guard	**SNEV1-0002**

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1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC - Type Examination Certificate Number: **Baseefa02ATEX0168**

4 Equipment or Protective System: **A Nevis Bulkhead Luminaire**

5 Manufacturer: **Chalmit Lighting**

6 Address: **Glasgow, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa (2001) Ltd. Notified body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **02(C)0092**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amendments 1 & 2 **EN 50018: 2000: + Amendment 1,**
EN 50019: 2000 **EN 50281-1-1: 1998**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following :

⟨Ex⟩ II 2 GD EEx de IIB T* (See Schedule)

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa (2001) Ltd. Customer Reference No. **0068** Project File No. **02/0092**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

Baseefa (2001) Ltd.
Health and Safety Laboratory Site, Harpur Hill,
Buxton, Derbyshire SK17 9JN
Telephone +44 (0) 1298 28255 Fax +44 (0) 1298 28216
e-mail info@baseefa2001.biz web site www.baseefa2001.biz
Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

pp R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 **Schedule**

14 **Certificate Number Baseefa02ATEX0168**

15 Description of Equipment or Protective System

A Nevis Bulkhead Luminaire comprises an oval cast base and cover manufactured from aluminium, gunmetal or brass. The flat flanged cover is fitted with an oval wellglass and is attached to the base with 8 cap head screws. Integral with the base casting is an increased safety terminal box. A line bushing to PTB97ATEX1047U, coded ⟨Ex⟩ II 2 G EEx d II is provided between the two enclosures. The luminaire may be fitted with GLS, SON, MBI, MBF/U, MBTF, compact fluorescent, or QL (induction) lamps and associated control gear when appropriate.

The lamp type, ratings, temperature classification, ambient temperature range, and maximum external surface temperature for use in an explosive dust atmospheres, are indicated below.

Lamp Type	Wattage	Voltage	Temperature Classification	Ambient Temperature Range	Delay Time Before Opening (Minutes)	Cable Rating	Maximum External Surface Temperature
GLS	150	24-240	T3	-55°C to +55°C	10	80°C	150°C
GLS	200	24-240	T3	-55°C to +55°C	10	90°C	165°C
SON/E	70	200-250 50Hz 220-270 60Hz	T4	-55°C to +55°C	4	80°C	125°C
MBI	70	200-250 50Hz 220-270 60Hz	T4	-55°C to +55°C	4	80°C	125°C
MBF/U	80	200-250 50Hz 220-270 60Hz	T4	-55°C to +55°C	4	80°C	130°C
MBF/U	125	200-250 50Hz 220-270 60Hz	T3	-55°C to +40°C	4	70°C	140°C
MBTF	160	220-250	T3	-55°C to +40°C	4	70°C	155°C
Fluorescent	18/26	12-260 ac/dc	T5	-55°C to +55°C	-	70°C	80°C
Induction	55	110-240 ac/dc	T5	-55°C to +55°C	10	70°C	98°C

16 Report Number

02(C)0092

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

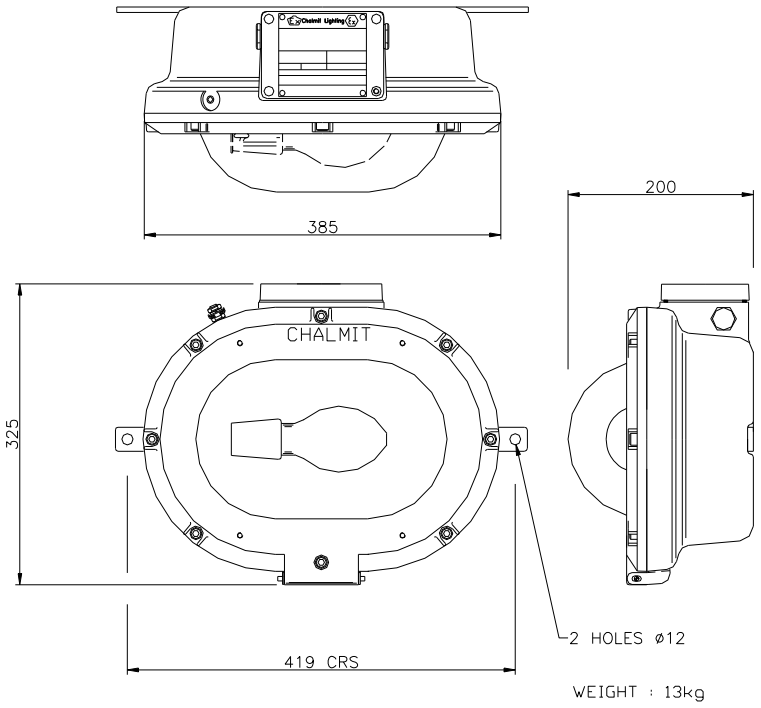
19 Drawings and Documents

Number	Sheet	Issue	Date	Description
D2102	1	-	07.05.02	General Assembly
D2102	2	-	08.05.02	General Assembly
D2102	3	-	09.05.02	Item list and Label details
D2102	4	-	08.07.02	General Assembly - GL Lamp
D2062	1	01	08.04.03	Wellglass Glazing Data

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Nevis Bulkhead Luminaire (ATEX)

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used As a guide only.



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0.0 Specification

Type Of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014: 1998, EN 50018: 2000, EN50019: 2000, EN 50281-1-1: 1998
ATEX Equipment Classification	Group II Category 2 G Group II Category 2 D
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14 Zone 21 and Zone 22 areas to EN 50281-3 and installation to EN 50281-1-2 and BS EN 60079-14
Certificate	EC Type Examination Certificate Baseefa02ATEX0168
Equipment Coding	II 2 G EEx de IIB T3/T4/T5. II 2 D T**ºC (Refer to table 0)
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark	The CE marking of this product applies to 94/9/EC "The Electrical Equipment (Safety) Regulations 1994", ‘’The Electromagnetic Compatibility Regulations 1992", and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment as described and identified in these instructions is declared to meet the provisions of the ATEX directive by reason of the EC Type Examination denoted based on the harmonised standards listed above. J A Lilley Technical manager Reference: D03/03-00 dated 20.5.03

1.0 Introduction – NEVIS BULKHEAD (ATEX).

The type Nevis Bulkhead is designed for all round lighting applications. It is suitable for use with elliptical discharge lamps, GLS incandescent lamps and QL lamp sources.

Note : *Lamp ranges and temperature ratings are outlined in TABLE 0.*

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.

In the UK the requirements of the *'Health and Safety at Work Act'* must be met.

Handling and electrical work associated with this product to be in accordance with *the 'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.

The luminaires are quite heavy and suitable means of handling on installation must be provided.

Certification details on the rating plate must be verified against the application requirements before installation.

The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in ignitable dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate

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on the fitting surface and good housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures.
Refer to EN50281-1-2 for additional details of selection, installation and maintenance.

3.1.2 Hybrid Mixtures – Gas plus Dust.

Where Hybrid mixtures exist as defined in EN1127 as a potentially explosive atmosphere, consideration should be given to verifying that the maximum surface temperature of the luminaire is below the ignition temperature of the hybrid mixture.

3.1.3 Floodlight Orientation in the presence of combustible dust.

The luminaire was tested in accordance with EN 50281-1-1 and IEC 61241-1-1 practice A.
As the build up of the dust layer can never be guaranteed not to occur, the luminaire must not be mounted in an orientation where the dust could lie on the glass. The temperature on the glass is the hottest point on the luminaire and any obstruction of the radiation from the luminaire would cause the surface temperature to increase.

3.2 Tools

6, 3mm A/F socket keys.
3mm and 5mm flat blade screwdriver.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care must be taken in connecting to the nominal 230V UK public supply.*** In most cases, the luminaire has multi-tapped control gear which can be set to a range of voltages on 50 or 60Hz cycles. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side. 20V max. nominal drop is acceptable for incandescent and MBF, 10V max. drop is desirable for HPS. The light output will be reduced. The HPS circuits use S.I.P ignitors and the circuit diagram will indicate the choke connections. Where MBI/Metal Halide lamps are used, the tapping must be set accurately for best performance. Where shore or construction site supplies are used, different to the service supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department. Where adverse system conditions occur, luminaires can be supplied without PFC. The circuit current will then be the lamp current. The circuit power does not change. Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

3.4 Lamps

The lamps used in this range are of a standardised type, and there is no preference between makes, or in the case of HPS colour. Due to the need to control photometric performance and certification conditions, and avoid incorrect lamps being fitted, the type of lamp and size is specified on the rating plate. If mixed installations are used, care must be taken to ensure that the correct lamp is fitted on installation and replacement.
GLS lamps will give 1000 hours life dependent on the supply voltage variation. The light output will remain substantially unaltered up until failure. Mercury vapour lamps will burn for up to 24,000 hours but should be changed at 10,000 as they will then be at about 70% of initial output. HPS lamps substantially maintain their light output to the end of their electrical half life, which again can be up to 24,000 hours. However, lamp replacement at around 16,000 hours is desirable to avoid piecemeal replacement on a large scale. ***HPS and MBI lamps should be replaced shortly after they do not light***. One indication of the end of life for HPS lamps is 'cycling' where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously they should be switched off occasionally, to allow old lamps to fail to re-ignite rather than possibly become diodes with detrimental effects on control gear. The above information is current at the time of

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publication. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the Technical Department or the lamp supplier. ***HPS and MBI circuits should not be energised without a lamp fitted***. HPS lamps without an internal ignitor should be used. The current HPS control gear is incompatible with internal ignitor lamps.

3.4.1.1 QL Lamps

The QL lamp available for this product is the 55W type. The QL lamp will operate for up to 60,000 hours dependant on operating ambient. The QL lamp system consists of a lamp, power coupler that the lamp fixes to and a HF generator. Should the lamp fail to ignite it is most probable that the HF generator will need replacement, please note that it is essential that the correct generator be fitted. Contact the technical department for advice.

3.4.1.2

When a QL lamp source is fitted the fitting may be sealed for life by applying silicone sealant on flamepath (maintaining flamepath gap). This would also require the cover bolts to be filled with a hard setting epoxy resin and a label stating that the front cover must not be removed will be attached to the luminaire.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation This will usually consist of aiming points and aiming angles.
Mounting arrangements should be secured with lock washers or self-locking nuts and bolts.

3.6 Cabling and Cable Glands

3.6.1 Cable Glands

The installer and user take responsibility for the selection of cables, cable glands and seals.
The product is certified for ATEX and to comply with the certification for installation and use within the EU, cable glands and sealing plugs must have ATEX component approval or be certified to EN 50014('E generation').
For installation outside the EU, suitable cable glands in accordance with EN 50014 or IEC 60079-0 will meet the technical requirements.
The cable and gland assembly when installed must maintain a minimum of IP54 rating for Ex e terminals
The cable gland must withstand an impact value of 7Nm where the risk of mechanical damage is high or 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non-armoured cable and 80 x the cable OD for armoured cable. Where brass cable glands are used in an corrosive environment cadmium or nickel plating should be used. Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request.

3.6.2 Cable

At maximum rated ambient temperature refer to rating table for minimum cable temperature rating. The luminaire is also rated with the temperature rise at the cable entry. This allows the user to adjust the cable spec. for an ***actual*** T amb lower than that for which the luminaire is certified. The standard looping conductor size is 6mm².
Internal and external earth points are provided. For luminaires specified for non-standard ambient temperatures refer to the Technical Department.
300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The selection of cable size will be suitable for the fuse rating. Some guidance on this is given below. When MCB's are used, the type with the higher inrush current resistance, as used for motor starting and lighting, should be specified.

3.6.3 Cable Connection

The cable connections are made by removing the terminal chamber cover. The retaining screws are captive and should be re-greased as required. The conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more than 1mm beyond the terminal. Unused terminal screws should be tightened. The core must

be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. Ex e cover bolt torque 6Nm. Where control gear tappings need to be re-selected, the lampglass needs to be removed (see below). Undo the eight screws to remove front cover and remove the reflector by removing three fixing screws, then re-select the taps (see 'Electrical Supplies' above).

3.7 Fitting Lamps

Make sure the correct lamp is selected as detailed above. Access for fitting lamps is gained through the lampglass cover. This should be disconnected and hinged to the side. Before removing the lampglass on any occasion, check that the hinge is in good condition. The lamp should be firmly screwed into place. The flameproof path should have a coat of silicone grease (Dow Corning "Molykote III" or similar) or other protective non-setting grease suitable for high temperature. Replace all bolts and fully tighten. Lamp glass cover bolt torque 24Nm.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe, refer to *BS EN 60079-17*. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening and note taken of the rated opening delay periods alternatively the nameplate may read ‘do not open when an explosive gas atmosphere is present’. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting, re-greasing or other replacement.
3 Check the terminal chamber bolts for tightness. Torque 6Nm.
4 Check the cable gland for tightness and nip up if necessary.
5 Check any external earthing.
6 Examine the lampglass for any signs of sealant damage, cracking or discoloration. If thought necessary, the silicone weather seal can be re-sealed with a proprietary brand of clear RTV silicone, but only if the underlying sealant is in good condition.
7 Check all cover bolts for tightness. Torque 24Nm.
8 Check for signs of corrosion between the lampglass cover and the main housing. Evaluation of this will be a matter for judgement gained by experience, as there may be little evidence on the outside. If there is any sign of corrosion, remove the cover and wipe the flameproof paths with a clean cloth and non-metallic scraper. Examine the surfaces for pitting; any pitted component should be replaced. A damaged or non-resilient gasket must be replaced. The cord is 4mmØ. The cover should be re-greased with silicone (Dow Corning 'Molykote III' or similar) or other non-setting grease suitable for high temperatures, and re-fitted with all bolts fully tightened. Any replacement bolts must be identical to the original. All are 18/8 stainless steel with a minimum of ISO262 grade A2-70. With this type of flameproof path all bolts must be in place and tight. The maximum gap for IIB in this case is 0.15mm. It will be unusual for any luminaire to have a gap of more than 0.1mm when tried with a feeler gauge. If 0.1mm is exceeded, check that no foreign bodies or debris at the bottom of the blind tapped holes is keeping the surfaces apart and, if not, a workshop overhaul should be carried out to bring the apparatus to as new condition. Periodically, when the lampglass is removed, the opportunity should be taken to remove the reflector, check the lampholder connections for signs of over-heating and similarly check the control gear.
9 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced. (It may well be practical to also replace the gasket on each occasion if this is at a 3-year interval). Torque 6Nm.
10 If painting operations have taken place around the luminaire, ensure that coatings have not entered the flameproof path or been deposited on the lampglass. If they have, dismantle and clean carefully.
11 Check that mountings are secure.

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12 Cover the bolt heads with silicone grease to prevent corrosion and accumulation of dirt in the screw threads.
13 Clean the lampglass.
14 If there is suspicion that the luminaire has suffered mechanical damage, a stringent workshop check should be made.

Important : *Where spares are needed, these must be replaced with manufacturers parts. No modifications should be made without the knowledge and approval of the manufacturer.*

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
With Mercury and GLS lamps the faults are simple, loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs of overheating. Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work.
With HPS and MBI lamps the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an 'attempt to start' effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

4.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current, and last 1-2 milliseconds. Lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.
With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current, will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. For GLS inrush use 6 x rated current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1. A conventional matrix for HBC fuses is shown in TABLE 2.*

5.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

5.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury by fragmentation.
This applies to the UK, there may be other regulations on disposal operating in other countries.
Important : *Do not incinerate lamps.*

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0.0 Tables 0/1/2

Table 0 Lamp Ranges and Temperature Ratings Refer to Section : 1.0

Lamp	Wattage	Rated Supply	T Class	T amb ºC	Min Ambient ºC	Rated Cable ºC	Cable Temp. Rise Above amb ºC
GLS	100	110 to 250V	T3	55	-55ºC	80	25
GLS	150	"	T3	55		80	25
GLS	200	"	T3	55		90	35
SON/E	70	(210 to 254V, 50Hz	T4	55		80	25
		220 to 270V, 60Hz)					
MBF/U	80	"	T4	55		80	25
MBF/U	125	"	T3	40		70	30
MBI	70	"	T4	55		80	25
MBTF	160	220 to 250V	T3	40		70	30
QL	55.	120V, 220-240V	T5	55	-20ºC	70	25

Table 1 Starting and Running Currents Refer to Section : 4.0

Lamp	Start A	Run A	Capacitance µF	Circuit Power (W)
70W HPS	0.55	0.40	10	80
80W MBFU	0.5	0.39	10	90
125W MBFU	1.0	0.63	10	136
70W MBI	0.55	0.41	10	83

Note : *Minimum power factor correction: 0.85.*

Table 2 Fuse Ratings Refer to Section : 4.0

Lamp	Number of Lamps					
	1	2	3	4	5	6
70W HPS	4A	4A	4A	6A	6A	10A
80W MBFU	4A	4A	4A	4A	6A	6A
125W MBFU	4A	4A	6A	10A	10A	10A
70W MBI	4A	4A	4A	6A	6A	10A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

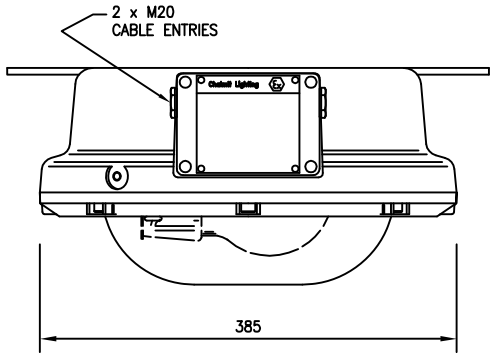
Registered No. 3650461

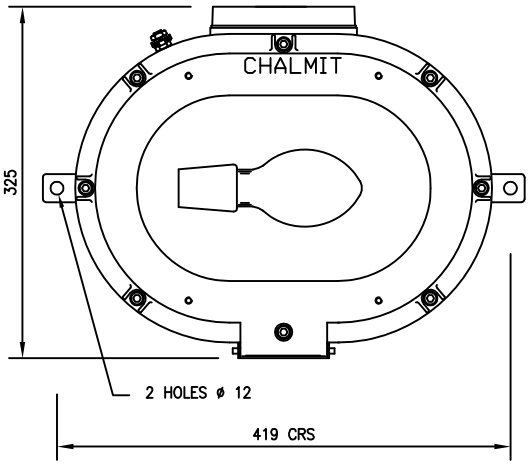
Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

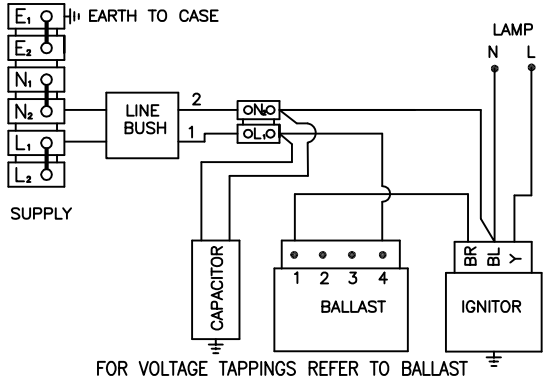
Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

1	2	3	4	5	6	7	8
DRAWING NUMBER/SHEET NUMBER F1277	REMOVE ALL BURRS & SHARP EDGES			IF IN DOUBT ASK!		3RD ANGLE PROJECTION	







FOR VOLTAGE TAPPINGS REFER TO BALLAST HPS/MBI WIRING DIAGRAM

TYPE OF PROTECTION....Ex de FLAMEPROOF & INCREASED SAFETY
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA & IIB
TO BS EN 60079-14
STANDARD.....BS EN 50014/18/19
CERTIFICATE.....ATEX TYPE EXAMINATION EECS Baseefa02ATEX0168
CODE EEx de IIB T4 Tamb(SEE TABLE)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 6mm^2 (3 CORE) FOR FOR LOOPING

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	J.T.C.
CHECKED	J.T.C
APPROVED	J.T.C
DATE	03/04/2003
REF. DRGS.-	

LUMINAIRE	RATED SUPPLY	T CLASS	T amb	LAMPHOLDER	WEIGHT
NEVIS/070/MS	230V 50Hz	T4	55°C	E27	8.5Kgs

MATERIAL	TOLERANCE
ALUMINIUM LM6	
FINISH	SURFACE ROUGHNESS
SELF	
DIMS. IN MM	SCALE -

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
NEVIS 70W BULKHEAD
STRAP MOUNTING
OUTLINE GA

DRAWING NUMBER/SHEET NUMBER
F1277 1 OF 1

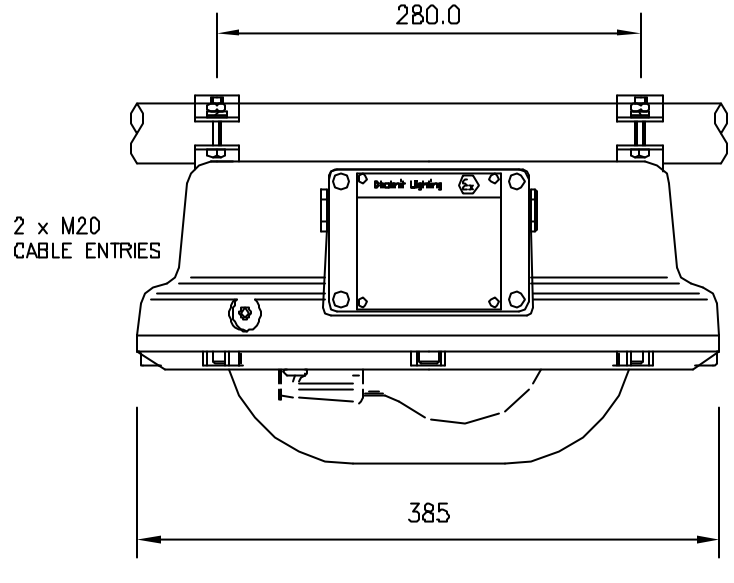
1	2	3	4	5	6	7	8

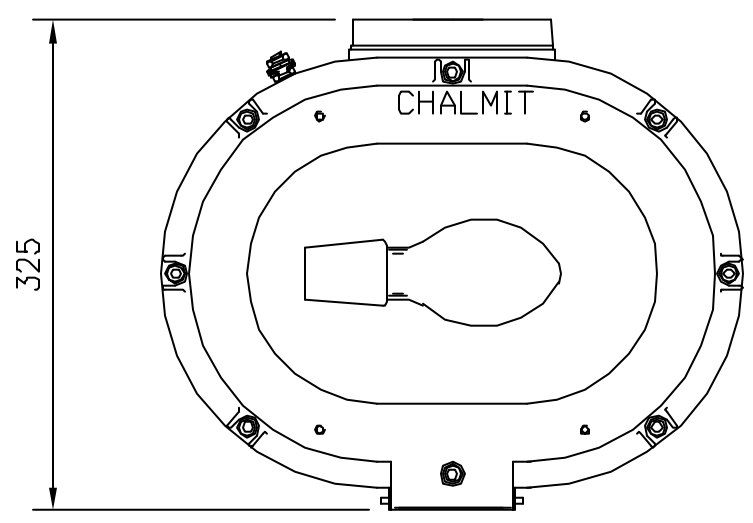
DRAWING NUMBER/SHEET NUMBER
F1385

REMOVE ALL BURRS & SHARP EDGES

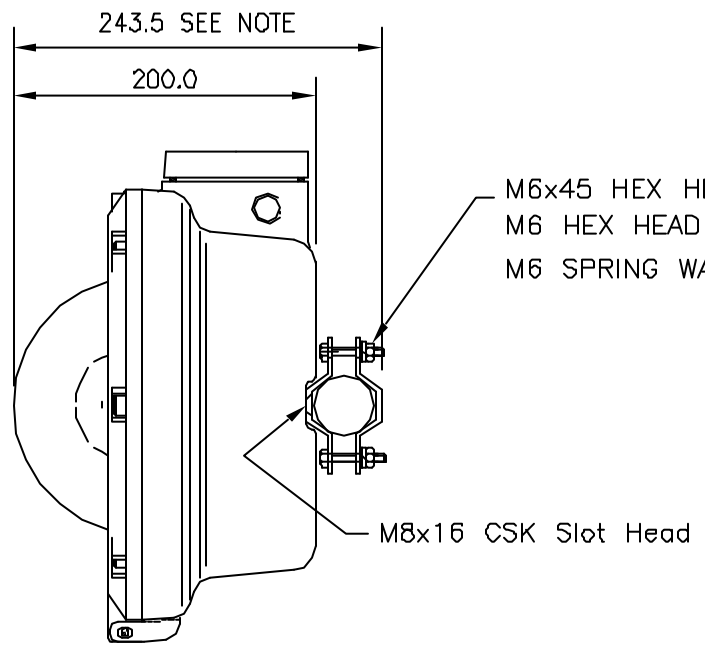
IF IN DOUBT ASK!

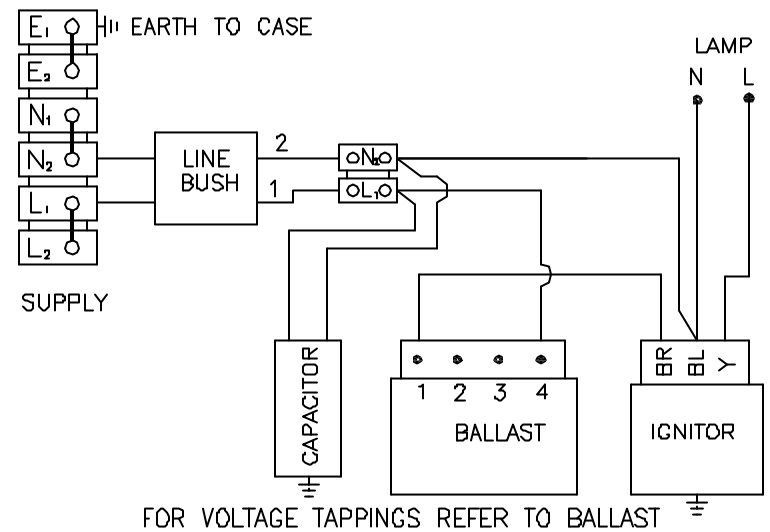
3RD ANGLE PROJECTION





Dimension will vary depending on pole diameter, diameter of pole illustrated is 40mm





FOR VOLTAGE TAPPINGS REFER TO BALLAST HPS/MBI WIRING DIAGRAM

TYPE OF PROTECTION....Ex de FLAMEPROOF & INCREASED SAFETY
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA & IIB
TO BS EN 60079-14
STANDARD.....BS EN 50014/18/19
CERTIFICATE.....ATEX TYPE EXAMINATION EECS Baseefa02ATEX0168
CODE EEx de IIB T4 Tamb(SEE TABLE)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 6mm^2 (3 CORE) FOR FOR LOOPING

DCF No.	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	J.T.C.
APPROVED	J.T.C.
DATE	03/04/2003

LUMINAIRE	RATED SUPPLY	T CLASS	T amb	LAMPHOLDER	WEIGHT
NEVIS/070/MS	230V 50Hz	T4	55°C	E27	8.5Kgs

REF. DRGS.-

MATERIAL	ALUMINIUM LM6
TOLERANCE	
FINISH	SELF
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

TITLE
NEVIS 70W BULKHEAD
POLE MOUNTING
OUTLINE GA

DRAWING NUMBER/SHEET NUMBER
F1385 1 OF 1

261

Ex d WELL-GLASS

ATEX CATEGORY 2 ZONE 1 APPLICATIONS

The 261 well-glass is a high light output luminaire ideally suitable for demanding environments. It accommodates high pressure discharge lamps up to 400W and also incandescent lamps up to 500W. External reflectors are available making the 261 suitable for medium and high bay applications.

The luminaire is made from corrosion resistant aluminium alloy and toughened boro-silicate glass using stainless steel fastenings and has an IP66/67 rating. It features a large side mounted increased safety terminal chamber eliminating the need for flameproof cable glands and allowing for flush mounting. Versions of the 261 are available for operation at -40ºC.

Standard Specification

Type of Protection:	**Ex de (Flameproof Increased Safety)**
ATEX Classification:	**Group II Category 2 G**
Area Classification:	**Zone 1 and Zone 2 areas to EN 60079-10 with installation to EN 60079-14 Gas Groups IIA and IIB**
Apparatus Standard:	**EN 50014 EN 50018 EN 50019**
Certificate:	**EC Type Examination Certificate BAS01ATEX2309**
Coding:	**Ⓔx II 2 G EEx de IIB (refer to table for T rating and Ambient)**
Enclosure:	**Aluminium alloy LM6 to BS 1490. All fastenings stainless steel. Toughened glass bowl**
Reflector:	**High purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Stirrup mounting bracket**
Control Gear:	**Internal copper/iron with PFC correction capacitor**
Relamping:	**Access via front glass cover assembly**
Lampholder:	**E40**
Lamp Type:	**HPS, Metal Halide, Mercury Vapour and GLS**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz (HID) 110V - 240V ac/dc (GLS)**

Features

Ex e terminal chamber

Stainless steel fasteners

Anchor chain on glass cover assembly

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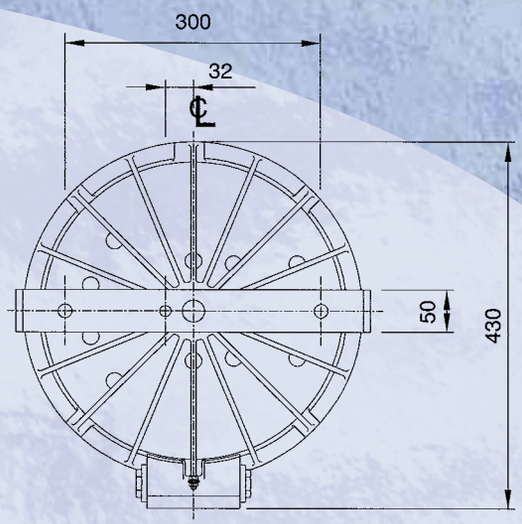
Std. Cat No.	Wattage	Lamp	T Class	Ambient ºC	Weight
261D/150/HS	150W	HPS	T4	40	31kg
261D/250/HS	250W	HPS	T4	40	32kg
261D/400/HS	400W	HPS	T4	40	33kg
261D/125/MV	125W	Mercury Vapour	T4	40	31kg
261D/250/MV	250W	Mercury Vapour	T4	40	32kg
261D/400/MV	400W	Mercury Vapour	T4	40	33kg
261D/250/MH	250W	Metal Halide	T4	40	32kg
261D/400/MH	400W	Metal Halide	T4	40	33kg
261D/500/GL	Up to 500W	GLS	T4	40	29kg
261D/150/HS/F*	150W	HPS	T4	50	31kg
261D/250/HS/F*	250W	HPS	T4	50	32kg
261D/125/MV/F*	125W	Mercury Vapour	T4	70	31kg

***F - Flush / Pendant Mounted Version**

Note: When the external reflector is fitted with the flush/pendant version, the 'T' class and ambients stated above apply.
When fitted to the stirrup mounted version the 'T' class changes to T3 with the ambient remaining the same.

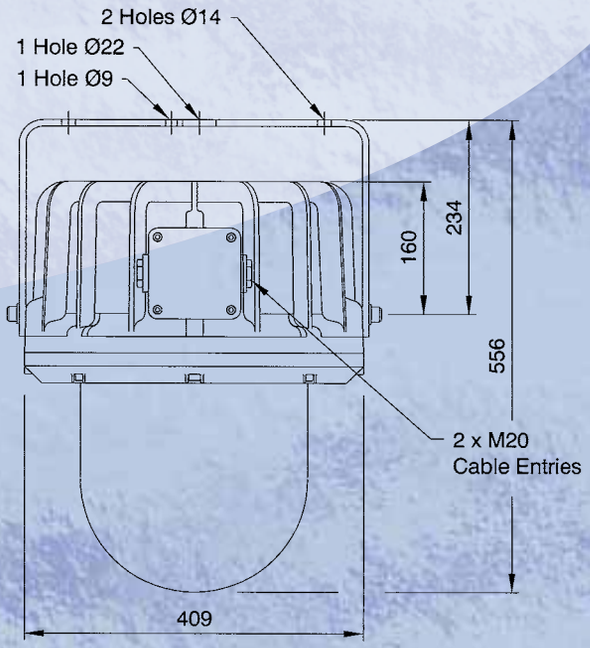


Options - Suffix to Catalogue No.

/P	PTFE coating
/M25	M25 Entries
/LT	Low temperature version -40ºC
/60	60 Hz

Applications

- Zone 1 and 2 hazardous areas
- Harsh and low temperature environments
- Offshore oil and gas platforms
- Petrochemical process areas
- Paint and solvent storage
- Sewage treatment plants
- Process areas
- Highbay lighting
- Oil jetties



Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting bracket	**S2610-0001**
Wire guard	**S2610-0003**
External reflector	**S2610-0007**

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1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX2309**

4 Equipment or Protective System: **A TYPE 261 WELLGLASS LUMINAIRE**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(C)0558/3 dated 16 January 2002

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 **EN 50018: 2000** **EN 50019: 2000**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II 2 G **EEx de IIB T* (see schedule)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/018

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
22 January 2002

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2309**

15 **Description of Equipment or Protective System**

A Type 261 Weligiass Luminaire comprises circular body and cover manufactured from aluminium, brass or gunmetal. The cover is fitted with a wellglass sealed with silicone cement, and the body has an integral increased safety terminal compartment. A line bushing is provided between the terminal enclosure and the main enclosure.

The luminaire can be fitted with either GLS, SON, MBF/U and MBI lamps, and the associated control gear when required.

Internal and external earth facilities are provided.

The ratings, temperature classification, and ambient temperature range when fitted with each type of lamp are indicated below.

Lamp Type	Wattage	Voltage	Temperature Classification	Ambient Temperature Range	Delay Time Before Opening (Minutes)	Cable Rating	Mounting Position
GLS	300	110-240	T4	-40°C to +40°C	6	70°C	Any
GLS	500	110-240		-40°C to +40°C	6	70°C	Any
MBF/U	125	200,210 220,230 240,250 254,260 270V 50,60Hz		-40°C to +70°C	10	85°C	Pendent only
MBF/U	250			-40°C to +40°C	10	70°C	Any
MBFR	400			-40°C to +40°C	10	70°C	Any
MBFR	250			-40°C to +40°C	10	70°C	Any
MBF/U	400			-40°C to +40°C	10	70°C	Any
SON/E	150			-40°C to +40°C	6	70°C	Any
SON/E	250			-40°C to +40°C	6	70°C	Any
SON/E	400			-40°C to +40°C	6	70°C	Any
SON/E	150			-40°C to +50°C	10	85°C	Pendent only
SON/E	250			-40°C to +50°C	10	85°C	Pendent only
SON/R	250			-40°C to +40°C	6	70°C	Any
SON/R	400			-40°C to +40°C	6	70°C	Any
MBI/E	250W 3 Amp rated Lamp			-40°C to +40°C	6	70°C	Any
MBI/E	400W 4.2 Amp HPS Compatible Lamp Only			-40°C to +40°C	6	70°C	Any

In addition the luminaires may be fitted with an external reflector, in these cases the mounting position is pendent only for the above temperature classifications and ambients, or the temperature classification is T3 when mounted in any position within the above ambients.

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13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2309**

The luminaires may also be fitted with a label indicating that the enclosures shall not be opened when an explosive gas atmosphere is present in place of the delay before opening time.

16 **Report No.**

BASEEFA Certification Report No. 01(C)0558/3 dated 16 January 2002.

17 **Special Conditions For Safe Use**

None.

18 **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0.2	Analysis of possible operating faults	Manufacturer's Instructions
1.0.3	Special checking and maintenance conditions	No special requirements
1.0.6	Instructions	Manufacturer's Instructions
1.2.2	Components for incorporation or replacement	No user serviceable parts
1.2.4	Dust deposits	Certification for gas atmospheres only
1.2.5	Additional means of protection	Not applicable
1.2.7	Protection against other hazards	BASEEFA Report No. 01(C)0558/3
1.3.5	Hazards arising from pressure compensation	Not applicable
1.5.	General requirements for safety devices	Not applicable
1.6.1	Manual override	Not applicable
1.6.2	Emergency shutdown	Not applicable
1.6.3	Hazards arising from power failure	Not applicable
1.6.5	Placing of warning devices as parts of equipment	Not applicable
2.0.	Category M	Not applicable
2.1.	Category 1	Not applicable
2.2.1	Category 2G	BASEEFA Report No. 00(C)0558/3
2.2.2	Category 2D	Not applicable
2.3.	Category 3	Not applicable
3.	Requirements for protective systems	Not applicable

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13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2309**

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D2059	1	-	30.08.01	General Assembly - Type 261 Wellglass Luminaire
D2059	2	-	30.08.01	General Assembly - Type 261 Wellglass Luminaire
*D2062	1	-	14.09.01	Glazing Data - Types 216, 238, 261, & 261E Luminaires

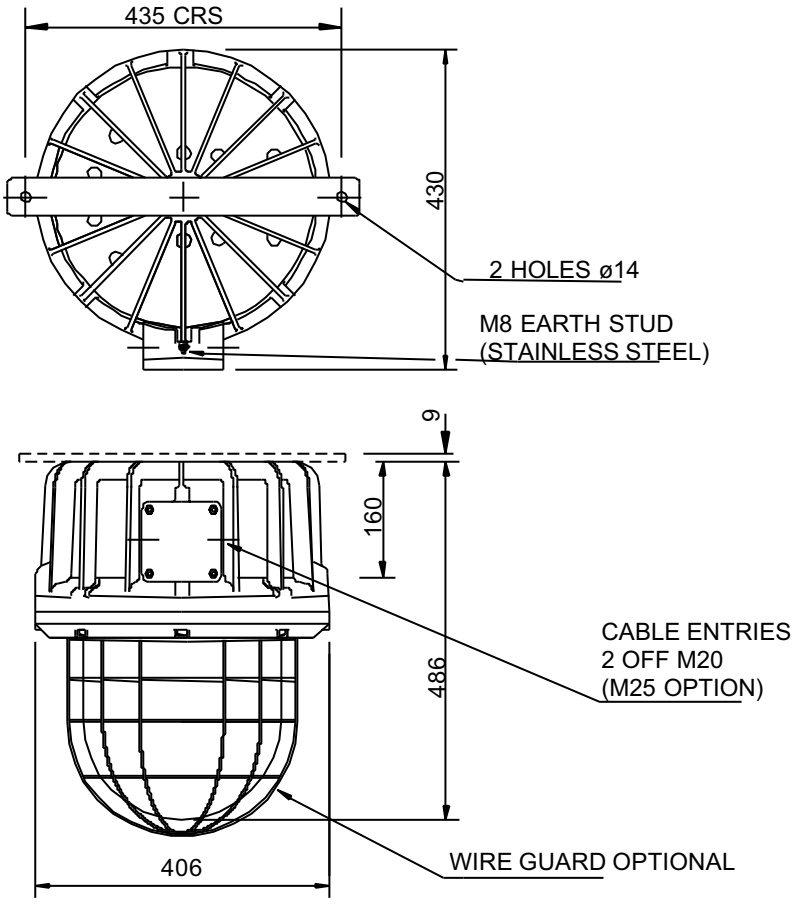
* This drawing is common to certificates BAS01ATEX2307, BAS01ATEX2308, BAS01ATEX2310, held on EECS files 0068/01/016, 0068/01/017, and 0068/01/019 respectively, and is held on EECS file 0068/01/016.

BASEEFA List Keywords
2WELLLUM

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

261 Wellglass Luminaire (ATEX).

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



WEIGHT	ALUMINIUM LM6	GUNMETAL LG2
HID	28kg	64kg
GLS	22kg	58kg

WINDAGE AREA: 0.19m^2

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0.0 Specification

Type Of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014: 1998, EN 50018: 2000, EN 50019: 2000.
ATEX Equipment Classification	Group II Category 2 G
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	EC Type Examination Certificate BAS01ATEX2309
Equipment coding	Ⓔx II 2 G EEx de IIB T3/T4
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

CE

1.0 Introduction - 261 Wellglass Luminaire (ATEX).

The type 261 Wellglass Luminaire is designed for all-round and high bay applications. It is suitable for use with elliptical and reflector discharge lamps and GLS incandescent lamps. An external reflector option is available, when fitted the luminaire is T3 in any attitude.

Note : *Lamp ranges are outlined in TABLE 0.*
The wellglass is certified for –40ºC.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with *the 'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

8, 6 and 5mm A/F socket keys.
3mm and 5mm flat blade screwdriver. 19mm A/F spanners.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

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3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage or tapping. The user must determine the ***actual*** site supply and purchase or adjust accordingly. In most cases, the luminaire has multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. ***Care must be taken in connecting to the nominal 230V UK public supply.*** The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side. 20V Max. nominal drop is acceptable for incandescent and MBF, 10V Max. drop is desirable for HPS and advised for MBI. The light output will be reduced. The MBI circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke making the tap selection obvious. The HPS circuits usually use impulser type ignitors and the circuit diagram will indicate the choke connections. The ignition tap is 20V to one side of the input. Where shore or construction site supplies are used, different to the service supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

Where adverse system conditions occur, luminaires can be supplied without PFC. The circuit current will then be the lamp current. The circuit power does not change. Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

3.4 Lamps

All the lamps used in this range, except MBI, are of a standardised type and there is no preference between makes, or in the case of HPS, colour. The 250W MBI lamp currently used is the 3A type. The control gear currently supplied for the 400W is designed to run the standard 3.5A lamp and will also run the 4.2A "SON compatible" lamp at 360W rating. The OSRAM lamp now available is designed to run at both currents, the output being appropriate to the wattage. ***Take great care in selecting 400W MBI lamps or problems will arise***. Because of the need to control photometric performance and certification conditions, and to avoid incorrect lamps being fitted, the type of lamp and size is specified on the rating plate. If mixed installations are used, care must be taken to ensure that the correct lamp is fitted on installation and replacement. GLS lamps will give 1000 hours life, dependent on the supply voltage variation. The light output will remain substantially unaltered up until failure. Mercury vapour lamps will burn for up to 24,000 hours but should be changed at 10,000 hours, as they will then be at about 70% of initial output.

HPS lamps substantially maintain their light output to the end of their electrical half life, which again can be up to 24,000 hours. However, lamp replacement at around 16,000 hours is desirable to avoid piecemeal replacement on a large scale. ***HPS and MBI lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling', where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects on control gear.

The above information is current at the time of publication. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the Technical Department or the lamp supplier. ***HPS and MBI circuits should not be energised without a lamp fitted.*** In general, HPS lamps without internal ignitor should be used. Commonly available SON/R lamps may have an internal ignitor. The current HPS control gear is compatible with internal ignitor lamps.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles.

The top mounting or trunnion mounting arrangements should be secured with lock washers or self-locking nuts and bolts. Reflector lamps should not be mounted with the axis more than 20^{o} above the horizontal.

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3.6 Cabling and Cable Glands

3.6.1 Cable Glands

Apparatus certified to *EN 50014 : 1998, EN 50018: 2000, EN 50019: 2000.*
Cable glands for entry into Ex e enclosures when fitted with any gland to body sealing method and the supply cable must reliably maintain the IP rating of the enclosure with a minimum value of IP54. The cable gland must withstand an impact value of 7Nm or alternatively 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non-armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.
Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified. Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used.
Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request.
Note: Other apparatus certified to EN 50014:1998, in practice the requirements of this later standard mean that for practical reasons certified entry devices must be used. Glands may be selected for low levels of mechanical risk and external clamping. Entry plugs can be selected as above.

3.6.2 Cable

At normal maximum rated ambient temperatures (ta=40°C) ordinary PVC cable (70°C) can be used. The standard looping conductor size is 2.5mm². 6mm² is available to special order. Internal and external earth points are provided.
For luminaires specified for non-standard ambient temperatures refer to the Technical Department. 300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The selection of cable size will be suitable for the fuse rating. Some guidance on this is given below. The luminaire is also rated with the temperature rise at the cable entry. This allows the user to adjust the cable spec. for an actual T amb lower than that for which the luminaire is certified.(only affects the higher ambient pendant only versions of this luminaire).

3.6.3 Cable Connection

The cable connections are made by removing the terminal chamber cover. Take care not to mix these covers up as they carry the rating plate. The retaining screws are captive and should be re-greased as required. The conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more than 1mm beyond the terminal. With the ceramic terminal block (2.5mm² max.) either there should be a pair of equal conductors or, where the conductors are not looped, a 'U' should be made to allow equal clamping both sides. Unused terminal screws should be tightened. The core must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. Cover bolt torque 6Nm.
Where control gear tappings need to be reselected ,the lampglass needs to be removed (see below). Undo the three screws and extract the reflector then reselect the taps (see 'Electrical Supplies' above).

3.7 Fitting Lamps

Make sure the correct lamp is selected as detailed above. Isolate the supply before opening the cover.
Access for fitting lamps is gained through the lampglass cover. This should be removed. Take care not to hang the lampglass on one bolt when removing or replacing. Before removing the lampglass on any occasion, check that the suspension chain is secure and in good condition. The lamp should be firmly screwed into place. The flameproof path should have a coat of silicone grease (Dow Corning Molykote III or similar) or other protective non-setting grease suitable for high temperature. Replace all bolts and fully tighten. Torque 16Nm.

3.8 Inspection and Maintenance

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Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe, refer to BS EN 60079-17. The time between lamp changes could be very infrequent and this is too long a period without inspection. The frequency of inspection is critically dependent on environment.

3.8.1 Routine Examination

The equipment must be de-energised before opening and note taken of the rated opening delay periods, alternatively the nameplate may read 'do not open when an explosive atmosphere is present'. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience :

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gaskettng, re-greasing or other replacement.
3 Check the terminal chamber bolts for tightness. Torque 6Nm.
4 Check the cable gland for tightness and nip up if necessary.
5 Check any external earthing.
6 Examine the lampglass for any signs of sealant damage, cracking or discolouration. If thought necessary, the silicone weather seal can be re-sealed with a proprietary brand of clear RTV silicone, but only if the underlying sealant is in good condition.
7 Check all cover bolts for tightness. Torque 16Nm.
8 Check for signs of corrosion between the lampglass cover and the main housing. Evaluation of this will be a matter for judgement gained by experience, as there may be little evidence on the outside. If there is any sign of corrosion, remove the cover, wipe the flameproof paths with a clean cloth and non-metallic scraper. Examine the surfaces for pitting; any pitted component should be replaced. A damaged or non-resilient gasket must be replaced. The cord is 3mm diameter. The cover should be re-greased with silicone (Dow Corning 'Molykote III' or similar) or other non-setting grease suitable for high temperatures, and re-fitted with all bolts fully tightened. Any replacement bolts must be identical to the original. All are 18/8 stainless steel with a minimum of ISO 262 grade A2-70. With this type of flameproof path all bolts must be in place and tight.
   The maximum gap for IIB in this case is 0.15mm. It will be unusual for any luminaire to have a gap of more than 0.1mm when tried with a feeler gauge. If 0.1mm is exceeded, check that no foreign bodies or debris at the bottom of the blind tapped holes is keeping the surfaces apart and, if not, a workshop overhaul should be carried out to bring the apparatus to as new condition.
   Periodically, when the lampglass is removed, the opportunity should be taken to remove the reflector, check the lampholder connections for signs of over-heating and similarly check the control gear.
9 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced. (It may well be practical to also replace the gasket on each occasion if this is at a 3-year interval). Torque 6Nm.
10 If painting operations have taken place around the luminaire, ensure that coatings have not entered the flameproof path or been deposited on the lampglass. If they have, dismantle and clean carefully.
11 Check that mountings are secure.
12 Cover the bolt heads with silicone grease to prevent corrosion and accumulation of dirt in screw threads.
13 Clean the lampglass.
14 If there is suspicion that the luminaire has suffered mechanical damage, a stringent workshop check should be made. Where spares are needed, these must be replaced with manufacturers parts. No modifications should be made without the knowledge and approval of the manufacturer.

3.9 Electrical Fault Finding and Replacement

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With Mercury and GLS lamps the faults are simple, loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discolourations of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs of overheating. Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work.
With HPS and MBI lamps the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct they should produce an 'attempt to start' effect and a buzzing sound from the ignitor.
It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.
The supply must be isolated.

4.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisec; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.
With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. The normal capacitor current will probably be the determining factor 0.076A per µF at 240V, 50Hz (adjust for other volts by multiplication x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. Use MCB's suitable for high inrush to reduce current rating.
All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

5.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

5.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

0.0 Tables 0/1/2

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Table 0 Lamp Ranges and Temperature Ratings Refer to Section : 1.0

Lamp	Wattage	Rated Supply	T Class	Tamb ºC	Rated Cable ºC	Cable Temp Rise Above ambient ºC
GLS	300	110-250V	T4	40	70	
GLS	500	110-250V	T4	40	70	
SON/E	150	200-254V 50Hz 220-270v 60Hz	T4	40	70	
SON/E	150		T4	50	85	35
SON/E	250		T4	40	70	
SON/E	250		T4	50	85	35
SON/E	400		T4	40	70	
SON/R	250		T4	40	70	
SON/R	400		T4	40	70	
MBF/U	125		T4	70	85	15
MBF/U	250		T4	40	70	
MBF/U	400		T4	40	70	
MBFR	250		T4	40	70	
MBFR	400		T4	40	70	
MBI/E	250		T4	40	70	
MBI/E	400		T4	40	70	
Luminaires at ambient temperatures above 40ºC are pendant only.						

Table 1 Starting and Running Currents Refer to Section : 4.0

Lamp	**Start A**	**Run A**	**Capacitance µF**	**Circuit Power (W)**
150W HPS	1.45	0.8	20	175
250W HPS	2.35	1.3	30	285
400W HPS	4.0	2.2	40	445
250W MBI	2.7	1.35	30	280
400W MBI	4.4	2.1	30	440
250W MBFU	2.8	1.4	15	280
400W MBFU	4.4	2.2	20	430

Note : *Minimum power factor correction :0.85*

Table 2 Fuse Ratings Refer to Section : 4.0

Lamp Wattage	**Number of Lamps**					
	1	**2**	**3**	**4**	**5**	**6**
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

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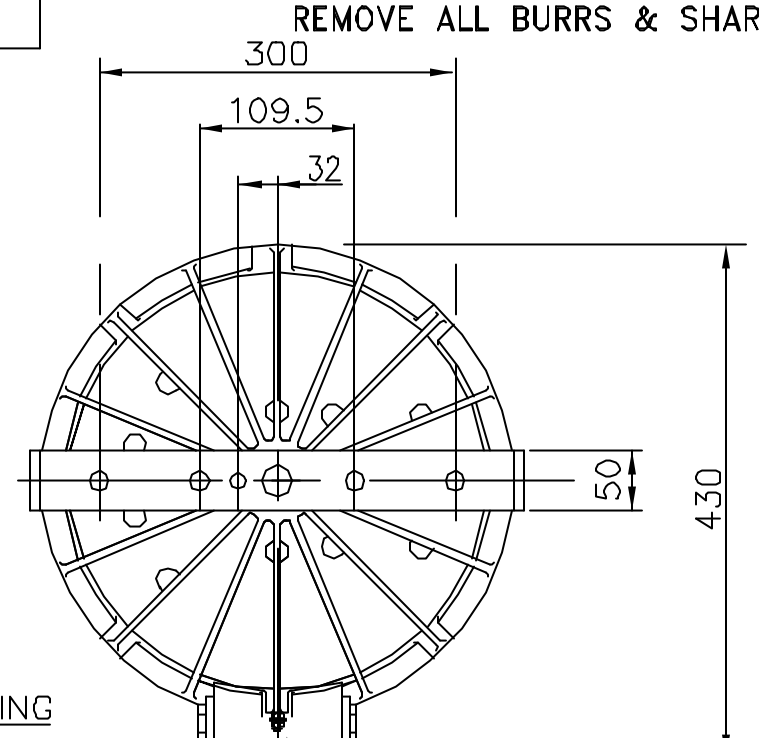
1	2	3	4	5	6	7	8

DRAWING NUMBER/SHEET NUMBER
F1068

REMOVE ALL BURRS & SHARP EDGES

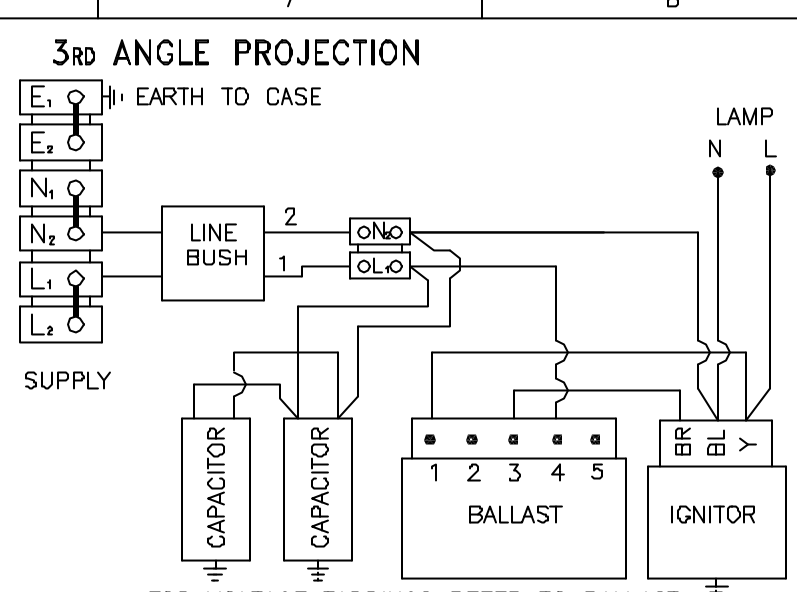
IF IN DOUBT ASK!

3RD ANGLE PROJECTION

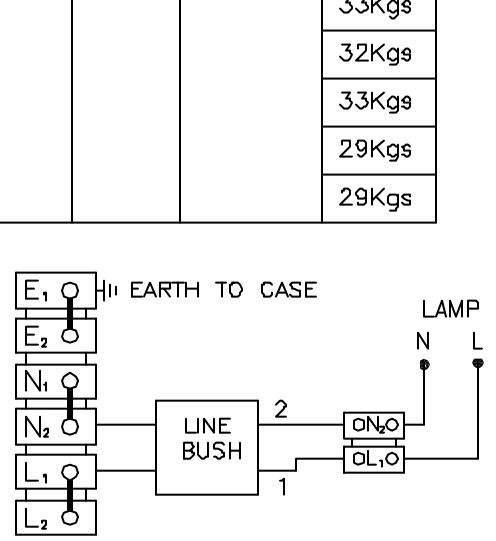


STIRRUP–MOUNTING
BRACKET HOLES
ø14 AT 109.5 & 300 CRS
ø22 & ø9 AT 32 CRS

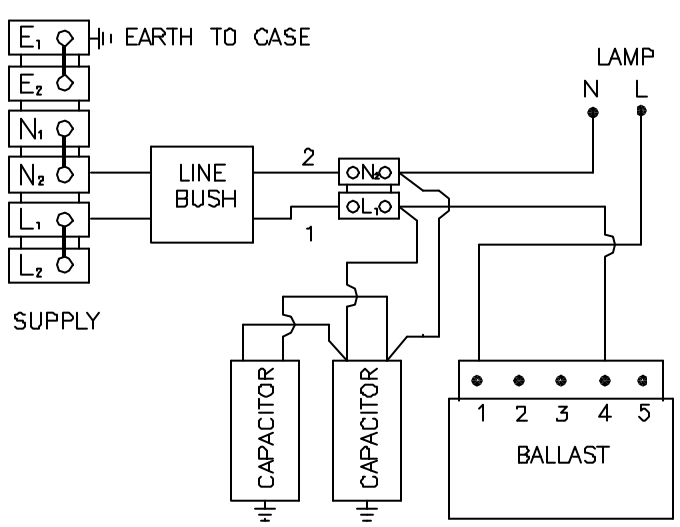
LUMINAIRE	RATED SUPPLY	T CLASS	T amb	LAMPHOLDER	WEIGHT
261/150 SON	220/230/240/254V 50Hz OR 220/230/240/254V 60Hz	T4	40°C	E40	31Kgs
261/250 SON					32Kgs
261/400 SON					33Kgs
261/250 SON/R					32Kgs
261/400 SON/R					33Kgs
261/125 MBFU					31Kgs
261/250 MBFU					32Kgs
261/400 MBFU					33Kgs
261/250 MBFR					32Kgs
261/400 MBFR					33Kgs
261/250 MBI					32Kgs
261/400 MBI					33Kgs
261/300 GLS	110/240 ac dc				29Kgs
261/500 GLS	110/240 ac dc				29Kgs



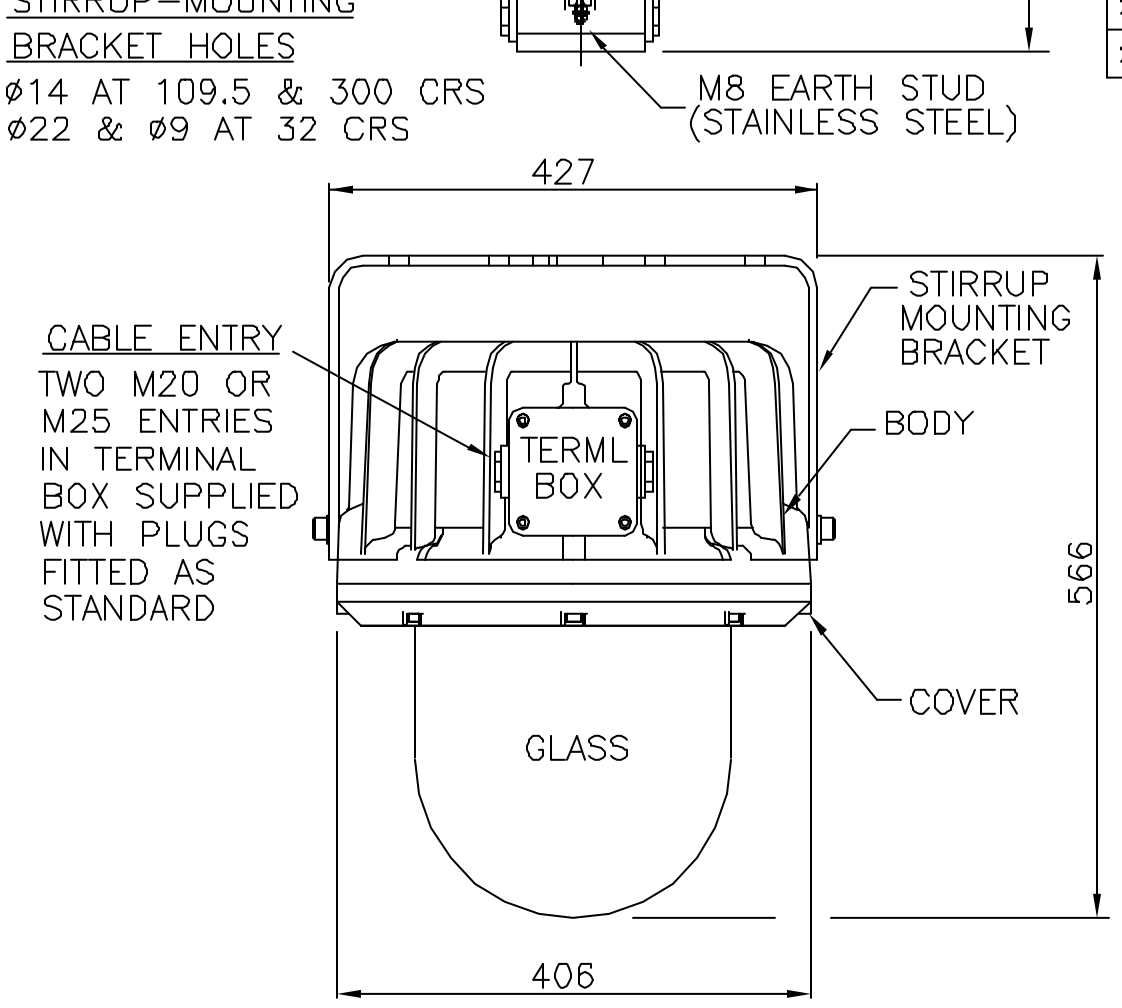
FOR VOLTAGE TAPPINGS REFER TO BALLAST
TYPICAL HPS/MBI WIRING DIAGRAM



SUPPLY
TYPICAL GLS WIRING DIAGRAM



FOR VOLTAGE TAPPINGS REFER TO BALLAST
TYPICAL MBFU WIRING DIAGRAM



TYPE OF PROTECTION....Ex de FLAMEPROOF & INCREASED SAFETY
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA & IIB
TO BS EN 60079–14
STANDARD.....BS EN 50014/18/19
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS01ATEX2309
CODE EEx de IIC T4 Tamb(SEE TABLE)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 6mm^2 (3 CORE) FOR FOR LOOPING

DCF NO	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	13/06/2002

REF. DRGS.–

MATERIAL	ALUMINIUM LM6
FINISH	SELF
DIMS. IN	MM
TOLERANCE	
SURFACE ROUGHNESS	
SCALE	–

TITLE
261 WELLGLASS GA
STIRRUP MOUNTING
LAMP RANGE

DRAWING NUMBER/SHEET NUMBER
F1068 1 OF 1

238

Ex d WELL-GLASS

ATEX CATEGORY 2 ZONE 1 APPLICATIONS

The 238 well-glass luminaire is ideal for use where a compact and powerful source of area lighting is needed.

The range accommodates high pressure discharge lamps up to 250W and also incandescent GLS lamps up to 300W. External reflectors are available to provide light control for efficient low and medium height operation. The luminaire is made from corrosion resistant aluminium alloy and toughened boro-silicate glass using stainless steel fastenings. It has an IP66/67 rating.

The luminaire features a large side mounted increased safety terminal chamber eliminating the need for flame-proof cable glands and allowing flush mounting. The 238 is suitable for a wide range of high and low temperature applications.

Standard Specification

Type of Protection:	**Ex de (Flameproof Increased Safety)**
ATEX Classification:	**Group II Category 2 G**
Area Classification:	**Zone 1 and Zone 2 areas to EN 60079-10 with installation to EN 60079-14 Gas Groups IIA and IIB**
Apparatus Standard:	**EN 50014 EN 50018 EN 50019**
Certificate:	**EC Type Examination Certificate BAS01ATEX2308**
Coding:	**Ⓔx II 2 G EEx de IIB (refer to table for T rating and ambient)**
Enclosure:	**Aluminium alloy LM6 to BS 1490. All fastenings stainless steel. Toughened glass bowl.**
Internal Reflector:	**High purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Flush mounting bracket**
Control Gear:	**Internal copper/iron with PFC correction capacitor**
Relamping:	**Access via front glass cover assembly**
Lampholder:	**E27 or E40**
Lamp Type:	**HPS, Metal Halide, Mercury Vapour, GLS, QL or MBTF**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz - 70, 150 & 250W HPS/Metal Halide 220, 230, 240V 50Hz - 80, 125, 250W MBF/U & 100W HPS 250V Max GLS/MBTF**

Features

Ex e cable entries and looping as standard

Anchor chain on glass cover assembly

High ingress protection

External reflector (option)

Low teperature applications to -50ºC

Compact construction

Gost Approved

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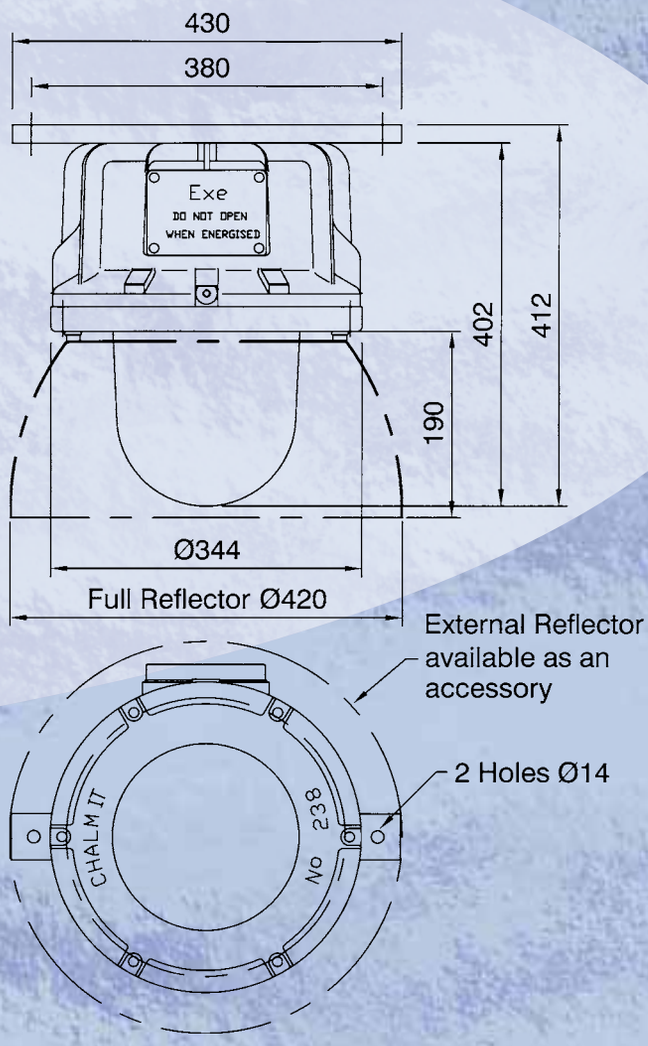
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient ºC	Weight
238D/070/HS	70W	HPS	E27	T4	70*	17kg
238D/100/HS	100W	HPS	E40	T4	60*	17kg
238D/150/MS	150W	HPS and Metal Halide	E40	T4	40	18kg
238D/250/MS	250W	HPS and Metal Halide	E40	T3	40*	20kg
238D/080/MV	80W	Mercury Vapour	E27	T4	60*	17kg
238D/125/MV	125W	Mercury Vapour	E27	T4	40	17kg
238D/250/MV	250W	Mercury Vapour	E40	T3	40*	19.5kg
238D/150/GL	150W	GLS	E27	T4	70*	15.5kg
238D/200/GL	200W	GLS	E27	T4	50	15.5kg
238D/300/GL	300W	GLS	E27	T4	40	15.5kg
238D/160/MB	160W	MBTF	E27	T3	50*	15.5kg
238D/085/QL	85W	QL	QL	T5	55	16.0kg
238D/070/HS/T5	70W	HPS	E27	T5	40	17kg
238D/150/MS/T3	150W	HPS and Metal Halide	E40	T3	55*	18kg
238D/125/MV/T3	125W	Mercury Vapour	E27	T3	50*	17kg

Note: Refer to installation leaflet for cable rating on models marked *

The 250W luminaires have a 70ºC cable rating at ambients of 30ºC



Options - Suffix to Catalogue No.

/120	120V QL only
/60	60Hz
/M25	M25 entries
/P	PTFE coating
/S	Stirrup mounting bracket
/NC	No power factor correction capacitors fitted

Applications

- Zone 1 and 2 hazardous areas
- Harsh and low temperature environments
- Offshore oil and gas platforms
- Medium and low bay lighting
- Petrochemical industry
- Pharmaceutical industry
- Road tanker loading facilities
- Stairwells • Oil jetties • Distilleries

Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting bracket (stirrup mounting version only)	**S2610-0001**
Wire guard	**S2381-0002**
External reflector	**S2380-0001**

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1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX2308**

4 Equipment or Protective System: **A TYPE 238 WELLGLASS LUMINAIRE**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(C)0558/2 dated 16 January 2002

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 **EN 50018: 2000** **EN 50019: 2000**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II 2 G **EEx de IIB T* (see schedule)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/017

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
22 January 2002

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2308**

15 **Description of Equipment or Protective System**

A Type 238 Wellglass Luminaire comprises circular body and cover manufactured from aluminium, brass or gunmetal. The cover is fitted with a wellglass sealed with silicone cement, and the body has an integral increased safety terminal compartment. One or two line bushings are provided between the terminal enclosure and the main enclosure.

The luminaire can be fitted with either GLS, SON, MBF/U and MBI lamps, and the associated control gear when required.

Internal and external earth facilities are provided.

The ratings, temperature classification, and ambient temperature range when fitted with each type of lamp are indicated below.

Lamp Type	Wattage	Voltage	Temperature Classification	Ambient Temperature Range	Cable Rating	Delay Time Before Opening (Minutes)
GLS	150	110-250	4	-50°C to +70°C	90°C	10
			4	-50°C to +50°C	70°C	
GLS	200	110-250	3	-50°C to +70°C	90°C	
			4	-50°C to +50°C	70°C	
GLS	300	110-240	4	-50°C to +40°C	70°C	
SON/E	70	200,210 220,230 240,250 254V 50Hz	4	-50°C to +50°C	70°C	
			4	-50°C to +70°C	85°C	
			5	-50°C to +40°C	70°C	
SON/E	100		4	-50°C to +60°C	80°C	
			4	-50°C to +40°C	70°C	
SON/E	150		3	-50°C to +55°C	80°C	
			4	-50°C to +40°C	70°C	
SON/E	250		3	-50°C to +40°C	80°C	
SON/R	250		3	-50°C to +40°C	80°C	
MBF/U	80	220,230 240,250 260,270V 60Hz	4	-50°C to +60°C	80°C	
			4	-50°C to +50°C	70°C	
MBF/U	125		3	-50°C to +50°C	80°C	
			4	-50°C to +40°C	70°C	
MBF/U	250		3	-50°C to +40°C	80°C	
MBI	150		3	-50°C to +55°C	80°C	
			4	-50°C to +40°C	70°C	
MBI	250		3	-50°C to +40°C	80°C	
MBTF	160	220-250	3	-50°C to +40°C	70°C	
			3	-50°C to +50°C	80°C	

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13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2308**

The luminaires may also be fitted with a label indicating that the enclosures shall not be opened when an explosive gas atmosphere is present in place of the delay before opening time.

16 **Report No.**

BASEEFA Certification Report No. 01(C)0558/2 dated 16 January 2002.

17 **Special Conditions For Safe Use**

None.

18 **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0.2	Analysis of possible operating faults	Manufacturer's Instructions
1.0.3	Special checking and maintenance conditions	No special requirements
1.0.6	Instructions	Manufacturer's Instructions
1.2.2	Components for incorporation or replacement	No user serviceable parts
1.2.4	Dust deposits	Certification for gas atmospheres only
1.2.5	Additional means of protection	Not applicable
1.2.7	Protection against other hazards	BASEEFA Report No. 01(C)0558/2
1.3.5	Hazards arising from pressure compensation	Not applicable
1.5.	General requirements for safety devices	Not applicable
1.6.1	Manual override	Not applicable
1.6.2	Emergency shutdown	Not applicable
1.6.3	Hazards arising from power failure	Not applicable
1.6.5	Placing of warning devices as parts of equipment	Not applicable
2.0.	Category M	Not applicable
2.1.	Category 1	Not applicable
2.2.1	Category 2G	BASEEFA Report No. 01(C)0558/2
2.2.2	Category 2D	Not applicable
2.3.	Category 3	Not applicable
3.	Requirements for protective systems	Not applicable

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13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2308**

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D2058	1	-	30.08.01	General Assembly - Type 238 Wellglass Luminaire
D2058	2	-	30.08.01	General Assembly - Type 238 Wellglass Luminaire
*D2062	1	-	14.09.01	Glazing Data - Types 216, 238, 261, & 261E Luminaires

* This drawing is common to certificates BAS01ATEX2307, BAS01ATEX2309, BAS01ATEX2310, held on EECS files 0068/01/016, 0068/01/018, and 0068/01/019 respectively, and is held on EECS file 0068/01/016.

BASEEFA List Keywords
2WELLLUM

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number :	**BAS01ATEX2308/1**
4	Equipment or protective system:	**A Type 238 Wellglass Luminaire**
5	Manufacturer :	**Chalmit Lighting**
6	Address :	**Glasgow, G52 4BL**

7 This supplementary certificate extends EC - Type Examination Certificate No. **BAS01ATEX2308** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate

The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa (2001) Ltd., Notified Body Number 1180, is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate it has issued.

This certificate may only be reproduced in its entirety, without any change, Schedule included.

Baseefa (2001) Ltd. Customer Reference No. **0068**

Project File No. **02/0043**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

Baseefa (2001) Ltd.
Health and Safety Laboratory Site, Harpur Hill,
Buxton, Derbyshire SK17 9JN
Telephone +44 (0) 1298 28255 Fax +44 (0) 1298 28216
e-mail info@baseefa2001.biz web site www.baseefa2001.biz
Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

13 **Schedule**

14 **Certificate Number BAS01ATEX2308/1**

15 Description of the variation to the Equipment or Protective System

Variation 1.1

To permit the addition of 85W and 165W QL lamps.

The ratings, temperature classification, and ambient temperature range when fitted with each type of lamp are indicated below.

Lamp Type	Wattage	Voltage	Temperature Classification	Ambient Temperature Range	Cable Rating	Delay Time Before Opening (Minutes)
Induction QL	85	220-240V 120V a.c. d.c. 50/60 Hz	5	-50°C to +55°C	70°C	10
	165		5	-50°C to +40°C	70°C	

The luminaires may also be fitted with a label indicating that the enclosures are not to be opened when an explosive gas atmosphere is present in place of the delay before opening time.

16 Report Number

02(C)0043

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

See original certificate

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
D2058	1	01	08.07.02	General Assembly – Type 238 Wellglass Luminaire
D2058	2	01	08.07.02	General Assembly – Type 238 Wellglass Luminaire
D2058	3	01	08.07.02	General Assembly – Type 238 Wellglass Luminaire

CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1358955 **Master Contract:** 201067

Project: 1358955 (Edition 1) **Date Issued:** September 3rd, 2002

Issued to: **Chalmit Lighting, A Division of Hubbell Lighting Ltd.**
388 Hillington Road
Glasgow, G52 4BL
UNITED KINGDOM

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'

C US

Issued by: D. Adams, P. Eng.
Certification Specialist

Authorized by: John Verwey, P.Eng.
Operations Manager

CLASS
3428 03 - Fixtures and Fittings - For Hazardous Locations
3428 83 - Fixtures and Fittings - For Hazardous Locations - To US Requirements

PRODUCTS
Ex de IIB T(See Table); Tamb = -50°C to (See Table); CSA Enclosure Type 4:
Class I, Zone 1, AEx de IIB T(See Table); Tamb = -50°C to (See Table); NEMA 4:

Type "238" Wellglass Luminaires, Model Number's 238D/a/b/c/d/e/f/g/h, rated up to 270Vac, 50 Hz; or 600Vac, 60-Hz, 300W max. Specific model numbers are listed below.

Model Number **238D/a/b/c/d/e/f/g/h**

1st Digit (a)	2nd Digit (b)	3rd Digit (c)	4th Digit (d)	5th Digit (e)	6th Digit (f)	7th Digit (g)	8th Digit (h)
Wattage 70, 80, 100, 125, 150, 160, 200, 250 or 300 W	**Lamp Type** PHS, Metal Halide, Mercury vapour, GLS or MBTF	**Specific Voltage** Up to 600 Vac	**60-Hz**	**M25 entries**	**PTFE Coating**	**Stirrup Mounting bracket**	**No PF correction Capacitors fitted.**

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognised to perform certification to U.S. Standards.

DQD 507WD 2001/07/20

CSA INTERNATIONAL

Certificate: 1358955 **Master Contract:** 201067

Project: 1358955 **Date:** September 3rd, 2002

The ratings are as follows:

Lamp	Wattage	Ambient Temp Range °C	T Rating
GLS	150	-50°C To 70°C	T4
		-50°C To 50°C	T4
''	200	-50°C To 70°C	T3
		-50°C To 50°C	T4
''	300	-50°C To 40°C	T4
SON/E	70	-50°C To 50°C	T4
		-50°C To 70°C	T4
		-50°C To 40°C	T5
''	100	-50°C To 60°C	T4
		-50°C To 40°C	
''	150	-50°C To 55°C	T3
		-50°C To 40°C	T4
''	250	-50°C To 40°C	T3
SON/R	250	-50°C To 40°C	T3
MBF/U	80	-50°C To 60°C	T4
		-50°C To 50°C	
''	125	-50°C To 50°C	T3
		-50°C To 40°C	T4
''	250	-50°C To 40°C	T3
MBI	150	-50°C To 55°C	T3
		-50°C To 40°C	T4
''	250	-50°C To 40°C	T3
MBTF	160	-50°C To 40°C	T3
		-50°C To 50°C	

APPLICABLE REQUIREMENTS

CSA Standard C22.2 No 0-M1991 - General Requirements - Canadian Electrical Code Part II.
CSA Standard C22.2 No137-M1981 - Electric Luminaires for Use in Hazardous Locations.
CAN/CSA E79-0-95 - Electrical apparatus for explosive gas atmospheres. PART 0: General requirements.
E79-1-95 - Electrical apparatus for explosive gas atmospheres. PART 1: Construction and verification test of flameproof enclosures of electrical apparatus.
E79-7-95 - Electrical apparatus for explosive gas atmospheres. Part 7: Increased Safety 'e'.

UL 2279 - UL Standard for Safety for Electrical Equipment for Use in Class I, Zone 0,1,2 Hazardous Locations.
ANSI/UL 844 - Standard for Electric Lighting Fixtures for Use in Hazardous (Classified) Locations.

CSA INTERNATIONAL

Supplement to Certificate of Compliance

Certificate: 1358955 **Master Contract:** 201067

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1358955	September 3rd, 2002	Original Certification of Type "238" Wellglass Luminaires, Model Number's 238D/a/b/c/d/e/f/g/h.

DQD 507WD 2001/07/20

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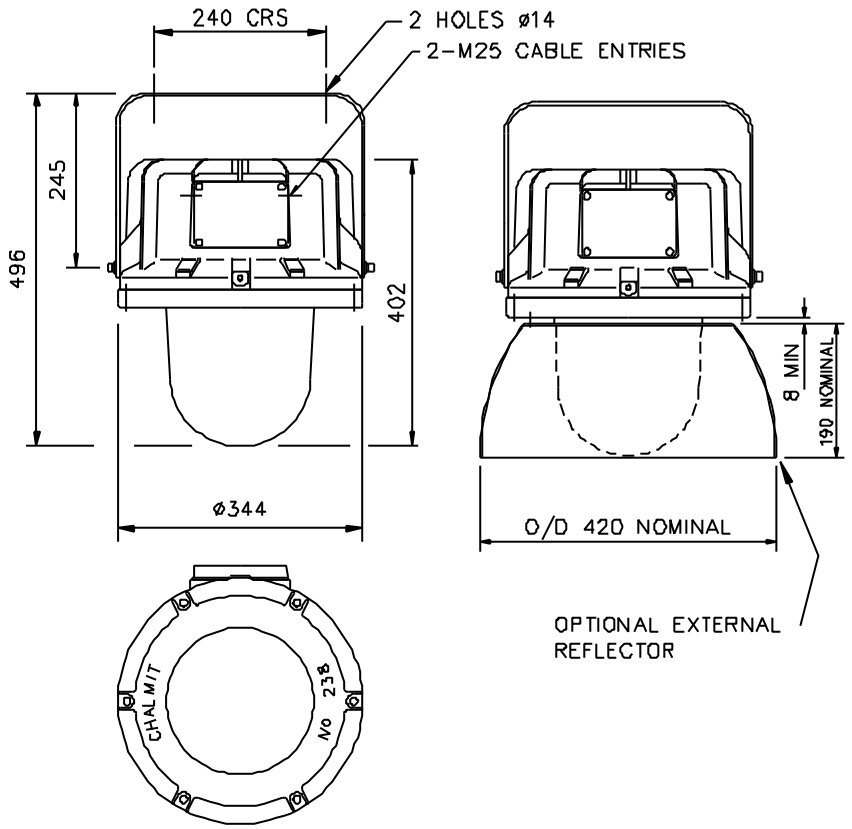
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

238 Wellglass Luminaire (ATEX)

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



WEIGHT	150W SON/E	250W SON/E	200W GLS
ALUMINIUM LM6	21.6Kg	24.2Kg	18.4Kg
GUNMETAL LG2	53.6Kg	56.2Kg	50.4Kg

WINDAGE AREA: 0.11m²

WINDAGE AREA WITH OPTIONAL EXTERNAL REFELCTOR: 0.15m²

CE

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0.0 Specification

Type Of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014: 1998, EN 50018: 2000, EN50019: 2000.
ATEX Equipment Classification	Group II Category 2 G
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	EC Type Examination Certificate BAS01ATEX2308
Equipment Coding	Ex II 2 G EEx de IIB T3/T4/T5.
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark	The CE marking of this product applies to 94/9/EC "The Electrical Equipment (Safety) Regulations 1994", ''The Electromagnetic Compatibility Regulations 1992", and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

1.0 Introduction - 238 Wellglass Luminaire (ATEX).

The type 238 Wellglass Luminaire is designed for all round and high bay applications. It is suitable for use with elliptical discharge lamps and GLS incandescent lamps. An external reflector is available.

Note : *Lamp ranges and temperature ratings are outlined in TABLE 0.*
The wellglass is certified for -50ºC.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with *the 'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy, especially in the gunmetal version, and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

8, 6, 5mm A/F socket keys.
3mm and 5mm flat blade screwdriver, 19mm A/F spanner.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

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3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care must be taken in connecting to the nominal 230V UK public supply*.** In most cases, the luminaire has multi-tapped control gear which can be set to a range of voltages on 50 or 60Hz cycles. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side. 20V max. nominal drop is acceptable for incandescent and MBF, 10V max. drop is desirable for HPS. The light output will be reduced. The HPS circuits use S.I.P ignitors and the circuit diagram will indicate the choke connections. Where MBI/Metal Halide lamps are used, the tapping must be set accurately for best performance. Where shore or construction site supplies are used, different to the service supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department. Where adverse system conditions occur, luminaires can be supplied without PFC. The circuit current will then be the lamp current. The circuit power does not change. Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

3.4 Lamps

The lamps used in this range are of a standardised type and there is no preference between makes, or in the case of HPS, colour. The MBI 250W is the 3.0A type. Due to the need to control photometric performance and certification conditions, and avoid incorrect lamps being fitted, the type of lamp and size is specified on the rating plate. If mixed installations are used, care must be taken to ensure that the correct lamp is fitted on installation and replacement.
GLS lamps will give 1000 hours life dependent on the supply voltage variation. The light output will remain substantially unaltered up until failure. Mercury vapour lamps will burn for up to 24,000 hours but should be changed at 10,000 as they will then be at about 70% of initial output. HPS lamps substantially maintain their light output to the end of their electrical half life, which again can be up to 24,000 hours. However, lamp replacement at around 16,000 hours is desirable to avoid piecemeal replacement on a large scale. ***HPS and MBI lamps should be replaced shortly after they do not light***. One indication of the end of life for HPS lamps is 'cycling' where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously they should be switched off occasionally, to allow old lamps to fail to re-ignite rather than possibly become diodes with detrimental effects on control gear. The above information is current at the time of publication. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the Technical Department or the lamp supplier. ***HPS and MBI circuits should not be energised without a lamp fitted***. In general, HPS lamps without internal ignitor should be used. The current HPS control gear is compatible with internal ignitor lamps. GES (E40) 125W Mercury Vapour lamps should be used as standard.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation This will usually consist of aiming points and aiming angles.
The top mounting or trunnion mounting arrangements should be secured with lock washers or self-locking nuts and bolts.

3.6 Cabling and Cable Glands

3.6.1 Cable Glands

Apparatus certified to *EN 50014: 1998, EN 50018: 2000, EN 50019; 2000.*
Cable glands for entry into Ex e enclosures when fitted with any gland to body sealing method and the supply cable must reliably maintain the IP rating of the enclosure with a minimum value of IP54. The cable gland must withstand an impact value of 7Nm or 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non-armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this

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requirement. Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified. Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used. Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request.
Note: Other apparatus certified to *EN 50014:1998*, in practice the requirements of this later standard means that for practical reasons certified entry devices must be used. Glands may be selected for low levels of mechanical risk and external clamping. Entry plugs can be selected as above.

3.6.2 Cable

At maximum rated ambient temperature refer to rating table for minimum cable temperature rating. The luminaire is also rated with the temperature rise at the cable entry. This allows the user to adjust the cable spec. for an ***actual*** T amb lower than that for which the luminaire is certified. The standard looping conductor size is 2.5mm². 6mm² is available to special order. Internal and external earth points are provided. For luminaires specified for non-standard ambient temperatures refer to the Technical Department.
300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The selection of cable size will be suitable for the fuse rating. Some guidance on this is given below. When MCB's are used, the type with the higher inrush current resistance, as used for motor starting and lighting, should be specified.

3.6.3 Cable Connection

The cable connections are made by removing the terminal chamber cover. The retaining screws are captive and should be re-greased as required. The conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more than 1mm beyond the terminal. With the ceramic terminal block (2.5mm² max) either there should be a pair of equal conductors or, where the conductors are not looped, a 'U' should be made to allow equal clamping of both sides. Unused terminal screws should be tightened. The core must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. Cover bolt torque 6Nm. Where control gear tappings need to be re-selected, the lampglass needs to be removed (see below). Undo the three screws and extract the reflector then re-select the taps (see 'Electrical Supplies' above).

3.7 Fitting Lamps

Make sure the correct lamp is selected as detailed above. Access for fitting lamps is gained through the lampglass cover. This should be removed. Take care not to hang the lampglass on one bolt when removing or replacing. Before removing the lampglass on any occasion, check that the suspension chain is secure and in good condition. The lamp should be firmly screwed into place. The flameproof path should have a coat of silicone grease (Dow Corning "Molykote III" or similar) or other protective non-setting grease suitable for high temperature. Replace all bolts and fully tighten. Torque 24Nm.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe, refer to *BS EN 60079-17*. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening and note taken of the rated opening delay periods alternatively the nameplate may read ‘do not open when an explosive gas atmosphere is present’. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting, re-greasing or other replacement.
3 Check the terminal chamber bolts for tightness. Torque 6Nm.
4 Check the cable gland for tightness and nip up if necessary.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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5 Check any external earthing.

6 Examine the lampglass for any signs of sealant damage, cracking or discoloration. If thought necessary, the silicone weather seal can be re-sealed with a proprietary brand of clear RTV silicone, but only if the underlying sealant is in good condition.

7 Check all cover bolts for tightness. Torque 24Nm.

8 Check for signs of corrosion between the lampglass cover and the main housing. Evaluation of this will be a matter for judgement gained by experience, as there may be little evidence on the outside. If there is any sign of corrosion, remove the cover and wipe the flameproof paths with a clean cloth and non-metallic scraper. Examine the surfaces for pitting; any pitted component should be replaced. A damaged or non-resilient gasket must be replaced. The cord is 3mmØ. The cover should be re-greased with silicone (Dow Corning 'Molykote III' or similar) or other non-setting grease suitable for high temperatures, and re-fitted with all bolts fully tightened. Any replacement bolts must be identical to the original. All are 18/8 stainless steel with a minimum of ISO262 grade A2-70. With this type of flameproof path all bolts must be in place and tight. The maximum gap for IIB in this case is 0.2mm. It will be unusual for any luminaire to have a gap of more than 0.1mm when tried with a feeler gauge. If 0.1mm is exceeded, check that no foreign bodies or debris at the bottom of the blind tapped holes is keeping the surfaces apart and, if not, a workshop overhaul should be carried out to bring the apparatus to as new condition. Periodically, when the lampglass is removed, the opportunity should be taken to remove the reflector, check the lampholder connections for signs of over-heating and similarly check the control gear.

9 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced. (It may well be practical to also replace the gasket on each occasion if this is at a 3-year interval). Torque 6Nm.

10 If painting operations have taken place around the luminaire, ensure that coatings have not entered the flameproof path or been deposited on the lampglass. If they have, dismantle and clean carefully.

11 Check that mountings are secure.

12 Cover the bolt heads with silicone grease to prevent corrosion and accumulation of dirt in the screw threads.

13 Clean the lampglass.

14 If there is suspicion that the luminaire has suffered mechanical damage, a stringent workshop check should be made.

Important : *Where spares are needed, these must be replaced with manufacturers parts. No modifications should be made without the knowledge and approval of the manufacturer.*

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.

With Mercury and GLS lamps the faults are simple, loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs of overheating. Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work.

With HPS and MBI lamps the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an 'attempt to start' effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

4.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.

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With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. For GLS inrush use 6 x rated current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1.*
A conventional matrix for HBC fuses is shown in TABLE 2.

5.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

5.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury by fragmentation.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

0.0 Tables 0/1/2

Table 0 Lamp Ranges and Temperature Ratings Refer to Section : 1.0

Lamp	Wattage	Rated Supply	T Class	T amb ºC	Rated Cable ºC	Cable Temp. Rise Above amb ºC
GLS	150	110 to 250V	T4	70	90	20
GLS	150	"	T4	50	70	20
GLS	200	"	T3	70	90	20
GLS	200	110 to 250V	T4	50	70	20
GLS	300	110 to 240V	T4	40	70	30
SON/E	70	(210 to 254V, 50Hz	T4	50	70	20
SON/E	70	220 to 270V, 60Hz)	T4	70	85	20
SON/E	70	"	T5	40	70	20
SON/E	100	"	T4	60	80	20
SON/E	100	"	T4	40	70	20
SON/E	150	"	T3	55	80	30
SON/E	150	"	T4	40	70	30
SON/E	250	"	T3	40	80	40
SON/R	250	"	T3	40	80	40
MBF/U	80	"	T4	60	80	20
MBF/U	80	"	T4	50	70	20
MBF/U	125	"	T3	50	80	30
MBF/U	125	"	T4	40	70	30
MBF/U	250	"	T3	40	80	40
MBI	150	"	T4	40	70	30
MBI	150	"	T3	55	80	30
MBI	250	"	T3	40	80	40
MBTF	160	(210 to 254V, 50Hz	T3	40	70	30

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MBTF	160	220 to 270V, 60Hz)	T3	50	80	30

Table 1 Starting and Running Currents Refer to Section : 4.0

Lamp	Start A	Run A	Capacitance µF	Circuit Power (W)
70W HPS	0.72	0.40	10	80
100W HPS	1.00	0.56	10	114
150W HPS	1.35	0.75	20	168
250W HPS	2.34	1.30	30	286
80W MBFU	0.70	0.39	10	90
125W MBFU	1.13	0.63	10	136
250W MBFU	2.80	1.40	20	280
150W MBI	1.60	0.80	20	175
250W MBI	2.70	1.35	30	280

Note : *Minimum power factor correction: 0.85.*

Table 2 Fuse Ratings Refer to Section : 4.0

Lamp	Number of Lamps					
	1	2	3	4	5	6
70W HPS	4A	4A	4A	6A	6A	10A
100W HPS	4A	4A	6A	10A	10A	10A
150W HPS	4A	6A	10A	10A	16A	16A
250W HPS	10A	16A	16A	20A	20A	20A
80W MBFU	4A	4A	4A	4A	6A	6A
125W MBFU	4A	4A	6A	10A	10A	10A
250W MBFU	10A	16A	16A	20A	20A	20A
150W MBI	4A	6A	10A	10A	16A	16A
250W MBI	10A	16A	16A	20A	20A	20A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

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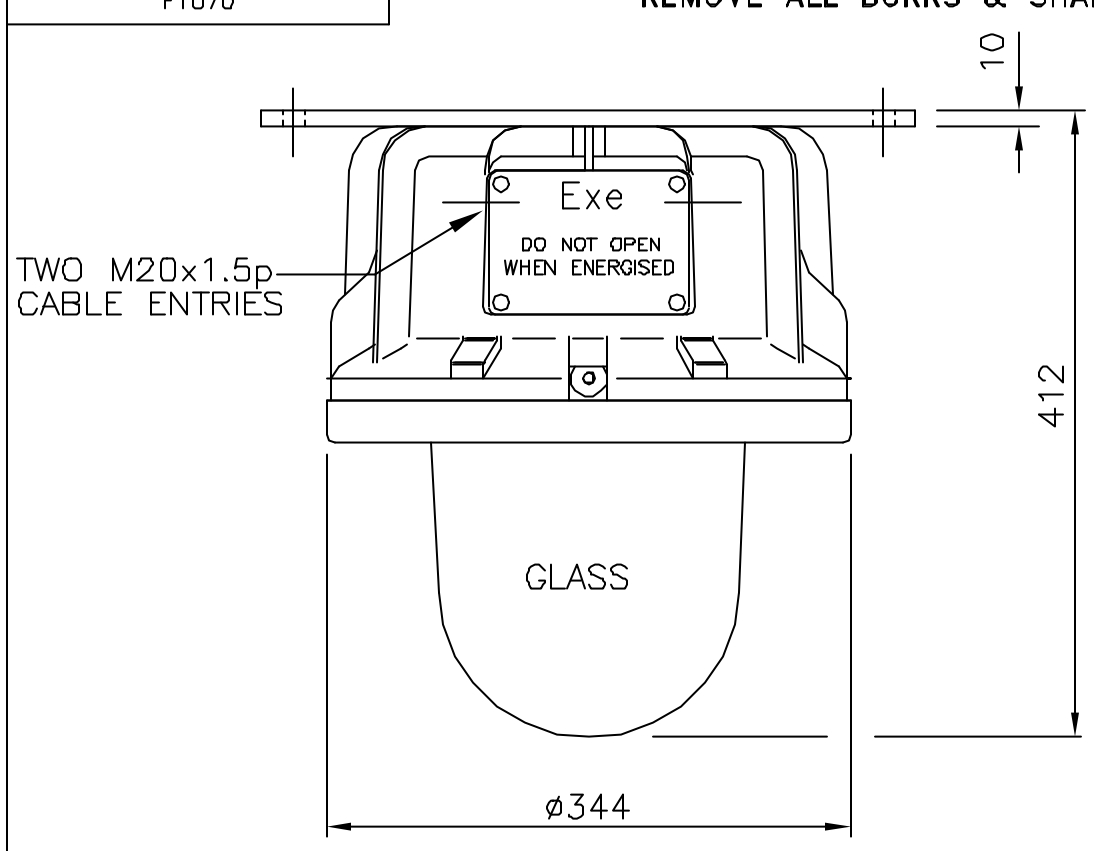
1	2	3	4	5	6	7	8

DRAWING NUMBER/SHEET NUMBER
F1070

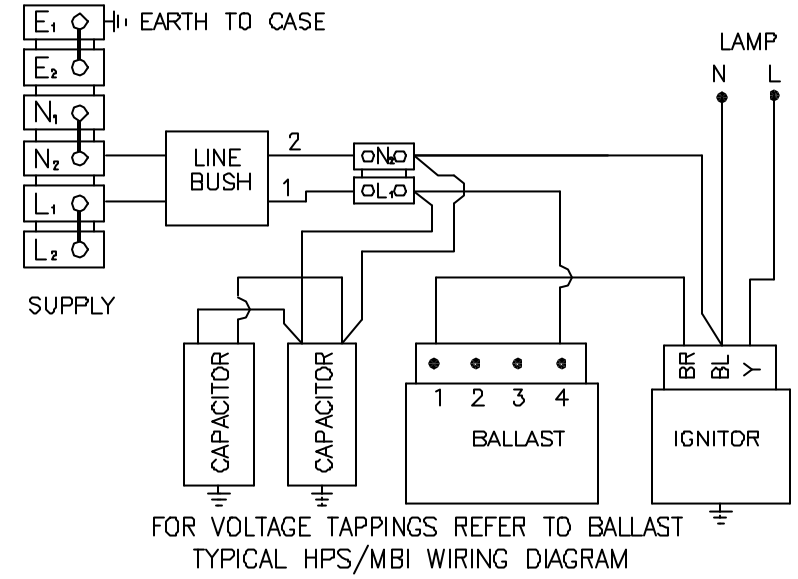
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

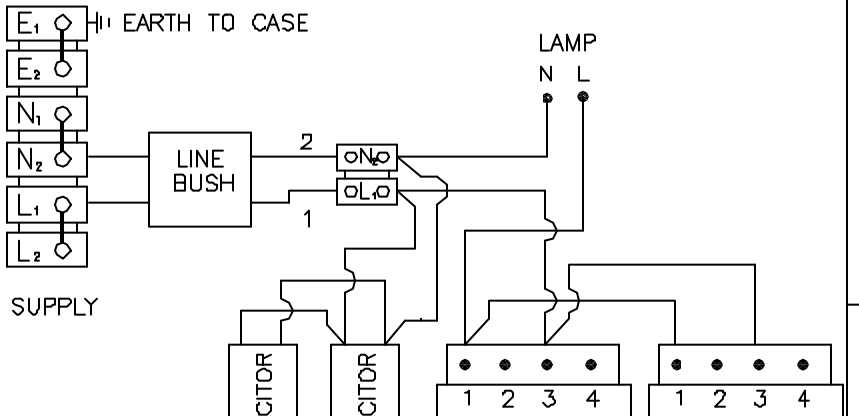
3RD ANGLE PROJECTION



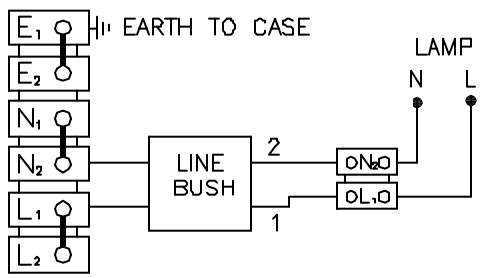
LUMINAIRE	RATED SUPPLY	T CLASS	T amb	LAMPHOLDER	WEIGHT
238/70 SON	220/230/240/254V 50Hz OR 220/230/240/254V 60Hz	T4	70°C	E27	17Kgs
238/100 SON			60°C	E40	
238/150 SON/MBI			40°C		18Kgs
238/250 SON/MBI		T3			20Kgs
238/80 MBFU	220/230/240V 50Hz OR 220/230/240V 60Hz	T4	60°C	E27	17Kgs
238/125 MBFU			40°C		
238/250 MBFU		T3		E40	19.5Kgs
238/150 GLS	250V MAX ac/dc	T4	70°C	E27	15.5Kgs
238/200 GLS			50°C		
238/300 GLS			40°C		
238/160 MBF/T		T3	50°C		



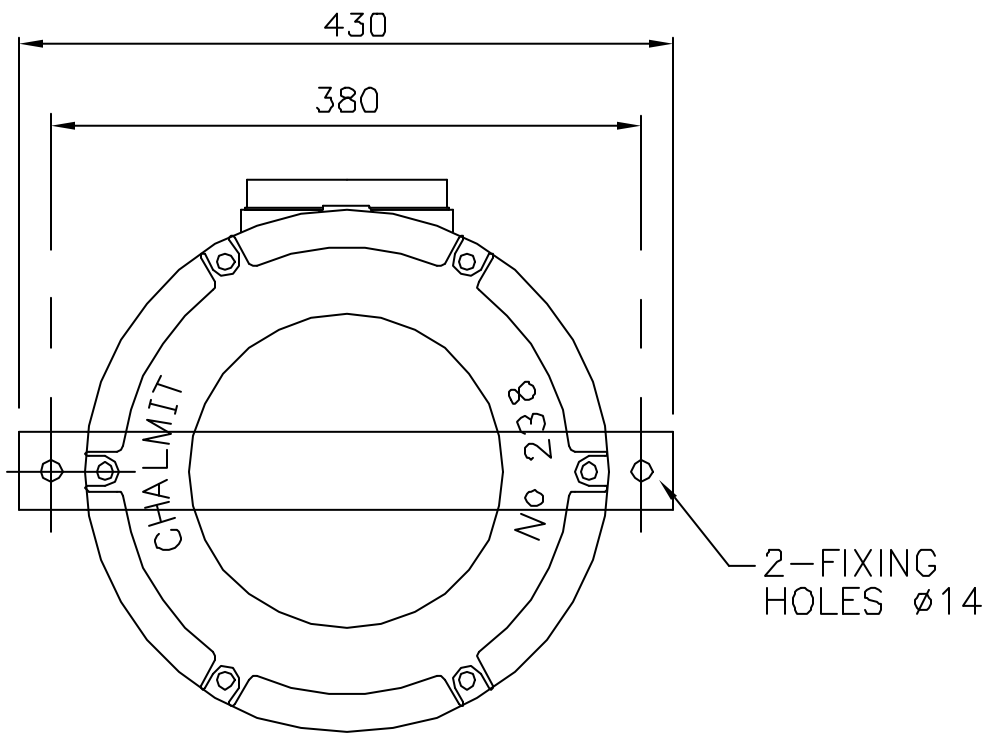
FOR VOLTAGE TAPPINGS REFER TO BALLAST
TYPICAL HPS/MBI WIRING DIAGRAM



FOR VOLTAGE TAPPINGS REFER TO BALLAST
TYPICAL MBFU WIRING DIAGRAM



TYPICAL GLS WIRING DIAGRAM



TYPE OF PROTECTION....Ex de FLAMEPROOF & INCREASED SAFETY
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA & IIB
TO BS EN 60079–14
STANDARD.....BS EN 50014/18/19
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS01ATEX2308
CODE EEx de IIC T4 Tamb(SEE TABLE)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 6mm² (3 CORE) FOR FOR LOOPING

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	13/06/2002

REF. DRGS.–

MATERIAL: ALUMINIUM LM6
TOLERANCE:
FINISH: SELF
SURFACE ROUGHNESS:
DIMS. IN MM
SCALE –

TITLE: 238 WELLGLASS GA FLUSH MOUNTING LAMP RANGE

DRAWING NUMBER/SHEET NUMBER: F1070 1 OF 1

216

Ex d WELL-GLASS

ATEX CATEGORY 2 ZONE 1 APPLICATIONS

The 216 well-glass luminaire is ideal for use where a compact, robust and efficient source of localised lighting is needed.

The range accommodates high pressure discharge lamps up to 80W Mercury Vapour and 70W HPS also incandescent up to 200W and compact fluorescent lamps up to 26W.

The 216 is made from corrosion resistant aluminium alloy and toughened boro-silicate glass using stainless steel fastenings and has an IP66/67 rating.

The luminaire features a large side mounted increased safety terminal chamber eliminating the need for flame-proof cable glands and allowing flush mounting.

Standard Specification

Type of Protection:	**Ex de (Flameproof Increased safety)**
ATEX Classification:	**Group II Category 2 G**
Area Classification:	**Zone 1 and Zone 2 areas to EN 60079-10 with installation to EN 60079-14 Gas Groups IIA and IIB**
Apparatus Standard:	**EN 50014 EN 50018 EN 50019**
Certificate:	**EC Type Examination Certificate BAS01ATEX2307**
Coding:	**Ⓔx II 2 G EEx de IIB (refer to table for T rating and ambient)**
Enclosure:	**Aluminium alloy LM6 to BS 1490. All fastenings stainless steel. Toughened glass bowl**
Reflector:	**High purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Flush mounting bracket**
Control Gear:	**Internal copper/iron with PFC correction capacitor**
Relamping:	**Access via front glass cover assembly**
Lampholder:	**E27 for GLS and HID lamps. G24q for compact fluorescent**
Lamp Type:	**High Pressure Sodium, Mercury Vapour, GLS and Compact Fluorescent**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220,230,240,254V 50Hz (H.I.D) 250V max (GLS) 240V (CF)**

Features

Highly resistant to mechanical damage and corrosion

Stainless steel fasteners

Compact and efficient

Ex e terminal chamber

Compact fluorescents have 6 times the life of tungsten lamps and consume 80% less power. They can be easily controlled by ac/dc supplies using high efficiency electronic control gear

Anchor chain on glass cover assembly

Suitable for use down to -50ºC ambient

Gost Approved

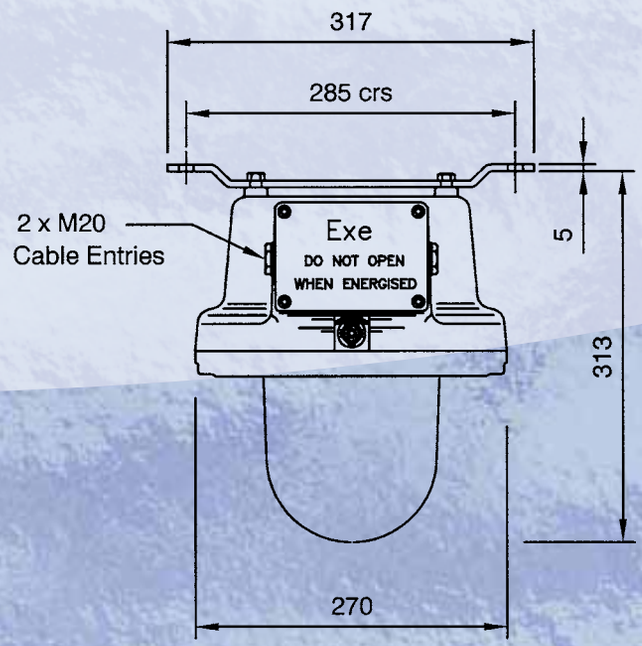
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient°C	Weight
216D/050/HS	50W	HPS	E27	T4	50	9.5kg
216D/070/HS	70W	HPS	E27	T4	40	10kg
216D/080/MV	80W	Mercury Vapour	E27	T4	40	10kg
216D/100/GL	100W	GLS	E27	T4	55	9.5kg
216D/200/GL	200W	GLS	E27	T3	55	9.5kg
216D/113/CF	1x10/13W	4-pin Compact Fluor	G24q	T6	55	9.5kg
216D/118/CF	1x18W	4-pin Compact Fluor	G24q	T5	55	9.5kg
216D/126/CF	1x26W	4-pin Compact Fluor	G24q	T5	55	9.5kg
216D/213/CF	2x10/13W	4-pin Compact Fluor	G24q	T5	40	10kg
216D/218/CF	2x18W	4-pin Compact Fluor	G24q	T5	40	10kg

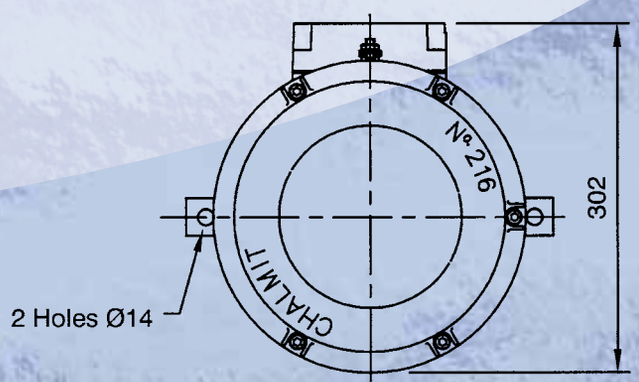
Options - Suffix to Catalogue No.

/___	Specific voltage (12,24,50,110,120, 130 compact flourescent, 210 HID)
/60	60Hz
/M25	M25 Entries
/P	PTFE coating
/2P	2 Pin compact fluorescent version c/w switch start control gear (single lamp version only)
/S	Stirrup mounting bracket
/BC	BC lampholder for GLS versions

Applications

- Zone 1 and 2 hazardous areas
- Offshore oil and gas platforms
- Harsh and low temperature environments
- Low bay lighting
- Gantry and walkway lighting
- Stairwells • Process skid manufacturing
- Sewage treatment plants
- Road tanker loading facilities
- Oil jetties





Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting bracket (stirrup mounting version only)	**S2160-0002**
Pole mounting bracket c/w stirrup (retro fit for flush mounting bracket)	**S2160-0004**
Wire guard	**S2160-0007**
External reflector	**S2160-0010**

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1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX2307**

4 Equipment or Protective System: **A TYPE 216 WELLGLASS LUMINAIRE**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(C)0558/1 dated 16 January 2002

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 **EN 50018: 2000** **EN 50019: 2000**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II 2 G **EEx de IIB T* (see schedule)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/016

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
22 January 2002

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2307**

15 **Description of Equipment or Protective System**

A Type 216 Wellglass Luminaire comprises circular body and cover manufactured from aluminium, brass or gunmetal. The cover is fitted with a wellglass sealed with silicone cement, and the body has an integral increased safety terminal compartment. A line bushing is provided between the terminal enclosure and the main enclosure.

The luminaire can be fitted with either GLS, SON, MBF and Fluorescent lamps, and the associated control gear when required.

Internal and external earth facilities are provided.

The ratings, temperature classification, and ambient temperature range when fitted with each type of lamp are indicated below.

LAMP TYPE	WATTAGE	VOLTAGE	TEMPERATURE CLASSIFICATION	AMBIENT TEMPERATURE RANGE	DELAY TIME BEFORE OPENING (MINUTES)	CABLE RATING
GLS	25 - 100	24 - 250	T4	-50°C to + 55°C	10	90°C
GLS	25 - 200	24 - 240	T3	-50°C to + 55°C	10	90°C
PAR 38	150	24 - 240	T3	-50°C to + 55°C	10	90°C
SON	50	200/210/220/230/240/250 50Hz 220/230/240/250/260 60Hz	T4	-50°C to + 50°C	4	70°C
SON	70		T4	-50°C to + 40°C	4	70°C
SON/R	70		T3	-50°C to + 40 °C	4	70°C
MBF/U	50/60		T4	-50°C to + 40 °C	4	70°C
FLUORESCENT						
PL 2 Pin	5/7/9/11	110,120 50/60 Hz (5/7/9) 220,230,240,250,260 50/60 Hz	T6	-50°C to + 55°C	Note 1	70°C
PLC 4 Pin	10/13	220/260 a.c./ d.c.	T6	-50°C to + 55°C	Note 1	70°C
PL 4 Pin	10/13	12,24,50110,120,130 a.c. /d.c.	T6	-50°C to + 55°C	Note 1	70°C
PLC 2 Pin PLC 4 Pin	10/13	220,230,240,250,260 50/60 Hz	T6	-50°C to + 55°C	Note 1	70°C
PLC 4 Pin	18/26	12,24,50110,120,130, 200,260 a.c. /d.c.	T5	-50°C to + 55°C	Note 1	70°C
PLC 2 Pin PLC 4 Pin	18/26	220,230,240,250,260 50/60 Hz	T5	-50°C to + 55°C	Note 1	70°C
2x PL 4 Pin	10/13	12,24,50,110,120,130 a.c./d.c.	T5	-50°C to + 40 °C	Note 1	70°C
2x PLC 4 Pin	10/13	220,230,240,250,260 50/60 Hz	T5	-50°C to + 40 °C	Note 1	70°C
2x PLC 4 Pin	18	220,230,240,250,260 50/60 Hz	T5	-50°C to + 40 °C	Note 1	70°C

Note 1 - These luminaires are fitted with a label indicating that the enclosures shall not be opened when an explosive gas atmosphere is present.

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13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2307**

The luminaires may also be fitted with a label indicating that the enclosures shall not be opened when an explosive gas atmosphere is present in place of the delay before opening time.

16 **Report No.**

BASEEFA Certification Report No. 01(C)0558/1 dated 16 January 2002.

17 **Special Conditions For Safe Use**

None.

18 **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0.2	Analysis of possible operating faults	Manufacturer's Instructions
1.0.3	Special checking and maintenance conditions	No special requirements
1.0.6	Instructions	Manufacturer's Instructions
1.2.2	Components for incorporation or replacement	No user serviceable parts
1.2.4	Dust deposits	Certification for gas atmospheres only
1.2.5	Additional means of protection	Not applicable
1.2.7	Protection against other hazards	BASEEFA Report No. 01(C)0558/1
1.3.5	Hazards arising from pressure compensation	Not applicable
1.5.	General requirements for safety devices	Not applicable
1.6.1	Manual override	Not applicable
1.6.2	Emergency shutdown	Not applicable
1.6.3	Hazards arising from power failure	Not applicable
1.6.5	Placing of warning devices as parts of equipment	Not applicable
2.0.	Category M	Not applicable
2.1.	Category 1	Not applicable
2.2.1	Category 2G	BASEEFA Report No. 01(C)0558/1
2.2.2	Category 2D	Not applicable
2.3.	Category 3	Not applicable
3.	Requirements for protective systems	Not applicable

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13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2307**

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D2057	1	-	30.08.01	General Assembly - Type 216 Wellglass Luminaire
D2057	2	-	30.08.01	General Assembly - Type 216 Wellglass Luminaire
D2057	3	-	30.08.01	General Assembly - Type 216 Wellglass Luminaire
*D2062	1	-	14.09.01	Glazing Data - Types 216, 238, 261, & 261E Luminaires

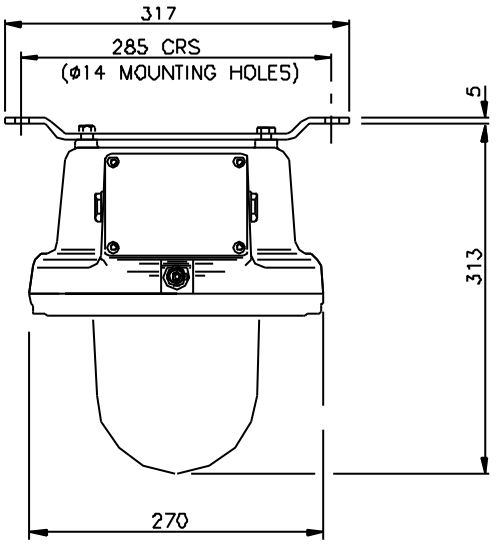
* This drawing is common to certificates BAS01ATEX2308, BAS01ATEX2309, BAS01ATEX2310, held on EECS files 0068/01/017, 0068/01/018, and 0068/01/019 respectively.

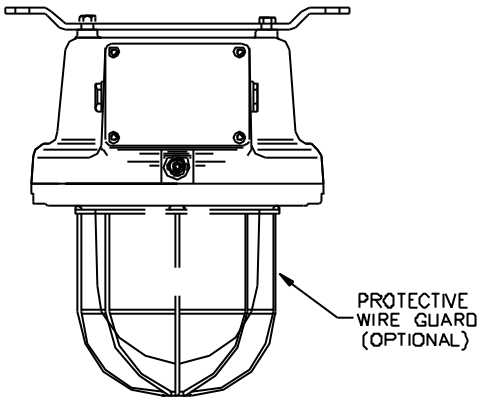
BASEEFA List Keywords
2WELLLUM

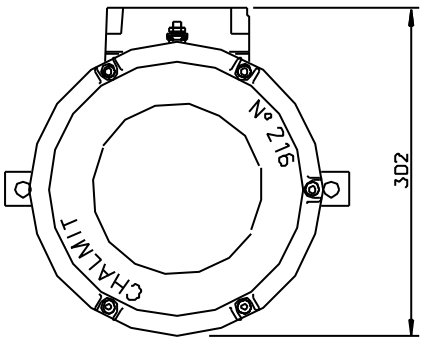
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

216 Wellglass Luminaire (ATEX).

Important :	Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.







CE

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0.0 Specification

Type Of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014: 1998, EN 50018:2000, EN 50019:2000.
ATEX Equipment Classification	Group II Category 2 G
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	EC Type Examination Certificate BAS01ATEX2307
Equipment Coding	Ex II 2 G EEx de IIB T3/T4/T5/T6
Ingress Protection	IP66 and IP67 to BS EN 60529

CE Mark

CE

The CE marking of this product applies to 94/9/EC "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992", and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively

ATEX Declaration — The Equipment is declared to meet the provisions of the directive by reason of the EC Type Examination based on the harmonised standards listed above.

1.0 Introduction - 216 Wellglass Luminaire (ATEX).

The type 216 wellglass luminaire is a general purpose wellglass suitable for a range of discharge, incandescent and fluorescent lamps. The range of surface temperature classifications and ambient temperature ratings is large and care must be taken with the selection of equipment and lamps. The range of lamps and the temperature ratings will be individually shown on the rating plate. The ratings are summarised in the section below under the heading 'Lamps'.

Note : *Lamp ranges and temperature ratings are as summarised in TABLE 0.*
The wellglass is certified for –50ºC.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN 60079-14 or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the 'Health and Safety at Work Act' must be met.
Handling and electrical work associated with this product to be in accordance with the 'Manual Handling Operations Regulations' and 'Electricity at Work Regulations, 1989'. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

6mm, 5mm and 3mm A/F socket keys.
3mm and 5mm flat blade screwdriver.
Suitable spanners for installing cable glands.

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Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care must be taken in connecting to the nominal 230V UK public supply.*** In some cases, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected to obtain the best lamp performance, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is relocated. If in doubt, tappings should be set on the high side. 20V Max. nominal drop is acceptable for incandescent and MBF, 10V Max. drop is desirable for HPS. The light output will be reduced. Where MBI/Metal Halide lamps are used the tapping must be set accurately for best performance. All the HPS use impulser type ignitors. Reference should be made to the circuit diagrams.

Where shore or construction site supplies are used, which are different to the service location supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

Where adverse system conditions occur, luminaires can be supplied without pfc. The circuit current will then be the lamp current, the circuit power does not change.

Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

3.4 Lamps

The high pressure sodium and mercury vapour lamps are of a standardised type and there is no preference between make or colour. All have E27 caps. The GLS lamp can have E27 or B22d (bayonet) caps. The luminaires with electronic ballasts for the compact fluorescent lamps use the four-pin type and the luminaire is marked accordingly. (Earlier models used the two-pin lamp in the 240V range). The luminaires with fluorescent lamps, which have the conventional wound ballast, use the two-pin lamp with integral starter. (Four-pin is a special option). Replacement ballasts for the 240V ELECTRONIC types (Arcotronic) will be of the type suitable for four-pin lamps, so installations may become mixed. The 10/13W lampholder is different to the 18W and 26W.

HPS/MBI lamps must be replaced shortly after they do not light. The indication of the end of life for HPS lamps is 'cycling' where the lamp goes out then re-ignites after a minute or so interval, most HPS models now have timed ignitors to prevent cycling.

If discharge lamps are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with possible detrimental effects on control gear. ***HPS circuits should not be energised without a lamp fitted. Lamps with internal ignitors should not be used.***

Lamp types are always changing and care must be taken to avoid using variations for which the luminaire is not certified.

The above information is current at the time of printing. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or the Chalmit Technical Department.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. Any mounting attitude may be used.

3.6 Cabling and Cable Glands

3.6.1 Cables

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The temperature conditions of the supply cable entry point are such that 70°C (ordinary PVC) cable can be used in all the luminaires except for those using GLS and PAR lamps where 90°C cable is specified. The standard maximum looping size is 2.5mm². 6mm² looping is available as an option.
For luminaires specified for non-standard ambient temperatures, refer to the Technical Department.
300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The selection of cable size will be suitable for the fuse rating. Some guidance on this is given below. The fuse ratings apply to the circuit on the supply side of the control gear. The luminaire is also rated with the temperature rise at the cable entry. This allows the user to adjust the cable spec. for an actual T amb lower than that for which the luminaire is certified.(only affects the GLS versions in the case of this luminaire).

3.6.2 Cable Glands

Apparatus certified to *EN 50014: 1998, EN 50018:2000, EN 50019:2000.*
Cable glands for entry into Ex e enclosures, when fitted with any gland to body sealing method and the supply cable must reliably maintain the IP rating of the enclosure with a minimum value of IP54. The cable gland must withstand an impact value of 7Nm or 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non-armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.
Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified.
Glands may be selected for low levels of mechanical risk and external clamping. Entry plugs can be selected as above. Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used.
Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request.

3.6.3 Cabling

Before fitting lamps or opening the terminal chamber the luminaire must be de-energised and isolated from the supply. Note should be taken of any time delay in opening to allow for cooling or the discharge of capacitors. The luminaires suitable for compact fluorescent lamps and having electronic control gear have not had their discharge times determined and for this reason the certificate states that they must not be opened when a hazardous atmosphere is present.
Access for cabling is via the terminal chamber. The lid is secured by four captive screws. Install the conductors in the appropriate terminals. Take care not to cut the conductor insulation excessively. 1mm of bare conductor outside the terminal is a maximum. With the clamp type terminals either there should be a pair of equal conductors or, where the conductors are not looped, a 'U' should be made to allow equal clamping on both sides. Unused terminal screws should be tightened. Before re-fitting the cover, the conductor should be neatly tucked away and a final check made on correct connection. Torque 5Nm.
Where taps need to be reselected, this is done by removing the lampglass cover and undoing the two screws to remove the reflector and gain access to the choke terminals.

3.7 Fitting Lamps

Make sure the correct lamp is selected as detailed above.
Access for fitting lamps is gained through the lampglass cover. This should be removed. Take care not to hang the lampglass on one bolt when removing or replacing. Before removing the lampglass on any occasion, check that the suspension chain is secure and in good condition. The lamp should be firmly screwed into place. The flameproof path should have a coat of silicone grease (Dow Corning 'Molykote' III or similar) or other protective non-setting grease suitable for high temperature. Replace all bolts and fully tighten. Torque 16Nm.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe, refer to *BS EN 60079-17*. The time between lamp changes could be very infrequent and this is too long a period without inspection.

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3.8.1 Routine Examination

The equipment must be de-energised before opening and note taken of the rated cooling/discharge period alternatively the nameplate may read 'do not open when an explosive atmosphere is present' - see previous note. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience :

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting, re-greasing or other replacement.
3 Check the cable gland for tightness and nip up if necessary.
4 Check the terminal chamber gasket for external cracking.
5 Examine the lampglass for any signs of sealant damage, cracking or discoloration. If thought necessary, the silicone weather seal can be re-sealed with a proprietary brand of clear silicone, but only if the underlying sealant is in good condition.
6 Check all cover bolts for tightness.
7 Check for signs of corrosion between the lampglass cover and the main housing. Evaluation of this will be a matter for judgement gained by experience, as there may be little evidence on the outside. If there is any sign of corrosion remove the cover, wipe the flame proof paths with a clean cloth and non-metallic scraper. Examine the surfaces for pitting; any pitted component should be replaced. A damaged or non-resilient gasket must be replaced. The cover should re-greased with silicone (Dow Corning 'Molykote III' or similar) or other non-setting grease suitable for high temperatures, and re-fitted with all bolts fully tightened. Torque 16Nm. Any replacement bolts must be identical to the original. All are 18/8 stainless steel with a minimum of ISO 262 grade A2-70. With this type of flameproof path all bolts must be in place and tight. The maximum gap for IIB apparatus is 0.15mm. It will be unusual for any luminaire to have a gap of more than 0.1mm when tried with a feeler gauge. If 0.1mm is exceeded, check that no foreign body or debris at the bottom of the blind tapped holes is keeping the surfaces apart and, if not, a workshop overhaul should be carried out to bring the apparatus to as new condition. Periodically when the lampglass is removed, the opportunity should be taken to remove the reflector, check the lampholder connections for signs of over-heating and similarly check the control gear.
8 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced. (It may well be practical to also replace the gasket on each occasion if this is at a 2/3 year interval). Torque 5Nm.
9 If painting operations have taken place around the luminaire, ensure that coatings have not entered the flameproof path or been deposited on the lampglass. If they have, dismantle and clean carefully.
10 Check that mountings are secure. Clean the lampglass.
11 Cover the bolt heads with silicone grease to prevent corrosion and accumulation of dirt in screw threads.
12 If it has been suspected that the luminaire has suffered mechanical damage, a stringent workshop check should be made. Where spares are needed, these must be replaced with manufacturers parts. No modifications should be made without the knowledge and approval of the manufacturer.

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.

With Mercury and T-H lamps the faults are simple, loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs of overheating.

Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS lamps the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an 'attempt to start' effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure.

Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

4.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor will probably be the determining factor 0.076A per µF at 240V, 50Hz (adjust for other volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. Use MCB's suitable for high inrush to reduce cable sizes. All calculations must satisfy wiring regulations. For GLS use an inrush of 6 x rated current.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

5.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

5.1 Lamps

Incandescent lamps, fluorescent lamps and discharge lamps in modest quantities are not "special waste". They should be broken up in a container to avoid injury, avoid inhaling dust.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

0.0

Table 0

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Lamp Single Lamp Versions	Wattage	Rated Supply	T Class	T amb ºC	Rated Cable ºC	Cable Temp Rise above Ambient. ºC
SON	50	210-250V 50Hz	T4	50	70	
SON	70	220-270V 60Hz	T4	40	70	
SON/R	70		T3	40	70	
MBFU	80		T4	40	70	
Tungsten	60-100	24, 110, 240V ac/dc	T4	55	90	35
Tungsten	150-200	110, 240V ac/dc	T3	55	90	35
Compact Fluorescent 2 Pin/4 Pin	10 & 13	12-260V ac/dc Electronic Ballast	T6	55	70	
Compact Fluorescent 4 Pin	10 & 13	220-260V, 50Hz and 60Hz	T6	55	70	
Compact Fluorescent 4 Pin	18 & 26	12-260V ac/dc Electronic Ballast	T5	55	70	
Compact Fluorescent 2 Pin/4 Pin	18 & 26	220-260V, 50Hz and 60Hz	T5	55	70	
Twin Lamp Versions						
Compact Fluorescent 4 Pin	10-13	12-130V ac/dc Electronic Ballast	T5	40	70	
Compact Fluorescent 4 Pin	10-13	220-260V, 50Hz and 60Hz	T5	40	70	
Compact Fluorescent 4 Pin	18	220-260V, 50Hz and 60Hz	T5	40	70	

Table 1 Starting and Running Currents Refer to Section : 4.0

Lamp	Start A	Run A	Capacitance µF
50W HPS	0.35	0.28	10
70W HPS	0.55	0.40	10
80W MBF	0.5	0.43	8

Table 2 Fuse Ratings Refer to Section : 4.0

Lamp	Number of Lamps					
	1	2	3	4	5	6
50W SON	4A	4A	4A	6A	6A	10A
70W SON	4A	4A	4A	6A	6A	10A
80W MBF	4A	4A	4A	4A	6A	6A

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
		0700 CHALMIT
Fax	:	+44 (0)141 883 3704
EMail	:	email@chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

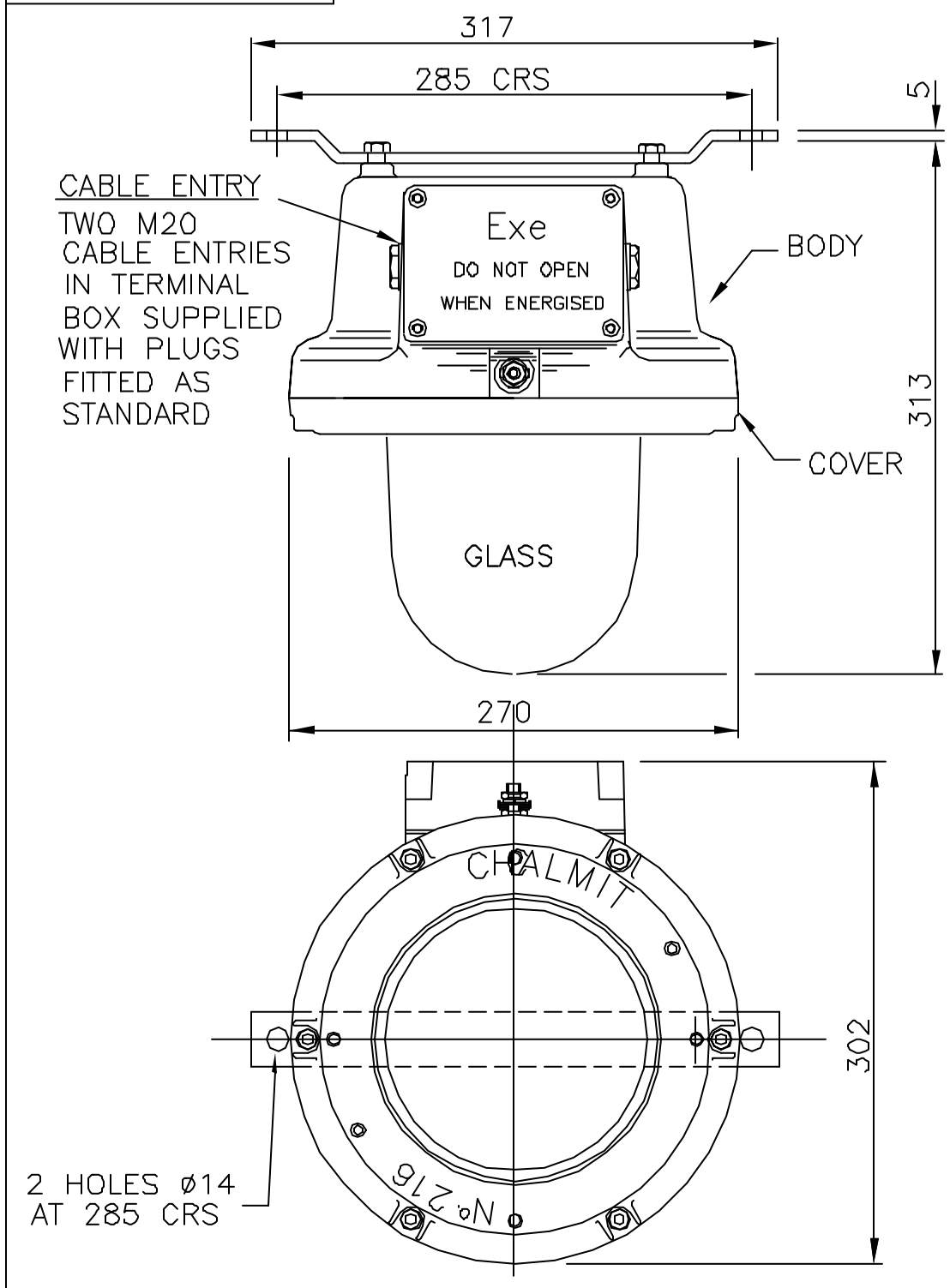
1	2	3	4	5	6	7	8

DRAWING NUMBER/SHEET NUMBER
F1072

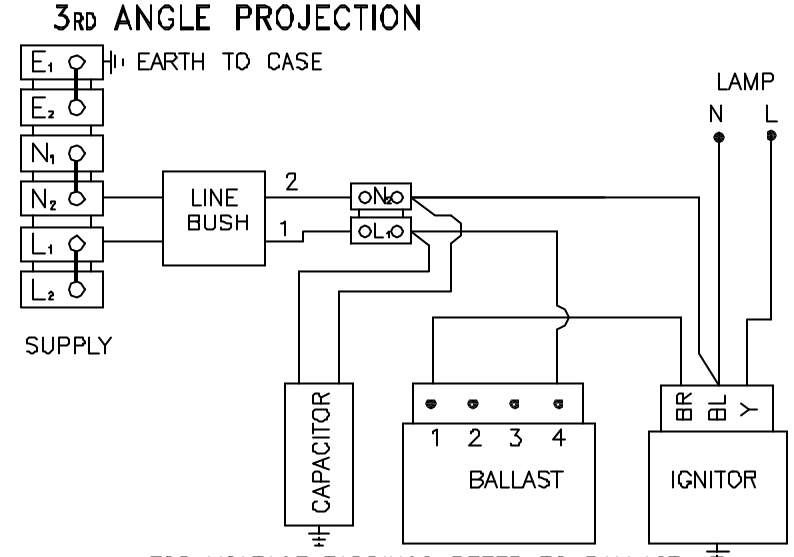
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

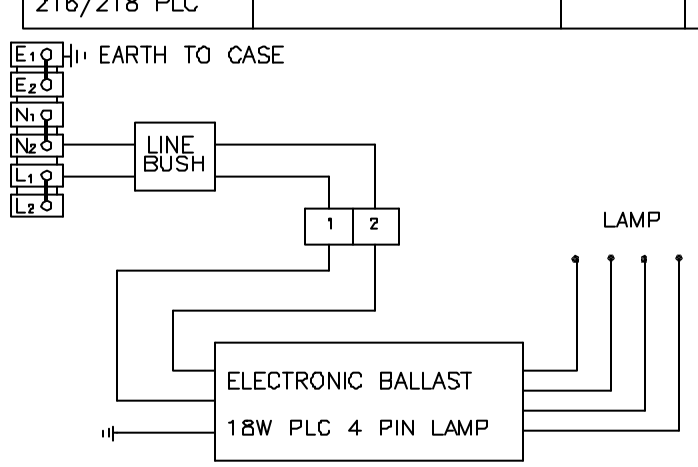
3RD ANGLE PROJECTION



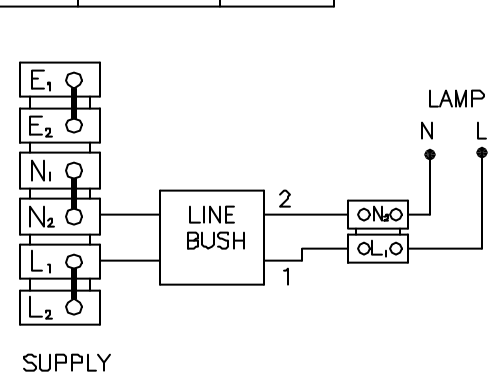
LUMINAIRE	RATED SUPPLY	T CLASS	T amb	LAMPHOLDER	WEIGHT
216/50 SON	220/230/240/254V 50Hz OR 220/230/240/254V 60Hz	T4	50°C	E27	9.5Kgs
216/70 SON			40°C		10Kgs
216/80 MBFU	220/230/240V 50Hz OR 220/230/240V 60Hz				
216/100 GLS	250V MAX ac/dc		55°C		9.5Kgs
216/200 GLS		T3			
216/113 PLC	12/24/50/110V ac/dc OR 220/230/240V 50Hz OR 220/230/240V 60Hz	T6		G24q 4 PIN	
216/118 PLC		T5			
216/126 PLC					
216/213 PLC			40°C		10Kgs
216/218 PLC					



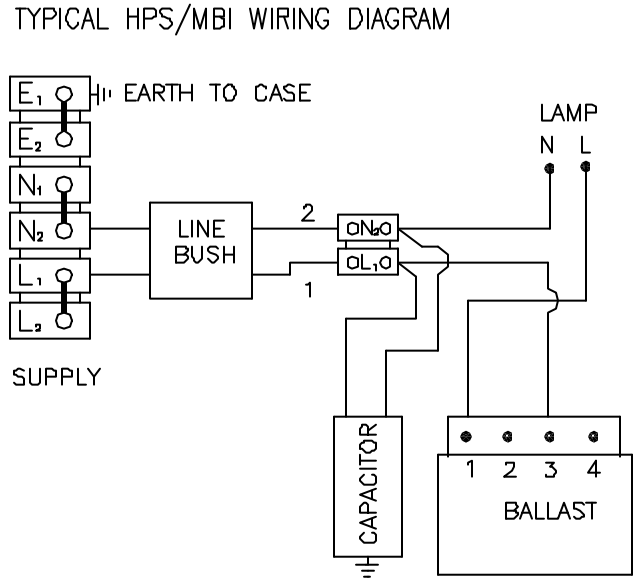
FOR VOLTAGE TAPPINGS REFER TO BALLAST
TYPICAL HPS/MBI WIRING DIAGRAM



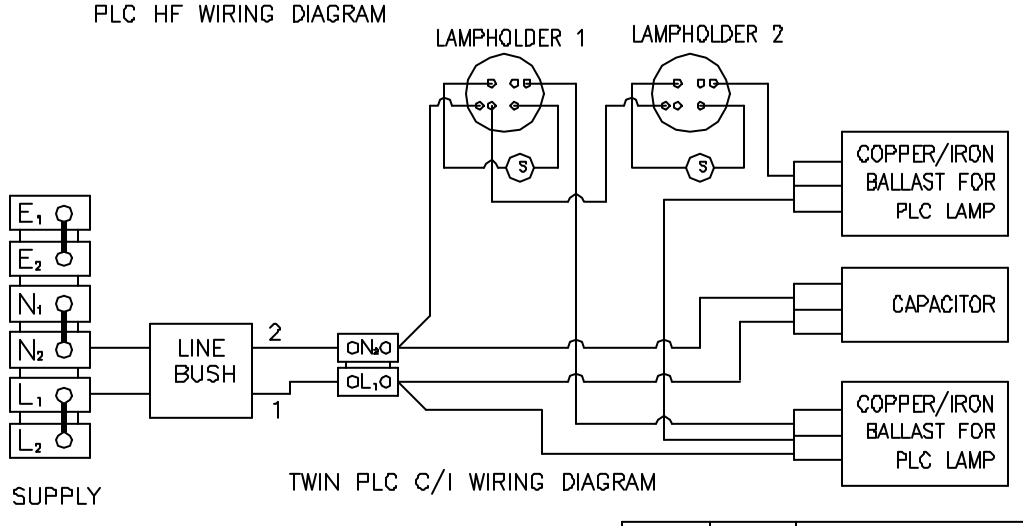
PLC HF WIRING DIAGRAM



TYPICAL GLS WIRING DIAGRAM



FOR VOLTAGE TAPPINGS REFER TO BALLAST
TYPICAL MBFU WIRING DIAGRAM



TWIN PLC C/I WIRING DIAGRAM

TYPE OF PROTECTION....Ex de FLAMEPROOF & INCREASED SAFETY
AREA CLASSIFICATION.....ZONE 1 & 2, GAS GROUPS IIA & IIB
TO BS EN 60079-14
STANDARD.....BS EN 50014/18/19
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS01ATEX2307
CODE EEx de IIC T4 Tamb(SEE TABLE)
INGRESS PROTECTION....IP66/67 TO BS EN60529 (IEC 529)
INCOMING CABLE UP TO 6mm^2 (3 CORE) FOR FOR LOOPING

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	13/06/2002

REF. DRGS.-

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL	TOLERANCE
ALUMINIUM LM6	
FINISH	SURFACE ROUGHNESS
SELF	
DIMS. IN MM	SCALE -

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
216 WELLGLASS GA
FLUSH MOUNTING
LAMP RANGE

DRAWING NUMBER/SHEET NUMBER
F1072 1 OF 1

261E and 723
EMERGENCY PROJECTOR

Ex d and Ex e PROTECTION
ZONE 1 APPLICATIONS

The 261 projector with 723 battery box is a system for use during emergency escape conditions.

The electronic lamp and battery controls are contained in the 261 and the Ni-Cd batteries are contained in the 723 stainless steel enclosure with terminal chamber. They are connected by a multi-core cable. The 70W SON/T lamp allows the power available in emergency operation to be directed to where it is needed rather than providing all around illumination. An application is life-boat launching areas. The unit is supplied from the mains and uses an internal 24v dc system. A manual Ex d switch is provided as standard to initiate operation. Remote or automatic control is an option.

Illumination is only provided in emergency operation.

The nominal duration is 90 mins. Recharge time is 24 Hours.

Standard Specification

Type of Protection:	**Luminaire: Ex de (Flameproof Increased Safety)** **Battery Box: Ex em (Increased Safety Encapsulation)**
Area Classification:	**Zone 1 and Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50014 EN 50018 EN 50019 and EN 50028**
Certificate:	**EC Type Examination Certificate BAS01ATEX2310** **Battery Box: Baseefa03ATEX0003**
Coding:	**261E: EEx de IIB T4 Tamb 40** **723: EEx em II T4 Tamb 40**
Enclosure:	**Luminaire: Aluminium alloy LM6 to BS 1490.** **All fastenings stainless steel. Toughened glass window** **Battery Box: Stainless steel 316S31 with silicone rubber gasket**
Reflector:	**Narrow beam high purity anodised aluminium**
Entry:	**2 x M20 cable entries for mains supply and** **1 x M25 cable entry for interconnection**
Termination:	**3 core 6mm² max. conductor with looping for mains supply and 12 core 1.5mm² luminaire to battery box**
Installation:	**Luminaire: Stirrup mounting bracket** **Battery Box: Flat straps**
Control Gear:	**Electronic**
Relamping:	**Access via front glass cover assembly**
Lampholder:	**E27 or Rx7s**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 250V 50Hz and 60Hz**
Emergency Light Duration:	**90 minutes**

Features

Ex e terminal chamber

Stainless steel fasteners, marine grade

Anchor chain on glass cover assembly

Increased safety battery

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Std. Cat No.	Wattage	Lamp	Lampholder	Weight	
				Flood	Battery Box
261E/070/HS/EM	70W	HPS	E27	28.0kg	22.0kg
261E/070/MS/EM	70W	HPS or Metal Halide Double Ended	Rx7s	28.0kg	22.0kg

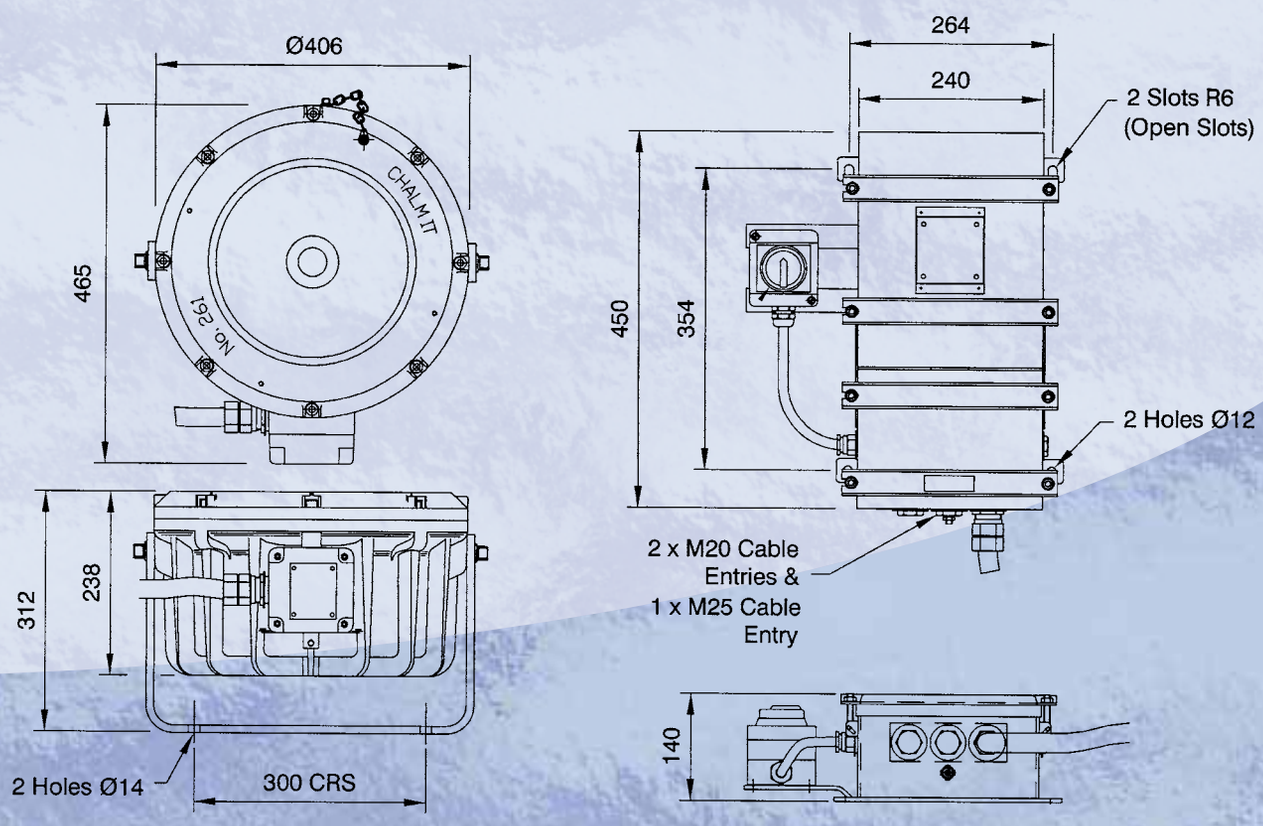
Standard catalogue number incorporates both floodlight and box.

Options - Suffix to Catalogue No.

/M25	M25 Entries (on 723 box)
/P	PTFE coating
/NS	Battery box without manual switching arrangement (automatic operation)
/W	Wide beam

Applications

- Muster stations
- Boat landing areas
- Lifeboat stations
- Overside lighting



Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting bracket	**S2610-0001**
Wire guard	**S2610-0005**
Slave unit for operation on UPS 24dc 110/254ac	**Details on request**

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1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX2310**

4 Equipment or Protective System: **A TYPE 261E EMERGENCY LUMINAIRE**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(C)0558/4 dated 16 January 2002

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 **EN 50018: 2000** **EN 50019: 2000**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II 2 G **EEx de IIB T4**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/01/019

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
22 January 2002

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2310**

15 **Description of Equipment or Protective System**

A Type 261E Emergency Luminaire comprises circular body and cover manufactured from aluminium, brass or gunmetal. The cover is fitted with a wellglass sealed with silicone cement, and the body has an integral increased safety terminal compartment. Line bushings are provided between the terminal enclosure and the main enclosure.

The luminaire can be fitted with 70W SON, or MBI lamps and the associated control gear, also houses control and charging units to charge batteries located elsewhere, and is rated up to 220V-260V a.c 50/60 Hz. Alternatively the luminaire can be supplied without the charging circuit and alternative control unit to produce a slave unit rated 24V d.c.

Internal and external earth facilities are provided.

16 **Report No.**

BASEEFA Certification Report No. 01(C)0558/4 dated 16 January 2002.

17 **Special Conditions For Safe Use**

None.

18 **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0.2	Analysis of possible operating faults	Manufacturer's Instructions
1.0.3	Special checking and maintenance conditions	No special requirements
1.0.6	Instructions	Manufacturer's Instructions
1.2.2	Components for incorporation or replacement	No user serviceable parts
1.2.4	Dust deposits	Certification for gas atmospheres only
1.2.5	Additional means of protection	Not applicable
1.2.7	Protection against other hazards	BASEEFA Report No. 01(C)0558/4
1.3.5	Hazards arising from pressure compensation	Not applicable
1.5.	General requirements for safety devices	Not applicable
1.6.1	Manual override	Not applicable
1.6.2	Emergency shutdown	Not applicable
1.6.3	Hazards arising from power failure	Not applicable
1.6.5	Placing of warning devices as parts of equipment	Not applicable
2.0.	Category M	Not applicable
2.1.	Category 1	Not applicable
2.2.1	Category 2G	BASEEFA Report No. 01(C)0558/4

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13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2310**

Essential Health and Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
2.2.2	Category 2D	Not applicable
2.3.	Category 3	Not applicable
3.	Requirements for protective systems	Not applicable

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D2060	1	-	30.08.01	General Assembly - Type 261E Emergency Luminaire
D2060	2	-	30.08.01	General Assembly - Type 261E Emergency Luminaire
D2060	3	-	30.08.01	General Assembly - Type 261E Emergency Luminaire
*D2062	1	-	14.09.01	Glazing Data - Types 216, 238, 261, & 261E Luminaires

* This drawing is common to certificates BAS01ATEX2307, BAS01ATEX2308, BAS01ATEX2309, held on EECS files 0068/01/016, 0068/01/017, and 0068/01/018 respectively, and is held on EECS file 0068/01/016.

BASEEFA List Keywords
2EMERLUM

NATIONAL ACCREDITATION OF CERTIFICATION BODIES
Registration Number 011

1 # CERTIFICATE OF CONFORMITY

2 SCS No Ex 93C3113

3 This Certificate is issued for the electrical apparatus:

723 SERIES BATTERY AND TERMINAL BOX

4 Manufactured by:

Chalmers & Mitchell Ltd
388 Hillington Road
Glasgow
G52 4BL

5 and submitted for certification by:

The Manufacturer

6 This electrical apparatus and any acceptable variation thereto is specified in the Schedule to this Certificate and the documents therein referred to.

7 Sira Certification Service being an approved Certification Body in accordance with Article 14 of the Council Directive of the European Communities of 18 December 1975 (76/117/EEC) certifies that the apparatus has been found to comply with harmonised European Standards

EN 50 014 (1977) + Amendments 1 to 5
EN 50 019 (1977) + Amendments 1 to 3
EN 50 028 (1987)

and has successfully met the examination and test requirements as recorded in confidential Test Report ERA Ref 4283/003, dated May 1994.

8 The apparatus marking shall include the code:

EEx em II T4

R0050a/REP2

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Certificate SCS No Ex 93C3113

9 The supplier of the electrical apparatus referred to in this Certificate has the responsibility to ensure that the apparatus conforms to the specification laid down in the schedule to this Certificate and has satisfied routine verifications and tests referred to therein.

10 This apparatus may be marked with the Distinctive Community Mark specified in Annex II to the Commission Directive of 16 January 1984 (Doc 84/47/EEC).

Date: 13 May 1994 **File No: P/0517/01**

I D KNOTT BSc CEng
MIMechE MInstMC
CHIEF EXECUTIVE

Sira Certification Service
Saighton Lane
Saighton
Chester
CH3 6EG
Great Britain

The use of this apparatus will normally be the subject of National Legislation and/or Installation Codes.

This Certificate and its Schedules should always be reproduced in its totality.

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CERTIFICATE OF CONFORMITY

NUMBER : Ex 93C3113

DATED : 13 May 1994

SCHEDULE

APPARATUS

A 723 SERIES BATTERY AND TERMINAL BOX comprising a stainless steel battery box and terminal box assembly. The battery box is fitted with four, five cell battery packs, four encapsulated 5A fuses, a Klippon type BK4 - 4 way terminal block Component Certificate BAS No 813094U and Klippon types MK3 - 6 way and MKL3 - 6 way terminal blocks.

The terminal box is fitted with two Klippon type BK3 - 3 way terminal blocks, two BK6-6 way terminal blocks Component Certificate BAS No Ex 813094U and MK6 - 6 way terminal block Component BAS No 813095U.

The battery box and terminal box are connected by a Bartec line bushing Component Certificate PTB No Ex 87.B.1086U.

Both internal and external earthing facilities are provided.

The apparatus is for use at 220 to 254V ac 50/60Hz and 24V dc. The maximum battery charging current is 420 mA and the maximum discharge current is 5A. The 723 Series Battery and Terminal Box must only be supplied via the battery charging circuit detailed on the drawings. The ac supply circuit must be fitted with a protective device that provides protection against a prospective fault current of 4000A.

The battery box and terminal enclosures provide a Degree of Protection IP66 and IP67.

Provision is made for the fitting of suitable cable entry devices or blanking plugs which must provide a minimum degree of protection of IP54 and withstand impacts of 7J energy and shall adequately clamp the cable without damage.

The battery charger and monitoring printed circuit boards do not form part of the certified apparatus and are housed within an additional enclosure in a non hazardous area. The drawings detailing the charger and monitoring printed circuit boards are included in the drawings list for completeness.

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CERTIFICATE OF CONFORMITY

NUMBER : Ex 93C3113

DATED : 13 May 1994

NUMBER	ISSUE	DATE	DESCRIPTION
D1510 sheet 1	-	02 Sept 92	EExe Battery Box/Teminal Box Enclosure (723 Series)
D1510 sheet 2	-	26 Jan 93	EExe Battery Box/Teminal Box Enclosure (723 Series)
D1510 sheet 3	-	12 Mar 93	Emergency Schematics (723 Series)
B725 sheets 1&2	-	24 Nov 93	Battery Monitor PCB
B725 sheet 3	-	11 Apr 94	Battery Monitor PCB
B724 sheets 1&2	-	24 Nov 93	Pulsed Charger PCB
B724 sheet 3	-	11 Apr 94	Pulsed Charger PCB

CONDITION OF CERTIFICATION

1 The use of the Sira Certification Service Mark is subject to the regulations applicable to the holders of SCS certificates.

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CERTIFICATE OF CONFORMITY VARIATION

CERTIFICATE NUMBER	SCS Ex 93C3113	Dated	13 May 1994
VARIATION NUMBER	1 (ONE)	Dated	19 November 1999

VARIATION TO APPARATUS

To permit:

1 A change of the Manufacturer's and Certification Holder's name on the certificate:

From:	To:
Chalmers & Mitchell Ltd	Chalmit Lighting

2 The manufacturer to substitute, on the approved label affixed to the apparatus, the name Chalmit Lighting for Chalmers & Mitchell Ltd.

DESCRIPTIVE DOCUMENTS

None

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No 51V5929

Report No.NA

M D Shearman
Certification Manager

This Variation and its schedules may only be reproduced in its entirety and without change

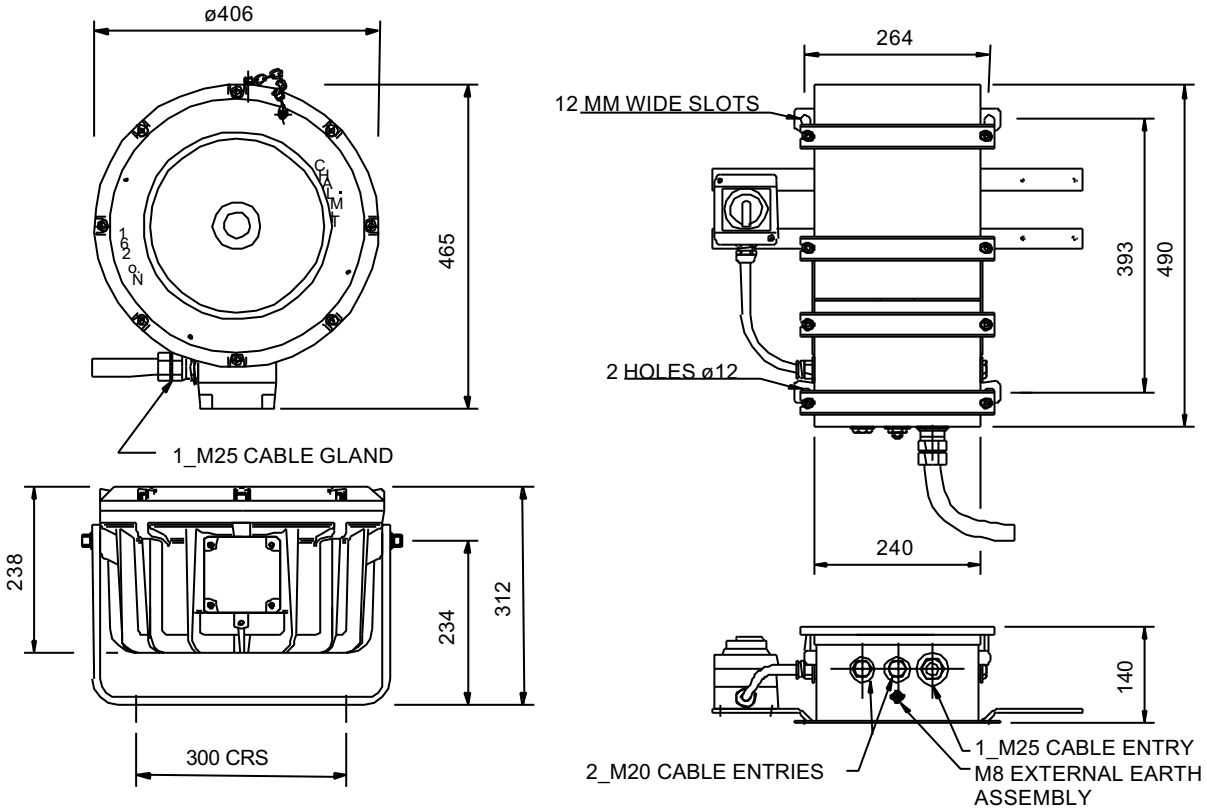
Sira Certification Service
South Hill, Chislehurst, Kent, BR7 5EH, England
Tel: +44 (0)181 467 2636 Fax: +44 (0)181 295 1990
Email: certification@siratc.co.uk

Issue | 00

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

261e Projector (ATEX) & 723 Battery Box

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



CE

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0.0 Specification

Type of Protection	Ex de (flameproof and increased safety).
Protection Standards	En 50014: 1998, EN 50018: 2000, EN 50019: 2000
ATEX Equipment Classification	Group II Category 2 G
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	EC Type Examination Certificate BAS01ATEX2310
Equipment Coding	Ⓔx II 2 G EEx de IIB T4
Type Of Protection	Ex em (increased safety and encapsulation)
Protection Standards	EN 50014: 1977, EN 50019: 1977, EN 50028: 1987.
Area Classification	Zone 1 and Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	SCS Ex 93C3113
Equipment Coding	EEx em II T4
Ingress Protection	IP66 and IP67 to BS EN 60529
Operating Temperature Range	-10ºC to +40ºC
CE Mark	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

CE

1.0 Introduction - 261e Projector (ATEX) & 723 Battery Box

The type 261E projector and 723 battery box are designed to be used in combination to provide projected emergency illumination for 90 minutes in situations where an area needs to be lit for escape purposes. This is a specialised system which incorporates a luminaire with a 24V dc control unit for a 70W SON/T lamp and a separate battery box with manual control switch. The electronic circuits for charging the battery are mounted in the luminaire. The supply current is brought into the terminal box which is mounted in unit with the battery container.
A control switch is coupled to the terminal box and the whole connected together electrically by a multi-core cable.
The battery is a 7Ah Ni-Cd with 20 cells. The battery is split into four sections which are individually monitored for voltage, in order to control over voltage and low voltage cut-off in a safe manner.
Two versions of the reflector and lamp arrangement are provided. The circular reflector provides a narrow beam. The conventional floodlight type provides a wider beam. For details contact our lighting design section.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

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3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN 60079-14 or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the *"Health and Safety at Work Act"* must be met.
Handling and electrical work associated with this product to be in accordance with *the "Manual Handling Operations Regulations"* and "*Electricity at Work Regulations, 1989*". Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

8, 6 and 5mm A/F socket keys.
3mm and 5mm flat blade screwdriver. 19mm A/F spanners.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.2.1 Operation

When the mains is on, the battery is charged and the dc supply is inhibited by an internal relay. The lamp is initiated by switching the manual switch to on. If the mains has not been interrupted (failed) the light will not go on until they are. *(Various other control systems are possible but these require detailed discussion with Chalmit).*
The light will go on when the manual switch is operated in the on position and the mains is switched off. It will take 4 minutes to reach full brightness. If the lamp does not strike up, the control unit will cut out in 4 seconds. The manual switch will then need to be opened and re-set before a further attempt to strike can occur. The lamp is expected to strike first time if everything is in order.
If the switch is inadvertently switched off when the lamp is warm, or the mains is reinstated, the lamp will switch off. The lamp will then need to cool down for 30/60 seconds before it can be re-energised without the automatic cut-out working.
The battery will run flat after a few days connected without the mains being energised. This is because the individual section monitoring circuits and relays draw current. The units will be supplied initially with the battery disconnected inside the battery box.

3.3 Electrical Supplies

The charging system will accept rated voltages of 220 to 254V, 50 or 60Hz.
A maximum nominal variation from this is +/-6%. The safety limit for T rating is +10%.

3.4 Lamps

European type 70W SON/T lamps are used.

3.5 Mounting

Luminaires and control boxes should be mounted where it is possible to gain access for maintenance and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles.
The top mounting or trunnion mounting arrangements should be secured with lock washers or self-locking nuts and bolts.

3.6 Cabling and Cable Glands

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3.6.1 Cable Glands

723 Battery Box certified to *EN 50014: 1977. (BS5501:1977).*
261e Projector certified to *EN 50014: 1998*
Cable glands for entry into Ex e enclosures when fitted with any gland to body sealing method and the supply cable must reliably maintain the IP rating of the enclosure with a minimum value of IP54. The cable gland must withstand an impact value of 7Nm or alternatively 4Nm where the risk of mechanical damage is low.
Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable ***is not reliably clamped*** externally to the apparatus the cable gland ***must*** clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.
Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified. Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used.
Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request.

Note: *Other apparatus certified to EN 50014:1993, in practice the requirements of this later standard mean that for practical reasons certified entry devices must be used. Glands may be selected for low levels of mechanical risk and external clamping. Entry plugs can be selected as above.*

3.6.2 Cable

The temperature ratings of the entries are suitable for ordinary PVC cable (70ºC). Users may wish to use fire resistant cables. A 12 core 1.5mm² cable to IEC 331 is available from Chalmit.
The cable length connecting the battery box to the luminaire should be as short as practical to reduce voltage drop, as any voltage drop will slightly reduce the duration of the illumination. The monitoring system does not see the voltage drop, so the power loss in the cable is all that is lost (1.6W for 5 metres of 1.5mm²).

3.6.3 Cable Connection

The accurate connection of the supply and battery monitoring circuits is essential. The connections must be must be carefully checked against the wiring diagrams which are on the equipment and in these instructions, before either the battery is connected or the main energised.
The supply cable can be tested by an electronic 500V 'Megger' (TM) but the dc connections cannot be. If the complete system is tested at the mains input the battery must be connected in. The best approach is to test the supply to the box with all the connections to the multi-core disconnected.
The luminaire is best fitted with its interconnecting cable in the workshop or factory as the space in the terminal chamber is limited and the connections need to be done carefully. The terminal box on the battery unit has plenty of room and can be connected in situ.
The cable connections are made by removing the terminal chamber cover. The retaining screws are captive and should be re-greased as required. The conductors should be bared back so that they make full contact in the terminals but the bare conductor should not be more than 1mm beyond the terminal throat. Unused terminal screws should be tightened. The cores must be connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made.
Cover bolt torque 6Nm. On the battery box the lid(s) are removed and the cable connections made as required. The lids are re-fitted and tightened to a torque of 2Nm (20lbf in) which will compress the gasket against the stops. The battery should be left disconnected until commissioning.

3.7 Fitting Lamps

Make sure the correct lamp is selected as detailed above.
Access for fitting lamps is gained through the lamp glass cover. This should be removed. Take care not to hang the lamp glass on one bolt when removing or replacing. Before removing the lamp glass on any occasion, check that the suspension chain is secure and in good condition. The lamp should be firmly screwed into place. The

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flameproof path should have a generous coat of silicone (*Dow Corning Molykote III* or similar), or other protective non-setting grease. Replace all bolts and fully tighten. Torque 16Nm.

4.0 Commissioning

Following the wiring up and checking of the equipment, the operation is checked when the mains supply becomes available. If the area is hazardous ensure that the situation is gas free.

Switch off the mains supply and put the manual switch to off. Undo the battery cover (not the terminal box). Slide the battery connection terminal block onto the projecting mating pins and tighten up the screws fully. Close up the battery box and tighten as above.

As the battery had been disconnected it will be expected to have built up some residual charge.

With the manual switch off, energise the mains for an hour or more. Switch off the mains and put the manual switch to on. Run lamp till it goes out. Switch off the manual switch and re-energise the mains supply for 24 hours. Switch off the mains and switch on manual switch, the lamp will go on. If the mains is available for a long time, discharge the lamp till it goes out and then re-energise the mains supply for 24 hours or more. If the mains is not available, just run the lamp for 10 minutes and turn off and disconnect the battery terminal block in the battery box. If the battery terminal block has been disconnected due to the mains not being available, a note should be taken so that it can be re-connected.

5.0 Re-lamping

The lamp will normally last the life of the installation. If it is necessary to replace the lamp, the area should be gas free, (this is because there are un-assessed electronic components in the unit and these could retain stored energy). Ensure that the manual switch is off and isolate the mains. Release the front cover, before letting the cover hang check that the securing chain is sound. Remove the old lamp and screw the new lamp fully home. Replace the cover and grease with suitable grease, see above. Check operation.

6.0 Fault Finding

If the unit does not operate correctly, fault finding is a process of elimination.

If the unit has been previously working satisfactorily then the connections can be assumed to be correct. If the unit has not run properly a prerequisite is the thorough checking of connections. If any have been made incorrectly, this should be recorded before re-connecting properly. This is to assess whether any damage has been done by the incorrect connections.

All investigation work should be done by a competent electrician in gas free conditions.

1 Check the mains is available at the terminal box of the battery unit, if it is then the starting point of the investigation is the battery itself. Isolate the mains.

2 Open the battery box. The battery is replaceable as a unit and the assembly contains Ex 'm' fuses made by Chalmit. Disconnect the battery terminals by disconnecting the removable 6 way terminal block from the fixed terminal block. The 5 connections are in order 0V + 6V + 12V + 18V +24V nominal when battery is fully charged. After disconnection, there should be a cumulative voltage difference between each terminal. If the battery is flat it will only be a volt or two, but will be cumulative. If this is not the case check the fuses. Remember that Ni-Cd batteries can give a high short circuit current, so ensure that any testing meter is not on the current connection when measuring voltage. If the voltages at the battery terminals themselves do not correspond with those between the fuses and the battery cable, then a fuse has gone. Replace the fuse(s), re-energise the system then re-check for operation. There is no reason why the battery fuses should blow in service. If the unit does not operate properly and a fuse has gone, this is a clear indication of either an inadvertent short circuit or a fault in the electronics.

3 To check the electronics, fit a battery package which is charged up, or substitute for another unit. [If the batteries are to be charged up away from the unit, then a charger suitable for Ni-Cd batteries is required. The normal charging current is 350mA. A 24 hour charge at 700mA is acceptable. Anyone carrying out this work should either be fully familiar with the operation of batteries or briefed by Chalmit.
If the lamp operates correctly with a new battery but does not re-charge, the charger module needs to be replaced with a new or proven unit.

4 If the lamp does not light with a fully charged battery, check firstly that the lamp control unit is receiving dc volts from the charger module by disconnecting the bullet connection and by using a test meter, the positive lead connected to the bullet connection from the charger unit and the negative connection number 7 (black wire from lamp control unit). When the switch is turned on with mains voltage off you should get a dc voltage reading on test meter. If there is no voltage reading then replace charger unit. If there is a voltage reading, reconnect bullet connection and try again with a replacement lamp. Iif there is no sign of the lamp striking up, replace the lamp control unit with a new or proven unit.
The control unit for the lamp can be checked in the workshop using a suitable 24V dc supply. This will have to either be a suitably rated battery or a 10A bench supply, a lower power bench supply may not have enough inrush capacity to operate the unit.

Note : *Care will be needed as the striking voltage at the lamp is 2.5kV.*

7.0 Inspection and Maintenance

Individual organisations will have their own procedures for inspection and maintenance. What follows are guidelines based on BS EN 60079-17 and on our experience. Maintenance work and fault finding must be performed by competent personnel under an appropriate permit to work and with the apparatus isolated. Frequency of maintenance will depend on experience and the operating conditions.

Luminaire should not be opened when an explosive atmosphere is present.

1 Check that the emergency light goes on when the manual switch is operated and the mains are isolated.
2 Check that the lamp goes out when the manual switch is on and the mains is re-energised. Refer to the procedure above.
3 Check the luminaire terminal chamber bolts for tightness. Torque 6Nm.
4 Check the cable glands for tightness and nip if necessary.
5 Check any external earthing.
6 Examine the lamp glass for any signs of damage. The luminaire lamp glass is sealed with silicone RTV. There is a moulded silicone seal between the lamp glass and the outer cover. This material is extremely durable in normal operating conditions. If there has been significant contamination by hydrocarbons look out for softening and yellowing of the silicone seal. If this is significant compared to a new unit, the lamp glass should be replaced and returned to Chalmit for refurbishment. Check luminaire cover bolts for tightness. Torque 16Nm.
7 Check for signs of corrosion between the lamp glass cover and main housing. Evaluation of this will be a matter of judgement and experience, as there may be little evidence on the outside. If there are serious signs of corrosion remove the cover, wipe the flameproof path with a clean cloth and non metallic scrapper. Examine the surface for pitting, any pitted component must be replaced. A damaged or non resilient cover gasket must be replaced. The cord diameter is 3mm.
The cover should be re-greased with silicone (*Dow Corning Molykote III* or a non-setting grease) and all bolts fully tightened. Any replacement bolts must be identical with the original.
All are 18/8 stainless steel with a minimum of ISO262 Grade A 2-70.
With this type of flameproof enclosure all the bolts must be in place and tightened. The maximum gap for IIB in this case is 0.15mm. It would be usual for any of our luminaires to have a gap exceeding 0.1mm when tried with a feeler gauge. If 0.1mm is exceeded check that no foreign bodies or debris at the bottom of blank tapped holes are keeping the surfaces apart and if not, a workshop overhaul should be carried out to bring the unit into new condition. Because of the operation of this type of equipment, the lamp will not require changing. Even if there are no signs of external corrosion the front cover should be removed at a minimum of every 3 years and the internal connections checked for tightness and any signs of overheating.
8 The terminal chamber should be opened periodically and checked for moisture ingress. The cable connections should be checked for tightness. The gasket should be checked for lack of elasticity and if necessary replaced (it may well be practical to replace the gasket on each occasion if this is 2-3 year interval). Torque 6Nm.
9 If painting operations have taken place near the luminaire ensure that coatings have not entered into the flameproof path or been deposited on the lamp-glass. If they have been, dismantle and clean carefully.

10 Check the mountings are secure.
11 Cover the bolt heads with silicone grease to prevent corrosion and the accumulation of dirt and screw threads.
12 Clean the lamp glass.
13 If there is suspicion that the luminaire has suffered mechanical damage, a stringent workshop check should be made.
14 On the battery terminal box check the tightness of cable glands and the tightness of the cover fixings.
Every two years open up the boxes having isolated the mains. Check the mains connections for tightness and overheating. Check the battery connection for tightness and overheating. Remember that the battery connections are live and must not be shorted together. Examine the battery for any signs of leakage or corrosion and if this has taken place and battery sections must be replaced.
If any moisture is in the boxes and the cause of this is not obvious, such as slack covers, then the cover gasket should be replaced. The cover gaskets are fixed on to the box rather than the lid, so it is probably better to do this in the workshop.
Gasket strips are obtained from Chalmit. These are cut and fixed in place by silicone RTV. After the initial assembly, check that the joints in corners are sealed with silicone. When the silicone is cured refit the cover. Where spares are needed, these must be replaced by our specified parts. No modification should be made unless approved by the manufacturer.

8.0 Current Ratings

The power drawn by each battery box when charging is 20W at unity power factor.

9.0 Disposal of Material

The units are chiefly made of incombustible material. The control gear contains electronic components and synthetic resin. All these may give off noxious fumes if incinerated. Care must be taken to render these fumes harmless and avoid inhalation. Any local regulations concerning disposal must be complied with.

9.1 Lamps

Discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

9.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the disposer needs to observe a 'duty of care'.
Batteries can be returned to the manufacturers for recycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit. For further details refer to our Technical Department.

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

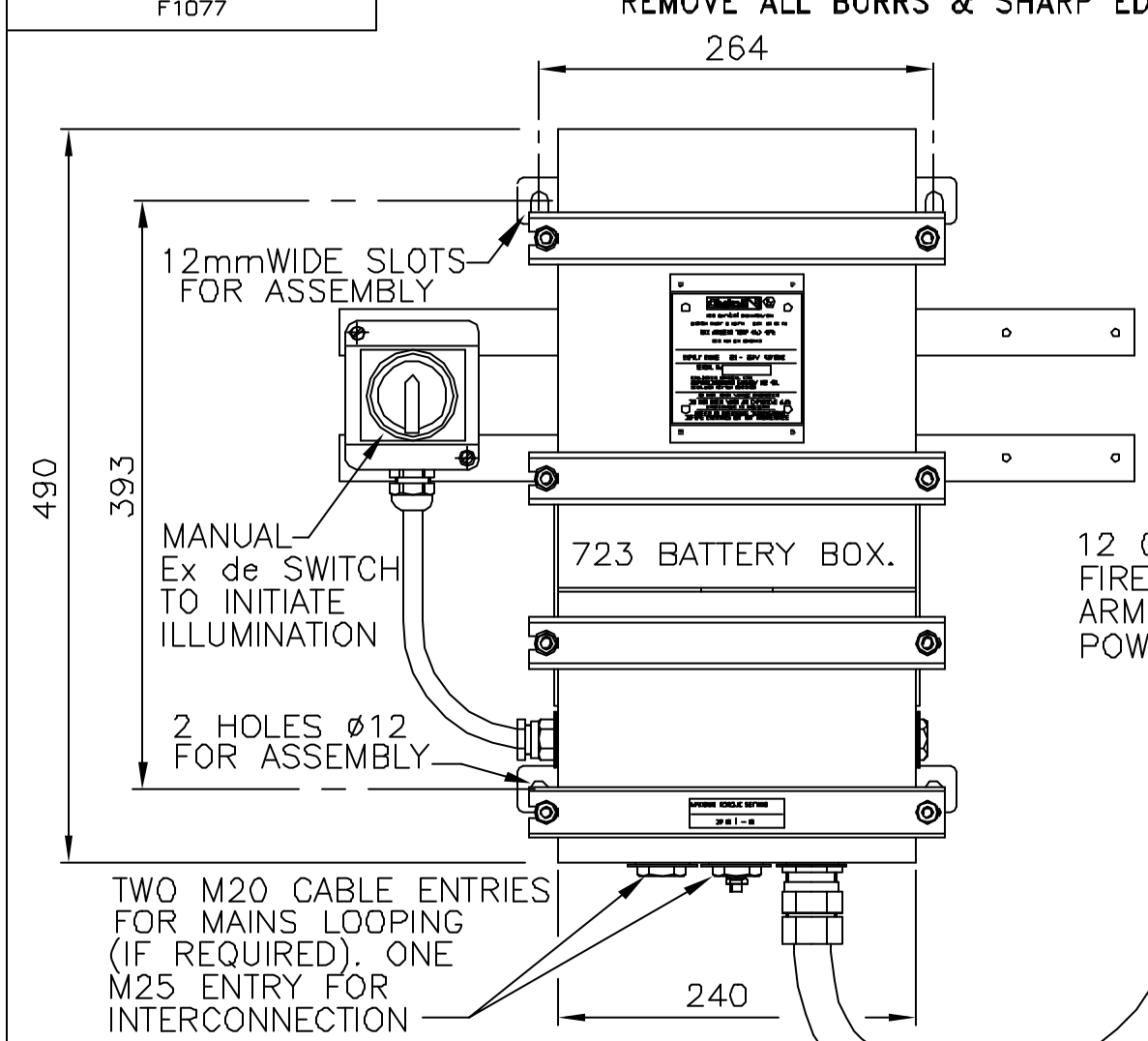
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

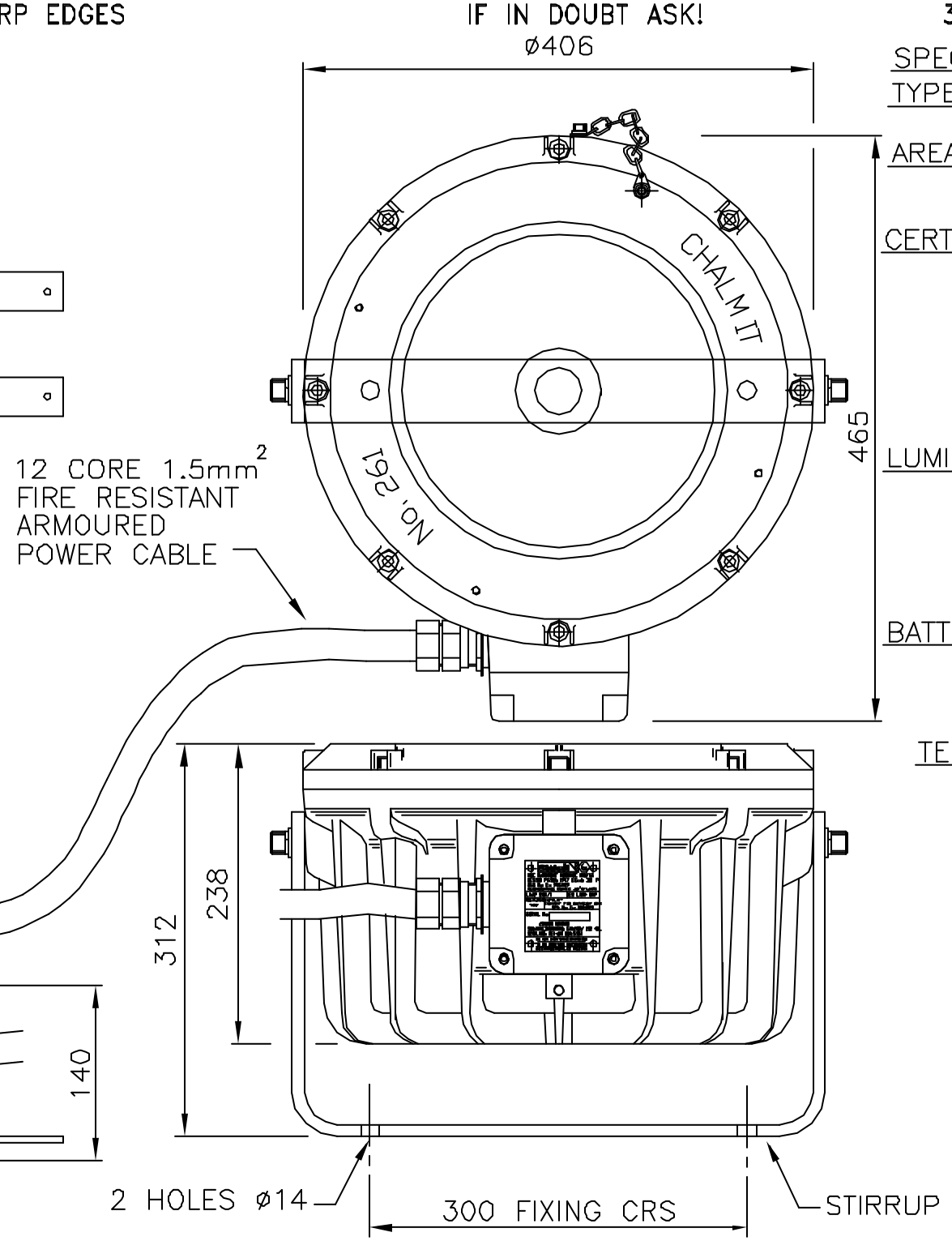
DRAWING NUMBER/SHEET NUMBER
F1077

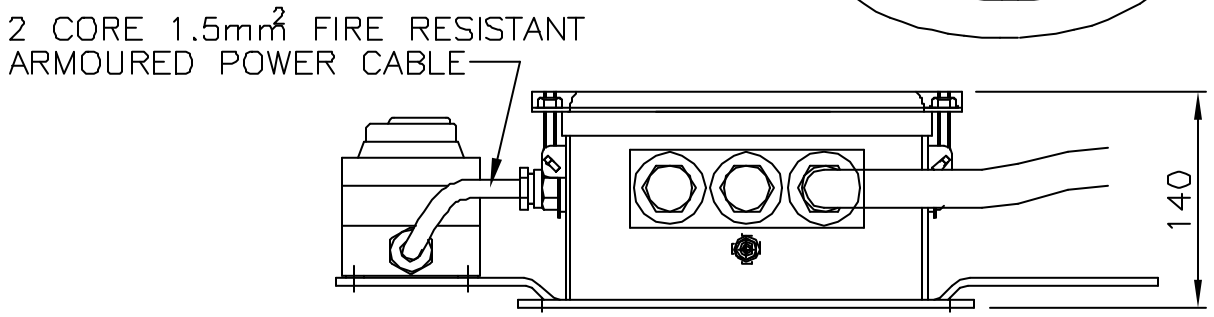
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION







SPECIFICATION(LUMINAIRE & BATTERY BOX)

TYPE OF PROTECTION:– LUMINAIRE Ex de
BATTERY Ex em

AREA CLASSIFICATION:– ZONE 1 & 2 AREAS
GAS GROUPS IIA & IIB TO BS EN 60079

CERTIFICATION:– EC TYPE EXAMINATION CERTIFICATE BAS01ATEX2310 (261E FLOODLIGHT)
SIRA CERTIFICATE Ex93C3113 (723 BATTERY BOX)

CODING:– EEx de IIB T4 (LUMINAIRE)
EEx em II T4 (BATTERY BOX)

LUMINAIRE MATERIAL:–ALUM. ALLOY LM6 BODY & COVER WITH TOUGHENED GLASS. ALUMINIUM STIRRUP & STAINLESS STEEL FIXINGS. (WEIGHT 28Kgs)

BATTERY BOX MATERIAL:– STAINLESS STEEL S316S31 C/W SILICONE GASKET (WEIGHT 22Kgs)

TEMPERATURE RANGE:– –20°C TO 40°C

IP RATING:– IP66/67

723 BATTERY BOX.	
SUPPLY VOLTAGE	200/254V 50/60Hz
OUTPUT VOLTAGE	24V dc
CABLE RATING	70°C

FLOODLIGHT TYPE	261E 70W SON/T
LAMP VARIATIONS	FLOOD OR PROJECTOR
VOLTAGE	220/250V 50/60Hz
EMERGENCY VOLTAGE	24Vdc FROM BATTERY BOX
CABLE RATING	70°C

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	18/06/2002
REF. DRGS.–	

MATERIAL	TOLERANCE
FINISH	SURFACE ROUGHNESS
DIMS. IN MM	SCALE –

Chalmit Lighting

Chalmit Lighting
388 Hillington Road.
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
261E/723 EMERG PROJ
FLAT GLASS &
BATTERY BOX

DRAWING NUMBER/SHEET NUMBER
F1077 1 OF 1

UNIVERSAL BOX

Ex e CONTROL BOXES

ATEX CATEGORY 2 ZONE 1 and ZONE 21 APPLICATIONS

A new range of lamp control and transformer boxes for Zone 1 and Zone 2 Applications.

This new range of control boxes also replaces a number of long established products for use in both Zone 1 and Zone 2 areas. The universal gearbox replaces the 720 Ex e remote gearbox series used to supply floodlights without integral control gear. Where an ignitor is required it must be with the luminaire. The correction capacitors are in the control box. The range also replaces the 700/702 Ex d control box but does not replace the 700/702 box with ignitor. The main range is for 150W to 600W HPS lamps. These models also replace the 500/501 series Ex N gearbox but do not replace those gear boxes with internal ignitors.
The universal transformer also replaces the 700 Ex d series transformer box the usual application of which is supplying 230V range control gear from 120V supplies. The transformer is an auto design not a double wound design. It is for lighting applications not for electrical safety. The rating is 500 and 1000VA. Both the control gear and transformers have a built-in thermal cut-out which resets after the mains supply is switched off for a short period. This protection is needed for lighting control gear operating during possible lamp faults. This range will often be used as replacements for obsolete items using a variety of lamps. The IOM sent with each product and available on request contains essential information for correct application.

Standard Specification

Type of Protection:	**Ex dem (Increased Safety Flameproof Encapsulated)** **Dust protected enclosure**
ATEX Classification:	**Group II Category 2 G D**
Area Classification:	**Zone 1 and Zone 21 areas to EN 60079-10 and EN 50281-3 with installation to EN 60079-14 and EN 50281-2** **Gas Groups IIA, IIB and IIC to EN 60079-14**
Apparatus Standard:	**EN 50014 EN 50018 EN 50019 EN 50028 EN 50281-1-1**
Certificate:	**EC Type Examination Certificate BAS01ATEX2270**
Coding:	**Ⓔx II 2 G D EEx dem IIC (refer to table for T rating and ambient)**
Enclosure:	**316S31 Marine grade stainless steel with silicone rubber gasket**
Entry:	**3 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Base mounting straps**
Control Gear:	**Internal copper/iron and PFC correction capacitor as required**
Operating Position:	**Cable entries on lower end, if mounted vertically**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220-254V 50Hz - Control box version,** **120V 50-60Hz 500VA - Transformer box version.**

Features

316S31 grade stainless steel construction

Easy to install and maintain

Hinged lid with three fixing screws

Lightweight

Control gear easily accessed and can be replaced

Thermal cut-outs fitted on ballast and transformer

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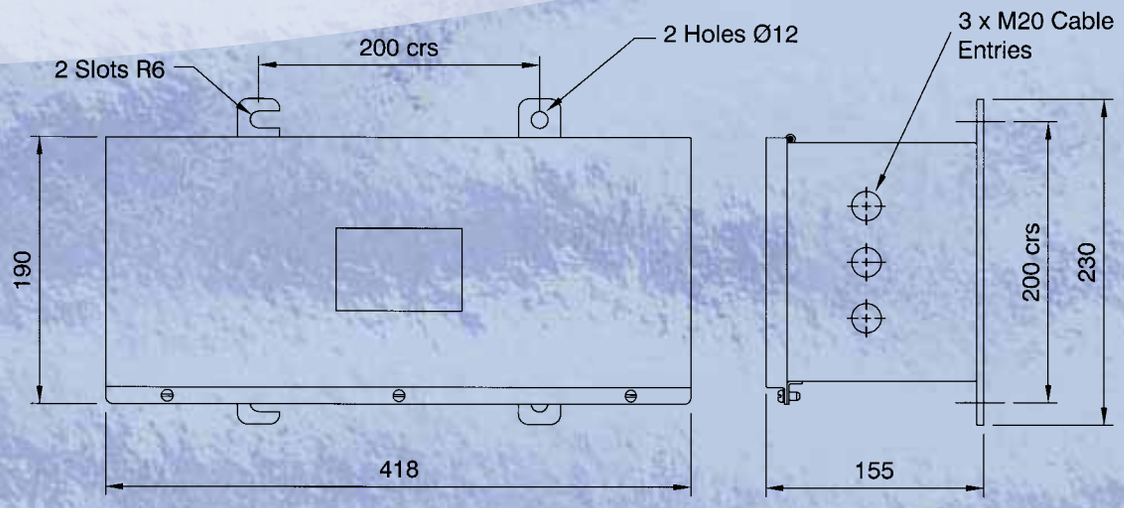
Std. Cat No.	Wattage	Lamp	T Class (Gas)	T°C (Dust)	Ambient°C	Weight
UNIE/150/HS	150W	HPS/Metal Halide	T4	110	45	10.5kg
			T3	120	55	10.5kg
UNIE/250/MS	250W	HPS/Metal Halide	T4	110	45	11.5kg
			T3	120	55	10.5kg
UNIE/400/MS	400W	HPS/Metal Halide	T4	120	55	12.0kg
UNIE/600/HS	600W	HPS	T4	115	45	14.0kg
			T3	125	55	10.5kg
UNIE/500/TF	500VA	Transformer	T4	105	35	11.0kg
			T3	115	55	10.5kg

Options - Suffix to Catalogue No.

/___	Specific voltage (254)
/60	60Hz
/M25	M25 Entries
/MF	Mains Fuse
/1000	1000VA Transformer (replace 500 with 1000)

Applications

- Zone 1 and 2 hazardous areas
- Areas of both high and low ambient
- For use where control gear has to be remote from luminaire



1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX2270**

4 Equipment or Protective System: **UNIVERSAL GEARBOX**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **Glasgow, G52 4BL**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(C)0341 dated 15 April 2002

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 **EN 50018: 2000** **EN 50019: 2000**
EN 50028: 1987 + Amd 1 **EN 50281-1-1: 1998**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II 2 GD T(see schedule) EEx edm IIC T(see schedule) T_{amb} (see schedule)

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/045

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

I M CLEARE
DIRECTOR
22 April 2002

Re-issued 8 May 2002 to remove Special Conditions for Safe Use

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2270**

15 **Description of Equipment or Protective System**

The Chalmit Universal Control Gearbox comprises of a 1.5mm thick stainless steel enclosure with overall dimensions 410mm x 170mm x 154mm. The hinged lid is secured to the enclosure by three M5 screws into 'nutserts' located in an external flange running the entire length of the enclosure. Adequate sealing of at least IP66 is ensured by a 5mm thick silicone sponge gasket adhered to the lid, compressed by at least 2mm by a lip on the body of the enclosure.

An external welded stainless steel earth stud is provided, fitted with locking and anti-rotation washers. Internal earthing is via an EEx e component approved terminal electrically in contact with the steel enclosure.

The following components may be contained within the enclosure:

Ballast/Transformer

Manufactured by Venture with winding wires to EN60317-8 grade 2, 200°C, vacuum impregnated with unsaturated solventless polyester (class H, CTI 600V). The ballasts have a minimum T_w of 140°C. The bobbin material is glass filled nylon with a minimum COT of 180°C.

The ballasts can be single or multi-tapped and are all fitted with non self-resetting Thermik P1 thermal cut-outs. The ballasts comply with EN 60922 and are fitted with EEx e approved terminals.

Capacitors (optional)

Capacitors are contained within a 5mm thick tubular aluminium enclosure 124mm long, 64mm diameter. The enclosure is completed by an end cap screwed into an internal thread on the enclosure with wires passing through a component approved line bush covered by PTB97ATEX1047U. The enclosed capacitor is assessed against the requirements of EN 50018.

If the optional capacitors are not used the marking becomes:

⟨Ex⟩ II 2GD T (see schedule) EEx em II T (see schedule) T_{amb} (see schedule)

Terminals

EEx e component approved terminals are used, either WAGO terminals covered by PTB Ex-97D3116U or Weidmuller MK6 covered by BAS Ex813095U.

Fuse (optional)

The glass cartridge fuse is encapsulated using Araldite inside an open-topped nylon potting box.

If the optional fuse is not fitted the marking becomes:

⟨Ex⟩ II 2GD T (see schedule) EEx ed IIC T (see schedule) T_{amb} -20°C to 40°C

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX2270**

The following ratings apply to different models in the range:

Model		Ambient -40°C to __°C (*)	T Class	Dust T rating (°C)
Ballast	150W	45	T4	110
		55	T3	120
	250W	45	T4	110
		55	T3	120
	400W	55	T4	120
	600W	45	T4	115
		55	T3	125
Transformer	500VA	35	T4	105
		55	T3	115
	1000VA	35	T4	105
		55	T3	115

(*) Ambient range reduced to -20°C to 40°C if optional encapsulated fuse is fitted,

17 **Special Conditions For Safe Use**

None.

18 **Essential Health and Safety Requirements**

All requirements are covered by compliance with harmonised standards EN 50014: 1997 + Amds 1 & 2, EN 50018: 2000, EN 50019: 2000 and EN 50281-1-1: 1998 as well as non-harmonised standard EN 50028: 1987 + Amd 1.

19 **DRAWINGS**

Number	Sheet	Date	Description
D1998	1	20-3-01	General arrangement
D1998	2	20-3-01	Component details
D1998	3	20-3-01	Certification notes

BASEEFA List Keywords
2ENCLOSU

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Flameproof Certification
Release From Pressure Testing

Release from individual pressure test is granted to:-

CHALMIT LIGHTING
388 Hillington Road
Glasgow
G52 4BL

I hereby grant release from the obligation to apply individual mechanical pressure tests to all apparatus covered by EC-Type Examination Certificate BAS01ATEX2270 and Supplementary Certificates thereto.

Only the following is included in this release.

The flameproof capacitor housing.

The release is conditional upon the maintenance of adequate quality control and inspection during production, to ensure compliance with any specified or implied conditions of certification.

The release is valid until 21 April 2005 unless earlier revoked or suspended.

File No: EECS 0068/03/045

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

I M CLEARE
DIRECTOR EECS
22 April 2002

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44 (0)1298 28000 Fax: +44 (0)1298 28244
internet: www.baseefa.com e.mail: baseefa.info.eecs@hsl.gov.uk

UKAS PRODUCT CERTIFICATION 020

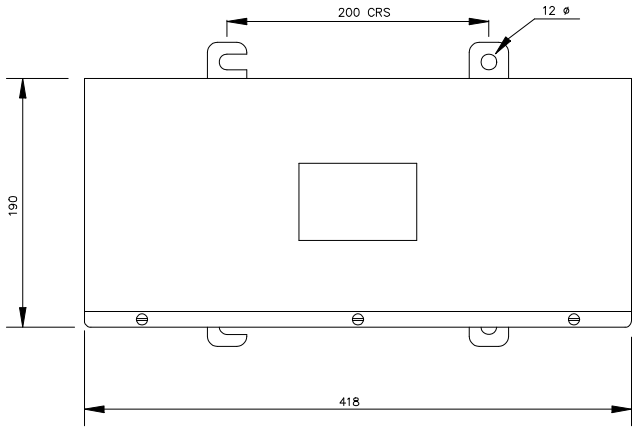
Re-issued 8 May 2002 to remove Special Conditions for Safe Use

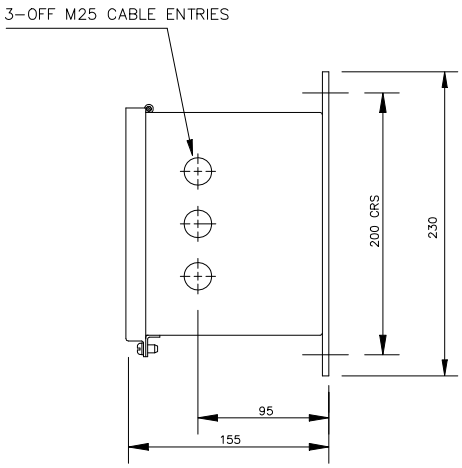
CERT\RPT\B ISSUE5 DATED JULY01

INSTALLATION, OPERATION AND MAINTENANCE

Universal Gearbox

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.





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0.0 Specification

Type of Protection	Ex dem (flameproof, increased safety and encapsulated)
Protection standards	EN 50014: 1998 EN50018: 2000 EN50019: 2000 EN 50028: 1987 EN 50281-1-1
ATEX Equipment Classification	Group II Category 2 G Group II Category 2 D
Area Classification	Zone 1 and 21 areas to EN 60079-10 and EN50281-3. Installation to EN 60079-14 and EN 50281-2. Gas groups IIA, IIB and IIC to EN 60079-14
Certificate	EC Type Examination Certificate BAS01ATEX2270
Equipment coding	Ⓔx II 2 G D EEx dem IIC (refer to table for T rating and ambient) II 2 G D (refer to table for temperatures)
Ingress Protection	IP66 and IP67 to BS EN 60529

CE Mark CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively].

1.0 Introduction - Universal Gearbox

The Universal series of control gear boxes replaces the 700 and 500 series gear boxes and is designed to run a variety of different HID lamps and provide a transformer step up unit that will allow 240v fittings to be run from 120v power supplies.
As this can be used as a remote gearbox, the ignitor is not included in the box. An external ignitor will be required in the fitting being controlled and this arrangement eliminates the need for high voltage cable between the gearbox and light fitting.
As well as providing current limiting through an appropriately sized ballast, the gearbox has power factor correction capacitors fitted which improve power factor to 0.85 or better. These capacitors are fitted into a flameproof aluminium case.
The gearbox is also available fitted with a fuse as an option which is encapsulated.
See table 2 for product weights.

Notes: *The ratings for the various types are as indicated in TABLE 0.*

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN 60079-14 and EN50281-2 or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the *Health and Safety at Work Act* must be met.
Handling and electrical work associated with this product to be in accordance with *the "Manual Handling Operations Regulations"* and *"Electricity at Work Regulations 1989".* Your attention is drawn to the paragraphs (i)

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'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The products are Class 1 and should be effectively earthed.
The boxes are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in ignitable dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate on the fitting surface and good housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures.
The European standard EN50281-1-2 also gives details of selection, installation and maintenance.

3.1.2 Hybrid Mixtures – Gas and Dust

Where Hybrid mixtures exist as defined in EN1127 as a potentially explosive atmosphere, consideration should be given to verifying that the maximum surface temperature of the luminaire is below the ignition temperature of the hybrid mixture.

3.2 Tools

Screwdrivers: 12mm blade, 6mm blade and 3mm blade.
Suitable spanners for installing glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. ***Care is needed connecting to the nominal 230V UK public supply***. The user must determine the actual underlying site supply and purchase or adjust accordingly. The boxes luminaires have multi-tapped control gear, which can be set to a range of voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system an appropriate voltage tap should be selected but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side. Maximum 10V drop is desirable for HPS and advised for MBI (These are figures given at the luminaire). Where adverse system conditions occur, the gearbox can be supplied without power factor correction. The circuit current will be the lamp current; the circuit power does not change.

3.4 Luminaires

The Universal box can be used to supply a wide range of luminaires. Care must be taken to ensure that the lamp used in the associated luminaire corresponds to the control gear used. This gearbox is designed to run both HPS and MBI lamps, but MBI lamps must be 'SON gear compatible'.

Note : *HPS and MBI control gear boxes should not be energised with an unlamped luminaire connected. HPS lamps with internal ignitors must not be used.*

3.5 Mounting

The box should be firmly attached to the structure in a position where access can be gained to install cables and carry out routine maintenance. If the box is to be mounted with the long axis vertical, the cable entries must be at the lower end.
The fixing centre is 200mm x 200mm and the bolt size is 10mm nominal.

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3.6 Cable Connection

3.6.1 Cables

The temperature rise of the entry when the box is used at its maximum ambient is such that ordinary PVC cable can be used. The box will loop conductors up to 6mm² section as standard. 300/500V ratings are adequate to supply the luminaire and no special internal construction is necessary. Internal and external earth points are provided. The cable size from the control box to the luminaire will depend on the supply circuit fuse rating.

3.6.2 Cable Glands

Apparatus certified to *EN 50014:1998.*

Cable glands for entry into Ex e enclosures when fitted with any gland to body sealing method and the supply cable must reliably maintain the IP rating of the enclosure. The cable gland must withstand an impact value of 7Nm or, alternatively, 4Nm where the risk of mechanical damage is low. Where the cable is not reliably clamped externally to the apparatus the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non-armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.

Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified. Sealing plugs must be similarly rated and a tool must be used for their removal.

Three tapped cable entries are provided, one with a plug and seal suitable for permanent use, the others have travelling plugs. M20 x 1.5 entries are standard, with M25 available on request.

Note: For other apparatus certified to *EN 50014:1998*, in practice the requirements of this later standard means that for practical reasons certified entry devices must be used. Glands may be selected for low levels of mechanical risk and external clamping. Entry plugs can be selected as above.

3.7 Electrical Connections

1 Undo the screws securing the hinged lid. If the lid is removed to facilitate cabling, take care not to mix it up with lids from other boxes which may have a different rating.
2 Reselect the voltage tappings if necessary.
3 Install the cable glands and cables. If the rubber sealing washer supplied is used, the large stainless steel washer must also be fitted.
4 Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1mm bare conductor outside the terminal is a maximum.
5 Any unused terminal should be fully tightened.
6 Check for correct connections and replace the lid, torque 2Nm.

3.8 Inspection and Maintenance

Individual organisations will have their own procedures for inspection and maintenance. What follows are guidelines based on *BS EN 60079-17* and on our experience. Maintenance work and fault finding must be performed by competent personnel under an appropriate permit to work and with the apparatus isolated.

Frequency of maintenance will depend on experience and the operating conditions.

Before opening the box must be electrically isolated.

1 Ensure that the control box is operating the associated luminaire correctly. If the luminaire does not operate correctly with a serviceable lamp, check the control box first for signs of bad connections or overheating. If the box is in good condition and the choke has continuity, complete the fault finding procedure for the luminaire (see below).
2 Open the box. Check for any signs of water ingress and if there is any, determine the entry point if possible. Replace the cable gland sealing washers and box lid gasket as appropriate (see below).
Clean up and dry out the box before re-energising.
3 Check terminals for tightness and any signs of overheating. Replace terminals where necessary. If the choke has overheated it will be badly discoloured. A D.C. resistance check compared with a spare unit will give confirmation of any internal shorting.

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4 The capacitor should be checked visually and if intact and not corroded should be satisfactory. The only failure with shunt capacitance is that the capacitance reduces in the self heating type or that the fuse blows. Capacitors can be disconnected and given a capacitance check. If capacitance has been lost and is critical factor in the circuit design, consideration will need to be given to further investigation and the replacement of the units.
5 Check the lid gasket and if there are signs that the gasket is not making a good joint, replace it (see below).
6 Check that the cable glands are tight and nip if necessary.
7 Refit the lid and re-tighten the screws. A spot of grease on the screw is recommended.
8 Check that the rating label is readable and secure. Refit using silicone sealant or other suitable adhesive if necessary.
9 Re-energise and check for correct luminaire operation. Any spare parts needed must be obtained from the manufacturer and unauthorised modifications must not be made.
10 Avoid the build up of dust layers by regular cleaning. Clean using a damp cloth.

3.9 Replacement of Lid Gasket

If a lid gasket needs to be replaced, obtain a spare from Chalmit. Remove the old gasket and scrape off any adhesive. Apply a bead of silicone sealant to the lid in the centre of the gasket position. Put the gasket in place squarely and squeeze out the sealant. Use a piece of metal sheet or chipboard which will fit inside the lid to keep the gasket in place while the adhesive initially cures. *(A sheet of polythene will prevent any surplus adhesive sticking to the plate).* After 60 minutes, or when convenient, remove the sheet and allow to cure in free air before refitting.

4.0 Electrical Fault Finding and Replacement

Any fault finding must be done by a competent electrician and if carried out with the box in place, under a permit to work. The supply must be isolated. The ballasts and transformers are fitted with a non-self resetting thermal cut-out, which will disconnect the power if the windings are too hot. To reset this, disconnect the power and re-connect it.
With MBF the faults are simple, loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation.
Similarly a bad contact at the lamp cap will usually result in signs of overheating. With HPS and MBI lamps the ignitor can become faulty. If the lamp is fitted the choke has continuity and the connections are good and correct, they should produce an "attempt to start" effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.
With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. The normal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other voltages by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.
Where transformers are fused, they are done so on the basis that they will be running HID lamps at powers up to rated. Therefore the fuse values chosen reflect this with higher ratings.

Note: *Starting and running currents for 240V, 50Hz using internal control gear or the Universal gearbox are indicated in TABLE 1.*

6.0 Disposal of Control Box

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The unit is chiefly made from inert incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin.
All the electrical components and the cover may give off noxious fumes if incinerated and this should only be done by licensed operators. Care must be taken to render these fumes harmless or avoid inhalation.
All disposal should be in accordance with local authority regulations and the *Environmental Protection Act 1990 - "Waste Management - The Duty of Care".*
In accordance with the provisions of Section 6 of the *"Health and Safety at Work Act 1974"* and as amended by the *"Consumer Protection Act 1987".* You should ensure that this information is made available to all concerned.

Table 0	Ratings	Refer to Section: 0,1		
Cat. No.	**Type**	**Dust rating (°C)**	**Gas rating**	**At ambient (°C)**
UNIE/150/HS	150W HPS/Metal Halide	110	T4	45
		120	T3	55
UNIE/250/MS	250W HPS/Metal Halide	110	T4	45
		120	T3	55
UNIE/400/MS	400W HPS/Metal Halide	120	T4	55
UNIE/600	600W HPS	115	T4	45
		125	T3	55
UNIE/TF/500	120-240V 500VA Transformer	105	T4	35
		115	T3	55
UNIE/TF/1000	120-240V 1000VA Transformer	105	T4	35
		115	T3	55

Table 1	Starting and Running Current			
Lamp	**Start A**	**Run A**	**Capacitance µF**	**Circuit Power (W)**
150W HPS	1.45	0.8	20	175
250W HPS	2.35	1.3	30	285
400W HPS	4.0	2.2	40	445
600W HPS	5.6	3.1	60	645
250W MBI	2.7	1.35	30	285
400W MBI	4.4	2.1	30	440
500 VA	N/A	5.0	N/A	500
1000 VA	N/A	9.0	N/A	1000

Note : *Minimum power factor correction : 0.85*

Table 2	Approximate weights				
150w	250w	400w	600w	500VA	1000VA
10.5Kg	11.5Kg	12.0Kg	14.0Kg	11.0Kg	13.0Kg

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

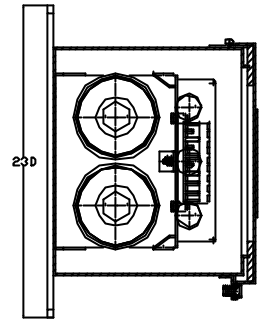
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

DRAWING NUMBER/SHEET NUMBER
F1078

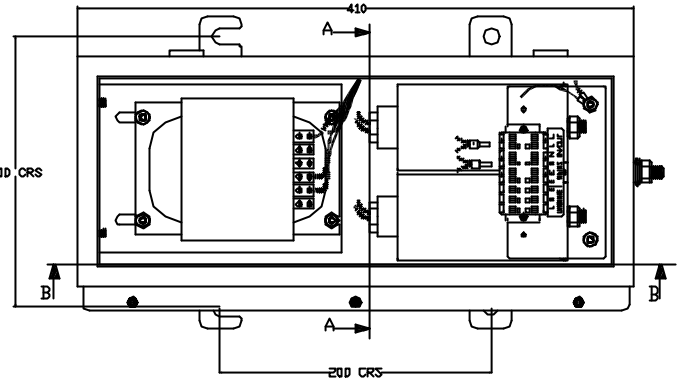
REMOVE ALL BURRS & SHARP EDGES

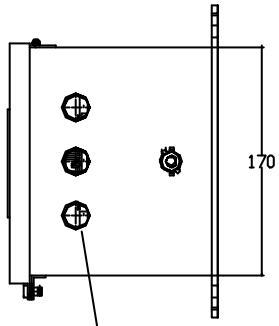
IF IN DOUBT ASK!

3RD ANGLE PROJECTION

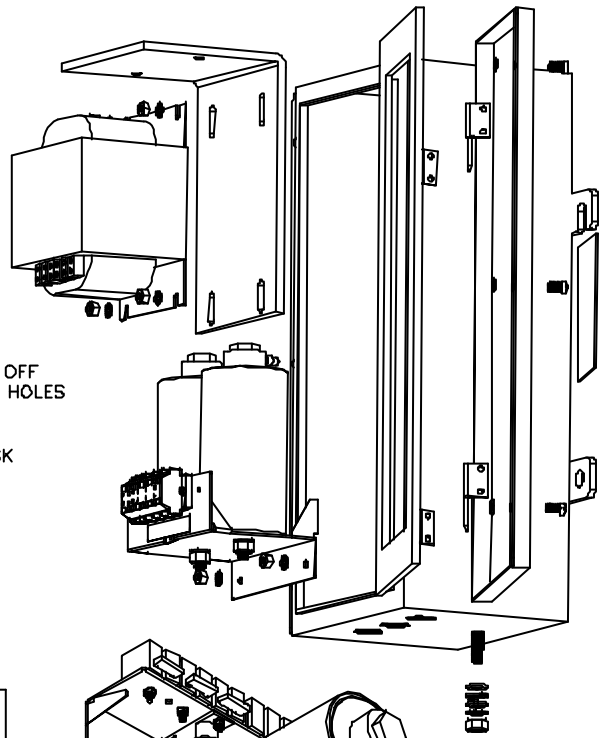


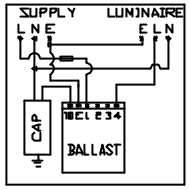
SECTION A-A



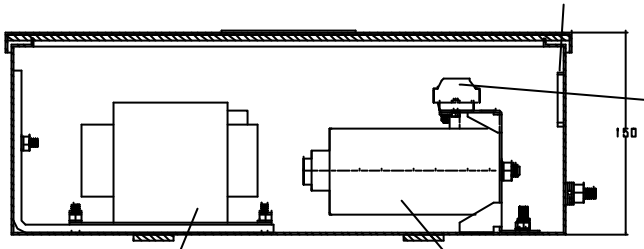


GLAND PLATE WITH 3 OFF
M20 OR M25 TAPPED HOLES





TYPICAL WIRING DIAGRAM

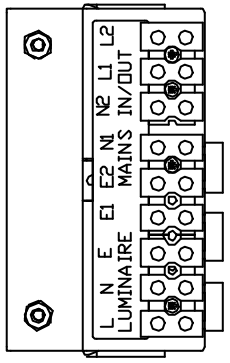


SECTION B-B

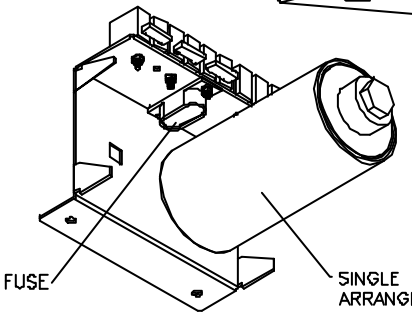
ALTERNATIVE LID FIXING SCREW
(FITTED WITH M5 RETAINING WASHER)

DUST AND GAS RATINGS

	VERSION	DUST RATING (°C)	GAS RATING	AMBIENT (°C)
BALLAST	150W	110	T4	45
	150W	120	T3	55
	250W	130	T4	45
	250W	120	T3	55
	400W	120	T4	55
	600W	115	T4	45
	600W	125	T3	55
TRANSFORMERS	300VA	105	T4	25
	500VA	115	T3	55
	1000VA	105	T4	25
	1000VA	115	T3	55



MK 6 SCREW
TERMINAL BLOCK



PRODUCT RANGE

MODEL	CAPACITORS	FUSE (IF REQUIRED)
150W 50Hz	1 x 20uF	1.6A
150W 60Hz	1 x 20uF	1.6A
250W 50Hz	1 x 30uF	3.15A
250W 60Hz	1 x 30uF	3.15A
400W 50Hz	1 x 45uF	4A
400W 60Hz	1 x 45uF	4A
600W 50Hz	2 x 30uF	6.3A
600W 60Hz	2 x 30uF	6.3A
500VA TRANSFORMER	NONE	6.3A
1000VA TRANSFORMER	NONE	10A

NOTES

POWER SUPPLY: 220-254V 50/60Hz (BALLAST)
120V 50/60Hz (TRANSFORMER 1:2 STEPUP)
TYPE OF PROTECTION: INCREASED SAFETY, FLAMEPROOF AND ENCAPSULATED (Ex dem)
ATEX CLASSIFICATION: GROUP II CATEGORY 2 G D

SUITABLE FOR: ZONE 1 AND 21 TO EN 60079-10 AND EN 50281-3
GAS GROUPS IIA, IIB AND IIC
MATERIAL: MARINE GRADE STAINLESS STEEL WITH SILICON GASKET

CABLE: 6MM MAX CONDUCTOR WITH LOOPING

INGRESS PROTECTION: IP66/67

PRODUCT OPTIONS

DOF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	M.E.
CHECKED	Michael Easton
APPROVED	Michael Easton
DATE	18/06/2002

REF. DR98.-

MATERIAL	STAINLESS STEEL
TOLERANCE	
FINISH	
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

Chalmit Lighting
Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
UNIVERSAL GEARBOX

DRAWING NUMBER/SHEET NUMBER
F1078 1 OF 1

SOLUS

Ex e Emergency Escape Light

**ATEX CATEGORY 2
ZONE 1 and 21
APPLICATIONS**

A lightweight, low cost emergency lighting unit, designed to provide emergency maintained lighting for accommodation areas or non-maintained escape lighting for use in cabins, corridors, elevators, crane cabins etc. The unit uses high power, long-life LED's and users can select, by means of a removable link, operation in maintained or non-maintained modes.
The unit contains rechargeable Ni-Cd batteries, with charging indication, which provide illumination in the event of mains failure. Lighting levels are attained instantly and are maintained at 100% of the mains powered output value during emergency operation. Duration whilst in emergency mode is 3 hours.

Standard Specification

Type of Protection:	**Ex de (Flameproof Increased Safety)** **Dust protected enclosure**
ATEX Classification:	**Group II Category 2 G D**
Area Classification:	**Zone 1 and Zone 21 areas to EN 60079-10 and EN 50281-3 with installation to EN 60089-14 and EN 50281-2** **Gas Groups IIA, IIB and IIC to EN60079-14**
Apparatus Standard:	**EN50014 EN50018 EN50019 EN50281-1-1**
Certificate:	**EC type Examination Certificate Baseefa03ATEX0174X**
Coding:	**Ⓔx II 2 G D Ex de IIC T4**
Enclosure:	**Polycarbonate/ABS**
Entry:	**2 x M20 entries**
Termination:	**4 core 4mm² max. conductor with looping**
Installation:	**Surface mounted, 4 mounting holes located outside of seal**
Lamp Type:	**2 x 1w light emitting diodes. Colour white.**
Re-lamping:	**Not necessary**
Control Gear:	**Electronic**
Burning Position:	**Universal**
Ingress Protection:	**IP65 to EN 60529**
Electrical Supply:	**220V - 254V 50/60Hz**
Battery:	**Internal Ni-Cd battery (3.6v 2.5Ah)**
Battery Duration:	**3 hours to EN60598-2-22**
Emergency output:	**100% on both lamps**

Features

Ultra bright LED lamps that last the life of the fitting - no re-lamping

Mains or emergency operation with maintained or non-maintained option

Full brightness of both lamps retained when running from battery

Lamps will 'blink' to indicate mains failure and changeover to battery operation

Light output exceeds the requirements of BS EN1838: 1999

Instant illumination - full brightness immediately on switch on

Very low mains power consumption - 6 watts per luminaire

Cool beam, safe to the touch

No ultra-violet light emitted

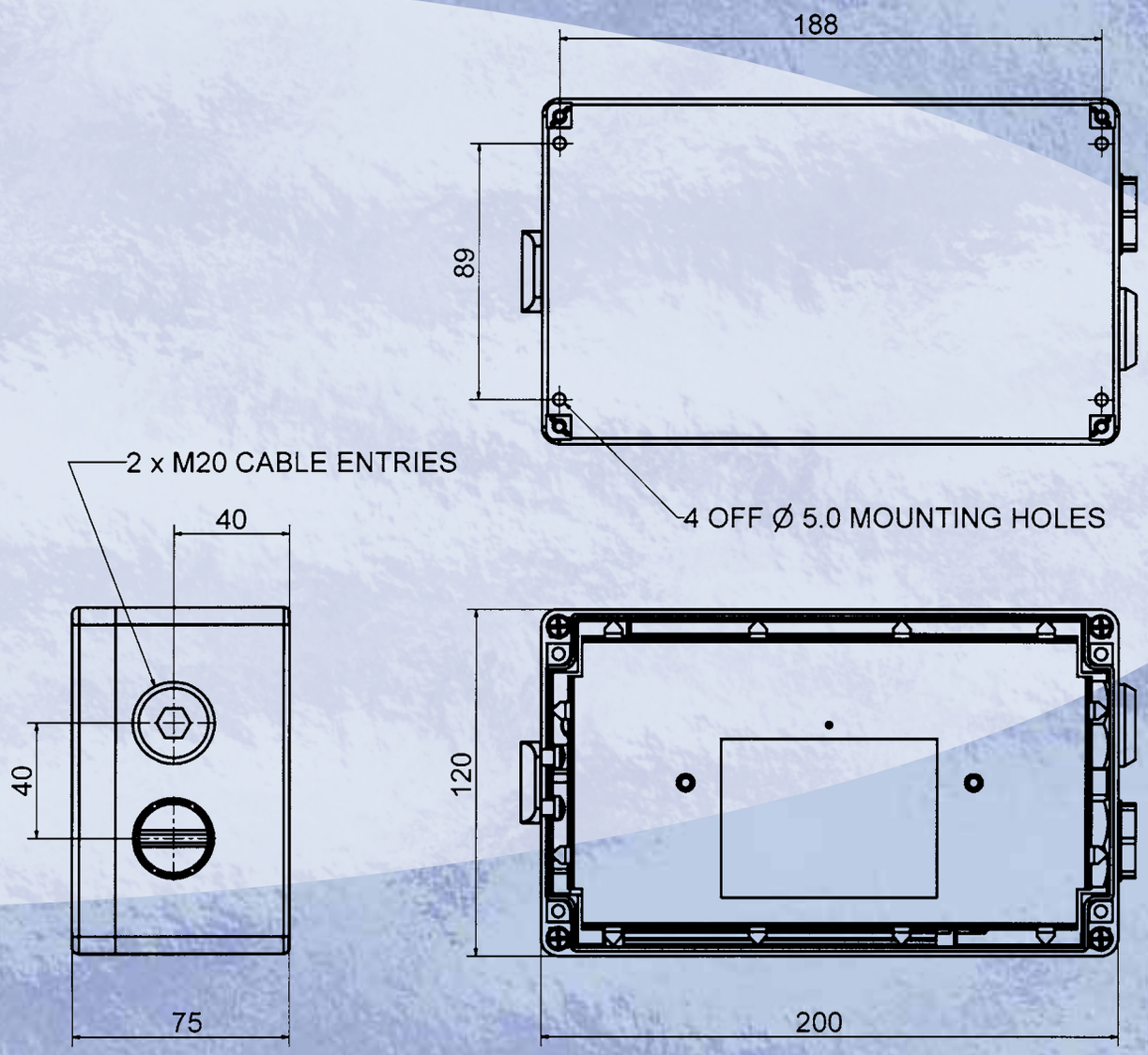
Std. Cat No.	Wattage	Lamp	T Class (Gas)	T°C (Dust)	Ambient ˚C	Weight
SOLE/201/LE	2x1W	LED	T4	85	40	1.8kg

Options - Suffix to Catalogue No.

/120	Specific voltage (110-120)

Applications

- Low level lighting
- Cabin lighting
- Washrooms
- Control rooms



Accessories (Should be ordered separately)	**Catalogue Order Code**
Universal ceiling mounting kit	**SSOL1-0001**

STERLING

Ex n FLUORESCENT

ATEX CATEGORY 3

ZONE 2 and 22 APPLICATIONS

The Sterling is a quality and cost effective luminaire designed to provide instant glare free white light at low mounting heights.

The GRP body and polycarbonate diffuser secured with multiple stainless steel clips ensure good corrosion resistance and rapid access for installation and maintenance. The protection is Ex n for ignitable gas applications and dust excluding, IP6X, for use in ignitable dust applications.

The ATEX Categories are 3 G and 3 D.
The range is suitable for T8 tubular fluorescent lamps in the nominal 18/36/58W sizes. The standard range has electronic control gear. Conventional low loss control gear with electronic start is available as an option.

Standard Specification

Type of Protection:	**Ex nA (Non-sparking) Dust protected enclosure**
ATEX Classification:	**Group II Category 3 G D**
Area Classification:	**Zone 2 and Zone 22 areas to EN 60079-10 and EN 50281-3 with installation to EN 60079-14 and EN 50281-1-2**
Apparatus Standard:	**EN 50021 EN 50281-1-1**
Certificate:	**Type Examination Certificate BAS01ATEX3052X**
Coding:	**Ⓔx II 3 G D EEx nA II (refer to table for T rating and Ambient)**
Enclosure:	**GRP with polycarbonate diffuser and stainless steel retaining clips**
Reflector:	**White polyester painted zinc coated steel**
Entry:	**2 x 20mm diameter holes, 1 at each end**
Termination:	**3 core 4mm² max. conductor with through wiring 16A rating**
Installation:	**Two clearance holes for M8 fasteners located on rear of body, sealing washers provided**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**T8 tubular fluorescent**
Control Gear:	**High Frequency ballast housed within sealed enclosure**
Relamping:	**Access via diffuser secured by quick release stainless steel clips**
Burning Position:	**Universal**
Ingress Protection:	**IP65 to EN60529**
Electrical Supply:	**220-240V 50/60Hz**

Features

Polycarbonate diffuser

Stainless steel diffuser clips 3 per side on 18W, 4 on 36W & 5 on 58W

Through wiring as standard

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output.

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Std. Cat No.	Previously	Wattage	T Class(Gas)	TºC (Dust)	Ambient ºC	Weight
STGN/118/BI*	321NA	1x18W	T4	95	45	2.2kg
STGN/218/BI	322NA	2x18W	T4	95	45	3.3kg
STGN/136/BI	341NA	1x36W	T4	95	50	3.0kg
STGN/236/BI	342NA	2x36W	T4	95	50	4.5kg
STGN/158/BI	351NA	1x58W	T4	95	40	4.0kg
STGN/258/BI	352NA	2x58W	T4	95	35	6.5kg

*Single lamp in twin body

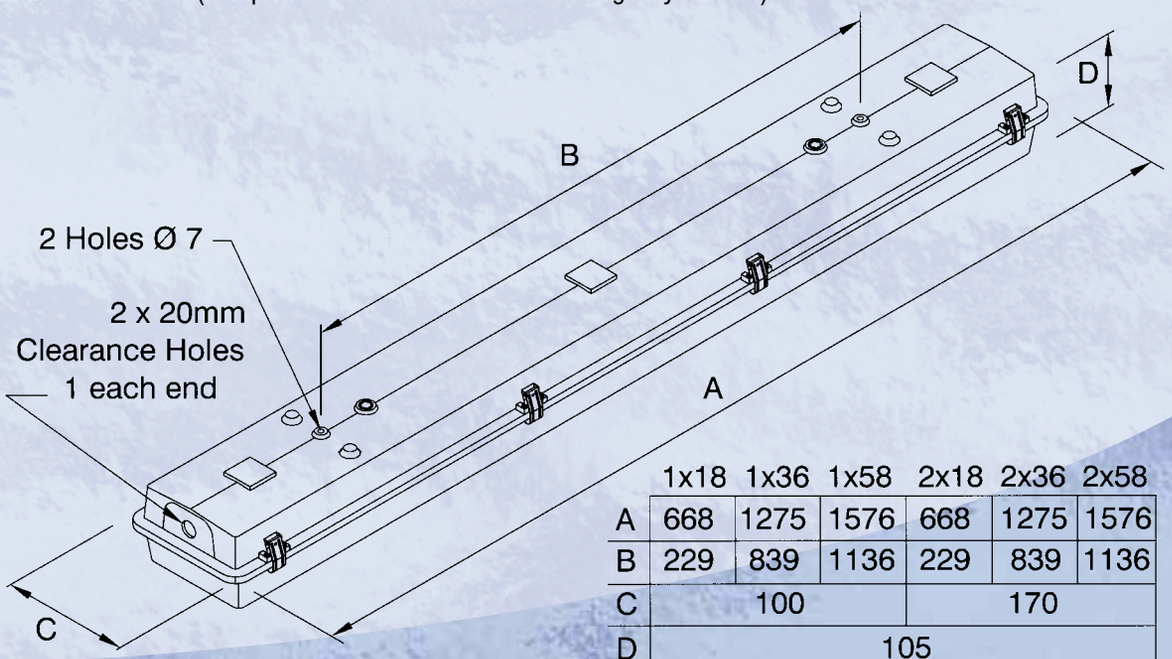
Dust only version (STGD/___) available. Contact sales for information.

Options - Suffix to Catalogue No.

/___	Specific voltage (120, 220 or 254 copper and iron versions only)
/ES	Copper and iron control gear
/60	60Hz (copper and iron versions only)
/MF	Mains fuse
/TB	Single lamp in twin body - Tamb 45ºC for 18W, Tamb 50ºC for 36 and 58W (copper and iron versions)
/EL	Extra live termination (compatible with 4-core switched emergency circuits)

Applications

- Zone 2 hazardous areas
- Petrochemical process areas
- Sewage treatment plants
- Explosives storage buildings (Category C listed)
- Pharmaceutical industry
- Tunnel lighting
- Harsh industrial environments



	1x18	1x36	1x58	2x18	2x36	2x58
A	668	1275	1576	668	1275	1576
B	229	839	1136	229	839	1136
C	100			170		
D	105					

Accessories (Should be ordered separately)

	Catalogue Order Code
Offset ceiling bracket assembly	**SPRO4-0002**
Pole mounting bracket assembly (38/50 diameter poles)	**SPRO4-0003**
C' form hook type ceiling bracket assembly	**SPRO4-0005**
Flush mounted wall bracket assembly	**SPRO4-0006**
18W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0008**
36W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0012**
58W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0022**
Eyebolt set	**SPRO5-0005**

TYPE EXAMINATION CERTIFICATE

Equipment Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC

3 Type Examination Certificate Number : **BAS01ATEX3052X**

4 Equipment: **STERLING RANGE OF FLUORESCENT LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

00(C)0966 dated 17 September 2001

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

EN 50021: 1999 **EN 50281-1-1: 1998**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

⟨Ex⟩ **II 3GD T95 EEx nA II 160°C** (for alternative Temperature marking see schedule (T3))
T_{amb} -10°C to +40°C

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/044

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

I M CLEARE
DIRECTOR
1 November 2001

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3052X**

15 **Description of Equipment**

The Sterling range of fluorescent luminaires comprises single and twin units of 18W, 36W and 58W in emergency and non-emergency units. The luminaire body is of glass reinforced polyester resin or stainless steel with a polycarbonate diffuser. The IP rating of the luminaire is maintained by a closed cell silicone rubber gasket between the lid and the body. The gasket is fixed by adhesive into a moulded groove in the body. The luminaire offers IP54 ingress protection according to the requirements for category 3G apparatus but this is increased to IP65 for category 3D apparatus when thermal conditioning is not required prior to the IP test. The diffuser is held in place using 6, 8 or 10 metal toggle clips for the 18, 36 and 58W versions respectively which produce a compression of at least 2mm in the gasket.

The following models are included in the range for the non-emergency units:

TABLE 1

Model STGN=GRP body STSN=Steel body	Lamps	Body	Voltage (50/60Hz)	Circuit	T_{amb} Max (°C)	T Class	Max Surface temperature (°C)
STGN/118...	1 x 18W	single	200-250	series	35	T4	95
STGN/318... STSN/318...	1 x 18W	twin	200-250	series	45	T4	95
STGN/318... STSN/318...	1 x 18W	twin	110-130	series	40	T4	95
STGN/218... STSN/218...	2 x 18W	twin	200-250	parallel	40	T4	95
STGN/218... STSN/218...	2 x 18W	twin	200-250	series	50	T4	95
STGN/218... STSN/218...	2 x 18W	twin	110-130	parallel	45	T4	95
STGN/136...	1 x 36W	single	200-250	series	40	T4	95
STGN/136...	1 x 36W	single	110-130	series	35	T4	95
STGN/336...	1 x 36W	twin	200-250	series	50	T4	95
STSN/336...	1 x 36W	twin	200-250	series	40	T4	95
STGN/336...	1 x 36W	twin	110-130	series	45	T4	95
STSN/336...	1 x 36W	twin	110-130	series	35	T4	95
STGN/236... STSN/236...	2 x 36W	twin	200-250	parallel	45	T4	95
STGN/236... STSN/236...	2 x 36W	twin	110-130	parallel	40	T4	95
STGN/158...	1 x 58W	single	200-250	series	40	140°C (T3)	95
					30	T4	95
STGN/158...	1 x 58W	single	110-130	series	35	140°C (T3)	95
STGN/358...	1 x 58W	twin	200-250	series	50	T4	95
STSN/358...	1 x 58W	twin	200-250	series	40	140°C (T3)	95
					30	T4	95
STGN/358...	1 x 58W	twin	110-130	series	45	T4	95
STSN/358...	1 x 58W	twin	110-130	series	35	140°C (T3)	95

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3052X**

Model STGN=GRP body STSN=Steel body	Lamps	Body	Voltage (50/60Hz)	Circuit	T_{amb} Max (°C)	T Class	Max Surface temperature (°C)
STGN/258... STSN/258...	2 x 58W	twin	200-250	parallel	40	160°C (T3)	95
STGN/258... STSN/258...	2 x 58W	twin	110-130	parallel	35	160°C (T3)	95

A white painted metal gear tray is attached within the main body by clips fixed to threaded pillars to which the following components are attached:

Component	Manufacturer	Part No.	Specification	Standard
Choke	Tridonic	EC 20/25 B90 EC 40 B90 EC 65 B140	T_w 130°C, Δt 35°C T_w 130°C, Δt 35°C T_w 130°C, Δt 35°C	EN 60921: 1991
	Transtar	C18P C36P C58P	T_w 130°C, Δt 35°C T_w 130°C, Δt 30°C T_w 130°C, Δt 35°C	EN 60921: 1991
Starter	Arlen	EFS100P EFS600P	T_c 75°C T_c 75°C	BS 4533 pt.102.51: 1986
Capacitor	various		T_c 85°C	EN 61048
Lamp holder	Vossloh	Type 27700		BS EN 60400: 1992

Internal wiring is by 1/0.8 solid copper conductor with heat resistant PVC insulation. Looping cables, where required, are 2.5mm² stranded copper conductor with silicone insulation. Through-going wiring is by 2.5mm² or 4mm² flexible conductor with high temperature PVC insulation and heat resistant oversleeve when required. When two conductors enter one terminal way they are fitted with a crimp-on blade connector.

The luminaire body is provided at each end with a 20mm diameter clearance hole for fitting suitable cable entry devices or blanking plugs which must maintain the IP rating of the unit and comply with the requirements of EN 50021.

EMERGENCY and HIGH FREQUENCY VERSIONS

The luminaire may alternatively be fitted with sealed high frequency electronic ballasts and inverters covered by BASEEFA Certificate BAS01ATEX3211U. The following models are included:

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3052X**

TABLE 2

Model	Lamps	Body	Voltage (50/60Hz)	T_{amb} Max (°C)	T Class	Max Surface temperature (°C)
118/HF	1 x 18W	twin	220-240	45	T4	95
218/HF	2 x 18W	twin	220-240	45	T4	95
136/HF	1 x 36W	single*	220-240	50	T4	95
136/HF/EM	1 x 36W	twin	220-240	45	T4	95
336/HF	1 x 36W	twin	220-240	50	T4	95
236/HF	2 x 36W	twin	220-240	50	T4	95
236/HF/EM	2 x 36W	twin	220-240	45	T4	95
158/HF	1 x 58W	single*	220-240	40	T4	95
158/HF/EM	1 x 58W	twin	220-240	35	T4	95
358/HF	1 x 58W	twin	220-240	40	T4	95
258/HF	2 x 58W	twin	220-240	35	T4	95
258/HF/EM	2 x 58W	twin	220-240	35	T4	95

* Single body only available in GRP

The emergency versions are denoted by the suffix /EM and due to the properties of the rechargeable batteries are only suitable for ambient temperatures above 0°C. Five NiCd cells, either Sanyo type KR-DHL or SAFT Type VT70, are welded together and contained within plastic sleeving. The batteries are rated at 6v 4Ah. The cells do not gas in normal operation and the charging system limits the charging rate and provides under voltage protection of 1v/cell.

16 **Report No.**

00(C)0966

17 **Special Conditions For Safe Use**

1. The luminaires are only suitable for use in areas with a low risk of impact.

2. Emergency luminaires must not be used at an ambient of less than 0°C.

18 **Essential Health and Safety Requirements**

All requirements are covered by compliance with EN 50021: 1999 and EN 50281-1-1: 1998

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3052X**

19 **DRAWINGS**

Number	Issue	Sheet	Date	Description
D2017	0	1 to 6	26/2/01	GRP Bodied Sterling Luminaire
D2021	0	1 to 6	3/4/01	Metal Bodied Sterling Luminaire
D2026	0	1 to 3	3/4/01	Emergency luminaires
C763	2	1 of 1	12/3/01	T Class data GRP bodied luminaire
C764	2	1 of 1	10/4/01	T Class data metal bodied luminaire

BASEEFA List Keywords
2FLUOLUM

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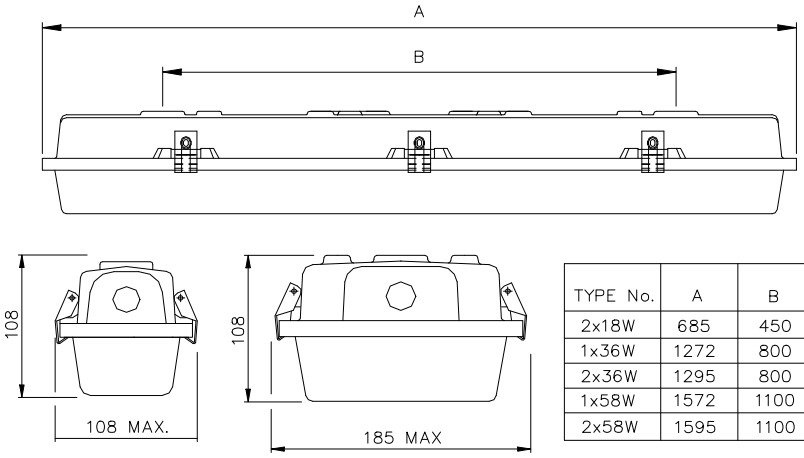
Issue 00

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

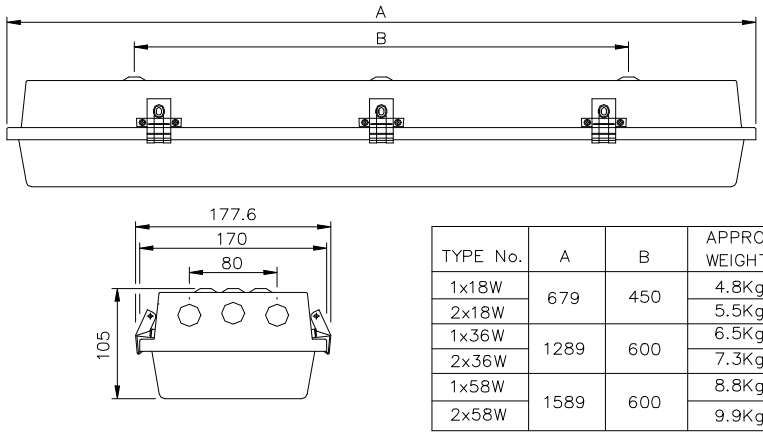
Sterling Ex nA Cat 3 G D ATEX Luminaire

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



TYPE No.	A	B	APPROX WEIGHT
2x18W	685	450	3.6Kg
1x36W	1272	800	3.3Kg
2x36W	1295	800	4.8Kg
1x58W	1572	1100	4.3Kg
2x58W	1595	1100	6.5Kg

G.R.P. BODY VERSIONS



TYPE No.	A	B	APPROX WEIGHT
1x18W	679	450	4.8Kg
2x18W			5.5Kg
1x36W	1289	600	6.5Kg
2x36W			7.3Kg
1x58W	1589	600	8.8Kg
2x58W			9.9Kg

METAL BODY VERSIONS

CE

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Specification and ATEX Declaration

Type(s) of Protection	EEx nA (non-sparking)
Protection Standard	EN 50021
Dust Standard	EN 50281-1-1.
Area of Application	Zone 2 areas to EN 60079-10 and installation to EN 60079-14 Zone 22 areas refer to EN 500281-3 and installation EN 500281-1-2.
ATEX Equipment Classification	Group II Category 3 G Group II Category 3 D
Equipment Coding	Ⓔx II 3 G D T95°C EEx nA II T*
Certificate	Type Examination BAS01ATEX3052X
Ingress Protection	IP65 to BS EN 60529
CE Mark CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and protective systems intended for use in Explosive Atmospheres regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction – Sterling Ex nA Fluorescent Luminaire

1.1 General

The type of protection is Ex nA.
The Sterling series Ex nA fluorescent luminaires are surface mounted or suspended, utilising the two holes on the base of the body. They are mainly used in harsh environments, and are constructed using a corrosion resistant glass reinforced polyester or stainless steel body, attached to an injection moulded polycarbonate diffuser by self-retaining stainless steel toggle clips. The control gear and lampholders are mounted on a removable tray that for maintenance purposes has hanging straps.

Note:

The ratings are listed in TABLES 1-5.

1.2 Application

The luminaire is designed to be safe in normal operation. The luminaire should not be used where there are environmental, vibration or shock conditions above the normal for fixed installations. The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states. The luminaire is suitable for applications where Category 3 apparatus can be used. The type examination does not address suitability for portable applications.

1.2.1 Special Conditions for safe use

The luminaire is suitable for areas where there is a low risk of mechanical damage.

2.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate.
In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.

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Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.
The polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.

3.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in ignitable dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate on the fitting surface and good housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures.
Refer to EN50281-1-2 for additional details of selection, installation and maintenance.

3.1.2 Hybrid Mixtures – Gas plus Dust.

Where Hybrid mixtures exist as defined in EN1127 as a potentially explosive atmosphere, consideration should be given to verifying that the maximum surface temperature of the luminaire is below the ignition temperature of the hybrid mixture.

3.2 Tools

Suitable spanners for installing cable glands.
3mm flat blade screwdriver.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. ***Care is needed connecting to the nominal 230V UK public supply.*** The user must determine the actual underlying site supply and purchase or adjust accordingly. The 2x18W & 2x36W luminaires for 230V and 240V, 50Hz rating are supplied with a tap. If the equipment is located in high or low voltage sections of the system an appropriate voltage tap should be selected but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side.

3.4 Lamps

The lamps used in the range can be T8 bi-pin fluorescent with G13 cap. Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The luminaire is mounted using the knockouts on the rear of the body. The knockout holes are 7mm ∅. On mounting the luminaire by using the holes, it is the responsibility of the user to ensure that an adequate seal is made, to maintain the desired IP rating with a minimum of IP54 or IP65 for conductive dust. Washers are provided

3.6 Cabling and Cable Glands

3.6.1 Cables

The GRP models do not have a facility for looping. The metal bodied series have the facility both looping and through wiring.

The temperature conditions of the supply cable entry point are such that 70ºC (ordinary PVC) cable can be used in most luminaire models. On models where there is no fixed through wiring supplied by Chalmit, but where there is a looping facility on the gear tray, any supply wiring passing through the body must either have a rating of 130ºC or have sleeving fitted which has a 130ºC rating. 300/500V cable ratings are adequate and no special internal construction is necessary. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The standard maximum looping size is 2.5mm² with options of 4mm² through wiring. An internal earth tag can be fitted to the cable gland.

Note : *Through wiring when used, is subject to a maximum current of 16A.*

3.6.2 Cable Gland Types

Cable glands for entry into Ex enclosures when fitted with any gland to body sealing method and supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54 or IP6X where conductive dusts may be present. Nylon washers are provided with the unit to seal between the gland body and the luminaire. Sealing plugs for unused entries should be similarly rated and fitted. Entries suitable for M20 cable glands are standard.

3.7 Cabling

Access for cabling is via diffuser cover; care is to be taken, as there is no suspension of diffuser cover. The diffuser clips are undone and the diffuser laid aside. The gear tray is dropped down after rotating the turnbuckles or sliding the screws in the keyholes. The tray can be removed by undoing the spring clips on the suspension cables. The cable glands are fitted using the washers supplied or as specified by the customer. Any earth tag connections should be fitted. The connecting terminals are identified and the conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more that 1mm beyond the terminal. Unused terminal screws should be tightened. The cores must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made.

3.7.1 Fitting Lamps

Before opening the diffuser cover ensure that the luminaire is isolated from mains supply. Access for re-lamping is via the diffuser cover; care is to be taken, as there is no suspension facility for the diffuser cover. Make sure that the correct lamp is selected. The lampholders are tombstone type, place the lamp in the lampholder and rotate 90º in lampholder. When inserting new lamps ensure pins and lampholder connection is centralised. Replace diffuser cover and snap clips into place.

3.7.2 Fused Terminal Blocks

When a fused terminal block has been fitted, it is essential that the metal clamp supplied retain the fuse holder.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

1 Ensure lamps are lit when energised by mains supply.
2 Visually check diffuser cover for damage. This should only be cleaned using a damp cloth to avoid static and only use recommended detergents for polycarbonate. If the polycarbonate is discoloured or damaged, a new diffuser cover must be fitted.
3 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are any signs of water ingress, the luminaire should be opened up, dried and any likely ingress points eliminated by re-gasketting or other replacements.

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4 Check cable gland for tightness and nip up if required.
5 Check any external and internal earths.
6 Check all terminations are firmly screwed down, tighten if necessary.
7 Check clips visually for any damage and replace, if necessary.
8 If it has been suspected that the luminaire has suffered mechanical damage, a stringent workshop check on all components should be made. All components can be removed from the luminaire for inspection.
9 Avoid the build up of dust layers by regular cleaning and again clean only using a damp cloth.

3.8.2 Routine Testing of Emergency Lighting Functions

Users should ensure that the performance of emergency lighting remains adequate for their purposes by conducting periodic tests and recording the results. Requirements will differ between countries, applications and organisations. In the United Kingdom BS 5266 Pt1 gives guidance on testing.

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
Any live fault finding must be done by a competent electrician and, if carried out with luminaire in place, under a permit to work. Where the control gear is copper and iron, the fitting can be tested for continuity of connections. When electronic high frequency gear is fitted do not megger.
If lamps go out repeatedly, and replacement lamps do not work or expected life is reduced, where applicable replacement starters should be tried. However, if this does not correct the fault the control gear should be returned for replacement/testing. The electronic starter, and where specified, the High frequency ballast will cut out if lamps are defective. The starter and High frequency ballasts are approved components. On re-assembly, all faulty/damaged wiring should be replaced and connections checked.

3.9.1 Battery Check and Replacement

Do not open luminaire when a hazardous atmosphere is present. Isolate before opening. The battery is detached at the plug and socket. Remove the two screws to release the battery. Re-assembly is in reverse order.
Important : *Care must be taken not to short the leads together as this can cause sparking which, in turn, could lead to a fire.*
The emergency duration is 3 hours for both the 36W and the 58W. This is in accordance with EN 60598 2-22. The battery must be replaced when the duration is not acceptable.
Protect the batteries from water ingress and mechanical damage then transport from the hazardous area as soon as practical. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit.

4.0 Overhaul

The unit is largely made of materials that are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 0.8mm² solid core, HTPVC insulated. All the spares required are available. Please state the model number and lamp details. The seal is between the polycarbonate diffuser and the base. The diffuser is retained by stainless steel clips. If the sealing gasket has deteriorated by softening or permanent set, a new sealing gasket should be fitted, which can be obtained from Chalmit. To fit this, care is needed, the old gasket should be removed and remaining adhesive scraped off. The gasket is fixed in place to the body with a small amount of silicone RTV.

5.0 Fuse Ratings

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The inrush current can be calculated where circuit conditions are known. The inrush currents can be obtained from Chalmit.
The fuse ratings for fluorescent lamp circuits need to take account of three components of circuit current. Where PFC capacitors are fitted, the current inrush can be up to 25 x the rated capacitor current and last 1-2milli seconds The inrush current can be calculated where circuit conditions are known. For luminaires the nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other supply volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

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Note : *Line currents for 240V, 50Hz are as indicated in Table 5.*

6.0 Disposal of Material

The unit is made from combustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Fluorescent lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation. Avoid inhaling dust. This applies to the UK; there may be other regulations on disposal operating in other countries.

Important: *Do not incinerate lamps.*

6.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the user needs to observe a 'duty of care'.

Batteries can be returned to the manufacturers for re-cycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit. For further details refer to Technical Department.

0.0 Tables 1/2/3/4/5

Note: for Dust Ratings Refer to Max Surface Temperatures.

Table 1	Ratings For GRP Body Type with CuFe Gear.				Refer to Section: 1.0	
Model	**Lamps**	**Voltage Range**	**Circuit Type**	**Ambient Temp ºC**	**T Rating**	**Max Surface Temp ºC**
STGN/158	1 x 58W T8	220/240V, 50Hz 220/254V, 60Hz	Parallel	40	140ºC (T3)	95
				30	T4	
STGN/158				50		
STGN/258	2 x 58W T8			40	160ºC (T3)	
				35	T4	
STGN/136	1 x 36W T8			40		
STGN/136				50		
STGN/236	2 x 36W T8			45		
STGN/118	1 x 18W T8			35		
STGN/118				45		
STGN/218	2 x 18W T8			40		
STGN/218			Series	50		

	Table 2	Ratings For Stainless Steel Body Type with CuFe Gear.			Refer to Section:	1.0
	Model	**Lamps**	**Voltage Range**	**Circuit Type**	**Ambient Temp ºC**	**T Rating**	**Max Surface Temp ºC**
	STSN/358	1 x 58W T8	220/240V, 50Hz	Parallel	50	T4	95
	STSN/258	2 x 58W T8	220/254V, 60Hz		40	160ºC (T3)	
					35		

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	STSN/336	1 x 36W T8			50		
	STSN/236	2 x 36W T8			45		
	STSN/318	1 x 18W T8			45	T4	
	STSN/218	2 x 18W T8			40		
				Series	50		

Table 3	Ratings For High Frequency GRP & Stainless Steel				Refer to Section:	1.0
Model	**Lamps**	**Voltage Range**	**Body Type**	**Ambient Temp ºC**	**T Rating**	**Max Surface Temp ºC**
STSN/358	1 x 58W T8	220/240V, 50/60/0Hz	Single	40	T4	95
STSN/258	2 x 58W T8		Twin	35		
STSN/336	1 x 36W T8		Single	50		
STSN/236	2 x 36W T8		Twin			
STSN/318	1 x 18W T8		Twin	45		
STSN/218	2 x 18W T8					

Table 4	Ratings For High Frequency Emergency Twin body types only. GRP & Stainless Steel.				Refer to Section:	1.0
Model	**Lamps**	**Voltage Range**	**BLF**	**Ambient Temp ºC**	**T Rating**	**Max Surface Temp ºC**
STGN/358*	1 x 58W T8	220/240V, 50/60Hz	8%	40	T4	95
STGN/258	2 x 58W T8			35		
STGN/336*	1 x 36W T8		10%	50		
STGN/236	2 x 36W T8			45		

* Non-maintained.

Table5

No. Off Lamp	**Gear Type**	**Lamp W**	**Nominal Circuit Power W**	**PFC µf**	**Line Current**
1	CuFe	18	24.3	4	0.16
2		18	48.6	6	0.32
2*		18	42.0	4	0.23
1		36	42.0	4	0.23
2		36	84.0	8	0.46
1		58	66.5	6	0.34
2		58	133	10	0.68
1	HF	18	20		0.09
2		18	38		0.17
1		36	36		0.16
2		36	72		0.32
1		58	56		0.25
2		58	107		0.49

*Series Circuit.

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

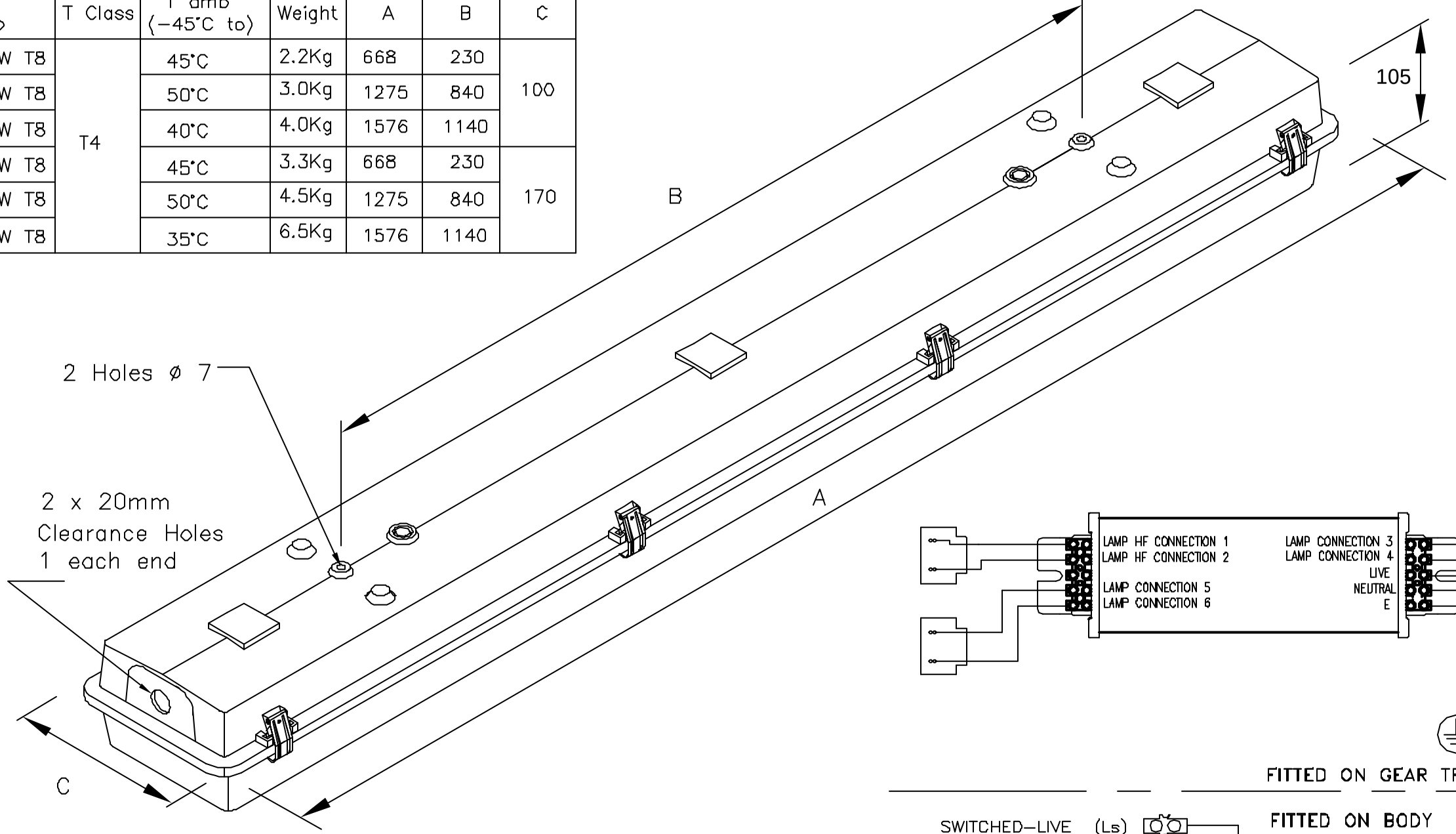
DRAWING NUMBER/SHEET NUMBER
F1075

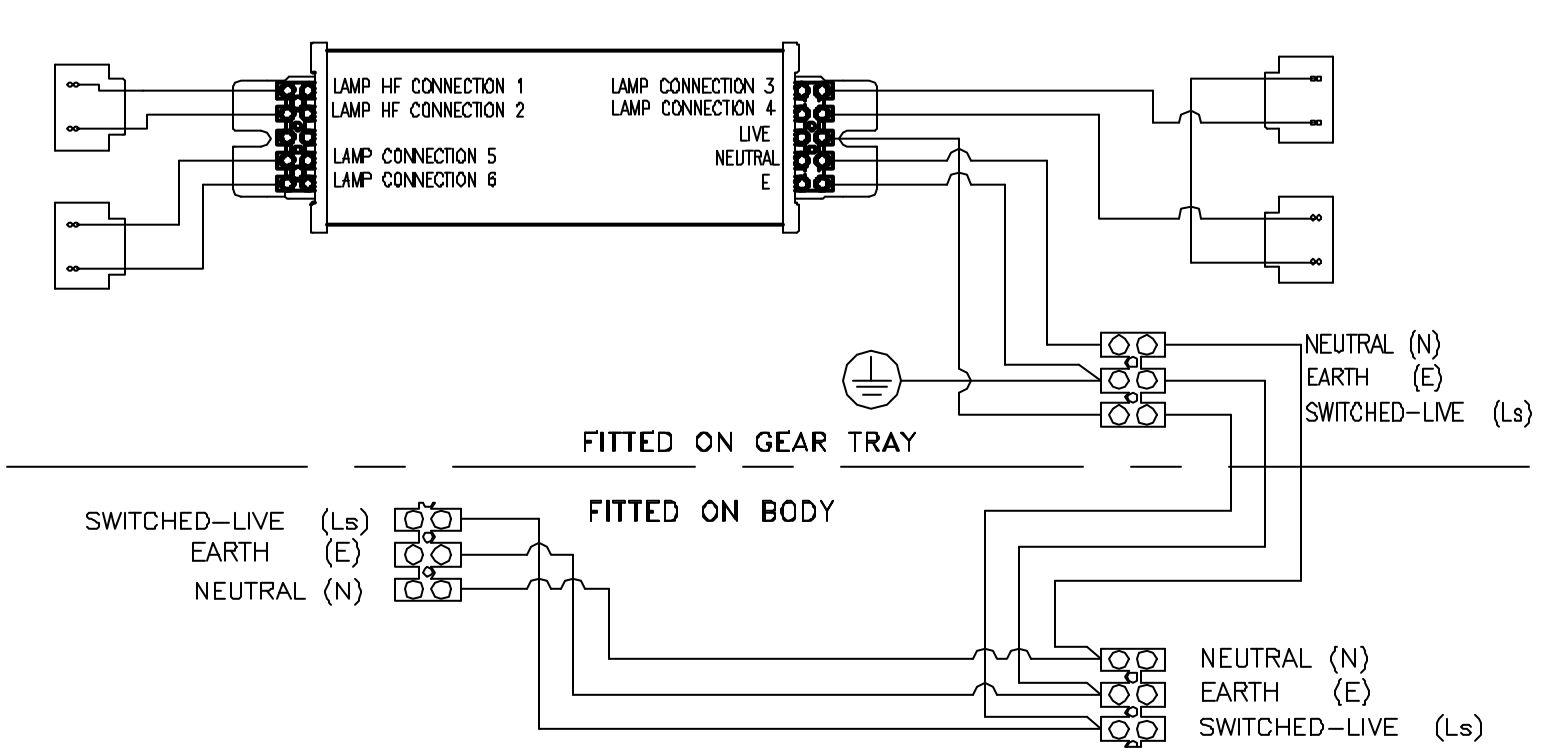
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION

Wattage & Lamp	T Class	T amb (−45°C to)	Weight	A	B	C
1 x 18W T8	T4	45°C	2.2Kg	668	230	100
1 x 36W T8		50°C	3.0Kg	1275	840	
1 x 58W T8		40°C	4.0Kg	1576	1140	
2 x 18W T8		45°C	3.3Kg	668	230	170
2 x 36W T8		50°C	4.5Kg	1275	840	
2 x 58W T8		35°C	6.5Kg	1576	1140	





Product Name	Sterling Ex n Fluorescent
Ex Classification	Ex nA (Non–sparking) Dust protected enclosure
Ex code	Ex nA II T4
Certificate	BAS01ATEX3052X
Voltage & Frequency	220–240V @ 50/60Hz
Degree of Protection	IP65 BS EN 60529

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	17/06/2002

REF. DRGS.–

MATERIAL	GRP
TOLERANCE	
FINISH	
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	–

TITLE
Sterling Ex n HF Range
BI PIN FLUORESCENT
HIGH FREQUENCY

DRAWING NUMBER/SHEET NUMBER
F1075 1 OF 1

STERLING E

Ex n FLUORESCENT
EMERGENCY LIGHTING

ATEX CATEGORY 3
ZONE 2 and 22 APPLICATIONS

The Sterling emergency is a quality luminaire designed to provide instant glare free white light at low mounting heights and have a 3 hour emergency duration. The GRP body and polycarbonate diffuser secured with multiple stainless steel clips ensure good corrosion resistance and rapid access for installation and maintenance. The protection is Ex n for ignitable gas applications and dust excluding, IP6X, for use in ignitable dust applications.
The ATEX Categories are 3 G and 3 D. The range is suitable for T8 tubular fluorescent lamps in the nominal 36/58W sizes.
The emergency electronics provide for battery charging, indication and protection. The standard range has electronic control gear. Conventional low loss control gear with electronic start is available as an option.

Standard Specification

Type of Protection:	**Ex nA (Non-sparking) Dust protected enclosure**
ATEX Classification:	**Group II Category 3 G D**
Area Classification:	**Zone 2 and Zone 22 areas to EN 60079-10 and EN 50281-3 with installation to EN 60079-14 and EN 50281-1-2**
Apparatus Standard:	**EN 50021 EN 50281-1-1**
Certificate:	**Type Examination Certificate BAS01ATEX3052X**
Coding:	**Ⓔx II 3 G D EEx nA II (refer to table for T rating and Ambient)**
Enclosure:	**GRP with polycarbonate diffuser and stainless steel retaining clips**
Reflector:	**White polyester painted zinc coated steel**
Entry:	**2 x 20mm diameter holes, 1 at each end**
Termination:	**4 core 4mm² max. conductor with through wiring 16A rating**
Installation:	**Two clearance holes for M8 fasteners located on rear of body, sealing washers provided**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**T8 tubular fluorescent**
Control Gear:	**High Frequency ballast housed within sealed enclosure, electronic charger/inverter housed in sealed enclosure, Ni-cd batteries**
Relamping:	**Access via front diffuser secured by quick release stainless steel clips**
Burning Position:	**Universal**
Ingress Protection:	**IP65 to EN 60529**
Electrical Supply:	**220-240V 50/60Hz**
Battery:	**Ni-Cd battery 6V 4Ah 5 cell**
Duration	**3 hours**
Emergency Output:	**36W 10% of one lamp 58W 8% of one lamp**

Features

Polycarbonate diffuser

Stainless steel diffuser clips 4 per side on 36W, 5 on 58W

Through wiring as standard

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output.

Long life nickel cadmium batteries

Switchable mains supply for local operation

LED charge indicator

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Std. Cat No.	Previously	Wattage	T Class (Gas)	T°C (Dust)	Ambient ˚C	Weight
STGN/136/BI/EM	341NA-EM	1x36W	T4	95	45*	4.8kg
STGN/236/BI/EM	342NA-EM	2x36W	T4	95	45	7.1kg
STGN/158/BI/EM	351NA-EM	1x58W	T4	95	35*	6.1kg
STGN/258/BI/EM	352NA-EM	2x58W	150°C T3	95	35	8.1kg

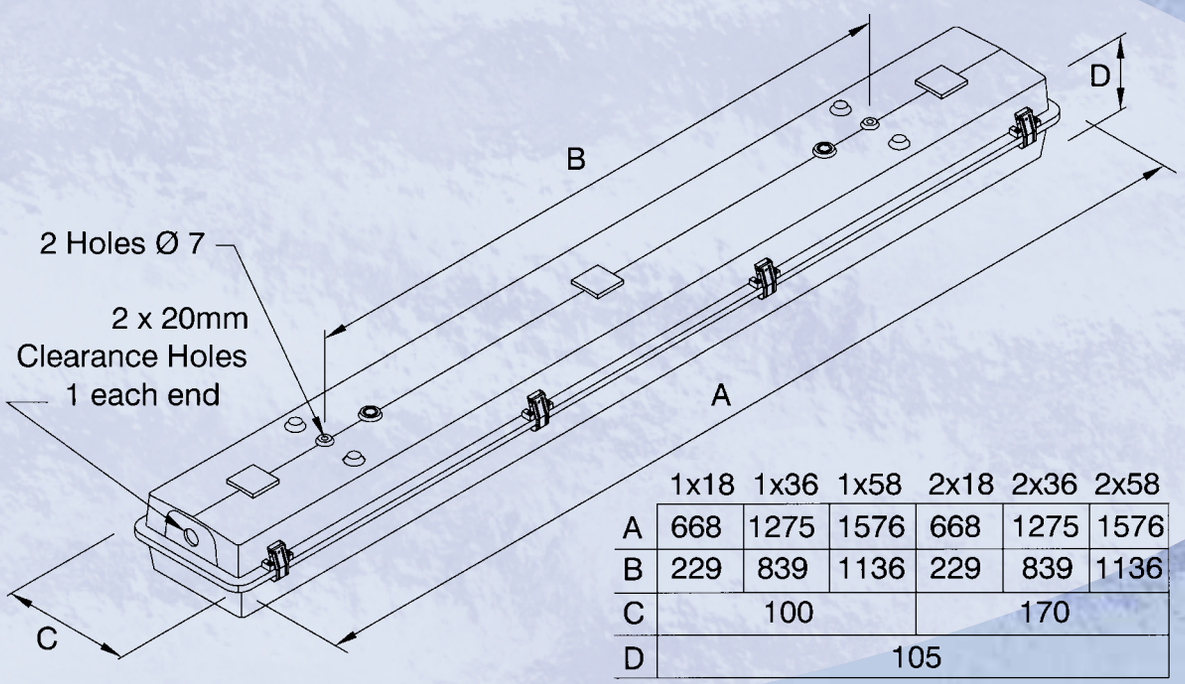
Note: Single lamp versions are in twin bodies.
*Available as non maintained. T5 at 45˚C ambient. (See options below)
Dust only version (STGD/___) available. Contact sales for information.

Options - Suffix to Catalogue No.

/MF	Mains Fuse
/NM	Non Maintained (Single lamp version only)

Applications

- Zone 2 hazardous areas • Petrochemical process areas
- Sewage treatment plants • Explosive storage buildings
- Pharmaceutical industry • Tunnel lighting
- Harsh industrial environments



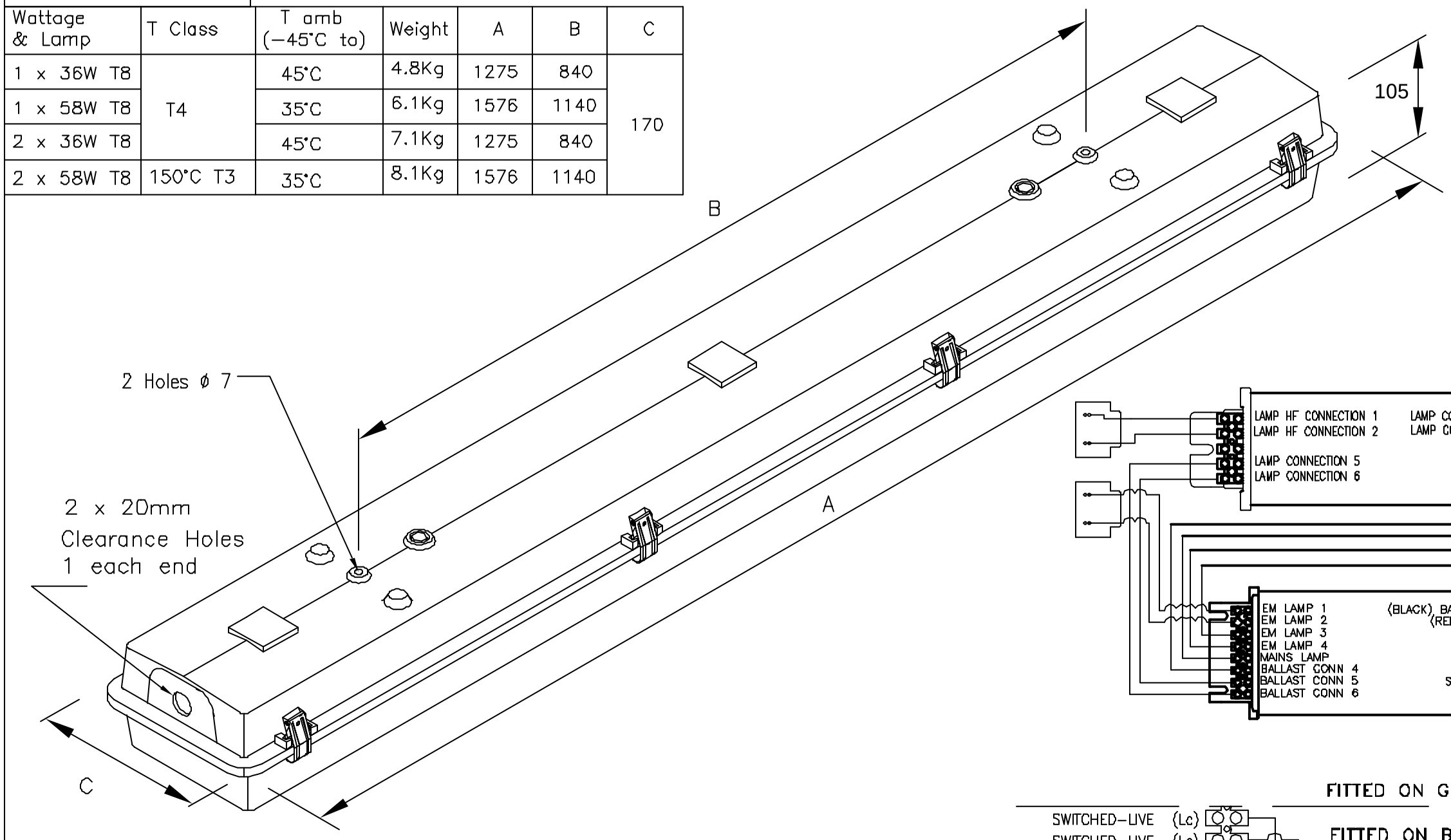
	1x18	1x36	1x58	2x18	2x36	2x58
A	668	1275	1576	668	1275	1576
B	229	839	1136	229	839	1136
C	100			170		
D	105					

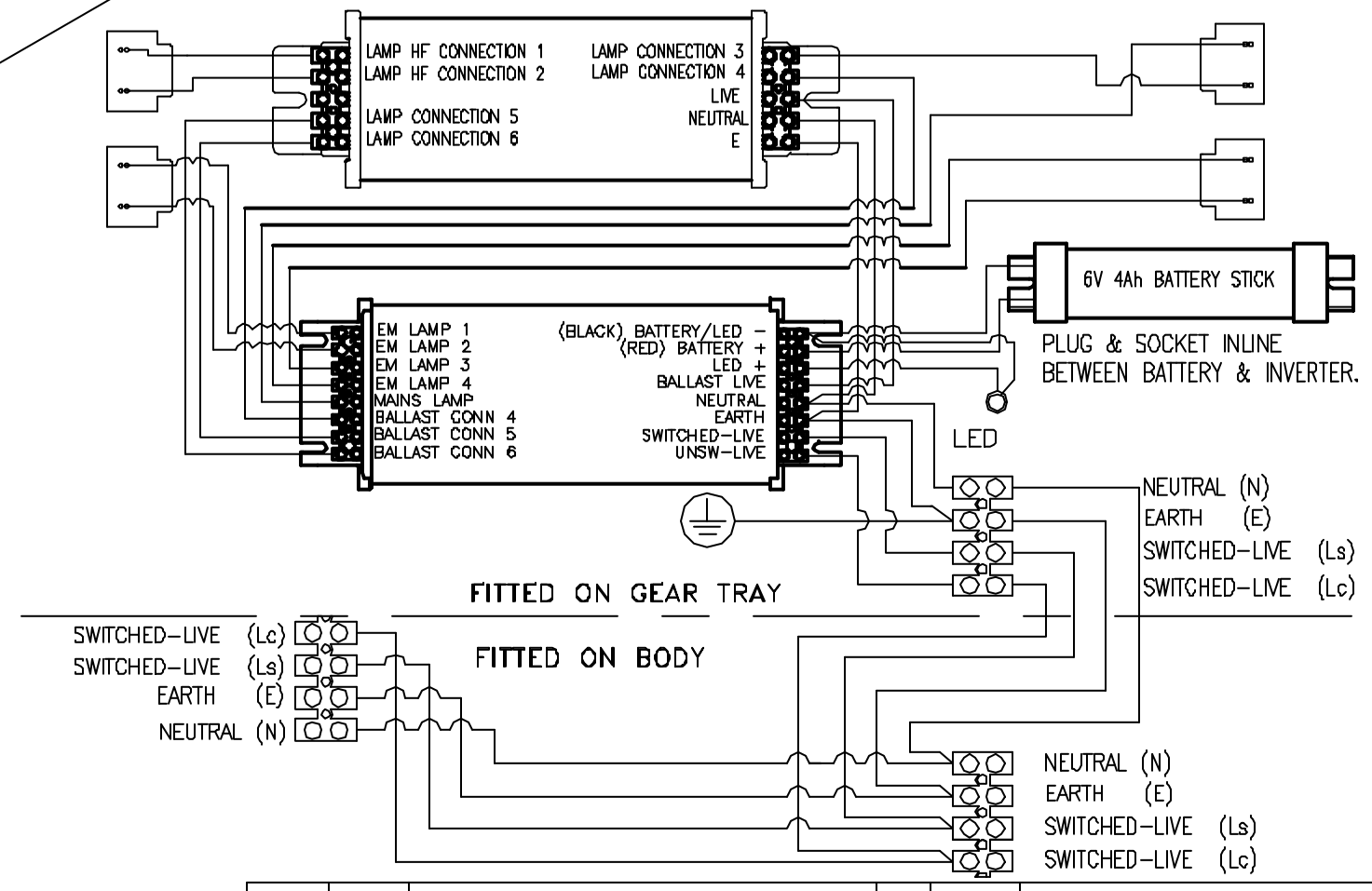
Accessories (Should be ordered separately)	**Catalogue Order Code**
Offset ceiling bracket assembly	**SPR04-0002**
Pole mounting bracket assembly (38/50 diameter poles)	**SPR04-0003**
C' form hook type ceiling bracket assembly	**SPR04-0005**
Flush mounted wall bracket assembly	**SPR04-0006**
18W wall mounting outreach bracket (use with SPR04-0003)	**NPR04-0008**
36W wall mounting outreach bracket (use with SPR04-0003)	**NPR04-0012**
58W wall mounting outreach bracket (use with SPR04-0003)	**NPR04-0022**
Eyebolt set	**SPR05-0005**

DRAWING NUMBER/SHEET NUMBER
F1076

REMOVE ALL BURRS & SHARP EDGES IF IN DOUBT ASK! 3RD ANGLE PROJECTION

Wattage & Lamp	T Class	T amb (−45°C to)	Weight	A	B	C
1 x 36W T8	T4	45°C	4.8Kg	1275	840	170
1 x 58W T8		35°C	6.1Kg	1576	1140	
2 x 36W T8		45°C	7.1Kg	1275	840	
2 x 58W T8	150°C T3	35°C	8.1Kg	1576	1140	





Product Name	Sterling Ex n Emergency Fluorescent
Ex Classification	Ex nA (Non-sparking) Dust protected enclosure
Ex code	Ex nA II T4 See Table
Certificate	BAS01ATEX3052X
Voltage & Frequency	220-240V @ 50/60Hz
Degree of Protection	IP65 BS EN 60529

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	17/06/2002

REF. DRGS.-

MATERIAL	GRP
TOLERANCE	
FINISH	
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

TITLE
Sterling Ex n EM HF Range
BI PIN FLUORESCENT
HIGH FREQUENCY

DRAWING NUMBER/SHEET NUMBER
F1076 1 OF 1

STERLING STAINLESS

Ex n FLUORESCENT

ATEX CATEGORY 3

ZONE 2 and 22 APPLICATIONS

The Sterling stainless is a robust quality luminaire designed to provide instant glare free white light at low mounting heights. The stainless steel 316S31 body and polycarbonate diffuser secured with multiple stainless steel clips ensure excellent corrosion resistance and rapid access for installation and maintenance. The stainless steel body is designed to provide high impact strength and resistance to those chemicals which might damage GRP. The protection is Ex n for ignitable gas applications and dust excluding, IP6X, for use in ignitable dust applications. The ATEX Categories are 3 G and 3 D.
The range is suitable for T8 tubular fluorescent lamps in the nominal 18/36/58W sizes. The standard range has electronic control gear. Conventional low loss control gear with electronic start is available as an option.

Standard Specification

Type of Protection:	**Ex nA (Non-sparking) Dust protected enclosure**
ATEX Classification:	**Group II Category 3 G D**
Area Classification:	**Zone 2 and Zone 22 areas to EN 60079-10 and EN 50281-3 with installation to EN 60079-14 and EN 50281-1-2**
Apparatus Standard:	**EN 50021 EN 50281-1-1**
Certificate:	**Type Examination Certificate BAS01ATEX3052X**
Coding:	**Ⓔx II 3 G D EEx nA II (refer to table for T rating and Ambient)**
Enclosure:	**Marine grade 316S31 stainless steel body with polycarbonate diffuser and stainless steel retaining clips**
Reflector:	**White polyester painted zinc coated steel**
Entry:	**3 x 20mm diameter holes, 2 at one end and 1 at the other end**
Termination:	**3 core 4mm² max. conductor with looping and through wiring 16A rating**
Installation:	**Two clearance holes for M8 fasteners located on rear of body, sealing washers provided**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**T8 tubular fluorescent**
Control Gear:	**High Frequency ballast housed within sealed enclosure**
Relamping:	**Access via front diffuser secured by quick release stainless steel clips**
Burning Position:	**Universal**
Ingress Protection:	**IP65 to EN 60529**
Electrical Supply:	**220-240V 50/60Hz**

Features

Marine grade 316S31 stainless steel body and polycarbonate diffuser

3 clips per side on 18W, 4 on 36W and 5 on 58W

Mains connection terminals fixed to body

Gear tray suspended and fitted with control gear for ease of maintenance

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output.

Std. Cat No.	Previously	Wattage	T Class (Gas)	T°C (Dust)	Ambient °C	Weight
STSN/118/BI	323NC	1x18W	T4	95	45	4.2kg
STSN/218/BI	322NC	2x18W	T4	95	45	3.6kg
STSN/136/BI	343NC	1x36W	T4	95	50	4.2kg
STSN/236/BI	342NC	2x36W	T4	95	50	4.8kg
STSN/158/BI	353NC	1x58W	T4	95	40	6.1kg
STSN/258/BI	352NC	2x58W	T4	95	35	6.5kg

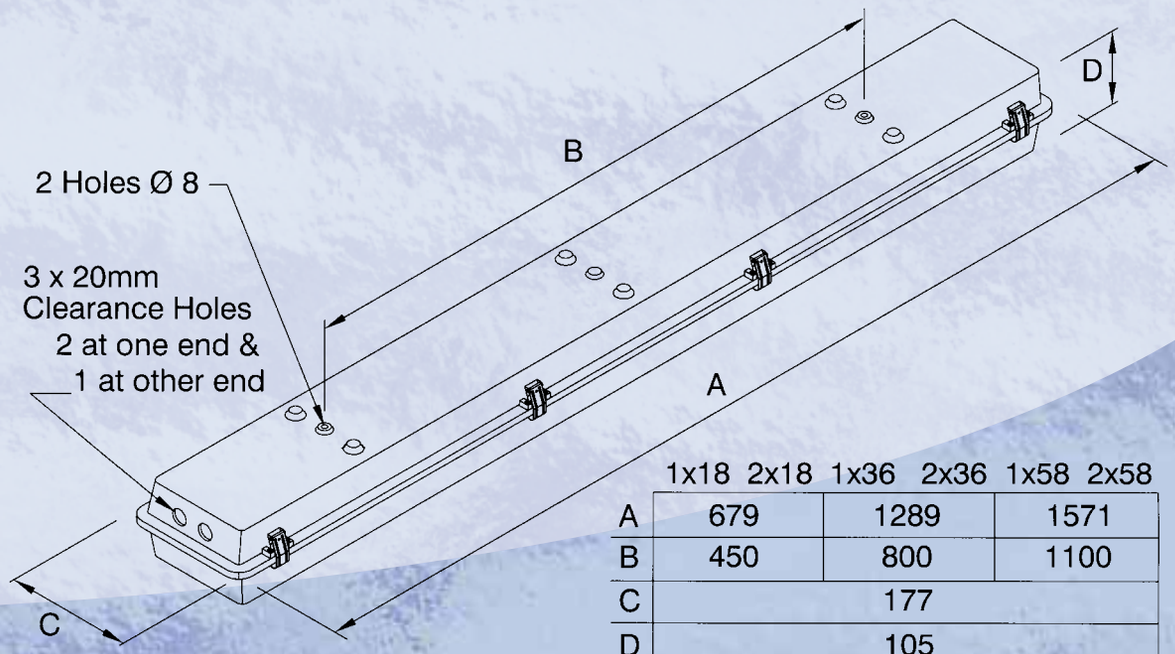
Note: Single lamp versions are in twin bodies.
Dust only version (STSD/___) available. Contact sales for information.

Applications

- Zone 2 hazardous areas
- Harsh and corrosive environments
- Petrochemical process areas
- Pharmaceutical industry
- Tunnel lighting
- Sewage treatment plants
- Distilleries
- Walkways

Options - Suffix to Catalogue No.

/___	Specific voltage (120, 220 or 254 copper & iron versions only)
/ES	Copper and iron control gear
/60	60Hz (copper and iron versions only)
/MF	Mains fuse
/25	3 x 25mm cable entries attached
/CM	c/w offset ceiling mounting brackets
/TE	Threaded entry pads
/EB	End mounting brackets attached
/EL	Extra live termination (compatible with 4-core switched emergency circuits)



	1x18	2x18	1x36	2x36	1x58	2x58
A	679		1289		1571	
B	450		800		1100	
C	177					
D	105					

Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting bracket assembly (38/50 diameter poles)	**SPRO4-0003**
C' form hook type ceiling bracket assembly	**SPRO4-0005**
Flush mounted wall bracket assembly	**SPRO4-0006**
18W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0008**
36W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0012**
58W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0022**
Eyebolt set	**SPRO5-0005**

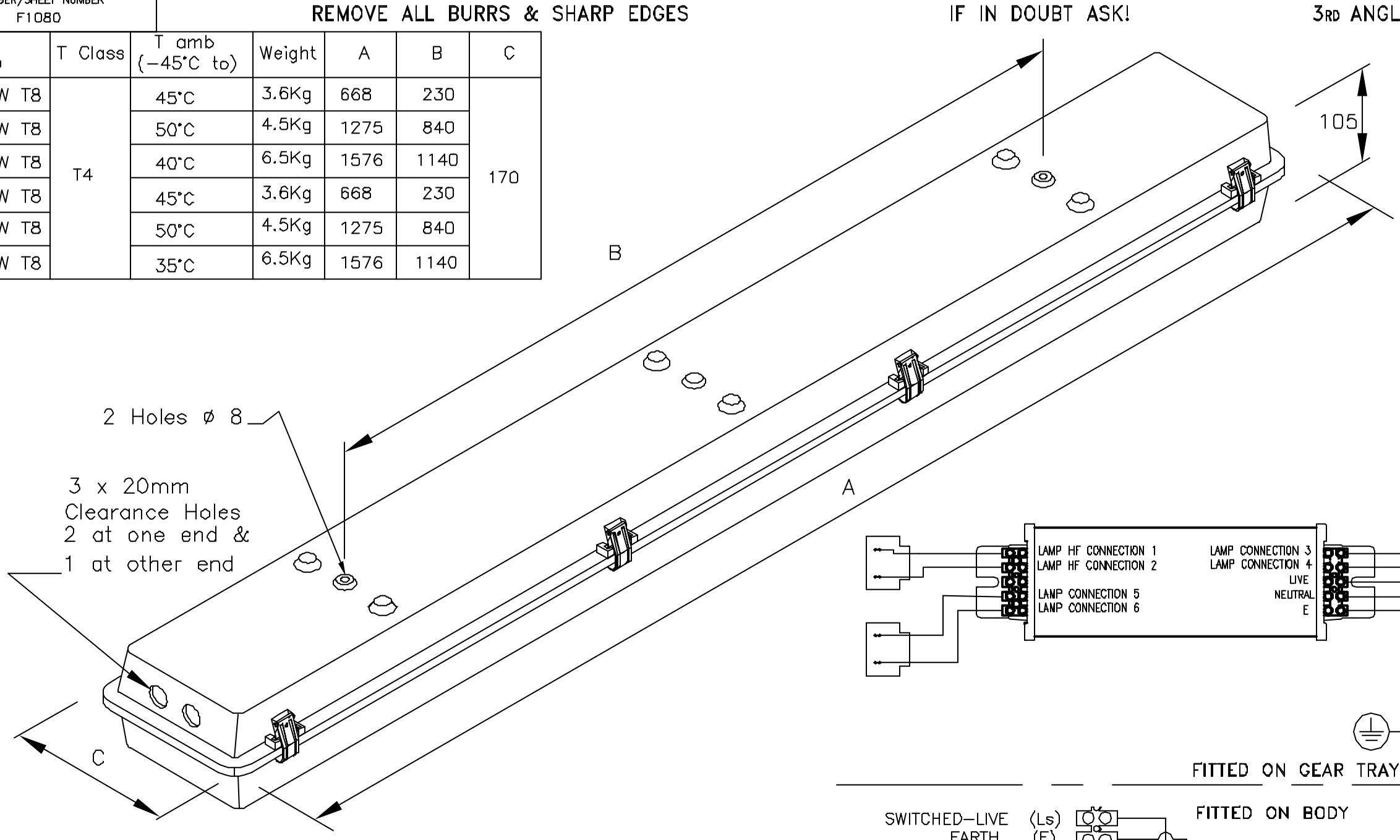
DRAWING NUMBER/SHEET NUMBER
F1080

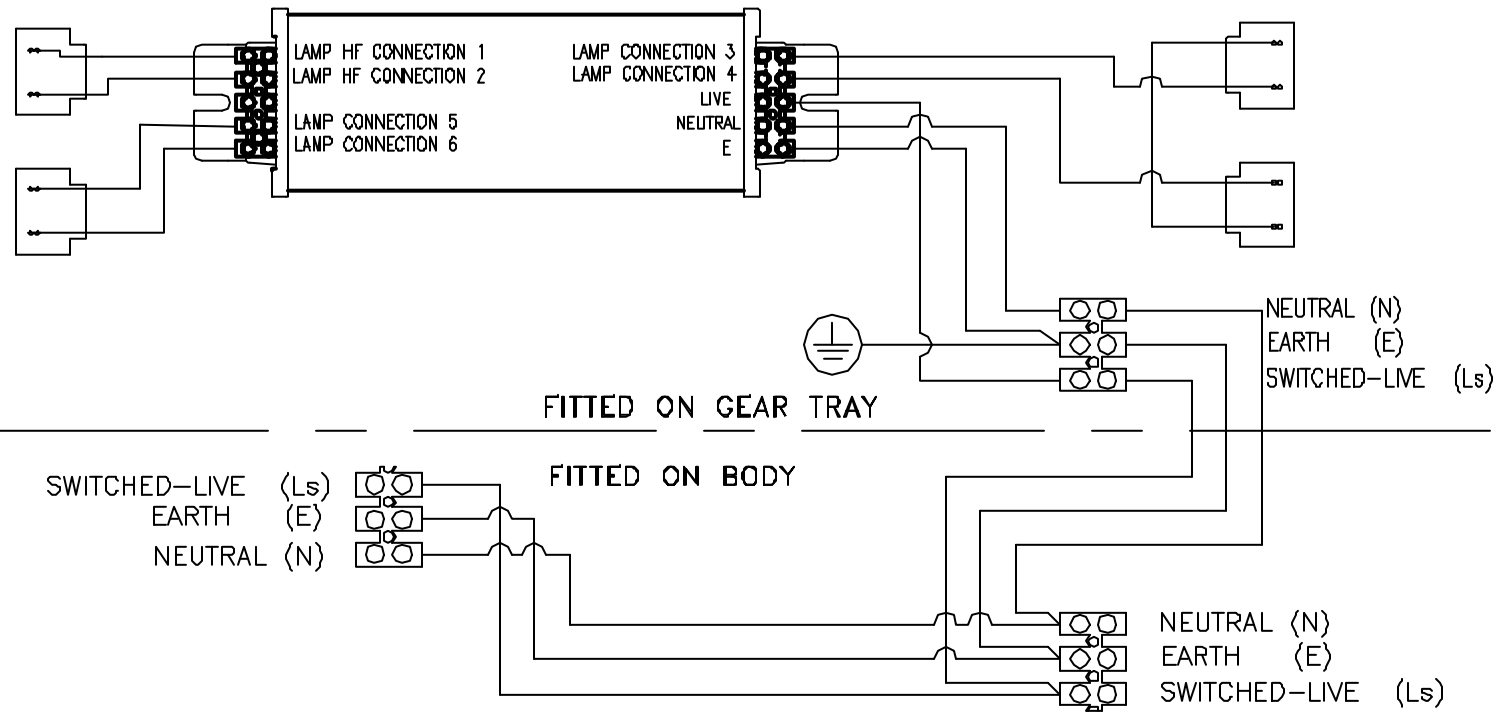
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION

Wattage & Lamp	T Class	T amb (−45°C to)	Weight	A	B	C
1 x 18W T8	T4	45°C	3.6Kg	668	230	170
1 x 36W T8		50°C	4.5Kg	1275	840	
1 x 58W T8		40°C	6.5Kg	1576	1140	
2 x 18W T8		45°C	3.6Kg	668	230	
2 x 36W T8		50°C	4.5Kg	1275	840	
2 x 58W T8		35°C	6.5Kg	1576	1140	





Product Name	Sterling Stainless Steel Ex n Fluorescent
Ex Classification	Ex nA (Non−sparking) Dust protected enclosure
Ex code	Ex nA II T4
Certificate	BAS01ATEX3052X
Voltage & Frequency	220−240V @ 50/60Hz
Degree of Protection	IP65 BS EN 60529

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	18/06/2002
REF. DRGS.−	

MATERIAL: GRP	TOLERANCE
FINISH	SURFACE ROUGHNESS
DIMS. IN MM	SCALE −

TITLE
Sterling St St Ex n HF
BI PIN FLUORESCENT
HIGH FREQUENCY

DRAWING NUMBER/SHEET NUMBER
F1080 1 OF 1

STERLING E STAINLESS

Ex n FLUORESCENT

EMERGENCY LIGHTING

ATEX CATEGORY 3

ZONE 2 and 22 APPLICATIONS

The Sterling stainless emergency is a robust quality luminaire designed to provide instant glare free white light at low mounting heights. The stainless steel 316S31 body and polycarbonate diffuser secured with multiple stainless steel clips ensure excellent corrosion resistance and rapid access for installation and maintenance. The stainless steel body is designed to provide high impact strength and resistance to those chemicals which might damage GRP. The protection is Ex n for ignitable gas applications and dust excluding, IP6X, for use in ignitable dust applications.
The ATEX Categories are 3 G and 3D.
The range is suitable for T8 tubular fluorescent lamps in the nominal 36/58W sizes.
The standard range has electronic control gear.
Conventional low loss control gear with electronic start is available as an option.

Standard Specification

Type of Protection:	**Ex nA (Non-sparking) Dust protected enclosure**
ATEX Classification:	**Group II Category 3 G D**
Area Classification:	**Zone 2 and Zone 22 areas to EN 60079-10 and EN 50281-3 with installation to EN 60079-14 and EN 50281-1-2**
Apparatus Standard:	**EN 50021 EN 50281-1-1**
Certificate:	**Type Examination Certificate BAS01ATEX3052X**
Coding:	**Ⓔx II 3 G D EEx nA II (refer to table for T rating and Ambient)**
Enclosure:	**Marine grade 316S31 stainless steel body with polycarbonate diffuser and stainless steel retaining clips**
Reflector:	**White polyester painted zinc coated steel**
Entry:	**3 x 20mm diameter holes, 2 at one end and 1 at the other end**
Termination:	**4 core 4mm² max. conductor with looping and through wiring 16A rating**
Installation:	**Two clearance holes for M8 fasteners located on rear of body, sealing washers provided**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**T8 tubular fluorescent**
Control Gear:	**High Frequency ballast housed within sealed enclosure, electronic charger/inverter housed in sealed enclosure, Ni-Cd batteries**
Relamping:	**Access via front diffuser secured by quick release stainless steel clips**
Burning Position:	**Universal**
Ingress Protection:	**IP65 to EN 60529**
Electrical Supply:	**220-240V 50-60Hz**
Battery:	**Ni-Cd battery 6V 4Ah 5 cell**
Duration	**3 hours**
Emergency Output:	**36W 10% of one lamp, 58W 8% of one lamp**

Features

Marine grade 316S31 stainless steel body and polycarbonate diffuser

3 clips per side on 18W, 4 on 36W and 5 on 58W

Mains connection terminals fixed to body

Gear tray suspended and fitted with control gear for ease of maintenance

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output.

Long life nickel cadmium batteries

Switchable mains supply for local operation

LED charge indicator

Std. Cat No.	Previously	Wattage	T Class (Gas)	TºC (Dust)	Ambient ºC	Weight
STSN/136/BI/EM	341NC-EM	1x36W	T4	95	45	6.6kg
STSN/236/BI/EM	342NC-EM	2x36W	T4	95	45	8.2kg
STSN/158/BI/EM	351NC-EM	1x58W	T4	95	35	7.2kg
STSN/258/BI/EM	352NC-EM	2x58W	150ºC T3	95	35	9.1kg

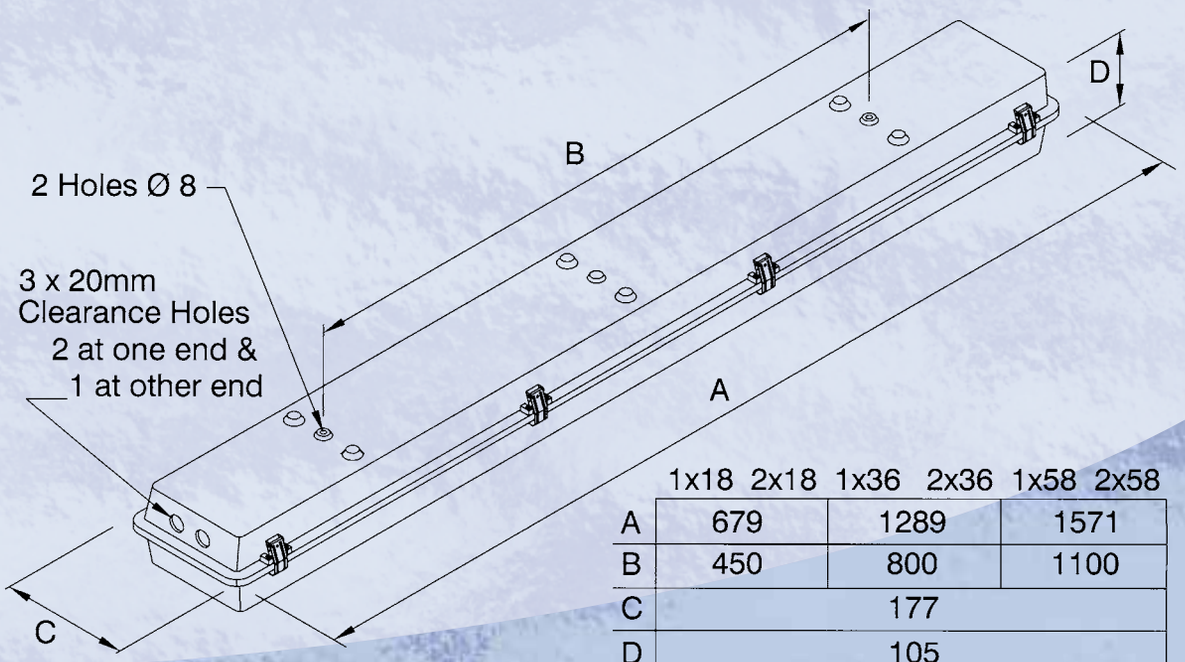
Note: Single lamp versions are in twin bodies.
Dust only version (STSD/___) available. Contact sales for information.

Options - Suffix to Catalogue No.

/NM	Non-maintained (single lamp version only)
/MF	Mains fuse
/25	3 x 25mm cable entries
/CM	c/w offset ceiling mounting brackets attached
/TE	Threaded entry pads
/EB	End mounting brackets attached

Applications

- Zone 2 hazardous areas
- Harsh and corrosive environments
- Petrochemical process areas
- Pharmaceutical industry
- Tunnel lighting
- Sewage treatment plants
- Distilleries
- Walkways



	1x18 2x18	1x36 2x36	1x58 2x58
A	679	1289	1571
B	450	800	1100
C	177		
D	105		

Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting bracket assembly (38/50 diameter poles)	**SPRO4-0003**
C' form hook type ceiling bracket assembly	**SPRO4-0005**
Flush mounted wall bracket assembly	**SPRO4-0006**
18W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0008**
36W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0012**
58W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0022**
Eyebolt set	**SPRO5-0005**

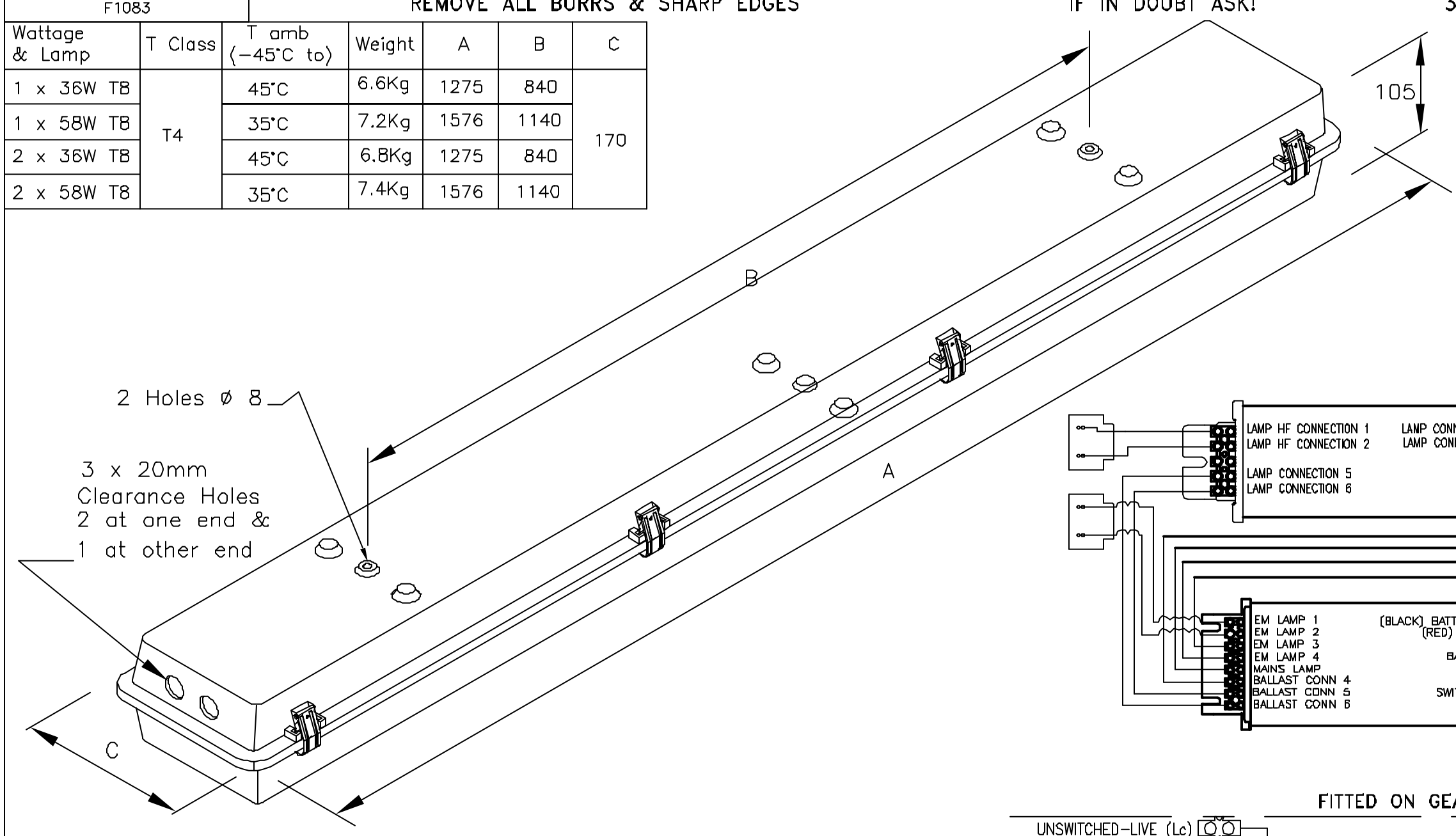
DRAWING NUMBER/SHEET NUMBER
F1083

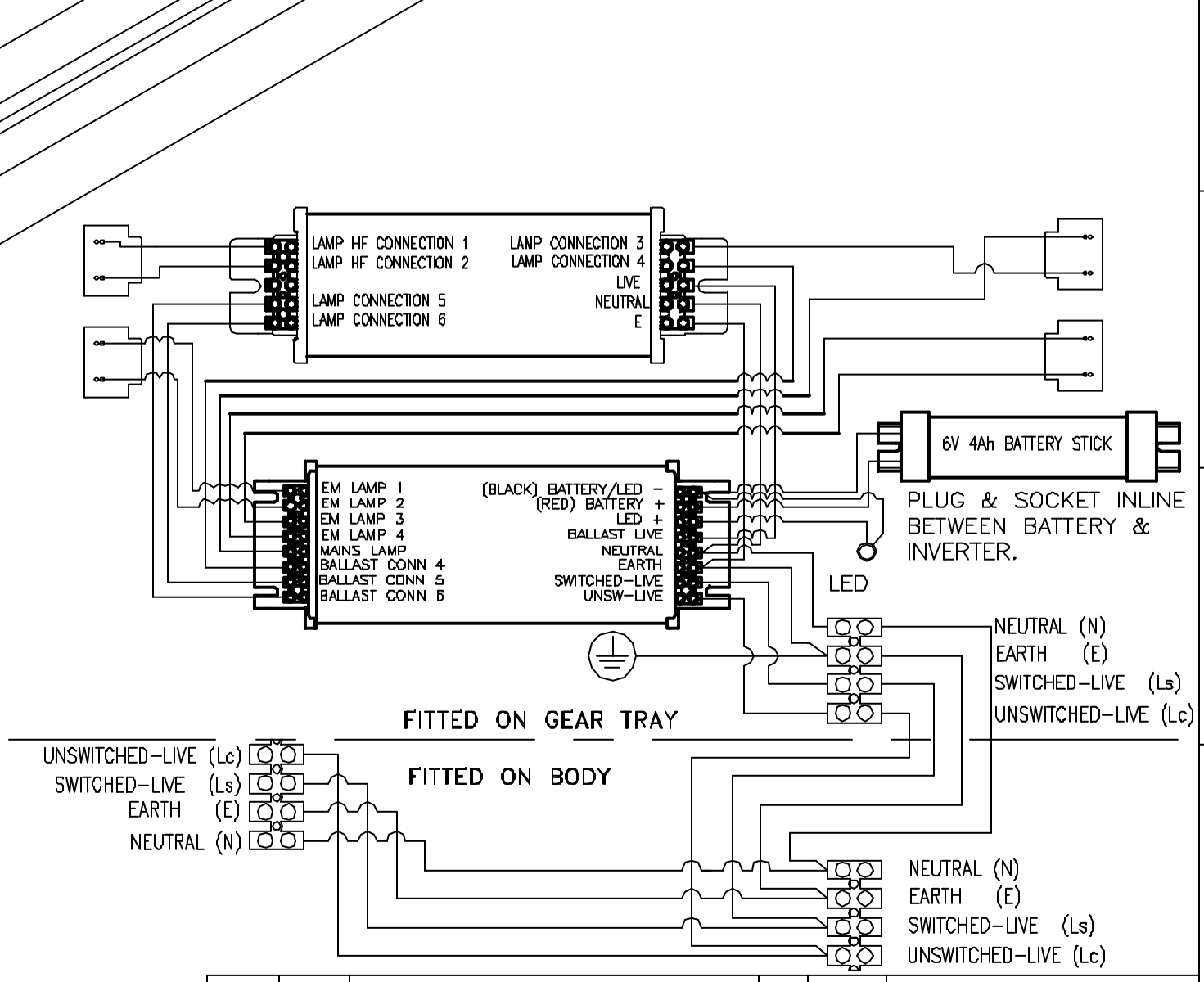
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION

Wattage & Lamp	T Class	T amb (−45°C to)	Weight	A	B	C
1 x 36W T8	T4	45°C	6.6Kg	1275	840	170
1 x 58W T8		35°C	7.2Kg	1576	1140	
2 x 36W T8		45°C	6.8Kg	1275	840	
2 x 58W T8		35°C	7.4Kg	1576	1140	





Product Name	Sterling Stainless Steel Ex n Emergency Fluorescent
Ex Classification	Ex nA (Non−sparking) Dust protected enclosure
Ex code	Ex nA II T4
Certificate	BAS01ATEX3052X
Voltage & Frequency	220−240V @ 50/60Hz
Degree of Protection	IP65 BS EN 60529

DCF No	MOD BY	CHANGE	ISSUE	DATE
	JTC	UNSWITCHED ADDED	01	26.06.02

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	J.T.C.
APPROVED	J.T.C.
DATE	26/06/2002

REF. DRGS.−

MATERIAL	GRP
TOLERANCE	
FINISH	
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	−

TITLE
Sterling St St Ex n HF EM BI PIN FLUORESCENT HIGH FREQUENCY

DRAWING NUMBER/SHEET NUMBER
F1083 1 OF 1

STERLING

Dust Protected Fluorescent

ATEX CATEGORY 3

ZONE 22 APPLICATIONS

The Sterling dust protected fluorescent is a quality low cost luminaire designed to be used in ignitable dust applications where low surface temperatures and instant low glare white light are required. It has a GRP body and a polycarbonate diffuser secured by multiple stainless steel clamps and is suitable for corrosive conditions.
The IP65 construction allows the use of the Sterling in applications where either non conducting or conducting dusts are present.
The standard range has high frquency control gear. Emergency versions with 3hour duration are included in the range.
There is also a stainless steel bodied version available for areas where resistance to chemicals which are corrosive to GRP may be needed.

Standard Specification

Type of Protection:	Dust protected enclosure
ATEX Classification:	Group II Category 3 D
Area Classification:	Zone 22 areas to EN 50281-3 with installation to EN 60079-14 and EN 50281-1-2
Apparatus Standard:	EN 50281-1-1
Certificate:	Type Examination Certificate BAS01ATEX3277X
Coding:	II 3 D T95ºC (refer to table for Ambient)
Enclosure:	GRP with polycarbonate diffuser and stainless steel retaining clips
Reflector:	White polyester painted zinc coated steel
Entry:	2 x 20mm diameter holes, 1 at each end
Termination:	3 core 4mm^2 max. conductor with through wiring 16A rating
Installation:	Two clearance holes for M8 fasteners located on rear of body, sealing washers provided
Lampholder:	G13 (Bi-pin)
Lamp Type:	T8 tubular fluorescent
Control Gear:	High Frequency ballast
Relamping:	Access via diffuser secured by quick release stainless steel clips
Burning Position:	Universal
Ingress Protection:	IP65 to EN60529
Electrical Supply:	220-240V 50/60Hz

Features

Polycarbonate diffuser

Stainless steel diffuser clips
3 per side on 18W, 4 on 36W & 5 on 58W

Through wiring as standard

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output.

Chalmit Lighting

United Kingdom Tel: +44 (0)141 882 5555 Fax: +44 (0)141 883 3704 info@chalmit.com
Benelux Tel: +31 (0)302 467132 Fax: +31 (0)302 467133 john.van.straalen@planet.nl

For the latest product information - www.chalmit.com

ibemo Kazakhstan - 090300 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Std. Cat No.	Wattage	TºC (Dust)	Ambient ºC	Weight
STGD/118/BI	1x18W	95	40	2.2kg
STGD/218/BI	2x18W	95	45	3.3kg
STGD/136/BI	1x36W	95	40	3.0kg
STGD/236/BI	2x36W	95	50	4.5kg
STGD/158/BI	1x58W	95	40	4.0kg
STGD/258/BI	2x58W	95	35	6.5kg
STGD/136/BI/EM	1x36W	95	45	4.6kg
STGD/236/BI/EM	2x36W	95	45	6.9kg
STGD/158/BI/EM	1x58W	95	35	5.9kg
STGD/258/BI/EM	2x58W	95	35	7.9kg

Notes: For stainless steel bodied versions STGD is replaced with STSD.

Single lamp emergency versions are in twin bodies.

Applications

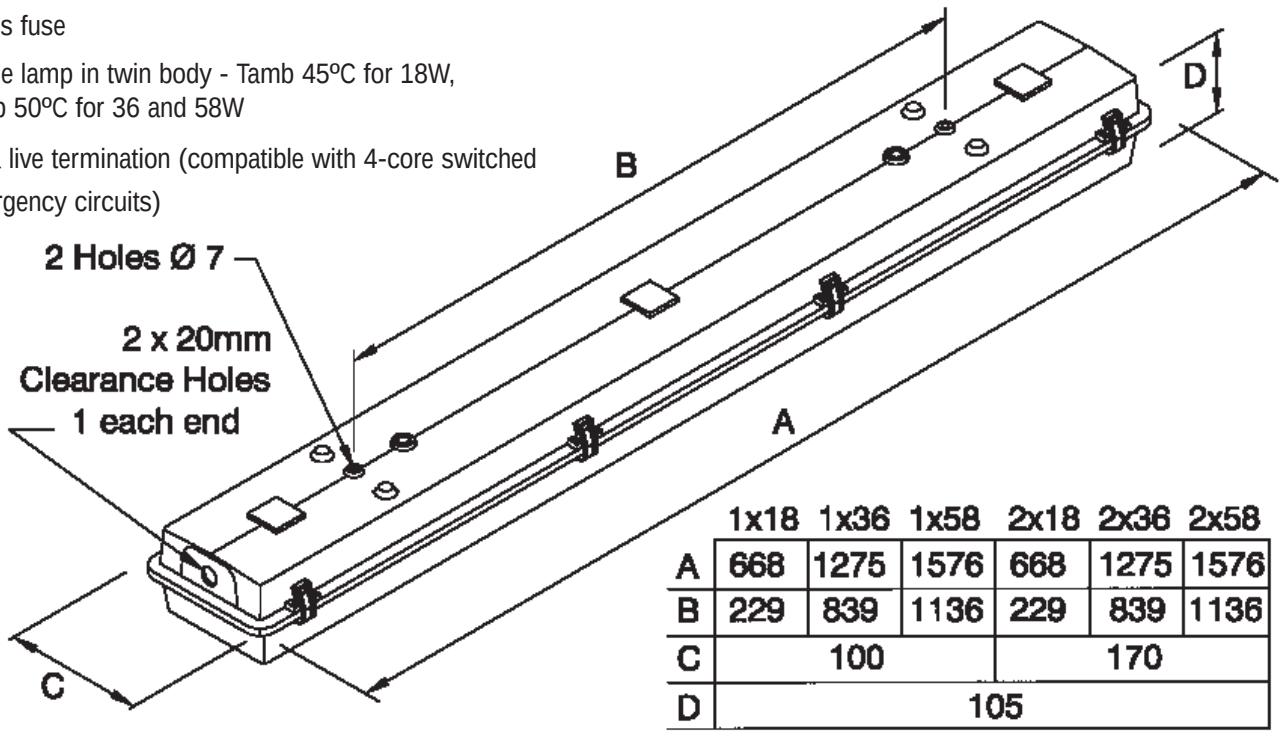
- Petrochemical process areas
- Sewage treatment plants
- Explosives storage buildings (Category C listed)
- Pharmaceutical industry
- Tunnel lighting
- Harsh industrial environments

Options - Suffix to Catalogue No.

/MF Mains fuse

/TB Single lamp in twin body - Tamb 45ºC for 18W, Tamb 50ºC for 36 and 58W

/EL Extra live termination (compatible with 4-core switched emergency circuits)



	1x18	1x36	1x58	2x18	2x36	2x58
A	668	1275	1576	668	1275	1576
B	229	839	1136	229	839	1136
C	100			170		
D	105					

Accessories (Should be ordered separately)	Catalogue Order Code
Offset ceiling bracket assembly	SPRO4-0002
Pole mounting bracket assembly (38/50 diameter poles)	SPRO4-0003
C' form hook type ceiling bracket assembly	SPRO4-0005
Flush mounted wall bracket assembly	SPRO4-0006
18W wall mounting outreach bracket (use with SPRO4-0003)	NPRO4-0008
36W wall mounting outreach bracket (use with SPRO4-0003)	NPRO4-0012
58W wall mounting outreach bracket (use with SPRO4-0003)	NPRO4-0022
Eyebolt set	SPRO5-0005

TYPE EXAMINATION CERTIFICATE

Equipment Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC

3 Type Examination Certificate Number : **BAS01ATEX3277X**

4 Equipment: **STERLING RANGE OF FLUORESCENT LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **Glasgow, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

BASEEFA Certification Report No. 01(C)0672 dated 22 November 2001

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

EN 50281-1-1: 1998

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

⟨Ex⟩ II 3D T95°C **T_{amb} (see schedule)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/048

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
12 December 2001

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

Re-issued 11 January 2002 to correct certificate number

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3277X**

15 **Description of Equipment**

The Sterling range of fluorescent luminaires comprises single and twin units of 18W, 36W and 58W in emergency and non-emergency units. The luminaire body is of glass reinforced polyester resin or stainless steel with a polycarbonate diffuser. Ingress protection of at least ***IP65*** is maintained by a closed cell silicone rubber gasket between the lid and the body. The gasket is fixed by adhesive into a moulded groove in the body. The diffuser is held in place using 6, 8 or 10 metal toggle clips for the 18, 36 and 58W versions respectively which produce a compression of at least 2mm in the gasket.

The following models are included in the range for the non-emergency units:

Model **STGN=GRP body** **STSN=Steel body**	**Lamps**	**Body**	**Voltage (50/60Hz)**	**T_{amb} (°C) -20 to __**	**Max Surface temperature (°C)**
STGN/118/D	1x18W	single	200-250	40	95
STSN/118/D	1x18W	twin	200-250	45	95
STGN/318/D	1x18W	twin	200-250	45	95
STGN/218/D STSN/218/D	2x18W	twin	200-250	45	95
STGN/136/D	1x36W	single	200-250	40	95
STSN/136/D	1x36W	twin	200-250	50	95
STGN/336/D	1x36W	twin	200-250	50	95
STGN/236/D STSN/236/D	2x36W	twin	200-250	50	95
STGN/158/D	1x58W	single	200-250	40	95
STSN/158/D	1x58W	twin	200-250	40	95
STSN/358/D	1x58W	twin	200-250	40	95
STGN/258/D STSN/258/D	2x58W	twin	200-250	35	95

TABLE 1

A white painted metal gear tray is attached within the main body by clips fixed to threaded pillars to which the following components are attached:

Ballast - Any electronic ballast meeting the requirements of EN 60928 and EN 60924 and carrying a BSI Kite Mark or European equivalent.

Lampholder - Vossloh Type 27700 or any tombstone type with centre contact support complying with EN 60400 carrying a BSI Kite Mark or European equivalent.

Terminals - 6 way terminal block suitable for 2.5 - 4 mm^2 cable and rated at least 250volts, 16 amps.

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3277X**

Internal wiring is by 1/0.8 solid copper conductor with heat resistant PVC insulation. Looping cables, where required, are 2.5mm² stranded copper conductor with silicone insulation. Through-going wiring is by 2.5mm² or 4mm² high temperature PVC insulated cable. When two conductors enter one terminal way they are fitted with a crimp-on blade connector.

The luminaire body is provided at each end with 20mm diameter clearance holes for fitting suitable cable entry devices or blanking plugs which must maintain the IP rating of the unit.

EMERGENCY VERSIONS

The luminaire may alternatively be fitted with electronic inverters meeting the requirements of EN 60928 and EN 60924 and carrying a BSI Kite Mark or European equivalent. The following models are included:

Model STGN=GRP body STSN=Steel body	Lamps	Maintained	Non-maintained	T_{amb} (°C) 0 to __	Max Surface temperature (°C)
STGN/336/EM/D STSN/336/EM/D	1x36W	yes	yes	45	95
STGN/236/EM/D STSN/236/EM/D	2x36W	yes	no	45	95
STGN/358/EM/D STSN/358/EM/D	1x58W	yes	yes	35	95
STGN/258/EM/D STSN/258/EM/D	2x58W	yes	no	35	95

TABLE 2

The emergency versions are denoted by the suffix /EM and due to the properties of the rechargeable batteries are only suitable for ambient temperatures above 0°C. Five NiCd cells, either Sanyo type KR-DHL or SAFT Type VT70, are welded together and contained within plastic sleeving. The batteries are rated at 6V 4Ah. The cells do not gas in normal operation and the charging system limits the charging rate and provides under voltage protection of 1v/cell.

17 **Special Conditions For Safe Use**

1. Emergency luminaires must not be used at an ambient of less than 0°C.

2. The luminaires must not be mounted in fast moving dry air streams.

18 **Essential Health and Safety Requirements**

All requirements are covered by compliance with EN 50281-1-1: 1998.

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3277X**

19 **DRAWINGS**

Number	Issue	Sheet	Date	Description
D2031	0	1	3/4/01	Component + certification details
D2031	0	2	3/4/01	Enclosure details

BASEEFA List Keywords
2FLUOLUM

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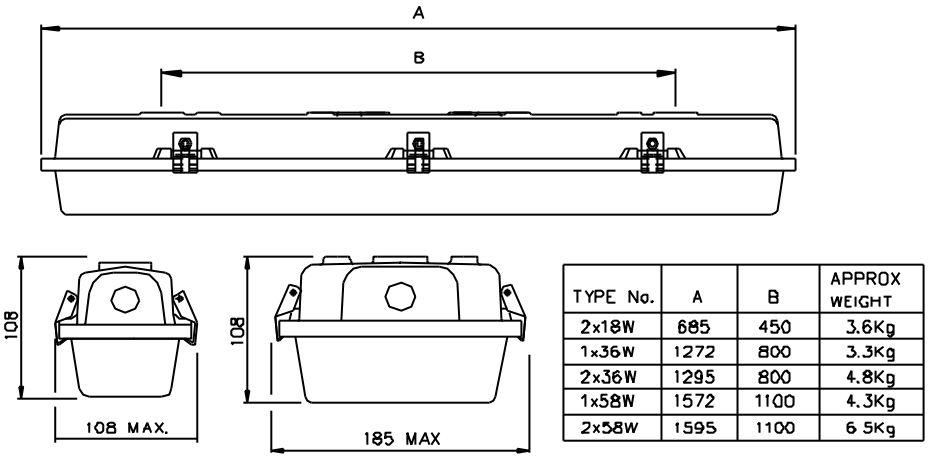
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Issue | 00

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

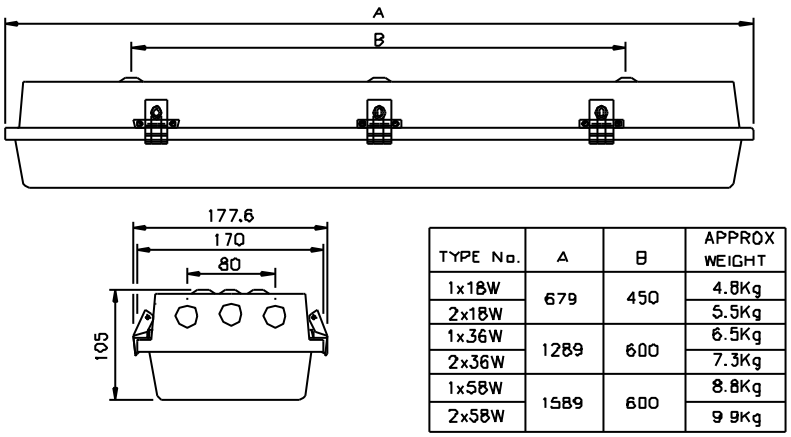
Sterling Cat 3 D ATEX Luminaire

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



TYPE No.	A	B	APPROX WEIGHT
2x18W	685	450	3.6Kg
1x36W	1272	800	3.3Kg
2x36W	1295	800	4.8Kg
1x58W	1572	1100	4.3Kg
2x58W	1595	1100	6.5Kg

G.R.P. BODY VERSIONS



TYPE No.	A	B	APPROX WEIGHT
1x18W	679	450	4.8Kg
2x18W			5.5Kg
1x36W	1289	600	6.5Kg
2x36W			7.3Kg
1x58W	1589	600	8.8Kg
2x58W			9.9Kg

METAL BODY VERSIONS

CE

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Specification and ATEX Declaration

Protection Standard	EN 50281-1-1
Area of Application	Zone 22 areas to EN 500281-3 and installation EN 500281-1-2.
ATEX Equipment Classification	Group II Category 3 D
Equipment Coding	⟨Ex⟩ II 3 D T95°C
Certificate	Type Examination BAS01ATEX3277X
Ingress Protection	IP65 to BS EN 60529
CE Mark CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and protective systems intended for use in Explosive Atmospheres regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction – Sterling Cat 3 D Fluorescent Luminaire

1.1 General

The Sterling series Cat 3 D fluorescent luminaires are surface mounted or suspended, utilising the two holes on the base of the body. They are mainly used in harsh environments, and are constructed using a corrosion resistant glass reinforced polyester or stainless steel body, attached to an injection moulded polycarbonate diffuser by self-retaining stainless steel toggle clips. The control gear and lampholders are mounted on a removable tray that for maintenance purposes has hanging straps.

Note:

The ratings are listed in TABLES 1-3.

1.2 Application

The luminaire is designed to be safe in normal operation. The luminaire should not be used where there are environmental, vibration or shock conditions above the normal for fixed installations. The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states. The luminaire is suitable for applications where Category 3 D apparatus can be used. The type examination does not address suitability for portable applications.

1.2.1 Special Conditions for safe use

The luminaire is suitable for areas where there is a low risk of mechanical damage.

2.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate.
In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.

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The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.1.1 Electrostatic electricity

The polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.

3.1.2 Use in Combustible Dust Atmospheres

Where the equipment is used in ignitable dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate on the fitting surface and good housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures.
Refer to EN50281-1-2 for additional details of selection, installation and maintenance.

3.2 Tools

Suitable spanners for installing cable glands.
3mm and 12mm flat blade screwdriver.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear.

3.4 Lamps

The lamps used in the range can be T8 bi-pin fluorescent with G13 cap. Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The luminaire is mounted using the knockouts on the rear of the body. The knockout holes are 7mm ∅. On mounting the luminaire by using the holes, it is the responsibility of the user to ensure that an adequate seal is made, to maintain the desired IP rating with a minimum of IP54 or IP65 for conductive dust. Washers are provided

3.6 Cabling and Cable Glands

3.6.1 Cables

The GRP models do not have a facility for looping. The metal bodied series have the facility both looping and through wiring.
The temperature conditions of the supply cable entry point are such that 70ºC (ordinary PVC) cable can be used in most luminaire models. On models where there is no fixed through wiring supplied by Chalmit, but where there is a looping facility on the gear tray, any supply wiring passing through the body must either have a rating of 130ºC or have sleeving fitted which has a 130ºC rating. 300/500V cable ratings are adequate and no special internal construction is necessary. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The standard maximum looping size is 2.5mm² with options of 4mm² through wiring. An internal earth tag can be fitted to the cable gland.

Note : *Through wiring when used, is subject to a maximum current of 16A.*

3.6.2 Cable Gland Types

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Cable glands for entry into Ex enclosures when fitted with any gland to body sealing method and supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54 or IP65 for conductive dust. Nylon washers are provided with the unit to seal between the gland body and the luminaire. Sealing plugs for unused entries should be similarly rated and fitted. Entries suitable for M20 cable glands are standard.

3.7 Cabling

Access for cabling is via diffuser cover; care is to be taken, as there is no suspension of diffuser cover. The diffuser clips are undone and the diffuser laid aside. The gear tray is dropped down after rotating the turnbuckles or sliding the screws in the keyholes. The tray can be removed by undoing the spring clips on the suspension cables. The cable glands are fitted using the washers supplied or as specified by the customer. Any earth tag connections should be fitted. The connecting terminals are identified and the conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more that 1mm beyond the terminal. Unused terminal screws should be tightened. The cores must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made.

3.7.1 Fitting Lamps

Before opening the diffuser cover ensure that the luminaire is isolated from mains supply. Access for re-lamping is via the diffuser cover; care is to be taken, as there is no suspension facility for the diffuser cover. Make sure that the correct lamp is selected. The lampholders are tombstone type, place the lamp in the lampholder and rotate 90º in lampholder. When inserting new lamps ensure pins and lampholder connection is centralised. Replace diffuser cover and snap clips into place.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

1 Ensure lamps are lit when energised by mains supply.
2 Visually check diffuser cover for damage. This should only be cleaned using a damp cloth to avoid static and only use recommended detergents for polycarbonate. If the polycarbonate is discoloured or damaged, a new diffuser cover must be fitted.
3 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are any signs of water ingress, the luminaire should be opened up, dried and any likely ingress points eliminated by re-gasketting or other replacements.
4 Check cable gland for tightness and nip up if required.
5 Check any external and internal earths.
6 Check all terminations are firmly screwed down, tighten if necessary.
7 Check clips visually for any damage and replace, if necessary.
8 If it has been suspected that the luminaire has suffered mechanical damage, a stringent workshop check on all components should be made. All components can be removed from the luminaire for inspection.
9 Avoid the build up of dust layers by regular cleaning and again clean only using a damp cloth.

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
Any live fault finding must be done by a competent electrician and, if carried out with luminaire in place, under a permit to work. When electronic high frequency gear is fitted do not megger.
If lamps go out repeatedly, and replacement lamps do not work or expected life is reduced the control gear should be returned for replacement/testing. The the High frequency ballast will cut out if lamps are defective. On re-assembly, all faulty/damaged wiring should be replaced and connections checked.

3.9.1 Battery Check and Replacement

Do not open luminaire when a hazardous atmosphere is present. Isolate before opening. The battery is detached at the plug and socket. Remove the two screws to release the battery. Re-assembly is in reverse order.

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Important : *Care must be taken not to short the leads together as this can cause sparking which, in turn, could lead to a fire.*

The emergency duration is 3 hours for both the 36W and the 58W. This is in accordance with EN 60598 2-22. The battery must be replaced when the duration is not acceptable.

Protect the batteries from water ingress and mechanical damage then transport from the hazardous area as soon as practical. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit.

4.0 Overhaul

The unit is largely made of materials that are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 0.8mm² solid core, HTPVC insulated. All the spares required are available. Please state the model number and lamp details. The seal is between the polycarbonate diffuser and the base. The diffuser is retained by stainless steel clips. If the sealing gasket has deteriorated by softening or permanent set, a new sealing gasket should be fitted, which can be obtained from Chalmit. To fit this, care is needed, the old gasket should be removed and remaining adhesive scraped off. The gasket is fixed in place to the body with a small amount of silicone RTV.

5.0 Fuse Ratings

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The inrush current can be calculated where circuit conditions are known. The inrush currents can be obtained from Chalmit.

Note : *Line currents for 240V, 50Hz are as indicated in Table 3.*

6.0 Disposal of Material

The unit is made from combustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Fluorescent lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation. Avoid inhaling dust. This applies to the UK; there may be other regulations on disposal operating in other countries.

Important: *Do not incinerate lamps.*

6.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the user needs to observe a 'duty of care'.

Batteries can be returned to the manufacturers for re-cycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit. For further details refer to Technical Department.

Table 1	Ratings For High Frequency GRP & Stainless Steel				Refer to Section: 1.0
Model	**Lamps**	**Voltage Range**	**Body Type**	**Ambient Temp ºC**	**Max Surface Temp ºC**
ST__/358/D	1 x 58W T8	100/120V 220/240V, 50/60/0Hz	Single	40	95
ST__/258/D	2 x 58W T8		Twin	35	
ST__/336/D	1 x 36W T8		Single	50	
ST__/236/D	2 x 36W T8		Twin		
ST__/318/D	1 x 18W T8		Twin	45	
ST__/218/D	2 x 18W T8				

Table 2	Ratings For High Frequency Emergency Twin body types only. GRP & Stainless Steel.				Refer to Section: 1.0
Model	**Lamps**	**Voltage Range**	**BLF**	**Ambient Temp ºC**	**Max Surface Temp ºC**
ST__/358/D*	1 x 58W T8	220/240V, 50/60Hz	8%	40	95
ST__/258/D	2 x 58W T8			35	
ST__/336/D*	1 x 36W T8		10%	50	
ST__/236/D	2 x 36W T8			45	
ST__/318/D*	1 x 18W T8				
ST__/218/D	2 x 18W T8				

* Non-maintained.

Table 3

No. Off Lamp	**Gear Type**	**Lamp W**	**Nominal Circuit Power W**	**Line Current**
1	HF	18	20	0.09
2		18	38	0.17
1		36	36	0.16
2		36	72	0.32
1		58	56	0.25
2		58	107	0.49

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

PROTECTA

Ex n FLUORESCENT

NORMAL and EMERGENCY LIGHTING

ATEX CATEGORY 3

ZONE 2 and 22 APPLICATIONS

The Protecta Category 3 Ex n luminaire combines the strength and integrity of the Category 2 increased safety enclosure with the Category 3 lamp and control gear package used in the Sterling. The range is suitable for T8 tubular fluorescent lamps in the nominal 18W, 36W and 58W sizes. Protecta has excellent maintenance features as it is constructed using glass reinforced polyester (GRP) and polycarbonate which resist saline and other corrosive environments. A major feature of the luminaire is the strength of the enclosure and mounting points together with the very high degree of ingress protection afforded by the simple reliable construction. The protection is Ex n for ignitable gas applications and dust excluding, to IP6X, for use in ignitable dust applications. The ATEX Categories are 3 G and 3 D. The ease of access to lamps and control gear means that installation and maintenance will be completed quickly and efficiently. The Protecta offers the facility of four cable entries. The standard range has electronic control gear. Conventional low loss control gear with electronic start is available as an option. An emergency version with 3 hour duration is available.

Standard Specification

Type of Protection:	**Ex nA (Non-sparking) Dust protected enclosure**
ATEX Classification:	**Group II Category 3 G D**
Area Classification:	**Zone 2 and Zone 22 areas to EN 60079-10 and EN 50281-3 with installation to EN 60079-14 and EN 50281-1-2**
Apparatus Standard:	**EN 50021 EN 50281-1-1**
Certificate:	**Type Examination Certificate BAS01ATEX3276**
Coding:	**Ⓔx II 3 G D EEx nA (refer to table for T rating and Ambient)**
Enclosure:	**GRP body with polycarbonate cover and brass suspension points**
Reflector:	**White polyester painted zinc coated steel**
Entry:	**4 x M20 cable entries, 2 at each end**
Termination:	**3 core 6mm² max. conductor with looping and 16A rating through wiring (4 core on emergency)**
Installation:	**Two M8 tapped brass inserts located on rear of body. (thread depth 12mm)**
Lampholder:	**G13 (Bi-pin)**
Lamp Type:	**T8 tubular fluorescent**
Control Gear:	**High Frequency ballast housed within sealed enclosure, Emergency - electronic charger/inverter housed in sealed enclosure, Ni-Cd batteries**
Relamping:	**Quick release diffuser clamp and hinged cover**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220-240V 50/60Hz**
Battery:	**Ni-Cd battery 6V 4Ah 5 cell**
Duration:	**3 hours**
Emergency Output	**36W 10% of one lamp**

Features

Full length easy access diffuser clamp

Simple rugged construction

Hinged cover

Shell/ERA deluge tested

Standard fixing centres

High frequency control gear gives 50/60Hz operation, high power factor correction and regulation of lamp output

Easy access to suspended control gear tray

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Std. Cat No.	Wattage	T Class (Gas)	TºC (Dust)	Ambient ºC	Weight
PRGN/118/BI	1x18W	T4	95	50	5.9kg
PRGN/218/BI	2x18W	T4	95	50	6.2kg
PRGN/136/BI	1x36W	T4	95	50	9.6kg
PRGN/236/BI	2x36W	T4	95	50	10.0kg
PRGN/158/BI	1x58W	T4	95	50	12.0kg
PRGN/258/BI	2x58W	T4	95	50	12.2kg
PRGN/136/BI/EM	1x36W	T4	95	50	12.2kg
PRGN/236/BI/EM	2x36W	T4	95	50	12.6kg
PRGN/158/BI/EM	1x58W	T4	95	50	14.2kg
PRGN/258/BI/EM	2x58W	T4	95	50	14.6kg

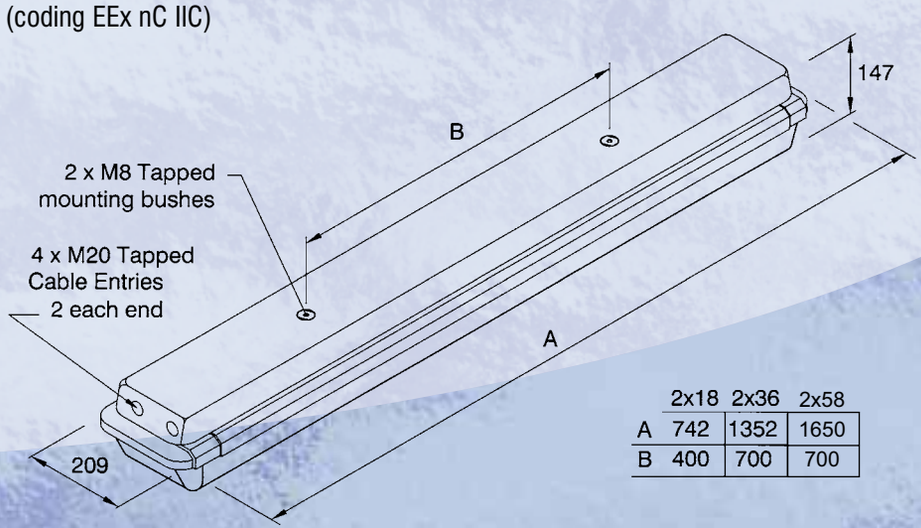
*** T class and ambients vary for copper and iron control gear. Contact Chalmit sales for details.**

Options - Suffix to Catalogue No.

/___	Specific voltage (220 or 254 only available with copper & iron gear)
/ES	Copper and iron control gear (Non-emergency only)
/60	60Hz (copper and iron versions only)
/M25	M25 Entries
/3P	Three phase termination
/MF	Mains fuse
/IS	Isolation switch (coding EEx nC IIC)

Applications

- Zone 2 hazardous areas
- Petrochemical process areas
- Sewage treatment plants
- Process skid manufacturing
- Distilleries
- Gantry and walkway lighting



	2x18	2x36	2x58
A	742	1352	1650
B	400	700	700

Accessories (Should be ordered separately)	**Catalogue Order Code**
Offset ceiling bracket assembly	**SPRO4-0002**
Pole mounting bracket assembly (38/50 diameter poles)	**SPRO4-0003**
C' form hook type ceiling bracket assembly	**SPRO4-0005**
Flush mounted wall bracket assembly	**SPRO4-0006**
18W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0008**
36W wall mounting outreach bracket (use with SPRO4-0003)	**NPRO4-0012**
Eyebolt brackets (set)	**SPRO5-0005**
Looping Kit (Allows looping from both ends of luminaire)	**SPROT-0021**

1 # TYPE EXAMINATION CERTIFICATE

2 **Equipment Intended for use in Potentially Explosive Atmospheres**
Directive 94/9/EC

3 Type Examination Certificate Number : **BAS01ATEX3276**

4 Equipment: **PROTECTA RANGE OF FLUORESCENT LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **Glasgow, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

01(C)0670 dated 30 October 2001

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

EN 50021: 1999 **EN 50281-1-1: 1998**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

Ⓔx II 3 GD T95°C **EEx nA II 150°C (T3)** **T_{amb} -20°C to +55°C**

or when fitted with optional isolating switch

Ⓔx II 3 GD T95°C **EEx nC IIC 150°C (T3)** **T_{amb} -20°C to +55°C**

In both cases ambient range and T class vary depending on model, see certificate schedule.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/047

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

I M CLEARE
DIRECTOR
21 November 2001

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3276**

15 **Description of Equipment**

The Protecta range of luminaires designed for fitting T8 bi-pin fluorescent tubes comprises single and twin versions for 18W and 36W tubes designed for connection to supplies of 200V-254V 50/60Hz. The range is available with copper/iron and high frequency electronic ballasts. When supplied with electronic ballasts an emergency version is available incorporating an internal battery and inverter/charger module.

The luminaire body is of glass reinforced polyester resin with a polycarbonate diffuser hinged at one side and held at the other side by a quick release snap-on channel along the entire length of the luminaire. Ingress protection of IP66/7 is assured by an EPDM gasket secured in a groove in the body.

The control gear and components are mounted on a removable steel gear tray attached to the body by moulded inserts. One of these components is an optional isolating switch allowing relamping without isolating the luminaire. If the isolating switch is omitted then isolation is required.

The standard Hylec Type PA44WP may be replaced by fused terminal blocks manufactured by EFA Type FTB1/N or Hylec Type 1003Si as described on sheet 3 of drawing D2052. As an alternative Weidmuller Type MK6 terminals (BASEEFA Certificate BAS99ATEX2123U) or WAGO Type 262 terminals (PTB Certificate PTB98ATEX3125 suitable for up to 6mm² conductors may be used.

Entry holes are provided at each end of the body suitable for M20 cable/conduit entries. Any cable entry device used must maintain the ingress protection rating of the enclosure. Any unused entries must be filled with suitable blanking plugs which must also maintain the degree of protection provided by the enclosure.

The following components are used within the luminaire using copper iron control gear:

Component	Manufacturer	Part No.	Specification	Standard
Ballast	Transtar	C18P C36P	T_w 130°C, Δt 35°C T_w 130°C, Δt 30°C	EN 60920: 1991 EN 60921: 1991
	Alternative ballasts may be used provided they are made to the same standards (guaranteed by the BSI Kite Mark) and have identical, or better, specification. The terminals must comply with the requirements of EN50021.			
Starter	Arlen	EFS120P EFS600P	T_c 75°C T_c 75°C	BS 4533: pt.102.51: 1986 (BAS. Cert. No. 4024U)
Capacitor (optional)	various		T_c 85°C (Dry metalised film construction)	EN61048:1993 (BSI Kite Marked)
Lamp holder	Vossloh	Type 27700		BS EN60400: 1992
	Alternative lampholders may be used provided they are made to the same standards (guaranteed by the BSI Kite Mark) and have centre contact support. The terminals must comply with the requirements of EN50021			
Isolating switch (optional)	Bartec	07-1541	250V 2A	EN 50018 PTB Ex89C1022U

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3276**

Through wiring is fitted as standard on 36W versions and may be used on 18W also. This uses either 2.5mm² high temperature PVC cable fitted within a glass fibre sheath rated at 155°C or 4mm² high temperature PVC cable without the sheath. On models fitted with HF electronic control gear 2.5mm² cable can be used without the protective sheath.

All internal wiring is made from 1/0.8mm² high temperature PVC insulated cable. Where two wire are required to be fitted in one terminal way a crimp-on blade connector is used.

The following models with copper/iron ballasts are included in the range:

Model	Lamps T8	Ballast	Capacitor µF	Starter	Circuit	T_{amb} -20°C to __(°C)	T Class	Max Surface temperature (°C)
400336	1x36W	1x36	4	EFS600P	parallel	55	T4	95
400436	2x36W	2x36	8	2xEFS600P	parallel	40	T4	95
						55	150°C (T3)	95
400136	1x18W	1x18		EFS120P	parallel	55	T4	95
400236	2x18W	2x18	8	2xEFS120P	parallel	45	150°C (T3)	95
		1x36	8	EFS600P	series	50	150°C (T3)	95
		1x36		EFS600P	series	52	150°C (T3)	95

ELECTRONIC BALLAST AND INVERTER UNITS

The luminaire may alternatively be fitted with sealed high frequency electronic ballasts and inverters covered by BASEEFA Certificate BAS01ATEX3211U. The following models are included:

Model	Type	Lamps T8	Sealed Control Gear BAS01ATEX3211U	T_{amb} °C	T Class	Max Surface temperature (°C)
400331	Standard	1x36W	electronic ballast	-10 to 50	T4	95
400431		2x36W				
400131		1x18W				
400231		2x18W				
400531	Spigot entry	1x18W	electronic ballast	-10 to 40	T4	95
400631		2x18W				
402431	Emergency	2x36W	electronic ballast and inverter	0 to 50	T4	95
402331		1x36W				

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3276**

Due to the properties of the rechargeable batteries the emergency versions are only suitable for ambient temperatures above 0°C. Five NiCd cells, either Sanyo type KR-DHL or SAFT Type VT70, are welded together and contained within plastic sleeving. The batteries are rated at 6V 4Ah. The cells do not gas in normal operation and the charging system limits the charging rate and provides under voltage protection of 1v/cell.

16 **Report No.**

01(C)0670

17 **Special Conditions For Safe Use**

None.

18 **Essential Health and Safety Requirements**

All requirements are covered by compliance with EN 50021: 1999 and EN 50281-1-1: 1998.

19 **DRAWINGS**

Number	Issue	Sheet	Date	Description
D2052	0	1	1/8/01	Certification details and control gear ratings
D2052	0	2	1/8/01	Enclosure outlines
D2052	0	3	1/8/01	Non-emergency control gear layout
D2052	0	4	1/8/01	Component details
D2052	0	5	1/8/01	Emergency control gear layout
D2052	0	6	1/8/01	Non-emergency HF ballast 18W pole mounted

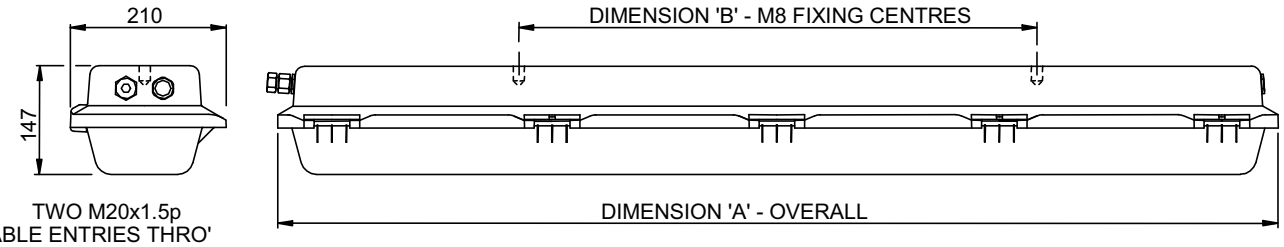
BASEEFA List Keywords
2FLUOLUM

Issue 00

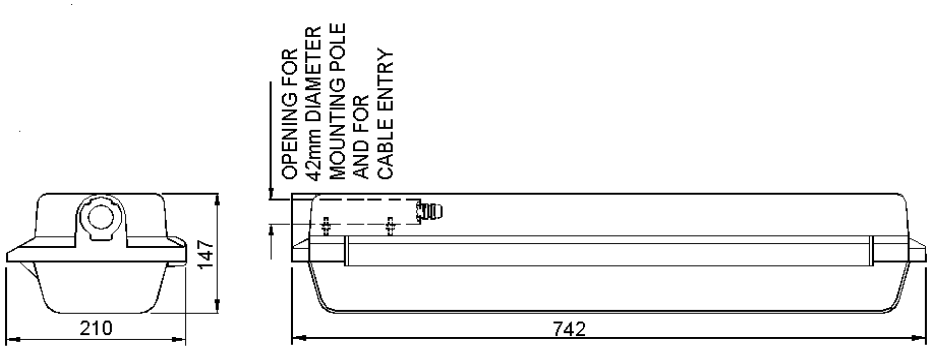
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Protecta Ex nA Cat 3 G D ATEX Luminaire

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



MODEL SIZE	DIMENSION 'A'	DIMENSION 'B'
18W	742	400
36W	1352	700



SIDE ENTRY 18/20W MODEL

CE

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Specification and ATEX Declaration

Type(s) of Protection	EEx nA (non-sparking)
Protection Standard	EN 50021
Dust Standard	EN 50281-1-1.
Area of Application	Zone 2 areas to EN 60079-10 and installation to EN 60079-14 Zone 22 areas refer to EN 500281-3 and installation EN 500281-1-2.
ATEX Equipment Classification	Group II Category 3 G Group II Category 3 D
Equipment Coding	Ⓔx II 3 GD EEx nA II T95°C T*
Certificate	Type Examination BAS01ATEX3276
Ingress Protection	IP66/67 to BS EN 60529
CE Mark CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and protective systems intended for use in Explosive Atmospheres regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction – Protecta Ex nA Fluorescent Luminaire

1.1 General

The type of protection is Ex nA.

The Protecta series Ex nA fluorescent luminaires are surface mounted or suspended. The standard suspension is via two M8 tapped holes in brass bushes in the top of the body. They are mainly used in harsh environments, and are constructed using a corrosion resistant glass reinforced polyester body hinged to an injection moulded polycarbonate diffuser. The control gear and lampholders are mounted on a removable tray that for maintenance purposes has hanging straps.

Note:

The ratings are listed in TABLES 1-4.

1.2 Application

The luminaire is designed to be safe in normal operation. The luminaire should not be used where there are environmental, vibration or shock conditions above the normal for fixed installations. The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states. The luminaire is suitable for applications where Category 3 apparatus can be used. The type examination does not address suitability for portable applications.

2.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate.

In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.

Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.

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The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.
The polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge.

3.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in ignitable dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate on the fitting surface and good housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures.
Refer to EN50281-1-2 for additional details of selection, installation and maintenance.

3.1.2 Hybrid Mixtures – Gas plus Dust.

Where Hybrid mixtures exist as defined in EN1127 as a potentially explosive atmosphere, consideration should be given to verifying that the maximum surface temperature of the luminaire is below the ignition temperature of the hybrid mixture.

3.2 Tools

3mm and 4mm flat blade screwdriver and large cross-head screwdriver.
Suitable spanners for installing cable glands. Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. ***Care is needed connecting to the nominal 230V UK public supply.*** The user must determine the actual underlying site supply and purchase or adjust accordingly. The 2x18W & 2x36W copper and iron control gear luminaires for 230V and 240V, 50Hz rating are supplied with a tap. If the equipment is located in high or low voltage sections of the system an appropriate voltage tap should be selected but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side.

3.4 Lamps

The lamps used in the range can be T8 bi-pin fluorescent with G13 cap. Lamp caps are to IEC 60061, lamp dimensions and safety to IEC 61195 and lamp performance to IEC 60081.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The standard suspension is via two M8 tapped holes in brass bushes in the top of the body. (At 400mm centres for 18W and 700mm centres for the 36W model). Various adaptors, pole clamps and suspension brackets are available to order. The 2x18W model is available with integral side entry for 42 mm diameter poles.

3.5.1 Opening and Closing the Cover

The procedure for opening the cover is as follows:
Insert the tool into one of the slots in the clamping bar with the end of the tool located into the outer flange of the body as a fulcrum point, a wide blade screwdriver is recommended. Gently lever the tool away from the diffuser; the clamping bar will begin to open. Insert the tool in the other clamping bar slot and gently lever away from the diffuser, the clamping bar will open and the hinge will retain the cover. Should difficulty be experienced, reinsert the tool in the first slot and repeat the procedure.
The procedure for closing and securing the cover is as follows:

Ensure the hinge mechanism is clear of any obstruction and then swing the diffuser into the closed position. Support the diffuser in position whilst pushing the clamp bar over the edge of the diffuser. Apply even pressure at both ends of the bar and press the bar over centre.

3.6 Cabling and Cable Glands

3.6.1 Cables

The Protecta series have the facility both looping and through wiring.
The temperature conditions of the supply cable entry point are such that 70ºC (ordinary PVC) cable can be used in most luminaire models. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The standard maximum looping size is 4mm². An internal earth tag can be fitted to the cable gland.
The pole-mounted version has a cable gland fitted that will seal onto cables in the range 13 to 18 mm OD. The gland does not have provision for armour clamping.

Note : *Through wiring when used, is subject to a maximum current of 16A.*

3.6.2 Cable Gland Types

Cable glands for entry into Ex enclosures when fitted with any gland to body sealing method and supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54 or IP6X for conductive dust. Nylon washers are provided with the unit to seal between the gland body and the luminaire. Sealing plugs for unused entries should be similarly rated and fitted. Four entries are provided. Three entries are fitted with suitably approved blanking plugs, the fourth entry with a transit plug. M20 x 1.5 entries are standard, other sizes are available on request. The standard entry configuration is with an earthed metal plate with tapped holes mounted in the body.

3.7 Cabling

Access for cabling is via the hinged diffuser cover. The reflector/gear tray is swung down by loosening the four fixing screws and sliding over the keyhole slots. This gives access to the mains terminals. The tray can be removed by undoing the spring clips on the suspension cables. Any earth tag connections should be fitted. The connecting terminals are identified and the conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more that 1mm beyond the terminal. Unused terminal screws should be tightened. The cores must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. The through current rating is 16A. 4mm² terminals are standard (6mm² wiring can be used in the terminals in accordance with the luminaire certificate).
Screw type or screw-less “cage clamp” terminals are fitted in the range of luminaires. Mains terminal blocks are marked L N Earth.

3.7.1 Fitting Lamps

Before opening the diffuser cover ensure that the luminaire is isolated from mains supply. Access for re-lamping is via the diffuser cover; care is to be taken, as there is no suspension facility for the diffuser cover. Make sure that the correct lamp is selected. The lampholders are tombstone type, place the lamp in the lampholder and rotate 90º in lampholder. When inserting new lamps ensure pins and lampholder connection is centralised. Replace diffuser cover and snap clips into place.

3.7.2 Fused Terminal Blocks

When a fused terminal block has been fitted, it is essential that the metal clamp supplied retain the fuse holder.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

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1 Ensure lamps are lit when energised by mains supply.
2 Visually check diffuser cover for damage. This should only be cleaned using a damp cloth to avoid static and only use recommended detergents for polycarbonate. If the polycarbonate is discoloured or damaged, a new diffuser cover must be fitted.
3 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are any signs of water ingress, the luminaire should be opened up, dried and any likely ingress points eliminated by re-gasketting or other replacements.
4 Check cable gland for tightness and nip up if required.
5 Check any external and internal earths.
6 Check all terminations are firmly screwed down, tighten if necessary.
7 If it has been suspected that the luminaire has suffered mechanical damage, a stringent workshop check on all components should be made. All components can be removed from the luminaire for inspection.
8 Avoid the build up of dust layers by regular cleaning and again clean only using a damp cloth.

3.8.2 Routine Testing of Emergency Lighting Functions

Users should ensure that the performance of emergency lighting remains adequate for their purposes by conducting periodic tests and recording the results. Requirements will differ between countries, applications and organisations. In the United Kingdom BS 5266 Pt1 gives guidance on testing.

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
Any live fault finding must be done by a competent electrician and, if carried out with luminaire in place, under a permit to work. Where the control gear is copper and iron, the fitting can be tested for continuity of connections. When electronic high frequency gear is fitted do not megger.
If lamps go out repeatedly, and replacement lamps do not work or expected life is reduced, where applicable replacement starters should be tried. However, if this does not correct the fault the control gear should be returned for replacement/testing. The electronic starter, and where specified, the High frequency ballast will cut out if lamps are defective. The starter and High frequency ballasts are approved components. On re-assembly, all faulty/damaged wiring should be replaced and connections checked.

3.9.1 Battery Check and Replacement

Do not open luminaire when a hazardous atmosphere is present. Isolate before opening. The battery is detached at the plug and socket. Remove the two screws to release the battery. Re-assembly is in reverse order.
Important : *Care must be taken not to short the leads together as this can cause sparking which, in turn, could lead to a fire.*
The emergency duration is 3 hours for the 36W. This is in accordance with EN 60598 2-22. The battery must be replaced when the duration is not acceptable.
Protect the batteries from water ingress and mechanical damage then transport from the hazardous area as soon as practical. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit.

4.0 Overhaul

The unit is largely made of materials that are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 0.8mm² solid core, HTPVC insulated. All the spares required are available. Please state the model number and lamp details. The seal is between the polycarbonate diffuser and the base. The diffuser is retained by the clamp bar. Periodic inspection of the enclosure seal should be carried out to ensure that the seal is sound. The seal can be replaced and, if necessary, secured in position by the application of a **very** small amount of rubber adhesive and using the joining piece. The seal can be obtained from Chalmit. This job should be carried out in the workshop.

4.1 Cleaning

The body of the luminaire may be cleaned with a mild solution of household detergent and water, after cleaning the body should be washed and wiped with clean water. **The diffuser should not be polished or wiped with a dry cloth as a risk of ignition due to electrostatic discharge may result**. Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

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4.2 Removal and Replacement of Clamping Bar (if required)

Open the luminaire as above and remove the diffuser or let it swing down. Press the clamping bar towards the closed position, tip forward beyond the closed position and the clamping bar will be released from the body. To replace the clamping bar, put in position on the body with the front edge pointing as far inwards as it will go. Click the bar outwards and bring back to the normal closed position. The clamping bar should then be secured in position, open the clamping bar fully by using hand or screwdriver pressure (avoid damaging the gasket), the clamping bar is then ready to accept the normal closure of the diffuser.

5.0 Fuse Ratings

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The inrush current can be calculated where circuit conditions are known. The inrush currents can be obtained from Chalmit.

The fuse ratings for fluorescent lamp circuits need to take account of three components of circuit current. Where PFC capacitors are fitted, the current inrush can be up to 25 x the rated capacitor current and last 1-2milli seconds The inrush current can be calculated where circuit conditions are known. For luminaires the nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other supply volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Line currents for 240V, 50Hz are as indicated in Table 4.*

6.0 Disposal of Material

The unit is made from combustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Fluorescent lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation. Avoid inhaling dust. This applies to the UK; there may be other regulations on disposal operating in other countries.

Important: *Do not incinerate lamps.*

6.2 Battery Disposal

Nickel cadmium batteries are defined as 'controlled waste' under the hazardous waste regulations and the user needs to observe a 'duty of care'.

Batteries can be returned to the manufacturers for re-cycling. They must be stored and transported safely and any necessary pollution control forms completed prior to transportation. Take care to fully discharge batteries before transporting or otherwise ensure that there can be no release of stored energy in transit. For further details refer to Technical Department.

0.0	Note: for Dust Ratings Refer to Max Surface Temperatures.

Table 1	Lamp Ranges and Temperature Ratings CuFe Gear.				Refer to Section : 1.0	
Model	**Lamps**	**Voltage Range**	**Circuit Type**	**Ambient Temp.**	**T Rating**	**Max Surface Temp ºC**
400336	1 x 36W T8	220/240, 50Hz 220/254, 60Hz	SERIES	55ºC	T4	95°C
400436	2 x 36W T8		PARALLEL	40ºC 55ºC	T4 150ºC(T3)	

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400136	1 x 18W T8		SERIES	55ºC	T4	
400236	2 x 18W T8		PARALLEL	45ºC 55ºC	T4 150ºC(T3)	
			SERIES	55ºC	T4	

Table 2	Ratings for High Frequency Control Gear Models				Refer to Section: 1.0
Model	**Lamps**	**Voltage Range**	**Ambient Temp ºC Range**	**T Rating**	**Max Surface Temp ºC**
400331	1 x 36W T8	220-240V 50/60/0Hz	-10≤0≤50	T4	95°C
400431	2 x 36W T8				
400131	1 x 18W T8				
400231	2 x 18W T8				
400531*	1 x 18W T8		-10≤0≤40		
400631*	2 x 18W T8				

*Pole mount type.

Table 3	Ratings For High Frequency Emergency					Refer to Section: 1.0
Model	**Lamps**	**Voltage Range**	**BLF**	**Ambient Temp ºC**	**T Rating**	**Max Surface**
402331**	1 x 36W T8	220/240V, 50/60Hz	10%	0≤0≤50	T4	95
402431	2 x 36W T8					

** Non-maintained.

Table 4

No. Off Lamp	**Gear Type**	**Lamp W**	**Nominal Circuit Power W**	**PFC µf**	**Line Current**
1	CuFe	18	24.3	4	0.16
2		18	48.6	6	0.32
1		36	42.0	4	0.23
2		36	84.0	8	0.46
1	HF	18	20		0.09
2		18	38		0.17
1		36	36		0.16
2		36	72		0.32

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

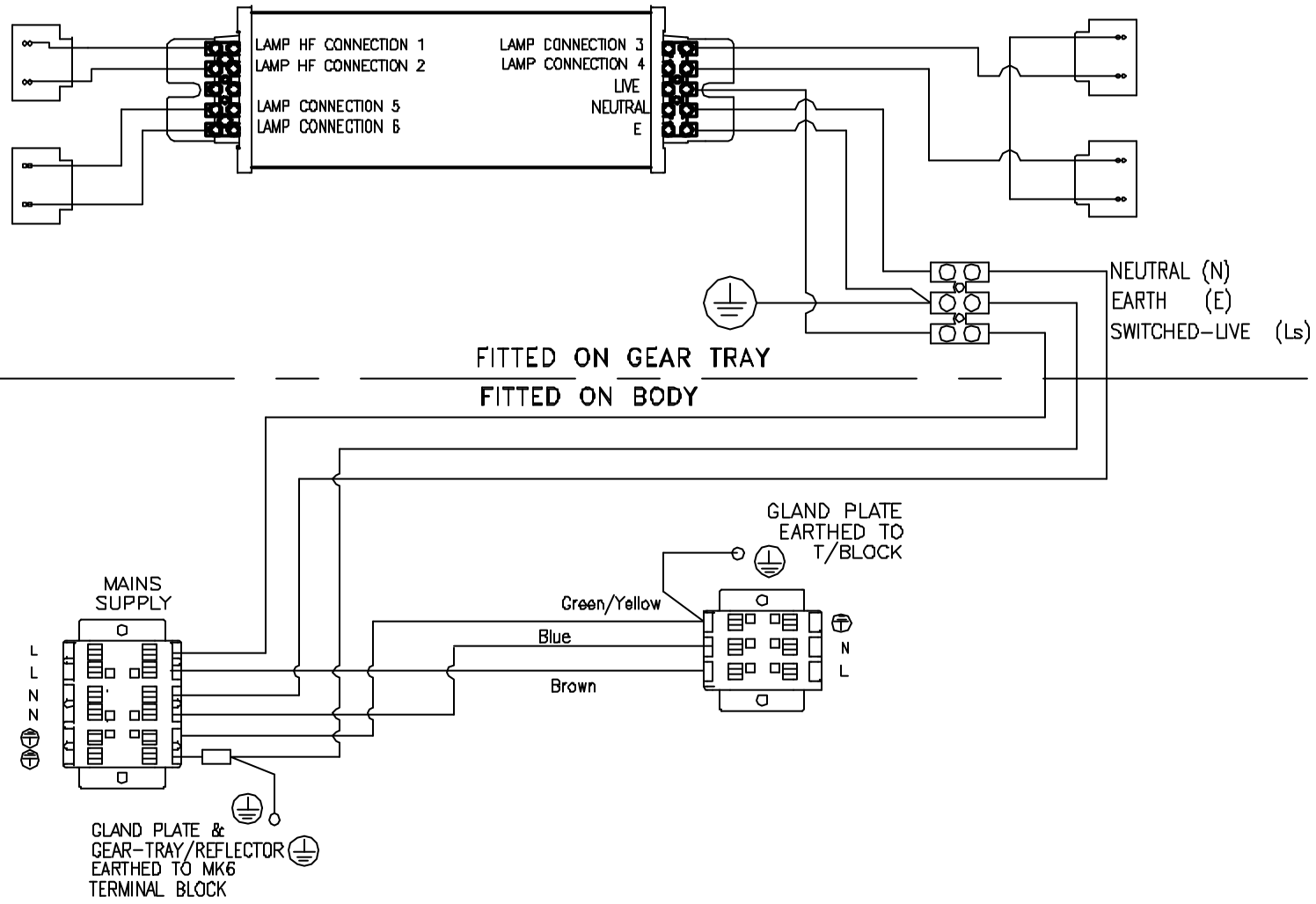
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

DRAWING NUMBER/SHEET NUMBER
F1089

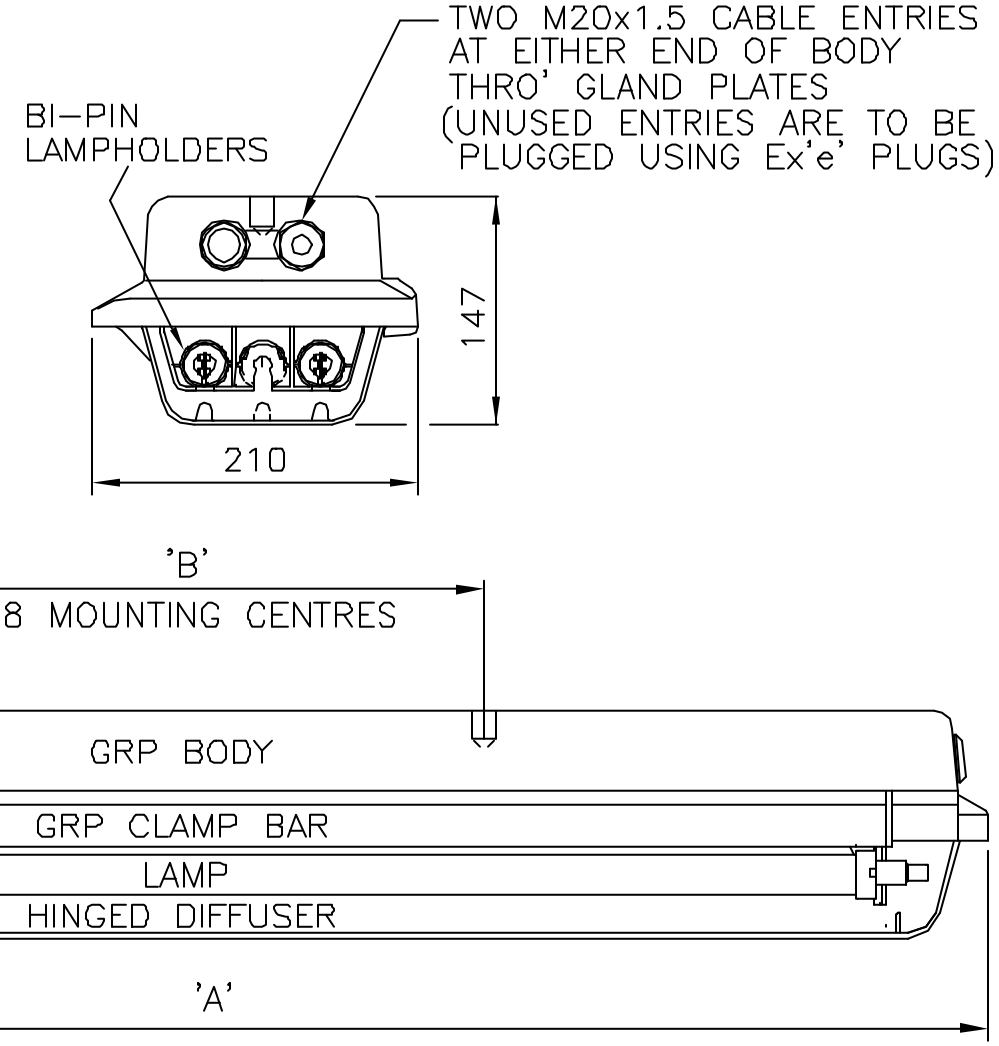
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION



MODEL	'A'	'B'	CODING
1x36W (EMERGENCY)	1352	700	II G D EEx nA T4 AMB. 0°C to 50°C
2x36W (EMERGENCY)			II G D EEx nA T4 AMB. 0°C to 50°C



NOTES

1) THE TERMINAL BLOCKS SHOWN ON THE WIRING DIAGRAM ALLOW FOR SINGLE ENTRY,LOOPING & THRO' WIRING FOR MAINS SUPPLY.
2) SUITABLE FOR 3 CORE 6mm SQ. INCOMING CABLE AS STANDARD
3) THRO' WIRING IS STANDARD ON ALL MODELS.
4) BATTERY IS CONTAINED INSIDE THE BODY
5) THERE ARE TWO M8 THREADED BRASS BUSHES INSERTED INTO THE GRP BODY FOR MOUNTING TO CEILING. (SEE DIMENSION 'B')
6) BI-PIN LAMPHOLDERS ARE STANDARD.

Product Name	Protecta Ex n Fluorescent
Ex Classification	Ex nA (Non-sparking) Dust protected enclosure
Ex code	Ex nA II T4
Certificate	BAS01ATEX3276
Voltage & Frequency	220-240V @ 50/60Hz
Degree of Protection	IP66/67 BS EN 60529

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	27/06/2002

REF. DRGS.-

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL	GRP
TOLERANCE	
FINISH	
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
Protecta Ex n HF
BI PIN FLUORESCENT
HIGH FREQUENCY

DRAWING NUMBER/SHEET NUMBER
F1089 1 OF 1

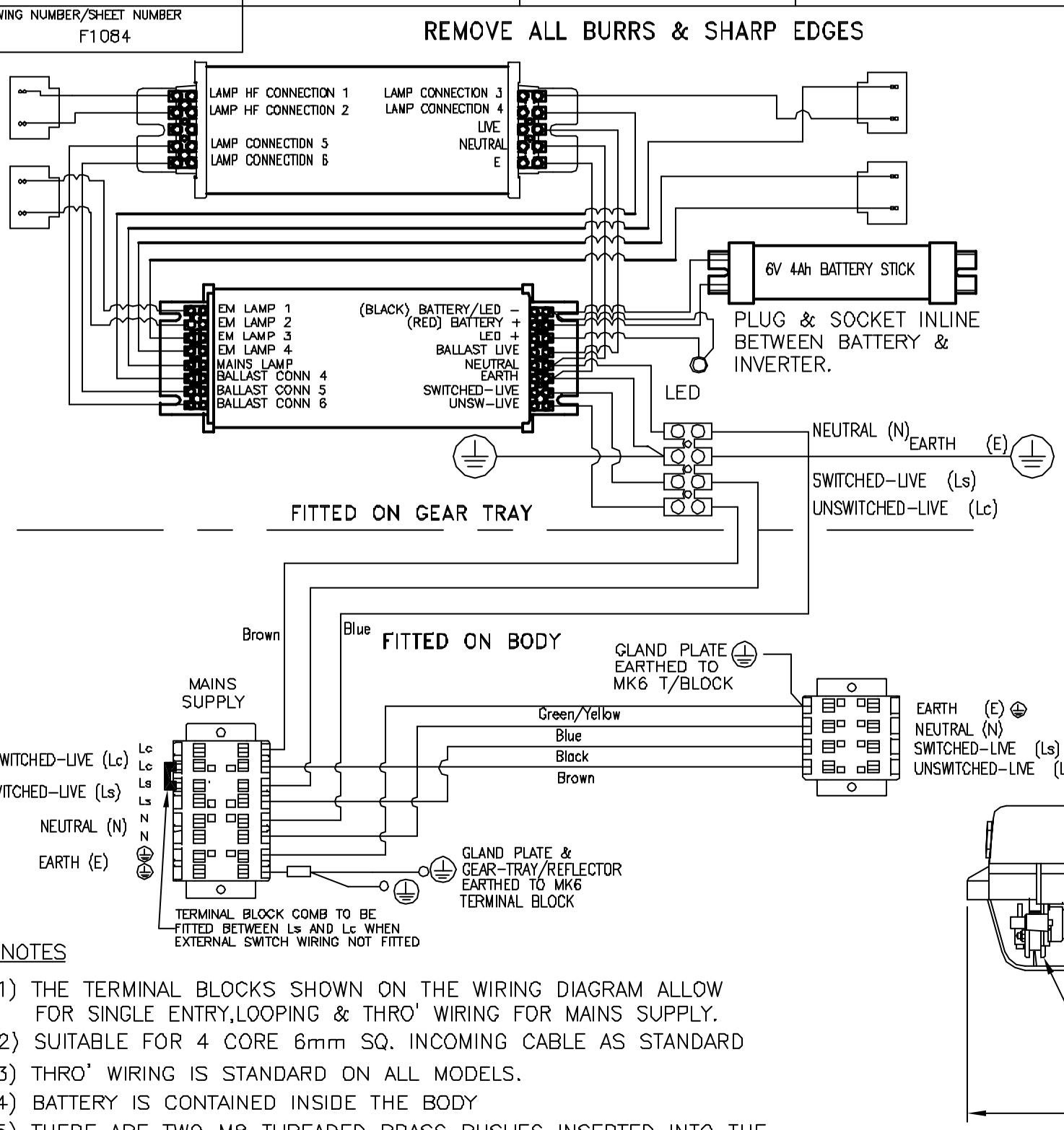
DRAWING NUMBER/SHEET NUMBER
F1084

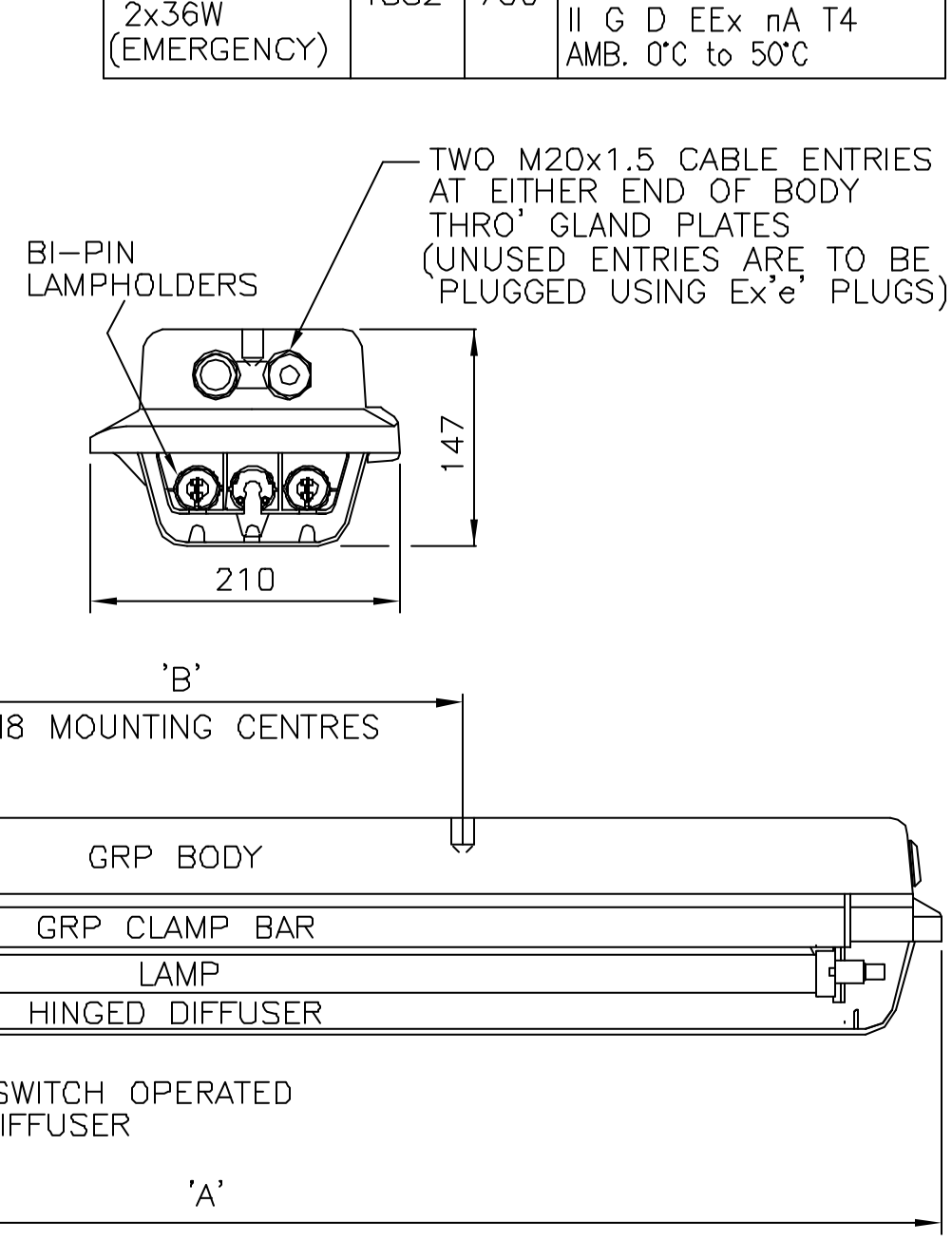
REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION

MODEL	'A'	'B'	CODING
1x36W (EMERGENCY)	1352	700	II G D EEx nA T4 AMB. 0°C to 50°C
2x36W (EMERGENCY)			II G D EEx nA T4 AMB. 0°C to 50°C





NOTES

1) THE TERMINAL BLOCKS SHOWN ON THE WIRING DIAGRAM ALLOW FOR SINGLE ENTRY,LOOPING & THRO' WIRING FOR MAINS SUPPLY.
2) SUITABLE FOR 4 CORE 6mm SQ. INCOMING CABLE AS STANDARD
3) THRO' WIRING IS STANDARD ON ALL MODELS.
4) BATTERY IS CONTAINED INSIDE THE BODY
5) THERE ARE TWO M8 THREADED BRASS BUSHES INSERTED INTO THE GRP BODY FOR MOUNTING TO CEILING. (SEE DIMENSION 'B')
6) BI–PIN LAMPHOLDERS ARE STANDARD.

Product Name	Protecta Ex n Emergency Fluorescent
Ex Classification	Ex nA (Non–sparking) Dust protected enclosure
Ex code	Ex nA II T4
Certificate	BAS01ATEX3276
Voltage & Frequency	220–240V @ 50/60Hz
Degree of Protection	IP66/67 BS EN 60529

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	26/06/2002

REF. DRGS.–

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL: GRP
TOLERANCE:
FINISH:
SURFACE ROUGHNESS:
DIMS. IN MM
SCALE –

Chalmit Lighting
Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
Protecta Ex n HF EM
BI PIN FLUORESCENT
HIGH FREQUENCY

DRAWING NUMBER/SHEET NUMBER
F1084 1 OF 1

800 SERIES

Ex n FLOODLIGHTS

ATEX CATEGORY 3 ZONE 2 APPLICATIONS

The 800 series is a premium range of stainless steel bodied asymmetrical beam floodlights suitable for tubular HPS and metal halide lamps from 70W to 400W and also 500W tungsten-halogen.

The explosion protection is Ex nR utilising a restricted breathing enclosure. The three asymmetrical floodlights in the 800 series provides the best lighting solution where the objective is low weight and exposure to very hostile and corrosive environments. The compact construction offers low windage and the many mounting options enables most floodlighting applications to be accommodated. The asymmetrical beam distribution enables areas to be lit more efficiently with less glare or light pollution. This is because the beam is thrown a long distance whilst avoiding excess light levels under the mounting point.

The enclosure is made from 316S31 stainless steel with a toughened glass cover and silicone gasket the. The cover is secured by powerful quick release clamps making installation and maintenance quick and easy.

Suitable for a wide range of ambient temperatures, -40˚C to +55˚C, dependant on lamp type and wattage.

Standard Specification

Type of Protection:	**Ex nR (Restricted Breathing)**
ATEX Classification:	**Group II Category 3 G**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50021**
Certificate:	**Type Examination Certificate BAS98ATEX3378**
Coding:	**Ⓔx II 3 G EEx nR II (refer to table overleaf for T rating and Ambient)**
Enclosure:	**Marine grade 316S31 stainless steel body with toughened glass window, silicone rubber gasket**
Reflector:	**Wide beam High purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Stirrup mounting**
Lamp Type:	**High Pressure Sodium, Metal Halide or Single Ended Tungsten Halogen**
Lampholder:	**E40 or E27**
Control Gear:	**Internal copper and iron choke with ignitor and PFC correction capacitors**
Relamping:	**Access via front glass cover assembly secured by quick release stainless steel clips**
Burning Position:	**Control gear mounted below lamp**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz**

Features

Lightweight

Marine grade 316S31 stainless steel body and toughened glass cover

Quick release fasteners for ease of relamping and maintenance

Suspended cover front

High efficiency asymmetric reflector

Suitable for low temperature applications

Cepel Approved

Applications

- **Zone 2 hazardous areas**
- **Harsh and corrosive environments**
- **Offshore oil and gas platforms**
- **FPSO's and FSO's vessels**
- **Petrochemical industry**
- **Tank farms**
- **Security and perimeter lighting**
- **Jetty lighting**
- **Distilleries**

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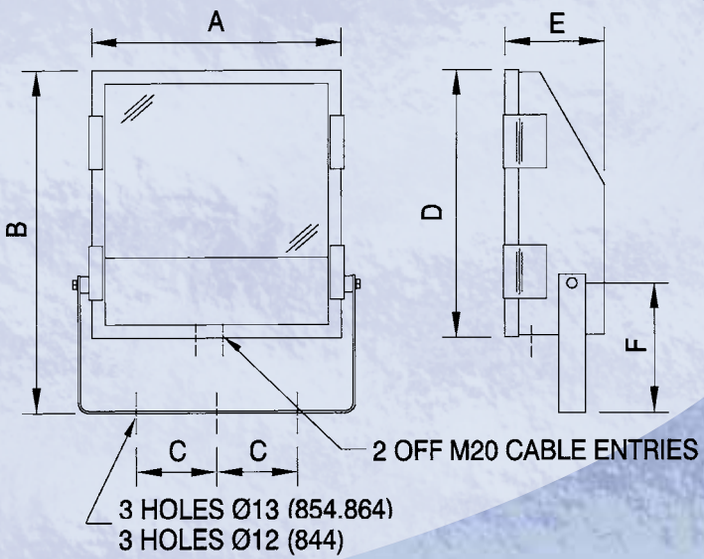
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient ºC	Weight
844N/070/HS	70W	HPS	E27	150ºC T3 T4	50 40	12.0kg
854N/100/HS	100W	HPS	E40	T4	55	18.0kg
854N/150/HS	150W	HPS	E40	T3 T4	55 50	18.0kg
854N/250/MS	250W	HPS/Metal Halide	E40	T4	40	19.0kg
854N/400/MS*	400W	HPS/Metal Halide	E40	T3	40	17.0kg
854N/500/TH	500W	Single Ended T/Halogen	E40	T3 T2	45 60	16.5kg
864N/250/MS	250W	HPS/Metal Halide	E40	T3	55	20.5kg
864N/400/MS	400W	HPS/Metal Halide	E40	T3	50 (HPS) 40 (MH)	21kg
110/120V Cat Nos.						
864N/150/HS**	150W	HPS	E40	T3	55	23.0kg
864N/250/HS/120**	250W	HPS	E40	T3	55	23.0kg
864N/400/HS/120***	400W	HPS	E40	T3	55	23.0kg

*** Ignitor only fitted. Remote gear box required (see Universal Box)**
****c/w IEC control gear 110/120V supply.**
*****Supplied c/w remote gear box for 110/120V supply. (IEC control gear fitted)**



	A	B	C	D	E	F
844	308	443	75	348	150	175
854	415	630	150	490	185	260
864	456	640	150	490	219	260

Options - Suffix to Catalogue No.

/60	60Hz
/M25	M25 Entries
/N	Narrow beam reflector
/TI	Timed cut out ignitor

Accessories (Should be ordered separately)	**Catalogue Order Code**
Wire guard - 844 - must be ordered with luminaire	**S8444-0005**
Wire guard - 854 - must be ordered with luminaire	**S8544-0004**
Wire guard - 864 - must be ordered with luminaire	**S8644-0004**
Pole mounting bracket - 844	**S8444-0002**
Pole mounting bracket - 854/864	**S2400-0002**
Spigot mounting bracket - 854/864	**S2400-0007**
Anti-glare shield - 844 - must be ordered with luminaire	**S8444-0001**
Anti-glare shield - 854 - must be ordered with luminaire	**S8544-0002**
Anti-glare shield - 864 - must be ordered with luminaire	**S8644-0002**

1 # TYPE EXAMINATION CERTIFICATE

2 **Equipment Intended for use in Potentially Explosive Atmospheres**
Directive 94/9/EC

3 Type Examination Certificate Number : **BAS98ATEX3378**

4 Equipment: **800 SERIES FLOODLIGHT LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING LTD**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

98(C)0591 dated 26 March 1999

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

EN 50021: 1999

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

II 3 G **EEx n R II T (see schedule)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/036

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
17 June 1999

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3378**

15 **Description of Equipment**

The 800 Series Floodlight Luminaires consists of the 844, 854 and 864 luminaires which are designed for fitting SON/T, MBI/T and Tungsten Halogen lamps at various ratings. The luminaires are rated at 200 to 254V at 50 Hz, or 210 to 254V at 60 Hz. An autotransformer may be included with the 864 luminaires to permit operation on 110V supplies.

Construction

The luminaires consist of a mild steel or stainless steel body with a toughened glass lens fitted to a lid assembly. The enclosures are classified as 'restricted breathing' and have degree of protection IP66/67. When 400W SON/T 864 luminaires are used with a 110V supply, a remote control gear box is also included. The gear box is not classified as restricted breathing.

Internally the enclosure contains bracket mounted control gear, reflector and lampholder. Holes in the body allow access for suitably glanded supply cables which are terminated on a component certified terminal block covered by BAS98ATEX3379U. Supply cables may be looped in using arrangements covered by this component certification.

The enclosure may be fitted with an anti-glare shield or a protective guard and cover retaining chains may also be fitted. Whilst the luminaire is designed to be mounted on a bracket fixed to bosses welded on the external surface, alternative methods which do not penetrate the enclosure may be used.

Control gear

The control gear comprises ballast, ignitor and capacitors covered by BAS98ATEX3379U. The 864 control gear may also include an autotransformer for 110V supplies. This arrangement is covered by this certificate. The control gear is selected using the following data:

Luminaire	Ballast		Ignitor Tc (min)
	Tw (min)	Δt (max)	
864	130°C	75°C	90°C
854	130°C	60°C	90°C
844	130°C	60°C	90°C

The capacitors and ballast may be omitted from the luminaire and may be located in a remote control gear box. The gear box may contain any ballast suitable for sodium or metal halide lamps in accordance with the lamp manufacturer's specification, provided that all ballasts comply with IEC 922 and IEC 923, or EN 60 922: 1991 and EN 60923: 1991 and have third party assessment.

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3378**

Mounting position

The beam of the floodlight may be aimed at any angle but the control gear is always mounted on or below the axis of rotation of the luminaire.

Marking

The luminaires may be marked depending on lamp type as follows:

Luminaire Type	Lamp	T class	T_{amb} range
864 240 volt	400W SON/T	T3	-40°C to +50°C
	400W MBI/T	T3	-25°C to +45°C
	250W SON/T	T3	-40°C to +55°C
	250W MBI/T	T3	-25°C to +55°C
854 240 volt	100W SON/T	T4	-40°C to +55°C
	150W SON/T	Either T4	-40°C to +50°C
		Or T3	-25°C to +55°C
	250W SON/T	T4	-40°C to +40°C
	250W MBI/T	T4	-25°C to +40°C
	400W SON/T *	T3	-40°C to +40°C
	400W MBI/T *	T3	-25°C to +40°C
	500W TH	Either T3	-45°C to +45°C
		Or T2	-45°C to +60°C
844 240 volt	70W SON/T	Either 150°C (T3)	-40°C to +50°C
		Or T4	-40°C to +40°C
864 110 volt	150W SON/T	T3	-40°C to +55°C
	250W SON/T	T3	-40°C to +55°C
(ext. transformer)	400W SON/T	T3	-40°C to +55°C

*These luminaires supplied by control gear (ballast and optional capacitor) in remote gear box.
The remote box is not restricted breathing and carries the marking EEx nA II T3
Luminaires fitted with SON lamps but NOT fitted with capacitors may be used down to -45°C

16. **Report No.**

98(C)0591

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3378**

18 **Essential Health and Safety Requirements**

Essential Health & Safety Requirements not covered by Standards listed at (9)		
ESR	**Subject**	**Compliance: Report Clause**
1.0.2	Analysis of possible operating faults and misuse	see report 98(C)0591 clause 4.1.0.2
1.0.5	Marking	see report 98(C)0591 clause 4.1.0.5
1.0.6	Instructions	see report 98(C)0591 clause 4.1.0.6
1.1.1	Materials not to trigger off explosions	see report 98(C)0591 clause 4.1.1.1
1.1.2	Constructional materials not to degrade or reduce protection	see report 98(C)0252 clause 4.1.1.2
1.1.3	Changes in characteristics of materials	see report 98(C)0591 clause 4.1.1.3
1.2.2	Components for incorporation or replacement	see report 98(C)0591 clause 4.1.2.2
1.2.5	Additional means of protection	see report 98(C)0591 clause 4.1.2.5
1.2.6	Safe opening	see report 98(C)0591 clause 4.1.2.6
1.2.7	Protection against other hazards	see report 98(C)0591 clause 4.1.2.7
1.3.3	Hazards arising from stray electric and leakage currents	see report 98(C)0591 clause 4.1.3.3
1.4.1	Safe function in changing external conditions	see report 98(C)0591 clause 4.1.4.1
1.4.2	Withstanding attack by stresses or aggressive substances	see report 98(C)0591 clause 4.1.4.2
1.6.4	Hazards arising from connections	see report 98(C)0591 clause 4.1.6.4

19. **DRAWINGS**

Number	Sheet	Issue	Date	Description
D1871	1	-	16.12.98	Components and notes
D1871	2	-	16.12.98	General arrangement
D1871	3	-	16.12.98	General arrangement
D1871	4	-	16.12.98	Internal arrangement
D1871	5	-	16.12.98	Wiring diagrams and gearbox layout

BASEEFA List Keywords
2FLODLUM

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA

CEPEL

OCP-0007

Organismo de Certificação Credenciado pelo INMETRO

INMETRO

Certificado de Conformidade

Certificate of Conformity / Certificado de Conformidad

Número: CEPEL-EX-070/2001	Emissão: 05/12/2001	Validade: 04/12/2003
Number / Número	*Issue / Expedición*	*Validity / Validez*

Produto: PROJETOR
Product / Producto

Tipo / Modelo: MAXINEX
Type - Model / Tipo - Modelo

Número de Série: ---
Serial Number / Número de Serie

Número do Lote: ---
Batch Number / Número del Lote

Solicitante /Endereço: CHALMIT LIGHTING
Requester - Address / Solicitante - Dirección
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Fabricante / Endereço: CHALMIT LIGHTING
Manufacturer - Address / Fabricante - Dirección
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Norma(s) Aplicável(eis):
Suitable Standard(s) / Norma(s) de Aplicación
Equipamentos elétricos para atmosferas explosivas
NBR 9518/97 – Requisitos gerais;
NBR 5363/98 – Invólucros à prova de explosão – Tipo de proteção "d";
NBR 9883/95 – Segurança aumentada – Tipo de proteção "e";
IEC 60079-0/98 – General requiriments.

Laboratório de Ensaio:
Testing Laboratory / Laboratório de Ensayo
CEPEL - Centro de Pesquisas de Energia Elétrica
Laboratório de Acionamentos e Segurança em Equipamentos Eletroeletrônicos - AP4

Número do Relatório de Ensaio: UNIAP-EX-1060/2001
Test Report Number / Número del Informe de Ensayo
MARCAÇÃO: BR-Ex nR II T* (vide Anexo) IP66

Condições de Emissão:
Conditions of Issue / Condiciones de Expedición
Com base na Portaria INMETRO Nº 176/2000, de 17/07/2000. Processo aprovado conforme ítem 2.13 da 55ª Reunião Ordinária da Comissão de Certificação de Equipamentos Elétricos para Atmosferas Explosivas - CCEX, em 29/11/2001.

1ª via - CLIENTE

Observações:
Remarks / Observaciones
1) Este Certificado só é válido acompanhado do seu Anexo.

Henrique Burd

SIGNATÁRIO AUTORIZADO
Authorized Signatory / Persona Autorizada

Escritório de Certificação de Produtos e Serviços - ECPS - Av. Olinda s/nº - Adrianópolis - CEP 26053-121 - Nova Iguaçu - RJ - Brasil
End. Postal CEPEL - Cx. Postal 68007 - CEP 21944-970 - Rio de Janeiro - RJ - Brasil - Tel. (55XXX21) 2667-2111 / 2667-8631 - Fax (55XXX21) 2667-8630

INMETRO CEPEL OCP-0007

CEPEL

ANEXO

AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-070/2001

Os **PROJETORES MODELO MAXINEX** fabricados pela **CHALMIT LIGHTING** são qualificados em termos de suas especificações, análises e ensaios a que foram submetidos conforme documentação descritiva.

Especificações:

Projetor para uso com lâmpada de vapor de sódio ou vapor metálico de 150, 250 ou 400 W, para tensões de até 254 V, 50 Hz ou 60 Hz.

O projetor consiste de um corpo em alumínio fundido e uma tampa com lente de vidro montada em uma moldura de alumínio, articulada ao corpo na parte inferior e presa por dois parafusos na parte superior. A lente é presa a moldura por quatro grampos e um composto selante. Na borda, onde a tampa encosta no corpo, é colocada uma vedação em borracha de silicone.

Internamente o invólucro contém, além do refletor, um reator, um capacitor, um ignitor e um soquete para a lâmpada. As características dos componentes permitidos são apresentadas na Tabela 1.

O corpo do invólucro possui dois orifícios tamanho M20 ou M25 com uma placa adicional para aumentar a espessura da entrada de cabos de alimentação, prevista para utilização de prensa-cabos certificados para a marcação "Ex e II" e grau de proteção IP66.

Os condutores de alimentação são conectados em uma barra de terminais tipo MK6. Se forem necessárias derivações da alimentação, condutores de até 6 mm^2 podem ser conectados em um bloco de terminais de alimentação de 6 vias MK6/6 com pontes para interligar os terminais.

Tabela 1 – Características dos Componentes Permitidos.

Componente	Fabricante	Modelo	Temperatura de trabalho (Tw)	Tensão (V)	Observações
Reator	Transdar, Parry ou Tridonic	150, 250 ou 400 W	140 °C	200-254 V/50 Hz 210-254 V/60 Hz	ΔT = 55 K (400 W) ΔT = 75 K (250/150 W)
Capacitor	DNA ou AEG	AAN, APN ou LBF MKP	85 °C (DNA) 100 °C (AEG)	250 V max (DNA) 280 V max (AEG)	10 – 40 µF (DNA) 10 – 20 µF (AEG)
Ignitor	Parry ou Tridonic	PXA 000, PXA 400 ou ZRM6 ESB	105 °C	210-254 V (Parry) 210-240 V (Tridonic)	BAS Ex 97Y4283U BAS Ex 94Y4237U
Soquete	Hackney ou Wade Ceramics	E40	-	300 V	Relat. BAS No 4153U BAS 98ATEX3197X
Terminais	Weidmuller	MK6	105 °C	300 V	BAS 99ATEX2123U

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O invólucro (corpo e tampa montados) é classificado como de respiração restrita e tem um grau de proteção IP66.

O reator para lâmpada de vapor metálico de 150 W possui protetor térmico (Microtherm tipo T21 ou Thermik tipo SO).

A classe de temperatura, a temperatura ambiente de operação e outras características são apresentadas na Tabela 2.

O capacitor e o reator podem ser retirados do projetor e colocados em uma caixa adicional, que deve possuir sua própria certificação.

Tabela 2 – Configuração, Classe de Temperatura, Faixa de Temperatura Ambiente e Classe de Temperatura de Isolamento do Cabo para Projetores MAXINEX

Configuração	Classe de Temperatura	Faixa Tamb (°C)	Classe Temp. Isol. Cabo (°C)
400 W Sódio	T3	-45 a +45	90
400 W Sódio	210 (T2)	-45 a +50	90
400 W Sódio *	210 (T2)	-45 a +55	105
400 W Metálico	T3	-45 a +30	70
400 W Metálico	220 (T2)	-45 a +50	90
400 W Metálico *	230 (T2)	-45 a +55	105
250 W Sódio	T3	-45 a +55	90
250 W Metálico	T3	-45 a +55	90
150 W Sódio	T4	-45 a +55	80
150 W Metálico	T4	-45 a +55	80

* Sem capacitor de correção de fator de potência.

Análises e ensaios realizados:

- Análise construtiva (NBR 9518 e IEC 60079-15 itens 4 a 6);
- Ensaio de elevação de temperatura (IEC 60079-15 item 9) – ver a Tabela 2 com as classes de temperatura;
- Resistência térmica ao calor e ao frio (NBR 9518 item 9.7.1) – 336 h a 95 °C e 90% de UR, 336 h a 100 °C e 24 h a –65/70 °C;
- Ensaio de impacto (IEC 60079-15 item 11) – 4 J de impacto no corpo e 2 J no vidro;
- Ensaio de respiração restrita (IEC 60079-15 item 26.8.2) – ensaiado com uma sub-pressão de 30 mbar (3 kPa), com um tempo de decaimento para uma sub-pressão de 15 mbar (1,5 kPa) maior do que 3 minutos;
- Ensaio de tensão aplicada no conjunto (IEC 60079-15 item 14) – 1600 V durante 1 minuto;
- Ensaio de grau de proteção (NBR 6146 itens 8 e 9) – ensaiado para o grau de proteção IP66.

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Documentação descritiva do equipamento:
Desenhos construtivos, características de componentes e materiais são relacionados na "Lista de Documentos" apresentada no Relatório de Ensaio UNIAP-EX-1060/2001.

Marcação:
Na marcação dos **PROJETORES MODELO MAXINEX** deverão constar as seguintes informações:

BR-Ex nR II T* (ver Tabela 2)
Tamb = -45 a ** °C (ver Tabela 2)
IP66
***** °C**
(Classe de temperatura da isolação do cabo - ver Tabela 2)

Observações:

1. O projetor deve possuir a seguinte advertência: DESENERGIZAR E AGUARDAR 5 MINUTOS ANTES DE ABRIR.

2. Na instalação do projetor deve ser utilizado cabo com classe de temperatura da isolação de acordo com a Tabela 2.

3. Projetores permanentemente ligados devem ser desligados ocasionalmente para que lâmpadas velhas queimem, evitando o efeito retificador e conseqüente sobre-temperatura do reator.

4. Este certificado é válido apenas para os equipamentos de modelo, tipo e série idênticos ao protótipo efetivamente ensaiado. Qualquer modificação no projeto, bem como a utilização de componentes ou materiais diferentes daqueles definidos pela documentação descritiva do equipamento, sem a prévia autorização do CEPEL, invalidará este certificado.

5. É responsabilidade do usuário assegurar que o produto será instalado em atendimento às normas pertinentes para instalações elétricas em atmosferas potencialmente explosivas.

6. É responsabilidade da **CHALMIT LIGHTING** assegurar que os equipamentos fornecidos ao mercado nacional estejam de acordo com as especificações e documentação descritiva do protótipo ensaiado e que tenham sido submetidos com sucesso aos ensaios de rotina de tensão aplicada de 1600 V durante 3 segundos e decaimento de sub-pressão de 30 mbar (3 kPa) para 27 mbar (2,7 kPa) em tempo superior a 27 segundos.

7. A marcação deve ser executada conforme a norma NBR 9518 e a Regra Específica de Certificação de Equipamentos Elétricos para Atmosferas Potencialmente Explosivas (NIE-DINQP 096) e fixada na superfície externa do equipamento em local visível. Esta marcação deve ser legível e durável, levando-se em conta possível corrosão química.

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Nova Iguaçu, 10 de dezembro de 2001.

Carlos Azevedo Sanguedo
Laboratório de Acionamento e Segurança em Equipamentos Eletro-Eletrônicos

Henrique Burd
Escritório de Certificação de Produtos e Serviços

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CSA INTERNATIONAL

Certificate of Compliance

Certificate : 201067 - 1006086 (LR 116028)

Project: 2500010469 **Date Issued:** May 3, 2000

Issued to: **Chalmit Lighting**
A Division of Hubbell Lighting Ltd.
388 Hillington Road Glasgow
G52 4BL
Scotland

The products listed below are eligible to bear the CSA Mark shown

Issued by: Scott Friel, P. Eng

Signature:

C US

CLASS
3428 03 - Fixtures and Fittings - For Hazardous Locations
3428 83 - Fixtures and Fittings - For Hazardous Locations - To US Requirements

PRODUCTS

Class I, Zone 2, II, Ex nR, T4, T3 or T2, CSA Enclosure Type 4

SFM2 and SFMM, Mariner Luminaires followed by 150, 175, 250 or 400; followed by H,S OR W; followed by 5,6,8,E or P; may be followed by F1 to F6 inclusive or RS. Rated up to 600 V max, 50 & 60 HZ, 400 W max HPS, MH and MV

800 Model Series Luminaire - 844, 854, 864, 70W, 100W, 150W, 175 W, 250W, HPS (SON), or Metal Halide MBI Lamps, up to 500W tungsten halogen, up to 600 Vac 50-60 Hz.

APPLICABLE REQUIREMENTS
The following standards were used as a guide in the evaluation of the products covered by this report.

CSA Standard C22.2 No 0-M1991	-	General Requirements - Canadian Electrical Code Part II.
CAN/CSA E79-0-95	-	Electrical apparatus for explosive gas atmospheres. PART 0: General requirements.
CAN/CSA E79-15-95	-	Electrical apparatus for explosive gas atmospheres. PART 15: Electrical Apparatus with type of Protection 'n'

UL 2279 - UL Standard for Saftey for Electrical Equipment for Use in Class I, Zone 0,1,2 Hazardous Locations.

CSA Standard C22.2 No. 137-M1981	-	Electric Luminaires for Use in Hazardous Locations.
ANSI/UL 1572,	-	Standard for High Intensity Discharge Lighting Fixtures
ANSI/UL 595,	-	Standard for Marine Type Electric Lighting Fixtures.
ANSI/UL 844,	-	Standard for Electric Lighting Fixtures for Use in Hazardous (Classified) Locations.

CSA INTERNATIONAL

Supplement to Certificate of Compliance

Certificate Number: 201067 - 1006086 (LR 116028)

Issued to: **Chalmit Lighting**
A Division of Hubbell Lighting Ltd.
388 Hillington Road Glasgow
G52 4BL
Scotland

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Issued By: Scott Friel, P.Eng

Signature:

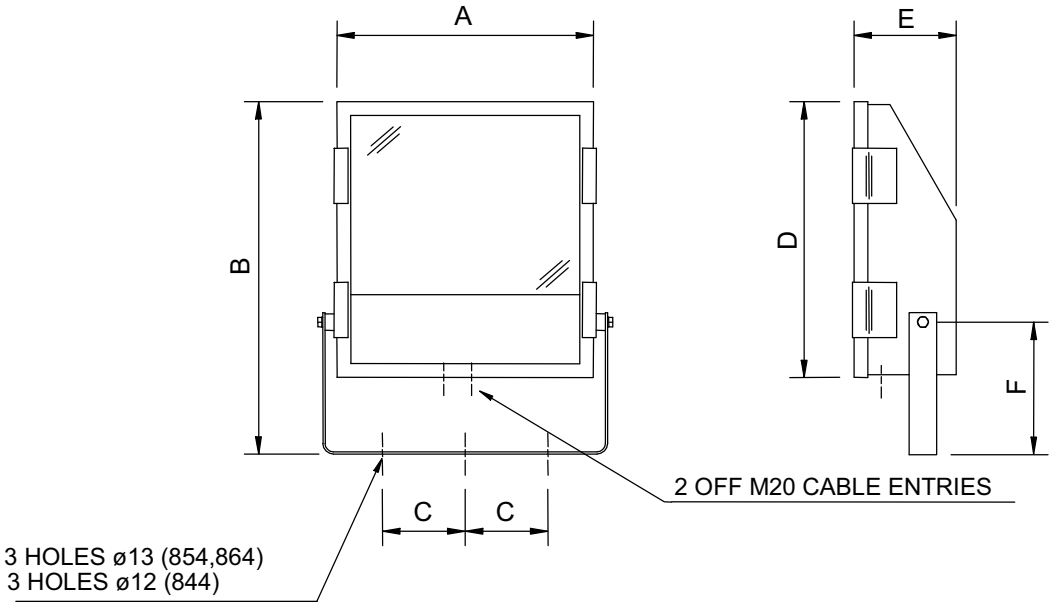
Product Certification History

Project	Date	Description
201067 - 1006086 (LR 116028)	2 September 1999	Original Certification.
2500010469	22 February 2000	Update to 1006086 report and add Alternate factories and specific Manufacturers marking.
	May 3, 2000	Correction Letter, no project opened.

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

800nR Series Floodlights

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



DIMENSIONS	844 70W	854 150/250/400W	864 400W
A	308	**415**	465
B	443	630	640
C	75	150	150
D	348	490	500
E	175	185	190
F	175	260	260

CE

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Specification and ATEX Declaration

Type(s) of Protection	Ex nR (non-sparking) (restricted breathing)
Protection Standard	EN 50021
Area of Application	Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
ATEX Equipment Classification	Group II Category 3 G
Equipment Coding	Ⓔx II 3 G EEx nR II T3/T4 (Refer to Table 0 for Tamb)
Certificate	Type Examination EECS BAS98ATEX3378
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Marking CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction – 800 nR Series Floodlights

1.1 General

The type of protection is Ex nR using a restricted breathing enclosure.

Note : *Lamp ranges, maximum ambient and surface temperature ratings are as indicated in TABLE 0.*

1.2 Application

The luminaire is designed to be safe in normal operation.
The luminaire should not be used in conditions where there are environmental, vibration or shock conditions above the normal for fixed installations.
The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states.
The luminaire is suitable for applications where *Category 3* apparatus is used. The application is for ignitable gas atmospheres. The type examination does not address suitability for dusts or portable applications.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation. *Any specific instructions concerning emergency luminaires must be complied with.*

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate.
In the UK the requirements of *the 'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with *the 'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

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3.2 Tools

A piece of 6mm bar or a cross head screwdriver blade to open the cover.
19mm A/F spanner, 8mm A/F socket, 3mm and 5mm flat blade screwdriver.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering a maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care must be taken if connecting to the nominal 230V UK public supply*.** In some cases, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected to obtain the best lamp performance, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is relocated. If in doubt, tappings should be set on the high side. If an autotransformer is fitted, the output voltage should be checked and, where appropriate, the tappings should be adjusted to suit the actual circuit voltage. 10V Max. drop is desirable for HPS and required for MBI. All circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke, so tap selection is obvious. Where supply conditions include significant harmonics, the PFC can be omitted.
Where shore or construction site supplies are used, which are different to the service location supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The discharge lamps used are of a standardised type. There is no preference between make or colour. The 800 nR series uses tubular HPS and MBI lamps. Care must be taken to fit the correct new and replacement lamps in order to preserve the certification conditions and obtain the designed photometric performance. The lamp type is shown on the rating plate. ***Lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling' where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects to control gear.
The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or from Chalmit.

Important : *HPS and MBI circuits should not be energised without a lamp fitted. HPS and MBI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The foot mounting or rear mounting arrangements should be secured with lock washers or self-locking nuts and bolts. The luminaire should be mounted with the lamp axis horizontal.

3.5.1 Weights and Windages

Note : *Weights and Windages for the various types are outlined in Table 5.*

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3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient temperature. This allows the user to adjust the cable specification for actual site maximum temperature. The standard conductor section is 6mm² max. All models are suitable for looping. Standard 300/500V cable is suitable. The cable makeup must be suitable to ensure the obtaining of a restricted breathing enclosure when the cable gland assembly is fitted.

3.6.2 Cable Glands

Cable glands and sealing plugs, when installed, must maintain the restricted breathing enclosure. (Vacuum test; 300mm head of water, half pressure time 3mins. minimum). Rubber sealing washers and steel compression washers are provided with the unit to seal between the gland body and the luminaire. The body torque value is 12Nm. The user must ensure that the assembly fulfils the above requirement. No means of checking the air tightness of the assembled unit is provided. When new sealing arrangements are to be installed, users should check a sample for substantial air tightness before making a full installation. Entries suitable for M20 cable glands are standard. Entries suitable for M25 are available to special order.

3.6.3 Cable Gland Types

Refer to the cable gland manufacturers catalogue for further information with regard to compatibility with cable types. Refer to Chalmit for the assessment of other suitable types. These will be covered by a manufacturers declaration.

Note : *Cable gland types covered by the type examination are as indicated in TABLE 1.*

3.7 Cabling and Fitting Lamps

Access for cabling and fitting lamps is by removing the front cover. Before removing the cover on any occasion, check that the support chain is sound. The cover is released by undoing the six toggle clips using a screwdriver or a peg through the hole in the clip. The reflector is removed by releasing four screws. The baffle plate is removed by undoing the four M5 nuts on the underside. Reselect the voltage tappings if necessary. Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1mm bare conductor outside the terminal is a maximum. Any unused terminal should be fully tightened. When the cabling is complete, make a final tightness and connection check. Lamps must be of the correct type and firmly screwed into place. The cover is replaced and the toggle clips snapped back over.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

a. The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience :

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting.
3 Check the cable gland for tightness and nip up if necessary.
4 Check all cover toggle clips for tightness. If they appear slack, re-set by reducing the angle of the long sides of the clips by bending until they require firm pressure to lock in place.
5 Clean the lampglass.
6 When relamping, check that the cover gasket has not softened or become excessively deformed, if in doubt replace (*See Section 4.0*).

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3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
In most instances, the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first over-heated; the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating.
Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS and MBI, the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an attempt to start effect in the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

3.9.1 Thermal Protector

Thermal protectors are included. If the lamp goes on and off over a timescale of several minutes, this could be the thermal protector operating. The causes are defective lamps/diode effects, gross over voltage or the choke beginning to fail and this should be investigated directly. Also see Section 3.4.

4.0 Overhaul

The unit is largely made of materials which are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 1.0mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable. All the spares required are available. Please state the model number, lamp and reflector details.
The seal at the cover is between the glass and the body. The glass is retained in the cover frame by silicone R.T.V. adhesive.
If the cover gasket has deteriorated by softening or permanent set, a new cover assembly should be fitted, which can be obtained from Chalmit. As an alternative, a replacement gasket strip can be obtained from Chalmit. To fit this, care is needed, the old gasket should be removed and the remaining adhesive scraped off with a chisel type blade. New strips are cut full length on the short sides and neatly butted on the long sides. The gasket is fixed in place and the butt joint sealed with silicone R.T.V. The cover assembly is left unclipped on top of a body with a sheet of thin polythene between it and the body to avoid adhesion. After a few hours the cover is removed and allowed to cure in free air for 24 hours. The cover should be tested on a test body for air tightness prior to being fitted to an overhauled unit.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The inrush current can be calculated where circuit conditions are known. The nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other supply volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are outlined in TABLE 2.*
Starting and running currents for 120V, 50Hz. are outlined in TABLE 3.
A conventional matrix for HBC fuses is outlined in TABLE 4.

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6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

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0.0 Tables 0/1/2/3/4/5

Table 0 Lamp Ranges and Temperature Ratings Refer to Section : 1.1

Model	Wattage	Lamp	Min Ambient °C	Max Ambient °C	T Rating	Cable Temp Rise °C	Cable Rating °C	VA Rating (When fitted with Autotransformer)
844	70W	SON/T	-40	50	T3(150°C)	25	75	
				40	T4		65	
854	100W	SON/T	-40	55		20	75	
	150W	SON/T	-40	50			70	
		MBI/T	-25	55	T3		75	
	250W	SON/T	-40	40	T4	25	65	
		MBI/T	-25					
854*	400W	SON/T	-40	40	T2	35	75	
		MBI/T	-25					
854	500W	T/Hal	-45	45	T3	40	85	
				60	T2		100	
864	250W	SON/T	-40	55	T3	30	85	
		MBI/T	-25					
	400W	MBI/T	-25					
	400W	SON/T	-40	50			80	
864**	150W	SON/T	-40	55	T3	20	75	500VA
	250W							
	400W			50		30	95	

Note : * *400W 854 version is used in conjunction with an external gearbox.*
** *These models have a 110V or a 120V supply.*
SON lamps without PFC capacitors are suitable for a minimum ambient of -45°C.

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Table 1 Cable Gland Types Refer to Section : 3.6.1

Gland Type	Make		
	Hawk Cable Glands	**CMP Products**	**BICC Components**
311	*		
321	*		
352	*		
353	*		
353T	*		
354	*		
VBL321	*		
VBL352	*		
VBL353	*		
VBL354	*		
A2F		*	*
E1FX		*	
E2FW		*	
E1FW		*	
A4e		*	
E1W			*
E1X			*
RTL			*

Table 2 Lamp, Starting and Running Currents (240V, 50Hz) Refer to Section : 5.0

Lamp	Lamp Current	Start Current	Running Current	PFC F	Circuit Power
70W	0.98	0.6	0.45	10	76
100W	1.2	1.0	0.56	10	114
150W	1.8	1.2	0.75	20	168
250W	3.0	2.65	1.35	30	282
400W	4.6	4.0	2.2	40	445

Table 3 Lamp, Starting and Running Currents (120V, 50Hz) Refer to Section : 5.0

Lamp	Lamp A	Start A	Running A	PFC F	Circuit Power
150W	1.8	2.4	1.5	20	170
250W	3.0	5.3	2.7	30	290
400W	4.6	8.0	4.4	40	450

Note : *Minimum power factor correction: 0.85*

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Table 4 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	**Number of Lamps**					
	1	**2**	**3**	**4**	**5**	**6**
70W	4A	6A	10A	10A	16A	16A
100W	4A	6A	10A	10A	16A	16A
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A

Table 5 Weights and Windages Refer to Section : 3.5.1

	Type					
	844/70	**854/100**	**854/150**	**854/250**	**864/250**	**864/400**
Weight	12.0kg	16.5kg	17.0kg	18.0kg	18.0kg	18.5kg
Windage	0.11m^2	0.20m^2	0.20m^2	0.20m^2	0.22m^2	0.22m^2

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

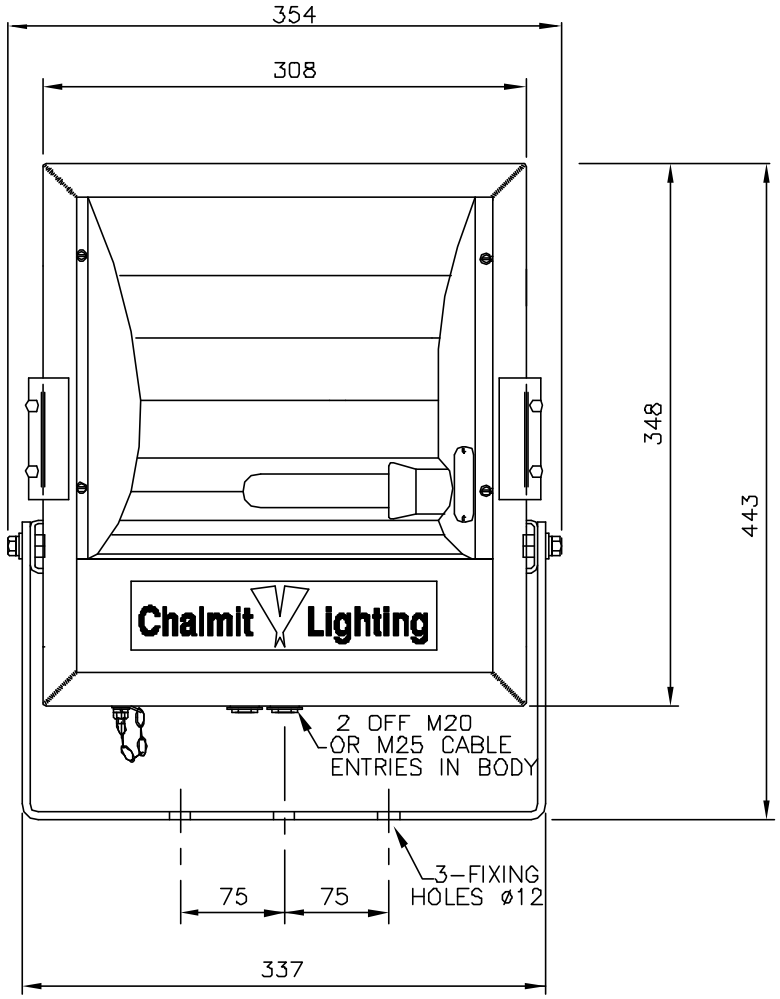
Registered No. 3650461

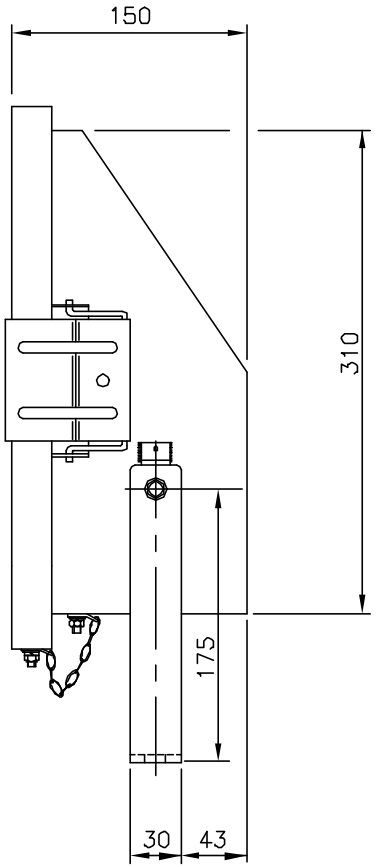
Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

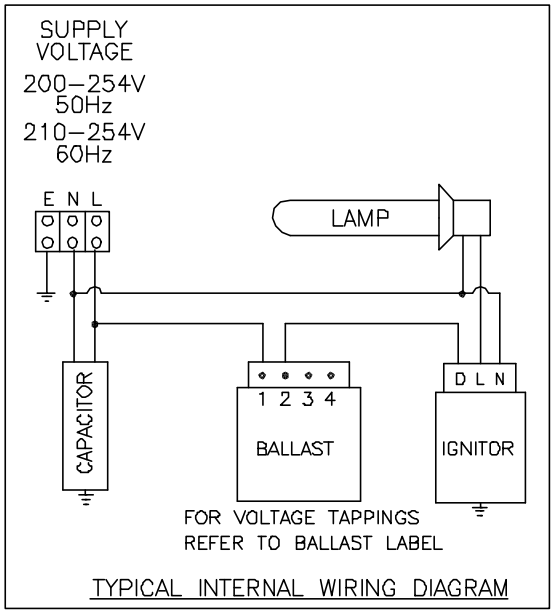
Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

DRAWING NUMBER/SHEET NUMBER
F485







TYPICAL INTERNAL WIRING DIAGRAM

OPTIONS

i) SPIGOT MOUNTING
ii) POLE-MOUNTING BRACKET
iii) WIDE & NARROW BEAM REFLECTOR

WEIGHT:- 12Kgs

SUPPLY CABLE:-
6mm^2, 3-CORE CABLE

MODEL	LAMP	AMBIENT TEMP	T RATING	IP RATING
844N/70S	SON/T	40°C	T4	IP 66/67
		55°C	150°C (T3)	

DRAWN	RJK
CHECKED	
APPROVED	
DATE	25-5-99
REF. DRGS:-	

REDRAWN	01	15-11-99
CHANGE	ISSUE	DATE

MATERIAL
STAINLESS STEEL 316 S31 (BODY)
MILD STEEL (STIRRUP MOUNTING BRKT)

TOLERANCE

FINISH
PAINTED BLACK(BODY ONLY)

SURFACE ROUGHNESS

DIM:- mm

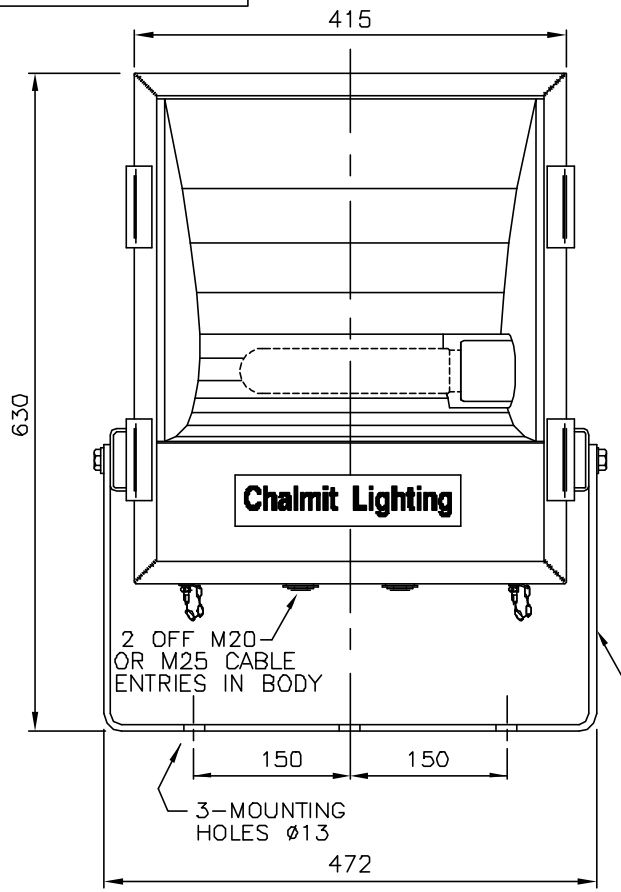
SCALE:-

Chalmit Lighting
Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel 0141-882 5555 Fax 0141-883 3704

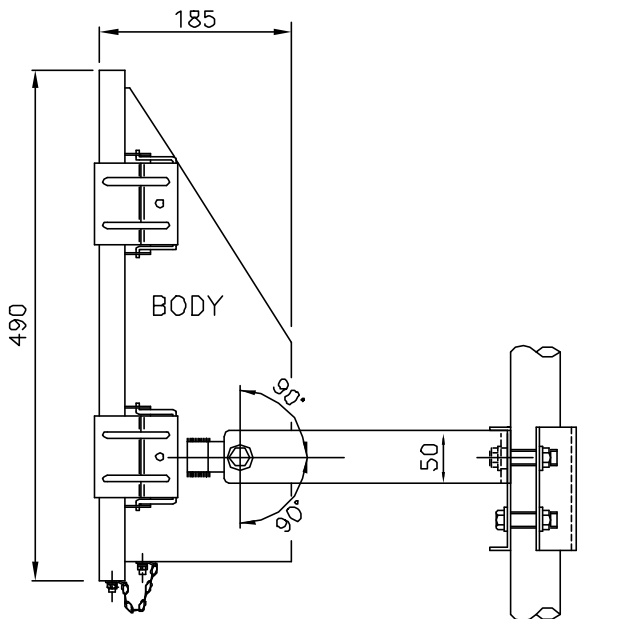
TITLE DETAILS OF 844 ExnR FLOODLIGHT FOR USE IN ZONE 2 AREAS(200-254V @50Hz & 210-254@60Hz)

DRAWING NUMBER/SHEET NUMBER
F485

DRAWING NUMBER/SHEET NUMBER
F535

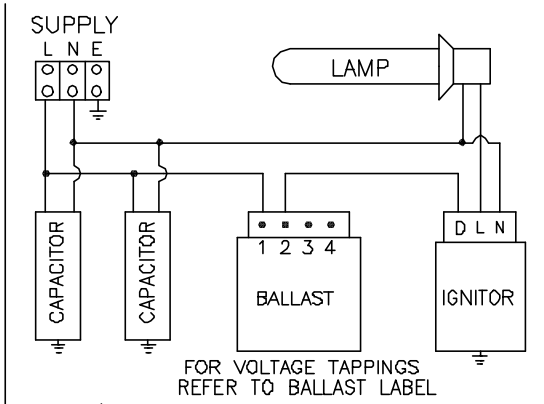


STANDARD MOUNTING POSITION



WEIGHT:-18Kgs(max)

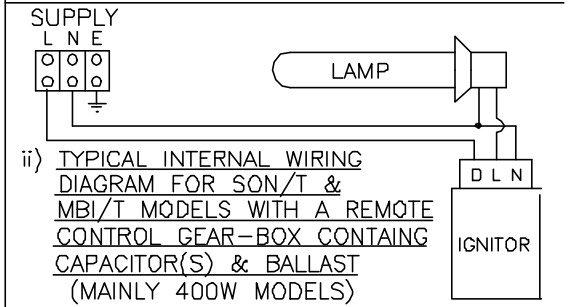
ALTERNATIVE MOUNTING POSITION
(STIRRUP-MOUNTING BRACKET ROTATED 90° FOR POLE-MOUNTING)



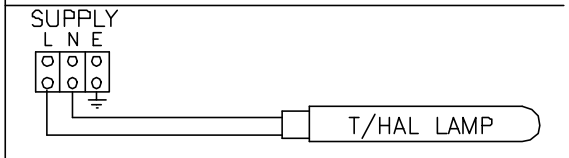
FOR VOLTAGE TAPPINGS REFER TO BALLAST LABEL

i) TYPICAL INTERNAL WIRING DIAGRAM FOR 854/250 SON/T & 854/250 MBI/T

(854/100 SON/T, 854/150 SON/T AND 854/150 MBI/T ARE SIMILAR BUT HAVE ONE CAPACITOR ONLY)



ii) TYPICAL INTERNAL WIRING DIAGRAM FOR SON/T & MBI/T MODELS WITH A REMOTE CONTROL GEAR-BOX CONTAING CAPACITOR(S) & BALLAST (MAINLY 400W MODELS)



WIRING DIAGRAM(TUNGSTEN HALOGEN LAMPS)

MODEL	AMBIENT TEMP	T RATING	IP RATING
854/100 SON/T	55°C	T4	IP 66/67
854/150 SON/T	50°C	T4	IP 66/67
854/150 MBI/T	55°C	T3	IP 66/67
854/250 SON/T	40°C	T4	IP 66/67
854/250 MBI/T	40°C	T4	IP 66/67
854/400 MBI/T	40°C	T3	IP 66/67
854/400 SON/T	40°C	T3	IP 66/67
854 UP TO 500W T/HAL	45°C	T3	IP 66/67
	60°C	T2	IP 66/67

SUPPLY CABLE:-
6mm², 3-CORE CABLE

SUPPLY VOLTAGE:-
200-254V @ 50Hz
& 210-254@60Hz

DRAWN	RJK
CHECKED	
APPROVED	
DATE	2-6-99
REF. DRGS:-	

CHANGE	ISSUE	DATE

MATERIAL: STAINLESS STEEL 316 S31 (BODY) MILD STEEL (STIRRUP MOUNTING BRKT)
TOLERANCE:
FINISH:
SURFACE ROUGHNESS:
DIM:- mm
SCALE:-

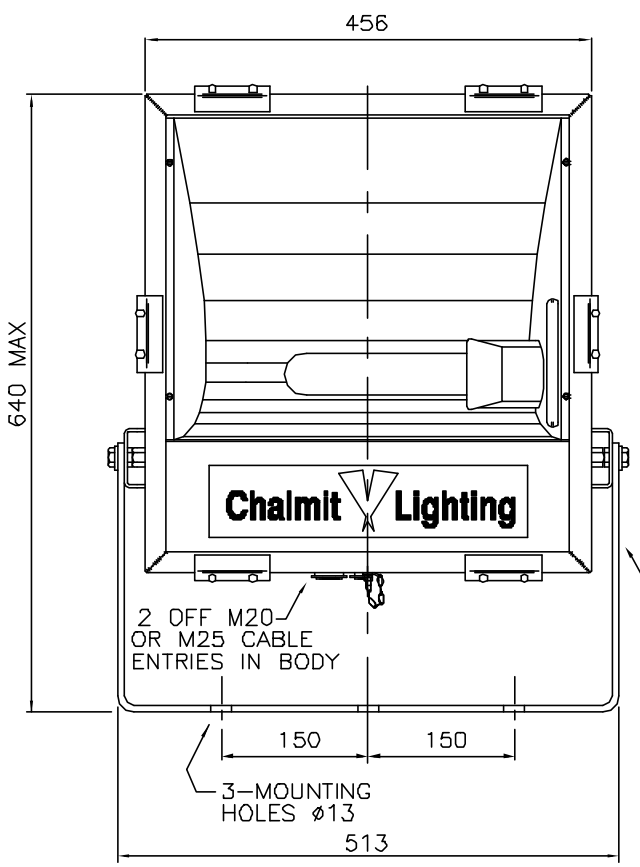
Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel 0141-882 5555 Fax 0141-883 3704

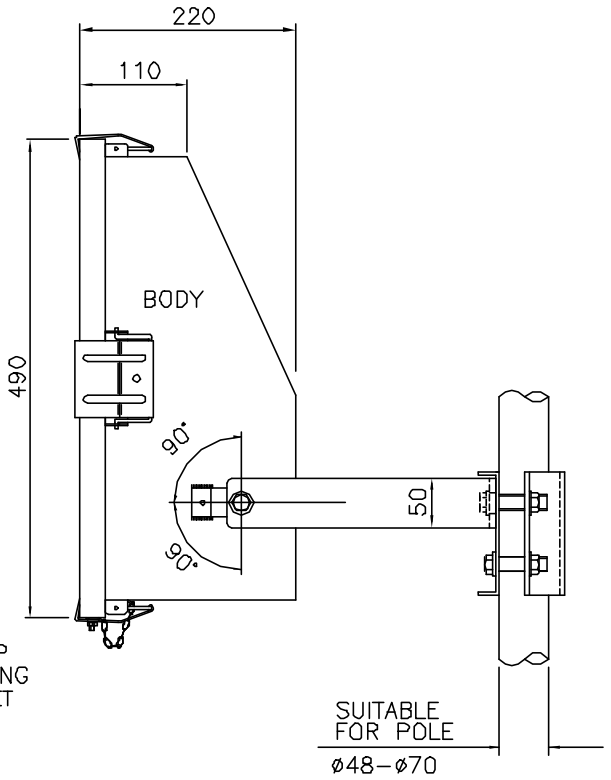
TITLE: DETAILS OF 854 ExnR FLOODLIGHT FOR USE IN ZONE 2 AREAS

DRAWING NUMBER/SHEET NUMBER
F535

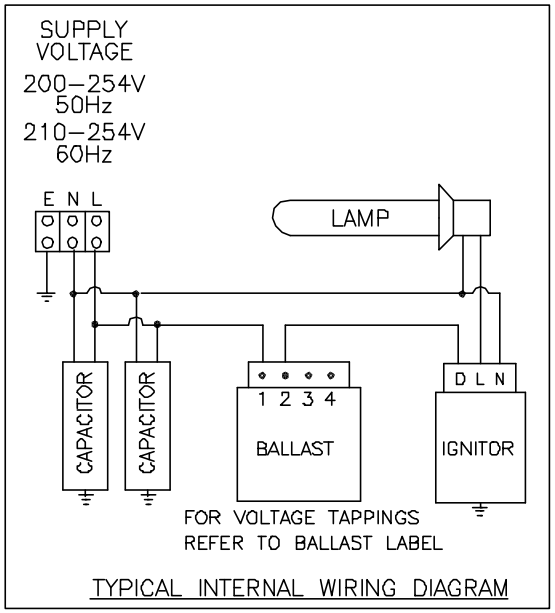
DRAWING NUMBER/SHEET NUMBER
F530



STANDARD MOUNTING POSITION



ALTERNATIVE MOUNTING POSITION
(STIRRUP–MOUNTING BRACKET
ROTATED 90° FOR POLE–MOUNTING)



TYPICAL INTERNAL WIRING DIAGRAM

WEIGHT:–19.5Kgs(max)

MODEL	AMBIENT TEMP	T RATING	IP RATING
864/250 SON/T	55°C	T3	IP 66/67
864/250 MBI/T	55°C	T3	IP 66/67
864/400 MBI/T	45°C	T3	IP 66/67
864/400 SON/T	50°C	T3	IP 66/67

SUPPLY CABLE:–
6mm², 3–CORE CABLE

DRAWN	RJK
CHECKED	
APPROVED	
DATE	25–5–99
REF. DRGS:–	

CHANGE	ISSUE	DATE

MATERIAL: STAINLESS STEEL 316 S31 (BODY) MILD STEEL (STIRRUP MOUNTING BRKT)
TOLERANCE
FINISH: PAINTED BLACK(BODY ONLY)
SURFACE ROUGHNESS
DIM:– mm
SCALE:–

Chalmit Lighting
Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel: 0141–882 5555 Fax: 0141–883 3704

TITLE: DETAILS OF 864 ExnR FLOODLIGHT FOR USE IN ZONE 2 AREAS(200–254V @50Hz & 210–254@60Hz)
DRAWING NUMBER/SHEET NUMBER
F530

MICRONEX and MAXINEX

Ex n FLOODLIGHTS

ATEX CATEGORY 3 ZONE 2 APPLICATIONS

The Maxinex and Micronex form a range of floodlights providing excellent photometric performance. The smaller Micronex is for 70W double ended high pressure sodium or metal halide lamps and the larger Maxinex is for 150W to 400W tubular high pressure sodium or metal halide lamps. The protection is Ex nR utilising a restricted breathing enclosure. The asymmetric distribution enables areas to be lit more efficiently with less glare or light pollution. This is because the beam is thrown a long distance whilst avoiding excess light levels under the mounting point and having a precise cut off. Available with a choice of either a narrow or wide beam reflector, the Micronex and Maxinex offer the opportunity for very effective and efficient lighting schemes to be designed. The enclosure is a robust high pressure die-cast aluminium body with a toughened glass cover in a hinged frame with stainless steel fasteners. The compact design ensures reduced weight and has low windage which helps lower installation costs as it allows more economical support structures.

Suitable for a wide range of ambient temperatures, -40˚C to +55˚C, dependant on lamp type and wattage.

Standard Specification

Type of Protection:	**Ex nR (Restricted Breathing)**
ATEX Classification:	**Group II Category 3 G**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50021**
Certificate:	**Maxinex: Type Examination Certificate BAS97ATEX4368** **Micronex: Type Examination Certificate BAS98ATEX3054**
Coding:	**Ⓔx II 3 G Ex nR II (refer to table for T rating and Ambient)**
Enclosure:	**Black epoxy painted aluminium body and frame with toughened glass window, silicone rubber gasket**
Reflector:	**Wide beam high purity anodised aluminium**
Entry:	**Maxinex: 2 x 20mm diameter holes** **Micronex: 1 x 20mm diameter holes**
Termination:	**Maxinex: 3 core 6mm² max. conductor with looping** **Micronex: 3 core 6mm² max. conductor**
Installation:	**Stirrup mounting**
Control Gear:	**Internal copper/iron ballast with ignitor and PFC correction capacitor**
Relamping:	**Access via front glass cover assembly secured by stainless steel screws**
Lamp Type:	**HPS or Metal Halide tubular**
Lampholder:	**Maxinex: E40, Micronex: Rx7s**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz**

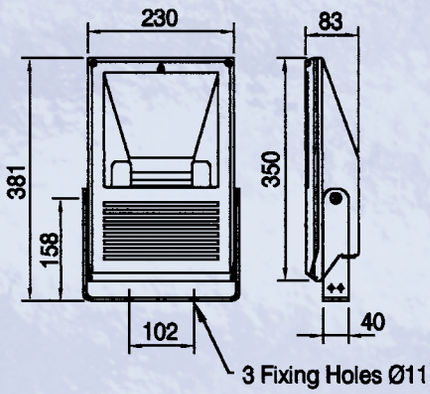
Features

- **Lightweight**
- **High corrosion resistance**
- **All stainless steel fasteners**
- **Hinged front cover for easy access**
- **High efficiency asymmetric reflector design**
- **Low windage of 0.08m² (Micronex) and 0.25m² (Maxinex)**
- **Choice of metal halide or high pressure sodium lamps**
- **Suitable for low temperature applications**
- **Gost Approved**
- **Cepel Approved (Maxinex only)**

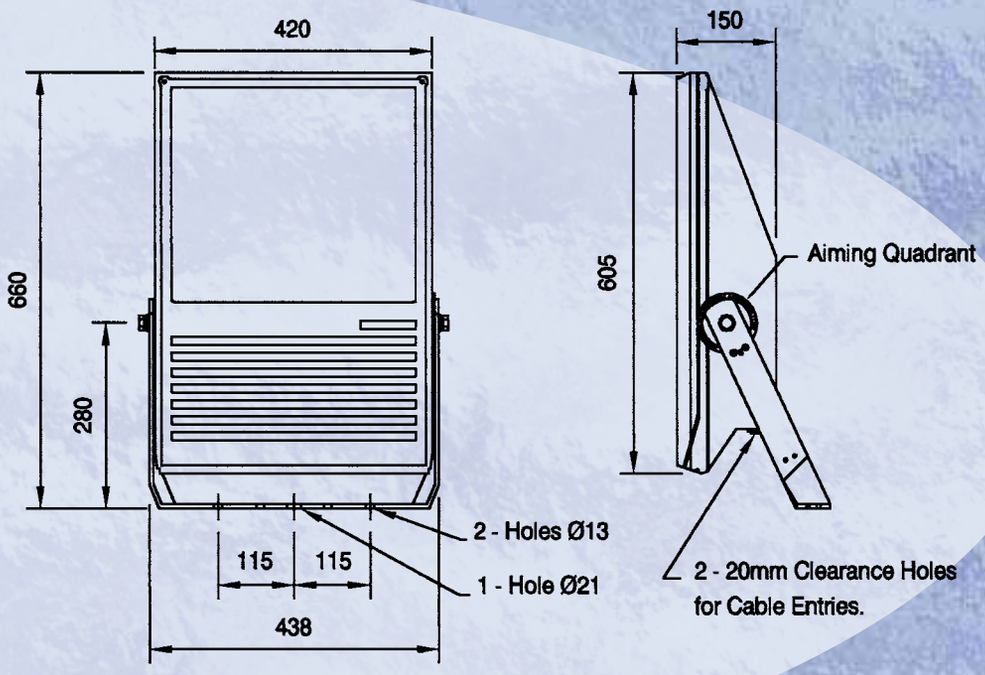
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient °C	Weight
MICN/070/MS	70W	Double Ended HPS/Metal Halide	Rx7s	T3	40	5.0kg
MAXN/150/MS	150W	HPS/Metal Halide	E40	T4	55	16kg
MAXN/250/MS	250W	HPS/Metal Halide	E40	T3	55	17kg
MAXN/400/MS	400W	HPS/Metal Halide	E40	T3 T3	45 (HPS) 30 (MH)	18.5kg

Options - Suffix to Catalogue No.

/60	60Hz
/D	Zone 2 and 22 Dust applications (Maxinex only)
/TI	Timed ignitor (Maxinex only)



MICRONEX



MAXINEX

Applications

Maxinex

- **Zone 2 hazardous areas • Low temperature environments**
- **Petrochemical plants • Tank farms**
- **Drum storage areas • Gas pumping stations**
- **Perimeter lighting • Distilleries**
- **Security lighting**

Micronex

- **Zone 2 hazardous areas**
- **Directional control lighting at low mounting heights**
- **Perimeter lighting • Loading areas**
- **Sewage treatment plants • Security lighting**
- **Gas pumping stations • Distilleries**

Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting bracket - Micronex	**SMIC1-0001**
Pole mounting bracket - Maxinex	**SMAX1-0001**

TYPE EXAMINATION CERTIFICATE

Equipment intended for use in Potentially Explosive Atmospheres

3 Type Examination Certificate Number : **BAS97ATEX4368**

4 Equipment: **MAXINEX FLOODLIGHT LUMINAIRE**

5 Manufacturer: **SIMPLEX CHALMIT LIGHTING**

6 Address: **388 Hillington Road, Glasgow, Scotland, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

97(C)0858/2 dated 24 February 1998

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

prEN 50 021: 1996

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

II 3 G Ex nR II T (see item 15 in Schedule)

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/030

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
24 February 1998

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS97ATEX4368**

15 **Description of Equipment**

The Maxinex Floodlight Luminaire is designed for fitting 150W, 250W or 400W SON/T or MBI/T lamps at supply voltages of 200 to 254V, 50 or 60 Hz.

Enclosure

The enclosure comprises a die cast aluminium lid and body with a toughened glass lens fitted to the lid assembly. Internally the enclosure contains bracket mounted control gear, a reflector and a bracket mounted lampholder.

The body is pierced with one or two entry holes for cable glands which may be up to M25. A flat plate with threaded holes may be provided to increase the wall thickness at this point. The gland is sealed with a neoprene sealing washer and plain washer supplied with the luminaire.

The supply conductors are terminated on a Type MK6 component certified terminal strip BASEEFA No. Ex 813095U coded EEx e II, incorporating pressure plates under screw pressure. Alternatively a Hylec terminal block, part No. PA76FV, may be used. If required conductors up to 6 mm^2 may be looped in to a Weidmuller MK6/6 way supply terminal block with cross connection combs fitted to link terminals.

The luminaire enclosure is classified as restricted breathing and has a degree of protection IP66 and IP67.

Control gear

The ballast, which includes thermal protectors, is manufactured by Transtar, Parry or Tridonic and is rated at 200 to 254V, 50 Hz and 210 to 254V, 60 Hz which is achieved by single or multi tappings. The ballasts have a T_w 140°C and Δt 55°C for 400 W lamps, or Δt 75°C for 250W and 150W lamps.

The ignitor is the Parry PXA 000 (all lamps), or PXA400 (150W or 250W lamps) detailed in BASEEFA Certification Report 96(C)1064. The Tridonic ZRM6ESB ignitor, Component Approval Ex 94Y4538U coded Ex N II may be fitted to 150W or 250W lamps.

Capacitors which are marked Tc 90°C and which comply with EN 61048 and EN 61049 may be fitted. Capacitors for a 40°C maximum ambient temperature may have a marked Tc 85°C.

The capacitors and ballast may be omitted from the luminaire and located in a remote control gear box. The gear box may contain any ballast suitable for lamps in accordance with the lamp manufacturer's specification, provided that all ballasts comply with IEC 922 and IEC 923 or BS EN 60922: 1991 and BS EN 60923: 1991 and have third party assessment.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS97ATEX4368**

Marking

Luminaire configuration	Temperature class	Referred ambient temperature
400W SON/T	T3	-40°C to +45°C
400W SON/T	210 (T2)	-40°C to +50°C
400W SON/T*	210 (T2)	-40°C to +55°C
400W MBI/T	T3	-40°C to +30°C
400W MBI/T	220 (T2)	-40°C to +50°C
400W MBI/T*	230 (T2)	-40°C to +55°C
250W SON/T	T3	-40°C to +55°C
250W MBI/T	T3	-40°C to +55°C
150W SON/T	T4	-40°C to +55°C
150W MBI/T	T4	-40°C to +55°C

* Without power factor correction (PFC) capacitor.

The following cable glands may be fitted to the enclosure:

HAWKE CABLE GLANDS		CMP PRODUCTS		BICC COMPONENTS	
Type	**Certificate No**	**Type**	**Certificate No**	**Type**	**Certificate No**
311	Ex 813162U	A2F	Ex 94C1293U	A2F	Ex 87B3022U
321		E1FX		E1W	Ex 87B3431U
352	Ex 813163U	E2FW		E1X	Ex 87B3430U
353		E1FW		RTL	Ex 87B3429U
353T	Ex 813164U	A4e	Ex 87B3413U		
354	Ex 813162U				
VBL321	Ex 813165U				
VBL352					
VBL353					
VBL354					

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS97ATEX4368**

16 **Report Nos.**

97(C)0858/1

17 **Special Conditions For Safe Use**

None

18 **Essential Health and Safety Requirements**

Essential Health & Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0.2	Analysis of possible operating faults and misuse	4.1.0.2
1.0.5	Marking	4.1.0.5
1.0.6	Instructions	4.1.0.6
1.1.1	Materials not to trigger off explosions	4.1.1.1
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19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D1729	1	0	25.11.97	General arrangement
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1 # SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE

2 **Equipment Intended for use in Potentially Explosive Atmospheres**
Directive 94/9/EC

3 Supplementary Type Examination Certificate Number: **BAS97ATEX4368/1**

4 Equipment: **MAXINEX FLOODLIGHT LUMINAIRE**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **388 Hillington Road, Glasgow, Scotland, G52 4BL**

7 This supplementary certificate extends Type Examination Certificate No. BAS97ATEX4368 to apply to equipment designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

File No: EECS 0068/03/030

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
4 November 1998

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

Schedule

SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE N° BAS97ATEX4368/1

Description of the Variation to the Equipment

VARIATION ONE

To permit an alternative E40 lampholder and marking plate modifications.

Report Nos.

Not applicable.

Special Conditions For Safe Use

Not applicable.

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Sheet	Issue	Date	Description
D1729	1	1	11/8/98	General arrangement
D1729	2		25/11/97	Detail views

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1 # SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially explosive atmospheres Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS97ATEX4368/2**

4 Equipment or Protective System: **MAXINEX FLOODLIGHT LUMINAIRE**

5 Manufacturer: **CHALMIT LIGHTING LTD**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS97ATEX4368 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/030

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
21 September 1999

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS97ATEX4368/2**

Description of the Variation to the Equipment or Protective System

VARIATION TWO

The luminaires may be operated in an ambient temperature of -45°C when used with the capacitors and ignitors in the schedule drawing below.

Report No.

None

SPECIAL CONDITIONS FOR SAFE USE

None

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Sheet	Issue	Date	Description
D1729	1	2	29.6.99	General arrangement
D1729	2	2	29.6.99	Details

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1 # SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE

2 **Equipment Intended for use in Potentially Explosive Atmospheres**
Directive 94/9/EC

3	Supplementary Type Examination Certificate Number :	**BAS97ATEX4368/3**
4	Equipment:	**MAXINEX FLOODLIGHT LUMINAIRE**
5	Manufacturer :	**CHALMIT LIGHTING LTD**
6	Address :	**388 Hillington Road, Glasgow, G52 4BL**

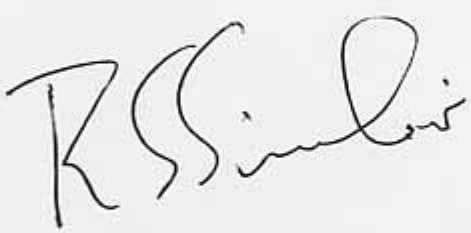
7 This supplementary certificate extends Type Examination Certificate No. BAS97ATEX4368 to apply to equipment designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate

The Electrical Equipment Certification Service, Notified Body Number 0600, retains responsibility for its original documentation. Baseefa (2001) Ltd. is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate that it has issued.

Baseefa (2001) Ltd. Customer Reference No. 0068

Project File No. 02/0148



R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

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Baseefa (2001) Ltd.
Health and Safety Laboratory Site, Harpur Hill,
Buxton, Derbyshire SK17 9JN
Telephone +44 (0) 1298 28255 Fax +44 (0) 1298 28216
e-mail info@baseefa2001.biz web site www.baseefa2001.biz
Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

Schedule

Description of the variation to the Equipment

Variation 3.1

To allow the Maxinex Floodlight Luminaire to be used in dust environments. The apparatus can be classified as Category 3D or Category 3GD and include the marking:

⟨Ex⟩ II3D T (see schedule) T_{amb} (see schedule)

The following models are included for use in zone 22 dust:

							Without PFC fitted	
Lamp Type	Designation	Power (W)	Max. amb. (°C)	Max. surface temp. (°C)	Max. amb. (°C)	Max. surface temp. (°C)	Max. amb. (°C)	Max. surface temp. (°C)
HPS	SON/T	400	45	200	50	205	55	210
Metal Halide	MBI/T		30			215		220
HPS	SON/T	250	55	180				
Metal Halide	MBI/T							
HPS	SON/T	150	55	130				
Metal Halide	MBI/T							

Report No.

02(C)0148 dated 12 November 2002

Special Conditions for Safe Use

None

Essential Health and Safety Requirements

See original certificate

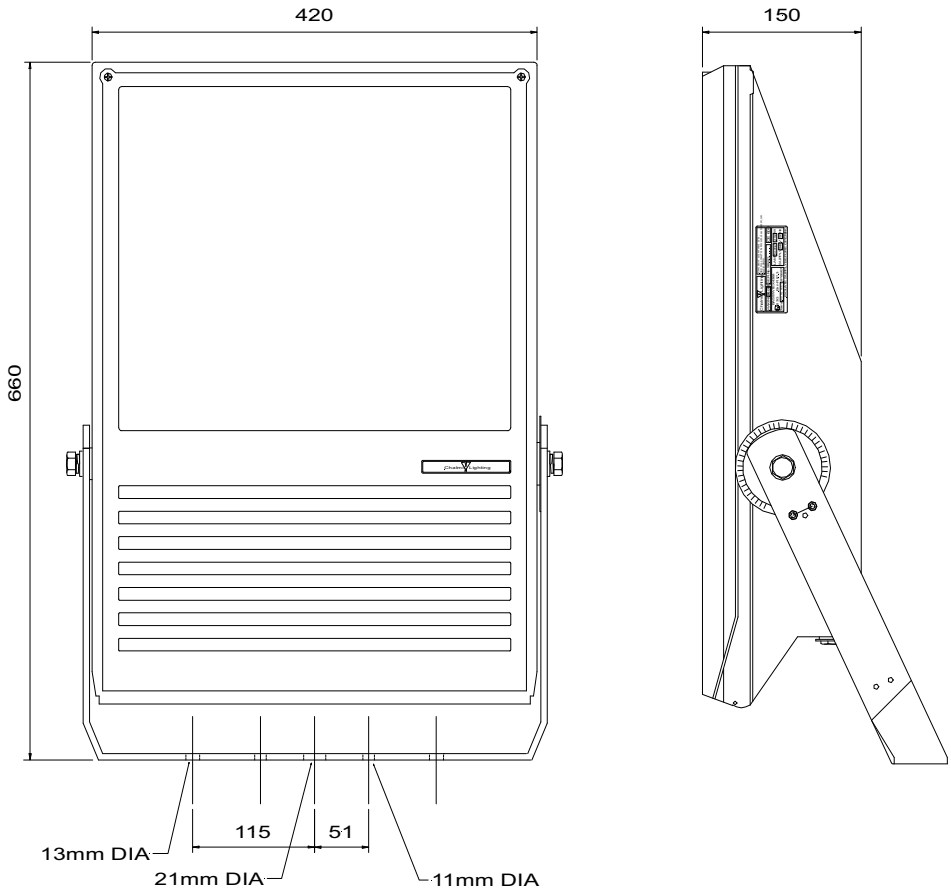
Drawings and Documents

Number	Issue	Date	Description
D2113	0	21/6/02	Dust general arrangement

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Maxinex Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



CE

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0.0 Specification and ATEX Declaration

Type of Protection	Ex nR (non-sparking) (restricted breathing)
Protection Standard	EN 50021
Area of Application	Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
ATEX Equipment Classification	Group II Category 3 G
Equipment Coding	Ⓔx II 3 G Ex nR II T2/T3/T4 (Refer to Table 0 for Tamb)
Certificate	Type Examination EECS BAS97ATEX4368
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Marking	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction - Maxinex Floodlight

1.1 General

The type of protection is Ex nR using a restricted breathing enclosure. It is available with wide (mottled) or narrow (specular) reflectors.

Note : *Lamp ranges, maximum ambient and surface temperature ratings are as outlined in TABLE 0.*

1.2 Application

The luminaire is designed to be safe in normal operation.
The luminaire should not be used in conditions where there are environmental, vibration or shock conditions above the normal for fixed installations.
The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states.
The body material is made from marine grade aluminium, copper free (*BS1490 LM6).*
The luminaire is suitable for applications where Category 3 apparatus is used. The application is for ignitable gas atmospheres. The type examination does not address suitability for dusts or portable applications.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN 60079-14 or the local hazardous area code of practice, whichever is appropriate.
In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.

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Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

A cross head screwdriver blade to open the cover.
19mm A/F spanner, 3mm and 5mm flat blade screwdriver.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering a maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care must be taken if connecting to the nominal 230V UK PUBLIC SUPPLY.*** In some cases, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected to obtain the best lamp performance, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is relocated. If in doubt, tappings should be set on the high side. 10V Max. drop is desirable for HPS and required for MBI. All circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke, so tap selection is obvious. Where supply conditions include significant harmonics, the PFC can be omitted. Where shore or construction site supplies are used, which are different to the service location supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The discharge lamps used are of a standardised type. There is no preference between make or colour. All have E40 caps. The Maxinex uses tubular HPS and MBI lamps. Care must be taken to fit the correct new and replacement lamp in order to preserve the certification conditions and obtain the designed photometric performance. The lamp type is shown on the rating plate. ***Lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling', where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects to control gear. The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or from Chalmit.

Important : *HPS and MBI circuits should not be energised without a lamp fitted. HPS and MBI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The foot mounting or rear mounting arrangements should be secured with lock washers or self-locking nuts and bolts. The luminaire should be mounted with the lamp axis horizontal.

3.5.1 Weights and Windages

Note : *Weights and Windages for the various types are outlined in Table 4.*

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3.6 Cabling and Cable Glands

3.6.1 Cables
The cable entry temperatures are given as the rise over the maximum rated ambient temperature. This allows the user to adjust the cable specification for actual site maximum temperature. The standard conductor section is 6mm² max. All models are suitable for looping except the 400W remote gear version. Standard 300/500V cable is suitable. The cable makeup must be suitable to ensure the obtaining of a restricted breathing enclosure when the cable gland assembly is fitted.

3.6.2 Cable Glands
Cable glands and sealing plugs when installed must maintain the restricted breathing enclosure. (Vacuum test; 300mm head of water, half pressure time 3 mins. minimum). Rubber sealing washers and steel compression washers are provided with the unit to seal between the gland body and the luminaire. The body torque value is 12Nm. The user must ensure that the assembly fulfils the above requirement. No means of checking the air tightness of the assembled unit is provided. When new sealing arrangements are to be installed, users should check a sample for substantial air tightness before making a full installation. Entries suitable for M20 cable glands are standard. Entries suitable for M25 are available to special order.

3.6.3 Cable Gland Types
Refer to the cable gland manufacturers catalogue for further information with regard to compatibility with cable types. Refer to Chalmit for the assessment of other suitable types. These will be covered by a manufacturers declaration.

Note : *Cable gland types covered by the type examination are as indicated in TABLE 1.*

3.7 Cabling and Fitting Lamps
Access for cabling and fitting lamps is by removing the front cover. The cover is released by undoing the two screws using a screwdriver. Reselect the voltage tappings if necessary. Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1 mm bare conductor outside the terminal is a maximum. Any unused terminal should be fully tightened. When the cabling is complete, make a final tightness and connection check. Lamps must be of the correct type and firmly screwed into place. The cover is replaced and the screws tightened down.

3.8 Inspection and Maintenance
Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination
The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience :

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting.
3 Check the cable gland for tightness and nip up if necessary.
4 Check the tightness of the cover screws and nip up if necessary.
5 Clean the lampglass.
6 When relamping, check that the cover gasket has not softened or become excessively deformed If in doubt, replace (*See Section 4.0*).

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3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
In most instances, the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first over-heated; the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating. Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS and MBI, the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an "attempt to start" effect in the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

3.9.1 Thermal Protector

Thermal protectors are included. If the lamp goes on and off over a timescale of several minutes, this could be the thermal protector operating. The causes are defective lamps/diode effects, gross over voltage or the choke beginning to fail and this should be investigated directly (*See Section 3.4.*).

4.0 Overhaul

The unit is largely made of materials which are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 1.0mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable. All the spares required are available. Please state the model number, lamp and reflector details. The seal at the cover is between the glass and the frame. The glass is retained in the cover frame by silicone R.T.V. adhesive. If the cover gasket has deteriorated by softening or permanent set, a new cover gasket should be fitted, which can be obtained from Chalmit. To fit this, care is needed, the old gasket should be removed and remaining adhesive scraped off with a chisel type blade. The gasket is fixed in place and joined with silicone R.T.V. to the body. The cover is tightened down and the assembly should be tested for air tightness prior to installation.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The inrush current can be calculated where circuit conditions are known. The nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other supply volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 2.*
A conventional matrix for HBC fuses is outlined in TABLE 3.

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

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6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation. This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

0.0 Tables 0/1/2/3/4

Table 0 Lamp Ranges, Maximum Ambient and Temperature Ratings Refer to Section : 1.1

Wattage	Lamp	Ambient Temp °C	T Rating	Cable Rating °C	Cable Rise °C
150W	SON/T, MBI/T	55	T4	75	20
250W	SON/T, MBI/T	55	T3	85	30
400W	SON/T	45	T3	85	40
400W	MBI/T	30	T3	75	40
400W	SON/T	50	210(T2)	90	40
400W	MBI/T	50	220(T2)	90	40
400W	SON/T*	55	220(T2)	95	40
400W	MBI/T*	55	230(T2)	95	40

Note : *400W, 55°C versions are not fitted with PFC capacitors.*

Table 1 Cable Gland Types Refer to Section : 3.6.3

Gland Type	Make		
	Hawk Cable Glands	CMP Products	BICC Components
311	*		
321	*		
352	*		
353	*		
353T	*		
354	*		
VBL321	*		
VBL352	*		
VBL353	*		
VBL354	*		
A2F		*	*
E1FX		*	
E2FW		*	
E1FW		*	
A4e		*	
E1W			*
E1X			*
RTL			*

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Table 2 Starting and Running Currents Refer to Section : 5.0

Lamp	Lamp A	Start A	Run A	PFC µF	Circuit Power (W)
150W HPS	1.8	1.2	0.75	15	168
250W HPS	3.0	2.35	1.3	20	286
400W HPS	4.5	4.0	2.2	30	440
150W MBI	1.8	1.2	0.75	15	170
250W MBI	3.0	2.65	1.35	30	282
400W MBI	4.2	4.4	2.2	40	440

Table 3 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	Number of Lamps					
	1	2	3	4	5	6
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A

Table 4 Weights and Windages Refer to Section : 3.5.1

Type	Weight	Windage
MAXINEX 400	17.0kg	$0.25m^2$
MAXINEX 250	15.5kg	$0.25m^2$
MAXINEX 150	14.5kg	$0.25m^2$

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

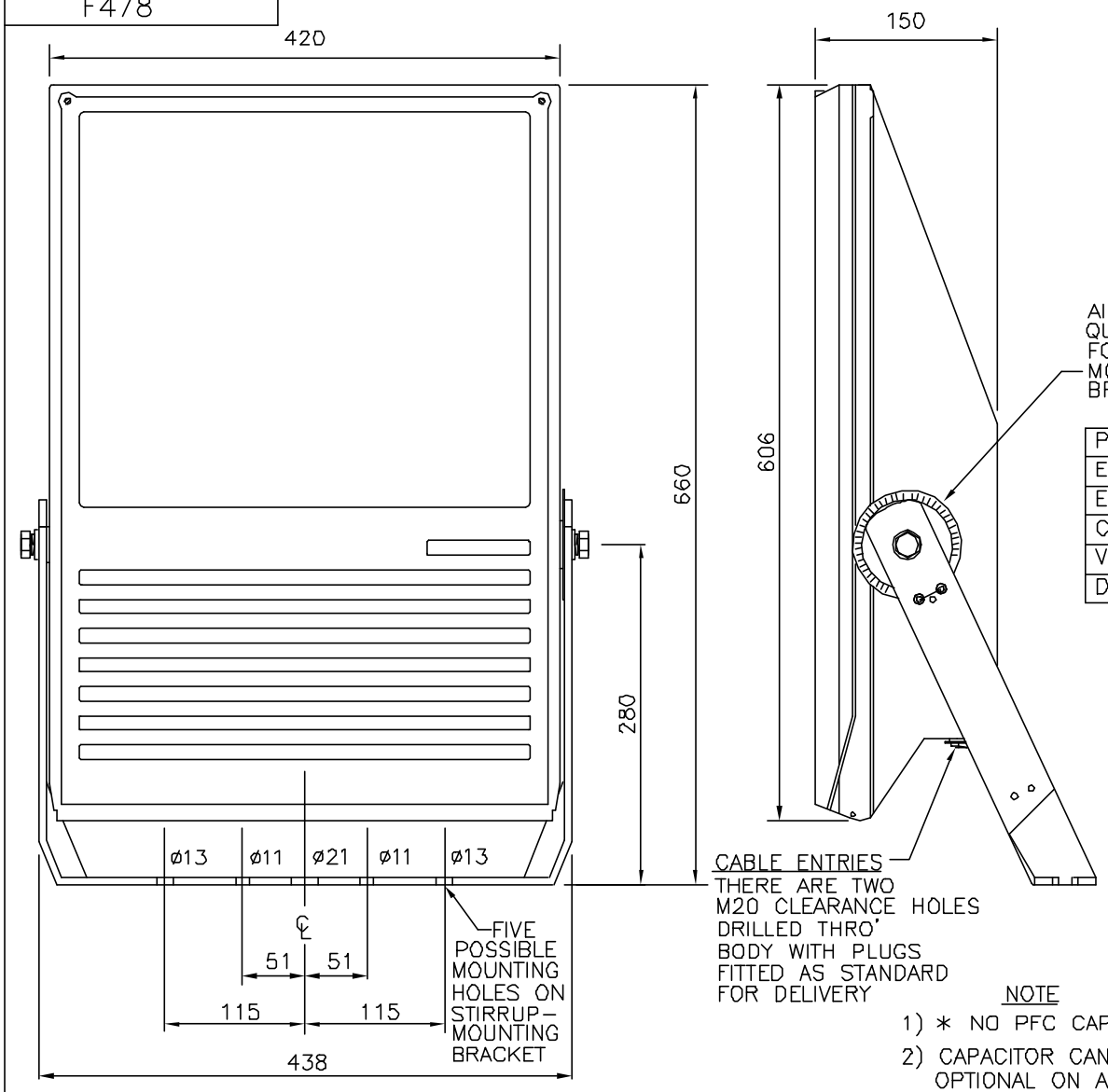
Registered No. 3650461

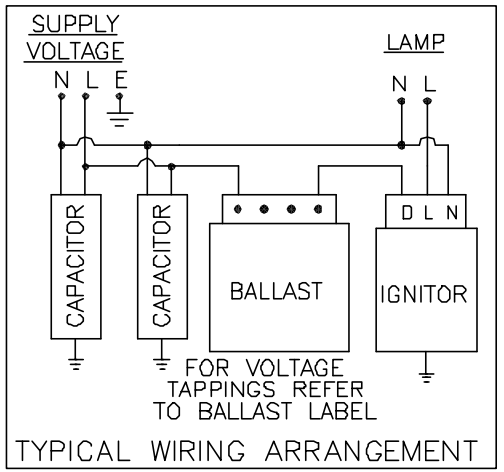
Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

DRAWING NUMBER/SHEET NUMBER
F478





TYPICAL WIRING ARRANGEMENT

Product Name	Stirrup Mounted Maxinex Floodlight
Ex Classification	Ex n Restricted Breathing
Ex code	Ex nR II T(see table)
Certificate	BAS97ATEX4368
Voltage & Frequency	200–254V @ 50Hz or 210–254V @ 60Hz
Degree of Protection	BS EN 60529 / IEC 529

	Wattage & Lamp	T Class	T amb (–45°C to)	Cable Temp Rating	Weight	Windage
	150W SON/T	T4	55°C	90°C	14.5Kg	0.25m²
	150W SON/T					
	250W SON/T	T3	55°C		15.5Kg	
	250W SON/T					
*	400W MBI/T	230(T2)	55°C		17.0Kg	
	400W MBI/T	220(T2)	50°C			
	400W MBI/T	T3	30°C			
	400W SON/T	210(T2)	50°C			
*	400W SON/T	210(T2)	55°C			
	400W SON/T	T3	45°C			

NOTE
1) * NO PFC CAPACITOR
2) CAPACITOR CAN BE OPTIONAL ON ALL MODELS.

SUPPLY CABLE
6mm² (3–CORE)

DRAWN	J.T.C
CHECKED	RJK
APPROVED	RJK
DATE	24.11.98
REF. DRGS:–	

	ISSUE	DATE
AMB TEMP OF –45°C ADDED	02	28-8-00
CAPACITOR OPTIONAL NOTE ADDED		
ATEX CERT ADDED. AMBIENT RANGES ADDED	01	6-7-00
CHANGE		

MATERIAL BODY(CAST ALUMINIUM) STIRRUP(MILD STEEL)	TOLERANCE
FINISH BODY & STIRRUP PAINTED BLACK	SURFACE ROUGHNESS
DIM:– mm	SCALE:– 1 : 4

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel 0141–882 5555 Fax 0141–883 3704

TITLE DETAILS OF Ex nR MAXINEX FLOODLIGHT FOR ZONE 2 AREAS

DRAWING NUMBER/SHEET NUMBER
F478

1 # TYPE EXAMINATION CERTIFICATE

2 **Equipment intended for use in Potentially Explosive Atmospheres**

3 Type Examination Certificate Number : **BAS98ATEX3054**

4 Equipment: **MICRONEX FLOODLIGHT**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **388 Hillington Road, Glasgow, Scotland, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

97(C)0962 dated 2 June 1998

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

prEN 50021: 1998

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

Ⓔx II 3 G Ex nR II T3 (T_{amb} -30°C to +40°C)

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/034

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
2 June 1998

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3054**

15 **Description of Equipment**

16 **Report Nos.**

The Micronex Floodlight Luminaire is designed for fitting 70W SON/TS or 70W MBI/TS lamps at supply voltages of 200 to 254V, 50 or 60 Hz.

Enclosure

The enclosure comprises a die cast aluminium lid and body with a toughened glass lens fitted to the lid assembly. Internally the enclosure contains bracket mounted control gear, a reflector and RX7s lampholders.

The body is pierced with one or two entry holes for cable glands which may be up to M25. Plain holes and a flat plate with threaded holes may be provided as an alternative. The gland is sealed with a neoprene sealing washer and recessed washer supplied with the luminaire.

The supply conductors are terminated on a Type MK6 component certified terminal strip BASEEFA No. Ex 813095U coded EEx e II, incorporating pressure plates under screw pressure. Alternatively a Hylec terminal block, part No. PA76FV, may be used. If required conductors up to 6 mm^2 may be looped in to a Weidmuller MK6/6 way supply terminal block with cross connection combs fitted to link terminals.

The luminaire enclosure is classified as restricted breathing and has a degree of protection IP66 and IP67. The luminaire is bracket mounted.

An additional, external, earth facility may be fitted, or alternative means of suspending the luminaire, which do not penetrate the restricted breathing enclosure.

Control gear

The ballast, which includes thermal protectors, is manufactured by Transtar, Parry or Tridonic and is rated at 200 to 254V, 50 Hz and 210 to 254V, 60 Hz which is achieved by single or multi tappings. The ballasts have a T_w 130°C and Δt 55°C. Alternative ballasts may be used provided they have a T_w greater than or equal to 130°C and Δt less than or equal to 55°C, are of similar overall dimensions and are covered by third party assessment.

The ignitor is the Parry PXA 070 or PXA 100, which is covered by BASEEFA Component Approval Ex 97Y4283U coded Ex N II. Alternatively the Tridonic ZRM2 ES/B, Component Approval Ex 94Y4538U coded Ex N II or ZRM6 ES/B ignitor, Component Approval Ex 94Y4537U coded Ex N II may be fitted.

Capacitors which are marked Tc 90°C or Tc 85°C and which comply with EN 61048 and EN 61049 may be fitted.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3054**

The capacitors and ballast may be omitted from the luminaire and located in a remote control gear box. The gear box may contain any ballast suitable for lamps in accordance with the lamp manufacturer's specification, provided that all ballasts comply with IEC 922 and IEC 923 or BS EN 60922: 1991 and BS EN 60923: 1991 and have third party assessment.

The following cable glands may be fitted to the enclosure:

HAWKE CABLE GLANDS		CMP PRODUCTS		BICC COMPONENTS	
Type	**Certificate No**	**Type**	**Certificate No**	**Type**	**Certificate No**
311	Ex 813162U	A2F	Ex 94C1293U	A2F	Ex 87B3022U
321		E1FX		E1W	Ex 87B3431U
352	Ex 813163U	E2FW		E1X	Ex 87B3430U
353		E1FW		RTL	Ex 87B3429U
353T	Ex 813164U	A4e	Ex 87B3413U		
354	Ex 813162U				
VBL321	Ex 813165U				
VBL352					
VBL353					
VBL354					

16 **Report No.**

97(C)0962 dated 2 June 1998

17 **Special Conditions For Safe Use**

None

18 **Essential Health and Safety Requirements**

Essential Health & Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0.1	Integrated explosion safety requirements	4.1.0.1
1.0.2	Analysis of possible operating faults and misuse	4.1.0.2
1.0.5	Marking	4.1.0.5
1.0.6	Instructions	4.1.0.6
1.1.1	Materials not to trigger off explosions	4.1.1.1

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3054**

Essential Health & Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.1.2	Constructional materials not to degrade and reduce protection	4.1.1.2
1.2.2	Components for incorporation and replacement	4.1.2.2
1.2.5	Additional means of protection	4.1.2.5
1.2.7	Protection against other hazards	4.1.2.7
1.3.3	Hazards arising from stray electric and leakage currents	4.1.3.3
1.4.1	Safe function in changing external conditions	4.1.4.1
1.4.2	Withstanding attack by stresses or aggressive substances	4.1.4.2
1.6.4	Hazards arising from connections	4.1.6.4

19 **DRAWINGS**

Number	**Sheet**	**Issue**	**Date**	**Description**
D1763	1	-	5.3.98	General arrangement
D1763	2	-	12.2.98	Detail views
A6568*	-	0	8.12.97	Cable gland details

*Drawing associated with BAS97ATEX4368 held on file 0068/03/030

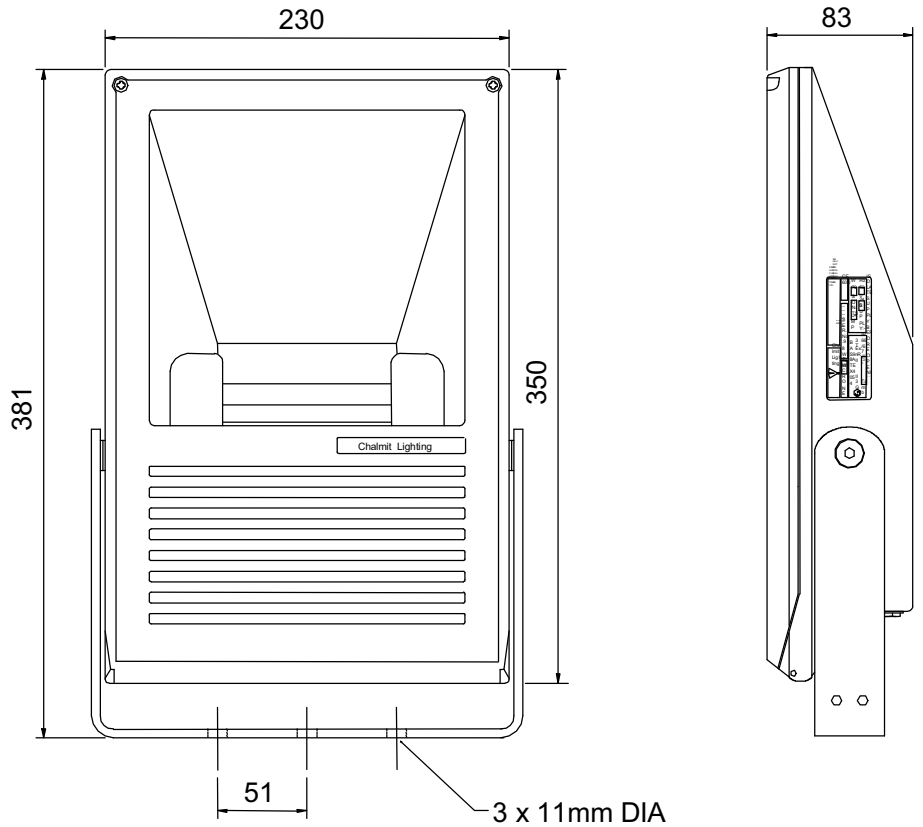
BASEEFA List Keywords
2FLODLUM

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Micronex Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



CE

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

0.0 Specification and ATEX Declaration

Type(s) of Protection	Ex nR (Non-Sparking) (Restricted Breathing)
Protection Standard	EN 50021
Area of Application	Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
ATEX Equipment Classification	Group II Category 3 G
Equipment Coding	⟨Ex⟩ II 3 G Ex nR II T3 Tamb 40ºC
Certificate	Type Examination EECS BAS98ATEX4054
Ingress Protection	IP66 and IP67 to BS EN 60529

CE Marking

CE

The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC, respectively].

ATEX Declaration

The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction - Micronex Floodlight

1.1 General

The type of protection is Ex nR using a restricted breathing enclosure.

Note : *The maximum ambient and surface temperature ratings are as indicated in TABLE 0.*

1.2 Application

The luminaire is designed to be safe in normal operation.
The luminaire should not be used in conditions where there are environmental, vibration or shock conditions above the normal expected levels for fixed installations.
The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states.
The body material is made from marine grade aluminium, copper free (*BS1490 LM6)*, powder coated.
The luminaire is suitable for applications where Category 3 apparatus can be used. The application is for ignitable gas atmospheres. The type examination does not address suitability for dusts or portable applications.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate.
In the UK the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with *the 'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

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3.2 Tools

A cross head screwdriver blade to open the cover.
Suitable spanners for installing cable glands, 3mm and 5mm flat blade screwdriver and a M6 Allen key.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering a maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly***. Care must be taken if connecting to the nominal 230V UK Public Supply.*** In some cases, the luminaires have multi-tapped control gear which can be set to a range of voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected to obtain the best lamp performance, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is relocated. If in doubt, tappings should be set on the high side. 10V Max. drop is desirable for HPS and required for MBI. All circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke so tap selection is obvious. Where supply conditions include significant harmonics the PFC can be omitted.
Where shore or construction site supplies are used, which are different to the service location supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The Micronex uses double ended HPS and MBI lamps and are of a standardised type, with no preference between make or colour. All have RX7 caps. Care must be taken to fit the correct new and replacement lamp in order to preserve the certification conditions and obtain the designed photometric performance. The lamp type is shown on the rating plate. ***Lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling', where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects to control gear.
The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or from Chalmit.

Note : *HPS and MBI circuits should not be energised without a lamp fitted. HPS and MBI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The stirrup mounting arrangements should be secured with lock washers or self-locking nuts and bolts. There are clearance holes for M10 bolts. The luminaire should be mounted with the lamp axis horizontal.

3.5.1 Weights and Windages

Note : *The weights and windages for the various floodlight types are outlined in TABLE 4.*

3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient temperature. This allows the user to adjust the cable specification for actual site maximum temperature. The standard conductor section is 6mm² max. All models are suitable for looping. Standard 300/500V cable is suitable. The cable makeup must be suitable to ensure the obtaining of a restricted breathing enclosure when the cable gland assembly is fitted.

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3.6.2 Cable Glands

Cable glands and sealing plugs when installed must maintain the restricted breathing enclosure. (Vacuum test; 300mm head of water, half pressure time 3 mins. minimum). Rubber sealing washers and steel compression washers are provided with the unit to seal between the gland body and the luminaire. The body torque value is 12Nm. The user must ensure that the assembly fulfils the above requirement.
No means of checking the air tightness of the assembled unit is provided. When new sealing arrangements are to be installed, users should check a sample for substantial air tightness before making a full installation. Entries suitable for M20 cable glands are standard.

3.6.3 Cable Gland Types

Refer to the cable gland manufacturers catalogue for further information with regard to compatibility with cable types. Refer to Chalmit for the assessment of other suitable types. These will be covered by a manufacturers declaration.

Note : *Cable gland types covered by the type examination are as indicated in TABLE 1.*

3.7 Cabling and Fitting Lamps

Access for cabling and fitting lamps is by removing the front cover. The cover is released by undoing the two screws using a screwdriver. Reselect the voltage tappings if necessary. Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1mm bare conductor outside the terminal is a maximum. Any unused terminal should be fully tightened.
When the cabling is complete, make a final tightness and connection check.
Lamps must be of the correct type and correctly in place. The cover is replaced and the screws tightened down.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

(a) The equipment must be de-energised before opening.
Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience :

1. Ensure the lamp is lit when energised and that the lampglass is not damaged.
2. When de-energised and left to cool there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting.
3. Check the cable gland for tightness and nip up if necessary.
4. Check the tightness of the cover screws and nip up if necessary.
5. Clean the lampglass.

(b) When relamping, check that the cover gasket has not softened or become excessively deformed, if in doubt replace (see Section 4.0).

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
In most instances the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first over-heated; the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating.
Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS and MBI, the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct they should produce an "attempt to start" effect in the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault

finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

3.9.1 Thermal Protector

Thermal protectors are included. If the lamp goes on and off over a timescale of several minutes, this could be the thermal protector operating. The causes are defective lamps/diode effects, gross over voltage or the choke beginning to fail and this should be investigated directly. See also Section 3.4.

4.0 Overhaul

The unit is largely made of materials which are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 1.0mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable. All the spares required are available. Please state the model number, lamp details.

The seal at the cover is between the glass and the frame. The glass is retained in the cover frame by silicone R.T.V. adhesive.

If the cover gasket has deteriorated by softening or permanent set, a new cover gasket should be fitted. Which can be obtained from Chalmit. To fit this, care is needed, the old gasket should be removed and remaining adhesive scraped off. The gasket is fixed in place and joined with silicone R.T.V. to the body. The cover is tightened down and the assembly should be tested for air tightness prior to installation.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The inrush current can be calculated where circuit conditions are known. The nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other supply volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 2.*
A conventional matrix for HBC fuses is outlined in TABLE 3.

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation, avoid inhaling dust.

This applies to the UK, there may be other regulations on disposal operating in other countries.

Note : *Do not incinerate lamps.*

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

0.0 Tables 0/1/2/3/4

Table 0 Maximum Ambient and Surface Temperature Rating Refer to Section : 1.1

Wattage	Lamp	Ambient Temp	T Rating	Cable Rating	Cable Rise
70W	SON/TS, MBI/TS	40ºC	T3	75ºC	30ºC

Table 1 Cable Gland Types Refer to Section : 3.6.3

Gland Type	Make		
	Hawk Cable Glands	CMP Products	BICC Components
311	*		
321	*		
352	*		
353	*		
353T	*		
354	*		
VBL321	*		
VBL352	*		
VBL353	*		
VBL354	*		
A2F		*	*
E1FX		*	
E2FW		*	
E1FW		*	
A4e		*	
E1W			*
E1X			*
RTL			*

Note : *Refer to the cable gland manufacturers catalogue for further information with regard to compatibility with cable types. Refer to Chalmit for the assessment of other suitable types. These will be covered by a manufacturers declaration.*

Table 2 Starting and Running Currents Refer to Section : 5.0

Lamp	Start A	Run A	PFC µF
70W HPS	0.55	0.40	10
70W MBI	0.55	0.40	10

Note : *Minimum power factor correction:0.85*

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Table 3 Fuse Ratings Refer to Section : 5.0

Lamp Type	**Number of Lamps**					
	1	**2**	**3**	**4**	**5**	**6**
70W HPS	4A	4A	4A	6A	6A	10A
70W MBI	4A	4A	4A	6A	6A	10A

Table 4 Weights and Windages Refer to Section : 3.5.1

Type	**Weight**	**Windage**
MICRONEX HPS/MBI	5.1kg	0.08m^2

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

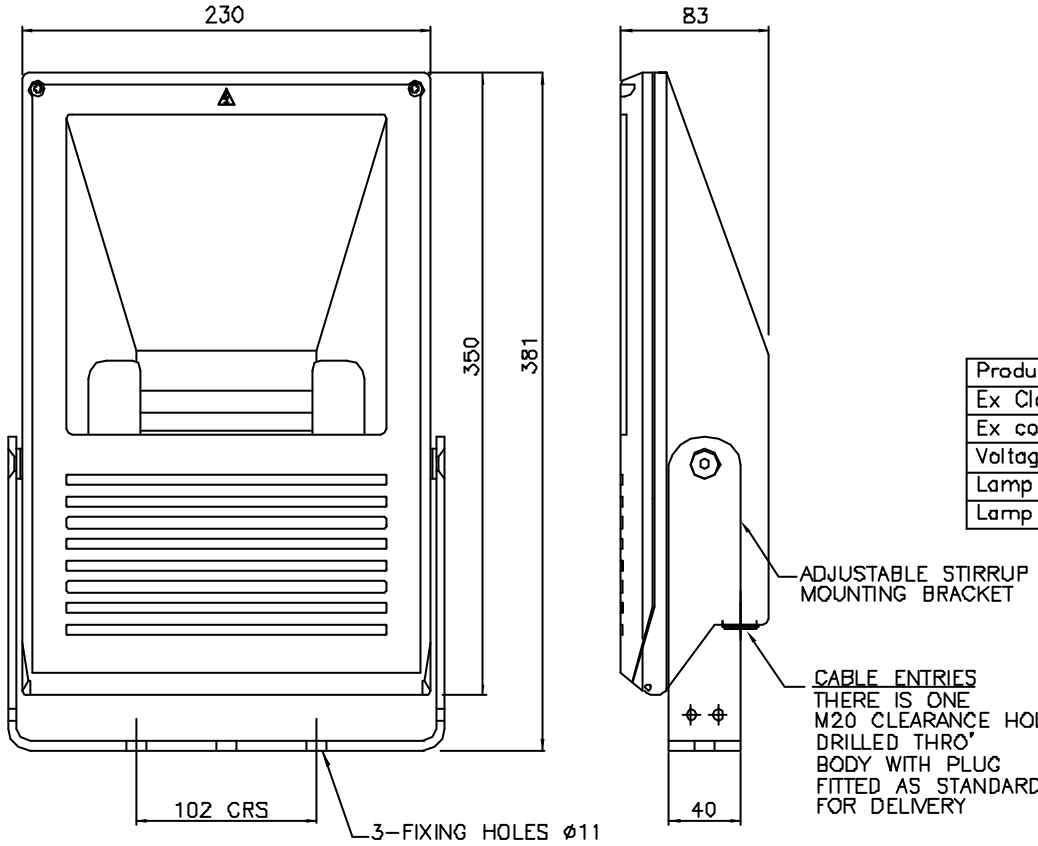
Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

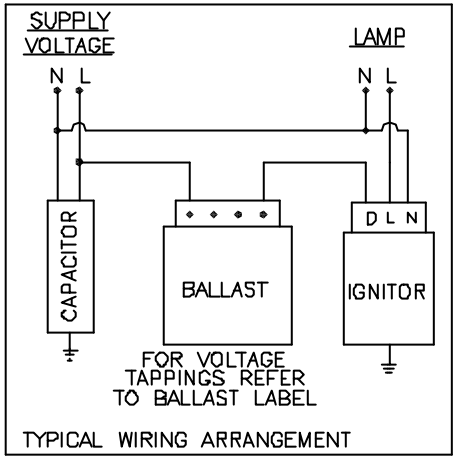
Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

1	2	3	4	5	6	7	8
WING NUMBER/SHEET NUMBER r1090							

REMOVE ALL BURRS & SHARP EDGES IF IN DOUBT ASK! 3RD ANGLE PROJECTION





Product Name	Stirrup Mounted Micronex Floodlight
Ex Classification	Ex n Restricted Breathing
Ex code	II 3 G Ex nR II T4
Voltage & Frequency	200–254V @ 50Hz or 210–254V @ 60Hz
Lamp Type	SON–TD or MBI–TD
Lamp Wattage	70W

Catalogue No	T Class	T amb	Weight	Windage
70W SON–TD	T4	40°C	5.0Kg	0.03m²
70W MBI–TD				

OPTIONS
i) STAINLESS STEEL MOUNTING STIRRUP
ii) POLE MOUNTING BRACKET
iii) NARROW BEAM REFLECTOR

SUPPLY CABLE
6mm² (3–CORE)

DOF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 8366 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	
APPROVED	
DATE	27/06/2012

DRGS:–

MATERIAL	TOLERANCE
FINISH	SURFACE ROUGHNESS
DIMS. IN MM	SCALE –

TITLE
Micronex Ex n 70W SON–TD/MBI–TD Lamp Stirrup Mounted

DRAWING NUMBER/SHEET NUMBER
r1090 1 OF 1

NEXXUS

Ex n BULKHEAD

ATEX CATEGORY 3
ZONE 2 APPLICATIONS

The Nexxus bulkhead luminaire is suitable for a wide range of discharge lamps, incandescent lamps and also compact fluorescent lamps.

The explosion protection is Ex nR utilising a restricted breathing enclosure. Bulkheads offer a compact and versatile solution in many applications especially those where conditions are exposed and have high levels of dirt dust and moisture. The enclosure is corrosion resistant aluminium with a heat resistant glass cover, silicone rubber sealing gasket and stainless steel fixings.

The bulkhead is simple to install, easy to maintain and durable. The wide range of light sources and wiring options makes the Nexxus a very versatile luminaire.

Suitable for a wide range of ambient temperatures, -45˚C to +55˚C, dependant on lamp type and wattage.

Standard Specification

Type of Protection:	**Ex nR (Restricted Breathing)**
ATEX Classification:	**Group II Category 3 G**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50021**
Certificate:	**Type Examination Certificate BAS99ATEX3012**
Coding:	**Ⓔx II 3 G EEx nR II (refer to table for T rating and Ambient)**
Enclosure:	**Painted LM6 aluminium alloy body with prismatic glass lens, silicone rubber gasket and stainless steel fasteners**
Reflector:	**High purity anodised aluminium**
Entry:	**3 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping or through wiring 16A max current rating**
Installation:	**4 x 7mm clearance holes in body fixing channel**
Lamp Type:	**HPS, Metal Halide, Mercury Vapour, Mercury Blended, Compact fluorescent and GLS**
Lampholder:	**E27 or G24q**
Control Gear:	**Internal copper/iron ballast with ignitor and PFC correction capacitors as specified**
Relamping:	**Access via front cover secured by four stainless steel screws**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz - 70 and 80W 220-240V 50Hz - 50W, 240V 50Hz - CF 250V max - 160 & 200W**

Features

Easy control gear replacement

Fixing points outside restricted breathing enclosure

High corrosion resistance

Suitable for ceiling or wall mounting

Through wire or looping as standard

Prismatic lens

Suitable for low temperature applications

Gost Approved

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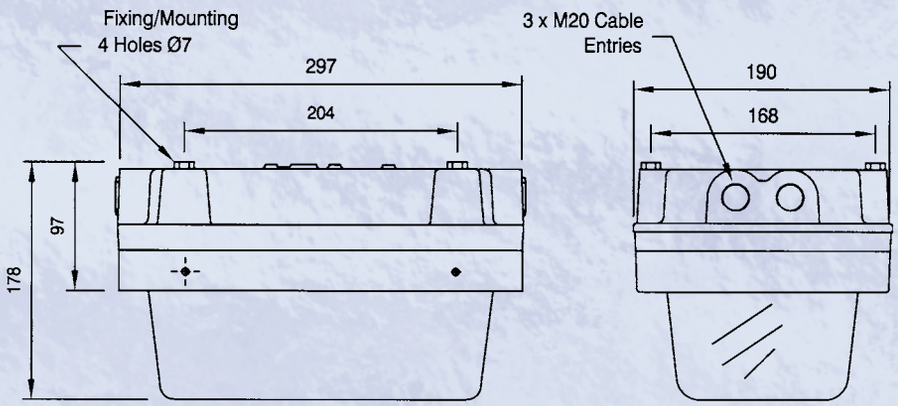
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient ºC	Weight
NEXN/050/HS	50W	HPS	E27	T4	35	6.5kg
NEXN/070/MS	70W	HPS/Metal Halide	E27	T4	35	7.0kg
NEXN/080/MV	80W	Mercury Vapour	E27	150ºC T3	25	6.5kg
NEXN/160/MB	160W	MBTF	E27	T3	30	5.0kg
NEXN/113/CF	1x13W	CFL	G24	T5	50	5.5kg
NEXN/118/CF	1x18W	CFL	G24	T5	50	5.5kg
NEXN/126/CF	1x26W	CFL	G24	T5	50	5.5kg
NEXN/213/CF	2x13W	CFL	G24	T5	30	6.0kg
NEXN/218/CF	2x18W	CFL	G24	T5	30	6.0kg
NEXN/226/CF	2x26W	CFL	G24	T5	30	6.0kg
NEXN/200/GL	200W max	GLS	E27	150ºC T3	30**	5.0kg
NEXN/050/HS/NC*	50W	HPS	E27	150ºC T3	50	6.5kg
NEXN/070/MS/NC*	70W	HPS/Metal Halide	E27	150ºC T3	50	7.0kg
NEXN/080/MV/NC*	80W	Mercury Vapour	E27	150ºC T3	35	6.5kg
NEXN/100/HS/NC*	100W	HPS	E27	T3	40	7.5kg

*No power factor correction capacitors fitted.
**Other 'T' ratings and ambients available for lower wattages. Contact sales for details.



Options - Suffix to Catalogue No.

/___	Specific voltage (254)
/60	60Hz
/TI	Timed cut out ignitor
/MF	Mains fuse

Applications

- Zone 2 hazardous areas
- Harsh and low temperature environments
- Localised lighting
- Stairwells
- Gantry and walkway lighting
- Process skid manufacturing
- Tunnel lighting
- Cable tray areas
- Gas pumping stations
- Paint and solvent storage rooms
- Distilleries

Accessories (Should be ordered separately)

	Catalogue Order Code
Wire Guard	**SNEX1-0001**

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TYPE EXAMINATION CERTIFICATE

Equipment Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC

3 Type Examination Certificate Number : **BAS99ATEX3012**

4 Equipment: **THE NEXXUS RANGE OF BULKHEAD LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **Glasgow, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

98(C)1175 dated 11 June 1999

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

EN 50021: 1999

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

Ex II 3 G **EEx nR II T (see table)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/039

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
22 July 1999

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS99ATEX3012**

15 **Description of Equipment**

The Nexxus luminaires are designed for use with high pressure sodium, metal halide, mercury or compact fluorescent discharge and incandescent lamps at supply voltages of 110 to 254 volts, 50 or 60 Hz. They are defined as class 1 with regard to protection against electric shock according to EN60598-1.

The enclosures are "restricted breathing" and each consists of a die cast aluminium base with a glass lens fitted to a cover assembly. Internally the enclosures each contain a steel gear tray with control gear, a reflector and a lampholder mounted on a bracket. Three threaded holes in the base allow access for a suitably glanded supply cable which is terminated on a terminal block inside the enclosure. The glass is fitted with a protective guard.

The supply cable is terminated on terminal blocks covered by BASEEFA Type Examination Certificate BAS98ATEX3379U. Alternatively an uncertified fused block made from polycarbonate which carries a BS 1362 fuse and whose creepage and clearance dimensions are controlled by the schedule drawings may be used provided that the fuse is always retained by a metal clamp.

Supply cables may be looped in using a Weidmuller MK6, 6 way terminal block and cross connection combs to link terminals. Through wiring is also permitted, subject to a maximum current through the terminal block of 16A.

The ballast, which may include thermal protectors, the ignitor or starter and capacitors are all selected from Component Certificate BAS98ATEX3379U.

The range of luminaires is tabulated below:

Lamp type	Output	T_{amb} °C	T class
SON / E	100W	-45°C to +25°C	T3
		-45°C to +40°C*	
	70W	-45°C to +35°C#	T4
		-45°C to +50°C*	150°C (T3)
	50W	-45°C to +35°C#	T4 150°C (T3)
		-45°C to +50°C*	
MBI	70W	-45°C to +35°C#	T4
		-45°C to +50°C*	150°C (T3)
MBFU	80W	-45°C to +25°C	150°C (T3) T3
		-45°C to +35°C*	
MBTF	160W	-25°C to +30°C	T3

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS99ATEX3012**

Lamp type	Output	T_{amb} °C	T class
GLS	200W	-45°C to +30°C	150°C (T3)
	150W	-45°C to +40°C	150°C (T3)
	100W	-45°C to +45°C	T4
CFL-DE	2 x 26W	-20°C to +30°C	T5
	2 x 18W		
	2 x 13W		
	26W	-20°C to +50°C	T5
	18W		
	13W		
CFL-DE 110 volt	to 1 x 26W	-20°C to + 30°C	T5

* indicates that a capacitor is not fitted
# may be increased to + 40°C when a heat shield is fitted

VARIATION ONE

The luminaire may be supplied without a protective guard in which case the certificate number must be suffixed with an "X".

16 **Report No.**

98(C)1175 dated 11 June 1999

17 **SPECIAL CONDITIONS FOR SAFE USE (APPLICABLE TO VARIATION ONE)**

17.1 The luminaire supplied without a protective guard shall be limited to use in a low impact area.

18 **Essential Health and Safety Requirements**

Essential Health & Safety Requirements not covered by Standards listed at (9)		
Clause	**Subject**	**Compliance**
1.0	General requirements	4.1.0
1.1	Selection of materials	4.1.1
1.2	Design and construction	4.1.2
1.3	Potential ignition sources	4.1.3

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS99ATEX3012**

Clause	Subject	Compliance
1.4	Hazards from external effects	4.1.4
1.5	Safety related devices	4.1.5
1.6	Integration of safety requirements	4.1.6
2.1	Requirements for cat. 1 group II	4.2.1
2.2	Requirements for cat. 2 group II	4.2.2
2.3	Requirements for cat. 3 group II	4.2.3

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D1894	1	0	19/2/99	G.A. parts list and table of variants
D1894	2	0	4/3/99	Guard and notes
D1894	3	0	4/3/99	Detail views and wiring diagram

BASEEFA List Keywords
2BULKLUM

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1 # SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially explosive atmospheres Directive 94/9/EC**

3 Supplementary Type Examination Certificate Number: **BAS99ATEX3012/1**

4 Equipment or Protective System: **NEXXUS BULKHEAD LUMINAIRE**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This supplementary certificate extends Type Examination Certificate No. BAS98ATEX3012 to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/039

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
22 December 1999

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE Nº BAS99ATEX3012/1**

Description of the Variation to the Equipment or Protective System

VARIATION ONE

To simplify the design by modifying the base casting so that the internal components may be mounted directly thereby removing the need for a separate gear try.

Associated with this change are the deletion of some wiring options and a clarification to allow the incandescent lamps to be used on direct current.

Report No.

None.

SPECIAL CONDITIONS FOR SAFE USE

See original certificate.

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Rev	Date	Description
D1894 sheet 1	01	16.11.99	Nexxus Parts List and Label
D1894 sheet 2	01	16.11.99	General Assembly
D1894 sheet 3	01	16.11.99	Circuit Diagram and Connection Detail

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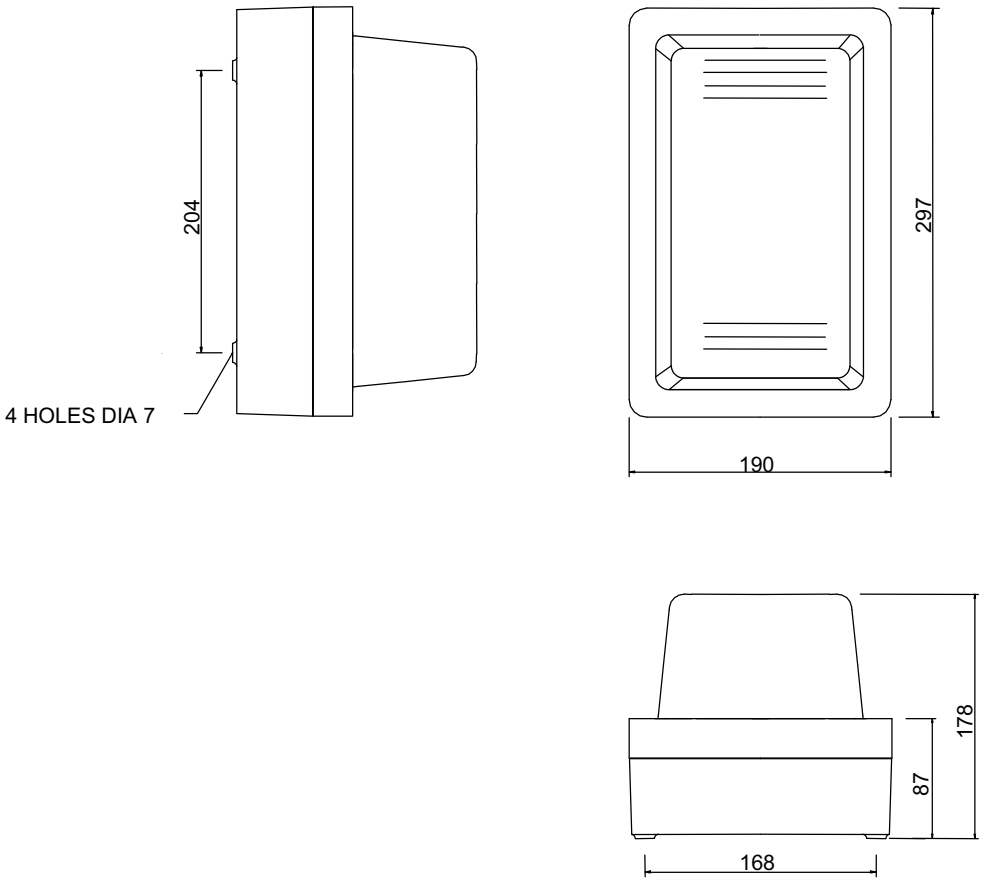
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Nexxus nR Bulkhead Luminaire

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



CE

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Specification and ATEX Declaration

Type(s) of Protection	EEx nR (non-sparking) (restricted breathing)
Protection Standard	EN 50021
Area of Application	Zone 2 areas to EN 60079-10 and installation to EN 60079-14
ATEX Equipment Classification	Group II Category 3G
Equipment Coding	Ex II 3G EEx nR II T3/4/5
Certificate	Type Examination BAS99ATEX3012
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark CE	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and protective systems intended for use in Explosive Atmospheres regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction - Nexxus nR Bulkhead Luminaire

1.1 General

The type of protection is EEx nR using a restricted breathing enclosure.

Note : *The maximum/minimum ambient and surface temperature ratings are indicated in TABLE 0.*

1.2 Application

The luminaire is designed to be safe in normal operation. The luminaire should not be used where there are environmental, vibration or shock conditions above the normal for fixed installations. The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states. The luminaire is suitable for applications where Category 3 apparatus can be used. The application is for ignitable gas atmospheres. The type examination does not address suitability for dusts or portable applications. Where there is a high risk of mechanical damage a guard should be specified and fitted. (Refer to EN 50021). Where a guard is not fitted, the nameplate is marked X.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation. Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate.
In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

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3.2 Tools

Suitable spanners for installing cable glands.
3mm and 5mm flat blade screwdriver.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering, a maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the **actual** underlying site supply and purchase or adjust accordingly. ***Care must be taken if connecting to the nominal 230V UK public supply.*** In some cases, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60 Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected to obtain the best lamp performance, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is relocated. If in doubt, tappings should be set on the high side. 10V Max. drop below the actual tapping is desirable for HPS and required for MBI. All circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke, so tap selection is obvious. Where supply conditions include significant harmonics, the PFC can be omitted. Where shore or construction site supplies are used, which are different to the service location supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The discharge lamps used are of a standardised type. There is no preference between make or colour. The compact fluorescent lamps are of the four pin type. The compact fluorescent lamps use G24q type caps, which vary with lamp wattage and are secured with a retaining bracket. Philips lamps must be used to obtain a correct fit. Care must be taken to fit the correct new and replacement lamps in order to preserve the certification conditions and obtain the designed photometric performance. The lamp type is shown on the rating plate. ***Lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling', where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects to control gear. The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or from Chalmit.

Important : *HPS and MBI circuits should not be energised without a lamp fitted.*
HPS and MBI lamps with internal ignitors must not be used.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The rear mounting arrangements should be secured with lock washers or self-locking nuts and bolts. Any mounting attitude may be used.

3.5.1 Weights

Note : *Weights for the various types are outlined in Table 4.*

3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient. This allows the user to adjust the cable specification for the actual site maximum temperature. The terminals are suitable for standard conductor section up to 6mm² max. All models are suitable for looping. Standard 300/500V cable is suitable. The cable makeup must be suitable to ensure the obtaining of a restricted breathing enclosure when the cable gland assembly is fitted.
Note : *Through wiring when used, is subject to a maximum current of 16A.*

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3.6.2 Cable Glands

Cable glands and sealing plugs when installed must maintain the restricted breathing enclosure. (Vacuum test; 300mm head of water, half pressure time 3mins. minimum). Rubber sealing washers and steel compression washers are provided with the unit to seal between the gland body and the luminaire. The body torque value is 12Nm. The user must ensure that the assembly fulfils the above requirement. No means of checking the air tightness of the assembled unit is provided. When new sealing arrangements are to be installed, users should check a sample for substantial air tightness before making a full installation. Entries suitable for M20 cable glands are standard.

3.6.3 Cable Gland Types

Refer to the cable gland manufacturers catalogue for information with regard to compatibility with cable types. Refer also to Chalmit for the assessment of other suitable types, these will be covered by a manufacturers declaration.

Note : *Cable gland types covered by the type examination are as indicated in TABLE 1.*

3.7 Cabling and Fitting Lamps

Access for cabling and fitting lamps is by removing the front cover. The cover is released by unscrewing the four screws using a screwdriver. Reselect the voltage tappings if necessary. Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1mm bare conductor outside the terminal is a maximum. Any unused terminal should be fully tightened. When the cabling is complete, make a final tightness and connection check. Lamps must be of the correct type and firmly screwed into place. The cover is replaced and the screws tightened down.

3.7.1 Fused Terminal Blocks

When a fused terminal block has been fitted, it is essential that the fuse holder be retained by the metal clamp supplied.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience :

1. Ensure the lamp is lit when energised and that the lampglass is not damaged.
2. When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting.
3. Check the cable gland for tightness and nip up if necessary.
4. Check all cover screws for tightness and nip up if necessary.
5. Clean the lampglass.
6. When relamping, check that the cover gasket has not softened or become excessively deformed. If in doubt, replace (*See Section 4.0*).

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
In most instances, the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first over-heated; the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating. Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS and MBI, the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an attempt to start effect in the lamp and a buzzing sound from the

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ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

3.9.1 Thermal Protector

Thermal protectors may be included. If the lamp goes on and off over a timescale of several minutes, this could be the thermal protector operating. The causes are defective lamps/diode effects, gross over voltage or the choke beginning to fail and this should be investigated directly (*See Section 3.4*).

4.0 Overhaul

The unit is largely made of materials that are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 1.0mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable. All the spares required are available. Please state the model number and lamp details. The seal is between the glass and the base. The glass is retained in the cover frame by stainless steel clips. If the sealing gasket has deteriorated by softening or permanent set, a new sealing gasket should be fitted, which can be obtained from Chalmit. To fit this, care is needed, the old gasket should be removed and remaining adhesive scraped off. The gasket is fixed in place to the body with a small amount of silicone RTV.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The inrush current can be calculated where circuit conditions are known. The nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other supply volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in Table 2.*
A conventional matrix for HBC fuses is outlined in TABLE 3.

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Incandescent lamps, fluorescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation. This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

0.0 Tables 0/1/2/3/4

Table 0	Maximum/Minimum Ambient and Temperature Ratings				Refer to Section :	1.1
Wattage	**Lamp**	**Lamp Cap**	**Max Ambient °C**	**Min Ambient °C**	**T Rating**	**Cable Rating °C**	**Cable Rise °C**
50W	SON	E27	35	-45	T4	75	30
50W	SON	E27	50*	-45	150°C (T3)	85	30
70W	SON	E27	40	-45	T4	75	30
70W	SON	E27	50*	-45	150°C (T3)	85	30
70W	MBI	E27	40	-45	T4	75	30
70W	MBI	E27	50*	-45	150°C (T3)	85	30
100W	SON/E	E27 / E40	25	-45	T3	75	35
100W	SON/E	E27 / E40	40*	-45	T3	75	35
80W	MBFU	E27	25	-45	150°C (T3)	75	35
80W	MBFU	E27	35*	-45	T3	75	35
160W	MBTF	E27	30	-25	T3	75	45
100W	GLS	E27	45	-45	T4	75	25
150W	GLS	E27	40	-45	150°C (T3)	75	30
200W	GLS	E27	30	-45	150°C (T3)	75	40
13W	CFL-DE	G24q-1	50	-20	T5	75	15
2 x 13W	CFL-DE	G24q-1	30	-20	T5	75	35
18W	CFL-DE	G24q-2	50	-20	T5	75	15
2 x 18W	CFL-DE	G24q-2	30	-20	T5	75	35
26W	CFL-DE	G24q-3	50	-20	T5	75	15
2 x 26W	CFL-DE	G24q-3	30	-20	T5	75	35

Note: *Versions marked with * are not fitted with PFC capacitors.*

Table 1 Cable Gland Types Refer to Section : 3.6.3

Gland Type	**Make**		
	Hawke Cable Glands	**CMP Products**	**BICC Components**
311	*		
321	*		
352	*		
353	*		
353T	*		
354	*		
VBL321	*		
VBL352	*		
VBL353	*		
VBL354	*		
A2F		*	*
E1FX		*	
E2FW		*	
E1FW		*	
A4e		*	
E1W			*
E1X			*
RTL			*

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Table 2 Starting and Running Currents Refer to Section : 5.0

Lamp	Start A	Run A	PFC µF 10
50W HPS	0.35	0.28	10
70W HPS	0.55	0.40	10
70W MBI	0.55	0.40	10
80W MBF	0.50	0.43	8

Table 3 Fuse Ratings Refer to Section : 5.0

Lamp	Number of Lamps					
	1	2	3	4	5	6
50W HPS	4A	4A	4A	6A	6A	10A
70W HPS	4A	4A	4A	6A	6A	10A
70W MBI	4A	4A	4A	6A	6A	10A
80W MBF	4A	4A	4A	6A	6A	10A

Table 4 Weights Refer to Section : 3.5.1

Lamp Type	Weight
HPS/MBI	7.5kg
CFL-DE	7.0kg
GLS/ MBTF	5.2kg
MBFU	6.3kg

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone : +44 (0)141 882 5555
Fax : +44 (0)141 883 3704
Email : Info@chalmit.com
Website : www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

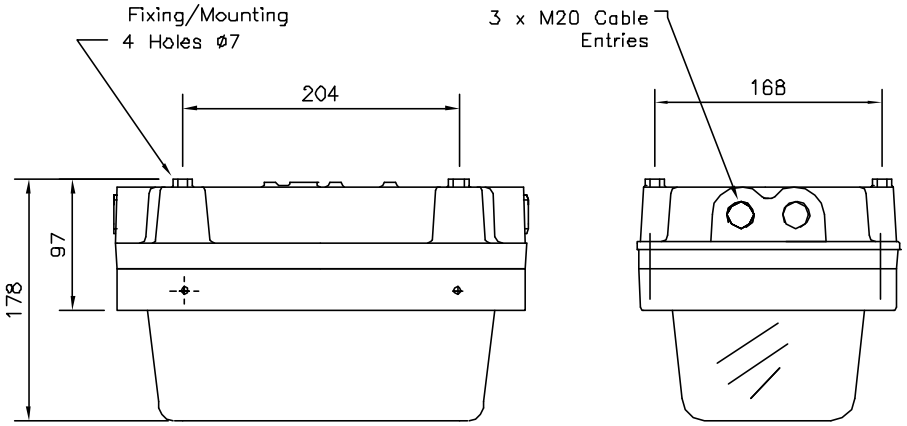
1	2	3	4	5	6	7	8

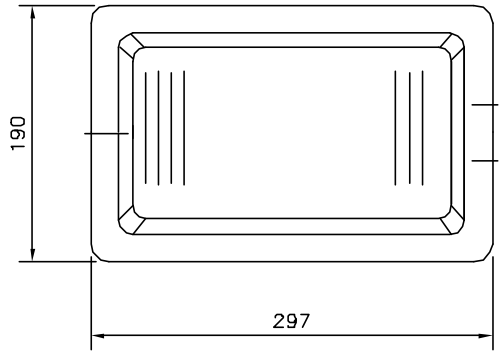
DRAWING NUMBER/SHEET NUMBER
F814

REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION





CATALOGUE No	LAMP(S)	WATTS	RATED SUPPLY	T CLASS	T Amb	WEIGHT
NEXN50	SON/E	50W	200–254V 50Hz	150°C(T3) 150°C(T3)	35°C 50°C *	8 Kgs
NEXN70	SON/E MBI/E	70W		T4 150°C(T3)	35°C 50°C *	
NEXN80M	MBFU	80W		150°C(T3) 150°C(T3)	25°C 35°C *	
NEXN160B	MBTF	160W		T3	30°C	6 Kgs
NEXN213C	CFL–DE	2x13W	210–254V 60Hz	T5	30°C	8 Kgs
NEXN218C	CFL–DE	2x18W		T5	30°C	
NEXN226C	CFL–DE	2x26W		T5	30°C	
NEXN113C	CFL–DE	1x13W		T5	50°C	
NEXN118C	CFL–DE	1x18W		T5	50°C	
NEXN126C	CFL–DE	1x26W		T5	50°C	
NEXNGLS	GLS	200W MAX	110–254V 50/60Hz	150°C(T3)	30°C	6 Kgs

1) DIFFERENT T RATINGS AND AMBIENTS AVAILABLE FOR LOWER WATTAGES.

* AVAILABLE ONLY WITHOUT PFC CAPACITOR
LOW TEMPERATURE MODELS DOWN TO –45°C AVAILABLE

CODING.....EExnR II T(see table)
AREA CLASSIFICATION.....ZONE 2 AREAS TO BS EN 60079–14
STANDARD.....BS EN 50021
CERTIFICATION.....BAS99ATEX3012
INGRESS PROTECTION.....IP65 TO BS5490/IEC529

INCOMING CABLE CAPACITY

UP TO 6mm^2 (3 CORE)
LOOPING AVAILABLE AS STANDARD

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	J.T.C.
CHECKED	J.T.C.
APPROVED	J.T.C.
DATE	27/03/2001

REF. DRGS.–

MATERIAL	N/A
TOLERANCE	N/A
FINISH	N/A
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	–

TITLE: Nexxus Exn Bulkhead

DRAWING NUMBER/SHEET NUMBER
F814 1 OF 1

ECLIPSE

Ex n HIGHBAY

ATEX CATEGORY 3 ZONE 2 APPLICATIONS

The Eclipse range of luminaires is suitable for high pressure discharge lamps up to 400W. The range consists of the Eclipse, the Eclipse Mini and the Eclipse Junior.
The Eclipse is used at higher mounting heights where the large discharge lamps are effective. The enclosed high bay reflector, illustrated, is used to direct light efficiently to where it is needed.
The Eclipse has a lightweight corrosion resistant aluminium body and heat resistant glass construction with stainless steel fasteners.
It is tested to IP65 and is suitable for use in harsh environments.
The design incorporates a restricted breathing lamp chamber and an unrestricted control gear and terminal housing. This removes the need for special cable or glands. The lampglass has a screwed thread for ready access. The enclosure part containing the control gear hinges on the mounting part but is not attached to it. This allows ready access to the terminals and the easy removal of the control gear and lamp enclosure if maintenance is needed. There is a range of wall, surface and stanchion mountings integrated into the designs.

Standard Specification

Type of Protection:	**Ex nA nR (Non-sparking Restricted Breathing)**
ATEX Classification:	**Group II Category 3 G**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50021**
Certificate:	**Type Examination Certificate BAS98ATEX3197X**
Coding:	**Ⓔx II 3 G EEx nAR II (refer to table for T class and Ambient)**
Enclosure:	**Painted aluminium body with spun aluminium reflector, silicone rubber gasket and stainless steel fasteners**
Reflector (internal):	**White polyester zinc coated steel**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Ceiling mounting**
Lamp Type:	**HPS, Metal Halide or Mercury Vapour**
Lampholder:	**E40**
Control Gear:	**Internal copper/iron ballast with ignitor and PFC correction capacitors**
Relamping:	**Access via sealed lamp chamber**
Burning Position:	**Up to 25º off vertical**
Ingress Protection:	**IP65 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz**

Features

Easy access for wiring and control gear

Corrosion resistant

Unrestricted breathing control gear enclosure removes the need for special glands or cable

Suitable for a wide range of ambient temperatures from -45˚C to +55˚C, dependant on lamp type and wattage

Totally enclosed reflector

Excellent light distribution for use up to 10 metre mounting heights

Std. Cat No.	Wattage	Lamp	T Class	Ambient ºC	Weight
ECDN/250/MS	250W	HPS/Metal Halide	T3	45	15.5kg
ECDN/400/MS	400W	HPS/Metal Halide	T3	45	16.0kg
ECDN/250/MV	250W	Mercury Vapour	T3	40	15.0kg
ECDN/400/MV	400W	Mercury Vapour	T3	40	15.5kg
Glass Refractor Cat Nos.					
ECDN/250/MS/R	250W	HPS/Metal Halide	150ºC T3	50	15.5kg
ECDN/250/MS/R/NC[1]	250W	HPS/Metal Halide	T3	55	15.5kg
ECDN/400/MS/R	400W	HPS/Metal Halide	T3	35	16.0kg
ECDN/400/MS/R/NC[1]	400W	HPS/Metal Halide	T3	50	16.0kg
ECDN/250/MV/R	250W	Mercury Vapour	T3	50	15.0kg
ECDN/250/MV/R/NC[1]	250W	Mercury Vapour	T3	55	15.0kg
ECDN/400/MV/R	400W	Mercury Vapour	T3	35	15.5kg
ECDN/400/MV/R/NC[1]	400W	Mercury Vapour	T3	45	15.5kg

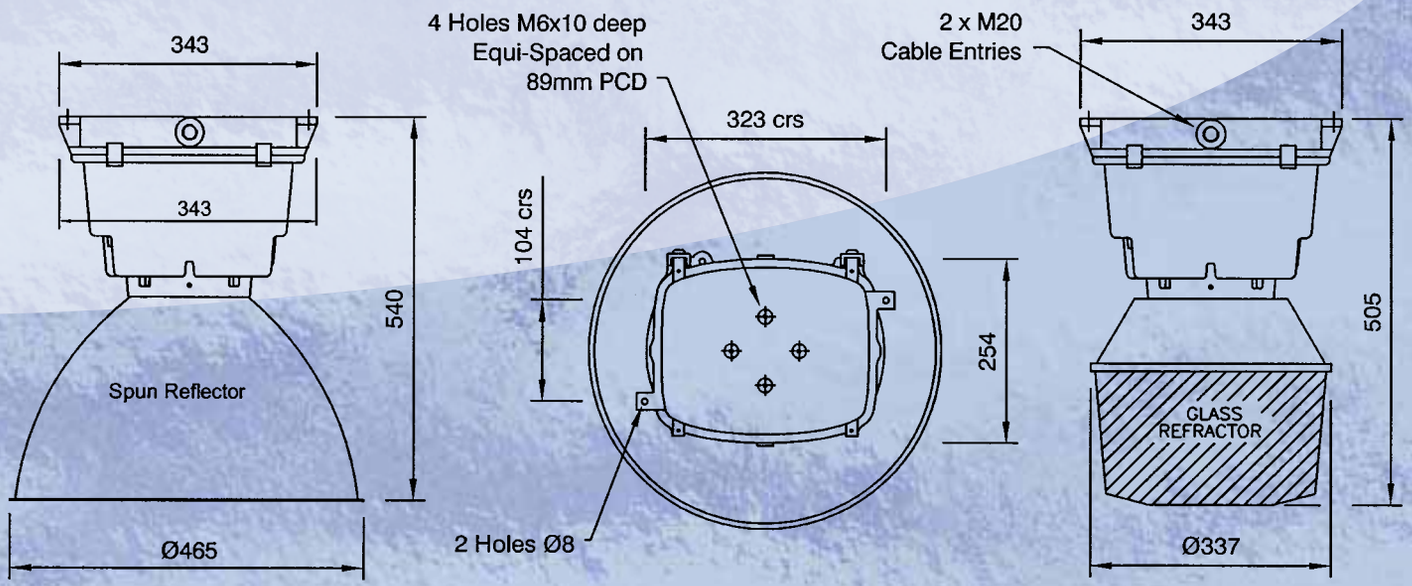
[1] No power factor correction capacitors are fitted. (Note: Used in conjunction with enclosed reflector the maximum ambient is raised to 55˚C with a T3 rating)

Options - Suffix to Catalogue No.

/60	60Hz
/W	Wall mounted version
/ST	Stanchion mounted version
/P	Pendant mounted version
/TI	Timed cut out ignitor
/D	Zone 22 Dust applications

Applications

- Zone 2 hazardous areas
- Low temperature environments
- Highbay lighting
- Petrochemical process areas
- Sewage treatment plants
- Bonded warehouses
- Distilleries
- Aircraft hangers
- M.O.D. category 'C' llisted buildings



Accessories (Should be ordered separately)	**Catalogue Order Code**
Guard for glass refractor	**HECL7-0001**
Guard for enclosed reflector	**HECL7-0002**

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

TYPE EXAMINATION CERTIFICATE

Equipment Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC

3 Type Examination Certificate Number: **BAS98ATEX3197X**

4 Equipment: **ECLIPSE WELLGLASS LUMINAIRE**

5 Manufacturer: **CHALMIT LIGHTING LTD**

6 Address: **388 Hillington Road, Glasgow, Scotland, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

98(C)0252 dated 17 July 1998

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

prEN50021: 1998

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

II 3 G **Ex nAR II T (see schedule) T_{amb} (see schedule)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/035

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
23 July 1998

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3197X**

15 **Description of Equipment**

The Eclipse Midi and Eclipse Mini Luminaires are designed for fitting the following lamps on supply voltages of 200V up to 254V, 50 or 60 Hz:

Eclipse MIDI	Eclipse MINI
250W SON & MBI	50W SON
250W MBF	70W SON & MBI
400W SON & MBI	100W SON & MBI
400W MBF	150W SON & MBI
	80W MBF
	125W MBF

Enclosure

The enclosure comprises a die cast aluminium lid and body with the body having a threaded part which allows a variety of different diffusers to be fitted. The joint between lid and body is sealed by a silicone rubber gasket and contact pressure is maintained by four screws. The luminaire is designed to be mounted using the fixing lugs provided on the lid but may be pole mounted using an alternative lid and cable entry arrangement. In this case the installer must ensure the IP rating of the enclosure is maintained.

The luminaire may be fitted with the following types of diffuser: symmetrical refractor, globe or enclosed reflector. The diffusers are fitted on to the threaded part of the luminaire body, compressing a silicone rubber gasket by the screw pressure. The lamp chamber forms a restricted breathing enclosure. The control gear and terminal chamber are not restricted breathing.

Diffusers

Symmetrical refractor- has a cast aluminium body fitted with a dimpled plain glass lens. The lens is retained by a metal band and screw clamp and the joint between the lens and body is sealed by a ceramic fibre gasket and silicone rubber sealant. This assembly is suitable for low risk impact only.

Globe - is manufactured from plain glass, with integral screw thread and ground sealing face.

Enclosed reflector- has an aluminium body secured to a cast aluminium threaded part. A flat toughened glass lens is held in place by a swaged rim.

Cable entries

Tapped or plain holes in the lid allow access for suitably glanded supply cable or conduit entry, up to M25 size or 1.5" NPT. Up to four entries may be fitted with unused entries plugged.

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3197X**

Control gear

Internally the enclosure contains bracket mounted control gear. The supply cable is terminated on a terminal block fixed to the inside of the lid. An intermediate terminal block, or plug and socket, is also fitted to form the connection point between the supply and control gear.

The ballast, which may include thermal protectors, is manufactured by Transtar Parry or Tridonic and is rated at 200 to 254V, 50 Hz or 210 to 254V, 60 Hz which is achieved by single or multi tappings. The ballasts have Tw 140°C and Δt 55°C or 75°C.

The ignitor may be the Tridonic ZRM6-ESB, Component Approval Ex 94Y4537U coded Ex N II or alternatively the Parry PXA 000, PXA 100, PXA 070 or PXA 400, covered by BASEEFA Component Approval Ex 97Y4283U coded Ex N II.

Capacitors which comply with EN 61048 and EN 61049, marked Tc 85°C or 90°C may be fitted.

The capacitor and ballast may be omitted from the luminaire and located in a remote control gear box. The gear box may contain any ballast suitable for sodium lamps in accordance with the lamp manufacturer's specification, provided that all ballasts comply with IEC 922 and IEC 923 or BS EN 60922: 1991 and BS EN 60923: 1991 and have third party assessment. IEC 922 and IEC 923 are identical to BS EN 60922: 1991 and BS EN 60923: 1991.

Temperature Classification and ambient temperature range

Luminaire	Lamp type	Lamp designation	Watts	Diffuser type	T_{amb}	Temperature Class
MIDI	HPS or Metal halide	SON or MBI	400W	Symmetrical	-30°C to +35°C	T3
			400W[1]	Symmetrical	-30°C to +50°C	T3
			400W	Enclosed	-30°C to +45°C	T3
			400W[1]	Enclosed	-30°C to +55°C	T3
			250W	Symmetrical	-30°C to +50°C	150°C (T3)
			250W[1]	Symmetrical	-30°C to +55°C	T3
			250W	Enclosed	-30°C to +45°C	T3
			250W[1]	Enclosed	-30°C to +55°C	T3
	Mercury	MBF	400W	Symmetrical	-30°C to +35°C	T3
			400W[1]	Symmetrical	-30°C to +45°C	T3
			400W	Enclosed	-30°C to +40°C	T3
			400W[1]	Enclosed	-30°C to +55°C	T3
			250W	Symmetrical	-30°C to +50°C	T3
			250W[1]	Symmetrical	-30°C to +55°C	T3
			250W	Enclosed	-30°C to +40°C	T3
			250W[1]	Enclosed	-30°C to +55°C	T3

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3197X**

Luminaire	Lamp type	Lamp designation	Watts	Diffuser type	T_{amb}	Temperature Class
MINI	HPS or Metal halide	SON or MBI	150W	Symmetrical or Globe	-30°C to +50°C	160°C (T3)
			100W	Symmetrical or Globe	-30°C to +50°C	160°C (T3)
			70W	Symmetrical or Globe	-30°C to +45°C	T4
		SON	50W	Symmetrical or Globe	-30°C to +45°C	T4
		SON or MBI	150W[1]	Symmetrical	-30°C to +55°C	T3
			100W[1]	Symmetrical	-30°C to +55°C	T3
			70W[1]	Symmetrical	-30°C to +55°C	150°C (T3)
		SON	50W[1]	Symmetrical	-30°C to +55°C	150°C (T3)
	Mercury	MBF	125W	Symmetrical or Globe	-30°C to +45°C	T3
			80W	Symmetrical or Globe	-30°C to +45°C	T3

[1] PFC capacitor omitted

16 **Report Nos.**

98(C)0252

17 **Special Conditions For Safe Use**

1. The luminaire diffusers form a restricted breathing enclosure when fitted in accordance with the manufacturer's instructions. Silicone grease shall be applied to the threads of the diffuser which shall be hand tightened, then tightened up to a further 36°.
2. The locking screw shall be tightened after the diffuser is fitted.
3. The symmetrical refractor is suitable only for areas with a low risk of mechanical damage.

18 **Essential Health and Safety Requirements**

Essential Health & Safety Requirements not covered by Standards listed at (9)		
ESR	**Subject**	**Compliance: Report Clause**
1.0.2	Analysis of possible operating faults and misuse	see report 98(C)0252 clause 4.1.0.2
1.0.5	Marking	see report 98(C)0252 clause 4.1.0.5
1.0.6	Instructions	see report 98(C)0252 clause 4.1.0.6
1.1.1	Materials not to trigger off explosions	see report 98(C)0252 clause 4.1.1.1
1.1.2	Constructional materials not to degrade or reduce protection	see report 98(C)0252 clause 4.1.1.2
1.1.3	Changes in characteristics of materials	see report 98(C)0252 clause 4.1.1.3
1.2.2	Components for incorporation or replacement	see report 98(C)0252 clause 4.1.2.2
1.2.5	Additional means of protection	see report 98(C)0252 clause 4.12.5
1.2.6	Safe opening	see report 98(C)0252 clause 4.1.2.6

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3197X**

Essential Health & Safety Requirements not covered by Standards listed at (9)		
ESR	**Subject**	**Compliance: Report Clause**
1.2.7	Protection against other hazards	see report 98(C)0252 clause 4.12.7
1.3.3	Hazards arising from stray electric and leakage currents	see report 98(C)0252 clause 4.13.3
1.4.1	Safe function in changing external conditions	see report 98(C)0252 clause 4.14.1
1.4.2	Withstanding attack by stresses or aggressive substances	see report 98(C)0252 clause 4.14.2

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
D1812	1	-	10.7.98	Construction details
D1812	2	-	8.6.98	General arrangement
D1812	3	-	8.6.98	General arrangement
D1812	4	-	8.6.98	Parts list and detail parts.
D1812	5	-	19.05.98	Mounting and optical details

BASEEFA List Keywords
2BULKLUM

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

1 # SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially explosive atmospheres Directive 94/9/EC**

3 Supplementary Type Examination Certificate Number: **BAS98ATEX3197X/1**

4 Equipment or Protective System: **THE ECLIPSE RANGE OF WELLGLASS LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING LIMITED**

6 Address: **388 Hillington Road, Glasgow, G52 4BL**

7 This supplementary certificate extends Type Examination Certificate No. BAS98ATEX3197X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/035

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
23 December 1999

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3197X/1**

Description of the Variation to the Equipment or Protective System

VARIATION ONE

To extend the range to include a smaller series of luminaires known as the Eclipse Junior.

The luminaires are intended for use on supplies of 110-120V and 200 to 254 volts d.c., 50/60 Hz a.c., with lamps rated at up to 150 watts (GLS) and 200-254V, 50/60 Hz for the CFL and HID lamps up to 100W. The lamp type / power ratings are tabulated below. The luminaire may be matched to the supply voltage by tappings on the choke where used.

The construction differs from the other luminaires in the ECLIPSE range in that the original luminaires have a quasi-rectangular shape with four retaining screws between the upper and lower bodies and the Junior range have circular bodies with a single retaining screw.

The top part carries the mounting feet and the main terminal block. The lower portion carries the gear tray and lamp holder. The well glass is screwed into the lower face of this part.

The body of the "Junior" is smaller having approximately 1/3 of the volume of the original range. It is made from cast aluminium.

The luminaire is designed to be "restricted breathing" as far as the lamp and holder is concerned whilst the closing of the top and bottom parts forms an enclosure, sealed with an integral silicone rubber tubular seal and has an IP54 minimum ingress protection rating.

The electrical components used within the luminaire are component certified by BASEEFA Certificate BAS98ATEX3379U.

Range table;

				Max amb		T class	
Wattage	**Lamp**	**Cap**	**Min.amb.**	**with pfc**	**no pfc**	**with pfc**	**no pfc**
50	SON	E27	-45°C	50°C	55°C	T4	T3
70	SON, MBI	E27	-45°C	50°C	55°C	T4	T3
80	MBF	E27	-45°C	50°C	55°C	T3	T3
100	SON, MBI	E27	-45°C	45°C	50°C	T3	T3
125	MBF	E27	-45°C	40°C	55°C	T3	T3
100	GLS	E27	-45°C	55°C	-	T4	-
150	GLS	E27	-45°C	55°C	-	T4	-
13	CFL-DE	G24q	-20°C	50°C	-	T4	-
18	CFL-DE	G24q	-20°C	50°C	-	T4	-
26	CFL-DE	G24q	-20°C	50°C	-	T4	-

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13 Schedule

14 TYPE EXAMINATION CERTIFICATE N° BAS98ATEX3197X/1

VARIATION TWO

Extends the ambient range on the Mini and Midi Eclipse down to -45°C for the Glass Globe and Enclosed Reflector only. The range is tabulated in Chalmit document "Installation Operation and Maintenance Instructions ~ Eclipse Mini & Midi Wellglass" issue 00 rev 11 January 00.

Report Nos.

99(C)0444

SPECIAL CONDITIONS FOR SAFE USE

As in the original certificate and additionally:

Care must be taken to ensure that the wellglass is securely screwed into place.

Essential Health and Safety Requirements

As in the original certificate.

DRAWINGS

Number	Sheet	Issue	Date	Description
D1912	1	-	28.05.99	Parts list
	2	-	27.05.99	Section and cct. drawing
	3	-	27.04.99	Outside view
	4	-	27.05.99	Shades and fixings
D1812	1	1	29.06.99	Parts list & ratings
	2	1	29.06.99	MINI section
	3	1	29.06.99	MIDI section
	4	1	29.06.99	Brackets and fixings
	5	1	29.06.99	Mounting and optical

1 # SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE

2 **Equipment Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC**

3	Supplementary Type Examination Certificate Number :	**BAS98ATEX3197X/2**
4	Equipment:	**THE ECLIPSE RANGE OF WELLGLASS LUMINAIRES**
5	Manufacturer :	**CHALMIT LIGHTING**
6	Address :	**388 Hillington Road, Glasgow, G52 4BL**

7 This supplementary certificate extends Type Examination Certificate No. BAS98ATEX3197 to apply to equipment designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate

The Electrical Equipment Certification Service, Notified Body Number 0600, retains responsibility for its original documentation. Baseefa (2001) Ltd. is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate that it has issued.

This certificate may only be reproduced in its entirety, without any change, Schedule included.

Baseefa (2001) Ltd. Customer Reference No. 0068

Project File No. 02/0107

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

Baseefa (2001) Ltd.
Health and Safety Laboratory Site, Harpur Hill,
Buxton, Derbyshire SK17 9JN
Telephone +44 (0) 1298 28255 Fax +44 (0) 1298 28216
e-mail info@baseefa2001.biz web site www.baseefa2001.biz
Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

Schedule

Description of the variation to the Equipment

Variation 2.1

To allow the Eclipse Range of Wellglass Luminaires to be used in dust environments. The apparatus can be classified as Category 3D or Category 3GD and include the marking:

⟨Ex⟩ II3D T (see schedule) T_{amb} (see schedule)

The following models are included for use in zone 22 dust:

Lamp type	Housing	Designation	Power (W)	amb. (°C)	Max. surface temp (°C)	Alternative Optics	amb. (°C)	Max. surface temp (°C)
HPS	Junior	SON	50	50	130			
HPS			70					
HPS			100	45	135			
Metal halide		MBI	70	50	130			
Mercury		MBF	80		135			
Mercury			125	40	140			
Incandescent		GLS	100	55	100			
Incandescent			150					
Compact Fluor.		CFL-DE	13	50	130			
Compact Fluor.			18					
Compact Fluor.			26					
HPS	Midi	SON	400	35	130	Symmetric Refractor	45	175
Metal halide		MBI			120			
HPS		SON	250	50				
Metal halide		MBI						
HPS	Mini	SON	150	50	135			
Metal halide		MBI						
HPS		SON	100					
Metal halide		MBI						
HPS		SON	70	45	130			
Metal halide		MBI						
HPS		SON	50					

Lamp type	Housing	Designation	Power (W)	amb. (°C)	Max. surface temp (°C)	Alternative Optics	amb. (°C)	Max. surface temp (°C)
Mercury	Midi	MBF	400	35	160	Symmetric refractor	40	180
			250	50	125			
	Mini		125	45	135			
			80					

Report No.

02(C)0107 dated 12 November 2002

Special Conditions for Safe Use

See original certificate and subsequent variations

Essential Health and Safety Requirements

See original certificate and subsequent variations

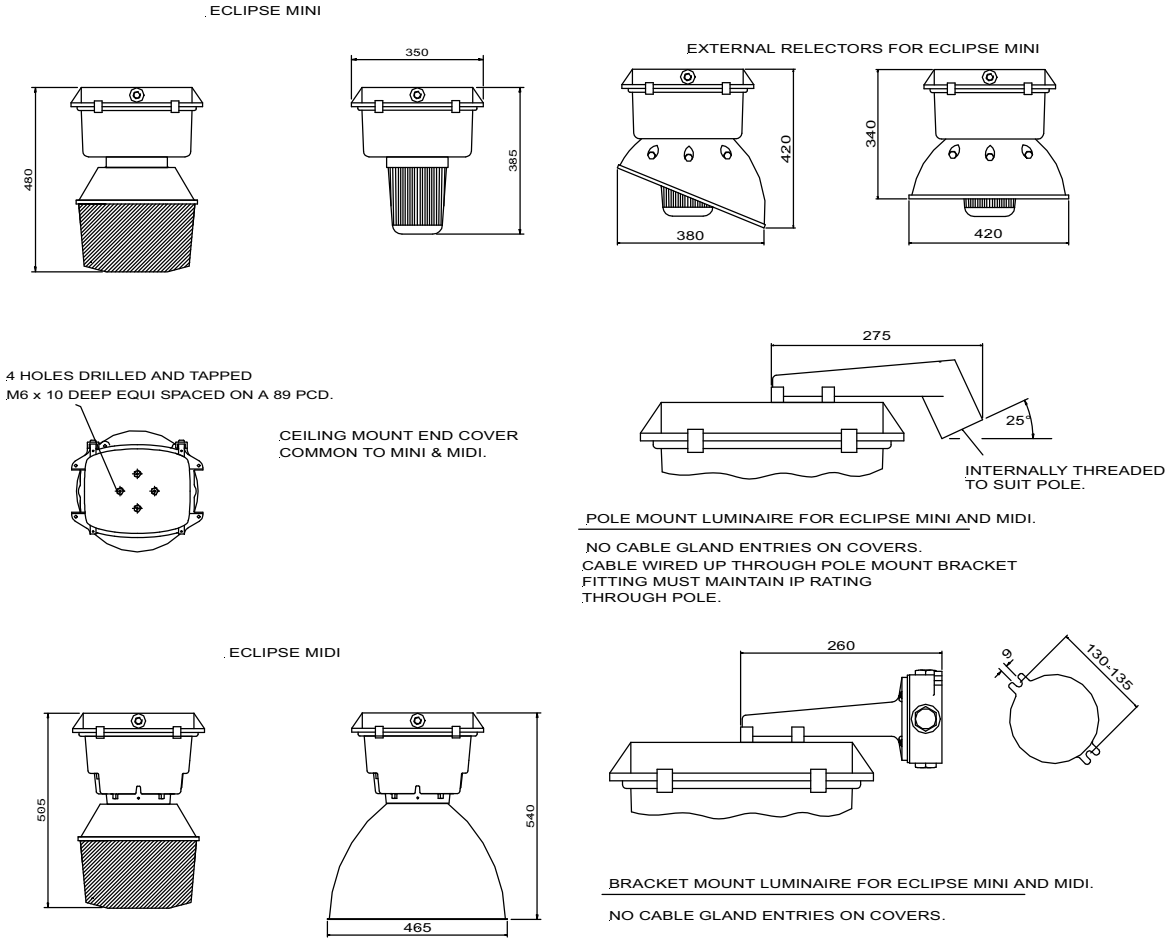
Drawings and Documents

Number	Sheet	Issue	Date	Description
D2115	1 & 2	0	3/7/02	Dust general arrangement

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Eclipse Mini & Midi Wellglass

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



CE

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0.0 Specification

Type Of Protection	Ex nA R (non-sparking) (restricted breathing)
Standard	EN50021
ATEX Equipment Classification	Group II Category 3G
Area Classification	Zone 2 areas to BS EN60079-10
Certificate	Type Examination BAS98ATEX3197X
Equipment Coding	⟨Ex⟩ Ex nA R II [T3 or T4]
Ingress Protection	IP65 to BS EN60529

CE Mark

CE

The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

1.0 Introduction - ECLIPSE Mini & Midi Wellglass

1.1 General

The type of protection is Ex nA R using a restricted breathing lamp enclosure. It is available in two body sizes with a range of optics and external reflectors

Note : *Lamp ranges, maximum ambient and surface temperature ratings are as indicated in TABLE 0. Refer also to notes 1, 2 & 3 in TABLE 0.*

1.2 Application

The luminaire is designed to be safe in normal operation.
The luminaire should not be used in conditions where there are environmental, vibration or shock conditions above the normal for fixed installations.
The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states.
The body material is made from corrosion resistant aluminium *(BS1490 LM20).*
The luminaire is suitable for applications where Category 3 apparatus is used. The application is for ignitable gas atmospheres. The *ATEX* type examination does not address suitability for dusts or portable applications.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN60079-14 or the local hazardous area code of practice, whichever is appropriate.
In the UK the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with *the 'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.

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Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

A flat blade screwdriver to open the end cover.
A strap wrench to tighten/loosen the diffuser.
3mm and 5mm flat blade screwdriver.
Pliers, knife, wire strippers/cutters.
A spanner suitable for fitting cable glands.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering a maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care must be taken if connecting to the nominal 230V UK public supply.*** In some cases, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected to obtain the best lamp performance, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is relocated. If in doubt, tappings should be set on the high side. 10V Max. drop is desirable for HPS and required for MBI. All circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke, so tap selection is obvious. Where supply conditions include significant harmonics, the PFC can be omitted.
Where shore or construction site supplies are used, which are different to the service location supplies, the tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The discharge lamps used are of a standardised type. There is no preference between make or colour. The Eclipse uses **tubular** HPS and HPS compatible MBI lamps and elliptical MBF lamps. Note that the use of diffuse elliptical lamps may affect photometric performance. Care must be taken to fit the correct new and replacement lamp in order to preserve the certification conditions and obtain the designed photometric performance. The lamp type is shown on the rating plate. ***Lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling' where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects to control gear.
The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or from Chalmit.

Important : *HPS and MBI circuits should not be energised without a lamp fitted. HPS and MBI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The luminaire is designed to operate at up to an angle of 25^{o} from the vertically down position. The wall mounting or ceiling mounting arrangements should be secured with lock washers or self-locking nuts and bolts. The pole mounting version must be mounted so as to maintain the IP rating.

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3.5.1 Weights and Windages

Note : *Weights and Windages for the various types are outlined in Table 3.*

3.5.2 Fitting the Diffuser

Care must be taken when fitting the diffuser, due to the lamp enclosure being classified as restricted breathing. The following steps must be taken:

1 Apply silicone grease to the threads of the diffuser.
2 Rotate the diffuser in the threaded collar until the diffuser seals onto the gasket.
3 Rotate the diffuser up to a further 36^{o}, it may be necessary to use a strap wrench to perform this task.
4 Secure the diffuser using the grub screw and lock nut.

3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient temperature. This allows the user to adjust the cable specification for actual site maximum temperature. The standard conductor section is 6mm² max. All models are suitable for looping except the 400W remote gear version. Standard 300/500V cable is suitable.

3.6.2 Cable Glands

Cable glands for entry into Ex enclosures when fitted with any gland to body sealing method and supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54. Nylon washers are provided with the unit to seal between the gland body and the luminaire. The cable glands must be suitable for Zone 2 applications, or the appropriate European Standard for industrial cable entries and cable entry devices. Plastic cable glands must be Ex certified. Where brass cable glands are used in a corrosive environment, cadmium or nickel plating should be used.
Sealing plugs for unused entries should be similarly rated and fitted.
Entries suitable for M20 cable glands are standard. Entries suitable for M25 are available to special order.

3.7 Cabling and Fitting Lamps

Before fitting lamps or opening the luminaire, the luminaire must be de-energised and isolated from the supply.
Access for cabling is by removing the end cover. The end cover is released by undoing the four screws using a flat blade screwdriver. Reselect the voltage tappings if necessary. Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1mm bare conductor outside the terminal is a maximum. Any unused terminal should be fully tightened.
When the cabling is complete make a final tightness and connection check. The cover is replaced and the screws tightened down.
The lamp is replaced by removing the diffuser, pay close attention to *Section 3.5.1* when replacing the diffuser. Lamps must be of the correct type and firmly screwed into place.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

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3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN60079-17* and on our experience:

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting.
3 Check the cable gland for tightness and nip up if necessary.
4 Check the tightness of the cover screws and nip up if necessary.
5 Clean the lampglass.
6 When re-lamping, check that the diffuser gasket has not softened or become excessively deformed. If in doubt, replace (*See Section 4.0*).

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
In most instances, the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first over-heated; the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating.
Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS and MBI, the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an attempt to start effect in the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

3.9.1 Thermal Protector

Thermal protectors may be included. If the lamp goes on and off over a timescale of several minutes, this could be the thermal protector operating. The causes are defective lamps/diode effects, gross over voltage or the choke beginning to fail and this should be investigated directly (*See Section 5.4.*).

4.0 Overhaul

The unit is largely made of materials that are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 1.0mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable. All the spares required are available. Please state the model number, lamp and optical details.
The seal at the end cover is held within a groove by silicone R.T.V. The diffuser gasket is held in place by a disc and two screws.
If the gaskets have deteriorated by softening or permanent set, new gaskets should be fitted, which can be obtained from Chalmit. To fit the end cover gasket, care is needed, the old gasket should be removed and remaining adhesive scraped off. The gasket is fixed in place and joined with silicone R.T.V. to the body. The end cover is then replaced.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The inrush current can be calculated where circuit conditions are known. The

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nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other supply volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation. This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

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0.0 Tables 0/1/2/3

Table 0 Lamp Ranges, Maximum Ambient and Temperature Ratings Refer to Section : 1.1

Model	Wattage	Lamp	Lamp Cap	Ambient Temp ºC	Min Ambient Temp ºC	T Rating	Cable Rating At Max Tamb ºC	Cable Rise ºC
MINI	50W	SON/T	E27	45	-45	T4	85	30
MINI	70W	SON/T, MBI/T	E27	45	-45	T4	85	30
MINI	80W	MBF	E27	45	-45	155(T3)	95	40
MINI	100W	SON/T, MBI/T	E40	50	-45	155(T3)	95	40
MINI	125W	MBF	E27/E40	45	-45	160(T3)	95	40
MINI	150W	SON/T, MBI/T	E40	50	-45	155(T3)	95	40
MINI	50W[1]	SON/T	E27	55	-30	150(T3)	85	30
MINI	70W[1]	SON/T, MBI/T	E27	55	-30	150(T3)	85	30
MINI	100W[1]	SON/T, MBI/T	E40	55	-30	T3	95	40
MINI	150W[1]	SON/T, MBI/T	E40	55	-30	T3	95	40
MIDI	250W	SON/T, MBI/T	E40	50	-30	150(T3)	85	35
MIDI	250W	MBF	E40	50	-30	T3	90	40
MIDI	400W	SON/T, MBI/T	E40	35	-30	T3	85	50
MIDI	400W	MBF	E40	35	-30	T3	85	50
MIDI	250W[1]	SON/T, MBI/T	E40	55	-30	T3	90	35
MIDI	250W[1]	MBF	E40	55	-30	T3	95	40
MIDI	400W[1]	SON/T, MBI/T	E40	50	-30	T3	100	50
MIDI	400W[1]	MBF	E40	45	-30	T3	100	50
MIDI	250W[2]	SON/T, MBI/T	E40	45	-45	T3	85	35
MIDI	250W[2]	MBF	E40	40	-45	T3	85	35
MIDI	400W[2]	SON/T, MBI/T	E40	45	-45	T3	85	35
MIDI	400W[2]	MBF	E40	40	-45	T3	85	35
MIDI	250W[3]	SON/T, MBI/T	E40	55	-45	T3	90	35
MIDI	250W[3]	MBF	E40	55	-45	T3	90	35
MIDI	400W[3]	SON/T, MBI/T	E40	55	-45	T3	90	35
MIDI	400W[3]	MBF	E40	55	-45	T3	90	35

Note : [1] *These models are supplied with standard refractors and are not fitted with PFC capacitors.*

[2] *These models are supplied with the enclosed reflector.*

[3] *These models are supplied with the enclosed reflector and are not fitted with PFC capacitors.*

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Table 1 Starting and Running Currents Refer to Section : 5.0

Lamp	Start A	Run A	PFC µF
50W HPS	0.35	0.28	10
70W HPS	0.55	0.4	10
70W MBI	0.55	0.4	10
80W MBF	0.5	0.43	8
100W HPS	1	0.56	10
100W MBI	1	0.56	10
125W MBF	1	0.66	10
150W HPS	1.2	0.75	15
150W MBI	1.2	0.75	15
250W HPS	2.35	1.35	30
250W MBI	2.35	1.35	30
250W MBF	2.35	1.35	20
400W HPS	4.4	2.2	40
400W MBI	4.4	2.2	40
400W MBF	4.4	2.2	25

Note : *Minimum power factor correction : 0.85*

Table 2 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	Number of Lamps					
	1	2	3	4	5	6
50W	4A	4A	4A	6A	6A	10A
70W	4A	4A	4A	6A	6A	10A
80W	4A	4A	4A	4A	6A	10A
100W	4A	4A	6A	10A	10A	10A
125W	4A	6A	6A	10A	10A	10A
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A

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Table 3 Weights & Windages

Refer to Section : 3.5.1

Lamp Type	Weight	Windage
Mini SON/T, MBI/T	12kg	0.25m^2
Mini MBF	12kg	0.25m^2
Midi 250 SON/T, MBI/T	15kg	0.33m^2
Midi 250 MBF	15kg	0.33m^2
Midi 400 SON/T, MBI/T	15.5 kg	0.33m^2
Midi 400 MBF	15.5 kg	0.33m^2

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	Info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

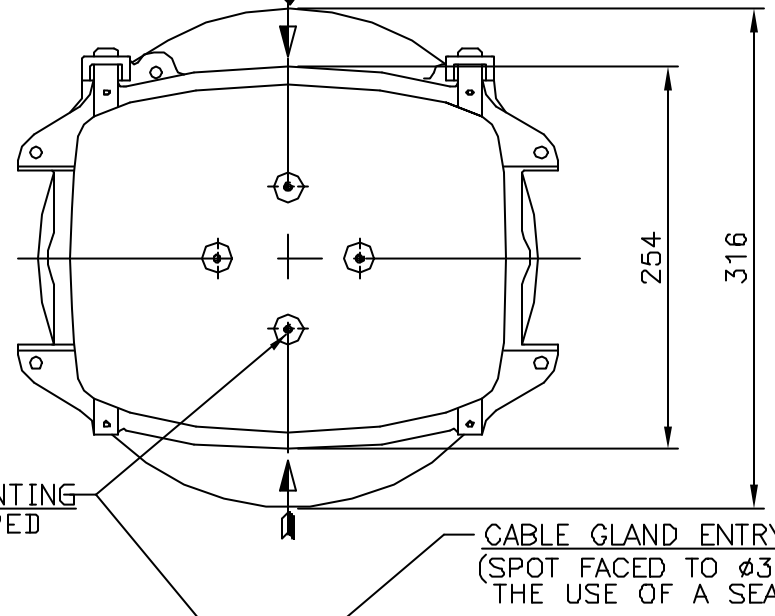
1	2	3	4	5	6	7	8

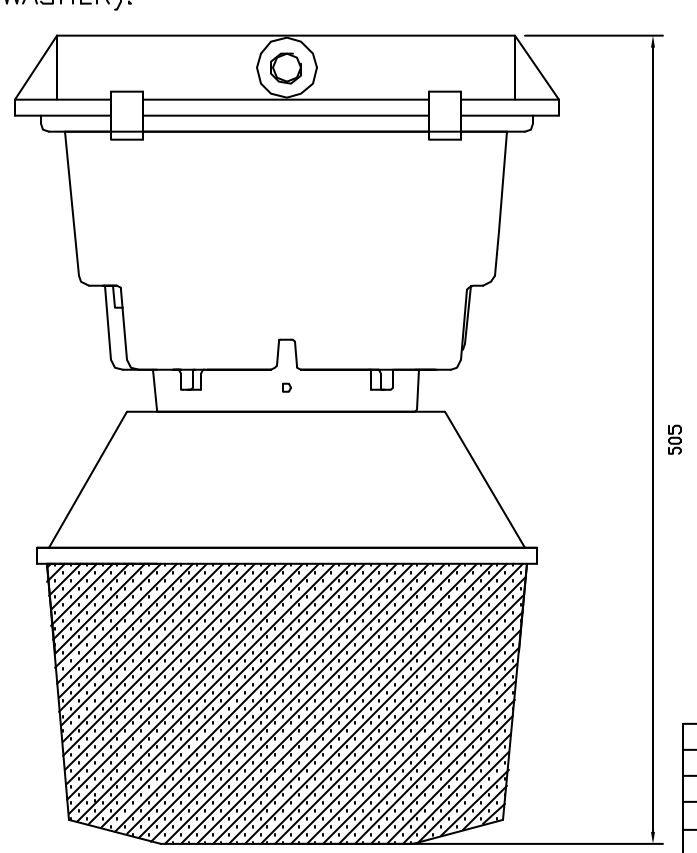
DRAWING NUMBER/SHEET NUMBER
F1069

REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION





MODEL	WATTAGE	LAMP	AMBIENT TEMP.	T RATING
ECLMD250	250W	SON MBI	50°C	150°C(T3)
	250W (1)		55°C	T3
	250W (2)		45°C	T3
	250W (3)		55°C	T3
ECLMD250M	250W	MBFU	55°C	T3
	250W (1)(3)		55°C	T3
	250W (2)		40°C	T3
ECLMD400	400W	SON MBI	35°C	150°C(T3)
	400W (1)		50°C	T3
	400W (2)		45°C	T3
	400W (3)		55°C	T3
ECLMD400M	400W	MBFU	35°C	150°C(T3)
	400W (1)		50°C	T3
	400W (2)		45°C	T3
	400W (3)		55°C	T3

1)THESE MODELS SUPPLIED WITH STANDARD REFRACTORS AND ARE FITTED WITH PFC CAPACITORS

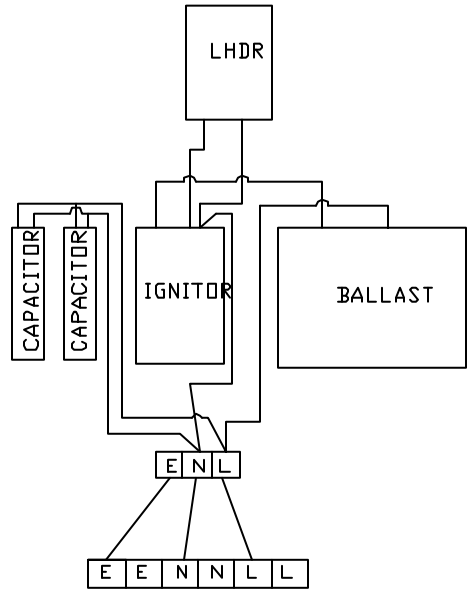
2)THESE MODELS SUPPLIED WITH THE ENCLOSED REFLECTOR.

3)THESE MODELS SUPPLIED WITH THE ENCLOSED REFLECTOR AND ARE NOT FITTED WITH PFC CAPACITORS

TYPE OF PROTECTION....Ex nA R (NON SPARKING) (RESTRICTED BREATHING ENCLOSURE)
AREA CLASSIFICATION.....ZONE 2 AREAS TO BS EN 60079-14
STANDARD.....BS EN 50021
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS98ATEX3197X
CODE Ex II 3G Ex nA R II T(SEE TABLE) Tamb(SEE TABLE)
INGRESS PROTECTION....IP65 TO BS EN60529 (IEC 529)

NOTES

1) VOLTAGE RANGE: 220-254V @50Hz OR 220-277V @ 60Hz
2) LOOPING UP TO 6mm^2 3-CORE CABLE AS STANDARD
3) DRAWING SHOWN ON LEFT IS FOR A STANDARD ECLIPSE MIDI WELLGLASS WITH GLASS REFRACTOR & SPUN REFLECTOR MOUNTED BY FOUR M6 TAPPED HOLES IN LID.



TYPICAL WIRING ARRANGEMENT
FOR HPS & MBI LAMPS.

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	13/06/02

REF. DRGS.-

MATERIAL	N/A
TOLERANCE	N.T.S
FINISH	N/A
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

TITLE: Eclipse Midi

DRAWING NUMBER/SHEET NUMBER: F1069 1 OF 1

ECLIPSE MINI

Ex n WELL-GLASS

ATEX CATEGORY 3
ZONE 2 APPLICATIONS

The Eclipse Mini is a well-glass luminaire suitable for high pressure discharge lamps up to 150W.
It has a lightweight corrosion resistant aluminium body and heat resistant glass construction with stainless steel fasteners. It is tested to IP65 and is suitable for use in harsh environments. The protection is Ex nAR incorporating a restricted breathing lamp chamber and an unrestricted control gear and terminal housing. This removes the need for special cable or glands. The lamp-glass has a screwed thread for quick access. The enclosure part containing the control gear hinges on the mounting part but is not fastened to it. This allows ready access to the terminals and the easy removal of the control gear and lamp enclosure if maintenance is needed. There is a range of wall, surface and stanchion mountings integrated into the designs. The Mini comes between the Junior and the Eclipse and is used where discharge lighting is needed at low and medium mounting heights. A range of reflectors and a prismatic refractor is available to direct light efficiently to where it is needed.

Standard Specification

Type of Protection:	**Ex nA nR (Non-sparking Restricted Breathing)**
ATEX Classification:	**Group II Category 3 G**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50021**
Certificate:	**Type Examination Certificate BAS98ATEX3197X**
Coding:	**Ⓔx II 3 G EEx nAR II (refer to table for T class and ambient)**
Enclosure:	**Painted aluminium body with glass lens. Silicone rubber gasket. Stainless steel fasteners**
Reflector (internal):	**White polyester painted zinc coated steel**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Ceiling mounting**
Lampholder:	**E27 or E40**
Lamp Type:	**HPS, Metal Halide or Mercury Vapour**
Control Gear:	**Internal copper/iron ballast with ignitor and PFC correction capacitors.**
Relamping:	**Access via sealed lamp chamber**
Burning Position:	**Up to 25º off vertical**
Ingress Protection:	**IP65 to EN 60529**
Electrical Supply:	**220, 230, 240V 50Hz (50, 80,100 & 125W)** **220, 230, 240, 254V 50Hz (70 & 150W only)**

Features

Easy access for wiring and control gear

Corrosion resistant

Unrestricted breathing gear enclosure removes the need for special glands or cable

Excellent light distribution

Suitable for a wide range of ambient temperatures from -45˚C to +55˚C, dependant on lamp type and wattage

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Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient ºC	Weight
ECNN/050/HS	50W	HPS	E27	T4	45	7.5kg
ECNN/070/MS	70W	HPS/Metal Halide	E27	T4	45	8.0kg
ECNN/100/HS	100W	HPS	E27	160ºC T3	50	9.0kg
ECNN/150/MS	150W	HPS/Metal Halide	E40	160ºC T3	50	11.0kg
ECNN/080/MV	80W	Mercury Vapour	E27	T3	45	7.5kg
ECNN/125/MV	125W	Mercury Vapour	E27	T3	45	8.0kg
55˚C Tamb Models - No PFC						
ECNN/050/HS/R/NC*	50W	HPS	E27	150ºC T3	55	7.5kg
ECNN/070/MS/R/NC*	70W	HPS/Metal Halide	E27	150ºC T3	55	8.0kg
ECNN/100/MS/R/NC*	100W	HPS/Metal Halide	E27	T3	55	9.0kg
ECNN/150/MS/R/NC*	150W	HPS/Metal Halide	E40	T3	55	11.0kg

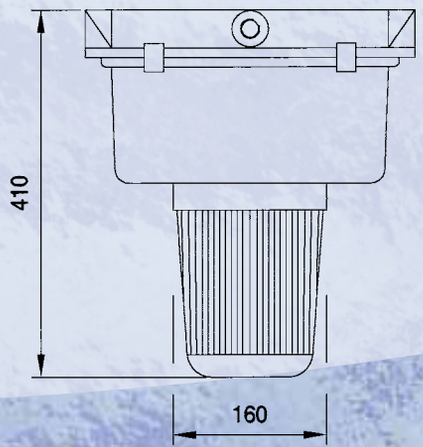
***** No power factor correction capacitors are fitted

Options - Suffix to Catalogue No.

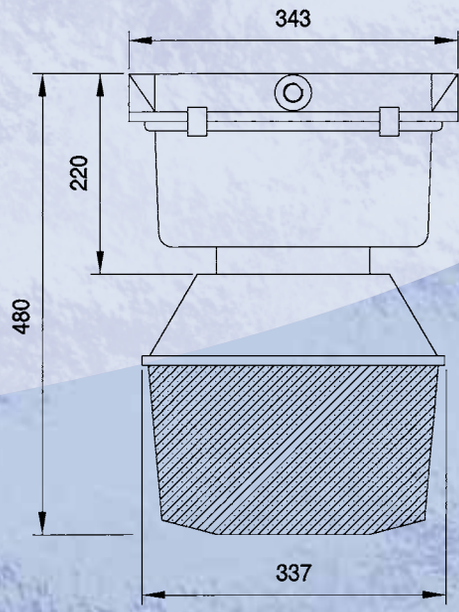
/60	60Hz
/R	Prismatic glass refractor
/W	Wall mounted version
/ST	Stanchion mounted version
/P	Pendant mounted version
/TI	Timed cut-out ignitor
/D	Zone 22 Dust applications

Applications

- Zone 2 hazardous areas
- Medium low bay lighting
- Meter reading areas
- Gantry and walkway lighting
- Sewage treatment plants
- Road tanker loading facilities
- Process skid manufacturing
- Distilleries • Stairwells



GLASS LENS VERSION



PRISMATIC GLASS REFRACTOR VERSION

Accessories (Should be ordered separately)	**Catalogue Order Code**
Cast guard (standard)	**CECL7-0006**
Dome reflector	**HECL0-0001**
30º angled reflector	**HECL0-0002**
Guard for glass refractor	**HECL7-0001**

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

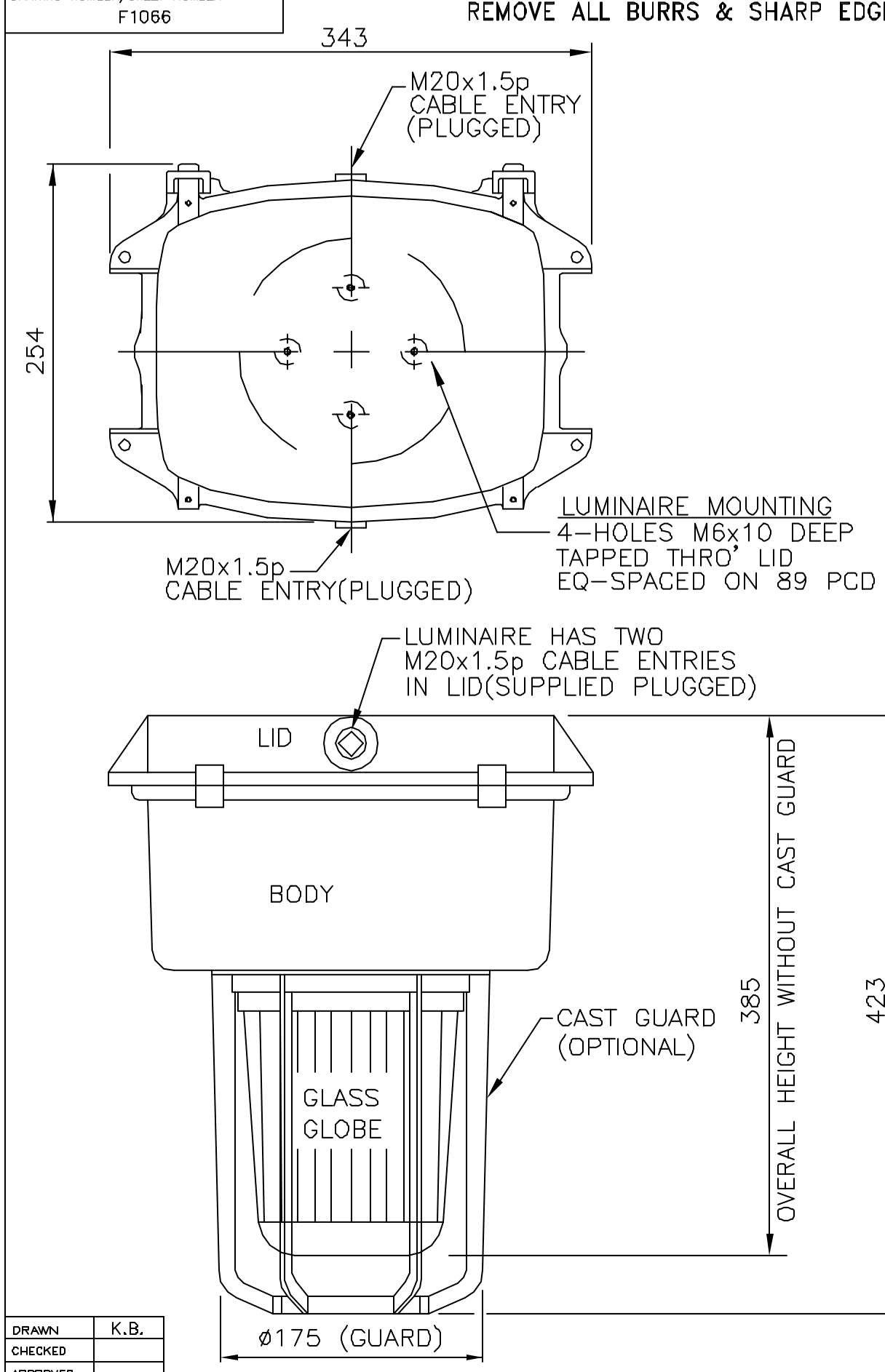
1	2	3	4	5	6	7	8

DRAWING NUMBER/SHEET NUMBER
F1066

REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION



MODEL	WATTAGE	LAMP	AMBIENT TEMP.	T RATING	APPROX WEIGHT
ECLNN50	50W	SON	45°C	T4	10 Kgs
			55°C	155°C(T3)	
ECLNN70	70W	SON, MBI	45°C	T4	
			55°C	155°C(T3)	
ECLNN80	80W	MBF	45°C	155°C(T3)	11 Kgs
ECLNN100	100W	SON, MBI	50°C	T3	12 Kgs
			55°C	155°C(T3)	
ECLNN125	125W	MBF	45°C	160°C(T3)	11 Kgs
ECLNN150	150W	SON, MBI	50°C	T3	12 Kgs
			55°C	155°C(T3)	

TYPE OF PROTECTION....Ex nA R (NON SPARKING) (RESTRICTED BREATHING ENCLOSURE)
AREA CLASSIFICATION.....ZONE 2 AREAS TO BS EN 60079–14
STANDARD.....BS EN 50021
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS98ATEX3197X
CODE Ex II 3G Ex nA R II T(SEE TABLE) Tamb(SEE TABLE)
INGRESS PROTECTION....IP65 TO BS EN60529 (IEC 529)

NOTES

1) VOLTAGE RANGE: 220–254V @50Hz OR 220–277V @ 60Hz
2) LOOPING UP TO 6mm^2 3–CORE CABLE AS STANDARD
3) LOW TEMPERATURE MODELS DOWN TO –45°C AVAILABLE.
4) FOR DETAILS OF THE FOLLOWING ALTERNATIVE ARRANGEMENTS SEE F547:–
   i) STANDARD ECLIPSE MINI WITH GLASS GLOBE & FULL GRP REFLECTOR
   ii) STANDARD ECLIPSE MINI WITH GLASS GLOBE & 30° ANGLED GRP REFLECTOR
   iii) STANDARD ECLIPSE MINI WITH GLASS REFRACTOR INSTEAD OF GLOBE
5) DRAWING SHOWN ON LEFT IS FOR A STANDARD ECLIPSE MINI WELLGLASS WITH MOUNTING BY FOUR M6 TAPPED HOLES IN LID. FOR DETAILS OF OTHER MOUNTING ARRANGEMENTS SEE F548.

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	10/06/02

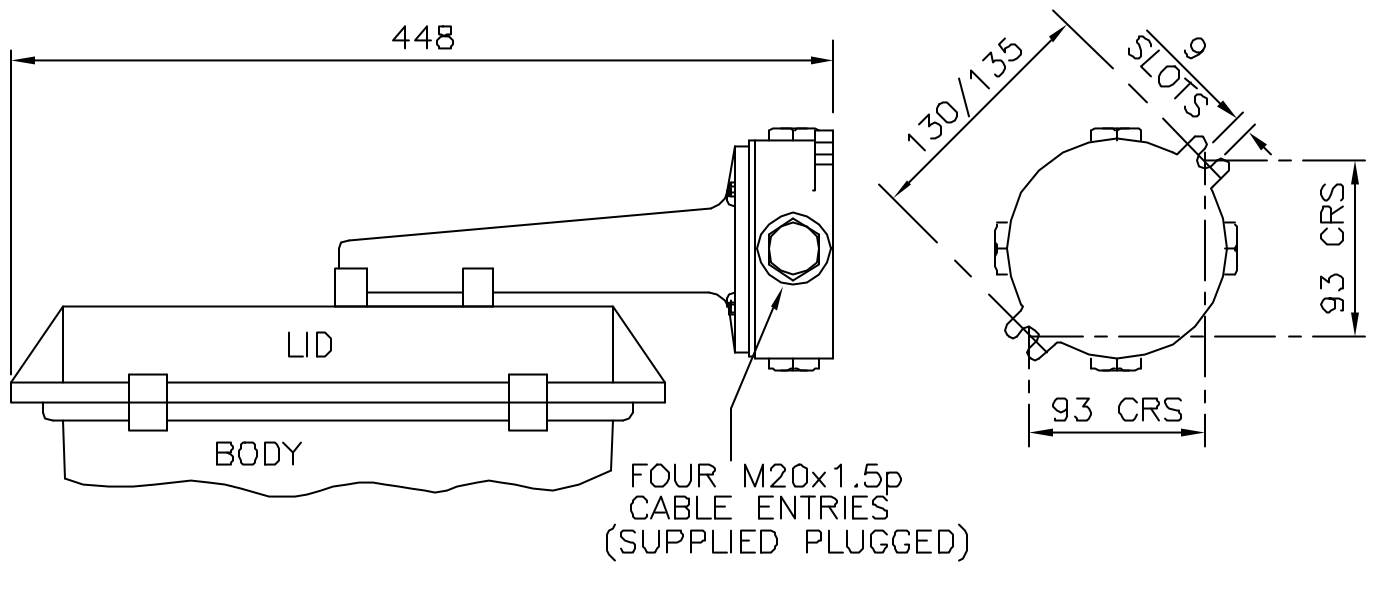
REF. DRGS.–

MATERIAL	TOLERANCE
ALUMINIUM	N.T.S
FINISH	SURFACE ROUGHNESS
Polyester Painted	
DIMS. IN MM	SCALE –

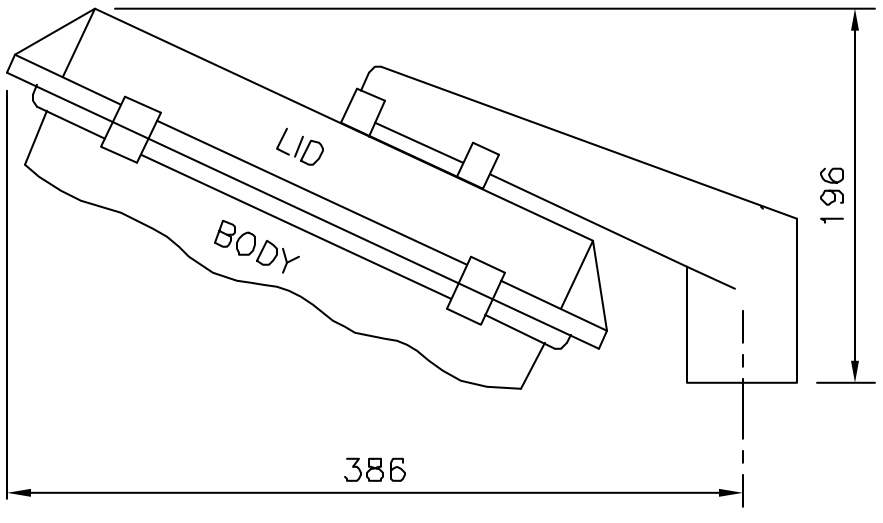
TITLE
Eclipse Mini Ex n
Well–Glass

DRAWING NUMBER/SHEET NUMBER
F1066 1 OF 1

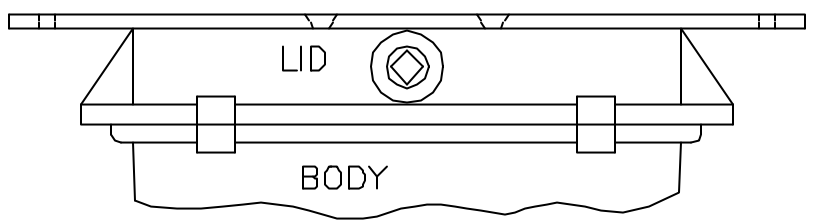
DRAWING NUMBER/SHEET NUMBER
F548

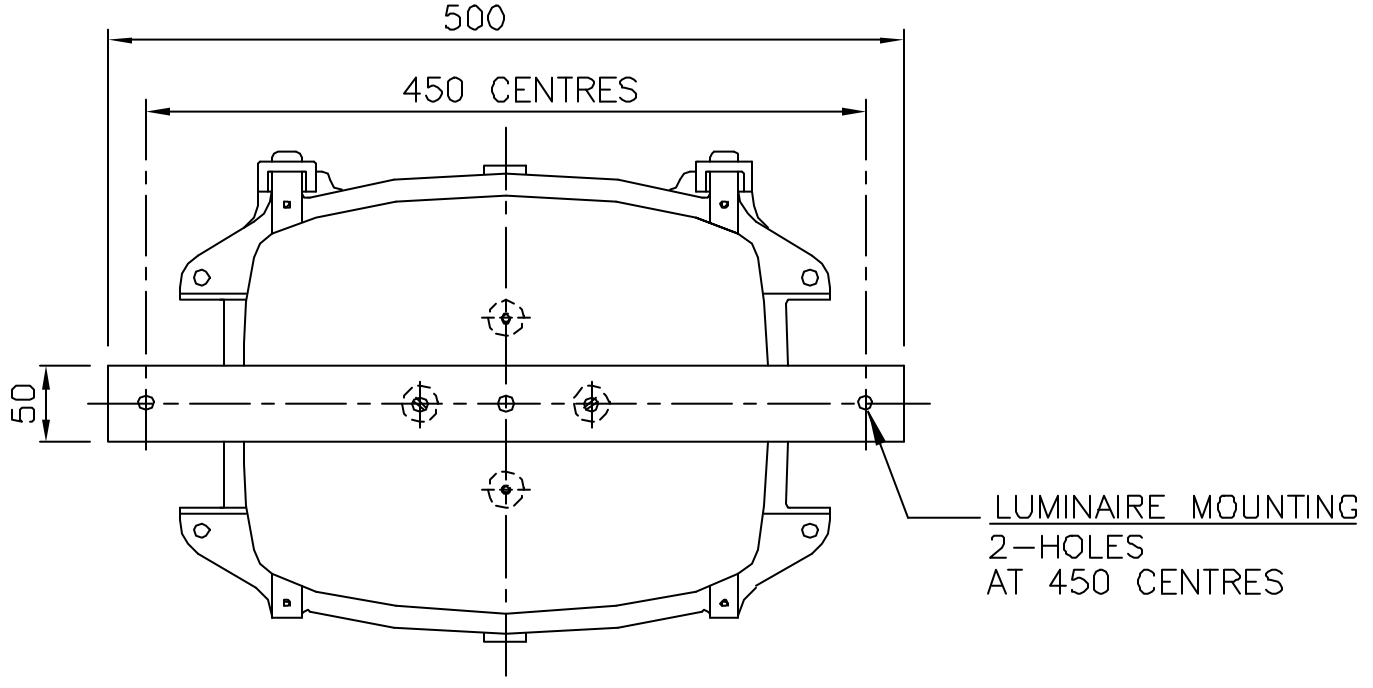


i) WALL–MOUNTING ARRANGEMENT



ii) POLE–MOUNTING ARRANGEMENT
(TO SUIT 1–1/2" NPT
EXT. THREADED POLE)





iii) FLUSH MOUNTING BRACKET

POLE FOR POLE MOUNTING MODELS WAS 70 DIA		01	14-7-00
CHANGE		ISSUE	DATE

DRAWN	RJK
CHECKED	
APPROVED	
DATE	27-8-99
REF. DRGS:–	

MATERIAL	TOLERANCE
FINISH	SURFACE ROUGHNESS
DIM:– mm	SCALE:–

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel: 0141-882 5555 Fax: 0141-883 3704

TITLE ALTERNATIVE MOUNTING ARRANGEMENTS FOR Ex nAR ECLIPSE MINI WELLGLASS LUMINAIRE

DRAWING NUMBER/SHEET NUMBER
F548

ECLIPSE JUNIOR

Ex n WELL-GLASS

ATEX CATEGORY 3 ZONE 2 APPLICATIONS

The Eclipse Junior is a well-glass luminaire suitable for high pressure discharge lamps up to 70W and GLS lamps up to 150W.

It has a lightweight corrosion resistant aluminium body and heat resistant glass cover with stainless steel fasteners. It is tested to IP66 and is suitable for use in harsh environments. The protection is Ex nAR incorporating a restricted breathing lamp chamber and an unrestricted control gear and terminal housing. This removes the need for special cable or glands. The lamp-glass has a screwed thread for quick access. The main enclosure containing the control gear hinges on the mounting part but is not fastened to it. This allows ready access to the terminals and the easy removal of the control gear and lamp enclosure if maintenance is needed. There is a range of wall, surface and stanchion mountings integrated into the designs. This small well-glass offers a compact lighting solution for use where all round lighting is needed in positions having limited space and access.

Standard Specification

Type of Protection:	**Ex nA nR (Non-sparking Restricted Breathing)**
ATEX Classification:	**Group II Category 3 G**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**EN 50021**
Certificate:	**Type Examination Certificate BAS98ATEX3197X**
Coding:	**Ⓔx II 3 G EEx nAR II (refer to table for T class and Ambient)**
Enclosure:	**Painted aluminium body with glass lens. Silicone rubber gasket. Stainless steel fasteners**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Ceiling mounting**
Control Gear:	**Internal copper/iron ballast with ignitor and PFC correction capacitor**
Relamping:	**Access via sealed lamp chamber**
Lampholder:	**E27 or G24q**
Lamp Type:	**HPS, Metal Halide, Mercury Vapour, CF or GLS**
Burning Position:	**Up to 25º off vertical**
Ingress Protection:	**IP66 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz - 70 & 80W (HID)** **220, 230, 240V 50Hz - 50, 100 & 125W (HID)** **240V 50Hz - CF, 250Vmax. 150W GLS**

Features

Compact size and low weight

Easy access for wiring and control gear

Corrosion resistant

Unrestricted breathing gear enclosure removes the need for special glands or cable

Excellent light distribution

Suitable for a wide range of ambient temperatures from -45˚C to +55˚C, dependant on lamp type and wattage

Cepel Approved

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

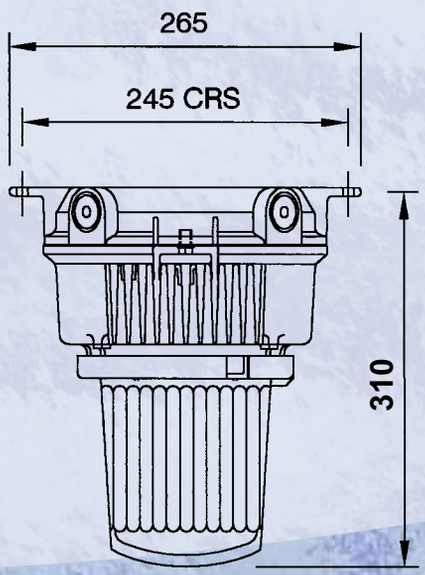
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient °C	Weight
ECJN/050/HS	50W	HPS	E27	T4	50	5.5kg
ECJN/070/MS	70W	HPS/Metal Halide	E27	T4	50	6.0kg
ECJN/100/HS	100W	HPS	E27	T3	45	7.5kg
ECJN/080/MV	80W	MBFU	E27	T3	50	6.0kg
ECJN/125/MV	125W	MBFU	E27	T3	40	6.5kg
ECJN/113/CF	1x13W	CFL	G24q	T4	50	5.0kg
ECJN/118/CF	1x18W	CFL	G24q	T4	50	5.0kg
ECJN/126/CF	1x26W	CFL	G24q	T4	50	5.0kg
ECJN/150/GL	150W	GLS	E27	T4	55	5.0kg

Options - Suffix to Catalogue No.

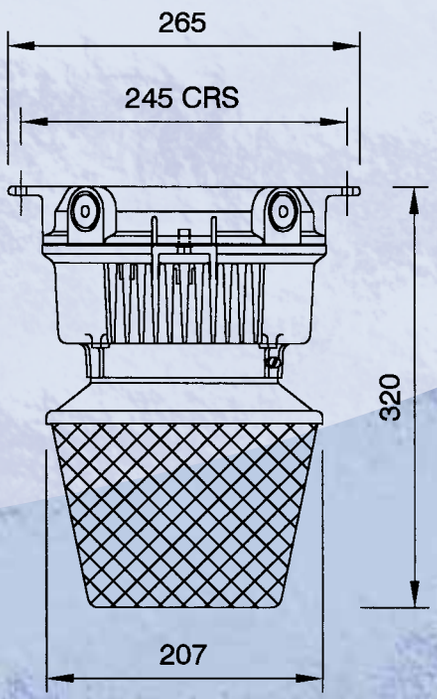
/___	Specific voltage (220,230,254)
/60	60Hz
/R	Prismatic glass refractor
/W	Wall mounted version
/ST	Stanchion mounted version
/P	Pendant mounted version
/NC	No capacitors
/D	Zone 22 Dust applications

Applications

- Zone 2 hazardous areas
- Low temperature environments
- Harsh and low temperature environments
- Medium low bay lighting
- Gantry and walkway lighting
- Road tanker loading facilities
- Stairwells
- Meter reading areas
- Sewage treatment plants
- Distilleries



Glass Globe



Glass Refractor

Standard ceiling mounting arrangement shown

Accessories (Should be ordered separately)	**Catalogue Order Code**
Cast Guard	**CECJ7-0007**
Dome Reflector	**HECL0-0001**
30° Angled Reflector	**HECL0-0002**
Guard for Glass Refractor	**HECJ4-0001**

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CEPEL
OCP-0007

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA

Organismo de Certificação Credenciado pelo INMETRO

INMETRO

Certificado de Conformidade

Certificate of Conformity / Certificado de Conformidad

Número: *Number / Número*	Emissão: *Issue / Expedición*	Validade: *Validity / Validez*
CEPEL-EX-072/2001X	**05/12/2001**	**04/12/2003**

Produto: *Product / Producto* **LUMINÁRIA**

Tipo / Modelo: *Type - Model / Tipo - Modelo* **ECLIPSE JUNIOR**

Número de Série: *Serial Number / Número de Serie* ---

Número do Lote: *Batch Number / Número del Lote* ---

Solicitante /Endereço: *Requester - Address / Solicitante - Dirección*
CHALMIT LIGHTING
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Fabricante / Endereço: *Manufacturer - Address / Fabricante - Dirección*
CHALMIT LIGHTING
388 Hillington Road
Glasgow G52 4BL
Scotland U.K.

Norma(s) Aplicável(eis): *Suitable Standard(s) / Norma(s) de Aplicación*
Equipamentos elétricos para atmosferas explosivas
NBR 9518/97 – Requisitos gerais;
IEC 60079-15/01 – Electrical apparatus with type of protection "n".

Laboratório de Ensaio: *Testing Laboratory / Laboratório de Ensayo*
CEPEL - Centro de Pesquisas de Energia Elétrica
Laboratório de Acionamentos e Segurança em Equipamentos Eletroeletrônicos - AP4

Número do Relatório de Ensaio: *Test Report Number / Número del Informe de Ensayo*
UNIAP-EX-1064/2001X
MARCAÇÃO: BR-Ex nAR II T* (vide Anexo) IP66

Condições de Emissão: *Conditions of Issue / Condiciones de Expedición*
Com base na Portaria INMETRO Nº 176/2000, de 17/07/2000. Processo aprovado conforme ítem 2.13 da 55ª Reunião Ordinária da Comissão de Certificação de Equipamentos Elétricos para Atmosferas Explosivas - CCEX, em 29/11/2001.

1ª via - CLIENTE

Observações: *Remarks / Observaciones*
1) Este Certificado só é válido acompanhado do seu Anexo.

Henrique Búrd

SIGNATÁRIO AUTORIZADO
Authorized Signatory / Persona Autorizada

Escritório de Certificação de Produtos e Serviços - ECPS - Av. Olinda s/nº - Adrianópolis - CEP 26053-121 - Nova Iguaçu - RJ - Brasil
End. Postal CEPEL - Cx. Postal 68007 - CEP 21944-970 - Rio de Janeiro - RJ - Brasil - Tel. (55XX21) 2667-2111 / 2667-8631 - Fax (55XX21) 2667-8630
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

INMETRO CEPEL OCP-0007

CEPEL

ANEXO

AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-072/2001X

As **LUMINÁRIAS MODELO ECLIPSE JUNIOR** fabricadas pela **CHALMIT LIGHTING** são qualificadas em termos de suas especificações, análises e ensaios a que foram submetidas conforme documentação descritiva.

Especificações:

Luminária modelo ECLIPSE JUNIOR para lâmpadas tipo incandescente até 150 W ou lâmpadas tipo fluorescente compacta, vapor de sódio, vapor de mercúrio e halógena até 125 W, com tensões de 110 a 120 V e 200 a 254 V, 50/60 Hz ou 200-254 V cc. A luminária pode ser adaptada a tensão de alimentação através de derivações no reator, quando ele é usado. A Tabela 1 indica as faixas de funcionamento da luminária.

Tabela 1 – Potência, Tipo de Lâmpada, Base, Classe de Temperatura e Faixa de Temperatura Ambiente para Luminárias ECLIPSE JUNIOR

				Tamb. max. (°C)		Classe de Temperatura	
Potência (W)	Lâmpada	Base	Tamb. min. (°C)	Com cfp	Sem cfp	Com cfp	Sem cfp
50	Sódio	E27	-45	50	55	T3	T3
70	Sódio, Halógena	E27	-45	50	55	T3	T3
80	Mercúrio	E27	-45	50	55	T3	T3
100	Sódio, Halógena	E27	-45	45	50	T3	T3
125	Mercúrio	E27	-45	40	55	T3	T3
100	Incandescente	E27	-45	-	55	-	T4
150	Incandescente	E27	-45	-	55	-	T4
13	Compacta	G24q	-20	50	-	T4	-
18	Compacta	G24q	-20	50	-	T4	-
26	Compacta	G24q	-20	50	-	T4	-

cfp = capacitor de correção de fator de potência

A luminária é composta por difusor (alojamento da lâmpada), corpo e tampa (contendo as orelhas de montagem e o bloco de terminais principal). O corpo (contendo, quando necessário, a placa com reator, ignitor e capacitor), fabricado em alumínio fundido, é preso a tampa por um parafuso de fixação. O corpo tem uma junta roscada que permite o uso de diferentes modelos de difusores. A vedação entre corpo e tampa é garantida por uma gaxeta de silicone e a pressão de contato é mantida por um parafuso de fixação. A luminária é projetada para ser montada utilizando-se as duas orelhas de fixação da tampa, mas podem ser montadas em poste utilizando-se corpo e entrada de cabos alternativos. Nesse caso, durante a instalação, deve ser assegurada a manutenção do grau de proteção do conjunto.

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA *(EMPRESA DO SISTEMA ELETROBRÁS)*
Sede: Av. Um s/n° - Ilha da Cidade Universitária - Rio de Janeiro - RJ - Brasil - 21941-590 - Tel.: 21 2598-6000- Fax: 21 2260-1340
Unidade Adrianópolis: Av. Olinda s/n° - Adrianópolis - Nova Iguaçu - RJ - Brasil - 26053-121 - Tel.: 21 2667-2111 - Fax: 21 2667-8630
Endereço Postal: CEPEL - Caixa Postal 68007 - 21944-970 - Rio de Janeiro - RJ - Brasil

ANEXO AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-072/2001X

A luminária pode ser instalada com os seguintes tipos de difusores: refrator simétrico, globo ou refletor abrigado. A câmara do difusor (alojamento da lâmpada) forma um invólucro de respiração restrita. A câmara formada por corpo e tampa não é de respiração restrita. A passagem de cabos entre as câmaras é feita através de uma vedação de silicone apropriada para cada base.

O difusor tipo refrator simétrico tem uma base em alumínio fundido e lente de vidro plano. A lente é fixada na base por uma fita metálica e parafuso e o conjunto é fixado e selado ao corpo por uma gaxeta de fibra cerâmica e borracha de silicone. Essa montagem é apropriada para baixo risco de impacto.

O difusor tipo globo é fabricado em vidro plano com rosca para selagem no corpo.

O difusor tipo refletor abrigado tem um corpo de alumínio preso a uma parte roscada em alumínio fundido.

Há quatro entradas de cabos no corpo, podendo ser de rosca plana ou cônica, e que permitem o uso de cabo com prensa-cabos ou eletroduto até o tamanho M25 ou 1 ½" NPT. As entradas não utilizadas devem ser fechadas.

Os componentes permitidos e suas características são apresentados na Tabela 2.

Tabela 2 – Características dos Componentes Permitidos

Componente	Fabricante	Modelo	Temperatura de trabalho (Tw)	Tensão (V)	Observações
Reator	Transdar, Parry ou Tridonic	150 ou 250 W	140 °C	200-254 V/50 Hz 210-254 V/60 Hz	ΔT = 55 K (400 W) ΔT = 75 K (250/150 W)
Capacitor	DNA ou AEG	AAN, APN ou LBF MKP	85 °C (DNA) 100 °C (AEG)	250 V max (DNA) 280 V max (AEG)	10 – 40 μF (DNA) 10 – 20 μF (AEG)
Ignitor	Parry ou Tridonic	PXA 000/070 /100/400 ou ZRM6 ESB	105 °C	210-254 V (Parry) 210-240 V (Tridonic)	BAS Ex 97Y4283U BAS Ex 94Y4237U
Terminais	Weidmuller	MK6	105 °C	300 V	BAS 99ATEX2123U

Os capacitores e o reator podem ser retirados do projetor e podem ser colocados em uma caixa adicional que deve possuir sua própria certificação.

A luminária pode ser montada com uma inclinação de até 25 graus em relação ao eixo vertical.

Análises e ensaios realizados:

- Análise construtiva (NBR 9518 e IEC 60079-15 itens 4 a 6);
- Ensaio de elevação de temperatura (IEC 60079-15 item 9) – ver a Tabela 1 com as classes de temperatura;
- Resistência térmica ao calor e ao frio (NBR 9518 item 9.7.1) – 336 h a 95 °C e 90% de UR, 336 h a 100 °C e 24 h a – 65/70 °C;
- Ensaio de impacto (IEC 60079-15 item 11) – 4 J de impacto no corpo e 2 J no vidro;

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Unidade Adrianópolis: Av. Olinda s/n° - Adrianópolis - Nova Iguaçu - RJ - Brasil - 26053-121 - Tel.: 21 2667-2111 - Fax: 21 2667-8630
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INMETRO CEPEL OCP-0007

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ANEXO AO CERTIFICADO DE CONFORMIDADE CEPEL-EX-072/2001X

- Ensaio de respiração restrita (IEC 60079-15 item 26.8.2) – ensaiado com uma sub-pressão de 30 mbar (3 kPa), com um tempo de decaimento para uma sub-pressão de 15 mbar (1,5 kPa) maior do que 3 minutos;
- Ensaio de tensão aplicada no conjunto (IEC 60079-15 item 14) – 1600 V durante 1 minuto;
- Ensaio de grau de proteção (NBR 6146 itens 8 e 9) – ensaiado para o grau de proteção IP66.

Documentação descritiva do equipamento:
Desenhos construtivos, características de componentes e materiais são relacionados na "Lista de Documentos" apresentada no Relatório de Ensaio UNIAP-EX-1064/2001X.

Marcação:
Na marcação das **LUMINÁRIAS MODELO ECLIPSE JUNIOR** deverão constar as seguintes informações:

BR-Ex nAR II T* (conforme Tabela 1)
Tamb = - a *** °C (conforme Tabela 1))**
IP66

Observações:
1. A luminária e a tampa da caixa adicional (quando utilizada) devem ter a seguinte advertência: DESENERGIZAR E AGUARDAR 5 MINUTOS ANTES DE ABRIR.

2. O relatório é terminado pela letra "X" para indicar que:
   - os difusores da luminária formam um invólucro de respiração restrita quando encaixados de acordo com as instruções do fabricante. Deve ser aplicada graxa de silicone nas roscas do difusor que deve ser apertado manualmente e a seguir apertado por mais 36°.
   - o parafuso de travamento deve ser apertado após o difusor ter sido instalado.
   - o refrator simétrico é apropriado somente para áreas de baixo risco de impacto.
   - deve-se assegurar que o globo está roscado firmemente no lugar.

3. Luminárias permanentemente ligadas devem ser desligadas ocasionalmente para que lâmpadas velhas queimem, evitando o efeito retificador e conseqüente sobre-temperatura do reator.

4. A montagem pendente apresentada no desenho DM 250 não faz parte do escopo da certificação.

5. Este certificado é válido apenas para os equipamentos de modelo, tipo e série idênticos ao protótipo efetivamente ensaiado. Qualquer modificação no projeto, bem como a utilização de componentes ou materiais diferentes daqueles definidos pela documentação descritiva do equipamento, sem a prévia autorização do CEPEL, invalidará este certificado.

6. É responsabilidade da **CHALMIT LIGHTING** assegurar que os equipamentos fornecidos ao mercado nacional estejam de acordo com as especificações e documentação descritiva do protótipo ensaiado e que tenham sido submetidos com sucesso aos ensaios de rotina de tensão aplicada de 1600 V durante 3 segundos e decaimento de sub-pressão de 30 mbar (3 kPa) para 27 mbar (2,7 kPa) com tempo superior a 27 segundos.

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7. É responsabilidade do usuário assegurar que o produto será instalado em atendimento às normas pertinentes para instalações elétricas em atmosferas potencialmente explosivas.

8. A marcação deve ser executada conforme a norma NBR 9518 e a Regra Específica de Certificação de Equipamentos Elétricos para Atmosferas Potencialmente Explosivas (NIE-DINQP 096) e fixada na superfície externa do equipamento em local visível. Esta marcação deve ser legível e durável, levando-se em conta possível corrosão química.

Nova Iguaçu, 10 de dezembro de 2001.

Carlos Azevedo Sanguedo
Laboratório de Acionamento e Segurança em
Equipamentos Eletro-Eletrônicos

Henrique Burd
Escritório de Certificação de
Produtos e Serviços

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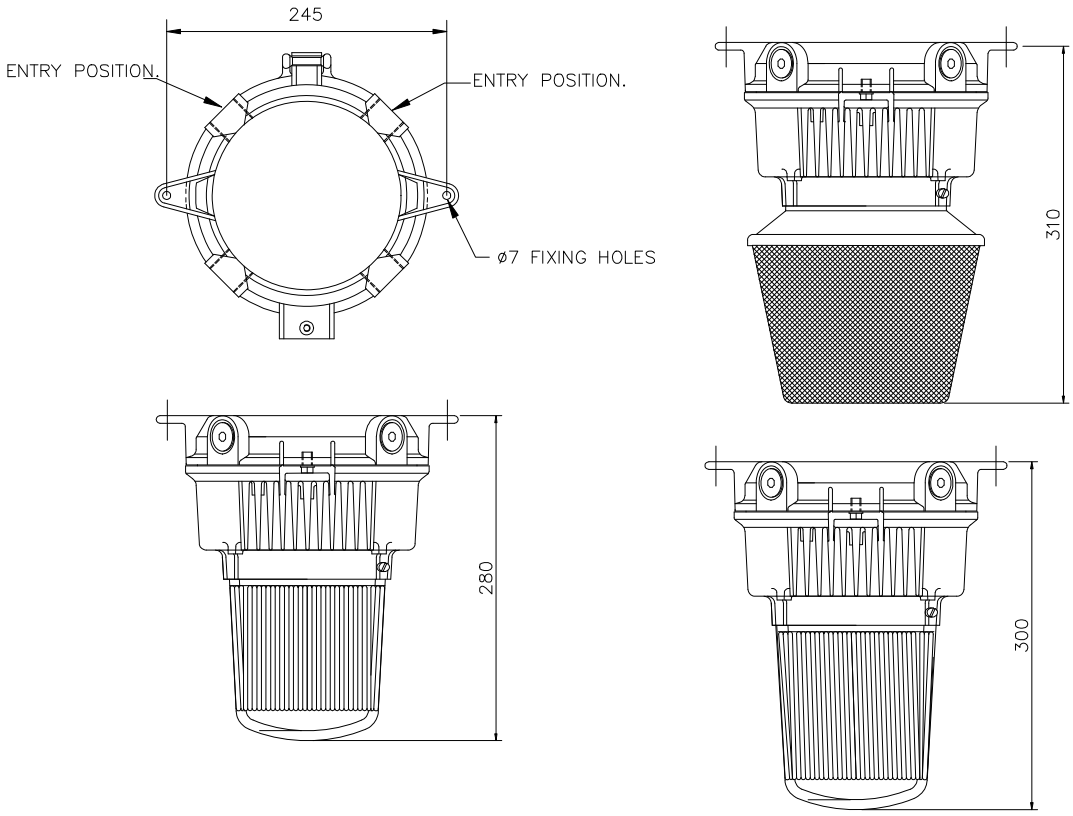
Issue | 00

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Eclipse Junior Wellglass

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



CE

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0.0 Specification

Type Of Protection	Ex nA R (non-sparking) (restricted breathing)
Standard	EN 50021
ATEX Equipment Classification	Group II Category 3G
Area Classification	Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Certificate	Type Examination BAS98ATEX3197X
Equipment Coding	⟨Ex⟩ II 3G Ex nA R II [T3 or T4]
Ingress Protection	IP66 to BS EN 60529
CE Mark	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

CE

1.0 Introduction - Eclipse Junior Wellglass

1.1 General

The type of protection is Ex nA R using a restricted breathing lamp enclosure and a non-sparking gear chamber.

Note : *Minimum/Maximum ambient and surface temperature ratings are as outlined in TABLE 0.*

1.2 Application

The luminaire is designed to be safe in normal operation.
The luminaire should not be used in conditions where there are environmental, vibration or shock conditions above the normal for fixed installations.
The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states.
The body material is made from aluminium alloy *BS1490 LM20.*
The luminaire is suitable for applications where Category 3 apparatus is used. The application is for ignitable gas atmospheres. The *ATEX* type examination does not address suitability for dusts or portable applications.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate.
In the UK the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with *the 'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

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3.2 Tools

A flat blade screwdriver to open the end cover.
Strap wrench to tighten/loosen the diffuser.
3mm and 5mm flat blade screwdriver.
Pliers, knife, wire and strippers/cutters.
A spanner suitable for fitting cable glands.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering, a maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply voltage and purchase or adjust accordingly. ***Care must be taken if connecting to the nominal 230V UK public supply*.** In some cases, the luminaires have multi-tapped control gear that can be set to a range of 50 and 60Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected to obtain the best lamp performance. Care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is relocated. If in doubt, tappings should be set on the high side. 10V max. drop is desirable for HPS and required for MBI. All circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke, so tap selection is obvious. Where supply conditions include significant harmonics the PFC can be omitted.
Where shore or construction site supplies are used, which are different to the service location supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The discharge lamps used are of a standardised type. There is no preference between make or colour. The Eclipse Junior uses **tubular** HPS and HPS compatible MBI lamps, elliptical MBF lamps, GLS and compact fluorescent lamps. Note that the use of diffuse elliptical lamps will alter the photometric performance of the luminaries. Care must be taken to fit the correct new and replacement lamps in order to preserve the certification conditions and obtain the designed photometric performance. The lamp type is shown on the rating plate. ***Lamps should be replaced shortly after they do not light.*** One indication of the end of life for HPS lamps is 'cycling', where the lamp goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects to control gear (*See Section 3.9.1*).
The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or from Chalmit.

Important : *HPS and MBI circuits should not be energised without a lamp fitted. HPS and MBI lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The luminaire is designed to operate at up to an angle of 25° from the vertically down position. The wall mounting or ceiling mounting arrangements should be secured with lock washers or self-locking nuts and bolts. The pole mounting version must be mounted so as to maintain the IP rating.

3.5.1 Weights and Windages

Note : *Weights and Windages for the various types are outlined in Table 3.*

3.5.2 Fitting the Diffuser

Care must be taken when fitting the diffuser, due to the lamp enclosure being classified as restricted breathing. The following steps must be taken :

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1 Apply silicone grease to the threads of the diffuser.
2 Rotate the diffuser in the threaded collar until the diffuser seats onto the gasket.
3 Rotate the diffuser up to a further 36^{O}, it may be necessary to use a strap wrench to perform this task.
4 Secure the diffuser using the grub screw.

3.6 Cabling and Cable Glands

3.6.1 Cables

The cable entry temperatures are given as the rise over the maximum rated ambient temperature. This allows the user to adjust the cable specification for actual site maximum temperature. The standard conductor section is 6mm² max. The pendant and pole mounts are not suitable for looping. Standard 300/500V cable is suitable.

3.6.2 Cable Glands

Cable glands for entry into Ex enclosures when fitted with any gland to body sealing method and supply cable, must reliably maintain the IP rating of the enclosure with a minimum value of IP54. Nylon washers are provided with the unit to seal between the gland body and the luminaire. The cable glands must be suitable for Zone 2 applications, or the appropriate European Standard for industrial cable entries and cable entry devices. Plastic cable glands must be Ex certified. Where brass cable glands are used in a corrosive environment, cadmium or nickel plating should be used. Sealing plugs for unused entries should be similarly rated and fitted. Entries suitable for M20 cable glands are standard. Entries suitable for M25, 3/4" or 1" NPT are available to special order.

3.7 Cabling and Fitting Lamps

Before fitting lamps or opening the luminaire, the luminaire must be de-energised and isolated from the supply.
Access for cabling is by removing the mounting adapter. The end cover is released by undoing the screw using a flat blade screwdriver. Reselect the voltage tappings if necessary. Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1mm bare conductor outside the terminal is a maximum. Any unused terminal should be fully tightened. When the cabling is complete, make a final tightness and connections check. The cover is replaced and the screws tightened down.
The lamp is replaced by removing the diffuser, pay close attention to *Section 3.5.1* when replacing the diffuser. Lamps must be of the correct type and firmly screwed into place.

3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN60079-17* and on our experience :

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting.
3 Check the cable gland for tightness and nip up if necessary.
4 Clean the lampglass.
5 When relamping, check that the diffuser gasket has not softened or become excessively deformed, if in doubt replace (*See Section 4.0*).

3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
In most instances, the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first over-heated; the signs of this

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are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating.
Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS and MBI, the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an attempt to start effect in the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

3.9.1 Thermal Protector

Thermal protectors may be included in the ballast. If the lamp goes on and off over a timescale of several minutes, this could be the thermal protector operating. The causes are defective lamps/diode effects, gross over voltage or the choke beginning to fail and this should be investigated directly (*See Section 3.4*).

4.0 Overhaul

The unit is largely made of materials that are very corrosion resistant. This allows the unit to be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 1.0mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable. All the spares required are available. Please state the model number, lamp and optical details. The seal at the mounting adapter is held within a groove by silicone R.T.V. The diffuser gasket is held in place by silicone R.T.V. If the gaskets have deteriorated by softening or permanent set, new gaskets should be fitted, which can be obtained from Chalmit. To fit the mounting adapter gasket, the old gasket should be removed and remaining adhesive scraped off. The gasket is fixed in place with silicone R.T.V. to the body. The end cover is then tightened down.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors can be up to 25 x the rated capacitor current and lasts 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The inrush current can be calculated where circuit conditions are known. The nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other supply volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are outlined in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury from fragmentation. This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

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0.0 Tables 0/1/2

Table 0 Minimum/Maximum Ambient and Temperature Ratings Refer to Section : 1.1

Wattage	Lamp	Lamp Cap	Min Ambient Temp °C	Max Ambient Temp °C	Max Ambient Temp without PFC	T Rating	Cable Temp Rise °C
50W	SON/T	E27	-45	50	55	T4	40
70W	SON/T, MBI/T	E27	-45	50	55	T4	40
80W	MBF	E27	-45	50	55	T3	40
100W	SON/T, MBI/T	E27	-45	45	50	T3	40
125W	MBF	E27	-45	40	55	T3	40
100W	GLS	E27	-45	55		T4	20
150W	GLS	E27	-45	55		T4	20
13W	CFL-DE	G24q	-20	50		T4	20
18W	CFL-DE	G24q	-20	50		T4	20
26W	CFL-DE	G24q	-20	50		T4	20

Table 1 Starting and Running Currents Refer to Section : 5.0

Lamp	Start A	Run A	PFC µF
50W HPS	0.35	0.28	10
70W HPS	0.55	0.4	10
70W MBI	0.55	0.4	10
80W MBF	0.5	0.43	8
100W HPS	1	0.56	10
100W MBI	1	0.56	10
125W MBF	1	0.66	10

Note : *Minimum power factor correction: 0.85*

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Table 2 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	**Number of Lamps**					
	1	**2**	**3**	**4**	**5**	**6**
50W	4A	4A	4A	6A	6A	10A
70W	4A	4A	4A	6A	6A	10A
80W	4A	4A	4A	4A	6A	10A
100W	4A	4A	6A	10A	10A	10A
125W	4A	6A	6A	10A	10A	10A

Table 3 Weights and Windages Refer to Section : 3.5.1

	Type			
	SON/T, MBI/T	**MBF**	**GLS**	**CFL-DE**
Weight	6.4kg	5.7kg	4.8kg	5.5kg
Windage	0.15m^2	0.15m^2	0.15m^2	0.15m^2

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

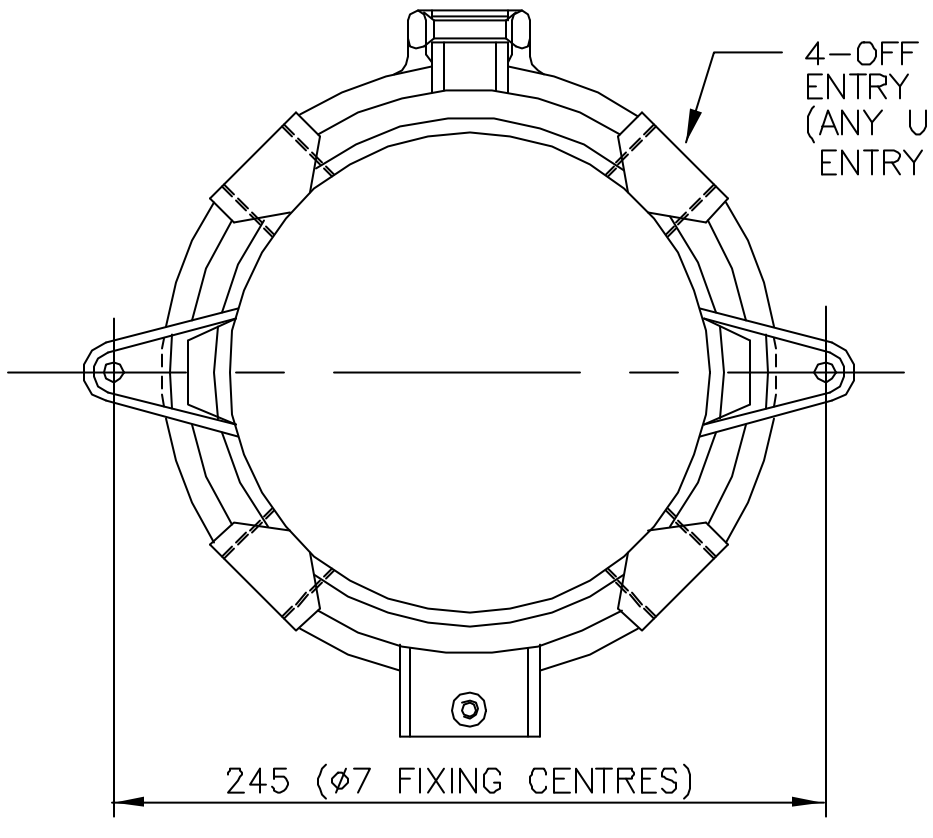
1	2	3	4	5	6	7	8

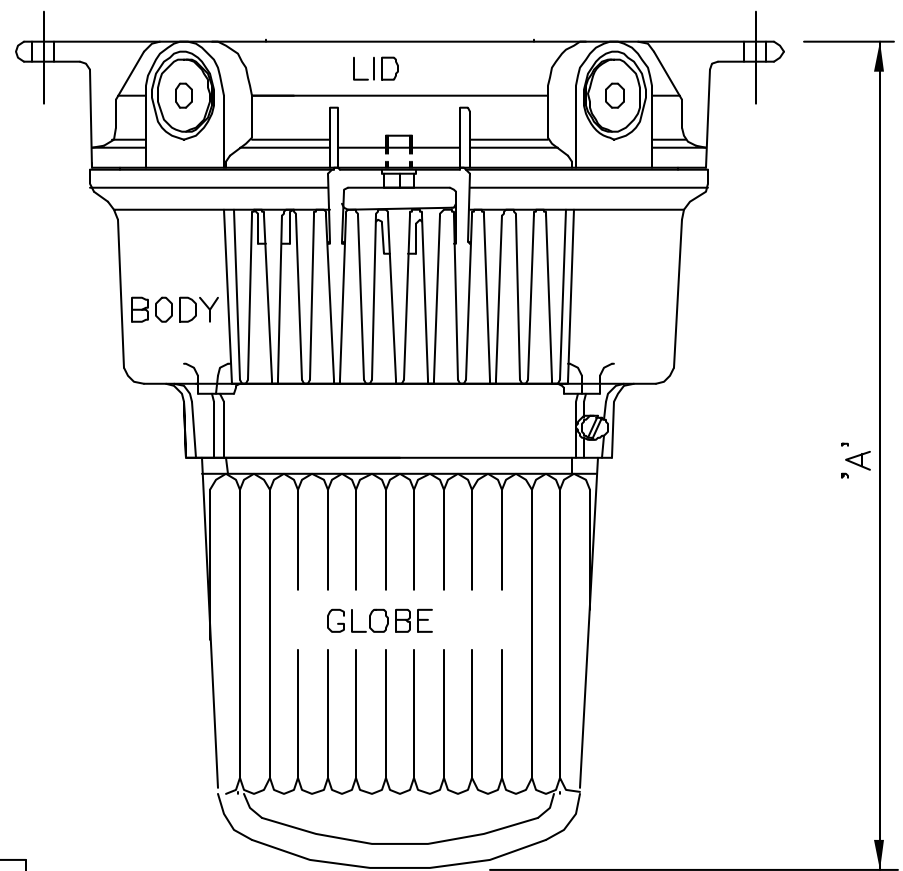
DRAWING NUMBER/SHEET NUMBER
F1064

REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION





ECLIPSE JUNIOR STANDARD LUMINAIRE
C/W GLASS GLOBE

WATTAGE	LAMP	AMBIENT TEMP(–45°C TO)		T RATING		VOLTAGE	DIM 'A'
		WITH PFC	W/O PFC	WITH PFC	W/O PFC		
50W	SON	50°C	55°C	T4	T3	200–254V 50/60Hz	290
70W	SON / MBI	50°C	55°C	T4	T3		310
80W	MBFU	50°C	55°C	T3	T3		
100W	SON / MBI	45°C	50°C	T3	T3		
125W	MBFU	40°C	55°C	T3	T3		330

WATTAGE	LAMP	AMBIENT TEMP (–45°C TO)	T RATING	VOLTAGE	DIM 'A'
100W / 150W	GLS	55°C	T4	110–120V 200–254V 50/60Hz	310

WATTAGE	LAMP	AMBIENT TEMP (–20°C TO)	T RATING	VOLTAGE	DIM 'A'
1x13W / 1x18W / 1x26W	CFL	50°C	T4	110–120V 200–254V 50/60Hz	310

TYPE OF PROTECTION....Ex nA R (NON SPARKING) (RESTRICTED BREATHING ENCLOSURE)
AREA CLASSIFICATION.....ZONE 2 AREAS TO BS EN 60079–14
STANDARD.....BS EN 50021
CERTIFICATE.....ATEX TYPE EXAMINATION EECS BAS98ATEX3197X
CODE Ex II 3G Ex nA R II T(SEE TABLE) Tamb(SEE TABLE)
INGRESS PROTECTION....IP65 TO BS EN60529 (IEC 529)

NOTE

DRAWING SHOWN ON LEFT IS FOR A STANDARD ECLIPSE JUNIOR WELLGLASS WITH MOUNTING THRO' TWO ø7 HOLES AT 245 CRS. FOR DETAILS OF ALTERNATIVE MOUNTING ARRANGEMENTS SEE F568

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	10/06/02

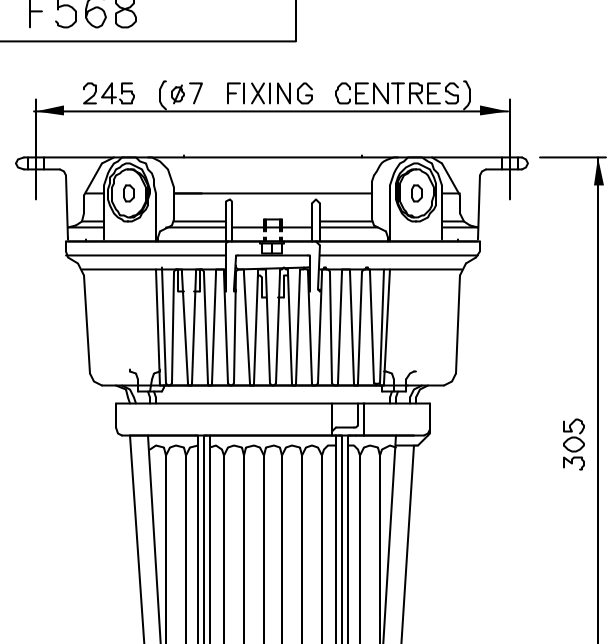
REF. DRGS.–

MATERIAL	ALUMINIUM
FINISH	N/A
DIMS. IN	MM
TOLERANCE	N.T.S
SURFACE ROUGHNESS	
SCALE	–

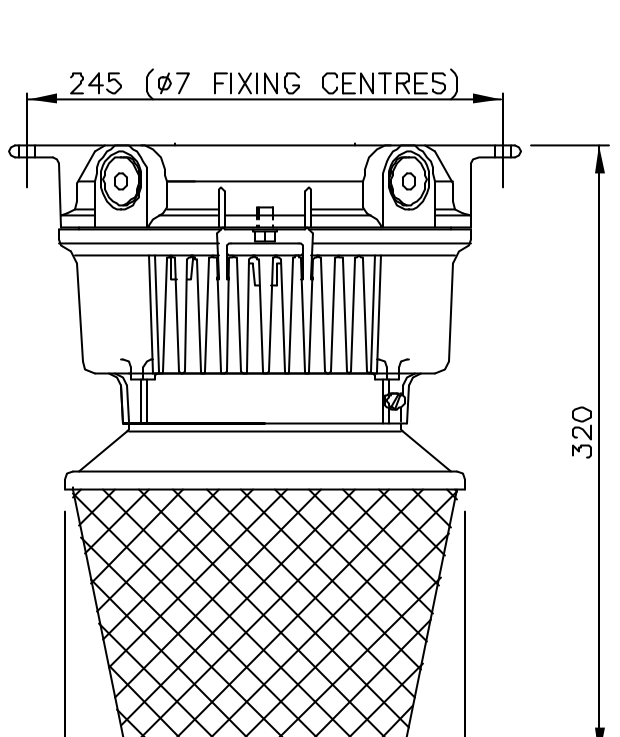
TITLE
Eclipse Ex n
Well–Glass

DRAWING NUMBER/SHEET NUMBER
F1064 1 OF 1

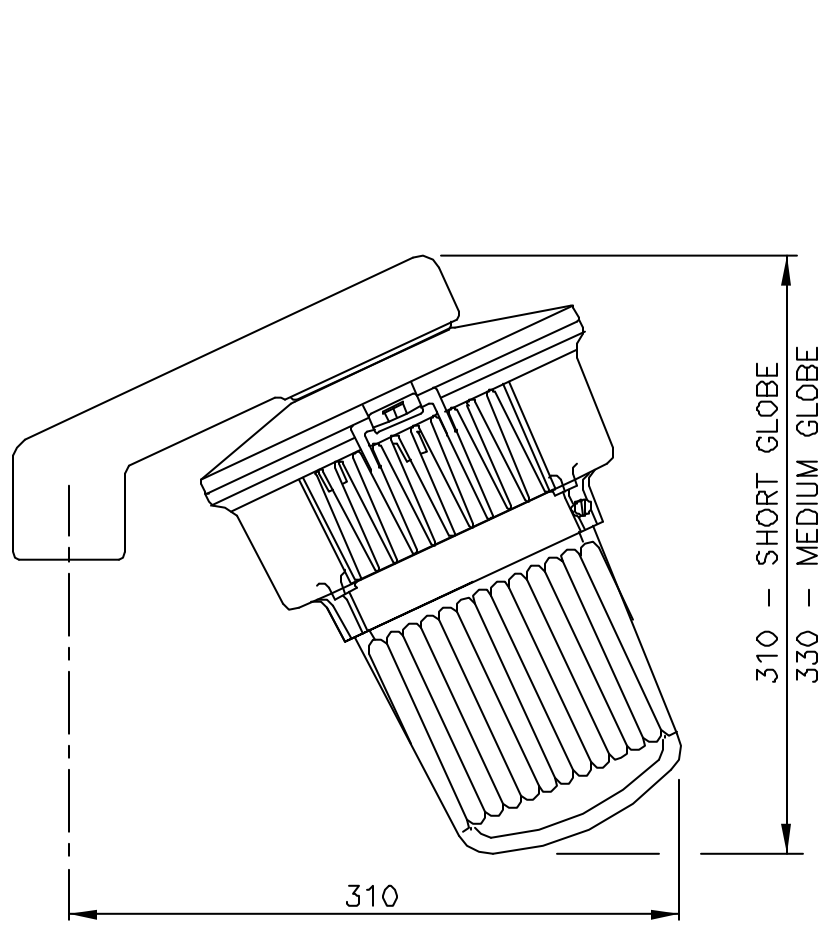
DRAWING NUMBER/SHEET NUMBER
F568



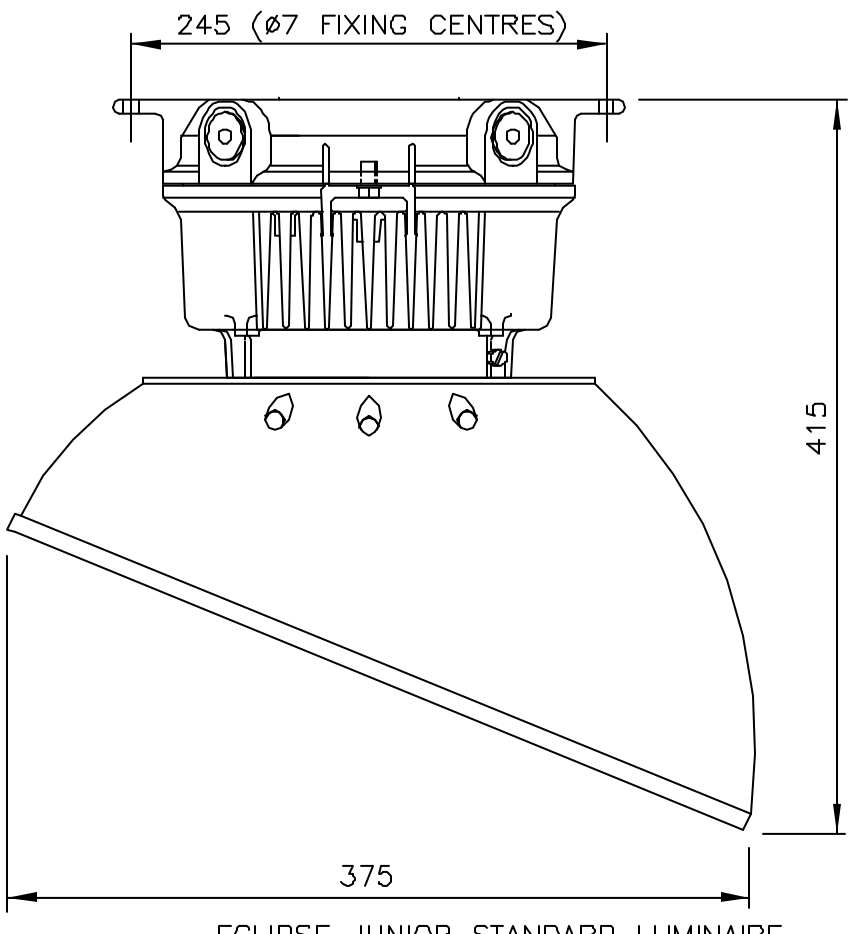
ECLIPSE JUNIOR STANDARD LUMINAIRE
C/W SHORT GLASS GLOBE & CAST GUARD



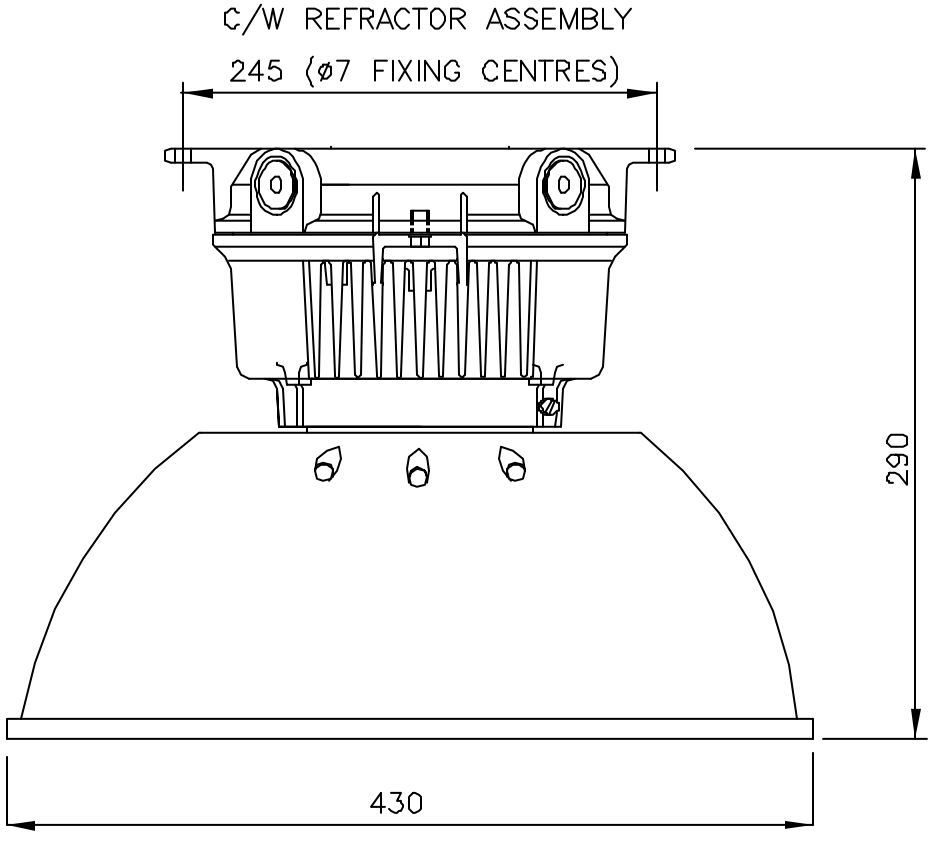
ECLIPSE JUNIOR STANDARD LUMINAIRE
C/W REFRACTOR ASSEMBLY



STANCHION MOUNTING ARRANGEMENT
TO SUIT POLE THREADED 1¼" NPT



ECLIPSE JUNIOR STANDARD LUMINAIRE
C/W 30° ANGLED REFLECTOR



ECLIPSE JUNIOR STANDARD LUMINAIRE
C/W FULL REFLECTOR

DRAWN	RJK
CHECKED	RJK
APPROVED	RJK
DATE	19-11-99

REF. DRGS:-

STANCHION MOUNTING WAS 1-1/2" NPT	01	21-6-00
CHANGE	ISSUE	DATE

MATERIAL CAST ALUMINIUM (BODY & LID)	TOLERANCE
FINISH PAINTED GREY (BODY & LID)	SURFACE ROUGHNESS
DIM:- mm	SCALE:-

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel: 0141-882 5555 Fax: 0141-883 3704

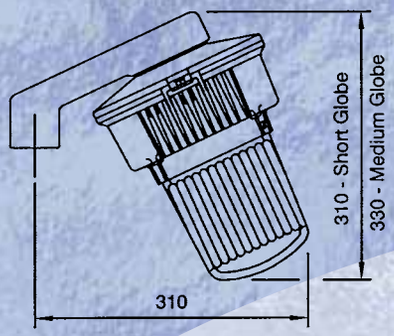
TITLE ALTERNATIVE MOUNTING ARRANGEMENTS FOR Ex nAR ECLIPSE JUNIOR WELLGLASS LUMINAIRE

DRAWING NUMBER/SHEET NUMBER
F568

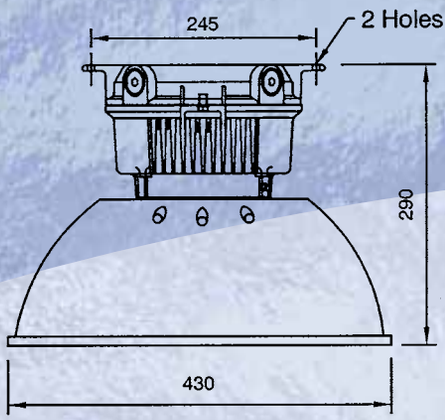
ECLIPSE RANGE

MOUNTING VARIATIONS and ACCESSORIES

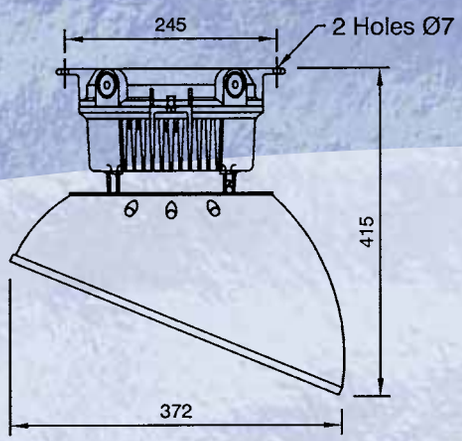
JUNIOR



Stanchion mounting arrangement
To suit pole threaded 1¼ NPT



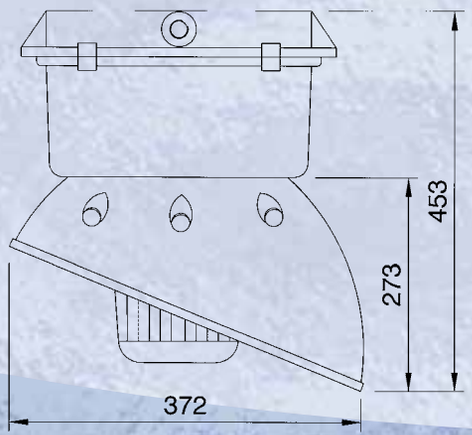
Eclipse Junior c/w glass globe
& full reflector



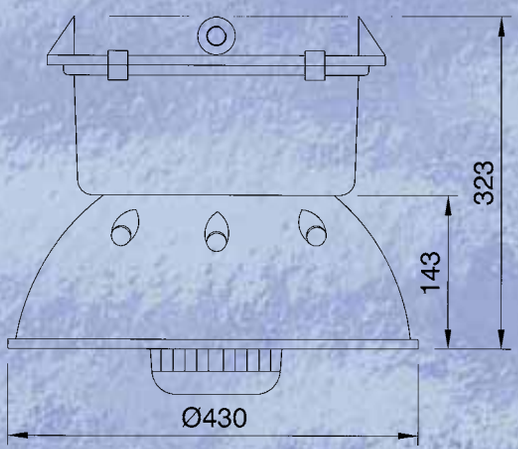
Eclipse Junior c/w glass globe
& 30° angled reflector

Note: M25 pendant version also available

MINI



Eclipse Mini c/w glass globe &
30° angled reflector



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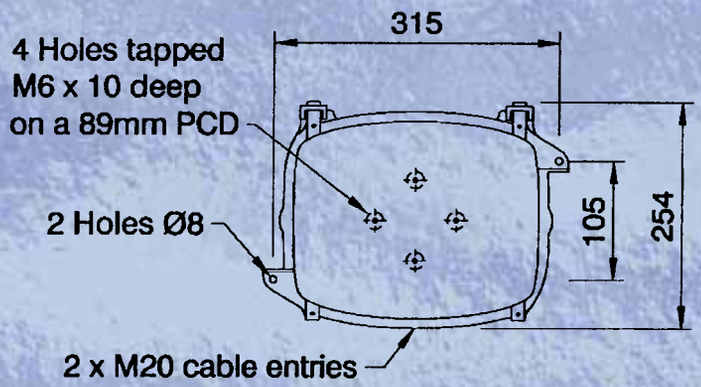
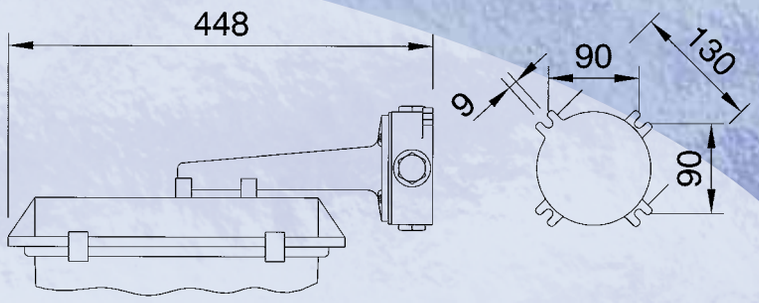
ECLIPSE HIGHBAY AND ECLIPSE MINI

CEILING AND FLUSH MOUNTING

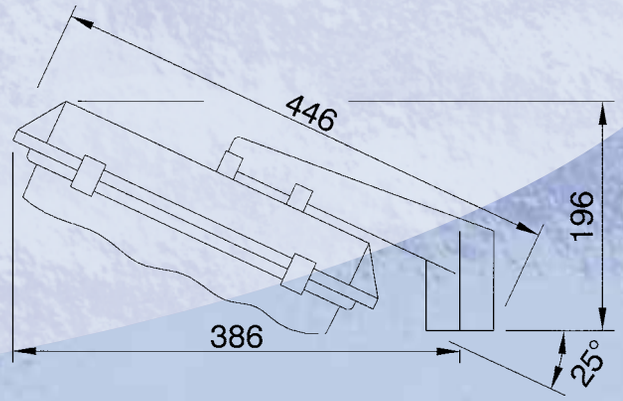


WALL MOUNTING



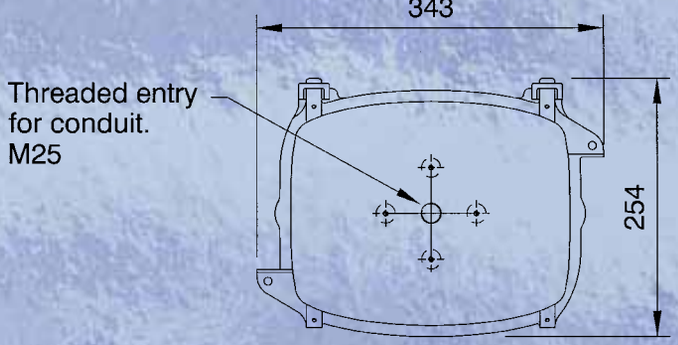
c/w 4 x M20 cable entries

STANCHION MOUNTING



To suit pole dia. 70mm (1 ½ NPT threaded)

PENDANT MOUNTING



PYRAMID

Ex n LOW-MEDIUM BAY

ATEX CATEGORY 3

ZONE 2 and 22 APPLICATIONS

The Pyramid is designed for low and medium bay applications where a high level of illumination and low glare is required. The high technology refractor gives excellent light distribution.

The protection for ignitable gas applications is Ex nR and for use in ignitable dust applications is dust excluding, IP6X.

The zinc coated steel body with polyester painting and the polycarbonate refractor make the Pyramid suitable for moderately aggressive locations where it can be surface mounted suspended or recessed. It is particularly suitable for mounting under canopies, in warehouses and in factories.

Standard Specification

Type of Protection:	**Ex nR (Restricted Breathing) Dust protected enclosure**
ATEX Classification:	**Group II Catagory 3 G D**
Area Classification:	**Zone 2 and Zone 22 areas to EN 60079-10 and En 50281-3 with installation to EN 60079-14 and EN 50281-1-2**
Apparatus Standard:	**EN 50021 EN 50281-1-1**
Certificate:	**Type Examination certificate BASO1ATEX3239**
Coding:	**Ⓔx II 3 G D EEx nR II (refer to table for T rating and ambient)**
Enclosure:	**White polyester painted zinc coated steel body and front cover with silicone gasket and polycarbonate diffuser**
Reflector:	**High purity anodised aluminium**
Entry:	**2 x 20mm diameter holes**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**4 x 10mm clearance holes**
Lampholder:	**E40**
Lamp Type:	**HPS or Metal Halide**
Control Gear:	**Internal copper/iron ballast with ignitor and PFC correction capacitors**
Relamping:	**Access via front cover secured by eight stainless steel screws**
Ingress Protection:	**IP65 to EN 60529**
Electrical Supply:	**220, 230, 240, 254V 50Hz**

Features

Zinc coated steel sheet, polyester painted for durability

Polycarbonate prismatic lens with excellent light distribution

Suspended gear tray for ease of maintenance

Simple and easy access via front cover for lamp replacement and maintenance

Excellent light distribution and uniformity up to 10 metre mounting heights

Low glare

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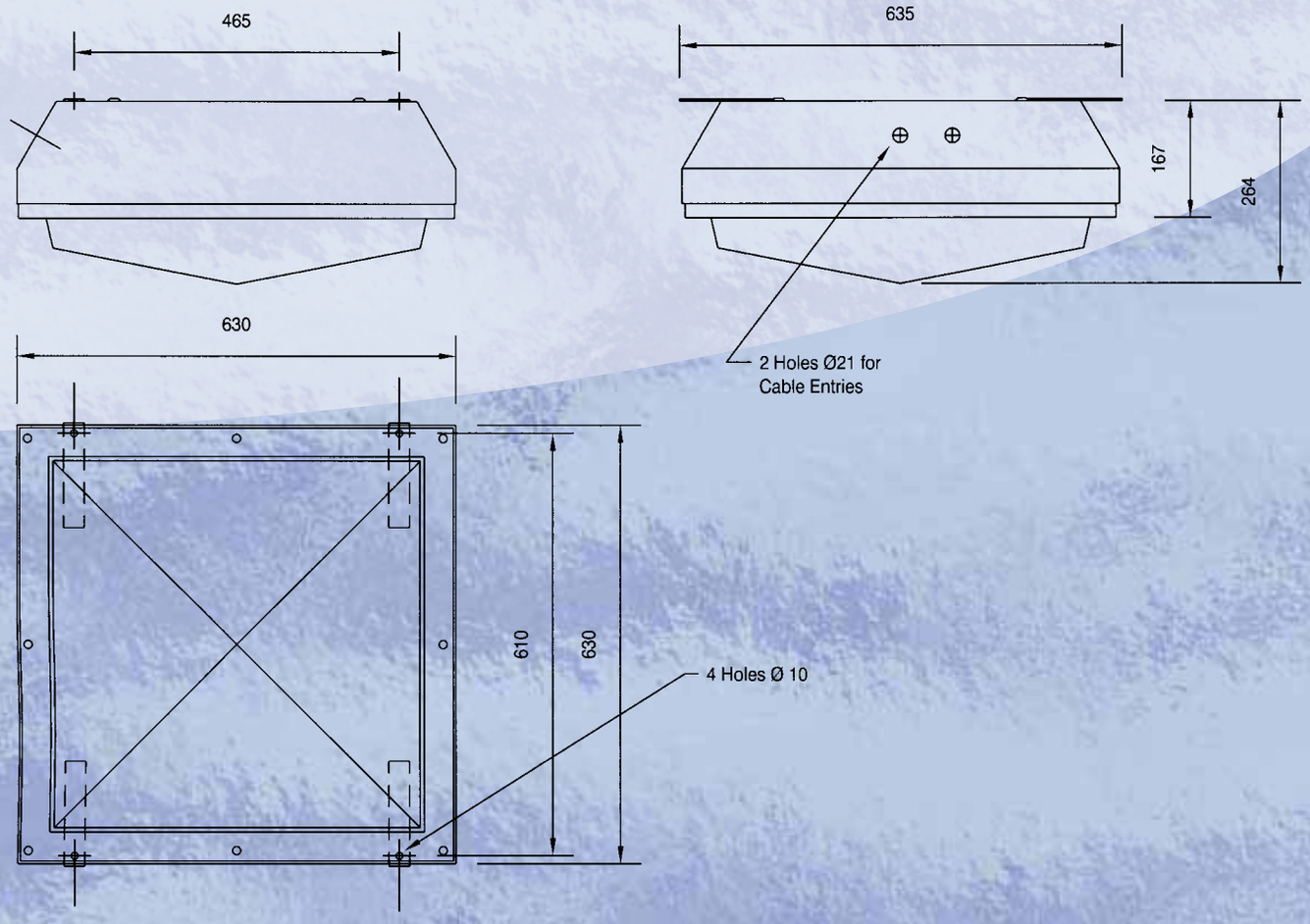
Std Cat No.	Wattage	Lamp	Ambient ºC	T Class (Gas)	T ºC (Dust)	Weight
PYMN/150/HS	150W	HPS	50	T4	130	18.5kg
PYMN/150/HS/RE	150W	HPS	45	T4	130	18.5kg
PYMN/250/MS	250W	HPS/Metal Halide	45	T4	110	19.5kg
PYMN/250/MS/RE	250W	HPS/Metal Halide	35	T4	110	19.5kg
PYMN/400/MS	400W	HPS/Metal Halide	30	T4	115	21.0kg

Options - Suffix to Catalogue No.

/60	60Hz
/25	25mm cable entries
/SUS	Suspension / pendant mounting version (Gas applications only)
/RE	Recessed (150 and 250W only)
/SUS/D	Dust applications only with rear dust shed
TI/	Timed cutout ignitor

Applications

- Zone 2 hazardous areas
- Petrochemical process areas
- Warehouse lighting
- Low-bay lighting
- Production areas
- Food process areas
- Transit sheds
- Distilleries
- Granaries



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1 # TYPE EXAMINATION CERTIFICATE

2 **Equipment Intended for use in Potentially Explosive Atmospheres**
Directive 94/9/EC

3 Type Examination Certificate Number : **BAS01ATEX3239**

4 Equipment: **TYPE PYM RANGE OF RESTRICTED BREATHING LUMINAIRES**

5 Manufacturer: **CHALMIT LIGHTING**

6 Address: **Glasgow, G52 4BL**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

01(C)0590 dated 23 August 2001

9 Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

EN 50021: 1999 **EN 50281-1-1: 1998**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:-

⟨Ex⟩ II 3 GD T(see schedule) **EEx nR II T4** **T_{amb} -20°C to (see schedule)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0068/03/046

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
26 October 2001

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3239**

15 **Description of Equipment**

The Type PYM Restricted Breathing Luminaire is designed for fitting SON/E lamps rated at 150, 250 or 400W or MBI/E lamps rated at 250 or 400W. The voltage range is 200 to 254V 50Hz or 210 to 254V 60Hz.

The enclosure comprises a 0.9mm thick mild steel chassis with a 2mm thick (minimum) injection moulded polycarbonate diffuser and contains a gear tray fitted with the lampholder and control gear. A 9mm thick silicone rubber gasket is adhered to a lip on the chassis using silicone rubber sealant. The diffuser is secured to the chassis by a mild steel frame held in place by steel screws which pass through the frame into nutserts in the chassis. A cover retaining chain and external earth may also be fitted to the enclosure. Mounting brackets are welded to the chassis for fixing purposes.

A hole in the chassis allows access for a suitably glanded supply cable and a neoprene washer is provided for use between the gland and the enclosure. A flat plate may be spot welded to the enclosure to increase wall thickness at the cable entry. The luminaire enclosure is classified restricted breathing with ingress protection of IP65.

The following components are fitted within the luminaire.

Lampholder	Hackney 95222 E40 type, BASEEFA Certificate no. Ex 4153U		
Ignitor or	Tridonic ZRM 6ES Series B, BASEEFA Certificate no. Ex 94Y4537U		
	Parry PXA 000, Assessed in BASEEFA Report no. 96(C)1064		
Transtar Ballast *		T_w (°C)	ΔT (°C)
	LN150	140	55
	LN250	140	70
	LN400	140	70
Capacitor	Optional capacitor must comply with the specification on drawing D1663		

* may include Thermik Type SO or Microtherm T21 thermal protectors

Alternative ballasts may be fitted provided they posses the following:

i) Identical or higher T_w than those specified
ii) Identical or lower ΔT than those specified
iii) Carry the BSI Kite Mark

The supply cable is terminated in an EEx e component approved MK6 terminal block. Supply cables may be looped by using a 6 way terminal block with cross connecting combs inserted to link terminals. A 10A (150/250W) or 13A (400W) ceramic cartridge fuse is fitted inside a clamped fuse carrier. When the fuse is fitted and the clamp is in place the fuse holder is a non-sparking component.

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13 **Schedule**

14 **TYPE EXAMINATION CERTIFICATE N° BAS01ATEX3239**

The following ambient temperatures and temperature classifications apply to the range:

Lamp	Mounting	Ambient temp. -30°C to____°C	T class	Max. external surface temp. (dust) °C
SON/E 150W	Surface	50	T4	130
	Pendant	50	T4	130
	Recessed	45	T4	130
SON/E 250W	Surface	45	T4	110
	Pendant	45	T4	110
	Recessed	35	T4	110
SON/E 400W	Surface	30	T4	115
	Pendant	30	T4	115
MBI/E 250W	Surface	45	T4	110
	Pendant	45	T4	110
	Recessed	35	T4	110
MBI/E 400W	Surface	30	T4	115
	Pendant	30	T4	115

17 **Special Conditions For Safe Use**

None.

18 **Essential Health and Safety Requirements**

All requirements are covered by compliance with EN 50021: 1999 and EN 50281-1-1: 1998.

19 **DRAWINGS**

Number	Issue	Sheet	Date	Description
D1663	1	1	2-5-01	General arrangement
D1663	1	2	2-5-01	Overall dimensions
D1663	1	3	2-5-01	Detail views

BASEEFA List Keywords
2DISCLUM

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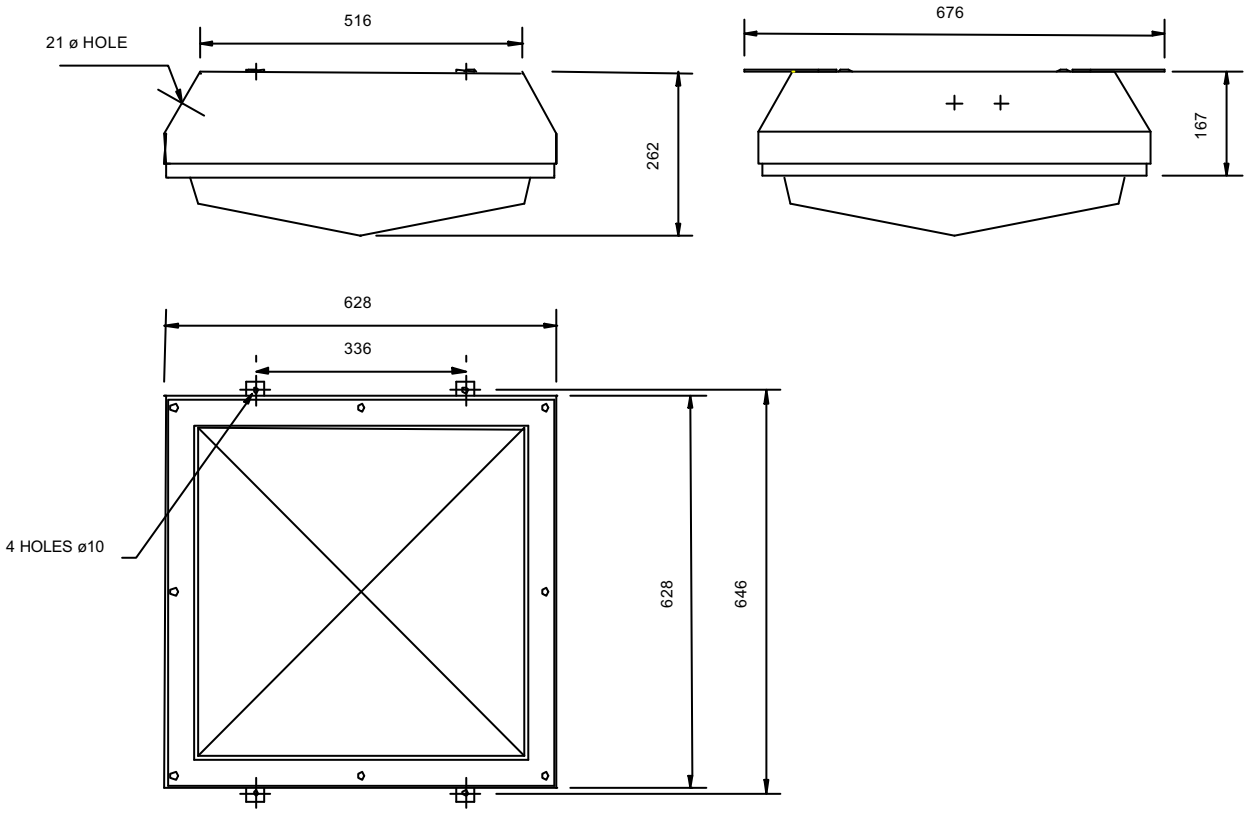
INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Pyramid Luminaire (ATEX)

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



CE

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0.0 Specification

Type of Protection	EEx nR (Restricted Breathing) Dust Protected Enclosure
Protection Standard	En 50021 EN50281-1-1
Area of Application	Zone 2 and 22 areas to BS EN 60079-10 and EN50281-3 With Installation to BS EN 60079-14 and 50281-1-2
ATEX Equipment Classification	Group II Category 3 G Group II Category 3 D
Equipment Coding	II 3G EEx nR II T4 (Refer to Table 0 to Tamb) II 3D T110/115/130°C
Certificate	Type Examination EECS BAS01ATEX3239
Ingress Protection	IP65 to BS EN 60529 : 1992
CE Mark	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].
ATEX Declaration	The Equipment is declared to meet the provisions of the directive by reason of the Type Examination based on the harmonised standards listed above.

1.0 Introduction - Pyramid Luminaire

The type PYM Ex nR Restricted Breathing luminaire is suitable for HID lamps and indoor use where IP65 ingress protection is required. For outdoor use consult our Technical Department.

Note: *The available models and Tamb/Dust ratings are as outlined on Table 0.*

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate.
In the UK the "Health and Safety at Work Act" must be met. Lamps must be disposed of in a safe manner. The luminaires are Class 1 and should be effectively earthed. Handling and electrical work associated with this product to be in accordance with the "Manual Handling Operations Regulations 1992" and "Electricity at Work Regulations 1989". Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'.
Certification details on the rating plate must be verified against the application requirements before installation.
The luminaires are IP65 but are designed for indoor or covered locations.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

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3.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in ignitable dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate on the fitting surface and good housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures.

The European standard EN50281-1-2 also gives details of selection, installation and maintenance.

3.1.2 Hybrid Mixtures – Gas and Dust

Where Hybrid mixtures exist as defined in EN1127 as a potentially explosive atmosphere, consideration should be given to verifying that the maximum surface temperature of the luminaire is below the ignition temperature of the hybrid mixture.

3.2 Electrical Supplies

The supply voltage and frequency should be specified when ordering. The supply voltage and frequency can be in the range 220 to 254V and 50 to 60Hz. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Continuous operation at more than +6%/-10% of the rated control gear setting is not advisable. The tappings are shown on the control gear and the limits are shown on the rating label. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care must be taken connecting to the nominal UK 230V public supply***. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is relocated. If in doubt, the tappings should be set on the high side. 10V maximum drop is desirable and the internal circuit uses a S.I.P. (superimposed pulse ignitor) - This means that there are only two connections to the choke, making the tap selection obvious.

3.3 Lamps

The high pressure sodium lamp is of a standardised type. There is no preference between make or colour. All have E40 caps.

The luminaire is designed to use the SON-E and MBI lamps and care must be taken to fit the correct lamp in order to maintain the certification conditions and obtain the designed photometric performance. ***MBI lamps must be "SON gear compatible".***

HPS and MBI lamps should be replaced shortly after they do not light. One indication of the end of life for HPS lamps is 'cycling' where the lamp extinguishes then re-ignites after a minute or so interval. The luminaire has a thermal cut out in the ballast and a line fuse to protect against fault conditions. If the thermal protector operates the cycle will be slow, i.e. 10 minutes or more.

If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects on the control gear.

At the time of printing, the development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or Chalmit.

Important : *This luminaire must not be energised without a lamp being fitted.*

3.4 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The luminaire must be mounted such that the enclosure is not penetrated or pierced and that the lamp axis is in the horizontal position.

Custom-made fixing arrangements are possible to special order prior to manufacture, which in no way pierce the basis luminaire.

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3.5 Cabling and Cable Glands

3.5.1 Cables

The temperature conditions at the supply cable entry point are such that 70°C (ordinary PVC) cable can be used.
The standard conductor section is 4mm maximum. Looping facility is available.
300/500V cable is suitable. The cable make up must be suitable to ensure the maintenance of the restricted breathing enclosure when the cable gland is fitted. The cable entry is located on the sloping side.

3.5.2 Cable Glands

Cable glands and sealing plugs when installed must maintain the restricted breathing enclosure. (Vacuum test, 300mm head of water, half pressure time 3 min. minimum). Rubber sealing washers and steel compression washers are provided with the unit. The user must ensure that the assembly fulfils the above requirement.
No means of checking the air tightness of the assembled unit is provided. Where a new or unproven sealing arrangement is introduced, users should check a sample for substantial air tightness before making a full installation.
Entries suitable for M20 cable glands are standard. Entries suitable for M25 are available to special order.

3.6 Cabling and Fitting Lamps

Cabling is by removing the front cover and gear tray. The front cover is secured by 8 x M6 captive screws. When removing the front cover care must be taken as there are no hanging facilities provided. The polycarbonate lens is fixed to the front cover by double-sided adhesive tape. The gear tray need not be completely removed (although installation is made easier due to lighter weight). To gain access to the terminal block, loosen M6 nuts and slide gear tray to the side and then pivot the gear tray downwards, which will now hang. This facility is provided purely to assist the installation and maintenance operations and for short term use only, otherwise completely remove gear tray.
When cabling, disconnect the flying lead mounted socket from the gear tray. Install the connectors in the appropriate terminals, taking care not to bare them excessively. 1mm of bare conductor outside the terminal is a maximum. When refitting the gear tray re-connect the plug and socket and make a final check on correct connections, making sure all cabling is neat and tidy. When refitting the cover, the cover fixing screws should be fully tightened.
Before proceeding, ensure the luminaire is isolated from mains supply and has cooled sufficiently. Remove front cover as previously discussed. Make sure that the correct lamp is selected.
The lampholder is an E40 GES, screw in firmly.
Replace front cover as previously discussed.

3.7 Inspection and Maintenance

The luminaire must be de-energised before maintenance procedures commence.
Individual organisations will have their own procedures.
Reference should also be made to BS EN 60079-17.
What follows are guidelines based on our experience :

1 Ensure lamp is lit when energised.
2 Visually check front cover for damage. This should only be cleaned using a damp cloth to avoid static and only using a detergent recommended for use with polycarbonate. Visually inspect the remainder of the enclosure for superficial damage. If the polycarbonate lens is significantly discoloured, cracked or damaged a new front cover assembly must be fitted.
3 When de-energised and left to cool, there should be no sign of internal moisture. If there are signs of water ingress the luminaire should be taken down and returned to ourselves for investigation/repair.
4 Check gland for tightness and nip-up if required.
5 Check internal and external earths.

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6 Check all terminations are firmly screwed down - tighten if necessary.
7 Check cover screws are firmly screwed down - tighten if necessary.
8 Every three years, or more frequently depending on experience, the front cover should be removed, gear tray swung down and all internal connections checked for tightness and any sign of corrosion or overheating. Any suspect components should be replaced. The cover gasket should be examined and if it has hardened or lost elasticity, it should be completely removed and new gasket fitted.
9 Avoid the build up of dust layers by regular cleaning and clean only using a damp cloth.

3.8 Electrical Fault Finding and Replacement

Any live fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. Checks for obvious causes such as loose connections, unserviceable lamps or open circuit control gear should be made. Control gear will not normally go open circuit unless it has first been overheated: The signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating.
The ignitor may become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an attempt to start effect in the lamp and a buzzing sound from the ignitor.
It will be unusual to have no other parts available to perform a substitution fault finding routine and this is normal procedure.
If replacement lamps do not work and all above checks prove normal, then the gear tray should be returned to Chalmit for investigations/repair.
Before re-assembly, all connections should be checked and any damaged cable replaced. The unit has a line fuse in the gear tray terminal block. This is the BS1362 type, 13A should be used for 400W and 10A for 250/150W. If this fuse blows, the luminaire should be examined for obvious faults such as cable shorts and if none are found, the lamp should be replaced.

3.9 Overhaul

This unit can be completely stripped, cleaned, then re-built with new electrical parts as required. The internal wiring is 1mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable. All the spares required are available. Please state the model number and lamp details.
The seal at the cover is between the diffuser frame and the body. The diffuser is retained in the cover frame by double sided tape. If the gasket has deteriorated by softening or permanent set, a new gasket should be fitted. Replacement gasket strip can be obtained from Chalmit but to fit this, care is needed. The old gasket should be removed and remaining adhesive scraped off with a chisel type blade. New strips are cut full length and neatly butted. The gasket pieces are fixed in place and the butt joint sealed with silicone R.T.V. The gasket should be pressed onto the body, making sure that it is flat all around and allowed to cure in free air for 24 hours. The assembly should be tested for air tightness on a test body (see 3.5.2).

4.0 Disposal of Material

The luminaire is fabricated from sheet steel.
The front covers lens is manufactured in polycarbonate.
The capacitor is of the dry film type and does not contain PCB's.
The control gear contains plastic parts and synthetic resin.
The ignitor contains electronic components and synthetic resins.
All the electrical components and the cover may give off noxious fumes if incinerated and this should only be done by licensed operators.
Care must be taken to render these fumes harmless or avoid inhalation.
All disposal should be in accordance with local authority regulations and the *Environmental Protection Act 1990 - "Waste Management - The Duty of Care".*
In accordance with the provisions of Section 6 of the *"Health and Safety at Work Act 1974"* and as amended by the *"Consumer Protection Act 1987".* You should ensure that this information is made available to all concerned.

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4.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The nominal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

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0.0 Tables 0/1/2

Table 0 Models and Tamb/Dust Ratings Refer to Section : 1.0

Model No.	T amb	T dust
PYMN150S SON-E Recessed	45ºC	130ºC
Pendant & Surface	50ºC	130ºC
PYMN250S SON-E Surface	45ºC	110ºC
PYMN250S SON-E Pendant	45ºC	110ºC
PYMN250S SON-E Recessed	35ºC	110ºC
PYMN400S SON-E Surface	30ºC	115ºC
PYMN400S SON-E Pendant	30ºC	115ºC
PYMN250H MBI Surface	45ºC	110ºC
PYMN250H MBI Pendant	45ºC	110ºC
PYMN250H MBI Recessed	35ºC	110ºC
PYMN400H MBI Surface	30ºC	115ºC
PYMN400H MBI Pendant	30ºC	115ºC

Table 1 Starting and Running Currents Refer to Section : 5.0

Lamp	Lamp Current A	Start A	Run A	PFC µF	Circuit Power (W)
150W HPS	1.8	1.2	0.75	20	168
250W HPS	3.0	2.35	1.3	30	286
400W HPS	4.5*	4.0	2.2	40	440
250W MBI	3.0	2.65	1.35	30	282
400W MBI	4.2*	4.4	2.2	40	440

Note : **This is the current in the cable between the control gear and luminaire.*
Minimum power factor correction:0.85.

Table 2 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	Number of Lamps					
	1	2	3	4	5	6
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone : +44 (0)141 882 5555
Fax : +44 (0)141 883 3704
Email : info@chalmit.com
Web-site : www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

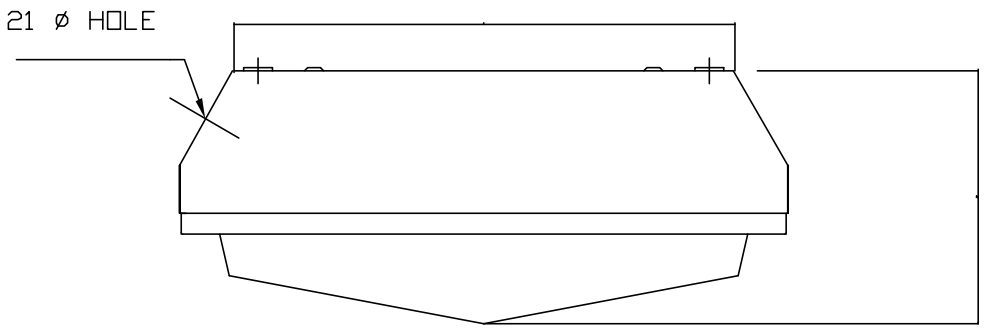
Registered No. 3650461

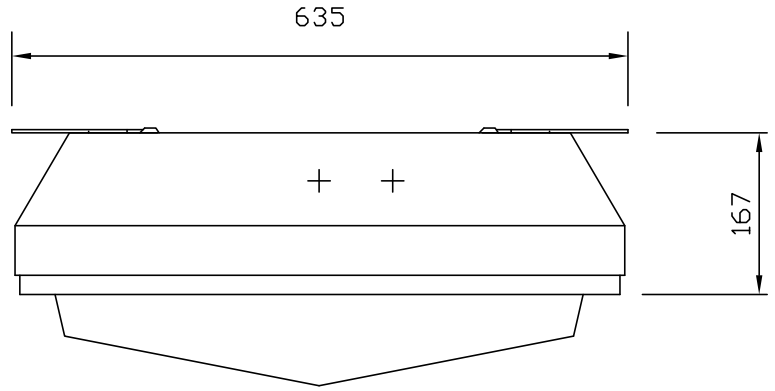
Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

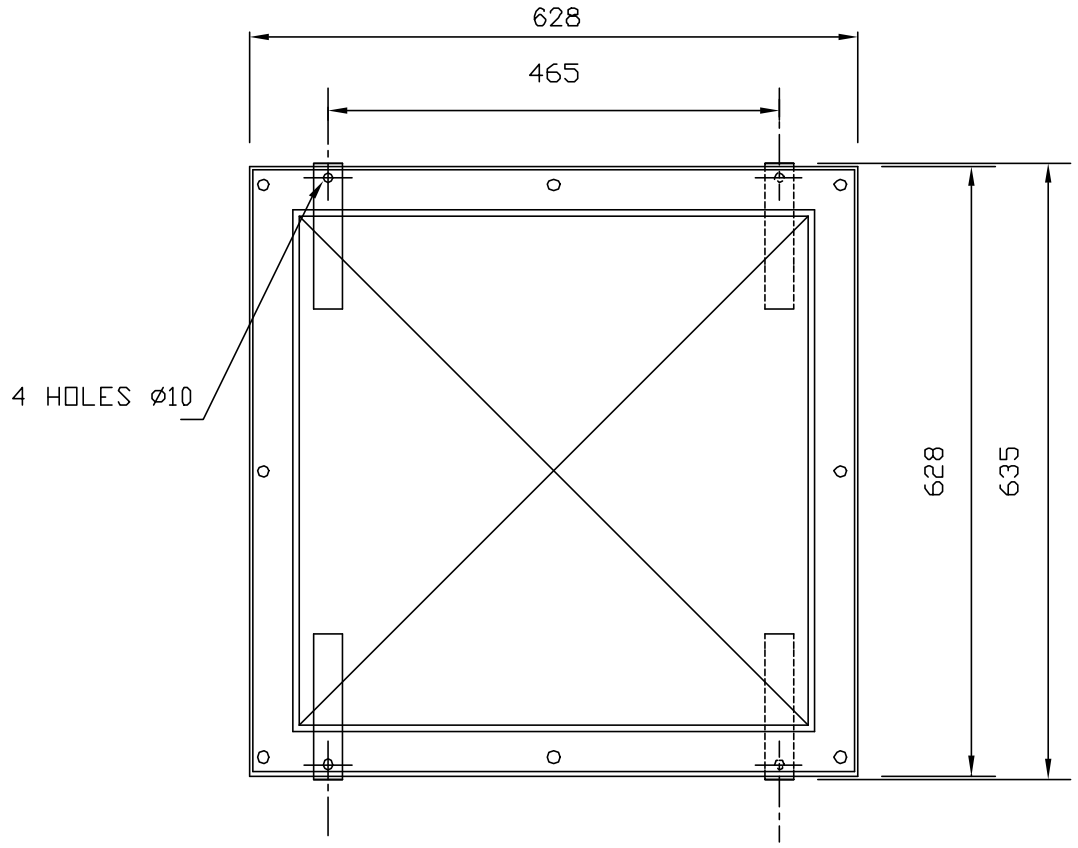
Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

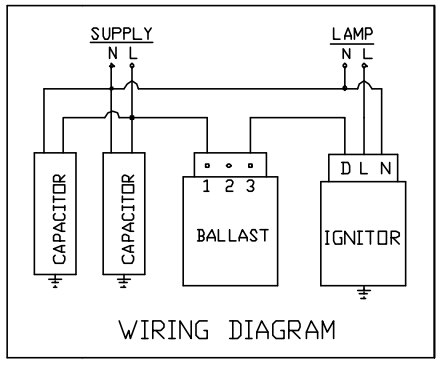
1	2	3	4	5	6	7	8
DRAWING NUMBER/SHEET NUMBER F1062	REMOVE ALL BURRS & SHARP EDGES			IF IN DOUBT ASK!		3RD ANGLE PROJECTION	







LAMP TYPE	WATTAGE RANGE	LAMP CAP	CAPACITOR	IGNITOR	BALLAST	MOUNTING POSITION	ta	SURFACE TEMP RATING	WEIGHT Kgs.
HPS (SON/E)	150	E40	20 uf	ZRM 6ES SERIES B COMPONENT APPROVED BASEEFA No. Ex 94Y4537U	LN 150	SURFACE	50°C	T4	28
						PENDANT	50°C	T4	
	250		30 uf		LN 250	SURFACE	45°C	T4	28
						PENDANT	40°C	T4	
	400		40 uf	PXA 000 DETAILED IN BASEEFA CERTIFICATION REPORT No. 96(C)1064.	LN 400	SURFACE	28°C	T4	28
						PENDANT	30°C	T4	
MH (MBI/E)	250		30 uf		LN 250	SURFACE	45°C	T4	28
						PENDANT	40°C	T4	
	400		30 uf		LN 400	SURFACE	30°C	T4	28
						PENDANT	27°C	T4	



WIRING DIAGRAM

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	10/06/02

REF. DRGS.–

MATERIAL	Polyester Painted Zinc Coated Steel N.T.S
FINISH	Polyester Painted
DIMS. IN	MM
TOLERANCE	
SURFACE ROUGHNESS	
SCALE	–

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE: Pyramid Ex n Low–Medium Bay

DRAWING NUMBER/SHEET NUMBER: F1062 1 OF 1

503

Ex N FLOODLIGHT

Ex N PROTECTION ZONE 2 APPLICATIONS

The 503 is a high power floodlight for high pressure sodium lamps of 600W or 1000W rating and tungsten-halogen lamps up to 2000W.

The protection is Ex N, non-sparking, using a restricted breathing enclosure. The control gear is in a separate box for cool running which should be ordered seperately.
When reguired an ignitor is mounted on the floodlight so there is no practical limit to the distance from the control gear box. This unique luminaire enables very high wattage lamps to be used for Zone 2 applications. The floodlight is fully weatherproof to IP66/IP67 and is made from corrosion resistant aluminium with a toughened glass and silicone gasket and sealing. The floodlight combines solid construction with very high light output in a housing of minimum weight and attractive appearance. Through advanced design and construction techniques the surface temperature remains relatively low even at maximum lamp wattage. The use of the 503 will give extremely high levels of illumination from a small number of luminaires which greatly reduces installation and maintenance costs.

Standard Specification

Type of Protection:	**Ex N (Non-sparking Restricted breathing)**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**BS 4533 Part 2 Section 2:1 1976**
Certificate:	**BASEEFA Ex 81267X**
Coding:	**Ex N II (refer to table for T class and ambient)**
Enclosure:	**Marine grade aluminium alloy LM6 body with toughened glass window, silicone rubber gasket**
Reflector:	**Wide beam high purity anodised aluminium**
Entry:	**1 x M20 cable entry**
Termination:	**3 core 4mm² max. conductor**
Installation:	**Foot mounted**
Lamp Type:	**HPS or Tungsten-Halogen**
Lampholder:	**E40**
Control Gear:	**Refer to Universal gear-box and 502 gear box**
Relamping:	**Access via end cover secured by stainless steel screws**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**Refer to Universal gear-box (600W) and 502 gear-box (1000W) for HPS lamps. 2000W max. for Tungsten-Halogen**

Features

Very robust

Highly resistant to corrosion and mechanical damage

All stainless steel fasteners

Very high light output

Lamp support mechanism

High ambient applications

ATEX version available

Std. Cat No.	Wattage	Lamp	T Class	Ambient °C	Weight
503N/600/HS*	600W	HPS	T3	60	25.0kg
503N/1000/HS*	1000W	HPS	T3	40	25.0kg
503N/2000/TH	2000W	Single Ended T/Halogen	T2	40	25.0kg

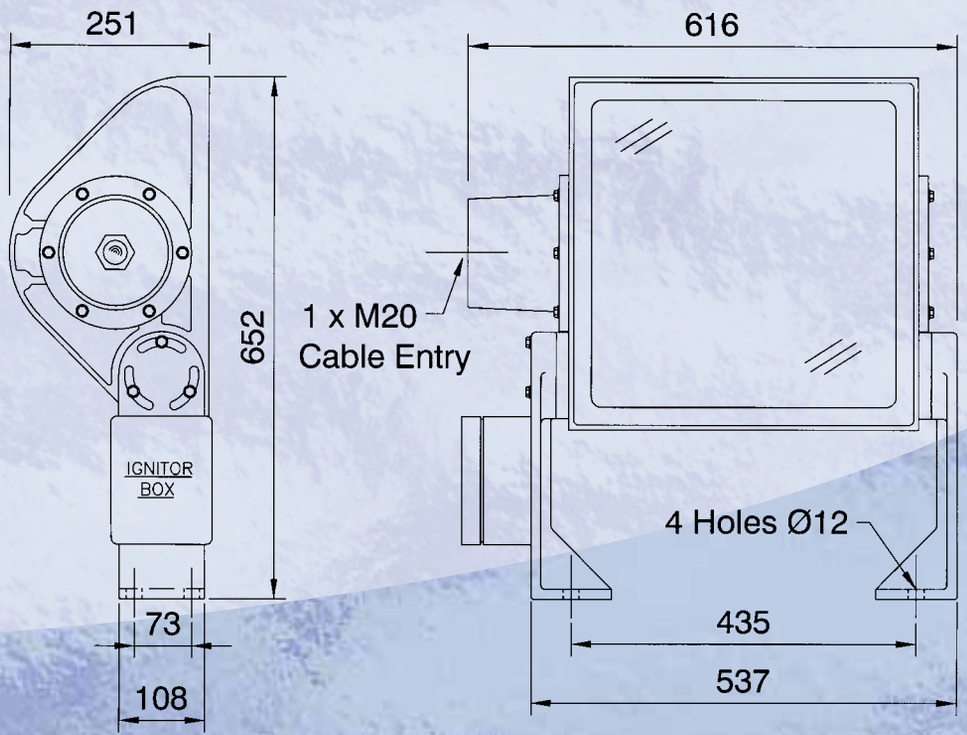
*Voltage should be matched to suitable external gear box. Chalmit Universal box or 502 box.
Gearbox suitable for high ambient applications available. Details on request.

Options - Suffix to Catalogue No.

/IG	Integral ignitor
/P	PTFE coating
/N	Narrow beam reflector

Applications

- Zone 2 hazardous areas
- Offshore oil and gas platforms
- Flare stacks
- High mast floodlighting
- Tank farms
- Perimeter and security floodlighting



Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting bracket	**S2000-0007**
Swinging Jib bracket	**S2000-0019**
Anti-glare shield	**S5030-0007**
Wire guard	**S5030-0008**

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BASEEFA

British Approvals Service
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Electrical Equipment
in
Flammable Atmospheres

Certificate of Assurance

THIS IS TO CERTIFY THAT THE "CHALMIT" FLOODLIGHT NO 503
manufactured by
ANDREW CHALMERS AND MITCHELL LIMITED
of Glasgow

designed and constructed in accordance with the Specification set out in the Schedule and the documents therein referred to, has been found to comply with the requirements of BS 4533 : 2.1 : 1976 for restricted breathing luminaires

This Certificate also applies to other apparatus conforming to the specification set out in the Schedule.

This Certificate is granted subject to the general conditions applicable to the Approval Service and any special conditions as may be prescribed.

This Certificate does not necessarily indicate that the apparatus may lawfully be used in particular industries or circumstances because such usage may be subject to statutory requirements.

File No: SFA 14/23/04

Codes : Ex N II T2
Ex N II T3

Test Reports:
81(N)213 (13.11.81)
Paisley College Reports
WAB/EM/80/8 (19.12.80)
WAB/AG/80/9 (18.12.80)
WAB/AG/80/10 (19.12.80)

K. Clark

p. p. B HILL
Director

CERTIFICATE NO: Ex 81267X dated 13 November 1981
7/41/42

Certificate of Assurance

NUMBER Ex 81267X

DATED 13 November 1981

Schedule

APPARATUS

A 'CHALMIT' FLOODLIGHT, No 503, is a restricted breathing luminaire for use with a 700W MBF/U (high pressure mercury vapour) lamp, a 2000W T/HAL (double envelope tungsten halogen) lamp or a 1000W SON/T (high pressure sodium) lamp.

The temperature class, maximum ambient and electrical supply parameters of the control gear vary according to the type of lamp fitted:

LAMP	RATING	CONTROL GEAR SUPPLY	T CLASS	t_a
MBF/U	700W	220/250V 50Hz	T3	40
		240/270V 60Hz	T3	40
T/HAL	2000W	200/240V a.c./d.c.	T2	40
SON/T	1000W	200/250V 50Hz	T3	40
		220/270V 60Hz	T3	40

The luminaire may be set to narrow or wide angle beam by use of the plain or mottled reflector respectively. The 700W MBF/U lamp is used with a narrow angle beam whereas the two other lamps are used with the narrow or wide angle beam.

The luminaire comprises a gravity die cast body, together with a toughened glass window which is set with a silicone-based sealant into the cast body and retained by four clips. The standard casting material is aluminium alloy LM6 to BS 1490 but gunmetal LG2 to BS 1400 or brass DCB3 to BS 1400 may be used. A protective coating of PTFE may be provided.

The lamp housing, which contains the lampholder, is mounted at one end of the cast body and a lamp steady assembly is fitted at the other end. Silicon rubber gaskets are provided at both these entries to the luminaire body. The luminaire is either foot mounted or, by the addition of a pole mounting back plate and 'V' bracket to the foot mounting brackets, the luminaire may be pole mounted.

On the foot mounting bracket, adjacent to the lamp holder housing, is mounted a Klippon K4 or K5 terminal box (BASEEFA Component Approval No 3031U/B). The K4 box contains a BK4 Klippon terminal block (BASEEFA Component Approval No 4021U/B) to connect the supply from the control gear to the 700W MBF/U or the 2000W T/HAL lamps.

Certificate of Assurance

NUMBER Ex 81267X

DATED 13 November 1981

Schedule

The K5 box contains a BK4 Klippon terminal block and a 1000W ignitor type PBA000 manufactured by W J Parry (Electrical) Ltd (BASEEFA Component Approval No 4131U). The terminal block connects the cable from the control gear to the input of the ignitor. The output of the ignitor is connected via a glanded cable to a Metway twin way porcelain connector type 560/CF mounted on a Tufnol insulating sheet on the lampholder mounting plate within the lamp housing. This is connected to an enclosed break E40 lampholder manufactured by F W Thorpe, type TG3016 (BASEEFA Component Approval No 4037U) by Intemp 250 cable. In the version for use with the high pressure sodium lamp, the Intemp cable is sealed into the lampholder base which is filled with a silicone based sealant.

The K4 and K5 Klippon boxes are omitted when connection to the lamps is made directly from the control gear box.

DRAWINGS

Number	Issue	Date	Description
D745	04	10.11.81	CHALMIT No 503 Zone 2 Luminaire G.A.
B115	01	10.11.81	Case
4473	01	5.1.81	Foot Mounting Bracket
4702	01	10.12.80	Pole Mounting Back Plate
4703	01	10.12.80	'V' Brackets
4447	-	9.5.77	Plain Reflector
4448	-	9.5.77	Mottled Reflector
3703R/1	1	15.11.77	Silicone Sealant
4263	02	22.12.80	Glass Retaining Bracket
4449	-	9.5.77	Safety Glass
4451	02	10.11.81	No 503 Gasket
4456	01	10.11.81	Lamp Steady Mounting Plate
4457	01	10.11.81	Lamp Steady Mounting Plate
4462	-	9.5.77	Lamp Steady Head
4463	-	9.5.77	Lamp Steady Head
4464	-	9.5.77	Lamp Steady Head
4461	-	9.5.77	Lamp Steady Plunger
4459	-	9.5.77	Compression Spring
4458	-	9.5.77	Locating Pin
4472	01	10.11.81	Lamp Housing
4480	-	15.11.77	Twin Way Connector
			Nameplates
4810	01	5.1.81	700W MBF/U
4478	01	5.1.81	2000W T/HAL
4477	01	5.1.81	1000W HPS SON/T
4139	-	21.11.73	Restricted Breathing Label
4483	-	14.3.78	Warning Label
4812	-	22.1.81	High Voltage

Certificate of Assurance

NUMBER Ex 81267X

DATED 13 November 1981

Schedule

SPECIAL CONDITIONS FOR SAFE USE

1) The method of cable entry shall be such as to retain the restricted breathing properties of the luminaire. In particular, if conduit entry is used, a stopper gland shall be inserted in the conduit.

2) Mercury vapour Lamps shall be used only in conjunction with ballasts complying with BS 4782 or other appropriate specification.

3) High Pressure Sodium Lamps shall be used only in conjunction with ballasts which limit the power input to a lamp to its rated value, when operating at the rated supply voltage. The igniter circuit shall not produce a pulse voltage in excess of 4.5kV peak.

Note: Unless authoritative information to the contrary is available from the manufacturer of a particular lamp, it must be assumed that the use of a lamp with an internal ignitor will infringe this requirement.

4) For luminaires fitted with high pressure mercury vapour lamps or tungsten halogen lamps the cable from the luminaire to the adjacent leg mounted junction box or the control gear box shall be suitable for 150°C (Silicone Rubber or better).

5) For luminaires fitted with high pressure sodium lamps the cable from the luminaire to the adjacent leg mounted junction box or the control gear box shall be suitable for 120°C and shall comply with one of the following:

a) Glass braided cores (300/500 volt grade to Table 10 of BS 6500), formed in a 3-core cable with an outer sheath selected from Table 8 in BS 6500.

b) 450/750 volt grade cable to Table 8 in BS 6500 but with the thickness of the outer sheath increased to approximately 1½ times the value given in the table.

6) With the exception of item 5a, the cores of the incoming cable shall be sleeved with the glass braided sleeving provided by the manufacturer.

BASEEFA

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Flammable Atmospheres

Certificate of Assurance

THIS IS TO CERTIFY THAT APPARATUS CERTIFICATE NO Ex 81267X

Issued to ANDREW CHALMERS AND MITCHELL
of Glasgow

is hereby extended to apply to the apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the attached Schedule.

File: SFA 14/23/04

Code : Ex N II T2
Ex N II T3

B HILL
DIRECTOR

Sheet 1/2

CERTIFICATE NO: Ex 81267X/1 dated 19 May 1986
3/08

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G
ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Certificate of Assurance

NUMBER Ex 81267X/1

DATED 19 May 1986

Schedule

VARIATION ONE

To permit the KLIPPON K4 or K5 Terminal Enclosure, Component Approval No 3031U, at present used as an Ignitor Box for the 1000W SONT Floodlight, or as an Indirect cable entry box for the 700W MBF/U and the 2000W T/HAL Floodlights, to be replaced by an enclosure, dimensionally identical to the K5 enclosure, cast in gunmetal, and manufactured by Andrew Chalmers and Mitchell Ltd.

This enclosure is fitted and used as previously specified in the original schedule for the CHALMIT FLOODLIGHT No 503.

DRAWINGS

Number	Issue	Date	Description
C 375	1	29.4.86	K5 Enclosure Base
B 282	3	1.4.86	K5 Enclosure Lid

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Flammable Atmospheres

Certificate of Assurance

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Issued to ANDREW CHALMERS AND MITCHELL LTD
of Glasgow

is hereby extended to apply to the apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the attached Schedule.

File: SFA 14/23/04

Code : Ex N II T3

Sheet 1/2

B HILL
DIRECTOR

CERTIFICATE NO: Ex 81267X/2 dated 14 July 1986
8/06

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Certificate of Assurance

NUMBER Ex 81267X/2

DATED 14 July 1986

Schedule

VARIATION TWO

To permit the 700W MBF/U lamp within the 'CHALMIT' FLOOD-LIGHT No 503 to be replaced by a 400W MBF/U lamp, when supplied from a suitable box containing appropriate control gear.

The conditions of use associated with the luminaire fitted with a 700W MBF/U lamp, apply equally to the luminaire fitted with a 400W MBF/U lamp. Also the limitation of supply voltage and frequency, ambient temperature and temperature classification for the 700W MBF/U luminaire are applicable to this fitting.

LAMP	RATING	CONTROL GEAR SUPPLY	T.CLASS	T_{amb}
MBF/U	400W	220 / 250V 50Hz	T3	40°C
		240 / 270V 60Hz	T3	40°C

DRAWINGS

Number	Issue	Date	Description
5371	-	9.6.86	Nameplate 400W MBF/U

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BASEEFA

British Approvals Service for Electrical
Equipment in Flammable Atmospheres

Certificate of Assurance Variation

THIS IS TO CERTIFY THAT APPARATUS CERTIFICATE NO Ex 81267X

Held by CHALMERS AND MITCHELL LIMITED
of 388 Hillington Road
Glasgow, G52 4BL

for the TYPE 503 LUMINAIRE

is hereby extended to apply to the Apparatus conforming to the specification set out in the Schedule of the said Certificate but having any variation specified in the attached Schedule.

A copy of this Supplementary Certificate shall be attached to the original certificate.

File No: EECS 0068/03/008

Certification Report No: 95(C)0456
dated: 28 June 1995

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

Sheet 1/2
CERTIFICATE NO: Ex 81267X/3

RHW

I M CLEARE
DIRECTOR EECS
28 June 1995

This certificate is issued under NACCB accreditation No. 020

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: 0298 26211 Fax: 0298 79514 Telex: 668113 RLSD G

HSE Health & Safety Executive

Schedule

Certificate of Assurance No Ex 81267X/3

VARIATION THREE To allow the luminaire to be fitted with a 600 watt SON/T lamp. With this arrangement the luminaire may be used in an ambient temperature of up to 60°C and the luminaire coded Ex N II T3.

DRAWINGS

Number	Revision	Date	Description
A6248	0	27.4.95	Name and rating plate

SPECIAL CONDITIONS FOR SAFE USE

1. As in the original certificate and variations.
2. The cable between the junction box at the back of the lampholder and the ignitor box must be suitable for use at 140°C.
3. The cable between the ignitor box and ballast must be suitable for use at 100°C.

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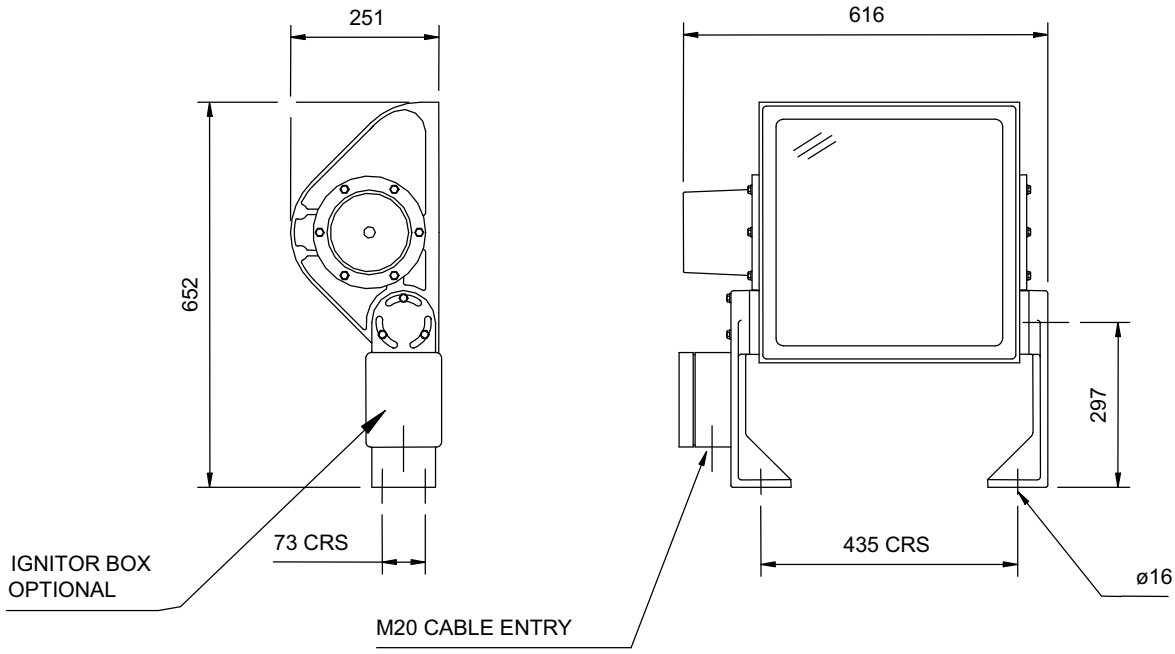
Issue | 03

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

503 High Wattage Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



WEIGHT	ALUMINIUM LM6	GUNMETAL LG2
	25kg	73kg

WINDAGE AREA: 0.22m^2

CE

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0.0 Specification

Type Of Protection	Ex N (non-sparking) (restricted breathing enclosure)
Area Classification	Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Standard	BS4533 Section 2.1 1976
Certificate	BASEEFA Certificate of Assurance Ex81267X Code Ex N II [T3 & T2 Tamb 40ºC]
Ingress Protection	IP66 and IP67 to BS EN 60529

CE Mark

CE

The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

1.0 Introduction - 503 High Wattage Floodlight

The 503 series of Ex N floodlights are designed for area lighting applications. The range of equipment is also available for non-hazardous applications with a wider selection of lamps and in underwater versions. The type of protection is Ex N using a restricted breathing enclosure. The maximum ambient temperature is as shown. The unit is used in conjunction with a 500 series control gear box or 700 series control gear box.

Note : *Lamp ranges and surface temperature ratings are as indicated in TABLE 0.*

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.0.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN 60079-14 or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'.* Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.1 Special conditions for Installation (suffix 'X')

3.1.1 Special conditions for safe use

1 The method of cable entry shall be such as to retain the restricted breathing properties of the luminaire. In particular, if conduit entry is used, a stopper gland shall be inserted in the conduit.
2 Mercury vapour lamps shall be used only in conjunction with ballasts complying with BS 4782 or other appropriate specification.

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3 High pressure sodium lamps shall be used only in conjunction with ballasts which limit the power input to a lamp to its rated value, when operating at the rated supply voltage. The ignitor circuit shall not produce a pulse voltage in excess of 4.5kV peak.

Note: *Unless authoritative information to the contrary is available from the manufacturer of a particular lamp, it must be assumed that the use of a lamp with an internal ignitor will infringe this requirement.*

4 For luminaires fitted with high pressure mercury vapour lamps or tungsten halogen lamps, the cable from the luminaire to the adjacent leg mounted junction box or the control gear box shall be suitable for 150ºC (Silicone Rubber or better).

5 For luminaires fitted with high pressure sodium lamps, the cable from the luminaire to the adjacent leg mounted junction box or the control gear box shall be suitable for 120ºC and shall comply with one of the following :

a) Glass braided cores (300/500V grade to Table 10 of *BS 6500*), formed in a 3-core cable with an outer sheath selected from Table 8 in *BS 6500.*

b) 450/750V grade cable to Table 8 in BS 6500 but with the thickness of the outer sheath increased to approximately 1½ times the value given in the table.

6 With the exception of Item 5a), the cores of the incoming cable shall be sleeved with the glass braided sleeving provided by the manufacturer.

Note : *The cable standards quoted are now obsolete or superseded by later editions. We can interpret the cable requirements as 150ºC or 120ºC, as appropriate. For HPS luminaires, the cable carrying the ignition pulse should be 600/1000V rating. The Chalmit Type 4891 cable meets all requirements.*

3.2 Tools

3mm and 5mm flat blade screwdriver.
14mm and 15mm A/F spanners.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The discharge lamp luminaires are supplied from separate 500/700 series control gear boxes. The installation and operating instructions for these boxes are dealt with in a separate leaflet.

The supply voltage and frequency should be specified for the control gear box when ordering. The Tungsten Halogen luminaires are suitable for lamps in the range 220/240V ac and dc. The correct lamp for the supply must be used. Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating. A maximum voltage variation of +/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care is needed in connecting to the nominal 230V UK public supply.***

In some cases, the control gear boxes have multi-tap control gear which can be set to a range of 50 and 60Hz cycle voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in a high or low voltage section of the system, an appropriate voltage tap should be selected to obtain the best lamp performance, but care must be taken to log or mark the equipment so that the tappings can be reset if the equipment is re-located. If in doubt, tappings should be set on the high side.

For Tungsten Halogen sources, the voltage drop calculation will be made to cover the voltage drop from the main supply point. For the MBF lamp the distance from the control gear box to the luminaire does not have a practical limit. The total voltage drop of supply and connection cable should not exceed the values given.

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In the case of the HPS lamp the normal maximum distance from the control gear box to the luminaire is 3 metres. If a greater distance is necessary for operational reasons, the model with the ignitor box attached to the foot mounting bracket of the luminaire should be ordered. In this case, a control gear box *without* an ignitor is ordered to supply the luminaire. A calculation can then be made to cover the voltage drop between the control gear box and the luminaire. 20V maximum nominal drop is acceptable for Tungsten-Halogen and MBF lamps, 10V maximum drop is desirable for HPS. The lamp power will be reduced. In all cases, the calculation is made on the lamp current, not the corrected circuit current.
The HPS circuit uses a SIP (superimposed pulse) ignitor. This means there are only two connections to the choke and the tap selection is obvious.
When the construction site supply is different to that of the service location, the tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The lamps are of a standardised type and there is no preference between make and colour. When fitting lamps, a check should be made that the lamp steady assembly does not become solid before the access cover has been fully bolted down. There may be some variation in length on the 1000W SON/T lamps available. In the later models, the length variation is catered for by a lamp steady using a spacer. This spacer can be put either on the stem or inside the steady cup to allow for a 2mm shift in the steady spring compression range. The assembly is available for retrofit for older models.
Care must be taken to fit the correct lamp in order that it will operate properly, maintain the certification conditions and obtain the design photometric performance.
HPS lamps should be replaced shortly after they do not light. One indication of the end of life for HPS lamps is "cycling", where the lamp goes out and then re-ignites after a minute or so interval. If discharge luminaires are burnt continuously, they should be switched off occasionally. This allows old lamps to fail to re-ignite, reducing the possibility of them becoming diodes with detrimental effects to the control gear.
HPS lamps and Mercury lamps will have a half life (50% mortality) of up to 24,000 hours but in the case of MBF lamps, the lumen output will by then have decreased to 50% or less. The lumen output of HPS lamps remains substantially constant during the life of the luminaire.
The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on the lamp performance can be obtained from the lamp supplier.

Note : *HPS circuits should not be energised without the lamp fitted.*
HPS lamps with internal ignitors must not be used.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The foot mounting brackets should be secured with lock washers or self-locking nuts and bolts.

3.6 Cabling and Cable Glands

3.6.1 Cables

The temperature conditions at the supply cable point are such that high temperature cable must be used in all the luminaires. This is referred to in the special conditions for safe use. In the case of HPS luminaires, the cable between the luminaire and the ignitor must be able to withstand the starting impulse (wherever located). Chalmit Type 4891 cable meets the requirements of the application. The cable make-up must be suitable to ensure the maintaining of the restricted breathing enclosure when the cable gland assembly is fitted.

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3.6.2 Cable Glands

Cable glands and sealing plugs when installed must maintain the restricted breathing enclosure. (Vacuum test; 300mm head of water, half pressure time 3 minutes minimum). Rubber sealing washers and steel compression washers are provided with the unit. The user must ensure that the assembly fulfils the above requirement.
No means of checking the air tightness of the assembled unit is provided. When new sealing arrangements are to be installed users should check a sample for substantial air tightness before making a full installation. Cable entries suitable for M20 cable glands are standard. The current certification drawing states that *Zone 2* cable glands and cable should be used. This can be interpreted as meeting the code of practice requirements and the special conditions of service.

3.7 Cabling and Fitting Lamps

Access for cabling is via the top hat shaped cover which carries the lampholder. The cable assembly is screwed into the cover after it has been removed from the luminaire. The lampholder assembly is slackened to allow access. The ignitor output goes to the lampholder centre contact, marked L at the terminal D at the ignitor.

3.8 Inspection and Maintenance

Visual inspection should be carried out at suitable intervals, frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on BS EN 60079-17 and on our experience:-

1 Ensure that the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. I f there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting. With the type of construction used in the 503, anything other than slight condensation should be very rare.
3 Check the cable gland for tightness and nip up if necessary.
4 Check any external earthing connections.
5 Check the access cover and lamp housing screws for tightness and nip up if necessary. Torque 16Nm. If the covers are removed it is good practice to replace the gasket.
6 Check the silicone sealant used to secure the lampglass. If it has become seriously discoloured or very soft, the luminaire will need to be returned to Chalmit for re-glazing. The material used for glazing has a long life and in normal applications would not be expected to deteriorate. Direct contamination with hydrocarbon oils could cause degradation.
7 Check that the lamp glass retaining clamps are in place and secure. (The purpose of these clamps is to reduce the load on the lamp glass caused by internal pressure build up from the high temperature of the light sources).
8 Clean the lamp glass.
9 When re-lamping, the incoming and lampholder terminals should be checked for signs of overheating and the terminals tightened up.

3.9 Electrical Fault Finding and Replacement

With Mercury and Tungsten Halogen lamps the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first overheated; signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating. Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an "attempt to start" flicker effect on the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a

substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be re-checked and any damaged cable replaced. The supply must be isolated.

4.0 Overhaul

The unit is largely made of materials which are very corrosion resistant. Overhaul consists of cleaning and replacement of gaskets where necessary. All the spares required are available from Chalmit. Please state the model number and lamp type. No unauthorised modifications should be made.

5.0 Fuse Ratings

The following remarks concern HID lamp circuits at the input side of the control gear box. The output side of the control gear box carries the lamp current, not the circuit current. The lamp current is shown in Table 1. This value should be used for any calculations of voltage drop between the control box and luminaire. Where the ignitor for HPS is contained in the control gear box, the cable also carries the starting pulse. The choke acts as a current limiter, therefore there is no means of protecting against a line to neutral fault on the electrical circuit beyond the choke. Extra care must therefore be taken to ensure sound cable installations. The fuse ratings for HID lamp circuits need to take into account three components of circuit current. Current inrush to PFC capacitors, which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current, which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor, 0.076A per µF at 240V, 50Hz (adjust for other volts by multiplication,x6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. For T/Hal inrush, use 8 x rated current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz. are as indicated in TABLE 1.*

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.

This applies to the UK, there may be other regulations on disposal operating in other countries.

Note : *Do not incinerate lamps.*

0.0 Tables 0/1

Table 0 Lamp Ranges and Surface Temperature Ratings Refer to Section : 1.0

Lamp	T Rating
600W SON/T	T3 Tamb 60ºC
1000W SON/T	T3 Tamb 40ºC
700W MBF	T3 Tamb 40ºC
2000W T/HAL	T2 Tamb 40ºC

Table 1 Starting and Running Currents Refer to Section : 5.0

Lamp	Lamp A	Start A	Run A	Capacitance µF
600W SON/T	6.2	5.6	3.1	60
1000W SON/T	10.6	6.9	5.0	100
700W MBF	5.4	5.6	3.5	30
2kW T/HAL	8.33	approx. x6	8.33	N/A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

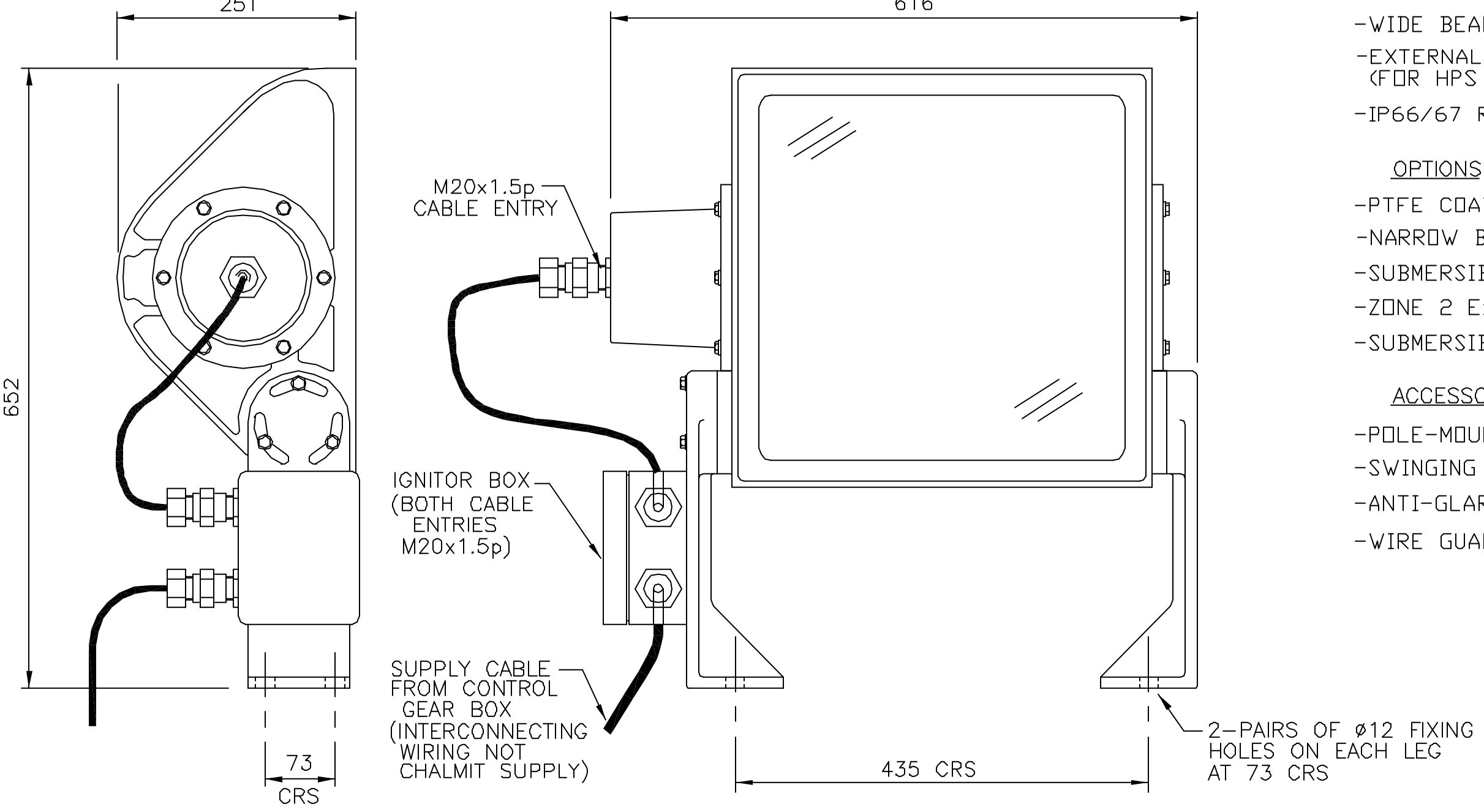
1	2	3	4	5	6	7	8

DRAWING NUMBER/SHEET NUMBER
F1061

REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION



STANDARD SPEC

-WIDE BEAM REFLECTOR

-EXTERNAL CONTROL GEAR BOX REQD (FOR HPS & MBI-T LAMP MODELS)

-IP66/67 RATING

OPTIONS

-PTFE COATING

-NARROW BEAM REFLECTOR

-SUBMERSIBLE OPTION

-ZONE 2 ExN VERSION

-SUBMERSIBLE OPTION

ACCESSORIES(ORDERED SEPARATELY)

-POLE-MOUNTED BRACKET KIT

-SWINGING JIB BRACKET KIT

-ANTI-GLARE SHIELD KIT

-WIRE GUARD KIT

LAMP RANGE

LAMP	WATTAGE	VOLTAGE	LAMP BASE	WEIGHT
HPS	600W	220-254V 50-60Hz	E40	25Kgs
HPS	2x400W			
HPS	1000W			
T/HAL	1000W	254V Max ac/dc		
MBI-T	2000W	220-254V 50-60Hz		

INCOMING CABLE

2.5mm² SOLID OR
4mm² STRANDED CABLE

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	10/06/02

REF. DRGS.-

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL	TOLERANCE
STAINLESS STEEL	N.T.S
FINISH	SURFACE ROUGHNESS
N/A	
DIMS. IN MM	SCALE -

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
503 Floodlight

DRAWING NUMBER/SHEET NUMBER
F1061 1 OF 1

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502

Ex N CONTROL GEAR-BOX

Ex N PROTECTION ZONE 2 APPLICATIONS

The 502 gearbox is used with the 1000W 503 floodlight. It has Ex N protection to BS 4683 Pt 3 with an unrestricted breathing enclosure.

The box is generously proportioned to obtain low control gear temperatures. It is made from 316S31 stainless steel and has base fixing brackets and bolted hinged clamps.

The IP66/67 rating and stainless steel construction enable the box to be used with excellent reliability in corrosive applications.

Standard Specification

Type of Protection:	**Ex N (Non sparking)**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**BS 4683 Part 3: 1972**
Certificate:	**BASEEFA Ex 81265X**
Coding:	**Ex N II T4 Tamb 40ºC**
Enclosure:	**316S31 Marine grade stainless steel**
Entry:	**3 x M20 cable entries**
Termination:	**3 core 4mm² max.**
Installation:	**Base mounting straps**
Cable:	**For HID lamps the Chalmit cable type 4891 or equivalent must be used between floodlight and control gear box to comply with the certificate requirements. This does not apply if the floodlight itself has an internal ignitor.**
Control Gear:	**Internal copper/iron ballast and PFC correction capacitors (Ignitor not fitted on standard model)**
Operating Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**200, 210, 220, 230, 240, 250V 50Hz, 220, 230, 240, 250, 260, 270V 60Hz**

Features

316S31 grade stainless steel construction

Easy to install and maintain

Hinged lid with two fixing screws

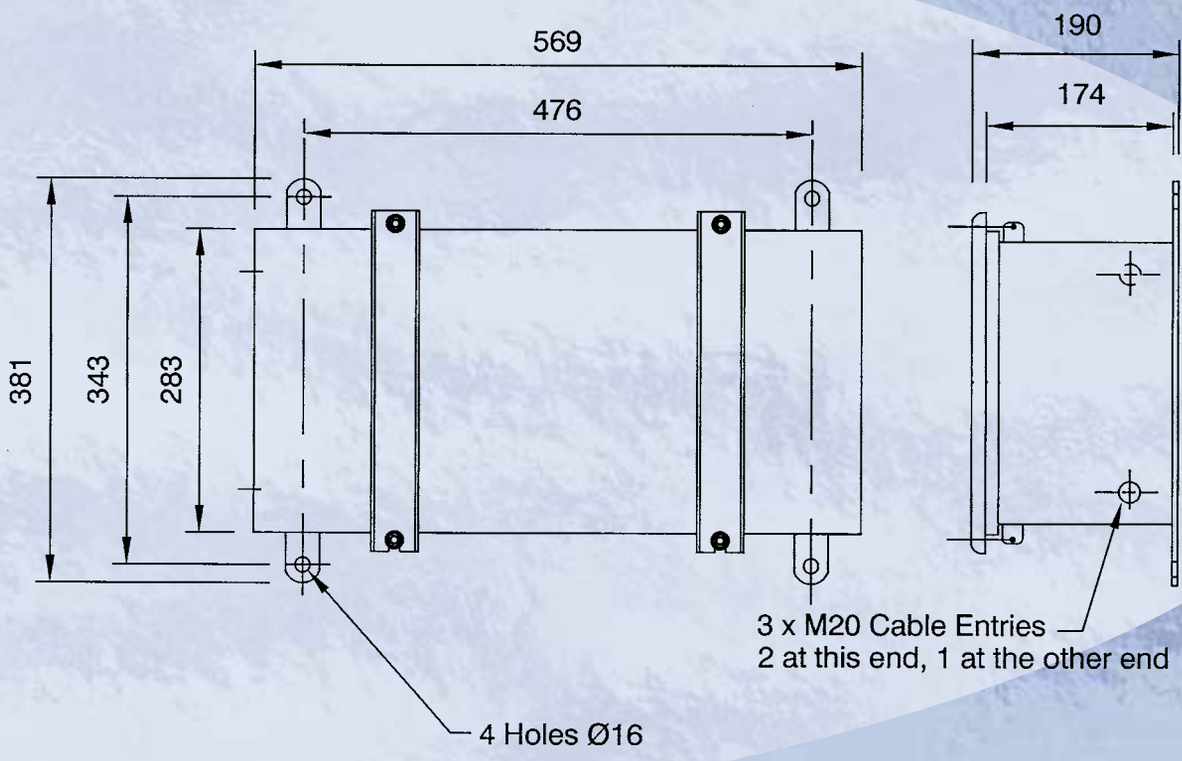
Multi tapped ballast

Control gear easily accessed and can be replaced

Std. Cat No.	Wattage	Lamp (Ref only)	Weight
502N/1000/HS	1000W	HPS	32kg

Options - Suffix to Catalogue No.

/25	25mm Entries
/TE	Threaded entry
/IG	Integral ignitor
/LO	Looping facility
/NC	No capacitors



Applications

- Zone 2 hazardous areas
- Areas of both high and low ambients
- For use where control gear has to be remote from luminaire

BASEEFA

British Approvals Service
for
Electrical Equipment
in
Flammable Atmospheres

Certificate of Assurance

THIS IS TO CERTIFY THAT THE 500 RANGE OF CONTROL GEAR SYSTEMS
manufactured by
ANDREW CHALMERS AND MITCHELL LIMITED
of Glasgow

designed and constructed in accordance with the Specification set out in the Schedule and the documents therein referred to, has been found to comply with the requirements of BS 4683 : Part 3 : 1972

This Certificate also applies to other apparatus conforming to the specification set out in the Schedule.

This Certificate is granted subject to the general conditions applicable to the Approval Service and any special conditions as may be prescribed.

This Certificate does not necessarily indicate that the apparatus may lawfully be used in particular industries or circumstances because such usage may be subject to statutory requirements.

File No: SFA 14/23/05

Codes : Ex N II T4
Ex N II T4 t_a = 35°C

Test Reports:
81(N)129 (29.6.81)
81(N)214 (13.11.81)
Paisley College Reports
WAB/JA/80/1 (11.3.80)
WAB/JA/80/2 (11.3.80)
WAB/EM/80/4 (23.7.80
WAB/EM/80/5 (22.7.80)
WAB/AG/80/6 (24.7.80)
WAB/AG/80/7 (8.8.80)

pp B HILL
Director

CERTIFICATE NO: Ex 81265X dated 13 November 1981

7/43/44

Certificate of Assurance

Schedule

NUMBER Ex 81265X

DATED 13 November 1981

APPARATUS

THE 500 RANGE OF CONTROL GEAR SYSTEMS for use in conjunction with 80, 125, 250, 400 and 700 watt MBF/U (high pressure mercury vapour) lamps, and 70, 150, 250, 400 and 1000 watt H.P.S. (high pressure sodium) lamps.

They consist of a 1.6mm (16 S.W.G) thick stainless steel or mild steel boxes, the latter being spray painted with grey epoxy stoving enamel. Construction is in accordance with drawing D765. The edge of the lid is folded to provide a lip for weather proofing and the entire inside area of the lid is covered with a 3 mm thick neoprene gasket. When the four retaining nuts are tightened down with a torque of 2.7Nm (2lb ft) the enclosure provides IP67 classification.

The boxes are manufactured in three sizes and designated:
500, 453 mm long, 159 mm wide and 152 mm deep
501, 498 mm long, 236 mm wide and 152 mm deep
502, 562 mm long, 283 mm wide and 174 mm deep.

The control gear is adjustable, by tappings on the choke, for supply voltages within the ranges 200V to 250V at 50Hz and 220V to 270V at 60Hz. When fitted, the transformers are adjustable for supply voltages within the range 110V to 120V at 50Hz or 60Hz.

The 500 box contains:-

either

(i) A 500VA transformer No XEB t_w 130°C manufactured by W J Parry (Electrical) Ltd fitted with an automatic reset cut out to prevent overheating of the transformer should a capacitor fail and to indicate circuit malfunction by causing the lamp to cycle. The transformer is mounted on the gear rails and is connected for input and output to two Klippon BK4 terminals (BASEEFA Component Approval No 4021U/B) mounted on a component bracket fixed to the gear rails. These terminals are replaced, when looping in facilities are required, by Klippon AKZ4 terminals (BASEEFA Component Approval No 4025U/B), jumper bar and rail. The arrangement is shown on drawing C172 and is given a temperature classification of T4 at an ambient temperature of 40°C.

or

(ii) The control gear for the operation of a 80, 125, 250 or 400 watt MBF/U lamp which consists of ballast ML085, ML130, MM255 and MM405 respectively manufactured by W J Parry (Electrical) Ltd all with t_w 130°C. The ballasts are mounted on the gear rails and the capacitors and the Klippon BK4 terminals for the supply and lamp connections or the Klippon AKZ4 terminals when looping in facilities

are required are mounted on a component bracket fixed to the gear rails. The arrangement is shown on drawing D762 and is given a temperature classification of T4 at an ambient temperature of 40°C.

The 501 box contains:-

either

(i) A 1250VA transformer No XFB t_w 130°C manufactured by W J Parry (Electrical) Ltd fitted with an automatic cut out. The transformer is mounted on the gear rails and is connected for input and output to two Klippon BK4 terminals mounted on a component bracket fixed to the gear rails. These terminals are replaced, when looping in facilities are required, by Klippon AKZ4 terminals, jumper bar and rail. The arrangement is shown on drawing C172 and is given a temperature classification of T4 at an ambient temperature of 40°C.

or

(ii) The control gear for the operation of a 70, 150, 250 or 400 watt HPS lamp which consists of ballast HSL075, HSN155, HDM255 and HSM405 respectively manufactured by W J Parry (Electrical) Ltd all with t_w 130°C and Bosch or Pye capacitors with t_c -25°C +85°C mounted on a control gear tray which is in turn mounted on the gear rails. Provision is made for input and output connectors and looping in facilities when required as described in previous sections. The ignitor is also mounted on the control gear tray and can be one of the following types

(a) PBA 070 for 70 watt lamps
(b) PBA 400 for 150, 250 or 400 watt lamps
(c) PBA 403 for 150, 250 or 400 watt lamps
(d) SON 6NS for 70 watt lamps
(e) SON 5NS for 150, 250 or 400 watt lamps

All marked with maximum can temperature of 90°C.

Items (a), (b) and (c) are manufactured by W J Parry (Electrical) Ltd to BASEEFA Component Approval No 4131U and are suitable for the declared voltage ranges of the control gear boxes, viz 200V to 250V at 50Hz and 220V to 270V at 60Hz.

Items (d) and (e) are manufactured by Simplex (Lighting) Ltd to BASEEFA Component Approval No 4117U and are suitable for a voltage range of 220V to 240V at 50Hz only. When these ignitors are fitted, the box label is altered to indicate the restricted supply voltage range.

The arrangement is shown on drawing D763 and is given a temperature classification of T4 at an ambient temperature of 40°C

or

(iii) The control gear for the operation of a 700 watt MBF/U lamp which consists of a ballast MB703 manufactured by W J Parry (Electrical) Ltd with t_w 130°C and Bosch or Pye capacitors with t_c -25°C +85°C mounted on a control gear tray which is in turn mounted on the gear rails. Provision is made for input and output connections and looping in facilities when required as described in previous sections. The arrangement is shown on drawing D763 and is given a temperature classification of T4 at an ambient temperature of 40°C.

The 502 box contains:-

either

(i) A 500VA transformer No XEB and the control gear for a 80, 125, 250 or 400 watt MBF/U lamp. The ballasts and capacitors are the same as those used for the same control gear in the 500 Box (as per drawing D762). Looping in facilities are available as described in previous sections. The arrangement is shown on drawing C170 and is given a temperature classification of T4 at an ambient temperature of 40°C.

or

(ii) A 500VA transformer No XEB and the control gear for a 70, 150, 250 or 400 watt HPS lamp. The ballasts, capacitors and ignitors are the same as those used for the same control gear in the 501 box (as per drawing D763). Looping in facilities are available as described in previous sections. The arrangement is shown on drawing C170 and is given a temperature classification of T4 at an ambient temperature of 40°C.

or

(iii) The control gear for the operation of 1000 watt HPS lamp which consists of two HSB505 ballasts manufactured by W J Parry (Electrical) Ltd with t_w 130°C, mounted on the gear runners, and five Bosch or Pye capacitors with t_c -25°C +85°C, mounted on a component bracket and then mounted on the gear runners. Provision is made for input and output connections and looping in facilities when required, as described in the previous sections. The ignitor is mounted on the component bracket and is a type PBA000, marked with a maximum can temperature of 90°C, manufactured by W J Parry (Electrical) Ltd to BASEEFA Component Approval No 4131U. It is suitable for the

declared voltage ranges of the control gear boxes, viz 200V to 250V at 50Hz and 220V to 270V at 60Hz. The arrangement is shown on drawing D764 and is given a temperature classification of T4 at an ambient temperature of 35°C.

DRAWINGS

Number	Issue	Date	Description
D765	05	12.11.81	Nos 500, 501 and 502 Control Gear Boxes IP67/Restricted Breathing
C172	04	24.9.81	No 500 and 501 Zone 2 Transformer Box
D762	04	24.9.81	No 500 Zone 2 Control Gear up to 400W MBF/U
D763	04	24.9.81	No 501 Zone 2 Control Gear up to 400W HPS and 700W MBF/U
D764	04	24.9.81	No 502 Zone 2 Control Gear 1000W HPS
C170	05	24.9.81	No 502 Zone 2 Control Gear up to 400W HPS, 400W MBF/U and 500VA Transformer
			Labels for:
4849	-	11.5.81	No 500 Zone 2 500VA Transformer
4850	-	12.5.81	No 500 Zone 2 Control Gear up to 400W MBF/U
4881	-	11.5.81	No 501 Zone 2 1250VA Transformer
4851		13.5.81	No 501 Zone 2 Control Gear up to 400W HPS and 700W MBF/U
4852	01	12.11.81	No 502 Zone 2 Control Gear up to 400W HPS, 400W MBF/U and 500VA Transformer
4853		11.5.81	No 502 Zone 2 Control Gear 1000W HPS

SPECIAL CONDITIONS FOR SAFE USE

1) For use with high pressure sodium lamps, the interconnecting cable between the control gear box and the luminaire shall be suitable for the duty with a high voltage lamp striking pulse of up to 4.5kV. Subject to other limitations that may be imposed by a particular luminaire, the following cables may be regarded as suitable:

a) Glass braided cores (300/500 volt grade to Table 10 of BS 6500), formed in a 3-core cable with an outer sheath selected from Table 8 in BS 6500.

b) 450/750 volt grade cable to Table 8 in BS 6500 but with the thickness of the outer sheath increased to approximately 1½ times the value given in the table.

2. This control gear should not be used with luminaires which incorporate high pressure sodium lamps with internal ignitors.

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Certificate of Assurance

THIS IS TO CERTIFY THAT CERTIFICATE NO Ex 81265X

Issued to ANDREW CHALMERS AND MITCHELL LIMITED
of Glasgow

is hereby extended to apply to apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the attached Schedule.

File: SFA 14/23/05

Codes : Ex N II T4
Ex N II T4 $t_a = 35^{o}C$

B HILL
DIRECTOR

CERTIFICATE NO: Ex 81265X/1 dated 31 March 1982
80/27

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Certificate of Assurance

NUMBER Ex 81265X/1

DATED 31 March 1982

Schedule

VARIATION ONE

To allow the use of ignitors having BASEEFA Component Approval No 4142U as an alternative to the previously specified ignitors which had BASEEFA Component Approval No 4117U. Thus the SON6NS, for 70 watt lamps, for a voltage range of 220V to 240V at 50Hz only and maximum can temperature of 90°C can be replaced by the SON8NS or the SON8NSL, for 70 watt lamps, for a voltage range of 220V to 255V at 50 or 60Hz and maximum can temperature of 105°C.

The SON5NS for 150, 250 or 400 watt lamps, for a voltage of 220V to 240V at 50Hz only and maximum can temperature of 90°C can be replaced by the SON7NS or the SON8NSL for 150, 250 or 400 watt lamps, for a voltage range of 220V to 255V at 50 or 60Hz and maximum can temperature of 105°C.

VARIATION TWO

The control gear boxes are provided with 10mm thick mild steel pads welded to the inside of the enclosures. These pads can be tapped to accommodate a PG16 thread or threads of a similar size for the reception of an appropriate cable entry device chosen in accordance with the relevant code of practice.

VARIATION THREE

The replacement of item 23 on drawing D763 and item 20 on drawing D764 respectively with 4BA Nylon 66 screws 25mm long. The terminal block insulator is increased in size and it is lettered to show the position of the wiring connections to the lamp on one side and the supply connections on the other. These positions coincide with the connections on the Klippon BK4 terminal block (BASEEFA Component Approval No 4021U/B) which has its terminal way between the live and neutral terminal ways removed.

DRAWING Number	Issue	Date	Description
4490	2	16.3.82	Terminal Block Insulator

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Schedule

VARIATION FOUR The 500VA transformer No XEB fitted in the 502 box for supplying the control gear for an 80, 125, 250 or 400 watt MBF/U lamp or the control gear for a 70, 150, 250 or 400 watt HPS lamp as shown on drawing C170 dated 24.9.81 may be used with or without the thermal cut out specified in note 17 of the above mentioned drawing.

File: SFA 14/23/05

Code : Ex N II T4
Ex N II T4 $t_a = 35^{o}C$

B HILL
DIRECTOR

CERTIFICATE NO: Ex 81265X/2 dated 19 May 1982

32/13

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Schedule

VARIATION FIVE — The M6 spring washers and M6 nuts, items 8 and 9 on drawings D762, D763 and D764 and items 5 and 6 on drawing C172 are replaced by stainless steel M6 internal shakeproof washers and stainless steel M6 aerotight nuts respectively.

VARIATION SIX — The use of the BJB 46.208 capacitor adaptor or the WAGO 214 capacitor adaptor with the Bosch power factor correction capacitors in the 500 Range of Control Gear Systems. The maximum current through each individual wire connected to the spring leaf terminals of the adaptor must not exceed 2A.

File: SFA 14/23/05

Test Report No: 84(N)101
dated 25.6.84

Code : Ex N II T4
Ex N II T4 $t_a = 35^{o}C$

B HILL
DIRECTOR

Sheet 1/1

CERTIFICATE NO: Ex 81265X/3 dated 25 June 1984
2/15

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ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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File: SFA 14/23/05

Code : Ex N II T4
Ex N II T4 ta = 35°C

B HILL
DIRECTOR

Sheet 1/2

CERTIFICATE NO: Ex 81265X/4 dated 28 November 1984
140/48

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Certificate of Assurance

NUMBER Ex 81265X/4

DATED 28 November 1984

Schedule

VARIATION SEVEN To allow the addition of a 3/4" x 3/8" x 432mm copper earth bonding bar. The bar is mounted in the enclosure on two 5/16" BSW or M8 hexagonal head screws which are welded to the side of the enclosure. The bar is drilled and tapped for mounting up to 12 1/4" BSW or M6 hexagonal head screws as required for connection of the bonding conductors. The bonding conductors are terminated with crimped connectors. One end is fastened to the bonding bar and the other to the component to be bonded. A shakeproof washer is fitted to each connector screw to prevent self-loosening.

DRAWINGS

Number	Issue	Date	Description
D1013	-	9.11.84	Nos 500, 501 and 502 Control Gear Boxes with Earthing Busbar
C325	-	14.11.84	No 500 and 501 Zone 2 Transformer Box with Earthing Busbar
D1010	-	12.11.84	No 500 Zone 2 Control Gear up to 400W MBF/U with Earthing Busbar
D1011	-	9.11.84	No 501 Zone 2 Control Gear up to 400W HPS and 700W MBF/U with Earthing Busbar
D1012	-	13.11.84	No 502 Zone 2 Control Gear 1000W HPS with Earthing Busbar
C324	-	14.11.84	No 502 Zone 2 Control Gear up to 400W MBF/U, 400W HPS and 500V Transformer with Earthing Busbar

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of Glasgow

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Schedule

VARIATION EIGHT To allow any of the enclosures covered by this certificate that are certified with control gear for discharge luminaires, which include power factor correction capacitors, to be manufactured and operated without the power factor correction capacitors.

File: EECS 0068/03/002
(formerly SFA 14/23/05)

Code : Ex N II T4
Ex N II T4 ta = 35°C

B HILL
DIRECTOR

CERTIFICATE NO: Ex 81265X/5 dated 18 March 1987
57/15

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Certificate of Assurance

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Issued to ANDREW CHALMERS AND MITCHELL LIMITED
of Glasgow, G52 4QW

is hereby extended to apply to the apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the following Schedule.

SCHEDULE

VARIATION NINE An additional power factor correction capacitor manufactured by RIFA having push wire connectors.

DRAWINGS

Number	Issue	Date	Description
D762	8	5.10.87	Control Gear up to 400W
D763	9	5.10.87	Control Gear up to 700W MBF/U
D764	9	5.10.87	Control Gear up to 1000W
5528	-	22.10.87	Capacitor detail

Code: Ex N II T4
Ex N II T4
(T_{amb} = 35°C)

File: EECS 0068/03/002
(formerly SFA 14/23/05)

B HILL
DIRECTOR

CERTIFICATE NO: Ex 81265X/6 dated 2 November 1987
221/55

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of Glasgow, G52 4QW

is hereby extended to apply to the apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the following Schedule.

VARIATION TEN Additional power factor correction capacitors manufactured by PED and SEL, both fitted with push wire connectors WAGO Type 214.

DRAWINGS

Number	Issue	Date	Description
D762	9	8.3.88	Control gear up to 400W
D763	10	8.3.88	Control gear up to 700W MBFU
D764	10	8.3.88	Control gear up to 1000W
5560	0	18.2.88	Capacitor detail
5561	0	18.2.88	Capacitor detail

These drawings are common to Ex 81266X/7

File: EECS 0068/03/002
(Formerly SFA 14/23/05)

I M CLEARE
DIRECTOR

CERTIFICATE NO: Ex 81265X/7 dated 15 March 1988

44/12

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Certificate of Assurance VARIATION

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is hereby extended to apply to the apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the attached Schedule.

File: EECS 0068/03/002
(formerly SFA 14/23/05)

Sheet 1/2

I M CLEARE
DIRECTOR EECS

CERTIFICATE NO: Ex 81265X/8 dated 11 July 1989
AH

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

Certificate of Assurance

NUMBER Ex 81265X/8

DATED 11 July 1989

Schedule

VARIATION ELEVEN Permits the power factor correction capacitors, and, in the case of gear for SON lamps, ignitors, to be mounted on the gear tray by the stud in the base of the can and a nut and lock washer. Additional brackets drilled in accordance with drawing No 4491R/9 are welded to either end of the gear tray. Capacitors or ignitors, when fitted, are mounted as shown on drawing No B444.

An alternative stud for earthing the gear tray to the enclosure is shown on drawing No D765. This involves a simple stud with plain washers, lock washers and a nut for connecting a lead with a crimped on ring tag.

DRAWINGS

Number	Issue	Date	Description
*4491R/9	09	16.12.88	Gear tray
*B444	-	27.6.89	Gear tray arrangement
*D765	09	27.6.89	Control gear enclosure

* These drawings are common to Certificate Number Ex 81266X/8.

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Certificate of Assurance

VARIATION

THIS IS TO CERTIFY THAT APPARATUS CERTIFICATE NO Ex 81265X

Held by ANDREW CHALMERS AND MITCHELL LTD
of Glasgow, G52 4QW

is hereby extended to apply to the apparatus conforming to the specification set out in the Schedules of the said Certificate but having any variations specified in the attached Schedule.

A copy of this Supplementary Certificate shall be attached to the original certificate.

File: EECS 0068/03/002

I M CLEARE
DIRECTOR EECS

Sheet 1/2
CERTIFICATE NO: Ex 81265X/9 dated 28 September 1990
TR

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

Certificate of Assurance

NUMBER Ex 81265X/9

DATED 28 September 1990

Schedule

VARIATION TWELVE Alternative terminal arrangement for use with conductors up to 6mm² comprising a Klippon MK6/6 terminal block (BASEEFA Component Approval No 4020U/B - Ex N II or BASEEFA Component Certificate No Ex 813095U - EEx e II) fitted with three Klippon QB 2 way cross connecting combs to facilitate looping of the supply cables.

DRAWINGS

Number	Issue	Date	Description
B494	-	10.9.90	Looping terminal arrangement MK6/6

VARIATION THIRTEEN Alternative label material, stainless steel, and other label detail changes.

DRAWINGS

Number	Issue	Date	Description
4849	01	11.9.90	No 500, 500VA transformer
4850	01	11.9.90	No 500, up to 400W MBF/U
4851	02	11.9.90	No 501, up to 400W HPS and 700W MBF/U
4852	02	11.9.90	No 502, up to 400W MBF/U 400W HPS and 500VA transformer
4853	02	11.9.90	No 502, 1000W HPS
4881	01	11.9.90	No 501, 1250VA transformer
4916	01	11.9.90	Lid tightening torque

British Approvals Service for Electrical Equipment in Flammable Atmospheres

BASEEFA

Certificate of Assurance - Variation

SUPPLEMENTARY CERTIFICATE BAS No. Ex 81265X/10

This is to certify that Apparatus Certificate number:

Ex 81265X

held by:

SIMPLEX CHALMIT LIGHTING LTD

of:

388 Hillington Road, Glasgow, Scotland, G52 4BL

for the:

500 RANGE OF CONTROL GEAR SYSTEMS

is hereby extended to apply to the apparatus designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

File No: EECS 0068/03/002

Sheet 1 of 2

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

I M CLEARE
DIRECTOR
8 June 1998

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances. Representation of equipment as "Certified" is valid only when the number of the prime certificate to which this certificate is a supplement is given on the relevant EECS Manufacturing Licence or Verification Certificate.

NATIONAL ACCREDITATION OF CERTIFICATION BODIES
Registration Number 020
The use of the Accreditation Mark indicates accreditation in respect of those activities covered by the accreditation certificate number 020.

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

British Approvals Service for Electrical Equipment in Flammable Atmospheres

BASEEFA

Schedule

Supplementary Certificate BAS No. Ex 81265X/10

VARIATION FOURTEEN

To permit alternative ignitors, the Parry PXA 000 for HPS lamps 150W to 1000W or the PXA 070 for 70W HPS lamps. The ignitors are covered by BASEEFA Component Approval Ex 97Y4283U coded Ex N II.

The ballast may be fitted with thermal cutouts.

DRAWING

Number	Issue	Date	Description
A6599	-	18.3.98	Lamp/Gear schedule

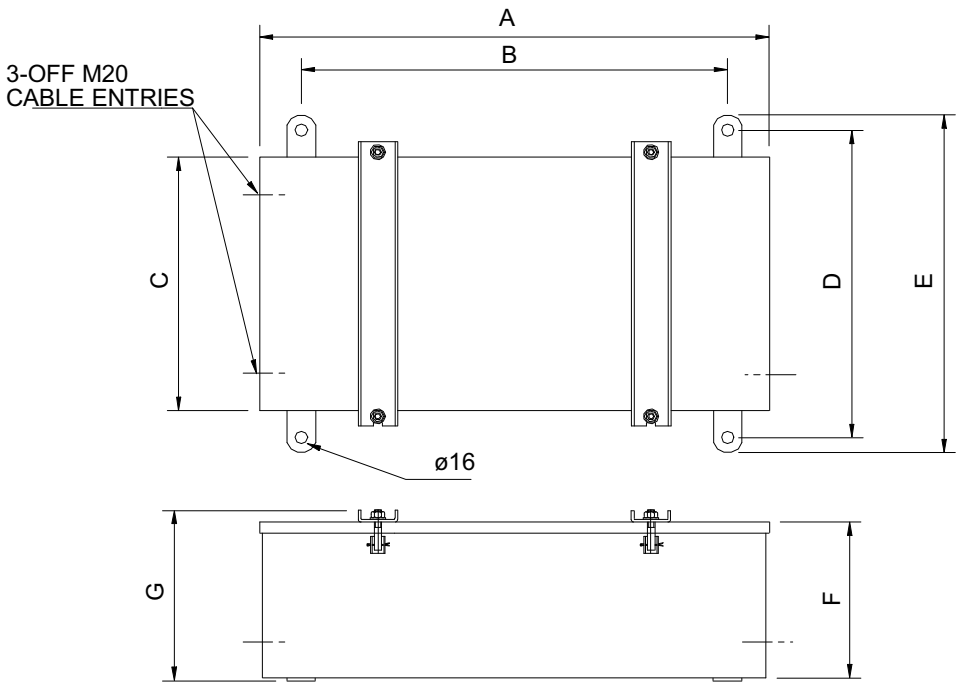
SPECIAL CONDITIONS FOR SAFE USE

As for the original schedule and supplements.

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

500N Series Control Gearbox

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



BOX TYPE	A	B	C	D	E	F	G
500	460	381	159	203	229	152	171
501	502	381	235	279	305	152	171
502	569	476	283	343	381	174	190

CE

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0.0 Specification

Type Of Protection	Ex N (non-sparking)
Area Classification	Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Standard	BS4683 Part 3: 1972
Certificate	BASEEFA Certificate of Assurance Ex 81265X, Code Ex N II T4 Tamb 40ºC,T4 Tamb 35ºC
Ingress Protection	IP66 and IP67 to BS EN 60529 (IEC 529)
CE Mark	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

1.0 Introduction – 500N Series Control Gearbox

The 500N Series of control gear boxes is usually used to power the 400 and 503 series Ex N luminaires. The boxes are fabricated from stainless steel and contain control gear or transformers as appropriate. They are also available without an ignitor in order to be able to power the luminaires with close coupled ignitor units.

Note : *Lamp ranges and temperature ratings are as indicated in TABLE 0.*

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with BS EN 60079-14 or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'.* Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.1.1 Special Conditions Of Certification *(X on Certificate)*

These special conditions should be read in conjunction with those for the associated luminaire :

1 For use with high pressure sodium lamps, the inter-connecting cable between the control gear box and the luminaire shall be suitable for the duty with the high voltage lamp striking pulse of up to 4.5kV. Subject to other limitations that may be imposed by a particular luminaire, the following cables may be regarded as suitable :

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(a) Glass braided cores (300/500V grade to table 10 of BS6500), formed in a 3-core cable with an outer sheath selected from table 8 in BS6500.
(b) 450/750V grade cable to table 8 in BS6500, but with the thickness of the outer sheathing increased to approximately 1½ times the value given in the table.

2 The control gear box should not be used with luminaires which incorporate high pressure sodium lamps with internal ignitors.

Note : *The standards quoted above are now obsolete or replaced by later editions. Reference should be made to the cable requirements of the associated luminaires. The requirements apply to the outgoing cable; the feed cable is not specified and can be ordinary PVC or better. Type 4891 cable meets the requirement to supply the luminaire.*

3.2 Tools

3mm and 5mm flat blade screwdriver, 13mm and 10mm A/F sockets.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected (the safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. ***Care must be taken connecting to the nominal 230V UK public supply.*** The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. In most cases, control gear boxes have multi-tap control gear which can be set to a range of 50 and 60Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected, but care should be taken to log or mark the equipment so that the tapping can be reset if the equipment is relocated. If in doubt, tappings should be set on the high side. 20V max. nominal drop is acceptable for mercury vapour and tungsten halogen sources, 10V max. drop is desirable for HPS. The light output will be reduced. The total supply and interconnecting cable drop should not exceed the values given.
All the HPS circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke, making the tap selection obvious. Where shore or construction site supplies are used, which are different to the service supplies, tappings should be reset. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

Important : *Circuits must not be energised without the lamp fitted. Lamps must be replaced shortly after they fail to light.*

Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

3.4 Luminaires

Care must be taken to ensure that the lamp used in the associated luminaire corresponds to the control gear used. ***HPS control gear boxes should not be energised with an unlamped luminaire connected.*** HPS lamps with internal ignitors must not be used. If the control gear box for 150W to 400W HPS luminaires is more than 16 metres from the luminaire, a luminaire with integral or close coupled ignitor is needed. Where "Plus" high output lamps are used, a close coupled ignitor is needed. For 70W and 1000W HPS the maximum distance is 2 metres.

3.5 Mounting

The box should be firmly attached to the structure in a position where access can be gained to install cables and carry out routine maintenance. Any mounting attitude can be used.

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3.6 Cabling and Cable Glands

3.6.1 Cables

The output cable must meet the requirements of the associated luminaire. The commonly associated luminaires use the "restricted breathing" enclosure technique. This means that the cable make up must be suitable for maintaining the restricted breathing enclosure of the luminaire when used in conjunction with the appropriate cable gland.

3.6.2 Cable Glands

The cable glands when installed should maintain the IP rating of the enclosure with a minimum of IP54 and meet any other installation requirements of *BS EN 60079-14*, or the appropriate local area code of practice. The cable gland should adequately secure the cable in the unit, unless provision is made to restrain the cable by other means. It is the responsibility of the user to ensure an adequate seal between the gland body and the apparatus.

Versions of the box are available for single entry and twin entry to loop 4mm^2 cable. Versions suitable for looping 6mm^2 cable are available to special order. The looping requirements should be specified when ordering. Clearance holes for M20 or M25 cable glands are standard. Versions with tapped internal pads are available to special order.

3.6.3 Installation

1 Undo the hexagon nuts securing the hinged lid. The rating plate is fixed to the lid. If the lid is removed to facilitate cabling, take care not to mix it up with lids from other boxes which may have different ratings.
2 Re-select the voltage tappings if necessary.
3 Install the cable glands and cables. If the supplied rubber sealing washer is used, the large stainless steel washer must also be used. The rubber washer can be inside or outside the box.
4 Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1mm bare conductor outside the terminal throat is a maximum.
5 Any unused terminals should be fully tightened.
6 Check for correct connections and replace the lid.
7 Tighten the lid to the recommended tightening torque (2 lb.ft/2.7Nm). Do not overtighten and distort the lid.

3.7 Inspection and Maintenance

Individual organisations will have their own procedures for inspection and maintenance. What follows are guidelines based on BS EN 60079-17 and on our experience.

Maintenance work and fault finding must be performed by competent personnel under an appropriate permit to work and with the apparatus isolated.

Frequency of maintenance will depend on experience and operating conditions.

Before opening, the box must be electrically isolated.

1 Ensure the control gear box is operating the associated luminaire correctly. If the luminaire is not operated correctly with a serviceable lamp, check the control gear box first for signs of bad connections or overheating. If the box is in good condition and the choke has continuity, check the fault finding procedure for the luminaire. Refer to the luminaire instructions.
2 Open the box. Check for any signs of water ingress. If there is, determine the entry point if possible. Replace the cable gland sealing washers or box lid gasket as appropriate (see below). Clean up and dry out the box before re-energising.
3 Check terminals for tightness and any sign of overheating. Replace the terminals where necessary. If the choke has overheated, it will be badly discoloured. A d.c. resistance check compared with a spare unit will give confirmation of any internal shorting.
4 The capacitors should be checked visually and if intact, and not corroded, should be satisfactory. The only likely fault with shunt capacitors is that the capacitance gradually reduces in the self-healing type or that the fuse blows. Capacitors can be disconnected and given a capacitance check. If capacitance has been lost and is a critical factor in the circuit design, consideration will need to be given to further investigation

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and the replacement of the capacitors. In those cases where the capacitors are used in conjunction with step-up transformers, the power factor correction is critical as the transformers will draw excess current and overheat if the secondary is uncorrected. If installations using transformers are seen to be "cycling", that is, going on and off, this can be due to the thermal trip in the transformer operating. If the luminaires on the circuit are apparently working normally, an investigation into the capacitance should be made.

5 Check the lid gasket and if there are signs that the gasket is not making a good joint, replace it (see below).

6 Check that the cable glands are tight and nip up if necessary.

7 Refit the lid and re-tighten the nuts to the recommended torque. A dab of grease on the thread is recommended.

8 Check that the rating label is readable and secure. Refit using silicone sealant or other suitable adhesive if necessary.

9 Re-energise and check for correct luminaire operation. Any spare parts needed must be obtained from the manufacturer and unauthorised modifications must not be made. If a lid gasket needs to be replaced, obtain a spare from Chalmit. Remove the old gasket and scrape off any adhesive. The gasket is self-adhesive, remove the self-adhesive backing, put the gasket in place squarely and smooth down.

3.8 Electrical Fault Finding and Replacement

Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With mercury and T-H lamps the faults are simple, loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discolouration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will result in signs of overheating. With HPS lamps the ignitor can become faulty. If the lamp is fitted and the choke has continuity and the connections are good and correct, they should produce an "attempt to start" flicker effect and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Some boxes have fuses fitted and these should be checked. The supply must be isolated.

3.9 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor 0.076A per µF at 50Hz (adjust for other volts my multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are indicated in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

4.0 Disposal of Material

The unit mostly contains incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

4.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury. This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

0.0 Tables 0/1/2

Table 0 Lamp Ranges and Temperature Ratings Refer to Section : 1.0

Model	Lamps	Transformer	T Rating
500	80W MBFU	500VA Auto	T4 Tamb 40ºC
	125W MBFU		
	250W MBFU		
	400W MBFU		
501	70W HPS	1250VA	
	150W HPS		
	250W HPS		
	400W HPS		
	700W MBFU		
502	1000W HPS		T4 Tamb 35°C
	Up to 400W HPS or MBFU		
		500VA Auto	T4 Tamb 40°C

Table 1 Starting and Running Currents Refer to Section : 3.9

Lamp	Lamp A	Start A	Run A	Capacitance µF	Circuit Power (W)
70W HPS	1.0	0.55	0.4	10	80
150W HPS	1.8	1.45	1.8	20	175
250W HPS	3.0	2.35	1.3	30	285
400W HPS	4.6	4.0	2.2	40	445
1000W HPS	10.6	6.9	5.0	100	1100
80W MBF	0.8	0.7	0.4	8	88
125W MBF	1.2	1.7	0.66	10	145
250W MBF	2.13	2.8	1.4	15	280
400W MBF	3.25	4.4	2.2	20	430
700W MBF	5.4	5.6	3.5	30	740

Note : *The lamp current is that between the control box and the luminaire.*
Start and run currents are corrected.
Minimum power correction factor: 0.85.

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Table 2 Fuse Ratings Refer to Section : 3.9

Lamp	**Number of Lamps**					
	1	**2**	**3**	**4**	**5**	**6**
150W HPS	4A	6A	10A	10A	16A	16A
250W HPS	10A	16A	16A	20A	20A	20A
400W HPS	16A	20A	20A	25A	25A	32A
700W MBF	16A	20A	25A	32A	32A	40A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

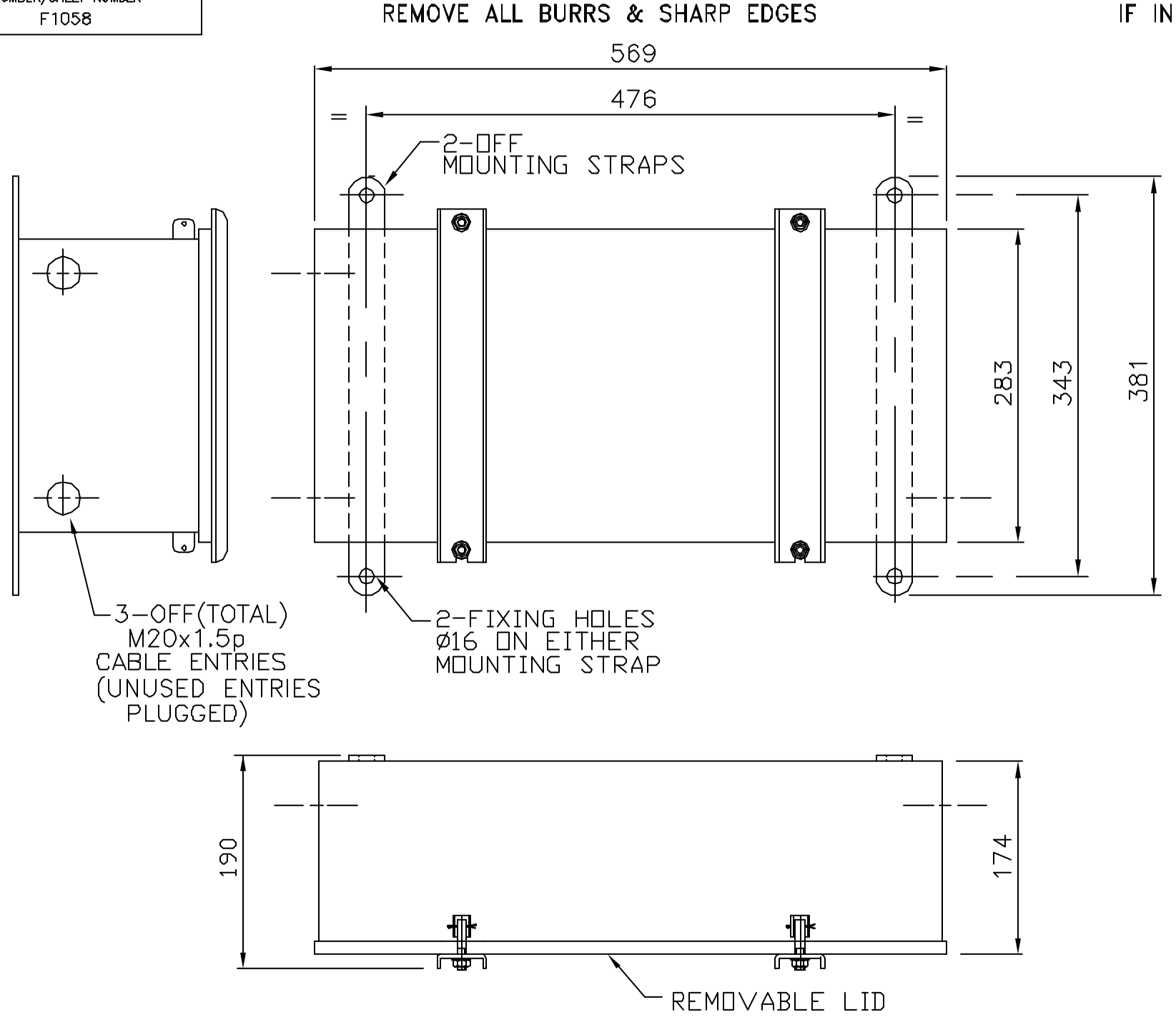
1	2	3	4	5	6	7	8

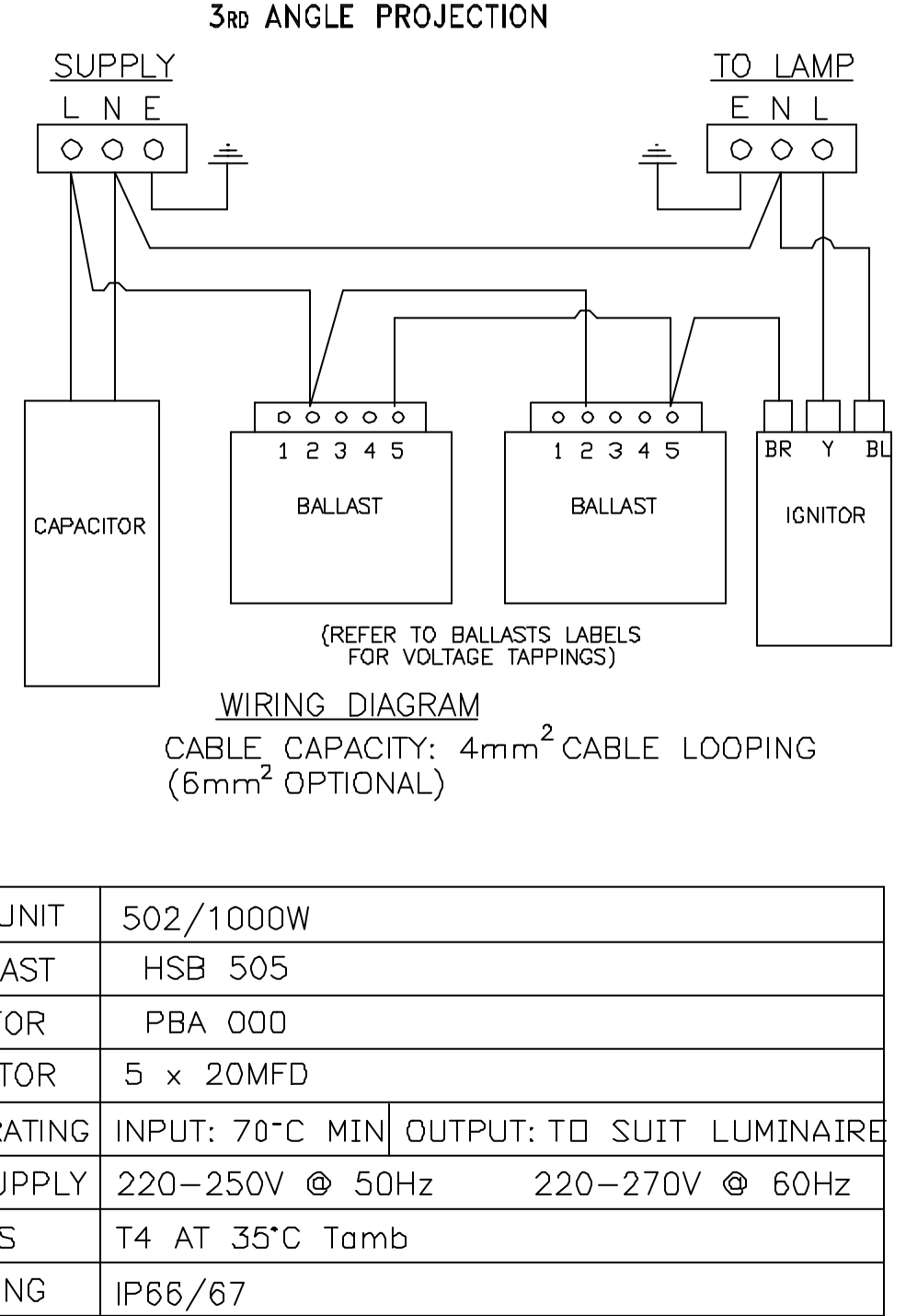
DRAWING NUMBER/SHEET NUMBER
F1058

REMOVE ALL BURRS & SHARP EDGES

IF IN DOUBT ASK!

3RD ANGLE PROJECTION





WIRING DIAGRAM

CABLE CAPACITY: 4mm^2 CABLE LOOPING
(6mm^2 OPTIONAL)

UNIT	502/1000W
BALLAST	HSB 505
IGNITOR	PBA 000
CAPACITOR	5 x 20MFD
CABLE TEMP RATING	INPUT: 70°C MIN | OUTPUT: TO SUIT LUMINAIRE
RATED SUPPLY	220-250V @ 50Hz 220-270V @ 60Hz
T CLASS	T4 AT 35°C Tamb
IP RATING	IP66/67
WEIGHT	32Kg

50 Ex N CONTROL GEAR BOX

TYPE OF PROTECTION....Ex N NON SPARKING
AREA CLASSIFICATION.....ZONE 2 AREAS TO BS EN 60079-14
STANDARD.....BS 4683 PART 3 : 1972
CERTIFICATE.....BASEEFA Certificate Ex 81265X.
Code Ex N II (see table below)
INGRESS PROTECTION....IP66/67 TO BS 5490 (IEC 529)
ENCLOSURE.....STAINLESS STEEL. GRADE 316 S31

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	10/06/02

REF. DRGS.-

MATERIAL	STAINLESS STEEL
TOLERANCE	N.T.S
FINISH	N/A
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	-

TITLE
503 Control Gear-Box

DRAWING NUMBER/SHEET NUMBER
F1058 1 OF 1

2484 and 2486

Ex N FLOODLIGHT

Ex N PROTECTION ZONE 2 APPLICATIONS

This range of floodlights is designed for use in harsh and corrosive environments. The quality of material and the ingress protection of IP66/IP67 means that the floodlight is highly resistant to saline corrosion. It is manufactured from marine grade 316S31 stainless steel and toughened glass with a silicone gasket. The range accommodates high pressure discharge lamps up to 600W rating.

The control gear is in a separate attached box for cool running which allows this luminaire to be used in ambient temperatures up to 55˚C

The cover is secured by four powerful instant release clamps making installation and maintenance quick and easy.
The 2486 is suitable for use with elliptical lamps therefore it can be used as an alternative to the 800 series which uses only tubular lamps.

Standard Specification

Type of Protection:	**Ex N (Non-sparking Restricted Breathing)**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**BS 4533 Part 102.51:1986**
Certificate:	**BASEEFA Ex 88Y4074X**
Coding:	**Ex N II T3 (Refer to table for ambient temperatures)**
Enclosure:	**Marine grade 316S31 stainless steel body with toughened glass window, silicone rubber gasket**
Reflector:	**Wide beam high purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Stirrup mounting**
Control Gear:	**Integral copper/iron choke with ignitor and PFC correction capacitors**
Relamping:	**Access via front glass cover assembly secured by four quick release stainless steel clamps**
Lampholder:	**E40**
Lamp Type:	**HPS Tubular and Eliptical, Mercury Vapour and Single Ended Tungsten-Halogen**
Burning Position:	**Universal, if lamp axis is not horizontal operate lamp cap down**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**200, 210, 220, 230, 240, 250V 50Hz** **220, 230, 240, 250, 260, 270V 60Hz**

Features

Excellent corrosion resistance properties

High ambient applications

Four quick release fasteners for ease of relamping and maintenance

Suspended cover front

Aiming quadrant

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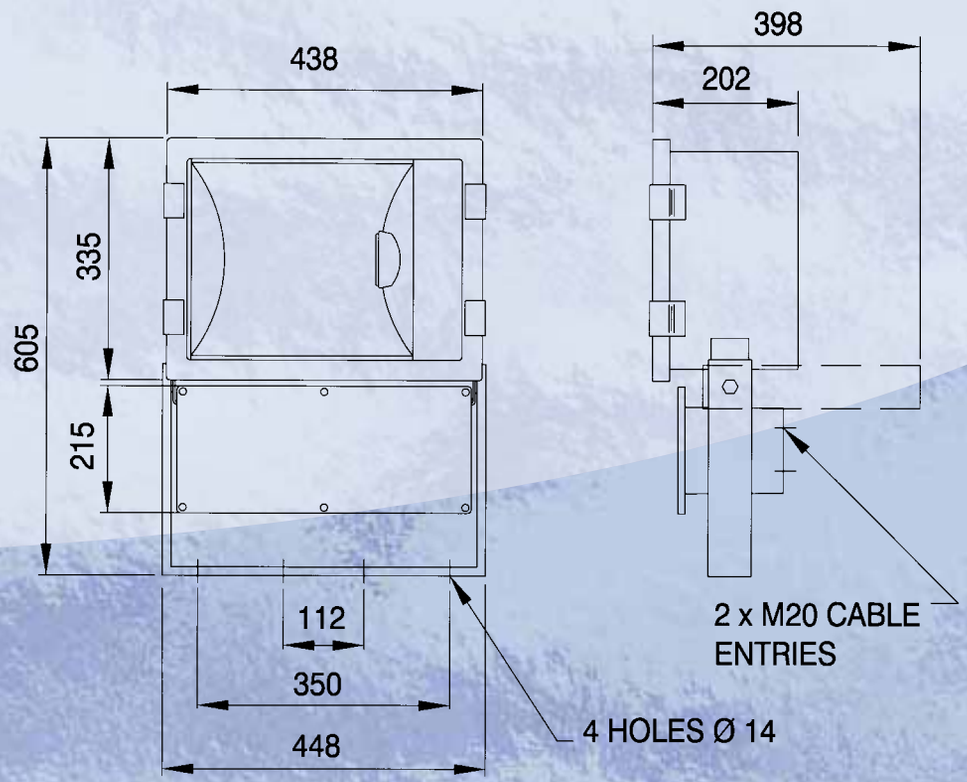
Std. Cat No.	Wattage	Lamp	Tamb	Weight
2484/150/HS	150W	HPS (SON/T)	55	21.0kg
2484/250/HS	250W	HPS (SON/T)	55	22.0kg
2484/400/HS	400W	HPS (SON/T)	55	23.0kg
2484/600/HS	600W	HPS (SON/T)	40	24.0kg
2486/150/HS	150W	HPS (SON/E)	40	21.0kg
2486/250/HS	250W	HPS (SON/E)	40	22.0kg
2486/400/HS	400W	HPS (SON/E)	40	23.0kg
2484/250/MH	250W	Metal Halide	40	22.0kg
2484/400/MH	400W	Metal Halide	40	23.0kg
2486/250/MV	250W	Mercury Vapour	40	21.0kg
2486/400/MV	400W	Mercury Vapour	40	22.0kg

Options - Suffix to Catalogue No.

/M25	M25 Entries
/N	Narrow beam reflector

Applications

- Zone 2 hazardous areas
- Harsh and corrosive environments
- Offshore oil and gas platforms
- Petrochemical industry
- High-mast floodlighting
- Tank farms
- Storage and process areas



Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting brackets	**S2400-0003**
Spigot mounting bracket	**S2400-0007**
Wire guard assembly (must be ordered with luminaire)	**S2400-0009**
Anti-glare shield assembly (must be ordered with luminaire)	**S2400-0004**

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BASEEFA

British Approvals Service
for
Electrical Equipment
in
Flammable Atmospheres

Certificate of Assurance

APPARATUS CERTIFICATE NO Ex 88Y4074X

Issued to ANDREW CHALMERS & MITCHELL LIMITED

of Glasgow G52 4QW

THIS IS TO CERTIFY THAT CHALMIT 2400 SERIES STAINLESS STEEL LUMINAIRES

designed and constructed in accordance with the specification set out in the Schedule and the documents therein referred to, including any variation specified in the Schedule, complies with the requirements of BS 4533 : Section 102.51 : 1986.

This Certificate is granted subject to the general conditions of the British Approvals Service for Electrical Equipment in Flammable Atmospheres and any additional conditions as may be prescribed.

This Certificate does not imply that the apparatus meets all statutory requirements in any particular industry or circumstance.

File : EECS 0068/03/001

Test Report No: ERA Ref 3628/117
Dated March 1988

Code : Ex N II T3

Sheet 1/4

103

p.p. **I M CLEARE**
Director
Dated 8 April 1988

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G
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Certificate of Assurance

NUMBER Ex 88Y4074X

DATED 8 April 1988

Schedule

APPARATUS

CHALMIT 2400 SERIES STAINLESS STEEL LUMINAIRES, comprise a restricted breathing enclosure for use with high pressure sodium (SON), metal halide (MBI) or elliptical high pressure mercury vapour (MBF/U) lamps. The Type 2484 luminaire is intended for use with SON/T and MBI/T lamps, whilst the Type 2486 luminaire is intended for use with SON, MBF/U and MBI/E lamps.

The apparatus covered by this certificate is listed below :-

TYPE NO.	LAMP WATTS	LAMP TYPE	BALLAST TYPE
2484	150	SON/T	HSN 155
2484	250	SON/T	HDN 255
2484	400	SON/T	HSN 405
2484	600	SON/T	HSM 605
2484	250	MBI/T	HDN 255
2484	400	MBI/T	HMN 405
2486	150	SON	HSN 155
2486	250	SON	HDN 255
2486	400	SON	HSN 405
2486	250	MBF/U	MN 255
2486	400	MBF/U	MN 405
2486	250	MBI/E	HDN 255
2486	400	MBI/E	HMN 405

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NUMBER Ex 88Y4074X

DATED 8 April 1988

Schedule

The luminaires may be used on any of the following supply voltage/frequency combinations :-

SUPPLY VOLTS (a.c. r.m.s.)	SUPPLY FREQUENCY (Hz)
200	50
210	50
220	50/60
230	50/60
240	50/60
250	50/60
260	60
270	60

Each luminaire comprises a lamp enclosure integrally connected to a control gear enclosure, fitted with a stirrup mounting to give angular adjustment of the light beam.

The lamp enclosure consists of a pressed or fabricated stainless steel body, containing an A. G. Hackney Type 95222 E40 porcelain lampholder covered by BASEEFA Approval Number 4153U (Code Ex N II), an anodised reflector and a removable (hinged)front frame with clear toughened glass secured to the body by two snap lever action stainless steel fasteners. A closed cell silicone rubber sponge gasket is fitted between the glass and the body. The lampholder is attached to an aluminium bracket with dual fixing positions, the lower position being used with tubular lamps, and the higher position with elliptical lamps.

The control gear enclosure consists of a body and a removable cover, fixed by six M5 screws. The body contains a Parry BS 4782 choke, a BS 4017 power factor correction capacitor or capacitors, a Klippon Type AKZ terminal rail assembly covered by BASEEFA Approval Number 4025 U/B (Code Ex N II) and in the case of high pressure sodium and metal halide lamps, a Parry Type PBA electronic ignitor covered by BASEEFA Approval Number 4131U (Code Ex N II). A closed cell neoprene rubber gasket is located between the cover and the body of the control gear enclosure. Cable entry is by means of a clearance hole (or holes in the case of the loop-in facility) on the side of the body to accept an approved gland appropriate to the cable being used.

Certificate of Assurance

NUMBER Ex 88Y4074X

DATED 8 April 1988

Schedule

The lamp enclosure and control gear enclosure are connected by two welded stainless steel brackets, one each end, which also provide the stirrup mounting. Additionally, a connecting tube, threaded at each end and gasketted, is fitted between the lamp enclosure and the control gear enclosure to enable the lampholder cables to pass from one to the other.

DRAWINGS

Number	Issue	Date	Description
D1136 Sheet 1	3	10-3-88	General Arrangement ✓
D1136 Sheet 2	4	10-3-88	Material Specification ✓
5474	-	1-2-88	Label for 2484
5475	-	1-2-88	Label for 2486
4812	-	22-1-81	H.V. Nameplate

SPECIAL CONDITION FOR SAFE USE

The luminaires may only be used with the major lamp axis horizontal.

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Certificate of Assurance

THIS IS TO CERTIFY THAT CERTIFICATE NO. Ex 88Y4074X

Issued to : ANDREW CHALMERS & MITCHELL LIMITED
of Glasgow, G52 4QW.

is hereby extended to apply to apparatus conforming to the specification set out in the Schedule of the said Certificate but having any variation specified in the attached Schedule.

File : EECS 0068/03/001

Test Report : ERA ref. 3628/137
Dated September 1988

CERTIFICATE NO. Ex 88Y4074X/1
Sheet 1/2
AES/105

I M CLEARE
DIRECTOR
Dated 20 September 1988

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

Certificate of Assurance

NUMBER Ex 88Y4074X/1

DATED 20 September 1988

Schedule

VARIATION ONE

Alternative mounting by means of an external stirrup bracket.

DRAWINGS

Number	Issue	Date	Description
D1136 Sheet 1	06	30/8/88	General Arrangement
D1136 Sheet 2	05	29/8/88	Material Specification

VARIATION TWO

Reversal of the control gear box to allow access from the rear of the fitting.

VARIATION THREE

Various minor drawing modifications to clarify construction.

VARIATION FOUR

To permit mounting of the luminaire with the lamp axis vertical with the lamp cap at the bottom. The following Special Conditions for Safe use will apply.

SPECIAL CONDITIONS FOR SAFE USE

1. The luminaire may only be used with the lamp axis a) horizontal or b) vertical with the lamp cap at the bottom.

2. The restricted breathing qualities must be maintained in service.

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Certificate of Assurance

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is hereby extended to apply to the apparatus conforming to the specification set out in the Schedules of the said Certificate but having the variation specified in the following Schedule.

SCHEDULE

VARIATION FIVE — The AKE4 earth terminals are omitted and the Klippon Type SSch busbar system is incorporated for earthing purposes. The SSch system is covered by BASEEFA Component Certificate Number Ex 813098U.

DRAWING

Number	Issue	Date	Description
5620	03	23.9.88	Arrangement of busbar inside the control gear box

SPECIAL CONDITIONS FOR SAFE USE

As for the original schedule.

File: EECS 0068/03/001

CERTIFICATE NO: Ex 88Y4074X/2 dated 3 October 1988

p.p. I M CLEARE
DIRECTOR

AH

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British Approvals Service
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in
Flammable Atmospheres

Certificate of Assurance VARIATION

THIS IS TO CERTIFY THAT APPATUS CERTIFICATE No Ex 88Y4074X

held by ANDREW CHALMERS & MITCHELL LIMITED
of Glasgow, G52 4QW

is hereby extended to apply to the apparatus conforming to the specification set out in the Schedules of the said Certificate but having any variation specified in the following variation Schedule.

VARIATION SIX Permits a stainless steel anti-glare shield to be screwed to the luminaire bezel.

DRAWINGS

Number	Issue	Date	Description
B455	-	6.11.89	Anti-glare shield attached to luminaire
5713	-	6.11.89	Anti-glare shield

SPECIAL CONDITIONS FOR SAFE USE

As for the original schedule.

File: EECS 0068/03/001

Test Report No: 89(N)334
dated 24 November 1989

I M CLEARE
DIRECTOR EECS

CERTIFICATE NO: Ex 88Y4074X/3 dated 24 November 1989
AH
Re-issued 26 May 1993 to correct certificate number

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

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BASEEFA

British Approvals Service for Electrical
Equipment in Flammable Atmospheres

CERTIFICATE OF ASSURANCE VARIATION

THIS IS TO CERTIFY THAT CERTIFICATE No Ex 88Y4074X

Held by: ANDREW CHALMERS & MITCHELL LIMITED
of Glasgow, G52 4QW

for the CHALMIT 2400 SERIES STAINLESS STEEL LUMINAIRES
is hereby extended to apply to the apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the attached Schedule.

A copy of this Supplementary Certificate shall be attached to the original certificate.

File No: EECS 0068/03/001

ERA Report Ref 3628/167
dated April 1991

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

I M CLEARE
DIRECTOR EECS
3 May 1991

CERTIFICATE No Ex 88Y4074X/4
Sheet 1/3
ref/R0135B/REP4
Reissued 17 October 1994 to amend the variation and supplementary certificate numbers

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: 0298 26211 Fax: 0298 79514 Telex: 668113 RLSD G

HSE Health & Safety Executive

Schedule

Certificate of Assurance No Ex 88Y4074X/4 dated 3 May 1991

VARIATION SEVEN

Revision of the number and construction of the lamp housing cover retaining clamps from 2 to 4 clamps to provide a Degree of Protection of IP66, or 2 heavy duty clamps to provide Degree of Protection IP65, together with associated label changes.

DRAWINGS

Number	Issue	Date	Description
D1136 Sheet 1	08	21/2/91	GA
5779	-	4/6/90	Label 2484
5780	-	4/6/90	Label 2486

VARIATION EIGHT

Clarification of control gear capacitor details

DRAWING

Number	Issue	Date	Description
D1136 Sheet 2	06	1/3/91	Certification Data

VARIATION NINE

To allow for the addition of an external cover glass wire guard.

DRAWING

Number	Issue	Date	Description
C489	01	2/11/90	Guard Detail

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Schedule

Certificate of Assurance No Ex 88Y4074X/4 dated 3 May 1991

VARIATION TEN

Minor modifications to the drawing notes with reference to cable entries.

VARIATION ELEVEN

To allow an alternative terminal assembly Klippon Type MK 6/6 certified according to Component Certificate Ex 813095U.

DRAWING

Number	Issue	Date	Description
C486	-	6/9/90	Terminal Assembly

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BASEEFA

British Approvals Service for Electrical
Equipment in Flammable Atmospheres

Certificate of Assurance Variation

THIS IS TO CERTIFY THAT APPARATUS CERTIFICATE No Ex 88Y4074X

Held by CHALMERS & MITCHELL LIMITED

of Glasgow G52 4QW

for the CHALMIT 2400 SERIES STAINLESS STEEL LUMINAIRE

is hereby extended to apply to the Apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the attached Schedule.

A copy of this Supplementary Certificate shall be attached to the original certificate.

File No: EECS 0068/03/001

ERA Ref:: 3628/234
dated August 1994

CERTIFICATE No Ex 88Y4074X/5
Sheet 1/3
ref/R0135A/REP4

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

I M CLEARE
DIRECTOR EECS
17 October 1994

This certificate is issued under NACCB accreditation No. 020

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: 0298 26211 Fax: 0298 79514 Telex: 668113 RLSD G

HSE Health & Safety Executive

BASEEFA

Schedule

Certificate of Assurance No Ex 88Y4074X/5 dated 17 October 1994

VARIATION TWELVE

To allow the maximum ambient temperature to be increased from 40°C to 55°C for the 2484 Series floodlights when in the HPS (SON/T) 400W, 250W and 150W configurations.

DRAWINGS

Number	Issue	Date	Description
D1136 Sheet 1	10	16/6/93	GA
D1136 Sheet 2	07	16/6/93	Certification information
C569	01	16/6/93	Certification information

VARIATION THIRTEEN

To allow the marking for the Degree of Protection to be changed from IP66 to IP66/67 on the certification nameplate for floodlights in which the lamp housing cover is fitted with four retaining clamps and the control gear box is fitted with a silicone rubber gasket.

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BASEEFA

Schedule

Certificate of Assurance No Ex 88Y4074X/5 dated 17 October 1994

VARIATION FOURTEEN

To allow the removal of the power factor correction capacitor. This item is now optional.

VARIATION FIFTEEN

To allow the following minor mechanical changes:

- the control gear box cover fixing screws are now M5
- the addition of an external earth stud adjacent to the cable entry holes

VARIATION SIXTEEN

To allow the removal of the ballast and capacitors from the control gear box to form a lamp housing and ignitor box.

SPECIAL CONDITION FOR SAFE USE

For variation sixteen the lamp and ignitor must be supplied from a remote ballast as specified on the certified drawing which is in accordance with IEC 922 and IEC 923, but which does not form part of this certification,

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British Approvals Service for Electrical
Equipment in Flammable Atmospheres

BASEEFA

Certificate of Assurance - Variation

SUPPLEMENTARY CERTIFICATE BAS No. Ex 88Y4074X/6

This is to certify that Apparatus Certificate number:

Ex 88Y4074X

held by:

SIMPLEX CHALMIT LIGHTING LTD

of:

Glasgow, G52 4BL

for the:

THE CHALMIT 2400 SERIES STAINLESS STEEL LUMINAIRES

is hereby extended to apply to the apparatus designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

File No: EECS 0068/03/001

Sheet 1 of 2

ELECTRICAL EQUIPMENT EECS VERIFICATION SERVICE

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances. Representation of equipment as "Certified" is valid only when the number of the prime certificate to which this certificate is a supplement is given on the relevant EECS Manufacturing Licence or Verification Certificate.

I M CLEARE
DIRECTOR
5 August 1997

NATIONAL ACCREDITATION OF CERTIFICATION BODIES
Registration Number 020
The use of the Accreditation Mark indicates accreditation in respect of those activities covered by the accreditation certificate number 020.

HSE

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

British Approvals Service for Electrical Equipment in Flammable Atmospheres

BASEEFA

Schedule

Supplementary Certificate BAS No. Ex 88Y4074X/6

VARIATION SEVENTEEN

To allow the use of an alternative ignitor namely the type PXE 000 as assessed in BASEEFA Certification Report No 96(C)1064.

DRAWING

Number	Issue	Date	Description
B909	-	14.03.97	Table of alternatives

SPECIAL CONDITIONS FOR SAFE USE

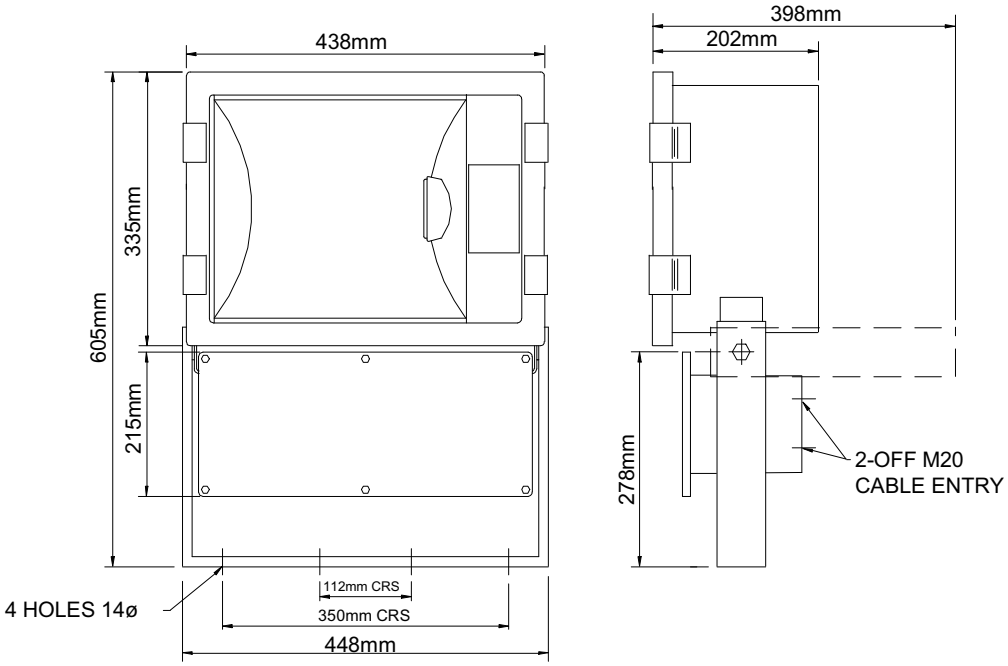
As in the original certificate and variations.

Issue | 04

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

2484 & 2486 Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



WEIGHT: 24kg MAX
WINDAGE AREA: 0.23m^2

CE

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0.0 Specification

Type Of Protection	Ex N (non-sparking) (restricted breathing enclosure)
Area Classification	Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Standard	BS4533 Pt.102.51(1986)
Certificate	BASEEFA Certificate of Assurance Ex 88Y4074X Code Ex N II T3 Tamb 40ºC, T3 Tamb 55ºC (150/400W SON/T only, to special order)
Ingress Protection	IP66 and IP67 to BS EN 60529

CE Mark

CE

The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

1.0 Introduction - 2484 & 2486 Floodlight

The 2484/2486 series Ex N floodlights are suitable for SON/T, SON/E, MBF, MBI/T and MBI/E lamps. The type of protection is Ex N using a restricted breathing enclosure. The maximum ambient is 40°C for all models, although 150/400W SON/T models are available with a Tamb 55ºC. The surface temperature rating is T3. The 2484 uses tubular HPS and MBI lamps. It is available with wide (mottled) and narrow (specular) beam reflectors. The lamp is mounted in the focus (rear) position on the lampholder bracket. The 2486 uses elliptical lamps both HPS (SON/E) and HPMV (MBF/U) and MBI. It is available only with the mottled reflector.
The elliptical lamps are mounted in the forward position.
Anti-glare shields are available for all types but must be ordered with the equipment as the fixings are not standard. Care must be taken to fit the correct lamp in order to maintain the certification conditions and obtain the designed photometric performance.

Note : *The IP66/67 rating applies to the current 4-clamp models only.*
Lamp ranges are as outlined in TABLE 0.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK the requirements of the 'Health and Safety at Work Act' must be met.
Handling and electrical work associated with this product to be in accordance with the 'Manual Handling Operations Regulations' and 'Electricity at Work Regulations, 1989'. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

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3.1.1 Special Conditions for Safe Use : (Suffix 'X' on Certificate Number)

1 The luminaire may only be used with the lamp axis a) horizontal or b) vertical with the lamp cap at the bottom.
2 The restricted breathing qualities must be maintained in service.

3.2 Tools

A piece of 6mm diameter bar or a cross head screwdriver blade to release the cover.
3mm and 5mm flat blade screwdriver, 19mm A/F spanner, 8mm A/F socket.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping***. Care must be taken connecting to the nominal UK 230V public supply***. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. In some cases, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages.
The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system an appropriate voltage tap should be selected, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side. 20V Max. nominal drop is acceptable for MBF. 10V Max. drop is desirable for HPS and advised for MBI. All the HPS and MBI circuits use S.I.P. (superimposed pulse) ignitors. This means that there are only two connections to the choke, making the tap selection obvious. Where MBI/Metal Halide lamps are used, the tapping must be set accurately for best performance.
Where shore or construction site supplies are used, different to the service location supplies, tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The high pressure sodium and mercury vapour lamps are of a standardised type. There is no preference between make or colour. All have E40 caps. MBI lamps are not standardised in the 250W and 400W ratings. The 250W used is the 3.0 A type. The control gear currently supplied for the 400W is designed to run the old standard 3.5A lamp and will also run the 4.2A "SON compatible lamp" at 360W rating. The OSRAM lamp now available is designed to run at both currents, the output being appropriate to the wattage***. Take care in the initial and replacement selection of MBI lamps or problems will occur. HPS and MBI lamps should be replaced shortly after they do not light. The indication of the end of life for HPS lamps is 'cycling' where the lamp goes out then re-ignites after a minute or so interval***. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with possible detrimental effects to control gear.
The above information is current at the time of printing. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or from Chalmit.

Important : *HPS and MBI circuits should not be energised without a lamp fitted. HPS and MBI lamps with internal ignitors must not be used.*

Note : *Refer to Section 3.9 for notes regarding 600W lamps under fault finding.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The foot mounting arrangement should be secured with lock washers or self-locking nuts and bolts. The luminaire should be mounted with the lamp axis horizontal. Any aiming angle may be used. If vertical mounting is used, the lamp cap must be downwards (choke uppermost).

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3.6 Cabling and Cable Glands

3.6.1 Cables

The temperature conditions at the supply cable entry point are such that 70°C (ordinary PVC.) cable can be used on Tamb 40ºC models. Tamb 55ºC models use 85ºC cable. The standard conductor section is 4mm² max. Versions for 6mm² can be obtained to special order. All models are suitable for looping. Standard 300/500V cable is suitable. The cable makeup must be suitable to ensure the maintenance of the restricted breathing enclosures when the cable gland is fitted.

3.6.2 Cable Glands

Cable glands and sealing plugs when installed must maintain the restricted breathing enclosure. (Vacuum test, 300mm head of water, half pressure time 3 mins. minimum). Rubber sealing washers and steel compression washers are provided with the unit. The user must ensure that the assembly fulfils the above requirement.
No means of checking the air tightness of the assembled unit is provided. Where a new or unproven sealing arrangement is introduced, users should check a sample for substantial air tightness before making a full installation.
Entries suitable for M20 cable glands are standard. Entries suitable for M25 are available to special order.

3.7 Cabling and Fitting Lamps

Access for fitting lamps is by removing the front cover. Access for cabling is via the control gear box cover. Before removing any cover on any occasion, check that the cover support chain is sound and the supply is isolated. The front cover is released by undoing the toggle clips using a screwdriver or a peg through the hole in the clip.
Lamps must be of the correct type and firmly screwed into place. The cover is replaced and the toggle clips snapped over.
Access for cabling is via the control gear box cover. The screws are loosened and the cover removed, the screws should remain captive. Before cabling any voltage tap re-selection required should be made. The conductor ends should be prepared so that the conductors are properly gripped and the bare part of the conductor should not extend more than 1mm beyond the throat. The connections should be made in accordance with the polarity marked and any unused terminal screws should be fully tightened, cover screw torque 2Nm. Before replacing the cover a final check should be made on the connections.

3.8 Inspection and Maintenance

Visual inspection should be carried out at suitable intervals and frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised and isolated before opening. Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and on our experience:

1 Ensure the lamp is lit when energised and that the lampglass is not damaged. Check for superficial damage to the enclosure.
2 When de-energised and left to cool there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting.
3 Check the cable gland for tightness and nip up if necessary. Check supply cables for damage.
4 Check all cover toggle clips for tightness. If they appear slack, re-set by bending the angle between the long sides of the clips, until they have a firm grip and need firm pressure to latch home.
5 Clean the lampglass.

Every three years, or more frequently depending on experience, the control gear box cover should be removed. The internal connections should be checked for tightness and any sign of corrosion or overheating. Any suspect components should be replaced. The cover gasket should be examined and if it has hardened or lost elasticity, it should be removed completely and replaced with a new one.

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3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.
With mercury vapour lamps the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first overheated; the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating.
Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS and MBI the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an attempt to start effect in the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure.
The 600W "Plus" lamp is now the only one available, older luminaires may have trouble striking this lamp. Refer to Chalmit for replacement ignitors and advice.
Before re-assembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

3.9.1 Thermal Protector

Thermal protectors are being introduced into the ranges. If the lamp goes on and off over a timescale of several minutes this could be the thermal protector operating. The causes are defective lamps/diode effects, gross over voltage or the choke beginning to fail and this should be investigated directly.

4.0 Overhaul

The unit is largely made of materials which are very corrosion resistant. This allows the unit to be completely stripped, mechanically cleaned, then re-built with new electrical parts as required. The internal wiring is 1mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable. All the spares required are available. Please state the model number, lamp and reflector details.
The seal at the cover is between the glass and the body. The glass is retained in the cover frame by silicone R.T.V. adhesive. If the cover gasket has deteriorated by softening or permanent set, a new cover assembly should be fitted. The IP66 4-clamp models use the 6 x 12mm firm grade of gasket, whereas the 2-clamp models use the 6 x 20mm softer grade of gasket. Cover assemblies should be identified before ordering. As an alternative, replacement gasket strip can be obtained from Chalmit but to fit this, care is needed. The old gasket should be removed and remaining adhesive scraped off with a chisel type blade. New strips are cut full length on the short sides and neatly butted on the long sides. The gasket pieces are fixed in place and the butt joint sealed with silicone R.T.V. The cover assembly is left unclipped on top of a body and with a suitable weight pressing uniformly on the frame and with a sheet of thin polythene between it and the body to avoid adhesion. After a few hours the cover is removed and allowed to cure in free air for 24 hours. The assembly should be tested for air tightness on a test body before being fitted to an overhauled unit. The control gear chamber cover gasket is black foamed polychloroprene, replaced by white silicone in later models. It is replaced by completely scraping it away from the lid, then fitting a new gasket obtained from the manufacturer. The silicone gasket is adhered by RTV, use the same procedure as for the lampglass.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor 0.076A per µF at 240V, 50Hz (adjust for other voltages by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in Table 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

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6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

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0.0 Tables 0/1/2

Table 0 Lamp Ranges Refer to Section : 1.0

Lamp	Wattage	Model
SON/T	150, 250, 400 and 600W	2484
SON/E	150, 250 and 400W	2486
MBFU	250 and 400W	2486
MBI/T	250 and 400W	2484
MBI/E	150, 250 and 400W	2486

Table 1 Starting And Running Currents Refer to Section : 5.0

Lamp	Start A	Run A	Capacitance µF	Circuit Power (W)
150W HPS	1.45	0.8	20	175
250W HPS	2.35	1.3	30	285
400W HPS	4.0	2.2	40	445
600W HPS	5.6	3.1	60	645
150W MBI	1.6	0.8	20	175
250W MBI	2.7	1.35	30	285
250W MBF	2.8	1.4	15	280

Table 2 Fuse Ratings Refer to Section : 5.0

Lamp Wattage	Number of Lamps					
	1	2	3	4	5	6
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A
600W	16A	20A	25A	32A	32A	40A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

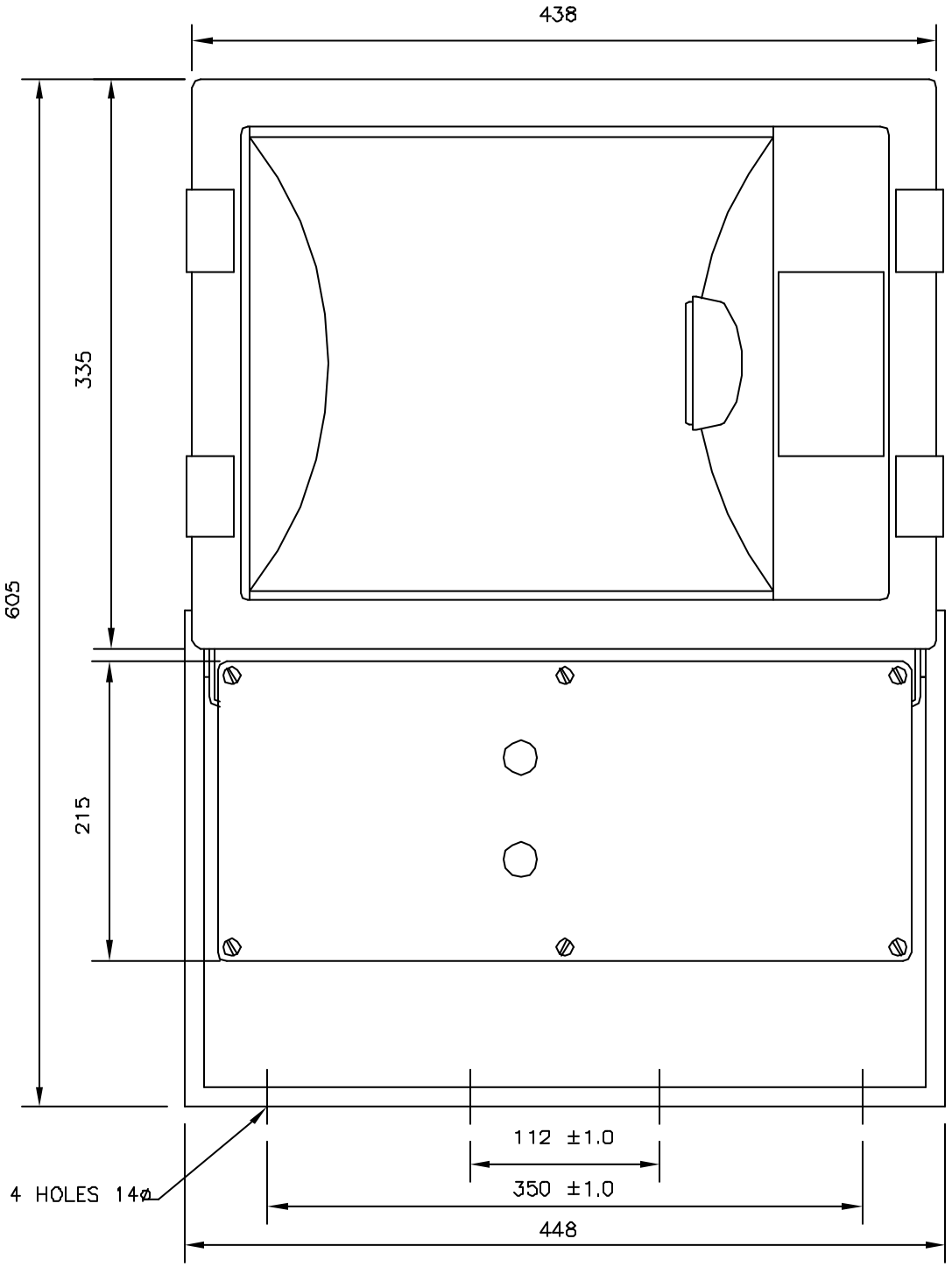
Registered No. 3650461

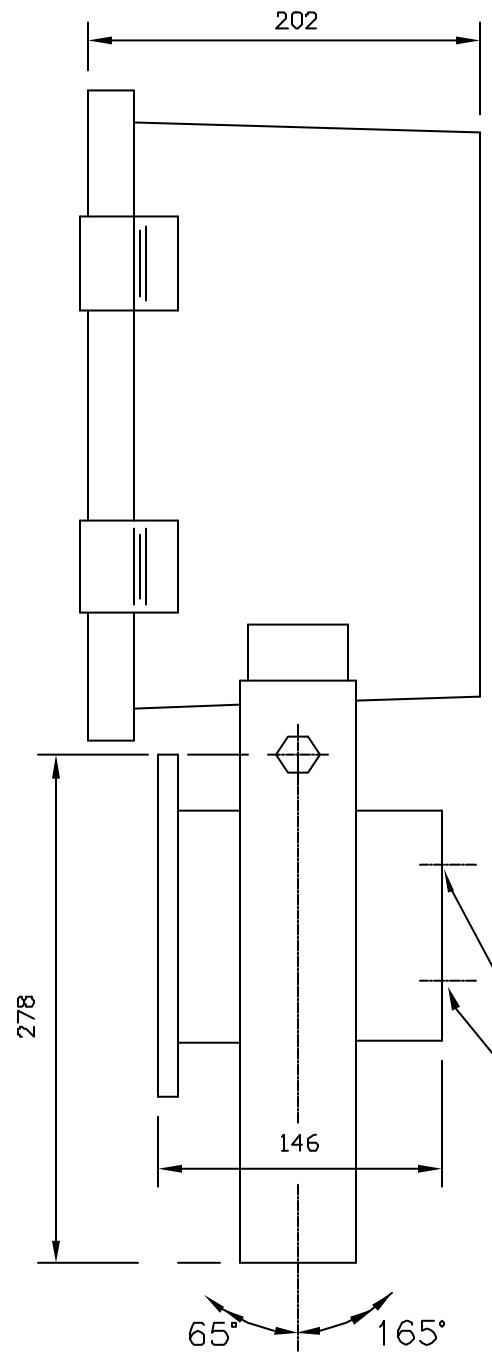
Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

Hubbell Lighting Inc.

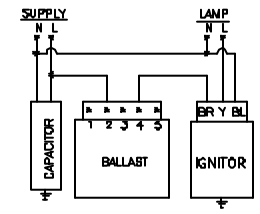
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

1	2	3	4	5	6	7	8	
DRAWING NUMBER/SHEET NUMBER F1057	REMOVE ALL BURRS & SHARP EDGES			IF IN DOUBT ASK!		3RD ANGLE PROJECTION		





LAMP		250W HPS	400W HPS	600W HPS
BALLAST		HDN 255	HSN 405	HSM 605
IGNITOR	PBA 400 OR PBA 400 MK II			PBA 000
CAPACITOR		2 x 15 µF	2 x 20 µF	3 x 20 µF
CABLE TEMP RATING	70°C (ORDINARY PVC CABLE)			
WEIGHT	24 Kg MAX.			
COMMON SPARES				
COVER ASSEMBLY	GEAR COVER SCREWS	LAMPHOLDER		
COVER ASSY GASKET	GEAR COVER GASKET			



WIRING DIAGRAM

2–OFF M20
CABLE ENTRY

REFER TO BALLAST FOR CORRECT TAPPINGS FOR REQUIRED VOLTAGE

CABLE CAPACITY: 4mm ²CABLE LOOPING (6mm² OPTION)

NOTE: THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE APPROPRIATE INSTALLATION LEAFLET.

DCF No	MOD BY	CHANGE	ISSUE	DATE

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	10/06/02
REF. DRGS.–	

MATERIAL	STAINLESS STEEL
TOLERANCE	N.T.S
FINISH	N/A
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	–

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE
2484 / 2486
Zone 2

DRAWING NUMBER/SHEET NUMBER
F1057 1 OF 1

2404/6/9
Ex N FLOODLIGHT

Ex N PROTECTION
ZONE 2 APPLICATIONS

This range of floodlights is designed for use in harsh and corrosive environments. It is a compact and efficient floodlight manufactured from marine grade 316S31 stainless steel and toughened glass with a silicone gasket.

The range accommodates high pressure discharge lamps up to 80W Mercury Vapour, 70W HPS and tungsten-halogen lamps up to 250W. The quality of materials and an ingress protection of IP66/IP67 ensures that the range is highly resistant to saline corrosion. The cover is secured by powerful instant release clamps making installation and maintenance quick and easy.

The small size affords low windage and minimum obstruction.

The helideck version complies with CAA dimensional regulations.

Standard Specification

Type of Protection:	**Ex N (Non-sparking Restricted Breathing)**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**BS 4533 Part 102..51:1986**
Certificate:	**BASEEFA Ex 90Y4335**
Coding:	**Ex N II (Refer to table for T rating) Tamb 40ºC**
Enclosure:	**Marine grade 316S31 stainless steel body with toughened glass window, silicone rubber gasket**
Reflector:	**Wide beam high purity anodised aluminium**
Entry:	**2 x M20 cable entries**
Termination:	**3 core 6mm² max. conductor with looping**
Installation:	**Stirrup mounting**
Control Gear:	**Internal copper/iron choke with ignitor and PFC correction capacitor**
Relamping:	**Access via front glass cover assembly secured by two quick release stainless steel clamps**
Lampholder:	**E27**
Lamp Type:	**High Pressure Sodium, Mercury Vapour and Single Ended Tungsten Halogen**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**220, 240V 50Hz (50, 70 and 80W), 250V max (Tunsten-Halogen)**

Features

Lightweight

Excellent corrosion resistant properties

Two quick release fasteners for ease of relamping and maintenance

Suspended cover front

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Std. Cat No.	Wattage	Lamp	T Class	Weight
2404/050/HS	50W	HPS SON/T	150ºC T3	8.5kg
2404/070/HS	70W	HPS SON/T	150ºC T3	8.5kg
2406/050/HS	50W	HPS SON/E	150ºC T3	8.5kg
2406/070/HS	70W	HPS SON/E	150ºC T3	8.5kg
2406/080/MV	80W	Mercury Vapour	150ºC T3	8.5kg
2409/150/TH	150W	Single Ended T/Halogen	T3	7.0kg
2409/250/TH	250W	Single Ended T/Halogen	220ºC T2	7.0kg

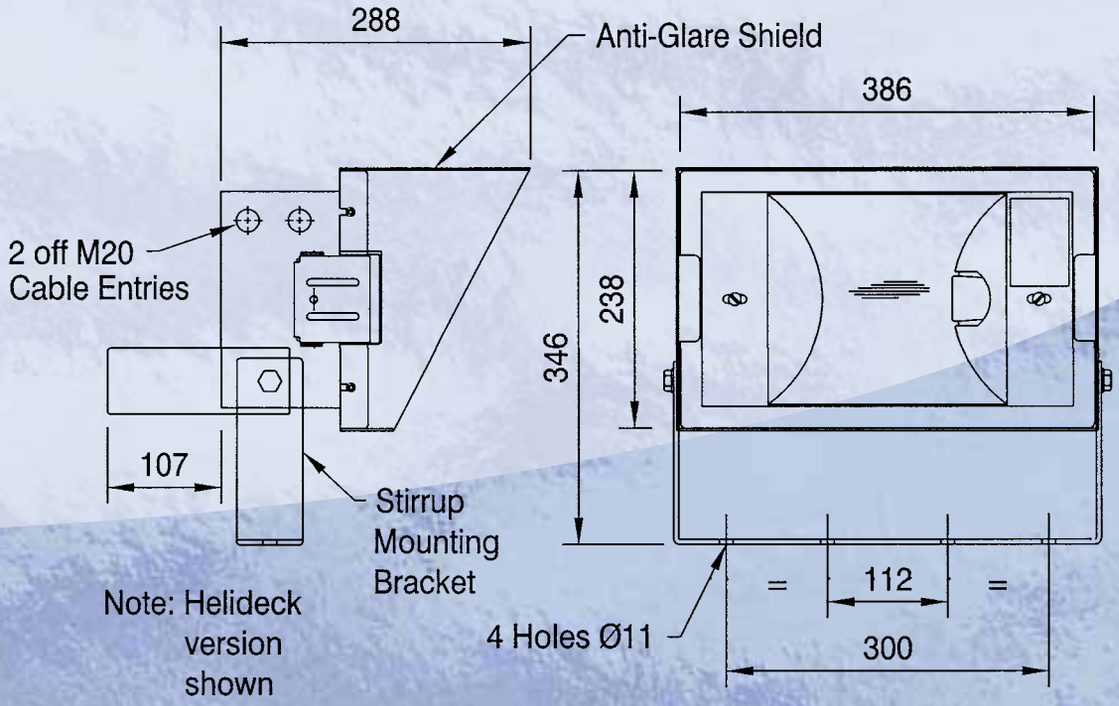
Note: 2409/250W uses 90ºC rated cable

Options - Suffix to Catalogue No.

/___	Specific voltage (200,210,230,254)
/60	60Hz
/M25	M25 entries
/N	Narrow beam reflector
/HD	Heli-deck version c/w anti glare shield and repositioned cable entries

Applications

- Zone 2 hazardous areas
- Ideal for harsh and corrosive environments
- Heli-deck lighting
- Offshore oil and gas platforms
- Petro-chemical industry
- Chemical process areas
- Walkway and access areas



Accessories (Should be ordered separately)	**Catalogue Order Code**
Pole mounting brackets	**S2404-0003**
Floorstand	**S2404-0005**
Anti Glare Shield (must be ordered with luminaire)	**S2404-0004**
Wire Guard (must be ordered with luminaire)	**S2000-WG**

BASEEFA

British Approvals Service
for
Electrical Equipment
in
Flammable Atmospheres

Certificate of Assurance

APPARATUS CERTIFICATE NO Ex 90Y4335

Issued to ANDREW CHALMERS & MITCHELL LIMITED

of Glasgow, G52 4QW.

THIS IS TO CERTIFY THAT THE CHALMIT 2400 SERIES OF STAINLESS STEEL FLOODLIGHT LUMINAIRES

designed and constructed in accordance with the specification set out in the attached Schedule and the documents therein referred to, including any variation specified in the Schedule, complies with the appropriate requirements where applicable of:-

BS 4533 : Section 102.51 : 1986

This Certificate is granted subject to the general conditions of the British Approvals Service for Electrical Equipment in Flammable Atmospheres and any additional conditions as may be prescribed.

This Certificate does not imply that the apparatus meets all statutory requirements in any particular industry or circumstance.

File : EECS 0068/03/010

Test Report No: ERA Ref 3628/158
Dated September 1990

Code : Ex N II 150°C (T3)
or Ex N II T3
or Ex N II 220°C (T2)

Sheet 1/3

2207/38

I.M. CLEARE
DIRECTOR EECS
24 October 1990

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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Certificate of Assurance

NUMBER Ex 90Y4335

DATED 24 October 1990

Schedule

APPARATUS

CHALMIT 2400 SERIES OF STAINLESS STEEL FLOODLIGHT LUMINAIRES comprising a restricted breathing lamp enclosure for use with high pressure sodium lamps, high pressure mercury vapour lamps or tungsten halogen lamps. The variants of the apparatus covered by this certificate are listed below.

Type No	Lamp Watts	Temperature Class	Lamp Type
2404/50	50	150°C (T3)	SON/T
2404/70	70	150°C (T3)	SON/T
2406/50	50	150°C (T3)	SON/E or SON/T
2406/70	70	150°C (T3)	SON/E or SON/T
2406M/50	50	150°C (T3)	HPMV
2406M/80	80	150°C (T3)	HPMV
2409/150	150	T3	Tungsten Halogen
2409/250	250	220°C (T2)	Tungsten Halogen

The luminaires may be used with any of the following supply voltage/frequency combinations.

Supply Volts (a.c. r.m.s.)	Supply Frequency (Hz)
200	50
210	50/60
220	50/60
230	50/60
240	50/60
250	50/60
260	60

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Certificate of Assurance

NUMBER Ex 90Y4335

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Internal components comprise an A.G. Hackney Type 114800 E27 lampholder, Certified by BASEEFA according to Component Approval No. 4129U, and as appropriate a W.J. Parry ignitor, Type PBA070, Certified by BASEEFA according to Component Approval Ex 88Y4386U; a capacitor to BS 4017:1979 having metallised polypropylene film construction; a W.J. Parry or Transtar/Davis ballast to BS 4782:1971 and Klippon terminals, Type AKZ, Certified by BASEEFA according to Component Approval No. 4025U/B.

The luminaire may be operated with the lamp axis horizontal or vertical (lamp cap up).

Provision is made for the looping of supply cables.

Cable entry to the enclosure is made via threaded or clearance holes provided in the enclosure wall to accept an approved gland (or glands) appropriate to the cable being used and suitable for maintaining the restricted breathing properties of the luminaire.

DRAWING

Number	Issue	Date	Description
D1292	6	27/8/90	G.A.

VARIATION ONE

Alternative terminal assembly Type MK 6/6 manufactured by Klippon Electricals Limited, Certified by BASEEFA according to Component Approval No. 4020/U/B. Looping of the supply cables is provided by the fitting of Type QB 2-way comb.

British Approvals Service for Electrical Equipment in Flammable Atmospheres

BASEEFA

Certificate of Assurance - Variation

SUPPLEMENTARY CERTIFICATE BAS No. Ex 90Y4335/1

This is to certify that Apparatus Certificate number:

Ex 90Y4335

held by:

SIMPLEX CHALMIT LIGHTING LTD

of:

388 Hillington Road, Glasgow, Scotland, G52 4BL

for the:

CHALMIT 2400 SERIES OF STAINLESS STEEL LUMINAIRES

is hereby extended to apply to the apparatus designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

File No: EECS 0068/03/010

Sheet 1 of 2

ELECTRICAL EQUIPMENT EECS VERIFICATION SERVICE

I M CLEARE
DIRECTOR

4 June 1998

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances. Representation of equipment as "Certified" is valid only when the number of the prime certificate to which this certificate is a supplement is given on the relevant EECS Manufacturing Licence or Verification Certificate.

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244

NATIONAL ACCREDITATION OF CERTIFICATION BODIES
Registration Number 020
The use of the Accreditation Mark indicates accreditation in respect of those activities covered by the accreditation certificate number 020.

British Approvals Service for Electrical Equipment in Flammable Atmospheres

BASEEFA

Schedule

Supplementary Certificate BAS No. Ex 90Y4335/1

VARIATION TWO

To permit an alternative ignitor, the Parry PXA 070 which is covered by BASEEFA Component Approval No. Ex 97Y4283U coded Ex N II.

The ballasts may be fitted with thermal cutouts.

DRAWING

Number	Issue	Date	Description
A6601	-	18.3.98	Lamp/Gear schedule

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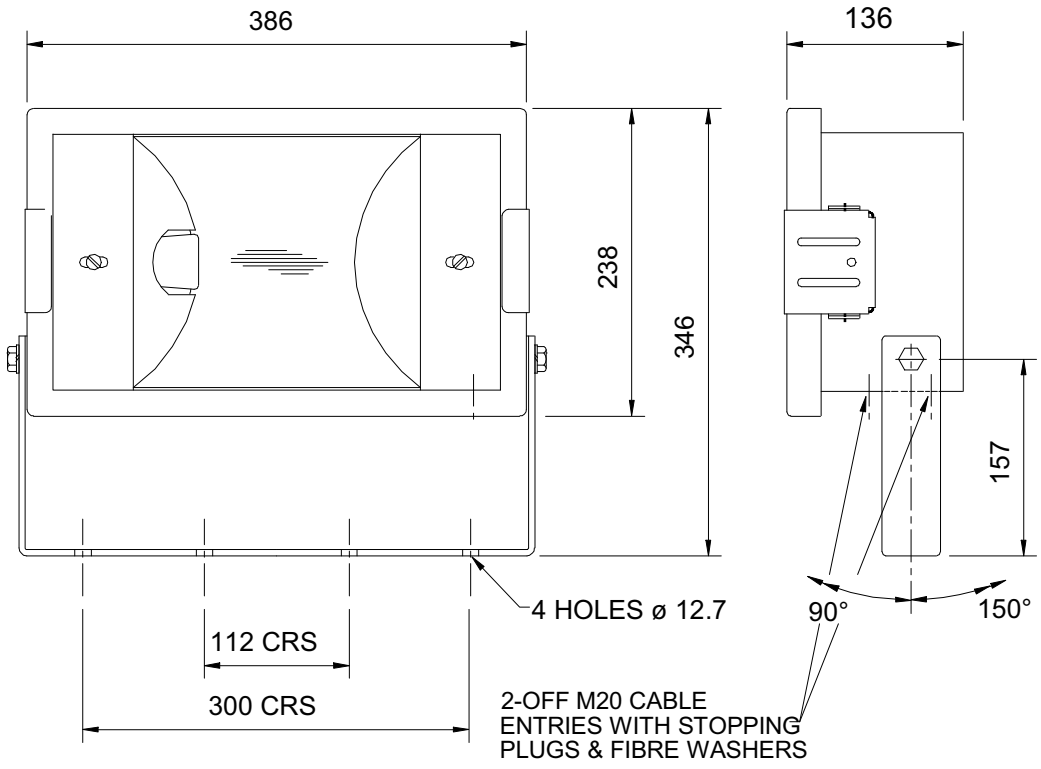
Issue | 03

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

2404, 2406 & 2409 Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



TYPE	SON/MBFU	T/HALOGEN
WEIGHT	8.5kg	7.0kg

WINDAGE AREA: 0.10m^2

CE

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0.0 Specification

Type Of Protection	Ex N (non-sparking) (restricted breathing enclosure)
Area Classification	Zone 2 areas to BS EN 60079-10 and installation to BS EN 60079-14
Standard	BS4533 Pt. 102.51 (1986)
Certificate	BASEEFA Certificate of Assurance Ex 90Y4335 Code Ex N II T3 or 150ºC (T3) or 220ºC (T2) Tamb 40ºC
Ingress Protection	IP66 and IP67 to BS EN 60529
CE Mark	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

1.0 Introduction - 2404, 2406 & 2409 Floodlight

The type 2404/2409 series floodlights are smaller versions of the 2484/2486 range. The type of protection is Ex N using a restricted breathing enclosure. The maximum ambient is Tamb 40ºC.

Note : *Lamp ranges and surface temperature ratings are outlined in TABLE 0.*

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN 60079-14* or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'*. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.2 Tools

A piece of 6mm diameter bar or a cross head screwdriver blade to release the cover.
17mm A/F spanner, 8mm A/F socket.
Flat blade screwdrivers 6mm and 3mm blade.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated

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continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. ***Care is needed connecting to the nominal 230V UK public supply***. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. In most cases, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, an appropriate voltage tap should be selected, but care must be taken to log or mark the equipment so that the tapping is re-set if the equipment is re-located. If in doubt, tappings should be set on the high side.
Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

3.4 Lamps

The discharge lamps used are of a standardised type. There is no preference between make of colour. All have E27 caps.
The 2404 uses tubular HPS lamps. It is available with wide (mottled) and narrow (specular) beam reflectors. The lamp is mounted in the focus (rear) position on the lampholder bracket.
The 2406 uses elliptical lamps, both HPS (SON) and HPMV (MBF/U). It is available only with the mottled reflector.
Also available on the 2406 is a dispersive glass ('stypolite') to reduce glare and provide an extra wide beam. The elliptical lamps are mounted in the forward position.
The 2409 uses single-end tungsten halogen lamps and is available only with the specular reflector.
Anti-glare shields are available for all types but must be ordered with the equipment, as the fixings are not standard. Care must be taken to fit the correct lamp in order to maintain the certification conditions and obtain the designed photometric performance.
HPS lamps should be replaced shortly after they do not light. One indication of the end of life for HPS lamps is 'cycling', where the lamps goes out then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with detrimental effects to control gear.
The above information is current at time if printing. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier or from our Technical Department.

Important : *HPS circuits should not be energised without a lamp fitted.*
HPS lamps with internal ignitors must not be used.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The foot mounting or rear mounting arrangements should be secured with lock washers or self-locking nuts and bolts. The luminaire should be mounted with the lamp axis horizontal. Any aiming angle may be used. If vertical mounting is used, the cable entry should be at the lower side.

3.6 Cable Connection

3.6.1 Cables

The temperature conditions at the supply cable point are such that 70ºC (ordinary PVC) cable can be used in all the discharge lamps units and the 2409/150W. 90ºC cable needs to be used for the 2409/250W.
The standard conductor section is 4mm² max. Versions for 6mm² can be obtained to special order. All models are suitable for looping. Standard 300/500V cable is suitable. The cable makeup must be suitable to ensure the obtaining of a restricted breathing enclosure when the cable gland assembly is fitted.

3.6.2 Cable Glands

Cable glands and sealing plugs when installed must maintain the restricted breathing enclosure. (*Vacuum test; 300mm head of water, half pressure time 3 mins. minimum*). Rubber sealing washers and steel compression washers are provided with the unit. The user must ensure that the assembly fulfils the above requirement.

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No means of checking the air tightness of the assembled unit is provided. When new sealing arrangements are to be installed, users should check a sample for substantial air tightness before making a full installation. Entries suitable for M20 cable glands are standard. Entries suitable for M25 are available to special order.

3.7 Cabling and Fitting Lamps

Access for cabling and fitting lamps is by removing the front cover. Before removing the cover on any occasion, check that the cover support chain is sound. The cover is released by undoing the two toggle clips using a screwdriver or a peg through the hole in the clip. The reflector is removed by releasing two screws. Reselect the voltage tappings if necessary. Install the conductors in the appropriate terminals. Take care not to cut back the insulation excessively, 1mm bare conductor outside the terminal is a maximum. Any unused terminal should be fully tightened.

When the cabling is complete, tuck the conductors away from the heat shield, make a final tightness and connection check, and then replace the reflector.

Lamps must be of the correct type and firmly screwed into place. The cover is replaced and the toggle clips snapped over.

3.8 Inspection and Maintenance

Visual inspection should be carried out at suitable intervals, frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening.

Individual organisations will have their own procedures. What follows are guidelines based on *BS EN 60079-17* and our experience :

1 Ensure the lamp is lit when energised and that the lampglass is not damaged.
2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketting.
3 Check the cable gland for tightness and nip up is necessary.
4 Check all cover toggle clips for tightness. If they appear slack, re-set by bending the angle between the long sides of the clips until they require firm pressure to lock into place.
5 Clean the lampglass.

3.9 Electrical Fault Finding and Replacement

With Mercury and T-H lamps the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has first over-heated; the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating.

Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS, the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an attempt to start effect in the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be checked and any damaged cable replaced.

The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

The supply must be isolated.

4.0 Overhaul

The unit is largely made of materials which are very corrosion resistant. This allows the unit to be completely stripped, mechanically cleaned, then re-built with new electrical parts as required. The internal wiring is 1.0mm² flexible, silicone rubber insulated. An H.T. sleeve is fitted to the ignitor cable.

All the spares required are available. Please state the model number, lamp and reflector details.

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The seal at the cover is between the glass and the body. The glass is retained in the cover frame by silicone R.T.V. adhesive. If the cover gasket has deteriorated by softening or permanent set, a new cover assembly should be fitted. As an alternative, replacement gasket strip can be obtained from Chalmit but to fit this, care is needed. The old gasket should be removed and remaining adhesive scraped off with a chisel type blade. New strips are cut full length on the short sides and neatly butted on the long sides. The gasket pieces are fixed in place and the butt joint sealed with silicone R.T.V. The cover assembly is left unclipped on top of a body with a sheet of thin polythene between it and the body to avoid adhesion.
After a few hours the cover is removed and allowed to cure in free air for 24 hours.
The assembly should be tested for air tightness on a test body before being fitted to an overhauled unit.

5.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating from a few seconds after starting, this effect is random and very variable. With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. The normal capacitor current will probably be the determining factor 0.076A per µF at 240V, 50Hz (adjust for other volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. For T-H inrush use nominal current x 8. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in a container to avoid possible injury by fragmentation.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

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0.0 Tables 0/1/2

Table 0 Lamp Ranges and Surface Temperature Ratings Refer to Section : 1.0

Lamp	T Rating	Model
50/70W HPS	150ºC (T3)	2404/6
50/80W MBF	150ºC (T3)	2406M
Up to 150W T/HAL	T3	2409
250W T/HAL	220ºC (T2)	2409

Table 1 Starting and Running Currents Refer to Section : 5.0

Lamp	Start A	Run A	Capacitance µF	Circuit Power (W)
50W HPS	0.35	0.3	8	60
70W HPS	0.55	0.4	10	80
50W MBF	0.32	0.3	6	58
80W MBF	0.5	0.43	8	88

Table 2 Fuse Ratings Refer to Section : 5.0

Lamp	Number of Lamps					
	1	2	3	4	5	6
50W HPS	4A	4A	4A	4A	4A	4A
70W HPS	4A	4A	4A	6A	6A	10A
50W MBF	4A	4A	4A	4A	4A	4A
80W MBF	4A	4A	4A	4A	6A	6A

Note : *Minimum power factor correction : 0.85*

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone	:	+44 (0)141 882 5555
Fax	:	+44 (0)141 883 3704
Email	:	info@chalmit.com
Website	:	www.chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

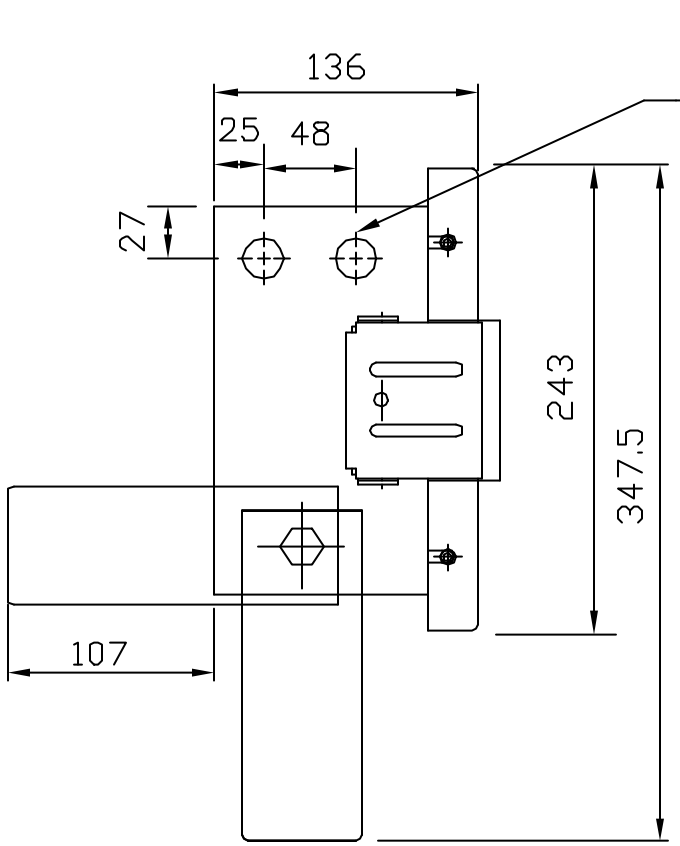
Registered No. 3650461

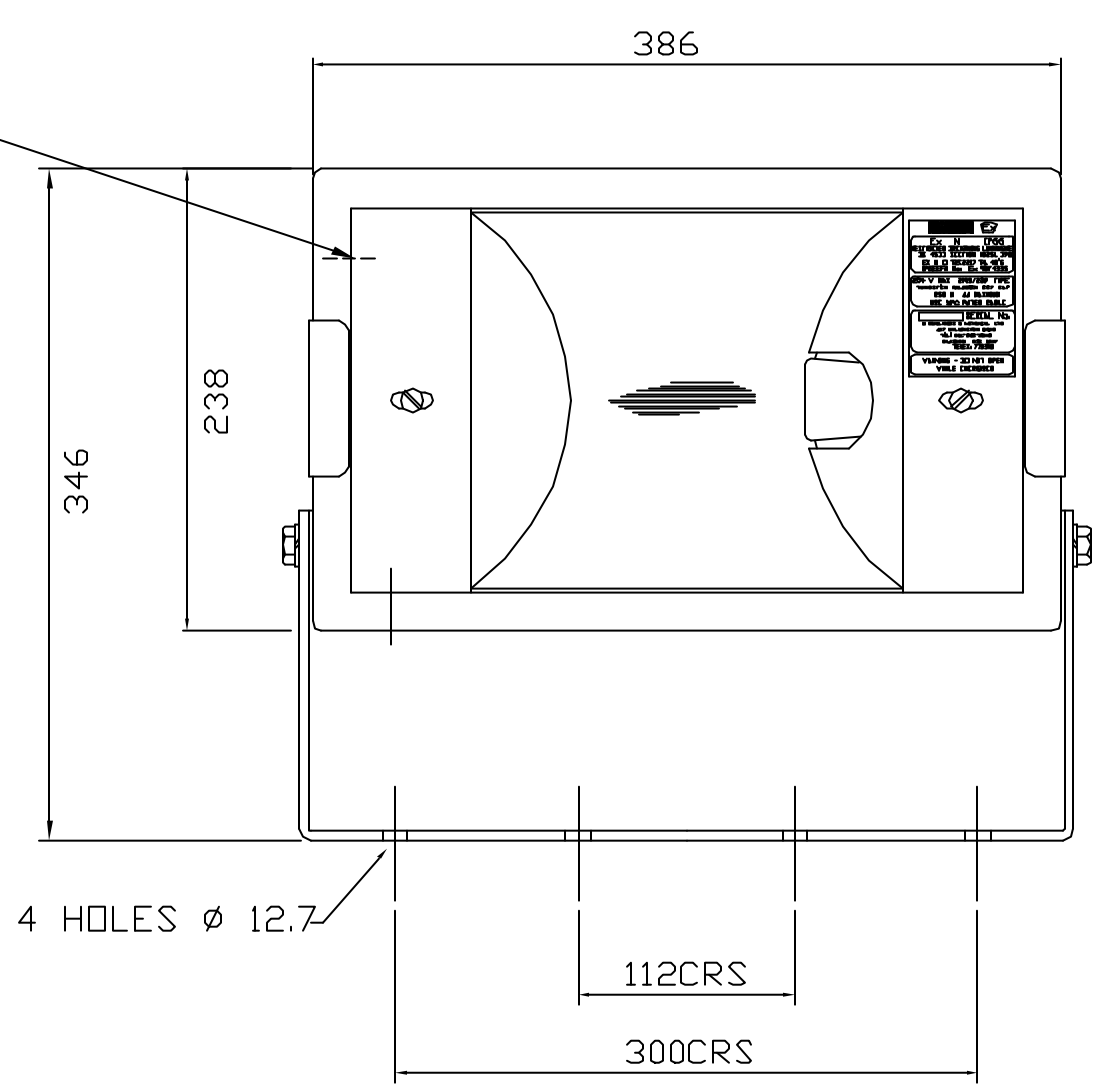
Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

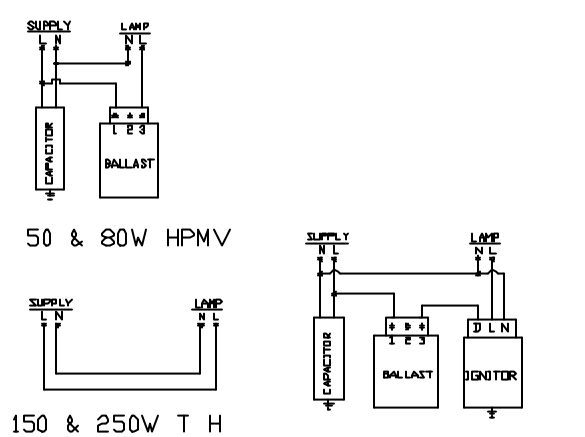
Hubbell Lighting Inc.

Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

1	2	3	4	5	6	7	8
DRAWING NUMBER/SHEET NUMBER F1054	REMOVE ALL BURRS & SHARP EDGES			IF IN DOUBT ASK!		3RD ANGLE PROJECTION	







TYPICAL WIRING DIAGRAM
CABLE CAPACITY:4mm² CABLE LOOPING
(6mm² OPTIONAL)

FLOODLIGHT	2404	2404	2406	2406	2406M	2406M	2409	2409
LAMP	50W SON/T	70W SON/T	50W SON	80W SON	50W MBF/U	80W MBF/U	150W TH	250W TH
BALLAST	CHALMIT – REFER TO LAMP/SUPPLY						N/A	
IGNITOR	PBA070				N/A		N/A	
CAPACITOR	1 x 10MFD				8MFD		N/A	
CABLE TEMP RATING	70°C	70°C	70°C	70°C	70°C	70°C	70°C	90°C
WEIGHT	8.5Kg						7.0Kg	
COMMON SPARES								
COVER ASSEMBLY	COVER ASSY GASKET	LAMPHOLDER
---	---	---

CERTIFIED DRG No. D1292
BASEEFA CERT. No. Ex 90Y4335
DEGREE OF PROTECTION IP66
SHELL MESC. No. 696184925.9
PROJECT NAME NELSON
ORDER No. EL/NLRN/6942A/EPA/X1

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	10/06/02

REF. DRGS.–

DCF No	MOD BY	CHANGE	ISSUE	DATE

MATERIAL	TOLERANCE
STAINLESS STEEL	N.T.S
FINISH	SURFACE ROUGHNESS
N/A	
DIMS. IN MM	SCALE –

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

TITLE: 2404 Zone 2

DRAWING NUMBER/SHEET NUMBER: F1054 1 OF 1

469

Ex N FLOODLIGHT

Ex N PROTECTION
ZONE 2 APPLICATIONS

The 469 is a high power floodlight for use with 300 to 1000W Tungsten-Halogen lamps. The protection is Ex N, non-sparking, to BS 4533 Pt 2 Sec 2:1 1976 using a restricted breathing enclosure.

This unique luminaire enables very high wattage lamps to be used for Zone 2 applications. The floodlight is fully weatherproof to IP66/IP67 and is made from corrosion resistant aluminium and toughened glass with a silicone rubber gasket seal. Through advanced design and construction techniques the surface temperature remains relatively low even at maximum lamp wattage.

The 469 is used where high instant illumination is needed and can be used with 120V or dc supplies.

Standard Specification

Type of Protection:	**Ex N (Non-sparking Restricted Breathing)**
Area Classification:	**Zone 2 areas to EN 60079-10 with installation to EN 60079-14**
Apparatus Standard:	**BS 4533 Part 2 Section 2:1 1976**
Certificate:	**BASEEFA Ex 78099X**
Coding:	**Ex N II (refer to table for T class and ambient)**
Enclosure:	**Marine grade aluminium alloy LM6 body with toughened glass window, silicone rubber gasket**
Reflector:	**Wide beam high purity anodised aluminium**
Entry:	**M20 cable entry**
Termination:	**3 core 4mm² max. conductor**
Installation:	**Foot mounted**
Relamping:	**Access via front glass cover assembly secured by stainless steel screws**
Lampholder:	**E40**
Burning Position:	**Universal**
Ingress Protection:	**IP66/67 to EN 60529**
Electrical Supply:	**up to 250V ac/dc**

Features

Very robust

Highly resistant to corrosion and mechanical damage

All stainless steel fasteners

Suspended hinged front cover assembly

Compact

ATEX version available

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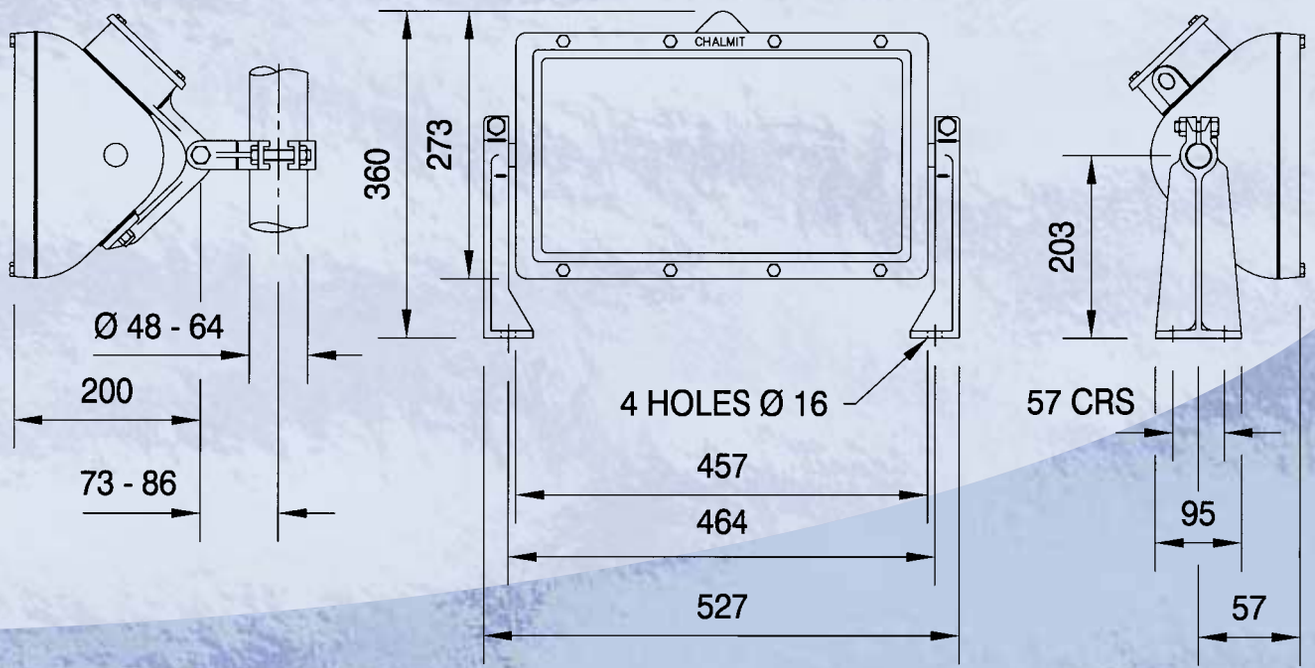
Std. Cat No.	Wattage	Lamp	Lampholder	T Class	Ambient°C	Weight
469N/300/TH	300W	Single Ended T/Halogen	E40	T3	50	10.0kg
469N/500/TH	500W	Single Ended T/Halogen	E40	T3	40	10.0kg
469N/1000/TH	1000W	Single Ended T/Halogen	E40	T2	40	10.0kg

Options - Suffix to Catalogue No.

/PM	Pole mounted version
/P	PTFE coating
/N	Narrow beam reflector
/M25	M25 Entry

Applications

- Zone 2 hazardous areas
- Loading and access areas
- Security and perimeter lighting
- Area floodlighting
- Meter stations
- Temporary lighting



Accessories (Should be ordered separately)	**Catalogue Order Code**
Anti-glare shield	**S4000-0002**
Wire guard	**E0850-0002**
Swinging Jib assembly	**S2000-0019**

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BASEEFA

British Approvals Service
for
Electrical Equipment
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Flammable Atmospheres

I hereby authorise ANDREW CHALMERS & MITCHELL LTD
447 HILLINGTON ROAD
GLASGOW

G52 4QW

to reproduce the BASEEFA Certification Mark on electrical equipment as defined in the Certificate referred to below, subject to compliance with the BASEEFA Certification Mark Licensing Regulations.

This Licence is valid until 14 AUGUST 1993 unless previously suspended or revoked in accordance with the Regulations.

Certificate No Ex78099X

Licence No L78099

pp. I.M.CLEARE
Director
2 JULY 1990

BASEEFA

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Certificate of Assurance

THIS IS TO CERTIFY THAT THE RANGE OF "CHALMIT" FLOODLIGHTS, TYPES 469, 484 AND 486
manufactured by
ANDREW CHALMERS AND MITCHELL LIMITED
of Glasgow

designed and constructed in accordance with the Specification set out in the Schedule and the documents therein referred to, has been found to comply with the requirements of BS 4533 : 2.1 : 1976 for restricted breathing luminaires

This Certificate also applies to other apparatus conforming to the specification set out in the Schedule.

This Certificate is granted subject to the general conditions applicable to the Approval Service and any special conditions as may be prescribed.

This Certificate does not necessarily indicate that the apparatus may lawfully be used in particular industries or circumstances because such usage may be subject to statutory requirements.

Test Reports:
70(n)024 (18.2.71)
71 (n)046 (7.12.71)

Codes: Ex N II T2
Ex N II T3

Paisley College Reports:
WAB.177/JBC (24.11.77)
WAB.277/JBC (24.11.77)
WAB.477/JBC (25.11.77)
WAB.577/JBC (28.2.78)
WAB.677/IH (3.3.78)
WAB.777/IH (9.3.78)

File: SFA/14/23/01

Director

CERTIFICATE NO. BAS 78009X dated 15 August 1978

Certificate of Assurance

NUMBER Ex 78099X

DATED 15 August 1978

Schedule

APPARATUS

THE RANGE OF "CHALMIT" FLOODLIGHTS, TYPES 469, 484 AND 486, is a range of restricted breathing luminaires for use with either double envelope tungsten halogen lamps, high pressure mercury vapour lamps (MBF/U) or high pressure sodium lamps (SON and SON/T).

The temperature class, maximum ambient and electrical supply parameters vary according to the type of lamp fitted:

TYPE NO	LAMP	RATING	SUPPLY	T CLASS	t_a
469	T/Halogen	500W	110/130V a.c./d.c.	T3	40°C
469	T/Halogen	500W	200/240V a.c./d.c.	T3	40°C
469	T/Halogen	1000W	200/240V a.c./d.c.	T2	40°C
484	SON/T	250W	220/250V 50/60 Hz	T3	40°C
484	SON/T	400W	220/250V 50/60 Hz	T3	40°C
486	MBF/U	125W	220/250V 50/60 Hz	T3	60°C
486	MBF/U	250W	220/250V 50/60 Hz	T3	40°C
486	MBF/U	400W	220/250V 50/60 Hz	T3	25°C
486	SON	250W	220/250 V 50/60 Hz	T3	40°C
486	SON	400W	220/250V 50/60 Hz	T3	25°C

The variation in type No relates to the positioning and method of mounting of the lamp holder required to obtain optimum optical performance as a floodlight with alternative lamp types. Note that the type No is used in conjunction with other symbols as defined in the Parts List schedules to indicate alternative materials, mounting, etc.

Each luminaire comprises a gravity diecast body together with a toughened glass window, set with a silicone-based sealant into the cover frame, and a cast terminal box and lid bolted to the outside of the body. Gaskets are provided at all joints. The glass retaining clips, fitted as standard for the 1000 watt tungsten halogen lamp version may optionally be fitted to all versions.

Mounting may be by a pole mounting clamp or by pedestal feet. The standard casting material is aluminium alloy LM6 to BS 1490 and an additional protective coating of PTFE may be provided. The foot mounting version is also available in sandcast gun metal, LG2.

The enclosed break E40 lampholder is either Hackney type 85986 (BASEEFA Component Approval No 4005U) or Thorpe type TG3016 (BASEEFA Component Approval No 4037U). The 125 watt MBF/U version has an enclosed break E27 lampholder, either Hackney type 85985 (BASEEFA Component Approval No 4005U) or Thorpe type TG3017 (BASEEFA Component Approval No 4037U). In versions

Certificate of Assurance

NUMBER Ex 78099X

DATED 1 5 August 1978

Schedule

for use with high pressure sodium lamps, the lampholder base is filled, after connecting the leads, with a silicone based sealant.

The terminal block is a Klippon BK3 (BASEEFA Component Approval No 4021U/B) with the centre terminal way removed or alternatively a Metway Twinway Connector 560/F.C. This latter is always fitted to the 1000W tungsten halogen lamp version.

DRAWINGS NUMBER	ISSUE	DATE	DESCRIPTION
D465	R/2	15.11.77	General Arrangement
3744	R/1	21.11.73	Body- pole mounting
3745	R/1	21.11.73	Body- foot mounting
3701	R/2	15.11.77	Cover frame
3702	R/2	15.11.77	Glass
3725	R/2	15.11.77	Terminal box
3726	R/2	15.11.77	Alt. Terminal box
3730	-	21.4.71	Terminal box cover
3704	R/2	15.11.77	Cover gasket
3731	R/1	15.11.77	Terminal box gasket
3727	R/1	15.11.77	Gasket
3734	R/1	15.11.77	Gasket
4479	-	15.11.77	Insulation
3716	R/2	15.11.77	Fibre Glass sheathing
			Nameplates
4512	-	15.11.77	469/Tun.Hal./500W/130V
4513	-	15.11.77	469/Tun.Hal./500W/240V
4514	-	15.11.77	469/Tun.Hal./1000W/240V
4515	-	15.11.77	484/SON/T/250W
4516	-	15.11.77	484/SON/T/400W
4517	-	15.11.77	486/MBF/U/125W
4518	-	15.11.77	486/MBF/U/250W
4519	-	15.11.77	486/MBF/U/400W
4520	-	15.11.77	486/SON/250W
4521	-	15.11.77	486/SON/400W
4139	-	21.11.73	Warning Plate (Restricted Breathing)
4524	-	15.11.77	Warning Plate (Special Cable)
4503	-	15.11.77	Instruction Label
3759	R/2	15.11.77	Warning Plate (Installation)

Parts List Schedules (3 sheets) dated 12.7.78

Parts List for 469 (4 sheets) Issue 3 dated 15.11.77
Parts List for 484 (4 sheets) Issue 2 dated 15.11.77
Parts List for 486 (4 sheets) Issue 3 dated 15.11.77

Certificate of Assurance

NUMBER Ex 78099X

DATED 15 August 1978

Schedule

ADDITIONAL CERTIFICATION CONDITIONS

1) The method of cable entry shall be such as to retain the restricted breathing properties of the luminaire. In particular, if conduit entry is used, a stopper gland shall be inserted in the conduit.

2) Mercury vapour Lamps shall be used only in conjunction with ballasts complying with BS 4782 or other appropriate specification

3) High Pressure Sodium Lamps shall be used only in conjunction with ballasts which limit the power input to a lamp to its rated value, when operating at the rated supply voltage. The igniter circuit shall not produce a pulse voltage in excess of 4.5 kV peak.

Note: Unless authoritative information to the contrary is available from the manufacturer of a particular lamp, it must be assumed that the use of a lamp with an internal igniter will infringe this requirement.

4) Luminaires with 500 watt tungsten halogen lamps or with mercury vapour lamps shall be cabled using cable suitable for 90°C (Heat resisting PVC or better)

5) Luminaires with 1000 watt tungsten halogen lamps shall be cabled using cable suitable for 150°C (Silicone Rubber or better)

6) Luminaires with high pressure sodium lamps shall be cabled with cable complying with one of the following:

a) Glass braided cores (300/500 volt grade to table 10 of BS 6500), formed in a 3-core cable with an outer sheath selected from table 8 in BS 6500

b) 450/750 volt grade cable to table 8 in BS 6500 but with the thickness of the outer sheath increased to approximately $1\frac{1}{2}$ times the value given in the table.

7) With the exception of item 6a, the cores of the incoming cable shall be sleeved with the glass braided sleeving provided by the manufacturer.

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of Glasgow

is hereby extended to apply to apparatus conforming to the specification set out in the Schedule of the said Certificate but having the variation specified in the attached Schedule.

File: SFA 14/23/01

Code : Ex N II T2
Ex N II T3

Test Reports: Andrew Chalmers & Mitchell Ltd
Report No 82/2 dated 21.1.82
Andrew Chalmers & Mitchell Ltd
Report No 82/22 dated 17.12.82

B HILL
DIRECTOR

CERTIFICATE NO: Ex 78099X/1 dated 9 February 1983

Certificate of Assurance

NUMBER Ex 78099X/1

DATED 9 February 1983

Schedule

VARIATION ONE

The lid of the cast terminal box of the "Chalmit" high pressure sodium floodlights, types 484 and 486 is removed and replaced with a Klippon K5 terminal enclosure (BASEEFA Approval No 3031U/B).

The enclosure contains a Klippon BK4 terminal block (BASEEFA Component Approval No 4021U/B) and a 120/400W ignitor type PBA400 or PBA403 manufactured by W J Parry & Co (Nottingham) Ltd (BASEEFA Component Approval No 4131U).

The terminal block is mounted on top of the components bracket which is fixed to the base of the enclosure and the ignitor is also mounted on the bracket underneath the terminal by means of its M8 earthing stud.

The terminal block connects the incoming supply from the control gear to the input of the ignitor. The output from the ignitor is fed through the base of the Klippon K5 terminal enclosure, through the cast terminal box and floodlight body by means of silicone rubber insulated cable sleeved with glass fibre sheathing, or Intemp PTFE insulated cable, to the lampholder

DRAWINGS

Number	Issue	Date	Description
D826	02	5.11.82	Types 484 and 486 Floodlights with Ignitor Box
4735	02	15.3.82	Ignitor Box for Mounting on Terminal Box
4652	01	3.3.82	Ignitor/Terminal Block Bracket
4812	-	22.1.81	High Voltage Label
4911	-	3.3.82	Ignitor Box Wiring Diagram
4915	-	5.3.82	Warning Label

SPECIAL CONDITIONS FOR SAFE USE

The floodlights types 484 and 486 with ignitor box shall be cabled using cable suitable for 90°C (Heat resisting PVC or better).

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File: SFA 14/23/01

Code : Ex N II T2
Ex N II T3

Sheet 1/5

p.p B HILL
DIRECTOR

CERTIFICATE NO: Ex 78099X/2 dated 11 May 1984

71/37

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G
ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

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NUMBER Ex 78099X/2

DATED 11 May 1984

Schedule

THE FOLLOWING VARIATIONS TWO TO NINE ARE INCORPORATED FROM PREVIOUS LETTERS OF ACCEPTANCE

VARIATION TWO L.O.A. dated 04.09.79

Description of changes

1) The use of hard anodised aluminium or stainless steel in place of polished aluminium as the material for the reflector.

2) The use of an alternative glass fibre cable sheath.

The Drawing which has been reissued and up-dated to record this change is as follows:

TITLE	NO	ISSUE	DATE
Cable Sheathing	3716	R/3	24.4.79

VARIATION THREE L.O.A. dated 12.06.80

Description of change

1. Change of label material from aluminium to brass for use on cast brass floodlights.

2. Use of Gun Metal as an alternative to brass as a casting material.

3. Use of E39 and E26 lampholders in place of E40 and E27 lampholders. (All manufactured by FW Thorpe - Component Approval No 4037U).

VARIATION FOUR L.O.A. dated 04.11.80

Description of change

The modification of the terminal box cover casting to incorporate the "CHALMIT" logo.

The drawing which has been re-issued and up-dated to record this change is as follows:

NUMBER	ISSUE	DATE	DESCRIPTION
3730	01	24.10.80	Terminal Box Cover

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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NUMBER Ex 78099X/2

DATED 11 May 1984

Schedule

VARIATION FIVE L.O.A. dated 21.08.81

Description of changes

1. To use a 150 Watt High Pressure Sodium Lamp, tubular bulb, SON/T with a E40 lamp cap in the "Chalmit" Floodlight type 484. Supply voltage 220/250 V at 50/60 Hz under these conditions the T class is T3 at 40°C ambient.

2. To use a 150 Watt High Pressure Sodium Lamp, elliptical bulb, SON with a E40 lamp cap in the "Chalmit" Floodlight type 486. Supply voltage 220/250 V at 50/60 Hz under these conditions the T class is T3 at 40°C ambient.

The drawings which have been issued to record these changes are:

DRAWING Number	Issue	Date	Description
4870	-	5.8.81	Nameplate 484/SON/T/150W
4871	-	5.8.81	Nameplate 486/SON/150W

VARIATION SIX L.O.A. dated 15.12.81

Description of changes

To increase the maximum ambient temperature, ta, of the 400W SON/T "Chalmit" floodlight type 484 from 40°C to 55°C. This will in turn change the T class rating from T3 to 215°C (T2). To accommodate this change the components and materials which will be effected have been replaced with materials and components from the 1000W T/Halogen "Chalmit" floodlight type 469 and are:

1. The porcelain Metway terminal block type No 560/FC for the Klippon BK terminal block.

2. All the gaskets will be manufactured from silicone rubber.

The drawings which have been issued to record these changes are:

Certificate of Assurance

NUMBER Ex 78099X/2

DATED 11 May 1984

Schedule

DRAWING Number	Issue	Date	Description
4480	-	15.11.77	Twinway connector
3704	R/2	15.11.77	Cover gasket
3727	R/1	15.11.77	Terminal box gasket
3731	R/1	15.11.77	Terminal box cover gasket
3734	R/1	15.11.77	Support arm gasket
4883	-	27.11.81	Nameplate 484/SON/T/400W Ambient (ta) 55°C

VARIATION SEVEN L.O.A. dated 12.02.82

Description of change

The use of a type 114800 screw non-sparking lampholder for E27 capped lamps, manufactured by A G Hackney & Co Ltd. BASEEFA Component Approval No 4129U (The lampholder is rated at 250V, 4A and is suitable for use in circuits subject to ignitor pulse voltages not exceeding 2.8kV peak) as an alternative lampholder for use in the "Chalmit" Floodlight type 486 with a MBF/U lamp rated at 125W supply voltage 220/250V at 50/60 Hz with T class T3 at 60°C.

VARIATION EIGHT L.O.A. dated 01.04.82

Description of changes

1. Overall dimensions added to general arrangement drawing for the Chalmit 469, 484 and 486 Zone 2 Luminaires.

2. Clarification of the fixing screw's position in the Klippon BK3 terminal block.

The terminal block has its centre terminal way removed and the fixing screw is fitted into the terminal block so that it is in the further of the two securing holes from the centre connection to the lampholder.

The drawing which has been issued to record the first change is:-

DRAWING Number	Issue	Date	Description
D465	R/3	8.2.82	General Arrangement

Certificate of Assurance

NUMBER Ex 78099X/2

DATED 11 May 1984

Schedule

VARIATION NINE

L.O.A. dated 07.04.83

Description of change

The use of a type 95222 E40 GES lampholder, manufactured by A G Hackney & Co Ltd having BASEEFA Component Approval No 4153U. The lampholder is rated at 750V, 16A and is also suitable for use in circuits subjected to ignitor pulse voltages not exceeding 4.5 kV peak as an alternative E40 lampholder for use in the range of "Chalmit" Floodlights types 469, 484 and 486.

However the wiring to the lampholder must have the conductors ferruled at the point of entry to the lampholder terminals.

VARIATION TEN

As Variation One but with a Klippon BK3 terminal block (BASEEFA Component Approval No 4131U) mounted in the terminal chamber bolted directly to the floodlight body. This allows for indirect entry of the ignition leads to the types 484 and 486 floodlights.

DRAWINGS

Number	Issue	Date	Description
D826	3	19.12.83	Types 484 and 486 Floodlights with Ignition Box

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VARIATION ELEVEN To permit a 1000 watt 120V ac/dc Tungsten Halogen Lamp, fitted with an E40 G.E.S. Cap, Part No 1134, to be added to the range of lamps which may be fitted to the Type No 469 Luminaire.

The three E40 lampholders, suitable for this size of lamp cap, are all suitable for the increased current associated with the lower voltage, and the Temperature Classification remains as specified for the 1000 watt 220V/240V version.

DRAWINGS

Number	Issue	Date	Description
5222	-	25.2.85	Nameplate

File: SFA 14/23/01

Code : Ex N II T2
T_{amb} = 40°C

B HILL
DIRECTOR

CERTIFICATE NO: Ex 78099X/3 dated 29 March 1985

18/43

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G
ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

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File: SFA 14/23/01

Code : Ex N II T2
Ex N II T3

B HILL
DIRECTOR

Sheet 1/2

CERTIFICATE NO: Ex 78099X/4 dated 19 May 1986
3/09

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NUMBER Ex 78099X/4

DATED 19 May 1986

Schedule

VARIATION TWELVE To permit the KLIPPON K5 Terminal Enclosure Component Approval No 3031U, at present used as an Ignitor box on the Type 484 and 486 Floodlights, to be replaced by a dimensionally identical, cast gunmetal, enclosure manufactured by Andrew Chalmers and Mitchell Ltd.

This enclosure is fitted and used as previously specified in Variation One to Ex 78099X except where these requirements are modified by subsequent variations, eg. Variation Six specifies that gasket materials are to be of silicone rubber for high ambient temperature use.

DRAWINGS

Number	Issue	Date	Description
C 375	1	29.4.86	K5 Enclosure Base
B282	3	1.4.86	K5 Enclosure Lid

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File: SFA 14/23/01

BASEEFA Test Report No: 86(N)220
dated 7 August 1986

Code: Ex N II T3
(T_{amb} = 50°C)

Sheet 1/2

B HILL
DIRECTOR

CERTIFICATE NO: Ex 78099X/5 dated 7 August 1986
42/25

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ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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Certificate of Assurance

NUMBER Ex 78099X/5

DATED 7 August 1986

Schedule

VARIATION THIRTEEN

To permit a 300W Tungsten Halogen lamp fitted with an E40 cap and rated at 110/120 volts or 200/240 volts a.c./d.c. to be fitted in the Type 469 Floodlight. The construction of the Luminaire remains otherwise as specified for the 500W Tungsten Halogen Luminaire.

This variation is designated a Type 469 300W Tungsten Halogen Floodlight rated at 110/120 or 200/240 volts a.c./d.c. coded Ex N II T3 for a maximum ambient of 50°C.

DRAWINGS

Number	Issue	Date	Description
5376	01	23.7.86	300W 110V Label
5377	-	14.7.86	300W 240V Label

ADDITIONAL CERTIFICATION CONDITIONS

Additional Certification Conditions 1, 4 and 7 of the original schedule apply and in addition attention is drawn to the need to select suitably insulated cable for external connection as the temperature of the incoming cable at 50°C ambient is 78°C.

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Certificate of Assurance Variation

THIS IS TO CERTIFY THAT APPARATUS CERTIFICATE NO Ex 78099X

Held by ANDREW CHALMERS & MITCHELL LTD
of Glasgow, G52 4BL

for the RANGE OF "CHALMIT" FLOODLIGHTS
TYPES 469, 484 & 486

is hereby extended to apply to the apparatus conforming to the specification set out in the Schedules of the said Certificate but having any variation specified in the attached Schedule.

A copy of this Supplementary Certificate shall be attached to the original certificate.

File No: EECS 0068/03/006

I M CLEARE
DIRECTOR EECS
4 December 1991

CERTIFICATE NO: Ex 78099X/6
Sheet 1/2
CC

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: 0298 26211 Fax: 0298 79514 Telex: 668113 RLSD G

HSE Health & Safety Executive

BASEEFA

Schedule

Certificate of Assurance No Ex 78099X/6 dated 4 December 1991

VARIATION FOURTEEN Minor variations in construction and labelling not affecting the basis of compliance with the Standard.

DRAWINGS

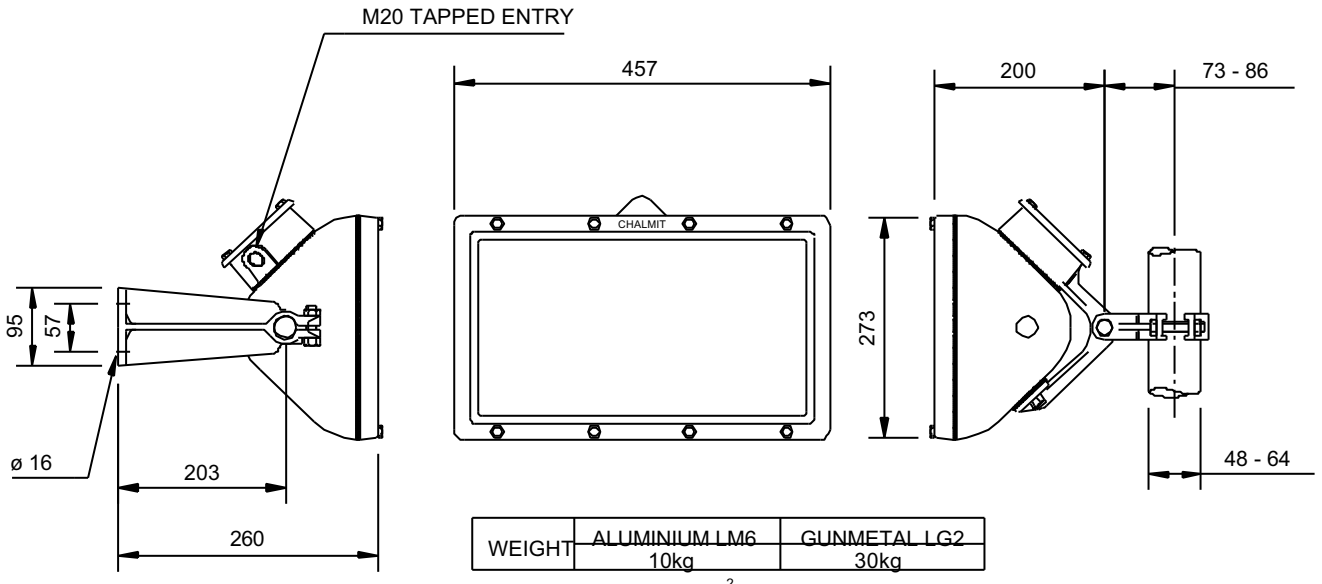
Number	Issue	Date	Description
D468	5	17.4.91	General Arrangement
D826	5	17.4.91	General Arrangement with Igniter Box
3744	6	20.3.91	Body - pole mounting
3745	6	20.3.91	Body - foot mounting
3759	4	4.3.91	Warning plate (installation)
			Nameplates
A4512	1	18.2.91	469 Tun-Hal/500W/130V
A4513	1	18.2.91	469 Tun-Hal/500W/240V
A4514	1	18.2.91	469 Tun-Hal/1000W/240V
A4515	1	18.2.91	484 SON/T 250W
A4516	1	18.2.91	484 SON/T 400W
A4517	1	18.2.91	486 MBFU 125W
A4518	1	18.2.91	486 MBFU 250W
A4519	1	18.2.91	486 MBFU 400W
A4520	1	18.2.91	486 SON 250W
A4521	1	18.2.91	486 SON 400W
A4870	1	18.2.91	484 SON/T 150W
A4871	1	18.2.91	486 SON 150W
A4883	1	18.2.91	484 SON/T 400W t_a 55 °C
A5222	1	18.2.91	469 Tun-Hal/1000W/120V
A5376	2	18.2.91	469 Tun-Hal/300W/120V
A5377	1	18.2.91	469 Tun-Hal/300W/240V

Issue | 04

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

400 Series Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



WEIGHT	ALUMINIUM LM6	GUNMETAL LG2
	10kg	30kg

WINDAGE AREA: 0.14m^2

CE

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0.0 Specification

Type Of Protection	Ex N (non-sparking) (restricted breathing)
Area Classification	Zone 2 areas to BS EN60079-10
Standard	BS 4533 Part 2 Section 2.1 1976
Certificate	BASEEFA Certificate of Assurance Ex 78099X & Ex 83010 (70W internal gear) Code Ex N II (see table below)
Ingress Protection	IP66 and IP67 to BS EN60529 (IEC 529)
CE Mark	The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994" and "The Electromagnetic Compatibility Regulations 1992", it does not apply to the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 94/9/EC respectively].

CE

1.0 Introduction - 400 Series Floodlight

The 400 series of floodlights comprises a range of luminaires for high pressure sodium, mercury vapour and tungsten halogen lamps. The luminaires, other than the tungsten halogen and 70W high pressure sodium types, are supplied from separate gear boxes in the 500 series. The protection of the luminaire utilises the restricted breathing enclosure method.

Note : *While the range is comprehensive, there are also some special options available, adding to those outlined in TABLE 0.*

Versions of the 484 and 486 150W/400W are also available with the ignitor in a box on the rear of the luminaire. This arrangement allows the use of a remote control gear box, without ignitor, mounted at long distances from the luminaire. For other HPS luminaires in the range supplied by 500 Series boxes with ignitors, the maximum distance allowed is 16 metres (but see section 3.4 Lamps). The 70W HPS luminaire has internal control gear.

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.
Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with *BS EN60079-14* or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.
In the UK, the requirements of the *'Health and Safety at Work Act'* must be met.
Handling and electrical work associated with this product to be in accordance with the *'Manual Handling Operations Regulations'* and *'Electricity at Work Regulations, 1989'.* Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.
The luminaires are quite heavy, especially in gunmetal version, and suitable means of handling on installation must be provided.
Certification details on the rating plate must be verified against the application requirements before installation.
The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

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3.2 Certification Condition "X"

The certificate contains additional certification conditions. These are as follows :

1 The method of cable entry shall be such as to retain the restricted breathing properties of the luminaire. In particular, if conduit entry is used, a stopper gland should be inserted in the conduit.

2 Mercury vapour lamps shall only be used with ballasts complying with BS4782 or other appropriate specification.

3 High pressure sodium lamps shall only be used in conjunction with ballasts which limit the power input to a lamp to it's rated value, when operating at the rated supply voltage.
The ignitor circuit shall not produce a pulse voltage in excess of 4.5kV Peak. (NOTE: Unless authoritative information to the contrary is available from the manufacturer of a particular lamp, it must be assumed that the use of a lamp with an internal ignitor will infringe this requirement).

Note : *The stipulation concerning HPS lamps pre-dated the publication of a lamp and ballast standards. In practice, the equipment is normally used with the 500 Series control gear box which meets all the above requirements).*

4 Luminaires with 500W tungsten halogen lamps or with mercury vapour lamps shall be cabled using cable suitable for 90ºC (heat resisting PVC or better).

5 Luminaires with 1000W tungsten halogen lamps should be cabled using cable suitable for 150ºC (silicone rubber or better).

6 Luminaires with high pressure sodium lamps shall be cabled to comply with one of the following :

(a) Glass braided cores (300/500V grade to Table 10 of *BS6500*), formed in a 3-core cable with an outer sheath selected from Table 8 in *BS6500*.
(b) 450/750V grade cable to Table 8 in *BS6500*, but with the thickness of the outer sheath increased to approximately 1½ times the value given in the table.

7 With the exception of Item 6(a), the cores of the incoming cable should be sleeved with glass braid sleeving provided by the manufacturer.

Note : These requirements apply to the initial issue of the certificate for the 400 Series range above 70W HPS. In practice, the cable standards stipulated are now obsolete or superseded by later editions. The following is a summary of the actual cable requirements :

(a) No.4891 silicone cable 3 x 2.5mm^2 wire armoured is suitable for all models.
(b) 90ºC cable of suitable make-up can be used on the 469/300W, 469/500W and 486 MBF models, also 484 and 486 HPS models with the external ignitor box when used at the standard Ta rating of the luminaire.
(c) 150ºC rated cable of a suitable make-up can be used in the 469/1000W.
(d) Glass braided at 150ºC, 300/500V grade cable with extruded sheath over the cable core can be used for can be used for all models.
(e) The 70W mini flood models are suitable for use with ordinary PVC cable.

The luminaires also contain warning plates referring the user to the certification drawing number.
This requirement is adequately covered by the instructions in this installation leaflet.

3.2 Tools

3mm and 5mm flat blade screwdriver, 19mm A/F spanner.
5/16" and 1/4" BSW spanners.

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Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +/-6% on the nominal voltage is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the ***actual*** underlying site supply and purchase or adjust accordingly. ***Care must be taken connecting to the nominal 230V UK public supply.*** In nearly all cases, the luminaires will be supplied from 500 series control gear boxes. In most cases, these will have multi-tap control gear which can be set to a range of 50 and 60Hz voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections of the system, the appropriate voltage tap should be selected, but care must be taken to log or mark the equipment so that the tapping can be reset if the equipment is relocated. If in doubt, the tapping should be set on the high side. 20V max. nominal drop is acceptable for MBF and Tungsten-Halogen. 10V max. drop is desirable for HPS. The light output will be reduced. The total supply and interconnecting cable drop should not exceed the values given.
All the HPS circuits use SIP (superimposed pulse) ignitors. This means that there are only two connections to the choke, making the tap selection obvious.
Where shore or construction site supplies are used, which are different from the service locations supplies, the tapping should be reset. If not, advice on the effect of these temporary supplies should be sought from our technical department.
The rating nameplates originally specified 250V max. for slave luminaires. Later models have this requirement modified and limit the luminaire to use with 500 series control gear boxes. This eliminates the artificial nameplate voltage rating for the slave luminaires. Calculations need to be made for remote operation at a considerable distance from the control gear box. Voltage drop calculations should be based on the lamp current.
Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

3.4 Lamps

The high pressure sodium and mercury vapour lamps are of a standardised type. There is no preference between make or colour. All have E40 caps except for the 70W which is E27. The 484 series use tubular lamps and the 486 series use elliptical lamps. HPS "Plus" lamps with higher output are now available, but these ***will not work*** with luminaires made before 1990 or with a remote ignitor in the control box. Care must be taken to fit the correct lamp in order to maintain the certification conditions and obtain the designed photometric performance.
HPS lamps should be replaced shortly after they do not light. The indication for end of life for HPS lamps is "cycling", when a lamp goes out and then re-ignites after a minute or so interval. If discharge luminaires are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with possible detrimental effects to control gear. The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on lamp performance can be obtained from the lamp supplier.

Important : *HPS circuits should not be energised without a lamp fitted. HPS lamps with internal ignitors must not be used.*

Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with the lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The foot mounting arrangement should be secured with lockwashers or self-locking nuts and bolts. The luminaires should be mounted with the lamp axis horizontal. Any aiming angle may be used. The post fixing brackets are

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designed for use on posts or pipes of $1^{7}/_{8}$" (48 mm) to 2½" (63 mm) dia. The pole mounting bracket arrangement should be secured with lock washers or self-locking nuts and bolts. The luminaires should be fitted to the post, the clamping nuts lightly tightened and the luminaire positioned so that the light output is directed towards the area to be illuminated. When the correct position is obtained, the nuts should be tightened securely to ensure that the luminaire is fixed correctly to the post. The foot fixing or bulkhead mounting luminaire should be secured by 4 bolts or studs, either ½" BSW (M12) or 5/8" BSW (M16), by using the 4 off 5/8" (16 mm) dia. holes provided on 2¼" (57 mm) x l8¼" (464 mm) centres. By slackening off the nuts on the trunnion brackets, the luminaire can be rotated in the vertical plane through 300°. When the correct mounting angle is determined, the nuts must be re-tightened to clamp the luminaire in position.

3.6 Cabling And Cable Glands

3.6.1 Cables

The cable temperature conditions are reviewed under "special conditions" above. The cable make up must be suitable to ensure maintenance of the restricted breathing enclosure when the cable is fitted. Standard 300/500V cable is suitable except in the case of the remote ignitor (ignitor in remote gear box) HPS luminaires, which require enhanced insulation thickness (our 4891 cable or 600/1000V grade). All the luminaires are suitable for single entry of $4mm^2$ maximum cable only. The exception is the 70W, which is available with a looping facility.

3.6.2 Cable Glands

Cable glands and sealing plugs when installed must maintain the restricted breathing enclosure (Vacuum test 300mm head of water, half pressure time 3 minutes minimum). Where appropriate, rubber sealing washers and steel compression washers are provided with the unit. The user must ensure that the assembly fulfils the above requirement. No means of checking air tightness of the assembled unit is provided. Where a new or unproven sealing arrangement is produced, users should check a sample for substantial air tightness before making a full installation. Entries for M20 cable glands are standard.

3.7 Cabling And Fitting Lamps

Access for fitting lamps is by removing of front cover. Access for cabling is by the terminal chamber cover. Before removing the front cover on any occasion, check that the cover support chain is sound. The front cover is released by undoing the 8 hexagon headed screws. These should be slackened off in turn and then undone fully. Lamps must be of the correct type and screwed firmly into the lampholder. When the lamp has been fitted, the gasket should be checked and then the cover fitted into place. Initially, the bolts are nipped up and then fully tightened using a diagonal/cross over method. The tightening torque is 16 lb. ft. (22Nm). When fully tightened the gasket should protrude slightly from the edge of the cover at all points. The gasket should not be greased, the bolt threads may be re-greased if required during installation or maintenance.

Access for cabling is via the terminal box cover. The screws are loosened and the cover removed. The conductor ends should be prepared so that the conductors are properly gripped and the bare part of the conductor should not extend more than 1mm beyond the throat. The connection should be made in accordance with the polarity marked and any unused terminal screws should be fully tightened. The lid is refitted, ensuring the gasket is correctly positioned and the screws are then evenly tightened. The tightening torque is 3 lb. ft. (4Nm).

3.8 Inspection and Maintenance

Visual inspection should be carried out at suitable intervals, frequently if conditions are severe. The time between lamp changes could be infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised and isolated before opening. Individual organisations will have their own procedures. What follows are guidelines based on BS EN60079-17 and on our experience :

1 Ensure the lamp is lit when energised and that the lamp glass is not damaged. Check for superficial damage to the enclosure.

2 When de-energised and left to cool there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out and any likely ingress points eliminated by re-gasketting.
3 Check the tightness of the main cover screws. Torque 22Nm.
4 Check the supply cable for damage and check the cable glands for tightness and nip up if necessary.
5 Examine the sealant holding the lamp glass into the cover. If possible, the consistency of the sealant should be compared with that of a new luminaire. The sealant will become discoloured in time. If the sealant has become very soft when compared with a new unit and is suffering from serious loss of adhesion to the glass, the complete cover assembly will need to be replaced. In general, the sealing system has a very long life but users should be aware of possible damage caused by close exposure to hydrocarbon oils.
6 The cover gasket should be checked for softening and if it has become significantly softer than a new unit or sticky, it should be replaced. It should be noted that the 1000W tungsten halogen luminaire has the red silicone rubber gasket.
7 The lamp glass should be cleaned. This is particularly important to avoid the accumulation of dirt or dust causing an increase in the T rating of equipment.
8 If it is thought that the luminaire has suffered mechanical damage, a stringent workshop check should be carried out.
9 When the cover is removed for re-lamping, the lampholder security and connections should be checked. Spare parts are available from Chalmit, the model number and lamp size should be given when ordering. No unauthorised modifications should be made.

3.9 Electrical Fault Finding And Replacement

With mercury lamps the faults are simple, namely loose or broken connections, un-serviceable lamps or open circuit control gear. (Control gear faults are also covered in the maintenance procedures for the control gear boxes).
Control gear will not normally go open circuit unless it has first overheated; the signs of this are being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in discoloration at the site of overheating.
Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work.
With HPS lamps the ignitor can become faulty. If the lamp is fitted, the lamp has continuity and the connections are good and correct, they should produce an "attempt to start" flicker effect in the lamp and a buzzing sound from the ignitor. It would be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before reassembling, all connections should be checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with the HT sleeving and this must be kept in place. The ignition connection goes to the centre of the lamp cap.
The supply must be isolated.

4.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of three components of circuit current. Current inrush to PFC capacitors which can be up to 25 x the rated capacitor current and last 1-2 millisecs; lamp starting current including steady capacitor current, which together may decline from up to 200% of normal at 10 seconds after switch on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.
With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor 0.076A per µF at 240V, 50Hz (adjust for other volts by multiplication, x 6/5 for 60Hz). For HBC fuses, use 1.5 x normal capacitor current. For T-H inrush, use 8 x rated current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1.*
A conventional matrix for HBC fuses is outlined in TABLE 2.

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5.0 Disposal Of Materials

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

5.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.
This applies to the UK, there may be other regulations on disposal operating in other countries.

Important : *Do not incinerate lamps.*

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0.0 Tables 0/1/2

Table 0 Lamp Ranges and Temperature Ratings Refer to Section : 1.0

Model	Lamp	Watts	Voltage Range	T Rating	T amb Max ºC

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484/70	SON/T	70	210/250V, 50Hz 220/270V, 60Hz	T6	40
484/150	SON/T	150	"	T3	40
484/250	SON/T	250	"	T3	40
484/400	SON/T	400	"	T3	40
486/70	SON/E	70	"	T6	40
486/150	SON/E	150	"	T3	40
486/250	SON/E	250	"	T3	40
486/400	SON/E	400	"	T3	25
486/250M	MBFU	250	"	T3	40
486/400M	MBFU	400	"	T3	25
469/300	T-HAL	300	110/125V ac/dc	T3	50
469/500	T-HAL	500	110/125V ac/dc 220/240V ac/dc	T3	40

Table 1 Starting And Running Currents Refer to Section : 4.0

Lamp	Lamp Current A	Circuit Start A	Circuit Run A	Capacitance µF	Circuit Power (W)
70W HPS	1.0	0.55	0.4	10	80
150W HPS	1.8	1.45	0.8	20	175
250W HPS	3.0	2.35	1.3	30	285
400W HPS	4.6	4.0	2.2	40	445
250W MBF	2.13	2.8	1.4	15	280
400W MBF	3.25	4.4	2.2	20	430

Note : *Minimum power correction factor 0.85*

Table 2 Fuse Ratings Refer to Section : 4.0

Lamp Wattage	Number of Lamps					
	1	2	3	4	5	6
70W	4A	4A	4A	6A	6A	10A
150W	4A	6A	10A	10A	16A	16A
250W	10A	16A	16A	20A	20A	20A
400W	16A	20A	20A	25A	25A	32A

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Chalmit Lighting 388 Hillington Road, Glasgow G52 4BL, Scotland
A Division of Hubbell Lighting Limited

Telephone : +44 (0)141 882 5555
0700 CHALMIT
Fax : +44 (0)141 883 3704
EMail : email@chalmit.com

Registered Office Ronald Close, Woburn Road Industrial Estate
Kempson, Bedford. MK42 7SH.

Registered No. 3650461

Note Chalmit Lighting reserve the right to amend characteristics of our products and all data is for guidance only.

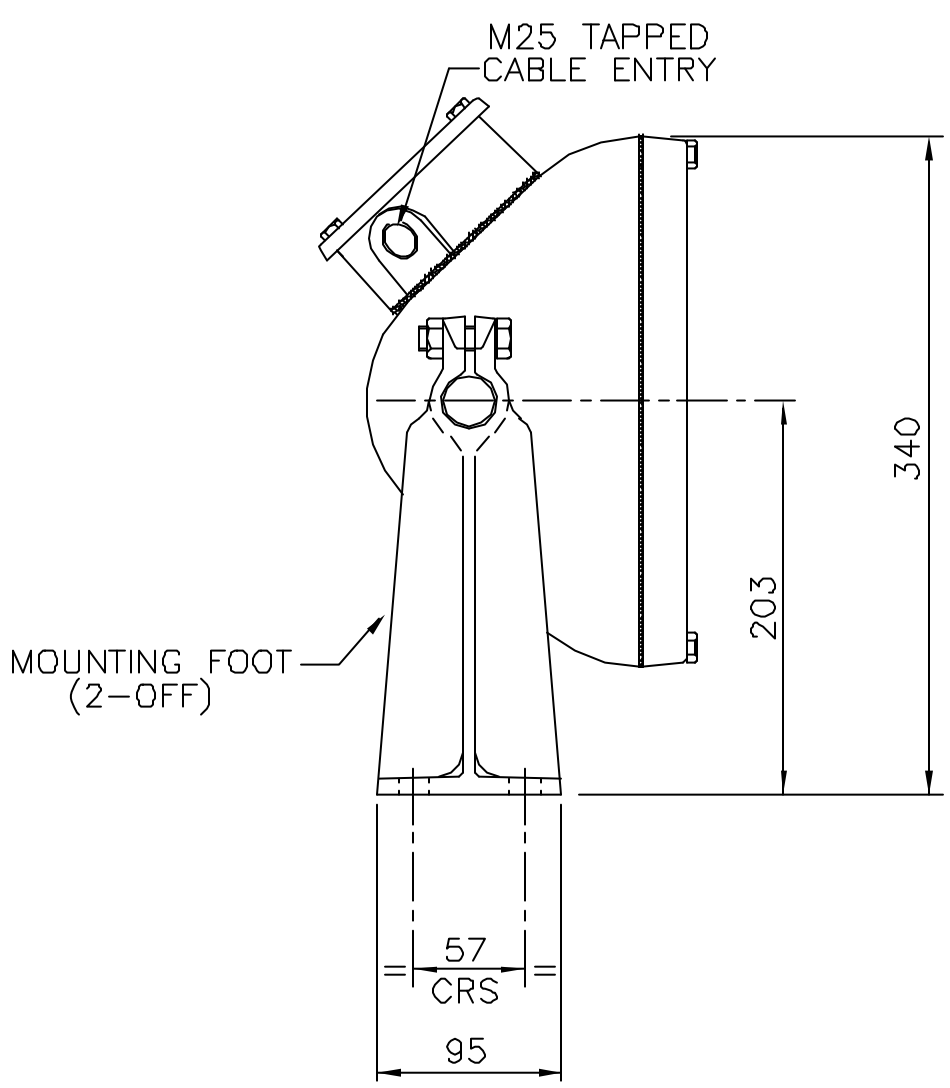
Hubbell Lighting Inc.

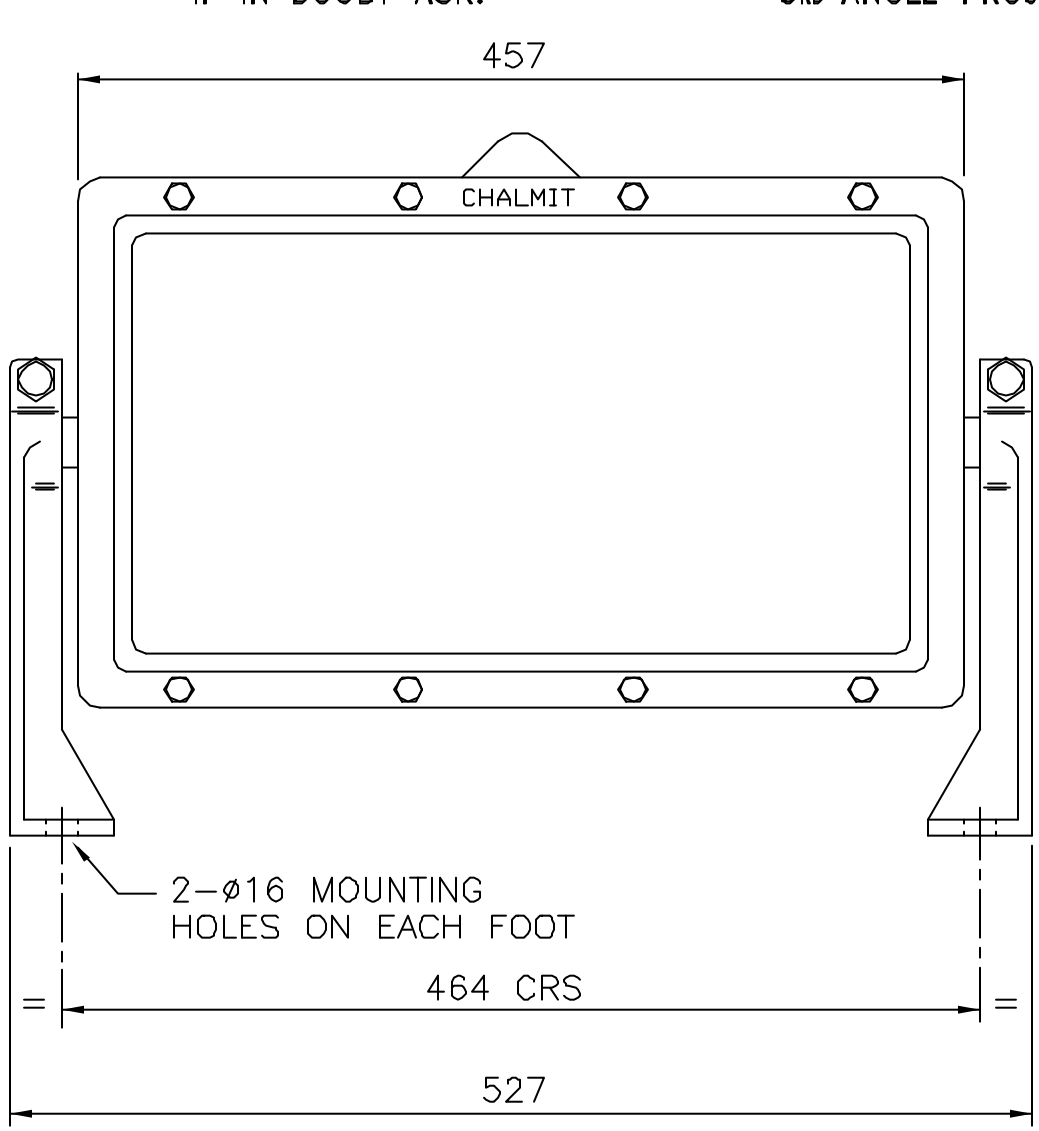
Chalmit Lighting is a leading supplier of Hazardous Area and Marine Lighting products.

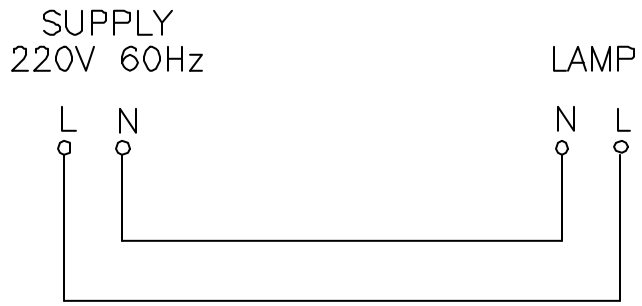
1	2	3	4	5	6	7	8

DRAWING NUMBER/SHEET NUMBER
F1051

REMOVE ALL BURRS & SHARP EDGES — IF IN DOUBT ASK! — 3RD ANGLE PROJECTION







WIRING DIAGRAM

FLOODLIGHT NAME	469/500
LAMP	500W T/HAL
INCOMING CABLE CAPACITY	3C 4mm²
IP RATING	IP66/67
WEIGHT	10Kg

DCF No	MOD BY	CHANGE	ISSUE	DATE

Chalmit Lighting

Chalmit Lighting
388 Hillington Road,
Glasgow G52 4BL
Scotland
Tel:0141 882 5555 Fax:0141 883 3704

DRAWN	K.B.
CHECKED	
APPROVED	
DATE	10/06/02

REF. DRGS.–

MATERIAL	N/A
TOLERANCE	N.T.S
FINISH	N/A
SURFACE ROUGHNESS	
DIMS. IN	MM
SCALE	–

TITLE
469 T/HAL
FOOT MOUNTED

DRAWING NUMBER/SHEET NUMBER
F1051 1 OF 1

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ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД (ЦСВЭ ИГД)

СВИДЕТЕЛЬСТВО
о взрывозащищенности электрооборудования (электротехнических устройств)
ЦС ВЭ ИГД № 2002.С170

Взрывозащищенные светильники типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE

2002 г.

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

ГБ05

ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД (ЦСВЭ ИГД)

Аттестат аккредитации
№ РОСС RU.0001.01ГБ05 от 24.11.97 г.
Лицензия Госстандарта России № 01ГБ05 от 05.12.97 г.
Лицензия Госгортехнадзора России 00АН № 017288 от 25.12.2001 г.
Свидетельство Российского Морского Регистра Судоходства об аккредитации №98.004.011 от 01.07.98 г.

Утверждено:
Госэнергонадзор
Министерства энергетики
Российской Федерации

(подпись) В.Н. Белоусов (ф. и. о)

м.п. "20" июня 2002 г.

СВИДЕТЕЛЬСТВО

о взрывозащищенности электрооборудования (электротехнических устройств)

ЦС ВЭ ИГД № 2002.С170

Настоящее свидетельство выдано **фирме "CHALMIT LIGHTING"**, 388 Hillington Road, Glasgow, G52 4BL Великобритания в том, что изготавливаемые ею **взрывозащищенные светильники типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE**, выпускаемые серийно, являются взрывозащищенными.

На основании экспертизы технической документации, оценки конструкции и испытаний серийных образцов на взрывозащищенность указанные изделия соответствуют требованиям ГОСТ 12.2.007.0-75, ГОСТ Р 51330.0-99 (МЭК 60079-0-98), ГОСТ Р 51330.1-99 (МЭК 60079-1-98), ГОСТ Р 51330.6-99 (МЭК 60079-5-97), ГОСТ Р 51330.8-99, ГОСТ Р 51330.13-99 (МЭК 60079-14-96) , ГОСТ Р 51330.14-99, ГОСТ Р 51330.17-99 (МЭК 60079-18-92), гл. 7.3. Правил устройства электроустановок, и им присвоена маркировка взрывозащиты:

- взрывозащищенным светильникам типа 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIB - **2ExdeIIBT2(T3,T4,T5 или T6) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. приложение к свидетельству);
- взрывозащищенным светильникам типа EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIC - **2ExdeIICT2(T3 или T4) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. приложение к свидетельству);
- взрывозащищенным светильникам типа PROTECTA - **2ExeqmIIT4X**;
- взрывозащищенным светильникам типа NEXXUS RANGE OF BULKHEAD LUMINAIRES, MAXINEX FLOODLIGHT LUMINAIRE – **ExnRIIT2(T3,T4 или T5) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. приложение к свидетельству);
- взрывозащищенным светильникам типа MICRONEX FLOODLIGHT – **ExnRIIT3X.**

Область применения - взрывоопасные зоны помещений и наружных установок согласно ГОСТ Р 51330.13-99 (МЭК 60079-14-96), гл. 7.3. Правил устройства электроустановок и другим нормативным документам, регламентирующим применение электрооборудования во взрывоопасных зонах.

Специальные условия для обеспечения безопасности при эксплуатации, обозначенные знаком X после маркировки взрывозащиты, приведены в приложении к свидетельству ЦС ВЭ ИГД № 2002.С170.

Срок действия свидетельства установлен до 01.06.2007 г.
Срок действия свидетельства продлен до _____

Исполнительный директор ЦС ВЭ ИГД А.С.Залогин

м.п. "20" 06 2002 г.

В настоящем свидетельстве пронумеровано и скреплено печатью приложение на 19 листах.

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД (ЦСВЭ ИГД)

ГБ05

Аттестат аккредитации № РОСС RU.0001.01ГБ05. Лицензия Госстандарта России № 01ГБ05
Лицензия Госгортехнадзора России 00АН № 017288
Свидетельство Российского Морского Регистра Судоходства об аккредитации № 98.004.011

109377, г.Москва, а/я 22,
НАНИО «ЦСВЭ ИГД»

Факс./Тел. (095) 558-81-41, 558-83-53,
557-68-72, 557-82-44, 967-72-16
E-mail: admin@ccve.ru

ПРИЛОЖЕНИЕ К СВИДЕТЕЛЬСТВУ ЦС ВЭ ИГД № 2002.С170

1. Изделия

Взрывозащищенные светильники типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE.
Код ТН ВЭД – 9405 10 100 0

2. Представлены

Фирма "CHALMIT LIGHTING",
388 Hillington Road, Glasgow, G52 4BL Великобритания.

3. Изготовлены

Фирма "CHALMIT LIGHTING",
388 Hillington Road, Glasgow, G52 4BL Великобритания.

4. Назначение и область применения

Взрывозащищенные светильники типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE (далее – светильники) предназначены для освещения помещений и наружных установок.
Область применения - взрывоопасные зоны помещений и наружных установок согласно ГОСТ Р 51330.13-99 (МЭК 60079-14-96), гл. 7.3. Правил устройства электроустановок и другим нормативным документам, регламентирующим применение электрооборудования во взрывоопасных зонах.

5. Описание конструкции, основных технических данных и средств обеспечения взрывозащиты взрывозащищенных светильников типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE

5.1. Описание конструкции и основные технические данные взрывозащищенных светильников типа 216 WELLGLASS LUMINAIRE

Уровень и вид взрывозащиты	**2ExdeIIBT3(T4,T5 или T6) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 1)
Степень защиты от внешних воздействий	IP66/67
Класс изделия по способу защиты человека от поражения электрическим током	I
Напряжение питания переменного тока, В	230
Допустимое изменение напряжения питания	+6 % - 10 %

Таблица 1

Светильники типа 216 WELLGLASS LUMINAIRE						
Тип источника света (установленной лампы)	Мощность источника света (лампы), Вт	Напряжение питания, В/Частота, Гц	Температурный класс	Допустимая температура окружающей среды, °С	Выдержка времени, перед открытием светильника, мин	Допустимый нагрев кабельного ввода, °С
GLS	25-100	24-250	T4	от –50 до + 55	10	90
GLS	25-200	24-240	T3	от –50 до + 55	10	90
PAR 38	150	24-240	T3	от –50 до + 55	10	90
SON	50	200-250 / 50 Гц / 60 Гц	T4	от –50 до + 50	4	70
SON	70		T4	от –50 до + 40	4	70
SON/R	70		T3	от –50 до + 40	4	70
MBFU	80		T4	от –50 до + 40	4	70
Светильники с люминесцентными лампами						
PL 2 Pin	5, 7, 9 11	110, 120 / 50 Гц 220-260 / 50 Гц	T6	от –50 до + 55	-	70
PLC 4 Pin	10 и 13	220-260 / ac/dc	T6	от –50 до + 55	-	70
PL 4 Pin	10 и 13	12, 24, 50, 110, 120, 130 / ac/dc	T6	от –50 до + 55	-	70
PLC 2 Pin PLC 4 Pin	10 и 13	220-260 / 50 Гц	T6	от –50 до + 55	-	70
PLC 4 Pin	18 и 26	12, 24, 50, 110, 120, 130, 200, 260 / ac/dc	T5	от –50 до + 55	-	70
PLC 2 Pin PLC 4 Pin	18 и 26	220-260 / 50 Гц	T5	от –50 до + 55	-	70
2x PL 4 Pin	10 и 13	12, 24, 50, 110,	T5	от –50 до + 40	-	70

		120, 130 / ac/dc				
2x PLC 4 Pin	10 и 13	220-260 / 50 Гц	T5	от –50 до + 40	-	70
2x PLC 4 Pin	18	220-260 / 50 Гц	T5	от –50 до + 40	-	70

Взрывозащищенный светильник типа 216 WELLGLASS LUMINAIRE состоит из корпуса, изготовленного из алюминиевого сплава и крышки-плафона, крепящейся на болтах. Плафон изготовлен из закаленного стекла. Корпус и крышка-плафон соединяются через эластичную уплотнительную прокладку. В корпусе светильника расположен дроссель, стартер, патрон, конденсатор и клеммная колодка. Светильники могут комплектоваться защитной решеткой.
На боковой поверхности корпуса имеется вводное отделение. Во вводном отделении имеются отверстия для установки двух кабельных вводов. Устанавливаемые кабельные вводы должны быть сертифицированы и иметь свидетельство о взрывозащищенности и Разрешение Госгортехнадзора на применение.
Подробное описание конструкции взрывозащищенных светильников типа 216 WELLGLASS LUMINAIRE приведено в Техническом описании и инструкции по монтажу и эксплуатации взрывозащищенных светильников типа 216 WELLGLASS LUMINAIRE.

5.2. Описание конструкции и основные технические данные взрывозащищенных светильников типа 238 WELLGLASS LUMINAIRE

Уровень и вид взрывозащиты	**2ExdeIIBT3(T4) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 2)
Степень защиты от внешних воздействий	IP66/67
Класс изделия по способу защиты человека от поражения электрическим током	I
Напряжение питания переменного тока, В	230
Допустимое изменение напряжения питания	+6 % - 10 %

Таблица 2

Светильники типа 238 WELLGLASS LUMINAIRE						
Тип источника света (тип лампы)	Мощность источника света (лампы), Вт	Напряжение питания, В/Частота, Гц	Температурный класс	Допустимая температура окружающей среды, °С	Выдержка времени, перед открытием светильника, мин	Допустимый нагрев кабельного ввода, °С
GLS	150	110-250	T4	от –50 до + 70	10	90
			T4	от –50 до + 50	10	70
GLS	200	110-250	T3	от –50 до + 70	10	90
			T4	от –50 до + 50	10	70
GLS	300	110-240	T4	от –50 до + 40	10	70
SON/E	70	200-254 / 50 Гц / 60 Гц	T4	от –50 до + 50	10	70
			T4	от –50 до + 70	10	85
			T5	от –50 до + 40	10	70
SON/E	100		T4	от –50 до + 60	10	80
			T4	от –50 до + 40	10	70

SON/E	150		T3	от –50 до + 55	10	80
			T4	от –50 до + 40	10	70
SON/E	250		T3	от –50 до + 40	10	80
SON/R	250		T3	от –50 до + 40	10	80
MBF/U	80		T4	от –50 до + 60	10	80
			T4	от –50 до + 40	10	70
MBF/U	125		T3	от –50 до + 50	10	80
			T4	от –50 до + 40	10	70
MBF/U	250		T3	от –50 до + 40	10	80
MBI	150		T3	от –50 до + 55	10	80
			T4	от –50 до + 40	10	70
MBI	250		T3	от –50 до + 40	10	70
MBTF	160	220-250	T3	от –50 до + 50	10	80

Взрывозащищенный светильник типа 238 WELLGLASS LUMINAIRE состоит из корпуса, изготовленного из алюминиевого сплава и крышки-плафона, крепящейся на болтах. Плафон изготовлен из закаленного стекла. Корпус и крышка-плафон соединяются через эластичную уплотнительную прокладку. В корпусе светильника расположен дроссель, стартер, патрон, конденсатор и клеммная колодка. Светильники могут комплектоваться отражателем. На боковой поверхности корпуса имеется вводное отделение.

Во вводном отделении имеются отверстия для установки двух кабельных вводов. Устанавливаемые кабельные вводы должны быть сертифицированы и иметь свидетельство о взрывозащищенности и Разрешение Госгортехнадзора на применение.

Подробное описание конструкции взрывозащищенных светильников типа 238 WELLGLASS LUMINAIRE приведено в Техническом описании и инструкции по монтажу и эксплуатации взрывозащищенных светильников типа 238 WELLGLASS LUMINAIRE.

5.3. Описание конструкции и основные технические данные взрывозащищенных светильников типов EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB и EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC.

Уровень и вид взрывозащиты:

- EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB — **2ExdeIIBT3(T4) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 3)
- EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC — **2ExdeIICT3(T4) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 3)

Степень защиты от внешних воздействий	IP66/67
Класс изделия по способу защиты человека от поражения электрическим током	I
Напряжение питания переменного тока, В	230
Допустимое изменение напряжения питания	+6 % - 10 %

Таблица 3

Лампа	Тип лампы	Мощность, Вт	Напряжение, В	Тип патрона	Пускорегулирующее устройство	Балласт	Емкость конденсатора, мкф	Максимальная температура кабельного ввода, °С	Допустимый диапазон температуры окружающей среды при эксплуатации для EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, °С	Допустимый диапазон температуры окружающей среды при эксплуатации для EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, °С	Температурный класс
Tungsten Halogen	TH	500 макси-мум	270 максимум	E40	-	-	-	50	от –50 до + 40	от –20 до + 40	T3
Tungsten Halogen	TH	500 макси-мум	270 максимум	R7s	-	-	-	40	от –50 до + 55	от –20 до + 40	T3
HPS	SON/T	150	220-254 / 50 Гц / 60 Гц	E40	Parry S.I.P. PCX40 S	Parry	20/30	40	от –50 до + 40	от –20 до + 40	T4
								35	от –50 до + 55	от –20 до + 40	T3
HPS	SON/T	250			Parry S.I.P. PCX40 S		30/40	40	от –50 до + 40	от –20 до + 40	T4
								35	от –50 до + 55	от –20 до + 40	T3
HPS	SON/T	400			Parry S.I.P. PXE000		40/50	40	от –50 до + 40	от –20 до + 40	T3
									от –50 до + 55	от –20 до + 40	T3
HPS	SON/T	600			Parry S.I.P. PXE000		Внешний	55	от –50 до + 35	от –20 до + 40	T3
MBI	MBIT	150			Parry S.I.P. PCX40 S		20/30	40	от –50 до + 40	от –20 до + 40	T4
								35	от –50 до + 55	от –20 до + 40	T3
MBI	MBIT	250			Parry S.I.P. PCX40 H		30/40	40	от –50 до + 40	от –20 до + 40	T4
								35	от –50 до + 55	от –20 до + 40	T3
MBI	MBIT	400			Parry S.I.P. PXE000		40/50	40	от –50 до + 40	от –20 до + 40	T3
								35	от –50 до + 55	от –20 до + 40	T3

Взрывозащищенные светильники типа EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB и EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC состоят из корпуса, изготовленного из алюминиевого сплава и несъемной крышки, крепящейся на болтах, в которой установлено плоское светопропускающее стекло. Соединение корпуса и крышки со светопропускающим стеклом герметизируются компаундом. В корпусе светильника расположено пускорегулирующее устройство, патрон, конденсатор и клеммная колодка.

На боковой поверхности корпуса имеется вводное отделение.

Во вводном отделении имеется отверстие для установки кабельного ввода. Устанавливаемый кабельный ввод должен быть сертифицирован и иметь свидетельство о взрывозащищенности и Разрешение Госгортехнадзора на применение.

Подробное описание конструкции взрывозащищенных светильников типов EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB и EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC приведено в Техническом описании и инструкции по монтажу

и эксплуатации взрывозащищенных светильников типа EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB и EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC.

5.4. Описание конструкции и основные технические данные взрывозащищенных светильников типов EVOLUTION JUNIOR FLOODLIGHT IIB и EVOLUTION JUNIOR FLOODLIGHT IIC.

Уровень и вид взрывозащиты:

- EVOLUTION JUNIOR FLOODLIGHT IIB **2ExdeIIBT2(T3 или T4) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 4)
- EVOLUTION JUNIOR FLOODLIGHT IIC **2ExdeIICT2(T3 или T4) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 4)

Степень защиты от внешних воздействий IP66/67

Класс изделия по способу защиты человека от поражения электрическим током I

Напряжение питания переменного тока, В 230

Допустимое изменение напряжения питания +6 % - 10 %

Таблица 4

Лампа	Максимальная мощность	Наличие двойного стекла	Температурный класс	Допустимый диапазон температуры окружающей среды при эксплуатации для EVOLUTION JUNIOR FLOODLIGHT IIB, °C	Допустимый диапазон температуры окружающей среды при эксплуатации для EVOLUTION JUNIOR FLOODLIGHT IIC, °C
Tungsten Halogen	300	есть	T2	от –50 до + 40	от –20 до + 40
	250	нет	T2	от –50 до + 50	от –20 до + 50
		есть	T2	от –50 до + 40	от –20 до + 40
		нет	T3	от –50 до + 20	от –20 до + 20
	200	есть	T2	от –50 до + 50	от –20 до + 50
		нет	T3	от –50 до + 40	от –20 до + 40
		есть	T3	от –50 до + 25	от –20 до + 25
	150	есть	T3	от –50 до + 55	от –20 до + 55
		нет	T3	от –50 до + 55	от –20 до + 55
SON/T	70	-	T3	от –50 до + 55	от –20 до + 55
		-	T4	от –50 до + 40	от –20 до + 40
HQI-E	70	-	T3	от –50 до + 55	от –20 до + 55
		-	T4	от –50 до + 40	от –20 до + 40

Взрывозащищенные светильники типов EVOLUTION JUNIOR FLOODLIGHT IIB и EVOLUTION JUNIOR FLOODLIGHT IIC состоят из корпуса, изготовленного из алюминиевого сплава и несъемной крышки, крепящейся на болтах, в которой установлено плоское светопропускающее стекло. Соединение корпуса и крышки со светопропускающим стеклом герметизируются компаундом. В корпусе светильника расположено пускорегулирующее устройство, патрон, конденсатор и клеммная колодка.

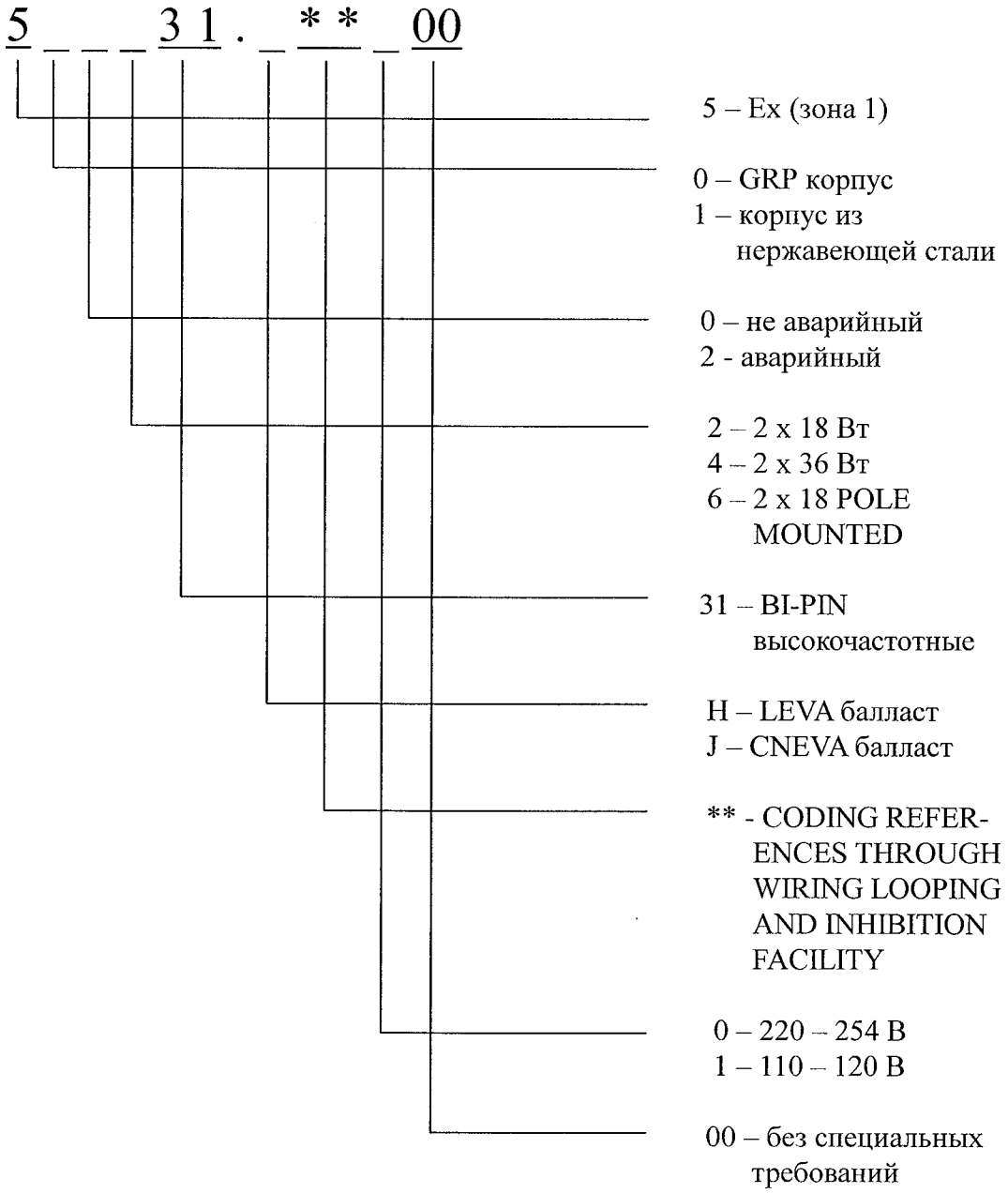
На боковой поверхности корпуса имеется вводное отделение.

Во вводном отделении имеется отверстие для установки кабельного ввода. Устанавливаемый кабельный ввод должен быть сертифицирован и иметь свидетельство о взрывозащищенности и Разрешение Госгортехнадзора на применение.

Подробное описание конструкции взрывозащищенных светильников типов EVOLUTION JUNIOR FLOODLIGHT IIB и EVOLUTION JUNIOR FLOODLIGHT IIC приведено в Техническом описании и инструкции по монтажу и эксплуатации взрывозащищенных светильников типов EVOLUTION JUNIOR FLOODLIGHT IIB и EVOLUTION JUNIOR FLOODLIGHT IIC.

5.5. Описание конструкции и основные технические данные взрывозащищенных светильников типа PROTECTA.

Структура условного обозначения моделей взрывозащищенных светильников типа PROTECTA.



Основные технические данные

Уровень и вид взрывозащиты	2ExeqmIIT4X
Степень защиты от внешних воздействий	IP66/67
Класс изделия по способу защиты человека от поражения электрическим током	II
Напряжение питания переменного тока, В	230 110 –120
Допустимое изменение напряжения питания	+6 % - 10 %
Допустимая температура окружающей среды, °С	от –20 до + 55

Взрывозащищенные светильники типа PROTECTA состоят из корпуса, изготовленного из полиэстера с добавками стекловолокна, и крышки-плафона на петлях, изготовленной из прозрачного поликарбоната. Корпус и крышка соединяются через эластичную уплотнительную прокладку. В корпусе светильника находится балласт. На рефлекторе светильника расположены одна или две люминисцентные лампы мощностью 18 или 36 Вт в зависимости от его модели. На корпусе светильника расположены два кабельных ввода, через которые подводится кабель питания в светильник, провода кабеля крепятся на клеммнике. Свободный кабельный ввод закрыт заглушкой. В корпусе светильника имеются два резьбовых отверстия для кронштейнов, с помощью которых он может крепиться.
Подробное описание конструкции взрывозащищенных светильников типа PROTECTA приведено в Техническом описании и инструкции по монтажу и эксплуатации взрывозащищенных светильников типа PROTECTA GRP ATEX Models 50….H, 50….J и PROTECTA III STAINLESS ATEX Models 51….H, 51….J.

5.6. Описание конструкции и основные технические данные взрывозащищенных светильников типа NEXXUS RANGE OF BULKHEAD LUMINAIRES

Уровень и вид взрывозащиты	ExnRIIT3(T4,T5) X (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 5)
Степень защиты от внешних воздействий	IP66/67
Класс изделия по способу защиты человека от поражения электрическим током	II
Напряжение питания переменного тока, В	230
Допустимое изменение напряжения питания	+6 % - 10 %

Таблица 5

Тип лампы	Мощность, Вт	Допустимая температура окружающей среды, °С	Температурный класс
SON/E	100	от – 45 до + 25	T3
		от – 45 до + 40	
	70	от – 45 до + 35	T4
		от – 45 до + 50	T3
	50	от – 45 до + 35	T4
		от – 45 до + 50	T3
MBI	70	от – 45 до + 35	T4
		от – 45 до + 50	T3

MBFU	80	от – 45 до + 25	T3
		от – 45 до + 35	
MBTF	160	от – 25 до + 30	T3
GLS	200	от – 45 до + 30	T3
	150	от – 45 до + 40	T3
	100	от – 45 до + 45	T4
CFL-DE	2 x 26 Вт	от – 20 до + 30	T5
	2 x 18 Вт		
	2 x 13 Вт		
	26 Вт	от – 20 до + 50	T5
	18 Вт		
	13 Вт		
CFL-DE 110 В	1 x 26 Вт	от – 20 до + 30	T5

Взрывозащищенные светильники типа NEXXUS RANGE OF BULKHEAD LUMINAIRES состоят из прямоугольного корпуса, изготовленного из алюминиевого сплава и крышки-плафона, крепящейся на болтах. Корпус и крышка-плафон соединяются через эластичную уплотнительную прокладку. В корпусе светильника расположено пускорегулирующее устройство, патрон, конденсатор и клеммная колодка. Во вводном отделении имеется отверстие для установки кабельного ввода. Устанавливаемый кабельный ввод должен быть сертифицирован и иметь свидетельство о взрывозащищенности и Разрешение Госгортехнадзора на применение.
Подробное описание конструкции взрывозащищенных светильников типов NEXXUS RANGE OF BULKHEAD LUMINAIRES приведено в Техническом описании и инструкции по монтажу и эксплуатации взрывозащищенных светильников типов NEXXUS RANGE OF BULKHEAD LUMINAIRES.

5.7. Описание конструкции и основные технические данные взрывозащищенных светильников типа MICRONEX FLOODLIGHT

Уровень и вид взрывозащиты	ExnRIIT3X
Степень защиты от внешних воздействий	IP66/67
Класс изделия по способу защиты человека от поражения электрическим током	I
Напряжение питания переменного тока, В	230
Допустимое изменение напряжения питания	+6 % - 10 %
Тип лампы	SON/TS, MBI/TS
Мощность лампы, Вт	70
Температура окружающей среды при эксплуатации, °С	от – 30 до + 40

Взрывозащищенные светильники типа MICRONEX FLOODLIGHT состоят из прямоугольного корпуса, изготовленного из алюминиевого сплава и крышки, крепящейся на болтах, в которой установлено плоское светопропускающее стекло. Корпус и крышка со светопропускающим стеклом соединяются через эластичную уплотнительную прокладку. В корпусе светильника расположено пускорегулирующее устройство, патрон, конденсатор и клеммная колодка.
Во вводном отделении имеется отверстие для установки кабельного ввода. Устанавливаемый кабельный ввод должен быть сертифицирован и иметь свидетельство о взрывозащищенности и Разрешение Госгортехнадзора на применение.
Подробное описание конструкции взрывозащищенных светильников типа MICRONEX FLOODLIGHT приведено в Техническом описании и инструкции по

монтажу и эксплуатации взрывозащищенных светильников типа MICRONEX FLOODLIGHT.

5.8. Описание конструкции и основные технические данные взрывозащищенных светильников типа MAXINEX FLOODLIGHT LUMINAIRE

Уровень и вид взрывозащиты	ExnRIIT2(T3,T4) X (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 6)
Степень защиты от внешних воздействий	IP66/67
Класс изделия по способу защиты человека от поражения электрическим током	I
Напряжение питания переменного тока, В	230
Допустимое изменение напряжения питания	+6 % - 10 %

Таблица 6

Тип лампы	Мощность, Вт	Допустимая температура окружающей среды, °С	Температурный класс
SON/T	400	от – 45 до + 45	T3
SON/T	400	от – 45 до + 50	T2
SON/T	400	от – 45 до + 55	T2
MBI/T	400	от – 45 до + 30	T3
MBI/T	400	от – 45 до + 50	T2
MBI/T	400	от – 45 до + 55	T2
SON/T	250	от – 45 до + 55	T3
MBI/T	250	от – 45 до + 55	T3
SON/T	150	от – 45 до + 55	T4
MBI/T	150	от – 45 до + 55	T4

Взрывозащищенные светильники типа MAXINEX FLOODLIGHT LUMINAIRE состоят из прямоугольного корпуса, изготовленного из алюминиевого сплава и крышки, крепящейся на болтах, в которой установлено плоское светопропускающее стекло. Корпус и крышка со светопропускающим стеклом соединяются через эластичную уплотнительную прокладку. В корпусе светильника расположено пускорегулирующее устройство, патрон, конденсатор и клеммная колодка.

Во вводном отделении имеется отверстие для установки кабельного ввода. Устанавливаемый кабельный ввод должен быть сертифицирован и иметь свидетельство о взрывозащищенности и Разрешение Госгортехнадзора на применение.

Подробное описание конструкции взрывозащищенных светильников типа MAXINEX FLOODLIGHT LUMINAIRE приведено в Техническом описании и инструкции по монтажу и эксплуатации взрывозащищенных светильников типа MAXINEX FLOODLIGHT LUMINAIRE.

5.9. Обеспечение взрывозащиты.

Взрывозащищенные светильники типа 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIB имеют взрывозащищенное исполнение, с видами взрывозащиты: "взрывонепроницаемая оболочка" по ГОСТ Р 51330.1-99 (МЭК 60079-1-98) и защита вида “e” по ГОСТ Р 51330.8-99, с уровнем взрывозащиты "повышенная надежность против взрыва", с маркировкой

взрывозащиты по ГОСТ Р 51330.0-99 (МЭК 60079-0-98) - **2ExdeIIBT2(T3,T4,T5 или T6) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 1,2,3,4).

Взрывозащищенные светильники типа EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIC имеют взрывозащищенное исполнение, с видами взрывозащиты: "взрывонепроницаемая оболочка" по ГОСТ Р 51330.1-99 (МЭК 60079-1-98) и защита вида "e" по ГОСТ Р 51330.8-99, с уровнем взрывозащиты "повышенная надежность против взрыва", с маркировкой взрывозащиты по ГОСТ Р 51330.0-99 (МЭК 60079-0-98) - **2ExdeIICT2(T3 или T4) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 3,4).

Взрывозащищенность светильников типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIC достигается за счет:

1) заключения всех токоведущих частей отделения источника света во взрывонепроницаемую оболочку, способную выдержать давление взрыва и исключить передачу взрыва в окружающую взрывоопасную среду, применения щелевой взрывозащиты в местах сопряжения деталей и узлов взрывонепроницаемой оболочки. Сопряжения обозначены с указанием допустимых параметров взрывозащиты: максимальной ширины и минимальной длины щелей, предельной шероховатости поверхностей, образующих взрывонепроницаемые щели в соответствии с ГОСТ Р 51330.1-99 (МЭК 60079-1-98);
2) ограничения температуры нагрева наружных частей светильников и внутренних деталей вводного отделения ниже предельной температуры, установленной ГОСТ Р 51330.0-99 (МЭК 60079-0-98) для температурных классов в зависимости от мощности и типа установленной лампы, см. приложение к свидетельству;
3) высокой механической прочности светильников по ГОСТ Р 51330.0-99 (МЭК 60079-0-98);
4) уплотнения кабеля в кабельном вводе специальным уплотнительным элементом по ГОСТ Р 51330.0-99 (МЭК 60079-0-98);
5) предохранения от самоотвинчивания всех болтов, крепящих детали, обеспечивающих взрывозащиту светильника, а также токоведущих зажимов с помощью пружинных шайб или контргаек в соответствии с ГОСТ Р 51330.0-99 (МЭК 60079-0-98);
6) обеспечения необходимых электрических зазоров, путей утечек и применения изоляционных материалов в соответствии с ГОСТ Р 51330.8-99;

Маркировка, нанесенная на корпусе светильника, хорошо видимая, четкая и прочная и должна включать следующие данные:

- знак или наименование предприятия - изготовителя;
- наименование изделия;
- порядковый номер изделия по системе нумерации предприятия изготовителя;
- наименование или знак центра по сертификации и номер сертификата (при выдаче сертификата);
- допустимую температуру окружающей среды при эксплуатации для светильников, предназначенных для эксплуатации в условиях, отличающихся от t_a= -20°C ÷ +40°C;

- Маркировку взрывозащиты:
  - ♦ взрывозащищенным светильникам типа 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIB - **2ExdeIIBT2(T3,T4,T5 или T6) X** (температурный класс в зависимости от мощности и типа установленной лампы см. табл. 1,2,3,4);
  - ♦ взрывозащищенным светильникам типа EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIC - **2ExdeIICT2(T3 или T4) X** (температурный класс в зависимости от мощности и типа установленной лампы см. см. табл. 3,4);
- предупредительные надписи **"Открывать отключив от сети!",** для светильников типа 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE **"Открывать через .. минут (см. табл. 1,2) после отключения от сети!",**

и другие данные, которые изготовитель должен отразить в маркировке, если это требуется технической документацией.

Специальные условия для обеспечения безопасности при эксплуатации, обозначенные знаком X, стоящим после маркировки взрывозащиты означают, что при эксплуатации светильников необходимо соблюдать следующие требования, (особые условия), указанные в техническом описании и инструкции по эксплуатации:

- светильники допускается эксплуатировать с сертифицированными кабельными вводами, имеющими Свидетельство о взрывозащищенности и Разрешение Госгортехнадзора РФ;
- эксплуатация светильников допускается в сети с колебаниями напряжения 230 В не более +6% -10%;
- для светильников типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE с установленными лампами, обеспечивающими нагрев кабельного ввода выше 70°С, необходимо применять специальные кабели, расчитанные на этот нагрев.

Взрывозащищенные светильники типа PROTECTA имеют взрывозащищенное исполнение, с видами взрывозащиты: защита вида "e" по ГОСТ Р 51330.8-99, взрывозащита вида «герметизация компаундом (m)» по ГОСТ Р 51330.17-99 (МЭК 60079-18-92), взрывозащита вида «кварцевое заполнение оболочки q» по ГОСТ Р 51330.6-99 (МЭК 60079-5-97) и с уровнем взрывозащиты "повышенная надежность против взрыва", с маркировкой взрывозащиты по ГОСТ Р 51330.0-99 (МЭК 60079-0-98) - **2ExeqmIIT4X.**

Взрывозащищенность светильников типа PROTECTA достигается за счет:

1) ограничения температуры нагрева наружных частей и внутренних деталей светильников не более 135°С, что соответствует ГОСТ Р 51330.0-99 (МЭК 60079-0-98);
2) высокой механической прочности светильников по ГОСТ Р 51330.0-99 (МЭК 60079-0-98);
3) уплотнения кабеля в кабельном вводе специальным уплотнительным элементом по ГОСТ Р 51330.0-99 (МЭК 60079-0-98);

4) предохранения от самоотвинчивания всех болтов, крепящих детали, обеспечивающих взрывозащиту светильника, а также токоведущих зажимов с помощью пружинных шайб или контргаек в соответствии с ГОСТ Р 51330.0-99 (МЭК 60079-0-98);
5) обеспечения необходимых электрических зазоров, путей утечек и применения изоляционных материалов в соответствии с ГОСТ Р 51330.8-99;
6) герметизации компаундом внутреннего объема и токоведущих частей блокировочного выключателя, исключающей проникновение взрывоопасной газовой смеси к токоведущим частям, с толщиной слоя заливки над деталями не менее 3 мм согласно, требованиям ГОСТ Р 51330.17-99 (МЭК 60079-18-92);
7) изоляцией и обеспечением электрических зазоров между токоведущими цепями светильника в соответствии с требованиями ГОСТ Р 51330.17-99 (МЭК 60079-18-92);
8) применением защиты вида «кварцевое заполнение оболочки q» по ГОСТ Р 51330.6-99 (МЭК 60079-5-97) для пускорегулирующего устройства.

Маркировка, нанесенная на корпусе светильника, хорошо видимая, четкая и прочная и должна включать следующие данные:

- знак или наименование предприятия - изготовителя;
- наименование изделия;
- порядковый номер изделия по системе нумерации предприятия изготовителя;
- наименование или знак центра по сертификации и номер сертификата (при выдаче сертификата);
- уровень и вид взрывозащиты - 2ExeqmIIT4X;
- предупредительные надписи **"Открывать во взрывоопасной зоне запрещается!", "Замена батареи во взрывоопасной зоне запрещается!"**;

и другие данные, которые изготовитель должен отразить в маркировке, если это требуется технической документацией.

Специальные условия для обеспечения безопасности при эксплуатации, обозначенные знаком X, стоящим после маркировки взрывозащиты означают, что при эксплуатации светильников необходимо соблюдать следующие требования, (особые условия), указанные в техническом описании и инструкции по эксплуатации:

- светильники допускается эксплуатировать с сертифицированными кабельными вводами, имеющими Свидетельство о взрывозащищенности и Разрешение Госгортехнадзора РФ;
- эксплуатация светильников допускается в сети с колебаниями напряжения 230 В не более +6% -10%;
- при эксплуатации взрывозащищенных светильников типа PROTECTA необходимо применять люминесцентные лампы только с хорошо отформованными цокольными наконечниками, также заземлять элементы крепления светильников, кабель питания должен иметь заземляющий провод. Протирать светильник только влажной тряпкой.

Взрывозащищенные светильники типа NEXXUS RANGE OF BULKHEAD LUMINAIRES, MAXINEX FLOODLIGHT LUMINAIRE имеют взрывозащищенное исполнение, с защитой вида "n" по ГОСТ Р 51330.14-99 с маркировкой взрывозащиты: – **ExnRIIT2(T3,T4 или T5) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 5,6)

Взрывозащищенные светильники типа MICRONEX FLOODLIGHT имеют взрывозащищенное исполнение, с защитой вида "n" по ГОСТ Р 51330.14-99 с маркировкой взрывозащиты: – **ExnRIIT3X**

Взрывозащищенность светильников типа NEXXUS RANGE OF BULKHEAD LUMINAIRES, MAXINEX FLOODLIGHT LUMINAIRE, MICRONEX FLOODLIGHT достигнута за счет:

1) размещения электрических цепей светильников в оболочку с ограниченным пропуском газов по ГОСТ Р 51330.14-99;
2) степени защиты от внешних воздействий не ниже IP66/67, что соответствует ГОСТ Р 51330.14-99;
3) уплотнения каждого ввода кабеля в штуцере специальным уплотнительным элементом по ГОСТ Р 51330.14-99;
4) обеспечения необходимых электрических зазоров и путей утечек в соответствии с ГОСТ Р 51330.14-99;
5) ограничения температуры нагрева наружных и внутренних частей светильника MICRONEX FLOODLIGHT (не более 200°С), для взрывозащищенных светильников типа NEXXUS RANGE OF BULKHEAD LUMINAIRES, MAXINEX FLOODLIGHT LUMINAIRE ниже предельной температуры, установленной ГОСТ Р 51330.0-99 (МЭК 60079-0-98) для температурных классов в зависимости от мощности и типа установленной лампы, см. приложение к свидетельству;
6) предохранения от самоотвинчивания всех болтов, крепящих детали, обеспечивающих взрывозащиту взрывозащищенных светильников типов NEXXUS RANGE OF BULKHEAD LUMINAIRES, MAXINEX FLOODLIGHT LUMINAIRE, MICRONEX FLOODLIGHT, а также токоведущих и заземляющих зажимов с помощью пружинных шайб или контргаек;
7) высокой механической прочности взрывозащищенных светильников типов NEXXUS RANGE OF BULKHEAD LUMINAIRES, MAXINEX FLOODLIGHT LUMINAIRE, MICRONEX FLOODLIGHT по ГОСТ Р 51330.0-99 (МЭК 60079-0-98);

Маркировка, нанесенная на корпусе светильника, хорошо видимая, четкая и прочная и должна включать следующие данные:

- знак или наименование предприятия - изготовителя;
- наименование изделия;
- порядковый номер изделия по системе нумерации предприятия изготовителя;
- наименование или знак центра по сертификации и номер сертификата (при выдаче сертификата);
- уровень и вид взрывозащиты:
  - ♦ взрывозащищенным светильникам типа NEXXUS RANGE OF BULKHEAD LUMINAIRES, MAXINEX FLOODLIGHT LUMINAIRE – **ExnRIIT2(T3,T4 или T5) X** (температурный класс в зависимости от мощности и типа установленной лампы, см. табл. 5,6);
  - ♦ взрывозащищенным светильникам типа MICRONEX FLOODLIGHT – **ExnRIIT3X;**
- предупредительную надпись **" Открывать во взрывоопасной зоне запрещается! "**;

и другие данные, которые изготовитель должен отразить в маркировке, если это требуется технической документацией.

Специальные условия для обеспечения безопасности при эксплуатации, обозначенные знаком X, стоящим после маркировки взрывозащиты означают, что при эксплуатации светильников необходимо соблюдать следующие требования, (особые условия), указанные в техническом описании и инструкции по эксплуатации:

- светильники допускается эксплуатировать с сертифицированными кабельными вводами, имеющими Свидетельство о взрывозащищенности и Разрешение Госгортехнадзора РФ;
- эксплуатация светильников допускается в сети с колебаниями напряжения 230 В не более +6% -10%.

6. Перечень чертежей, согласованных центром по сертификации.

Номер чертежа	Дата подписания	Дата согласования
D1929 2 листа	26.07.99	11.06.2002
D1930	26.07.99	11.06.2002
D1858	08.09.99	11.06.2002
D1857	08.09.99	11.06.2002
A6852	20.06.00	11.06.2002
B1143	05.04.00	11.06.2002
B1144	05.04.00	11.06.2002
B1145	04.04.00	11.06.2002
B1146	04.04.00	11.06.2002
B1147	04.04.00	11.06.2002
B1148	04.04.00	11.06.2002
B1149	04.04.00	11.06.2002
B1150	04.04.00	11.06.2002
B1151	01.05.00	11.06.2002
B1180	14.02.01	11.06.2002
C792	24.03.00	11.06.2002
C793	06.12.00	11.06.2002
C808	19.07.00	11.06.2002
D1954	11.04.00	11.06.2002
D1955 3 листа	16.03.00	11.06.2002
D1957	02.10.00	11.06.2002
D1928	07.07.00	11.06.2002
D1924	07.07.00	11.06.2002
D2055	24.08.01	11.06.2002
D2048	17.07.01	11.06.2002
B1154	25.04.00	11.06.2002
A6961	02.08.01	11.06.2002
A6578	10.03.98	11.06.2002
D2096	19.04.02	11.06.2002
D1955 3 листа	11.04.00	11.06.2002
D1957	02.10.00	11.06.2002
A6852	07.07.00	11.06.2002
C793	06.12.00	11.06.2002
C808	19.07.00	11.06.2002
D1954	11.04.00	11.06.2002
C792	11.04.00	11.06.2002
B1143	11.04.00	11.06.2002
B1144	11.04.00	11.06.2002

Номер чертежа	Дата подписания	Дата согласования
B1145	11.04.00	11.06.2002
B1146	11.04.00	11.06.2002
B1147	11.04.00	11.06.2002
B1151	12.04.00	11.06.2002
A6578	10.03.98	11.06.2002
A6961	02.08.01	11.06.2002
B1154	25.04.00	11.06.2002
D2048	17.07.01	11.06.2002
D2055	24.08.01	11.06.2002
D1763 1 лист	05.03.98	11.06.2002
D1763 2 лист	12.02.98	11.06.2002
A6568	08.12.97	11.06.2002
D2098	24.04.02	11.06.2002
D1729 2 лист	25.11.97	11.06.2002
D1870 2 листа	30.06.99	11.06.2002
A6568	08.12.97	11.06.2002
D1729 2 листа	29.06.99	11.06.2002
D1894 3 листа	16.11.99	11.06.2002
D2057 3листа	30.08.01	11.06.2002
D2062	14.09.01	11.06.2002
D2057 3 листа	30.04.02	11.06.2002
D2058 2 листа	30.08.01	11.06.2002
D2058 2 листа	30.04.02	11.06.2002
D1910 5 листов	01.11.01	11.06.2002
D1910 5 листов	01.05.02	11.06.2002
D1911 5 листов	01.11.01	11.06.2002
D1911 5 листов	01.05.02	11.06.2002
D1902 4 листа	21.05.01	11.06.2002
D1902 4 листа	30.04.02	11.06.2002
D1901 4 листа	06.03.01	11.06.2002
D1901 4 листа	01.05.02	11.06.2002

Внесение изменений в согласованные чертежи и конструкцию взрывозащищенных светильников типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE возможно только по согласованию с ЦС ВЭ ИГД.

7. Перечень нормативных документов, требованиям которых соответствует изделие

7.1. ГОСТ 12.2.007.0-75. Система стандартов безопасности труда. Изделия электротехнические. Общие требования безопасности;

7.2. ГОСТ Р 51330.0-99 (МЭК 60079-0-98). Электрооборудование взрывозащищенное. Часть 0. Общие требования;

7.3. ГОСТ Р 51330.1-99 (МЭК 60079-1-98). Электрооборудование взрывозащищенное. Часть 1. Взрывозащита вида ”взрывонепроницаемая оболочка”;

7.4. ГОСТ Р 51330.6-99 (МЭК 60079-5-97). Электрооборудование взрывозащищенное. Часть 5. Кварцевое заполнение оболочки q;
7.5. ГОСТ Р 51330.8-99. Электрооборудование взрывозащищенное. Часть 7. Защита вида "e";
7.6. ГОСТ Р 51330.13-99 (МЭК 60079-14-96). Электрооборудование взрывозащищенное. Часть 14. Электроустановки во взрывоопасных зонах (кроме подземных выработок).
7.7. ГОСТ Р 51330.14-99. Электрооборудование взрывозащищенное. Часть 15. Защита вида "n";
7.8. ГОСТ Р 51330.17-99 (МЭК 60079-18-92). Электрооборудование взрывозащищенное. Часть 18. Взрывозащита вида «герметизация компаундом (m)».
7.9. Правила устройства электроустановок (изд.6, 2000 г.).

8. Перечень документов, являющихся основанием для выдачи свидетельства.

8.1. Техническое описание и инструкция по монтажу и эксплуатации на взрывозащищенные светильники типа 216 WELLGLASS LUMINAIRE;
8.2. Техническое описание и инструкция по монтажу и эксплуатации на взрывозащищенные светильники типа 238 WELLGLASS LUMINAIRE;
8.3. Техническое описание и инструкция по монтажу и эксплуатации на взрывозащищенные светильники типа EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC;
8.4. Техническое описание и инструкция по монтажу и эксплуатации на взрывозащищенные светильники типа EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC;
8.5. Технические описания и инструкции по монтажу и эксплуатации на взрывозащищенные светильники типа PROTECTA GRP ATEX Models 50….H, 50….J и PROTECTA III STAINLESS ATEX Models 51….H, 51….J;
8.6. Техническое описание и инструкция по монтажу и эксплуатации на взрывозащищенные светильники типа NEXXUS RANGE OF BULKHEAD LUMINAIRES;
8.7. Техническое описание и инструкция по монтажу и эксплуатации на взрывозащищенные светильники типа MICRONEX FLOODLIGHT;
8.8. Техническое описание и инструкция по монтажу и эксплуатации на взрывозащищенные светильники типа MAXINEX FLOODLIGHT LUMINAIRE;
8.9. Комплекты конструкторской документации на взрывозащищенные светильники типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE по п.6.;
8.10. Протокол ИЛ ЦСВЭ № 70.2002-И от 11.06.2002 г. экспертизы технической документации, оценки конструкции и испытаний на взрывозащищенность взрывозащищенных светильников типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC,

PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE.

8.11. Сертификаты и протоколы испытаний, выданные национальными испытательными центрами: BAS98ATEX3054 от 2.06.98 г., ATEX CERTIFICATION REPORT 97(C)0962 от 2.06.98 г., BAS97ATEX4368 от 24.02.98 г., ATEX CERTIFICATION REPORT 97(C)0858/1 от 24.02.98 г., ATEX CERTIFICATION REPORT 97(C)0858/2 от 24.02.98 г., BAS99ATEX2123U от 23.06.99 г., BAS99ATEX3012 от 22.07.99 г., ATEX CERTIFICATION REPORT 98(C)1175 от 11.06.99 г., KEMA 98ATEX3045 от 24.02.2000 г., KEMA 00ATEX2121U от 23.04.2001 г., BAS01ATEX2307 от 22.01.02 г., CERTIFICATION REPORT 01(C)0558/1 от 16.01.02 г., BAS01ATEX2308 от 22.01.02 г., ATEX CERTIFICATION REPORT 01(C)0558/2 от 16.01.02 г., BAS98ATEX2372 от 15.07.99 г., ATEX CERTIFICATION REPORT 98(C)0619/2 от 5.07.99 г., BAS98ATEX2373 от 15.07.99 г., ATEX CERTIFICATION REPORT 98(C)0619 от 5.07.99 г., CERTIFICATION REPORT 95(C)0732 от 7.01.97 г., ASSESSMENT REPORT 98(A)0619 от 5.07.99 г., CERTIFICATION REPORT 01(C)0090 от 12.03.02 г., TEST REPORT 01(T)0090 от 31.10.01 г., CERTIFICATION REPORT 01(C)0090/1 от 7.03.02 г., BAS99ATEX2227 от 11.01.00 г., ATEX CERTIFICATION REPORT 99(C)0311 от 22.12.99 г., BAS99ATEX2228 от 11.01.00 г., ATEX CERTIFICATION REPORT 99(C)0312 от 22.12.99 г.

9. **При поставке в Россию** на корпусах взрывозащищенных светильников типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE должна быть нанесена маркировка взрывозащиты:
   - на взрывозащищенных светильниках типа 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIB - **2ExdeIIBT2(T3,T4,T5 или T6) X** (температурный класс в зависимости от мощности установленной лампы, см. табл. 1,2,3,4);
   - на взрывозащищенных светильниках типа EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIC - **2ExdeIICT2(T3 или T4) X** (температурный класс в зависимости от мощности установленной лампы, см. табл. 3,4);
   - на взрывозащищенных светильниках типа PROTECTA - **2ExeqmIIT4X**;
   - на взрывозащищенных светильниках типа NEXXUS RANGE OF BULKHEAD LUMINAIRES, MAXINEX FLOODLIGHT LUMINAIRE – **ExnRIIT2(T3,T4 или T5) X** (температурный класс в зависимости от мощности установленной лампы, см. табл. 5,6);
   - на взрывозащищенных светильниках типа MICRONEX FLOODLIGHT – **ExnRIIT3X,** а также поясняющие и предупредительные надписи на русском языке.

10. В комплект поставки в Россию должны входить:

10.1. Инструкции по монтажу и эксплуатации на взрывозащищенные светильники типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III)

FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE (на русском языке);

10.2. Свидетельство о взрывозащищенности ЦС ВЭ ИГД № 2002.С170.

Исполнительный директор ЦС ВЭ ИГД
к.т.н. **А.С.Залогин**

Эксперты:

Эксперт по взрывозащищенному и рудничному электрооборудованию (рег. № РОСС RU.0001.3106851),
старший научный сотрудник **Н.Н.Преловский**

Эксперт по взрывозащищенному и рудничному электрооборудованию (рег. № РОСС RU.0001.3109073),
ведущий научный сотрудник, к.т.н. **Ю.В.Коворов**

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X. Серийный выпуск.

код ОК 005 (ОКП):
34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ:
9405 10 100 0

ИЗГОТОВИТЕЛЬ
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.
Телефон: +44(0) 141 882 5555, факс: +44 (0) 141 883 3704.

НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Центр по сертификации ВЭ для сертификатов РОСС RU.0001.01ГБ05

Руководитель органа подпись **В.И. Серов** инициалы, фамилия

Эксперт подпись **Ю.В. Коворов** инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604 *

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17–99.

Руководитель органа _____ В.И. Серов
подпись — инициалы, фамилия

М.П.

Эксперт _____ Ю.В. Коворов
подпись — инициалы, фамилия

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X. Серийный выпуск.

код ОК 005 (ОКП): **34 6120**

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ: **9405 10 100 0**

ИЗГОТОВИТЕЛЬ
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
Фирма "Chalmit Lighting",
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Телефон: +44(0) 141 882 5555, факс: +44 (0) 141 883 3704.

НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Орган по сертификации ВЭ для сертификатов РОСС RU.0001.01ГБ05 ИГД

Руководитель органа _____ подпись **В.И. Серов** инициалы, фамилия

Эксперт _____ подпись **Ю.В. Коворов** инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) / код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17 – 99.

М.П.

Руководитель органа _______ подпись _______ В.И. Серов инициалы, фамилия

Эксперт _______ подпись _______ Ю.В. Коворов инициалы, фамилия

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X.
Серийный выпуск.

код ОК 005 (ОКП):
34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ:
9405 10 100 0

ИЗГОТОВИТЕЛЬ
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.
Телефон: +44(0) 141 882 5555, факс: +44 (0) 141 883 3704.

НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Центр по сертификации ВЭ для сертификатов РОСС RU. 0001. М.П.

Руководитель органа _____ подпись **В.И. Серов** инициалы, фамилия

Эксперт _____ подпись **Ю.В. Коворов** инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17 – 99.

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
**НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.**

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X. Серийный выпуск.

код ОК 005 (ОКП):
34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ:
9405 10 100 0

ИЗГОТОВИТЕЛЬ
**Фирма "Chalmit Lighting",
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СЕРТИФИКАТ ВЫДАН
**Фирма "Chalmit Lighting",
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Телефон: +44(0) 141 882 5555, факс: +44 (0) 141 883 3704.**

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**Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).**

КОПИЯ ВЕРНА

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

М.П.

Руководитель органа — подпись — **В.И. Серов** (инициалы, фамилия)

Эксперт — подпись — **Ю.В. Коворов** (инициалы, фамилия)

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СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17–99.

Центр по сертификации ВЭ ИЛИ ДЛЯ СЕРТИФИКАТОВ РОСС RU. 0001. 01ГБ05

КОПИЯ ВЕРНА

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

М.П.

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X. Серийный выпуск.

код ОК 005 (ОКП):
34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ:
9405 10 100 0

ИЗГОТОВИТЕЛЬ
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.
Телефон: +44(0) 141 882 5555, факс: +44 (0) 141 883 3704.

НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

КОПИЯ ВЕРНА

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

М.П.

Руководитель органа ______ подпись **В.И. Серов** инициалы, фамилия

Эксперт ______ подпись **Ю.В. Коворов** инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17–99.

Центр по сертификации ВЭ ДЛЯ СЕРТИФИКАТОВ РОСС RU. 0001. 01ГБ05

КОПИЯ ВЕРНА

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

М.П.

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ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
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СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X. Серийный выпуск.

код ОК 005 (ОКП):
34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ:
9405 10 100 0

ИЗГОТОВИТЕЛЬ
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388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
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НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

Центр по сертификации ВЭ ИГД — ДЛЯ СЕРТИФИКАТОВ — РОСС RU.0001.01ГБ05

КОПИЯ ВЕРНА

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Центр по сертификации ВЭ ИГД — ДЛЯ СЕРТИФИКАТОВ — РОСС RU.0001.01ГБ05

Руководитель органа ______ **В.И. Серов**
подпись инициалы, фамилия

М.П. Эксперт ______ **Ю.В. Коворов**
подпись инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17 – 99.

Центр по сертификации ВЭ ДЛЯ СЕРТИФИКАТОВ РОСС RU. 0001. 01ГБ05

КОПИЯ ВЕРНА

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

М.П.

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
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тел. /факс. 557-82-44.

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X. Серийный выпуск.

код ОК 005 (ОКП):
34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ
ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ:
9405 10 100 0

ИЗГОТОВИТЕЛЬ
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
Фирма "Chalmit Lighting",
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Телефон: +44(0) 141 882 5555, факс: +44 (0) 141 883 3704.

НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

КОПИЯ ВЕРНА

Руководитель органа ______ подпись ______ **В.И. Серов** инициалы, фамилия

М.П.

Эксперт ______ подпись ______ **Ю.В. Коворов** инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17 – 99.

Центр по сертификации взрывозащищенного и рудничного электрооборудования ДЛЯ СЕРТИФИКАТОВ РОСС RU. 0001. 01ГБ05

КОПИЯ ВЕРНА

М.П.

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

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СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
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ПРОДУКЦИЯ
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код ОК 005 (ОКП):
34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

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КОПИЯ ВЕРНА

М.П.

Руководитель органа ______ (подпись) **В.И. Серов** (инициалы, фамилия)

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СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № **РОСС GB.ГБ05.В00524**

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17 – 99.

Центр по сертификации ВЭ ДЛЯ СЕРТИФИКАТОВ РОСС RU. 0001. 01ГБ05

КОПИЯ ВЕРНА

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

М.П.

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X.
Серийный выпуск.

код ОК 005 (ОКП): 34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ: 9405 10 100 0

ИЗГОТОВИТЕЛЬ
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.
Телефон: +44(0) 141 882 5555, факс: +44 (0) 141 883 3704.

НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

КОПИЯ ВЕРНА

Руководитель органа _____ подпись В.И. Серов инициалы, фамилия

М.П.

Эксперт _____ подпись Ю.В. Коворов инициалы, фамилия

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
9405 10 100 0	Взрывозащищенные светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution Junior Floodlight IIB с маркировкой взрывозащиты 2ExdeIIBT2(T3, T4, T5 или T6) X; взрывозащищенные светильники типа Evolution (200 series MkIII) FloodLight IIC, Evolution Junior Floodlight IIC с маркировкой взрывозащиты 2ExdeIICT2(T3 или T4) X; взрывозащищенные светильники типа Protecta с маркировкой взрывозащиты 2ExeqmIIT4 X; взрывозащищенные светильники типа Nexxus Range of Bulkhead Luminaires Maxinex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT2(T3, T4, или T5) X; взрывозащищенные светильники типа Micronex Floodlight Luminaire с маркировкой взрывозащиты ExnRIIT3 X.	ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 ГОСТ Р 51330.1-99 ГОСТ Р 51330.6-99 ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99 ГОСТ Р 51330.17 – 99.

Центр по сертификации ВЭ ДЛЯ СЕРТИФИКАТОВ РОСС RU. 0001. 01ГБ05

КОПИЯ ВЕРНА

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

М.П.

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.

ПРОДУКЦИЯ
Светильники типа 216 Wellglass Luminaire, 238 Wellglass Luminare, Evolution (200 series MkIII) FloodLight IIB, Evolution (200 series MkIII) Floodlight IIC, Evolution Junior Floodlight IIB, Evolution Junior Floodlight IIC, Protecta, Nexxus Range of Bulkhead Luminaires, Micronex Floodlight, Maxinex Floodlight Luminaire с маркировками взрывозащиты 2ExdeIIBT2(T3,T4,T5 или T6) X, 2ExdeIICT2(T3 или T4) X, 2ExeqmIIT4 X, ExnRIIT2(T3, T4 или T5) X, ExnRIIT3 X.
Серийный выпуск.

код ОК 005 (ОКП): 34 6120

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

код ТН ВЭД СНГ: 9405 10 100 0

ИЗГОТОВИТЕЛЬ
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
Фирма "Chalmit Lighting",
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Телефон: +44(0) 141 882 5555, факс: +44 (0) 141 883 3704.

НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

Центр по сертификации ВЭ ИГД ДЛЯ СЕРТИФИКАТОВ РОСС RU.0001.01ГБ05

КОПИЯ ВЕРНА

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

М.П.

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № РОСС GB.ГБ05.В00524

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
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Центр по сертификации ВЗ ДЛЯ СЕРТИФИКАТОВ РОСС RU. 0001. 011Г05

КОПИЯ ВЕРНА

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС GB. ГБ05.В00524

Срок действия с 28.06.2002г. по 28.06.2005г.

№ 5318819

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.01ГБ05
НАНИО "ЦЕНТР ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО И РУДНИЧНОГО ЭЛЕКТРООБОРУДОВАНИЯ ИГД",
109377, г. Москва, а/я 22, НАНИО "ЦСВЭ ИГД",
тел. /факс. 557-82-44.

ПРОДУКЦИЯ
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Серийный выпуск.

код ОК 005 (ОКП): 34 6120

код ТН ВЭД СНГ: 9405 10 100 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99 (МЭК 60079-0-98); ГОСТ Р 51330.1-99 (МЭК 60079-1-98); ГОСТ Р 51330.6-99 (МЭК 60079-5-97); ГОСТ Р 51330.8-99; ГОСТ Р 51330.14-99; ГОСТ Р 51330.17-99 (МЭК 60079-18-92).

ИЗГОТОВИТЕЛЬ
Фирма "Chalmit Lighting",
388 Hillington Road, Glasgow, G52 4BL, Великобритания.

СЕРТИФИКАТ ВЫДАН
Фирма "Chalmit Lighting",
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НА ОСНОВАНИИ
Протокола испытаний № 70.2002-И от 11.06.02 г. ИЛ ЦСВЭ (рег. № РОСС RU.0001.21ГБ04);
Протокола проверки производства сертифицируемой продукции № 216-ПП от 19.04.02г. ЦСВЭ ИГД (рег. № РОСС RU.0001.01ГБ05).

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

КОПИЯ ВЕРНА

Руководитель органа _____ (подпись) В.И. Серов (инициалы, фамилия)

Эксперт _____ (подпись) Ю.В. Коворов (инициалы, фамилия)

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СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ГОССТАНДАРТ РОССИИ

№0571604

ПРИЛОЖЕНИЕ

К сертификату соответствия № **РОСС GB.ГБ05.В00524**

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП) код ТН ВЭД СНГ	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
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Центр по сертификации ДЛЯ СЕРТИФИКАТОВ РОСС RU. 0001. ГБ05

КОПИЯ ВЕРНА

Руководитель органа _____ В.И. Серов
подпись — инициалы, фамилия

Эксперт _____ Ю.В. Коворов
подпись — инициалы, фамилия

ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

Федеральный горный и промышленный надзор России
(Госгортехнадзор России)

РАЗРЕШЕНИЕ

№ РРС 04-6190

На применение

Оборудование (техническое устройство, материал)
Взрывозащищенные светильники типов 216 WELLGLASS LUMINAIRE, 238 WELLGLASS LUMINAIRE, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIB, EVOLUTION (200 SERIES Mk III) FLOODLIGHT IIC, EVOLUTION JUNIOR FLOODLIGHT IIB, EVOLUTION JUNIOR FLOODLIGHT IIC, PROTECTA, NEXXUS RANGE OF BULKHEAD LUMINAIRES, MICRONEX FLOODLIGHT, MAXINEX FLOODLIGHT LUMINAIRE.

Код ОКП (ТН ВЭД) 9405 10 100 0

Изготовитель (поставщик) Фирма "Chalmit Lighting" (Великобритания)

Основание выдачи разрешения Сертификат ЦСВЭ ИГД №РОСС GB.ГБ05.В00524 от 28.06.2002 г.

Условия изготовления (применения)
1. Применять на поднадзорных Госгортехнадзору России производствах и объектах в соответствии с Инструкцией по эксплуатации и требованиями главы 7.3 ПУЭ, издание 6.
2. Внесение изменений в техническую документацию и конструкцию светильников возможно только по согласованию с аккредитованной испытательной организацией и Госгортехнадзором России.

Срок действия разрешения до 24.06.2005

Дата выдачи 24.06.2002

Заместитель Начальника Госгортехнадзора России
А.И. Субботин

(подпись, должность, Ф.И.О.)

013450

Ibemo Kazakhstan - 090301 Republic of Kazakhstan, West Kazakhstan Oblast, Aksai, Pramzone, BKKS office complex
Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

LAMPS AVAILABLE FROM CHALMIT

A SELECTED RANGE OF LAMPS SUITABLE FOR USE IN CHALMIT PRODUCTS

In addition to luminaires, Chalmit can supply all lamps as part of an order.
Listed below are details of a selection of quality lamps which are available from stock or on short delivery times from Chalmit in Glasgow.
The list contains some common lamps and others that are not so easily available from stockists.

PART CODE	LAMP TYPE	WATTAGE	CAP/COLOUR
Fluorescent			
FLBI/018/G13/T8	Fluorescent T8 standard	18	G13 White
FLBI/036/G13/T8	Fluorescent T8 standard	36	G13 White
FLBI/058/G13/T8	Fluorescent T8 standard	58	G13 White
FLBI/018/G13/T8/LL	Fluorescent T8 long life (Aura)	18	G13 White
FLBI/036/G13/T8/LL	Fluorescent T8 long life (Aura)	36	G13 White
FLBI/058/G13/T8/LL	Fluorescent T8 long life (Aura)	58	G13 White
High Pressure Sodium			
SONT/070/E27	SON/T standard	70	E27
SONT/150/E40	SON/T standard	150	E40
SONT/250/E40	SON/T standard	250	E40
SONT/400/E40	SON/T standard	400	E40
SONT/600/E40/PLUS	SON/T plus	600	E40
SONT/070/E27/TWINARC	SON/T Twin arc	70	E27
SONT/150/E40/TWINARC	SON/T Twin arc	150	E40
SONT/250/E40/TWINARC	SON/T Twin arc	250	E40
SONT/400/E40/TWINARC	SON/T Twin arc	400	E40
Metal Halide			
MBIT/250/E40	MBI/T	250	E40
MBIT/400/E40	MBI/T	400	E40
Tungsten-Halogen			
THAL/150/R7S/24V	Double ended	150	R7s

The Metal Halide lamps are for use on HPS contol gear. For detailed information on the selection of Metal halide lamps refer to the lamp section of the technical introduction.

We are pleased to offer help with the selection of lamps for your Chalmit luminaires.
Please contact our customer services department.

ORDERING INFORMATION

The Chalmit customer service team is trained to help you solve all your hazardous lighting requirements. In addition to progressing your order, Chalmit can assist you with any questions you may have regarding selection, installation and maintenance of Chalmit lighting products.

In order that we may provide you with the best possible service, it is important that the following information accompanies any enquiry or order.

1. **Catalogue number/description**
2. **Number of lamps, type and wattage**
3. **Supply voltage and frequency**
4. **Method of protection or ATEX Category**
5. **T rating and T ambient ºC**
6. **Material and any special finish if required**
7. **Mounting arrangement**
8. **Any special requirements i.e. options, packing or delivery details.**
9. **Delivery date required.**
10. **Project name if known.**

It should be noted that Chalmit Lighting will only proceed with orders once written confirmation has been received. Quotation numbers if applicable should be stated on all orders.

If at any time you wish to progress the status of an order, it is vital that the sales order number is quoted in all correspondence. This can be found on your order acknowledgement which will be despatched to you on acceptance of your order.

Chalmit Lighting Standard Conditions of Sale will always apply. These are available on request and are printed on the rear of the order acknowledgement.

All luminaires shown in this catalogue are available as safe area luminaires for use in non-hazardous areas. These versions are ideal for adverse conditions where luminaires from standard / industrial lighting suppliers will not suffice.

Please contact Chalmit for details.

Chalmit Lighting has also been known under the following brand names:

Chalmit — Andrew Chalmers & Mitchell

Chalmers & Mitchell — Chalmers & Mitchell

SIMPLEX LIGHTING — Simplex Lighting

Simplex Chalmit — Simplex Chalmit

INDUSTRIA ® — Industria

Disclaimer

The technical and commercial information in this catalogue must be used as guidance only, Chalmit Lighting does not accept any liability arising from it's use.

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

KILLARK RANGE

NEC LIGHTING and ANCILLIARY PRODUCTS

EXPLOSION PROOF and ENCLOSED and GASKETTED
CLASS I DIVISION 1 and 2
CLASS II DIVISION 1 and 2
CLASS III APPLICATIONS

The Chalmit Product Portfolio covers an exceptional range of IEC products and is now enhanced by the addition of NEC products.

Chalmit can now offer the Killark® range of NEC Electrical Construction Products for standard, harsh and hazardous installations in markets outwith the US, Canada and Mexico. This expanded Product Portfolio now makes Chalmit a leader in the NEC market reflecting its long established leading position in the IEC market.

Products carrying the well respected North American Killark brand name are now available throughout the Chalmit global sales network.

The Killark product range encompasses industrial and explosion proof fittings in both iron and aluminium, enclosures, control stations, the world famous VersaMate® line of plugs and sockets and an extensive range of luminaires serving the vast majority of hazardous area requirements incorporating North American practice.

Whether your needs are IEC or NEC, the integrated Chalmit and Killark product ranges offer you a professional solution from start to finish with a sound technical and competitive package. The Killark lighting design data is included in the "Chalmlite" design programme.

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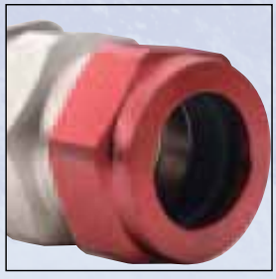

KILLARK®

Chalmit lighting

INNOVATIVE THINKING HAS MADE KILLARK AN INDUSTRY LEADER.

Killark is totally committed to on time, error free delivery of products that meet the highest levels of customer expectation.

With over 85 years of experience, Killark is a leading manufacturer of weatherproof, harsh and hazardous location products suitable for standard, explosion proof and other hostile or adverse environmental applications and is a major participant in the OEM, commercial and industrial construction materials market.

Killark became a division of Hubbell in 1985 and since then, increased levels of capital investment have funded major new product initiatives enabling the group to compete worldwide with an extensive electrical construction product range covering, conduit raceway fittings, junction boxes, enclosures, standard and custom control assemblies, lighting fixtures as well as plugs and sockets.

The strengths of Killark and Chalmit are now combined.

Chalmit Lighting joined the Hubbell family in 1998 and provides over 30 years of experience as one of the worlds leading and most respected IEC manufacturers. The combination results in the formation of the largest and most comprehensive range of lighting products and associated apparatus for hazardous locations, available within the global market.

Hubbell and Killark are well represented on Codes and Standards committees in the US, Canada, Mexico and internationally. Combined with the similar Chalmit European and International representation, this enables Chalmit with Killark to be at the forefront of the growing trend in global harmonisation. This affords the most cost competitive solutions to be offered to user requirements on a world wide basis, regardless of locality or installation constraints.

Both companies have reputations for customer specific solutions to complex and challenging hazardous location requirements, utilising proven designs and value added engineering input, and these solutions are enhanced by access to comprehensive laboratory facilities. In house testing laboratories allow R and D efforts to continually support new product development and solutions to specific user defined requirements.

With a Total Quality Management programme and ISO 9001 accreditation, Killark and Chalmit are dedicated to meeting customer needs, with engineering solutions, new product development and on-time delivery in every phase of the project. This underlines an already proven ability to supply lower cost total system solutions and savings over the entire lifetime of a project.

For further information on this NEW expanded range of products or to obtain a dedicated Killark brochure, simply refer to your usual Chalmit personnel, access our Web-Site at www.chalmit.com or communicate your requirement via any of the contact addresses contained within this brochure.

BSI REGISTERED FIRM
Cert. no. FM 09410

HUBBELL®

A4802 UL REGISTERED FIRM ISO 9001
KILLARK

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LIGHTING DESIGN

OVERVIEW

The core business of Chalmit centres on hazardous area lighting, both offshore and land based, as well as heavy industry and marine installations. The lighting design techniques for such wide and varied applications differ accordingly and are something which Chalmit has developed expertise in over the past 25 years.

CALCULATIONS

Before the advent of computers the only method of calculating lighting values was by hand using the point to point inverse square law or the more broadly based Lumen Method. The former hand calculation was usually limited by time constraints and the latter by the problem of trying to accurately determine the installed utilisation factor for a given area.

Neither method took into account the effects of obstructions in terms of shadowing or inter-reflections. However, the following 3 pages include photometric data for some of our more popular products for customers wishing to use these methods.

Today's powerful computers and related software can deal with calculations speedily and accurately, reducing the need for manual methods.

DESIGN

Chalmit have, over the years, developed a user friendly computer program to allow our customers the freedom of producing their own lighting designs. The latest, completely free, version of "CHALMLITE" gives the user the opportunity to design lighting layouts that can vary from the very basic to the extremely complex; taking into account shadowing and inter-reflection from buildings, platforms, tanks and other obstructions. The new Chalmlite interior component is built into the main program such that interior and exterior designs can be incorporated into the one lighting scheme.

There are times however when constraints demand a quick answer to a more basic lighting question and for this reason Chalmlite now includes estimators for exterior, interior and aisle lighting. These three calculating tools allow luminaire quantities to be determined very quickly for budgetary purposes prior to a detailed design being done at a later time. There is also a facility for producing an Isolux "Footprint".

Chalmit also offers a free lighting design service that uses the Autolux lighting program.
This interfaces with the latest Autocad drawing package and is ideal for sophisticated lighting presentations.
Customers requiring further details of this service or of the Chalmlite Lighting design software should contact their nearest Chalmit Sales Engineer or Head office Lighting Applications.

Chalmit Lighting is totally committed to the promotion of good and efficient lighting practices and is an active member of the Lighting Industry Federation who continuously strive to raise the standards of safety, performance and education in lighting.

LIGHTING PHOTOMETRIC DATA

ECLIPSE MIDI

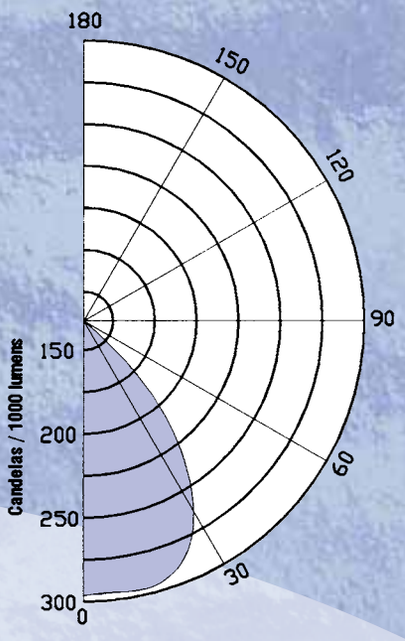
ENCLOSED REFLECTOR

400W CLEAR H.P.S.

Light Output Up 0.0%
Light Output Down 75%
Space / Height Ratio 1.47

UTILISATION TABLE

			ROOM INDEX								
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.48	0.56	0.61	0.65	0.70	0.73	0.75	0.78	0.79
0.70	0.30	0.20	0.42	0.51	0.56	0.60	0.66	0.69	0.72	0.75	0.77
0.70	0.10	0.20	0.39	0.47	0.53	0.57	0.63	0.67	0.69	0.73	0.76
0.50	0.50	0.20	0.46	0.54	0.59	0.63	0.67	0.70	0.72	0.75	0.76
0.50	0.30	0.20	0.42	0.50	0.55	0.59	0.64	0.68	0.70	0.73	0.75
0.50	0.10	0.20	0.38	0.47	0.52	0.56	0.62	0.65	0.68	0.71	0.73
0.30	0.50	0.20	0.45	0.53	0.58	0.61	0.65	0.68	0.70	0.72	0.74
0.30	0.30	0.20	0.41	0.49	0.54	0.58	0.63	0.66	0.68	0.71	0.72
0.30	0.10	0.20	0.38	0.46	0.52	0.55	0.60	0.64	0.66	0.69	0.71
0.00	0.00	0.00	0.37	0.44	0.50	0.53	0.58	0.61	0.63	0.66	0.68



ECLIPSE MIDI

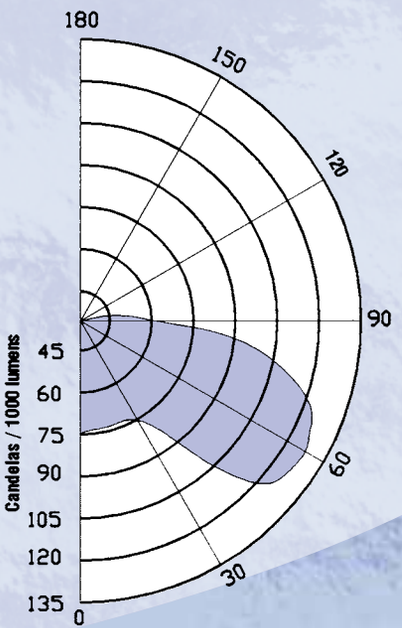
GLASS REFRACTOR

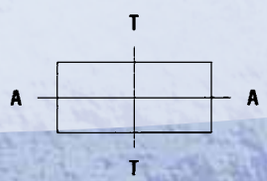
400W CLEAR H.P.S.

Light Output Up 14%
Light Output Down 68%
Space / Height Ratio 2.50

UTILISATION TABLE

			ROOM INDEX								
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.00	0.00	0.47	0.51	0.57	0.62	0.65	0.70	0.73
0.70	0.30	0.20	0.00	0.00	0.39	0.43	0.50	0.56	0.60	0.65	0.69
0.70	0.10	0.20	0.00	0.00	0.34	0.37	0.45	0.50	0.55	0.60	0.65
0.50	0.50	0.20	0.00	0.00	0.43	0.46	0.52	0.57	0.60	0.64	0.67
0.50	0.30	0.20	0.00	0.00	0.37	0.40	0.47	0.52	0.55	0.60	0.63
0.50	0.10	0.20	0.00	0.00	0.32	0.35	0.42	0.47	0.51	0.56	0.60
0.30	0.50	0.20	0.00	0.00	0.39	0.42	0.48	0.52	0.55	0.59	0.61
0.30	0.30	0.20	0.00	0.00	0.34	0.37	0.43	0.48	0.51	0.55	0.58
0.30	0.10	0.20	0.00	0.00	0.30	0.33	0.39	0.44	0.47	0.52	0.56
0.00	0.00	0.00	0.00	0.00	0.25	0.28	0.34	0.38	0.41	0.46	0.49





ECLIPSE JUNIOR

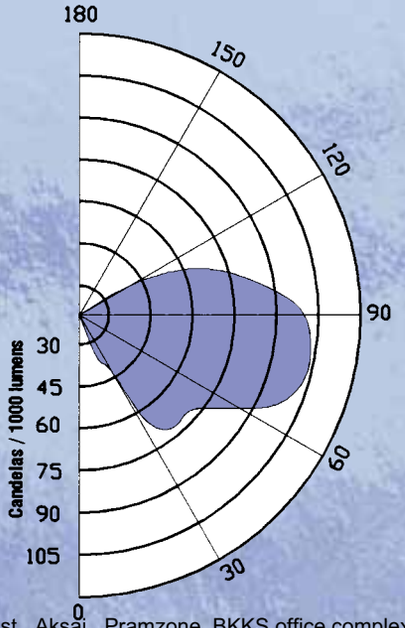
FLUTED GLOBE

100W CLEAR H.P.S.

Light Output Up 34%
Light Output Down 49%
Space / Height Ratio 1.81

UTILISATION TABLE

			ROOM INDEX								
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.00	0.35	0.40	0.45	0.51	0.55	0.58	0.63	0.66
0.70	0.30	0.20	0.00	0.27	0.33	0.37	0.44	0.48	0.52	0.58	0.61
0.70	0.10	0.20	0.00	0.22	0.27	0.31	0.38	0.43	0.47	0.53	0.57
0.50	0.50	0.20	0.00	0.29	0.34	0.37	0.43	0.46	0.49	0.53	0.56
0.50	0.30	0.20	0.00	0.23	0.28	0.31	0.37	0.41	0.44	0.49	0.52
0.50	0.10	0.20	0.00	0.18	0.23	0.27	0.32	0.37	0.40	0.45	0.49
0.30	0.50	0.20	0.00	0.24	0.28	0.31	0.35	0.39	0.41	0.45	0.47
0.30	0.30	0.20	0.00	0.19	0.23	0.26	0.31	0.34	0.37	0.41	0.44
0.30	0.10	0.20	0.00	0.15	0.19	0.22	0.27	0.31	0.34	0.38	0.41
0.00	0.00	0.00	0.00	0.09	0.12	0.15	0.18	0.21	0.24	0.28	0.30



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LIGHTING PHOTOMETRIC DATA

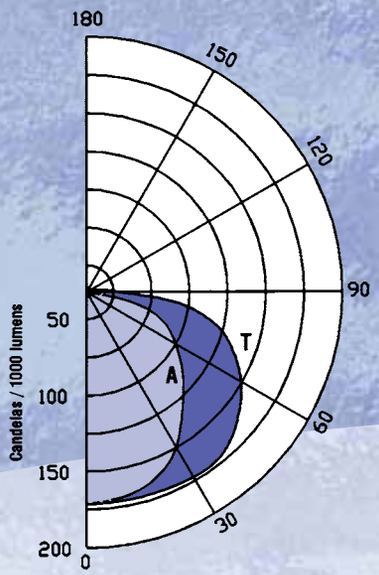
PROTECTA III 2X36W

Light Output Up 0.05%
Light Output Down 70%
Space / Height Ratio 1.75

UTILISATION TABLE

C	W	F	ROOM INDEX 0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.01	0.46	0.51	0.55	0.60	0.64	0.67	0.71	0.73
0.70	0.30	0.20	0.01	0.40	0.45	0.49	0.55	0.59	0.62	0.67	0.70
0.70	0.10	0.20	0.01	0.35	0.40	0.44	0.50	0.55	0.58	0.63	0.67
0.50	0.50	0.20	0.01	0.44	0.48	0.52	0.57	0.61	0.63	0.67	0.69
0.50	0.30	0.20	0.01	0.38	0.43	0.47	0.53	0.56	0.59	0.63	0.66
0.50	0.10	0.20	0.01	0.34	0.39	0.43	0.49	0.53	0.56	0.61	0.64
0.30	0.50	0.20	0.01	0.42	0.46	0.49	0.54	0.57	0.60	0.63	0.65
0.30	0.30	0.20	0.01	0.37	0.42	0.45	0.50	0.54	0.57	0.60	0.63
0.30	0.10	0.20	0.01	0.33	0.38	0.42	0.47	0.51	0.54	0.58	0.61
0.00	0.00	0.00	0.01	0.31	0.35	0.39	0.44	0.47	0.50	0.54	0.56

CORRECTION FACTORS
2X18W 1.05



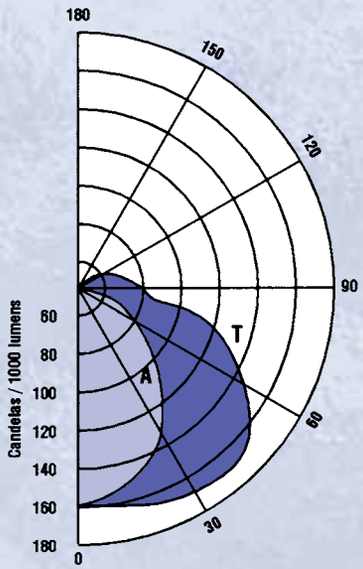
STERLING 2X58W

Light Output Up 10%
Light Output Down 69%
Space / Height Ratio 1.98

UTILISATION TABLE

C	W	F	ROOM INDEX 0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.20	0.46	0.51	0.56	0.62	0.65	0.69	0.73	0.75
0.70	0.30	0.20	0.11	0.40	0.45	0.50	0.56	0.60	0.64	0.69	0.71
0.70	0.10	0.20	0.05	0.35	0.40	0.45	0.51	0.56	0.60	0.65	0.68
0.50	0.50	0.20	0.18	0.44	0.48	0.52	0.58	0.61	0.64	0.68	0.70
0.50	0.30	0.20	0.10	0.38	0.43	0.47	0.53	0.57	0.60	0.64	0.67
0.50	0.10	0.20	0.04	0.34	0.38	0.43	0.49	0.53	0.56	0.61	0.64
0.30	0.50	0.20	0.15	0.41	0.45	0.49	0.54	0.57	0.59	0.63	0.69
0.30	0.30	0.20	0.08	0.36	0.40	0.45	0.50	0.53	0.56	0.60	0.62
0.30	0.10	0.20	0.03	0.32	0.37	0.41	0.47	0.50	0.53	0.58	0.60
0.00	0.00	0.00	0.00	0.29	0.33	0.37	0.42	0.45	0.48	0.52	0.54

CORRECTION FACTORS
2X36W 1.04
2X18W 1.07

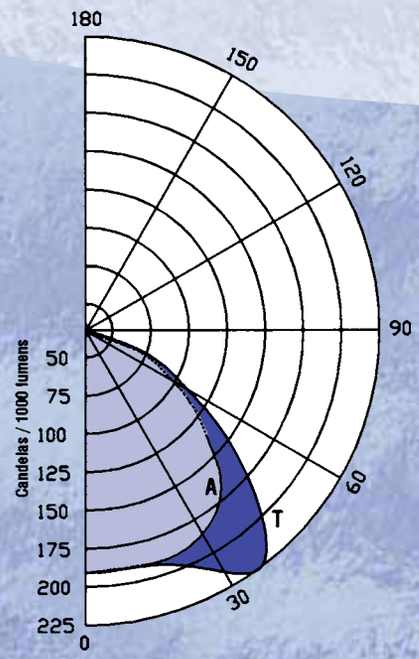


PYRAMID 400W SON-E

Light Output Up 02%
Light Output Down 67%
Space / Height Ratio 1.98

UTILISATION TABLE

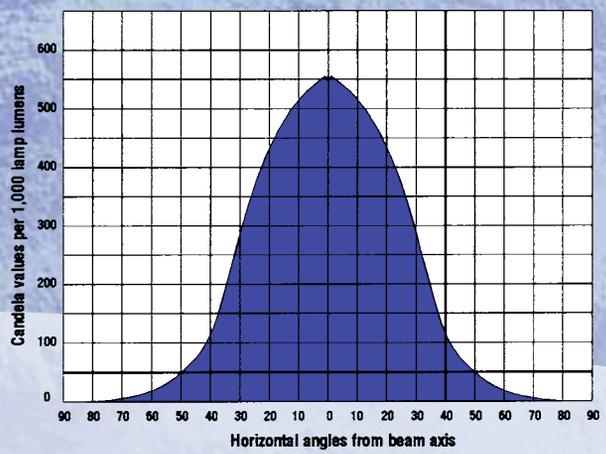
C	W	F	ROOM INDEX 0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.00	0.50	0.54	0.57	0.62	0.65	0.67	0.69	0.71
0.70	0.30	0.20	0.00	0.45	0.49	0.53	0.58	0.61	0.63	0.67	0.69
0.70	0.10	0.20	0.00	0.41	0.46	0.50	0.55	0.58	0.61	0.64	0.67
0.50	0.50	0.20	0.00	0.48	0.52	0.55	0.59	0.62	0.64	0.66	0.68
0.50	0.30	0.20	0.00	0.44	0.48	0.52	0.56	0.59	0.61	0.64	0.66
0.50	0.10	0.20	0.00	0.41	0.45	0.49	0.53	0.57	0.59	0.62	0.64
0.30	0.50	0.20	0.00	0.47	0.50	0.53	0.57	0.59	0.61	0.63	0.65
0.30	0.30	0.20	0.00	0.43	0.47	0.50	0.54	0.57	0.59	0.62	0.63
0.30	0.10	0.20	0.00	0.40	0.44	0.48	0.52	0.55	0.57	0.60	0.62
0.00	0.00	0.00	0.00	0.38	0.42	0.45	0.49	0.52	0.54	0.57	0.58



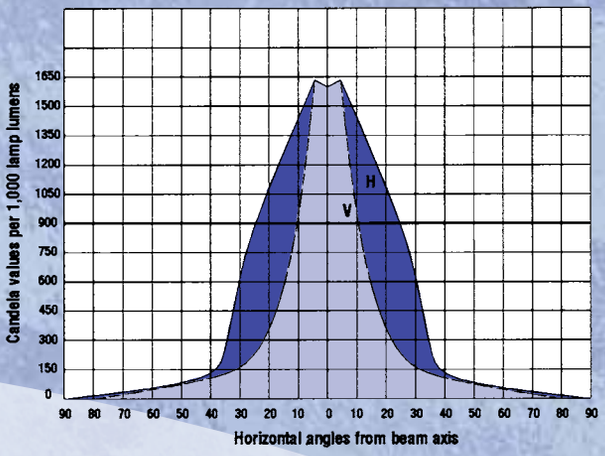
LIGHTING PHOTOMETRIC DATA

EVOLUTION 400W SON/T

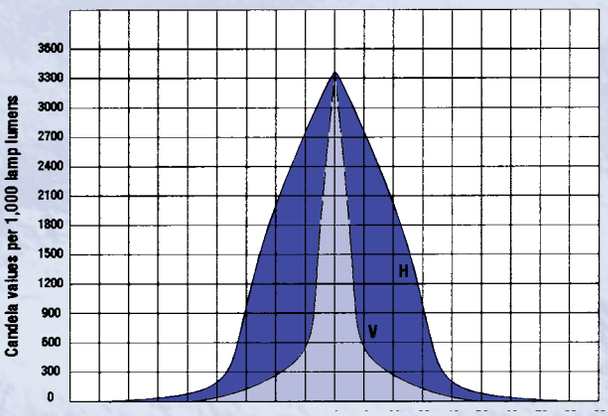
WIDE BEAM



MEDIUM BEAM



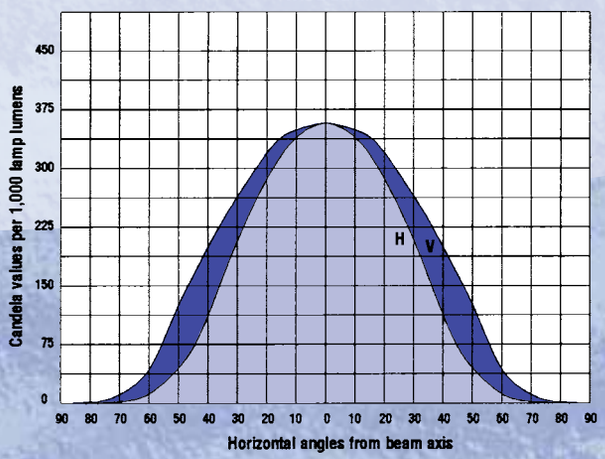
NARROW BEAM



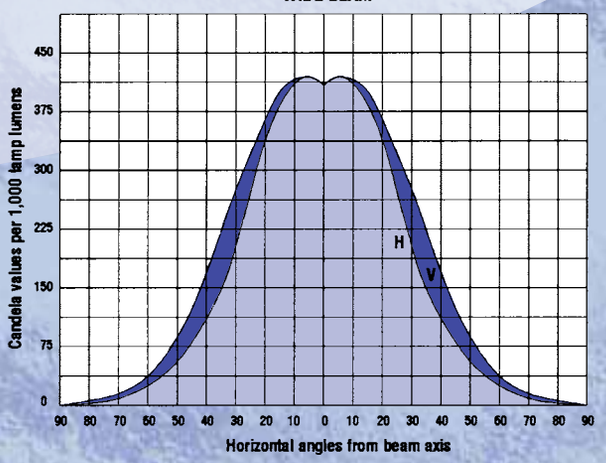
	Wide	Medium	Narrow
Peak Intensity Cd	559	1647	3348
Beam factor	0.55	0.50	0.38
Beam angle vertical	2x46	2x29	2x12
Beam angle horizontal	2x46	2x35	2x34

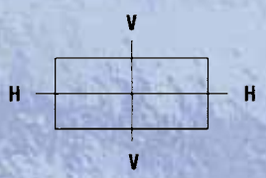
EVOLUTION JUNIOR

70W SON/T
WIDE BEAM



300W LINEAR T/HALOGEN
WIDE BEAM





	70 Watt	300 Watt
Peak Intensity Cd	363	417
Beam factor	0.58	0.60
Beam angle vertical	2x60	2x62
Beam angle horizontal	2x56	2x59

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Phone: +7 71133 93077 ; Fax: +7 71133 93074 ; E-Mail: info@ibemo-kz.com

CHALMIT LIGHTING

QUALITY TECHNOLOGY SERVICE

QUALITY AND APPROVALS

Lighting offers both safety and security.
Chalmit luminaires can be specified with complete confidence. The company has been assessed by BSI for many years to BS 5750 then EN ISO 9001:1994 and is now moving on to EN ISO 9001: 2000 and also to EN 13980 for products manufactured to ATEX.
In addition to certification to British and CENELEC standards Chalmit also holds approvals to Canadian standards certified by CSA.
Chalmit uses third party assessment for the provision of lighting design and environmental test data.

PRODUCT INNOVATION

Chalmit has attained a position of market pre-eminence through a rigorous programme of continuous product development. This has resulted in products being the first to use a concept which later became the accepted “state of the art”. The employment of the the latest technology in conjunction with emerging light sources and controls, and using computer aided design allied to the latest in photometric and mechanical test techniques underpins Chalmit’s ability to produce internationally accepted products. Utilising the latest in CNC and laser manufacturing technology ensures that the quality of Chalmit luminaires is assured every time.

TECHNICAL SUPPORT

From the centre of excellence in Glasgow, Scotland, and our operations around the world, clients can be assured of our extensive technical and after sales support.
This service encompasses application advice, advanced windows based lighting design software and informed guidance on the selection, installation and maintenance of luminaires. Chalmit provides the full back up service expected from a major international supplier and the immediately available knowledge covers both hazardous and other applications. This results in a breadth of expertise that can solve both routine and complex problems arising in lighting applications.

THE COMPLETE SOLUTION

Chalmit Lighting offers the complete solution to all your lighting needs. We can claim to be a truly international business and with a network of agents and distributors in over 40 countries world wide we have an enviable reputation for a world class service.
As well as drawing from our own and our group company resources we have well established links with other lighting and lamp manufacturers. This position within the lighting industry means that Chalmit can offer a complete package of lighting for end users, large and small projects, and for any application which calls for a diverse range of lighting products.

Chalmit lighting

KILLARK®

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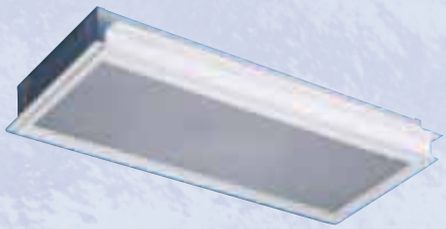
CHALMIT MARINE AND INDUSTRIAL

Chalmit has manufactured marine lighting products for over 90 years.
The business specialises in illuminating seagoing vessels where both marine and hazardous products are required and is able to offer a comprehensive product package for tankers and FPSO's.
The range is also specially designed for all types of freight carriers, heavy duty workboats, bulk carriers, military ships and port installations.

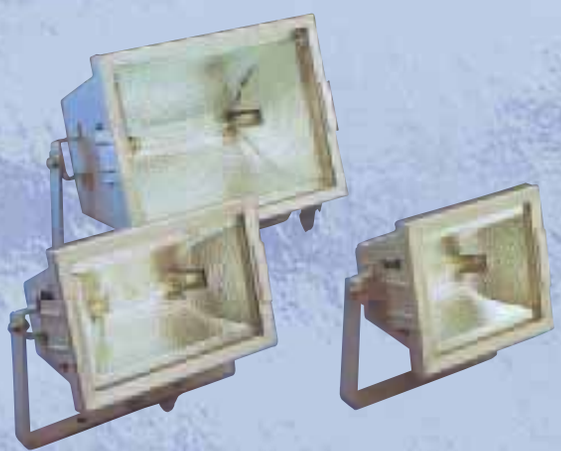
The Chalmit marine lighting range has been developed for weather decks, engine rooms, accommodation modules, machine spaces and interior areas.

The long experience of Chalmit in designing and manufacturing enclosures with high ingress protection ensures years of trouble free lighting.



The outstanding Chalmit range of hazardous area lighting products is complemented by a range of industrial products.
These products are intended for use in harsh environments and in specialist applications.
Many of the industrial products share components and enclosures from the hazardous area range which ensures they are robust and have high ingress protection.
The engineering expertise of Chalmit which is the foundation of the hazardous area range is also applied to the industrial range.
Chalmit products are designed to function in environments where standard industrial products fail.

For further information contact head office or one of our agents.



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Chalmit lighting

United Kingdom

388 Hillington Road
Glasgow G52 4BL Scotland
Tel: +44 (0) 141 882 5555
Fax: +44 (0) 141 883 3704
E-mail: info@chalmit.com
www.chalmit.com

The Netherlands

P.O. Box 11084
3505 BB Utrecht
The Netherlands
Tel: +31 (0) 302 467132
Fax: +31 (0) 302 467133
E-mail: john.van.straalen@planet.nl

Middle East

P.O. Box 46100
Mussafah North 2
Abu Dhabi, U.A.E.
Tel: +971 2 6213496
Fax: +971 2 6312152
E-mail: rwood@emirates.net.ae

Far East

Singapore Representative Office
159, Sin Ming Road
#05-08, Amtech Building,
Singapore 575 625
Tel: +65 451 4484
Fax: +65 451 1411
E-mail: chalmits@mbox2.singnet.com.sg

Chalmit Lighting
A leading supplier of
Hazardous Area, Industrial and
Marine lighting products.

Your Distributor is;

- Oil & Gas
- Pharmaceutical
- Harsh and Hazardous
- Environmental
- Specialist Applications
- Emergency Lighting
- Petrochemical
- Temporary
- Marine
- Portable
- Nuclear

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