TELEPHONE, FIBRE OPTIC, DATA AND COMPUTER CABLES

	Symbol	Standard	No of elements	Φ of wire	Application
TELECOMMUNICATION LOCAL UNIT CABLES PE INSULATED AND SHEATHED					
	**XzTKMXw**	PN-92/T-90335 PN-92T-90336 ZN-96/TPSA-029	5-500x4	0,4 0,5	Cables are designed for local telecommunication networks, for connections between exchanges and telephone subscribers, for connections between telephone exchanges for telephone installation in industrial plants. Non-armoured cables are designed for installation in ducts in an environment, where mechanical stresses are unlikely to occur. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10 x outer diameter.
	**XzTKMXpw**	PN-92/T-90335 PN-92/T-90336 ZN-96/TPSA-029	5-1000x4 5-5000x4 5-5000x4 5-2500x4	0,4 0,5 0,6 0,8	Cables are designed for local telecommunication network, for connections between exchanges and telephone subscribers, for connections between telephone exchanges and for telephone installation in industrial plants. Non-armoured cables are designed for installation in ducts in an environment, where mechanical stresses are unlikely to occur. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10 x outer diameter.
	**XzTKMXwFtlx** **XzTKMXwFtly**	PN-92/T-90335 PN-92/T-90336 ZN-96/TPSA-029	10-500x4 10-500x4	0,4 0,5	Cables armoured with steel tapes are designed for ducts or direct burial in areas of high-risk mechanical damages. Range of installation temperature: not lower than –10ºC and not higher than +50ºC in PE sheath, not lower than –5ºC and not higher than +50ºC in PVC sheath. Permissible bending radius >10 x outer diameter.
	**XzTKMXpwFtlx** **XzTKMXpwFtly**		5-500x4 5-500x4 5-500x4 5-250x4	0,4 0,5 0,6 0,8	
	**XzTKMXwFfx** **XzTKMXpwFfx**	ZN-EK-018 ZN-EK-019	10-1000x4 10-500x4 10-500x4 10-500x4 5-500x4	0,4 0,5 0,5 0,6 0,8	Cables are designed for ducts or direct burial in areas of high-risk rodents attacks. Range of installation temperature: not lower than –10ºC and not higher than +50ºC , Permissible bending radius >10 x outer diameter.
	**XzTKMXwFox** **XzTKMXwFoy**	PN-92/T-90335 PN-92T-90336 ZN-96/TPSA-029	5-500x4 5-500x4	0,4 0,5 0,4	Cables armoured with steel tapes are designed for ducts or direct burial in areas of high-risk mechanical damages (mining areas, river crossing, bridges or viaducts). Permissible bending radius >15 x outer diameter.
	**XzTKMXpwFox** **XzTKMXpwFoy**		5-500x4 5-500x4 5-200x4	0,5 0,6 0,8	
	**XzTKMXwn**	PN-92/T-90335 PN-92/T-90337 ZN-96/TPSA-029	5-50x4 5-50x4	0,4 0,5	Cables with a supporting wire (8 shaped, self-supporting) are designed for suspention on concrete or wooden supports. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10 x outer diameter.
	**XzTKMXpwn**		5-50x4 5-50x4 5-50x4 5-50x4	0,4 0,5 0,6 0,8	
	CW 1128	CW 1128	2-100x2 2-100x2 2-100x2 2-100x2 2-100x2	0,4 0,5 0,6 0,63 0,9	Cables are designed for location telecommunication networks, for connections between exchanges and telephone subscribers, for connections between telephone exchanges and for telephone installation in industrial plants. Non-armoured cables are designed for installation in ducts in an environment, where mechanical stresses are unlikely to occur. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10x outer diameter.

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	Symbol	Standard	No of elements	Φ of wire	Application
TELECOMMUNICATION LOCAL UNIT CABLES PE INSULATED AND SHEATHED					
	TPP	BDS 9096	6-1000x2 6-700x2 6-500x2	0,4 0,5 0,6 0,7	Cables are designed for local telecommunication network, for connections between exchanges and telephone subscribers, for connections between telephone exchanges for local railway connections and for telephone installation in industrial plants. Non-armoured cables are designed for installation in ducts in an environment, where mechanical stresses are unlikely to occur. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10 x outer diameter.
TELECOMMUNICATION OUTDOOR CABLES MANUFACTURED ACC. TO VDE					
	A-2YF(L)2Y…Bd	VDE 0816	2-1200x2 2-700x2 2-400x2	0,4 0,6 0,8	Cables are suitable for telecommunication devices. Filled cables designed for local telecommunication network, for connections between exchange and telephone subscribers, for connections between telephone exchanges, for local railway connections and for telephone installation in industrial plants. Non-armoured cables are designed for installation in ducts in an environment, where mechanical stresses are not likely to occur. Range of temperature: Installation: should be not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10x outer diameter.
	A-2Y(L)2Y…Bd		2-1500x2 2-1000x2 2-600x2	0,4 0,6 0,8	
	A-02Y(L)2Y…Bd		2-1000x2 2-400x2	0,6 0,8	
TELECOMMUNICATION LOCAL CABLES					
	XTKMXw XTKMXpw	WT-95/K-458/00 WT-95/K-458/01	1-9x2	0,5 0,5 0,6 0,8	Cables are designed for ducts or direct burial in areas of low risk damages. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10 x outer diameter.
	XzTKMXw XzTKMXpw	WT-95/K-458/00 WT-95/K-458/02	1-9x2	0,5 0,5 0,6 0,8	Cables are designed for ducts or direct burial in areas of low risk damages. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10 x outer diameter.
	XzTKMXwn XzTKMXpwn	WT-95/K-458/00 WT-95/K-458/03	1-9x2	0,5 0,6 0,8	Cables are designed for suspending on concrete or wooden supports. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10 x outer diameter.
	XzTKMXwn XzTKMXpwn	WT-95/K-458/00 WT-95/K-458/04	1-9x2	0,5 0,6 0,8	Cables are designed for suspending on concrete or wooden supports. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10x outer diameter.
	TKMXn	WT-93/K-423	1x2	0,6 0,8 0,9 1,2	Permissible bending radius >10x outer diameter.

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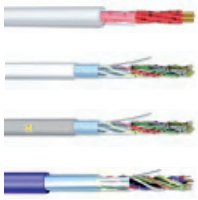
	Symbol	Standard	No of elements	Φ of wire	Application
TELECOMMUNICATION LOCAL CABLES					
	**NTKMXFtlN** **NTKMXpFtlN**	ZN-FKO-221	10,25,50, 100x4	0,8	Cables are designed for connections between telephone, and control devices. Cables are intended for areas where fire hazard are high and are manufactured according to detailed user's regulations. Cabled are installed with flame retardant inner and outer sheaths with low emission of smoke or toxic and corrosive fumes. Range of installation temperature: not lower than –10ºC and not higher than +50ºC. Permissible bending radius >10 x outer diameter.
	**TKSY** **YTKSY** **YnTKSY**	PN-92/T-90320 PN-92/T-90321	1x2-53x2	0,4(c) 0,5(c) 0,8(c)	Local cables are intended for connections between telephone devices, operation in moderate climate. Range of temperature: Operating: from –40ºC to +70ºC, Installation: from –15ºC to +50ºC, Relative humidity up to 90%. Permissible bending radius >10 x outer diameter.
	TCB (A) B	BDS 11507	1-52x2 1-52x2 5-35x3 5-35x3	0,4 0,5 0,4 0,5	Cables are designed for connections between telephone devices operating in moderate climate. Range of temperature: Operating: from –40ºC to +70ºC, Installation: from –15ºC to +50ºC, Relative humidity up to 90%. Permissible bending radius >10 x outer diameter.
	MULTIT **5 up to 15kV**	EATS 09.6 Issue 6 Section 3	4PR - 7PR 19PR - 37PR 61PR	0,8	Cables are designed for connections between telephones, telegraph transmission and data processing devices operating in moderate climate. Range of temperature: Operating: from –40ºC to +70ºC, Installation: from –15ºC to +50ºC, Relative humidity up to 90%. Permissible bending radius >10 x outer diameter.
TELECOMMUNICATION INDOOR CABLES MANUFACTURED ACC. TO VDE					
	**J-YY...Bd** **J-Y(St)Y...Bd** **J-H(St)H...Bd** **JE-Y(St)Y...Bd**	DIN VDE 0815	2-100x2 (2,4,6,10, 16,20,30, 40,50,60, 80,100)	0,6	Cables are designed for telecommunication electronic devices. Cable can be manufactured in halogen-free sheath or insulation. Cables are suitable for installation in dry or dump premises, on or under plaster. Cables are designed for fixed installation. Cables are not suitable for power installation and cannot be buried directly in the ground. Range of temperature: In case of fixed installation: from –30ºC to +70ºC.
	**J-Y(St)Y...Lg**	DIN VDE 0815	2-100x2 (2,4,6,10, 16,20,30, 40,50,60, 80,100)	0,6 0,8	Cables are designed for telephone devices. Cables with anti-electrostatic screen (ST) protect signal circuit from electromagnetic disturbances. Wires stranded in pairs eliminate influence of parallel circuit. Cables can be manufactured in halogen free insulation or sheath. Cables are suitable for installation in dry or dump premises, on or under plaster. Cables are designed for fixed installation. Cable are not suitable for power installation and cannot be buried directly in the ground or nailed to the wall. Range of temperature: In case of fixed installation: from –30ºC to +70ºC.

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	Symbol	Standard	No of elements	Φ of wire	Application
TELECOMMUNICATIONS LOW FREQUENCY INDOOR CABLES					
	YTKSYekw YnTKSYekw YTKSYlekw	PN-92/T-90320 PN-92/T-90321	1-53x2	0,4 (c) 0,5 (c) 0,8 (c)	Local cables are intended for connections between telephone, telegraph transmission and data processing devices operations in moderate climate. Range of temperature: Operating: from –40ºC to +70ºC, Installation: from –15ºC to +50ºC, Relative humidity up to 90%. Permissible bending radius >10 x outer diameter.
TELECOMMUNICATIONS LOW FREQUENCY INDOOR CABLES, SCREENED PAIRS					
	YTKSYekp	PN-92/T-90320 PN-92/T-90323	2,6,7,10, 12,20,21x2	0,5(c)	Local cables are intended for connections between telephone, telegraph transmission and data processing devices operations in moderate climate. Range of temperature: Operating: from –40ºC to +70ºC, Installation: from –15ºC to +50ºC, Relative humidity up to 90%. Permissible bending radius >10 x outer diameter.
TELECOMMUNICATIONS LOW FREQUENCY INDOOR CABLES UP TO 2 Mbit/s					
	YTKSXpekp YnTKSXpekp	ZN-EK-015	1,2,3,4,5, 7,8,10x2	0,5(c)	Cables are designed for connections between transmission devices of analog signals up 552 kHz or digital signals up 2 Mbit/s. Range of operating temperature: from –10ºC to +50ºC in case of mechanical hazard such as bending or vibration, from –40ºC to +70ºC when there is no mechanical hazard. Relative humidity up to 90%.
	YTKSXpekp YTKSXekp YnTKSXekp YnTKSXpekp Y-YTKSXekp Yn-YTKSXekp Y-YTKSXpekp Yn-YTKSXpekp	ZN-EK-015	1x2x0,4(c) 8x(1x2x0,4 (c)	0,4(c)	Telecommunication high frequency, screened pairs, PE insulated, PVC sheathed and/or PVC common sheathed cables designed for fixed wiring in telecommunication, electronic, measuring and computer installation used for transmission up to 1 MHz. Range of operating temperature: from –10ºC to +50ºC in case of mechanical damages hazard, from –40ºC to +85ºC in case of lack of mechanical hazard. Permissible bending radius >10 x outer diameter.
	YTKSXpekteko NTKSXpekteko	ZN-EK-021	2,4,8,12x4	0,6(c)	Telecommunication high frequency, screened pairs, PE insulated, PVC sheathed and/or PVC common sheathed cables designed for fixed wiring in telecommunication, electronic, measuring and computer installation used for transmission up to 1 MHz. Range of operating temperature: from –10ºC to +50ºC in case of mechanical damages hazard, from –40ºC to +85ºC in case of lack of mechanical hazard. Permissible bending radius >10 x outer diameter.
TELECOMMUNICATIONS LOW FREQUENCY INDOOR CABLES IN FLAME RETARDANT SHEATH					
	NTKSXekw NzTKX YnTKSXekw	WT-98/K-399	7,14,19,21, 42,48x2	0,8	Cables are designed for connections between telephone, telegraph transmission, data processing and control devices. Cables are intended for areas where fire hazard are high and are installed according to detailed user's regulations. Cables are installed with flame retardant outer sheath with low emission of smoke or toxic and corrosive fumes. Range of temperature: operating should be lower than –10ºC but not higher than +50ºC, Permissible bending radius >10 x outer diameter.
DATA TELECOMMUNICATIONS LOW FREQUENCY TERMINATING CABLES					
	YTKZYekw	PN-92/T-90320 PN-92/T-90322	5-50x4	0,5	Cables are designed for terminating local cables in switchboard station operating in moderate climate. Range of temperature: Operating: from –40ºC to +70ºC, Installation: from –15ºC to +50ºC, Relative humidity up to 90%. Permissible bending radius >10 x outer diameter.

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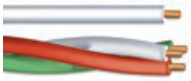
	Symbol	Standard	No of elements	Φ of wire	Application
BUILDING CORDS					
	TDY	PN-91/T-90200 PN-91/T-90206	1x1, 1x2, 1x3, 1x4	0,4 (c) 0,5 (c) 0,6 (c) 0,8 (c) 1,0 (c)	Cords are designed for fixed installation in telecommunication and electronic devices operating in moderate climate. Range of temperature: Operating: from –40°C to +70°C Installation: from –15°C to +50°C Relative humidity up to 100%. Cords may operate with rated voltage not exceeding mean value of: 150V – in case of the smallest insulation thickness of 0.12 mm 300V – in case of the smallest insulation thickness of 0.15 mm Cords used in special equipment should be resistant to winding in low temperature –40+20C
	TDX	PN-91/T-90200 PN-91/T-90205	1x1, 1x2, 1x3, 1x4	0,4 0,5 0,6 0,8 1,0	
TELECOMMUNICATION BUILDING CORDS FOR WRAPPED CONNECTIONS					
	TDYo	ZN-EK-016	1 1x2 1x3	0,4 c 0,5 c 0,8 c 0,9 c	Cords are designed for fixed installation in telecommunication devices. Range of temperature: Operating: from –40°C to +70°C Installation: from -5°C to +50°C Relative humidity up to 100%.
TELECOMMUNICATION BUILDING CORDS					
	Y	DIN/VDE-0815	1-7x1	0,6 0,8	Cords are designed for telecommunication and data processing devices. Cables are suitable for installation in dry or dump premises, on or under plaster. In open air cables are designed for fixed installation. Cables are not suitable for power installation and cannot be buried directly in the ground. Range of temperature: In case of fixed installation: from –30°C to +70°C In case of movable installation: from -5°C to +50°C
	J-FY		1x2, 1x3	0,6	
BROADCASTING CORDS					
	RPX YRPX YnRPX	ZN-95|MD-13-K 12196	1x2 1x2 1x4 1x4	0,9 1,2 1,2 0,9	Cords are designed for internal broadcasting installation, inside building as well for under ground installations. Range of temperature: Installation: not lower than 0°C in case of PVC sheathed cords or –20°C in case of other cords.
DATA COMMUNICATION CABLES					
	UTP Cat. 5, 5e	ZN-TF-01:2001 ISO/IEC-11801 2nd edition:2002 IEC 61156-5:2002 EN 50173-1:2002 ANSI/TIA/EIA-568-B.2	4x2	AWG 24	For digital signals transmission with binary flowability, signal frequency spectrum up to 100 MHz (cat. 5) as well 125 MHz (cat. 5e). UTP cable is intended for use in computer data processing systems, measurement systems, automation and control systems, with high resistance of these systems against electromagnetic interference. For high frequency analogue signals transmission in automation and industrial TV network. Cable is intended to be used for horizontal and vertical installations within data communication networks.
	UTP DUAL Cat. 5, 5e	ZN-TF-01:2001 ISO/IEC-11801 2nd edition:2002 IEC 61156-5:2002 EN 50173-1:2002 ANSI/TIA/EIA-568-B.2	2x4x2	AWG 24	For digital signals transmission with binary flowability, signal frequency spectrum up to 100 MHz (cat. 5) as well 125 MHz (cat. 5e). UTP –dual cable is intended for use in computer data processing systems, measurement systems, automation and control systems, with high resistance of these systems against electromagnetic interference. For high frequency analogue signals transmission in automation and industrial TV network. Cable is intended to be used for horizontal and vertical installations within data communication networks.
	FTP S-FTP Cat. 5, 5e	ZN-TF-01:2001 ISO/IEC-11801 2nd edition:2002 IEC 61156-5:2002 EN 50173-1:2002 ANSI/TIA/EIA-568-B.2	4x2	AWG 24	For digital signals transmission with binary flowability, signal frequency spectrum up to 100 MHz (cat. 5) as well 125 MHz (cat. 5e). Cables are intended for use in computer data processing systems, measurement systems, automation and control systems and for high frequency analogue signals transmission in automation and industrial TV network. The cable is intended to be used for horizontal and vertical installations within data communication networks. This cable features high resistance against electromagnetic interference.

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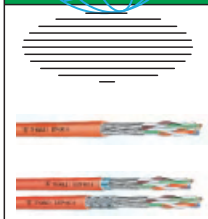
	Symbol	Standard	No of elements	Φ of wire	Application
			DATA COMMUNICATION CABLES		
	**STP S-STP Cat. 6**	ZN-TF-01:2001 ISO/IEC-11801 2nd edition:2002 IEC 61156-5:2002 EN 50173-1:2002 EN 50288-5-1	4x2	AWG 24	For digital signals transmission with binary flowability, signal frequency spectrum up to 250 MHz. Cables are intended for use in computer data processing systems, measurement systems, automation and control systems and for high frequency analogue signals transmission in automation and industrial TV network. The cable is intended to be used for horizontal and vertical installations within data communication networks. This cable features high resistance against electromagnetic interference.
	**UTP FLEX Cat. 5, 5e**	ZN-TF-01:2001 ISO/IEC-11801 2nd edition:2002 IEC 61156-5:2002 EN 50173-1:2002	4x2	AWG 24/7 AWG 26/7	For digital signals transmission with binary flowability, signal frequency spectrum up to 100 MHz (cat. 5) as well 125 MHz (cat. 5e). UTP FLEX cable is intended for use in computer data processing systems, measurement systems, automation and control systems, with high resistance of these systems against electromagnetic interference. For high frequency analogue signals transmission in automation and industrial TV network. Cable is intended to be used for horizontal and vertical installations within data communication networks.
	**FTP FLEX Cat. 5, 5e**	ZN-TF-01:2001 ISO/IEC-11801 2nd edition:2002 IEC 61156-5:2002 EN 50173-1:2002	4x2	AWG 24/7 AWG 26/7	For digital signals transmission with binary flowability, signal frequency spectrum up to 100 MHz (cat. 5) as well 125 MHz (cat. 5a). FTP FLEX cable is intended for use in computer data processing systems, measurement systems, automation and control systems and for high frequency analogue signals transmission in automation and industrial TV network. The cable is intended to be used for horizontal and vertical installations within data communication networks. This cable features high resistance against electromagnetic interference.
	**UTP OUT DOOR UTP$_f$ OUT DOOR Cat. 5**	ZN-TF-01:2001 ISO/IEC-11801 2nd edition:2002 ANSI/TIA/EIA-568-B.2	4x2	AWG 24	For digital signals transmission with binary flowability, signal frequency spectrum up to 100 MHz (cat. 5). Cables are intended for use in computer data processing systems, measurement systems, automation and control systems, with high resistance of these systems against electromagnetic interference. For high frequency analogue signals transmission in automation and industrial TV network. Cable is intended to be used for horizontal and vertical installations within data communication networks. These cables can be used outdoors.
	**FTP OUT DOOR FTP$_f$ OUT DOOR FTP^n OUT DOOR FTP$_{nf}$ OUT DOOR Cat. 5**	ZN-TF-01:2001 ISO/IEC-11801 2nd edition:2002 ANSI/TIA/EIA-568-B.2	4x2	AWG 24	For digital signals transmission with binary flowability, signal frequency spectrum up to 100 MHz (cat. 5). Cables are intended for use in computer data processing systems, measurement systems, automation and control systems and for high frequency analogue signals transmission in automation and industrial TV network. The cable is intended to be used for horizontal and vertical installations within data communication networks. This cable features high resistance against electromagnetic interference. This cables can be used outdoors. Cables FTP$_n$ OUT DOOR and FTP$_{nf}$ OUT DOOR with a supporting wire are designed for suspending on concrete or wooden support.

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Type of fibres fol all cable construction

SM; SM-NZDS (NON ZERO DISPERSION SHIFTED),
SM-DS (DISPERSION SHIFTED), MM(50/125) MM(62,5/125)

	Symbol	Standard	Number of fibres	Application
OPTICAL FIBRE OUTDOOR CABLE OF LOOSE TUBE CONSTRUCTION				
All indoor cables manufactured acc to a standard **and tested acc to a standard**		ZN-TF-11:2001 ZN-EK-103:2001 ZN-TF-13:2001 ZN-EK-108:2001 IEC 60793-1 IEC 60794-1-1		Permissible pulling force during laying for non armoured cables is equal to the 2 km cable weight but not more than 2500 N reinforced cables (letter D in index) is equal to the 2 km cable weigh but not less than 3000 N armoured cables is not bigger than 2700 N Reinforced cables and armoured by steel tapes can be designed with bigger pulling force if specified in an order Range of temperature: Operating from -40°C to +70°C Storage and transport from-40°C to +70°C Laying and installation from-15°C to +60°C
	**Z-XOTKtsd** **Z-XzOTKts**	ZN-TF-11:2001	4-288	Optical fibre cables for primary and secondary cable ducts. Permissible bending radius for cable >20 x outer diameter
	**Z-XOTKtsdD** **Z-XXOTKtsdD** **Z-XzOTKtsD** **Z-XXzOTKtsD** **A-DQ(ZN)2Y** **A-DQ(ZN)B2Y** **A-DQ(L)(ZN)2Y** **A-DQ(L)(ZN)B2Y**	ZN-TF-11:2001 DIN VDE 0888		Cables reinforced with aramid yarn, suitable for laying in ducts or for direct burial and may be suspended on supports, on poles of power lines and railway tracks. Permissible bending radius for cable >20 x outer diameter.
	**Z-XOTKtcdD** **Z-XOTKtcd** **ZW-NOTKtcdD** **ZW-NOTKtcd** **A-DQ(ZN)2Y** **A-DQ(ZN)B2Y** **A/I-DQ(ZN)H** **A/I-DQ(ZN)BH**	ZN-TF-11:2001 DIN VDE 0888	2-12	Optical fibre light pack cables. Cables with fibres placed in a central tube, optical fibres in units, filled with thixotropic jelly, armoured with aramid or glass yarn placed around a tube under a cable jacket. Suitable for local LAN networks, wide-spread WAN networks, indoors and between buildings, (an option with flame retardant jacketing ZW-NOTKtcdD and W-YOTKtcdD). Cables recommended for companies, which Install and design computer and data transmission ISDN networks. Suitable for technical implementation of LAN, MAN, WAN systems. Cables with a small diameter and light. Cables may be installed in ducts or suspended on poles and they occupy little space in ducts (pipes of smaller diameter-reduced costs).

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	Symbol	Standard	Number of fibres	Application
OPTICAL FIBRE OUTDOOR CABLE OF LOOSE TUBE CONSTRUCTION				
	Z-(VX)OTKtsd Z-(XV)OTKtsd Z-(XV)OTKtsD Z-(VX)OTKtsD A-DQ(ZN)2Y4Y A-DQ(ZN)B2Y4Y A-DQ(ZN)4Y2Y	ZN-EK-103:2001 DIN VDE 0888	4-288	Cables with polyamid, anti-rodent protection suitable for laying in ducts or for direct burial. Permissible bending radius for cable >20 x outer diameter.
	Z-XOTKtsdp	ZN-EK-108:2001	2-24	Flat cable of the loose tube construction, can be laid into primary or secondary ducts systems-particularly when space limitations occurs
	Z-XXOTKtsFtl ZKS-XXOTKtsFo ZKS-XXOTKtsFf A-DQ(ZN)2Y(SR)2Y	ZN-EK-103:2001 ZN-TF-13:2001 DIN VDE 0888	4-288	Cables armoured by: steel varnish types suitable for direct burial in areas of high-risk damages steel wires suitable for direct burial in areas of high risk damages and river crossings steel corrugated tape suitable for direct burial in areas of high risk damages or attacks made by rodents. Permissible bending radius for cable >30 x outer diameter
OPTICAL FIBRE MINING CABLES				
	YOTKGtsFoyn NOTKGtsFoN YOTKGtsFfyn NOTKGtsFfN	ZN-TF-015:2002	4-72	Designed for connection between optoelectronic system devices, for laying on the ground or under ground in mining areas Permissible tensile force during operation 2 kN (for...Fo... cables) Permissible tensile force during installation. 6 kN (for...Fo... cables) Range of temperature: Operating from –20°C to +70°C Storage and transport from-20°C to +70°C Laying and installation from –5°C to +60°C Permissible bending radius for cable >30 x outer diameter
	YOTKGtsDFoyn NOTKGtsDFoN YOTKGtsDFfyn NOTKGtsDFfN	ZN-TF-015:2002	4-72	Designed for connection between optoelectronic system devices, for laying on the ground or under ground in mining areas. Permissible tensile force during operation 3 kN (for…Fo…cables) Permissible tensile force during installation 8 kN (for…Fo… cables) Range of temperature: Operating from –20°C to +70°C Storage and transport from-20°C to +70°C Laying and installation from –5°C to +60°C Permissible bending radius for cable >30 x outer diameter
OPTICAL FIBRE OUTDOOR, SELF SUPPORTING CABLE OF LOOSE TUBE CONSTRUCTION				
	ADSS-XXOTKtsdD	ZN-EK-107:01:2002	4-144	Self-supporting cables, suitable for suspending on poles and supports in open space. A cable may be suspended on poles of power lines and railway track. Range of temperature: Operating from –40°C to +70°C Storage and transport from –40°G to +70°C Laying and installation from –15°C to +60°C Permissible bending radius for cable >20 x outer diameter

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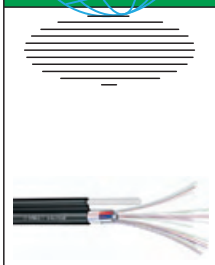
	Symbol	Standard	Number of fibres	Application
OPTICAL FIBRE OUTDOOR, SELF SUPPORTING CABLE OF LOOSE TUBE CONSTRUCTION				
	**S-XOTKtsd** **S-XOTKtsdD** **S-XzOTKts** **S-XzOTKtsD**	ZN-TF-016 ZN-EK-105	4-144	Self-supporting 8-shaped cables, suitable for suspending on poles and supports in open space, if the dielectric messenger is used, a cable may be suspended on poles of power lines and railway track. Range of temperature: Operating from -40°C for +70°C Storage and transport from -40°C for +70°C Laying and installation from -5°C to +50°C Permissible bending radius for cable >30 x outer diameter
OPTICAL FIBRE INDOOR CABLES OF LOOSE TUBE CONSTRUCTION				
All indoor cables manufactured acc to a standard **and tested acc to a standard**		ZN-TF-11:2001 ZN-EK-103:2001 IEC 60793-1 IEC 60794-1-1		Permissible pulling force during installation for: non-armoured cables is equal to the 2 km cable weight but not more than 2500 N reinforced cable is equal to the 2 km cable weight but not less 3000 N Range of temperature: Operating from -20°C to +60°C Storage and transport from -20°C to +60°C Laying and installation from -5°C to +60°C
	**W-YOTKtsd**	ZN-EK-103:2001	4-288	Indoor flame retardant cables suitable for laying in railway and road channels and mines. Permissible bending radius for cable >20 x outer diameter
	**W-YOTKtsdD** **W-YYOTKtsdD** **J-D(ZN)Y**	ZN-EK-103:2001 DIN VDE 0888	4-288	Indoor reinforced flame retardant cables suitable for laying indoors, in railway and road channels, in mines and vertical or horizontal suspension. Permissible bending radius for cable >20 x outer diameter
	**W-(YV)OTKtsd** **W(YV)OTKtsdD**	ZN-EK-103:2001	4-288	Cables with polyamid anti-rodent protection, reinforced (D) and non-reinforced suitable for indoor installation, in railway and road channels or outside buildings on walls. Permissible bending radius for cable >20 x outer diameter.
OPTICAL FIBRE INDOOR-OUTDOOR CABLES OF LOOSE TUBE CONSTRUCTION				
All indoor - outdoor cables manufactured acc to a standard **and tested acc to a standard**		ZN-TF-11:2001 ZN-EK-103:2001 ZN-EK-108:2001 IEC 60793-1 IEC 60794-1-1		Permissible pulling force during installation for: non-armoured cables is equal to the 2 km cable weight but not more than 2500 N reinforced cable is equal to the 2 km cable weight but not less than 3000N Range of temperature. Operating from -20°C to +60°C Storage and transport from -30°C to +60°C Laying and installation from -15°C to +60°C

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	Symbol	Standard	Number of fibres	Application
OPTICAL FIBRE INDOOR-OUTDOOR CABLES OF LOOSE TUBE CONSTRUCTION				
	ZW-NOTKtsd	ZN-TF-11:2001	4-288	Indoor/outdoor flame retardant cables suitable for laying in railway and road channels and In mines. Permissible bending radius for cable >20 x outer diameter
	ZW-NOTKtsdD ZW-NXOTKtsdD ZW-NNOTKtsdD A/I-DQ(ZN)H	ZN-TF-11:2001 DIN VDE 0888		Indoor/outdoor reinforced, flame retardant cables suitable for laying out door in railway and road channels, in mines and vertical or horizontal suspension. Permissible bending radius far cable >20 x outer diameter
	ZW-(NV)OTKtsd ZW-(NV)OTKtsdD A/I-DQ(ZN)4YH	ZN-EK-103:2001 DIN VDE 0888		Cables with polyamid anti-rodent protection reinforced (D) and non-reinforced suitable for indoor installation, in railway and road channels or outside buildings on walls. Permissible bending radius for cable >20 x outer diameter
	ZW-NOTKtsdp	ZN-EK-108:2001	2-24	Flat cable of the loose tube construction. can be laid into primary or secondary duct systems-particularly when space limitations occurs.
OPTICAL FIBRE INDOOR ASSEMBLE CABLES				
	W-NOTKSd W-YOTKSd I-V(ZN)H I-V(ZN)Y	ZN-TF-012:2001 DIN VDE 0888	1-24	Designed for connection between optoelectronic system devices, for indoor installation. Cables of tight tube, 0.9 µm, buffer. Permissible pulling force for simplex cable 400 N duplex cable 800 N multi fibre 1200 N Range of temperature: Operating from -20°C to +60O C Installation from -5°C to +60°C Storage and transport from -30°C to +60°C Permissible bending radius for cable >20 x outer diameter
OPTICAL FIBRE INDOOR BREAKOUT CABLES				
	W-NNOTKSd W-YYOTKSd I-V(ZN)HH I-V(ZN)YY	ZN-TF-012:2001 DIN VDE 0888	4-96	Designed for connection between optoelectronic system devices, for indoor installation. Cables of tight tube, 0.9 µm, consisting of terminating modules. Permissible pulling force: for cables without strength member (F*n)N for cables with strength member (F*n)+600N where: F- single module force; n-number of modules in a cable Range of temperature: Operating from -20°C to +60O C Installation from -5°C to +60°C Storage and transport from -30°C to +60°C Permissible bending radius for cable >20 x outer diameter
OPTICAL FIBRE CABLES FOR MILITARY APPLICATIONS				
	PSKD A-V(ZN)11Y(ZN)11Y	ZN-TF-017	2-18	Optical fibre cables for military tactical field communications systems, field communications systems on areas of mining, geological explorations, underground, temporary field communication and video signals transfer systems.

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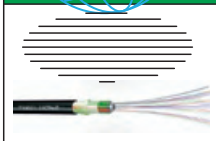
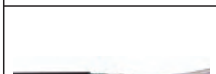
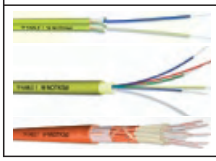
	Symbol	Standard	Number of fibres	Application
OPTICAL FIBRE CABLES				
	**A-DQ(ZN)2Y**	VDE 0888-3 DIN EN 187000 DIN EN 188000	4-144	Cables reinforced with aramid yarn, available with a central bundle core and stranded version (at fibre number greater than 12) suitable for laying in ducts or for direct burial and may be suspended on supports, on poles of power lines and railway tracks. Permissible bending radius for cable >20 x outer diameter.
	**J-D(ZN)H** **J-D(ZN)Y**	VDE 0888-6 DIN EN 187000 DIN EN 188000	4-144	Indoor reinforced, flame retardant cables suitable for laying out door in railway and road channels, in mines and vertical or horizontal suspension. The halogen-fee version is especially suitable for the application in skyscrapers, hospitals and stores. Permissible bending radius for cable >20 x outer diameter
	**J-V(ZN)H**	VDE 0888-6 DIN EN 187000 DIN EN 188000	2-24	Indoor fibre optic cable used for the data network cabling at the indoor environment.
	J-V(ZN)H simplex	VDE 0888-4 DIN EN 187000 DIN EN 188000	1	Cables of tight tube, 0.9 µm, buffer. Range of temperature: operating from -20°C to +60º C
OPTICAL FIBRE CABLES CERTIFICATED – UKRSEPRO (Ukraine)				
	**Z-XOTKt(s)d**	IEC 60793-1 IEC 60794-1-1 GOST 18690-82	4-288	Optical fibre cables for primary and secondary cable ducts. Permissible bending radius for cable >20 x outer diameter
	**Z-XOTKt(s)dD**	IEC 60793-1 IEC 60794-1-1 GOST 18690-82	4-288	Cables reinforced with aramid yarn, suitable for laying in ducts or for direct burial and may be suspended on supports, on poles of power lines and railway tracks. Permissible bending radius for cable >20 x outer diameter.
	**Z-XXOTKt(s)dD**	IEC 60793-1 IEC 60794-1-1 GOST 18690-82	4-288	
	**ZKS-XXOTKtsFf**	IEC 60793-1 IEC 60794-1-1 GOST 18690-82	4-144	Cables armoured by steel corrugated tape suitable for direct burial in areas of high risk damages or attacks made by rodents Permissible bending radius for cable >30 x outer diameter
	**W-YOTKSd** **W-YnOTKSd** **W-NOTKSd**	IEC 60793-1 IEC 60794-1-1 GOST 18690-82	1-24	Designed for connection between optoelectronic system devices, for indoor installation. Cables of tight tube, 0.9 µm, buffer.

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