

ETHERLINE®

Data communication systems for ETHERNET technology



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ETHERNET IN AUTOMATION

The Ethernet standard is a permanent fixture in corporate IT departments due to it's simplicity. The reason for the acceptance and popularity is not only because of the integrated networking for a company, but rather due to the fact that it is the basic technology for the world's largest network – the Internet. The Ethernet is the world's most-used standard. The advantages of the Ethernet and the related networking are obvious:

- Simple, unlimited expansion possibilities
- Fast assembly due to simple connection technology with RJ45 or M12
- Dynamic bandwidth adjustment with 10/ 100 Mbit/s, 1 Gbit up to a current 10 Gbit/s
- Connecting of various applications areas (industrial, building, Automation, IT, ...)

Because of these facts, more companies are using the performance of Ethernet for their machine and plant control. For these applications, the Industrial Ethernet Systems are developed. Now it is possible to connect your office area with the industrial field area. Due to the fact, that Ethernet allows to use one communication system through all areas, need only less interfaces and can connect unlimited numbers of members, it offers the applicants for example the possibility to use remote diagnostics via the Internet. Industrial Ethernet systems like EtherCAT®, PROFINET® or EtherNet/IP® are especially developed for industrial applications. In combination of using Ethernet protocols and components which are specified for industrial environment, there are more advantages than for commercial fieldbus systems like PROFIBUS:

- Company-wide access to data and applications
- High data transmission rate for fast exchange of information
- Improvement of efficiency and speed of work flow and furthermore an increase of energy efficiency and machine performance
- Continuously and coordinated monitoring and machine control for an optimized manufacturing process
- Wiring from office till machine is possible

The user can choose between copper cable (Twisted Pair-cable), fiber optics or wireless for physical connection of the devices. There are different maximum transmission length for the media.

	Medium	Cable	Installation length
ETHERNET	10 Base-T	Twisted Pair	100 m
	10 Base-FL	62.5 µm, 50 µm Multimode LWL	2,000 m
Fast ETHERNET	100 Base-TX	Twisted Pair	100 m
	100 Base-FX	62.5 µm, 50 µm Multimode LWL FDX	412 m
		62.5 µm, 50 µm Multimode LWL HDX	2,000 m
Gigabit ETHERNET	1000 Base-CX	Twinax STP (150 Ω)	25 m
	1000 Base-T	Twisted Pair	100 m
	1000 Base-SX 850 nm	62.5 µm Multimode LWL	275 m
		50 µm Multimode LWL	550 m
	1000 Base-LX 1300 nm	62.5 µm Multimode LWL	550 m
		50 µm Multimode LWL	550 m
10 Gigabit ETHERNET	10G Base-LX4 WWDM	Singlemode LWL	10,000 m
		Multimode LWL	300 m
		62.5 µm Multimode LWL	26 m
	10G Base-SR/SW 850 nm	50 µm Multimode LWL	82 m
		Singlemode LWL	10,000 m
	10G Base-ER/EW 1550 nm	Singlemode LWL	40,000 m

QUICKFINDER

Automation area	Inst. Area	category	Application/ cabling	halogen-free	Sheath material	Shielding	AWG	Outer diameter [mm]	Characteristics		Approvals	Article designation	Article number	Page	Connectors	Socket	
Building 4-pairs	Indoor	Cat.5e	static	x	LSZH	U/UTP	4x2xAWG24/1	5.6				UNITRONIC® LAN 200 U/UTP Cat.5e LSZH	2170173	*	3,4,6,8,10,12,22	28,29,30,33,34,35	
						SF/UTP	4x2xAWG24/1	6.7				UNITRONIC® LAN 200 SF/UTP Cat.5e LSZH	2170138	*	4,5,7,9,11,13	28,29,30,31,33,34,35	
				PVC	U/UTP	4x2xAWG24/1	5.6				UNITRONIC® LAN 200 U/UTP Cat.5e Y	2170125	*	3,4,6,8,10,12,22	28,29,30,33,34,35		
					F/UTP	4x2xAWG24/1	6.4				UNITRONIC® LAN 200 F/UTP Cat.5e Y	2170126	*	3,4,5,7,9,11,13	28,29,30,31,33,34,35		
					SF/UTP	4x2xAWG24/1	6.7				UNITRONIC® LAN 200 SF/UTP Cat.5e Y	2170128	*	4,5,7,9,11,13	28,29,30,31,33,34,35		
			flexible			F/UTP	4x2xAWG26/7	5.6				UNITRONIC® LAN 200 F/UTP Cat.5e Y Flex	2170127	*	1,2,3,4,6,8,10,12,22	27,29,30,33,34	
				SF/UTP		4x2xAWG26/7	6				UNITRONIC® LAN 200 SF/UTP Cat.5e Y Flex	2170129	*	1,2,3,4,6,8,10,12,22	27,29,30,33,34		
				F/UTP		4x2xAWG26/7	5.6				UNITRONIC® LAN 200 F/UTP Cat.5e H Flex	2170172	*	1,2,3,4,6,8,10,12,22	27,29,30,33,34		
				x	LSZH	SF/UTP	4x2xAWG26/7	6				UNITRONIC® LAN 200 SF/UTP Cat.5e H Flex	2170139	*	1,2,3,4,6,8,10,12,22	27,29,30,33,34	
		Cat.6				static	x	LSZH	U/UTP	4x2xAWG24/1	6.5				UNITRONIC® LAN 250 U/UTP Cat.6 LSZH	2170171	*
			F/UTP	4x2xAWG24/1	7.5							UNITRONIC® LAN 250 F/UTP Cat.6 LSZH	2170170	*	4,5,7,9,11,13	26,28,29,30,31,33,34,35	
				PVC	U/UTP		4x2xAWG24/1	6.5				UNITRONIC® LAN 250 U/UTP Cat.6 Y	2170186	*	3,4,6,8,10,12	26,28,29,30,33,34,35	
		Cat.6 _Δ	static	x	LSZH	U/FTP	4x2xAWG23/1	7.4				UNITRONIC® LAN 500 U/FTP Cat.6 _Δ LSZH	2170195	*	4,5,7,9,11,13	28,29,30,31,33,34,35	
						F/FTP	4x2xAWG23/1	7.6				UNITRONIC® LAN 500 F/FTP Cat.6 _Δ LSZH	2170196	*	4,5,7,9,11,13	28,29,30,31,33,34,35	
					PVC	S/FTP	4x2xAWG23/1	7.1				UNITRONIC® LAN 500 S/FTP Cat.6 _Δ Y	2170143	*	4,5,7,9,11,13	28,29,30,31,33,34,35	
		Cat.7	static	x	LSZH	S/FTP	4x2xAWG23/1	7.7				UNITRONIC® LAN 1000 S/FTP Cat.7 LSZH	2170614	*	4,5,7,9,11,13	28,29,30,31,33,34,35	
							2x(4x2xAWG23/1)	2x7.7	DUPLEX			UNITRONIC® LAN 1000 S/FTP Cat.7 LSZH D	2170634	*	4,5,7,9,11,13	28,29,30,31,33,34,35	
			flexible		PVC	S/FTP	4x2xAWG26/7	6.5				UNITRONIC® LAN 600 S/FTP Cat.7 Y FLEX	2170144	*	3,4,5,7,9,11,13	27,29,30,31,33,34	
				x	LSZH	S/FTP	4x2xAWG26/7	6.5				UNITRONIC® LAN 600 S/FTP Cat.7 LSZH Flex	2170142	*	3,4,5,7,9,11,13	27,29,30,31,33,34	
						Cat.7 _Δ	static	x	LSZH	S/FTP	4x2xAWG22/1	8.1				UNITRONIC® LAN 1200 S/FTP Cat.7 _Δ LSZH	2170615
		2x(4x2xAWG22/1)	2x8.1	DUPLEX								UNITRONIC® LAN 1200 S/FTP Cat.7 _Δ DUPLEX	2170618	*	5,7,9,11,13	28,29,30,31,33,34,35	
		4x2xAWG22/1	8.5									UNITRONIC® LAN 1500 S/FTP Cat.7 _Δ LSZH	2170199	*	5,7,9,11,13	28,29,30,31,33,34,35	
		Outdoor ground	Cat.7	static		(L)PE	S/FTP	4x2xAWG23/1	10	PE-AL-outer sheath, direct burial			UNITRONIC® LAN 1000 S/FTP Cat.7 (L)PE	2170198	*	7,11	
						PE	S/FTP	4x2xAWG23/1	9.6	PE-outer sheath			UNITRONIC® LAN 1000 S/FTP Cat.7 PE	2170197	*	7,11	

Automation area	Inst. Area	category	Application/ cabling	halogen-free	Sheath material	Shielding	AWG	Outer diameter [mm]	Industrial Ethernet Systems	Characteristics	Approvals	Article designation	Article number	Page	Connectors	Socket	
Industrial 2-pairs	Indoor	Cat.5e	static	x	H	SF/UTP	2x2xAWG24/1	6.1				ETHERLINE® H Cat.5e	2170280	137	5,6,7,8,9,10,11,12,13,17	20,26,28,29,30,31,32,33,34	
							PVC	SF/UTP	2x2xAWG22/1	6.8	PROFINET®, EtherCAT®	QP, Fast Connect	UL/CSA Typ PLTC ER	ETHERLINE® TRAY ER PN Y FC	2170879	143	14,15,16
						2x2xAWG22/1		6.5	PROFINET®, EtherCAT®	QP	UL/CSA Typ CMX	ETHERLINE® PN Cat.5e Y	2170891	143	14,15,16	20,26,28,29,30,32,33,34	
			flexible		PVC	SF/UTP	1x4xAWG26/7	4.8	EtherCAT®	QP	UL/CSA Typ CMX	ETHERLINE® Y EC FLEX Cat.5e	2170430	141	1,2,3,4,5,6,7,8,9,10,11,12,13,17	20,27,29,30,31,32,33,34	
						x	PUR	SF/UTP	1x4xAWG26/7	4.8	EtherCAT®	QP	UL/CSA Typ CMX	ETHERLINE® P EC FLEX Cat.5e	2170431	141	1,2,3,4,5,6,7,8,9,10,11,12,13,17
					H			SF/UTP	2x2xAWG26/7	5.9				ETHERLINE® H Flex Cat.5e	2170283	138	3,4,6,8,10,12,17
				high flexible	x	PUR	S/UTP	2x2xAWG26/19	6.2		Power chain	UL (AWM) 1000 V Rating	ETHERLINE® FD P Cat.5e	2170289	139	6,8,10,12	29,30,33,34
							SF/UTP	1x4xAWG26/19	4.8	EtherCAT®	QP	UL/CSA Typ CMX	ETHERLINE® P EC FD Cat.5e	2170433	142	1,2,3,4,5,6,7,8,9,10,11,12,13	29,30,31,33,34
		Cat.5	high flexible		x	PUR	SF/UTP	2x2xAWG22/7	6.8	PROFINET®, EtherCAT®	QP, power chain, Fast Connect	UL/CSA Typ CMX, UL (AWM) 1000 V Rating	ETHERLINE® FD P FC Cat.5	2170894	145	14,15,16	20,29,30,33,34
				torsion			x	PUR	SF/UTP	2x2xAWG22/19	6.8	PROFINET®, EtherCAT®	QP, torsion	UL/CSA (AWM)	ETHERLINE® TORSION Cat.5	2170888	146
	Indoor and outdoor	Cat.5e	static		PVC	SF/UTP	2x2xAWG22/1	6.8	PROFINET®, EtherCAT®	QP, Fast Connect	UL/CSA Typ PLTC and CMG	ETHERLINE® Y FC Cat.5	2170893	143	14,15,16	20,29,30,33,34	
						static	x	PUR	SF/UTP	2x2xAWG24/1	6.1			UL (AWM) 1000 V Rating	ETHERLINE® P Cat.5e	2170281	137
			flexible		PVC	SF/UTP	2x2xAWG22/7	6.8	PROFINET®, EtherCAT®	QP, Fast Connect	UL/CSA Typ CMG	ETHERLINE® PN Cat.5 Y FLEX FC	2170886	144	14,15,16	20,29,30,33,34	
						x	FRNC	SF/UTP	2x2xAWG22/7	6.8	PROFINET®, EtherCAT®	QP, Fast Connect	UL/CSA Typ CMG	ETHERLINE® PN Cat.5e FRNC FLEX FC	2170890	144	14,15,16
				PVC	SF/UTP			2x2xAWG22/7	6.5	PROFINET®, EtherCAT®	QP, black UV res		ETHERLINE® Y Cat.5e BK	2170901	147	14,15,16	20,29,30,33,34
			Cat.5	flexible	x	FRNC	SF/UTP	2x2xAWG22/7	6.5	PROFINET®, EtherCAT®	Application Marine, Fast Connect	UL/CSA Typ PLTC and CMG Germanischer Lloyd, Lloyds Register of Shipping, ABS Europe Ltd Bureau Veritas, Det Norske Veritas (DNV)	ETHERLINE® MARINE FRNC FC	2170889	149	14,15,16	20,29,30,33,34
			Cat.5e	flexible		TPE	SF/UTP	2x2xAWG22/7	6.5	PROFINET®, EtherCAT®	For hollow shaft between gear units and pitch system		ETHERLINE® Cat.5e 105 plus	2170636	148	14,15,16	20,29,30,33,34
		x															
		Outdoor and ground	Cat.5	static		PVC/PE	SF/UTP	2x2xAWG22/1	9.8	PROFINET®, EtherCAT®	QP, steel armoured, black, UV resistant		ETHERLINE® Cat.5 ARM	2170496	150	14,15,16	20,29,30,33,34
	Cat.5e																

Industrial 2-pairs combi	Indoor	Cat.5	flexible	x	FRNC	SF/UTP	2x2xAWG22/7 + 4x1.5	10.6	PROFINET®	Hybrid	UL (AWM)	ETHERLINE® Cat.5 FRNC HYBRID	2170887	151		
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QUICKFINDER [CONTINUATION]

Automation area	Inst. Area	category	Application/cabling	halogen-free	Sheath material	Shielding	AWG	Outer diameter [mm]	Industrial Ethernet Systems	Characteristics	Approvals	Article designation	Article number	Page	Connectors	Socket
Industrial 4-pairs	Indoor	Cat.5e	static	x	H	SF/UTP	4x2xAWG24/1	6.3				ETHERLINE® H Cat.5e	2170296	137	5,7,9,11,13,18,25	21,23,29,30,31,33,34
					FRNC	F/UTP	4x2xAWG23/1	8.6		Isolation integrity	PH60 acc. to EN50200	ETHERLINE® FIRE Cat.5e PH120	2170905	159	6,8,10,12	21,23,29,30,33,34
					H/H	SF/UTP	4x2xAWG24/1	6.3/8.3		Double sheath		ETHERLINE® H-H Cat.5e	2170298	137	5,7,9,11,13,18,25	21,23,29,30,31,33,34
			flexible	x	H	SF/UTP	4x2xAWG26/7	6.1				ETHERLINE® H Flex Cat.5e	2170299	138	5,7,9,11,13,19,25	22,24,29,30,31,33,34
					PVC	SF/UTP	4x2xAWG26/7	6.4			UL/CSA Typ CMG	ETHERLINE® Y FLEX Cat.5e	2170486	138	5,7,9,11,13,18,25	21,23,29,30,31,33,34
	Indoor and outdoor	Cat.5e	static	x	PUR	SF/UTP	4x2xAWG24/1	6.3		Limited UV resistance	UL (AWM) 1000 V Rating	ETHERLINE® P Cat.5e	2170297	137	5,7,9,11,13,18,25	21,23,29,30,31,33,34
			flexible		PUR	SF/UTP	4x2xAWG26/7	6.3		Limited UV resistance	UL (AWM) 1000 V Rating	ETHERLINE® P Flex Cat.5e	2170300	138	5,7,9,11,13,18,25	21,23,29,30,31,33,34
		Cat.5	high flexible	x	PUR	S/UTP	4x2xAWG26/19	6.6		Easy to wind, best for stage, power chain, black, UV resistant	UL (AWM) 1000 V Rating	ETHERLINE® FD BK Cat.5	CE217489	140	6,8,10,12	21,23,29,30,33,34
		Cat.5e	high flexible	x	PUR	S/UTP	4x2xAWG26/19	6.1		Power chain, limited UV resistance	UL (AWM) 1000 V Rating	ETHERLINE® FD P Cat.5e	2170489	139	6,8,10,12	22,24,29,30,33,34
		Cat.6	high flexible	x	PUR	SF/UTP	4x2xAWG26/19	7.8		Power chain, limited UV resistance	UL/CSA Typ CMX	ETHERLINE® FD P Cat.6	2170488	152	6,8,10,12	21,23,29,30,33,34
	Indoor	Cat.6 _A	static	x	PVC	S/FTP	4x2xAWGG22/1	9	PROFINET®			ETHERLINE® Cat.6 _A Y	2170464	153	5,7,9,11,13,18,25	21,23,29,30,31,33,34
					PUR							ETHERLINE® Cat.6 _A P	2170465	153	5,7,9,11,13,18,25	21,23,29,30,31,33,34
					H							ETHERLINE® Cat.6 _A H	2170466	153	5,7,9,11,13,18,25	21,23,29,30,31,33,34
			flexible	x	PVC	S/FTP	4x2xAWG23/7	9	PROFINET®		UL/CSA Typ CMG	ETHERLINE® PN Cat.6 _A Y FLEX	2170930	154	5,7,9,11,13,18,25	21,23,29,30,31,33,34
					FRNC							ETHERLINE® PN Cat.6 _A FRNC FLEX	2170931	154	5,7,9,11,13,18,25	21,23,29,30,31,33,34
			high flexible	x	PVC	S/FTP	4x2xAWG24/7	9	PROFINET®	Power chain	UL/CSA Typ CMX	ETHERLINE® FD Cat.6 _A	2170485	155	5,7,9,11,13,18,25	21,23,29,30,31,33,34
					PUR						UL/CSA Typ CMX, UL (AWM) 1000 V Rating	ETHERLINE® FD P Cat.6 _A	2170484	155	5,7,9,11,13,18,25	21,23,29,30,31,33,34
			torsion	x	PVC	S/FTP	4x2xAWG24/7	9	PROFINET®	Torsion	UL/CSA Typ CMX	ETHERLINE® TORSION Y Cat.6 _A	2170482	156	5,7,9,11,13,18,25	21,23,29,30,31,33,34
					PUR						UL/CSA Typ CMX, UL (AWM) 1000 V Rating	ETHERLINE® TORSION P Cat.6 _A	2170483	156	5,7,9,11,13,18,25	21,23,29,30,31,33,34
		Cat.7	static	x	PVC	S/FTP	4x2xAWGG22/1	9	PROFINET®			ETHERLINE® Cat.7 Y	2170474	157	5,7,9,11,13,18,25	21,23,29,30,31,33,34
					PUR							ETHERLINE® Cat.7 P	2170475	157	5,7,9,11,13,18,25	21,23,29,30,31,33,34
					H							ETHERLINE® Cat.7 H	2170476	157	5,7,9,11,13,18,25	21,23,29,30,31,33,34
	Outdoor and ground	Cat.7	static		(L)PE	S/FTP	4x2xAWG23/1	10		PE-AL-outer sheath, direct burial		UNITRONIC® LAN 1000 S/FTP Cat.7 (L)PE	2170198	*	7,11	
					PE		4x2xAWG23/1	9.6		PE-outer sheath		UNITRONIC® LAN 1000 S/FTP Cat.7 PE	2170197	*	7,11,18,25	21,23

ISO/IEC-11801 (2002)	Construction (outdoor/indoor)
U/UTP	Unshielded/Unshielded Twisted Pair
F/UTP	Foiled/Unshielded Twisted Pair
S/UTP	Screened/Unshielded Twisted Pair
SF/UTP	Screened+Foiled/Unshielded Twisted Pair
S/FTP	Screened/Foiled Twisted Pair

Legend
PN = PROFINET®, cables acc. to PROFINET® standard

QP = Quad Pair, star quad cable
Please see detailed technical information on the data sheet (www.lappgroup.com/products).

Connectors

No.	Cable type	Max. Ø-cable	Category	Core dimension	Article designation	Article number	Page	
RJ45 male connector								
1	flexible	5.8 mm	Cat.5	AWG26	RJ45 connector TM11 Hirose, beige	CE6321	*	
2	flexible	5.72 mm	Cat.5	AWG26	RJ45 Steckverbinder Stewart, grey	CE6323	*	
3	solid + flexible	6.6 mm	Cat.6	AWG27 – 24	RJ45 connector TM21 Hirose, beige	CE6324	*	
4	solid + flexible	8 mm	Cat.5e	AWG26 – 22	RJ45 connector FM45	21700540	*	
5	solid + flexible	9 mm	Cat.6 _A	solid: AWG24 – 22 flexible: AWG27 – 22	RJ45-connector, straight, Cat.6 _A TIA568A ED-IE-AX-6A-A-20-FC	21700600	185	
6	solid + flexible	9 mm	Cat.6 _A	solid: AWG26 – 24 flexible: AWG27 – 24	RJ45-connector, straight, Cat.6 _A TIA568A ED-IE-AX-6A-A-20-FD-FC	21700615	185	
7	solid + flexible	10 mm	Cat.6 _A	solid: AWG24 – 22 flexible: AWG27 – 22	RJ45-connector, angled, Cat.6 _A TIA568A ED-IE-90-6A-A-20-FC	21700636	186	
8	solid + flexible	10 mm	Cat.6 _A	solid: AWG26 – 24 flexible: AWG27 – 24	RJ45-connector, angled, Cat.6 _A TIA568A ED-IE-90-6A-A-20-FD-FC	21700639	186	
9	solid + flexible	9 mm	Cat.6 _A	solid: AWG26 – 24 flexible: AWG27 – 24	RJ45-connector, straight, Cat.6 _A TIA568B ED-IE-AX-6A-B-20-FC	21700601	185	
10	solid + flexible	9 mm	Cat.6 _A	solid: AWG24 – 22 flexible: AWG27 – 22	RJ45-connector, straight, Cat.6 _A TIA568B ED-IE-90-6A-B-20-FD-FC	21700616	185	
11	solid + flexible	10 mm	Cat.6 _A	solid: AWG26 – 24 flexible: AWG27 – 24	RJ45-connector, angled, Cat.6 _A TIA568B ED-IE-90-6A-B-20-FC	21700637	186	
12	solid + flexible	10 mm	Cat.6 _A	solid: AWG24 – 22 flexible: AWG27 – 22	RJ45-connector, angled, Cat.6 _A TIA568B ED-IE-90-6A-B-20-FD-FC	21700640	186	
13	solid + flexible	9 mm	Cat.6 _A	solid: AWG24 – 22 flexible: AWG27 – 22	Circular connector IP68 (incl. 21700601) ED-IE-AX-RJ45-6A-B-68-FC	21700630	187	
14	solid + flexible	9 mm	Cat.5e	solid: AWG24 – 22 flexible: AWG27 – 22	RJ45-connector, straight, Cat.5e, PROFINET® ED-IE-AX-5-PN-20-FC	21700605	184	
15	solid + flexible	10 mm	Cat.5e	solid: AWG24 – 22 flexible: AWG27 – 22	RJ45 connector, angled, Cat.5e, PROFINET® ED-IE-90-6A-PN-20-FC	21700638	184	
M12 male connector								
16	solid + flexible	9.7 mm	Cat.5e	AWG26 – 22	M12 D-coded, Cat.5e, PROFINET® ED-IE-AX-M12D-5-PN-67-FC	21700647	189	
17	solid + flexible	6.3 mm	Cat.5e	AWG26 – 22	M12 D-coded, Cat.5e TIA568B ED-IE-AX-M12D-5-67	21700648	189	
18	solid + flexible	9.7 mm	Cat.6 _A	solid: AWG24 – 22 flexible: AWG27 – 22	M12 X-coded, Cat.6 _A TIA568B ED-IE-AX-M12X-6A-67-FC	21700602	189	
19	solid + flexible	6.3 mm	Cat.6 _A	solid: AWG24 – 22 flexible: AWG27 – 22	M12 X-coded, Cat.6 _A TIA568B ED-IE-AX-M12X-6A-67-FC-S	21700644	*	
M12 female connector								
20	flexible	8 mm	Cat.5e	AWG26 – 22	M12 D-coded, Cat.5e TIA568B AB-C4-M12FSD-SH	22261016	189	
21	solid + flexible	9.7 mm	Cat.6 _A	solid: AWG24-22 flexible: AWG27-22	M12 X-coded, Cat.6 _A TIA568B ED-IE-AX-M12XF-6A-67-FC	21700621	189	
22	solid + flexible	6.3 mm	Cat.6 _A	solid: AWG24-22 flexible: AWG27-22	M12 X-coded, Cat.6 _A TIA568B ED-IE-AX-M12XF-6A-67-FC-S	21700645	*	
23	solid + flexible	9.7 mm	Cat.6 _A	solid: AWG24-22 flexible: AWG27-22	M12 X-coded, for rear-mounting, Cat.6 _A TIA568B ED-IE-AX-M12XF-RM-6A-67-FC	21700622	189	
24	solid + flexible	6.3 mm	Cat.6 _A	solid: AWG24-22 flexible: AWG27-22	M12 X-coded, for rear-mounting, Cat.6 _A TIA568B ED-IE-AX-M12XF-RM-6A-67-FC-S	21700646	*	
Cable coupler								
25	solid + flexible	9.7 mm	Cat.7 _A	AWG26 – 22	Cable coupler round EPIC® DATA CCR FA	21700623	190	
RJ45 female connector								
26	solid	–	Cat.6	AWG24 – 22	LANmark-6 EVO 250 MHz Snap-In connector	62104	*	
27	flexible	–	Cat.6	AWG26	LANmark-6 EVO 250MHz Snap-In for AWG26	62105	*	
28	solid	–	Cat.6 _A	AWG24 – 22	LANmark-6 EVO 10 G Snap-In connector	62106	*	
29	solid + flexible	5 – 9 mm	Cat.6 _A	AWG27 – 22	RJ45 connector, Cat.6 _A TIA568A ED-IE-AX-RJ45F-6A-A-FC	21700611	188	
30	solid + flexible	5 – 9 mm	Cat.6 _A	AWG27 – 22	RJ45 connector, straight, Cat.6 _A TIA568B ED-IE-AX-RJ45F-6A-B-FC	21700612	188	
31	solid + flexible	9 mm	Cat.6 _A	solid: AWG24 – 22 flexible: AWG27 – 22	Circular bulkhead housing IP68 (incl. 21700612), ED-IE-RJ45F-6A-B-68-FC	21700632	187	
32	solid + flexible	–	Cat.6	AWG24 – 22	Circular bulkSnapIn rail mount adapter 1-single incl. Cat.6 head housing	60795	*	
33	solid + flexible	5 – 9 mm	Cat.6 _A	AWG27 – 22	Rail mount adapter, Cat.6 _A TIA568A EPIC® DATA HS RJ45 F 10G A	21700613	188	
34	solid + flexible	5 – 9 mm	Cat.6 _A	AWG27 – 22	Rail mount adapter, Cat.6 _A TIA568B EPIC® DATA HS RJ45 F 10G B	21700614	188	
LANmark SnapIn GG45 socket								
35	solid	–	Cat.7 _A	AWG24 – 22	LANmark-7A, 1000 MHz Snap-In GG45 connector	63104	*	

Legend: *see www.lappgroup.com/products. Please see detailed technical information on the data sheet (www.lappgroup.com/products).

For current information see: www.lappgroup.com

Industrial ethernet articlecode for patchcords

IE - PNC - 5 - M12D - S - 1 - P - 2 - 22 - FD - RJ45 - S

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

- 1

Type

IE = Industrial Ethernet
- 2

Bussystem

PNA = PROFINET® Type A
PNB = PROFINET® Type B
PNC = PROFINET® Type C
EC = EtherCAT®
- 3

Category

5 = Cat.5/Cat.5e
6 = Cat.6
6A = Cat.6_A
- 4

Connection left

M8 = M8
M12D = M12 D-coded, male
M12DF = M12 D-coded, female

M12X = M12 X-coded, male
M12XF = M12 X-coded, female

RJ45 = RJ45
- 5

Cable outlet

S = Straight (180°)
A = Angled (90°)
- 6

Cable length

1 = 1 m
2 = 2 m
3 = 3 m
5 = 5 m
10 = 10 m
15 = 15 m
20 = 20 m
- 7

Outer sheath material

H = Halogen free
P = PUR
Y = PVC
- 8

Pairs

2 = 2x2
4 = 4x2
- 9

AWG (cross section)

22 = AWG22
23 = AWG23
24 = AWG24
26 = AWG26
27 = AWG27
- 10

Installation type

1 = Fixed installation
7 = Flexible installation
FD = Drag chain application
T = Torsion stressed application
- 11

Connection right

M8 = M8
M12D = M12 D-coded male
M12DF = M12 D-coded female

M12X = M12 X-coded male
M12XF = M12 X-coded female

RJ45 = RJ45
OE = Open conductor end
- 12

Cable outlet

S = Straight (180°)
A = Angled (90°)

EPIC® DATA Code for Ethernet applications

ED - IE - 90 - M12 - X - RM - 6A - A - 54 - FD - FC - AC

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

- 1

Type

ED = EPIC® DATA
- 2

Bussystem

IE = Industrial Ethernet
- 3

Cable outlet

90 = 90°
45 = 45°
35 = 35°
AX = Straight (0°)
- 4

Type of connection

N/A/RJ45 = RJ45 male
RJ45F = RJ45 female
M12 = M12 male
M12F = M12 female
M8 = M8 male
HY = Hybrid
H = H3A
- 5

Coding

N/A = D-coded
X = X-coded
A = A-coded
- 6

Mounting version

RM = Rear-mounting
FM = Front-mounting
- 7

Category

5 = Cat.5/Cat.5e
6 = Cat.6
6A = Cat.6_A
- 8

Standard for pin assignment

A = T568A
B = T568B
PN = PROFINET®
- 9

Protection class

N/A = IP20 (= Standard)
54 = IP54
65 = IP65
67 = IP67
68 = IP68
- 10

Special requirements

FD = Especially for 19 wire stranded cores
- 11

Cable connection

N/A = Screw (= Standard)
FC = Fastconnect
FZ = Spring type
- 12

Additional

AC = Accessory
AC-DC = Accessory Dust Cap

For current information see: www.lappgroup.com