

THE WORLD OF LAPP

Automation & Network Guide



Legend for icons

INDUSTRIES



Automation



e-Mobility



Food & Beverage



Mechanical and
Plant Engineering



Oil & Gas



Rail



Solar Energy



Wind Energy

PRODUCT CHARACTERISTICS



Suitable for outdoor use



Good chemical
resistance



Flame-retardant



Wide clamping range



Halogen-free



Heat-resistant



Cold-resistant



Corrosion-resistant



Maximum vibration
protection



Mechanical resistance



Assembly time



Low weight



Oil-resistant



Optimum strain relief



Space requirement



Power chain



Clean room



Robust



Acid-resistant



Reliability



Integrated
SKINTOP® cable gland



Voltage



Connector with
standard housing unit



Interference signals



Temperature-resistant



Torsion-resistant



Torsion load



UV-resistant



Waterproof



Variety of approval
certifications

Please note: the purpose of the icons is to provide you with a quick overview and a rough indication of the product features to which the corresponding information relates. You can find details of product characteristics in the “technical data” sections on the product pages.

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Eight brands, one promise: uncompromising quality – worldwide



ÖLFLEX®
Power and control cables

ÖLFLEX® has become synonymous with power and control cables. Our flexible and oil-resistant cables satisfy the highest demands and can withstand even the very toughest conditions.



UNITRONIC®
Data communication systems

Our high-quality UNITRONIC® data network cables and field bus components provide a forward-looking solution for all applications in industrial machinery and plant engineering. From transmission of simple control signals to field bus signals in complex network structures – we offer a dependable cabling and connection solution for almost every situation.



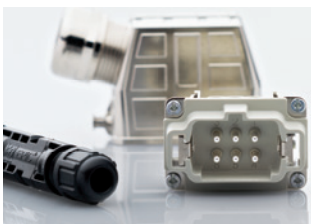
ETHERLINE®
Data communication systems
for ETHERNET technology

Our ETHERLINE® branded products open up a secure, fast and reliable path to the future of Ethernet applications. The systems are made up of durable and robust cables and connection components for passive network technology, and deliver an effective solution for almost any application, particularly in an industrial environment.



HITRONIC®
Optical transmission systems

HITRONIC® fibre optic cables make transmitting large data volumes easy: fault free, bug proof and at almost light speed. Even electromagnetic radiation does not interfere with the transmission. The HITRONIC® range includes the ideal solution for indoor or outdoor use, for demanding conditions, and even for use in power chains.



EPIC®
Industrial connectors

EPIC® industrial connectors can be found everywhere in industrial machinery and plant engineering, for measuring, control and drives. EPIC® is a flexible system of housings, inserts and contacts: all extremely robust, absolutely safe and simplicity itself to assemble.



SKINTOP®
Cable glands

Simply feed in the cable and twist. That's it. Our SKINTOP® cable glands provide secure connections in no time. The universal systems are simple but effective. They secure and centre the cable, hermetically seal it and guarantee optimum strain relief.



SILVYN®
Protective cable conduit systems
and cable carrier systems

The universal range of SILVYN® protection and guidance systems protect cables effectively against dust, moisture, mechanical, thermal and chemical influences. The versatile SILVYN® CHAIN range of energy supply chains also protects and guides cables in dynamic applications.



FLEXIMARK®
Marking systems

The requirement: permanent marking. The solution: FLEXIMARK®. These sophisticated systems mean that a clear overview inside a control cabinet is no longer just a pipe dream. From simple labels for manual marking through to electronic markings, the FLEXIMARK® range is guaranteed to be permanent.

Reliably connecting the world

We want to help you become even more productive and successful. This is why we work tirelessly on optimising our processes. We do everything to make sure we always find the best solution for you and also provide you with quick, efficient and effective support.

No matter where you are – we are always by your side. Our plants, sales companies,

partners and, above all, our competent teams of advisers ensure we offer you a comprehensive service on every continent. We do not simply distribute cable technology, we also manufacture our products ourselves – which represents another advantage for you. As a manufacturer with 18 of our own production facilities, you will benefit from our expertise in the development, design and manufacture of cables, system

products and cable accessories. Thanks to this expertise, we can guarantee that Lapp will provide you with the quality that you require and that you demand.

You can always rely on quality from Lapp – wherever you are in the world. This is also embodied by our strong brands.

8

**strong
brands**

100

sales partners

1

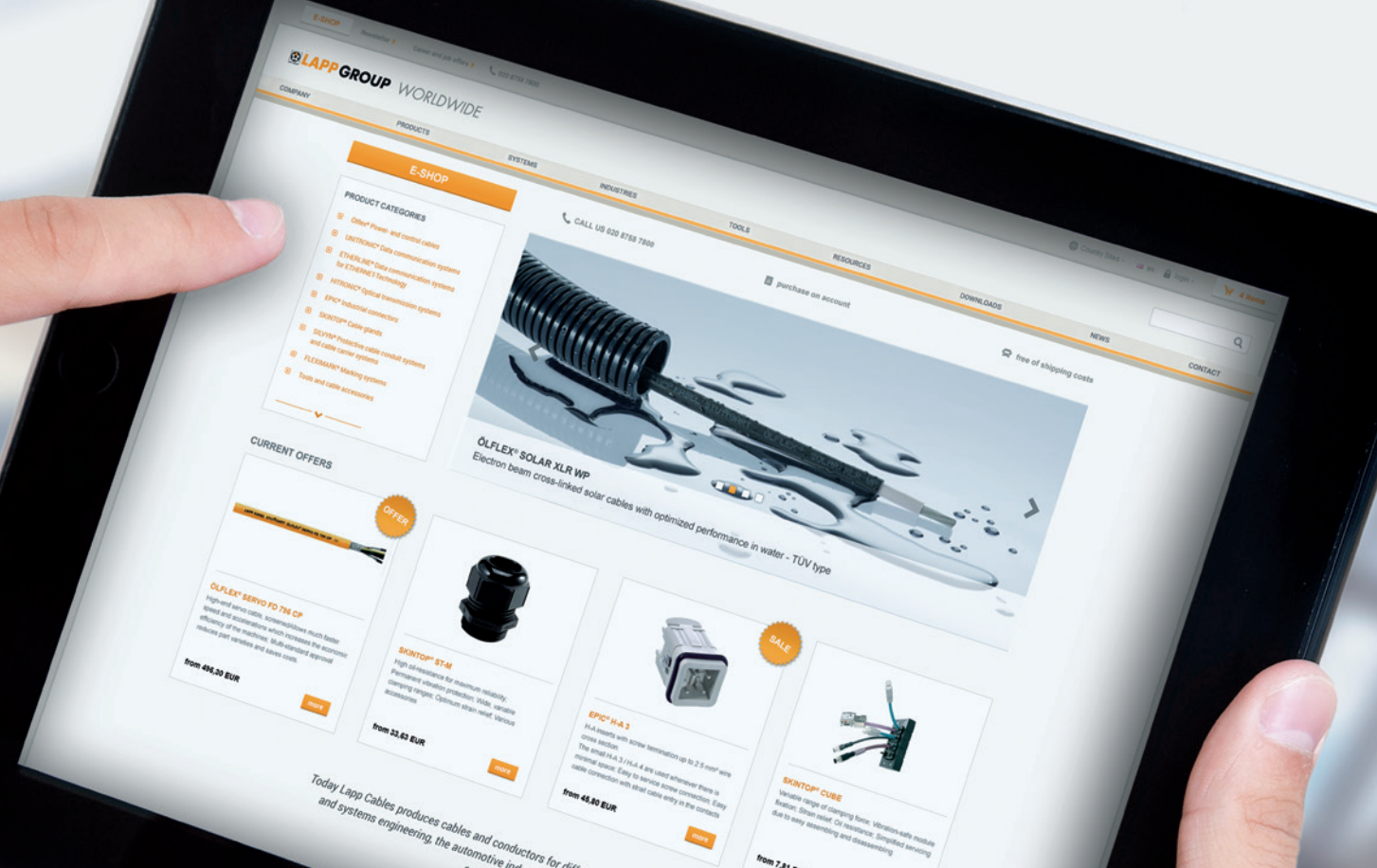
**innovation
after
another**

Employees from
152
countries

More than
40,000
standard products

39
**proprietary sales
companies**

3,300
employees



Product finder – don't search, find it!

The Lapp Group not only offers you more than 40,000 articles, but also the quickest way to find the right cables, connectors and whatever else you need.

- Straightforward selection of the desired filter properties for quickly finding the product of your choice.
- Possible to order immediately from the e-shop.
- Fast interactive product finder.

Simply use our product finder at

www.lappgroup.com/productfinder

CABLE ASSEMBLY FINDER

Based on criteria such as the number of pins, connector/female, sheath material and cable length, you are able to find the suitable cable assembly in a matter of moments

from the following areas:

- UNITRONIC® BUS
- UNITRONIC® Sensor/actuator
- ETHERLINE® Industrial Ethernet
- HITRONIC® Fibre optic cable

www.lappgroup.com/assemblyfinder

CABLE FINDER

Based on criteria such as the number of cores, cross-section in mm² and nominal voltage, it directs you to the correct article in seconds.

www.lappgroup.com/cablefinder

CONNECTOR FINDER

Design, insert, housing and counterpart. These four selections take you to the appropriate connector in just a few clicks.

www.lappgroup.com/connectorfinder

CABLE GLAND FINDER

Use the SKINTOP® Finder to help you identify the cable gland you need and the required accessories. What's more, the online catalogue provides you with a direct route to your order or to more detailed product information.

www.lappgroup.com/cable-glandfinder

CONNECTOR HOUSING CONFIGURATOR

Configure your own individual industrial connector housing with locking concept and cable entries.

www.lappgroup.com/connector-housing

CABLE MARKING FINDER

Use our FLEXIMARK® Cable Marking Finder to quickly identify the appropriate marking and labelling for your application. You can also view the corresponding accessories and more detailed product information.

www.lappgroup.com/markfinder

CHARGING CABLE CONFIGURATOR

The Charging Cable Configurator enables you to find the cables and connectors you need to create the perfect charging cable in no time.

www.lappgroup.com/emobility-cablefinder

SERVO CONFIGURATOR

Choose application, assembly type, cable and length and find within seconds the complying servo assemblies.

www.lappgroup.com/servoconfigurator





Bus systems

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Sensor/actuator cabling

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For current information see www.lappgroup.com/products

APPLICATION AREAS FOR BUS CABLES

- Plant engineering and construction
- Factory Automation (field busses like AS-Interface, PROFIBUS®, INTERBUS, DeviceNet, CAN etc.)
- Process Automation (chemical, petro-chemical industry etc.)
- Building Automation (building management)

OVERVIEW OF THE MOST COMMON BUS SYSTEMS

AS-Interface (AS-I)

Developed to have an inexpensive alternative on the lower Fieldbus level (sensor/actuator) of Automation. Used very often in connection with Ethernet, PROFIBUS®, CAN and DeviceNet.

PROFIBUS®

We distinguish between PROFIBUS® DP and PROFIBUS® PA. The DP variant dominates worldwide with a bit rate of 1.5 Mbit/s up to 12 Mbit/s PROFIBUS® PA is the leader in Process Automation in Europe.

CAN/CANopen

Originally developed for cars. Used in industry in an extremely broad range of applications.

DeviceNet™

Prior Fieldbussystem in North America. Developed by Allen Bradley (Rockwell Automation). Based on CAN.

Fieldbus Foundation™

Bus system for use in Process Automation.

SafetyBUS

Bus systems are developed especially for safety-relevant areas. They operate either completely independently (e.g. SaftyBUS p®) or are part of an overall system (e.g. PROFIsafe, INTERBUS Safty, DeviceNet Safty etc.).

INTERBUS®

One of the first field bus systems used in the automotive industry.

European Installation Bus EIB/KNX

Bus system for Building Automation. Operates primarily with low bit rate.

Other bus systems

For dedicated bus systems or modified system solutions based on standardized systems.

QUICKFINDER BUS CABLES

Bus system	Inst. area	Application/cabling	Outer sheath material	Approval
PROFIBUS® DP (150 Ω)	indoor (UV = outdoor)	static	PVC	UL/CSA (CMX)
				UL/CSA (CMG)
				UL/CSA (PLTC-ER)
			H	UL/CSA (CM)
				UL/CSA (CMG)
			PUR	UL/CSA (CMX)
			ROBUST	
		static/flexible	PVC	
				UL/CSA (CMG)
			H	
		high flexible	PUR	UL/CSA (CMX)
				UL/CSA (CMX)
			PVC	UL/CSA (CMG)
			FRNC	UL/CSA (CMG)
		torsion	PUR	UL/CSA (CMX)
		festoon	PVC	UL/CSA (CMG)
PROFIBUS® PA (100 Ω)	indoor	static	PVC	
	indoor/outdoor	static	PVC	
				UL/CSA (CMG)
CAN CANopen (120 Ω)	indoor	static	PVC	UL/CSA (CMX)
		static/flexible	PVC	UL/CSA (PLTC-ER)
		high flexible	PUR	UL/CSA (CMX)
	outdoor	static	PVC/PE	
DeviceNet (120 Ω)	indoor (UV = outdoor)	static	FRNC	UL/CSA (CMG) Germ. Lloyd
			PVC	UL/CSA (CMG)
				UL/CSA (CMG)

Legend

*see www.lappgroup.com/products**data sheet on www.lappgroup.com/products

***second outer sheath PVC need to be removed before harnessing

****second outer sheath PE need to be removed before harnessing

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

7-W: 7-Wire: 7-stranded litz, dedicated for vibrating machine parts

CAN: Controller Area Network

FC: Fast Connect (cable construction for fast connector harnessing)

FD: high flexible (german – "Flexible Dauerbiegung")

FRNC: Flame Retardant Not Corrosive

Characteristics	Article designation	Article number	Page	Connectors see page
	UNITRONIC® BUS PB	2170220	79	100, 103, 106
	UNITRONIC® BUS PB A	2170219	79	100, 103, 106
Fast Connect, UV-resistant	UNITRONIC® BUS PB FC	2170820	79	100, 103
105 °C temperature resistant	UNITRONIC® BUS PB 105	2170630	82	100, 103, 106
PLTC-ER approval for cable trays	UNITRONIC® BUS PB TRAY	2170856	80	100, 103, 106
Fast Connect, halogen-free	UNITRONIC® BUS PB H FC	2170326	79	101
Fast Connect, halogen-free, flame retardant	UNITRONIC® BUS PB FRNC FC	2170853	85	101, 103
Fast Connect, oil resistant	UNITRONIC® BUS PB P FC	2170330	79	101
higher chemical resistance, UV-resistant	UNITRONIC® BUS PB ROBUST	2170620	81	100
Fast Connect, food & beverage industry, black, UV-resistant	UNITRONIC® BUS PB PE FC	2170333	79	101
food & beverage industry, black, UV-resistant	UNITRONIC® BUS PB PE	2170233	79	100, 103, 106
105 °C; temporary up to 120 °C	UNITRONIC® BUS PB 105 plus	2170635	83	100, 103, 106
180 °C heat resistant, -50 °C cold resistant	UNITRONIC® BUS PB HEAT 180	3031981	84	100, 103, 106
vibration resistant, UV-resistant	UNITRONIC® BUS PB 7-W A	2170824	79	100, 106
Fast Connect, vibration resistant, UV-resistant, black	UNITRONIC® BUS PB Y 7-W FC BK	2170310	90	101, 106
Fast Connect, vibration resistant, UV-resistant	UNITRONIC® BUS PB 7-W FC	2170826	79	101, 106
vibration resistant, COMBI 3 x 1 mm ²	UNITRONIC® BUS PB COMBI 7-W	2170225	79	
vibration resistant, halogen-free	UNITRONIC® BUS PB H 7-W	2170226	79	100, 106
drag chain suitable, halogen-free, oil resistant	UNITRONIC® BUS PB FD P	2170222	91	100, 106
drag chain suitable, halogen-free, oil resistant	UNITRONIC® BUS PB FD P A	2170822	92	100, 106
Fast Connect, drag chain suitable, oil resistant	UNITRONIC® BUS PB FD P FC	2170322	93	101, 106
drag chain suitable, oil resistant, COMBI 3 x 1 mm ²	UNITRONIC® BUS PB FD P COMBI	2170227	95	
drag chain suitable, oil resistant, COMBI 4 x 1.5 mm ²	UNITRONIC® BUS PB FD P HYBRID	2170495	96	
drag chain suitable, oil resistant, UV-resistant, COMBI 4 x 1.5 mm ²	UNITRONIC® BUS PB FD Y HYBRID	2170875	97	
Fast Connect, drag chain suitable, halogen-free, flame retardant	UNITRONIC® BUS PB FD FRNC FC	2170854	94	101, 106
torsion, halogen-free	UNITRONIC® BUS PB TORSION	2170332	98	100, 106
cable trolley, festoon, UV-resistant	UNITRONIC® BUS PB FESTOON	2170331	99	100, 106
UV-resistant, armoured, max. EMV-protection	UNITRONIC® BUS PB ARM	2170247	86	
UV-resistant, burial, black	UNITRONIC® BUS PB Yv	2170223	87	
UV-resistant, burial, black	UNITRONIC® BUS PB YY	2170236	88	100, 103, 106***
Fast Connect, UV-resistant, burial, black	UNITRONIC® BUS PB BURIAL FC	2170323	89	101****
Ex area, blue	UNITRONIC® BUS PA BU	2170234	*	103
UV-resistant, black	UNITRONIC® BUS PA BK	2170235		
Fast Connect, Ex area, oil resistant, UV-resistant, blue	UNITRONIC® BUS PA FC (BU)	2170334		
Fast Connect, oil resistant, UV-resistant, black	UNITRONIC® BUS PA FC (BK)	2170335		
vibration resistant	UNITRONIC® BUS CAN 1x2x0.22	2170260	112	114, 117
	UNITRONIC® BUS CAN 2x2x0.22	2170261	112	114, 117
	UNITRONIC® BUS CAN 1x2x0.34	2170263	112	114, 117
	UNITRONIC® BUS CAN 2x2x0.34	2170264	112	
	UNITRONIC® BUS CAN 1x2x0.5	2170266	112	114, 117
	UNITRONIC® BUS CAN 2x2x0.5	2170267	112	
	UNITRONIC® BUS CAN 1x2x0.75	2170269	112	
	UNITRONIC® BUS CAN 2x2x0.75	2170270	112	
PLTC-ER approval for cable tray	UNITRONIC® BUS CAN TRAY 2x2x0.34	2170857	113	
drag chain suitable, oil resistant, halogen-free	UNITRONIC® BUS CAN FD P 1x2x0.25	2170272	112	114, 117
	UNITRONIC® BUS CAN FD P 2x2x0.25	2170273	112	
	UNITRONIC® BUS CAN FD P 1x2x0.34	2170275	112	114, 117
	UNITRONIC® BUS CAN FD P 2x2x0.34	2170276	112	
	UNITRONIC® BUS CAN FD P 1x2x0.5	2170278	112	114, 117
	UNITRONIC® BUS CAN FD P 2x2x0.5	2170279	112	
UV-resistant, burial, black	UNITRONIC® BUS CAN BURIAL 2x2x0.5	2170500	*	
vibration resistant, halogen-free, UV-resistant	UNITRONIC® BUS DN THICK FRNC	2170340	110	
	UNITRONIC® BUS DN THIN FRNC	2170341	110	114, 117
vibration resistant, oil resistant, UV-resistant	UNITRONIC® BUS DN THICK Y	2170342	110	
	UNITRONIC® BUS DN THIN Y	2170343	110	114, 117
vibration resistant, UV-resistant	UNITRONIC® BUS DN THICK Y ECO	2170362	*	
	UNITRONIC® BUS DN THIN Y ECO	2170363	*	114, 117*

See continuation page 9

H: halogen-free
 LD: Long Distance
 P: PUR – Polyurethan – oil resistant
 PA: Process Automation
 PB: PROFIBUS®

PE: Polyethylen; can be used in food & beverage industry
 PROFIBUS® PA: PROFIBUS® for Process Automation, especially in hazardous areas
 ROBUST: extended use: Water, chemical resistance, soap, tenside
 vibration resistant: Vibration resistant because single core ist 7-wire stranded
 Y: PVC – Polyvinylchlorid

QUICKFINDER BUS CABLES [CONTINUATION]

Bus system	Inst. area	Application/cabling	Outer sheath material	Approval
DeviceNet (120 Ω)	indoor (UV = outdoor)	high flexible	PUR	UL/CSA (CMX)
			PVC	UL/CSA (CMG)
AS-Interface (AS-I) (70 – 140 Ω)	indoor	static/flexible	EPDM (Rubber)	
			TPE	
			PVC	UL/CSA (CMG)
		high flexible	PUR	UL (AWM)
			TPE	UL (AWM) CSA
RS485, RS422 Bus systems (100 – 120 Ω)	indoor	static	PVC	
				UL/CSA (CMX)
		high flexible	PUR	
				UL/CSA (CMX)
Fieldbus Foundation™ (100 Ω)	indoor/outdoor	static/flexible	PVC	UL/CSA (CMG)
		static	PVC	UL/CSA (CMG)
CC-Link® (110 Ω)	indoor/outdoor	static/flexible	PVC	UL (CM) CLPA
	indoor	high flexible	PUR	UL (AWM)
SafetyBUS (120 Ω)	indoor	static	H	
		high flexible	PUR	
INTERBUS (100 Ω)	indoor	static	PVC	
				UL/CSA (CMX)
			PUR	
	outdoor	static	PVC	
				UL/CSA (CMX)
European Installation Bus EIB/KNX	indoor	static	PVC	
			H	
			PVC	

Legend

7-W: 7-Wire: 7-stranded litz, dedicated for vibrating machine parts
CAN: Controller Area Network
FC: **Fast Connect** (cable construction for fast connector harnessing)
FD: high flexible (german – “Flexible Dauerbiegung”)
FRNC: Flame Retardant Not Corrosive
H: halogen-free
LD: Long Distance
P: PUR – Polyurethan – oil resistant

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PE: Polyethylen: can be used in food & beverage industry
PROFIBUS® PA: PROFIBUS® for Process Automation, especially in hazardous areas
ROBUST: extended use: Water, chemical resistance, soap, tensile
vibration resistant: Vibration resistant because single core is 7-wire stranded
Y: PVC – Polyvinylchlorid

*see www.lappgroup.com/products

***second outer sheath PVC need to be removed before harnessing

****second outer sheath PE need to be removed before harnessing

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

Characteristics	Article designation	Article number	Page	Connectors see page
drag chain suitable, halogen-free, UV-resistant	UNITRONIC® BUS DN THICK FD P	2170344	111	114, 117
	UNITRONIC® BUS DN THIN FD P	2170345	111	
drag chain suitable, oil resistant, UV-resistant	UNITRONIC® BUS DN THICK FD Y	2170346	111	114, 117
	UNITRONIC® BUS DN THIN FD Y	2170347	111	
food & beverage industry, halogen-free	UNITRONIC® BUS ASI (G) YE	2170228	76	78
	UNITRONIC® BUS ASI (G) BK	2170229	76	
Long Distance (2.5 mm²), saving of power supplies	UNITRONIC® BUS ASI LD(G) YE 2x2.5	2170371	76	
	UNITRONIC® BUS ASI LD(G) BK 2x2.5	2170372	76	
oil resistant, cold flexible	UNITRONIC® BUS ASI (TPE) YE	2170230	76	
	UNITRONIC® BUS ASI (TPE) BK	2170231	76	
	UNITRONIC® BUS ASI (TPE) RD	2170232	76	
oil resistant	UNITRONIC® BUS ASI (PVC) A YE	2170842	76	
	UNITRONIC® BUS ASI (PVC) A BK	2170843	76	
oil resistant	UNITRONIC® BUS ASI (PVC) A RD	2170844	76	
drag chain, oil resistant, flame-retardant, halogen-free	UNITRONIC® BUS ASI FD P FRNC YE	2170357	77	
	UNITRONIC® BUS ASI FD P FRNC BK	2170358	77	
drag chain, Long Distance (2.5 mm²), saving of power supplies	UNITRONIC® BUS ASI LD FD P YE 2x2.5	2170318	77	
	UNITRONIC® BUS ASI LD FD P BK 2x2.5	2170319	*	
drag chain suitable, oil resistant, 105 °C	UNITRONIC® BUS ASI FD (TPE) A YE	2170830	77	
	UNITRONIC® BUS ASI FD (TPE) A BK	2170831	77	
drag chain suitable, oil resistant	UNITRONIC® BUS LD 1x2x0.22	2170203	*	Standard Sub-D plug 9-pin
	UNITRONIC® BUS LD 2x2x0.22	2170204		
	UNITRONIC® BUS LD 3x2x0.22	2170205		
	UNITRONIC® BUS LD A 1x2x0.22	2170803		
	UNITRONIC® BUS LD FD P 1x2x0.25	2170213		
	UNITRONIC® BUS LD FD P 2x2x0.25	2170214		
	UNITRONIC® BUS LD FD P 3x2x0.25	2170215		
	UNITRONIC® BUS LD FD P A 1x2x0.25	2170813		
	UNITRONIC® BUS LD FD P A 2x2x0.26	2170814		
	UNITRONIC® BUS LD FD P A 3x2x0.27	2170815		
105 °C, UV-resistant, yellow	UNITRONIC® BUS FF 3	2170350	*	
105 °C, UV-resistant, yellow	UNITRONIC® BUS FF 2	2170352		
105 °C, UV-resistant, armoured, ++ EMV, yellow	UNITRONIC® BUS FF 3 ARM (YE)	2170351		
105 °C, UV-resistant, armoured, ++ EMV, blue	UNITRONIC® BUS FF 3 ARM (BU)	2170353		
UV-resistant	UNITRONIC® BUS CC	2170360	*	
drag chain suitable, halogen-free, oil resistant,	UNITRONIC® BUS CC FD P FRNC	2170370		
halogen-free, vibration resistant	UNITRONIC® BUS SAFETY	2170295	*	
drag chain suitable, halogen-free	UNITRONIC® BUS SAFETY FD P	2170885		
vibration resistant	UNITRONIC® BUS IBS	2170206	*	Standard Sub-D plug 9-pin
vibration resistant	UNITRONIC® BUS IBS A	2170209		
vibration resistant, COMBI 3 x 1 mm²	UNITRONIC® BUS IBS P COMBI	2170208		
drag chain suitable	UNITRONIC® BUS IBS FD P	2170216		
drag chain suitable, COMBI 3 x 1 mm²	UNITRONIC® BUS IBS FD P COMBI	2170218		
drag chain suitable, COMBI 3 x 1 mm²	UNITRONIC® BUS IBS FD P COMBI A	2170818		
vibration resistant	UNITRONIC® BUS IBS Yv	2170207		
vibration resistant	UNITRONIC® BUS IBS Yv COMBI	2170217		
	UNITRONIC® BUS EIB	2170240	*	
halogen-free	UNITRONIC® BUS EIB H	2170241		
COMBI 3 x 1.5 mm²	UNITRONIC® BUS EIB COMBI	2170242		

Adapter

AS-Interface distributor					
No.	Cable type	Distributor	Article designation	Article number	Page
41	flexible	1 x AS-I → 2-pol. M12	AB-ASI-J-Y-N-M12FS	22260800	78
42	flexible	2 x AS-I → 4-pol. M12	AB-ASI-J-Y-B-M12FS	22260801	78
43	flexible	1 x AS-I → 2 x AS-I	AB-ASI-J-Y-Y-N	22260802	78
44	flexible	1 x AS-I → 2-pol. M12 1m	AB-ASI-J-Y-N-PUR-1.0-M12FS	22260803	78
45	flexible	1 x AS-I → 2-pol. M12 2m	AB-ASI-J-Y-N-PUR-2.0-M12FS	22260804	78
46	flexible	2 x AS-I → 4-pol. M12 1m	AB-ASI-J-Y-B-PUR-1.0-M12FS	22260805	78
47	flexible	2 x AS-I → 4-pol. M12 2m	AB-ASI-J-Y-B-PUR-2.0-M12FS	22260806	78





PROFIBUS® FAST CONNECT – QUICK AND EASY SYSTEM INSTALLATION!

Personnel expenses represent a significant cost factor in machines or plants. The cabling has a notable share in this. With the Fast Connect system, the amount of time needed to perform this work can be drastically reduced. This is possible through perfectly matched components:



FC STRIP stripping tool
article number 21124030



1. Stripping with the FC STRIP stripping tool

- The special structure of the Fast Connect cables with an inner sheath makes it possible to use the Fast Connect STRIP stripping tool
- Reduction of connection times by removing outer sheath and braided screen in just one step
- Specification of the stripping length is not necessary
- Prevention of short circuits between screening and core due to preset stripping lengths

2. Contacting the cores

- Flexibility due to assembly of the optimal cable length on site
- Prevention of incorrect connections with transparent contact lid with imprinted colour coding
- Contact assignment can be inspected when closed
- Time and cost savings due to fast and simple connector assembly

3. Fixing and securing

- When the lid is closed, the precision blades create the contact with the cores
- The cable is automatically strain relieved
- A standard screwdriver can be used, no special tool needed

ALL COMPONENTS FROM ONE SOURCE

CONNECTORS



Advantages/benefits

- New innovative insulation displacement terminals suitable for solid and flexible conductors
- Adjustable terminating resistor is integrated
- Improved EMC features due to metallised housing
- UL-certified (File E331560)
- Fully compatible with market standard
- Versions with additional programming and diagnostics interface (PG-port) are available

Properties

- For PROFIBUS® FC standard cables, Ø 0.64 mm
 - Cable outer diameter 5 to 8 mm
 - Operating temperature: 0 °C to + 60 °C
- See page 101

Article number	Article designation	PG	Core type	Dimensions	Diagnostic LEDs	Page
21700511	ED-PB-35-FC	no	solid or 7-wire	95 x 70 x 17 mm	no	101
21700513	ED-PB-35-PG-FC	yes	solid or 7-wire	95 x 70 x 17 mm	no	101
21700502	ED-PB-90-FC	no	solid or 7-wire	72 x 40 x 17 mm	no	101
21700501	ED-PB-90-PG-FC	yes	solid or 7-wire	72 x 40 x 17 mm	no	101
21700547	ED-PB-90-LED-FC	no	solid or 7-wire	72 x 40 x 17 mm	yes	101
21700546	ED-PB-90-PG-LED-FC	yes	solid or 7-wire	72 x 40 x 17 mm	yes	101
21700544	ED-PB-180-FC	no	solid or 7-wire	70 x 35 x 17 mm	no	101

CABLES



Advantages/benefits

- High resistance against electromagnetic interference
- UL- approvals available
- UNITRONIC® PB FC cables can also be connected to EPIC® DATA connectors with screw connection

Properties

- The cables comply with the requirements of the PROFIBUS® User Organization (PNO)
 - Double shielding with copper braid and plastic-laminated aluminum foil
- See page 79

	Article number	Article designation	Approval	Sheath material	Temperature fixed installation	Feature	Page
Fixed installation	2170820	UNITRONIC® BUS PB FC	UL/CSA CMG	PVC, violet	-40 °C to +80 °C	–	79
	2170326	UNITRONIC® BUS PB-H FC	UL/CSA CMG	halogen-free, violet	-25 °C to +70 °C	halogen-free	79
	2170330	UNITRONIC® BUS PB P FC	UL/CSA CMX	PUR, violet	-40 °C to +70 °C	abrasion-resistant sheath	79
	2170333	UNITRONIC® BUS PB PE FC	–	PE, black	-40 °C to +60 °C	for the food industry	79
	2170853	UNITRONIC® BUS PB FRNC FC	UL/CSA CMG	FRNC, violet	-30 °C to +80 °C	halogen-free/less fumes	85
	2170323	UNITRONIC® BUS PB BURIAL FC	–	PVC/PE, black	-40 °C to +60 °C	suitable for direct burial UV-resistant	89
Flexible installation	2170826	UNITRONIC® BUS PB 7-W FC	UL/CSA CMG	PVC, violet	-40 °C to +80 °C	–	79
	2170310	UNITRONIC® BUS PB Y 7-W FC BK	–	PVC, black	-40 °C to +80 °C	outdoors, UV-resistant	90
Highly flexible installation	2170322	UNITRONIC® BUS PB FD P FC	UL/CSA CMX	PUR, violet	-40 °C to +80 °C	suitable for drag chains	93
	2170854	UNITRONIC® BUS PB FD FRNC FC	UL/CSA CMX	FRNC, violet	-40 °C to +80 °C	suitable for drag chains halogen-free/less fumes	94

TOOLS



Advantages/benefits

- Outer sheath and copper braid removing in just one step
- Prevents damage on the cable
- Adaptation of almost all Fast Connect cables with positioning screws

Properties

- Two step stripping tool for Fast Connect cables
- For outer diameter 2.5 – 8.0 mm

Art. no.	Article designation
21124030	FC STRIP with blade
21124040	FC STRIP without blade
21124041	FC STRIP blade



INTRODUCTION

Time consuming and costly wiring with terminal blocks and decentralized cabinets is the past. Use UNITRONIC® SENSOR for your sensor/actuator wiring.

UNITRONIC® SENSOR is consistently focused on the modular system of proven M8 and M12 connections. Easy integration into the machine concept through compact dimensions of the components. The signals from the sensors and actuators are collected via trunk lines and transferred to the controller. Timesaving installation and maintenance in troubleshooting. Errors in the signal transmission can be diagnosed by the LEDs on sockets and distribution boxes. Particularly in large machinery and equipment, which will be dismantled again before delivery to the end-customer,

the modular connector system pays off. Instead of having to reassemble everything – it's only putting together and tightening the M8 or M12 threads.

The system is characterized by a high reliability even under difficult environmental conditions. The high demands on material are validated through continuous testing. For example, the several million drag chain cycles of a cable are tested in Lapp's own test center in Stuttgart. Various chemical or vibration and shock resistances as well as the IP protection classes are tested in our own laboratory.



You can find the right sensor/actuator cordsets with our assembly finder on our website:
www.lappgroup.com/assemblyfinder



Sensor/actuator boxes

In standardized connection systems, sensor/actuator boxes enable connection with all commonly used sensors and actuators and are the solution for decentralizing small-scale I/O. Regardless of whether the installation is to be performed on profiles, on even surfaces or under challenging conditions, the assembly concept ensures flexibility and reduces installation costs. The devices enable two assembly directions and are suitable for all uses. The allocation of the connectors also ensures that assembly time is kept to a minimum even under challenging conditions.



Sensor/actuator cables

Do you need to perform quick cabling of sensors and actuators in the field? Not a problem – thanks to our comprehensive range of overmoulded cables with M8, M12 and valve connectors. Signal statuses can be monitored with ease by means of the sensor/actuator cable designs featuring LEDs. Screened cables comply with the requirements concerning increased EMC compatibility.



Sensor/actuator flush-type connectors and field mountable connectors

For the purpose of connecting devices, we recommend M12 flush-type connectors with integrated stranded wire for PCB connection. Use field mountable connectors for rapid configuration of individual cable lengths for M8 and M12 sensor/actuator cables. Whether you need a screw connection or a fast connection, we will deliver according to your requirements.



FIELD MOUNTABLE CONNECTORS [M8]

Connector M8   Meterware for M8							UNITRONIC® SENSOR			
							Article designation		high flexible application	
							Insulation material		PP/PUR	PP/PUR
							Dimension No. of cores x mm²		3x0.25	4x0.25
							Outer diameter (mm)		4.4	4.7
							Page		122	122
Number of contacts	Plug	Design	Connection type	Ø (mm)¹	U (V)²	OD (mm)³	Article number	7038883	7038884	

3-pin	Plug	Straight	Screw	0.14 – 0.5	60	3.5 – 5	22260120	X	
			IDC	0.08 – 0.25	30	2.5 – 5	22260993	X	
				0.25 – 0.5	60		22260985	X	
		Angled	Piercing	0.14 – 0.38	60	3 – 5	22260122	X	
						3.5 – 5	22262110	X	
			Screw	0.14 – 0.5	60	3.5 – 5.5	22262025	X	
	Socket	Straight	Screw	0.14 – 0.5	60	3.5 – 5	22260125	X	
			IDC	0.08 – 0.25		2.5 – 5	22260994	X	
				0.25 – 0.5			22260986	X	
		Angled	Piercing	0.14 – 0.38		3 – 5	22260124	X	
						3.5 – 5	22262112	X	
			Screw	0.14 – 0.5		3.5 – 5.5	22262026	X	

4-pin	Plug	Straight	Screw	0.14 – 0.5	30	3.5 – 5	22260121		X
			IDC	0.08 – 0.25		2.5 – 5	22260043		X
				0.25 – 0.5			22260044		X
		Angled	Piercing	0.14 – 0.38		3 – 5	22260123		X
							22262111		X
			Screw	0.14 – 0.5		3.5 – 5	22262027		X
	Socket	Straight	Screw	0.14 – 0.5	30	3.5 – 5	22260126		X
			IDC	0.08 – 0.25		2.5 – 5	22260045		X
				0.25 – 0.5			22260046		X
		Angled	Piercing	0.14 – 0.38		3 – 5	22260119		X
				0.14 – 0.5		3.5 – 5	22262113		X
			Screw	0.14 – 0.5		3.5 – 5.5	22262028		X

Legend

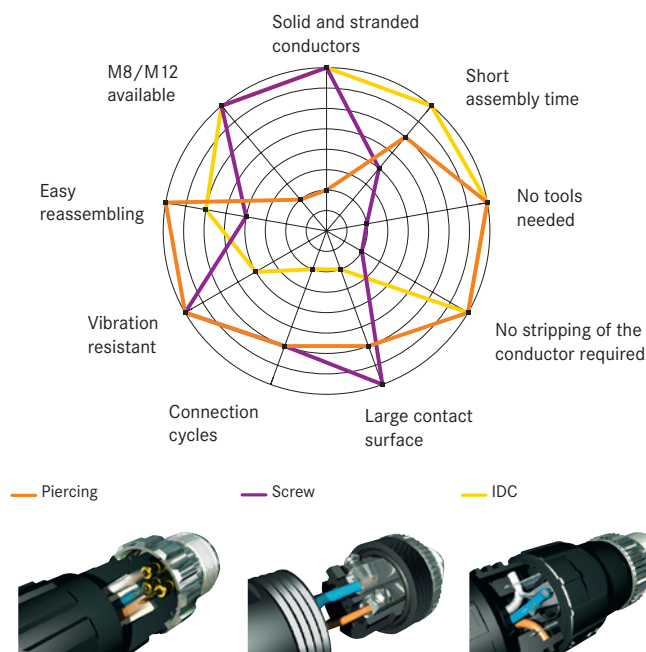
¹ Cross section

² Rated current

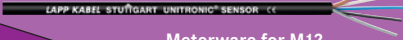
³ Feasible outer diameter

TECHNICAL DATA: M8

	M8	
Number of contacts	3	4
Coding	A-Standard	
Rated current	4 A	
Material contact	CuSn	
Protection class		
– Screw	IP67	
– IDC	IP65/IP67	
– Piercing	IP68	
Temperature range (Plug/Socket)		
– Screw	-40 °C to +85 °C	
– IDC	-25 °C to +85 °C	
– Piercing	-25 °C to +85 °C	
ETIM 5.0 Class	EC002062	



FIELD MOUNTABLE CONNECTORS [M12]

Connector M12  Meterware for M12 							Article designation	UNITRONIC® SENSOR				
								flexible applications				
							LifYY	LifYY	LifY11Y	LifY11Y	DESINA®	
							Insulation material	PVC/PVC	PVC/PVC	PVC/PUR	PVC/PUR	PVC/PUR
Dimension No. of cores x mm²	3x0.34	4x0.34	4x0.34	5x0.25	4x0.34							
Outer diameter (mm)	4.8	4.8	4.8	4.9	5.2							
Page	121	121	121	121	121							
Number of contacts	Plug	Design	Connection type	ø (mm²) ¹	U (V) ²	OD (mm) ³	Article number	7038859	7038860	7038861	7038862	0040434
4-pin	Plug	Straight	Screw	0.25 – 0.75	250	4 – 6	22260649	X	X	X		X
						6 – 8	22260995*					
		IDC	0.14 – 0.34	125	3.5 – 6	22260132	X	X	X		X	
			0.34 – 0.75	250	4 – 8	22260134	X	X	X		X	
	Socket	Angled	Screw	0.25 – 0.75	250	4 – 8	22260647	X	X	X		X
						4 – 8	22260640	X	X	X		X
		Straight	Screw	0.25 – 0.75	250	4 – 8	22260641*					
						6 – 8	22260641*					
		IDC	0.14 – 0.34	125	3.5 – 6	22260131	X	X	X		X	
			0.34 – 0.75	250	4 – 8	22260133	X	X	X		X	
Angled	Screw	0.25 – 0.75	250	4 – 8	22260636	X	X	X	X	X		
5-pin	Plug	Straight	Screw	0.25 – 0.75	60	4 – 8	22260129	X	X	X	X	X
						6 – 8	22260651*					
		Straight, SKINTOP®				4 – 6	22260996*					
							22260130	X	X	X	X	X
		Angled				6 – 8	22260648*					
							22262023*					
		Straight, shielded				4 – 6	22260135*					
							22262108	X	X	X	X	X
	Socket	Straight	Screw	0.25 – 0.75	60	4 – 6	22260127	X	X	X	X	X
						6 – 8	22260644*					
		Straight, SKINTOP®				4 – 6	22260997*					
							22260128	X	X	X	X	X
		Angled				6 – 8	22260638*					
							22262024*					
		Straight, shielded				4 – 6	22260136*					
							22262109	X	X	X	X	X
Angled, shielded												
8-pin	Plug	Straight, shielded	Screw	0.25 – 0.75	30	6 – 8	22260825*					
							22260826*					

Legend

¹ Cross section

² Rated current

³ Feasible outer diameter

* Cables are available upon request.

Alternatively we suggest to use connectors with a clamping range of 4 – 6 mm.

TECHNICAL DATA: M12

	M12		
Number of contacts	4	5	8
Coding	A-Standard		
Rated current	2 A		
Material contact	CuSn		
Protection class			
– Screw	IP67		
– IDC	IP65/IP67		
– Piercing	IP68		

	M12
Temperature range (Plug/Socket)	
– Screw	-40°C to +85°C
– IDC	-25°C to +85°C
– Piercing	-25°C to +85°C
ETIM 5.0 Class	EC002062

FIELD MOUNTABLE CONNECTORS [M12]

Connector M12



Meterware for M12 suitable for drag chains

Number of contacts	Plug	Design	Connection type	∅ (mm) ¹	U (V) ²	OD (mm) ³
4-pin	Plug	Straight	Screw	0.25 – 0.75	250	4 – 6
			IDC	0.14 – 0.34	125	6 – 8
		Angled	Screw	0.34 – 0.75	250	3.5 – 6
			IDC	0.25 – 0.75	250	4 – 8
	Socket	Straight	Screw	0.25 – 0.75	250	4 – 8
			IDC	0.14 – 0.34	125	6 – 8
		Angled	Screw	0.34 – 0.75	250	3.5 – 6
			IDC	0.25 – 0.75	250	4 – 8
5-pin	Plug	Straight	Screw	0.25 – 0.75	60	4 – 8
		Straight, SKINTOP®				6 – 8
		Angled				4 – 6
		Angled, SKINTOP®				6 – 8
		Straight, shielded				4 – 6
		Angled, shielded				4 – 6
	Socket	Straight	Screw	0.25 – 0.75	60	4 – 6
		Straight, SKINTOP®				6 – 8
		Angled				4 – 6
		Angled, SKINTOP®				6 – 8
		Straight, shielded				4 – 6
		Angled, shielded				4 – 6
8-pin	Plug	Straight, shielded	Screw	0.25 – 0.75	30	6 – 8
	Socket	Straight, shielded	Screw	0.25 – 0.75	30	6 – 8

Legend

- ¹ Cross section
- ² Rated current
- ³ Feasible outer diameter



Article designation	UNITRONIC® SENSOR FD					UNITRONIC® SENSOR FD shielded		
	high flexible application					high flexible application		
	Lif9Y11Y	Li9fY11Y	Lif9Y11Y	Lif9Y11Y	Lif9Y11Y	Lif9YC11Y	Li9fYC11Y	Lif9YC11Y
Insulation material	PP/PUR	PP/PUR	PP/PUR	PP/PUR	PP/PUR	PP/PUR	PP/PUR	PP/PUR
Dimension No. of cores x mm²	3x0.34	4x0.34	5x0.25	5x0.34	8x0.25	3x0.34	4x0.34	5x0.34
Outer diameter (mm)	4.6	4.7	4.7	5.1	5.9	4.3	4.6	5.0
Page	122	122	122	122	122	122	122	122
Article number	7038864	7038865	7038867	7038866	7038868	7038885	7038886	7038887
22260649	X	X						
22260995								
22260132	X	X						
22260134	X	X						
22260647	X	X						
22260640	X	X						
22260641								
22260131	X	X						
22260133	X	X						
22260636	X	X						
22260129	X	X						
22260651								
22260996								
22260130	X	X	X	X		X	X	X
22260648								
22262023								
22260135								
22262108	X	X	X	X		X	X	X
22260127	X	X	X	X				
22260644								
22260997								
22260128	X	X	X	X				
22260638								
22262024								
22260136								
22262109	X	X	X	X		X	X	X
22260825								
22260826								



TECHNICAL DATA: M12

	M12		
Number of contacts	4	5	8
Coding	A-Standard		
Rated current			2 A
Material contact	CuSn		
Protection class			
- Screw	IP67		
- IDC	IP65/IP67		
- Piercing	IP68		
Temperature range (Plug/Socket)			
- Screw	-40 °C to +85 °C		
- IDC	-25 °C to +85 °C		
- Piercing	-25 °C to +85 °C		
ETIM 5.0 Class	EC002062		

M8 CORDSETS, A-CODED [3-PIN]

		 M8 socket straight		 M8 socket angled		 M8 socket angled, 2 LEDs	
Free conductor end		Article number					
M8, 3-pin, PUR	Length (m)	Article number					
	2	-	22260202	22260203	22260275		
	5	-	22260200	22260201	22260276		
	10	-	22260219	22260220	22260277		
 	0.3		22260206	22260210	22260214		
	0.6		22260207	22260211	22260215		
	1		22260208	22260212	22260216		
	2	22260204	22260209	22260213	22260217		
	5	22260205	22260938*				
	10	22260218	22260935*				
 	2	22260053					
	5	22260987					
	10	22260055					

* Available upon request

TECHNICAL DATA: M8, 3-PIN

	M8	M8 with LED
Number of contacts	3	3
Rated current (V)	60	24
Rated current	4 A	
Protection class	IP65/IP67/IP68	
Material contact	CuSn	
Material contact surface	Ni/Au	
Material gripping body	TPU, flame-retardant, self-extinguishing	
Material knurl M8	Zinc die-cast, nickel plated	
Core cross-section (mm²)	0.25	
Colour code	bn (1), bu (3), bk (4)	
Material outer sheath	PUR	
Colour outer sheath	black	
Suitable for drag chains	Yes	
Minimum bending radius		
– Fixed installation	5 x Outer diameter	
– Occasional flexing	10 x Outer diameter	
Temperature range		
– Plug/Socket	-25 °C to +90 °C	
– Fixed installation	-40 °C to +80 °C	
– Occasional flexing	-25 °C to +80 °C	
Flame retardant acc.	UL 1581 FT-2	
Halogen free acc.	DIN VDE 0472	
Approvals	UL: E249137	
ETIM 5.0 Class	EC001855	



M8 CORDSETS, A-CODED [4-PIN]

							
Free conductor end							
		M8 socket straight		M8 socket angled		M8 socket angled, 2 LEDs	
M8, 4-pin, PUR		Length (m)	Article number				
	2	-	22260309	22260311			
	5	-	22260310	22260312	22262076*		
	10	-	22260317	22260319			
 	0.3		22260313	22260059			
	0.6		22260314	22260060			
	1		22260315	22260061			
	2	22260300	22260316	22260062			
	5	22260308	22260923*				
	10	22260318	22260922*				
 	2	22260056					
	5	22260057					
	10	22260058					

* Available upon request



TECHNICAL DATA: M8, 4-PIN

	M8
Number of contacts	4
Rated current (V)	30
Rated current	4 A
Protection class	IP65/IP67/IP68
Material contact	CuSn
Material contact surface	Ni/Au
Material gripping body	TPU, flame-retardant, self-extinguishing
Material knurl M8	Zinc die-cast, nickel plated
Core cross-section (mm²)	0.25
Colour code	bn (1), wh (2), bu (3), bk (4)
Material outer sheath	PUR
Colour outer sheath	black
Suitable for drag chains	Yes
Minimum bending radius	
- Fixed installation	5 x Outer diameter
- Occasional flexing	10 x Outer diameter
Temperature range	
- Plug/Socket	-25 °C to +90 °C
- Fixed installation	-40 °C to +80 °C
- Occasional flexing	-25 °C to +80 °C
Flame retardant acc.	UL 1581 FT-2
Halogen free acc.	DIN VDE 0472
Approvals	UL: E249137
ETIM 5.0 Class	EC001855

M12 CORDSETS, A-CODED [3-PIN]

									
Free conductor end		M12 socket straight		M12 socket angled		M12 socket straight, 2 LEDs		M12 socket angled, 2 LEDs	
M12, 3-pin, PUR		Length (m)	Article number						
	2	-	22260257	22260258	22260252	22260253			
	5	-	22260250	22260259	22260265	22260254			
	10	-	22260251	22260260	22260266	22260255			
 	0.3		22260233	22260237		22260261			
	0.6		22260234	22260238		22260262			
	1		22260235	22260239		22260263			
	2	22260221	22260236	22260240		22260264			
	5	22260222				22260667*			
	10	22260249	22260920*						
 	2	22260223							
	5	22260224							
	10	22260256							

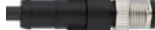
* Available upon request

TECHNICAL DATA: M12, 3-PIN

	M12	M12 with LED
Rated current (V)	250	24
Rated current	4 A	
Protection class	IP65/IP67/IP68	
Material contact	CuSn	
Material contact surface	Ni/Au	
Material gripping body	TPU, flame-retardant, self- extinguishing	
Material knurl M12	Zinc die-cast, nickel plated	
Core cross-section (mm²)	0.34	
Colour code	bn (1), bu (3), bk (4)	
Material outer sheath	PUR	
Colour outer sheath	black	
Suitable for drag chains	Yes	
Minimum bending radius		
– Fixed installation	5 x Outer diameter	
– Occasional flexing	10 x Outer diameter	
Temperature range		
– Plug/Socket	-25 °C to +90 °C	
– Fixed installation	-40 °C to +80 °C	
– Occasional flexing	-25 °C to +80 °C	
Flame retardant acc.	UL 1581 FT-2	
Halogen free acc.	DIN VDE 0472	
Approvals	UL: E249137	
ETIM 5.0 Class	EC001855	



M12 CORDSETS, A-CODED [4-PIN]

									
Free conductor end		M12 socket straight		M12 socket angled		M12 socket straight, 2 LEDs		M12 socket angled, 3 LEDs	
M12, 4-pin, PUR	Length (m)	Article number							
	2	-	22260322	22260324	22260344	22260326			
	5	-	22260323	22260325	22260345	22260327			
	10	-	22260343	22260341	22260346	22260340			
 	0.3		22260328	22260332		22260336			
	0.6		22260329	22260333		22260337			
	1		22260330	22260334		22260338			
	2	22260320	22260331	22260335		22260339			
	5	22260321	22260702*	22262066*					
	10	22260342	22260710*	22260851*					
 	0.3		22260304						
	0.6		22260305						
	1		22260306	22260965*					
	2	22260301	22260307	22260693*					
	5	22260302							
	10	22260303							

* Available upon request

TECHNICAL DATA: M12, 4-PIN

	M12	M12 with LED
Rated current (V)	250	24
Rated current	4 A	
Protection class	IP65/IP67/IP68	
Material contact	CuSn	
Material contact surface	Ni/Au	
Material gripping body	TPU, flame-retardant, self-extinguishing	
Material knurl M12	Zinc die-cast, nickel plated	
Core cross-section (mm²)	0.34	
Colour code	bn (1), wh (2), bu (3), bk (4)	
Material outer sheath	PUR	
Colour outer sheath	black	
Suitable for drag chains	Yes	

	M12	M12 with LED
Minimum bending radius		
- Fixed installation	5 x Outer diameter	
- Occasional flexing	10 x Outer diameter	
Temperature range		
- Plug/Socket	-25 °C to +90 °C	
- Fixed installation	-40 °C to +80 °C	
- Occasional flexing	-25 °C to +80 °C	
Flame retardant acc.	UL 1581 FT-2	
Halogen free acc.	DIN VDE 0472	
Approvals	UL: E249137	
ETIM 5.0 Class	EC001855	

M12 CORDSETS, A-CODED [5-PIN]

							
Free conductor end		M12 socket straight		M12 socket angled		M12 socket angled, 3 LEDs	
M12, 5-pin, PUR		Length (m)	Article number				
	2	-	22260404	22260406	22260408		
	5	-	22260405	22260407	22260409		
	10	-	22260415	22260418	22260416		
 	0.3		22260410	22260063	22260067		
	0.6		22260411	22260064	22260068		
	1		22260412	22260065	22260069		
	2	22260400	22260413	22260066	22260070		
	5	22260401	22260724*				
	10	22260414	22260723*				
 	2	22260402					
	5	22260403					
	10	22260417					

* Available upon request

TECHNICAL DATA: M12, 5-PIN

	M12	M12 with LED
Rated current (V)	60	24
Rated current	4 A	
Protection class	IP65/IP67/IP68	
Material contact	CuSn	
Material contact surface	Ni/Au	
Material gripping body	TPU, flame-retardant, self-extinguishing	
Material knurl M12	Zinc die-cast, nickel plated	
Core cross-section (mm²)	0.34	
Colour code	bn (1), wh (2), bu (3), bk (4), gn/ye (5)	
Material outer sheath	PUR	
Colour outer sheath	black	
Suitable for drag chains	Yes	
Minimum bending radius		
- Fixed installation	5 x Outer diameter	
- Occasional flexing	10 x Outer diameter	
Temperature range		
- Plug/Socket	-25 °C to +90 °C	
- Fixed installation	-40 °C to +80 °C	
- Occasional flexing	-25 °C to +80 °C	
Flame retardant acc.	UL 1581 FT-2	
Halogen free acc.	DIN VDE 0472	
Approvals	UL: E249141	
ETIM 5.0 Class	EC001855	



M12 CORDSETS, A-CODED [8-PIN]



Free
conductor end



M12 socket
straight



M12 socket
angled

M12, 8-pin, PUR	Length (m)	Article number		
Free conductor end 	2	-	22260726	22260141
	5	-	22260728	22260615
	10	-	22260729	22260616
M12 plug straight  	0.3		22260097	22260137
	0.6		22260098	22260138
	1		22260099	22260139
	2	22260091	22260042	22260140
	5	22260092		
	10	22260093		
M12 plug angled  	2	22260094		
	5	22260095		
	10	22260096		



TECHNICAL DATA: M12, 8-PIN

	M12
Rated current (V)	30
Rated current	2 A
Protection class	IP65/IP67/IP74
Material contact	CuSn
Material contact surface	Ni/Au
Material gripping body	TPU, flame-retardant, self-extinguishing
Material knurl M12	Zinc die-cast, nickel plated
Core cross-section (mm²)	0.25
Colour code	wh (1), bn (2), gn (3), ye (4), gy (5), pk (6), bu (7), rd (8)
Material outer sheath	PUR
Colour outer sheath	black
Suitable for drag chains	Yes
Minimum bending radius	
- Fixed installation	5 x Outer diameter
- Occasional flexing	10 x Outer diameter
Temperature range	
- Plug/Socket	-25 °C to +90 °C
- Fixed installation	-40 °C to +80 °C
- Occasional flexing	-25 °C to +80 °C
Flame retardant acc.	UL 1581 FT-2
Halogen free acc.	DIN VDE 0472
Approvals	UL: E249143
ETIM 5.0 Class	EC001855

CORDSETS M8 ON M12, A-CODED [3-PIN]



M12 socket
straight



M12 socket
angled

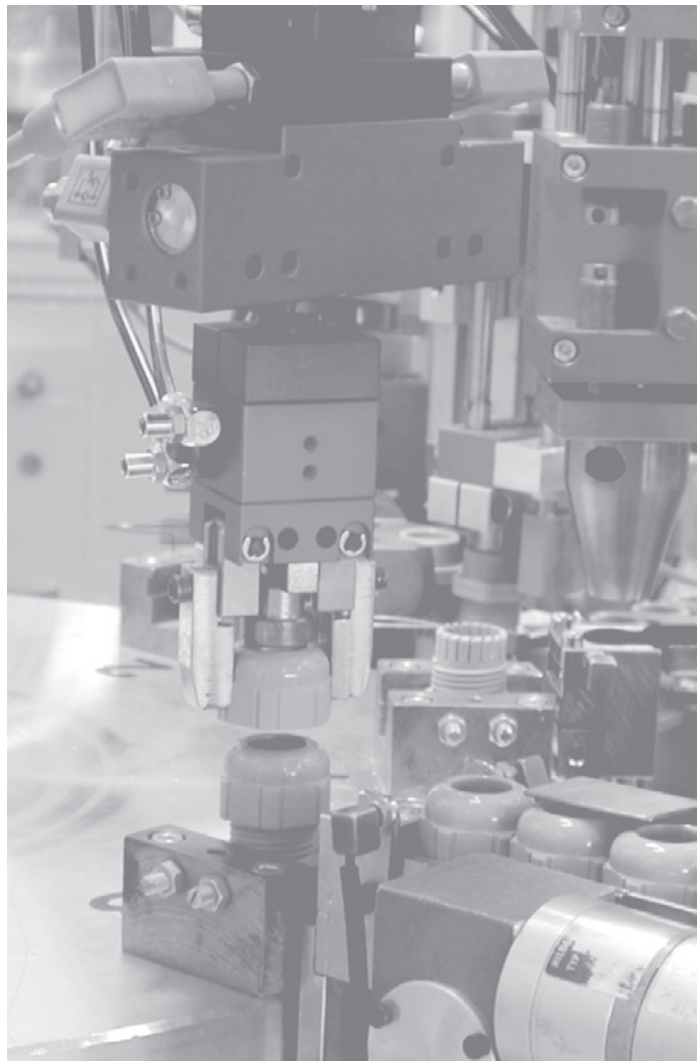


M12 socket
angled, 2 LEDs

M8 on M12, 3-pin, PUR	Length (m)	Article number		
 	0.3	22260241	22260245	22260271
	0.6	22260242	22260246	22260272
	1	22260243	22260247	22260273
	2	22260244	22260248	22260274

TECHNICAL DATA: M8 ON M12

	M8 on M12	M8 on M12 LED
Number of contacts	3	
Core cross-section (mm²)	0.25	
Rated current (V)	60	24
Rated current	4 A	
Material contact	CuSn	
Material contact surface	Ni/Au	
Material gripping body	TPU, flame-retardant, self-extinguishing	
Material knurl	Zinc die-cast, nickel plated	
Core cross-section (mm²)	0.25	
Material outer sheath	PUR	
Colour outer sheath	black	
Suitable for drag chains	Yes	
Minimum bending radius		
– Fixed installation	5 x Outer diameter	
– Occasional flexing	10 x Outer diameter	
Approvals	UL: E249137	
Protection class	IP65/IP67/IP68	
Temperature range		
– Plug/Socket	-25 °C to +90 °C	
– Fixed installation	-40 °C to +80 °C	
– Occasional flexing	-25 °C to +80 °C	
Colour code	bn (1), bu (3), bk (4)	
ETIM 5.0 Class	EC001855	
Flame retardant acc.	UL 1581 FT-2	
Halogen free acc.	DIN VDE 0472	



CORDSETS M12 ON M8, A-CODED [3-/4-PIN]

M8 socket
straightM8 socket
angledM8 socket
angled, 2 LEDsM8 socket
straight (4-pin)

M12 on M8, 3-/4-pin, PUR	Length (m)	Article number			
M12 plug straight  	0.3	22260225	22260229	22260267	
	0.6	22260226	22260230	22260268	
	1	22260227	22260231	22260269	
	2	22260228	22260232	22260270	
M12 plug straight (4-pin)  	0.3				22260347
	0.6				22260349
	1				22260350
	2				22260348



TECHNICAL DATA: M12 ON M8

	M12 on M8	M12 on M8 with LED	M12 on M8
Number of contacts	3	3	4
Rated current (V)	60	24	30
Rated current	4 A		
Protection class	IP65/IP67/IP68		
Material contact	CuSn		
Material contact surface	Ni/Au		
Material gripping body	TPU, flame-retardant, self-extinguishing		
Material knurl	Zinc die-cast, nickel plated		
Core cross-section (mm²)	0.25		
Colour code	bn (1), bu (3), bk (4)		bn (1), wh (2), bu (3), bk (4)
Material outer sheath	PUR		
Colour outer sheath	black		
Suitable for drag chains	Yes		
Minimum bending radius			
- Fixed installation	5 x Outer diameter		
- Occasional flexing	10 x Outer diameter		
Temperature range			
- Plug/Socket	-25 °C to +90 °C		
- Fixed installation	-40 °C to +80 °C		
- Occasional flexing	-25 °C to +80 °C		
Flame retardant acc.	UL 1581 FT-2		
Halogen free acc.	DIN VDE 0472		
Approvals	UL: E249137		
ETIM 5.0 Class	EC001855		

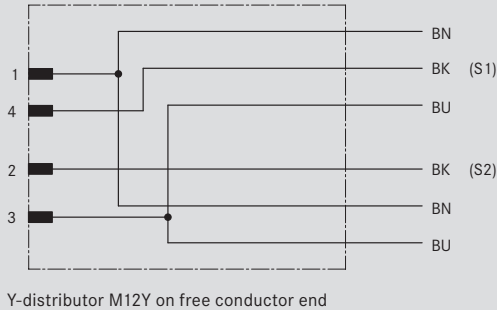
Y-DISTRIBUTOR, A-CODED [M12Y 3-PIN]



free conductor end

M12Y 3-pin, 3 x 0.34 mm ²		Length (m)	Article number
 		2	22260500
		5	22260513
		10	22260526

CIRCUIT DIAGRAM



Y-distributor M12Y on free conductor end

Y-DISTRIBUTOR, A-CODED [M12Y 3-PIN]



2 x M8 socket straight



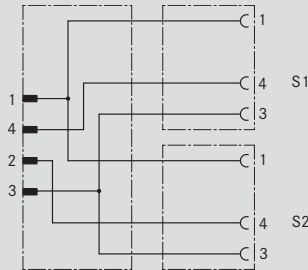
2 x M8 socket angled



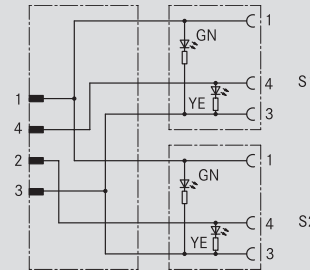
2 x M8 socket angled, 2 LEDs

M12Y 3-pin , 3 x 0.25 mm ²		Length (m)	Article number		
 		0.3	22260514	22260518	22260522
		0.6	22260515	22260519	22260523
		1	22260516	22260520	22260524
		2	22260517	22260521	22260525

CIRCUIT DIAGRAM



Y-distributor M12Y on M8

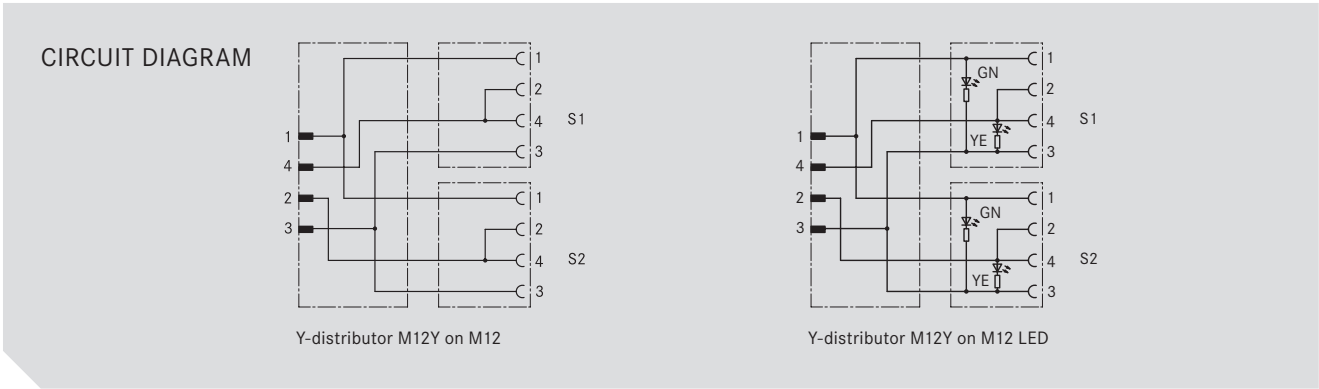


Y-distributor M12Y on M8 LED

Y-DISTRIBUTOR, A-CODED [M12Y 3-PIN]

		
		
2 x M12 socket straight	2 x M12 socket angled	2 x M12 socket angled, 2 LEDs

M12Y 3-pin , 3 x 0.34 mm ²	Length (m)	Article number		
 	0.3	22260501	22260505	22260509
	0.6	22260502	22260506	22260510
	1	22260503	22260507	22260511
	2	22260504	22260508	22260512



TECHNICAL DATA: M12Y

	on free conductor end	on 2 x M8	on 2 x M12
Rated current (V)	250	60/24 (LED)	250/24 (LED)
Rated current	4 A		
Protection class	IP65/IP67/IP68		
Material contact	CuSn		
Material contact surface	Ni/Au		
Material gripping body	TPU, flame-retardant, self-extinguishing		
Material knurl	Zinc die-cast, nickel plated		
Colour code	bn (1), bu (3), bk (4)		
Material outer sheath	PUR		
Colour outer sheath	black		
Suitable for drag chains	Yes		
Minimum bending radius			
- Fixed installation	5 x Outer diameter		
- Occasional flexing	10 x Outer diameter		
Approvals	UL: E249137		
Temperature range			
- Plug/Socket	-25 °C to +90 °C		
- Fixed installation	-40 °C to +80 °C		
- Occasional flexing	-25 °C to +80 °C		
ETIM 5.0 Class	EC001855		

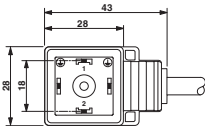
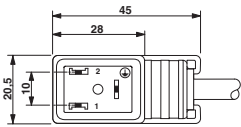
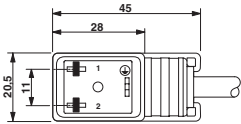
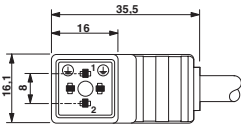
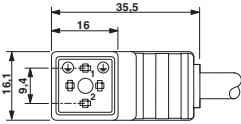
VALVE CONNECTOR CORDSETS [3-PIN]



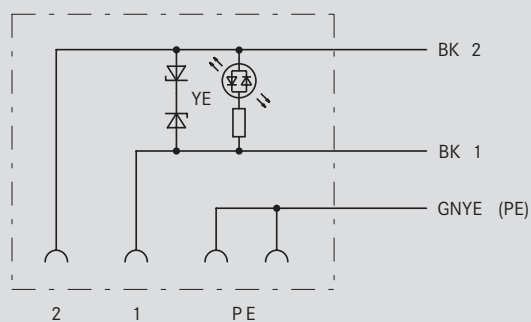
free conductor end



M12 plug, A-coded

Design		Length (m)	Article number	Length (m)	Article number
Type A Z-Diode 1 LED		2.0	22260584	0.3	22260550
		5.0	22260576	0.6	22260551
		10.0	22260577	1.0	22260552
				2.0	22260553
Type B Z-Diode 1 LED		2.0	22260585	0.3	22260558
		5.0	22260578	0.6	22260559
		10.0	22260579	1.0	22260560
				2.0	22260561
Type BI Z-Diode 1 LED		2.0	22260586	0.3	22260554
		5.0	22260580	0.6	22260555
		10.0	22260581	1.0	22260556
				2.0	22260557
Type C Z-Diode 1 LED		2.0	22260587	0.3	22260566
		5.0	22260582	0.6	22260567
		10.0	22260583	1.0	22260568
				2.0	22260569
Type CI Z-Diode 1 LED		2.0	22260588		
		5.0	22260574		
		10.0	22260575		

CIRCUIT DIAGRAM



Valve connector 3-pin

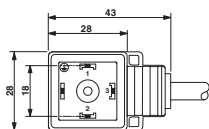
VALVE CONNECTOR CORDSETS [5-PIN]



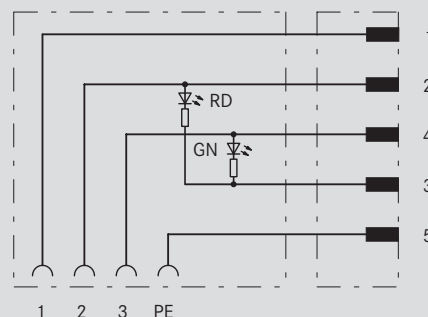
free conductor end

M12 plug, A-coded

Design	Length (m)	Article number	Length (m)	Article number
Type A for pressure switch 2 LEDs	2.0	22260589	0.3	22260573
	5.0	22260590	0.6	22260572
	10.0	22260591	1.0	22260571
			2.0	22260570



CIRCUIT DIAGRAM



Valve connector 5-pin (type AD) on M12



TECHNICAL DATA

Valve connectors	free conductor end	M12
Rated current (V)		24
Rated current		4 A
Protection class		IP65/IP67
Material contact		CuSn
Material gripping body M12		TPU, flame-retardant, self-extinguishing
Material knurl M12		Zinc die-cast, nickel plated
Core cross-section (mm²)		0.5
Colour code		black with white numbers and green/yellow
Material outer sheath		PUR
Colour outer sheath		black
Outer diameter (mm)		4.5 (3-pin)/5.3 (5-pin)
Suitable for drag chains		Yes
Minimum bending radius		
- Fest verlegt		5 x Outer diameter
- Occasional flexing		10 x Outer diameter
Temperature range		
- Plug/Socket		-25 °C to +90 °C
- Valve connector		-20 °C to +85 °C
- Fixed installation		-40 °C to +80 °C
- Occasional flexing		-20 °C to +80 °C
Halogen free acc.		DIN VDE 0472
ETIM 5.0 Class		EC001855



TYPE DESIGNATIONS LEGEND

1. Meterware (cable)

Li = Litz wire
f = Super fine litz wire
Y = PVC
9Y = PP
11Y = PUR
C = Screening copper braid

2. Sensor/actuator cordsets/connectors

AB = Automation Bus

a) Cable

C3/C4/C5/C8 = Conductor
0.3/1.0... = Cable length

b) Connection

MS = Plug straight
MA = Plug angled
FS = Socket straight
FA = Socket angled
M8/M12/M16/M23 = Thread
 Connector
M12Y = M12 Y-distributor

c) Additional

1L = 1 LED
2L = 2 LEDs
3L = 3 LEDs
SH = Shielded
S = Z-Diode
SV = Varistor
P = Piercingconnection
PG7/PG9/PG11/PG13 = Cableconnection
OS = Without marking carrier
V = Parallel distribution

d) Particularities

VA = Stainless steel knurl
HD = Hygienic Design
B = Contact bridged
f = Super fine litz wire
Y = PVC
9Y = PP
11Y = PUR
C = Screening copper braid

3. Flush-type connector

PO = Can be positioned
DSI = Data Socket Inside (Rear-mounting)

4. Valve connector

A = Type A
AD = Type AD
B = Type B
BI = Type BI
C = Type C
CI = Type CI
SVC = Valve connector with varistor and commutator
SUP = Valve connector with suppressor diode

5. Passive distribution box

B4/B6/B8 = No. of sockets M8/M12
C = Distributor Box with master cable connection
M8L = Distributor Box with M8 slots and LED indication
M12L = Distribution box with M12 sockets and LED indication
M16 = Distributor Box with master cable connection M16
M12 = Distributor Box with master cable connection M12

FURTHER PORTFOLIO

PVC – PORTFOLIO



UNITRONIC® SENSOR PVC M8/M12
In addition to our PUR standard range we offer M8 and M12 assemblies with PVC material. These are particularly suitable for medium mechanical stress in dry areas.

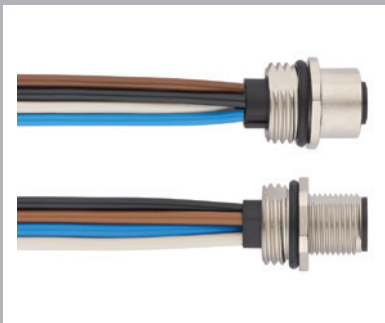


DISTRIBUTION BOXES AND ACCESSORIES

M8/M12 distribution boxes for quick and easy bundling of signals, to optimize the individual wiring. Available with connected master cable or for individual cable assemblies.

SHIELDED M12 CORDSETS

For reliable signal transmission in EMC critical surroundings shielded UNITRONIC® SENSOR M12 SH offers protection against electromagnetic interference.

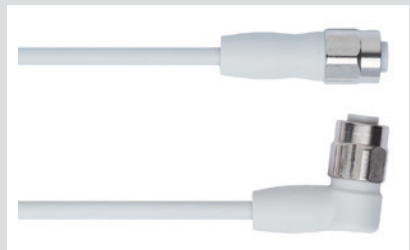


FLUSH-TYPE CONNECTORS

EPIC® SENSOR M8/M12 flush-type connectors, particularly suitable as a panel feed-through and for the cabinet. Versions for rear and front mounting offer flexible connection solutions for individual device concepts.

HYGIENIC DESIGN FOR FOOD & BEVERAGE

At direct contact with food, components must meet the highest hygienic requirements. With an optimized design, stainless steel and resistant materials at UNITRONIC® SENSOR HD M12 you get with optimum cleaning results.



EPIC® SENSOR



Our wide range of field-mountable EPIC® SENSOR M8/M12 connectors enables you to individually adapt the cabling to a perfect match at your application. With different types of connection in shielded and unshielded versions.

This and other information can be found here:



www.lappgroup.com/sensoractuator-cabling

M12 POWER WIRING

For safe and compact power transmission UNITRONIC® SENSOR M12 POWER assemblies with A- and T- coding and attachable connectors EPIC® M12 POWER 60 V.



ETHERLINE®

Data communication systems
for ETHERNET technology



ETHERNET in Automation	34
Quickfinder	35
Industrial Ethernet patchcords	39

For current information see www.lappgroup.com/products

ETHERNET IN AUTOMATION

The Ethernet standard is a permanent fixture in corporate IT departments due to its 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
		Singlemode LWL	5,000 m
10 Gigabit ETHERNET	10G Base-T	Twisted Pair	100 m
	10G Base-LX4 WDM	Singlemode LWL	10,000 m
	10G Base-LX4 WDM	Multimode LWL	300 m
	10G Base-SR/SW 850 nm	62.5 µm Multimode LWL	26 m
		50 µm Multimode LWL	82 m
	10G Base-LR/LW 850 nm	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
Building 4-pairs	Indoor	Cat.5e	static	x	LSZH	U/UTP	4x2xAWG24/1	5.6	
					PVC	SF/UTP	4x2xAWG24/1	6.7	
					PVC	U/UTP	4x2xAWG24/1	5.6	
					PVC	F/UTP	4x2xAWG24/1	6.4	
			flexible		PVC	SF/UTP	4x2xAWG24/1	6.7	
					PVC	F/UTP	4x2xAWG26/7	5.6	
					PVC	SF/UTP	4x2xAWG26/7	6	
				x	LSZH	F/UTP	4x2xAWG26/7	5.6	
					LSZH	SF/UTP	4x2xAWG26/7	6	
		Cat.6	static	x	LSZH	U/UTP	4x2xAWG24/1	6.5	
					PVC	F/UTP	4x2xAWG24/1	7.5	
		Cat.6 _A	static	x	LSZH	U/UTP	4x2xAWG24/1	6.5	
					PVC	F/UTP	4x2xAWG24/1	7.5	
		Cat.7	static	x	LSZH	U/FTP	4x2xAWG23/1	7.4	
					PVC	F/FTP	4x2xAWG23/1	7.6	
			flexible	x	LSZH	S/FTP	4x2xAWG23/1	7.1	
					LSZH	S/FTP	4x2xAWG23/1	7.7	DUPLEX
		Cat.7 _A	static	x	PVC	S/FTP	2x(4x2xAWG23/1)	2x7.7	DUPLEX
					LSZH	S/FTP	4x2xAWG22/1	8.1	
		Cat.7 _A	static	x	LSZH	S/FTP	2x(4x2xAWG22/1)	2x8.1	DUPLEX
					LSZH	S/FTP	4x2xAWG22/1	8.5	
	Outdoor ground	Cat.7	static		(L)PE	S/FTP	4x2xAWG23/1	10	PE-AL-outer sheath, direct burial
					PE	S/FTP	4x2xAWG23/1	9.6	PE-outer sheath
Automation area	Inst. Area	category	Application/cabling	halogen-free	Sheath material	Shielding	AWG	Outer diameter [mm]	Industrial Ethernet Systems
Industrial 2-pairs	Indoor	Cat.5e	static	x	H	SF/UTP	2x2xAWG24/1	6.1	
					PVC	SF/UTP	2x2xAWG22/1	6.8	PROFINET®, EtherCAT®
					PVC	SF/UTP	2x2xAWG22/1	6.5	PROFINET®, EtherCAT®
					PVC	SF/UTP	1x4xAWG26/7	4.8	EtherCAT®
			flexible	x	PUR	SF/UTP	1x4xAWG26/7	4.8	EtherCAT®
					H	SF/UTP	2x2xAWG26/7	5.9	
					PUR	S/UTP	2x2xAWG26/19	6.2	
				x	PUR	SF/UTP	1x4xAWG26/19	4.8	EtherCAT®
		Cat.5	high flexible	x	PUR	SF/UTP	2x2xAWG22/7	6.8	PROFINET®, EtherCAT®
				x	PUR	SF/UTP	2x2xAWG22/19	6.8	PROFINET®, EtherCAT®
	Indoor and outdoor	Cat.5	static		PVC	SF/UTP	2x2xAWG22/1	6.8	PROFINET®, EtherCAT®
		Cat.5e	static	x	PUR	SF/UTP	2x2xAWG24/1	6.1	
		Cat.5	flexible		PVC	SF/UTP	2x2xAWG22/7	6.8	PROFINET®, EtherCAT®
		Cat.5e	flexible	x	FRNC	SF/UTP	2x2xAWG22/7	6.8	PROFINET®, EtherCAT®
					PVC	SF/UTP	2x2xAWG22/7	6.5	PROFINET®, EtherCAT®
		Cat.5	flexible	x	FRNC	SF/UTP	2x2xAWG22/7	6.5	PROFINET®, EtherCAT®
		Cat.5e	flexible		TPE	SF/UTP	2x2xAWG22/7	6.5	PROFINET®, EtherCAT®
				x	PUR	SF/UTP	2x2xAWG26/7	5.9	
	Outdoor and ground	Cat.5	static		PVC/PE	SF/UTP	2x2xAWG22/1	9.8	PROFINET®, EtherCAT®
		Cat.5e	static		PVC/PVC	SF/UTP	2x2xAWG22/1	7.7	PROFINET®, EtherCAT®
Industrial 2-pairs combi	Indoor	Cat.5	flexible	x	FRNC	SF/UTP	2x2xAWG22/7 + 4x1.5	10.6	PROFINET®

	Approvals	Article designation	Article number	Page	Connectors	Socket
		UNITRONIC® LAN 200 U/UTP Cat.5e LSZH	2170173	*	3,4,6,8,10,12,22	28,29,30,33,34,35
		UNITRONIC® LAN 200 SF/UTP Cat.5e LSZH	2170138	*	4,5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 200 U/UTP Cat.5e Y	2170125	*	3,4,6,8,10,12,22	28,29,30,33,34,35
		UNITRONIC® LAN 200 F/UTP Cat.5e Y	2170126	*	3,4,5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 200 SF/UTP Cat.5e Y	2170128	*	4,5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 200 F/UTP Cat.5e Y Flex	2170127	*	1,2,3,4,6,8,10,12,22	27,29,30,33,34
		UNITRONIC® LAN 200 SF/UTP Cat.5e Y Flex	2170129	*	1,2,3,4,6,8,10,12,22	27,29,30,33,34
		UNITRONIC® LAN 200 F/UTP Cat.5e H Flex	2170172	*	1,2,3,4,6,8,10,12,22	27,29,30,33,34
		UNITRONIC® LAN 200 SF/UTP Cat.5e H Flex	2170139	*	1,2,3,4,6,8,10,12,22	27,29,30,33,34
		UNITRONIC® LAN 250 U/UTP Cat.6 LSZH	2170171	*	3,4,6,8,10,12	26,28,29,30,33,34,35
		UNITRONIC® LAN 250 F/UTP Cat.6 LSZH	2170170	*	4,5,7,9,11,13	26,28,29,30,31,33,34,35
		UNITRONIC® LAN 250 U/UTP Cat.6 Y	2170186	*	3,4,6,8,10,12	26,28,29,30,33,34,35
		UNITRONIC® LAN 500 U/FTP Cat.6 _A LSZH	2170195	*	4,5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 500 F/FTP Cat.6 _A LSZH	2170196	*	4,5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 500 S/FTP Cat.6 _A Y	2170143	*	4,5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 1000 S/FTP Cat.7 LSZH	2170614	*	4,5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 1000 S/FTP Cat.7 LSZH D	2170634	*	4,5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 600 S/FTP Cat.7 Y FLEX	2170144	*	3,4,5,7,9,11,13	27,29,30,31,33,34
		UNITRONIC® LAN 600 S/FTP Cat.7 LSZH Flex	2170142	*	3,4,5,7,9,11,13	27,29,30,31,33,34
		UNITRONIC® LAN 1200 S/FTP Cat.7 _A LSZH	2170615	*	5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 1200 S/FTP Cat.7 _A DUPLEX	2170618	*	5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 1500 S/FTP Cat.7 _A LSZH	2170199	*	5,7,9,11,13	28,29,30,31,33,34,35
		UNITRONIC® LAN 1000 S/FTP Cat.7 (L)PE	2170198	*	7,11	
		UNITRONIC® LAN 1000 S/FTP Cat.7 PE	2170197	*	7,11	
Characteristics	Approvals	Article designation	Article number	Page	Connectors	Socket
		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
QP, Fast Connect	UL/CSA Typ PLTC ER	ETHERLINE® TRAY ER PN Y FC	2170879	143	14,15,16	20,26,28,29,30,32,33,34
QP	UL/CSA Typ CMX	ETHERLINE® PN Cat.5e Y	2170891	143	14,15,16	20,26,28,29,30,32,33,34
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
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	20,27,29,30,31,32,33,34
		ETHERLINE® H Flex Cat.5e	2170283	138	3,4,6,8,10,12,17	20,29,30,33,34
Power chain	UL (AWM) 1000 V Rating	ETHERLINE® FD P Cat.5e	2170289	139	6,8,10,12	29,30,33,34
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
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
QP, torsion	UL/CSA (AWM)	ETHERLINE® TORSION Cat.5	2170888	146	14,15,16	20,29,30,33,34
QP, Fast Connect	UL/CSA Typ PLTC and CMG	ETHERLINE® Y FC Cat.5	2170893	143	14,15,16	20,29,30,33,34
	UL (AWM) 1000 V Rating	ETHERLINE® P Cat.5e	2170281	137	6,8,10,12,17	20,29,30,33,34
QP, Fast Connect	UL/CSA Typ CMG	ETHERLINE® PN Cat.5 Y FLEX FC	2170886	144	14,15,16	20,29,30,33,34
QP, Fast Connect	UL/CSA Typ CMG	ETHERLINE® PN Cat.5e FRNC FLEX FC	2170890	144	14,15,16	20,29,30,33,34
QP, black UV res		ETHERLINE® Y Cat.5e BK	2170901	147	14,15,16	20,29,30,33,34
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
For hollow shaft between gear units and pitch system		ETHERLINE® Cat.5e 105 plus	2170636	148	14,15,16	20,29,30,33,34
	UL (AWM) 1000 V Rating	ETHERLINE® P Flex Cat.5e	2170284	138	6,8,10,12,17	20,29,30,33,34
QP, steel armoured, black, UV resistant		ETHERLINE® Cat.5 ARM	2170496	150	14,15,16	20,29,30,33,34
QP, double sheath, black, UV resistant	UL/CSA Typ CMG	ETHERLINE® PN Cat.5e YY	2170494	143	14,15,16	20,29,30,33,34
Hybrid	UL (AWM)	ETHERLINE® Cat.5 FRNC HYBRID	2170887	151		

Continuation see page 37

QUICKFINDER [CONTINUATION]

Automation area	Inst. Area	category	Application/ cabling	halogen- free	Sheath material	Shielding	AWG	Outer diameter [mm]	Industrial Ethernet Systems
Industrial 4-pairs	Indoor	Cat.5e	static	x	H	SF/UTP	4x2xAWG24/1	6.3	
					FRNC	F/UTP	4x2xAWG23/1	8.6	
					H/H	SF/UTP	4x2xAWG24/1	6.3/8.3	
			flexible	x	H	SF/UTP	4x2xAWG26/7	6.1	
					PVC	SF/UTP	4x2xAWG26/7	6.4	
	Indoor and outdoor	Cat.5e	static	x	PUR	SF/UTP	4x2xAWG24/1	6.3	
			flexible		PUR	SF/UTP	4x2xAWG26/7	6.3	
		Cat.5	high flexible	x	PUR	S/UTP	4x2xAWG26/19	6.6	
		Cat.5e	high flexible	x	PUR	S/UTP	4x2xAWG26/19	6.1	
		Cat.6	high flexible	x	PUR	SF/UTP	4x2xAWG26/19	7.8	
	Indoor	Cat.6 _A	static	x	PVC	S/FTP	4x2xAWG22/1	9	PROFINET®
					PUR				
					H				
			flexible	x	PVC	S/FTP	4x2xAWG23/7	9	PROFINET®
					FRNC				
			high flexible	x	PVC	S/FTP	4x2xAWG24/7	9	PROFINET®
					PUR				
			torsion	x	PVC	S/FTP	4x2xAWG24/7	9	PROFINET®
					PUR				
		Cat.7	static	x	PVC	S/FTP	4x2xAWG22/1	9	PROFINET®
					PUR				
	Outdoor and ground	Cat.7	static		(L)PE	S/FTP	4x2xAWG23/1	10	
					PE		4x2xAWG23/1	9.6	

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).

Characteristics	Approvals	Article designation	Article number	Page	Connectors	Socket
		ETHERLINE® H Cat.5e	2170296	137	5,7,9,11,13,18,25	21,23,29,30,31,33,34
Isolation integrity	PH60 acc. to EN50200	ETHERLINE® FIRE Cat.5e PH120	2170905	159	6,8,10,12	21,23,29,30,33,34
Double sheath		ETHERLINE® H-H Cat.5e	2170298	137	5,7,9,11,13,18,25	21,23,29,30,31,33,34
		ETHERLINE® H Flex Cat.5e	2170299	138	5,7,9,11,13,19,25	22,24,29,30,31,33,34
	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
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
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
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
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
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
		ETHERLINE® Cat.6 _A Y	2170464	153	5,7,9,11,13,18,25	21,23,29,30,31,33,34
		ETHERLINE® Cat.6 _A P	2170465	153	5,7,9,11,13,18,25	21,23,29,30,31,33,34
		ETHERLINE® Cat.6 _A H	2170466	153	5,7,9,11,13,18,25	21,23,29,30,31,33,34
	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
	UL/CSA Typ CMG	ETHERLINE® PN Cat.6 _A FRNC FLEX	2170931	154	5,7,9,11,13,18,25	21,23,29,30,31,33,34
	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
Power chain	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
	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
Torsion	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
		ETHERLINE® Cat.7 Y	2170474	157	5,7,9,11,13,18,25	21,23,29,30,31,33,34
		ETHERLINE® Cat.7 P	2170475	157	5,7,9,11,13,18,25	21,23,29,30,31,33,34
		ETHERLINE® Cat.7 H	2170476	157	5,7,9,11,13,18,25	21,23,29,30,31,33,34
PE-AL-outer sheath, direct burial		UNITRONIC® LAN 1000 S/FTP Cat.7 (L)PE	2170198	*	7,11	
PE-outer sheath		UNITRONIC® LAN 1000 S/FTP Cat.7 PE	2170197	*	7,11,18,25	21,23

INDUSTRIAL ETHERNET KONFEKTIONEN

CONNECTION TYPE OF CABLE: CONNECTOR TO CONNECTOR

IE-protocol	2-pair cable																4-pair cable			
	PROFINET®							Industrial Ethernet				EtherCAT®		EtherCAT®		Industrial Ethernet				
	Type A		Type B		Type C		halogenfree		PUR		PVC FLEX		PUR FD		halogenfree		PUR			
	Lenght in m	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	
M12 – M12 (straight)	0.5	2172184	175	2172192	178	2171121	181	2171976	165	2171979	162			2171778	170					
	1	2171001	175	2171025	178	2171049	181	2171073	165	2171097	162			2171779	170					
	2	2171002	175	2171026	178	2171050	181	2171074	165	2171098	162			2171780	170					
	3	2171003	175	2171027	178	2171051	181	2171075	165	2171099	162			2171781	170					
	5	2171004	175	2171028	178	2171052	181	2171076	165	2171100	162			2171782	170					
	7.5	2172185	175	2172193	178	2172200	181	2171984	165	2171985	162			2171986	170					
	10	2171005	175	2171029	178	2171053	181	2171077	165	2171101	162			2171783	170					
	20	2171006	175	2171030	178	2171054	181	2171078	165	2171102	162			2171784	170					
M12 (angled) – M12 (straight)	0.5	2172188	175	2172196	178	2171122	181							2171785	170					
	1	2171013	175	2171037	178	2171061	181							2171786	170					
	2	2171014	175	2171038	178	2171062	181							2171787	170					
	3	2171015	175	2171039	178	2171063	181							2171788	170					
	5	2171016	175	2171040	178	2171064	181							2171789	170					
	7.5	2172189	175	2172197	178	2172203	181							2171989	170					
	10	2171017	175	2171041	178	2171065	181							2171790	170					
	20	2171018	175	2171042	178	2171066	181							2171791	170					
M12 – RJ45 (straight)	0.5	2171164	176	2171214	179	2171264	182	2171977	166	2171123	163			2171750	171					
	1	2171165	176	2171215	179	2171265	182	2171085	166	2171109	163			2171751	171					
	2	2171166	176	2171216	179	2171266	182	2171086	166	2171110	163			2171752	171					
	3	2171167	176	2171217	179	2171267	182	2171087	166	2171111	163			2171753	171					
	5	2171168	176	2171218	179	2171268	182	2171088	166	2171112	163			2171754	171					
	10	2171169	176	2171219	179	2171269	182	2171089	166	2171113	163			2171755	171					
	20	2171170	176	2171220	179	2171270	182	2171090	166	2171114	163			2171756	171					
RJ45 – RJ45 (straight)	0.3	2171973	177	2171974	180	2171975	183	2171133	167	2171980	164			2171990	173	2171991	167	2171992	164	
	0.5	2171178	177	2171228	180	2171278	183	2171132	167	2171124	164			2171764	173	2171982	167	2171525	164	
	1	2171179	177	2171229	180	2171279	183	2171091	167	2171115	164			2171765	173	2171513	167	2171501	164	
	2	2171180	177	2171230	180	2171280	183	2171092	167	2171116	164			2171766	173	2171514	167	2171502	164	
	3	2171181	177	2171231	180	2171281	183	2171093	167	2171117	164			2171767	173	2171515	167	2171503	164	
	5	2171182	177	2171232	180	2171282	183	2171094	167	2171118	164			2171768	173	2171516	167	2171504	164	
	10	2171183	177	2171233	180	2171283	183	2171095	167	2171119	164			2171769	173	2171517	167	2171505	164	
	20	2171184	177	2171234	180	2171284	183	2171096	167	2171120	164			2171770	173	2171518	167	2171506	164	
M8 – M8 (straight)	0.5											2171300	*	2171700	168					
	1											2171301	*	2171701	168					
	2											2171302	*	2171702	168					
	3											2171303	*	2171703	168					
	5											2171304	*	2171704	168					
	7											2171305	*	2171705	168					
	10											2171306	*	2171706	168					
	15											2171307	*	2171707	168					
	20											2171308	*	2171708	168					
M8 (angled) – M8 (straight)	0.5											2171350	*	2171718	168					
	1											2171351	*	2171719	168					
	2											2171352	*	2171720	168					
	3											2171353	*	2171721	168					
	5											2171354	*	2171722	168					
	7											2171355	*	2171723	168					
	10											2171356	*	2171724	168					
	15											2171357	*	2171725	168					
	20											2171358	*	2171726	168					
	Used cable	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	
	2170893	143	2170886	144	2170894	145	2170283	138	2170284	138	2170430	141	2170433	142	2170299	138	2170300	138		

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

CONNECTION TYPE OF CABLE: CONNECTOR ON FREE CONDUCTOR END (OE)

IE-protocol		2-pair cable														4-pair cable			
		PROFINET®						Industrial Ethernet				EtherCAT®		EtherCAT®		Industrial Ethernet			
		Type A		Type B		Type C		halogenfree		PUR		PVC FLEX		PUR FD		halogenfree		PUR	
	Lenght in m	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page
M12 (straight) – OE	0.5	2172186	175	2172194	178	2172201	181	2171978	165	2171981	162			2171792	170				
	1	2171007	175	2171031	178	2171055	181	2171079	165	2171103	162			2171793	170				
	2	2171008	175	2171032	178	2171056	181	2171080	165	2171104	162			2171794	170				
	3	2171009	175	2171033	178	2171057	181	2171081	165	2171105	162			2171795	170				
	5	2171010	175	2171034	178	2171058	181	2171082	165	2171106	162			2171796	170				
	7.5	2172185	175	2172195	178	2172202	181	2171993	165	2171994	162			2171995	170				
	10	2171011	175	2171035	178	2171059	181	2171083	165	2171107	162			2171797	170				
	20	2171012	175	2171036	178	2171060	181	2171084	165	2171108	162			2171798	170				
M12 (angled) – OE	0.5	2172190	175	2172198	178	2172204	181							2171870	170				
	1	2171019	175	2171043	178	2171067	181							2171871	170				
	2	2171020	175	2171044	178	2171068	181							2171872	170				
	3	2171021	175	2171045	178	2171069	181							2171873	170				
	5	2171022	175	2171046	178	2171070	181							2171874	170				
	7.5	2172191	175	2172199	178	2172205	181							2171996	170				
	10	2171023	175	2171047	178	2171071	181							2171875	170				
	20	2171024	175	2171048	178	2171072	181							2171876	170				
RJ45 (straight) – OE	0.5	2171185	177	2171235	180	2171285	183							2171771	173	2171997	167	2171983	164
	1	2171186	177	2171236	180	2171286	183							2171772	173	2171519	167	2171507	164
	2	2171187	177	2171237	180	2171287	183							2171773	173	2171520	167	2171508	164
	3	2171188	177	2171238	180	2171288	183							2171774	173	2171521	167	2171509	164
	5	2171189	177	2171239	180	2171289	183							2171775	173	2171522	167	2171510	164
	10	2171190	177	2171240	180	2171290	183							2171776	173	2171523	167	2171511	164
	20	2171191	177	2171241	180	2171291	183							2171777	173	2171524	167	2171512	164
M8 (straight) – OE	0.5											2171320	*	2171709	168				
	1											2171321	*	2171710	168				
	2											2171322	*	2171711	168				
	3											2171323	*	2171712	168				
	5											2171324	*	2171713	168				
	7											2171325	*	2171714	168				
	10											2171326	*	2171715	168				
	15											2171327	*	2171716	168				
	20											2171328	*	2171717	168				
M8 (angled) – OE	0.5											2171370	*	2171727	168				
	1											2171371	*	2171728	168				
	2											2171372	*	2171729	168				
	3											2171373	*	2171730	168				
	5											2171374	*	2171731	168				
	7											2171375	*	2171732	168				
	10											2171376	*	2171733	168				
	15											2171377	*	2171734	168				
	20											2171378	*	2171735	168				
Used cable		Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page	Art. no.	Page
		2170893	143	2170886	144	2170894	145	2170283	138	2170284	138	2170430	141	2170433	142	2170299	138	2170300	138

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



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PCF selection table: connector – cable – tools – accessories.....	55

For current information see www.lappgroup.com/products

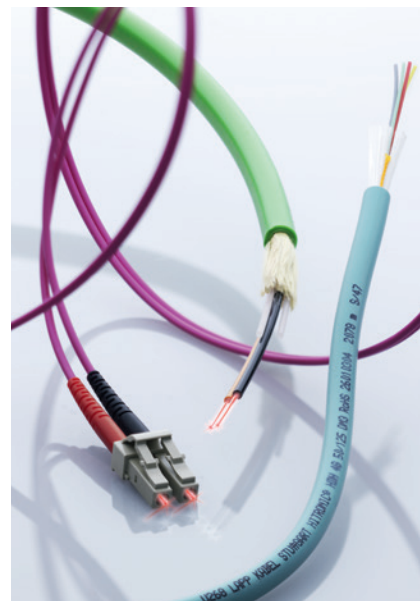
FIBRE OPTIC TECHNOLOGY – GENERAL

The optical transmission of signals in fibre optic cables functions according to the principle of “total reflection”. The reflection is attained by surrounding a light-conducting core with a sheath that is optically thinner – the light is totally reflected by the boundary surface of the sheath, enabling it to be guided through the fibre optic cable.

At a time when the demand for fast and secure communication networks is constantly growing, fibre optic cables are now an indispensable and irreplaceable communication medium.

Benefits of using fibre optic cables

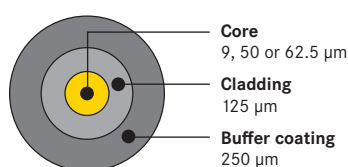
- Insensitivity to electromagnetic interference
- Electrical isolation of connected devices
- Low attenuation values
- Large transmission distances and high bandwidths
- Lightweight design
- Compact dimensions
- Can be installed in explosive environments
- High level of interception protection



GOF – Glass Optical Fibre

There are the following different types of fibres:

- Singlemode (SM) fibre, E9/125 OS2
- Multimode (MM) fibre, G62.5/125 OM1, G50/125 OM2 to OM4

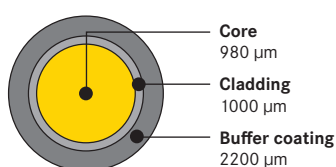


POF – Polymer Optical Fibre

- P980/1000

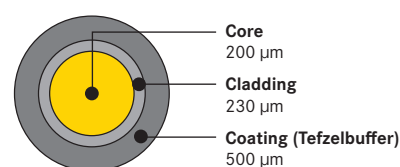
A distinction is made between the following application cases

- SIMPLEX (one buffered fibre)
- DUPLEX (two buffered fibres)



PCF – Plastic Cladded Fibre

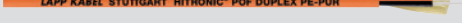
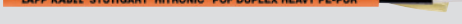
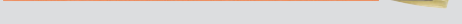
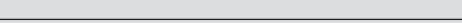
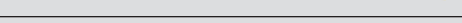
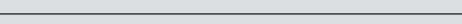
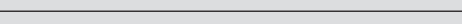
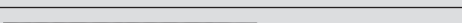
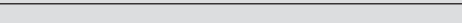
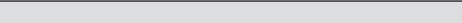
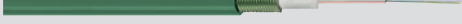
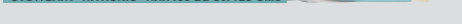
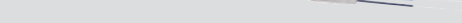
- K200/230
- PCF – Plastic Cladded Fibre
- Also known as HCS (Hard Cladded Silica Optical Fibre)



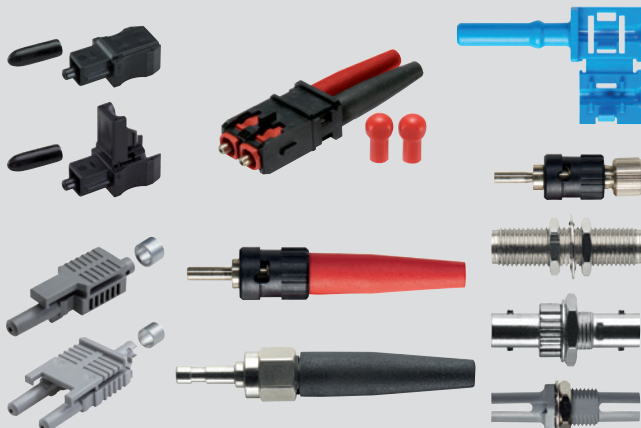
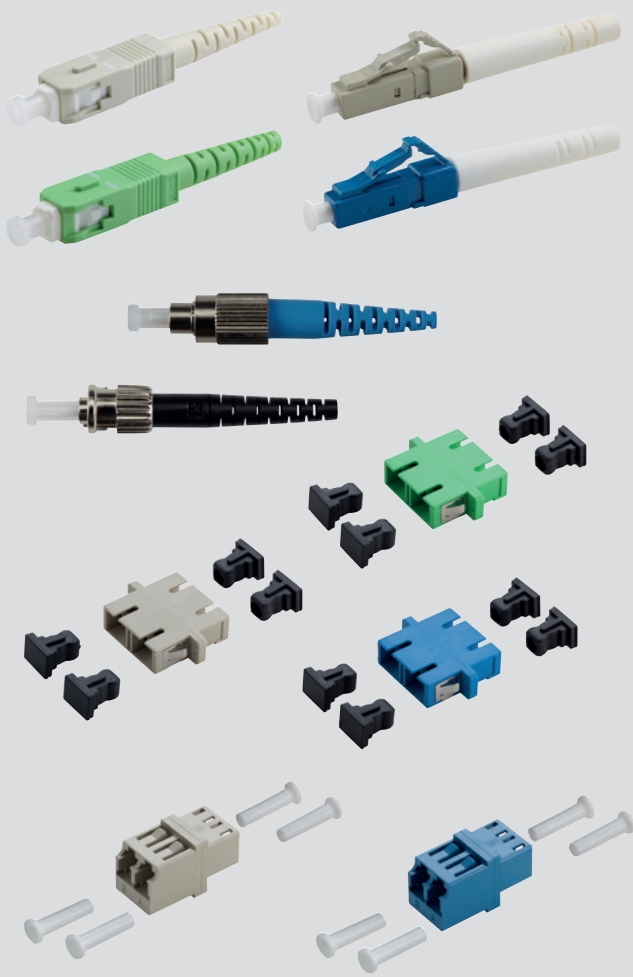
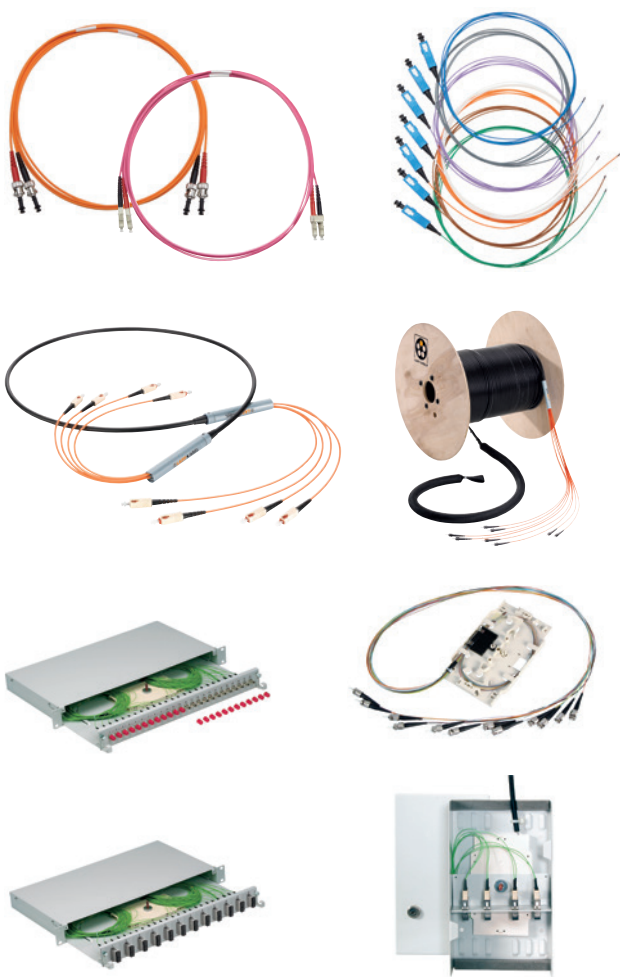
Fibre type/ wavelength	max. attenuation [dB/km]				max. transmission length [m]				Colour
	650 nm	850 nm	1300 nm	1550 nm	650 nm	850 nm	1300 nm	1550 nm	
POF 980 µm	160				100 Mbit/s (PN): 50				
PCF 200 µm	10.0	8.0			100 Mbit/s (PN): 100				
GOF MM 62.5 µm OM1		3.5 (3.0)	1.5 (0.7)		100 Mbit/s: 550 1 Gbit/s: 275 10 Gbit/s: 33	100 Mbit/s: 2,000 1 Gbit/s: 550 10 Gbit/s: 300			Orange
GOF MM 50 µm OM2		3.5 (2.5)	1.5 (0.7)		100 Mbit/s: 550 1 Gbit/s: 550 10 Gbit/s: 82	100 Mbit/s: 2,000 1 Gbit/s: 550 10 Gbit/s: 300			Orange
GOF MM 50 µm OM3		3.5 (2.5)	1.5 (0.7)		1 Gbit/s: 1,000 10 Gbit/s: 300 40 Gbit/s: 100 100 Gbit/s: 100	1 Gbit/s: 550 10 Gbit/s: 300			Aqua
GOF MM 50 µm OM4		3.5 (2.5)	1.5 (0.7)		1 Gbit/s: 1,100 10 Gbit/s: 550 40 Gbit/s: 150 100 Gbit/s: 150	1 Gbit/s: 550 10 Gbit/s: 300			Violet
GOF SM 9 µm OS2 (G652.D)			0.40 (0.35)	0.40 (0.21)			40 Gbit/s: 10,000 40 Gbit/s: 40,000		Yellow

Photographs are not to scale and do not represent detailed images of the respective products.
For specific cable parameters see product pages or technical data sheets.

HITRONIC® PRODUCT OVERVIEW

Type of fibre	Cables	
POF	POF SIMPLEX PE	
	POF DUPLEX PE	
	POF SIMPLEX PE-PUR	
	POF DUPLEX PE-PUR	
	POF DUPLEX Heavy	
	POF SIMPLEX/DUPLEX FD PE-PUR	
	POF DUPLEX for PROFINET® applications	
PCF	PCF SIMPLEX Outdoor	
	PCF DUPLEX Outdoor	
	PCF DUPLEX Indoor	
	PCF DUPLEX FD Universal	
	PCF DUPLEX for PROFINET® applications	
GOF	HITRONIC® FIRE	
	HITRONIC® TORSION	
	HRM-FD Flexible	
	HDM Reel	
	HQN Outdoor	
	HVN Stranded Outdoor	
	HVN-Mini Outdoor (air blowable)	
	HQW Armoured Outdoor	
	HVW Armoured Stranded Outdoor	
	HQW-Plus Armoured Outdoor	
	HQA Aerial ADSS	
	HQA-Plus Aerial ADSS	
	HUN Universal	
	HUW Armoured Universal	
	HRH Breakout	
	HDH Mini Breakout	

Photographs are not to scale and do not represent detailed images of the respective products.

Connectors and adapters	Accessories
	
	
	

QUICKFINDER

FO-fibre type	Cable type/standardisation (DIN VDE 0888)	Area of Installation	Cabling	Fibre Specification	No. of fibres	Max. tensile force (long-term) in [N]	Outer sheath material
GOF – Glass Optical Fibre	Outdoor Cable A-DQ(ZN)B2Y (loose tube, 4 – 24 fibres)	Outdoor	static	Multimode 50/ 125 µm OM3	4	1500	PE
					8		
					12		
					24		
				Multimode 50/ 125 µm OM2	4	1500	PE
					8		
					12		
					24		
				Multimode 62.5/ 125 µm OM1	4	1500	PE
					8		
					12		
					24		
				Singlemode 9/ 125 µm OS2	4	1500	PE
					8		
					12		
					24		
	Outdoor Cable A-DQ(ZN)B2Y (loose tube, 12 – 144 fibres)	Outdoor	static	Multimode 50/ 125 µm OM2	24	1500	PE
					48		
				Multimode 62.5/ 125 µm OM1	24	1500	PE
					48		
				Singlemode 9/ 125 µm OS2	12	1500	PE
					24		
					48		
					72	2000	
					96		
					144		
	Outdoor Cable A-DQ(ZN)2Y (stranded loose tubes, 12 – 144 fibres, compact)	Outdoor, MicroDuct systems	static, blowing technology	Singlemode 9/ 125 µm OS2	12	500	PE
					24		
					48		
					72	1200	
					96		
					144	1500	
	Armoured Outdoor Cable A-DQ(ZN)(SR)2Y (loose tube, 4 – 24 fibres)	Outdoor	static	Multimode 50/ 125 µm OM3	4	3000	PE
					8		
					12		
					24		
				Multimode 50/ 125 µm OM2	4	3000	PE
					8		
					12		
					24		
				Multimode 62.5/ 125 µm OM1	4	3000	PE
					8		
					12		
					24		
				Singlemode 9/ 125 µm OS2	4	3000	PE
					8		
					12		
					24		

Product Benefits	Article designation	Article number	Page
compact, central loose tube, direct burial, UV resistance, halogen-free, rodent and moisture protection, watertight, low friction	HITRONIC® HQN1500 4 G 50/125 OM3	27600304	220
	HITRONIC® HQN1500 8 G 50/125 OM3	27600308	220
	HITRONIC® HQN1500 12 G 50/125 OM3	27600312	220
	HITRONIC® HQN1500 24 G 50/125 OM3	27600324	220
compact, central loose tube, direct burial, UV resistance, halogen-free, rodent and moisture protection, watertight, low friction	HITRONIC® HQN1500 4 G 50/125 OM2	27600204	220
	HITRONIC® HQN1500 8 G 50/125 OM2	27600208	220
	HITRONIC® HQN1500 12 G 50/125 OM2	27600212	220
	HITRONIC® HQN1500 24 G 50/125 OM2	27600224	220
compact, central loose tube, direct burial, UV resistance, halogen-free, rodent and moisture protection, watertight, low friction	HITRONIC® HQN1500 4 G 62.5/125 OM1	27600104	220
	HITRONIC® HQN1500 8 G 62.5/125 OM1	27600108	220
	HITRONIC® HQN1500 12 G 62.5/125 OM1	27600112	220
	HITRONIC® HQN1500 24 G 62.5/125 OM1	27600124	220
compact, central loose tube, direct burial, UV resistance, halogen-free, rodent and moisture protection, watertight, low friction	HITRONIC® HQN1500 4 E 9/125 OS2	27600904	220
	HITRONIC® HQN1500 8 E 9/125 OS2	27600908	220
	HITRONIC® HQN1500 12 E 9/125 OS2	27600912	220
	HITRONIC® HQN1500 24 E 9/125 OS2	27600924	220
compact, stranded loose tubes, UV resistance, halogen-free, rodent and moisture protection, low friction, suitable for blowing technology	HITRONIC® HVN1500 2x12 G 50/125 OM2	26601224	221
	HITRONIC® HVN1500 4x12 G 50/125 OM2	26601248	221
	HITRONIC® HVN1500 2x12 G 62.5/125 OM1	26601124	221
	HITRONIC® HVN1500 4x12 G 62.5/125 OM1	26601148	221
compact, stranded loose tubes, UV resistance, halogen-free, rodent and moisture protection, low friction, suitable for blowing technology	HITRONIC® HVN1500 2x6 E 9/125 OS2	26601912	221
	HITRONIC® HVN1500 2x12 E 9/125 OS2	26601924	221
	HITRONIC® HVN1500 4x12 E 9/125 OS2	26601948	221
	HITRONIC® HVN2000 6x12 E 9/125 OS2	26601972	221
	HITRONIC® HVN2000 8x12 E 9/125 OS2	26601996	221
	HITRONIC® HVN2000 12x12 E 9/125 OS2	26601944	221
compact, stranded loose tubes, reduced dimensions, UV resistance, halogen-free, moisture protection, low friction, suitable for blowing technology	HITRONIC® HVN-Mini500 1x12 E9/125 OS2	26609912	219
	HITRONIC® HVN-Mini500 2x12 E9/125 OS2	26609924	219
	HITRONIC® HVN-Mini500 4x12 E9/125 OS2	26609948	219
	HITRONIC® HVN-Mini500 6x12 E9/125 OS2	26609972	219
	HITRONIC® HVN-Mini1000 8x12 E9/125 OS2	26609996	219
	HITRONIC® HVN-Mini1000 12x12 E9/125 OS2	26609944	219
compact, central loose tube, metallic armoured (corrugated steel tape), higher mechanical and chemical resistance, excellent rodent protection, halogen-free, UV resistance, moisture protected, watertight, low friction	HITRONIC® HQW3000 4 G 50/125 OM3	27900304	222
	HITRONIC® HQW3000 8 G 50/125 OM3	27900308	222
	HITRONIC® HQW3000 12 G 50/125 OM3	27900312	222
	HITRONIC® HQW3000 24 G 50/125 OM3	27900324	222
compact, central loose tube, metallic armoured (corrugated steel tape), higher mechanical and chemical resistance, excellent rodent protection, halogen-free, UV resistance, moisture protected, watertight, low friction	HITRONIC® HQW3000 4 G 50/125 OM2	27900204	222
	HITRONIC® HQW3000 8 G 50/125 OM2	27900208	222
	HITRONIC® HQW3000 12 G 50/125 OM2	27900212	222
	HITRONIC® HQW3000 24 G 50/125 OM2	27900224	222
compact, central loose tube, metallic armoured (corrugated steel tape), higher mechanical and chemical resistance, excellent rodent protection, halogen-free, UV resistance, moisture protected, watertight, low friction	HITRONIC® HQW3000 4 G 62.5/125 OM1	27900104	222
	HITRONIC® HQW3000 8 G 62.5/125 OM1	27900108	222
	HITRONIC® HQW3000 12 G 62.5/125 OM1	27900112	222
	HITRONIC® HQW3000 24 G 62.5/125 OM1	27900124	222
compact, central loose tube, metallic armoured (corrugated steel tape), higher mechanical and chemical resistance, excellent rodent protection, halogen-free, UV resistance, moisture protected, watertight, low friction	HITRONIC® HQW3000 4 E 9/125 OS2	27900904	222
	HITRONIC® HQW3000 8 E 9/125 OS2	27900908	222
	HITRONIC® HQW3000 12 E 9/125 OS2	27900912	222
	HITRONIC® HQW3000 24 E 9/125 OS2	27900924	222

Continuation see page 47

QUICKFINDER [CONTINUATION]

FO-fibre type	Cable type/standardisation (DIN VDE 0888)	Area of Installation	Cabling	Fibre Specification	No. of fibres	Max. tensile force (long-term) in [N]	Outer sheath material
GOF – Glass Optical Fibre	Universal Cable A/J-DQ(ZN)BH U-DQ(ZN)BH (loose tube, 4 – 24 fibres)	Indoor/Outdoor	static	Multimode 50/ 125 µm OM3	4	1500	LSZH
					8		
					12		
					24		
				Multimode 50/ 125 µm OM2	4	1500	LSZH
					8		
					12		
					24		
				Multimode 62.5/ 125 µm OM1	4	1500	LSZH
					8		
					12		
					24		
				Singlemode 9/ 125 µm OS2	4	1500	LSZH
					8		
					12		
					24		
	Armoured Universal Cable A/J-DQ(ZN)(SR)BH U-DQ(ZN)(SR)BH (loose tube, 4 – 24 fibres)	Indoor/Outdoor	static	Multimode 50/ 125 µm OM3	4	1500	LSZH
					8		
					12		
					24		
				Multimode 50/ 125 µm OM2	4	1500	LSZH
					8		
					12		
					24		
				Multimode 62.5/ 125 µm OM1	4	1500	LSZH
					8		
					12		
					24		
				Singlemode 9/ 125 µm OS2	4	1500	LSZH
					8		
					12		
					24		
GOF – Glass Optical Fibre	Breakout Cable J-V(ZN)HH (tight buffer, 2 – 12 fibres)	Indoor	static	Multimode 50/ 125 µm OM4	2	400	LSZH
					4	600	
					8	1200	
					12	1700	
				Multimode 50/ 125 µm OM3	2	400	LSZH
					4	600	
					8	1200	
					12	1700	
				Multimode 50/ 125 µm OM2	2	400	LSZH
					4	600	
					8	1200	
					12	1700	
				Multimode 62.5/ 125 µm OM1	2	400	LSZH
					4	600	
					8	1200	
					12	1700	

Please see detailed technical information on the data sheet (www.lappgroup.com/products).
Multimode OM4 fibres are also available upon request for all GOF cables.

Product Benefits	Article designation	Article number	Page
compact, flexible, central loose tube, flame retardant, low smoke emission, UV resistance, halogen-free, rodent and moisture protection, watertight	HITRONIC® HUN1500 4 G 50/ 125 OM3	27400304	227
	HITRONIC® HUN1500 8 G 50/ 125 OM3	27400308	227
	HITRONIC® HUN1500 12 G 50/ 125 OM3	27400312	227
	HITRONIC® HUN1500 24 G 50/ 125 OM3	27400324	227
compact, flexible, central loose tube, flame retardant, low smoke emission, UV resistance, halogen-free, rodent and moisture protection, watertight	HITRONIC® HUN1500 4 G 50/ 125 OM2	27400204	227
	HITRONIC® HUN1500 8 G 50/ 125 OM2	27400208	227
	HITRONIC® HUN1500 12 G 50/ 125 OM2	27400212	227
	HITRONIC® HUN1500 24 G 50/ 125 OM2	27400224	227
compact, flexible, central loose tube, flame retardant, low smoke emission, UV resistance, halogen-free, rodent and moisture protection, watertight	HITRONIC® HUN1500 4 G 62.5/ 125 OM1	27400104	227
	HITRONIC® HUN1500 8 G 62.5/ 125 OM1	27400108	227
	HITRONIC® HUN1500 12 G 62.5/ 125 OM1	27400112	227
	HITRONIC® HUN1500 24 G 62.5/ 125 OM1	27400124	227
compact, flexible, central loose tube, flame retardant, low smoke emission, UV resistance, halogen-free, rodent and moisture protection, watertight	HITRONIC® HUN1500 4 E 9/ 125 OS2	27400904	227
	HITRONIC® HUN1500 8 E 9/ 125 OS2	27400908	227
	HITRONIC® HUN1500 12 E 9/ 125 OS2	27400912	227
	HITRONIC® HUN1500 24 E 9/ 125 OS2	27400924	227
metallic armoured (corrugated steel tape), excellent rodent protection, flame retardant, low smoke emission, halogen-free, moisture protection, watertight	HITRONIC® HUW1500 4 G 50/ 125 OM3	27500304	228
	HITRONIC® HUW1500 8 G 50/ 125 OM3	27500308	228
	HITRONIC® HUW1500 12 G 50/ 125 OM3	27500312	228
	HITRONIC® HUW1500 24 G 50/ 125 OM3	27500324	228
metallic armoured (corrugated steel tape), excellent rodent protection, flame retardant, low smoke emission, halogen-free, moisture protection, watertight	HITRONIC® HUW1500 4 G 50/ 125 OM2	27500204	228
	HITRONIC® HUW1500 8 G 50/ 125 OM2	27500208	228
	HITRONIC® HUW1500 12 G 50/ 125 OM2	27500212	228
	HITRONIC® HUW1500 24 G 50/ 125 OM2	27500224	228
metallic armoured (corrugated steel tape), excellent rodent protection, flame retardant, low smoke emission, halogen-free, moisture protection, watertight	HITRONIC® HUW1500 4 G 62.5/ 125 OM1	27500104	228
	HITRONIC® HUW1500 8 G 62.5/ 125 OM1	27500108	228
	HITRONIC® HUW1500 12 G 62.5/ 125 OM1	27500112	228
	HITRONIC® HUW1500 24 G 62.5/ 125 OM1	27500124	228
metallic armoured (corrugated steel tape), excellent rodent protection, flame retardant, low smoke emission, halogen-free, moisture protection, watertight	HITRONIC® HUW1500 4 E 9/ 125 OS2	27500904	228
	HITRONIC® HUW1500 8 E 9/ 125 OS2	27500908	228
	HITRONIC® HUW1500 12 E 9/ 125 OS2	27500912	228
	HITRONIC® HUW1500 24 E 9/ 125 OS2	27500924	228
halogen-free, flame-retardant, low smoke emission, easy to handle, highly flexible, suitable for direct connector assembly, SIMPLEX sheath diameter: 2.1 mm	HITRONIC® HRH400 2 G 50/ 125 OM4	26000402	229
	HITRONIC® HRH600 4 G 50/ 125 OM4	26000404	229
	HITRONIC® HRH1200 8 G 50/ 125 OM4	26000408	229
	HITRONIC® HRH1700 12 G 50/ 125 OM4	26000412	229
halogen-free, flame-retardant, low smoke emission, easy to handle, highly flexible, suitable for direct connector assembly, SIMPLEX sheath diameter: 2.1 mm	HITRONIC® HRH400 2 G 50/ 125 OM3	26000302	229
	HITRONIC® HRH600 4 G 50/ 125 OM3	26000304	229
	HITRONIC® HRH1200 8 G 50/ 125 OM3	26000308	229
	HITRONIC® HRH1700 12 G 50/ 125 OM3	26000312	229
halogen-free, flame-retardant, low smoke emission, easy to handle, highly flexible, suitable for direct connector assembly, SIMPLEX sheath diameter: 2.1 mm	HITRONIC® HRH400 2 G 50/ 125 OM2	26000202	229
	HITRONIC® HRH600 4 G 50/ 125 OM2	26000204	229
	HITRONIC® HRH1200 8 G 50/ 125 OM2	26000208	229
	HITRONIC® HRH1700 12 G 50/ 125 OM2	26000212	229
halogen-free, flame-retardant, low smoke emission, easy to handle, highly flexible, suitable for direct connector assembly, SIMPLEX sheath diameter: 2.1 mm	HITRONIC® HRH400 2 G 62.5/ 125 OM1	26000102	229
	HITRONIC® HRH600 4 G 62.5/ 125 OM1	26000104	229
	HITRONIC® HRH1200 8 G 62.5/ 125 OM1	26000108	229
	HITRONIC® HRH1700 12 G 62.5/ 125 OM1	26000112	229

Continuation see page 49

QUICKFINDER [CONTINUATION]

FO-fibre type	Cable type/standardisation (DIN VDE 0888)	Area of Installation	Cabling	Fibre Specification	No. of fibres	Max. tensile force (long-term) in [N]	Outer sheath material
GOF – Glass Optical Fibre	Breakout Cable J-V(ZN)HH (tight buffer, 2 – 12 fibres)	Indoor	static	Singlemode 9/ 125 µm OS2	2	400	LSZH
					4	600	
					8	1200	
					12	1700	
	Mini Breakout Cable J-V(ZN)H (tight buffer, 2 – 12 fibres)	Indoor	static	Multimode 50/ 125 µm OM4	2	650	LSZH
					4		
					8	850	
					12		
				Multimode 50/ 125 µm OM3	2	650	LSZH
					4		
					8	850	
					12		
				Multimode 50/ 125 µm OM2	2	650	LSZH
					4		
					8	850	
					12		
				Multimode 62.5/ 125 µm OM1	2	650	LSZH
					4		
					8	850	
					12		
GOF – Glass Optical Fibre Cables for Special Applications	Fire-Resistant Cable Universal cable with special properties in case of fire A/J-DQ(ZN)BH(SR)H, U-DQ(ZN)BH(SR)H, armoured loose tube cable (4 – 24 fibres)	Universal (indoor and outdoor), safety area, tunnels	static	Multimode 50/ 125 µm OM3	4	1500	LSZH
					8		
					12		
					24		
				Multimode 50/ 125 µm OM2	4	1500	LSZH
					8		
					12		
					24		
				Multimode 62.5/ 125 µm OM2	4	1500	LSZH
					8		
					12		
					24		
				Singlemode 9/ 125 µm OS2	4	1500	LSZH
					8		
					12		
					24		
	Torsion-Resistant Breakout Cable A/J-V(ZN)H11Y flexible (tight buffer, 2 – 12 fibres)	Universal (indoor and outdoor), Torsion, flexible application	flexible (Torsion)	Multimode 50/ 125 µm OM2	2	600	PUR
					4	800	
					8	1600	
					12	2400	
Multimode 62.5/ 125 µm OM1				2	600	PUR	
				4	800		
				8	1600		
				12	2400		

Please see detailed technical information on the data sheet (www.lappgroup.com/products).
Multimode OM4 fibres are also available upon request for all GOF cables.

Product Benefits	Article designation	Article number	Page
halogen-free, flame-retardant, low smoke emission, easy to handle, highly flexible, suitable for direct connector assembly, SIMPLEX sheath diameter: 2.1 mm	HITRONIC® HRH400 2 E9/125 OS2	26000902	229
	HITRONIC® HRH600 4 E9/125 OS2	26000904	229
	HITRONIC® HRH1200 8 E9/125 OS2	26000908	229
	HITRONIC® HRH1700 12 E9/125 OS2	26000912	229
halogen-free, flame-retardant, low smoke emission, easy to handle, suitable for direct connector assembly, tight buffer fibre diameter: 900µm	HITRONIC® HDH 2 G 50/125 OM4	26010402	230
	HITRONIC® HDH 4 G 50/125 OM4	26010404	230
	HITRONIC® HDH 8 G 50/125 OM4	26010408	230
	HITRONIC® HDH 12 G 50/125 OM4	26010412	230
halogen-free, flame-retardant, low smoke emission, easy to handle, suitable for direct connector assembly, tight buffer fibre diameter: 900µm	HITRONIC® HDH 2 G 50/125 OM3	26010302	230
	HITRONIC® HDH 4 G 50/125 OM3	26010304	230
	HITRONIC® HDH 8 G 50/125 OM3	26010308	230
	HITRONIC® HDH 12 G 50/125 OM3	26010312	230
halogen-free, flame-retardant, low smoke emission, easy to handle, suitable for direct connector assembly, tight buffer fibre diameter: 900µm	HITRONIC® HDH 2 G 50/125 OM2	26010202	230
	HITRONIC® HDH 4 G 50/125 OM2	26010204	230
	HITRONIC® HDH 8 G 50/125 OM2	26010208	230
	HITRONIC® HDH 12 G 50/125 OM2	26010212	230
halogen-free, flame-retardant, low smoke emission, easy to handle, suitable for direct connector assembly, tight buffer fibre diameter: 900µm	HITRONIC® HDH 2 G 62.5/125 OM1	26010102	230
	HITRONIC® HDH 4 G 62.5/125 OM1	26010104	230
	HITRONIC® HDH 8 G 62.5/125 OM1	26010108	230
	HITRONIC® HDH 12 G 62.5/125 OM1	26010112	230
Safety fire-resistant fibre optical cable with system integrity for 180 min, halogen-free, flame-retardant, low smoke emission cable sheath, metallic armoured (corrugated steel tape)	HITRONIC® FIRE 4G50/125 OM3	27560304	214
	HITRONIC® FIRE 8G50/125 OM3	27560308	214
	HITRONIC® FIRE 12G50/125 OM3	27560312	214
	HITRONIC® FIRE 24G50/125 OM3	27560324	214
Safety fire-resistant fibre optical cable with system integrity for 180 min, halogen-free, flame-retardant, low smoke emission cable sheath, metallic armoured (corrugated steel tape)	HITRONIC® FIRE 4G50/125 OM2	27560204	214
	HITRONIC® FIRE 8G50/125 OM2	27560208	214
	HITRONIC® FIRE 12G50/125 OM2	27560212	214
	HITRONIC® FIRE 24G50/125 OM2	27560224	214
Safety fire-resistant fibre optical cable with system integrity for 180 min, halogen-free, flame-retardant, low smoke emission cable sheath, metallic armoured (corrugated steel tape)	HITRONIC® FIRE 4G62.5/125 OM1	27560104	214
	HITRONIC® FIRE 8G62.5/125 OM1	27560108	214
	HITRONIC® FIRE 12G62.5/125 OM1	27560112	214
	HITRONIC® FIRE 24G62.5/125 OM1	27560124	214
Safety fire-resistant fibre optical cable with system integrity for 180 min, halogen-free, flame-retardant, low smoke emission cable sheath, metallic armoured (corrugated steel tape)	HITRONIC® FIRE 4E9/125 OS2	27560904	214
	HITRONIC® FIRE 8E9/125 OS2	27560908	214
	HITRONIC® FIRE 12E9/125 OS2	27560912	214
	HITRONIC® FIRE 24E9/125 OS2	27560924	214
Fibre optical cables for wind applications with defined movement, torsion with robust PUR sheath, breakout cable construction, SIMPLEX sheath diameter: 2.5 mm	HITRONIC® TORSION 2G50/125 OM2	26310202	215
	HITRONIC® TORSION 4G50/125 OM2	26310204	215
	HITRONIC® TORSION 8G50/125 OM2	26310208	215
	HITRONIC® TORSION 12G50/125 OM2	26310212	215
Fibre optical cables for wind applications with defined movement, torsion with robust PUR sheath, breakout cable construction, SIMPLEX sheath diameter: 2.5 mm	HITRONIC® TORSION 2G62.5/125 OM1	26310102	215
	HITRONIC® TORSION 4G62.5/125 OM1	26310104	215
	HITRONIC® TORSION 8G62.5/125 OM1	26310108	215
	HITRONIC® TORSION 12G62.5/125 OM1	26310112	215

Continuation see page 51

QUICKFINDER [CONTINUATION]

FO-fibre type	Cable type/standardisation (DIN VDE 0888)	Area of Installation	Cabling	Fibre Specification	No. of fibres	Max. tensile force (long-term) in [N]	Outer sheath material
GOF – Glass Optical Fibre Cables for Special Applications	highly flexible drag chain Breakout cable A/J-V(ZN)H(ZN)11Y (tight buffer, 2 – 12 fibres)	Universal, industrial area	flexible, moving (drag chain)	Multimode 50/125 µm OM4	4	1000	PUR
				Multimode 50/125 µm OM3			
				Multimode 50/125 µm OM2			
				Multimode 62.5/125 µm OM1			
				Singlemode 9/125 µm OS2			
	Reelable Mini Breakout Cable A/ J-V(ZN)11Y flexible (tight buffer, 4, 6, 8 fibres)	Universal, industrial area, event technology	flexible (for frequent reeling)	Multimode 50/125 µm OM4	4	600	PUR
					6		
					8	700	
				Multimode 50/125 µm OM3	4	600	PUR
					6		
					8	700	
				Multimode 50/125 µm OM2	4	600	PUR
					6		
					8	700	
				Multimode 62.5/125 µm OM1	4	600	PUR
					6		
					8	700	

FO-fibre type	Cable type/standardisation (DIN VDE 0888)	Area of Installation	Cabling	Fibre Specification	No. of fibres	Outer sheath material
POF – Polymer Optical Fibre	J-V2Y 1P980/1000	Indoor (industrial & automation areas)	static	POF 980/100 µm	1 (SIMPLEX)	PE
	J-V2Y(ZN)11Y 1P980/1000				1 (SIMPLEX)	PUR
	J-V2Y 2P980/1000			POF 980/1000 µm	2 (DUPLEX)	PE
	J-V2Y(ZN)11Y 2P980/1000				2 (DUPLEX)	PUR
	J-V2Y(ZN)11Y 2P980/1000				2 (DUPLEX)	
	J-V2Y(ZN)11Y 1P980/1000 flex		highly flexible	POF 980/1000 µm	1 (SIMPLEX)	PUR
	J-V2Y(ZN)11Y 2P980/1000 flex				2 (DUPLEX)	
	J-V4Y(ZN)11Y 2P980/1000	Industry and automation PROFINET®	static, Type B	POF 980/1000 µm	2 (DUPLEX)	PUR
	J-V4Y(ZN)Y 2P980/1000			POF 980/1000 µm	2 (DUPLEX)	PVC
	J-V4Y(ZN)11Y 2P980/1000 flex		highly flexible, Type C	POF 980/1000 µm	2 (DUPLEX)	PUR
PCF – Polymer Cladded Fibre	A-V(ZN)11Y 1K200/230	Outdoor	static	PCF 200/230 µm	1 (SIMPLEX)	PUR
	AT-VQ(ZN)HB2Y 2K200/230				2 (DUPLEX)	PE
	J-V(ZN)H11Y 2K200/230	Indoor	static	PCF 200/230 µm	2 (DUPLEX)	PUR
	A/J-V(ZN)H11Y 2K200/230 flex	Universal	highly flexible	PCF 200/230 µm	2 (DUPLEX)	PUR
	AT-V(ZN)YY 2K200/230	Industry and automation PROFINET®	static, Type B	PCF 200/230 µm	2 (DUPLEX)	PVC
	AT-V(ZN)YY 2K200/230 (with UL-listing)			PCF 200/230 µm	2 (DUPLEX)	
	AT-V(ZN)Y(ZN)Y 2K200/230 flex		highly flexible, Type C	PCF 200/230 µm	2 (DUPLEX)	PVC
	AT-V(ZN)Y(ZN)11Y 2K200/230 flex			PCF 200/230 µm	2 (DUPLEX)	PUR

Please see detailed technical information on the data sheet (www.lappgroup.com/products). Multimode OM4 fibres are also available upon request for all GOF cables.

Product Benefits	Article designation	Article number	Page
Fibre optical cable for flexible applications (power chain) for high mechanical stress in industrial environments, PUR outer sheath, breakout cable construction, SIMPLEX sheath dimension: 2.0 mm	HITRONIC® HRM-FD1000 4G50/125 OM4	26300404	217
	HITRONIC® HRM-FD1000 4G50/125 OM3	26300304	217
	HITRONIC® HRM-FD1000 4G50/125 OM2	26300204	217
	HITRONIC® HRM-FD1000 4G62.5/125 OM1	26300104	217
	HITRONIC® HRM-FD1000 4E9/125 OS2	26300904	217
Reelable fibre optical cable for events and plant engineering, tactical applications, with robust PUR outer sheath, mini-Breakout cable construction, tight buffer fibre diameter: 900µm	HITRONIC® HDM600 4G50/125 OM4	26610404	216
	HITRONIC® HDM600 6G50/125 OM4	26610406	216
	HITRONIC® HDM700 8G50/125 OM4	26610408	216
Reelable fibre optical cable for events and plant engineering, tactical applications, with robust PUR outer sheath, mini-Breakout cable construction, tight buffer fibre diameter: 900µm	HITRONIC® HDM600 4G50/125 OM3	26610304	216
	HITRONIC® HDM600 6G50/125 OM3	26610306	216
	HITRONIC® HDM700 8G50/125 OM3	26610308	216
Reelable fibre optical cable for events and plant engineering, tactical applications, with robust PUR outer sheath, mini-Breakout cable construction, tight buffer fibre diameter: 900µm	HITRONIC® HDM600 4G50/125 OM2	26610204	216
	HITRONIC® HDM600 6G50/125 OM2	26610206	216
	HITRONIC® HDM700 8G50/125 OM2	26610208	216
Reelable fibre optical cable for events and plant engineering, tactical applications, with robust PUR outer sheath, mini-Breakout cable construction, tight buffer fibre diameter: 900µm	HITRONIC® HDM600 4G62.5/124 OM1	26610104	216
	HITRONIC® HDM600 6G62.5/125 OM1	26610106	216
	HITRONIC® HDM700 8G62.5/125 OM1	26610108	216

Product Benefits	Article designation	Article number	Page
fibre sheath halogen-free, non-ageing, direct connector assembly	HITRONIC® POF SIMPLEX PE	28000001	195
PUR outer sheath halogen-free, flame-retardant, direct connector assembly	HITRONIC® POF SIMPLEX PE-PUR	28020001	196
fibre sheath halogen-free, non-ageing, direct connector assembly	HITRONIC® POF DUPLEX PE	28000002	197
PUR outer sheath halogen-free, flame-retardant, direct connector assembly	HITRONIC® POF DUPLEX PE-PUR	28020002	198
thicker outer sheath for increased mechanical resistance, halogen-free	HITRONIC® POF DUPLEX HEAVY PE-PUR	28030002	198
power chain, for highly flexible industrial applications, halogen-free outer sheath	HITRONIC® POF SIMPLEX FD PE-PUR	28320001	196
power chain, for highly flexible industrial applications, halogen-free outer sheath	HITRONIC® POF DUPLEX FD PE-PUR	28320002	198
PROFINET® compliant Type B, PA fibre buffer, PUR outer sheath, halogen-free, for high mechanical or chemical stress in industrial environments	HITRONIC® POF DUPLEX PNB PA-PUR	28051002	199
PROFINET® compliant Type B, PA fibre buffer, PVC outer sheath, for standard applications in industrial environments	HITRONIC® POF DUPLEX PNB PA-PVC	28052002	199
PROFINET® compliant Type C, PA fibre buffer, PUR outer sheath, halogen-free, for flexible applications (power chain)	HITRONIC® POF DUPLEX FD PNC PA-PUR	28351002	199
PUR outer sheath, flame-retardant and halogen-free outer sheath, for direct connector assembly	HITRONIC® PCF SIMPLEX PUR Outdoor	28600701	207
compatible with all typical BUS systems, FRNC SIMPLEX sheath (diameter: 2.9 mm), PE outer sheath, low-smoke and halogen-free outer sheath, for direct connector assembly	HITRONIC® PCF DUPLEX FRNC-PE Outdoor	28620702	208
compatible with all typical BUS systems, FRNC SIMPLEX sheath (diameter: 2.9 mm), PUR outer sheath, low-smoke and halogen-free outer sheath, for direct connector assembly	HITRONIC® PCF DUPLEX FRNC-PUR Indoor	28020702	208
power chain, compatible with all typical BUS systems, for highly flexible industrial applications, FRNC SIMPLEX sheath (diameter: 2.2mm), halogen-free outer sheath, for direct connector assembly	HITRONIC® PCF DUPLEX FD FRNC-PUR	28320702	209
PROFINET® compliant Type B, PVC SIMPLEX sheath (2.2 mm), PVC outer sheath, for standard applications in industrial environments, for direct connector assembly	HITRONIC® PCF DUPLEX PNB PVC-PVC	28052702	210
PROFINET® compliant Type B, PVC SIMPLEX sheath (2.2 mm), PVC outer sheath, for standard applications in industrial environments, for direct connector assembly, c(UL)us OFNG 75 °C	HITRONIC® PCF DUPLEX PNB PVC-PVC A	28055702	210
PROFINET® compliant Type C, PVC SIMPLEX sheath (2.2 mm), PVC outer sheath, for flexible applications (power chain)	HITRONIC® PCF DUPLEX FD PNC PVC-PVC	28352702	210
PROFINET® compliant Type C, PVC SIMPLEX sheath (2.2 mm), PUR outer sheath, halogen-free, for flexible applications (power chain)	HITRONIC® PCF DUPLEX FD PNC PVC-PUR	28351702	210

POF SELECTION TABLE [CONNECTOR – CABLE – TOOLS – ACCESSORIES]

Connector types			ST (BFOC)		FSMA			
			Crimp version	Clamp version	Crimp version		Clamp version	
			POF Connector ST(BFOC) Crimp 2.2	POF Connector ST(BFOC) Crimp 2.2	POF Connector FSMA Crimp 2.2	POF Connector FSMA Hex Crimp	POF Connector FSMA Crimp 2.2	POF Connector FSMA Hex Clamp
			Article no./PU	Article no./PU	Article no./PU		Article no./PU	
Cable – tools – accessories		Article no.	29125099/4	29120099/4	29135099/4	29135089/4	29130099/4	29130089/4
			29125098/50	29120098/50	29135098/50	29135088/50	29130098/50	29130088/50
(compatible) Cables	HITRONIC® POF SIMPLEX PE	28000001	X	X	X	X	X	X
	HITRONIC® POF SIMPLEX PE-PUR	28020001	X	X	X	X	X	X
	HITRONIC® POF SIMPLEX FD PE-PUR	28320001	X	X	X	X	X	X
	HITRONIC® POF DUPLEX PE	28000002	X	X	X	X	X	X
	HITRONIC® POF DUPLEX PE-PUR	28020002	X	X	X	X	X	X
	HITRONIC® POF DUPLEX HEAVY PE-PUR	28030002	X	X	X	X	X	X
	HITRONIC® POF DUPLEX PNB PA-PUR	28051002	X	X	X	X	X	X
	HITRONIC® POF DUPLEX PNB PA-PVC	28052002	X	X	X	X	X	X
	HITRONIC® POF DUPLEX FD PE-PUR	28320002	X	X	X	X	X	X
	HITRONIC® POF DUPLEX FD PNC PA-PUR	28351002	X	X	X	X	X	X
Tool sets	Assembly Set POF Connector FSMA	29500001			X	X	(X)*	(X)*
	Assembly Set POF Connector ST(BFOC)	29500002	X	(X)*				
	Assembly Set POF Connector SC/SC-RJ	29500004						
Adapters	POF Adapter FSMA/4PC	29430099			X	X	X	X
	POF Adapter FSMA Hex/4PC	29430089			X	X	X	X
	POF Adapter ST (BFOC)/4PC	29420099	X	X				
	POF Adapter F05 SIMPLEX/4PC	29450099						
	POF Adapter HFBR4505 GY SIMPLEX/4PC	29440099						
	POF Adapter HFBR4515 BL SIMPLEX/4PC	29441099						
Individual accessories, tools, supplies	POF Buffered Fibre Stripper 2.2 mm	29500011	X	X	X	X	X	X
	POF Cable Stripper 3.6/6.0 mm	29500012	X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)
	POF Cable Stripper PA 2.2 mm	29500013	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)
	POF Crimp Tool 2.5/3.0/4.5/4.95 mm	29500010	X		X	X		
	Strain relief element scissors	29500017	X	X	X	X	X	X
	Polishing film graining size 1000 (BL)	29500021	X	X	X	X	X	X
	Polishing film graining size 0.3 µm (WH)	29500022						
	Polishing film graining size 1 µm (GN)	29500023	X	X	X	X	X	X
	Polishing film graining size 5 µm (BR)	29500024	X	X	X	X	X	X
	Polishing glass plate 150x230 mm	29500020	X	X	X	X	X	X
	Polishing Disc POF ST(BFOC) Connector	29500032	X	X				
	Polishing Disc POF HFBR4501/4511 SIMPLEX	29500033						
	Polishing Disc POF SIMPLEX 2.2 mm	29500036						
	Polishing Disc POF FSMA Connector	29500031			X	X	X	X
	Polishing Disc POF F05 Connector	29500035						
	Polishing Disc POF HFBR4516 DUPLEX	29500034						
	Polishing Disc POF SC Connector	29500037						
	POF Cutter 2.2/1.0 mm Guillotine	29500014	X	X	X	X	X	X
	POF BufferedFibreCutter 2.2 mm manual	29500015	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)
	POF BufferedFibreCutter 2.2 mm automatic	29500016	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)
Optional test accessories	POF Optical Transmitter (TMR)	29500070	X	X	X	X	X	X
	POF Optical TMR Adapter HFBR, 650 nm	29500071						
	POF Optical TMR Adapter FSMA, 650 nm	29500072			X	X	X	X
	POF Optical TMR Adapter ST(BFOC), 650 nm	29500073	X	X				
	POF Optical TMR Adapter F05, 660 nm	29500074						
	POF Optical TMR Adapter HFBR, 660 nm	29500075						
	POF Optical TMR Adapter FSMA, 660 nm	29500076			X	X	X	X
	POF Optical TMR Adapter ST(BFOC), 660 nm	29500077	X	X				
	POF Optical Power Meter 660/850 nm	29500080	X		X	X	X	X
	POF Power Meter Adapter HFBR4501/4521	29500081						
	POF Power Meter Adapter FSMA	29500082			X	X	X	X
	POF Power Meter Adapter ST(BFOC)	29500083	X	X				
	POF Power Meter Adapter F05	29500084						
	POF Measuring Equipment Set 660/850 nm	29500089	X (Set: Transmitter, Power Meter)	X (Set: Transmitter, Power Meter)	X (Set: Transmitter, Power Meter)	X (Set: Transmitter, Power Meter)	X (Set: Transmitter, Power Meter)	X (Set: Transmitter, Power Meter)

* Includes tools that can be used on the clamp version.

SC-RJ	F05 SIMPLEX	HFBR-Connector Family								
Crimp version										
POF Connector SC-RJ Crimp 2.2	POF Connector F05 SIMPLEX	POF Connector HFBR4501	POF Connector HFBR4503	POF Connector HFBR4506	POF Connector HFBR4511	POF Connector HFBR4513	POF Connector HFBR4516	POF Connector HFBR4531	POF Connector HFBR4532	POF Connector HFBR4533
Article no./PU	Article no./PU	Article no./PU								
29161097/1	29150099/4	29140099/4	29141099/4	29142099/4	29143099/4	29144099/4	29145099/4	29146099/4	29147099/4	29148099/4
-	29150098/50	29140098/50	29141098/50	29142098/50	29143098/50	29144098/50	29145098/50	29146098/50	29147098/50	29148098/50
	X	X	X		X	X		X	X	X
	X	X	X		X	X		X	X	X
	X	X	X		X	X		X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X										
	X									
		X			X					
		X			X					
X	X	X	X	X	X	X	X	X	X	X
X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)	X (for cable)
X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)
		X	X	X	X	X	X			
X	X									
X	X		X	X	X	X	X			
X	X		X	X	X	X	X			
X	X		X	X	X	X	X			
X	X									
		X			X					
	X									
							X			
X										
X	X	X	X	X	X	X	X	X	X	X
X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)
X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)	X (Alternative)
	X	X								
		X								
	X									
		X								
	X	X								
		X								
	X									
	X (Set: Transmitter, Power Meter)	X (Set: Transmitter, Power Meter)								

PCF SELECTION TABLE [CONNECTOR – CABLE – TOOLS – ACCESSORIES]

Connector types		ST (BFOC)		
		Clamp version		
		PCF Connector ST (BFOC) Clamp 3.0		PCF Connector ST (BFOC) Clamp 2.2
		Article no./PU		
Cable – tools – accessories		Article no.		
			29126799/4	29125799/4
			29126798/50	29125798/50
(compatible) Cables	HITRONIC® PCF SIMPLEX PUR, 2.9 mm	28600701	X	
	HITRONIC® PCF DUPLEX FRNC-PUR, 2.9 mm	28020702	X	
	HITRONIC® PCF DUPLEX FRNC-PE, 2.9 mm	28620702	X	
	HITRONIC® PCF DUPLEX PNB PVC-PVC A, 2.2mm	28055702		X
	HITRONIC® PCF DUPLEX PNB PVC-PVC, 2.2mm	28052702		X
	HITRONIC® PCF DUPLEX FD FRNC-PUR, 2.2 mm	28320702		X
	HITRONIC® PCF DUPLEX FD PNC PVC-PUR, 2.2mm	28351702		X
	HITRONIC® PCF DUPLEX FD PNC PVC-PVC, 2.2mm	28352702		X
Tool sets	Assembly Set PCF Connector FSMA	29500701		
	Assembly Set PCF Connector ST(BFOC)	29500702	X	X
	Assembly Set PCF Connector SC/SC-RJ	29500704		
	Assembly Set PCF Connector HFBR4521	29500703		
Adapters	POF Adapter FSMA/4PC	29430099		
	POF Adapter FSMA Hex/4PC	29430089		
	POF Adapter ST (BFOC)/4PC	29420099	X	X
	POF Adapter F05 SIMPLEX/4PC	29450099		
	POF Adapter HFBR4505 GY SIMPLEX/4PC	29440099		
	POF Adapter HFBR4515 BL SIMPLEX/4PC	29441099		
Individual accessories, tools, supplies	PCF Buffered Fibre Stripper 0.5 mm (K200/230)	29500711	X	X
	POF Cable Stripper 3.6/6.0 mm	29500012	X	X
	POF Cable Stripper PA 2.2 mm	29500013		
	POF Crimp Tool 2.5/3.0/4.5/4.95 mm	29500010		
	PCF Cleaving Tool FSMA Connector	29500712		
	PCF Cleaving Tool ST(BFOC) Connector	29500713	X	X
	PCF Cleaving Tool HFBR4521 Connector	29500714		
	PCF Cleaving Tool SC Connector	29500715		
	Strain relief element scissors	29500017	X	X
	PCF Microscope Adapter FSMA SIMPLEX	29500771		
	PCF Microscope Adapter ST(BFOC) SIMPLEX	29500772	X	X
	PCF Microscope Adapter HFBR SIMPLEX	29500773		
	PCF Inspection Microscope (100x)	29500770	X	X
	Polishing film graining size 1000 (BL)	29500021		
	Polishing film graining size 0.3 µm (WH)	29500022	X (optional)	X (optional)
	Polishing film graining size 1 µm (GN)	29500023	X (optional)	X (optional)
	Polishing film graining size 5 µm (BR)	29500024	X (optional)	X (optional)
	Polishing glass plate 150x230 mm	29500020	X (optional)	X (optional)
	Polishing Disc POF ST(BFOC) Connector	29500032	X (optional)	X (optional)
	Polishing Disc POF HFBR4501/4511 SIMPLEX	29500033		
	Polishing Disc POF SIMPLEX 2.2 mm	29500036		
	Polishing Disc POF FSMA Connector	29500031		
	Polishing Disc POF F05 Connector	29500035		
	Polishing Disc POF HFBR4516 DUPLEX	29500034		
	Polishing Disc PCF HFBR4521 Connector	29500733		
	Polishing Disc POF SC Connector	29500037		
Optional test accessories	POF Optical Transmitter (TMR)	29500070	X	X
	POF Optical TMR Adapter HFBR, 650 nm	29500071		
	POF Optical TMR Adapter FSMA, 650 nm	29500072		
	POF Optical TMR Adapter ST(BFOC), 650 nm	29500073	X	X
	POF Optical TMR Adapter F05, 660 nm	29500074		
	POF Optical TMR Adapter HFBR, 660 nm	29500075		
	POF Optical TMR Adapter FSMA, 660 nm	29500076		
	POF Optical TMR Adapter ST(BFOC), 660 nm	29500077	X	X
	POF Optical Power Meter 660/850 nm	29500080	X	X
	POF Power Meter Adapter HFBR4501/4521	29500081		
	POF Power Meter Adapter FSMA	29500082		
	POF Power Meter Adapter ST(BFOC)	29500083	X	X
	POF Power Meter Adapter F05	29500084		
	POF Measuring Equipment Set 660/850 nm	29500089	X	X

FSMA		SC-RJ		HFBR 4521	
Clamp version		Clamp version		Clamp version	Crimp version
PCF Connector FSMA Clamp 3.0	PCF Connector FSMA Clamp 2.2	PCF Connector SC-RJ Clamp 3.0	PCF Connector SC-RJ Clamp 2.2	PCF Connector HFBR4521 Clamp 3.0	PCF Connector HFBR4521 BK SIMPLEX 2.2
Article no./PU		Article no./PU		Article no./PU	
29136799/4	29135799/4	29166797/1	29165797/1	29141799/4	29140799/4
29136798/50	29135798/50	-	-	29141798/50	29140798/50
X		X		X	
X		X		X	
X		X		X	
	X		X		
	X		X		
	X		X		X
	X		X		X
	X		X		X
X	X				
		X	X		
				X	
X	X				
X	X				
X	X	X	X	X	X
X	X	X	X	X	X
X	X				
				X	
		X	X		
X	X			X	X
X	X				
				X	X
X	X			X	X
X (optional)	X (optional)	X (optional)	X (optional)	X (optional)	X
X (optional)	X (optional)	X (optional)	X (optional)	X (optional)	X
X (optional)	X (optional)	X (optional)	X (optional)	X (optional)	X
X (optional)	X (optional)	X (optional)	X (optional)	X (optional)	X
X (optional)	X (optional)				
				X (optional)	X
		X (optional)	X (optional)		
X	X			X	X
X	X				
				X	X
X	X				
X	X			X	X
				X	X
X	X				
X	X			X	X



KABEL STUTTGART HITRONIC

KABEL STUTTGART HITRONIC U268



Power and control cables



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ÖLFLEX® CONNECT

Systems Solutions made by Lapp

Our dedicated and highly qualified team of engineers, technicians, sales and service personnel are with you throughout – from design to the creation of the prototype right through to production and quality control.

ÖLFLEX® CONNECT SERVO



Thanks to our expertise in manufacturing servo cables and circular connectors, we can provide you with solutions for all your servo-application needs: servo cables in three performance classes, connectors with standard interlocking screws or rapid interlocking system, overmolded assemblies.

Your benefits at a glance

- Improved EMC shielding (6db) through new connector design (size 1)
- Improved quality through semi-automated assembly process
- Tamper proof (connector cannot be opened)
- Complete Lapp solution incl. new controller connector (new SIEMENS® booksize generation)

More features

- Vibration-proof
- Strain relief in line with standards
- IP67



Find our servo assemblies from page 58 onwards

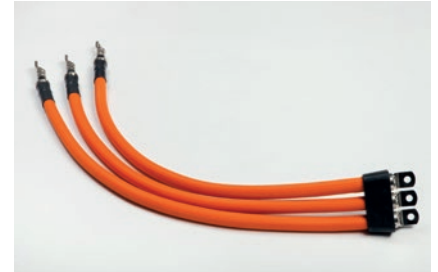
ÖLFLEX® CONNECT CABLES

Cable assemblies

Our wide array of cables, connectors and accessories that we have engineered, enables us to respond quickly to your requirements – from smaller orders to large-scale projects. Our systems solutions assembly sites around the world all operate to the same operating standards to deliver the renowned Lapp quality.



Cable harness with different connectors and end sleeves



Extruded e-mobility cabling

Examples of products from our portfolio:



Cable with ring eyelets



Cable with heat shrink tube, crimps and circular connector



Cable with circular connector and earth cable with heat shrink tube

i Find out more about our cable assemblies on www.lappgroup.com/systems

Spiral cables

When producing spiral cables, we have a wealth of expertise at our disposal. Flexibility and durability are key factors for applications requiring long-term high performance. It is also crucial to have the appropriate insulation and the right conductor material. With Lapp, your spiral cables are definitely in safe hands.

Features

- PUR or rubber outer sheath to withstand high mechanical stress
- Extension lengths of up to 3.5x the unextended spiral length
- High restoring force
- Various cable cross sections from 0.14 to 2.5 mm²
- Unextended lengths of > 2.0 m are customizable



ÖLFLEX® CONNECT SERVO

Servo solutions for SIEMENS® standard

With our smart servo solutions you get cables in 2 classes: Core Line and Extended Line. All cables are fitted with our newly designed connector. This connector is tamper proof, as it is pressed rather than screwed like conventional connectors. The 360° screen contact makes a huge improvement to EMC shielding (6db). In addition, the cable design in our Core Line enables a semi-automated production process. This ensures higher process reliability and accordingly a globally standardised quality standard.

Our powerlines at a glance:

6FX-5002	6FX-8002
core line ^{*1} semi-automated assembly PVC	core line ^{*2} semi-automated assembly PUR
	extended line ^{*3} PUR

^{*1} ÖLFLEX® 742, PVC, for 6FX5002, ^{*2} ÖLFLEX® 752, PUR, for 6FX8002, ^{*3} ÖLFLEX® 796, PUR, acc. to 6FX8002

Core Line: Your smart alternative

Core Line is the ideal alternative for **PVC 6FX-5002/ PUR 6FX-8002** realized by a specially developed cable:

- PVC 6FX-5002: Suitable for static and dynamic applications: timber processing, packaging machines, slowly moving chains
- PUR 6FX-8002: Suitable for highly dynamic applications: moving chains in tooling machines

Your benefits at a glance:

- Improved EMC shielding (6db) through new connector design (size 1, SIEMENS®)
- Improved quality through semi-automated assembly process
- Tamper proof (connector cannot be opened)
- Complete Lapp solution incl. new controller connector

More features:

- Vibration-proof
- Strain relief in line with standards
- IP67



EMC screening

Screening

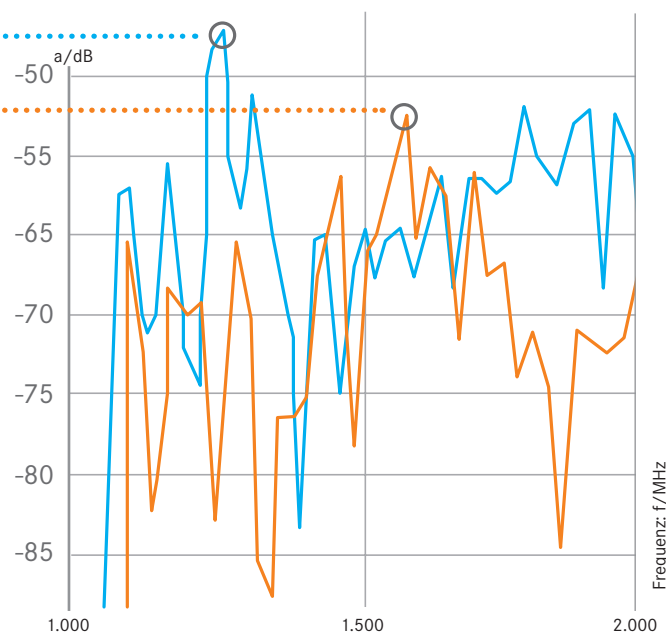
Competitor product

-47 db

-53 db

Screening

Lapp assembly*



*6db better screening (factor 4)

Product video:
360 degree screening



Lines in comparison

6FX-5002

	core line PVC
Number of cycles	5 mio. cycles
Max. length	Acc. to manufacturer info
Travelling speed	Up to 3m/s
Travelling distance	Up to 10m
Acceleration	Up to 3m/s ²
Min. bending radius (1.5– 6mm ²)	7.5 x external diameter

6FX-8002

	core line PUR	extended line PUR
Number of cycles	5 mio. cycles	10 mio. cycles
Max. length	Up to 35m	Up to 100m
Travelling speed	Up to 3m/s	Up to 5m/s
Travelling distance	Up to 10m	Up to 100m
Acceleration*	Up to 3m/s ²	Up to 50m/s ²
Min. bending radius (1.5– 6mm ²)	7.5 x outer diameter	7.5 x outer diameter

*Deviation of Core Line to Extended Line due to test parameters, i.e. Core Line was not tested up to 50m/s² in high speed drag chain. This test will be undergone in due time.

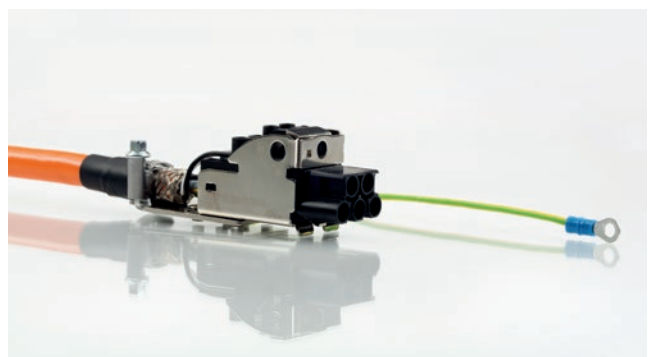
Portfolio Overview



- Powerline for drive
- For SIEMENS® standard 5002/8002
- Size 1
- Newly designed connector
- Available as PVC/PUR



- Powerline for drive
- For SIEMENS® standard 5002/8002
- More SIEMENS® sizes available (1.5/3) as conventional assembly
- Available as PVC/PUR



- Powerline with conventional controller connector
- For SIEMENS® standard 5002/8002
- Available as PVC/PUR



NEW

Lapp controller connector acc. to
SIEMENS® S 120 C-/D types, booksize

Discover our new servo configurator:
www.lappgroup.com/servoconfigurator



Learn more under lappgroup.com/servo

Customer Service and Orders:
export.uil@lappgroup.com



ÖLFLEX® SERVO Core Line for Siemens 6FX5002 (PVC)



Info

- Connector with novel, safe screen connection
- Custom length available



Benefits

- Regional manufactured worldwide available
- Lapp quality standards

Application range

- Specifically for machine tool building
- For travel distances up to 10 m.
- For static and dynamic applications

Product features

- Core Line for light duty power chain applications
- New PVC servo cable, shielded
- Innovative connector concept

Norm references / Approvals

- Design according to SIEMENS® standard

Product Make-up

- Brake wire with 1,5 mm² wire gauge

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description:
Control cable



Nominal voltage

Power cable:- Power cores: 1000 V (UL/CSA) 600 / 1000 V (VDE Uo/U)-
Control cores: 1000 V (UL/CSA) 600 / 1000 V (VDE Uo/U)

Distance of Travel

Power cables up to 6mm²: 10m

Acceleration

Power cable up to 6mm²: 3m/s²

Speed of Travel

Power cable up to 6mm²: 3m/s

Max. bending cycles

Power cable up to 6mm²: 5 Mio.



Temperature range

Flexible use: -5°C to +70°C

Article number	Length (m)	SIEMENS® assembly designation	Copper index kg/ 1.000 pieces	Other dimensions	PU
ÖLFLEX® SERVO Core Line for Siemens 6FX5002 (PVC)					
5480007020	10.0	5CA05	818.1	Other lengths available	1
5480007090	10.0	5CA15	1212	Other lengths available	1
5480007510	10.0	5CN01	818.1	Other lengths available	1
5480007650	10.0	5CN11	1212	Other lengths available	1
5480007720	10.0	5CN21	818.1	Other lengths available	1
5480007790	10.0	5CN31	1212	Other lengths available	1
5480008210	10.0	5CQ15	1212	Other lengths available	1
5480008630	10.0	5CS01	818.1	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only.

Other lengths and cable terminations are available upon request.

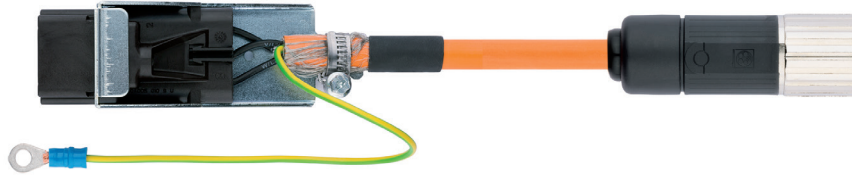
Photographs are not to scale and do not represent detailed images of the respective products.

Power and control cables

ÖLFLEX® CONNECT Systems Solutions • ÖLFLEX® CONNECT Servo assemblies



ÖLFLEX® SERVO Core Line for Siemens 6FX8002 (PUR)



Info

- Connector with novel, safe screen connection
- Custom length available

Benefits

- Regional manufactured worldwide available
- Lapp quality standards

Application range

- Specifically for machine tool building
- For travel distances up to 10 m.
- For highly dynamic applications

Product features

- New PUR servo cable, halogen-free & shielded
- Innovative connector concept
- Core Line for light duty power chain applications

Norm references / Approvals

- Design according to SIEMENS® standard

Product Make-up

- Brake wire with 1,5 mm² wire gauge

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description:
Control cable



Nominal voltage

Power cable:- Power cores:: 1000 V (UL/CSA) 600 / 1000 V (VDE Uo/U)-
Control cores: 1000 V (UL/CSA) 600 / 1000 V (VDE Uo/U)

Distance of Travel

Power cables up to 6mm²: 10m

Acceleration

Power cable up to 6mm²: 3m/s²

Speed of Travel

Power cable up to 6mm²: 3m/s

Max. bending cycles

Power cable up to 6mm²: 5 Mio.



Temperature range

Moved: -40°C to +90°C

Article number	Length (m)	SIEMENS® assembly designation	Copper index kg/1.000 pieces	Other dimensions	PU
ÖLFLEX® SERVO Core Line for Siemens 6FX8002 (PUR)					
5480005390	10.0	5CS31	1302.9	Other lengths available	1
5480000665	10.0	5CN01	818.1	Other lengths available	1
5480000715	10.0	5CN11	1212	Other lengths available	1
5480000765	10.0	5CN31	1212	Other lengths available	1
5480001065	10.0	5CS01	818.1	Other lengths available	1
5480001115	10.0	5CS11	1212	Other lengths available	1
5480001215	10.0	5CS21	818.1	Other lengths available	1
5480001765	10.0	5DN11	1828.1	Other lengths available	1
5480001840	10.0	5DN41	2727	Other lengths available	1
5480002115	10.0	5DS01	1393.8	Other lengths available	1
5480002215	10.0	5DS31	1828.1	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only.

Other lengths and cable terminations are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

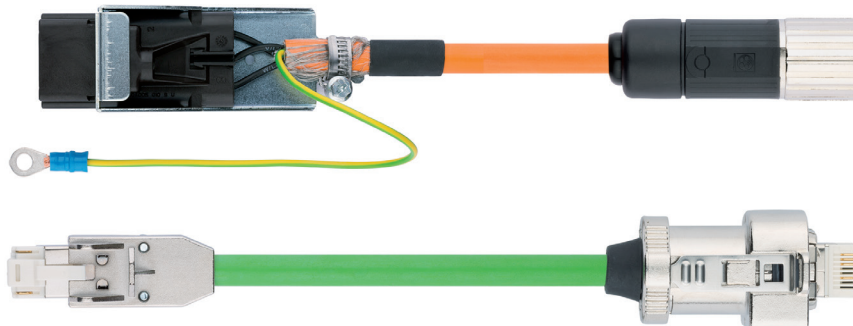


ÖLFLEX® SERVO Extended Line according to Siemens 6FX8002 (PUR)



Info

- Classical production and assembly
- Connector with novel, safe screen connection
- For the most demanding mechanical requirements



Benefits

- Regional manufactured worldwide available
- Lapp quality standards

Application range

- Specifically for machine tool building
- Designed for power chain use: for travel distances up to 100 m (horizontal)
- For very high dynamic motion sequences

Product features

- Extended Line for high mechanical stress in Power chains
- Proven for high dynamic stresses and long distances

Norm references / Approvals

- Design according to SIEMENS® standard 6FX 8002
- Flame-retardant according to IEC 60332-1-2, VW-1, FT 1

Product Make-up

- Full range of types
- Brake wire with 1.5mm² wire gauge

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description:
Control cable



Minimum bending radius

Flexible use: 7.5 x outer diameter
Flexible Use: from 25mm²
10x outer diameter



Nominal voltage

Signal cables: See cable datasheet
Power cable:
- Power cores: See cable datasheet
- Control cores: See cable datasheet

Distance of Travel

up to 100m

Acceleration

up to 50m/s²

Speed of Travel

5m/s

Max. bending cycles

10 Mio.



Temperature range

Flexing: -40°C to +90°C

Article number	Length (m)	SIEMENS® assembly designation	Copper index kg/1.000 pieces	Other dimensions	PU
Assemblies for signal transmission systems					
5480000015	10.0	2AD00	707	Other lengths available	1
5480000065	10.0	2AH00	515.1	Other lengths available	1
5480000165	10.0	2CA31	808	Other lengths available	1
5480000290	10.0	2CH00	707	Other lengths available	1
5480000390	10.0	2DC10	424.2	Other lengths available	1
5480000415	10.0	2DC20	424.2	Other lengths available	1
5480000440	10.0	2EQ10	808	Other lengths available	1
5480004940	10.0	5CN51	2989.6	Other lengths available	1
5480005290	10.0	5CS13	4534.9	Other lengths available	1
5480005440	10.0	5CS51	2989.6	Other lengths available	1
5480005990	10.0	5DN51	3322.9	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only. Other lengths and cable terminations are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

Power and control cables

Servo applications • PVC sheath, certified



ÖLFLEX® SERVO 719 CY

Screened, low capacitive servo cable with PVC outer sheath for static use - certified for North America

LAPP KABEL STUTTGART ÖLFLEX® SERVO 719 CY DESINA, CE



Info

- Successor of ÖLFLEX® SERVO 700 CY and ÖLFLEX® SERVO 709 CY
- Low-capacitance design
- EMC-compliant

Benefits

- Suitable for use with servomotor product lines from leading drive manufacturers
- Longer cable installation lengths thanks to low mutual capacitance cable design
- Multi-standard certification reduces part varieties and saves costs
- Space and weight-saving installations due to small cable diameters
- Copper braiding screens the cable against electromagnetic interference

Application range

- Connecting cable between servo controller and motor
- For static and occasionally flexible use
- Plant engineering
- Industrial machinery and machine tools
- Printing machines

Product features

- Low capacitance
- Flammability:
UL/CSA: VW-1, FT1
IEC/EN: 60332-1-2
- Oil-resistant
- EMC-compliant

Norm references / Approvals

- USA: UL AWM Style 2570
Canada: cUL AWM Style I/II A/B FT1
- UL File No. E63634

Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one or two individually screened control core pairs twisted together in short lay lengths
- Tinned copper screen braiding
- PVC outer sheath, orange (RAL 2003)

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description:
Control cable



Core identification code

Power cores: black with marking
U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE
protective conductor
Single-paired versions: black; white
Double-paired versions: black with
white numbers 5; 6; 7; 8
0,34mm² pairs: WH/BN/GN/YE



Conductor stranding

Fine wire according to VDE 0295
Class 5/ IEC 60228 Class 5



Minimum bending radius

Occasional flexing: 15 x outer diameter
Fixed installation: 6 x outer diameter



Nominal voltage

Power cores and control cores:
IEC U₀/U: 600/1000 V
UL & CSA: 1000 V



Test voltage

Core/Core: 4 kV
Core/Screen: 4 kV



Protective conductor

G = with GN-YE protective conductor



Temperature range

Occasional flexing:
-5°C to +70°C (UL: +80°C)
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SERVO 719 CY				
1020010	4 G 1,5	8.4	83	130
1020011	4 G 2,5	9.9	125	190
1020012	4 G 4	11.7	191	273
1020013	4 G 6	13.7	290	394
1020014	4 G 10	16.7	452	581
1020015	4 G 16	20.1	721	884
1020016	4 G 25	24.3	1100	1348
1020017	4 G 35	27.7	1548	1840
1020018	4 G 50	33.7	2151	2645
1020019	4 G 1,5 + (2 x 1,5)	11.5	146	242
1020020	4 G 2,5 + (2 x 1,5)	12.9	189	306
1020021	4 G 4 + (2 x 1,5)	15.0	271	420
1020022	4 G 6 + (2 x 1,5)	17.0	351	529
1020023	4 G 10 + (2 x 1,5)	19.5	540	752
1020024	4 G 0,75 + 2 x (2 x 0,34)	9.7	99	163
1020025	4 G 1,5 + 2 x (2 x 0,75)	12.3	150	245
1020026	4 G 2,5 + 2 x (2 x 1,0)	14.7	223	357
1020027	4 G 4 + 2 x (2 x 1,0)	16.4	288	452
1020028	4 G 4 + (2 x 1,0) + (2 x 1,5)	16.6	307	469
1020029	4 G 6 + (2 x 1,0) + (2 x 1,5)	18.5	421	617
1020030	4 G 10 + (2 x 1,0) + (2 x 1,5)	22.1	588	852
1020031	4 G 16 + 2 x (2 x 1,5)	25.0	876	1162
1020032	4 G 25 + 2 x (2 x 1,5)	28.7	1227	1590
1020033	4 G 35 + 2 x (2 x 1,5)	30.6	1652	2023
1020034	4 G 50 + 2 x (2 x 2,5)	37.0	2308	2876

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® POWER LS1 refer to main catalogue 2016/17
- SKINTOP® MS-M BRUSH refer to page 244
- SKINTOP® MS-HF-M BRUSH refer to main catalogue 2016/17



ÖLFLEX® SERVO FD 796 CP

Screened servo cable with PUR outer sheath for highly dynamic power chain application - certified



Info

- Extended Line for heavy duty in power chain applications
- AWM certification for USA and Canada
- VDE-tested characteristics

Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Suitable for use with servomotor product lines from leading drive manufacturers
- Longer cable connection possible between frequency converter and drive due to low capacitance design
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Copper braiding screens the cable against electromagnetic interference

Application range

- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

Product features

- Dynamic power chain performance:
Acceleration up to 50 m/s².
Travel speeds up to 5 m/s.
Travel distances up to 100 m.
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
- Flammability:
UL/CSA: VW-1, FT1
IEC/EN: 60332-1-2
- Halogen-free materials
- Abrasion and notch-resistant
- Oil-resistant

Norm references / Approvals

- VDE - Reg. - No. 8591
UL AWM Style 20234
cULus AWM I/II A/B, 1000V 80° FT1
CSA AWM I/II A, 1000V 80° FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one or two individually screened control core pairs twisted together in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

Technical data

- Classification**
ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description: Control cable
- Core identification code**
Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor
Optional designs with one pair of control cores: black; white
Two pairs of control cores: black with white numbers: 5, 6, 7, 8
- Conductor stranding**
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**
For flexible use:
7.5 x outer diameter (1.5-16 mm²)
10 x outer diameter (25-50 mm²)
Fixed installation: 4 x outer diameter
- Nominal voltage**
Power cores and control cores:
IEC U₀/U: 600/1000 V
UL & CSA: 1000 V
- Test voltage**
Core/Core: 4 kV
Core/Screen: 2 kV
- Protective conductor**
G = with GN-YE protective conductor
- Alternating bending cycles**
10 mio. cycles
- Temperature range**
Flexing:
-40°C to +90°C (UL/CSA: +80°C)
Fixed installation:
-50°C to +90°C (UL/CSA: +80°C)

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SERVO FD 796 CP				
0027950	4 G 1,5	9,1	79	140
0027951	4 G 2,5	10,6	129	197
0027952	4 G 4	11,9	186	268
0027953	4 G 6	14,5	296	397
0027954	4 G 10	17,5	449	591
0027955	4 G 16	21,6	716	955
0027956	4 G 25	25,2	1073	1337
0027957	4 G 35	28,6	1480	1769
0027958	4 G 50	33,4	2115	2468
0027959	4 G 1,5 + (2 x 1,5)	11,6	135	261
0027960	4 G 2,5 + (2 x 1,5)	13,4	188	318
0027961	4 G 4 + (2 x 1,5)	14,8	235	385
0027962	4 G 6 + (2 x 1,5)	16,8	329	486
0027963	4 G 10 + (2 x 1,5)	19,4	515	701
0027964	4 G 16 + (2 x 1,5)	23,1	757	1048
0027965	4 G 25 + (2 x 1,5)	26,6	1147	1532
0027966	4 G 35 + (2 x 1,5)	30,9	1538	2097
0027967	4 G 50 + (2 x 1,5)	34	2181	2721
0027969	4 G 1,5 + 2 x (2 x 0,75)	12,2	159	313
0027970	4 G 2,5 + 2 x (2 x 1,0)	14,6	207	395
0027980	4 G 4 + 2 x (2 x 1,0)	16,1	274	466
0027971	4 G 4 + (2 x 1,0) + (2 x 1,5)	16,3	344	485
0027972	4 G 6 + (2 x 1,0) + (2 x 1,5)	18,1	436	588
0027973	4 G 10 + (2 x 1,0) + (2 x 1,5)	21,8	610	819
0027974	4 G 16 + 2 x (2 x 1,5)	25,5	801	1135
0027975	4 G 25 + 2 x (2 x 1,5)	28,8	1187	1559
0027976	4 G 35 + 2 x (2 x 1,5)	30,9	1588	2093
0027977	4 G 50 + 2 x (2 x 2,5)	36,3	2557	2920

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Circular connectors refer to page
- SKINTOP® EMC/Earthing refer to main catalogue 2016/17



ÖLFLEX® SERVO FD 798 CP

Screened encoder cable with PUR outer sheath for highly dynamic power chain application - certified

LAPP KABEL STUTTGART ÖLFLEX® SERVO FD 798 CP



Info

- Extended Line for heavy duty in power chain applications
- Fits to various encoder systems
- AWM certification for USA and Canada

Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Suitable for use with encoders & resolvers from leading manufacturers
- Thin, optimised for weight and volume
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and speed generators
- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

Product features

- Dynamic power chain performance: Acceleration up to 50 m/s². Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Low-capacitance design
- Abrasion and notch-resistant
- Oil-resistant

Norm references / Approvals

- UL AWM Style 20236
- CSA AWM IA/B; IIA/B FT 1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up

- Fine-wire or extra-fine wire, tinned-copper conductor
- Core insulation: polypropylene (PP)
- Cores (or core pairs) twisted in layers or bundles
- Refer to data sheet for more details
- Non-woven wrapping
- PUR outer sheath, green (RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description:
Control cable



Core identification code

Details see datasheet
ÖLFLEX® SERVO FD 798 CP



Conductor stranding

Fine wire or extra-fine wire



Minimum bending radius

Flexible use: 7.5 x outer diameter
Fixed installation: 4 x outer diameter



Nominal voltage

IEC: 30 V
UL & CSA: 30 V



Test voltage

Core/core: 1500 V rms
Core/screen: 750 V rms



Alternating bending cycles

10 mio. cycles



Temperature range

Flexing:
-40°C to +90°C (UL/CSA: +80°C)
Fixed installation:
-50°C to +90°C (UL/CSA: +80°C)

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SERVO FD 798 CP				
0036910	4x2x0,34+4x0,5	8,9	79	125
0036911	3x(2x0,14)+2x(0,5)	8,9	70	120
0036912	3x(2x0,14)+4x0,14+2x0,5	8,8	68	110
0036913	3x(2x0,14)+4x0,14+2x0,5+4x0,22	9,4	80	130
0036914	9x0,5	8,8	71	110
0036915	4x2x0,25+2x1,0	8,8	63	109
0036916	6x2x0,25+2x0,5	10,3	67	121
0036917	10x0,14+2x0,5	7,7	41	82
0036918	10x0,14+4x0,5	8,1	54	98
0036920	4x2x0,14+4x0,5	8,2	51	95
0036921	4x2x0,25	7,6	38	75
0036923	8x2x0,18	7,8	51	85
0036924	4x2x0,18	6,4	30	52
0036926	12x0,22	6,9	44	73
0036927	4x2x0,25+2x0,5	8,5	62	98
0036928	2x2x0,14+2x(2x0,14)+4x0,5+(4x0,14)	9,1	79	135
0036929	2x(2x0,25)+2x0,5	8,7	46	98
0036930	2x2x0,25+2x0,5	7,3	38	72

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

DESINA® is a registered trademark of the German Machine Tool Builders' Association

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Circular connectors refer to main catalogue 2016 / 17
- SILVYN® CHAIN cable protection and guiding systems



ÖLFLEX® SERVO FD 7DSL

Low capacitive hybrid servo cable with PUR outer sheath for highly dynamic power chain application - certified



Info

- OCS - One Cable Solution
- Suitable for HiPerface DSL® motor-feedback systems
- Extended Line for heavy duty in power chain applications

LAPP KABEL STUTTGART ÖLFLEX® SERVO FD 7DSL CE



Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Only one connection line between drive and motor-feedback system. Instead of the encoder cable an integrated DSL pair takes over the signalling.
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

Application range

- Power drive systems in automation engineering
- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines

Product features

- Dynamic power chain performance: Acceleration up to 50 m/s². Travel speeds up to 5 m/s. Travel distances up to 20m.
- Maximum DSL transmission length: 100m
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Low-capacitance design
- Oil-resistant

Norm references / Approvals

- UL AWM Style 21223 cRU AWM I/II A/B FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up

- Extra-fine-wire, bare copper conductor (power cores and control pair) and 19-wire, tinned copper conductor (signal pair)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one screened control pair and one DSL signal pair twisted together
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description: Control cable



Core identification code

Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor
Signal pair: white, blue
Control pair (optional): black with white numbers 5 + 6



Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
DSL pair: 19-wired



Minimum bending radius

For flexible use:
7.5 x outer diameter
Fixed installation: 5 x outer diameter



Nominal voltage

Power and control:
IEC: U₀/U: 600/1000 V
UL: 1000 V
Signal pair: 300 V



Test voltage

Power and control: 4 kV
Signal pair: 1 kV



Protective conductor

G = with GN-YE protective conductor



Alternating bending cycles

10 mio. cycles



Temperature range

Flexing: -40°C to +90°C (UL: +80°C)
Fixed installation:
-50°C to +90°C (UL: +80°C)

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Hybrid cables for power chain applications				
1023275	4 G 1,5 + (2 x 22AWG)	11,2	115	198
1023276	4 G 2,5 + (2 x 22AWG)	12,6	160	269
1023277	4 G 4 + (2 x 22AWG)	14	218	343
1023274	4 G 1 + (2 x 0,75) + (2 x 22AWG)	11,8	133	202
1023278	4 G 1,5 + (2 x 1,0) + (2 x 22AWG)	13,2	152	256
1023279	4 G 2,5 + (2 x 1,0) + (2 x 22AWG)	14	195	313
1023280	4 G 4 + (2 x 1,0) + (2 x 22AWG)	15,8	268	407

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

HIPEFACE DSL® is a registered trademark of SICK AG

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO 7DSL refer to main catalogue 2016/17
- ÖLFLEX® SERVO FD 796 CP refer to page 67

Accessories

- Protective cable conduit systems and cable carrier systems refer to main catalogue 2016/17
- Circular connectors refer to main catalogue 2016/17



SERVO Cables in acc. to SEW® Standard

Screened, low capacitive servo cable with PVC outer sheath for static use - certified for North America

LAPP KABEL STUTTGART SERVO LK SEWX Static CE



Info

- Servo drives
- EMC-compliant

Benefits

- Multi-standard certification reduces part varieties and saves costs
- Longer cable installation lengths thanks to low mutual capacitance cable design
- Copper braiding screens the cable against electromagnetic interference

Application range

- Specially designed to connect SEW servomotors
- Connecting cable between servo controller and motor
- For static and occasionally flexible use
- Industrial machinery and machine tools
- Plant engineering

Product features

- Oil-resistant
- Flame-retardant acc. to IEC 60332-1-2, UL VW-1 & CSA FT 1

Norm references / Approvals

- Based on VDE 0250 / 0285
- UL AWM Style 2570
- UL File No. E63634

Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: TPE
- Control core triplet with laminated aluminium film and a layer of tinned-copper wires
- Cores twisted in short lay lengths
- Tinned-copper braiding
- PVC outer sheath, orange (RAL 2003)

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description:
Control cable



Core identification code

Power: black cores with U, VV, WWW printing and 1 core gnye
Control cores: black cores with numbers 1, 2 and 3



Conductor stranding

Fine wire according to VDE 0295
Class 5 / IEC 60228 Class 5



Minimum bending radius

Occasional flexing: 15 x outer diameter
Fixed installation: 4 x outer diameter



Nominal voltage

Power cores: IEC 750 V, UL 600 V
Control cores: IEC 350 V, UL 600 V



Test voltage

2000 V



Protective conductor

G = with GN-YE protective conductor



Temperature range

Flexing: -10°C to +80°C
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Servo cables				
0038060	4 G 1,5 + (3 x 1,0)	11.8	151	300
0038061	4 G 2,5 + (3 x 1,0)	13.4	212.9	370
0038062	4 G 4 + (3 x 1,0)	15.0	281.8	476
0038063	4 G 6 + (3 x 1,5)	17.0	392.8	625
0038064	4 G 10 + (3 x 1,5)	20.0	625.1	1024

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

SEW® is a registered trademark of SEW Eurodrive GmbH & Co KG, Ernst-Blickle Str. 42, D-76646 Bruchsal

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- SKINTOP® BRUSH ADD-ON refer to page 245
- SKINTOP® MS-SC-M refer to page 243
- SKINTOP® MS-M BRUSH refer to page 244
- SKINTOP® MS-HF-M SC refer to main catalogue 2016/17
- SKINTOP® MS-HF-M BRUSH refer to main catalogue 2016/17



SERVO cables in acc. to SIEMENS® Standard 6FX 5008-

Motor and resolver/encoder cables - certified



Info

- Servo drives
- EMC-compliant

Benefits

- Motor & servo motor cables up to 6 mm²: low capacitance characteristics due to PP insulation
- Multi-standard certification reduces part varieties and saves costs

Application range

- Connecting cable between servo controller and motor
- For static and occasionally flexible use
- Plant engineering
- Industrial machinery and machine tools
- Printing machines

Product features

- Oil-resistant
- Flame-retardant according to IEC 60332-1-2 & CSA FT1
- EMC-compliant

Norm references / Approvals

- Power cable: VDE-registered UL/CSA AWM Style 2570
- Signal cables: UL/CSA AWM style 2502
- UL File No. E63634

Product Make-up

- Design according to SIEMENS® standard 6FX 5008
- Core insulation: up to 6 mm² = PP; 10 mm² and larger = PVC
- Core and pairs are twisted together
- Tinned-copper braiding
- Outer sheath made of special PVC compound
- Signal cables: green (RAL 6018)
- Motor and servomotor cables: orange (RAL 2003)

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description: Control cable



Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



Minimum bending radius

For fixed installation:
5 x outer diameter
For flexible use:
15 x outer diameter



Nominal voltage

Signal cables:
30 V AC (IEC)
30 V AC/DC (UL/CSA)
Power cable:
- Power cores:
U₀/U 600/1000 V (IEC)
1000 V (UL/CSA)
- Control cores:
30 V AC (IEC)
1000 V (UL/CSA)



Test voltage

Power cable:
Power cores: 4000 V
Control cores: 2000 V
Signal cables: 500 V



Temperature range

Fixed installation: -20°C to +80°C
Flexing: from -0°C to +60°C

Article number	Number of cores and mm ² per conductor	Reference article no.	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Signal cables					
0025724	4 x 2 x 0,38 + 4 x 0,5	6FX5008-1BD21	9.0	76.4	120
0025725	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5	6FX5008-1BD41	8.9	63	100
0025726	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5 + 4 x 0,23	6FX5008-1BD51	9.5	69	139
Motor cables					
00257001	4 G 1.5	6FX5008-1BB11 LC	8.0	88	131
00257011	4 G 2.5	6FX5008-1BB21 LC	9.6	132	219
00257021	4 G 4.0	6FX5008-1BB31 LC	11.0	195	312
00257031	4 G 6.0	6FX5008-1BB41 LC	13.1	280	380
0025704	4 G 10.0	6FX5008-1BB51	19.3	445	620
0025705	4 G 16.0	6FX5008-1BB61	23.3	715	1060
0025706	4 G 25.0	6FX5008-1BB25	26.9	1110	1640
0025707	4 G 35.0	6FX5008-1BB35	30.3	1540	2310
0025708	4 G 50.0	6FX5008-1BB50	36.5	2160	3240
Servo cables					
00257151	4 G 1,5 + (2 x 1,5)	6FX5008-1BA11 LC	10.4	150	248
00257161	4 G 2,5 + (2 x 1,5)	6FX5008-1BA21 LC	12.0	194	310
00257171	4 G 4 + (2 x 1,5)	6FX5008-1BA31 LC	13.6	272	445
00257181	4 G 6 + (2 x 1,5)	6FX5008-1BA41 LC	15.6	351	554
0025719	4 G 10 + (2 x 1,5)	6FX5008-1BA51	21.0	536	806

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only. DESINA® is a registered trademark of the German Machine Tool Builders' Association.

Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO FD 796 CP refer to page 67
- SERVO cables in acc. to SIEMENS® Standard 6FX 8PLUS refer to page 72

Accessories

- Circular connectors refer to main catalogue 2016/17
- SKINTOP® EMC/Earthing refer to main catalogue 2016/17

Power and control cables

Power chain applications • Servo applications - power drive systems, certified



SERVO cables in acc. to SIEMENS® Standard 6FX 8PLUS

Motor and resolver/encoder cables - certified



Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines

Product features

- Dynamic power chain performance: Acceleration up to 50 m/s². Travel speeds up to 5 m/s. Travel distances up to 100 m.

- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
- Abrasion and cut-resistant, halogen-free, oil-resistant
- Flame-retardant according to IEC 60332-1-2 & CSA FT 1

Norm references / Approvals

- Power cable: VDE-registered UL AWM Style 21223 CSA AWM I/II, A/B 1000 V 80° FT 1
- Signal cables: UL/CSA AWM Style 20236 UL File No. E63634
- For horizontal travel distances up to 100m
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up

- Extra-fine strand made of copper wires: > Signal cables: tinned > Power cables: bare
- Core insulation: polypropylene (PP)
- Tinned-copper braiding
- PUR outer sheath
- Signal cables: green (RAL 6018)
- Servo cable: orange (RAL 2003)
- Refer to data sheet for more details



Info

- Servo drives
- PUR outer sheath
- EMC-compliant

Technical data

	Classification ETIM 5.0 Class-ID: EC000104 ETIM 5.0 Class-Description: Control cable
	Core identification code Details see datasheet
	Conductor stranding Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
	Minimum bending radius Power cable: Fixed: 4 x Diameter Dynamic: 1.5 mm ² - 16 mm ² : 7.5 x Diameter 25 mm ² - 50 mm ² : 10 x Diameter Signal cable: Fixed: 4 x Diameter Dynamic: 8 x Diameter
	Nominal voltage Signal cables: 30 V AC/DC Power cable: - Power cores: U ₀ /U 600/1000 V (IEC) 1000 V (UL/CSA) - Control cores: 24 V AC/DC (IEC) 1000 V (UL/CSA)
	Test voltage Power cable: 4 kV Signal cables: 500 V
	Protective conductor G = with GN-YE protective conductor
	Alternating bending cycles 10 mio. cycles
	Temperature range Flexing: -20°C to +60°C Fixed installation: -50°C to +80°C

Article number	Number of cores and mm ² per conductor	Reference article no.	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Feedback / signal cables					
00277101	8 x 2 x 0,18	6FX8008-1BD11	7,8	54	85
00277111	4 x 2 x 0,38 + 4 x 0,5	6FX8008-1BD21	8,9	77	120
00277121	3 x (2 x 0,14) + 2 x (0,5)	6FX8008-1BD31	8,9	69	113
00277131	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5	6FX8008-1BD41	8,8	66	101
00277141	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5 + 4 x 0,22	6FX8008-1BD51	9,4	86	139
00277151	4 x 2 x 0,18	6FX8008-1BD61	6,4	34.25	53
00277161	2 x 2 x 0,18	6FX8008-1BD71	5	23.1	36
00277171	12 x 0,22	6FX8008-1BD81	6,9	48	76
00277992	2 x 2 x 0,15 + 1 x 2 x 0,38	6FX8008-2DC00	7,2	39	67
Motor cables					
0027784	4 G 1,5	6FX8008-1BB11-Plus	9,1	90	150
0027785	4 G 2,5	6FX8008-1BB21-Plus	10,6	132	220
0027786	4 G 4,0	6FX8008-1BB31-Plus	11,9	204	300
0027787	4 G 6,0	6FX8008-1BB41-Plus	14,5	315	450
0027788	4 G 10,0	6FX8008-1BB51-Plus	17,5	488	660
0027789	4 G 16,0	6FX8008-1BB61-Plus	21,6	769	1010
Servo cables					
0027790	4 G 1,5 + (2 x 1,5)	6FX8008-1BA11-Plus	11,6	146	230
0027791	4 G 2,5 + (2 x 1,5)	6FX8008-1BA21-Plus	13,4	187	300
0027792	4 G 4 + (2 x 1,5)	6FX8008-1BA31-Plus	14,8	258	380
0027793	4 G 6 + (2 x 1,5)	6FX8008-1BA41-Plus	16,8	365	530
0027794	4 G 10 + (2 x 1,5)	6FX8008-1BA51-Plus	19,4	560	765
0027795	4 G 16 + (2 x 1,5)	6FX8008-1BA61-Plus	23,1	816	1090
0027796	4 G 25 + (2 x 1,5)	6FX8008-1BA25-Plus	26,6	1166	1530
0027797	4 G 35 + (2 x 1,5)	6FX8008-1BA35-Plus	30,9	1554	2040
0027798	4 G 50 + (2 x 1,5)	6FX8008-1BA50-Plus	34	2188	2760

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. / Please find our standard lengths at:

www.lappkabel.de/en/cable-standardlengths / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum / Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils). / Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only

Cables for power chain use should only be handled on drums prior to installation. / Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO FD 796 CP refer to page 67

Accessories

- Circular connectors refer to main catalogue 2016/17
- SKINTOP® EMC/Earthing refer to main catalogue 2016/17



Info

- Servo drives
- PUR outer sheath
- EMC-compliant

SERVO cables in acc. to INDRAMAT® Standard INK

Motor and resolver/encoder cables - certified



Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description:
Control cable



Core identification code

Details see datasheet



Conductor stranding

Extra-fine wire according to IEC 60228 class 6



Minimum bending radius

Power cable:
Fixed installation: 4 x outer diameter
For flexible use: 7.5 x outer diameter
Signal cables:
Fixed installation: 5 x outer diameter
For flexible use: 10 x outer diameter



Nominal voltage

Power cable:
- Power cores:
U₀/U 600/1000 V (IEC)
1000 V (UL/CSA)
- Control cores:
250 V AC (IEC)
1000 V (UL/CSA)
Signal cables:
300 V (IEC), 300 V (UL/CSA)



Test voltage

Power cable:
Power cores: 4000 V
Control cores: 2000 V
Signal cables: 500 V



Protective conductor

G = with GN-YE protective conductor



Alternating bending cycles

5 mio. cycles



Temperature range

Fixed installation: -50°C to +80°C
Flexing: -30°C to +80°C

Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and motor
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines

Product features

- Designed for 5 million alternating bending cycles
- For horizontal travel distances up to 100m
- Abrasion and cut-resistant, halogen-free, oil-resistant
- Flame-retardant according to IEC 60332-1-2 & CSA FT 1

Norm references / Approvals

- Power cable:
UL Style 20234, CSA AWM I/II A/B
- Signal cables:
UL Style 20236, CSA AWM I/II A/B
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up

- In accordance with INDRAMAT® standard INK (also suitable for pre-assembled versions, IKS and IKG)
- Core insulation: TPE
- Refer to data sheet for more details
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

Article number	Number of cores and mm² per conductor	Reference article no.	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Feedback / encoder / resolver cables					
7072400	4 x 2 x 0,25 + 2 x 1,0	INK-0209	8,8	74	120
7072401	4 x 2 x 0,25 + 2 x 0,5	INK-0448	8,5	70	100
7072402	9 x 0,5	INK-0208	8,8	75	126
7072414	4 x 1,0 + 4 x 2 x 0,14 + (4 x 0,14)	INK-0532	9,7	81	140
7072415	2 x (2 x 0,25) + 2 x 0,5	INK-0234	8,7	46	90
7072416	2 x 2 x 0,25 + 2 x 0,5	INK-0750	7,6	35	92
Servo cables					
7072417	4 G 0,75 + 2 x 0,5	INK-0670	10	73	132
7072403	4 G 1,0 + 2 x (2 x 0,75)	INK-0653	11,5	170	226
7072404	4 G 1,5 + 2 x (2 x 0,75)	INK-0650	12,2	189	268
7072405	4 G 2,5 + 2 x (2 x 1,0)	INK-0602	15,1	212	320
7072406	4 G 4 + (2 x 1,0) + (2 x 1,5)	INK-0603	16	306	470
7072407	4 G 6 + (2 x 1,0) + (2 x 1,5)	INK-0604	18,8	366	600
7072408	4 G 10 + (2 x 1,0) + (2 x 1,5)	INK-0605	22	565	850
7072409	4 G 16 + 2 x (2 x 1,5)	INK-0606	25,2	838	1020
7072410	4 G 25 + 2 x (2 x 1,5)	INK-0607	28	1231	1420

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Indramat part designations (IKG, IKS, INK, INS, RKL and RKG) are registered trademarks of Bosch Rexroth AG, and are listed for comparison purposes only.

Cables for power chain use should only be handled on drums prior to installation. / Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO FD 796 CP refer to page 67

Accessories

- Circular connectors refer to main catalogue 2016/17
- SKINTOP® EMC/Earthing refer to main catalogue 2016/17

Power and control cables

Power chain applications • Servo applications - power drive systems, certified



SERVO cables in acc. to LENZE® Standard

Motor and resolver/encoder cables - certified



Benefits

- Motor cables with low-capacitance
- Multi-standard certification reduces part varieties and saves costs

Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and motor
- Plant engineering
- Assembly lines, production lines, in all kinds of machines

Norm references / Approvals

- Resolver and encoder cable:
UL AWM Style 2464 for fixed installation versions,
UL AWM Style 21165 for highly flexible applications,
CSA AWM I/II A/B
- Motor cable:
UL AWM Style 2570 for fixed installation version,
UL AWM Style 20940 for high flexibility use,
CSA AWM I/II A/B
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up

- Design according to LENZE® standard:
- Designs for fixed installation:
PVC outer sheath, PP core insulation.
- Designs for highly flexible use:
PUR outer sheath, TPE core insulation
- Refer to data sheet for more details
- Signal cables: green (RAL 6018)
- Servo cable: orange (RAL 2003)



Info

- Servo drives
- For static or highly flexible use
- EMC-compliant

Technical data



Classification

ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description:
Control cable



Core identification code

Encoder cables
- 7072508 (fixed installation)
bk/ye+bk/gn+bk/rd+bk/bu+bk/wh
- 7072517 (flexible use)
gn/ye+bu/rd+gy/pk+bk/vt+bn/wh
Resolver cables:
- 7072507 (fixed installation)
bk/ye+bk/gn+bk/rd+bk/wh
- 7072516 (flexible use)
gn/ye+bu/rd+gy/pk+bn/wh



Minimum bending radius

Flexible use: 10 x outer diameter
Fixed installation: 7.5 x outer diameter



Nominal voltage

Signal cables:
30 V (VDE), 300 V (UL/CSA)
Power cables:
- Power cores:
U₀/U 0.6/1 kV (VDE),
600 V (UL/CSA)
- Control cores:
24 V (VDE)
600 V (UL/CSA)



Test voltage

Signal cable: 1.5 kV
Motor cable:
- Power cores: 4 kV
- Control cores: 2 kV



Protective conductor

G = with GN-YE protective conductor



Temperature range

Flexing: -5°C to +70°C
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Motor cables for fixed installation				
7072500	4 G 1,0 + (2 x 0,5)	10	81	128
7072501	4 G 1,5 + (2 x 0,5)	11,2	106	173
7072502	4 G 2,5 + (2 x 0,5)	12,3	153	244
Screened encoder cable with PVC outer sheath for static use				
7072507	3 x (2 x 0,14) + 1 x (2 x 0,5)	9,3	43	91
7072508	4 x (2 x 0,14) + 1 x (2 x 1,0)	11	65	136
Motor cables for power chain application				
7072509	4 G 1,0 + (2 x 0,5)	10	81	151
7072510	4 G 1,5 + (2 x 0,5)	11,5	106	192
7072511	4 G 2,5 + (2 x 0,5)	13,2	153	271

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
7072512	4 G 4 + (2 x 1,0)	14,6	235	373
7072513	4 G 6 + (2 x 1,0)	16,8	316	477
7072514	4 G 10 + (2 x 1,0)	20,1	513	710
7072515	4 G 16 + (2 x 1,0)	23,8	710	1015
Resolver & encoder cable for power chain applications				
7072516	3 x (2 x 0,14) + 1 x (2 x 0,5)	10	44	107
7072517	4 x (2 x 0,14) + 1 x (2 x 1,0)	11,5	65	145

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Lenze® part designations (EWLM_, EWLR_, EWLE_, EWLL_, EYL and EYP) are registered trademarks of Lenze® AG, and are listed for comparison purposes only. DESINA® is a registered trademark of the German Machine Tool Builders' Association.

Cables for power chain use should only be handled on drums prior to installation.

Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Circular connectors refer to main catalogue 2016/17
- SKINTOP® EMC/Earthing refer to main catalogue 2016/17

UNITRONIC®

Data communication systems



UNITRONIC® BUS ASI	76	EPIC® DATA PB M12.	106
UNITRONIC® BUS ASI FD	77	EPIC® DATA PB M12/M12	107
ASI Distributor.	78	EPIC® DATA PB TR M12	108
UNITRONIC® BUS PB.	79	EPIC® DATA PB M12T/DATA PB CCR.	109
UNITRONIC® BUS PB TRAY	80	UNITRONIC® DeviceNet THICK + THIN.	110
UNITRONIC® BUS PB ROBUST	81	UNITRONIC® DeviceNet FD THICK + THIN	111
UNITRONIC® BUS PB 105	82	UNITRONIC® BUS CAN	112
UNITRONIC® BUS PB 105 plus	83	UNITRONIC® BUS CAN FD P.	112
UNITRONIC® BUS PB HEAT 180	84	UNITRONIC® BUS CAN TRAY	113
UNITRONIC® BUS PB FRNC FC.	85	EPIC® DATA CAN Sub-D	114
UNITRONIC® BUS PB ARM	86	EPIC® DATA CAN Sub-D PRO	115
UNITRONIC® BUS PB Yv	87	UNITRONIC® BUS CAN M12/BUS CAN M12-M12	116
UNITRONIC® BUS PB YY.	88	EPIC® DATA CAN M12/DATA CAN M12/M12	117
UNITRONIC® BUS PB BURIAL FC	89	EPIC® DATA CAN TR M12.	118
UNITRONIC® BUS PB Y 7-W FC BK	90	EPIC® DATA CAN M12T	119
UNITRONIC® BUS PB FD P	91	EPIC® DATA CAN CCR	119
UNITRONIC® BUS PB FD P A.	92	UNITRONIC® SENSOR master cable.	120
UNITRONIC® BUS PB FD P FC.	93	UNITRONIC® SENSOR.	121
UNITRONIC® BUS PB FD FRNC FC	94	UNITRONIC® SENSOR FD	122
UNITRONIC® BUS PB FD P COMBI	95	EPIC® SENSOR Flush-type M8	123
UNITRONIC® BUS PB FD P HYBRID.	96	UNITRONIC® SENSOR SH M12	124
UNITRONIC® BUS PB FD Y HYBRID.	97	EPIC® SENSOR Flush-type M12	125
UNITRONIC® BUS PB TORSION.	98	EPIC® SENSOR M12T/SENSOR CCR.	126
UNITRONIC® BUS PB FESTOON	99	EPIC® SENSOR M8Y M12Y	127
EPIC® DATA PB Sub-D.	100	Distribution Box M8	128
EPIC® DATA PB Sub-D FC	101	Distribution Box M12.	129
EPIC® DATA PB Sub-D M12	102	UNITRONIC® SENSOR M12 Power	130
EPIC® DATA PB Sub-D PRO	103	UNITRONIC® SENSOR M12-M12 Power	131
EPIC® DATA PB Sub-D FO	104	EPIC® POWER M12 60V/	
UNITRONIC® BUS PB M12/BUS PB M12-M12.	105	EPIC® POWER M12 60V flush-type connectors	132



UNITRONIC® BUS ASI

LAPP KABEL STUTTGART UNITRONIC® BUS ASI

LAPP KABEL STUTTGART UNITRONIC® BUS ASI

LAPP KABEL STUTTGART UNITRONIC® BUS ASI



Info

- "LD" = Long Distance

Benefits

- The new BUS ASI LD 2 x 2.5 (Long Distance) allows even modules located further away to be connected. AS-I power supplies can be reduced. The BUS ASI LD is downwards-compatible with version 1.5.
- The rubber versions are halogen-free

Application range

- Communication at sensor/actuator level
- Sensor-/actuator wiring
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- The TPE version has an oil-resistant outer sheath. It is suitable for wet areas, in particular in conjunction with water-soluble cooling lubricants.

Product features

- Data and power are transmitted via an unscreened, geometrically coded two-core flat cable (protection against polarity reversal).
- The conductor is contacted by "piercing technology" within the ASI modules.
- The sensors are connected to the ASI modules (coupling modules) using round cables (connection cables).

Norm references / Approvals

- ASI is standardised Europe-wide in EN 50295 and internationally in IEC 62026-2.
- PVC version with UL/CSA (CMX) certification
- UL/CSA version: CMG c(UL)us or (UL)CL2 or AWM 300V FT4 certified

Product Make-up

- Extra-fine wire, tinned copper strands
- Core insulation: blue and brown
- Profiled outer sheath made of rubber (G), thermoplastic elastomers (TPE) or PVC
- Colour: yellow (RAL 1023) or black (RAL 9005)
- Colour: red (RAL 3000)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

Yellow: 300 V
(not for power applications)
Black: 300 V
(not for power applications)
Red: 300 V



Conductor resistance

1.5 mm²: max. 13.7 Ohm/km
2.5 mm²: max. 8.21 Ohm/km



Minimum bending radius

Fixed installation: 12 mm
Flexible use 24 mm



Test voltage

Core/core: 2000 V



Temperature range

Dependent on outer sheath material:
PVC: -30 °C to +90 °C
Other materials: -40 °C to +85 °C
During installation:
PVC -20 °C to +90 °C
Other materials:
-30 °C to +85 °C

Article number	Article designation	Outer sheath material	Outer sheath colour	Application	Number of cores and mm ² per conductor	Copper index (kg/km)	Weight (kg/km)
For fixed and flexible applications (19-wire stranded conductor)							
2170228	UNITRONIC® BUS ASI (G)	EPDM (rubber)	yellow	Data and power transmission	2 x 1,5	29	85
2170229	UNITRONIC® BUS ASI (G)	EPDM (rubber)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	85
2170371	UNITRONIC® BUS ASI LD (G)	EPDM (rubber)	yellow	Data and power transmission	2 x 2,5	48	85
2170372	UNITRONIC® BUS ASI LD (G)	EPDM (rubber)	black	Transmission of 30 V DC auxiliary power	2 x 2,5	48	85
2170230	UNITRONIC® BUS ASI (TPE)	TPE	yellow	Data and power transmission	2 x 1,5	29	64
2170231	UNITRONIC® BUS ASI (TPE)	TPE	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64
2170232	UNITRONIC® BUS ASI (TPE)	TPE	red	Transmission of 230 V AC auxiliary power	2 x 1,5	29	64
2170842	UNITRONIC® BUS ASI (PVC) A PVC UL/CSA (CMG)		yellow	Data and power transmission	2 x 1,5	29	70
2170843	UNITRONIC® BUS ASI (PVC) A PVC UL/CSA (CMG)		black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	70
2170844	UNITRONIC® BUS ASI (PVC) A PVC UL/CSA (CMG)		red	Transmission of 230 V AC auxiliary power	2 x 1,5	29	70

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Lapp Kabel is a member of the AS-International Association

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- SKINTOP® DIX-M AUTOMATION refer to page 247
- UNIVERSAL STRIP stripping tool refer to main catalogue 2016/17
- AS-I clip clamp / AS-I end sealing refer to main catalogue 2016/17
- AS-I STRIP special stripping tool refer to main catalogue 2016/17
- AS-I STRIP special
- SKINTOP® DIX ASI



UNITRONIC® BUS ASI FD

Highly flexible application



Info

- “FD” = suitable for power chains
- “LD” = Long Distance

Benefits

- The new BUS ASI LD 2 x 2.5 (Long Distance) allows even modules located further away to be connected. AS-I power supplies can be reduced. The BUS ASI LD is downwards-compatible with version 1.5.
- For highly flexible applications (power chains, moving machine parts)
- High oil-resistance

Application range

- Communication at sensor/actuator level
- Sensor-/actuator wiring

Product features

- PUR versions are halogen-free according to IEC 60754-1
- Flame-retardant according to IEC 60332-1-2, UL FT-2 flame test
- Data and power are transmitted via an unscreened, geometrically coded two-core flat cable (protection against polarity reversal).

- The conductor is contacted by “piercing technology” within the ASI modules.
- The sensors are connected to the ASI modules (coupling modules) using round cables (connection cables).

Norm references / Approvals

- ASI is standardised Europe-wide in EN 50295 and internationally in IEC 62026-2.
- TPE variant: UL AWM Style 2103 CSA AWM II A/B
- PUR versions: UL AWM Style 20549

Product Make-up

- Extra-fine wire, tinned copper strands
- Core insulation: blue and brown
- Profiled outer sheath: TPE or PUR
- Colour: yellow (RAL 1023) or black (RAL 9005)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage 300 V (not for power applications)
	Conductor resistance 1.5 mm ² : max. 13.7 Ohm/km 2.5 mm ² : max. 8.21 Ohm/km
	Minimum bending radius Fixed installation: 12 mm Flexing without fixing: 24 mm Flexing with fixing: 60 mm (15 x D)
	Test voltage Core/core: 2000 V
	Temperature range Fixed installation: -40°C to +80°C (TPE +105°C) Flexing without fixing: -30 °C to +70 °C (TPE +105 °C)

Article number	Article designation	Outer sheath material	Outer sheath colour	Application	Number of cores and mm ² per conductor	Copper index (kg/km)	Weight (kg/km)
For highly flexible applications (power chains, moving machine parts)							
2170357	UNITRONIC® BUS ASI FD P FRNC	PUR UL/CSA (AWM)	yellow	Data and power transmission	2 x 1,5	29	64
2170358	UNITRONIC® BUS ASI FD P FRNC	PUR UL/CSA (AWM)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64
2170317	UNITRONIC® BUS ASI LD FD P	PUR UL/CSA (AWM)	yellow	Data and power transmission	2 x 2,5	48	74
2170318	UNITRONIC® BUS ASI LD FD P	PUR UL/CSA (AWM)	black	Transmission of 30 V DC auxiliary power	2 x 2,5	48	74
2170830	UNITRONIC® BUS ASI FD (TPE) A	TPE UL/CSA (AWM)	yellow	Data and power transmission	2 x 1,5	29	64
2170831	UNITRONIC® BUS ASI FD (TPE) A	TPE UL/CSA (AWM)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Lapp Kabel is a member of the AS-International Association

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- SKINTOP® DIX-M AUTOMATION refer to page 247
- UNIVERSAL STRIP stripping tool refer to main catalogue 2016/17
- AS-I clip clamp / AS-I end sealing refer to main catalogue 2016/17
- AS-I STRIP special stripping tool refer to main catalogue 2016/17
- AS-I STRIP special
- SKINTOP® DIX ASI



ASI Distributor

AS-Interface Distributor



Benefits

- Cost-efficient and rational wiring for AS-Interface installations
- Space-saving due to compact dimensions
- Easy to install

Product features

- Field mountable distributor with flat cable clamp
- On 2 flat cables or straight M12 socket (A-coded)
- Suitable for drag chains
- Panel mounting
- Rated current ≤ 4 A (H-distributor: ≤ 8 A)

Product Make-up

- Wire cross-section: 0,34 mm²
- Colour-code: bn (1), wh (2), bu (3), bk (4)
- Outer sheath: PUR halogen-free, black

Suitable cables

- UNITRONIC® BUS ASI Page 76
- UNITRONIC® BUS ASI FD Page 77

Technical data



Classification

ETIM 5.0 Class-ID: EC000313
ETIM 5.0 Class-Description:
Communications technique adapter

Connection type

Penetration technique for flat cable



Protection rating

IP 67
(H-distributor: IP69)



Ambient temperature (operation)

-25°C to +75°C

Article number	Article designation	Length (m)	PU
Distribution of 1 flat cable			
on 2 flat cables (H distributor)			
22260802	AB-ASI-J-Y-Y-N		1
on M12 socket (2-pos.)			
22260800	AB-ASI-J-Y-N-M12FS		1
22260803	AB-ASI-J-Y-N-PUR-1,0-M12FS	1	1
22260804	AB-ASI-J-Y-N-PUR-2,0-M12FS	2	1
Distribution of 2 flat cables			
on M12 socket (4-pos.)			
22260801	AB-ASI-J-Y-B-M12FS		1
22260805	AB-ASI-J-Y-B-PUR-1,0-M12FS	1	1
22260806	AB-ASI-J-Y-B-PUR-2,0-M12FS	2	1

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Kraftform® adjustable torque screwdriver/Kraftform Kompakt® Set refer to main catalogue 2016/17



UNITRONIC® BUS PB

Fixed installation

ÖLFLEX®
UNITRONIC®
ETHERLINE®
HITRONIC®
EPIC®
SKINTOP®
FLEXIMARK®
APPENDIX

Info

- Lapp Kabel is a member of the PROFIBUS User Organisation (PNO)
- A for Advanced here: UL and CSA certifications



Application range

- For fixed installation
Maximum electromagnetic screening
- Dry or damp rooms
- Item nos. 2170233, 2170333, 2170820, 2170824, 2170826 are all UV-resistant

Product features

- These bus cables can be used for PROFIBUS-DP as well as for PROFIBUS-FMS and FIP
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
93.75 kbit/s = 1200 m
187.5 kbit/s = 1000 m
500 kbit/s = 400 m
1.5 Mbit/s = 200 m
12.0 Mbit/s = 100 m

Norm references / Approvals

- In accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC NET, also suitable for FIP (Factory Instrumentation Protocol)
- See below for UL certification type

Product Make-up

- FC: "Fast Connect" cable design
- P: Polyurethane
- H: Halogen-free
- PE: polyethylene, black Outer sheath, e.g. for the food and beverage industry
- 7-W: 7-wire, e.g. for applications where vibrations occur
- COMBI: Data transmission and power supply in one cable

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz): max. 30 nF/km
	Peak operating voltage (not for power applications) 250 V
	Conductor resistance (loop): max. 186 Ohm/km. see also datasheet
	Minimum bending radius Fixed installation: see data sheet
	Test voltage Core/core: 1500 V rms
	Characteristic impedance 150 ± 15 Ohm

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
For fixed installation - conventional cable assembly					
2170220	UNITRONIC® BUS PB	1 x 2 x 0.64	8	30.1	74
2170233	UNITRONIC® PB PE	1 x 2 x 0.64	8	30.1	57
2170226	UNITRONIC® BUS PB H 7-W	1 x 2 x 0.64	8	30.1	55
2170225	UNITRONIC® BUS PB COMBI 7-W	1 x 2 x 0,64 Ø + 3 x 1,0 mm²	9.8	59	92
For fixed installation - UL/CSA CMX certification					
2170219	UNITRONIC® BUS PB A	1 x 2 x 0.64	8	30.1	57
For fixed installation - UL/CSA CMG certification					
2170824	UNITRONIC® BUS PB 7-W A	1 x 2 x 0.64	8	30.1	55
For fixed installation - "Fast Connect" cable assembly					
2170333	UNITRONIC® BUS PB PE FC	1 x 2 x 0.64	8	26	67
For fixed installation - UL/CSA CMX certification					
2170330	UNITRONIC® BUS PB P FC	1 x 2 x 0.64	8	26	71
For fixed installation - "Fast Connect" cable assembly - UL/CSA CMG certification					
2170820	UNITRONIC® BUS PB FC	1 x 2 x 0.64	8	26	84
2170826	UNITRONIC® BUS PB 7-W FC	1 x 2 x 0.64	8	26	67
2170326	UNITRONIC® BUS PB-H FC	1 x 2 x 0.64	8	26	72

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

SIMATIC NET® is a registered trademark of Siemens AG

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- UNITRONIC® BUS PB ROBUST refer to page 81
- UNITRONIC® BUS PB 105 refer to page 82

Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17
- FC STRIP stripping tool refer to main catalogue 2016/17
- SENSOR STRIP stripping tool refer to main catalogue 2016/17

**UNITRONIC® BUS PB TRAY**

Fixed installation

LAPP KABEL STUTTGART UNITRONIC® BUS PB TRAY

**Info**

- PLTC-ER (power limited tray cable exposed run) for unprotected use on cable trays

Benefits

- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- PLTC-ER approval for open wiring between cable tray and industrial machines/plants acc. to NEC 725.154 (D)
- No additional protection of the cable needed

Application range

- For fixed installation or applications with occasional movements
- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- UV-resistant UL SUN RES
- Oil-resistant according to UL OIL RES I
- Flame retardant acc. UL 1685 - FT4 (vertical tray)

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
93.75 kbit/s = 1200 m
187.5 kbit/s = 1000 m
500 kbit/s = 400 m
1.5 Mbit/s = 200 m
12.0 Mbit/s = 100 m

Norm references / Approvals

- C(UL)us Typ CMG (75°C) acc.to UL 444 / CSA 22.2
- UL Type PLTC-ER acc. to UL 13

Product Make-up

- Bare copper wire, 0,64 mm diameter
- Core colours: red, green
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC inner sheath and outer sheath
- Colour: violet (RAL 4001)

Technical data**Classification**

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

**Mutual capacitance**

(1 kHz): max. 30 nF/km

**Peak operating voltage**

(not for power applications) 250 V

**Impedance**

150 +/- 15 Ohm

**Conductor resistance**

(loop): max. 110 ohm/km

**Minimum bending radius**

Fixed installation: 8 x outer diameter

**Test voltage**

Core/core: 2000 V

**Characteristic impedance**

150 ± 15 Ohm

**Temperature range**

Flexing: -10°C to +70°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB TRAY					
2170856	UNITRONIC® BUS PB TRAY	1x2x0,64	8.4	26	82

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17



UNITRONIC® BUS PB ROBUST

Fixed installation

LAPP KABEL STUTTGART UNITRONIC® BUS PB ROBUST



Benefits

- Robust PROFIBUS cable for use under harsh environmental conditions

Application range

- For use for PROFIBUS-DP or FIP in harsh industrial environments
- Fixed installation

Product features

- Significantly extended use and application areas, water and chemical resistance for use in industrial conditions.
- High resistance to tensides, soaps etc.
- UV-resistant
- Flame-retardant according IEC 60332-1-2

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
 93.75 kbit/s = 1200 m
 187.5 kbit/s = 1000 m
 500 kbit/s = 400 m
 1.5 Mbit/s = 200 m
 12.0 Mbit/s = 100 m

Product Make-up

- Solid and bare copper conductor
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- With conventional cable design, but with an outer sheath made of special TPE

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (1 kHz): approx. 28.5 nF/km
	Peak operating voltage (not for power applications) 250 V
	Minimum bending radius Fixed installation: 75 mm
	Test voltage Core/core: 1500 V rms Core/screen: 1500 V
	Characteristic impedance (3 - 20 MHz): 150 ± 15 Ohm
	Temperature range -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170620	UNITRONIC® BUS PB ROBUST	1 x 2 x 0.64	8	26	55

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17



UNITRONIC® BUS PB 105

Fixed installation

LAPP KABEL STUTTGART UNITRONIC® BUS PB 105

Benefits

- A standard PROFIBUS cable can only be used up to a max. temperature of 80°C
- This enables an extended area of application

Application range

- Cable has been designed for use in factory halls where temperatures up to max. 105°C may occur.

Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant

Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: PP
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- PVC outer sheath for use up to 105°C

Suitable connectors

- Sub-D Bus-Connectors

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Mutual capacitance

Approx. 28.5 nF/km



Peak operating voltage

max. 100 V (not for power applications)



Minimum bending radius

Fixed installation: 45 mm once
Flexing: 65 mm



Test voltage

Core/core: 1500 V rms
Core/screen: 1500 V



Characteristic impedance

(3 - 20 MHz): 150 ± 15 Ohm



Temperature range

-30°C to +105°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB 105					
2170630	UNITRONIC® BUS PB 105	1 x 2 x 0.64	8	30.1	72

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

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Accessories

- Multipurpose shears A and B refer to main catalogue 2016/17



UNITRONIC® BUS PB 105 plus

ÖLFLEX®

UNITRONIC®

ETHERLINE®

HITRONIC®

EPIC®

SKINTOP®

FLEXIMARK®

APPENDIX



Info

- Bus system PROFIBUS-DP/FMS/FIP
- Lapp Kabel is a member of the PROFIBUS User Organisation (PNO)

Benefits

- No need for additional cable protection against high temperatures
- High temperature resistance

Application range

- For installation in hollow shaft between gear units and pitch system
- Suitable for fixed installation and occasionally flexible use in high temperature areas

Product features

- Permanent load up to +105°C, temporary load +120°C

LAPP KABEL STUTTGART UNITRONIC® BUS PB 105 plus



Norm references / Approvals

- In accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC NET, also suitable for FIP (Factory Instrumentation Protocol)

Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: polypropylene (PP)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: TPE-based

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Mutual capacitance

(800 Hz): max. 30 nF/km



Peak operating voltage

(not for power applications) 250 V



Minimum bending radius

Fixed installation: 45 mm once
Flexing: 65 mm



Test voltage

Core/core: 1500 V rms
Core/screen: 1500 V eff.



Characteristic impedance

(3 - 20 MHz): 150 ± 15 Ohm



Temperature range

Fixed installation: -40°C to +105°C
Short-term: up to +120 °C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)
UNITRONIC® BUS PB 105 plus				
2170635	UNITRONIC® BUS PB 105 plus	1x2x0,64	8	30.1

Photographs are not to scale and do not represent detailed images of the respective products.



UNITRONIC® BUS PB HEAT 180

LAPP KABEL STUTTGART UNITRONIC® BUS PB HEAT 180

Benefits

- No need for additional cable protection against high temperatures
- High temperature resistance

Application range

- Fixed installation
- For use in high temperature areas with up to 180 °C

Product features

- High oil-resistance

Product Make-up

- Solid and bare copper conductor
- Wire insulation Fluorethylen
- Overall screening with copper braid and plastic-laminated aluminium foil
- Screening: wrapped with braided tinned-copper wires
- Outer Sheath: Perfluorethylenpropylen, FEP, violet

Suitable connectors

- Sub-D Bus-Connectors

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Mutual capacitance

approx. 28 nF / km



Peak operating voltage

(not for power applications) 250 V



Minimum bending radius

Repeated: 7 x Outer Diameter
Single: 5 x Outer Diameter



Test voltage

3600 V DC (3 sec.)



Characteristic impedance

(3 - 20 MHz): 150 ± 15 Ohm



Temperature range

-50 to +180 °C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB HEAT 180				
3031981	UNITRONIC® BUS PB HEAT 180	1 x 2 x 0,64	21.7	0.064

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

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UNITRONIC® BUS PB FRNC FC

Fixed installation



Info

- FRNC = Flame Retardant Non Corrosive
 - Reduction of flame-propagation and density and toxicity of smoke gases in the event of fire
 - Minimisation of damage to buildings and production facilities
 - Safety for staff and in areas with high density of people

Benefits

- Halogen-free and highly flame-retardant
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Fast Connect (FC) cable design

Application range

- This cable provides special advantages for use in sensitive areas where fire propagation must be avoided and the presence of toxic fumes would cause personal injury and damage to equipment.

Product features

- The cable is UL/CSA-certified (CMG)
- Halogen-free
- High flame retardancy in accordance with IEC 60332-3 and FT4
- Oil-resistant

LAPP KABEL STUTTGART UNITRONIC® BUS PB FRNC FC

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
 - 93.75 kbit/s = 1200 m
 - 187.5 kbit/s = 1000 m
 - 500 kbit/s = 400 m
 - 1.5 Mbit/s = 200 m
 - 12.0 Mbit/s = 100 m

Product Make-up

- Solid, bare, single-wire copper conductor
- PE core insulation
- Inner sheath, screening foil and braiding
- Thermoplastic outer sheath
- Colour: violet (RAL 4001)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Certifications UL/CSA (CMG)
	Mutual capacitance Approx. 28.5 nF/km
	Peak operating voltage (not for power applications) 250 V
	Minimum bending radius 80 mm
	Test voltage Core/core: 1500 V rms Core/screen: 1500 V
	Characteristic impedance (3 - 20 MHz): 150 ± 15 Ohm
	Temperature range -30°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170853	UNITRONIC® BUS PB FRNC FC	1 x 2 x 0.64	8	30.1	75

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17
- FC STRIP stripping tool refer to main catalogue 2016/17



UNITRONIC® BUS PB ARM

Fixed installation

LAPP KABEL STUTTGART UNITRONIC® BUS PB ARM

Benefits

- EMC-optimised design

Application range

- For use for PROFIBUS-DP or FIP in harsh industrial environments
- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- Flame-retardant according IEC 60332-1-2
- UV-resistant

Product Make-up

- Solid and bare copper conductor
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Overlapping plastic tape
- Copper tape, welded longitudinally
- Outer sheath: PVC

Technical data



Classification

ETIM 5.0 Class-ID: EC000830

ETIM 5.0 Class-Description: Data cable



Mutual capacitance

(800 Hz): max. 30 nF/km



Peak operating voltage

(not for power applications) 100 V



Minimum bending radius

Fixed installation: 7.5 x outer diameter

Fixed installation: 3.5 x cable diameter once



Test voltage

3600 V DC (3 sec.)



Characteristic impedance

150 ± 15 Ohm



Temperature range

-40°C to +70°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170247	UNITRONIC® BUS PB ARM	1 x 2 x 0.65	11.1	86.9	131

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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UNITRONIC® BUS PB Yv

Suitable for outdoor use and direct burial, UV-resistant

LAPP KABEL STUTTGART UNITRONIC® BUS PB Yv

Benefits

- Rugged, UV-resistant and weatherproof
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- Reinforced outer sheath made of PVC

Product Make-up

- Solid and bare copper conductor
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- Outer sheath: reinforced PVC, black

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz): max. 30 nF/km
	Peak operating voltage (not for power applications) 250 V
	Minimum bending radius Fixed installation: 75 mm once Fixed installation: 150 mm
	Test voltage Core/core: 1500 V rms Core/screen: 1500 V
	Characteristic impedance 150 ± 15 Ohm
	Temperature range Flexing: -5°C to +50°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170223	UNITRONIC® BUS PB Yv	1 x 2 x 0.64	9.4	30.1	106

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
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UNITRONIC® BUS PB YY

Suitable for outdoor use and direct burial, UV-resistant

LAPP KABEL STUTTGART UNITRONIC® BUS PB YY

Benefits

- Rugged, UV-resistant and weatherproof
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- Dual PVC outer sheath

Product Make-up

- Solid and bare copper conductor
- PE core insulation
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- PVC outer sheath, violet, OD 7.5 mm
- PVC outer sheath, black, OD 9.5 mm

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Mutual capacitance

(800 Hz): max. 30 nF/km



Peak operating voltage

(not for power applications) 250 V



Minimum bending radius

Fixed installation: 75 mm once
Fixed installation: 150 mm



Test voltage

Core/core: 1500 V rms
Core/screen: 1500 V



Characteristic impedance

150 ± 15 Ohm



Temperature range

Flexing: -5°C to +50°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Suitable for outdoor use and direct burial					
2170236	UNITRONIC® BUS PB YY	1 x 2 x 0.64	9.5	30.1	87

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17
- Multipurpose shears A and B refer to main catalogue 2016/17



UNITRONIC® BUS PB BURIAL FC

Suitable for outdoor use and direct burial, UV-resistant

LAPP KABEL STUTTGART UNITRONIC® BUS PB BURIAL FC

Benefits

- Fast Connect (FC) cable design
- Rugged, UV-resistant and weatherproof
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- Second PE outer sheath

Product Make-up

- Solid and bare copper conductor
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- PVC outer sheath, violet, OD 8 mm
- PE outer sheath, black, OD 10.8 mm

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz): max. 30 nF/km
	Peak operating voltage (not for power applications) 100 V
	Minimum bending radius Fixed installation: 3.5 x cable diameter once Fixed installation: 7.5 x outer diameter
	Test voltage 3600 V DC (3 sec.)
	Characteristic impedance 150 ± 15 Ohm
	Temperature range -40 °C to +60 °C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Suitable for outdoor use and direct burial					
2170323	UNITRONIC® BUS PB BURIAL FC	1 x 2 x 0.64	10.8	26	115

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17
- FC STRIP stripping tool refer to main catalogue 2016/17



UNITRONIC® BUS PB Y 7-W FC BK

Suitable for outdoor use, UV-resistant

LAPP KABEL STUTTGART UNITRONIC® BUS PB Y 7-W SUN RES

Benefits

- UV and weather-resistant in black
- 7-W: 7-wire, e.g. for applications where vibrations occur
- Fast Connect (FC) cable design
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- PVC compound TM2 acc. to EN 50363-4-1
- Resistant to acids, alkalis and certain oils at room temperature

Product Make-up

- Stranded conductor, 7-wire, bare
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- PVC outer sheath, black

Suitable tools

- FC STRIP stripping tool refer to main catalogue 2016/17

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz): max. 30 nF/km
	Peak operating voltage (not for power applications) 250 V
	Minimum bending radius Fixed installation: 8 x outer diameter Flexing: 15 x outer diameter
	Test voltage Core/core: 1500 V rms Core/screen: 1500 V
	Characteristic impedance 150 ± 15 Ohm
	Temperature range Flexing: -10°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB Y 7-W FC BK					
2170310	UNITRONIC® BUS PB Y 7-W FC BK	1 x 2 x 0.64	7.8	30.1	80

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17
- FC STRIP stripping tool refer to main catalogue 2016/17



UNITRONIC® BUS PB FD P

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD P

Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

Product features

- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Oil-resistant

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
 93.75 kbit/s = 1200 m
 187.5 kbit/s = 1000 m
 500 kbit/s = 400 m
 1.5 Mbit/s = 200 m
 12.0 Mbit/s = 100 m

Product Make-up

- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- Outer sheath: PUR compound

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz): max. 30 nF/km
	Peak operating voltage (not for power applications) 250 V
	Torsion movement in WTG (wind turbine generator) TW-0 & TW-2, refer to Appendix T0
	Minimum bending radius 65 mm
	Test voltage Core/core: 1500 V rms
	Characteristic impedance 150 ± 15 Ohm
	Temperature range Flexing: -30°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
For highly flexible applications (e.g. power chains) - conventional cable assembly					
2170222	UNITRONIC® BUS PB FD P	1 x 2 x 0.64	8	30.1	64

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17



UNITRONIC® BUS PB FD P A

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD P A



Info

- A for Advanced here: UL and CSA certifications

Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For highly flexible applications (power chains, moving machine parts)

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

Product features

- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Oil-resistant

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
93.75 kbit/s = 1200 m
187.5 kbit/s = 1000 m
500 kbit/s = 400 m
1.5 Mbit/s = 200 m
12.0 Mbit/s = 100 m

Norm references / Approvals

- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214

Product Make-up

- Stranded bare copper wire
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: PUR compound

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Mutual capacitance

(800 Hz): max. 30 nF/km



Peak operating voltage

(not for power applications) 250 V



Torsion movement in WTG (wind turbine generator)

TW-0 & TW-2, refer to Appendix T0



Minimum bending radius

65 mm



Test voltage

Core/core: 1500 V rms



Characteristic impedance

150 ± 15 Ohm



Temperature range

Flexing: -30°C to +70°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Highly flexible application					
2170822	UNITRONIC® BUS PB FD P A	1 x 2 x 0.64	8	30.1	58

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17



UNITRONIC® BUS PB FD P FC

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD P FC

Benefits

- Fast Connect (FC) cable design
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For highly flexible applications (power chains, moving machine parts)

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
(cable type A, PROFIBUS-DP):
93.75 kbit/s = 1200 m
187.5 kbit/s = 1000 m
500 kbit/s = 400 m
1.5 Mbit/s = 200 m
12.0 Mbit/s = 100 m

Norm references / Approvals

- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214

Product Make-up

- Stranded bare copper wire
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: PUR compound

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz): max. 30 nF/km
	Peak operating voltage (not for power applications) 250 V
	Minimum bending radius Flexing: 15 x outer diameter
	Test voltage 3600 V DC (3 sec.)
	Characteristic impedance 150 ± 15 Ohm
	Temperature range Flexing: -30°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170322	UNITRONIC® BUS PB FD P FC	1 x 2 x 0.64	8	26	79

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17
- FC STRIP stripping tool refer to main catalogue 2016/17



UNITRONIC® BUS PB FD FRNC FC

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD FRNC FC

Benefits

- Fast Connect (FC) system
- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- For highly flexible use in energy supply chains or permanently moving machines and linear robots
- This cable provides special advantages for use in sensitive areas where fire propagation must be avoided and the presence of toxic fumes would cause personal injury and damage to equipment.

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
93.75 kbit/s = 1200 m
187.5 kbit/s = 1000 m
500 kbit/s = 400 m
1.5 Mbit/s = 200 m
12.0 Mbit/s = 100 m

Product Make-up

- Stranded bare copper wire
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: PUR compound

Product features

- The cable is UL/CSA-certified (CMG)
- Halogen-free
- High flame retardancy in accordance with IEC 60332-3 and FT4
- Oil-resistant

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance nom. 28 nF/km
	Peak operating voltage (not for power applications) 250 V
	Minimum bending radius Fixed installation: 10 x outer diameter Flexing: 15 x outer diameter
	Test voltage Core/core: 1500 V rms
	Characteristic impedance (3 - 20 MHz): 150 ± 15 Ohm
	Temperature range Flexing: -30°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB FD FRNC FC					
2170854	UNITRONIC® BUS PB FD FRNC FC	1x2x0,64	8	26	75

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17
- FC STRIP stripping tool refer to main catalogue 2016/17



UNITRONIC® BUS PB FD P COMBI

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD P COMBI

Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- HYBRID: cable for data transmission + power supply
- Flame-retardant according to IEC 60332.1.2

Product Make-up

- Cores for Power Supply
3 x 1.0 mm² (AWG 18)
- Core insulation: Based on Polyolefin
- PUR-based outer sheath

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz): max. 30 nF/km
	Peak operating voltage (not for power applications) 100 V
	Minimum bending radius Flexing: 145 mm
	Test voltage Core/core: 600 V
	Characteristic impedance 150 ± 15 Ohm
	Temperature range Flexing: -5°C to +50°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170227	UNITRONIC® BUS PB FD P COMBI	1 x 2 x 0.64 Ø + 3 x 1.0 mm ²	10.1	59	125

Highly flexible application

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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UNITRONIC® BUS PB FD P HYBRID

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD P HYBRID



Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- HYBRID: cable for data transmission + power supply
- Flame-retardant according IEC 60332-1-2
- Oil-resistant

Product Make-up

- Cores for Power Supply
4 x 1.5 mm² (AWG 16)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Mutual capacitance

(800 Hz): max. 30 nF/km



Peak operating voltage

(not for power applications) 100 V



Minimum bending radius

Flexing: 15 x outer diameter



Test voltage

Core/core: 600 V
Core/screen: 600 V



Characteristic impedance

150 ± 15 Ohm



Temperature range

Flexing: -30°C to +60°C
Fixed installation: -40°C to +70°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Highly flexible application					
2170495	UNITRONIC® BUS PB FD P HYBRID	1 x 2 x 0.64 Ø + 4 x 1.5 mm ²	11.3	89	148

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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UNITRONIC® BUS PB FD Y HYBRID

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD Y HYBRID

Benefits

- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- CL3 for installation on trays

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- HYBRID: cable for data transmission + power supply

Norm references / Approvals

- With UL/CSA certification (CMG, CL3, SUN RES, Oil Res I)
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I

Product Make-up

- Outer sheath: special PVC compound
- Cores for Power Supply
4 x 1.5 mm² (AWG 16)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage 600 V (not for power applications)
	Minimum bending radius Fixed installation: 10 x outer diameter Flexing: 15 x outer diameter
	Test voltage Core/core: 2000 V Core/screen: 2000 V
	Characteristic impedance 150 ± 15 Ohm
	Temperature range -5°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Highly flexible application					
2170875	UNITRONIC® BUS PB FD Y HYBRID	1 x 2 x 0.64 Ø + 4 x 1.5 mm ²	11.3	89	155

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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UNITRONIC® BUS PB TORSION

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB TORSION

Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- TORSION: for torsional stress, e.g. robot application; $\pm 180^\circ$ per 1 m
- Halogen-free
- Flame-retardant according IEC 60332-1-2

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
 $93.75 \text{ kbit/s} = 1200 \text{ m}$
 $187.5 \text{ kbit/s} = 1000 \text{ m}$
 $500 \text{ kbit/s} = 400 \text{ m}$
 $1.5 \text{ Mbit/s} = 200 \text{ m}$
 $12.0 \text{ Mbit/s} = 100 \text{ m}$

Norm references / Approvals

- Certification: UL type CMX in accordance with UL 444

Product Make-up

- PE core insulation

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Mutual capacitance

(800 Hz): max. 30 nF/km



Peak operating voltage

(not for power applications)
300 V



Torsion movement in WTG (wind turbine generator)

Max. torsion load
 $\pm 180^\circ/\text{m}$



Minimum bending radius

Fixed installation: 4 x outer diameter
Flexing: 7.5 x outer diameter



Test voltage

3600 V DC (3 sec.)



Characteristic impedance

$150 \pm 15 \text{ Ohm}$



Temperature range

Operating temperature:
 -25°C to 75°C

Storage temp.: -40°C to 80°C

Article number	Article designation	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Highly flexible application					
2170332	UNITRONIC® BUS PB TORSION	1 x 2 x 0.38	8	31	66

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil $\leq 30 \text{ kg}$ or $\leq 250 \text{ m}$, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17



UNITRONIC® BUS PB FESTOON

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FESTOON

Benefits

- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- CL3 for installation on trays

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

Product features

- FESTOON: for cable trolley (festoon)

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
(cable type A, PROFIBUS-DP):
93.75 kbit/s = 1200 m
187.5 kbit/s = 1000 m
500 kbit/s = 400 m
1.5 Mbit/s = 200 m
12.0 Mbit/s = 100 m

Norm references / Approvals

- With UL/CSA certification (CMG, CL3, SUN RES, Oil Res I)
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I

Product Make-up

- Outer sheath: special PVC compound

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz): max. 30 nF/km
	Peak operating voltage 600 V (not for power applications)
	Minimum bending radius Flexing: 70 mm Fixed installation: 30 mm once
	Test voltage Core/core: 2000 V
	Characteristic impedance 150 ± 15 Ohm
	Temperature range Flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of cores and mm² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Highly flexible application					
2170331	UNITRONIC® BUS PB Festoon	1 x 2 x 0.64	8	26	64

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Accessories

- Sub-D Bus-Connectors refer to main catalogue 2016/17



EPIC® DATA PB Sub-D

PROFIBUS connectors with screw terminals | REPEATER function | ATEX



Info

- Optional with LED diagnostic
- ATEX and REPEATER Version
- Versions with 2th Sub-D ports

Benefits

- Easy connection with proven screw clamp connection
- Compact design: Small space requirements
- Terminating resistor (integrated) can be switched
- REPEATER version: Regeneration of data signal (slope, power and mark-to-space ratio)
- ATEX version: For use within intrinsically-safe circuits in zone 2 areas with an explosion hazard (explosive gas atmosphere occurs only rarely and briefly)

Product features

- Max. transmission rate 12 Mbit/s possible
- Current consumption max. 12,5 mA (with LED 35 mA / REPEATER 100 mA)
- Supply voltage 4.75 - 5.25 V DC (supplied from the terminal)
- Terminating resistor "ON" - the outbound bus cable is disconnected
- REPEATER version: Easy extension of the PROFIBUS network:
 - up to 3 repeaters
 - 1 additional PROFIBUS segment
 - galvanic isolation

Norm references / Approvals

- IEC 61158, IEC 61784
- UL File No. E331560
- ATEX version: DIN EN 60079-0:2006, DIN 60079-15:2005 (category 3G zone 2)

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Improved electromagnetic compatibility (EMC) by metallized housing
- Versions with additional Sub-D interface for programming/diagnostic ("PG")
- For cable outer diameter: 5 - 8 mm
- LED Version indicate:
 - bus operation - (green)
 - station transmission - (blue)
 - terminating resistor "on" - (orange)

Suitable cables

- Bus system PROFIBUS-DP/FMS/FIP refer to main catalogue 2016/17

Suitable tools

- Kraftform® adjustable torque screwdriver / Kraftform Kompakt® Set refer to main catalogue 2016/17

Technical data



Classification

ETIM 5.0 Class-ID: EC001132
ETIM 5.0 Class-Description:
D-Sub connector



Dimensions

54 mm x 40 mm x 17 mm - 35°
64 mm x 40 mm x 17 mm - 90°
68 mm x 40 mm x 17 mm - 180°
(LxWxH)

Connection type

Screwing



Protection rating

IP 20

Terminating resistor

150 Ω

Interfaces

PROFIBUS station:
D-Sub socket, 9-pin
PROFIBUS cable:
4 terminal blocks for wires
up to 1.0 mm²
(solid/flexible 7/19 wire)



Permissible ambient conditions

Operating temperature:
-25°C to +85°C

*The max. temperature for UL is 60 °C.

Article number	Article designation	Version	PG-Interface	Diagnostic LEDs	PU
35° cable outlet					
21700507	ED-PB-35		no	no	1
21700506	ED-PB-35-PG		yes	no	1
90° cable outlet					
21700504	ED-PB-90		no	no	1
21700503	ED-PB-90-PG		yes	no	1
21700530	ED-PB-90-LED		no	yes	1
21700529	ED-PB-90-PG-LED		yes	yes	1
21700541	ED-PB-90-RP-PG	REPEATER	yes	yes	1
21700543	ED-PB-90-ATEX	ATEX	no	no	1
21700542	ED-PB-90-PG-ATEX	ATEX	yes	no	1
180° (AX) cable outlet					
21700505	ED-PB-AX		no	no	1

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EPIC® DATA PB Sub-D FC

PROFIBUS Connectors Fast Connect

- Info**
- New innovative insulation displacement terminals suitable for solid and flexible conductors (90° and 180° versions)
 - Versions with 2th Sub-D ports
 - Optional with LED diagnostic



Benefits

- Quick installation with Fast Connect (‘FC’) technology
- Compact design: Small space requirements
- No loose parts
- Visual bus connection control
- Terminating resistor (integrated) can be switched

Product features

- Fully compatible with market standard
- Max. transmission rate 12 Mbit/s possible
- Current consumption max. 12,5 mA (with LED 35 mA)
- Supply voltage 4.75 - 5.25 V DC (supplied from the terminal)
- Terminating resistor “ON” - the outbound bus cable is disconnected

Norm references / Approvals

- IEC 61158, IEC 61784
- UL File No. E331560

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Improved electromagnetic compatibility (EMC) by metallized housing
- Max. cable outer diameter: 8 mm
- Versions with additional Sub-D interface for programming/diagnostic (‘PG’)
- LED Version indicate:
bus operation - (green)
station transmission - (blue)
terminating resistor “on” - (orange)

Suitable cables

- Bus system PROFIBUS-DP/FMS/FIP refer to main catalogue 2016/17

Suitable tools

- FC STRIP stripping tool refer to main catalogue 2016/17
- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to main catalogue 2016/17

Technical data

	Classification ETIM 5.0 Class-ID: EC001132 ETIM 5.0 Class-Description: D-Sub connector
	Dimensions 95 mm x 70 mm x 17 mm - 35° 72 mm x 40 mm x 17 mm - 90° 70 mm x 35 mm x 17 mm - 180° (LxWxH)
	Connection type Fast Connect
	Protection rating IP 20
	Terminating resistor 150 Ω
	Interfaces PROFIBUS station: SUB-D socket, 9-pin PROFIBUS cable: FC standard cable, Ø 0.64 mm
	Permissible ambient conditions Operating temperature: -25°C to +85°C *The max. temperature for UL is 60 °C.

Article number	Article designation	PG-Interface	Diagnostic LEDs	PU
35° cable outlet for solid conductor				
21700511	ED-PB-35-FC	no	no	1
21700513	ED-PB-35-PG-FC	yes	no	1
35° cable outlet for 7-/ 19-wire stranded conductor				
21700514	ED-PB-35-FC-FLEX	no	no	1
21700515	ED-PB-35-PG-FC-FLEX	yes	no	1
90° cable outlet for solid/ 7-/ 19-wire stranded conductor				
21700502	ED-PB-90-FC	no	no	1
21700501	ED-PB-90-PG-FC	yes	no	1
21700547	ED-PB-90-LED-FC	no	yes	1
21700546	ED-PB-90-PG-LED-FC	yes	yes	1
180° (AX) cable outlet for solid/ 7-/ 19-wire stranded conductor				
21700544	ED-PB-AX-FC	no	no	1

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA PB Sub-D M12

PROFIBUS Connectors M12



Benefits

- Cost-efficient due to quick installation (Plug & Play)
- Compact design: Small space requirements
- No loose parts
- Terminating resistor (integrated) can be switched
- Suitable for assembled M12 PB cables

Product features

- Max. transmission rate 12 Mbit/s possible
- Current consumption max. 12,5 mA
- Supply voltage 4.75 - 5.25 V DC (supplied from the terminal)
- Switch can also be operated when the connector is plugged and setting is clearly visible
- Terminating resistor "ON" - the outbound bus cable is disconnected

Norm references / Approvals

- IEC 61158, IEC 61784
- UL File No. E331560

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Connector M12, B-coded
- Improved electromagnetic compatibility (EMC) by metallized housing
- Version with additional Sub-D port for programming/diagnostic ('PG')

Suitable cables

- UNITRONIC® BUS PB M12 Page 105
- UNITRONIC® BUS PB M12-M12



Info

- Plug & Play together with ready-to-use PROFIBUS M12 cordsets

Technical data



Classification

ETIM 5.0 Class-ID: EC001132
ETIM 5.0 Class-Description:
D-Sub connector



Dimensions

70 mm x 40 mm x 17 mm (L x W x H)

Connection type

M12



Protection rating

IP 20

Terminating resistor

150 Ω

Interfaces

PROFIBUS station:
D-Sub socket, 9-pin
PROFIBUS cable:
M12 PB system cabling



Permissible ambient conditions

Operating temperature:
-25°C to +85°C

*The max. temperature for UL is 60 °C.

Article number	Article designation	PG-Interface	PU
90° cable outlet			
21700520	ED-PB-PG-90-M12	yes	1

Photographs are not to scale and do not represent detailed images of the respective products.



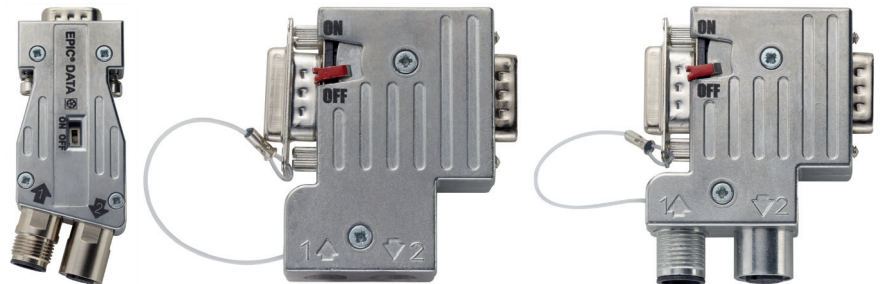
EPIC® DATA PB Sub-D PRO

PROFIBUS Connectors full-metall M12 connection /spring type connection



Info

- For high mechanical stress
- High EMC protection



Benefits

- Optimum EMC protection
- Robust housing material for harsh environments
- No loose parts
- Cost-efficient due to quick installation (Plug & Play)
- Terminating resistor (integrated) can be switched

Product features

- Extended temperature range
- High mechanical strength (200 contact durability)
- Less transmission loss
- Max. transmission rate 12 Mbit/s possible
- Supply voltage 4.75 - 5.25 V DC (supplied from the terminal)

Norm references / Approvals

- IEC 61158, IEC 61784

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- 360° shielding due full-metall housing (ZnAl)
- With additional Sub-D port for programming/diagnostic 'PG' (35° and 90° version)
- With EMC connector protection (PG port)
- M12 version: 5-pin connector, M12 B-coded

Suitable cables

- UNITRONIC® BUS PB M12 Page 105
- UNITRONIC® BUS PB M12-M12

Suitable tools

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to main catalogue 2016/17

Technical data



Classification

ETIM 5.0 Class-ID: EC001132
ETIM 5.0 Class-Description:
D-Sub connector



Dimensions

see technical data sheet

Connection type

M12 or
Internal spring type terminal



Protection rating

IP 30

Terminating resistor

150 Ω

Interfaces

PROFIBUS station:

D-Sub socket, 9-pin

PROFIBUS cable:

M12 PROFIBUS cordsets

Spring type for solid conductor

0,08 - 0,5 mm² (AWG28 - AWG14)

Cable diameter: 8 - 9 mm



Permissible ambient conditions

Operating temperature: -20°C to +70°C

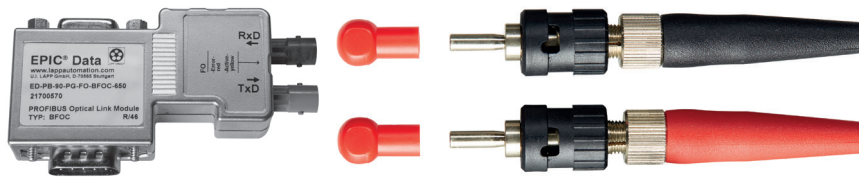
Article number	Article designation	Connection type	PG-Interface	PU
EPIC® DATA PB Sub-D PRO				
21700563	ED-PB-AX-M12-PRO	M12	no	1
21700561	ED-PB-35-PG-M12-PRO	M12	yes	1
21700562	ED-PB-90-PG-M12-PRO	M12	yes	1
180° (AX) cable outlet				
21700566	ED-PB-AX-M12-PRO	Internal spring type	no	1
35° cable outlet				
21700564	ED-PB-35-PG-ST-PRO	Internal spring type	yes	1
90° cable outlet				
21700565	ED-PB-90-PG-ST-PRO	Internal spring type	yes	1

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA PB Sub-D FO

PROFIBUS Connectors Optical Link Modul



Info

- PROFIBUS repeater with integrated optical interface

Benefits

- Easy covering of large distances (PCF 250 m / POF 65 m)
- Cost-efficient due to quick installation (Plug & Play)
- Galvanic isolation in case of potential differences within PROFIBUS network
- For EMC critical environments
- Integrated repeater functionality: Regeneration of data signal (slope, power and mark-to-space ratio)

Product features

- Max. distance:
POF fiber: 65 m
PCF fiber: 250 m
- Diagnostic LEDs (blue, green, red, yellow)
- Bus termination is integrated
- Current consumption typ. 100 mA
- Supply voltage 5.0 V DC (supplied from the terminal)

Norm references / Approvals

- IEC 61158, IEC 61784

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Improved electromagnetic compatibility (EMC) by metallized housing
- Versions with additional Sub-D interface for programming/diagnostic ('PG')
- An external 24 V supply is not necessary
- Connection for optical cable (POF or PCF)

Suitable cables

- HITRONIC® POF DUPLEX BUFFERED FIBRES Page 197
- HITRONIC® POF DUPLEX CABLE Page 198
- HITRONIC® POF cables for PROFINET Applications Page 199

Suitable connectors

- HBFR, SMA and BFOC(ST)

Technical data



Classification

ETIM 5.0 Class-ID: EC001132
ETIM 5.0 Class-Description:
D-Sub connector



Dimensions

64 mm x 40 mm x 17 mm (LxWxH)



Protection rating

IP 20

Interfaces

Connection: Sub-D socket, 9-pin

FO-cable:

- Polymeric-optical-fiber (POF), 650 nm
- Polymer-cladded-fiber (PCF), 650 nm



Permissible ambient conditions

Operating temperature: 0 °C to +60 °C

Article number	Article designation	PG-Interface	Diagnostic LEDs	PU
90° cable outlet				
For HFBR connector				
21700568	ED-PB-90-PG-FO-HFBR-650	yes	yes	1
For SMA connector				
21700569	ED-PB-90-PG-FO-SMA-650	yes	yes	1
For BFOC(ST) connector				
21700570	ED-PB-90-PG-FO-BFOC-650	yes	yes	1

Applicable optical connectors (POF) included

Photographs are not to scale and do not represent detailed images of the respective products.

Note: For one optical link 2 modules are required

Accessories

- PCF Assembly Sets refer to page 212
- PCF Connector HFBR refer to page 211
- PCF Connector F-SMA and ST(BFOC) refer to page 211
- POF Assembly Sets refer to page 204
- POF Connector F-SMA and ST(BFOC) refer to page 201
- POF Connector SC-RJ refer to page 202



UNITRONIC® BUS PB M 12 / UNITRONIC® BUS PB M 12-M 12

PROFIBUS cable: M 12 plug/socket on free conductor end

PROFIBUS Cable: M 12 connector on M 12 socket

Info

- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Cost efficient and rational wiring for PROFIBUS installations
- Space-saving due to compact dimensions
- Fast and easy error tracking

Application range

- Mechanical and plant engineering

Product features

- 2-core PROFIBUS cable, shielded
- Connector M 12, B-coded with quick locking system
- Suitable for drag chains
- Including tag carrier

Norm references / Approvals

- UL-AWM-Style 21198 (80°C/300V)

Product Make-up

- Core cross section: 0.25 mm²
- Core colours: red, green
- Outer sheath: PUR halogen-free, violett
- Outer diameter: 7.8 mm
- Shielded version
- Shielding is conducted over the knurl

Suitable connectors

- Sub-D Bus-Connectors
- EPIC® DATA PB M 12 Page 106
- EPIC® DATA PB M 12/M 12 Page 107
- EPIC® DATA PB M 12T Page 109

Technical data



Classification

ETIM 5.0 Class-ID: EC001855
ETIM 5.0 Class-Description:
Sensor-actuator patch cord



Material

Contact: CuSn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing



Protection rating

IP65/IP67



Ambient temperature (operation)

Plug/socket -25°C to +90°C
Fixed installation -40°C to +80°C
Flexing -30°C to +80°C
Drag chain application ≤ 70°C

Coding

B - inverse

Rated current (A)

4 A

Article number	Article designation	Length (m)	Number of pins	Design	Rated voltage (V)	PU
plug						
22260767	AB-PB-M 12MS-2,0PUR	2	2	straight	250	1
22260768	AB-PB-M 12MS-5,0PUR	5	2	straight	250	1
22260769	AB-PB-M 12MS-10,0PUR	10	2	straight	250	1
22260956	AB-PB-M 12MA-2,0PUR	2	2	angled	250	1
Socket						
22260770	AB-PB-2,0PUR-M 12FS	2	2	straight	250	1
22260771	AB-PB-5,0PUR-M 12FS	5	2	straight	250	1
22260772	AB-PB-10,0PUR-M 12FS	10	2	straight	250	1
Plug on socket						
22260955	AB-PB-M 12MS-0,2PUR-M 12FS	0.2	2	straight-straight	250	1
22260773	AB-PB-M 12MS-0,3PUR-M 12FS	0.3	2	straight-straight	250	1
22260774	AB-PB-M 12MS-1,0PUR-M 12FS	1	2	straight-straight	250	1
22260775	AB-PB-M 12MS-2,0PUR-M 12FS	2	2	straight-straight	250	1
22260869	AB-PB-M 12MS-3,0PUR-M 12FS	3	2	straight-straight	250	1
22260776	AB-PB-M 12MS-5,0PUR-M 12FS	5	2	straight-straight	250	1
22260777	AB-PB-M 12MS-10,0PUR-M 12FS	10	2	straight-straight	250	1
22260907	AB-PB-M 12MS-15,0PUR-M 12FS	15	2	straight-straight	250	1
22260908	AB-PB-M 12MS-20,0PUR-M 12FS	20	2	straight-straight	250	1
22260079	AB-PB-M 12MA-5,0PUR-M 12FA	5	2	angled-angled	250	1
22260904	AB-PB-M 12MA-10,0PUR-M 12FA	10	2	angled-angled	250	1
22260905	AB-PB-M 12MA-15,0PUR-M 12FA	15	2	angled-angled	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: inclusive of copper. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges.
Photographs are not to scale and do not represent detailed images of the respective products.

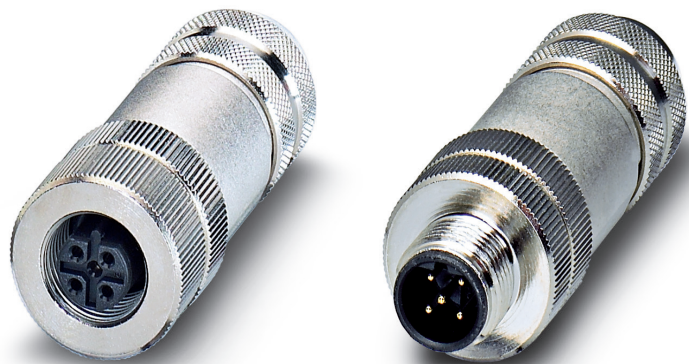
Accessories

- FLEXIMARK® Label LMB refer to main catalogue 2016/17



EPIC® DATA PB M12

Field mountable M12 BUS-connectors, shielded for PROFIBUS



Benefits

- Quick and easy on-site assembly
- For creating of individual cable lengths
- Cost efficient and rational wiring for BUS installations
- Space-saving due to compact dimensions

Product features

- Screened version
- Connector M12, B-coded
- PG9- / PG11-thread
- Screw connection

Suitable cables

- Bus system PROFIBUS-DP/FMS/FIP main catalogue 2016/17
- UNITRONIC® BUS PB M12 Page 105

Technical data



Classification

ETIM 5.0 Class-ID: EC002062
ETIM 5.0 Class-Description:
Sensor-actuator connector



Material

Contact: CuSn
Contact surface: Au
Contact carrier: PA66
Sealing: NBR
Knurl: Nickel-plated brass
Gripping body: Zinc die-cast, nickel-plated



Protection rating

IP 67



Ambient temperature (operation)

Plug/socket -40°C to +85°C

Coding

B - inverse (PROFIBUS)

Rated current (A)

4 A

Article number	Article designation	Min. conductor cross-section, flexible, in mm ²	Max. conductor cross-section, flexible, in mm ²	Min. conductor cross-section AWG/kcmil	Max. conductor cross-section AWG/kcmil	Min. cable diameter (mm)	Max. cable diameter (mm)	PU
Plug, straight								
22260653	AB-C5-M12MSB-PG9-SH-AU	0.25	0.75	24	18	6	8.5	1
22262078	AB-C5-M12MSB-PG11-SH-AU	0.25	0.75	24	18	8	10	1
Socket, straight								
22260646	AB-C5-M12FSB-PG9-SH-AU	0.25	0.75	24	18	6	8.5	1
22260889	AB-C5-M12FSB-PG11-SH-AU	0.25	0.75	24	18	8	10	1

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA PB M12/M12

PROFIBUS M12 control cabinet feed-through, shielded



Benefits

- M12 connector on both sides
- Plug & Play for flexible connection solutions

Application range

- Mechanical and plant engineering

Product features

- For PROFIBUS applications
- Bipolar/screw mounting

Product Make-up

- 5-pin control cabinet feed-through, M12 B-coded
- M12 plug on M12 socket
- Screened version

Suitable cables

- UNITRONIC® BUS PB M12 Page 105
- UNITRONIC® BUS PB M12-M12 main catalogue 2016/17

Suitable connectors

- EPIC® DATA PB M12 Page 106

Technical data



Classification

ETIM 5.0 Class-ID: EC002061
ETIM 5.0 Class-Description:
Sensor-actuator connector chassis



Material

Contact: CuZn
Contact surface: Au (gold)
Contact carrier: PA 66
Knurl: Nickel-plated brass
Sealing: FKM



Protection rating

IP 67



Ambient temperature (operation)

Plug/socket
-25°C to +85°C

Coding

B - inverse (PROFIBUS)

Rated current (A)

4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
Control cabinet feed through				
22262021	AB-C5-DSI-M12MSB-M12FSB-M16-SH	5	60	1

Photographs are not to scale and do not represent detailed images of the respective products.

**EPIC® DATA PB TR M12**

M12 Terminating resistor for PROFIBUS

**Benefits**

- Cost efficient termination of a bus systems
- Space-saving due to compact dimensions
- Robust design

Application range

- Mechanical and plant engineering

Product features

- 150 Ω terminating resistor for PROFIBUS

Product Make-up

- Straight connector M12 with integrated termination resistor
- Straight connector M12, with integrated termination resistor, shielded

**Info**

- Fully suitable for industrial use

Technical data**Classification**

ETIM 5.0 Class-ID: EC000448
ETIM 5.0 Class-Description:
Terminal resistor

**Protection rating**

IP65/IP67 (plug)
IP 67 (socket)

**Ambient temperature (operation)**

-25°C to +90°C (plug)
-40°C to +85°C (socket)

Contact material

CuSn

Coding

B - inverse (PROFIBUS)

Rated current (A)

4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
Plug, unshielded (terminating resistor)				
22260722	AB-C4-M12MS-PB-TR	4	60	5
Socket, shielded (terminating resistor)				
22261001	AB-C5-M12FS-PB-TR-SH	4	32	1

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PB M12T refer to page 109



Info

- Fully suitable for industrial use

Benefits

- Cost efficient and rational wiring for PROFIBUS installations
- Space-saving due to compact dimensions
- Robust design

Application range

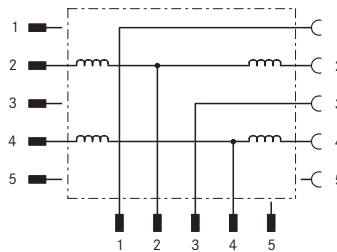
- Mechanical and plant engineering

Product features

- For PROFIBUS stubs
- Screened version

Product Make-up

- 4-pin PROFIBUS T-connector
- M12 plug to M12 plug and M12 socket



EPIC® DATA PB M12T

M12 T distributor, shielded for PROFIBUS



Technical data



Classification

ETIM 5.0 Class-ID: EC002925
ETIM 5.0 Class-Description:
Sensor-actuator adapting connector



Material

Contact: CuSn
Contact surface: Ni/Au
Contact carrier: PUR
Knurl: Nickel-plated brass
Gripping body: PUR
Sealing: FKM



Protection rating

IP 67



Ambient temperature (operation)

Plug/socket
-25°C to +80°C

Coding

B - inverse

Rated current (A)

4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
T distributor				
22260761	AB-C2-M12T-2XM12FS PB	4	60	1

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PB TR M12 refer to page 108



EPIC® DATA PB CCR

Cable coupler round, shielded for e.g. sensor /PROFIBUS /CAN cables

Benefits

- Time-saving assembly with IDC connection technology
- Optimum EMC protection with 360 ° shielding

Application range

- To extend existing cable systems
- Repairkit for damaged cables

Product features

- 5-pin cable coupler round
- Screened version

Technical data



Material

Contact: CuZn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: Zinc die-cast, nickel-plated



Protection rating

IP65/IP67



Ambient temperature (operation)

-40°C to +85°C

Rated current (A)

4 A



- UNITRONIC® BUS PB Page 79

Article number	Article designation	Number of pins	Cross-section in mm²	Cable diameter in mm	Rated voltage (V)	PU
Cable coupler round						
21700641	AB-C5-CCR-SH	5	0.14 - 0.5	5 - 9.7	60	1

Photographs are not to scale and do not represent detailed images of the respective products.



UNITRONIC® DeviceNet THICK + THIN

LAPP KABEL STUTTGART UNITRONIC® BUS DeviceNet™ Thick Cable



LAPP KABEL STUTTGART UNITRONIC® BUS DeviceNet™ Thin Cable



Application range

- Fixed installation
- DeviceNet™ connects industrial devices e.g. limit switches, photoelectric switches, valve islands, motor starters, drives, PLCs, etc.

Product features

- Resistant to oils
- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- FRNC Version: Halogene free and flame retardant
- Refer to data sheet for more details

Norm references / Approvals

- CMG UL/CSA certification 75°C or PLTC, Sun Res
- FRNC variant additionally with Germanischer Lloyd certification

Product Make-up

- Core insulation made of foam skin
- Outer sheath: Halogene free (FRNC) or Polyvinylchlorid (PVC)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Core identification code

Data pair: light blue + white
Power supply: red + black



Mutual capacitance

(800 Hz): max. 39.8 nF/km



Peak operating voltage

300 V (not for power applications)



Conductor resistance

Thick (loop): max. 45 ohm/km
Thin (loop): max. 180 ohm/km



Minimum bending radius

Fixed installation: 15 x outer diameter



Test voltage

Core/core: 2000 V



Characteristic impedance

120 ohm



Temperature range

Fixed installation: -25°C to +80°C

Article number	Article designation	Number of pairs and AWG size	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Halogen-free					
2170340	UNITRONIC® BUS DN THICK FRNC	1x2xAWG18 + 1x2xAWG15	12.2	82.8	195
2170341	UNITRONIC® BUS DN THIN FRNC	1x2xAWG24 + 1x2xAWG22	6.9	33.4	69.5
With PVC outer sheath					
2170342	UNITRONIC® BUS DN THICK Y	1x2xAWG18 + 1x2xAWG15	12.2	88.4	192
2170343	UNITRONIC® BUS DN THIN Y	1x2xAWG24 + 1x2xAWG22	6.9	33.4	66.9

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

FRNC means Flame-Retardant, Non-Corrosive; and DeviceNet is a registered trademark of ODVA.

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

ECO is the cost-efficient version of article no. 2170342 and 2170343, with a slight modification to the outer sheath and UL/CSA-approved (CMG).

Photographs are not to scale and do not represent detailed images of the respective products.



UNITRONIC® DeviceNet FD THICK+THIN

Highly flexible and UL/CSA-certified

LAPP KABEL STUTTGART UNITRONIC® BUS DN THICK FD P

LAPP KABEL STUTTGART UNITRONIC® BUS DN THIN FD P

Application range

- For highly flexible applications
- DeviceNet™ connects industrial devices e.g. limit switches, photoelectric switches, valve islands, motor starters, drives, PLCs, etc.

Product features

- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- Refer to data sheet for more details
- PUR (P) Version: Halogene free
- PVC (Y) Version: Flame retardant (UL FT4)
- UV-resistant (but colour may change after some time)

Norm references / Approvals

- PUR: UL/CSA-certified (CMX)
- PVC: UL/CSA CMG 75°C FT4 Sun Res Oil Res, at 2170346 also PLTC

Product Make-up

- Core insulation: PE
- Outer sheath of Polyurethan (PUR) or Polyvinylchlorid (PVC)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Core identification code Data pair: light blue + white Power supply: red + black
	Mutual capacitance (800 Hz): max. 39.8 nF/km
	Peak operating voltage 300 V (not for power applications)
	Conductor resistance Thick (loop): max. 45 ohm/km Thin (loop): max. 180 ohm/km
	Minimum bending radius Fixed installation: 7.5 x outer diameter Flexing: 15 x outer diameter
	Test voltage Core/core: 2000 V
	Characteristic impedance 120 ohm
	Temperature range PUR: -40°C to +80°C PVC: -10°C to +80°C

Article number	Article designation	Number of pairs and AWG size	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Version P (PUR)					
2170344	UNITRONIC® BUS DN THICK FD P	1x2xAWG18 + 1x2xAWG15	12.2	94	184
2170345	UNITRONIC® BUS DN THIN FD P	1x2xAWG24 + 1x2xAWG22	6.9	33.4	67.7
Version Y (PVC)					
2170346	UNITRONIC® BUS DN THICK FD Y	1x2xAWG18 + 1x2xAWG15	12.2	94	195
2170347	UNITRONIC® BUS DN THIN FD Y	1x2xAWG24 + 1x2xAWG22	6.9	33.4	69.8

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
DeviceNet is a registered trademark of ODVA
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- SILVYN® CHAIN refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17



UNITRONIC® BUS CAN

LAPP KABEL STUTTGART UNITRONIC® BUS CAN



Info

- CAN = Controller Area Network

UNITRONIC® BUS CAN FD P

LAPP KABEL STUTTGART UNITRONIC® BUS CAN FD P



Application range

UNITRONIC® BUS CAN

- Fixed installation

UNITRONIC® BUS CAN FD P

- For highly flexible applications

Product features

UNITRONIC® BUS CAN

- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according IEC 60332-1-2

UNITRONIC® BUS CAN FD P

- Halogen-free outer sheath
- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according IEC 60332-1-2

Norm references / Approvals

- Standardised internationally in ISO 11898
- UL/CSA type CMX (UL 444)

Product Make-up

UNITRONIC® BUS CAN

- 0.22 + 0.34 + 0.5: bare stranded conductor, 7-wire
- 0.75: bare stranded conductor, fine-wire
- Colour-coded in accordance with DIN 47100
- Copper braid
- PVC sheath
- Colour: violet (RAL 4001)

UNITRONIC® BUS CAN FD P

- Stranded bare conductor
- Screening: wrapped with braided copper wires
- PUR outer sheath
- Colour: violet (RAL 4001)
- UV-resistant (but colour may change after some time)

Suitable connectors

UNITRONIC® BUS CAN

- EPIC® DATA CAN Sub-D Page 114
- EPIC® DATA CAN Sub-D PRO Page 115

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Mutual capacitance

UNITRONIC® BUS CAN
(800 Hz) max. 40 nF/km
UNITRONIC® BUS CAN FD P
Flexible use: 10 x outer diameter



Peak operating voltage

UNITRONIC® BUS CAN
(not for power applications) 250 V
UNITRONIC® BUS CAN FD P
250 V (not for power transmission)



Conductor resistance

UNITRONIC® BUS CAN
(loop): max. 186 ohm/km
UNITRONIC® BUS CAN FD P
(loop): max. 159.8 ohm/km



Minimum bending radius

UNITRONIC® BUS CAN
Fixed installation: 8 x outer diameter
UNITRONIC® BUS CAN FD P
Flexing: 15 x outer diameter



Test voltage

Core/core: 1500 V rms



Characteristic impedance

120 ohm



Temperature range

UNITRONIC® BUS CAN
Fixed installation:
-30°C to +80°C
Flexing: -5°C to +70°C
UNITRONIC® BUS CAN FD P
Fixed installation: -40°C to +80°C
Flexing: -30°C to +70°C

Article number	Article designation	Number of pairs/conductor cross section (mm ²)	Outer diameter (mm)	Conductor resistance	Copper index (kg/km)	Weight (kg/km)
for fixed installation						
2170260	UNITRONIC® BUS CAN	1 x 2 x 0,22	5.7	186	16.7	42
2170261	UNITRONIC® BUS CAN	2 x 2 x 0,22	7.6	186	34.8	68
2170263	UNITRONIC® BUS CAN	1 x 2 x 0,34	6.8	115	25	55
2170264	UNITRONIC® BUS CAN	2 x 2 x 0,34	8.5	115	46.4	88
2170266	UNITRONIC® BUS CAN	1 x 2 x 0,5	7.5	78	41.6	90
2170267	UNITRONIC® BUS CAN	2 x 2 x 0,5	9.6	78	59.4	106
2170269	UNITRONIC® BUS CAN	1 x 2 x 0,75	8.7	52	52.7	108
2170270	UNITRONIC® BUS CAN	2 x 2 x 0,75	11.5	52	80.6	142
For highly flexible applications (power chains, moving machine parts)						
2170272	UNITRONIC® BUS CAN FD P	1 x 2 x 0,25	6.4	159.8	24	40
2170273	UNITRONIC® BUS CAN FD P	2 x 2 x 0,25	8.4	159.8	33	65
2170275	UNITRONIC® BUS CAN FD P	1 x 2 x 0,34	6.8	122	32.8	60
2170276	UNITRONIC® BUS CAN FD P	2 x 2 x 0,34	9.6	122	52.4	88
2170278	UNITRONIC® BUS CAN FD P	1 x 2 x 0,5	8	72.8	41.9	74
2170279	UNITRONIC® BUS CAN FD P	2 x 2 x 0,5	10.8	72.8	59.4	100

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Multipurpose shears A and B refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17
- SENSOR STRIP stripping tool refer to main catalogue 2016/17

UNITRONIC® BUS CAN FD P

- SILVYN® CHAIN refer to main catalogue 2016/17



UNITRONIC® BUS CAN TRAY



Info

- CAN = Controller Area Network

Benefits

- PLTC-ER approval for open wiring between cable tray and industrial machines/plants acc. to NEC 725.154 (D)
- No additional protection of the cable needed

Application range

- Fixed installation

Product features

- Maximum bit rate: 1 Mbit/s for 40 m segment length
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- UV-resistant UL SUN RES
- Oil-resistant according to UL OIL RES I
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test

Norm references / Approvals

- Standardised internationally in ISO 11898
- C(UL)us Typ CMG (75°C) acc.to UL 444 / CSA 22.2
- UL Type PLTC-ER acc. to UL 13

Product Make-up

- 7-wire bare stranded copper conductor
- Colour-coded in accordance with DIN 47100
- Copper braid
- PVC inner sheath and outer sheath
- Colour: violet (RAL 4001)

Suitable connectors

- EPIC® DATA CAN Sub-D Page 114
- EPIC® DATA CAN Sub-D PRO Page 115

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Mutual capacitance (800 Hz) max. 40 nF/km
	Peak operating voltage (not for power applications) 250 V Rated voltage: 600 V (UL)
	Conductor resistance (loop): max. 110,8 ohm/km
	Minimum bending radius Fixed installation: 8 x outer diameter Flexing: 15 x outer diameter
	Test voltage Core/core: 2000 V
	Characteristic impedance 120 ohm
	Temperature range Fixed installation: -40°C to +80°C Flexing: -10°C to +70°C

Article number	Article designation	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS CAN TRAY					
2170857	UNITRONIC® BUS CAN TRAY	2 x 2 x 0,34	7.5	35	81

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Multipurpose shears A and B refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17

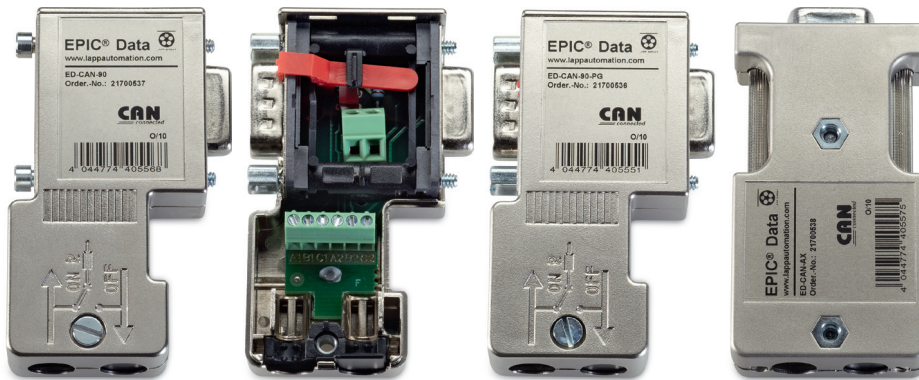


DeviceNet

CANopen

EPIC® DATA CAN Sub-D

CAN Bus-Connectors with screw connection



Benefits

- Terminating resistor (integrated) can be switched
- Compact design: Small space requirements
- No loose parts
- With additional 24 V DC output to supply external devices (90° version only)

Product features

- Max. transmission rate 1 Mbit/s possible
- Terminating resistor "ON" - the outbound bus cable is disconnected
- The integrated, connectable terminating resistor enable the CAN-Bus to be terminated or connected through
- Sub-D pin assignment:
CAN Low = Pin 2
CAN High = Pin 7
CAN Gnd = Pin 3
GND = Pin 6 (90° version only)
CAN V+ = Pin 9 (90° version only)
(shield = housing)

Norm references / Approvals

- UL File No. E331560

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Screw connection
- Improved electromagnetic compatibility (EMC) by metallized housing
- For cable outer diameter: 5 - 8 mm

Suitable cables

- Bus system CAN / DeviceNet

Suitable tools

- Kraftform® adjustable torque screwdriver / Kraftform Kompakt® Set refer to main catalogue 2016 / 17

Technical data



Classification

ETIM 5.0 Class-ID: EC001132

ETIM 5.0 Class-Description:

D-Sub connector



Dimensions

60 mm x 40 mm x 17 mm - 90°

67,5 mm x 35 mm x 17 mm - 180°

(LxWxH)

Connection type

Screwing



Protection rating

IP 20

Terminating resistor

120 Ω

Interfaces

CAN bus station:

D-Sub socket, 9-pin

CAN bus cable:

6 terminal blocks for wires up to 0.8 mm²

Permissible ambient conditions

Operating temperature:

-25°C to +85°C

*The max. temperature for UL is 60 °C.

Article number	Article designation	Cable outlet	PG-Interface	PU
Sub-D connector				
21700537	ED-CAN-90	90°	no	1
21700536	ED-CAN-90-PG	90°	yes	1
21700538	ED-CAN-AX	180° axial	no	1

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Photographs are not to scale and do not represent detailed images of the respective products.

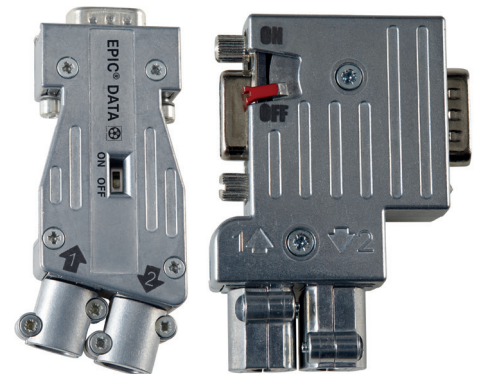


EPIC® DATA CAN Sub-D PRO

CAN Bus-Connectors full-metall

Info

- High EMC protection
- For cable diameters up to 10 mm



Benefits

- High flexibility by extended cable clamping range
- Cost-saving due to quick and easy installation
- Robust housing material for harsh environments
- For EMC critical environments

Product features

- Extended temperature range
- High mechanical strength (200 contact durability)
- Less transmission loss
- Bus termination is integrated
- Sub-D pin assignment:
CAN Low = Pin 2
CAN High = Pin 7
CAN Gnd = Pin 3
GND = Pin 6 (90° version only)
CAN V+ = Pin 9 (90° version only)
(shield = housing)

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- 360° shielding due full-metall housing (ZnAl)
- External cable clamp connection (7-10 mm)
- 90° version: With additional Sub-D port for programming/diagnostic ('PG')
- 90° version: PG port with undetachable EMC Sub-D protection

Suitable cables

- UNITRONIC® DeviceNet THICK + THIN Page 110
- UNITRONIC® BUS CAN Page 112
- UNITRONIC® DeviceNet FD THICK+THIN Page 111
- UNITRONIC® BUS CAN FD P Page 112
- UNITRONIC® BUS CAN TRAY Page 113
- UNITRONIC® BUS CAN BURIAL

Suitable tools

- Kraftform® adjustable torque screwdriver / Kraftform Kompakt® Set refer to main catalogue 2016 / 17

Technical data



Classification

ETIM 5.0 Class-ID: EC001132
ETIM 5.0 Class-Description:
D-Sub connector



Dimensions

63 x 45 x 18 - 90°
81 x 36 x 15 - 180°
(LxWxH)



Connection type

Screwing



Protection rating

IP 30

Terminating resistor

120 Ω

Interfaces

CAN-Bus station:
D-SUB socket, 9-pin
CAN-Bus cable:
- screw terminals for wires
0.14 - 0.5 mm²



Permissible ambient conditions

Operating temperature:
-20°C to +70°C

Article number	Article designation	Cable outlet	PG-Interface	PU
Sub-D connector				
21700590	ED-CAN-90-PG-PRO	90°	yes	1
21700591	ED-CAN-AX-PRO	180° axial	no	1

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Photographs are not to scale and do not represent detailed images of the respective products.



DeviceNet CANopen

UNITRONIC® BUS CAN M12 / UNITRONIC® BUS CAN M12-M12

DeviceNet/CANopen Cable: M12 plug/socket on free conductor end

DeviceNet/CANopen Cable: M12 connector on M12 socket



Info

- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Robust design

Application range

- Mechanical and plant engineering

Product features

- 5-core DeviceNet/CANopen cable, shielded
- M12 connector, A-coded with quick-locking system
- Suitable for drag chains
- Including tag carrier

Norm references / Approvals

- UL-AWM-Style 21198

Product Make-up

- Signal line: 2 x 0.25 mm²
- Power supply: 2 x 0.34 mm²
- Drain wire: 1 x 0.34 mm²
- Core colours: red/black, blue/white
- Outer sheath: PUR halogen-free, violett
- Outer diameter: 6.7 mm
- Shielded version

Suitable connectors

- Sub-D Bus-Connectors
- EPIC® DATA CAN M12 Page 117
- EPIC® DATA CAN M12/M12 Page 117
- EPIC® DATA CAN TR M12 Page 118
- EPIC® DATA CAN M12T Page 119
- EPIC® DATA CAN CCR Page 119

Technical data



Classification

ETIM 5.0 Class-ID: EC001855
ETIM 5.0 Class-Description:
Sensor-actuator patch cord



Material

Contact: CuSn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing



Protection rating

IP65/IP67



Ambient temperature (operation)

Plug/socket -25°C to +90°C
Fixed installation -40°C to +80°C
Flexing -20°C to +80°C
Drag chain application ≤ 70 °C

Coding

A-standard

Rated current (A)

4 A

Article number	Article designation	Length (m)	Number of pins	Design	Rated voltage (V)	PU
plug						
22260789	AB-DN-M12MS-2,0PUR	2	5	straight	60	1
22260790	AB-DN-M12MS-5,0PUR	5	5	straight	60	1
22260791	AB-DN-M12MS-10,0PUR	10	5	straight	60	1
22262004	AB-DN-M12MA-2,0PUR	2	5	angled	60	1
Socket						
22260792	AB-DN-2,0PUR-M12FS	2	5	straight	60	1
22260793	AB-DN-5,0PUR-M12FS	5	5	straight	60	1
22260794	AB-DN-10,0PUR-M12FS	10	5	straight	60	1
Plug on socket						
22260795	AB-DN-M12MS-0,3PUR-M12FS	0.3	5	straight-straight	60	1
22260796	AB-DN-M12MS-1,0PUR-M12FS	1	5	straight-straight	60	1
22260797	AB-DN-M12MS-2,0PUR-M12FS	2	5	straight-straight	60	1
22260798	AB-DN-M12MS-5,0PUR-M12FS	5	5	straight-straight	60	1
22260799	AB-DN-M12MS-10,0PUR-M12FS	10	5	straight-straight	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- FLEXIMARK® Label LMB refer to main catalogue 2016/17



EPIC® DATA CAN M12

Field mountable M12 BUS-connectors shielded for DeviceNet/CANopen

Benefits

- Quick and easy on-site assembly
- For creating of individual cable lengths
- Cost efficient and rational wiring for BUS installations
- Space-saving due to compact dimensions

Product Make-up

- M12 plug, 5-pins, A-coded
- Screw connection
- PG9 thread
- Screened version

Technical data

Connection type
Screwing

**Material**

Contact: CuSn
Contact surface: Au
Contact carrier: PA66
Sealing: NBR
Knurl: Nickel-plated brass
Gripping body: Zinc die-cast, nickel-plated

**Protection rating**

IP 67

**Ambient temperature (operation)**

Plug/socket -40°C to +85°C

Coding

A - Standard
(CANopen/DeviceNet/CC-Link)

Rated current (A)

4 A



Article number	Article designation	Connection type	Number of pins	Cross-section in mm ²	Cable diameter in mm	Rated voltage (V)	PU
Plug, straight							
22260135	AB-C5-M12MS-PG9-SH	screw	5	0.25 - 0.75	6.0 - 8.0	60	1
Socket, straight							
22260136	AB-C5-M12FS-PG9-SH	screw	5	0.25 - 0.75	6.0 - 8.0	60	1

DeviceNet is a registered trademark of ODVA

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA CAN M12/M12

M12 control cabinet feed-through, shielded for CAN/DeviceNet/ S/A cabling

Benefits

- M12 connector on both sides
- Plug & Play for flexible connection solutions

Product features

- For CANopen/DeviceNet applications
- For sensor/actuator cabling
- Bipolar/screw mounting

Product Make-up

- 5-pin control cabinet feed-through, M12 A-coded
- M12 plug on M12 socket
- Screened version

Technical data

**Material**

Contact: CuZn
Contact surface: Au (gold)
Contact carrier: PA 66
Knurl: Nickel-plated brass
Sealing: FKM

**Protection rating**

IP 67

**Ambient temperature (operation)**

Plug/socket
-25°C to +85°C

Coding

A - Standard
(CANopen/DeviceNet/CC-Link)

Rated current (A)

4 A



Article number	Article designation	Number of pins	Rated voltage (V)	PU
Control cabinet feed through				
22262020	AB-C5-DSI-M12MS-M12FS-M16-SH	5	24	1

DeviceNet is a registered trademark of ODVA

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA CAN TR M12

M12 Terminating resistor for DeviceNet/CANopen



Info

- Fully suitable for industrial use

Benefits

- Cost efficient termination of a bus systems
- Space-saving due to compact dimensions
- Robust design

Application range

- Mechanical and plant engineering

Product features

- 120 Ω terminating resistor for DeviceNet/CANopen

Product Make-up

- Straight connector M12 with integrated termination resistor

Technical data



Classification

ETIM 5.0 Class-ID: EC000448
ETIM 5.0 Class-Description:
Terminal resistor



Protection rating

IP65/IP67



Ambient temperature (operation)

-25°C to +90°C

Contact material

CuSn

Coding

A - Standard (CANopen/DeviceNet)

Rated current (A)

4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
Plug, unshielded (terminating resistor)				
22260766	AB-C5-M12MS-DN-TR	5	60	5

DeviceNet is a registered trademark of ODVA

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA CAN M12T refer to page 119



EPIC® DATA CAN M12T

M12 T parallel distributor for CAN/ DeviceNet/ S/A cabling

Benefits

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Robust design

Product features

- For CANopen/DeviceNet applications
- PWIS-free

Product Make-up

- 5-pin parallel distributor
- M12 socket on M12 plug and M12 socket

Technical data

Classification
ETIM 5.0 Class-ID: EC002925
ETIM 5.0 Class-Description:
Sensor-actuator adapting connector

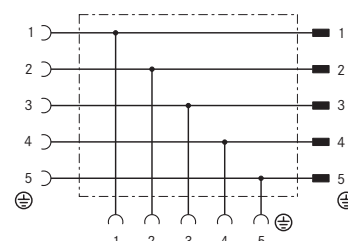
Material
Contact: CuZn
Contact surface: Ni/Au
Contact carrier: TPU GF
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing
Sealing: NBR

Protection rating
IP65/IP67

Ambient temperature (operation)
Plug/socket -25°C to +90°C

Coding
A - Standard
(CANopen/DeviceNet/CC-Link)

Rated current (A)
4 A



Article number	Article designation	Number of pins	Rated voltage (V)	PU
T distributor				
22260765	AB-C5-M12T-2XM12FS DN	5	60	5

DeviceNet is a registered trademark of ODVA
Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA CAN CCR

Cable coupler round, shielded for e.g. sensor /PROFIBUS /CAN cables

Benefits

- Time-saving assembly with IDC connection technology
- Optimum EMC protection with 360 ° shielding

Application range

- To extend existing cable systems
- Repairkit for damaged cables

Product features

- 5-pin cable coupler round
- Screened version

Technical data

Classification
ETIM 5.0 Class-ID: EC002062
ETIM 5.0 Class-Description:
Sensor-actuator connector

Material
Contact: CuZn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: Zinc die-cast, nickel-plated

Protection rating
IP65/IP67

Ambient temperature (operation)
-40°C to +85°C

Rated current (A)
4 A



Article number	Article designation	Number of pins	Cross-section in mm²	Cable diameter in mm	Rated voltage (V)	PU
Cable coupler round						
21700641	AB-C5-CCR-SH	5	0.14 - 0.50	5.0 - 9.7	60	1

DeviceNet is a registered trademark of ODVA
Photographs are not to scale and do not represent detailed images of the respective products.



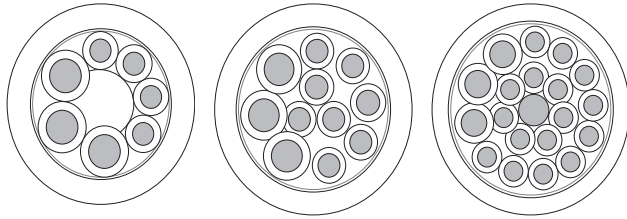
UNITRONIC® SENSOR master cable

LAPP KABEL STUTTGART UNITRONIC® SENSOR Li9Y11Y



Info

- Customised construction can be supported



Benefits

- Cost efficient and rational wiring for S/A boxes with detachable master cable connection
- Can be used universally for S/A installations

Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

Product features

- Cores for Power Supply:
3 x 0.75 mm² and 3 x 1.0 mm²
- Cores for Signalling cable:
4 x 0.34 mm², 8 x 0.5 mm², 16 x 0.5 mm²
- Suitable for drag chains
- Halogen-free according to VDE 0472-815
- Flame-retardant according to UL 1581 FT-2

Norm references / Approvals

- UL-AWM-Style 21198

Product Make-up

- Fine-wire, bare copper strand
- Single wire diameter:
0.34 mm² = (43 x 0.10 mm)
0.5 mm² = (19 x 0.18 mm)
0.75 mm² = (21 x 0.205 mm)
1.0 mm² = (55 x 0.15 mm)
- Core insulation: PP
- Outer sheath: PUR, black

Technical data



Classification

ETIM 5.0 Class-ID: EC001578
ETIM 5.0 Class-Description:
Flexible cable



Conductor stranding

Stranded conductor, fine-wire



Minimum bending radius

Flexing: 10 x outer diameter



Temperature range

Fixed installation: -40°C to +80°C
Flexing: -5°C to +80°C

Article number	Article designation	Dimensions (mm ²)	Outer diameter (mm)	Core/outer sheath material	Copper index (kg/km)
UNITRONIC® SENSOR COMBI					
7038880	Li9Y11Y	3 x 0.75 + 4 x 0.34	6.6	PP/PUR	34.5
7038881	Li9Y11Y	3 x 1.0 + 8 x 0.5	8.4	PP/PUR	67.2
7038882	Li9Y11Y	3 x 1.0 + 16 x 0.5	9.8	PP/PUR	105.6

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil 100m

Cables are printed

Other variations are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

For detailed technical information please refer to the data sheet

Accessories

- S/A box with M12 slots and master cable connection refer to main catalogue 2016/17



UNITRONIC® SENSOR

Flexible cable for sensor/actuator cabling



Info

- Good processability

Benefits

- Easy to strip and dismantle
- Space-saving due to compact dimensions

Application range

- Automation technology
- Sensor/actuator cabling
- For medium mechanical stress in dry conditions

Product features

- Core colour code in accordance with DIN EN 50044
- UV-resistant
- PWIS-free
- Partly oil and chemical resistant

Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: PVC
- Colour-code:
3-pin: bn, bu, bk
4-pin: bn, wh, bu, bk
5-pin: bn, wh, bu, bk, gy
- DESINA® 4x0,34: bn, wh, bu, bk
- Outer sheath: PVC or PUR
- Sheath colour: black (RAL 9005)
- DESINA® yellow (RAL 1021)

Suitable tools

- SENSOR STRIP stripping tool

Technical data



Classification

ETIM 5.0 Class-ID: EC001578
ETIM 5.0 Class-Description:
Flexible cable



Peak operating voltage

300 V (not for power applications)



Conductor stranding

Extra-fine wire acc. to VDE 0295,
class 6 / IEC 60228 class 6



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 8 x outer diameter



Temperature range

PVC/PVC:
Fixed installation: -25°C to +80°C
Flexing: -5°C to +80°C
PVC/PUR:
Fixed installation: -30°C to +80°C
Flexing: -10°C to +80°C

Article number	Article designation	Dimensions (mm ²)	Outer diameter (mm)	Core/outer sheath material	Colour	Copper index (kg/km)
UNITRONIC® SENSOR						
7038859	LifYY	3 x 0.34	4.8	PVC/PVC	black	9.8
7038860	LifYY	4 x 0.34	4.8	PVC/PVC	black	13.1
7038861	LifY11Y	4 x 0.34	4.8	PVC/PUR	black	13.1
7038862	LifY11Y	5 x 0.25	4.9	PVC/PUR	black	12
0040434	DESINA	4 x 0.34	5.2	PVC/PUR	yellow	13.5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Photographs are not to scale and do not represent detailed images of the respective products.



UNITRONIC® SENSOR FD

High flexible cable for sensor/actuator cabling for use in drag chains, halogen-free

LAPP KABEL STUTTGART UNITRONIC® SENSOR FD Lif9Y11Y

LAPP KABEL STUTTGART UNITRONIC® SENSOR FD Lif9YC11Y CE



Info

- For increased mechanical stress and harsh operating conditions

Benefits

- Designs for highly flexible use
- Abrasion-resistant
- Wear-resistant
- Space-saving due to compact dimensions

Application range

- Automation technology
- Sensor/actuator cabling
- Mechanical and plant engineering
- Assembly and production lines

Product features

- UV-resistant
- Halogen-free according to VDE 0472-815
- Flame-retardant according to IEC UL 1581 FT-2
- Suitable for drag chains
- Designed for 4 million alternating bending cycles and travel distances up to 10 m

Norm references / Approvals

- UL AWM Style 20549

Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: PP
- Colour-code:
 - 3-pin: bn, bu, bk
 - 4-pin: bn, wh, bu, bk
 - 5-pin: bn, wh, bu, bk, gy
 - 8-pin: bn, wh, gn, ye, gy, pk, bu, rd
- Outer sheath: PUR, black

Technical data



Classification

ETIM 5.0 Class-ID: EC001578
ETIM 5.0 Class-Description:
Flexible cable



Peak operating voltage

300 V (not for power applications)



Conductor stranding

Extra-fine wire acc. to VDE 0295, class 6 / IEC 60228 class 6



Minimum bending radius

Fixed installation: 5 x outer diameter
Flexing: 10 x outer diameter



Temperature range

Occasional flexing: -25°C to +80°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Dimensions (mm ²)	Outer diameter (mm)	Core/outer sheath material	Colour	Copper index (kg/km)
UNITRONIC SENSOR FD						
7038883	Lif9Y11Y	3x0.25	4.4	PP/PUR	black	7.5
7038884	Lif9Y11Y	4x0.25	4.7	PP/PUR	black	10.2
7038867	Lif9Y11Y	5 x 0.25	4.7	PP/PUR	black	12
7038868	Lif9Y11Y	8 x 0.25	5.9	PP/PUR	black	19
7038864	Lif9Y11Y	3 x 0.34	4.6	PP/PUR	black	9.8
7038865	Lif9Y11Y	4 x 0.34	4.7	PP/PUR	black	13
7038866	Lif9Y11Y	5 x 0.34	5.1	PP/PUR	black	16
UNITRONIC® SENSOR FD screened						
7038885	Lif9YC11Y	3 x 0.34	4.3	PP/PUR	black	19.1
7038886	Lif9YC11Y	4 x 0.34	4.6	PP/PUR	black	23.5
7038887	Lif9YC11Y	5 x 0.34	5	PP/PUR	black	27.5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Other types of composition are available upon request.

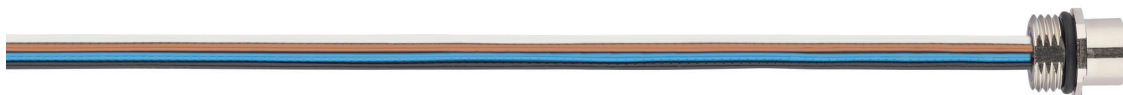
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® SENSOR M12 refer to main catalogue 2016/17
- EPIC® SENSOR M8 refer to main catalogue 2016/17
- STAR STRIP stripping tool refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17



EPIC® SENSOR Flush-type M8

**Benefits**

- Flexible connection solutions for individual device concepts
- Simple installation in devices (e.g. cabinet)

Application range

- Connection of enclosures and cabinets

Product features

- M8 fastening thread
- Designs for front mounting
- PWIS-free

Product Make-up

- TPE single strands, l = 0.5 m
- Core cross section: 0.25 mm²

Technical data**Classification**

ETIM 5.0 Class-ID: EC002061
ETIM 5.0 Class-Description:
Sensor-actuator connector chassis

**Material**

Contact: CuSn
Contact surface: Ag

**Protection rating**

IP 67

**Ambient temperature (operation)**

Plug/socket
-25°C to +85°C

Coding

A-standard

Rated current (A)

4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
Panel-mount connector male				
22260100	AB-C3-M8MS-0,5	3	60	1
22260101	AB-C4-M8MS-0,5	4	30	1
Panel-mount connector female				
22260102	AB-C3-M8FS-0,5	3	60	1
22260103	AB-C4-M8FS-0,5	4	30	1

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Matching fitting nut: 22260104



UNITRONIC® SENSOR SH M12

M12 plug/socket on free conductor end, shielded



Info

- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Technical data



Classification

ETIM 5.0 Class-ID: EC001855
ETIM 5.0 Class-Description:
Sensor-actuator patch cord



Material

Contact: CuSn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing



Minimum bending radius

Fixed installation: 5 x outer diameter
Flexing: 10 x outer diameter



Protection rating

IP65/IP67



Ambient temperature (operation)

Plug/socket -25°C to +90°C
Fixed installation -40°C to +80°C
Flexing -25°C to +80°C

Coding

A-standard

Rated current (A)

4 A

Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Integrated vibration protection (mechanical lock-in)
- Gold-plated contacts for low transfer resistance

Application range

- For increased mechanical stress and harsh operating conditions

Product features

- UV-resistant
- Good resistance to oils and chemicals
- Shielding is conducted over the knurl
- Suitable for drag chains
- Including tag carrier

Norm references / Approvals

- Halogenfree according to DIN VDE 0472
- UL File Number: E249137
- Flame-retardant according to UL 1581 FT-2

Product Make-up

- Wire cross-section: 0,34 mm²
- Colour-code:
3-pin: bn (1), bu (3), bk (4)
4-pin: bn (1), wh (2), bu (3), bk (4)
5-pin: bn (1), wh (2), bu (3), bk (4), gy (5)
- Outer sheath: PUR, black
- Shielded version

Suitable tools

- DATA STRIP stripping tool refer to main catalogue 2016/17

Article number	Article designation	Number of pins	Length (m)	Design	LED	Rated voltage (V)	PU
3-pin							
plug							
22260453	AB-C3-M12MS- 2,0PUR-SH	3	2	straight	no	250	1
22260454	AB-C3-M12MS- 5,0PUR-SH	3	5	straight	no	250	1
22260455	AB-C3-M12MS-10,0PUR-SH	3	10	straight	no	250	1
Socket							
22260450	AB-C3- 2,0PUR-M12FS-SH	3	2	straight	no	250	1
22260451	AB-C3- 5,0PUR-M12FS-SH	3	5	straight	no	250	1
22260452	AB-C3-10,0PUR-M12FS-SH	3	10	straight	no	250	1
22260071	AB-C3- 2,0PUR-M12FA-SH	3	2	angled	no	250	1
22260072	AB-C3- 5,0PUR-M12FA-SH	3	5	angled	no	250	1
22260073	AB-C3-10,0PUR-M12FA-SH	3	10	angled	no	250	1
4-pin							
plug							
22260459	AB-C4-M12MS- 2,0PUR-SH	4	2	straight	no	250	1
22260460	AB-C4-M12MS- 5,0PUR-SH	4	5	straight	no	250	1
22260461	AB-C4-M12MS-10,0PUR-SH	4	10	straight	no	250	1
Socket							
22260456	AB-C4- 2,0PUR-M12FS-SH	4	2	straight	no	250	1
22260457	AB-C4- 5,0PUR-M12FS-SH	4	5	straight	no	250	1
22260458	AB-C4-10,0PUR-M12FS-SH	4	10	straight	no	250	1
22260074	AB-C4- 2,0PUR-M12FA-SH	4	2	angled	no	250	1
22260675	AB-C4- 5,0PUR-M12FA-SH	4	5	angled	no	250	1
22260680	AB-C4-10,0PUR-M12FA-SH	4	10	angled	no	250	1
5-pin							
plug							
22260465	AB-C5-M12MS- 2,0PUR-SH	5	2	straight	no	60	1
22260466	AB-C5-M12MS- 5,0PUR-SH	5	5	straight	no	60	1
22260467	AB-C5-M12MS-10,0PUR-SH	5	10	straight	no	60	1
Socket							
22260462	AB-C5- 2,0PUR-M12FS-SH	5	2	straight	no	60	1
22260463	AB-C5- 5,0PUR-M12FS-SH	5	5	straight	no	60	1
22260464	AB-C5-10,0PUR-M12FS-SH	5	10	straight	no	60	1
22260946	AB-C5- 2,0PUR-M12FA-SH	5	2	angled	no	60	1
22260714	AB-C5- 5,0PUR-M12FA-SH	5	5	angled	no	60	1
22260991	AB-C5-10,0PUR-M12FA-SH	5	10	angled	no	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

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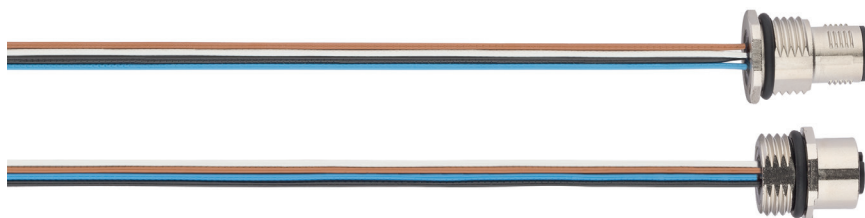
UL certifications can be found in the data sheet

Accessories

- FLEXIMARK® Label LMB refer to main catalogue 2016/17



EPIC® SENSOR Flush-type M12

**Benefits**

- Flexible connection solutions for individual device concepts
- Simple installation in devices (e.g. cabinet)
- Outside pluggable with M12 connection, inside housing connected with fixed wires

Application range

- Connection of enclosures and cabinets

Product features

- With M12, M16 or PG9 fastening thread
- Designs for front and rear wall-mounting
- M12 connector, A-coded with quick-locking system
- PWIS-free
- Rear wall-mounting versions inclusive fitting nut

Norm references / Approvals

- UL File Number: E249137

Product Make-up

- TPE single strands, l = 0.5 m
- Wire cross-section: 0.34 mm²

Technical data**Classification**

ETIM 5.0 Class-ID: EC002061
ETIM 5.0 Class-Description:
Sensor-actuator connector chassis

**Material**

Contact: CuZn
Contact surface: Au (gold)

**Protection rating**

IP 67

**Ambient temperature (operation)**

Plug/socket
-25°C to +85°C

Coding

A-standard

Rated current (A)

4 A

Article number	Article designation	Number of pins	Fastening thread	Rated voltage (V)	PU
Plug for front-mounting					
22260108	AB-C4-M12MS-M16-0,5	4	M16	250	1
22260106	AB-C5-M12MS-M16-0,5	5	M16	60	1
22260083	AB-C4-M12MS-M16-PO-0,5	4	M16 positionable	250	1
22260084	AB-C5-M12MS-M16-PO-0,5	5	M16 positionable	60	1
22260113	AB-C4-M12MS-PG9-0,5	4	PG9	250	1
22260112	AB-C5-M12MS-PG9-0,5	5	PG9	60	1
22260087	AB-C4-M12MS-PG9-PO-0,5	4	PG9 positionable	250	1
22260088	AB-C5-M12MS-PG9-PO-0,5	5	PG9 positionable	60	1
Plug for rear-mounting					
22260999	AB-C4-DSI-M12MS-M12-0,5	4	M12	250	1
22260117	AB-C4-DSI-M12MS-PG9-0,5	4	PG9	250	1
22260115	AB-C5-DSI-M12MS-PG9-0,5	5	PG9	60	1
Socket for front-mounting					
22260107	AB-C4-M12FS-M16-0,5	4	M16	250	1
22260105	AB-C5-M12FS-M16-0,5	5	M16	60	1
22260085	AB-C4-M12FS-M16-PO-0,5	4	M16 positionable	250	1
22260086	AB-C5-M12FS-M16-PO-0,5	5	M16 positionable	60	1
22260114	AB-C4-M12FS-PG9-0,5	4	PG9	250	1
22260111	AB-C5-M12FS-PG9-0,5	5	PG9	60	1
22260089	AB-C4-M12FS-PG9-PO-0,5	4	PG9 positionable	250	1
22260090	AB-C5-M12FS-PG9-PO-0,5	5	PG9 positionable	60	1
Socket for rear-mounting					
22260118	AB-C4-DSI-M12FS-PG9-0,5	4	PG9	250	1
22260116	AB-C5-DSI-M12FS-PG9-0,5	5	PG9	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

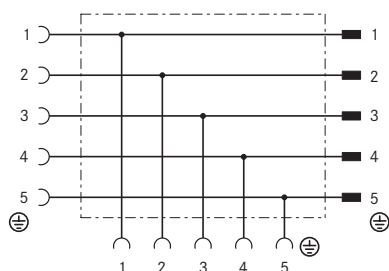
- Matching fitting nut: 22261062 (M12), 52003500 (PG9), 22260110 (M16)



DeviceNet. CANopen

EPIC® SENSOR M12T

M12 T parallel distributor for CAN/ DeviceNet/ S/A cabling

**Benefits**

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Robust design

Product features

- PWIS-free

Product Make-up

- 5-pin parallel distributor
- M12 socket on M12 plug and M12 socket

Technical data**Material**

Contact: CuZn
Contact surface: Ni/Au
Contact carrier: TPU GF
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing
Sealing: NBR

**Protection rating**

IP65/IP67

**Ambient temperature (operation)**

Plug/socket -25°C to +90°C

Coding

A - Standard
(CANopen/DeviceNet/CC-Link)

Rated current (A)

4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
T distributor				
22260765	AB-C5-M12T-2XM12FS DN	5	60	5

Photographs are not to scale and do not represent detailed images of the respective products.



DeviceNet. CANopen

EPIC® SENSOR CCR

Cable coupler round, shielded for e.g. sensor /PROFIBUS /CAN cables

**Benefits**

- Optimum EMC protection with 360 ° shielding
- Time-saving assembly with IDC connection technology

Application range

- To extend existing cable systems
- Repairkit for damaged cables

Product features

- 5-pin cable coupler round
- Screened version

Technical data**Material**

Contact: CuZn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: Zinc die-cast, nickel-plated

**Protection rating**

IP65/IP67

**Ambient temperature (operation)**

-40°C to +85°C

Rated current (A)

4 A

Article number	Article designation	Number of pins	Cross-section in mm²	Cable diameter in mm	Rated voltage (V)
Cable coupler round					
21700641	AB-C5-CCR-SH	5	0.14 - 0.50	5.0 - 9.7	60

DeviceNet is a registered trademark of ODVA

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® SENSOR M8Y | M12Y

Y distributor M8 | M12



Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking

Product features

- Design: Plug on 2x socket
- M12 design with screw hole
- PWIS-free

Product Make-up

- 22260600:
M12, 3-pin+ PE, straight M12 plug on 2x straight M12 socket, pin 2+4 bridged
- 22260601:
M12, 3-pin+ PE, straight M12 plug on 2x straight M12 socket
- 22260602:
M12, 5-pin straight M12 plug on 2x 3-pin straight M8 socket, parallel distributor
- 22260603:
M8, 4-pin M8 plug on 2x 3pin M8 socket
- 22260604:
M8 plug on M8 socket, 3-pin parallel distributor

Technical data



Classification

ETIM 5.0 Class-ID: EC002925
ETIM 5.0 Class-Description:
Sensor-actuator adapting connector



Material

Contact: CuZn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing



Protection rating

IP65/IP67



Ambient temperature (operation)

Plug/socket -25°C to +90°C

Coding

A-standard

Rated current (A)

4 A

3 A (M8)

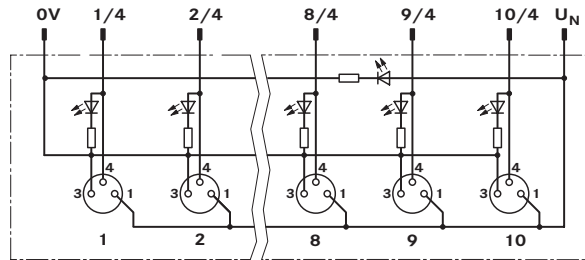
Article number	Article designation	Rated voltage (V)	PU
M12 Y distributor			
22260600	AB-C3-M12Y-2XM12FS B E	60	5
22260601	AB-C3-M12Y-2XM12FS E	60	5
22260602	AB-C5-M12Y-2XM12FS V	60	5
M8 Y distributor			
22260603	AB-C3-M8Y-2XM8FS	30	5
22260604	AB-C3-M8Y-2XM8FS V	60	5

Photographs are not to scale and do not represent detailed images of the respective products.



Distribution Box M8

Distribution box with M8 slots and master cable/connection M12/M16



Benefits

- Cost efficient and rational wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- Hybrid cable for signal and power transmission
- There are no assembly costs as the master cable is already pre-assembled
- Suitable for drag chains

Product features

- Single-occupied boxes
- With fixed master cable or M12/M16 socket
- LEDs indicate the operating mode of the distributor and the status of the sensors
- PWIS-free

Norm references / Approvals

- E-File number: E75770

Product Make-up

- Core insulation: PVC
- Outer sheath: PUR, black

Suitable cables

- M12 master cable
8-pos. 5/10 m: 22260615/22260616
- M16 master cable
8-pos 5/10m: 22260607/22260608
10-pos 5/10m: 22260609/22260610
12-pos 5/10m: 22260611/22260612
14-pos 5/10m: 22260613/22260614

Suitable tools

- Suitable tools are available upon request (e.g. M8 torque screwdriver)

Technical data



Classification

ETIM 5.0 Class-ID: EC002585

ETIM 5.0 Class-Description:

Passive sensor-actuator interface



Protection rating

IP65/IP67



Ambient temperature (operation)

-30°C to +80°C

Fixed installation -40°C to +90°C

Flexing -5°C to 80°C



Current rating per slot

2 A

Article number	Article designation	Connection cable (No. of poles)	Length (m)	Number of slots	Status display
Fixed master cable					
22260026	AB-B4-M8L-4-5,0PUR		5	4	With LEDs
22260027	AB-B4-M8L-4-10,0PUR		10	4	With LEDs
22260028	AB-B6-M8L-6-5,0PUR		5	6	With LEDs
22260029	AB-B6-M8L-6-10,0PUR		10	6	With LEDs
22260030	AB-B8-M8L-8-5,0PUR		5	8	With LEDs
22260031	AB-B8-M8L-8-10,0PUR		10	8	With LEDs
22260032	AB-B10-M8L-10-5,0PUR		5	10	With LEDs
22260033	AB-B10-M8L-10-10,0PUR		10	10	With LEDs
M12 connection					
22260038	AB-B4-M8L-4-M12	8		4	With LEDs
22260039	AB-B6-M8L-6-M12	8		6	With LEDs
M16 connection					
22260034	AB-B4-M8L-4-M16	8		4	With LEDs
22260035	AB-B6-M8L-6-M16	10		6	With LEDs
22260036	AB-B8-M8L-8-M16	12		8	With LEDs
22260037	AB-B10-M8L-10-M16	14		10	With LEDs

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

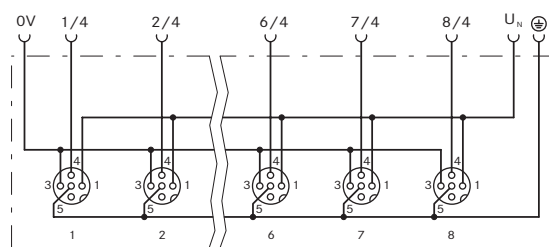
Photographs are not to scale and do not represent detailed images of the respective products.

Unoccupied slots must be covered with protective caps - ArtNo. 22260606 (M8); 22260605 (M12).



Distribution Box M12

Distribution box with M12 slots and master cable/mountable/M23 connection



Benefits

- Cost efficient and rational wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- Hybrid cable for signal and power transmission

Product features

- With fixed master cable, mountable or M23 socket
- Single or double-occupied sensor/actuator box
- M12 quick-locking system, optional LED diagnostic
- Suitable for drag chains
- PWIS-free

Norm references / Approvals

- E-File number: E75770

Product Make-up

- Core insulation: PVC
- Outer sheath: PUR, black

Suitable cables

- UNITRONIC® SENSOR master cable
Page 120
- M23 connection cable: 10 m: 22260852;
15 m: 22260853; 30 m: 22260959

Suitable tools

- Suitable tools are available upon request
(e.g. M12 torque screwdriver)

Technical data



Classification
ETIM 5.0 Class-ID: EC002585
ETIM 5.0 Class-Description:
Passive sensor-actuator interface



Protection rating
IP65/IP67 (M23 connection)
IP65/IP67/IP69



Ambient temperature (operation)
-25°C to +75°C (M23 connection)
-30°C to +90°C
Fixed installation -40°C to +90°C
Flexing -5 °C bis +80 °C



Max. current rating per path
2 A



Current rating per slot
4 A

Article number	Article designation	Length (m)	Number of slots	Status display
Single-occupied boxes				
Fixed master cable				
22260010	AB-B4-M12-4-5,0PUR	5	4	no
22260011	AB-B4-M12-4-10,0PUR	10	4	no
22260014	AB-B8-M12-8-5,0PUR	5	8	no
22260015	AB-B8-M12-8-10,0PUR	10	8	no
22260018	AB-B4-M12L-4-5,0PUR	5	4	With LEDs
22260019	AB-B4-M12L-4-10,0PUR	10	4	With LEDs
22260970	AB-B6-M12L-6-5,0PUR	5	6	With LEDs
22260022	AB-B8-M12L-8-5,0PUR	5	8	With LEDs
22260023	AB-B8-M12L-8-10,0PUR	10	8	With LEDs
Field mountable				
22260005	AB-B4-M12-4-C		4	no
22260007	AB-B8-M12-8-C		8	no
22260001	AB-B4-M12L-4-C		4	With LEDs
22260003	AB-B8-M12L-8-C		8	With LEDs
M23 connection				
22260618	AB-B6-6-L-M23		6	With LEDs
22260619	AB-B8-8-L-M23		8	With LEDs
Double-occupied boxes				
Fixed master cable				
22260012	AB-B4-M12-8-5,0PUR	5	4	no
22260013	AB-B4-M12-8-10,0PUR	10	4	no
22260016	AB-B8-M12-16-5,0PUR	5	8	no
22260017	AB-B8-M12-16-10,0PUR	10	8	no
22260020	AB-B4-M12L-8-5,0PUR	5	4	With LEDs
22260021	AB-B4-M12L-8-10,0PUR	10	4	With LEDs
22260024	AB-B8-M12L-16-5,0PUR	5	8	With LEDs
22260025	AB-B8-M12L-16-10,0PUR	10	8	With LEDs
Field mountable				
22260006	AB-B4-M12-8-C		4	no
22260008	AB-B8-M12-16-C		8	no
22260002	AB-B4-M12L-8-C		4	With LEDs
22260004	AB-B8-M12L-16-C		8	With LEDs
M23 connection				
22260621	AB-B8-16-M23		8	no
22260620	AB-B8-16-L-M23		8	With LEDs

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Photographs are not to scale and do not represent detailed images of the respective products.

Unoccupied slots must be covered with protective caps - ArtNo. 22260606 (M8); 22260605 (M12).

UL certifications can be found in the data sheet



UNITRONIC® SENSOR M12 Power

Power cable: M12 plug/socket on free conductor



Info

- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Customise assembly of the free conductor end

Product features

- 4-core power cable
- M12 connector, A-coded with quick-locking system
- Including tag carrier
- Suitable for drag chains
- PWIS-free

Product Make-up

- 4 x 0.75 mm²
- 4-pin: bn (1), wh (2), bu (3), bk (4)
- Core insulation: PVC
- Outer sheath: PUR, black
- Outer diameter: 5.9 mm

Suitable tools

- DATA STRIP stripping tool refer to main catalogue 2016/17

Suitable connectors

- EPIC® SENSOR M12

Technical data



Classification

ETIM 5.0 Class-ID: EC001855
ETIM 5.0 Class-Description:
Sensor-actuator patch cord



Material

Contact: CuSn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing



Minimum bending radius

Flexing: 10 x outer diameter



Protection rating

IP65/IP67/IP68



Ambient temperature (operation)

Plug/socket -25°C to +90°C
Fixed installation -25°C to +80°C
Flexing -5°C to +80°C

Coding

A-standard

Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Design	Rated voltage (V)	PU
Straight connector						
22260778	AB-PC4-M12MS-2,0PUR	4	2	straight	250	1
22260779	AB-PC4-M12MS-5,0PUR	4	5	straight	250	1
22260780	AB-PC4-M12MS-10,0PUR	4	10	straight	250	1
Straight socket						
22260781	AB-PC4-2,0PUR-M12FS	4	2	straight	250	1
22260782	AB-PC4-5,0PUR-M12FS	4	5	straight	250	1
22260783	AB-PC4-10,0PUR-M12FS	4	10	straight	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- FLEXIMARK® Label LMB refer to main catalogue 2016/17

**UNITRONIC® SENSOR M12-M12 Power**

Power cable: M12 straight plug on M12 straight socket

**Info**

- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Fast and easy assembly

Product features

- 4-core power cable
- M12 connector, A-coded with quick-locking system
- Straight plug to straight socket
- PWIS-free
- Suitable for drag chains

Product Make-up

- 4 x 0.75 mm²
- 4-pin: bn (1), wh (2), bu (3), bk (4)
- Core insulation: PVC
- Outer sheath: PUR, black
- Outer diameter: 5.9 mm

Technical data**Classification**

ETIM 5.0 Class-ID: EC001855
ETIM 5.0 Class-Description:
Sensor-actuator patch cord

**Material**

Contact: CuSn
Contact surface: Ni/Au
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing

**Minimum bending radius**

Flexing: 10 x outer diameter

**Protection rating**

IP65/IP67/IP68

**Ambient temperature (operation)**

Plug/socket -25°C to +90°C
Fixed installation -25°C to +80°C
Flexing -5°C to +80°C

Coding

A-standard

Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Design	Rated voltage (V)	PU
Plug on socket						
22260784	AB-PC4-M12MS-0,3PUR-M12FS	4	0.3	straight-straight	250	1
22260785	AB-PC4-M12MS-1,0PUR-M12FS	4	1	straight-straight	250	1
22260786	AB-PC4-M12MS-2,0PUR-M12FS	4	2	straight-straight	250	1
22260787	AB-PC4-M12MS-5,0PUR-M12FS	4	5	straight-straight	250	1
22260788	AB-PC4-M12MS-10,0PUR-M12FS	4	10	straight-straight	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- FLEXIMARK® Label LMB refer to main catalogue 2016/17

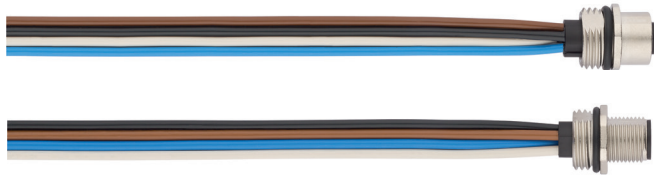


EPIC® POWER M12 60V / EPIC® POWER M12 60V flush-type connectors

Field mountable M12 POWER connectors



EPIC® POWER M12 60V



Info

- DC high-power connector
- 60 VDC / 12 A



EPIC® POWER M12 60V
flush-type connectors

Benefits

- Compact and standardized M12 design saves space and costs
- Fault proof connection through M12 T coding of the connector face
- Low voltage drop
- Safety use in field environment by high protection class

Application range

- Power Supply for small devices
- Tool shop
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for use in measuring, control and regulating circuits

Product features

EPIC® POWER M12 60V

- Robust M12 circular connector with screw connection and knurled screw
- Screw-locking connection, to be connected to different conductor
- For conductor cross-section 0.75 - 1.5 mm² (AWG 18 - AWG 16)

EPIC® POWER M12 60V flush-type connectors

- Designs for front mounting
- Flush type connector with M16 thread and preharnessed wires
- Flush-type connector with M20 thread with screw contacts
- Contact durability: > 100

Norm references / Approvals

- UL File Number: E249137

Product Make-up

EPIC® POWER M12 60V flush-type connectors

- PVC single stranded wires, l = 0.2 m (4x AWG 16)
- 4-pin: bn (1), wh (2), bu (3), bk (4)
- High quality gold-plated contacts
- For screw contacts: 0,75 mm² - 1,5 mm² (AWG 18 - AWG 16)

Suitable cables

EPIC® POWER M12 60V

- ÖLFLEX® FD 855 P refer to main catalogue 2016/17
- (ÖLFLEX® FD 855 P: Example for harsh conditions)

EPIC® POWER M12 60V flush-type connectors

- MULTI-STANDARD SC 2.1 refer to main catalogue 2016/17
- (MULTI-STANDARD SC 2.1.: Example for panel mount connectors with screw terminals)

Suitable connectors

EPIC® POWER M12 60V flush-type connectors

- EPIC® POWER M12 60V Page 132

Technical data



Classification

EPIC® POWER M12 60V

ETIM 5.0 Class-ID: EC002062

ETIM 5.0 Class-Description:

Sensor-actuator connector
EPIC® POWER M12 60V flush-type connectors

ETIM 5.0 Class-ID: EC002061

ETIM 5.0 Class-Description:

Sensor-actuator connector chassis



Material

EPIC® POWER M12 60V

Contact: CuZn

Contact surface: Au (gold)

Knurl: Zinc die-cast, nickel-plated

Gripping body: PA

EPIC® POWER M12 60V flush-type connectors

Contact: CuZn

Contact surface: Au (gold)



Protection rating

IP 67



Ambient temperature (operation)

Plug/socket -40°C to +85°C

Coding

T - Power

Rated current (A)

12 A

Article number	Article designation	Design	Number of pins	Cable diameter in mm	Rated voltage (V)	PU
EPIC® POWER M12 60V						
Plug						
22262010	AB-C4-M12MST-PG11	straight	4	8.0 - 10.0	60	1
22262012	AB-C4-M12MAT-PG11	angled	4	8.0 - 10.0	60	1
Socket						
22262011	AB-C4-M12FST-PG11	straight	4	8.0 - 10.0	60	1
22262013	AB-C4-M12FAT-PG11	angled	4	8.0 - 10.0	60	1
EPIC® POWER M12 60V flush-type connectors, male						
Screw connection						
22262014	AB-C4-M12MST-M20-PO	M20 thread	4		60	1
With PVC single cores						
22262016	AB-C4-M12MST-M16-0,2	M16 thread	4		60	1
EPIC® POWER M12 60V flush-type connectors, female						
Screw connection						
22262015	AB-C4-M12FST-M20-PO	M20 thread	4		60	1
With PVC single cores						
22262017	AB-C4-M12FST-M16-0,2	M16 thread	4		60	1

Photographs are not to scale and do not represent detailed images of the respective products.

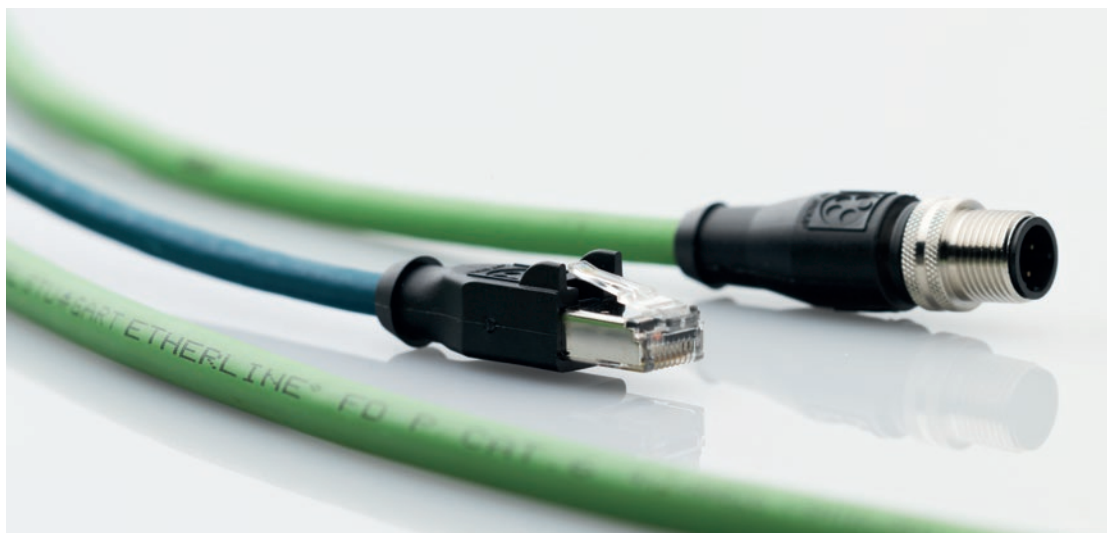
Accessories

EPIC® POWER M12 60V flush-type connectors

- SKINDICHT® SM-M refer to page 250

ETHERLINE®

Data communication systems for ETHERNET technology



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ETHERLINE® PN FLEX	144	ETHERLINE® EC FD Cat.5e M12F	174
ETHERLINE® PN Cat.5 FD	145	ETHERLINE® PN Cat.5 M12	175
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ETHERLINE® Y Cat.5e BK 2x2AWG22/7	147	ETHERLINE® PN Cat.5 RJ45	177
ETHERLINE® Cat.5e 105 plus	148	ETHERLINE® PN Flex Cat.5 M12	178
ETHERLINE® MARINE FRNC FC Cat.5	149	ETHERLINE® PN Flex Cat.5 M12-RJ45	179
ETHERLINE® Cat.5 ARM	150	ETHERLINE® PN Flex Cat.5 RJ45	180
ETHERLINE® Cat.5 FRNC HYBRID	151	ETHERLINE® PN FD Cat.5 M12	181
ETHERLINE® Cat.6 FD	152	ETHERLINE® PN FD Cat.5 M12-RJ45	182
ETHERLINE® Cat.6 _A	153	ETHERLINE® PN FD Cat.5 RJ45	183
ETHERLINE® PN Cat.6 _A FLEX	154	EPIC® DATA PN AX RJ45/PN 90 RJ45	184
ETHERLINE® FD Cat.6 _A	155	EPIC® DATA AX RJ45 Cat.6 _A	185
ETHERLINE® TORSION Cat.6 _A	156	EPIC® DATA 90 RJ45 Cat.6 _A	186
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ETHERLINE® HEAT 6722	158	EPIC® DATA RJ45F Cat.6 _A	188
ETHERLINE® FIRE Cat.5e PH120	159	EPIC® DATA HS RJ45F Cat.6 _A	188
ETHERLINE® ROBUST	160	EPIC® DATA M12D	189
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ETHERLINE® P Flex Cat.5e M12-RJ45	163	EPIC® DATA CCR FA	190

PROFINET®

In the field of Industrial Automation more than 20 different Industrial Ethernet protocols are defined by companies. All of them differ from their application field and technical functions to each other.

PROFINET® (PNO – ProfibusNutzerOrganisation)

The installation guide defines three different types of cables for their optimal use in different applications and environments:

- Type A stationary, no movement after installation, solid wire
- Type B flexible, occasional movement of vibration, 7-stranded wire
- Type C special applications (high flexible, draig chain, ...)

This guideline defines also the design of the cable types.

Using a two pair cable with a min. category Cat.5, the design has to be:

- Type A 2x2xAWG22/1
- Type B 2x2xAWG22/7
- Type C 2x2xAWG22/...

Mostly the cables have a design of a quad star.

Using a four pair cable with a min category Cat.5, the design has to be:

- Type A 4x2xAWG23/1 (min. AWG23)
- Type B 4x2xAWG23/7 (min. AWG23)
- Type C 4x2xAWG24/... (min. AWG24)

EtherNet/IP® or EtherCAT® are using Cat.5 standard cable, which are specified for industrial applications.

Sercos III uses also standard components like Cat.5 cable with a double shielding.

With ETHERLINE® products are you fit for future

If you want to avoid failures, down times and quality problems, you can trust on our complete and high quality product system. Lapp takes care to offer products of individuality and costumer requirement as well as long time usability. Our big product range of ETHERLINE® cables are suitable for nearly any application and is tested in our test laboratory, for example in drag chains. If there are special requirements as flexibility for applications in drag chains, with torsion stress, industrial environments with high mechanical or temperature specifications, you can find some real all-rounders in the Lapp product program. If you are at the point where you will connect your cable to a device, you can also find suitable connectors, for example RJ45 or M12 connectors. Nearly for every cable and application you can choose the right connector, mostly with you need no special assembly tool. For some applications and for saving time and money, Lapp offers also a big range of patch cords. There the Industrial Ethernet ETHERLINE® cables are used and are assembled with connectors who are especially produced for industrial requirements. The patch cords are completely tested in our plant and you can trust on Industrial Protection classes and transmission rates.

Application classes (LAN copper cabling)

Application class	Category	Frequency	Services and applications
Class A	–	Up to 100 kHz	
Class B	–	Up to 1 MHz	Telephone, ISDN
Class C	Cat.3	Up to 16 MHz	Tel, ISDN, TokenRing, Ethernet
Class D	Cat.5/5e	Up to 100 MHz	Fast Ethernet, Gigabit Ethernet
Class E	Cat.6	Up to 250 MHz	Fast Ethernet, Gigabit Ethernet
Class E _A	Cat.6 _A	Up to 500 MHz	10 Gigabit Ethernet
Class F	Cat.7	Up to 600 MHz	10 Gigabit Ethernet
Class F _A	Cat.7 _A	Up to 1 GHz	10 Gigabit Ethernet

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).

Industrial ethernet articlecode for patchcords

IE - PNC - 5 - M 12D - 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 - M 12 - 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

**ETHERLINE® Cat.5e**

Fixed installation

**Info**

- Industrial Ethernet cable
- Cat.5e

LAPP KABEL STUTTGART ETHERLINE® P Cat.5e 4x2xAWG24/1

LAPP KABEL STUTTGART ETHERLINE® H-H CAT.5e

Benefits

- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Can be used for Industrial Ethernet in harsh industrial environments
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

Application range

- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Suitable for EtherCAT and EtherNet/IP applications
- Industrial use
- Fixed installation

Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Halogen-free outer sheath

Norm references / Approvals

- PUR versions: UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

Product Make-up

- Solid conductor
- Core insulation made of foam skin
- 2 or 4-pair version
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage (not for power applications) 125 V
	Minimum bending radius Fixed installation: 7.5 x outer diameter (2 pair cable) Fixed installation: 8 x outer diameter (4 pair cable)
	Test voltage Core/core: 1000 V Core/screen: 500 V
	Characteristic impedance 100 Ohm +/- 15%
	Temperature range cable with PUR jacket Fixed installation: VDE -30°C to +80°C; UL/CSA -30°C to +80°C flexing: VDE -5°C to +50°C; UL/CSA -5°C to +80°C cable halogenfree compound fixed installation: -30°C to +80°C moved: -5°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2-pair version					
Halogen-free jacket					
2170280	ETHERLINE® H CAT.5e	2 x 2 x AWG24/1	6.1	22	45
PUR outer sheath, halogen-free					
2170281	ETHERLINE® P CAT.5e	2 x 2 x AWG24/1	6.1	22	53
4-pair version					
Halogen-free jacket					
2170296	ETHERLINE® H CAT.5e	4 x 2 x AWG24/1	6.3	32	54
2170298	ETHERLINE® H-H CAT.5e	4 x 2 x AWG24/1	6.3 / 8.3	32	80
PUR outer sheath, halogen-free					
2170297	ETHERLINE® P CAT.5e	4 x 2 x AWG24/1	6.3	32	62

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to main catalogue 2016/17
- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA HS RJ45F Cat.6_A refer to page 188
- EPIC® DATA M12D refer to page 189
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190
- SMART STRIP stripping tool refer to main catalogue 2016/17
- DATA STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® Cat.5e FLEX

Flexible use

LAPP KABEL STUTTGART ETHERLINE® Y Flex CAT.5e 4x2xAWG26/7

LAPP KABEL STUTTGART ETHERLINE® P Flex CAT.5e

Benefits

- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Can be used for Industrial Ethernet in harsh industrial environments
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

Application range

- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)
- Only for patch cable applications (max. 60 m)

Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Halogen-free outer sheath
- PUR outer sheath is highly resistant to mineral oils and abrasion

Norm references / Approvals

- PVC version with UL/CSA (CMX) certification
- PUR versions: UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2
- Cable with PUR or halogenfree compound: Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

Product Make-up

- Stranded conductor, bare, 7-wire
- Core insulation made of foam skin
- 2 or 4-pair version
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)
- PVC jacket colour: green (based on RAL 6018)

Info

- Industrial Ethernet cable
- Cat.5e
- Only for patch cable applications (max. 60 m)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

(not for power applications) 125 V



Minimum bending radius

Fixed installation: 8 x outer diameter
Flexing: 15 x outer diameter



Test voltage

Core/core: 1000 V
Core/screen: 500 V



Characteristic impedance

100 Ohm +/- 15%



Temperature range

cable with PUR jacket
Fixed installation: VDE -30°C to +80°C;
UL/CSA -30°C to +80°C
flexing: VDE -5°C to +50°C;
UL/CSA -5°C to +80°C
cable halogenfree compound
Fixed installation: -30°C to +80°C
flexing: -5°C to +60°C
cable with PVC jacket
Fixed installation: -40°C to +80°C
flexing: -10°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2-pair version					
Halogen-free jacket					
2170283	ETHERLINE® H Flex CAT.5e	2 x 2 x AWG26/7	5.9	19	43
PUR outer sheath, halogen-free					
2170284	ETHERLINE® P Flex CAT.5e	2 x 2 x AWG26/7	5.9	19	45
4-pair version					
Halogen-free jacket					
2170299	ETHERLINE® H Flex CAT.5e	4 x 2 x AWG26/7	6.3	25	48
PUR outer sheath, halogen-free					
2170300	ETHERLINE® P Flex CAT.5e	4 x 2 x AWG26/7	6.3	25	54
PVC outer sheath					
2170486	ETHERLINE® Y Flex CAT.5e	4 x 2 x AWG26/7	6.4	30	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to main catalogue 2016/17
- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA HS RJ45F Cat.6_A refer to page 188
- EPIC® DATA M12D refer to page 189
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190
- DATA STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® Cat.5e FD

Highly flexible application



Info

- Industrial Ethernet cable
- For highly flexible applications
- Only for patch cable applications (max. 60 m)

LAPP KABEL STUTTGART ETHERLINE® FD P Cat.5e 2x2xAWG26/19



Benefits

- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Industrial use
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

Application range

- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- Power chain applications

Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Halogen-free outer sheath
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

Norm references / Approvals

- PUR versions: UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

Product Make-up

- Bare stranded copper wire, 26AWG (19 x 0.10), (0.14 mm²)
- Inner sheath: thermoplastic elastomer, halogen-free
- 2 or 4-pair version
- Screening: wrapped with braided tinned-copper wires
- PUR outer sheath
- Colour: water blue (RAL 5021)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage (not for power applications) 125 V
	Minimum bending radius Fixed installation: 8 x outer diameter Flexing: 15 x outer diameter
	Test voltage Core/core: 1000 V Core/screen: 500 V
	Characteristic impedance 100 Ohm +/- 15%
	Temperature range cable with PUR jacket Fixed installation: VDE -30°C to +80°C; UL/CSA -30°C to +80°C flexing: VDE -5°C to +50°C; UL/CSA -5°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2-pair version					
2170289	ETHERLINE® FD P CAT.5e	2 x 2 x AWG26/19	6.2	20	48
4-pair version					
2170489	ETHERLINE® FD P CAT.5e	4 x 2 x AWG26/19	6.6	27	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Coil 100 m; Drum (500; 1000) m

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Connector RJ45 CAT.6 Hirose TM21 refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17
- DATA STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® Cat.5 FD BK

The Ethernet cable for installation in events

LAPP KABEL STUTTGART ETHERLINE® CAT.5 FD BK



Info

- For highly flexible industrial applications
- Cat.5e-Performance
- Only for patch cable applications (max. 60 m)

Benefits

- Additional application options thanks to suitability for outdoor use, UV-resistant
- Good flexibility - easy installation with tight space requirements
- Screened against interference
- Easy to coil for mobile use
- Usable on the roads

Application range

- IEEE 802.3: 10/100/1000Base-T
- IEEE 802.5: ISDN; FDDI; ATM
- Suitable for the transfer of audio signals (ETHERSOUND), light control signals (DMX over Ethernet), or for computer networking
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

Product features

- CAT.5-Performance
- Specifically developed for road environments
- Suitable for outdoor use, UV-resistant
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Premium screening against electromagnetic interference

Norm references / Approvals

- UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)
- Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

Product Make-up

- Bare stranded copper wire, 26AWG (19 x 0.10), (0.14 mm²)
- Insulation: foam skin, max. core diameter 1.0 mm
- Twisting: 2 twisted-pair cores, stranding from 4 pairs
- Inner sheath: thermoplastic elastomer, halogen-free
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: halogen-free PUR, black

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

(not for power applications) 125 V



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 8 x outer diameter



Test voltage

Core/core: 1000 V
Core/screen: 500 V



Characteristic impedance

100 Ohm +/- 15%



Temperature range

cable with PUR jacket
Fixed installation: VDE -30°C to +80°C;
UL/CSA -30°C to +80°C
flexing: VDE -5°C to +50°C;
UL/CSA -5°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® Cat.5 FD BK					
CE217489	ETHERLINE® FD P BK Cat.5	4x2xAWG26/19	6.6	27	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Standard lengths: (100; 500; 1000) m

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Connector RJ45 CAT.6 Hirose TM21 refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® EC FLEX Cat.5e

Flexible use



Info

- For EtherCAT applications
- Cat.5e-Performance
- Only for patch cable applications (max. 60 m)



Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms
- Lower space requirement

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)
- Many applications with Industrial Ethernet, i.e. fixed installation and flexible use.
- For internal wiring of electric and electronic equipment in switch cabinets
- Only for patch cable applications (max. 60 m)

Product features

- PUR (Polyurethane) Version with increased robustness, UV- resistance and halogen free
- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Norm references / Approvals

- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214
- Flame-retardant according to UL VW1/ CSA FT1

Product Make-up

- Stranded tinned 7-wire conductor
- Core insulation: PE
- Insulation colour-codes: orange/white-orange; green/white-green
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- PVC or PUR jacket material
- Colour: green (based on RAL 6018)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage max. 100 V (not for power applications)
	Minimum bending radius Fixed installation: 4 x outer diameter Flexing: 8 x outer diameter
	Characteristic impedance 100 Ohm +/- 15%
	Temperature range fixed installation PVC: -30°C to +80°C PUR: -40°C to +80°C flexing PVC: -5°C to +50°C PUR: -30°C to +50°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
PVC outer sheath					
2170430	ETHERLINE® Y EC FLEX Cat.5e	1 x 4 x AWG26/7	5,1	20	37
PUR outer sheath, halogen-free					
2170431	ETHERLINE® P EC FLEX Cat.5e	1 x 4 x AWG26/7	5,1	20	35

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® SENSOR M8 refer to main catalogue 2016/17
- Field-Terminable Connector RJ45 CAT.5e FM45 refer to main catalogue 2016/17
- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184



ETHERLINE® EC FD Cat.5e

Highly flexible application

LAPP KABEL STUTTGART ETHERLINE® P EC FD Cat.5e



Info

- For EtherCAT applications
- For highly flexible industrial applications
- Cat.5e-Performance

Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms
- Lower space requirement

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- For highly flexible applications (power chains, moving machine parts)
- Many applications with Industrial Ethernet, e.g. EtherCat, i.e. fixed installation, flexible and highly flexible use
- For internal wiring of electric and electronic equipment in switch cabinets
- Only for patch cable applications (max. 60 m)

Product features

- PUR outer sheath, halogen-free
- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Norm references / Approvals

- UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214-02
- Flame-retardant according to UL VW1/CSA FT1
- Halogen-free according to VDE 0472-815

Product Make-up

- Tinned stranded copper wire, 26AWG (19 x 0.10), (0.14 mm²)
- Core insulation: PE
- Insulation colour-codes: orange/white-orange; green/white-green
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath: PUR compound, halogen-free
- Colour: green (based on RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

max. 100 V (not for power applications)



Minimum bending radius

Fixed installation: 4 x Outer diameter
Flexing: 8 x outer diameter



Characteristic impedance

100 Ohm +/- 15%



Temperature range

Fixed installation: -40°C to +80°C
Flexing: -30°C to +50°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® EC FD Cat.5e					
2170433	ETHERLINE® P EC FD Cat.5e	1 x 4 x AWG26/19	5.0	20	35

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable. Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® SENSOR M8 refer to main catalogue 2016/17

**ETHERLINE® PN Cat.5**

Fixed installation

**Info**

- For PROFINET applications type A
- Cat.5/5e

Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 100 m
- Suitable for EtherCAT and EtherNet/IP applications
- ETHERLINE® TRAY ER PN Y FC: installation in open cable trays without any conduit

Product features

- Fixed installation
- CAT.5-Performance
- FC: "Fast Connect" cable design
- Flame-retardant according IEC 60332-1-2
- ETHERLINE® Y FC, ETHERLINE® YY, ETHERLINE® TRAY ER PN Y FC : flame-retardant according to CSA FT-4

Norm references / Approvals

- ETHERLINE® Y FC with PLTC approbation and AWM Style 21694
- ETHERLINE® PN Cat.5e YY with UL CMG
- ETHERLINE® PN Cat.5e Y with UL CMX
- ETHERLINE® TRAY ER PN Y FC with PLTC ER approval

Product Make-up

- Solid bare copper wire AWG22
- Core insulation: PE
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PVC
- Colour: green (based on RAL 6018)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage (not for power applications) 125 V
	Minimum bending radius See data sheet
	Test voltage See data sheet
	Characteristic impedance 100 Ohm +/- 15%
	Temperature range See data sheet

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
conventional cable assembly					
2170891	ETHERLINE® PN Cat.5e Y	2 x 2 x AWG22/1	6.5	30.4	56
FC: "Fast Connect" cable design					
2170893	ETHERLINE® Y FC Cat.5	2 x 2 x AWG22/1	6.8	30.4	70
2170879	ETHERLINE® TRAY ER PN Y FC	2 x 2 x AWG22/1	6.8	30.4	70
Suitable for outdoor use and direct burial					
2170494	ETHERLINE® Cat.5e YY	2 x 2 x AWG22/1	7.8	30.4	62

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA RJ45F Cat.6_A refer to page 188
- EPIC® DATA M12D refer to page 189



ETHERLINE® PN FLEX

Flexible use



Benefits

- For PROFINET applications type B
- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)

Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- CAT.5-Performance
- FRNC Version: Halogene free and flame retardant
- Fast Connect (FC) cable design

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)
- ETHERLINE® PN Cat.5 Y FLEX FC: ECOLAB® Industry standard for innovation and efficiency in the field of professional cleaning and disinfection

Product Make-up

- Stranded 7-wire bare conductor
- Core insulation: PE
- Star quad
- Inner sheath made of PVC or FRNC
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)



Info

- For Profinet applications
- CAT.5-Performance
- Flexible use

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

(not for power applications) 125 V



Minimum bending radius

FRNC cable:
during installation: 8 x outer diameter
fixed: 4 x outer diameter
PVC cable:
during installation: 15 x outer diameter
fixed: 10 x outer diameter



Test voltage

Core/core: 2000 V
Core/screen: 2000 V



Characteristic impedance

100 Ohm +/- 15%



Temperature range

cable halogenfree compound
Fixed installation: -25°C to +80°C
Moved: -25°C to +80°C
cable with PVC jacket
Fixed installation: -40°C to +80°C
Moved: -20°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
PVC jacket					
2170886	ETHERLINE® PN Cat.5 Y FLEX FC	2 x 2 x AWG22/7	6.8	31.3	67
FRNC outer sheath					
2170890	ETHERLINE® PN Cat.5 FRNC FLEX FC	2 x 2 x AWG22/7	6.8	31.2	65

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA RJ45F Cat.6_A refer to page 188
- EPIC® DATA M12D refer to page 189
- FC STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® PN Cat.5 FD

Highly flexible application



Info

- Highly flexible application
- For PROFINET applications



Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- Power chain applications
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- CAT.5-Performance
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Flame-retardant according IEC 60332-1-2
- Optimized cable construction for power chain use
- Broad usages due to halogen-free materials

Norm references / Approvals

- UL/CSA type CMX (UL 444)

Product Make-up

- Fine-wire strand made of tinned-copper wires
- Star quad
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Inner sheath: thermoplastic copolymer (FRNC)
- Overall screening with copper braid and plastic-laminated aluminium foil
- PUR outer sheath, halogen-free
- Colour: green (based on RAL 6018)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage (not for power applications) 125 V
	Minimum bending radius Flexing: 8 x outer diameter Fixed installation: 5 x outer diameter
	Test voltage Core/core: 700 V Core/screen: 700 V
	Characteristic impedance 100 Ohm +/- 15%
	Temperature range Fixed installation: -30°C to +70°C Flexing: -20°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® PN Cat.5 FD					
2170894	ETHERLINE® FD P FC CAT.5	2 x 2 x AWG22/7	6.8	31.3	63

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA M12D refer to page 189



ETHERLINE® TORSION Cat. 5

Highly flexible application

LAPP KABEL STUTTGART ETHERLINE® TORSION Cat.5 2x2xAWG22/19



Info

- Industrial Ethernet Cable, 2-pair, suitable for torsion stress
- For PROFINET applications

Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- Industrial Ethernet Cable, 2-pair, suitable for torsion stress
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length für 100 Mbit/s is 55 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre.
- Outer sheath with high abrasion-resistance
- Broad usages due to halogen-free materials
- PUR outer sheath is highly resistant to mineral oils and abrasion

Norm references / Approvals

- UL AWM (Style 21161)
- Halogen-free according to VDE 0472-815
- Flame retardant acc. to IEC 60332-1-2

Product Make-up

- Stranded conductor, tinned
- AWG 22 (19-wire)
- PE core insulation
- Star quad
- Screening: wrapped with braided tinned-copper wires
- Non-woven wrapping
- PUR outer sheath, green (RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

max. 100 V (not for power applications)



Minimum bending radius

Installation: 5 x outer diameter



Test voltage

700 V



Characteristic impedance

100 ± 15 Ohm (> 1 MHz)



Temperature range

-40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® TORSION Cat. 5					
2170888	ETHERLINE® TORSION CAT.5	2 x 2 x AWG22/19	6.8	31.3	52

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA HS RJ45F Cat.6_A refer to page 188
- Multipurpose shears A and B refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® Y Cat.5e BK 2x2AWG22/7

Flexible application



Info

- For PROFINET applications
- CAT.5-Performance



Benefits

- UV and weather-resistant in black
- Can be used in dry or damp rooms
- Screened against interference
- Suitable for outdoor use, UV-resistant
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- Many applications with Industrial Ethernet, e.g. PROFINET type B, i.e. fixed installation and flexible use.
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- PVC compound TM2 acc. to EN 50363-4-1
- Resistant to acids, alkalis and certain oils at room temperature
- Flame retardant acc. to IEC 60332-1-2
- CAT.5-Performance

Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: Based on Polyolefin
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC outer sheath, black

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage (not for power applications) 125 V
	Minimum bending radius Fixed installation: 10 x outer diameter Flexing: 15 x outer diameter
	Test voltage Core/core: 1000 V Core/screen: 500 V
	Characteristic impedance 100 ± 15 Ohm (> 1 MHz)
	Temperature range Flexing: -10 °C to +70 °C Fixed installation: -40 °C to +80 °C

Article number	Article designation	Number of pairs and AWG per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® Y Cat.5e BK 2x2AWG22/7					
2170901	ETHERLINE® Y CAT.5e BK 2x2xAWG22/7	2 x 2 x AWG22/7	6.5	30.4	59

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ETHERLINE® PN FLEX refer to page 144

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA HS RJ45F Cat.6_A refer to page 188
- EPIC® DATA M12D refer to page 189
- DATA STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® Cat.5e 105 plus

Flexible application

LAPP KABEL STUTTGART ETHERLINE® Cat.5e 105 plus



Info

- For PROFINET applications
- Extended temperature range

Benefits

- No need for additional cable protection against high temperatures
- High temperature resistance
- Industrial use
- Premium screening against electromagnetic interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- For installation in hollow shaft between gear units and pitch system
- Suitable for fixed installation and occasionally flexible use in high temperature areas
- Max. cable length for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications
- Wiring of machines, tools, devices, appliances and control cabinets

Product features

- Optimum EMC protection
- Permanent load up to +105°C, temporary load +120°C

Norm references / Approvals

- Electrical requirements acc. to IEC 61156-5

Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: PE
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: TPE-based
- Colour: green (based on RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Minimum bending radius

Fixed installation: 10 x outer diameter
Flexing: 15 x outer diameter



Characteristic impedance

100 Ohm +/- 15%



Temperature range

Fixed installation: -40°C to +105°C
occasionally flexing: -30°C to +105°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)
ETHERLINE® Cat.5e 105 plus				
2170636	ETHERLINE Cat.5e 105 plus	2x2xAWG22/7	6.5	30.4

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA RJ45F Cat.6_A refer to page 188
- EPIC® DATA M12D refer to page 189



ETHERLINE® MARINE FRNC FC CAT.5

Flexible application

Info

- Certified for maritime applications
- Flexible use in conjunction with light mechanical stress



Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- For use in dry, damp and wet rooms
- Premium screening against electromagnetic interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- Shipbuilding
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- Onshore and offshore applications
- Max. cable length für 100 Mbit/s is 85 m

Product features

- High flame retardancy in accordance with IEC 60332-3 and FT4
- CAT.5-Performance
- Fast Connect (FC) cable design

Norm references / Approvals

- CMG UL/CSA certification 75 °C or PLTC, Sun Res
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test

Product Make-up

- Fine-wire strand made of tinned-copper wires
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Star quad
- Inner sheath: thermoplastic copolymer (FRNC)
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Halogen-free and flame-retardant FRNC outer sheath
- Colour: green (based on RAL 6018)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage (not for power applications) 125 V
	Minimum bending radius Fixed installation: 3 x outer diameter Flexing: 7.5 x outer diameter
	Characteristic impedance 100 Ohm +/- 15%
	Temperature range Operating temperature: -25 °C to +70 °C During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® MARINE FRNC FC CAT.5					
2170889	ETHERLINE® MARINE FRNC FC CAT.5	2 x 2 x AWG22/7	6.5	32	68

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA M12D refer to page 189
- FC STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® Cat.5 ARM

Fixed installation

LAPP KABEL STUTTGART ETHERLINE® Y2Y ARM Type C Cat.5



Info

- Industrial Ethernet cable
- CAT.5-Performance
- Suitable for outdoor use and direct burial

Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- EMC-optimised design
- With armouring for improved rodent protection
- Screened against interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- Suitable for outdoor use, UV-resistant
- Suitable for direct burial
- Max. cable length for 100 Mbit/s is 100 m
- PROFINET application Type C but for fixed installation
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- Fast Connect (FC) cable design

Product Make-up

- Solid and bare copper conductor
- Core insulation: PE
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Inner sheath made of PVC (green RAL6018)
- 2 layer galvanizid steel tape
- Outer sheath made of black polyethylene (PE)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

(not for power applications) 125 V



Minimum bending radius

Fixed installation: 10 x outer diameter
Flexing: 15 x outer diameter



Test voltage

Core/core: 2000 V
Core/screen: 2000 V



Characteristic impedance

100 Ohm +/- 15%



Temperature range

Operation: -40 °C to +70 °C
During installation: -20 °C to +60 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Fixed installation					
2170496	ETHERLINE® Cat.5 ARM	2 x 2 x AWG22/1	6.7 / 9.8	30.4	124

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

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Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA M12D refer to page 189



ETHERLINE® Cat.5 FRNC HYBRID

Flexible use



Info

- HYBRID: cable for data transmission + power supply

Benefits

- Industrial use
- Screened against interference

Application range

- Industrial Ethernet cable
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Max. cable length for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- Flame-retardant according IEC 60332-1-2
- HYBRID: cable for data transmission + power supply
- Robust, halogen-free outer sheath
- CAT.5-Performance

Norm references / Approvals

- UL AWM Style 21282

Product Make-up

- Cores for Power Supply
4 x 1.5 mm² (AWG 16)
- Data transfer: braided conductor, 7-wire, bare
- Pair screening: wrapped with foil and braided copper wires
- Twisting: data pairs and power supply pairs twisted together
- Overlapping plastic tape
- FRNC outer sheath
- Colour: green (based on RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Minimum bending radius

Occasional flexing: 10 x outer diameter
Fixed installation: 5 x outer diameter



Test voltage

See data sheet



Characteristic impedance

100 Ohm ± 15%



Temperature range

Operation: -20 °C to +70 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170887	ETHERLINE® Cat.5 FRNC HYBRID	2x2xAWG22/7 + 4x1.5	10.6	94.2	153

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

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Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® CAT.6 FD

Highly flexible application

LAPP KABEL STUTTGART ETHERLINE® Cat.6 FD 4x2xAWG26/19



Info

- CAT.6 for drag chain!

Benefits

- Highly flexible data cable with PUR outer sheath, meets the highest service life requirements, even under harsh climatic conditions.
- Premium screening against electromagnetic interference

Application range

- For use in drag chains and moving machinery parts in dry or damp rooms
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- Plant engineering, machinery manufacturing
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

Product features

- Flame-retardant according IEC 60332-1-2
- PUR outer sheath is resistant to most oils and hydraulic fluids
- CAT.6 for drag chain!
- LAN Cat.6 cables are specified up to 350 MHz
- Designed for 1...2 million bending/unbending cycles in the drag chain

Norm references / Approvals

- UL/CSA type CMX (UL 444)

Product Make-up

- Stranded conductor, tinned
- AWG 26 (19-wire)
- PP core insulation
- Inner sheath: thermoplastic copolymer (FRNC)
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- PUR outer sheath, halogen-free
- Colour: green (based on RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

max. 100 V (not for power applications)



Minimum bending radius

Fixed installation: 4 x outer diameter
Flexing: 7.5 x outer diameter



Test voltage

700 V



Characteristic impedance

At 1 - 100 MHz: 100 ± 15 Ohm



Temperature range

Fixed installation: -40°C to +80°C
Flexing: -30°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® CAT.6 FD					
2170488	ETHERLINER CAT.6 FD	4 x 2 x AWG26/19	7.8	31.7	63

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- DATA STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® Cat.6_A

Fixed installation



Info

- Industrial Ethernet cable
- For PROFINET applications with 4 pairs
- CAT.6_A qualified for 10Gbit/s



Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 100 m
max. cable length for 10 Gbit/s is 100 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Robust, halogen-free outer sheath
- The oil-resistant PVC sheath enables usage in industrial environments
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Product Make-up

- Solid bare copper wire AWG22
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Colour: green (based on RAL 6018)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage (not for power applications) 125 V
	Minimum bending radius Fixed installation: 10 x outer diameter
	Characteristic impedance 100 ohm at 1 - 100 MHz
	Temperature range cable with PUR jacket Fixed installation: VDE -30°C to +80°C; UL/CSA -30°C to +80°C flexing: VDE -5°C to +50°C; UL/CSA -5°C to +80°C cable halogenfree compound Fixed installation: -25°C to +80°C cable with PVC jacket Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Halogen-free jacket					
2170466	ETHERLINE® Cat.6 _A H	4 x 2 x AWG22/1	9.0	53	99
PUR outer sheath, halogen-free					
2170465	ETHERLINE® CAT.6 _A P	4 x 2 x AWG22/1	9.0	53	91
PVC outer sheath					
2170464	ETHERLINE® Cat.6 _A Y	4 x 2 x AWG22/1	9.0	53	98

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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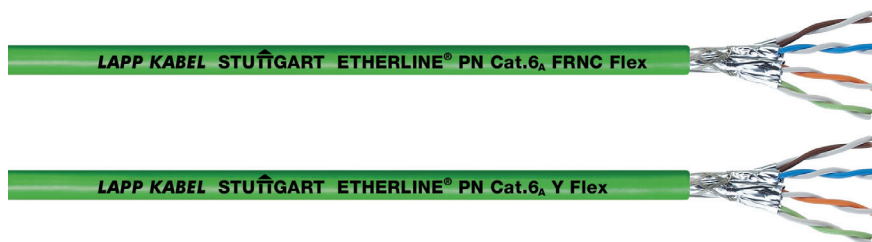
Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA RJ45F Cat.6_A refer to page 188
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190
- DATA STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® PN Cat.6_A FLEX

Flexible use



Info

- For PROFINET applications with 4 pairs
- CAT.6_A qualified for 10Gbit/s

Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- At 100 Mbit/s: max 90 m cable length
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)

Product features

- CAT.6_A for flexible application, qualified for 10Gbit/s
- Meets the requirements according to CAT.6_A, ISO/IEC 11801 and EN 50173
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- The oil-resistant PVC sheath enables usage in industrial environments

Norm references / Approvals

- PVC cable is UL/CSA-certified (CMG)
- ETHERLINE® PN Cat.6_A Y FLEX: **ECOLAB®** Industry standard for innovation and efficiency in the field of professional cleaning and disinfection
- FRNC cable is UL/CSA-certified (CM)

Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation: PE
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

(not for power applications) 125 V



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 8 x outer diameter



Characteristic impedance

100 ± 15 Ohm (> 1 MHz)



Temperature range

cable halogenfree compound
Fixed installation: -25°C to +80°C
cable with PVC jacket
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
PVC outer sheath					
2170930	ETHERLINE PN Cat.6 _A Y FLEX	4 x 2 x AWG23/7	9.0	48	92
FRNC outer sheath					
2170931	ETHERLINE PN Cat.6 _A FRNC FLEX	4 x 2 x AWG23/7	9.0	48	87

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
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Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA RJ45F Cat.6_A refer to page 188
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190
- DATA STRIP stripping tool refer to main catalogue 2016/17



ETHERLINE® FD CAT.6_A

For highly flexible applications

Info

- CAT.6_A for drag chain, qualified for 10Gbit/s
- For PROFINET applications with 4 pairs

LAPP KABEL STUTTGART ETHERLINE® FD Cat.6_A 4x2xAWG24/7



Benefits

- For use in power chains and moving machinery parts in dry or damp rooms
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

Application range

- For highly flexible applications (e.g. power chains)
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 85 m
- Max. cable length for 10 Gbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- PUR version is halogen-free according to IEC 60754
- Oil-resistant acc. IEC 60811-2-1
- CAT.6_A for drag chain, qualified for 10Gbit/s
- Meets the requirements according to CAT.6_A, ISO/IEC 11801 and EN 50173
- Min. 2.5 million bending cycles in the power chain

Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- PUR: UL/CSA-certified (CMX)
- PUR versions: UL AWM Style 21576
- PVC cable is UL/CSA-certified (CM)
- Flame retardant acc. to IEC 60332-1-2

Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation: Based on Polyolefin
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR, halogen-free/PVC
- Colour: green (based on RAL 6018)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Minimum bending radius Flexing: 15 x outer diameter Fixed installation: 8 x cable diameter
	Characteristic impedance 100 Ohm
	Temperature range Fixed installation PVC: -40°C bis +80°C PUR: -40°C bis +80°C Flexing PVC: -10°C to +70°C PUR: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
PVC sheath					
2170485	ETHERLINE® FD CAT.6 _A	4x2xAWG24/7	9.0	44	88
PUR outer sheath, halogen-free					
2170484	ETHERLINE® FD P CAT.6 _A	4x2xAWG24/7	9.0	44	90

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190



ETHERLINE® TORSION Cat.6_A

Highly flexible application

LAPP KABEL STUTTGART ETHERLINE® TORSION P Cat.6_A 4x2xAWG24/7



Info

- Industrial Ethernet Cable, 4-pair, suitable for torsion stress
- CAT.6_A qualified for 10Gbit/s
- For PROFINET applications

Benefits

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

Application range

- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Can be used for Industrial Ethernet in harsh industrial environments
- Max. cable length für 100 Mbit/s is 85 m
- Max. cable length für 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- PUR version is halogen-free according to IEC 60754
- Oil-resistant acc. IEC 60811-2-1
- Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre.
- Meets the requirements according to CAT.6_A, ISO/IEC 11801 and EN 50173

Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- PUR: UL/CSA-certified (CMX)
- PUR versions: UL AWM Style 21576
- PVC cable is UL/CSA-certified (CM)
- Flame retardant acc. to IEC 60332-1-2

Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR, halogen-free/PVC
- Colour: green (based on RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 8 x cable diameter



Characteristic impedance

100 Ohm



Temperature range

Fixed installation
PVC: -40°C bis +80°C
PUR: -40°C bis +80°C
Flexing
PVC: -10°C to +70°C
PUR: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)
PVC jacket				
2170482	ETHERLINE® TORSION Y CAT6 _A	4 x 2 x AWG24/7	9.0	44
PUR outer sheath, halogen-free				
2170483	ETHERLINE® TORSION P CAT6 _A	4 x 2 x AWG24/7	9.0	44

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190

**ETHERLINE® Cat.7**

Fixed installation

**Info**

- Industrial Ethernet cable
- For PROFINET applications with 4 pairs
- Cat.7 qualified for 10Gbit/s

**Benefits**

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 100 m
max. cable length for 10 Gbit/s is 100 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Robust, halogen-free outer sheath
- The oil-resistant PVC sheath enables usage in industrial environments
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Product Make-up

- Solid bare copper wire AWG22
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Colour: green (based on RAL 6018)

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Peak operating voltage (not for power applications) 125 V
	Minimum bending radius Fixed installation: 10 x outer diameter
	Characteristic impedance 100 ohm at 1 - 100 MHz
	Temperature range fixed installation PVC: -30°C to +80°C PUR: -40°C to +80°C cable halogenfree compound Fixed installation: -25°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
Halogen-free jacket					
2170476	ETHERLINE® CAT.7 H	4 x 2 x AWG22/1	9.0	53	99
PUR outer sheath, halogen-free					
2170475	ETHERLINE® Cat.7 P	4 x 2 x AWG22/1	9.0	53	91
PVC outer sheath					
2170474	ETHERLINE® Cat.7 Y	4 x 2 x AWG22/1	9.0	53	98

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190

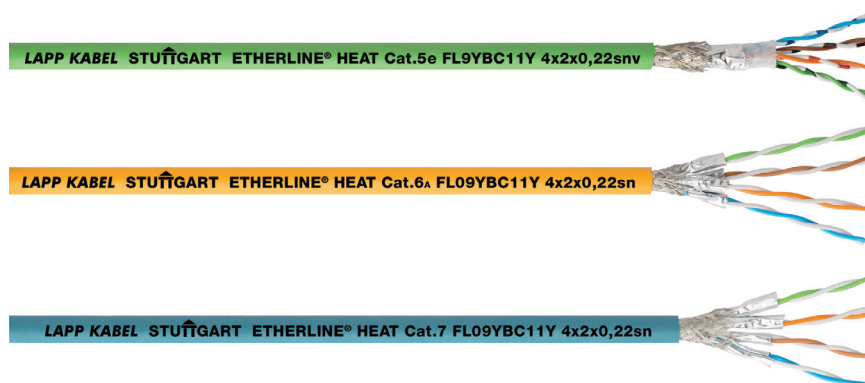


ETHERLINE® HEAT 6722



Info

- Designed according to ISO 6722
- Tested acc.to ECE-R 118.01



Benefits

- Easy to strip and dismantle
- Extended temperature range
- Good resistance to oil, petrol, acids and alkalis
- Abrasion and cut-resistant, halogen-free, oil-resistant
- Reduction of flame propagation, density and toxicity of smoke gases in event of fire

Application range

- For flexible applications (7-wire stranded conductor)
- For fixed, flexible and protected installations inside buses
- Suitable for connecting to of e.g. camera systems, enter-/ infotainment for passengers, ticketing systems
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

Product features

- Halogen-free according to VDE 0472-815
- Good chemical resistance
- Flame retardant acc. to ISO 6722-1
- Temperature class B on the basis of ISO 6722-1

Norm references / Approvals

- DIN/ISO 6722
- Electrical requirements acc. to IEC 61156-6
- Tested acc.to ECE-R 118.01
- ISO 14572, 5.21
- LV 112-1, LV 212-2, LV 213-2

Product Make-up

- Stranded tinned 7-wire conductor
- Core insulation: Based on Polyolefin
- Colour-coded in accordance with EIA/TIA 568A and B
- Cat.5e: SF/UTP - copper braid and foil screening as overall screening
- Cat.6_A/Cat.7: S/FTP - copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR compound, halogen-free
- Outer sheath colour:
Cat.5e green (RAL 6018)
Cat.6_A yellow (RAL 1003)
Cat.7 blue (RAL 5021)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Peak operating voltage

(not for power applications) 125 V



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 10 x outer diameter



Characteristic impedance

nom. 100 Ohm acc. to IEC 61156-6



Temperature range

Flexing: -30 °C to +105 °C
Fixed installation: -40 °C to +105 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® HEAT 6722					
2170850	ETHERLINE® Cat. 5e FL9YBC11Y 4x2x0,22sn	4x2xAWG24/7	7.7	38	72
2170581	ETHERLINE® Cat. 6A FL09YBC11Y 4x2x0,22sn	4x2xAWG24/7	8.1	38	77
2170582	ETHERLINE® Cat. 7 FL09YBC11Y 4x2x0,22sn	4x2xAWG24/7	8.1	38	77

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

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Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

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Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA M12X refer to page 189



ETHERLINE® FIRE Cat.5e PH120



Info

- Isolation integrity for at least 120 minutes in the event of fire

LAPP KABEL STUTTGART ETHERLINE® FIRE Cat.5e PH120 4x2xAWG23/1



Benefits

- Ensures that the cable can still transmit data during and after a fire for 120 min (according to EN50200)
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Application range

- In industrial areas that use fire as a tool
- Highly combustible or fire-prone areas
- For fixed installation
- For indoor use

Product features

- Fire behaviour:
 - Halogen-free (IEC 60754-1 & EN50267-2-1)
 - Flame-retardant (IEC 60332-1)
 - Fire retardant (IEC 60332-3-24)
 - Low smoke density (IEC 61034-2)
 - Circuit integrity (EN50200); 120 min
- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D

Product Make-up

- Solid bare copper conductor
- Core insulation: Based on Polyolefin
- Each insulation will be wrapped with a special tape (anti-fire barrier)
- Twisting: 2 twisted-pair cores, stranding from 4 pairs
- F/UTP: foil screening as overall screening
- Halogen-free and flame-retardant FRNC outer sheath, colour: red (similar to RAL3000)

Technical data



Classification

ETIM 5.0 Class-ID: EC000829
ETIM 5.0 Class-Description:
Signal-/telecommunications cable



Peak operating voltage

(not for power applications) 125 V



Minimum bending radius

Fixed installation: 15 x outer diameter



Characteristic impedance

100 Ohm ± 15%



Temperature range

Operation: -20 °C to +70 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® FIRE Cat.5e PH120					
2170905	ETHERLINE® FIRE Cat.5e PH120	4 x 2 x AWG23/1	8.3	24	75

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Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
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ETHERLINE® ROBUST

Flexible use



Info

- For PROFINET applications
- Good chemical resistance

Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic substances, oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

Application range

- For flexible applications (7-wire stranded conductor)
- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702

Product features

- Halogen-free materials
- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396
- Low smoke density according to IEC 61034-2

Product Make-up

- Stranded 7-wire bare conductor
- Core insulation: Based on Polyolefin
- Screening: wrapped with braided tinned-copper wires
- Outer sheath made of special TPE
- Colour: black

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Minimum bending radius

Flexing: 10 x outer diameter
Fixed installation: 4 x outer diameter



Characteristic impedance

100 Ohm +/- 15%



Temperature range

Occasional flexing: -40°C to +80°C
Fixed installation: -50°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
PROFINET Cat.5e					
2170451	ETHERLINE® ROBUST PN Cat.5	2x2xAWG22/7	6.8	30.4	50
PROFINET Cat.7					
2170452	ETHERLINE® ROBUST PN Cat.7	4x2xAWG23/7	9.0	48	75
Industrial Ethernet Cat.7					
2170453	ETHERLINE® ROBUST Cat.7 FLEX	4x2xAWG26/7	6,5	27	36

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

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Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA M12D refer to page 189
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190



ETHERLINE® ROBUST FR



Info

- For PROFINET applications
- Flame-retardant

LAPP KABEL STUTTGART ETHERLINE® ROBUST PN FR Cat.5

LAPP KABEL STUTTGART ETHERLINE® ROBUST PN FR Cat.7

Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

Application range

- For flexible applications (7-wire stranded conductor)
- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Flame retardance makes it suitable for indoor and outdoor installations
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Many applications with Industrial Ethernet, e.g. PROFINET type B, i.e. fixed installation and flexible use.

Norm references / Approvals

- UV-resistant according to ISO 4892-2 and ozone-resistant according to EN 50396
- Flame-retardant according IEC 60332-1-2

Product Make-up

- Stranded 7-wire bare conductor
- Core insulation: Based on Polyolefin
- Screening: wrapped with braided tinned-copper wires
- Outer sheath made of special TPE
- Colour: black

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Minimum bending radius Flexing: 10 x outer diameter Fixed installation: 4 x Outer diameter
	Characteristic impedance 100 ohm at 1 - 100 MHz
	Temperature range Occasional flexing: -40°C to +80°C Fixed installation: -50°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
PROFINET Cat.5e					
2170454	ETHERLINE® ROBUST PN FR Cat.5	2x2xAWG22/7	6.8	30.4	55
PROFINET Cat.7					
2170455	ETHERLINE® ROBUST PN FR Cat.7	4x2xAWG23/7	9.0	48	80
Industrial Ethernet Cat.7					
2170456	ETHERLINE® ROBUST FR Cat.7 FLEX	4x2xAWG26/7	6,5	27	40

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

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Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

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Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184
- EPIC® DATA AX RJ45 Cat.6_A refer to page 185
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 186
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 187
- EPIC® DATA M12D refer to page 189
- EPIC® DATA M12X refer to page 189
- EPIC® DATA CCR FA refer to page 190



ETHERLINE® P Flex Cat.5e M12

Industrial Ethernet Patchcord M12



Info

- Industrial Ethernet cable
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: water blue (RAL 5021)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 8 x outer diameter



Protection rating

IP 67 / IP 69



Characteristic impedance

100 Ohm +/- 15%



Temperature range

Flexing: -5°C to +50°C (UL: +80°C)
Fixed installation: -30°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/ 1.000 pieces
straight plug M12 on straight plug M12				
2171097	IE-5-M12D-S-1-P-2-26-7-M12D-S	2x2xAWG26	1	19
2171098	IE-5-M12D-S-2-P-2-26-7-M12D-S	2x2xAWG26	2	38
2171099	IE-5-M12D-S-3-P-2-26-7-M12D-S	2x2xAWG26	3	57
2171100	IE-5-M12D-S-5-P-2-26-7-M12D-S	2x2xAWG26	5	95
2171101	IE-5-M12D-S-10-P-2-26-7-M12D-S	2x2xAWG26	10	190
2171102	IE-5-M12D-S-20-P-2-26-7-M12D-S	2x2xAWG26	20	380
straight plug M12 on free conductor end				
2171103	IE-5-M12D-S-1-P-2-26-7-OE	2x2xAWG26	1	19
2171104	IE-5-M12D-S-2-P-2-26-7-OE	2x2xAWG26	2	38
2171105	IE-5-M12D-S-3-P-2-26-7-OE	2x2xAWG26	3	57
2171106	IE-5-M12D-S-5-P-2-26-7-OE	2x2xAWG26	5	95
2171107	IE-5-M12D-S-10-P-2-26-7-OE	2x2xAWG26	10	190
2171108	IE-5-M12D-S-20-P-2-26-7-OE	2x2xAWG26	20	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® P Flex Cat.5e M12-RJ45**

Industrial Ethernet Patchcord M12/RJ45

**Info**

- Industrial Ethernet cable
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: water blue (RAL 5021)
- Pre-assembled patchcords with D-coded M12 connector and RJ45-connector
- 4 pole M12 connector with vibration protection

Technical data**Classification**

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry

**Minimum bending radius**

Flexing: 15 x outer diameter
Fixed installation: 8 x outer diameter

**Protection rating**

M12 - IP 67 / IP 69
RJ45 - IP 20

**Characteristic impedance**

100 Ohm +/- 15%

**Temperature range**

Flexing: -5°C to +50°C (UL: +80°C)
Fixed installation: -30°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug RJ45				
2171109	IE-5-M12D-S-1-P-2-26-7-RJ45	2x2XAWG26	1	19
2171110	IE-5-M12D-S-2-P-2-26-7-RJ45	2x2XAWG26	2	38
2171111	IE-5-M12D-S-3-P-2-26-7-RJ45	2x2XAWG26	3	57
2171112	IE-5-M12D-S-5-P-2-26-7-RJ45	2x2XAWG26	5	95
2171113	IE-5-M12D-S-10-P-2-26-7-RJ45	2x2XAWG26	10	190
2171114	IE-5-M12D-S-20-P-2-26-7-RJ45	2x2XAWG26	20	380
angled plug M12 on straight plug RJ45				
2171887	IE-5-M12D-A-1-P-2-26-7-RJ45	2x2XAWG26	1	19
2171888	IE-5-M12D-A-2-P-2-26-7-RJ45	2x2XAWG26	2	38
2171889	IE-5-M12D-A-3-P-2-26-7-RJ45	2x2XAWG26	3	57
2171890	IE-5-M12D-A-5-P-2-26-7-RJ45	2x2XAWG26	5	95
2171892	IE-5-M12D-A-10-P-2-26-7-RJ45	2x2XAWG26	10	190
2171894	IE-5-M12D-A-20-P-2-26-7-RJ45	2x2XAWG26	20	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® P Flex Cat.5e RJ45

Industrial Ethernet Patchcord RJ45



Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10 / 100 Mbit/s for Industrial Ethernet
- 4pair: 10 / 100 / 1000 Mbit/s for Industrial Ethernet

Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: water blue (RAL 5021)
- Pre-assembled patchcord with RJ45 connectors



Info

- Industrial Ethernet cable
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 8 x outer diameter



Protection rating

IP 20



Characteristic impedance

100 Ohm ± 15%



Temperature range

Flexing: -5 °C to +50 °C (UL: +80 °C)
Fixed installation: -30 °C to +80 °C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/ 1.000 pieces
2-pair: straight plug RJ45 on straight plug RJ45				
2171115	IE-5-RJ45-1-P-2-26-7-RJ45	2x2xAWG26	1	19
2171116	IE-5-RJ45-2-P-2-26-7-RJ45	2x2xAWG26	2	38
2171117	IE-5-RJ45-3-P-2-26-7-RJ45	2x2xAWG26	3	57
2171118	IE-5-RJ45-5-P-2-26-7-RJ45	2x2xAWG26	5	95
2171119	IE-5-RJ45-10-P-2-26-7-RJ45	2x2xAWG26	10	190
2171120	IE-5-RJ45-20-P-2-26-7-RJ45	2x2xAWG26	20	380
4-pair: straight plug RJ45 on straight plug RJ45				
2171501	IE-5-RJ45-1-P-4-26-7-RJ45	4x2xAWG26	1	25
2171502	IE-5-RJ45-2-P-4-26-7-RJ45	4x2xAWG26	2	50
2171503	IE-5-RJ45-3-P-4-26-7-RJ45	4x2xAWG26	3	75
2171504	IE-5-RJ45-5-P-4-26-7-RJ45	4x2xAWG26	5	125
2171505	IE-5-RJ45-10-P-4-26-7-RJ45	4x2xAWG26	10	250
2171506	IE-5-RJ45-20-P-4-26-7-RJ45	4x2xAWG26	20	500
4-pair: straight plug RJ45 on free conductor end				
2171507	IE-5-RJ45-1-P-4-26-7-OE	4x2xAWG26	1	25
2171508	IE-5-RJ45-2-P-4-26-7-OE	4x2xAWG26	2	50
2171509	IE-5-RJ45-3-P-4-26-7-OE	4x2xAWG26	3	75
2171510	IE-5-RJ45-5-P-4-26-7-OE	4x2xAWG26	5	125
2171511	IE-5-RJ45-10-P-4-26-7-OE	4x2xAWG26	10	250
2171512	IE-5-RJ45-20-P-4-26-7-OE	4x2xAWG26	20	500

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® H Flex Cat.5e M12

Industrial Ethernet Patchcord M12



Info

- Industrial Ethernet cable
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: water blue (RAL 5021)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 6 x cable diameter



Protection rating

IP 67/IP 69



Characteristic impedance

100 Ohm +/- 15%



Temperature range

During installation: -5 °C to +60 °C
Fixed installation: -30 °C to +80 °C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug M12				
2171073	IE-5-M12D-S-1-H-2-26-7-M12D-S	2x2xAWG26	1	19
2171074	IE-5-M12D-S-2-H-2-26-7-M12D-S	2x2xAWG26	2	38
2171075	IE-5-M12D-S-3-H-2-26-7-M12D-S	2x2xAWG26	3	57
2171076	IE-5-M12D-S-5-H-2-26-7-M12D-S	2x2xAWG26	5	95
2171077	IE-5-M12D-S-10-H-2-26-7-M12D-S	2x2xAWG26	10	190
2171078	IE-5-M12D-S-20-H-2-26-7-M12D-S	2x2xAWG26	20	380
straight plug M12 on free conductor end				
2171079	IE-5-M12D-S-1-H-2-26-7-OE	2x2xAWG26	1	19
2171080	IE-5-M12D-S-2-H-2-26-7-OE	2x2xAWG26	2	38
2171081	IE-5-M12D-S-3-H-2-26-7-OE	2x2xAWG26	3	57
2171082	IE-5-M12D-S-5-H-2-26-7-OE	2x2xAWG26	5	95
2171083	IE-5-M12D-S-10-H-2-26-7-OE	2x2xAWG26	10	190
2171084	IE-5-M12D-S-20-H-2-26-7-OE	2x2xAWG26	20	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® H Flex Cat.5e M12-RJ45

Industrial Ethernet Patchcord M12/RJ45



Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: water blue (RAL 5021)
- Pre-assembled patchcords with D-coded M12 connector and RJ45-connector
- 4 pole M12 connector with vibration protection



Info

- Industrial Ethernet cable
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 6 x outer diameter



Protection rating

M12 - IP 67 / IP 69
RJ45 - IP 20



Characteristic impedance

100 Ohm +/- 15%



Temperature range

During installation: -5 °C to +60 °C
Fixed installation: -30 °C to +80 °C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug RJ45				
2171085	IE-5-M12D-S-1-H-2-26-7-RJ45	2x2xAWG26	1	19
2171086	IE-5-M12D-S-2-H-2-26-7-RJ45	2x2xAWG26	2	38
2171087	IE-5-M12D-S-3-H-2-26-7-RJ45	2x2xAWG26	3	57
2171088	IE-5-M12D-S-5-H-2-26-7-RJ45	2x2xAWG26	5	95
2171089	IE-5-M12D-S-10-H-2-26-7-RJ45	2x2xAWG26	10	190
2171090	IE-5-M12D-S-20-H-2-26-7-RJ45	2x2xAWG26	20	380
angled plug M12 on straight plug RJ45				
2171878	IE-5-M12D-A-1-H-2-26-7-RJ45	2x2xAWG26	1	19
2171879	IE-5-M12D-A-2-H-2-26-7-RJ45	2x2xAWG26	2	38
2171880	IE-5-M12D-A-3-H-2-26-7-RJ45	2x2xAWG26	3	57
2171881	IE-5-M12D-A-5-H-2-26-7-RJ45	2x2xAWG26	5	95
2171883	IE-5-M12D-A-10-H-2-26-7-RJ45	2x2xAWG26	10	190
2171885	IE-5-M12D-A-20-H-2-26-7-RJ45	2x2xAWG26	20	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® H Flex Cat.5e RJ45**

Industrial Ethernet Patchcord RJ45

**Info**

- Industrial Ethernet cable
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Automation technology
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: water blue (RAL 5021)
- Pre-assembled patchcord with RJ45 connectors

Technical data**Classification**

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry

**Minimum bending radius**

Flexing: 15 x outer diameter
Fixed installation: 6 x outer diameter

**Protection rating**

IP 20

**Characteristic impedance**

100 Ohm +/- 15%

**Temperature range**

During installation: -5 °C to +60 °C
Fixed installation: -30 °C to +80 °C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
2-pair: straight plug RJ45 on straight plug RJ45				
2171091	IE-5-RJ45-1-H-2-26-7-RJ45	2x2xAWG26	1	19
2171092	IE-5-RJ45-2-H-2-26-7-RJ45	2x2xAWG26	2	38
2171093	IE-5-RJ45-3-H-2-26-7-RJ45	2x2xAWG26	3	57
2171094	IE-5-RJ45-5-H-2-26-7-RJ45	2x2xAWG26	5	95
2171095	IE-5-RJ45-10-H-2-26-7-RJ45	2x2xAWG26	10	190
2171096	IE-5-RJ45-20-H-2-26-7-RJ45	2x2xAWG26	20	380
4-pair: straight plug RJ45 on straight plug RJ45				
2171513	IE-5-RJ45-1-H-4-26-7-RJ45	4x2xAWG26	1	25
2171514	IE-5-RJ45-2-H-4-26-7-RJ45	4x2xAWG26	2	50
2171515	IE-5-RJ45-3-H-4-26-7-RJ45	4x2xAWG26	3	75
2171516	IE-5-RJ45-5-H-4-26-7-RJ45	4x2xAWG26	5	125
2171517	IE-5-RJ45-10-H-4-26-7-RJ45	4x2xAWG26	10	250
2171518	IE-5-RJ45-20-H-4-26-7-RJ45	4x2xAWG26	20	500
4-pair: straight plug RJ45 on free conductor end				
2171519	IE-5-RJ45-1-H-4-26-7-OE	4x2xAWG26	1	25
2171520	IE-5-RJ45-2-H-4-26-7-OE	4x2xAWG26	2	50
2171521	IE-5-RJ45-3-H-4-26-7-OE	4x2xAWG26	3	75
2171522	IE-5-RJ45-5-H-4-26-7-OE	4x2xAWG26	5	125
2171523	IE-5-RJ45-10-H-4-26-7-OE	4x2xAWG26	10	250
2171524	IE-5-RJ45-20-H-4-26-7-OE	4x2xAWG26	20	500

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Other lengths and types of connectors are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® EC FD Cat.5e M8

Industrial Ethernet EC Patchcord M8



Info

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M8 connectors

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 8 x outer diameter
Fixed installation: 4 x outer diameter



Protection rating

M8 - IP 67



Characteristic impedance

100 Ohm +/- 15%



Temperature range

During installation: -30°C to +50°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M8 on straight plug M8				
2171700	IE-EC-5-M8-S-0,5-P-2-26-FD-M8-S	2x2xAWG26	0,5	10
2171701	IE-EC-5-M8-S-1-P-2-26-FD-M8-S	2x2xAWG26	1	20
2171702	IE-EC-5-M8-S-2-P-2-26-FD-M8-S	2x2xAWG26	2	40
2171703	IE-EC-5-M8-S-3-P-2-26-FD-M8-S	2x2xAWG26	3	60
2171704	IE-EC-5-M8-S-5-P-2-26-FD-M8-S	2x2xAWG26	5	100
2171705	IE-EC-5-M8-S-7-P-2-26-FD-M8-S	2x2xAWG26	7	140
2171706	IE-EC-5-M8-S-10-P-2-26-FD-M8-S	2x2xAWG26	10	200
2171707	IE-EC-5-M8-S-15-P-2-26-FD-M8-S	2x2xAWG26	15	300
2171708	IE-EC-5-M8-S-20-P-2-26-FD-M8-S	2x2xAWG26	20	400
angled plug M8 on straight plug M8				
2171718	IE-EC-5-M8-A-0,5-P-2-26-FD-M8-S	2x2xAWG26	0,5	10
2171719	IE-EC-5-M8-A-1-P-2-26-FD-M8-S	2x2xAWG26	1	20
2171720	IE-EC-5-M8-A-2-P-2-26-FD-M8-S	2x2xAWG26	2	40
2171721	IE-EC-5-M8-A-3-P-2-26-FD-M8-S	2x2xAWG26	3	60
2171722	IE-EC-5-M8-A-5-P-2-26-FD-M8-S	2x2xAWG26	5	100
2171723	IE-EC-5-M8-A-7-P-2-26-FD-M8-S	2x2xAWG26	7	140
2171724	IE-EC-5-M8-A-10-P-2-26-FD-M8-S	2x2xAWG26	10	200
2171725	IE-EC-5-M8-A-15-P-2-26-FD-M8-S	2x2xAWG26	15	300
2171726	IE-EC-5-M8-A-20-P-2-26-FD-M8-S	2x2xAWG26	20	400
straight connector on free conductor end				
2171709	IE-EC-5-M8-S-0,5-P-2-26-FD-OE	2x2xAWG26	0,5	10
2171710	IE-EC-5-M8-S-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171711	IE-EC-5-M8-S-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171712	IE-EC-5-M8-S-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171713	IE-EC-5-M8-S-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171714	IE-EC-5-M8-S-7-P-2-26-FD-OE	2x2xAWG26	7	140
2171715	IE-EC-5-M8-S-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171716	IE-EC-5-M8-S-15-P-2-26-FD-OE	2x2xAWG26	15	300
2171717	IE-EC-5-M8-S-20-P-2-26-FD-OE	2x2xAWG26	20	400
Angled connector on free conductor end				
2171727	IE-EC-5-M8-A-0,5-P-2-26-FD-OE	2x2xAWG26	0,5	10
2171728	IE-EC-5-M8-A-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171729	IE-EC-5-M8-A-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171730	IE-EC-5-M8-A-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171731	IE-EC-5-M8-A-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171732	IE-EC-5-M8-A-7-P-2-26-FD-OE	2x2xAWG26	7	140
2171733	IE-EC-5-M8-A-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171734	IE-EC-5-M8-A-15-P-2-26-FD-OE	2x2xAWG26	15	300
2171735	IE-EC-5-M8-A-20-P-2-26-FD-OE	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® EC FD Cat.5e M8-RJ45**

Industrial Ethernet Patchcord M8/RJ45

**Info**

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M8 connector and RJ45 connector

Technical data**Classification**

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry

**Minimum bending radius**

Flexing: 8 x outer diameter
Fixed installation: 4 x outer diameter

**Protection rating**

M8 - IP 67
RJ45 - IP 20

**Characteristic impedance**

100 Ohm ± 15%

**Temperature range**

During installation: -30°C to +50°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M8 on straight plug RJ45				
2171757	IE-EC-5-M8-S-0,5-P-2-26-FD-RJ45	2x2xAWG26	0,5	10
2171758	IE-EC-5-M8-S-1-P-2-26-FD-RJ45	2x2xAWG26	1	20
2171759	IE-EC-5-M8-S-2-P-2-26-FD-RJ45	2x2xAWG26	2	40
2171760	IE-EC-5-M8-S-3-P-2-26-FD-RJ45	2x2xAWG26	3	60
2171761	IE-EC-5-M8-S-5-P-2-26-FD-RJ45	2x2xAWG26	5	100
2171762	IE-EC-5-M8-S-10-P-2-26-FD-RJ45	2x2xAWG26	10	200
2171763	IE-EC-5-M8-S-20-P-2-26-FD-RJ45	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® EC FD Cat.5e M12

Industrial Ethernet EC Patchcord M12



Info

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 8 x outer diameter
Fixed installation: 4 x outer diameter



Protection rating

M12 - IP 67 / IP 69



Characteristic impedance

100 Ohm +/- 15%



Temperature range

During installation: -30°C to +50°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug M12				
2171778	IE-EC-5-M12D-S-0,5-P-2-26-FD-M12D-S	2x2xAWG26	0.5	10
2171779	IE-EC-5-M12D-S-1-P-2-26-FD-M12D-S	2x2xAWG26	1	20
2171780	IE-EC-5-M12D-S-2-P-2-26-FD-M12D-S	2x2xAWG26	2	40
2171781	IE-EC-5-M12D-S-3-P-2-26-FD-M12D-S	2x2xAWG26	3	60
2171782	IE-EC-5-M12D-S-5-P-2-26-FD-M12D-S	2x2xAWG26	5	100
2171783	IE-EC-5-M12D-S-10-P-2-26-FD-M12D-S	2x2xAWG26	10	200
2171784	IE-EC-5-M12D-S-20-P-2-26-FD-M12D-S	2x2xAWG26	20	400
angled plug M12 on straight plug M12				
2171785	IE-EC-5-M12D-A-0,5-P-2-26-FD-M12D-S	2x2xAWG26	0.5	10
2171786	IE-EC-5-M12D-A-1-P-2-26-FD-M12D-S	2x2xAWG26	1	20
2171787	IE-EC-5-M12D-A-2-P-2-26-FD-M12D-S	2x2xAWG26	2	40
2171788	IE-EC-5-M12D-A-3-P-2-26-FD-M12D-S	2x2xAWG26	3	60
2171789	IE-EC-5-M12D-A-5-P-2-26-FD-M12D-S	2x2xAWG26	5	100
2171790	IE-EC-5-M12D-A-10-P-2-26-FD-M12D-S	2x2xAWG26	10	200
2171791	IE-EC-5-M12D-A-20-P-2-26-FD-M12D-S	2x2xAWG26	20	400
straight plug M12 on free conductor end				
2171792	IE-EC-5-M12D-S-0,5-P-2-26-FD-OE	2x2xAWG26	0.5	10
2171793	IE-EC-5-M12D-S-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171794	IE-EC-5-M12D-S-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171795	IE-EC-5-M12D-S-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171796	IE-EC-5-M12D-S-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171797	IE-EC-5-M12D-S-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171798	IE-EC-5-M12D-S-20-P-2-26-FD-OE	2x2xAWG26	20	400
angled plug M12 on free conductor end				
2171870	IE-EC-5-M12D-A-0,5-P-2-26-FD-OE	2x2xAWG26	0.5	10
2171871	IE-EC-5-M12D-A-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171872	IE-EC-5-M12D-A-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171873	IE-EC-5-M12D-A-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171874	IE-EC-5-M12D-A-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171875	IE-EC-5-M12D-A-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171876	IE-EC-5-M12D-A-20-P-2-26-FD-OE	2x2xAWG26	20	400
angled plug M12 on angled plug M12				
2171906	IE-EC-5-M12D-A-0,5-P-2-26-FD-M12D-A	2x2xAWG26	0.5	10
2171907	IE-EC-5-M12D-A-1-P-2-26-FD-M12D-A	2x2xAWG26	1	20
2171908	IE-EC-5-M12D-A-2-P-2-26-FD-M12D-A	2x2xAWG26	2	40
2171909	IE-EC-5-M12D-A-3-P-2-26-FD-M12D-A	2x2xAWG26	3	60
2171910	IE-EC-5-M12D-A-5-P-2-26-FD-M12D-A	2x2xAWG26	5	100
2171911	IE-EC-5-M12D-A-10-P-2-26-FD-M12D-A	2x2xAWG26	10	200
2171913	IE-EC-5-M12D-A-20-P-2-26-FD-M12D-A	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® EC FD Cat.5e M12-RJ45**

Industrial Ethernet EC Patchcord M12/RJ45

**Info**

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with D-coded M12 connector and RJ45-connector
- 4 pole M12 connector with vibration protection

Technical data**Classification**

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry

**Minimum bending radius**

Flexing: 8 x outer diameter
Fixed installation: 4 x outer diameter

**Protection rating**

M12 - IP 67 / IP 69
RJ45 - IP 20

**Characteristic impedance**

100 Ohm ± 15%

**Temperature range**

During installation: -30°C to +50°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug RJ45				
2171750	IE-EC-5-M12D-S-0,5-P-2-26-FD-RJ45	2x2xAWG26	0.5	10
2171751	IE-EC-5-M12D-S-1-P-2-26-FD-RJ45	2x2xAWG26	1	20
2171752	IE-EC-5-M12D-S-2-P-2-26-FD-RJ45	2x2xAWG26	2	40
2171753	IE-EC-5-M12D-S-3-P-2-26-FD-RJ45	2x2xAWG26	3	60
2171754	IE-EC-5-M12D-S-5-P-2-26-FD-RJ45	2x2xAWG26	5	100
2171755	IE-EC-5-M12D-S-10-P-2-26-FD-RJ45	2x2xAWG26	10	200
2171756	IE-EC-5-M12D-S-20-P-2-26-FD-RJ45	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® EC FD Cat.5e M12-M8



Info

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connector and M8 connector
- 4 pole M12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 8 x outer diameter
Fixed installation: 4 x outer diameter



Protection rating

M12 - IP 67 / IP 69
M8 - IP 67



Characteristic impedance

100 Ohm +/- 15%



Temperature range

During installation: -30°C to +50°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug M8				
2171944	IE-EC-5-M12D-S-0,5-P-2-26-FD-M8-S	2x2xAWG26	0.5	10
2171945	IE-EC-5-M12D-S-1-P-2-26-FD-M8-S	2x2xAWG26	1	20
2171946	IE-EC-5-M12D-S-2-P-2-26-FD-M8-S	2x2xAWG26	2	40
2171947	IE-EC-5-M12D-S-3-P-2-26-FD-M8-S	2x2xAWG26	3	60
2171948	IE-EC-5-M12D-S-5-P-2-26-FD-M8-S	2x2xAWG26	5	100
2171949	IE-EC-5-M12D-S-10-P-2-26-FD-M8-S	2x2xAWG26	10	200
2171950	IE-EC-5-M12D-S-15-P-2-26-FD-M8-S	2x2xAWG26	15	300
2171951	IE-EC-5-M12D-S-20-P-2-26-FD-M8-S	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® EC FD Cat.5e RJ45

Industrial Ethernet EC Patchcord RJ45



Info

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on www.lappgroup.com/assemblyfinder or upon request



Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with RJ45 connectors

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 8 x outer diameter
Fixed installation: 4 x outer diameter



Protection rating

RJ45 - IP 20



Characteristic impedance

100 Ohm ± 15%



Temperature range

During installation: -30°C to +50°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug RJ45 on straight plug RJ45				
2171764	IE-EC-5-RJ45-0,5-P-2-26-FD-RJ45	2x2xAWG26	0.5	10
2171765	IE-EC-5-RJ45-1-P-2-26-FD-RJ45	2x2xAWG26	1	20
2171766	IE-EC-5-RJ45-2-P-2-26-FD-RJ45	2x2xAWG26	2	40
2171767	IE-EC-5-RJ45-3-P-2-26-FD-RJ45	2x2xAWG26	3	60
2171768	IE-EC-5-RJ45-5-P-2-26-FD-RJ45	2x2xAWG26	5	100
2171769	IE-EC-5-RJ45-10-P-2-26-FD-RJ45	2x2xAWG26	10	200
2171770	IE-EC-5-RJ45-20-P-2-26-FD-RJ45	2x2xAWG26	20	400
straight plug RJ45 on free conductor end				
2171771	IE-EC-5-RJ45-0,5-P-2-26-FD-OE	2x2xAWG26	0.5	10
2171772	IE-EC-5-RJ45-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171773	IE-EC-5-RJ45-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171774	IE-EC-5-RJ45-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171775	IE-EC-5-RJ45-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171776	IE-EC-5-RJ45-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171777	IE-EC-5-RJ45-20-P-2-26-FD-OE	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® EC FD Cat.5e M12F



Info

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10 / 100 Mbit/s for Industrial Ethernet

Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 socket, D-coded
- 4 pole M12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 8 x outer diameter
Fixed installation: 4 x outer diameter



Protection rating

M12 - IP 67 / IP 69



Characteristic impedance

100 Ohm +/- 15%



Temperature range

During installation: -30°C to +50°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight socket M12 on straight plug M12				
2171736	IE-EC-5-M12DF-S-0,5-P-2-26-FD-M12D-S	2x2xAWG26	0.5	10
2171737	IE-EC-5-M12DF-S-1-P-2-26-FD-M12D-S	2x2xAWG26	1	20
2171738	IE-EC-5-M12DF-S-2-P-2-26-FD-M12D-S	2x2xAWG26	2	40
2171739	IE-EC-5-M12DF-S-3-P-2-26-FD-M12D-S	2x2xAWG26	3	60
2171740	IE-EC-5-M12DF-S-5-P-2-26-FD-M12D-S	2x2xAWG26	5	100
2171741	IE-EC-5-M12DF-S-10-P-2-26-FD-M12D-S	2x2xAWG26	10	200
2171742	IE-EC-5-M12DF-S-20-P-2-26-FD-M12D-S	2x2xAWG26	20	400
straight socket M12 on angled plug M12				
2171743	IE-EC-5-M12DF-S-0,5-P-2-26-FD-M12D-A	2x2xAWG26	0.5	10
2171744	IE-EC-5-M12DF-S-1-P-2-26-FD-M12D-A	2x2xAWG26	1	20
2171745	IE-EC-5-M12DF-S-2-P-2-26-FD-M12D-A	2x2xAWG26	2	40
2171746	IE-EC-5-M12DF-S-3-P-2-26-FD-M12D-A	2x2xAWG26	3	60
2171747	IE-EC-5-M12DF-S-5-P-2-26-FD-M12D-A	2x2xAWG26	5	100
2171748	IE-EC-5-M12DF-S-10-P-2-26-FD-M12D-A	2x2xAWG26	10	200
2171749	IE-EC-5-M12DF-S-20-P-2-26-FD-M12D-A	2x2xAWG26	20	400
straight socket M12 on straight socket M12				
2171915	IE-EC-5-M12DF-S-0,5-P-2-26-FD-M12DF-S	2x2xAWG26	0.5	10
2171916	IE-EC-5-M12DF-S-1-P-2-26-FD-M12DF-S	2x2xAWG26	1	20
2171917	IE-EC-5-M12DF-S-2-P-2-26-FD-M12DF-S	2x2xAWG26	2	40
2171918	IE-EC-5-M12DF-S-3-P-2-26-FD-M12DF-S	2x2xAWG26	3	60
2171919	IE-EC-5-M12DF-S-5-P-2-26-FD-M12DF-S	2x2xAWG26	5	100
2171920	IE-EC-5-M12DF-S-10-P-2-26-FD-M12DF-S	2x2xAWG26	10	200
2171921	IE-EC-5-M12DF-S-20-P-2-26-FD-M12DF-S	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

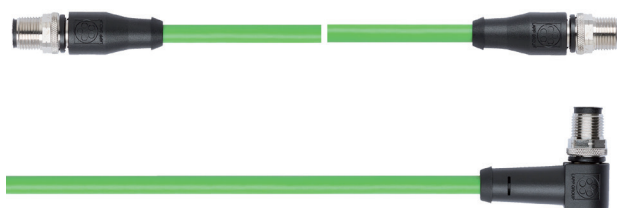
Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® PN Cat.5 M12

PROFINET Patchcord M12



Info

- For PROFINET applications (D-coded)
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- For PROFINET applications type A
- Fixed installation
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)
- UL File Number: E249137

Product Make-up

- Solid and bare copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

Technical data

	Classification ETIM 5.0 Class-ID: EC002599 ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
	Minimum bending radius During installation: 15 x outer diameter Fixed installation: 10 x outer diameter
	Protection rating IP 67/IP 69
	Characteristic impedance 100 Ohm +/- 15%
	Temperature range During installation: -20°C to +60°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug M12				
2171001	IE-PNA-5-M12D-S-1-Y-2-22-1-M12D-S	2x2xAWG22	1	30.4
2171002	IE-PNA-5-M12D-S-2-Y-2-22-1-M12D-S	2x2xAWG22	2	60.8
2171003	IE-PNA-5-M12D-S-3-Y-2-22-1-M12D-S	2x2xAWG22	3	91.2
2171004	IE-PNA-5-M12D-S-5-Y-2-22-1-M12D-S	2x2xAWG22	5	152
2171005	IE-PNA-5-M12D-S-10-Y-2-22-1-M12D-S	2x2xAWG22	10	304
2171006	IE-PNA-5-M12D-S-20-Y-2-22-1-M12D-S	2x2xAWG22	20	608
angled plug M12 on straight plug M12				
2171013	IE-PNA-5-M12D-A-1-Y-2-22-1-M12D-S	2x2xAWG22	1	30.4
2171014	IE-PNA-5-M12D-A-2-Y-2-22-1-M12D-S	2x2xAWG22	2	60.8
2171015	IE-PNA-5-M12D-A-3-Y-2-22-1-M12D-S	2x2xAWG22	3	91.2
2171016	IE-PNA-5-M12D-A-5-Y-2-22-1-M12D-S	2x2xAWG22	5	152
2171017	IE-PNA-5-M12D-A-10-Y-2-22-1-M12D-S	2x2xAWG22	10	304
2171018	IE-PNA-5-M12D-A-20-Y-2-22-1-M12D-S	2x2xAWG22	20	608
straight plug M12 on free conductor end				
2171007	IE-PNA-5-M12D-S-1-Y-2-22-1-OE	2x2xAWG22	1	30.4
2171008	IE-PNA-5-M12D-S-2-Y-2-22-1-OE	2x2xAWG22	2	60.8
2171009	IE-PNA-5-M12D-S-3-Y-2-22-1-OE	2x2xAWG22	3	91.2
2171010	IE-PNA-5-M12D-S-5-Y-2-22-1-OE	2x2xAWG22	5	152
2171011	IE-PNA-5-M12D-S-10-Y-2-22-1-OE	2x2xAWG22	10	304
2171012	IE-PNA-5-M12D-S-20-Y-2-22-1-OE	2x2xAWG22	20	608
angled plug M12 on free conductor end				
2171019	IE-PNA-5-M12D-A-1-Y-2-22-1-OE	2x2xAWG22	1	30.4
2171020	IE-PNA-5-M12D-A-2-Y-2-22-1-OE	2x2xAWG22	2	60.8
2171021	IE-PNA-5-M12D-A-3-Y-2-22-1-OE	2x2xAWG22	3	91.2
2171022	IE-PNA-5-M12D-A-5-Y-2-22-1-OE	2x2xAWG22	5	152
2171023	IE-PNA-5-M12D-A-10-Y-2-22-1-OE	2x2xAWG22	10	304
2171024	IE-PNA-5-M12D-A-20-Y-2-22-1-OE	2x2xAWG22	20	608

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Other lengths and types of connectors are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.
For detailed technical information please refer to the data sheet

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184



ETHERLINE® PN Cat.5 M 12-RJ45

PROFINET Patchcord M 12/RJ45



Info

- For PROFINET applications
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- For PROFINET applications type A
- Fixed installation
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

Product Make-up

- Solid and bare copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with D-coded M 12 connector and RJ45-connector
- 4 pole M 12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

During installation: 15 x outer diameter
Fixed installation: 10 x outer diameter



Protection rating

M 12 - IP 67 / IP 69
RJ45 - IP 20



Characteristic impedance

100 Ohm +- 15%



Temperature range

During installation: -20°C to +60°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M 12 on straight plug RJ45				
2171164	IE-PNA-5-M 12D-S-0,5-Y-2-22-1-RJ45	2x2xAWG22	0.5	15.2
2171165	IE-PNA-5-M 12D-S-1-Y-2-22-1-RJ45	2x2xAWG22	1	30.4
2171166	IE-PNA-5-M 12D-S-2-Y-2-22-1-RJ45	2x2xAWG22	2	60.8
2171167	IE-PNA-5-M 12D-S-3-Y-2-22-1-RJ45	2x2xAWG22	3	91.2
2171168	IE-PNA-5-M 12D-S-5-Y-2-22-1-RJ45	2x2xAWG22	5	152
2171169	IE-PNA-5-M 12D-S-10-Y-2-22-1-RJ45	2x2xAWG22	10	304
2171170	IE-PNA-5-M 12D-S-20-Y-2-22-1-RJ45	2x2xAWG22	20	608
angled plug M 12 on straight plug RJ45				
2171171	IE-PNA-5-M 12D-A-0,5-Y-2-22-1-RJ45	2x2xAWG22	0.5	15.2
2171172	IE-PNA-5-M 12D-A-1-Y-2-22-1-RJ45	2x2xAWG22	1	30.4
2171173	IE-PNA-5-M 12D-A-2-Y-2-22-1-RJ45	2x2xAWG22	2	60.8
2171174	IE-PNA-5-M 12D-A-3-Y-2-22-1-RJ45	2x2xAWG22	3	91.2
2171175	IE-PNA-5-M 12D-A-5-Y-2-22-1-RJ45	2x2xAWG22	5	152
2171176	IE-PNA-5-M 12D-A-10-Y-2-22-1-RJ45	2x2xAWG22	10	304
2171177	IE-PNA-5-M 12D-A-20-Y-2-22-1-RJ45	2x2xAWG22	20	608

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

For detailed technical information please refer to the data sheet



ETHERLINE® PN Cat.5 RJ45

PROFINET Patchcord RJ45



Info

- For PROFINET applications
- Other types are available on www.lappgroup.com/assemblyfinder or upon request



Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- For PROFINET applications type A
- Fixed installation
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

Product Make-up

- Solid and bare copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with RJ45 connectors

Technical data

	Classification ETIM 5.0 Class-ID: EC002599 ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
	Minimum bending radius During installation: 15 x outer diameter Fixed installation: 10 x outer diameter
	Protection rating RJ45 - IP 20
	Characteristic impedance 100 Ohm +/- 15%
	Temperature range During installation: -20°C to +60°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug RJ45 on straight plug RJ45				
2171178	IE-PNA-5-RJ45-0,5-Y-2-22-1-RJ45	2x2xAWG22	0.5	15.2
2171179	IE-PNA-5-RJ45-1-Y-2-22-1-RJ45	2x2xAWG22	1	30.4
2171180	IE-PNA-5-RJ45-2-Y-2-22-1-RJ45	2x2xAWG22	2	60.8
2171181	IE-PNA-5-RJ45-3-Y-2-22-1-RJ45	2x2xAWG22	3	91.2
2171182	IE-PNA-5-RJ45-5-Y-2-22-1-RJ45	2x2xAWG22	5	152
2171183	IE-PNA-5-RJ45-10-Y-2-22-1-RJ45	2x2xAWG22	10	304
2171184	IE-PNA-5-RJ45-20-Y-2-22-1-RJ45	2x2xAWG22	20	608
straight plug RJ45 on free conductor end				
2171185	IE-PNA-5-RJ45-0,5-Y-2-22-1-OE	2x2xAWG22	0.5	15.2
2171186	IE-PNA-5-RJ45-1-Y-2-22-1-OE	2x2xAWG22	1	30.4
2171187	IE-PNA-5-RJ45-2-Y-2-22-1-OE	2x2xAWG22	2	60.8
2171188	IE-PNA-5-RJ45-3-Y-2-22-1-OE	2x2xAWG22	3	91.2
2171189	IE-PNA-5-RJ45-5-Y-2-22-1-OE	2x2xAWG22	5	152
2171190	IE-PNA-5-RJ45-10-Y-2-22-1-OE	2x2xAWG22	10	304
2171191	IE-PNA-5-RJ45-20-Y-2-22-1-OE	2x2xAWG22	20	608

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Other lengths and types of connectors are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.
For detailed technical information please refer to the data sheet

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184



ETHERLINE® PN Flex Cat.5 M12

PROFINET Patchcord M12



Info

- For PROFINET applications (D-coded)
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- For PROFINET applications type B
- Flexible use
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)
- UL File Number: E249137

Product Make-up

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 10 x outer diameter



Protection rating

IP 67/IP 69



Characteristic impedance

100 Ohm +/- 15%



Temperature range

Flexing: -20°C to +60°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug M12				
2171025	IE-PNB-5-M12D-S-1-Y-2-22-7-M12D-S	2x2xAWG22	1	31.3
2171026	IE-PNB-5-M12D-S-2-Y-2-22-7-M12D-S	2x2xAWG22	2	62.6
2171027	IE-PNB-5-M12D-S-3-Y-2-22-7-M12D-S	2x2xAWG22	3	93.9
2171028	IE-PNB-5-M12D-S-5-Y-2-22-7-M12D-S	2x2xAWG22	5	156.5
2171029	IE-PNB-5-M12D-S-10-Y-2-22-7-M12D-S	2x2xAWG22	10	313
2171030	IE-PNB-5-M12D-S-20-Y-2-22-7-M12D-S	2x2xAWG22	20	626
angled plug M12 on straight plug M12				
2171037	IE-PNB-5-M12D-A-1-Y-2-22-7-M12D-S	2x2xAWG22	1	31.3
2171038	IE-PNB-5-M12D-A-2-Y-2-22-7-M12D-S	2x2xAWG22	2	62.6
2171039	IE-PNB-5-M12D-A-3-Y-2-22-7-M12D-S	2x2xAWG22	3	93.9
2171040	IE-PNB-5-M12D-A-5-Y-2-22-7-M12D-S	2x2xAWG22	5	156.5
2171041	IE-PNB-5-M12D-A-10-Y-2-22-7-M12D-S	2x2xAWG22	10	313
2171042	IE-PNB-5-M12D-A-20-Y-2-22-7-M12D-S	2x2xAWG22	20	626
straight plug M12 on free conductor end				
2171031	IE-PNB-5-M12D-S-1-Y-2-22-7-OE	2x2xAWG22	1	31.3
2171032	IE-PNB-5-M12D-S-2-Y-2-22-7-OE	2x2xAWG22	2	62.6
2171033	IE-PNB-5-M12D-S-3-Y-2-22-7-OE	2x2xAWG22	3	93.9
2171034	IE-PNB-5-M12D-S-5-Y-2-22-7-OE	2x2xAWG22	5	156.5
2171035	IE-PNB-5-M12D-S-10-Y-2-22-7-OE	2x2xAWG22	10	313
2171036	IE-PNB-5-M12D-S-20-Y-2-22-7-OE	2x2xAWG22	20	626
angled plug M12 on free conductor end				
2171043	IE-PNB-5-M12D-A-1-Y-2-22-7-OE	2x2xAWG22	1	31.3
2171044	IE-PNB-5-M12D-A-2-Y-2-22-7-OE	2x2xAWG22	2	62.6
2171045	IE-PNB-5-M12D-A-3-Y-2-22-7-OE	2x2xAWG22	3	93.9
2171046	IE-PNB-5-M12D-A-5-Y-2-22-7-OE	2x2xAWG22	5	156.5
2171047	IE-PNB-5-M12D-A-10-Y-2-22-7-OE	2x2xAWG22	10	313
2171048	IE-PNB-5-M12D-A-20-Y-2-22-7-OE	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184



ETHERLINE® PN Flex Cat.5 M12-RJ45

PROFINET Patchcord M12/RJ45



Info

- For PROFINET applications
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- For PROFINET applications type B
- Flexible use
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

Product Make-up

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with D-coded M12 connector and RJ45-connector
- 4 pole M12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 15 x outer diameter
Fixed installation: 10 x outer diameter



Protection rating

M12 - IP 67 / IP 69
RJ45 - IP 20



Characteristic impedance

100 Ohm +/- 15%



Temperature range

Flexing: -20°C to +60°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug RJ45				
2171214	IE-PNB-5-M12D-S-0,5-Y-2-22-7-RJ45	2x2xAWG22	0.5	15.65
2171215	IE-PNB-5-M12D-S-1-Y-2-22-7-RJ45	2x2xAWG22	1	31.3
2171216	IE-PNB-5-M12D-S-2-Y-2-22-7-RJ45	2x2xAWG22	2	62.6
2171217	IE-PNB-5-M12D-S-3-Y-2-22-7-RJ45	2x2xAWG22	3	93.9
2171218	IE-PNB-5-M12D-S-5-Y-2-22-7-RJ45	2x2xAWG22	5	156.5
2171219	IE-PNB-5-M12D-S-10-Y-2-22-7-RJ45	2x2xAWG22	10	313
2171220	IE-PNB-5-M12D-S-20-Y-2-22-7-RJ45	2x2xAWG22	20	626
angled plug M12 on straight plug RJ45				
2171221	IE-PNB-5-M12D-A-0,5-Y-2-22-7-RJ45	2x2xAWG22	0.5	15.65
2171222	IE-PNB-5-M12D-A-1-Y-2-22-7-RJ45	2x2xAWG22	1	31.3
2171223	IE-PNB-5-M12D-A-2-Y-2-22-7-RJ45	2x2xAWG22	2	62.6
2171224	IE-PNB-5-M12D-A-3-Y-2-22-7-RJ45	2x2xAWG22	3	93.9
2171225	IE-PNB-5-M12D-A-5-Y-2-22-7-RJ45	2x2xAWG22	5	156.5
2171226	IE-PNB-5-M12D-A-10-Y-2-22-7-RJ45	2x2xAWG22	10	313
2171227	IE-PNB-5-M12D-A-20-Y-2-22-7-RJ45	2x2xAWG22	20	626
straight socket M12 for rear-mounting on straight plug RJ45				
2171293	IE-PNB-5-M12DF-S-0,5-Y-2-22-7-RJ45	2x2xAWG22	0.5	15.65
2171294	IE-PNB-5-M12DF-S-1-Y-2-22-7-RJ45	2x2xAWG22	1	31.3
2171295	IE-PNB-5-M12DF-S-2-Y-2-22-7-RJ45	2x2xAWG22	2	62.6
2171296	IE-PNB-5-M12DF-S-3-Y-2-22-7-RJ45	2x2xAWG22	3	93.9
2171297	IE-PNB-5-M12DF-S-5-Y-2-22-7-RJ45	2x2xAWG22	5	156.5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Other lengths and types of connectors are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® PN Flex Cat.5 RJ45

PROFINET Patchcord RJ45



Info

- For PROFINET applications
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- For PROFINET applications type B
- Flexible use
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

Product Make-up

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with RJ45 connectors

Technical data



Classification

ETIM 5.0 Class-ID: EC002599

ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

During installation: 15 x outer diameter
Fixed installation: 10 x outer diameter



Protection rating

RJ45 - IP 20



Characteristic impedance

100 Ohm +/- 15%



Temperature range

During installation: -20°C to +60°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug RJ45 on straight plug RJ45				
2171228	IE-PNB-5-RJ45-0,5-Y-2-22-7-RJ45	2x2xAWG22	0,5	15.65
2171229	IE-PNB-5-RJ45-1-Y-2-22-7-RJ45	2x2xAWG22	1	31.3
2171230	IE-PNB-5-RJ45-2-Y-2-22-7-RJ45	2x2xAWG22	2	62.6
2171231	IE-PNB-5-RJ45-3-Y-2-22-7-RJ45	2x2xAWG22	3	93.9
2171232	IE-PNB-5-RJ45-5-Y-2-22-7-RJ45	2x2xAWG22	5	156.5
2171233	IE-PNB-5-RJ45-10-Y-2-22-7-RJ45	2x2xAWG22	10	313
2171234	IE-PNB-5-RJ45-20-Y-2-22-7-RJ45	2x2xAWG22	20	626
straight plug RJ45 on free conductor end				
2171235	IE-PNB-5-RJ45-0,5-Y-2-22-7-OE	2x2xAWG22	0,5	15.65
2171236	IE-PNB-5-RJ45-1-Y-2-22-7-OE	2x2xAWG22	1	31.3
2171237	IE-PNB-5-RJ45-2-Y-2-22-7-OE	2x2xAWG22	2	62.6
2171238	IE-PNB-5-RJ45-3-Y-2-22-7-OE	2x2xAWG22	3	93.9
2171239	IE-PNB-5-RJ45-5-Y-2-22-7-OE	2x2xAWG22	5	156.5
2171240	IE-PNB-5-RJ45-10-Y-2-22-7-OE	2x2xAWG22	10	313
2171241	IE-PNB-5-RJ45-20-Y-2-22-7-OE	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

For detailed technical information please refer to the data sheet

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184



ETHERLINE® PN FD Cat.5 M12

PROFINET Patchcord M12

Info

- For PROFINET applications (D-coded)
- Other types are available on www.lappgroup.com/assemblyfinder or upon request



Benefits

- For directly connecting two electric components
- Non-permanent connections allow for easy change of equipment
- CAT.5-Performance

Application range

- For PROFINET applications type C
- Highly flexible application
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMX)
- UL File Number: E249137

Product Make-up

- Extra-fine wire, tinned braided conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

Technical data

	Classification ETIM 5.0 Class-ID: EC002599 ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
	Minimum bending radius Flexing: 8 x outer diameter
	Protection rating IP 67/IP 69
	Characteristic impedance 100 Ohm +- 15%
	Temperature range Flexing: -20°C to +60°C Fixed installation: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug M12				
2171049	IE-PNC-5-M12D-S-1-P-2-22-FD-M12D-S	2x2xAWG22	1	31.3
2171050	IE-PNC-5-M12D-S-2-P-2-22-FD-M12D-S	2x2xAWG22	2	62.6
2171051	IE-PNC-5-M12D-S-3-P-2-22-FD-M12D-S	2x2xAWG22	3	93.9
2171052	IE-PNC-5-M12D-S-5-P-2-22-FD-M12D-S	2x2xAWG22	5	156.5
2171053	IE-PNC-5-M12D-S-10-P-2-22-FD-M12D-S	2x2xAWG22	10	313
2171054	IE-PNC-5-M12D-S-20-P-2-22-FD-M12D-S	2x2xAWG22	20	626
angled plug M12 on straight plug M12				
2171061	IE-PNC-5-M12D-A-1-P-2-22-FD-M12D-S	2x2xAWG22	1	31.3
2171062	IE-PNC-5-M12D-A-2-P-2-22-FD-M12D-S	2x2xAWG22	2	62.6
2171063	IE-PNC-5-M12D-A-3-P-2-22-FD-M12D-S	2x2xAWG22	3	93.9
2171064	IE-PNC-5-M12D-A-5-P-2-22-FD-M12D-S	2x2xAWG22	5	156.5
2171065	IE-PNC-5-M12D-A-10-P-2-22-FD-M12D-S	2x2xAWG22	10	313
2171066	IE-PNC-5-M12D-A-20-P-2-22-FD-M12D-S	2x2xAWG22	20	626
straight plug M12 on free conductor end				
2171055	IE-PNC-5-M12D-S-1-P-2-22-FD-OE	2x2xAWG22	1	31.3
2171056	IE-PNC-5-M12D-S-2-P-2-22-FD-OE	2x2xAWG22	2	62.6
2171057	IE-PNC-5-M12D-S-3-P-2-22-FD-OE	2x2xAWG22	3	93.9
2171058	IE-PNC-5-M12D-S-5-P-2-22-FD-OE	2x2xAWG22	5	156.5
2171059	IE-PNC-5-M12D-S-10-P-2-22-FD-OE	2x2xAWG22	10	313
2171060	IE-PNC-5-M12D-S-20-P-2-22-FD-OE	2x2xAWG22	20	626
angled plug M12 on free conductor end				
2171067	IE-PNC-5-M12D-A-1-P-2-22-FD-OE	2x2xAWG22	1	31.3
2171068	IE-PNC-5-M12D-A-2-P-2-22-FD-OE	2x2xAWG22	2	62.6
2171069	IE-PNC-5-M12D-A-3-P-2-22-FD-OE	2x2xAWG22	3	93.9
2171070	IE-PNC-5-M12D-A-5-P-2-22-FD-OE	2x2xAWG22	5	156.5
2171071	IE-PNC-5-M12D-A-10-P-2-22-FD-OE	2x2xAWG22	10	313
2171072	IE-PNC-5-M12D-A-20-P-2-22-FD-OE	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184



ETHERLINE® PN FD Cat.5 M12-RJ45

PROFINET Patchcord M12/RJ45



Info

- For PROFINET applications
- Other types are available on www.lappgroup.com/assemblyfinder or upon request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- For PROFINET applications type C
- Highly flexible application
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

Product Make-up

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with D-coded M12 connector and RJ45-connector
- 4 pole M12 connector with vibration protection

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 8 x outer diameter



Protection rating

M12 - IP 67 / IP 69
RJ45 - IP 20



Characteristic impedance

100 Ohm +/- 15%



Temperature range

Flexing: -20°C to +60°C
Fixed installation: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug M12 on straight plug RJ45				
2171264	IE-PNC-5-M12D-S-0,5-P-2-22-FD-RJ45	2x2xAWG22	0.5	15.65
2171265	IE-PNC-5-M12D-S-1-P-2-22-FD-RJ45	2x2xAWG22	1	31.3
2171266	IE-PNC-5-M12D-S-2-P-2-22-FD-RJ45	2x2xAWG22	2	62.6
2171267	IE-PNC-5-M12D-S-3-P-2-22-FD-RJ45	2x2xAWG22	3	93.9
2171268	IE-PNC-5-M12D-S-5-P-2-22-FD-RJ45	2x2xAWG22	5	156.5
2171269	IE-PNC-5-M12D-S-10-P-2-22-FD-RJ45	2x2xAWG22	10	313
2171270	IE-PNC-5-M12D-S-20-P-2-22-FD-RJ45	2x2xAWG22	20	626
angled plug M12 on straight plug RJ45				
2171271	IE-PNC-5-M12D-A-0,5-P-2-22-FD-RJ45	2x2xAWG22	0.5	15.65
2171272	IE-PNC-5-M12D-A-1-P-2-22-FD-RJ45	2x2xAWG22	1	31.3
2171273	IE-PNC-5-M12D-A-2-P-2-22-FD-RJ45	2x2xAWG22	2	62.6
2171274	IE-PNC-5-M12D-A-3-P-2-22-FD-RJ45	2x2xAWG22	3	93.9
2171275	IE-PNC-5-M12D-A-5-P-2-22-FD-RJ45	2x2xAWG22	5	156.5
2171276	IE-PNC-5-M12D-A-10-P-2-22-FD-RJ45	2x2xAWG22	10	313
2171277	IE-PNC-5-M12D-A-20-P-2-22-FD-RJ45	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



ETHERLINE® PN FD Cat.5 RJ45

PROFINET Patchcord RJ45



Info

- For PROFINET applications
- Other types are available on www.lappgroup.com/assemblyfinder or upon request



Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

Application range

- For PROFINET applications type C
- Highly flexible application
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

Product Make-up

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with RJ45 connectors

Technical data



Classification

ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



Minimum bending radius

Flexing: 8 x outer diameter



Protection rating

RJ45 - IP 20



Characteristic impedance

100 Ohm +/- 15%



Temperature range

During installation: -20°C to +60°C
Fixed installation: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index kg/1.000 pieces
straight plug RJ45 on straight plug RJ45				
2171278	IE-PNC-5-RJ45-0,5-P-2-22-FD-RJ45	2x2xAWG22	0.5	15.65
2171279	IE-PNC-5-RJ45-1-P-2-22-FD-RJ45	2x2xAWG22	1	31.3
2171280	IE-PNC-5-RJ45-2-P-2-22-FD-RJ45	2x2xAWG22	2	62.6
2171281	IE-PNC-5-RJ45-3-P-2-22-FD-RJ45	2x2xAWG22	3	93.9
2171282	IE-PNC-5-RJ45-5-P-2-22-FD-RJ45	2x2xAWG22	5	156.5
2171283	IE-PNC-5-RJ45-10-P-2-22-FD-RJ45	2x2xAWG22	10	313
2171284	IE-PNC-5-RJ45-20-P-2-22-FD-RJ45	2x2xAWG22	20	626
straight plug RJ45 on free conductor end				
2171285	IE-PNC-5-RJ45-0,5-P-2-22-FD-OE	2x2xAWG22	0.5	15.65
2171286	IE-PNC-5-RJ45-1-P-2-22-FD-OE	2x2xAWG22	1	31.3
2171287	IE-PNC-5-RJ45-2-P-2-22-FD-OE	2x2xAWG22	2	62.6
2171288	IE-PNC-5-RJ45-3-P-2-22-FD-OE	2x2xAWG22	3	93.9
2171289	IE-PNC-5-RJ45-5-P-2-22-FD-OE	2x2xAWG22	5	156.5
2171290	IE-PNC-5-RJ45-10-P-2-22-FD-OE	2x2xAWG22	10	313
2171291	IE-PNC-5-RJ45-20-P-2-22-FD-OE	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

For detailed technical information please refer to the data sheet

Accessories

- EPIC® DATA PN AX RJ45 refer to page 184
- EPIC® DATA PN 90 RJ45 refer to page 184



EPIC® DATA PN AX RJ45



Product features

- For PROFINET applications
- Housing: zinc die-casting, grey
- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1

- Suitable for use in industrial applications
- Colour-coded in accordance with PROFINET for Cat.5 applications

Norm references / Approvals

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Info

- For PROFINET applications
- Installation without tools

Technical data

	Classification ETIM 5.0 Class-ID: EC001121 ETIM 5.0 Class-Description: Modular connector
	Protection rating IP 20
	Ambient temperature (operation) -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Max. Core diameter in mm	AWG solid	AWG 7-wire
EPIC® DATA PN AX RJ45							
21700605	ED-IE-AX-5-PN-20-FC	5	9	1.6	1	24 - 22	27 - 22

Photographs are not to scale and do not represent detailed images of the respective products.
10 pieces in one blister



EPIC® DATA PN 90 RJ45



Product features

- For PROFINET applications
- Cable outlet in 4 different 90° angles possible
- Housing: zinc die-casting, grey
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1

- Suitable for use in industrial applications
- Colour-coded in accordance with PROFINET for Cat.5 applications

Norm references / Approvals

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Info

- For PROFINET applications
- Installation without tools
- 4 different angled cable outlets possible

Technical data

	Classification ETIM 5.0 Class-ID: EC001121 ETIM 5.0 Class-Description: Modular connector
	Protection rating IP 20
	Ambient temperature (operation) -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Max. Core diameter in mm	AWG solid	AWG 7-wire
EPIC® DATA PN 90 RJ45							
21700638	ED-IE-90-6A-PN-20-FC	5.5	10	1	1.6	24 - 22	27 - 22

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA AX RJ45 Cat.6_A

Info

- CAT.6_A qualified for 10Gbit/s
- Installation without tools



Product features

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

Norm references / Approvals

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data

Classification
 ETIM 5.0 Class-ID: EC001121
 ETIM 5.0 Class-Description:
 Modular connector

Protection rating
 IP 20

Ambient temperature (operation)
 -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Max. Core diameter in mm	AWG solid	AWG 7-wire	AWG 19-wire
RJ45 connector acc. to T568A								
21700600	EPIC® DATA ED-IE-AX-6A-A-20-FC	5	9	1	1.6	24 - 22	27 - 22	
RJ45 connector acc. to T568A, specifically for cables with 19-wire cores								
21700615	EPIC DATA ED-IE-AX-6 _A -A-20-FD-FC	5	9	0.85	1.1	26 - 24	27 - 24	26
RJ45 connector acc. to T568B								
21700601	EPIC® DATA ED-IE-AX-6A-B-20-FC	5	9	1	1.6	24 - 22	27 - 22	
RJ45 connector acc. to T568B, specifically for cables with 19-wire cores								
21700616	EPIC DATA ED-IE-AX-6 _A -B-20-FD-FC	5	9	0.85	1.1	26 - 24	27 - 24	26

Photographs are not to scale and do not represent detailed images of the respective products.
 10 pieces in one blister
 An approval is necessary for 19-wire cables by Lapp Group



EPIC® DATA 90 RJ45 Cat.6_A



Info

- CAT.6_A qualified for 10Gbit/s
- Installation without tools
- 4 different angled cable outlets possible

Product features

- Cable outlet in 4 different 90° angles possible
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1-22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

Norm references / Approvals

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data



Classification

ETIM 5.0 Class-ID: EC001121
ETIM 5.0 Class-Description:
Modular connector



Protection rating

IP 20



Ambient temperature (operation)

-40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Max. Core diameter in mm	AWG solid	AWG 7-wire	AWG 19-wire
RJ45 connector acc. to T568A								
21700636	ED-IE-90-6A-A-20-FC	5.5	10	1	1.6	24 - 22	27 - 22	
RJ45 connector acc. to T568A, specifically for cables with 19-wire cores								
21700639	ED-IE-90-6A-A-20-FD-FC	5.5	10	0.85	1.1	26 - 24	27 - 24	26
RJ45 connector acc. to T568B								
21700637	ED-IE-90-6A-B-20-FC	5.5	10	1	1.6	24 - 22	27 - 22	
RJ45 connector acc. to T568B, specifically for cables with 19-wire cores								
21700640	ED-IE-90-6A-B-20-FD-FC	5.5	10	0.85	1.1	26 - 24	27 - 24	26

Photographs are not to scale and do not represent detailed images of the respective products.

An approval is necessary for 19-wire cables by Lapp Group

EPIC® DATA AX RJ45 Cat.6A IP68

RJ45 connector in IP68 housing



Info

- CAT.6_A qualified for 10Gbit/s
- Installation without tools

Product features

- Housing: brass nickel plated
- Qualified for 10 Gigabit Ethernet
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1
- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm

Norm references / Approvals

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data



Classification

ETIM 5.0 Class-ID: EC002597
ETIM 5.0 Class-Description:
Modular connector



Protection rating

IP 68



Ambient temperature (operation)

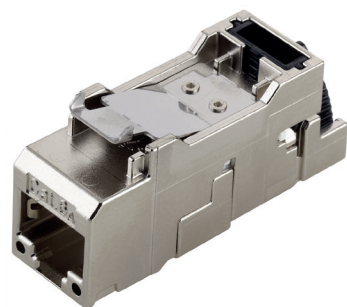
Plug/socket -40°C to +70°C
circular housing: -40°C to +85°C

Article number	Article designation
circular connector (male) inclusive RJ45 connector	
21700630	ED-IE-AX-RJ45-6A-B-68-FC
dust cap for RJ45 connector	
21700631	ED-IE-AX-RJ45-AC-DC
circular bulkhead housing inclusive RJ45 Modul acc. to T568B	
21700632	ED-IE-RJ45F-6A-B-68-FC
dust cap for RJ45 Modul	
21700633	ED-IE-RJ45F-AC-DC

Photographs are not to scale and do not represent detailed images of the respective products.

**EPIC® DATA RJ45F Cat.6_A**

RJ45 female connector

**Product features**

- Field assembly Industrial Ethernet module RJ45 according to IEC 60603-7-51
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1

- Suitable for use in industrial applications
- Available with colour code T568A or T568B

Norm references / Approvals

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data**Classification**

ETIM 5.0 Class-ID: EC001121
ETIM 5.0 Class-Description:
Modular connector

**Protection rating**

IP 20

**Ambient temperature (operation)**

-40°C to +70°C

Article number	Article designation
RJ45 Modul acc. to T568A	
21700611	ED-IE-AX-RJ45F-6A-A-FC
RJ45 Modul acc. to T568B	
21700612	ED-IE-AX-RJ45F-6A-B-FC

Photographs are not to scale and do not represent detailed images of the respective products.

**EPIC® DATA HS RJ45F Cat.6_A**Cat.6_A rail mount adapter**Product features**

- Plastic housing including Easy Connect RJ45 Modul Cat.6_A 10G
- Suitable for use in industrial applications
- Integrated strain relief for cable O.D. to 9 mm
- Colour: light grey (RAL 7035)
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1

Norm references / Approvals

- Field assembly Industrial Ethernet module RJ45 according to IEC 60603-7-51

Technical data**Classification**

ETIM 5.0 Class-ID: EC001121
ETIM 5.0 Class-Description:
Modular connector

**Protection rating**

IP 20

**Ambient temperature (operation)**

-40°C to +70°C

Article number	Article designation
Inclusive RJ45 Modul acc. to T568A	
21700613	EPIC DATA HS RJ45 F 10G A
Inclusive RJ45 Modul acc. to T568B	
21700614	EPIC DATA HS RJ45 F 10G B

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA M12D

M12 D-coded connectors



Info

- CAT.5-Performance
- Installation without tools

Product features

- Field assembly Industrial Ethernet connector, M12 D-coded according to IEC 61076-2-101
- Suitable for use in industrial applications
- Robust and vibrations-resistant
- Toolfree installation, small and compact design

Norm references / Approvals

- Data transmission is conform to category Cat.5 acc. to ISO 11801

Technical data

	Classification ETIM 5.0 Class-ID: EC001121 ETIM 5.0 Class-Description: Modular connector
	Protection rating IP 67
	Ambient temperature (operation) -25°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	AWG solid	AWG 7-wire
M12 D-coded plug, straight, colour coding acc. to PROFINET					
21700647	ED-IE-AX-M12D-5-PN-67-FC	6.2	9.7	24 - 22	26 - 22
M12 D-coded plug, straight, colour coding acc. to TIA 568					
21700648	ED-IE-AX-M12D-5-67	5	6.1	24 - 22	26 - 22
M12 D-coded socket, straight, TIA 568 colour coding					
22261016	AB-C4-M12FSD-SH	4	8	26 - 22	26 - 22

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® DATA M12X

M12 X-coded connectors



Info

- CAT.6_A qualified for 10Gbit/s
- Installation without tools

Product features

- Field assembly Industrial Ethernet connector, M12 X-coded according to IEC 61076-2-109
- Qualified for 10 Gigabit Ethernet
- Suitable for use in industrial applications
- Robust and vibrations-resistant
- Housing: zinc die-casting, grey

- Insulation displacement contacts for conductor diameter of AWG27/7 - AWG22/7 and AWG24/1 - AWG22/1; max. outer diameter 9,7 mm
- Toolfree installation, small and compact design

Norm references / Approvals

- Acc. to standard IEC 61076-2-109
- Data transmission is conform to category Cat.6_A acc. to ISO/IEC 11801:2010

Technical data

	Classification ETIM 5.0 Class-ID: EC001121 ETIM 5.0 Class-Description: Modular connector
	Protection rating IP 67
	Ambient temperature (operation) Plug/socket -40°C to +85°C

Article number	Article designation
M12 X-coded plug, straight	
21700602	ED-IE-AX-M12X-6 _A -67-FC
M12 X-coded socket, straight	
21700621	ED-IE-AX-M12XF-6 _A -67-FC
M12 X-coded socket, straight for wall mounting	
21700622	ED-IE-AX-M12XF-RM-6 _A -67-FC

Photographs are not to scale and do not represent detailed images of the respective products.

Data communication systems for ETHERNET technology



Connectors for industrial cabling • M12 Field mountable connectors and wall ducts

EPIC® DATA FT IE

Industrial Ethernet feed through



Product features

- Designs for front and rear wall-mounting
- M12 panel feed-throughs for direct connecting with PCB
- Can be used for Industrial Ethernet in harsh industrial environments
- Housing: zinc die-casting, grey

Norm references / Approvals

- Acc. to standard IEC 61076-2
- D-coded: Cat.5 acc. to ISO 11801
- X-coded: Cat.6_A acc. to ISO 11801

Technical data

	Classification ETIM 5.0 Class-ID: EC002061 ETIM 5.0 Class-Description: Sensor-actuator connector chassis
	Protection rating IP 67
	Ambient temperature (operation) -25°C to +85°C

Article number	Article designation
M12 feed through, socket on socket, D-coded	
22262022	AB-C4-DSI-M12FSD-M12FSD-M16-SH
M12 flush-type connector socket for front-mounting, X-coded	
21700617	ED-IE-M12F-X-FM
M12 flush-type connector socket for rear-mounting, solder contacts, X-coded	
21700618	ED-IE-M12F-X-RM

Photographs are not to scale and do not represent detailed images of the respective products.

Data communication systems for ETHERNET technology



Connectors for industrial cabling • Cable coupler



EPIC® DATA CCR FA

Cable coupler round



Product features

- Field mountable cable coupler for data cables up to Cat.7_A
- Compact, round design
- Qualified for 10 Gigabit Ethernet
- Suitable for use in industrial applications
- Robust and vibrations-resistant
- Housing: zinc die-casting, grey

- Insulation displacement contacts for conductor diameter of AWG24/7 - AWG22/7 and AWG24/1 - AWG22/1; max. outer diameter 9,7 mm

Norm references / Approvals

- Compliance to class F_A up to 1000 MHz in connection with Cat.7_A cables
- Data transmission is conform to category Cat.7_A acc. to ISO/IEC 11801

Info

- Cable coupler round class F_A
- Installation without tools

Technical data

	Classification ETIM 5.0 Class-ID: EC001121 ETIM 5.0 Class-Description: Modular connector
	Protection rating IP 67
	Ambient temperature (operation) Plug/socket -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	AWG solid	AWG 7-wire
EPIC® DATA CCR FA					
21700623	EPIC® DATA CCR FA	5	9.7	24 - 22	24 - 22

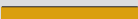
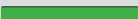
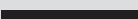
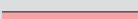
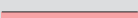
Photographs are not to scale and do not represent detailed images of the respective products.

Optical transmission systems



Selection criteria	192	PCF Connector SC-RJ	212
Customized Pre-Assembled FO Cable Solutions . . .	194	PCF Assembly Sets	212
HITRONIC® POF SIMPLEX BUFFERED FIBRE	195	PCF Cutting Tools	213
HITRONIC® POF SIMPLEX CABLE	196	PCF Measurement Equipment	213
HITRONIC® POF DUPLEX BUFFERED FIBRES	197	HITRONIC® FIRE	214
HITRONIC® POF DUPLEX CABLE	198	HITRONIC® TORSION	215
HITRONIC® POF cables		HITRONIC® HDM Cable	216
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POF Connector F-SMA and ST(BFOC)	201	HITRONIC® HQN Outdoor Cable	220
POF Connector SC-RJ	202	HITRONIC® HVN Outdoor Cable	221
POF Adapter F-SMA	203	HITRONIC® HQW Armoured Outdoor Cable	222
POF Adapter ST (BFOC)	203	HITRONIC® HVW Armoured Outdoor Cable	223
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POF Cutting Tools	204	HITRONIC® HQA Aerial Cable	225
POF Polishing tools and accessories	205	HITRONIC® HQA-Plus Aerial Cable	226
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Colour-codes of fibres (loose tube) cabletypes

Lapp Standard		TIA/EIA-598 (Bellcore)		IEC60304 and DIN EN60794-1-1 (VDE0888-..)	
1 red		1 blue		1 red	
2 green		2 orange		2 green	
3 blue		3 green		3 blue	
4 yellow		4 brown		4 yellow	
5 grey		5 grey		5 white	
6 violet		6 white		6 grey	
7 brown		7 red		7 brown	
8 orange		8 black		8 violet	
9 white		9 yellow		9 turquoise	
10 pink		10 violet		10 black	
11 black		11 pink		11 orange	
12 turquoise		12 turquoise		12 pink	

If fibre 13 – 24 are used in a loose tube design, the color sequence is repeated for fibre 13 – 24, but fibres are ring marked.

In terms of connectors, a distinction is made with regard to the fibre type and the application

Connector for fibre type POF

- Very easy to handle. Configurable by means of crimp or clamp connection
- Connector with inner bore > 1 mm at a fibre diameter of 1000 µm and pin diameter (ferrule) of 2.5 mm
- Tailored tool set for straightforward field configuration

Connector for fibre type PCF

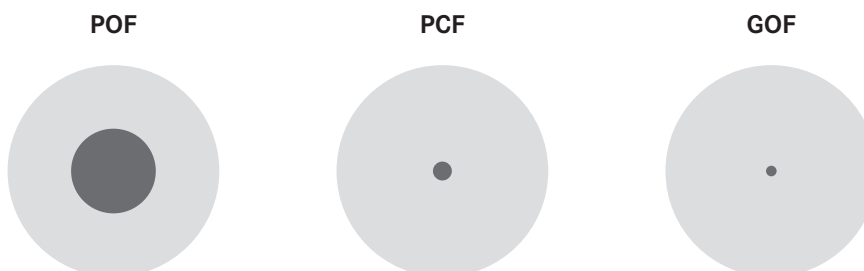
- Easy to handle. Configurable by means of crimp and cleave technology
- Connector with inner bore > 230 µm at a fibre diameter of 230 µm and pin diameter (ferrule) of 2.5 mm
- Tailored tool set for straightforward field configuration

Connector for fibre type GOF

- Handling requires existing knowledge. Assembly by means of bonding and polishing process
- Connector with inner bore > 125 µm at a fibre diameter of 125 µm and pin diameter (ferrule) of 2.5 mm or 1.25 mm (depending on connector type)
- Assembly by qualified staff
- The use of pre-assembled cables is recommended



Schematic size comparison of connector pin (2.5 mm) and hole (POF – PCF – GOF)



When comparing the different connector holes with regard to the fibre diameter, it becomes apparent that these are not interchangeable with one another. In other words, a PCF connector cannot be used for a POF cable. A PCF connector cannot be used for a POF cable as the fibre geometries and parameters are not compatible with one another.

Selection criteria

Basic information
needed to select cable

1. Where is it used?

Indoor
Outdoor
Indoor/Outdoor (Universal)

2. Type of applications

Mining
Railway
Wind Turbines
Inside Machines
Production or Processing Plants
Telecommunications
Power chains
Vertical installation
Oil & gas platforms
On ships

3. Type of Fibres

GOF Single-mode 9/125 µm OS2
Multimode 62.5/125 µm OM1
Multimode 50/125 µm OM2
Multimode 50/125 µm OM3
Multimode 50/125 µm OM4
PCF (200/230)
POF (980/1000)

4. No. of Fibres

GOF 2, 4, 6, 8, 12, 24 ... n x 12
(depend on cable type)
POF 1 (SIMPLEX), 2 (DUPLEX)
PCF 1 (SIMPLEX), 2 (DUPLEX)

Cable designations
for optical cables according
to DIN VDE 0888

□ – □ □ □ □ □ □
1 2 3 4 5 6

1. Product application area

A Outdoor cable
AT Outdoor cable, divisible
J Indoor cable
U or A/J Universal cable
(for outdoor and indoor)

2. Buffered fibre type

B Loose tube, unfilled
D Loose tube, filled
V Tight-buffered fibre

3. Cable construction
(in the cable from inside to outside)

B Armouring
F Grease-filled
Q Swelling tape, dry core
(L) Aluminium tape
S Optical cable with copper elements
(SR) Corrugated steel tape
(ZN) Non-metallic strain relief elements
(ZS) metallic strain relief elements

4. Sheath materials

H Halogen-free sheath
Y PVC sheath
2Y PE sheath
4Y PA sheath
11Y PUR sheath

5. Number of fibres

X Number of fibres or number of
loose tubes X numbers of fibres
per loose tube

6. Fibre type/fibre dimensions

E Single-mode fibre
(glass core/glass cladding)
9/125 µm SM GOF (OS2)
G Multimode fibre
(glass core/glass cladding)
50/125 µm or 62.5/125 µm MM GOF
(OM1, OM2, OM3, OM4)
K Plastic clad fibre
(glass core/plastic cladding)
200/230 µm PCF
P Polymer optical fibre
(polymer core/polymer cladding)
980/1000 µm POF

7. Optical quality/transmission properties

Example 1: A-DQ(ZN)(SR)2Y 12G 50/125 OM3

Outdoor cable with corrugated steel tape armour
and PE sheath, central loose tube, non-metallic
strain relief made of glass yarns, 12 fibres, 50/125
µm OM3 multimode fibres

Example 2: J-V2Y(ZN)11Y 2P 980/1000

Plastic fibre-optic cable, two-fibre (DUPLEX),
indoor cable with PE inner sheath, non-metallic
strain relief, PUR outer sheath

Article number
coding for cables
(not applicable to accessories)

□ □ □ □ □ □ □ □
A B C D1 D2

A. Group of fibres

6 GOF cables
7 GOF cables
8 POF/PCF cables

B. Installation area

0 Indoor
3 Universal, flexible
4 Universal
5 Universal, armoured
6 Outdoor
9 Outdoor, armoured

C. Type of fibres

0 POF 980/1000
1 GOF 62.5/125 OM1
2 GOF 50/125 OM2
3 GOF 50/125 OM3
4 GOF 50/125 OM4
7 PCF 200/230
9 GOF 9/125 OS2 (ITU-G652.D)

D. No. of fibres

01 SIMPLEX, 1 fibre
02 DUPLEX, 2 fibres
04 4 fibres
08 8 fibres
12 12 fibres
24 24 fibres
96 96 fibres
44 144 fibres

Example 1:

GOF outdoor cable,
HQN1500 24G 50/125 OM3 27600324

Example 2:

GOF armoured universal cable,
HUW1500 8E 9/125 OS2 27500908

Example 3:

POF cable,
POF SIMPLEX PE 28000001

Example 4:

POF cable,
POF DUPLEX PE-PUR 28020002

Example 5:

PCF outdoor cable,
PCF SIMPLEX Outdoor 28600701

Example 6:

PCF indoor cable,
PCF DUPLEX Indoor 28020702

Customized Pre-Assembled FO Cable Solutions

ÖLFLEX® CONNECT – integrated solutions made by Lapp

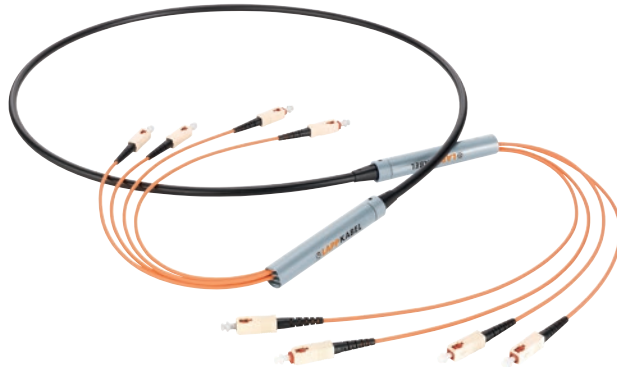
Lapp is offering an integrated solution with **ÖLFLEX® CONNECT** – cables assembled exactly to your requirements. Everything is possible – from traditional cable assemblies to industry standard servo connections right up to highly complex drag chain systems. With **ÖLFLEX® CONNECT** Lapp offers as well customized fibre optic system assemblies (FO trunks).

Customers can choose the right cable from the wide range of HITRONIC® fibre optic cables which can be assembled exactly as per customer specification.

By using factory assembled fibre optic cable solutions the installation for industry, telecommunication and office applications are significantly simplified.

Depending on the planning approach, time consuming connector installation or splicing at site can be avoided. Just lay the trunk system and simply plug it in with the factory pre-assembled connectors.

A plug & play solution from Lapp.

**Technical benefits**

- No splice connections are necessary during installation. This saves time and costs for equipment and special tooling.
- Low attenuation values by factory preassembled plugs
- Trunk-system are easy to use without any further time consuming on-site processing
- Available with all major cable and connector types (Lapp HITRONIC® range)
- Ready to use fibre optic cabling system
- IP 68 metallic cable unit splitter for glass fibre (GOF) loose tube cables up to 48 fibres

In a few steps to a customized FO-trunk-system:

- Determination of the required fibre type**
 - POF (980/1000)
 - PCF (200/230)
 - GOF (single-mode 9/125 OS2)
(multimode 62,5/125 OM1)
(multimode 50/125 OM2; OM3; OM4)
- Selection of cable type and version**

See HITRONIC® cable range
(POF, PCF und GOF and number of fibers)
- Determination of the system length**
- Connector configuration**

Selection of connector type – side 1 and 2
- Cable pulling device**

Selection cable pulling device
side 1 and/or side 2
- Specific requirements**

Regarding packaging and marking
- Lapp in-house**

Lapp will check the technical feasibility and plausibility (fibre – cable – connector) and make a quotation
- Easy ordering and fast shipping**

For questions about customized packaging and special issues we are happy to assist you.

Selection example:**Short designation:**

TRUNK GOF HUN 1500-4E9/125-SC/LC-85m

Description:

- Customized pre-assembled fibre optic cable solution
- Based on cable version
HITRONIC® HUN 4E9/125 OS2
- Assembled at both ends with connectors
 - side 1: 2 x SC-duplex connector
 - side 2: 2 x LC-duplex connector
- Cable splitter unit IP68:
 - up to zu 24 fibres
 - M20 through hole
- Side 1 protected with a cable pulling device
 - outer diameter < 30 mm
- System length 85 m
- On disposable drum



HITRONIC® POF SIMPLEX BUFFERED FIBRE

ÖLFLEX®

UNITRONIC®

ETHERLINE®

HITRONIC®

EPIC®

SKINTOP®

FLEXIMARK®

APPENDIX



Info

- J-V2Y 1P 980/1000
- Simplex polymer fibre-optic cable for direct connector assembly

Benefits

- Transmission lengths up to 70 m
- Suitable for direct connector assembly
- Easy to handle
- No crosstalk
- EMC protection

Application range

- For optical signal transmission in industrial applications
- Very suitable for fixed installation in control cabinets, cable ducts, or pipes with low mechanical stress

Product features

- Lightweight
- High flexibility
- Halogen-free buffer tube

Product Make-up

- Polymer Optical Fibre (POF)
- PE buffer tube
- Without outer sheath
- Colour: black

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: PMMA
Cladding material: fluoropolymers



Permissible bending radius

≥ 10 x outer diameter



Permissible tensile force

Fixed installation: 5 N
Short-term: 15 N



Temperature range

Operation: -55°C to +85°C
Installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
HITRONIC® POF SIMPLEX PE					
28000001	HITRONIC® POF SIMPLEX PE	980/1000 POF	1	2.2	3.8

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- HITRONIC® POF SIMPLEX CABLE refer to page 196

Accessories

- POF Connector and Adapter HFBR refer to page 200
- POF Cutting Tools refer to page 204
- POF Connector F05 Simplex refer to page 201
- UNIVERSAL STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® POF SIMPLEX CABLE

LAPP KABEL STUTTGART HITRONIC® POF SIMPLEX FD PE-PUR

LAPP KABEL STUTTGART HITRONIC® POF SIMPLEX PE-PUR



Info

- J-V2Y(ZN)11Y 1P 980/1000
- Simplex POF cable with strain relief and PUR outer sheath
- FD - Highly flexible (power chains)

Benefits

- Optical data transmission up to 70m
- Easy to handle
- No interference by external fields
- No grounding problems
- Suitable for direct connector assembly

Application range

- For optical signal transmission in industrial applications
- As a link between moving parts
- FD cable version: for flexible applications (power chains)

Product features

- Resistant to abrasion, oil, microbes and hydrolysis
- Adhesion-free
- Outer sheath flame-retardant and halogen-free
- FD cable version: 5.000.000 bending cycles

Product Make-up

- Polymer Optical Fibre (POF)
- PE buffer tube
- Aramid yarns as strain relief
- PUR outer sheath
- Colour: orange (RAL 2003)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: PMMA
Cladding material: fluoropolymers



Permissible bending radius

≥ 10 x outer diameter



Permissible tensile force

Fixed installation: 100 N
Short-term: 600 N



Temperature range

Operation: -20 °C to +70 °C
Installation: -10 °C to +50 °C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
HITRONIC® POF SIMPLEX PE-PUR					
28020001	HITRONIC® POF SIMPLEX PE-PUR	980/1000 POF	1	5.5	25
HITRONIC® POF SIMPLEX FD PE-PUR for draig chain application					
28320001	HITRONIC® POF SIMPLEX FD PE-PUR	980/1000 POF	1	6	30

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- POF Assembly Sets refer to page 204
- POF Cutting Tools refer to page 204
- POF Connector F-SMA and ST(BFOC) refer to page 201
- STAR STRIP stripping tool refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® POF DUPLEX BUFFERED FIBRES

ÖLFLEX®

UNITRONIC®

ETHERLINE®

HITRONIC®

EPIC®

SKINTOP®

FLEXIMARK®

APPENDIX



Info

- J-V2Y 2x1P 980/1000
- Duplex polymer fibre-optic cable for direct connector assembly

Benefits

- Transmission lengths up to 70 m
- Suitable for direct connector assembly
- Easy to handle
- No crosstalk
- EMC protection

Application range

- For optical signal transmission in industrial applications
- Very suitable for fixed installation in control cabinets, cable ducts, or pipes with low mechanical stress
- Light mechanical stress
- Identification by white dots

Product features

- Halogen-free
- Lightweight
- High flexibility

Product Make-up

- Polymer Optical Fibre (POF)
- Twin cable
- PE buffer tube
- Without outer sheath
- Colour: black

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Dimensions

Twin cable
2x2.2mm



Optical fibre type

Core material: PMMA
Cladding material: fluoropolymers



Permissible bending radius

≥ 10 x outer diameter



Permissible tensile force

Fixed installation: 10 N
Short-term: 30 N



Temperature range

Operation: -55°C to +85°C
Installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
HITRONIC® POF DUPLEX BUFFERED FIBRES					
28000002	HITRONIC® POF DUPLEX PE	980/1000 POF	2	2.2	7.6

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Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- HITRONIC® POF SIMPLEX BUFFERED FIBRE refer to page 195

Accessories

- POF Connector and Adapter HFBR refer to page 200
- POF Cutting Tools refer to page 204
- UNIVERSAL STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® POF DUPLEX CABLE

LAPP KABEL STUTTGART HITRONIC® POF DUPLEX PE-PUR

LAPP KABEL STUTTGART HITRONIC® POF DUPLEX HEAVY PE-PUR

LAPP KABEL STUTTGART HITRONIC® POF DUPLEX FD PE-PUR



Info

- J-V2Y(ZN)11Y 2P 980/1000
- Duplex plastic fibre optic cable with strain relief and PUR outer sheath
- FD - Highly flexible (power chains)

Benefits

- Optical data transmission up to 70m
- Easy to handle
- No interference by external fields
- No grounding problems
- Suitable for direct connector assembly

Application range

- For optical signal transmission in industrial applications
- FD cable version: for flexible applications (power chains)

Product features

- Outer sheath flame-retardant and halogen-free
- Resistant to abrasion, oil, microbes and hydrolysis
- Adhesion-free
- FD cable version: 5.000.000 bending cycles

Product Make-up

- Polymer Optical Fibre (POF)
- PE buffer tube
- Fibre colour coding: black, orange
- Aramid yarns as strain relief
- PUR outer sheath, orange (RAL 2003)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: PMMA
Cladding material: fluoropolymers



Permissible bending radius

≥ 10 x outer diameter



Permissible tensile force

Fixed installation: 100 N (PE-PUR),
130 N (Heavy PE-PUR)
Short-term: 400 N



Temperature range

Operation: -40°C to +7 °C
(FD: -20°C to +70°C)
Installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
HITRONIC® POF DUPLEX PE-PUR					
28020002	HITRONIC® POF DUPLEX PE-PUR	980/1000 POF	2	5.5	27
HITRONIC® POF DUPLEX HEAVY PE-PUR					
28030002	HITRONIC® POF DUPLEX HEAVY PE-PUR	980/1000 POF	2	8	57
HITRONIC® POF DUPLEX FD PE-PUR for draig chain application					
28320002	HITRONIC® POF DUPLEX FD PE-PUR	980/1000 POF	2	6	30

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
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Accessories

- POF Assembly Sets refer to page 204
- POF Cutting Tools refer to page 204
- POF Connector F-SMA and ST(BFOC) refer to page 201
- POF Connector SC-RJ refer to page 202
- STAR STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® POF cables for PROFINET Applications



Info

- PROFINET compliant
 - Type B or Type C
- J-V4Y(ZN) 11Y 2P980/1000
- J-V4Y(ZN)Y 2P980/1000
- J-V4Y(ZN) 11Y 2P980/1000 flex

Benefits

- Optical data transmission up to 70m
- Easy to handle
- No interference by external fields
- No grounding problems
- Suitable for direct connector assembly

Application range

- For optical signal transmission in industrial applications
- PROFINET / Industrial Ethernet
- At 100 Mbit/s: max 50 m cable length
- PROFINET type B: for fixed laying
- PROFINET type C: for flexible applications (power chains)

Product features

- Cable version with PVC outer sheath: for standard applications in industrial environments
- Cable version with PUR outer sheath: for high mechanical or chemical stress in industrial environments
- PNB - PROFINET-Type B
- PNC - PROFINET-Type C
- FD - Highly flexible (power chains)

Product Make-up

- Polymer Optical Fibre (POF)
- PA buffer tube
- Fibre colour coding: black, orange (with arrow printing)
- Aramid yarns as strain relief
- Outer sheath material PUR or PVC (see article description)
- Outer sheath colour: green (RAL 6018)

Technical data

	Classification ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	Dimensions Buffered fibre: 2.2mm Cable: see table
	Core identification code Black, orange (with arrow printing)
	Optical fibre type Core material: PMMA Cladding material: fluoropolymers
	Permissible bending radius ≥ 10 x outer diameter
	Permissible tensile force see data sheet
	Temperature range Operation: -20 °C to +70 °C Installation: -10 °C to +50 °C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
POF DUPLEX - PROFINET TYPE B					
28051002	HITRONIC® POF DUPLEX PNB PA-PUR	980/1000 POF	2	8	56
28052002	HITRONIC® POF DUPLEX PNB PA-PVC	980/1000 POF	2	7.8	59
POF DUPLEX - PROFINET TYPE C					
28351002	HITRONIC® POF DUPLEX FD PNC PA-PUR	980/1000 POF	2	8	55

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- POF Assembly Sets refer to page 204
- POF Cutting Tools refer to page 204
- POF Connector F-SMA and ST(BFOC) refer to page 201
- POF Connector SC-RJ refer to page 202
- EPIC® DATA PB Sub-D FO refer to page 104
- STAR STRIP stripping tool refer to main catalogue 2016/17

POF Connector and Adapter HFBR

**Benefits**

- Compatible with HP Versatile Link Connectors and Components series
- Different colours for channel coding

Application range

- Factory automation
- Medical equipment
- Telecommunications Switching Systems
- Automotive Networks
- Printed Circuit Board

Product features

- HFBR connector series for 2.2 mm POF
- For crimping or clamping
- Simplex or Duplex variations

Technical data**Classification**

ETIM 5.0 Class-ID: EC000752
ETIM 5.0 Class-Description:
Fibre optic connector

Article number	Article designation	PU
Connector HFBR-4501, Simplex, with Crimp Sleeve		
29140099	POF Connector HFBR4501 GY Simplex /4PC	4 piece
29140098	POF Connector HFBR4501 GY Simplex /50PC	50 piece
Latching Connector HFBR-4503, Simplex, with Crimp Sleeve		
29141099	POF Connector HFBR4503 GY Simplex /4PC	4 piece
29141098	POF Connector HFBR4503 GY Simplex /50PC	50 piece
Connector HFBR-4506, Duplex, with Crimp Sleeve		
29142099	POF Connector HFBR4506 WH Duplex /4PC	4 piece
29142098	POF Connector HFBR4506 WH Duplex /50PC	50 piece
Connector HFBR-4511, Simplex, with Crimp Sleeve		
29143099	POF Connector HFBR4511 BL Simplex /4PC	4 piece
29143098	POF Connector HFBR4511 BL Simplex /50PC	50 piece
Latching Connector HFBR-4513, Simplex, with Crimp Sleeve		
29144099	POF Connector HFBR4513 BL Simplex /4PC	4 piece
29144098	POF Connector HFBR4513 BL Simplex /50PC	50 piece
Latching Connector HFBR-4516, Duplex, with Crimp Sleeve		
29145099	POF Connector HFBR4516 GY Duplex /4PC	4 piece
29145098	POF Connector HFBR4516 GY Duplex /50PC	50 piece
Clamp Connector HFBR-4531, Simplex		
29146099	POF Connector HFBR4531 BK Simplex /4PC	4 piece
29146098	POF Connector HFBR4531 BK Simplex /50PC	50 piece
Clamp and Latching Connector HFBR-4532, Simplex		
29147099	POF Connector HFBR4532 BK Simplex /4PC	4 piece
29147098	POF Connector HFBR4532 BK Simplex /50PC	50 piece
Clamp Connector HFBR-4533, Simplex		
29148099	POF Connector HFBR4533 BL Simplex /4PC	4 piece
29148098	POF Connector HFBR4533 BL Simplex /50PC	50 piece
HFBR4505 Adapters		
29440099	POF Adapter HFBR4505 GY Simplex /4PC	4 piece
HFBR4515 Adapters		
29441099	POF Adapter HFBR4515 BL Simplex /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- POF Cutting Tools refer to page 204
- POF Polishing tools and accessories refer to page 205

POF Connector F05 Simplex

Benefits

- Easy to assemble

Application range

- Digital audio
- Factory automation
- Office Automation (Smart House)

Product features

- F-05 (TOCP) SIMPLEX clamp connector for connecting to polymer optical fibre without crimping or gluing
- Snap-In Connector
- Suitable for 2.2 mm POF



Info

- Compatible with TOCP155K

Technical data



Classification

ETIM 5.0 Class-ID: EC001122

ETIM 5.0 Class-Description:

Fibre optic connector



Article number	Article designation	PU
Connector F05 Simplex		
29150099	POF Connector F05 Simplex /4PC	4 piece
29150098	POF Connector F05 Simplex /50PC	50 piece
Adapter for Connector F05 Simplex		
29450099	POF Adapter F05 Simplex /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- POF Cutting Tools refer to page 204
- POF Polishing tools and accessories refer to page 205

POF Connector F-SMA and ST(BFOC)

Benefits

- As crimp or clamp version for easy assembling

Product features

- FSMA and ST(BFOC) connector with knurled nut or hexagonal nut for crimping, gluing or easy clamping
- Suitable for 2.2 mm POF
- Available for different cable diameters (2.2 mm and 6.0 mm)
- Connector including bend protection boot and dust cap
- Bend protection boot colour: black and red



Info

- FSMA and ST(BFOC) connectors for POF cable assembly

Technical data

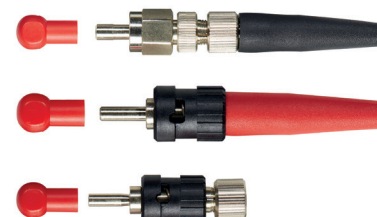


Classification

ETIM 5.0 Class-ID: EC001122

ETIM 5.0 Class-Description:

Fibre optic connector



Article number	Article designation	PU
FSMA Connectors with knurled nut for crimping		
29135099	POF Connector FSMA Crimp 2.2 /4PC	4 piece
29135098	POF Connector FSMA Crimp 2.2 /50PC	50 piece
29137099	POF Connector FSMA Crimp 6.0 /4PC	4 piece
29137098	POF Connector FSMA Crimp 6.0 /50PC	50 piece
FSMA Connectors with hexagonal nut for crimping		
29135089	POF Connector FSMA Hex Crimp 2.2 /4PC	4 piece
29135088	POF Connector FSMA Hex Crimp 2.2 /50PC	50 piece
29132089	POF Connector FSMA Hex Crimp 6.0 /4PC	4 piece
29132088	POF Connector FSMA Hex Crimp 6.0 /50PC	50 piece
FSMA Connectors with knurled nut for clamping		
29130099	POF Connector FSMA Clamp 2.2 /4PC	4 piece
29130098	POF Connector FSMA Clamp 2.2 /50PC	50 piece
FSMA Connectors with hexagonal nut for clamping		
29130089	POF Connector FSMA Hex Clamp 2.2 /4PC	4 piece
29130088	POF Connector FSMA Hex Clamp 2.2 /50PC	50 piece
ST(BFOC) Connectors for crimping		
29125099	POF Connector ST(BFOC) Crimp 2.2 /4PC	4 piece
29125098	POF Connector ST(BFOC) Crimp 2.2 /50PC	50 piece
ST(BFOC) Connectors for clamping		
29120099	POF Connector ST(BFOC) Clamp 2.2 /4PC	4 piece
29120098	POF Connector ST(BFOC) Clamp 2.2 /50PC	50 piece

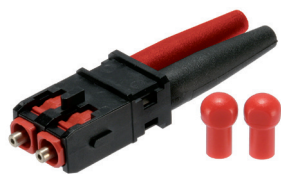
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- POF Assembly Sets refer to page 204
- POF Cutting Tools refer to page 204
- POF Polishing tools and accessories refer to page 205
- POF Measurement Equipment refer to page 206



POF Connector SC-RJ



Benefits

- As crimp version for easy assembling

Product features

- Connector set included two SC connectors, SC-RJ housing, two bending protection boots, dust caps
- Suitable for 2.2 mm POF
- Bend protection boot colour: black and red



Info

- SC-RJ connectors for POF cable assembly
- Connectors for PROFINET Data Cabling

Technical data



Classification

ETIM 5.0 Class-ID: EC001122

ETIM 5.0 Class-Description:

Fibre optic connector

Article number	Article designation	PU
POF Connector SC-RJ		
29161097	POF Connector SC-RJ Crimp 2.2	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- POF Assembly Sets refer to page 204
- POF Cutting Tools refer to page 204
- POF Polishing tools and accessories refer to page 205
- POF Measurement Equipment refer to page 206

POF Adapter F-SMA

Product features

- POF Adapter FSMA: version with two fixing nuts and lock washer
- POF Adapter FSMA hexa: version with hexagonal flange, fixing nuts and lock washer



Info

- Can be used for POF and PCF connector types



Technical data



Classification

ETIM 5.0 Class-ID: EC000752

ETIM 5.0 Class-Description: Fibre optic coupler

Article number	Article designation	PU
FSMA Adapters		
29430099	POF Adapter FSMA /4PC	4 piece
29430089	POF Adapter FSMA Hex /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

POF Adapter ST (BFOC)

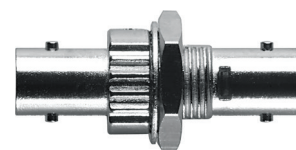
Product features

- ST(BFOC) adapter with flange, fixing nuts and lock washer



Info

- Can be used for POF and PCF connector types



Technical data



Classification

ETIM 5.0 Class-ID: EC000752

ETIM 5.0 Class-Description: Fibre optic coupler

Article number	Article designation	PU
ST(BFOC) Adaptera		
29420099	POF Adapter ST (BFOC) /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

POF Assembly Sets



Benefits

- Easy to handle
- Set includes all the necessary tools for connector assembly
- Suitable for on-site assembly

Product features

- Sets available for POF connector types FSMA and ST (BFOC) and SC / SC-RJ
- Contents: crimp tool, buffered fibre stripper, polishing disc FSMA, polishing film, cutter

Technical data



Classification

ETIM 5.0 Class-ID: EC002609

ETIM 5.0 Class-Description:

Accessories for optic fibre technique

Article number	Article designation	PU
Assembly Set for POF FSMA Connector		
29500001	Assembly Set POF Connector FSMA	1 piece
Assembly Set for POF ST(BFOC) Connector		
29500002	Assembly Set POF Connector ST(BFOC)	1 piece
Assembly Set for POF SC/SC-RJ Connector		
29500004	Assembly Set for POF Connector SC	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

POF Cutting Tools



Benefits

- Cutting tools for the POF cable and connector product range

Application range

- Cable stripper for different jacket materials and cable diameter

Product features

- Various tools for cutting buffered fibres (2.2mm) from very simple to version with automatic blade advance
- Crimping tool suitable for the POF(PCF) connector program

Technical data



Classification

ETIM 5.0 Class-ID: EC000163

ETIM 5.0 Class-Description:

Fibre optic cleaver

Article number	Article designation	PU
POF Bare Fibre Cutter		
29500014	POF Cutter 2.2 / 1.0mm Guillotine	5 pieces
29500015	POF BufferedFibreCutter 2.2mm manuel	1 piece
29500016	POF BufferedFibreCutter 2.2mm automatic	1 piece
POF Cable Stripper		
29500011	POF Buffered Fibre Stripper 2.2 mm (P980 / 1000)	1 piece
29500013	POF Cable Stripper PA 2.2mm	1 piece
29500012	POF Cable Stripper 3.6 / 6.0mm	1 piece
Strain relief element scissors		
29500017	Strain relief element scissors	1 piece
POF Crimping Tool		
29500010	POF Crimp Tool 2.5 / 3.0 / 4.5 / 4.95mm	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- POF Assembly Sets refer to page 204

POF Polishing tools and accessories

Benefits

- Easy to handle
- Suitable to POF Connector Assembly Sets

Product features

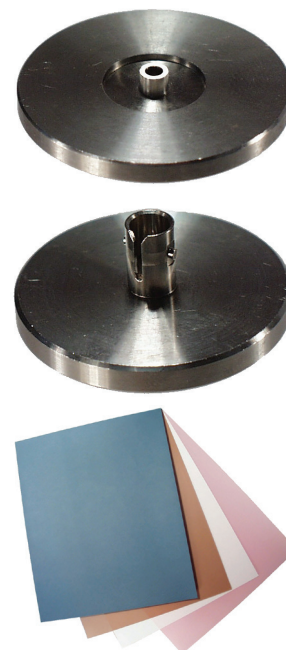
- Accessories for POF Assembly
- Polishing disc for various POF connector types
- Other versions are available upon request
- Polishing film with different graining size types for fibre end face treatment
- Polishing process:
 - POF - Polishing Film 1000 (BU)
 - Polishing Film 5µm (BN)
 - Polishing Film 1µm (GN)
 - PCF - Polishing Film 5 µm (BN)
 - Polishing Film 1 µm (GN)
 - Polishing Film 0.3 µm (WH)

Technical data**Classification**

ETIM 5.0 Class-ID: EC001688

ETIM 5.0 Class-Description:

Fibre optic cleaver



Article number	Article designation	PU
Polishing Disc for POF connector assembly		
29500031	Polishing Disc POF FSMA Connector	1 piece
29500032	Polishing Disc POF ST(BFOC) Connector	1 piece
29500033	Polishing Disc POF HFBR4501/4511 SIMPLEX	1 piece
29500034	Polishing Disc POF HFBR4516 DUPLEX	1 piece
29500035	Polishing Disc POF F05 Connector	1 piece
29500036	Polishing Disc POF Simplex 2.2mm	1 piece
29500733	Polishing Disc PCF HFBR4521 Connector	1 piece
29500037	Polishing Disc POF SC Connector	1 piece
Polishing film		
29500021	Polishing film graining size 1000 (BL)	10 pieces
29500024	Polishing film graining size 5 µm (BR)	10 pieces
29500023	Polishing film graining size 1 µm (GN)	10 pieces
29500022	Polishing film graining size 0.3 µm (WH)	10 pieces
Polishing accessories		
29500020	Polishing glass plate 150x230mm	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- POF Assembly Sets refer to page 204

POF Measurement Equipment



Benefits

- Measuring Equipment Set for wavelengths 660/850nm
- Suitable for the measurement of assembled POF and PCF systems
- Measuring Equipment Set for different wave lengths and connector types. Connector type and wavelength is defined by interchangeable adapter system

Product features

- The measurement device is supplied without adapters. Please order separately
- Optical Transmitter (TMR): wavelength dependent on interchangeable adapter
 - 650nm
 - 660nm
 - 850nm (on request)
- Optical Power Meter: for attenuation measurement of an assembled POF (PCF) systems adapted to Optical Transmitter (TMR)

Product Make-up

- Optical Transmitter with digital display, wavelength dependent on adapter, active interchangeable adapters are not included, please order separately
- Optical Power Meter with digital display, wavelength meter 660/850 nm, interchangeable adapters (receiver side) are not included, please order separately
- Measuring Set (29500089): Optical Transmitter and Power Meter as set in a black suitcase, interchangeable adapters are not included

Technical data



Classification

ETIM 5.0 Class-ID: EC002609

ETIM 5.0 Class-Description:

Accessories for optic fibre technique

Article number	Article designation	PU
POF Measurement Equipment		
29500070	POF Optical Transmitter (TMR)	1 piece
POF TMR Adapter, wavelength 650nm		
29500071	POF Optical TMR Adapter HFBR, 650nm	1 piece
29500072	POF Optical TMR Adapter FSMA, 650nm	1 piece
29500073	POF Optical TMR Adapter ST(BFOC), 650nm	1 piece
POF TMR Adapter, wavelength 660nm		
29500074	POF Optical TMR Adapter F05, 660nm	1 piece
29500075	POF Optical TMR Adapter HFBR, 660nm	1 piece
29500076	POF Optical TMR Adapter FSMA, 660nm	1 piece
29500077	POF Optical TMR Adapter ST(BFOC), 660nm	1 piece
POF Optical Power Meter 660/850 nm		
29500080	POF Optical Power Meter 660/850 nm	1 piece
POF Power Meter Adapters		
29500081	POF Power Meter Adapter HFBR4501/4521	1 piece
29500082	POF Power Meter Adapter FSMA	1 piece
29500083	POF Power Meter Adapter ST(BFOC)	1 piece
29500084	POF Power Meter Adapter F05	1 piece
POF Measuring Equipment Set without adapters		
29500089	POF Measuring Equipment Set 660/850nm	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.



HITRONIC® PCF SIMPLEX Cable



Info

- A-V(ZN) 11Y
- Simplex plastic cladded fibre (PCF) cable for direct connector assembly

Benefits

- Transmission lengths up to 500 m
- Suitable for direct connector assembly
- High mechanical strength
- UV-resistant
- EMC protection

Application range

- For data transmission in field bus systems, such as PROFIBUS, INTERBUS etc.
- Industrial environments

Product features

- Possible transmission wavelengths: 650 nm and 850 nm
- Outer sheath flame-retardant and halogen-free

Product Make-up

- Tight-buffered fibres
- Aramid yarns as strain relief
- PUR outer sheath
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Minimum bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Optical fibre type

Core material: glass
Cladding material: fluoropolymers



Permissible tensile force

Fixed installation: 200 N



Temperature range

Operation: -10°C to $+60^{\circ}\text{C}$
Installation: -10°C to $+50^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
HITRONIC® PCF SIMPLEX Cable					
28600701	HITRONIC® PCF SIMPLEX PUR Outdoor	200/230 PCF	1	2.9	7.5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- PCF Assembly Sets refer to page 212
- PCF Connector HFBR refer to page 211
- PCF Connector F-SMA and ST(BFOC) refer to page 211
- PCF Cutting Tools refer to page 213



HITRONIC® PCF DUPLEX Cable



Info

- PCF DUPLEX Indoor: J-V(ZN)H11Y 2K200/230
- PCF DUPLEX Outdoor: A-VQ(ZN)HB2Y 2K200/230
- Plastic-cladded fibre (PCF) cable compatible with all BUS systems

Benefits

- Transmission lengths up to 500 m
- Suitable for direct connector assembly
- Good resistance to oil, petrol, acids and alkalis
- High mechanical strength
- EMC protection

Application range

- For data transmission in field bus systems, such as PROFIBUS, INTERBUS etc.
- Industrial environments

Product features

- Possible transmission wavelengths: 650 nm and 850 nm
- Complies with requirements for all BUS systems
- Halogen-free outer sheath

Product Make-up

- Colour-coded, tight-buffered PCF sub-cable with FRNC sheath (2.9mm)
- Aramid yarns as strain relief
- PUR outer sheath (indoor); PE outer sheath (outdoor)
- Colour: orange (indoor); black (outdoor)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Minimum bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Optical fibre type

Core material: glass
Cladding material: fluoropolymers



Permissible tensile force

Fixed installation: 400 N (indoor); 500 N (outdoor)
Short-term: 1200 N (indoor); 1500 N (outdoor)



Temperature range

Operation: -20°C to $+70^{\circ}\text{C}$
Installation: -10°C to $+50^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Indoor					
28020702	HITRONIC® PCF DUPLEX FRNC-PUR Indoor	200/230 PCF	2	8	53
Outdoor					
28620702	HITRONIC® PCF DUPLEX FRNC-PE Outdoor	200/230 PCF	2	10.5	89

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- HITRONIC® PCF DUPLEX FD cables refer to page 209
- HITRONIC® PCF cables for PROFINET Applications refer to page 210

Accessories

- PCF Assembly Sets refer to page 212
- PCF Connector HFBR refer to page 211
- PCF Connector F-SMA and ST(BFOC) refer to page 211
- PCF Connector SC-RJ refer to page 212
- STAR STRIP stripping tool refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® PCF DUPLEX FD cables



Info

- A/J-V(ZN)H11Y
- Flexible PCF cable compatible with all BUS systems



Benefits

- Designed for use in power chains
- Transmission lengths up to 500 m
- Suitable for direct connector assembly
- Good resistance to oil, petrol, acids and alkalis
- EMC protection

Application range

- For highly flexible applications
- For data transmission in field bus systems, such as PROFIBUS, INTERBUS etc.
- As a link between moving parts
- Industrial environments

Product features

- Possible transmission wavelengths: 650 nm and 850 nm
- Complies with requirements for all BUS systems
- Outer sheath flame-retardant and halogen-free

Product Make-up

- Colour-coded, tight-buffered PCF sub-cable with FRNC sheath
- Sub cable outer diameter: 2.2mm
- Aramid yarns as strain relief
- PUR outer sheath
- Colour: orange (RAL 2003)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Minimum bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Optical fibre type

Core material: glass
Cladding material: fluoropolymers



Permissible tensile force

Fixed installation: 800 N
Short-term: 2000 N



Temperature range

Operation: -20°C to $+70^{\circ}\text{C}$
Installation: -10°C to $+50^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
HITRONIC® PCF DUPLEX FD cables					
28320702	HITRONIC® PCF DUPLEX FD FRNC-PUR	200/230 PCF	2	8.8	63

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

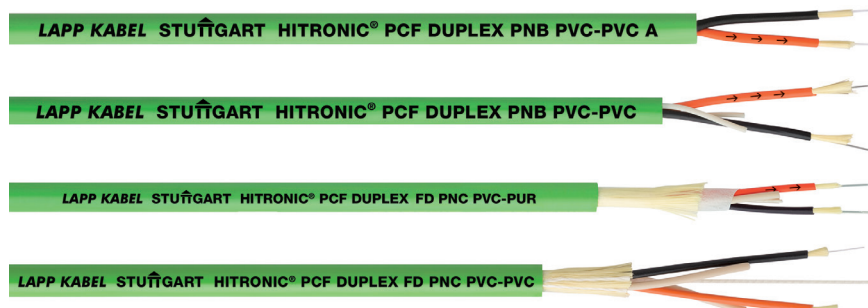
The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- PCF Assembly Sets refer to page 212
- PCF Connector HFBR refer to page 211
- PCF Connector F-SMA and ST(BFOC) refer to page 211
- PCF Cutting Tools refer to page 213
- PCF Connector SC-RJ refer to page 212
- STAR STRIP stripping tool refer to main catalogue 2016/17

PCF - Plastic Cladded Fibre Cable • Two buffered fibres applications (DUPLEX)

**HITRONIC® PCF cables for PROFINET Applications****Info**

- PROFINET compliant
 - Type B or Type C
- J-V(ZN)YY 2K200/230
 - J-V(ZN)Y(ZN)11Y 2K200/230 flex
 - J-V(ZN)Y(ZN)Y 2K200/230 flex

Benefits

- Optical data transmission up to 500m
- Easy to handle
- No interference by external fields
- No grounding problems
- Suitable for direct connector assembly

Application range

- PCF DUPLEX cables for optical signal transmission in industrial applications
- PROFINET / Industrial Ethernet
- At 100 Mbit/s: max 100 m cable length
- PROFINET type B:
 - for fixed laying
- PROFINET type C:
 - for flexible applications (power chains)

Product features

- Cable version with PVC outer sheath:
 - for standard applications in industrial environments
- Cable version with PUR outer sheath:
 - for high mechanical or chemical stress in industrial environments
- PNB - PROFINET-Type B
- PNC - PROFINET-Type C
- FD - Highly flexible (power chains)

Norm references / Approvals

- 28055702: with c(UL)us certification (OFNG 75°C)

Product Make-up

- Colour-coded, tight-buffered PCF sub-cable with PVC sheath
- Sub cable outer diameter: 2.2mm
- Aramid yarns as strain relief
- Outer sheath material PUR or PVC (see article description)
- Outer sheath colour: green (RAL 6018)

Technical data**Classification**

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable

**Dimensions**

Sub cable outer diameter: 2.2mm
Cable: see table

**Core identification code**

Black, orange (with arrow printing)

**Minimum bending radius**

see data sheet

**Optical fibre type**

Core material: glass
Cladding material: fluoropolymers

**Permissible tensile force**

see data sheet

**Temperature range**

See data sheet

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
PCF DUPLEX - PROFINET TYPE B					
28055702	HITRONIC® PCF DUPLEX PNB PVC-PVC A	200/230 PCF	2	7.5	59
28052702	HITRONIC® PCF DUPLEX PNB PVC-PVC	200/230 PCF	2	7.2	55
PCF DUPLEX - PROFINET TYPE C					
28351702	HITRONIC® PCF DUPLEX FD PNC PVC-PUR	200/230 PCF	2	8.8	71
28352702	HITRONIC® PCF DUPLEX FD PNC PVC-PVC	200/230 PCF	2	8.8	76

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- PCF Assembly Sets refer to page 212
- PCF Connector F-SMA and ST(BFOC) refer to page 211
- PCF Cutting Tools refer to page 213
- PCF Connector SC-RJ refer to page 212
- EPIC® DATA PB Sub-D FO refer to page 104
- STAR STRIP stripping tool refer to main catalogue 2016/17



PCF Connector HFBR

Benefits

- Compatible with HP Versatile Link Connectors and Components series

Application range

- Factory automation
- Medical equipment
- Telecommunications Switching Systems

Product features

- HFBR4521 connector for 2.2 mm PCF cable diameter as crimp version
- HFBR4521 connector for 3.0 mm PCF cable diameter as clamp version
- HFBR4521 clamp connector compatible with Assembly Set PCF Connector HFBR4521

Technical data



Classification

ETIM 5.0 Class-ID: EC001122

ETIM 5.0 Class-Description:

Fibre optic connector



Article number	Article designation	PU
Connector HFBR4521 for 2.2 mm cables - crimp version		
29140799	PCF Connector HFBR4521 BK Simplex 2.2 /4PC	4 piece
29140798	PCF Connector HFBR4521 BK Simplex 2.2 /50PC	50 piece
Connector HFBR4521 for 3.0 mm cables - clamp version		
29141799	PCF Connector HFBR4521 Clamp 3.0 /4PC	4 piece
29141798	PCF Connector HFBR4521 Clamp 3.0 /50PC	50 piece

Photographs are not to scale and do not represent detailed images of the respective products.



PCF Connector F-SMA and ST(BFOC)

Benefits

- Easy to assemble
- Designed for field assembly
- Reusable as it can be removed

Product features

- Connectors for clamp and cleave assembly
- Available for different cable diameters (2.2mm and 3.0mm)
- Adapters available on request
- Bend protection boot colour: black and red

Technical data



Classification

ETIM 5.0 Class-ID: EC001122

ETIM 5.0 Class-Description:

Fibre optic connector



Article number	Article designation	PU
Connector FSMA Clamp for 3.0 mm cables		
29136799	PCF Connector FSMA Clamp 3.0 /4PC	4 piece
29136798	PCF Connector FSMA Clamp 3.0 /50PC	50 piece
Connector FSMA Clamp for 2.2 mm cables		
29135799	PCF Connector SC-RJ Clamp 2.2	4 piece
29135798	PCF Connector FSMA Clamp 2.2 /50PC	50 piece
Connector ST(BFOC) Clamp for 3.0 mm cables		
29126799	PCF Connector ST (BFOC) Clamp 3.0 /4PC	4 piece
29126798	PCF Connector ST (BFOC) Clamp 3.0 /50PC	50 piece
Connector ST(BFOC) Clamp for 2.2 mm cables		
29125799	PCF Connector ST (BFOC) Clamp 2.2 /4PC	4 piece
29125798	PCF Connector ST (BFOC) Clamp 2.2 /50PC	50 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

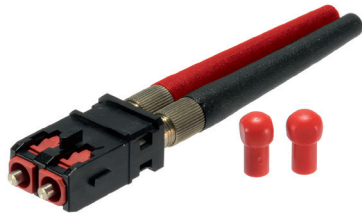
- POF Adapter F-SMA refer to page 203
- POF Adapter ST (BFOC) refer to page 203

Accessories

- PCF Cutting Tools refer to page 213



PCF Connector SC-RJ



Benefits

- Easy to assemble
- Designed for field assembly
- Reusable as it can be removed

Product features

- Connector set included two SC connectors, SC-RJ housing, two bending protection boots, dust caps
- Connectors for clamp and cleave assembly
- Available for different cable diameters (2.2mm and 3.0mm)
- Bend protection boot colour: black and red



Info

- Connectors for PROFINET Data Cabling

Technical data



Classification

ETIM 5.0 Class-ID: EC001122
ETIM 5.0 Class-Description:
Fibre optic connector

Article number	Article designation	PU
PCF Connector SC-RJ		
29166797	PCF Connector SC-RJ Clamp 3.0	1 piece
29165797	PCF Connector SC-RJ Clamp 2.2	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- PCF Cutting Tools refer to page 213

PCF Assembly Sets



Benefits

- Easy to handle
- Set includes all the necessary tools for connector assembly from clamp connector versions
- Suitable for on-site assembly

Product features

- Sets available for PCF clamp connector types FSMA, ST (BFOC), SC and HFBR4521
- Contents: stripper, cleave tool, kevlar scissor, cutter, microscope

Technical data



Classification

ETIM 5.0 Class-ID: EC002609
ETIM 5.0 Class-Description:
Accessories for optic fibre technique

Article number	Article designation	PU
Assembly Set For PCF FSMA Connectors		
29500701	Assembly Set PCF Connector FSMA	1 piece
Assembly Set For PCF ST(BFOC) Connectors		
29500702	Assembly Set PCF Connector ST(BFOC)	1 piece
Assembly Set For PCF HFBR4521 Connectors		
29500703	Assembly Set PCF Connector HFBR4521	1 piece
Assembly Set For PCF SC/SC-RJ Connectors		
29500704	Assembly Set PCF Connector SC	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- PCF Connector F-SMA and ST(BFOC) refer to page 211
- PCF Cutting Tools refer to page 213
- PCF Connector SC-RJ refer to page 212

PCF Cutting Tools

Benefits

- Optimally coordinated tools for the PCF cable and connector product range
- For the processing of PCF fibres

Product features

- PCF cleaving tool for connector types:
 - FSMA
 - ST(BFOC)
 - HFBR4521
 - SC

Technical data



Classification

ETIM 5.0 Class-ID: EC001126

ETIM 5.0 Class-Description: Cable stripping tool



Article number	Article designation	PU
PCF Buffered Fibre Stripper		
29500711	PCF Buffered Fibre Stripper 0.5mm (K200/230)	1 piece
PCF Fibre Cleaving Tool		
29500712	PCF Cleaving Tool FSMA Connector	1 piece
29500713	PCF Cleaving Tool ST(BFOC) Connector	1 piece
29500714	PCF Cleaving Tool HFBR4521 Connector	1 piece
29500715	PCF Cleaving Tool SC Connector	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- PCF Assembly Sets refer to page 212

PCF Measurement Equipment

Benefits

- Inspection Microscope with 100x magnification for connector inspection
- Easy to handle

Product features

- Interchangeable adapter for PCF connector types FSMA, ST(BFOC), HFBR
- Interchangeable adapters are not included in microscope, please order separately
- Other adapters available on request

Technical data



Classification

ETIM 5.0 Class-ID: EC001685

ETIM 5.0 Class-Description: Microscope for glass fibre

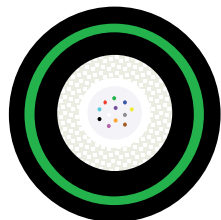


Article number	Article designation	PU
PCF Inspection Microscope (100x) without adapter		
29500770	PCF Inspection Microscope (100x)	1 piece
PCF Microscope Adapter For Connector Types		
29500771	PCF Microscope Adapter FSMA Simplex	1 piece
29500772	PCF Microscope Adapter ST(BFOC) Simplex	1 piece
29500773	PCF Microscope Adapter HFBR Simplex	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.



HITRONIC® FIRE



Info

- A/J-DQ(ZN)BH(SR)H or U-DQ(ZN)BH(SR)H
- Fire-resistant for at least 180 minutes in the event of fire

Benefits

- Ensures that the fibres can still transmit data during and after a fire (according to IEC 60331-25)
- Suitable for installation in underground tunnels where fire safety is critical
- Additional sheath protects the fibres for use in harsh environments
- Armouring provides excellent protection against high mechanical stress and rodents
- UV-resistant longitudinally and laterally watertight

Application range

- In industrial areas that use fire as a tool
- Highly combustible or fire-prone areas
- For indoor and outdoor use
- Methods of Deployment: empty plastic pipes, ducts and trays

Product features

- Fire behaviour:
 - Halogen-free (IEC 60754-1)
 - Flame-retardant (IEC 60332-3)
 - Low smoke density (IEC 61034-1/2)
 - Circuit integrity (IEC 60331-25); Optical fibre cables
- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Outer sheath flame-retardant and halogen-free

Product Make-up

- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- LSZH inner and outer sheaths
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Permissible tensile force

Fixed installation: 1500 N
Short-term: 2200 N



Temperature range

Fixed installation: -30°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM3					
27560304	HITRONIC® FIRE 4G 50/125 OM3	50/125 OM3	4	9.6	123
27560308	HITRONIC® FIRE 8G 50/125 OM3	50/125 OM3	8	9.6	123
27560312	HITRONIC® FIRE 12G 50/125 OM3	50/125 OM3	12	9.6	123
27560324	HITRONIC® FIRE 24G 50/125 OM3	50/125 OM3	24	12.6	188
Multimode G 50 OM2					
27560204	HITRONIC® FIRE 4G 50/125 OM2	50/125 OM2	4	9.6	123
27560208	HITRONIC® FIRE 8G 50/125 OM2	50/125 OM2	8	9.6	123
27560212	HITRONIC® FIRE 12G 50/125 OM2	50/125 OM2	12	9.6	123
27560224	HITRONIC® FIRE 24G 50/125 OM2	50/125 OM2	24	12.6	188
Multimode G 62.5 OM1					
27560104	HITRONIC® FIRE 4G 62.5/125 OM1	62.5/125 OM1	4	9.6	123
27560108	HITRONIC® FIRE 8G 62.5/125 OM1	62.5/125 OM1	8	9.6	123
27560112	HITRONIC® FIRE 12G 62.5/125 OM1	62.5/125 OM1	12	9.6	123
27560124	HITRONIC® FIRE 24G 62.5/125 OM1	62.5/125 OM1	24	12.6	188
Single-mode E 9 OS2					
27560904	HITRONIC® FIRE 4E 9/125 OS2	9/125 OS2	4	9.6	123
27560908	HITRONIC® FIRE 8E 9/125 OS2	9/125 OS2	8	9.6	123
27560912	HITRONIC® FIRE 12E 9/125 OS2	9/125 OS2	12	9.6	123
27560924	HITRONIC® FIRE 24E 9/125 OS2	9/125 OS2	24	12.6	188

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Available on request with Multimode OM4 fibres.

Accessories

- STAR STRIP stripping tool refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® TORSION

ÖLFLEX®

UNITRONIC®

ETHERLINE®

HITRONIC®

EPIC®

SKINTOP®

FLEXIMARK®

APPENDIX

Info

- A/J-V(ZN)H11Y
- Breakout cable designed to withstand high torsional stresses
- Torsion-resistant and very flexible



Benefits

- Designed to withstand high torsion in the windmill drip loop
- Suitable for field assembly
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For fixed and flexible installations, as well as for applications with torsional movements (e.g. machinery, wind turbines)
- Industrial environments
- In vertical installations
- As a link between moving parts
- For indoor and outdoor use

Product features

- Based on military norm MIL-C-85045
- Torsion-resistant and very flexible
- Outer sheath flame-retardant and halogen-free
- Mechanically robust

Product Make-up

- 2.5 mm tight-buffered sub-cable with LSZH sheath
- Aramid yarns as strain relief
- Central element
- PUR outer sheath
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Temperature range

Fixed installation: -40°C to $+70^{\circ}\text{C}$
Occasional flexing: -30°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM3					
26310302	HITRONIC® TORSION 2G 50/125 OM3	50/125 OM3	2	8.4	54
26310304	HITRONIC® TORSION 4G 50/125 OM3	50/125 OM3	4	8.4	54
26310308	HITRONIC® TORSION 8G 50/125 OM3	50/125 OM3	8	11.6	95
26310312	HITRONIC® TORSION 12G 50/125 OM3	50/125 OM3	12	14.7	122
Multimode G 50 OM2					
26310202	HITRONIC® TORSION 2G 50/125 OM2	50/125 OM2	2	8.4	54
26310204	HITRONIC® TORSION 4G 50/125 OM2	50/125 OM2	4	8.4	54
26310208	HITRONIC® TORSION 8G 50/125 OM2	50/125 OM2	8	11.6	95
26310212	HITRONIC® TORSION 12G 50/125 OM2	50/125 OM2	12	14.7	122
Multimode G 62.5 OM1					
26310102	HITRONIC® TORSION 2G 62.5/125 OM1	62.5/125 OM1	2	8.4	54
26310104	HITRONIC® TORSION 4G 62.5/125 OM1	62.5/125 OM1	4	8.4	54
26310108	HITRONIC® TORSION 8G 62.5/125 OM1	62.5/125 OM1	8	11.6	95
26310112	HITRONIC® TORSION 12G 62.5/125 OM1	62.5/125 OM1	12	14.7	122
Single-mode E 9 OS2					
26310902	HITRONIC® TORSION 2E 9/125 OS2	9/125 OS2	2	8.4	54
26310904	HITRONIC® TORSION 4E 9/125 OS2	9/125 OS2	4	8.4	54
26310908	HITRONIC® TORSION 8E 9/125 OS2	9/125 OS2	8	11.6	95
26310912	HITRONIC® TORSION 12E 9/125 OS2	9/125 OS2	12	14.7	122

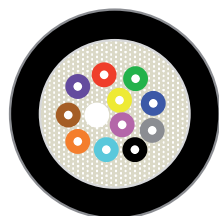
Photographs are not to scale and do not represent detailed images of the respective products.
Available on request with Multimode OM4 fibres.

Accessories

- STAR STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® HDM Cable



Info

- A/J-V(ZN)11Y
- Mini breakout/distribution cable designed for frequent reeling and unreeling use
- Mobile field cables

Benefits

- Suitable for field application
- Reelable for mobile use
- Very easy to install due to small dimensions, high flexibility, and small bending radius
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- Light & sound technology
- For indoor and outdoor use
- Industrial environments
- TV broadcasts
- Camera technology
- Building monitoring
- Field application

Product features

- Based on military norm MIL-C-85045
- Highly flexible, reelable and tensile strength
- Colour-coded tight buffered fibres for easy channel identification
- Outer sheath halogen-free
- Mechanically robust

Product Make-up

- Up to 12 tight-buffered fibres (900µm)
- Colour-coded
- Aramid yarns as strain relief
- PUR outer sheath
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Temperature range

Fixed installation: -40°C to $+70^{\circ}\text{C}$
Flexible use: -20°C to $+60^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM4					
26610404	HITRONIC® HDM600 4G 50/125 OM4	50/125 OM4	4	5.5	24
26610406	HITRONIC® HDM600 6G 50/125 OM4	50/125 OM4	6	5.6	29
26610408	HITRONIC® HDM700 8G 50/125 OM4	50/125 OM4	8	6.2	36
Multimode G 50 OM3					
26610304	HITRONIC® HDM600 4G 50/125 OM3	50/125 OM3	4	5.5	24
26610306	HITRONIC® HDM600 6G 50/125 OM3	50/125 OM3	6	5.6	29
26610308	HITRONIC® HDM700 8G 50/125 OM3	50/125 OM3	8	6.2	36
Multimode G 50 OM2					
26610204	HITRONIC® HDM600 4G 50/125 OM2	50/125 OM2	4	5.5	24
26610206	HITRONIC® HDM600 6G 50/125 OM2	50/125 OM2	6	5.6	29
26610208	HITRONIC® HDM700 8G 50/125 OM2	50/125 OM2	8	6.2	36
Multimode G 62.5 OM1					
26610104	HITRONIC® HDM600 4G 62.5/125 OM1	62.5/125 OM1	4	5.5	24
26610106	HITRONIC® HDM600 6G 62.5/125 OM1	62.5/125 OM1	6	5.6	29
26610108	HITRONIC® HDM700 8G 62.5/125 OM1	62.5/125 OM1	8	6.2	36
Single-mode E 9 OS2					
26610904	HITRONIC® HDM600 4E9/125 OS2	9/125 OS2	4	5.5	24
26610906	HITRONIC® HDM600 6E9/125 OS2	9/125 OS2	6	5.6	29
26610908	HITRONIC® HDM700 8E9/125 OS2	9/125 OS2	8	6.2	36
26610912	HITRONIC® HDM700 12E9/125 OS2	9/125 OS2	12	6.7	49

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.



HITRONIC® HRM-FD Cable

ÖLFLEX®

UNITRONIC®

ETHERLINE®

HITRONIC®

EPIC®

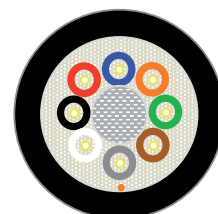
SKINTOP®

FLEXIMARK®

APPENDIX

Info

- A/J-V(ZN)H(ZN)11Y
- Flexible breakout cable designed for use in power chain applications



Benefits

- Designed for use in power chains
- Suitable for field assembly
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For highly flexible industrial applications
- As a link between moving parts
- In vertical installations
- Industrial environments
- For indoor and outdoor use

Product features

- Based on military norm MIL-C-85045
- For use in power chains and moving machinery parts in dry or damp rooms
- Outer sheath flame-retardant and halogen-free
- Mechanically robust

Product Make-up

- 2.0 mm tight-buffered sub-cable with LSZH sheath
- Aramid yarns as strain relief
- Central element
- PUR outer sheath
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Temperature range

Fixed installation: -40°C to $+70^{\circ}\text{C}$
Flexible use: -20°C to $+60^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM4					
26300402	HITRONIC® HRM-FD800 2G 50/125 OM4	50/125 OM4	2	7.8	50
26300404	HITRONIC® HRM-FD1000 4G 50/125 OM4	50/125 OM4	4	7.8	50
26300408	HITRONIC® HRM-FD1400 8G 50/125 OM4	50/125 OM4	8	10.4	93
26300412	HITRONIC® HRM-FD1800 12G 50/125 OM4	50/125 OM4	12	13	98
Multimode G 50 OM3					
26300302	HITRONIC® HRM-FD800 2G 50/125 OM3	50/125 OM3	2	7.8	50
26300304	HITRONIC® HRM-FD1000 4G 50/125 OM3	50/125 OM3	4	7.8	50
26300308	HITRONIC® HRM-FD1400 8G 50/125 OM3	50/125 OM3	8	10.4	93
26300312	HITRONIC® HRM-FD1800 12G 50/125 OM3	50/125 OM3	12	13	98
Multimode G 50 OM2					
26300202	HITRONIC® HRM-FD800 2G 50/125 OM2	50/125 OM2	2	7.8	50
26300204	HITRONIC® HRM-FD1000 4G 50/125 OM2	50/125 OM2	4	7.8	50
26300208	HITRONIC® HRM-FD1400 8G 50/125 OM2	50/125 OM2	8	10.4	93
26300212	HITRONIC® HRM-FD1800 12G 50/125 OM2	50/125 OM2	12	13	98
Multimode G 62.5 OM1					
26300102	HITRONIC® HRM-FD800 2G 62.5/125 OM1	62.5/125 OM1	2	7.8	50
26300104	HITRONIC® HRM-FD1000 4G 62.5/125 OM1	62.5/125 OM1	4	7.8	50
26300108	HITRONIC® HRM-FD1400 8G 62.5/125 OM1	62.5/125 OM1	8	10.4	93
26300112	HITRONIC® HRM-FD1800 12G 62.5/125 OM1	62.5/125 OM1	12	13	98
Single-mode E 9 OS2					
26300902	HITRONIC® HRM-FD800 2E 9/125 OS2	9/125 OS2	2	7.8	50
26300904	HITRONIC® HRM-FD1000 4E 9/125 OS2	9/125 OS2	4	7.8	50
26300908	HITRONIC® HRM-FD1400 8E 9/125 OS2	9/125 OS2	8	10.4	93
26300912	HITRONIC® HRM-FD1800 12E 9/125 OS2	9/125 OS2	12	13	98

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.



HITRONIC® HMDC Micro Cable



Info

- A-D(ZN)2Y
- Micro special cable designed for installation by air-blowing systems (Micro Ducts)

Benefits

- Suitable for blowing into micro-ducts
- Very compact dimensions (between 2mm to 2.5mm diameter)
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- FTTH applications
- House connection
- Telecommunications network
- For installations by blowing
- Methods of deployment: for blowing or pulling into micro ducts

Product features

- Colour-coded fibres
- High reduced dimensions (cable diameter ≤ 2.5mm)
- Halogen-free, low-friction outer sheath
- UV-resistant

Product Make-up

- Central mini subunit with up to 12 fibres
- Standard with single-mode fibre type G.657.A1 (low macrobending sensitive fibre)
- Aramid yarns as strain relief
- PE outer sheath
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable

Fibre type

Single-mode
ITU-T G.657.A1

Standard designation

A-D(ZN)2Y



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

≥ 25 x outer diameter



Permissible tensile force

Installation: 200N



Temperature range

Fixed installation: -40°C to +80°C
During installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
HITRONIC® HMDC Micro Cable					
27009802	HITRONIC® HMDC 2E9/125 G.657.A1	9/125 G.657.A1	2	2	5
27009804	HITRONIC® HMDC 4E9/125 G.657.A1	9/125 G.657.A1	4	2	5
27009806	HITRONIC® HMDC 6E9/125 G.657.A1	9/125 G.657.A1	6	2.2	5
27009808	HITRONIC® HMDC 8E9/125 G.657.A1	9/125 G.657.A1	8	2.3	5
27009812	HITRONIC® HMDC 12E9/125 G.657.A1	9/125 G.657.A1	12	2.5	5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- HITRONIC® HQN Outdoor Cable refer to page 220
- HITRONIC® HVN-Mini Cable refer to page 219

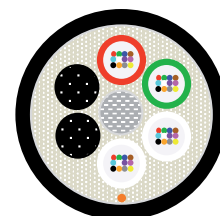


HITRONIC® HVN-Mini Cable



Info

- A-DQ(ZN)2Y
- Mini outdoor cable designed for installation by air-blowing systems (Ducts)



Benefits

- Suitable for blowing into ducts
- Compact dimensions
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- Backbone-Area, FTTH applications
- Telecommunications network
- WAN applications
- For installations by blowing
- Methods of deployment: for blowing or pulling into ducts

Product features

- Stranded loose tubes with up to 144 fibres (12 loose tubes with each 12 fibres)
- Colour-coded fibres and loose tubes
- Reduced dimensions
- Halogen-free, low-friction outer sheath
- UV-resistant

Product Make-up

- Up to 12 stranded gel-filled loose tubes
- Central GRP strength element
- Reinforced glass yarn strain relief
- PE outer sheath
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable

Standard designation

A-DQ(ZN)2Y



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Temperature range

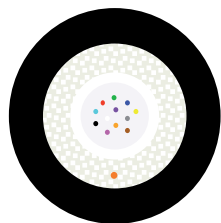
Fixed installation: -40°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Single-mode E 9 OS2					
26609912	HITRONIC® HVN-Mini500 1x12E 9/125 OS2	9/125 OS2	12	5.8	30
26609924	HITRONIC® HVN-Mini500 2x12E 9/125 OS2	9/125 OS2	24	5.8	30
26609948	HITRONIC® HVN-Mini500 4x12E 9/125 OS2	9/125 OS2	48	5.8	33
26609972	HITRONIC® HVN-Mini500 6x12E 9/125 OS2	9/125 OS2	72	5.8	33
26609996	HITRONIC® HVN-Mini1200 8x12E 9/125 OS2	9/125 OS2	96	7.2	52
26609944	HITRONIC® HVN-Mini1000 12x12E 9/125	9/125 OS2	144	8	80

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.



HITRONIC® HQN Outdoor Cable



Info

- A-DQ(ZN)B2Y
- Outdoor cable with central loose tube and non-metallic strain relief

Benefits

- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For outdoor use
- Campus backbone
- WAN applications
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Rodent-protection
- Robust, halogen-free outer sheath

Product Make-up

- Glass fibres with primary coating
- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- PE outer sheath
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Permissible tensile force

Fixed installation: 1500 N
Short-term: 3000 N



Temperature range

Fixed installation: -40°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM4					
27600404	HITRONIC® HQN 1500 4G 50/125 OM4	50/125 OM4	4	7.3	40
27600408	HITRONIC® HQN 1500 8G 50/125 OM4	50/125 OM4	8	7.3	40
27600412	HITRONIC® HQN 1500 12G 50/125 OM4	50/125 OM4	12	7.3	40
27600424	HITRONIC® HQN 1500 24G 50/125 OM4	50/125 OM4	24	8.3	65
Multimode G 50 OM3					
27600304	HITRONIC® HQN 1500 4G 50/125 OM3	50/125 OM3	4	7.3	40
27600308	HITRONIC® HQN 1500 8G 50/125 OM3	50/125 OM3	8	7.3	40
27600312	HITRONIC® HQN 1500 12G 50/125 OM3	50/125 OM3	12	7.3	40
27600324	HITRONIC® HQN 1500 24G 50/125 OM3	50/125 OM3	24	8.3	65
Multimode G 50 OM2					
27600204	HITRONIC® HQN 1500 4G 50/125 OM2	50/125 OM2	4	7.3	40
27600208	HITRONIC® HQN 1500 8G 50/125 OM2	50/125 OM2	8	7.3	40
27600212	HITRONIC® HQN 1500 12G 50/125 OM2	50/125 OM2	12	7.3	40
27600224	HITRONIC® HQN 1500 24G 50/125 OM2	50/125 OM2	24	8.3	65
Multimode G 62.5 OM1					
27600104	HITRONIC® HQN 1500 4G 62.5/125 OM1	62.5/125 OM1	4	7.3	40
27600108	HITRONIC® HQN 1500 8G 62.5/125 OM1	62.5/125 OM1	8	7.3	40
27600112	HITRONIC® HQN 1500 12G 62.5/125 OM1	62.5/125 OM1	12	7.3	40
27600124	HITRONIC® HQN 1500 24G 62.5/125 OM1	62.5/125 OM1	24	8.3	65
Single-mode E 9 OS2					
27600904	HITRONIC® HQN 1500 4E 9/125 OS2	9/125 OS2	4	7.3	40
27600908	HITRONIC® HQN 1500 8E 9/125 OS2	9/125 OS2	8	7.3	40
27600912	HITRONIC® HQN 1500 12E 9/125 OS2	9/125 OS2	12	7.3	40
27600924	HITRONIC® HQN 1500 24E 9/125 OS2	9/125 OS2	24	8.3	65

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- HITRONIC® HUN Universal Cable refer to page 227
- HITRONIC® HVN Outdoor Cable refer to page 221
- HITRONIC® HQW Armoured Outdoor Cable refer to page 222

Accessories

- GOF SIMPLEX Pigtail refer to page 232
- DATA STRIP stripping tool refer to main catalogue 2016/17

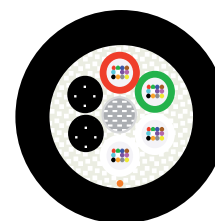


HITRONIC® HVN Outdoor Cable



Info

- A-DQ(ZN)B2Y
- Outdoor cable with stranded loose tubes and non-metallic strain relief



Benefits

- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For outdoor use
- Campus backbone
- WAN applications
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

Product features

- Stranded loose tubes with up to 144 fibres (12 loose tubes with each 12 fibres)
- Colour-coded fibres and loose tubes
- Longitudinal watertight
- Rodent-protection
- Robust, halogen-free outer sheath

Product Make-up

- Up to 12 stranded gel-filled loose tubes
- Central GRP strength element
- Water-blocking reinforced glass yarn strain relief
- PE outer sheath
- Colour: black (RAL 9005)

Technical data

- Classification**
ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description: Fibre optic cable
- Optical fibre type**
Core material: glass
Cladding material: glass
- Permissible bending radius**
Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter
- Temperature range**
Fixed installation: -40°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM3					
26600324	HITRONIC® HVN5000 2x12G 50/125 OM3	50/125 OM3	24	11	64
26600348	HITRONIC® HVN5000 4x12G 50/125 OM3	50/125 OM3	48	11	84
Multimode G 50 OM2					
26600224	HITRONIC® HVN5000 2x12G 50/125 OM2	50/125 OM2	24	11	64
26600248	HITRONIC® HVN5000 4x12G 50/125 OM2	50/125 OM2	48	11	84
Single-mode E 9 OS2					
26600924	HITRONIC® HVN5000 2x12E 9/125 OS2	9/125 OS2	24	11	64
26600948	HITRONIC® HVN5000 4x12E 9/125 OS2	9/125 OS2	48	11	84
HVN Telecom Single-mode E 9 OS2					
26601924	HITRONIC® HVN1500 2x12E 9/125 OS2	9/125 OS2	24	10.5	89
26601948	HITRONIC® HVN1500 4x12E 9/125 OS2	9/125 OS2	48	10.5	91
26601972	HITRONIC® HVN2000 6x12E 9/125 OS2	9/125 OS2	72	10.8	97
26601996	HITRONIC® HVN2000 8x12E 9/125 OS2	9/125 OS2	96	11.9	121
26601944	HITRONIC® HVN2000 12x12E 9/125 OS2	9/125 OS2	144	14.3	183

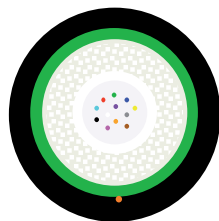
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
The cables can also be supplied as pre-terminated fibre optic trunks.
Photographs are not to scale and do not represent detailed images of the respective products.
Other models are available upon request.

Similar products

- HITRONIC® HVN-Mini Cable refer to page 219
- HITRONIC® HVV Armoured Outdoor Cable refer to page 223



HITRONIC® HQW Armoured Outdoor Cable



Info

- A-DQ(ZN)(SR)2Y
- Double-sheathed outdoor cable with corrugated steel tape armour, and non-metallic strength elements

Benefits

- Armouring provides excellent protection against high mechanical stress and rodents
- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight

Application range

- For outdoor use
- Campus backbone
- WAN applications
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Excellent rodent protection
- Robust, halogen-free outer sheath

Product Make-up

- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- PE outer sheath
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Permissible tensile force

Fixed installation: 3000 N
Short-term: 5000 N



Temperature range

Fixed installation: -40°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM3					
27900304	HITRONIC® HQW3000 4G 50/125 OM3	50/125 OM3	4	9.6	88
27900308	HITRONIC® HQW3000 8G 50/125 OM3	50/125 OM3	8	9.6	88
27900312	HITRONIC® HQW3000 12G 50/125 OM3	50/125 OM3	12	9.6	88
27900324	HITRONIC® HQW3000 24G 50/125 OM3	50/125 OM3	24	9.6	88
Multimode G 50 OM2					
27900204	HITRONIC® HQW3000 4G 50/125 OM2	50/125 OM2	4	9.6	88
27900208	HITRONIC® HQW3000 8G 50/125 OM2	50/125 OM2	8	9.6	88
27900212	HITRONIC® HQW3000 12G 50/125 OM2	50/125 OM2	12	9.6	88
27900224	HITRONIC® HQW3000 24G 50/125 OM2	50/125 OM2	24	9.6	88
Multimode G 62.5 OM1					
27900104	HITRONIC® HQW3000 4G 62.5/125 OM1	62.5/125 OM1	4	9.6	88
27900108	HITRONIC® HQW3000 8G 62.5/125 OM1	62.5/125 OM1	8	9.6	88
27900112	HITRONIC® HQW3000 12G 62.5/125 OM1	62.5/125 OM1	12	9.6	88
27900124	HITRONIC® HQW3000 24G 62.5/125 OM1	62.5/125 OM1	24	9.6	88
Singlemode E 9 OS2					
27900904	HITRONIC® HQW3000 4E 9/125 OS2	9/125 OS2	4	9.6	88
27900908	HITRONIC® HQW3000 8E 9/125 OS2	9/125 OS2	8	9.6	88
27900912	HITRONIC® HQW3000 12E 9/125 OS2	9/125 OS2	12	9.6	88
27900924	HITRONIC® HQW3000 24E 9/125 OS2	9/125 OS2	24	9.6	88

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- STAR STRIP stripping tool refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17

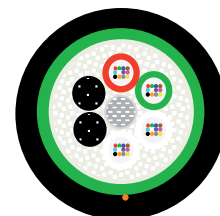


HITRONIC® HVW Armoured Outdoor Cable



Info

- A-DQ(ZN)(SR)2Y
- Outdoor cable with corrugated steel tape armour, stranded loose tubes and non-metallic strain relief



Benefits

- Armouring provides excellent protection against high mechanical stress and rodents
- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight

Application range

- Methods of Deployment: empty plastic pipes, ducts and trays
- For outdoor use
- Campus backbone
- WAN applications
- Industrial environments

Product features

- Stranded loose tubes with up to 144 fibres (12 loose tubes with each 12 fibres)
- Colour-coded fibres and loose tubes
- Longitudinal watertight
- Excellent rodent protection
- Robust, halogen-free outer sheath

Product Make-up

- Up to 12 stranded gel-filled loose tubes
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- PE outer sheath
- Colour: black (RAL 9005)

Technical data

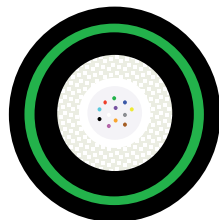
	Classification ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	Optical fibre type Core material: glass Cladding material: glass
	Permissible bending radius Static: $\geq 15 \times$ outer diameter Dynamic: $\geq 20 \times$ outer diameter
	Permissible tensile force Fixed installation: 3000 N Short-term: 5000 N
	Temperature range Fixed installation: -40°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Single-mode E 9 OS2					
26900924	HITRONIC® HVW3000 2x12E 9/125 OS2	9/125 OS2	24	10	98
26900948	HITRONIC® HVW3000 4x12E 9/125 OS2	9/125 OS2	48	12.5	148
26900972	HITRONIC® HVW3000 6x12E 9/125 OS2	9/125 OS2	72	16	215
26900996	HITRONIC® HVW3000 8x12E 9/125 OS2	9/125 OS2	96	16	222
26900944	HITRONIC® HVW3000 12x12E 9/125 OS2	9/125 OS2	144	18.5	261

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
The cables can also be supplied as pre-terminated fibre optic trunks.
Photographs are not to scale and do not represent detailed images of the respective products.



HITRONIC® HQW-Plus Armoured Outdoor Cable



Info

- A-DQ(ZN)B2Y(SR)2Y
- Double-sheathed outdoor cable with corrugated steel tape armour, and non-metallic strength elements

Benefits

- Additional sheath protects the fibres for use in harsh environments
- Armouring provides excellent protection against high mechanical stress and rodents
- Suitable for direct burial
- UV-resistant longitudinally and laterally watertight

Application range

- For outdoor use
- Harsh industrial environment
- Campus backbone
- WAN applications
- Methods of Deployment: empty plastic pipes, ducts and trays

Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Excellent rodent protection
- Robust, halogen-free outer sheath

Product Make-up

- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- PE inner and outer sheaths
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Permissible tensile force

Fixed installation: 3000 N
Short-term: 5000 N



Temperature range

Fixed installation: -40°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM3					
27920304	HITRONIC® HQW-Plus3000 4G 50/125 OM3	50/125 OM3	4	9.6	95
27920308	HITRONIC® HQW-Plus3000 8G 50/125 OM3	50/125 OM3	8	9.6	95
27920312	HITRONIC® HQW-Plus3000 12G 50/125 OM3	50/125 OM3	12	9.6	95
27920324	HITRONIC® HQW-Plus3000 24G 50/125 OM3	50/125 OM3	24	12.6	135
Multimode G 50 OM2					
27920204	HITRONIC® HQW-Plus3000 4G 50/125 OM2	50/125 OM2	4	9.6	95
27920208	HITRONIC® HQW-Plus3000 8G 50/125 OM2	50/125 OM2	8	9.6	95
27920212	HITRONIC® HQW-Plus3000 12G 50/125 OM2	50/125 OM2	12	9.6	95
27920224	HITRONIC® HQW-Plus3000 24G 50/125 OM2	50/125 OM2	24	12.6	135
Multimode G 62.5 OM1					
27920104	HITRONIC® HQW-Plus3000 4G 62.5/125 OM1	62.5/125 OM1	4	9.6	95
27920108	HITRONIC® HQW-Plus3000 8G 62.5/125 OM1	62.5/125 OM1	8	9.6	95
27920112	HITRONIC® HQW-Plus3000 12G 62.5/125 OM1	62.5/125 OM1	12	9.6	95
27920124	HITRONIC® HQW-Plus3000 24G 62.5/125 OM1	62.5/125 OM1	24	12.6	135
Single-mode E 9 OS2					
27920904	HITRONIC® HQW-Plus3000 4E 9/125 OS2	9/125 OS2	4	9.6	95
27920908	HITRONIC® HQW-Plus3000 8E 9/125 OS2	9/125 OS2	8	9.6	95
27920912	HITRONIC® HQW-Plus3000 12E 9/125 OS2	9/125 OS2	12	9.6	95
27920924	HITRONIC® HQW-Plus3000 24E 9/125 OS2	9/125 OS2	24	12.6	135

Photographs are not to scale and do not represent detailed images of the respective products.



HITRONIC® HQA Aerial Cable

ÖLFLEX®

UNITRONIC®

ETHERLINE®

HITRONIC®

EPIC®

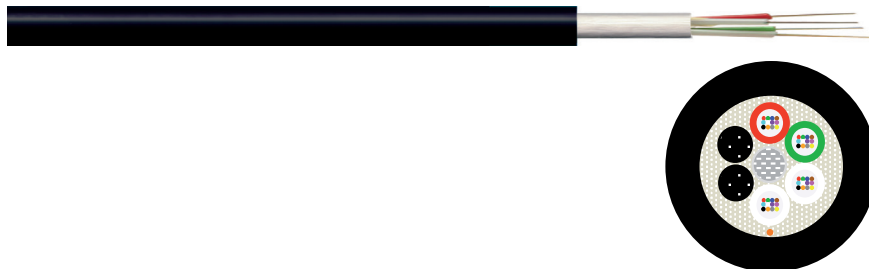
SKINTOP®

FLEXIMARK®

APPENDIX

Info

- A-DQ(ZN)2Y - ADSS
- Outdoor self-supporting aerial cable with stranded loose tubes and non-metallic strain relief



Benefits

- Suitable for mild weather conditions
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For outdoor use
- Hanging on poles
- Laying on poles

Product features

- Stranded loose tubes with up to 96 fibres
- Colour-coded fibres and loose tubes
- Longitudinal watertight
- Robust, halogen-free outer sheath
- Span width up to 90m

Product Make-up

- Up to 8 stranded gel-filled loose tubes
- Central GRP strength element
- Aramid yarns as strain relief
- PE outer sheath
- Colour: black (RAL 9005)

Technical data

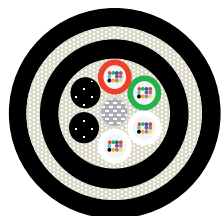
	Classification ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	Optical fibre type Core material: glass Cladding material: glass
	Permissible bending radius Static: $\geq 15 \times$ outer diameter Dynamic: $\geq 20 \times$ outer diameter
	Permissible tensile force MAT: 2000 N EDS: 800 N
	Temperature range Fixed installation: -40°C to $+70^{\circ}\text{C}$ Occasional flexing: -30°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Single-mode E 9 OS2					
26640912	HITRONIC® HQA800 6x2E 9/125 OS2	9/125 OS2	12	9.7	73
26640924	HITRONIC® HQA800 6x4E 9/125 OS2	9/125 OS2	24	9.7	73
26640948	HITRONIC® HQA800 6x8E 9/125 OS2	9/125 OS2	48	10.9	92
26640972	HITRONIC® HQA800 6x12E 9/125 OS2	9/125 OS2	72	10.9	94
26640996	HITRONIC® HQA800 8x12E 9/125 OS2	9/125 OS2	96	12.4	121

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.



HITRONIC® HQA-Plus Aerial Cable



Info

- A-DQ2Y(ZN)2Y ADSS
- Double-sheathed, self-supporting aerial cable with stranded loose tubes and non-metallic strain relief

Benefits

- Designed to withstand harsh weather conditions
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For long span widths
- Hanging on poles
- For outdoor use
- Laying on poles

Product features

- Stranded loose tubes with up to 96 fibres
- Colour-coded fibres and loose tubes
- Longitudinal watertight
- Robust, halogen-free outer sheath
- Span width up to 250m

Product Make-up

- Up to 8 stranded gel-filled loose tubes
- Central GRP strength element
- Aramid yarns as strain relief
- PE inner and outer sheaths
- Colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Permissible tensile force

MAT: 8000 N
EDS: 3200 N



Temperature range

Fixed installation: -40°C to $+70^{\circ}\text{C}$
Occasional flexing: -30°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Single-mode E 9 OS2					
26644912	HITRONIC® HQA-Plus3200 6x2E 9/125 OS2	9/125 OS2	12	12.8	132
26644924	HITRONIC® HQA-Plus3200 6x4E 9/125 OS2	9/125 OS2	24	12.8	132
26644948	HITRONIC® HQA-Plus3200 6x8E 9/125 OS2	9/125 OS2	48	13.7	151
26644972	HITRONIC® HQA-Plus3200 6x12E 9/125 OS2	9/125 OS2	72	13.7	153
26644996	HITRONIC® HQA-Plus3200 8x12E 9/125 OS2	9/125 OS2	96	15.3	188

Photographs are not to scale and do not represent detailed images of the respective products.

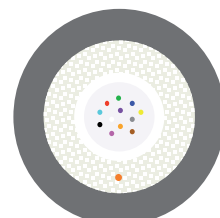


HITRONIC® HUN Universal Cable



Info

- A/J-DQ(ZN)BH or U-DQ(ZN)BH
- Universal cable with central or stranded loose tube and non-metallic strain relief



Benefits

- Flame retardance makes it suitable for indoor and outdoor installations
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For indoor and outdoor use
- Campus backbone
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Outer sheath flame-retardant and halogen-free
- Rodent-protection

Product Make-up

- Glass fibres with primary coating
- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- LSZH outer sheath
- Colour: dark grey

Technical data

	Classification ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	Optical fibre type Core material: glass Cladding material: glass
	Permissible bending radius Static: $\geq 15 \times$ outer diameter Dynamic: $\geq 20 \times$ outer diameter
	Permissible tensile force Fixed installation: 1500 N Short-term: 2000 N
	Temperature range Fixed installation: -30°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM3					
27400304	HITRONIC® HUN1500 4G 50/125 OM3	50/125 OM3	4	7.3	53
27400308	HITRONIC® HUN1500 8G 50/125 OM3	50/125 OM3	8	7.3	53
27400312	HITRONIC® HUN1500 12G 50/125 OM3	50/125 OM3	12	7.3	53
27400324	HITRONIC® HUN1500 24G 50/125 OM3	50/125 OM3	24	8.3	60
26400324	HITRONIC® HUN1500 2x12G 50/125 OM3	50/125 OM3	24	10.1	84
26400348	HITRONIC® HUN1500 4x12G 50/125 OM3	50/125 OM3	48	11	109
Multimode G 50 OM2					
27400204	HITRONIC® HUN1500 4G 50/125 OM2	50/125 OM2	4	7.3	53
27400208	HITRONIC® HUN1500 8G 50/125 OM2	50/125 OM2	8	7.3	53
27400212	HITRONIC® HUN1500 12G 50/125 OM2	50/125 OM2	12	7.3	53
27400224	HITRONIC® HUN1500 24G 50/125 OM2	50/125 OM2	24	8.3	60
Multimode G 62.5 OM1					
27400104	HITRONIC® HUN1500 4G 62.5/125 OM1	62.5/125 OM1	4	7.3	53
27400108	HITRONIC® HUN1500 8G 62.5/125 OM1	62.5/125 OM1	8	7.3	53
27400112	HITRONIC® HUN1500 12G 62.5/125 OM1	62.5/125 OM1	12	7.3	53
27400124	HITRONIC® HUN1500 24G 62.5/125 OM1	62.5/125 OM1	24	8.3	60
Single-mode E 9 OS2					
27400904	HITRONIC® HUN1500 4E 9/125 OS2	9/125 OS2	4	7.3	53
27400908	HITRONIC® HUN1500 8E 9/125 OS2	9/125 OS2	8	7.3	53
27400912	HITRONIC® HUN1500 12E 9/125 OS2	9/125 OS2	12	7.3	53
27400924	HITRONIC® HUN1500 24E 9/125 OS2	9/125 OS2	24	8.3	60
26400924	HITRONIC® HUN1500 2x12E 9/125 OS2	9/125 OS2	24	10.1	84
26400948	HITRONIC® HUN1500 4x12E 9/125 OS2	9/125 OS2	48	11	109
26400972	HITRONIC® HUN2000 6x12E 9/125 OS2	9/125 OS2	72	12.6	148
26400996	HITRONIC® HUN2000 8x12E 9/125 OS2	9/125 OS2	96	14.3	190
26400944	HITRONIC® HUN2000 12x12E 9/125 OS2	9/125 OS2	144	17	221

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Available on request with Multimode OM4 fibres.

Accessories

- GOF SIMPLEX Pigtail refer to page 232
- DATA STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® HUW Armoured Universal Cable



Info

- A/J-DQ(ZN)(SR)H or U-DQ(ZN)(SR)H
- Universal cable with corrugated steel tape armour, central loose tube and non-metallic strain relief

Benefits

- Armouring provides excellent protection against high mechanical stress and rodents
- Flame retardance makes it suitable for indoor and outdoor installations
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- Water-resistant

Application range

- For indoor and outdoor use
- Campus backbone
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

Product features

- Outer sheath flame-retardant and halogen-free
- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Excellent rodent protection

Product Make-up

- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- LSZH outer sheath
- Colour: green (based on RAL 6018)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Permissible tensile force

Fixed installation: 1500 N
Short-term: 2000 N



Temperature range

Fixed installation: -30°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM4					
27500404	HITRONIC® HUW1500 4G 50/125 OM4	50/125 OM4	4	9.6	88
27500408	HITRONIC® HUW1500 8G 50/125 OM4	50/125 OM4	8	9.6	88
27500412	HITRONIC® HUW1500 12G 50/125 OM4	50/125 OM4	12	9.6	88
27500424	HITRONIC® HUW1500 24G 50/125 OM4	50/125 OM4	24	9.6	88
Multimode G 50 OM3					
27500304	HITRONIC® HUW1500 4G 50/125 OM3	50/125 OM3	4	9.6	88
27500308	HITRONIC® HUW1500 8G 50/125 OM3	50/125 OM3	8	9.6	88
27500312	HITRONIC® HUW1500 12G 50/125 OM3	50/125 OM3	12	9.6	88
27500324	HITRONIC® HUW1500 24G 50/125 OM3	50/125 OM3	24	9.6	88
Multimode G 50 OM2					
27500204	HITRONIC® HUW1500 4G 50/125 OM2	50/125 OM2	4	9.6	88
27500208	HITRONIC® HUW1500 8G 50/125 OM2	50/125 OM2	8	9.6	88
27500212	HITRONIC® HUW1500 12G 50/125 OM2	50/125 OM2	12	9.6	88
27500224	HITRONIC® HUW1500 24G 50/125 OM2	50/125 OM2	24	9.6	88
Multimode G 62.5 OM1					
27500104	HITRONIC® HUW1500 4G 62.5/125 OM1	62.5/125 OM1	4	9.6	88
27500108	HITRONIC® HUW1500 8G 62.5/125 OM1	62.5/125 OM1	8	9.6	88
27500112	HITRONIC® HUW1500 12G 62.5/125 OM1	62.5/125 OM1	12	9.6	88
27500124	HITRONIC® HUW1500 24G 62.5/125 OM1	62.5/125 OM1	24	9.6	88
Single-mode E 9 OS2					
27500904	HITRONIC® HUW1500 4E 9/125 OS2	9/125 OS2	4	9.6	88
27500908	HITRONIC® HUW1500 8E 9/125 OS2	9/125 OS2	8	9.6	88
27500912	HITRONIC® HUW1500 12E 9/125 OS2	9/125 OS2	12	9.6	88
27500924	HITRONIC® HUW1500 24E 9/125 OS2	9/125 OS2	24	9.6	88

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- STAR STRIP stripping tool refer to main catalogue 2016/17
- SMART STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® HRH Breakout Cable

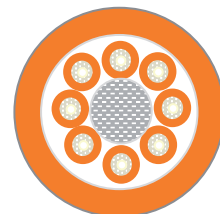


Info

- J-V(ZN)HH
- Breakout cable for direct connector assembly

LAPP KABEL STUTTGART HITRONIC® HRH1700 12G 50/125 OM2

LAPP KABEL STUTTGART HITRONIC® HRH400 2G 50/125 OM3



Benefits

- Suitable for field assembly
- Universal cable for cabling of buildings
- Very easy to install due to compact design, high flexibility, and small bending radii
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For indoor use
- Tertiary cabling
- Structured cabling - backbone
- Methods of Deployment: laying in trunking, ducts, trays, empty plastic pipes, building riser, raised floors and plenums

Product features

- Installation cable with up to 12 Simplex cables
- Outer sheath flame-retardant and halogen-free
- Mechanically robust

Product Make-up

- 2.1 mm tight-buffered sub-cable with LSZH sheath (identified by numbers)
- Central GRP strength element
- Aramid yarns as strain relief
- LSZH inner and outer sheaths
- Colour: aqua (RAL 6027) for OM3, orange (RAL 2003) for OM2 and OM1

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Temperature range

Fixed installation: -20°C to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM3					
26000302	HITRONIC® HRH400 2G 50/125 OM3	50/125 OM3	2	7	35
26000304	HITRONIC® HRH600 4G 50/125 OM3	50/125 OM3	4	7	44
26000308	HITRONIC® HRH1200 8G 50/125 OM3	50/125 OM3	8	9.7	77
26000312	HITRONIC® HRH1700 12G 50/125 OM3	50/125 OM3	12	10.3	100
Multimode G 50 OM2					
26000202	HITRONIC® HRH400 2G 50/125 OM2	50/125 OM2	2	7	35
26000204	HITRONIC® HRH600 4G 50/125 OM2	50/125 OM2	4	7	44
26000208	HITRONIC® HRH1200 8G 50/125 OM2	50/125 OM2	8	9.7	77
26000212	HITRONIC® HRH1700 12G 50/125 OM2	50/125 OM2	12	10.3	100
Multimode G 62.5 OM1					
26000102	HITRONIC® HRH400 2G 62.5/125 OM1	62.5/125 OM1	2	7	35
26000104	HITRONIC® HRH600 4G 62.5/125 OM1	62.5/125 OM1	4	7	44
26000108	HITRONIC® HRH1200 8G 62.5/125 OM1	62.5/125 OM1	8	9.7	77
26000112	HITRONIC® HRH1700 12G 62.5/125 OM1	62.5/125 OM1	12	10.3	100

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Available on request with Multimode OM4 fibres.

Accessories

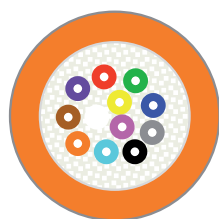
- DATA STRIP stripping tool refer to main catalogue 2016/17



HITRONIC® HDH Mini-Breakout Cable

LAPP KABEL STUTTGART HITRONIC® HDH 12G 50/125 OM2

LAPP KABEL STUTTGART HITRONIC® HDH 4G 50/125 OM3



Info

- J-V(ZN)H
- Mini breakout/distribution cable for direct connector assembly

Benefits

- Very easy to install due to small dimensions, high flexibility, and small bending radius
- Suitable for field assembly
- Universal cable for cabling of buildings
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For indoor use
- Tertiary cabling
- Structured cabling - backbone
- Methods of Deployment: laying in trunking, ducts, trays, empty plastic pipes, building riser, raised floors and plenums

Product features

- Up to 12 tight-buffered fibres (900µm)
- Colour-coded fibres
- Outer sheath flame-retardant and halogen-free
- Mechanically robust

Product Make-up

- Tight-buffered fibres
- Water-blocking reinforced glass yarn strain relief
- LSZH outer sheath
- Colour: aqua (RAL 6027) for OM3, orange (RAL 2003) for OM2 and OM1
- Available on request: single-mode OS2 (yellow) and multimode OM4 (violet)

Technical data



Classification

ETIM 5.0 Class-ID: EC000034
ETIM 5.0 Class-Description:
Fibre optic cable



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: $\geq 15 \times$ outer diameter
Dynamic: $\geq 20 \times$ outer diameter



Temperature range

Fixed installation: -20°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
Multimode G 50 OM3					
26010302	HITRONIC® HDH 2G 50/125 OM3	50/125 OM3	2	6	34
26010304	HITRONIC® HDH 4G 50/125 OM3	50/125 OM3	4	6.3	37
26010308	HITRONIC® HDH 8G 50/125 OM3	50/125 OM3	8	7.5	57
26010312	HITRONIC® HDH 12G 50/125 OM3	50/125 OM3	12	8.3	69
Multimode G 50 OM2					
26010202	HITRONIC® HDH 2G 50/125 OM2	50/125 OM2	2	6	34
26010204	HITRONIC® HDH 4G 50/125 OM2	50/125 OM2	4	6.3	37
26010208	HITRONIC® HDH 8G 50/125 OM2	50/125 OM2	8	7.5	57
26010212	HITRONIC® HDH 12G 50/125 OM2	50/125 OM2	12	8.3	69
Multimode G 62.5 OM1					
26010102	HITRONIC® HDH 2G 62.5/125 OM1	62.5/125 OM1	2	6	34
26010104	HITRONIC® HDH 4G 62.5/125 OM1	62.5/125 OM1	4	6.3	37
26010108	HITRONIC® HDH 8G 62.5/125 OM1	62.5/125 OM1	8	7.5	57
26010112	HITRONIC® HDH 12G 62.5/125 OM1	62.5/125 OM1	12	8.3	69

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Available on request with Multimode OM4 fibres.

Accessories

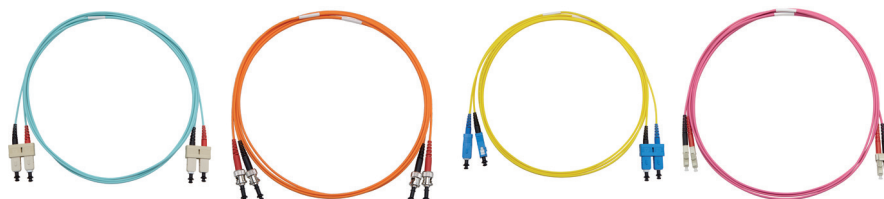
- DATA STRIP stripping tool refer to main catalogue 2016/17

GOF DUPLEX Patchcord



Info

- J-VH 2x1G/E
- Pre-terminated tight buffered duplex cable with durable ceramic ferrules
- Other types are available on www.lappgroup.com/assemblyfinder or upon request



Benefits

- “Plug & Play” connection between any optical devices
- Non-permanent connections allow for easy change of equipment
- Direct connection between two active optical components
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For indoor use
- LAN connections
- Data Centers
- Distributor cabinet

Product features

- Outer sheath flame-retardant and halogen-free
- High flexibility
- Cable termination with durable ceramic ferrules

Product Make-up

- Tight-buffered duplex cable with LSZH outer sheath
- Connector: LC, SC or ST
- Cable colour: violet for multimode OM4, aqua for multimode OM3, orange for multimode OM2 and OM1, yellow for single-mode OS2
- Standard length: 2 m
- On request: 1 m, 3 m, 5 m and 10 m

Technical data



Classification

ETIM 5.0 Class-ID: EC001263
ETIM 5.0 Class-Description: Fibre optic patch cord



Optical fibre type

Core material: glass
Cladding material: glass



Permissible bending radius

Static: ≥ 30 mm
Dynamic: ≥ 40 mm



Permissible tensile force

Fixed installation: 100 N



Temperature range

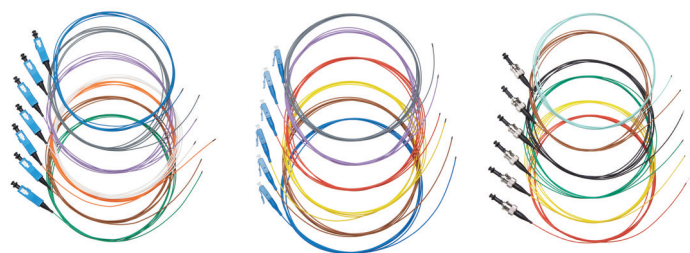
Fixed installation: -20°C to +60°C
Occasional flexing: -5°C to +50°C

Article number	Article designation	PU
Multimode G 50 OM4		
29011402	GOF Duplex Patchcord SC/SC G50 OM4, 2m	1 piece
29021402	GOF Duplex Patchcord ST/SC G50 OM4, 2m	1 piece
29022402	GOF Duplex Patchcord ST/ST G50 OM4, 2m	1 piece
29031402	GOF Duplex Patchcord LC/SC G50 OM4, 2m	1 piece
29032402	GOF Duplex Patchcord LC/ST G50 OM4, 2m	1 piece
29033402	GOF Duplex Patchcord LC/LC G50 OM4, 2m	1 piece
29044402	GOF Duplex Patchcord FC/FC G50 OM4, 2m	1 piece
Multimode G 50 OM3		
29011302	GOF Duplex Patchcord SC/SC G50 OM3, 2m	1 piece
29021302	GOF Duplex Patchcord ST/SC G50 OM3, 2m	1 piece
29022302	GOF Duplex Patchcord ST/ST G50 OM3, 2m	1 piece
29031302	GOF Duplex Patchcord LC/SC G50 OM3, 2m	1 piece
29032302	GOF Duplex Patchcord LC/ST G50 OM3, 2m	1 piece
29033302	GOF Duplex Patchcord LC/LC G50 OM3, 2m	1 piece
29044302	GOF Duplex Patchcord FC/FC G50 OM3, 2m	1 piece
Multimode G 50 OM2		
29011202	GOF Duplex Patchcord SC/SC G50 OM2, 2m	1 piece
29021202	GOF Duplex Patchcord ST/SC G50 OM2, 2m	1 piece
29022202	GOF Duplex Patchcord ST/ST G50 OM2, 2m	1 piece
29031202	GOF Duplex Patchcord LC/SC G50 OM2, 2m	1 piece
29032202	GOF Duplex Patchcord LC/ST G50 OM2, 2m	1 piece
29033202	GOF Duplex Patchcord LC/LC G50 OM2, 2m	1 piece
29044202	GOF Duplex Patchcord FC/FC G50 OM2, 2m	1 piece
Multimode G 62.5 OM1		
29011102	GOF Duplex Patchcord SC/SC G62.5, 2m	1 piece
29021102	GOF Duplex Patchcord ST/SC G62.5, 2m	1 piece
29022102	GOF Duplex Patchcord ST/ST G62.5, 2m	1 piece
29031102	GOF Duplex Patchcord LC/SC G62.5, 2m	1 piece
29032102	GOF Duplex Patchcord LC/ST G62.5, 2m	1 piece
29033102	GOF Duplex Patchcord LC/LC G62.5, 2m	1 piece
29044102	GOF Duplex Patchcord FC/FC G62.5, 2m	1 piece
Single-mode E 9 OS2		
29011902	GOF Duplex Patchcord SC/SC E9 OS2, 2m	1 piece
29021902	GOF Duplex Patchcord ST/SC E9 OS2, 2m	1 piece
29022902	GOF Duplex Patchcord ST/ST E9 OS2, 2m	1 piece
29031902	GOF Duplex Patchcord LC/SC E9 OS2, 2m	1 piece
29032902	GOF Duplex Patchcord LC/ST E9 OS2, 2m	1 piece
29033902	GOF Duplex Patchcord LC/LC E9 OS2, 2m	1 piece
29033802	GOF DUPLEX Patchcord LC/LC 9/125 APC, 2m	1 piece
29039902	GOF DUPLEX Patchcord LC/SC-APC E9 OS2, 2m	1 piece

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

GOF SIMPLEX Pigtail



Info

- J-VH 1G/E
- Pre-terminated tight-buffered simplex cable with one durable ceramic ferrule

Benefits

- Ease of installation and assembly
- Create a direct plug connection for installation cables with splicing
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For indoor use
- Connection to an end optical device

Product features

- Outer sheath flame-retardant and halogen-free
- High flexibility
- Cable termination with durable ceramic ferrules
- Set consisting of 12 colour-coded pigtails

Product Make-up

- Tight-buffered simplex fibre with LSZH outer sheath
- Connector: LC, SC or ST
- Colour-coded primary and secondary coatings
- Standard length: 2 m

Technical data



Classification

ETIM 5.0 Class-ID: EC000748
ETIM 5.0 Class-Description: Pigtail



Optical fibre type

Core material: glass
Cladding material: glass



Permissible tensile force

Fixed installation: 100 N



Temperature range

Fixed installation: -20°C to +60°C
Occasional flexing: -5°C to +50°C

Article number	Article designation	PU
Multimode G 50 OM4		
29310402	GOF Simplex Pigtail SC G50 OM4, 2m	12 piece
29320402	GOF Simplex Pigtail ST G50 OM4, 2m	12 piece
29330402	GOF Simplex Pigtail LC G50 OM4, 2m	12 piece
Multimode G 50 OM3		
29310302	GOF Simplex Pigtail SC G50 OM3, 2m	12 piece
29320302	GOF Simplex Pigtail ST G50 OM3, 2m	12 piece
29330302	GOF Simplex Pigtail LC G50 OM3, 2m	12 piece
Multimode G 50 OM2		
29310202	GOF Simplex Pigtail SC G50 OM2, 2m	12 piece
29320202	GOF Simplex Pigtail ST G50 OM2, 2m	12 piece
29330202	GOF Simplex Pigtail LC G50 OM2, 2m	12 piece
Multimode G 62.5 OM1		
29310102	GOF Simplex Pigtail SC G62.5, 2m	12 piece
29320102	GOF Simplex Pigtail ST G62.5, 2m	12 piece
29330102	GOF Simplex Pigtail LC G62.5, 2m	12 piece
Single-mode E 9 OS2		
29310902	GOF Simplex Pigtail SC E9 OS2, 2m	12 piece
29320902	GOF Simplex Pigtail ST E9 OS2, 2m	12 piece
29330902	GOF Simplex Pigtail LC E9 OS2, 2m	12 piece

Other types of connectors (e.g. LC, MTRJ, E2000) are available upon request. This will not apply to Hitronic anymore, as LC will become a standard product and MTRJ/E2000 will be removed.

Photographs are not to scale and do not represent detailed images of the respective products.

GOF Connector



Benefits

- Ideal for assembling
- For assembly process: cable preparation/ glueing/crimping/polishing
- Assembly instructions can be found in the GOF assembly toolbox (not included in Lapp product range)
- Trained optical installers should be used in all connector assembly

Application range

- For connector assemblies in production or laboratory environment

Product features

- Connector sets include all needed parts for assembly

Norm references / Approvals

- LC comply with IEC standard 61754-20
- SC comply with IEC standard 61754-4
- ST comply with IEC standard 61754-2

Product Make-up

- Ferrule diameter:
LC: 1.25mm (zirconia)
SC, ST: 2.5mm (zirconia)
- Can be assembled with cables of 1.7mm-2.1mm diameter
- LC and SC connector sets available in green (single-mode APC), blue (single-mode PC) and grey (multimode)

Technical data



Classification

ETIM 5.0 Class-ID: EC001122
ETIM 5.0 Class-Description:
Fibre optic connector



Permissible tensile force

Tensile load 70N
Tensile strength after assembly
> 100N



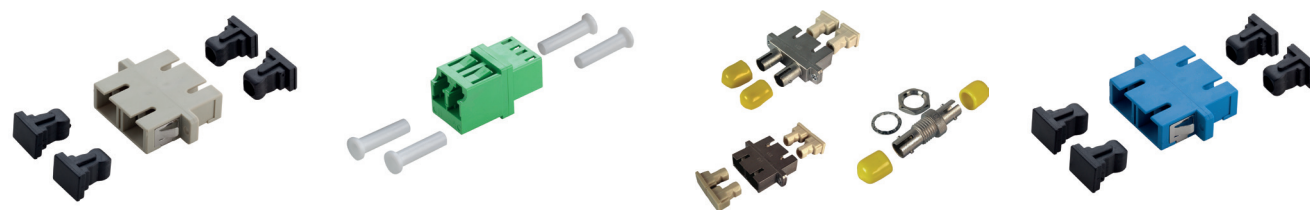
Temperature range

Operating
LC: -40°C to 75°C
SC: -40°C to 75°C
ST: -40°C to 85°C
Humidity 95%
Flammability UL 94 V-0

Article number	Article designation	PU
Singlemode		
29110999	GOF Connector SC Single-mode Blue /4PC	4 piece
29110998	GOF Connector SC Single-mode Blue /50PC	50 piece
29110989	GOF Connector SC Single-mode APC Green/ 4PC	4 piece
29110988	GOF Connector SC Single-mode APC Green/ 50PC	50 piece
29130999	GOF Connector LC Single-mode Blue /4PC	4 piece
29130998	GOF Connector LC Single-mode Blue /50PC	50 piece
29130989	GOF Connector LC Single-mode APC GR /4PC	4 piece
29130988	GOF Connector LC Single-mode APC GR/50PC	50 piece
29120999	GOF Connector ST Single-mode /4PC	4 piece
29120998	GOF Connector ST Single-mode /50PC	50 piece
29140999	GOF Connector FC Single-mode /4PC	4 piece
Multimode		
29110199	GOF Connector SC Multimode Beige /4PC	4 piece
29110198	GOF Connector SC Multimode Beige /50PC	50 piece
29130199	GOF Connector LC Multimode Beige /4PC	4 piece
29130198	GOF Connector LC Multimode Beige /50PC	50 piece
29120199	GOF Connector ST Multimode /4PC	4 piece
29120198	GOF Connector ST Multimode /50PC	50 piece
29140199	GOF Connector FC Multimode /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

GOF Adapters



Product features

- The couplings connect the glass fibre connectors with the same or different connector types.

Norm references / Approvals

- LC comply with IEC standard 61754-20
- SC comply with IEC standard 61754-4
- ST comply with IEC standard 61754-2
- Comply with IEC, EIA/TIA standards

Product Make-up

- Zirconia sleeves
- LC and SC adapters available in green (single-mode APC), blue (single-mode PC) and grey (multimode)

Technical data



Classification

ETIM 5.0 Class-ID: EC000752
ETIM 5.0 Class-Description:
Fibre optic coupler

Attenuation

Attenuation (dB) < 0.2
Repeatability
1000 cycles (dB) < 0.2



Temperature range

Operating
LC: -25°C to 70°C
SC: -40°C to 75°C
ST: -40°C to 85°C
Humidity 95%
Flammability UL 94 V-0

Article number	Article designation	PU
Singlemode		
29410999	GOF Adapter Duplex SC Single-mode Blue /4PC	4 piece
29410989	GOF Adapter Duplex SC Single-mode APC Green /4PC	4 piece
29430999	GOF Adapter Duplex LC Single-mode Blue /4PC	4 piece
29430989	GOF Adapter Duplex LC Single-mode APC Green /4PC	4 piece
29420999	GOF Adapter Simplex ST(BFOC) Single-mode /4PC	4 piece
29421999	GOF Adapter Duplex ST-SC Single-mode /4PC	4 piece
Multimode		
29410199	GOF Adapter Duplex SC Multimode Beige /4PC	4 piece
29430199	GOF Adapter Duplex LC Multimode Beige /4PC	4 piece
29420199	GOF Adapter Simplex ST(BFOC) Multimode /4PC	4 piece
29421199	GOF Adapter Duplex ST-SC Multimode /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.



Industrial connectors



EPIC® SIGNAL M23 Kits 12pole	236
EPIC® POWER LS1 Kits 6pole	238



EPIC® SIGNAL M23 Kits 12pole

Benefits

- Uncomplicated ordering
- No misplaced orders
- Pre-packed kits with compatible components

Technical data

	Rated voltage (V) 100 V (1 mm contacts)
	Rated current (A) 7 A (1 mm contacts)
	Number of contacts 13



Info

- Complete connectors - easy to order



Article number	Pieces / PU
EPIC® SIGNAL M23 Kits 12pole	
75009710	1

Article numbers for single components

EPIC® KIT M23 D6 12-POL FEMALE



- EPIC® M23 12-pin solder termination female insert
- Max. cross-section 1.0 mm²
- E-Part, rotation to the right, clockwise
- D6 cable connector, clamping range 7.0 - 13.5 mm



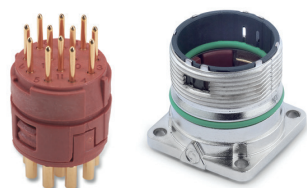
Article number	Pieces / PU
M23 D6	
75009702	1

Article numbers for single components

EPIC® KIT M23 D6 12-POL FEMALE



- EPIC® M23 12-pin solder termination female insert
- Max. cross-section 1.0 mm²
- P-part, rotation to the left, anticlockwise
- D6 cable connector, clamping range 7.0 - 13.5 mm



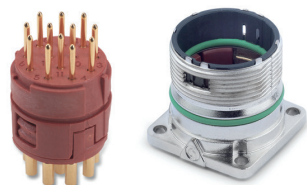
Article number	Pieces / PU
M23 D6	
75009703	1

Article numbers for single components

EPIC® KIT M23 A1 12-POL MALE



- EPIC® M23 12-pin solder-termination male insert
- Max. cross-section 1.0 mm²
- E-Part, rotation to the right, clockwise
- A1 panel-mount box, front wall mounting



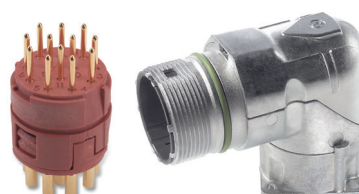
Article number	Pieces / PU
M23 A1	
75009711	1

Article numbers for single components

EPIC® KIT M23 A1 12-POL MALE



- EPIC® M23 12-pin solder-termination male insert
- Max. cross-section 1.0 mm²
- P-part, rotation to the left, anticlockwise
- A1 panel-mount box, front wall mounting



Article number	Pieces / PU
M23 A1	
25009704	1

Article numbers for single components

EPIC® KIT M23 A3 12-POL MALE



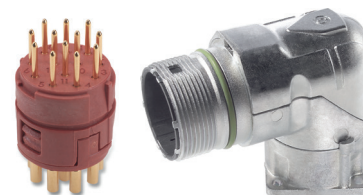
- EPIC® M23 12-pin solder-termination male insert
- Max. cross-section 1.0 mm²
- E-Part, rotation to the right, clockwise
- A3 panel-mount box, angled and rotatable, front wall mounting

EPIC® KIT M23 A3 12-POL MALE



- EPIC® M23 12-pin solder-termination male insert
- Max. cross-section 1.0 mm²
- P-part, rotation to the left, anticlockwise
- A3 panel-mount box, angled and rotatable, front wall mounting

Article number	Pieces / PU
M23 A3	
75009712	1
Article numbers for single components	

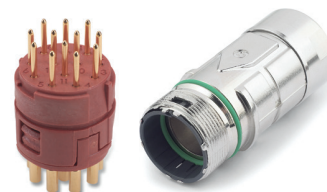


EPIC® KIT M23 F6 12-POL MALE



- EPIC® M23 12-pin solder-termination male insert
- Max. cross-section 1.0 mm²
- E-Part, rotation to the right, clockwise
- F6 cable coupler, clamping range 7.0 - 13.5 mm

Article number	Pieces / PU
M23 F6	
75009705	1
Article numbers for single components	

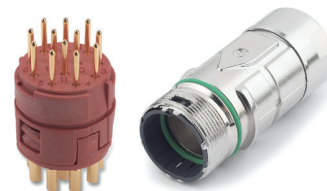


EPIC® KIT M23 F6 12-POL MALE



- EPIC® M23 12-pin solder-termination male insert
- Max. cross-section 1.0 mm²
- P-part, rotation to the left, anticlockwise
- F6 cable coupler, clamping range 7.0 - 13.5 mm

Article number	Pieces / PU
M23 F6	
75009713	1
Article numbers for single components	





EPIC® POWER LS1 Kits 6pole

Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

Technical data

	Rated voltage (V) 630 V (2 mm contacts)
	Rated current (A) 26A/3+PE+4, 25A/5+PE (2mm contacts)
	Number of contacts 5 + PE



Info

- Complete connectors - easy to order



Article number	Pieces / PU
EPIC® POWER LS1 Kits 6pole	
75009690	1
Article numbers for single components	

EPIC KIT LS1 D6 6-POL FEMALE



- Pin configuration 5+PE, for female contacts 2 mm Ø
- Machined crimp contacts 0.5 - 2.5 mm² are included
- D6 cable connector, clamping range 7.5 - 15.5 mm



Article number	Pieces / PU
LS1 D6	
75009691	1
Article numbers for single components	

EPIC KIT LS1 A1 6-POL MALE



- Pin configuration 5+PE, for male contacts 2 mm Ø
- Machined crimp contacts 0.5 - 2.5 mm² are included
- A1 panel-mount box, front wall mounting



Article number	Pieces / PU
LS1 A1	
25009692	1
Article numbers for single components	

EPIC KIT LS1 A3 6-POL MALE



- Pin configuration 5+PE, for male contacts 2 mm Ø
- Machined crimp contacts 0.5 - 2.5 mm² are included
- A3 panel-mount box, angled and rotatable, front wall mounting



Article number	Pieces / PU
LS1 A3	
75009693	1
Article numbers for single components	

EPIC KIT LS1 F6 6-POL MALE



- Pin configuration 5+PE, for male contacts 2 mm Ø
- Machined crimp contacts 0.5 - 2.5 mm² are included
- F6 cable coupler, clamping range 7.5 - 15.5 mm

SKINTOP®

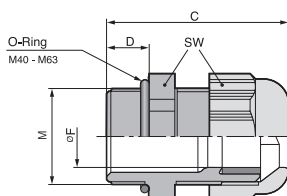
Cable glands



SKINTOP® ST-M/SKINTOP® STR-M.	240
SKINTOP® CLICK/SKINTOP® CLICK-R	242
SKINTOP® MS-SC-M	243
SKINTOP® MS-M BRUSH.	244
SKINTOP® BRUSH ADD-ON	245
SKINTOP® DIX-M.	246
SKINTOP® DIX-M AUTOMATION	247
SKINTOP® CUBE	248
SKINTOP® MULTI.	249
SKINDICHT® SM-M	250
SKINDICHT® SM-PE-M	250



SKINTOP® ST-M / SKINTOP® STR-M



Info

- Now with IP69 approval! Proven to withstand the most demanding cleaning procedures for industrial machinery with high-pressure cleaners and hot water!

Benefits

SKINTOP® ST-M

- High oil-resistance for maximum reliability
- Permanent vibration protection
- Wide, variable clamping ranges
- Optimum strain relief
- Various accessories (e.g. multiple sealing inserts)

Application range

SKINTOP® ST-M

- Used in areas where a lot of cables and wires need to be inserted into housings with minimum space requirements
- Machine and equipment manufacturing
- Photovoltaic
- Automation technology
- Offshore platforms, equipment and shipyards

SKINTOP® STR-M

- With reducing seal insert, to seal cables with smaller outer diameters.

Norm references / Approvals

- UL File Nr. E79903
- GGVS: TÜ.EGG.020-95

Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

Note

- Refer to SKINTOP® metric accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL-M
- SKINTOP® ST(R) M ISO types have an extra-long connection thread
- SKINTOP® ST(R) M ISO versions with extra-long connection thread, see table, no DNV approval

Suitable cables

SKINTOP® STR-M

- The following cables are recommended for IP 69 applications:
ÖLFLEX® ROBUST 200
H07RN8-F
H07RN-F

Suitable tools

SKINTOP® ST-M

- SKINTOP® LOCATOR refer to main catalogue 2016/17
- SKINMATIC® QUICK Set 1 refer to main catalogue 2016/17
- SKINMATIC® RZ refer to main catalogue 2016/17
- SKINMATIC® MH Set refer to main catalogue 2016/17

Technical data



Classification

ETIM 5.0 Class-ID: EC000441
ETIM 5.0 Class-Description:
Cable screw gland



Caution

SKINTOP® ST-M

Refer to Appendix T21 for the installation dimensions and torques
Size M 40 x 1,5 up to M 63 x 1,5 with O-ring

SKINTOP® STR-M

Refer to Appendix T21 for the installation dimensions and torques



Colour delivered

Silver grey (RAL 7001)
Light grey (RAL 7035)
Black (RAL 9005), UV-resistant



Material

Body: Polyamide
Seal: CR

Tests

GGVS: TÜ.EGG.020-95



Protection rating

IP 68 - 5 bar
IP 69



Temperature range

Fixed: -40°C to +100°C
Dynamic: -20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
SKINTOP® ST-M silver grey						
53111000	M 12 x 1,5	3,5-7	15	30.0	8	100
53111010	M 16 x 1,5	4,5-10	19	34.0	8	100
53111020	M 20 x 1,5	7-13	25	37.0	9	100
53111030	M 25 x 1,5	10-17	30	40.0	10	50
53111040	M 32 x 1,5	11-21	36	47.0	10	25
53111050	M 40 x 1,5	19-28	46	52.0	10	10
53111060	M 50 x 1,5	27-35	55	62.0	12	5
53111070	M 63 x 1,5	34-45	66	71.0	12	5
SKINTOP® ST-M black						
53111200	M 12 x 1,5	3,5-7	15	30.0	8	100
53111210	M 16 x 1,5	4,5-10	19	34.0	8	100
53111220	M 20 x 1,5	7-13	25	37.0	9	100
53111230	M 25 x 1,5	10-17	30	40.0	10	50
53111240	M 32 x 1,5	11-21	36	47.0	10	25
53111250	M 40 x 1,5	19-28	46	52.0	10	10
53111260	M 50 x 1,5	27-35	55	62.0	12	5
53111270	M 63 x 1,5	34-45	66	71.0	12	5
SKINTOP® ST-M light grey						
53111400	M 12 x 1,5	3,5-7	15	30.0	8	100
53111410	M 16 x 1,5	4,5-10	19	34.0	8	100
53111420	M 20 x 1,5	7-13	25	37.0	9	100
53111430	M 25 x 1,5	10-17	30	40.0	10	50
53111440	M 32 x 1,5	11-21	36	47.0	10	25
53111450	M 40 x 1,5	19-28	46	52.0	10	10
53111460	M 50 x 1,5	27-35	55	62.0	12	5
53111470	M 63 x 1,5	34-45	66	71.0	12	5
SKINTOP® ST M ISO silver-grey (with long metric connecting thread)						
53017010	M 16 x 1,5 ISO	3,5-8	19	40.0	12	100
53017030	M 20 x 1,5 ISO	5-12	24	45.0	13	100
53017040	M 25 x 1,5 ISO	9-14	27	47.0	13	50

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
SKINTOP® ST M ISO black (with long metric connecting thread)						
53010000	M 12 x 1,5 ISO	3,5-7	15	36.7	15	100
53017210	M 16 x 1,5 ISO	3,5-8	19	40.0	12	100
53017230	M 20 x 1,5 ISO	5-12	24	45.0	13	100
53017240	M 25 x 1,5 ISO	9-14	27	47.0	13	50
SKINTOP® STR-M silver grey						
53111100	M 12 x 1,5	1-5	15	30.0	8	100
53111110	M 16 x 1,5	2-7	19	34.0	8	100
53111120	M 20 x 1,5	5-10	25	37.0	9	100
53111130	M 25 x 1,5	6-13	30	40.0	10	50
53111140	M 32 x 1,5	7-15	36	47.0	10	25
53111150	M 40 x 1,5	15-23	46	52.0	10	10
53111160	M 50 x 1,5	22-29	55	62.0	12	5
53111170	M 63 x 1,5	28-39	66	71.0	12	5
SKINTOP® STR-M black						
53111300	M 12 x 1,5	1-5	15	30.0	8	100
53111310	M 16 x 1,5	2-7	19	34.0	8	100
53111320	M 20 x 1,5	5-10	25	37.0	9	100
53111330	M 25 x 1,5	6-13	30	40.0	10	50
53111340	M 32 x 1,5	7-15	36	47.0	10	25
53111350	M 40 x 1,5	15-23	46	52.0	10	10
53111360	M 50 x 1,5	22-29	55	62.0	12	5
53111370	M 63 x 1,5	28-39	66	71.0	12	5
SKINTOP® STR-M light grey						
53111500	M 12 x 1,5	1-5	15	30.0	8	100
53111510	M 16 x 1,5	2-7	19	34.0	8	100
53111520	M 20 x 1,5	5-10	25	37.0	9	100
53111530	M 25 x 1,5	6-13	30	40.0	10	50
53111540	M 32 x 1,5	7-15	36	47.0	10	25
53111550	M 40 x 1,5	15-23	46	52.0	10	10
53111560	M 50 x 1,5	22-29	55	62.0	12	5
53111570	M 63 x 1,5	28-39	66	71.0	12	5
SKINTOP® STR M ISO silver-grey (with long metric connecting thread)						
53017110	M 16 x 1,5 ISO	2-6	19	40.0	12	100
53017130	M 20 x 1,5 ISO	4-9	24	45.0	13	100
53017140	M 25 x 1,5 ISO	6-12	27	47.0	13	50
SKINTOP® STR M ISO black (with long metric connecting thread)						
53017310	M 16 x 1,5 ISO	2-6	19	40.0	12	100
53017330	M 20 x 1,5 ISO	4-9	24	45.0	13	100
53017340	M 25 x 1,5 ISO	6-12	27	47.0	13	50

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

SKINTOP® ST-M

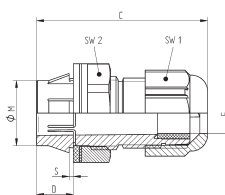
- SKINTOP® DIX-M refer to page 246
- SKINTOP® GMP-GL-M refer to main catalogue 2016/17
- SKINTOP® DIX-M AUTOMATION refer to page 247
- SKINTOP® SDV-M ATEX refer to main catalogue 2016/17
- SKINTOP® SD-M refer to main catalogue 2016/17
- SKINTOP® DV-M refer to main catalogue 2016/17

SKINTOP® STR-M

- SKINTOP® GMP-GL-M refer to main catalogue 2016/17
- SKINTOP® SDVR-M ATEX refer to main catalogue 2016/17
- SKINTOP® SD-M refer to main catalogue 2016/17



SKINTOP® CLICK / SKINTOP® CLICK-R



Benefits

SKINTOP® CLICK

- Fewer parts, counter nut no longer needed
- Save up to 70% of the time with the innovative CLICK system
- Simple, free assembly in any position
- Vibration protection
- No thread required

SKINTOP® CLICK-R

- For the benefits, refer to SKINTOP® CLICK

Application range

SKINTOP® CLICK

- Automation technology
- Solar applications
- Control cabinet manufacturing
- Measurement, control and electrical applications
- Air-conditioning technology

SKINTOP® CLICK-R

- With reducing seal insert, to seal cables with smaller outer diameters.

Norm references / Approvals

- UL File Nr. E79903

Included

- Included: disassembly tool

Info

- The most innovative cable insertion system in the market for a fast and highly flexible assembly. Simply click in - turn to the left - turn to the right - finished. The result: fixed, centred, strain-relieved fitting and maximum protection class in a few seconds.

Technical data

Classification
ETIM 5.0 Class-ID: EC000441
ETIM 5.0 Class-Description:
Cable screw gland

Colour delivered
Silver grey (RAL 7001)
Light grey (RAL 7035)
Black (RAL 9005), UV-resistant

Material
Body: special polyamide
Seal: special elastomer

Protection rating
SKINTOP® CLICK
IP 68 - 4 bar (M12)
IP 68 - 5 bar (M16 - M25)
IP 68 - 1 bar (M32)

Temperature range
Dynamic: -20°C to +100°C
Fixed: -40°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	M (hole in mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Wall thickness, S (mm)	Pieces / PU
SKINTOP® CLICK light grey								
53112692	CLICK 12	4.5 - 7	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112686	CLICK 16	5 - 9	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112687	CLICK 20	7 - 13	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112688	CLICK 25	9 - 17	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112694	CLICK 32	11 - 21	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
SKINTOP® CLICK silver grey								
53112921	CLICK 12	4.5 - 7	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112876	CLICK 16	5 - 9	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112877	CLICK 20	7 - 13	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112878	CLICK 25	9 - 17	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112922	CLICK 32	11 - 21	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
SKINTOP® CLICK black								
53112923	CLICK 12	4.5 - 7	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112882	CLICK 16	5 - 9	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112883	CLICK 20	7 - 13	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112884	CLICK 25	9 - 17	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112924	CLICK 32	11 - 21	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
SKINTOP® CLICK-R light grey								
53112925	CLICK-R 12	3.5 - 5	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112689	CLICK-R 16	4 - 7	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112690	CLICK-R 20	5 - 10	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112691	CLICK-R 25	6 - 13	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112926	CLICK-R 32	7 - 15	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
SKINTOP® CLICK-R silver grey								
53112927	CLICK-R 12	3.5 - 5	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112879	CLICK-R 16	4 - 7	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112880	CLICK-R 20	5 - 10	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112881	CLICK-R 25	6 - 13	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112928	CLICK-R 32	7 - 15	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
SKINTOP® CLICK-R black								
53112929	CLICK-R 12	3.5 - 5	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112885	CLICK-R 16	4 - 7	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112886	CLICK-R 20	5 - 10	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112887	CLICK-R 25	6 - 13	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112931	CLICK-R 32	7 - 15	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

SKINTOP® CLICK

- SKINTOP® DIX-M refer to page 246
- SKINTOP® DIX-M AUTOMATION refer to page 247
- SKINTOP® SDV-M ATEX refer to main catalogue 2016/17
- SKINTOP® SD-M refer to main catalogue 2016/17
- SKINTOP® DV-M refer to main catalogue 2016/17

SKINTOP® CLICK-R

- SKINTOP® SDVR-M ATEX refer to main catalogue 2016/17



SKINTOP® MS-SC-M



Benefits

- Suitable for cables with and without inner sheath
- Also suitable for continuing the cable screen to another connection
- Low-resistance screen contact, optimum EMC protection
- Highly conductive, flexible EMC contact for clamping various screen diameters
- Few operation steps, easy to assemble

Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Telecommunication
- Industrial machinery and plant engineering
- Measurement and control technology
- Automation technology

Norm references / Approvals

- UL File Nr. E79903

Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

Note

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- Refer to SKINTOP® metric accessories for suitable accessories
- As an alternative for thick-walled housings, we recommend SKINTOP® MS-SC-M-XL with long connection thread in the sizes M16 to M50

Technical data



Classification

ETIM 5.0 Class-ID: EC000441
ETIM 5.0 Class-Description:
Cable screw gland



Caution

Refer to Appendix T21 for the installation dimensions and torques



Note

In stainless steel V2A available



Material

Body: nickel-plated brass
Insert: polyamide
Sealing ring: CR
O-ring: NBR



Protection rating

Remark: A RoHS-non-compliant version is marketed under ÖLFLEX® 110 with VDE-REG.-Nr. 8067. To order this, please add appendix <1> to the below stated part numbers. This does not affect the above given further technical data or description.
IP 68 - 10 bar



Temperature range

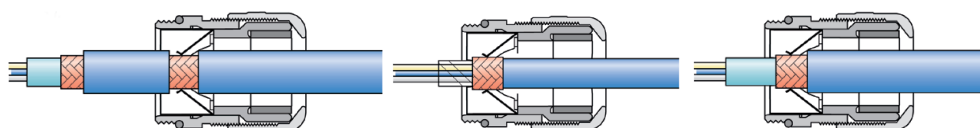
dynamic -25°C up to + 100°C
static -40°C up to +100°C

Article number	Article designation / size	Outer Ø (mm), from - to	Minimum Ø above braiding (mm)	SW wrench size mm	Thread length, D (mm)	Pieces / PU
SKINTOP® MS-SC-M						
53112610	M 12 x 1,5	3.5 - 7.0	2	16	6.5	50
53112620	M 16 x 1,5	4.5 - 9.0	4	20	7	50
53112630	M 20 x 1,5	7.0 - 12.5	5	24	8	25
53112640	M 25 x 1,5	9.0 - 16.5	7.5	29	8	25
53112650	M 32 x 1,5	11.0 - 21.0	9	36	9	25
53112660	M 40 x 1,5	19.0 - 28.0	15	45	9	10
53112670	M 50 x 1,5	27.0 - 35.0	21	54	10	5
SKINTOP® MS-SC-M-XL						
53112625	M 16 x 1,5	4.5 - 9.0	4	20	12	50
53112635	M 20 x 1,5	7.0 - 12.5	5	24	12	25
53112645	M 25 x 1,5	9.0 - 16.5	7.5	29	12	25
53112655	M 32 x 1,5	11.0 - 21.0	9	36	15	25
53112665	M 40 x 1,5	19.0 - 28.0	15	45	15	10
53112675	M 50 x 1,5	27.0 - 35.0	21	54	15	5

Photographs are not to scale and do not represent detailed images of the respective products.

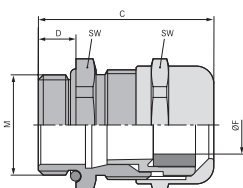
Accessories

- SKINDICHT® SM-PE-M refer to page 250





SKINTOP® MS-M BRUSH



Benefits

- Faster, easier screen contact
- Optimum, low-resistance 360° screen contact
- Faster than any other comparable system
- Uncomplicated and reliable
- Maximum assembly freedom during adjustment

Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Automation systems
- High-power drives
- Frequency converters
- Conveyor and transport systems

Norm references / Approvals

- UL File Nr. E79903

Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

Note

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings



Info

- SKINTOP® MS-M BRUSH sizes 75 x 1.5 to 110 x 2 with innovative double lamella gasket for easier assembling of cables with large diameters.

Technical data



Classification

ETIM 5.0 Class-ID: EC000441

ETIM 5.0 Class-Description:

Cable screw gland



Caution

Refer to Appendix T21 for the installation dimensions and torques



Certifications

VDE, UL, CSA, DNV approval for size M90 x 2 and 110 x 2 pending
SKINTOP® MSR-M BRUSH 25 x 1,5 approvals pending



Material

Body: nickel-plated brass
Cap nut: nickel-plated brass
Insert: polyamide, halogen-free acc. to UL 94 V0
EMC brush: brass wire
Sealing ring: special elastomer
O-ring: special elastomer



Protection rating

IP 68 - 10 bar (M12 - M50)
IP 68 - 5 bar (M63)
IP 68 - 1 bar (M63 plus - M75)
IP 69 (M12 - M63)



Temperature range

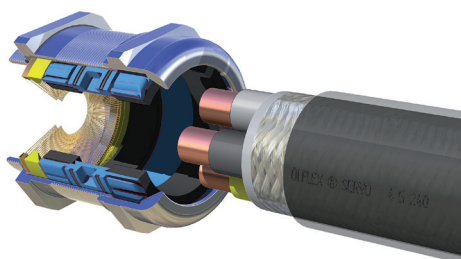
dynamic -25°C up to + 100°C
Fixed: -40°C to +100°C

Article number	Article designation / size	Outer Ø (mm), from - to	Minimum Ø above braiding (mm)	SW wrench size mm	Thread length, D (mm)	Pieces / PU
SKINTOP® MS-M BRUSH						
53112676	M 25 x 1,5	9.0 - 17.0	6	29	8	10
53112677	M 32 x 1,5	11.0 - 21.0	8	36	9	5
53112678	M 40 x 1,5	19.0 - 28.0	10	45	9	5
53112679	M 50 x 1,5	27.0 - 35.0	14	54	10	5
53112680	M 63 x 1,5	34.0 - 45.0	20	67	15	1
53112681	M 63 x 1,5 plus	44.0 - 55.0	25	75	15	1
53112501	M 75 x 1,5	53.0 - 63.0	35	95	15	1
53112500	M 75 x 1,5 plus	58.0 - 68.0	35	95	15	1
53112503	M 90 x 2	66.0 - 78.0	45	115	20	1
53112505	M 110 x 2	76.0 - 88.0	55	135	25	1
53112504	M 110 x 2 plus	86.0 - 98.0	55	135	25	1

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- SKINDICHT® SM-PE-M refer to page 250





SKINTOP® BRUSH ADD-ON

Benefits

- Optimum, low-resistance 360° screen contact
- Cutting edges cut through the insulating layer of the housing or switch cabinets, thus guaranteeing an optimum EMC contact
- Easy disassembling
- Visible, large-scale screen contact
- Uncomplicated and reliable

Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- For EMC-contact at through bore-holes
- Control cabinet manufacturing
- Automation systems
- Conveyor and transport systems

Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444



Info

- Innovative EMC add-on for SKINTOP® ST(R)-M polyamide cable glands.
- World's first patented active EMC lock-nut!

Technical data



Classification

ETIM 5.0 Class-ID: EC000441
ETIM 5.0 Class-Description:
Cable screw gland



Caution

Refer to Appendix T21 for the installation dimensions and torques
Apply SKINTOP® ST-M torques



Certifications

UL pending



Material

Body: nickel-plated brass
EMC brush: brass



Temperature range

Dynamic: -20°C to +100°C
Depending on the combination of the used cable gland



Article number	Article designation / size	Minimum Ø above braiding (mm)	SW wrench size mm	Thread length, D (mm)	Pieces / PU
SKINTOP® BRUSH ADD-ON					
54110839	M 12 x 1,5	4	24	10	25
54110840	M 16 x 1,5	5	24	10	25
54110841	M 20 x 1,5	5	24	10	10
54110842	M 25 x 1,5	5	30	10	10
54110843	M 32 x 1,5	8	39	12	10
54110844	M 40 x 1,5	10	47	12	5
54110845	M 50 x 1,5	14	56	12	5
54110846	M 63 x 1,5	14	63	12	5

Photographs are not to scale and do not represent detailed images of the respective products.

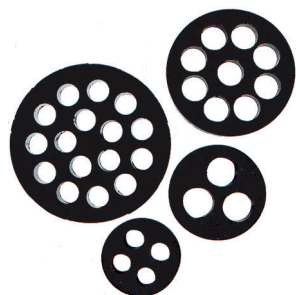
Accessories

- SKINTOP® BS-M refer to main catalogue 2016/17
- SKINTOP® ST-M refer to page 240
- SKINTOP® STR-M refer to page 240
- SKINTOP® ST-HF-M refer to main catalogue 2016/17
- SKINTOP® COLD refer to main catalogue 2016/17
- SKINTOP® COLD-R refer to main catalogue 2016/17





SKINTOP® DIX-M



Benefits

- Easy insertion of several cables into one gland
- Higher packing density allows smaller part construction

Application range

- For use in SKINTOP® cable glands.
- A sealing ring with several holes is used in place of the inner sealing insert.

Note

- IP 68 can be achieved when all openings are closed and all bores are optimally occupied, i.e. when using cables with nominal diameter and/or SKINTOP® DIX-DV sealing plugs

Product Make-up

- SKINTOP® DIX-M FKM is resistant to oil, water, alkaline solutions, acids, solvents etc.

Technical data

	Classification ETIM 5.0 Class-ID: EC000032 ETIM 5.0 Class-Description: Plug for cable screw gland
	On request Special shapes
	Colour delivered Black, RAL 9005
	Material NBR FKM
	Protection rating IP 54
	Temperature range -40 °C to +100 °C

Article number	Article designation / size	Size M	Number of cables x cable Ø	Pieces / PU
SKINTOP® DIX-M				
53316220	16220	M 16	2 x 2.0	100
53316230	16230	M 16	2 x 3.0	100
53316240	16240	M 16	2 x 4.0	100
53316420	16420	M 16	4 x 2.0	100
53320250	20250	M 20	2 x 5.0	100
53320260	20260	M 20	2 x 6.0	100
53320340	20340	M 20	3 x 4.0	100
53320353	20353	M 20	3 x 5.3	100
53320440	20440	M 20	4 x 4.0	100
53320920	20920	M 20	9 x 2.0	100
53320430	20430	M 20	4 x 3.0	100
53325260	25260	M 25	2 x 6.0	50
53325250	25250	M 25	2 x 5.0	50
53325350	25350	M 25	3 x 5.0	50
53325360	25360	M 25	3 x 6.0	50
53325370	25370	M 25	3 x 7.0	50
53325450	25450	M 25	4 x 5.0	50
53325540	25540	M 25	5 x 4.0	50
53325640	25640	M 25	6 x 4.0	50
53332270	32270	M 32	2 x 7.0	50
53332280	32280	M 32	2 x 8.0	50
53332290	32290	M 32	2 x 9.0	50
53332370	32370	M 32	3 x 7.0	50
53332380	32380	M 32	3 x 8.0	50
53332460	32460	M 32	4 x 6.0	50
53332470	32470	M 32	4 x 7.0	50
53332560	32560	M 32	5 x 6.0	50
53332650	32650	M 32	6 x 5.0	50
53332840	32840	M 32	8 x 4.0	50
53332850	32850	M 32	8 x 5.0	50
53332940	32940	M 32	9 x 4.0	50
53340290	40290	M 40	2 x 9.0	25
53340310	40310	M 40	3 x 10.0	25
53340480	40480	M 40	4 x 8.0	25
53340490	40490	M 40	4 x 9.0	25
53340580	40580	M 40	5 x 8.0	25
53340590	40590	M 40	5 x 9.0	25
53340670	40670	M 40	6 x 7.0	25
53340860	40860	M 40	8 x 6.0	25
53340969	40969	M 40	9 x 6.9	25
53350118	50118	M 50	11 x 8.0	10
53350680	50680	M 50	6 x 8.0	10
53350780	50780	M 50	7 x 8.0	10
53350870	50870	M 50	8 x 7.0	10
53350147	50147	M 50	14 x 7.0	10
53350164	50164	M 50	16 x 4.0	10
53350166	50166	M 50	16 x 6.0	10
SKINTOP® DIX-M FKM				
53420250	20250	M 20	2 x 5.0	100
53420260	20260	M 20	2 x 6.0	100
53440969	40969	M 40	9 x 6.9	25

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- SKINTOP® CLICK refer to page 242
- SKINTOP® ST-M refer to page 240
- SKINTOP® DIX-DV refer to main catalogue 2016/17



SKINTOP® DIX-M AUTOMATION

**Benefits**

- Optimal seal when using AS-I bus cables
- Easy insertion of pre-assembled cables (with fieldbus or RJ-45 connector)
- Strain relief

Application range

- These seals can be used instead of our standard seals in the SKINTOP® cable glands.
- Control cabinets
- Control panels
- Office applications
- Automation technology

Note

- IP 68 can be achieved if the hole is optimally occupied, i.e. when using standard AS-I bus cables

Product Make-up

- Precise cut for AS-I bus cables
- Seal with hole and cut for easy insertion of pre-assembled RJ45 network cables
- Seal with hole and cut for easy insertion of pre-assembled field bus cables
- Multiple seal inserts with holes and slits for easy insertion of pre-assembled cables

Technical data

Classification
ETIM 5.0 Class-ID: EC000032
ETIM 5.0 Class-Description:
Plug for cable screw gland



Colour delivered
Black, RAL 9005



Material
NBR



Protection rating
IP 54



Temperature range
-40°C to +100°C

Article number	Article designation / size	Number of cables x cable Ø	Pieces / PU
SKINTOP® DIX-M ASI			
53611001	M 20	1 x AS-I	50
SKINTOP® DIX-M ASI DUO			
53611004	M 25	2 x AS-I	50
SKINTOP® DIX-M RJ-45			
53440980	M 25	1 x 5.4	50
SKINTOP® DIX-M FIELDBUS			
53440970	M 32	1 x 6.5	50
SKINTOP® DIX-M CUT			
53310444	M 40	3 x 10.0	25

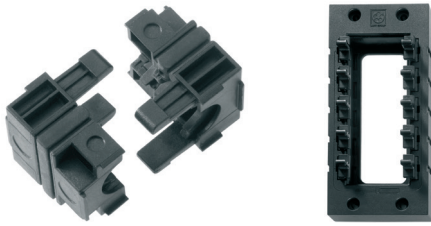
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Accessories

- SKINTOP® CLICK refer to page 242
- SKINTOP® MS-M refer to main catalogue 2016/17
- SKINTOP® ST-M refer to page 240
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to main catalogue 2016/17



SKINTOP® CUBE



Info

- Innovative multi-cable bushing system with variable clamping ranges for high flexibility in assembling.
- When disassembling, the frame can remain on the housing and the plug-in module remains securely on the cable.

Benefits

- Variable clamping range
- Vibration-safe module fixation
- Strain relief
- Oil resistance
- Simplified servicing due to easy assembling and disassembling

Application range

- For installation of harnessed cables
- Used in areas where a lot of cables and wires need to be inserted into housings with minimum space requirements
- Apparatus and switch cabinet construction
- Electronic installations
- Automation technology

Norm references / Approvals

- UL File No. E349737

Product Make-up

- The SKINTOP® CUBE system consists of the SKINTOP® CUBE FRAME and the clip modules SKINTOP® CUBE MODULE.
- For cut-outs for industrial connectors with standard defined boreholes.
- For cut-outs for 16-pin industrial connectors (36 x 86 mm)
- For cut-outs for 24-pin industrial connectors (36 x 112 mm)

Note

- SKINTOP® CUBE MODULE 20x20 BLIND can be used as a blind module and for clamping ranges 1 - 3 mm

Included

- Including mounting material

Technical data



Classification

ETIM 5.0 Class-ID: EC000240

ETIM 5.0 Class-Description:

Cable entry



Certifications

UL File No. E349737

Fire behaviour according to UL94 V-2



Material

Frame: glass fibre-reinforced polyamide

Frame seal: CR

Clip module: special polypropylene

Clip module seal: LSE 2



Protection rating

IP 64



Temperature range

Dynamic: -20°C up to +80°C

Static: -40°C up to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Max. number of executions	Pieces / PU
SKINTOP® CUBE Frame				
52220000	SKINTOP® CUBE FRAME 16		8	1
52220001	SKINTOP® CUBE FRAME 24		10	1
SKINTOP® CUBE clip modules				
52220004	SKINTOP® CUBE MODULE 20x20 BLIND	1 - 3		5
52220002	SKINTOP® CUBE MODULE 20x20 SMALL	4 - 6		5
52220003	SKINTOP® CUBE MODULE 20x20 LARGE	6 - 9		5
52220040	SKINTOP® CUBE MODULE 20x20 AS-I BUS			5
52220005	SKINTOP® CUBE MODULE 40x40 SMALL	9 - 12		5
52220006	SKINTOP® CUBE MODULE 40x40 LARGE	12 - 16		5
52220007	SKINTOP® CUBE MODULE 40x40 BLIND			5

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- SKINTOP® CUBE MULTI refer to main catalogue 2016/17
- SKINTOP® MULTI refer to page 249

Accessories

- Kraftform Kompakt® 10





SKINTOP® MULTI



Info

- Compact multi cable bushing system with innovative gel technology



Benefits

- Large clamping range of 4 mm and AS-I BUS entry system by elastic gel technology with innovative membrane technology
- Easy installation, high packing density
- Optimum strain relief at the entire cable bundle
- Error reduction through clear assignment of cable to be installed by a clear marker of implementing points
- Not used holes remain securely sealed

Application range

- Used in areas where a lot of cables and wires need to be inserted into housings with minimum space requirements
- For not harnessed cables and media hoses
- Apparatus and switch cabinet construction
- Automation technology

Product features

- One sealing to the cable & housing (captive)
- Halogen-free
- UV-, Ozon and oil resistant
- The adhesive gel provides a very easy positioning at the enclosure during the assembling

Product Make-up

- For cut-outs for 24-pin industrial connectors (36 x 112 mm)

Included

- SKINTOP® MULTI including mounting material

Technical data



Classification

ETIM 5.0 Class-ID: EC000240
ETIM 5.0 Class-Description:
Cable entry system



Certifications

UL pending
Fire behaviour according to UL94 V-2



Note

Individual hole configuration on request



Material

Frame: Polycarbonat
Sealing: Gel



Protection rating

IP 68



Temperature range

-30°C to +100°C

Article number	Article designation / size	Max. number of executions	Number of cables x clamping range	Pieces / PU
SKINTOP® MULTI				
52220065	SKINTOP® MULTI Version 1	22	6 x 8-12 mm, 16 x 3-7 mm	1
52220073	SKINTOP® MULTI Version 2	21	5 x 2-6 mm, 8 x 4-8 mm, 3 x 5-9 mm, 2 x 8-12 mm, 1 x 12-16 mm, 2 x AS-I BUS oder 2 x 2-4 mm	1

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- SKINTOP® CUBE MULTI refer to main catalogue 2016/17
- SKINTOP® CUBE refer to main catalogue 2016/17

Accessories

- Kraftform Kompakt® 10





SKINDICHT® SM-M



Application range

- Used when a gland has to be countered, or in through-holes on thin-walled housings

Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

Technical data



Classification

ETIM 5.0 Class-ID: EC000940

ETIM 5.0 Class-Description:

Locknut for cable screw gland



Material

Nickel-plated brass



Temperature range

-20°C to +100°C

Article number	Article designation / size	Thickness (mm)	SW wrench size mm	Outer Ø (mm)	Pieces / PU
SKINDICHT® SM-M					
52103000	M 12 x 1,5	3.0	15	16.5	100
52103010	M 16 x 1,5	3.0	19	20.9	100
52103020	M 20 x 1,5	3.5	24	26.4	100
52103030	M 25 x 1,5	4.0	30	33.0	100
52103040	M 32 x 1,5	4.0	36	39.6	100
52103050	M 40 x 1,5	5.0	46	50.6	50
52103060	M 50 x 1,5	5.0	60	65.0	50
52103070	M 63 x 1,5	5.0	70	77.0	25
52103071	M 75 x 1,5	8.0	85	95.0	5
52103072	M 90 x 2	10.0	102	114.0	1
52103073	M 110 x 2	12.0	124	135.0	1

Photographs are not to scale and do not represent detailed images of the respective products.



SKINDICHT® SM-PE-M



Benefits

- Cutting edges cut through the insulating layer, thus guaranteeing an optimum EMC contact
- Suitable for all metric glands used in earthing and EMC applications

Application range

- For lacquered, anodised or powder-coated housings.

Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

Technical data



Classification

ETIM 5.0 Class-ID: EC000940

ETIM 5.0 Class-Description: Locknut for cable screw gland



Material

Nickel-plated brass



Temperature range

-20°C to +100°C

Article number	Article designation / size	Thickness (mm)	SW wrench size mm	Outer Ø (mm)	Pieces / PU
SKINDICHT® SM-PE-M					
52103300	M 12 x 1,5	3.5	15	16.5	100
52103310	M 16 x 1,5	3.5	19	20.9	100
52103320	M 20 x 1,5	3.7	24	26.4	100
52103330	M 25 x 1,5	4.2	30	33.0	50
52103340	M 32 x 1,5	4.7	36	39.6	50
52103350	M 40 x 1,5	5.5	46	50.6	25
52103360	M 50 x 1,5	5.5	60	66.0	10
52103370	M 63 x 1,5	7.0	70	77.0	10
52103371	M 75 x 1,5	8.0	85	95.0	5
52103372	M 90 x 2	10.0	102	114.0	1
52103373	M 110 x 2	12.0	124	135.0	1

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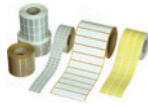
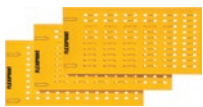
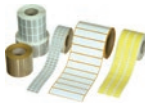
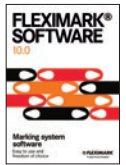
Marking systems



Marking Guide	252
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		Customized system		Basic system	
What?		Your demand – we deliver		Ready made to deliver for each environment	
Cable	Outdoor & Indoor				
		Stainless Steel FCC	Cablelabel FCC	MINI character strips	Stainless Steel Marking
	Indoor				
		Marking tags TMB FCC	Cablelabel PUR FCC	Collars	Marking kit DYMO® PL 150
Wire	before mounting the wire				
	after mounting the wire	Shrink tube FCC	Flexiprint FCC	Organized shrink tube FCC	Marking tags TMB FCC
Component	Device marking				
	Terminal	Marking rings	Collars	Flexiprint	
	Sensor				
Accessories					
					

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Data marking					
Laser office printers			Thermal transfer printer		
					
Flexilabel LFL		Labels LMB	Cablelabel TFL		Cablelabel PUR
					
			Cablelabel MTFL		Marking tags TMB
  			  		
Wrapping labels LCK			Labels TA		
Labels LA			Wrapping labels TCK		
Cablelabel LFL					
			  		
			Cablelabel TFL		
			Organized shrink tube		
			Shrink tube		
 			  		
Flexiprint LF			Labels LMB		
Labels LMB			Flexiprint TF		
			Organized shrink tube		
			Marking tags TMB		
 			  		
Labels LA			Labels TA		
Flexilabel LFL			TA Foam labels		
			Flexilabel TFL		
			 		
Labels LA			Terminal block marking		
			TA Foam labels		
 			 		
Labels LMB			Marking tags TMB		
Marking tags TMB					
Marking tags TMB					
FLEXIMARK® SOFTWARE 10.0			Thermal transfer printer		
• Print your own labels & signs • Work with Excel files • Print barcodes & sequences 					

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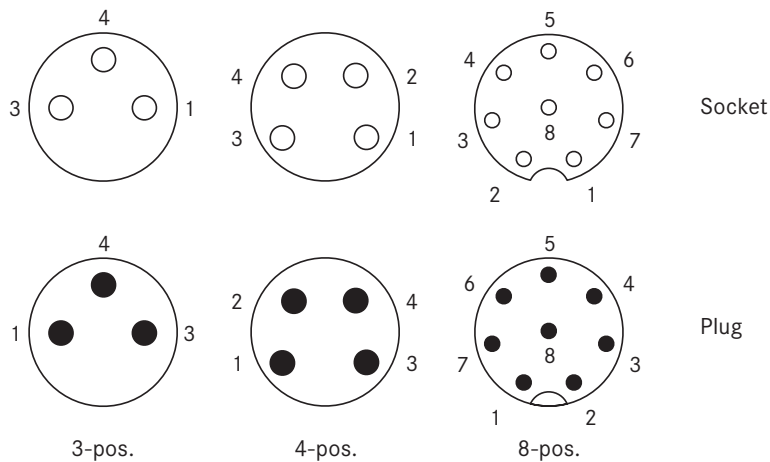
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Appendix

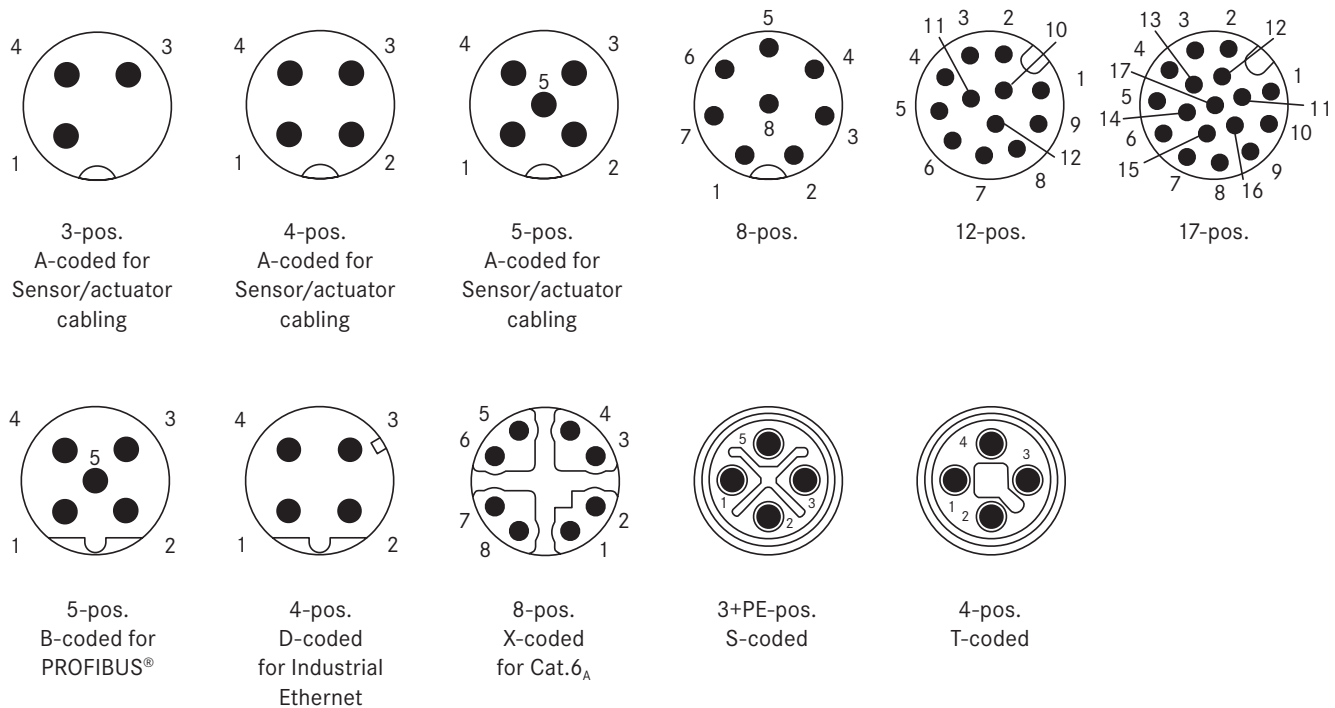
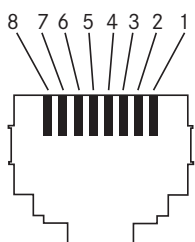


Pin assignments	256
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M8 pin assignments (IEC 61076-2-104)



M12 pin assignments (IEC 61076-2-101)

RJ45 pin assignment
(IEC 60603-7-51)

Connector pin assignments

TIA 568-A	TIA 568-B	PROFINET®	RJ45	M12 D-coded	M12 X-coded	M8
White/Green	White/Orange	Yellow	1	1	1	1
Green	Orange	Orange	2	3	2	4
White/Orange	White/Green	White	3	2	3	2
Blue	Blue	–	4		8	
White/Blue	White/Blue	–	5		7	
Orange	Green	Blue	6	4	4	3
White/Brown	White/Brown	–	7		5	
Brown	Brown	–	8		6	

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The following applies for the use of our products

The conformity of our products to the relevant European directives and compliance with the provisions contained therein shall be indicated by the CE marking.

The safety of our products is closely associated with how they are used. A knowledge of and adherence to the respective international/national standards of use (e.g. DIN VDE 0100; 0298) are

mandatory. There are particular risks if installed improperly. This applies to all our products/items:

Processing is only to be done by an authorised electrician! Otherwise, there is the risk of an electric shock or a fire ignited by electric current!

Safety

Without exception, our products are tested for application safety in accordance with defined standards and our own regulations, which complement the standards. Relevant legal requirements and safety regulations are also observed. Provided due care and attention is paid, the possibility of product-specific danger to the user may thus reasonably be excluded. Where products are used carelessly or incorrectly, however, considerable danger to persons and the

environment may arise. For this reason, our cables must only be processed and/or used responsibly by trained electricians or specialists. This catalogue contains general information for the application of each product. Independent of such information, the application standards DIN VDE 0298 and DIN VDE 0891 for cables will apply. Excerpts from these standards, as well as complementary selection and application tables, design and installation

guidelines, are contained in the tables in the appendix to the current main catalogue. Our machines and installation tools are – where necessary – designed in accordance with the machine guidelines and display the CE identification mark. It must be noted, however, that our machines and installation tools must only be used by trained specialist personnel and for the purpose for which they were designed.

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