

# AUTOMATION GUIDE



**LAPP GROUP**



## Welcome

Please come in and look around. Irrespective of which cable, line, plug and accessory you require for your particular application, you will find exactly what you need here. We have more than 40,000 different standard articles in stock. We also deliver within 24 or 48 hours. Special tasks demand special solutions. In this case too, you need look no further than our company. In addition to the comprehensive range of standard Lapp products, we can also offer you individual cable assemblies and the engineering involved.

You should also be aware of the following: Lapp is one of the leading international system providers. Our brands are used in the most varied of applications, branches and global markets. One of our principles states: when striving for perfection we should rely on no-one but ourselves. This is why we manufacture everything in our own production sites. We also have numerous sales companies and logistics centres around the world, which enable us to be close to our customers. We're somewhere near you too!

To contact your local Lapp Group representative please visit  
**[www.lappgroup.com/worldwide](http://www.lappgroup.com/worldwide)**

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At home in Stuttgart, but known all over the world  
Complete system solutions for automation technology  
The complete range  
**Productfinder**

## UNITRONIC® Data communication systems

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UNITRONIC® LiYD11Y  
UNITRONIC® BUS ASI  
UNITRONIC® BUS ASI FD  
UNITRONIC® BUS PB, PB ROBUST  
UNITRONIC® BUS PB 105  
UNITRONIC® BUS PB FRNC FC  
UNITRONIC® BUS PB ARM, BUS PB Yv  
UNITRONIC® BUS PB YY  
UNITRONIC® BUS PB BURIAL FC  
UNITRONIC® BUS PB FD P  
UNITRONIC® BUS PB FD P A  
UNITRONIC® BUS PB FD P FC  
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UNITRONIC® BUS PB FD P COMBI  
UNITRONIC® BUS PB FD P HYBRID  
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UNITRONIC® BUS PB FESTOON  
UNITRONIC® BUS PB TORSION  
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UNITRONIC® DeviceNet FD THICK+THIN  
UNITRONIC® BUS CAN  
UNITRONIC® BUS CAN FD P  
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S/A cable: M12 socket on free conductor end  
S/A cable: M12 connector on M12 socket  
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S/A cable: M8 socket on free conductor end  
S/A cable: M8 connector on M8 socket  
S/A cable: M8 connector on M12 socket  
S/A cable: M12 connector on free conductor end  
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S/A cable: M12 connector on M12 socket  
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S/A cable: straight M12 Y plug on 2x free conductor end  
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S/A cable: 3-pos., valve connector on free conductor end  
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## At home in Stuttgart, but known all over the world

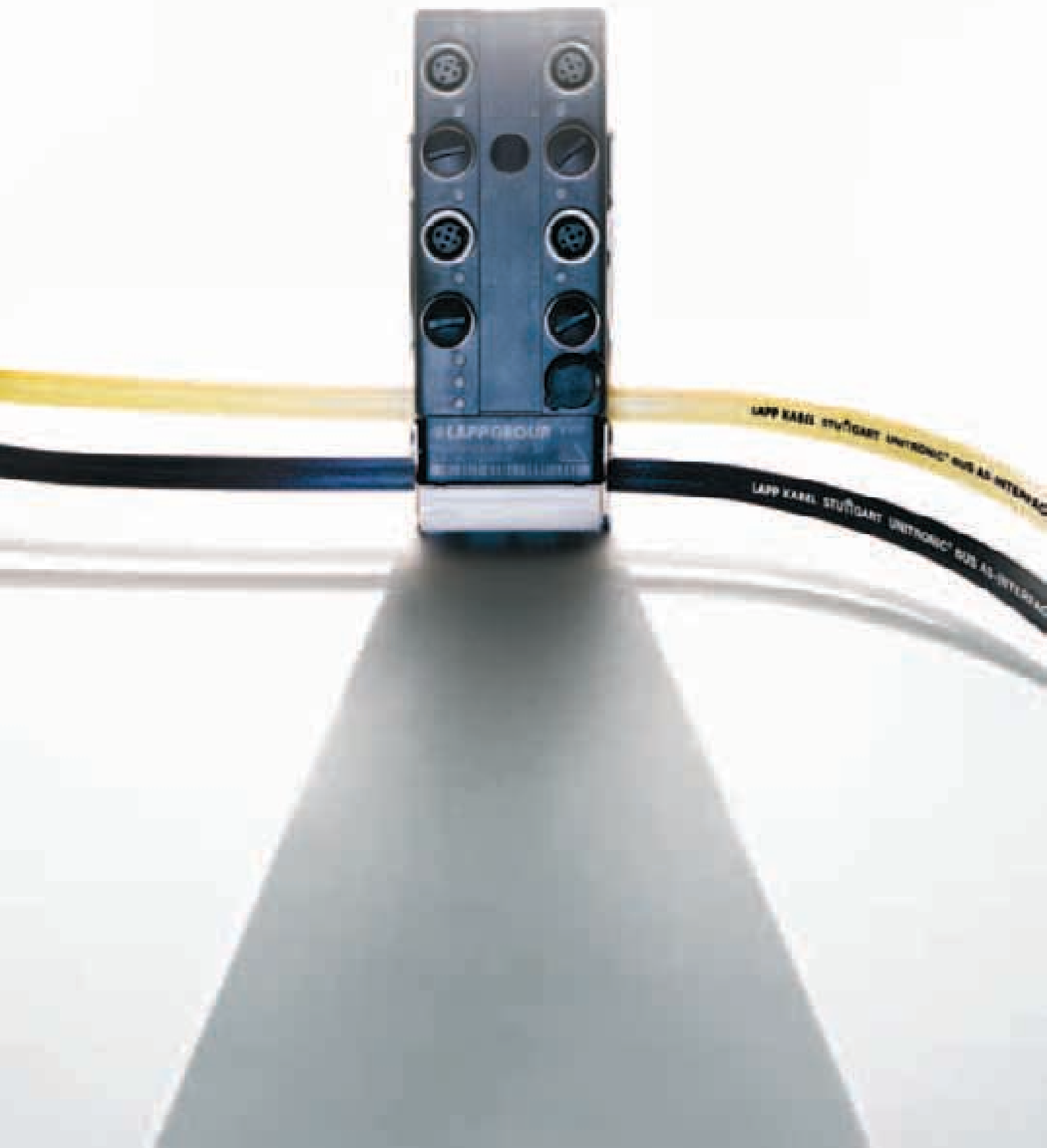
**The World of Lapp is based in Stuttgart. This is where it all started for our company, which was founded in 1959 as U.I. LAPP KG (now U.I. LAPP GmbH). From its headquarters in Stuttgart we have determinedly evolved to become a global player – with currently 16 production plants in Europe, Asia and America, 40 sales companies and more than 100 sales partners. The larger Lapp companies such as Russia, India, China, Canada and Mexico have their own warehouses. The others are promptly supplied through our high-performance logistics centres. At our Lapp Centres we are also strongly committed to enhancing the knowledge of our employees and customers. After all, knowledge is the ink with which the future is written down.**

One of our most successful “products” is that of proximity to our customers. On the one hand, we practice intensive dialogue with designers and planners, manufacturers and users. This enables us to identify new requirements and trends at a much earlier stage, to quickly provide you with suitable solutions. Innovation leadership put into active practice.

On the other hand, proximity to our customers really means something to us: our presence extends all round the globe. As a reliable partner on a local basis we support our customers in exploiting markets by providing them with short delivery times and low logistics costs.

Our current addresses see  
[www.lappgroup.com/worldwide](http://www.lappgroup.com/worldwide)

Complete system solutions for automation technology



# The complete range



## Sensor/Actuator boxes

Sensor/actuator boxes with the standardized connection technology provide connections to all commercially available sensors and -actuators and are the solution for decentralizing small numbers of I/O's. Sensor/actuator boxes can be connected to the Profibus, DeviceNet™ and CANopen fieldbus systems. Regardless of -whether you are installing them on profiles, on flat sur-

faces or under rough conditions – the assembly concept ensures flexibility and reduces the installation costs. The devices enable assembly in two directions and are thus suitable for every application. The arrangement of connectors minimizes the installation time even under rough conditions.

## Sensor/Actuator cables

A comprehensive range of preassembled conductors with M8-, M12- and valve-connectors for rapid wiring of sensors and actuators in the field are available. Sensor/actuator cables with LEDs can be used for

simplified control of signal status. Shielded wiring types are also available for those applications with higher EMV capability.



## AS-i boxes – Easy cabling in the lower field level

The AS-i devices were designed for efficiently networking sensors and actuators in the AS-i network and allow for fast and safe installation with tool-free contacting.

AS-i devices can be installed quickly and easily. The locking mechanism allows a tool-

free connection to the AS-i flat conductors. They are pressed into the corresponding guide aids and the module electronics are moved forward. The devices are connected to the AS-i flat conductors using the penetration technique by snapping the hinged section into place.



## Sensor/Actuator flush type connectors and customer assembled plug connectors

M8 and M12 flush type connectors with integrated braid for device connection to the PCB is available. Freely customizable plug connectors can be used for rapid assembly

of individual wiring lengths of M8 and M12 sensor/actuator cables. Here it is possible to choose between versions with screw or fast connectors.

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Fieldbussystem

Fieldbus sensor/actuator cabling . . . . .

1. Selector: M8/M12 connectors (field attachable) – sensor cable . . . . .

1a. Sensor/actuator cordsets . . . . .

1b. Valve connectors. . . . .

1c. Selector: Flush-type connectors . . . . .

2. Selector: Structured Fieldbus wiring for passive S/A distribution box to PLC I/O . . . . .

3. Selector: Bus-compatible S/A boxes active (IP65/67) . . . . .

4. Selector: Bus-compatible S/A boxes active (IP30/IP67) . . . . .

Type designation UNITRONIC® Fieldbus . . . . .

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ETHERNET in Automation . . . . .

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Fibre optic cables

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For current information see [www.lappgroup.com/products](http://www.lappgroup.com/products)

Application areas for bus cables

- Plant engineering and construction
- Factory Automation (field busses like 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 Factory Automation. Used very often in connection with 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 Saftety, DeviceNet Saftey 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.

CAN = Controller Area Network  
DeviceNet™ = registered trademark of Open Device Vendors Association (ODVA)  
Fieldbus Foundation™ = registered trademark of Fieldbus Foundation™  
SaftyBUS p® = registered trademark of Pilz GmbH & Co. KG  
INTERBUS® = registered trademark of Phoenix Contact GmbH & Co  
Lapp Kabel is a member of the PROFIBUS user organisation e. V. (PNO)

Quickfinder

Bus system	Inst. area	Application/cabling	Outer sheath material	Approval	Characteristics	Article designation	Part number	Page	Connectors
PROFIBUS DP (150 Ω)	indoor	static	PVC			UNITRONIC® BUS PB	2170220	25	1,2,3,4,5,6,11,12,15,16,17,18
				UL/CSA (CMX)		UNITRONIC® BUS PB A	2170219	25	1,2,3,4,5,6,11,12,15,16,17,18
				UL/CSA (CMG)	vibration resistant, UV-resistant	UNITRONIC® BUS PB 7-W A	2170824	25	1,2,3,4,11,12,15,16,17,18,21,22
					Fast Connect, vibration resistant, UV-resistant, black	UNITRONIC® BUS PB Y 7-W FC BK	2170310	**	8,10,20
				UL/CSA (CMG)	Fast Connect, UV-resistant	UNITRONIC® BUS PB FC	2170820	25	7,9,13,14,19
				UL/CSA (CMG)	Fast Connect, vibration resistant, UV-resistant	UNITRONIC® BUS PB 7-W FC	2170826	25	8,10,20,21,22
					vibration resistant, COMBI 3 x 1 mm²	UNITRONIC® BUS PB COMBI 7-W	2170225	25	
					105 °C	UNITRONIC® BUS PB 105	2170630	26	1,2,3,4,5,6,11,12,15,16,17,18,21,22
			H	UL/CSA (CM)	Fast Connect, halogen-free	UNITRONIC® BUS PB H FC	2170326	25	7,9,13,14,19
				UL/CSA (CMG)	Fast Connect, halogen-free	UNITRONIC® BUS PB FRNC FC	2170853	26	7,9,13,14,19
					halogen-free	UNITRONIC® BUS PB H 7-W	2170226	25	1,2,3,4,11,12,15,16,17,18,21,22
			PUR	UL/CSA (CMX)	Fast Connect, oil resistant	UNITRONIC® BUS PB P FC	2170330	25	7,9,13,14,19
			ROBUST		higher chemical resistance, UV-resistant	UNITRONIC® BUS PB ROBUST	2170620	25	1,2,3,4,5,6,11,12,15,16,17,18
			PE		Fast Connect, food & beverage industry, black, UV-resistant	UNITRONIC® BUS PB PE FC	2170333	25	7,9,13,14,19
				food & beverage industry, black, UV-resistant	UNITRONIC® BUS PB PE	2170233	25	1,2,3,4,5,6,11,12,15,16,17,18	
		high flexible	PUR		drag chain suitable, halogen-free, oil resistant	UNITRONIC® BUS PB FD P	2170222	29	1,2,3,4,11,12,15,16,17,18,21,22
				UL/CSA (CMX)	drag chain suitable, halogen-free, oil resistant	UNITRONIC® BUS PB FD P A	2170822	29	1,2,3,4,11,12,15,16,17,18,21,22
				UL/CSA (CMX)	Fast Connect, drag chain suitable, oil resistant	UNITRONIC® BUS PB FD P FC	2170322	30	8,10,20,21,22
					drag chain suitable, oil resistant, COMBI 3 x 1 mm²	UNITRONIC® BUS PB FD P COMBI	2170227	31	
					drag chain suitable, oil resistant, COMBI 4 x 1.5 mm²	UNITRONIC® BUS PB FD P HYBRID	2170495	31	
					drag chain suitable, oil resistant, UV-resistant, COMBI 4 x 1.5 mm²	UNITRONIC® BUS PB FD Y HYBRID	2170875	31	
			PVC	UL/CSA (CMG)	drag chain suitable, oil resistant, UV-resistant, COMBI 4 x 1.5 mm²	UNITRONIC® BUS PB FD Y HYBRID	2170875	31	
			FRNC	UL/CSA (CMG)	Fast Connect, drag chain suitable, halogen-free, flame retardant	UNITRONIC® BUS PB FD FRNC FC	2170854	30	8,10,20,21,22
		torsion	PUR	UL/CSA (CMX)	torsion, halogen-free	UNITRONIC® BUS PB TORSION	2170332	32	1,2,3,4,11,12,15,16,17,18,21,22
	festoon	PVC	UL/CSA (CMG)	cable trolley, festoon, UV-resistant	UNITRONIC® BUS PB FESTOON	2170331	32	1,2,3,4,11,12,15,16,17,18,21,22	
	outdoor	static	PVC		UV-resistant, armoured, max. EMV-protection	UNITRONIC® BUS PB ARM	2170247	27	
					UV-resistant, burial, black	UNITRONIC® BUS PB Yv	2170223	27	
					UV-resistant, burial, black	UNITRONIC® BUS PB YY	2170236	28	1,2,3,4,5,6,11,12,15,16,17,18***
PVC/PE				Fast Connect, UV-resistant, burial, black	UNITRONIC® BUS PB BURIAL FC	2170323	28	7,9,13,14,19****	
PROFIBUS PA (100 Ω)	indoor	static	PVC		Ex area, blue	UNITRONIC® BUS PA BU	2170234	*	21,22
	indoor/outdoor				UV-resistant, black	UNITRONIC® BUS PA BK	2170235	*	21,22
				UL/CSA (CMG)	Fast Connect, Ex area, oil resistant, UV-resistant, blue	UNITRONIC® BUS PA FC (BU) 1X2X1	2170334	*	21,22
					Fast Connect, oil resistant, UV-resistant, black	UNITRONIC® BUS PA FC (BK) 1X2X1	2170335	*	21,22
				CAN CANopen (120 Ω)	indoor	static	PVC	UL/CSA (CMX)	vibration resistant
UNITRONIC® BUS CAN 2X2X0,22	2170261	35	31,32,33,23,24						
UNITRONIC® BUS CAN 1X2X0,34	2170263	35	31,32,33,23,24						
UNITRONIC® BUS CAN 2X2X0,34	2170264	35							
UNITRONIC® BUS CAN 1X2X0,5	2170266	35	31,32,33,23,24						
UNITRONIC® BUS CAN 1X2X0,5	2170267	35							
UNITRONIC® BUS CAN 1X2X0,75	2170269	35							
UNITRONIC® BUS CAN 2X2X0,75	2170270	35							
high flexible	PUR	UL/CSA (CMX)	drag chain suitable, oil resistant, halogen-free			UNITRONIC® BUS CAN FD P 1X2X0,25	2170272	35	31,32,33,23,24
						UNITRONIC® BUS CAN FD P 2X2X0,25	2170273	35	
						UNITRONIC® BUS CAN FD P 1X2X0,34	2170275	35	31,32,33,23,24
						UNITRONIC® BUS CAN FD P 2X2X0,34	2170276	35	
						UNITRONIC® BUS CAN FD P 1X2X0,5	2170278	35	31,32,33,23,24
						UNITRONIC® BUS CAN FD P 2X2X0,5	2170279	35	
DeviceNet (120 Ω)	indoor	static	FRNC	UL/CSA (CMG) Germ. Lloyd	vibration resistant, halogen-free, UV-resistant	UNITRONIC® BUS DN THICK FRNC	2170340	33	
			PVC	UL/CSA (CMG)	vibration resistant, oil resistant, UV-resistant	UNITRONIC® BUS DN THIN FRNC	2170341	33	31,32,33,23,24
						UNITRONIC® BUS DN THICK Y	2170342	33	
						UNITRONIC® BUS DN THIN Y	2170343	33	31,32,33,23,24
		high flexible	PUR	UL/CSA (CMG)	drag chain suitable, halogen-free, UV-resistant	UNITRONIC® BUS DN THICK Y ECO	2170362	33	
						UNITRONIC® BUS DN THIN Y ECO	2170363	33	31,32,33,23,24
						UNITRONIC® BUS DN THICK FD P	2170344	34	
			PVC	UL/CSA (CMG)	drag chain suitable, oil resistant, UV-resistant	UNITRONIC® BUS DN THIN FD P	2170345	34	31,32,33,23,24
					UNITRONIC® BUS DN THICK FD Y	2170346	34		
					UNITRONIC® BUS DN THIN FD Y	2170347	34	31,32,33,23,24	

See continuation page 8

Bus cables

Connectors					
No.	Cable type	Core dimension	Article designation	Part number	Page
PROFIBUS D-SUB					
1	solid + flexible	≤ 1 mm²	ED-PB-35	21700507	*
2	solid + flexible	≤ 1 mm²	ED-PB-35-PG	21700506	*
3	solid + flexible	≤ 1 mm²	ED-PB-90	21700504	*
4	solid + flexible	≤ 1 mm²	ED-PB-90-PG	21700503	*
5	solid	≤ 0.5 mm²	ED-PB-90-ST	21700509	*
6	solid	≤ 0.5 mm²	ED-PB-90-PG-ST	21700508	*
7	solid	0.64 mm	ED-PB-90-FC	21700502	*
8	flexible	0.64 mm	ED-PB-90-FC-FLEX	21700528	*
9	solid	0.64 mm	ED-PB-90-PG-FC	21700501	*
10	flexible	0.64 mm	ED-PB-90-PG-FC-FLEX	21700527	*
11	solid + flexible	≤ 1 mm²	ED-PB-90-LED	21700530	*
12	solid + flexible	≤ 1 mm²	ED-PB-90-PG-LED	21700529	*
13	solid	0.64 mm	ED-PB-90-LED-FC	21700547	*
14	solid	0.64 mm	ED-PB-90-PG-LED-FC	21700546	*
15	solid + flexible	≤ 1 mm²	ED-PB-90-ATEX	21700543	*
16	solid + flexible	≤ 1 mm²	ED-PB-90-PG-ATEX	21700542	*
17	solid + flexible	≤ 1 mm²	ED-PB-90-RP-PG	21700541	*
18	solid + flexible	≤ 1 mm²	ED-PB-AX	21700505	*
19	solid	0.64 mm	ED-PB-AX-FC	21700544	*
20	flexible	0.64 mm	ED-PB-AX-FC-FLEX	21700545	*
PROFIBUS M12					
21	flexible	0.25 – 0.75 mm²	AB-C5-M12MSB-PG9-SH-AU	22260653	87
22	flexible	0.25 – 0.75 mm²	AB-C5-M12FSB-PG9-SH-AU	22260646	87

CAN/CANopen/DeviceNet M12				
23	flexible	0.25 – 0.75 mm²	AB-C5-M12MS-PG9-SH	22260135 87
24	flexible	0.25 – 0.75 mm²	AB-C5-M12FS-PG9-SH	22260136 87

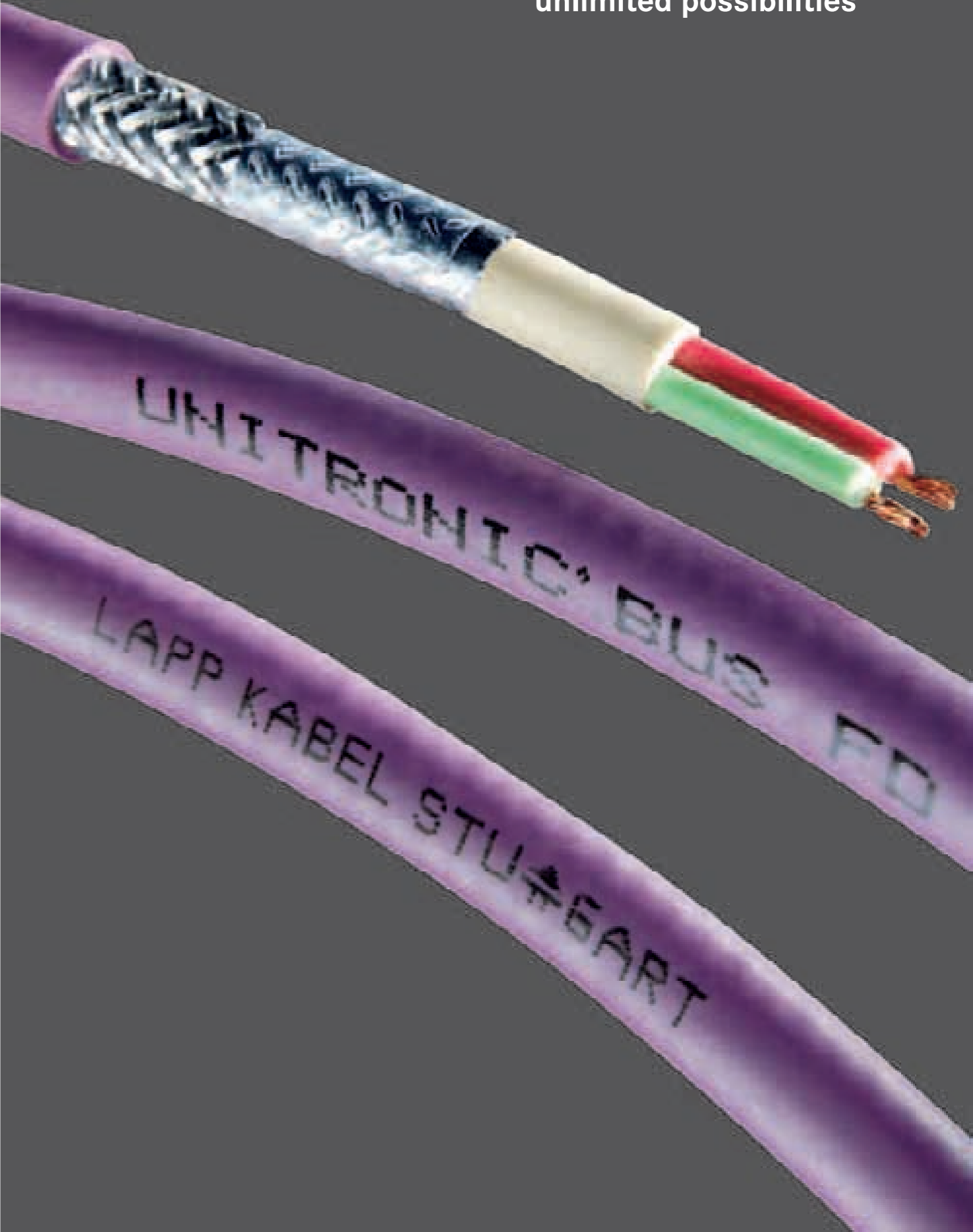
CAN/CANopen/DeviceNet					
31	solid + flexible	≤ 1 mm²	ED-CAN-90	21700537	*
32	solid + flexible	≤ 1 mm²	ED-CAN-90-PG	21700536	*
33	solid + flexible	≤ 1 mm²	ED-CAN-AX	21700538	*

AS-Interface distributor					
No.	Cable type	Distributor	Article designation	Part number	Page
41	flexible	1 x AS-i → 2-pos. M12	AB-ASI-J-Y-N-M12FS	22260800	81
42	flexible	2 x AS-i → 4-pos. M12	AB-ASI-J-Y-B-M12FS	22260801	81
43	flexible	1 x AS-i → 2 x AS-i	AB-ASI-J-Y-Y-N	22260802	81
44	flexible	1 x AS-i → 2-pos. M12 1m	AB-ASI-J-Y-N-PUR-1,0-M12FS	22260803	81
45	flexible	1 x AS-i → 2-pos. M12 2m	AB-ASI-J-Y-N-PUR-2,0-M12FS	22260804	81
46	flexible	2 x AS-i → 4-pos. M12 1m	AB-ASI-J-Y-B-PUR-1,0-M12FS	22260805	81
47	flexible	2 x AS-i → 4-pos. M12 2m	AB-ASI-J-Y-B-PUR-2,0-M12FS	22260806	81

Legend			
35°	35 degree	FSB	Female Straight Bus
90°	90 degree	MSB	Male Straight Bus
ATEX	ATEX (atmosphère explosible)	PB	PROFIBUS
AX	axial (180°)	PG	service port
CAN	CAN bus	PG9	PG9 cable screw connection
ED	EPIC® Data	RP	Repeater
FC	Fast Connect	ST	spring type
FLEX	flexible		

\*see [www.lappgroup.com/products](http://www.lappgroup.com/products)  
Please see detailed technical information on the data sheet ([www.lappautomation.com](http://www.lappautomation.com)).

UNITRONIC® FIELDBUS  
Your partner for  
unlimited possibilities



Quickfinder (continuation)

Bus system	Inst. area	Application/cabling	Outer sheath material	Approval	Characteristics	Article designation	Part number	Page	Connectors
AS-Interface (AS-i) (70 – 140 Ω)	indoor	static/flexible	EPDM (Rubber)		food & beverage industry, halogen-free	UNITRONIC® BUS ASI (G) YE	2170228	23	41 – 47
			TPE		oil resistant, cold flexible	UNITRONIC® BUS ASI (G) BK	2170229	23	
						UNITRONIC® BUS ASI (TPE) YE	2170230	23	
						UNITRONIC® BUS ASI (TPE) BK	2170231	23	
			PUR		oil resistant, cold flexible	UNITRONIC® BUS ASI (PUR) YE	2170201	23	
						UNITRONIC® BUS ASI (PUR) BK	2170202	23	
		high flexible	PVC	UL/CSA (CMG)	oil resistant	UNITRONIC® BUS ASI (PVC) A YE	2170842	23	
						UNITRONIC® BUS ASI (PVC) A BK	2170843	23	
			PUR		drag chain suitable, oil resistant, halogen-free	UNITRONIC® BUS ASI FD P YE	2170306	24	
						UNITRONIC® BUS ASI FD P BK	2170307	24	
		TPE	UL (AWM) CSA	drag chain suitable, oil resistant, 105 °C	UNITRONIC® BUS ASI FD (TPE) A YE	2170830	24		
					UNITRONIC® BUS ASI FD (TPE) A BK	2170831	24		
RS485, RS422 Bus systems (100 – 120 Ω)	indoor	static	PVC	UL/CSA (CMX)		UNITRONIC® BUS LD 1x2x0,22	2170203	*	Standard D-SUB connector 9-pos.
						UNITRONIC® BUS LD 2x2x0,22	2170204	*	
						UNITRONIC® BUS LD 3x2x0,22	2170205	*	
						UNITRONIC® BUS LD A 1x2x0,22	2170803	*	
						UNITRONIC® BUS LD A 2x2x0,22	2170804	*	
						UNITRONIC® BUS LD A 3x2x0,22	2170805	*	
		high flexible	PUR	UL/CSA (CMX)	drag chain suitable, oil resistant	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	*	
Fieldbus Foundation™ (100 Ω)	indoor/outdoor	flexible	PVC	UL/CSA (CMG)	105°C, UV-resistant, yellow	UNITRONIC® BUS FF 3	2170350	*	
					105°C, UV-resistant, yellow	UNITRONIC® BUS FF 2	2170352	*	
		static			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	*	
CC-Link® (110 Ω)	indoor/outdoor	flexible	PVC	UL (CM) CLPA	UV-resistant	UNITRONIC® BUS CC	2170360	*	
	indoor	high flexible	PUR	UL (AWM)	drag chain suitable, halogen-free, oil resistant,	UNITRONIC® BUS CC FD P FRNC	2170370	*	
SafetyBUS (120 Ω)	indoor	static	H		halogen-free, vibration resistant	UNITRONIC® BUS SAFETY	2170295	*	
			PVC	UL (AWM)	vibration resistant	UNITRONIC® BUS SAFETY FC	2170895	*	
		high flexible	PUR		drag chain suitable, halogen-free	UNITRONIC® BUS SAFETY FD P	2170885	*	
INTERBUS (100 Ω)	indoor	static	PVC		vibration resistant	UNITRONIC® BUS IBS	2170206	*	Standard D-SUB connector 9-pos.
				UL/CSA (CMX)	vibration resistant	UNITRONIC® BUS IBS A	2170209	*	
			PUR		vibration resistant, COMBI 3 x 1 mm²	UNITRONIC® BUS IBS P COMBI	2170208	*	
		high flexible	PUR		drag chain suitable	UNITRONIC® BUS IBS FD P	2170216	*	
					drag chain suitable, COMBI 3 x 1 mm²	UNITRONIC® BUS IBS FD P COMBI	2170218	*	
				UL/CSA (CMX)	drag chain suitable, COMBI 3 x 1 mm²	UNITRONIC® BUS IBS FD P COMBI A	2170818	*	
	outdoor	static	PVC		vibration resistant	UNITRONIC® BUS IBS Yv	2170207	*	
					vibration resistant	UNITRONIC® BUS IBS Yv COMBI	2170217	*	
European Installation Bus EIB/KNX	indoor	static	PVC			UNITRONIC® BUS EIB	2170240	*	
			H		halogen-free	UNITRONIC® BUS EIB H	2170241	*	
			PVC		COMBI 3 x 1.5 mm²	UNITRONIC® BUS EIB COMBI	2170242	*	

Legend

7-W: 7-Wire: 7-stranded litz, dedicatet 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

PA: Process Automation

PB: PROFIBUS

PE: Polyethlen: can be used in food & beverage industry

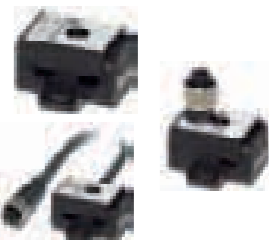
PROFIBUS PA: PROFIBUS for Process Automation, especially in hazardous areas

ROBUST: extended use: Water, chemical resistance, soap, tenside

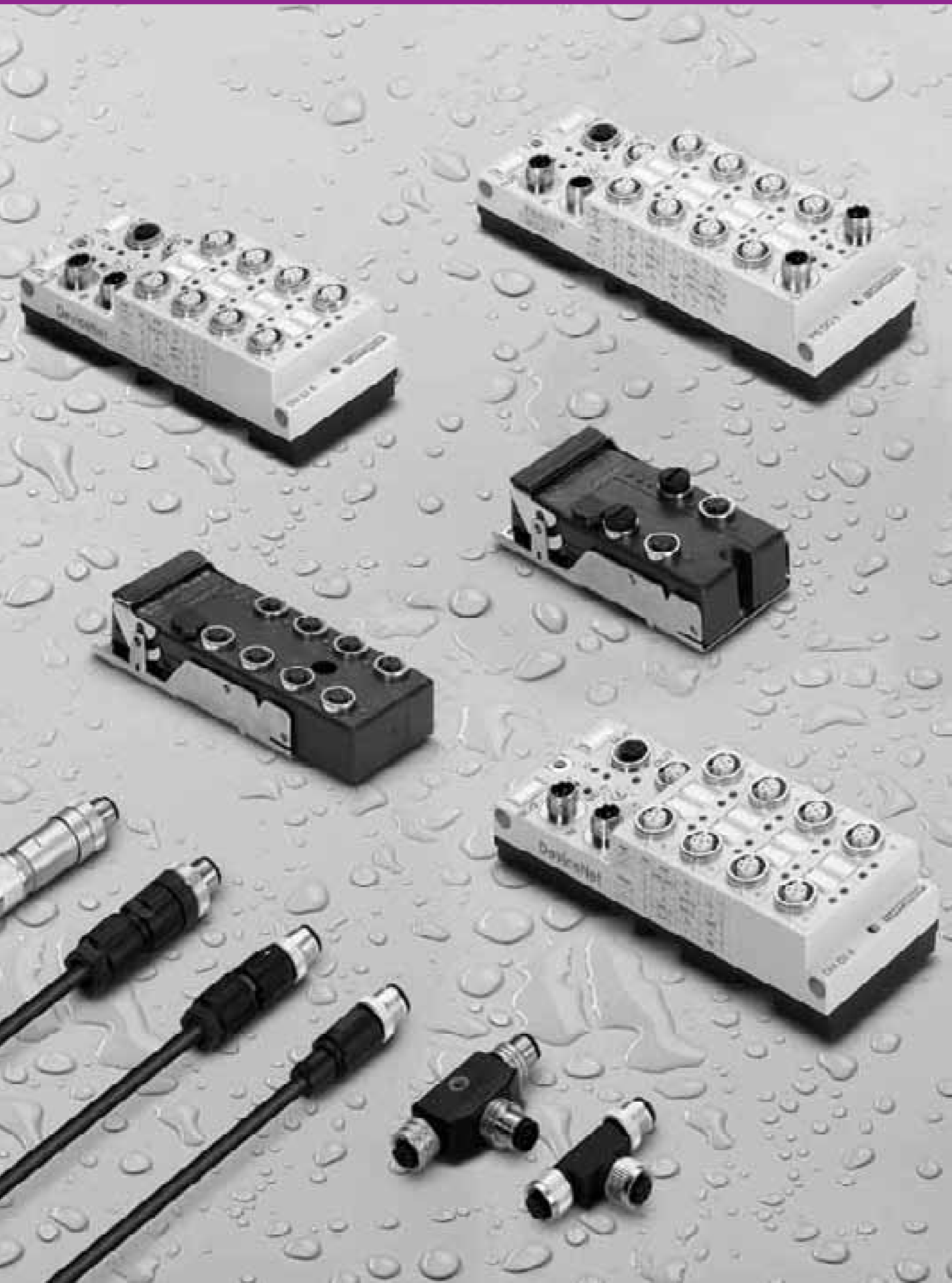
vibration resistant: Vibration resistant because single core ist 7-wire stranded

Y: PVC – Polyvinylchlorid

\*see [www.lappgroup.com/products](http://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.lappautomation.com](http://www.lappautomation.com)).

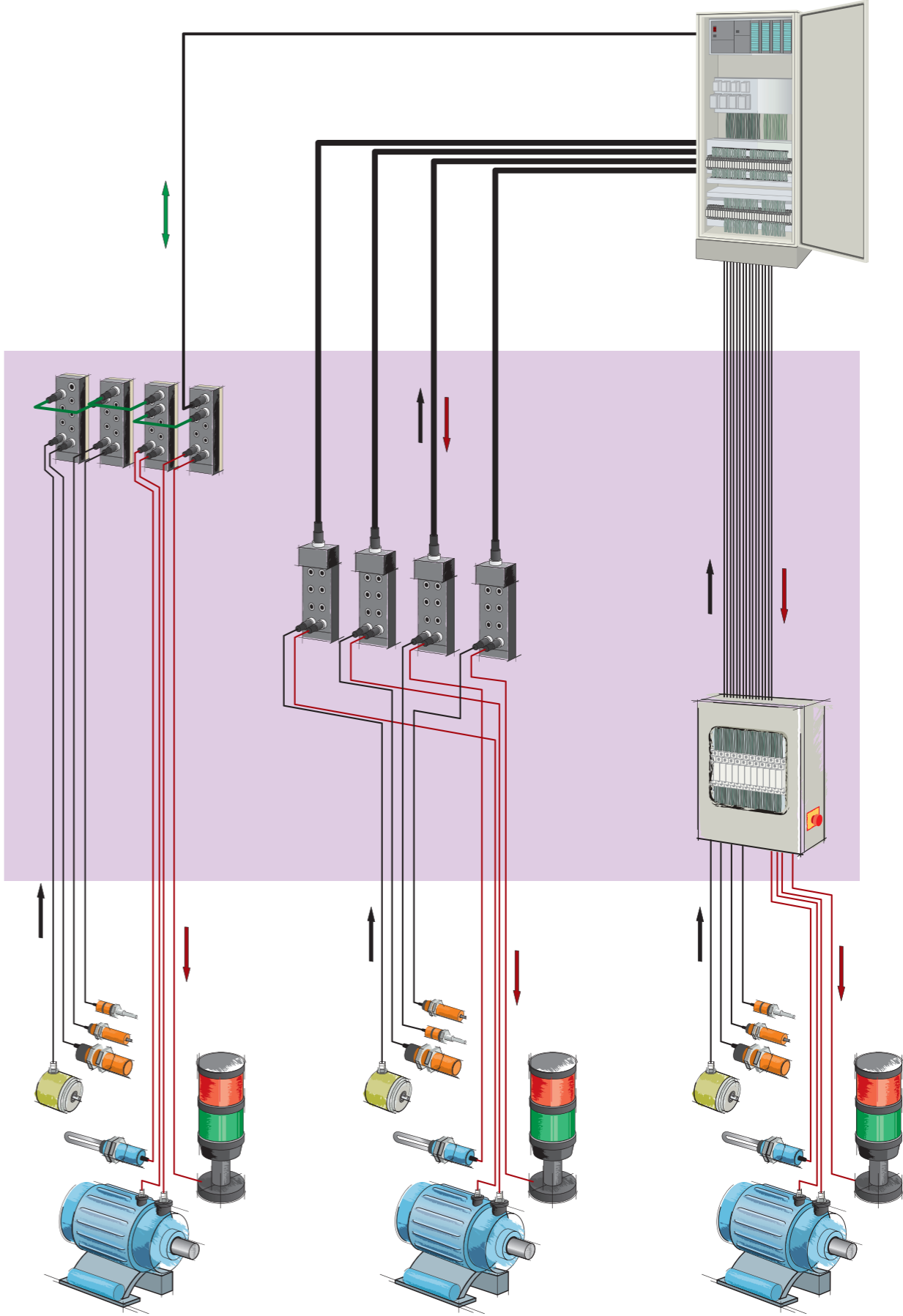
Connectors						
AS-Interface distributor						
No.	Cable type	Distributor	Article designation	Part number	Page	
41	flexible	1 x AS-i → 2-pos. M12	AB-ASI-J-Y-N-M12FS	22260800	81	
42	flexible	2 x AS-i → 4-pos. M12	AB-ASI-J-Y-B-M12FS	22260801	81	
43	flexible	1 x AS-i → 2 x AS-i	AB-ASI-J-Y-Y-N	22260802	81	
44	flexible	1 x AS-i → 2-pos. M12 1m	AB-ASI-J-Y-N-PUR-1,0-M12FS	22260803	81	
45	flexible	1 x AS-i → 2-pos. M12 2m	AB-ASI-J-Y-N-PUR-2,0-M12FS	22260804	81	
46	flexible	2 x AS-i → 4-pos. M12 1m	AB-ASI-J-Y-B-PUR-1,0-M12FS	22260805	81	
47	flexible	2 x AS-i → 4-pos. M12 2m	AB-ASI-J-Y-B-PUR-2,0-M12FS	22260806	81	

Fieldbus systems



Fieldbus systems

Fieldbus sensor/actuator cabling



1. Selector: M8/M12 connectors (field attachable) – sensor cable

Connectors									UNITRONIC® SENSOR					UNITRONIC® SENSOR FD UL/CSA					UNITRONIC® shielded version				UNITRONIC® shielded version, UL/CSA	
									S-LiFYY (3x0,34)	S-LiFYY (4x0,34)	DESINA (4x0,34)	S-LiFY11Y (4x0,34)	S-LiF11Y (5x0,25)	Li9Y11Y (3x0,34)	Li9Y11Y (4x0,34)	Li9Y11Y (5x0,34)	Li9Y11Y (5x0,25)	Li9Y11Y (8x0,25)	LiYCY (5x0,34)	LiHCH (5x0,34)	LiYCY (8x0,25)	LiYD11Y (5x0,25)	FD CP plus (5x0,25)	FD CP plus (5x0,34)
								Outer diameter [mm]	4.8	4.8	5.2	4.8	4.9	4.6	4.7	5.1	4.7	5.9	6.2	6.4	7.1	6.0	6.2	6.8
								Part number	7038859	7038860	0040434	7038861	7038862	7038864	7038865	7038866	7038867	7038868	0034505	0037505	0034408	0033305	0028892	0028901
								Page	71	71	71	71	71	71	71	71	71	71	*	*	*	22	21	21
Connection	Number of poles	Version	Connection type	Conductor cross-section [mm²]	Cable diameter [mm]	Part number	Page																	
M8	3-pos.	socket, straight	Screw	0.14 – 0.5	3.5 – 5.0	22260125	70		X				X											
		connector, straight	Screw	0.14 – 0.5	3.5 – 5.0	22260120	70		X				X											
		socket, straight	Piercing	0.14 – 0.38	3.0 – 5.0	22260124	70		X				X											
		connector, straight	Piercing	0.14 – 0.38	3.0 – 5.0	22260122	70		X				X											
	4-pos.	socket, straight	Screw	0.14 – 0.5	3.5 – 5.0	22260126	70							X										
		connector, straight	Screw	0.14 – 0.5	3.5 – 5.0	22260121	70							X										
		socket, straight	Piercing	0.14 – 0.38	3.0 – 5.0	22260119	70							X										
		connector, straight	Piercing	0.14 – 0.38	3.0 – 5.0	22260123	70							X										
M12	4-pos.	socket, straight	IDC	0.14 – 0.34	3.5 – 6.0	22260131	69		X	X	X	X		X										
		socket, straight	IDC	0.34 – 0.75	4.0 – 8.0	22260133	69		X	X	X	X		X										
		connector, straight	IDC	0.14 – 0.34	3.5 – 6.0	22260132	69			X	X	X		X										
		connector, straight	IDC	0.34 – 0.75	4.0 – 8.0	22260134	69			X	X	X		X										
	5-pos.	socket, straight	Screw	0.25 – 0.75	4.0 – 6.0	22260127	69					X			X	X								
		socket, angled	Screw	0.25 – 0.75	4.0 – 6.0	22260128	69					X			X	X								
		connector, straight	Screw	0.25 – 0.75	4.0 – 6.0	22260129	69					X			X	X								
		connector, angled	Screw	0.25 – 0.75	4.0 – 6.0	22260130	69					X			X	X								
		socket, straight, shielded	Screw	0.25 – 0.75	6.0 – 8.0	22260136	69										X	X		X	X	X		
		connector, straight, shielded	Screw	0.25 – 0.75	6.0 – 8.0	22260135	69										X	X		X	X	X		
	8-pos.	connector, straight, shielded	Screw	0.25 – 0.75	6.0 – 8.0	22260825	69										X			X				
		socket, straight, shielded	Screw	0.25 – 0.75	6.0 – 8.0	22260826	69										X			X				

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

1a. Sensor/actuator cordsets



S/A selector			M8 connector				M12 connector												M12 connector shielded (SH)						Free conductor end to the direct connection at field attachable connectors		Page	
			straight (M8MS)				straight (M12MS)						angled (M12MA)						straight (M12MS ... SH)									
			3-pos.		4-pos.		3-pos.		4-pos.		5-pos.		3-pos.		4-pos.		5-pos.		3-pos.		4-pos.		5-pos.					
			Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page				
S/A cable with free conductor end to the direct connection at: – sensors/actuators and – field attachable connectors			2.0 m	22260204	40	22260300	48	22260221	36	22260320	44	22260400	51	22260223	36	22260301	44	22260402	51	22260453	54	22260459	54	22260465	54			
			5.0 m	22260205	40	22260308	48	22260222	36	22260321	44	22260401	51	22260224	36	22260302	44	22260403	51	22260454	54	22260460	54	22260466	54			
			10.0 m	22260218	40	22260318	48	22260249	36	22260342	44	22260414	51	22260256	36	22260303	44	22260417	51	22260455	54	22260461	54	22260467	54			
M8 socket	straight socket (M8FS)	3-pos.	0.3 m	22260206	42			22260225	39																2.0 m	22260202	41	
			0.6 m	22260207	42			22260226	39																5.0 m	22260200	41	
			1.0 m	22260208	42			22260227	39																10.0 m	22260219	41	
			2.0 m	22260209	42			22260228	39																			
		4-pos.	0.3 m			22260313	50			22260347	47														2.0 m	22260309	49	
			0.6 m			22260314	50			22260349	47														5.0 m	22260310	49	
			1.0 m			22260315	50			22260350	47														10.0 m	22260317	49	
			2.0 m			22260316	50			22260348	47																	
	angled socket (M8FA)	3-pos.	0.3 m	22260210	42			22260229	39																2.0 m	22260203	41	
			0.6 m	22260211	42			22260230	39																5.0 m	22260201	41	
			1.0 m	22260212	42			22260231	39																10.0 m	22260220	41	
			2.0 m	22260213	42			22260232	39																			
		4-pos.	0.3 m																						2.0 m	22260311	49	
			0.6 m																						5.0 m	22260312	49	
			1.0 m																						10.0 m	22260319	49	
			2.0 m																									
	angled socket with LEDs (M8FA-2L)	3-pos.	0.3 m	22260214	42			22260267	39																2.0 m	22260275	41	
			0.6 m	22260215	42			22260268	39																5.0 m	22260276	41	
			1.0 m	22260216	42			22260269	39																10.0 m	22260277	41	
			2.0 m	22260217	42			22260270	39																			
M12 socket	straight socket (M12FS)	3-pos.	0.3 m	22260241	43			22260233	38															2.0 m	22260257	37		
			0.6 m	22260242	43			22260234	38																5.0 m	22260250	37	
			1.0 m	22260243	43			22260235	38																10.0 m	22260251	37	
			2.0 m	22260244	43			22260236	38																			
		4-pos.	0.3 m						22260328	46						22260304	46								2.0 m	22260322	45	
			0.6 m						22260329	46						22260305	46								5.0 m	22260323	45	
			1.0 m						22260330	46						22260306	46								10.0 m	22260343	45	
			2.0 m						22260331	46						22260307	46											
		5-pos.	0.3 m								22260410	53													2.0 m	22260404	52	
			0.6 m								22260411	53													5.0 m	22260405	52	
			1.0 m								22260412	53													10.0 m	22260415	52	
			2.0 m								22260413	53																
	straight socket with LEDs (M12FS-2L)	3-pos.	0.3 m																						2.0 m	22260252	37	
			0.6 m																					5.0 m	22260265	37		
			1.0 m																					10.0 m	22260266	37		
			2.0 m																									
		4-pos.	0.3 m																						2.0 m	22260344	45	
			0.6 m																						5.0 m	22260345	45	
			1.0 m																						10.0 m	22260346	45	
			2.0 m																									
	angled socket (M12FA)	3-pos.	0.3 m	22260245	43			22260237	38																2.0 m	22260258	37	
			0.6 m	22260246	43			22260238	38																5.0 m	22260259	37	
			1.0 m	22260247	43			22260239	38																10.0 m	22260260	37	
			2.0 m	22260248	43			22260240	38																			
		4-pos.	0.3 m							22260332	46														2.0 m	22260324	45	
			0.6 m							22260333	46														5.0 m	22260325	45	
			1.0 m							22260334	46														10.0 m	22260341	45	
			2.0 m							22260335	46																	
		5-pos.	0.3 m																						2.0 m	22260406	52	
			0.6 m																						5.0 m	22260407	52	
			1.0 m																						10.0 m	22260418	52	
			2.0 m																									

Example: AB-C4-M12MA-2,0PUR-M12FS

S/A

Example: AB-C4-M12MA-2,0PUR-M12FS

1a. Sensor/actuator cordsets (continuation)

S/A

S/A selector				M8 connector				M12 connector												M12 connector shielded (SH)						Free conductor end to the direct connection at field attachable connectors		Page	
				straight (M8MS)				straight (M12MS)						angled (M12MA)						straight (M12MS ... SH)									
				3-pos.		4-pos.		3-pos.		4-pos.		5-pos.		3-pos.		4-pos.		5-pos.		3-pos.		4-pos.		5-pos.					
				Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page	Part number	Page				
M12 socket	angled socket with LEDs (M12FA-xL)	3-pos.	0.3 m	22260271	43			22260261	38																2.0 m	22260253	37		
			0.6 m	22260272	43			22260262	38																5.0 m	22260254	37		
			1.0 m	22260273	43			22260263	38																10.0 m	22260255	37		
			2.0 m	22260274	43			22260264	38																				
		4-pos.	0.3 m							22260336	46															2.0 m	22260326	45	
			0.6 m							22260337	46															5.0 m	22260327	45	
			1.0 m							22260338	46															10.0 m	22260340	45	
			2.0 m							22260339	46																		
		5-pos.	0.3 m																							2.0 m	22260408	52	
			0.6 m																							5.0 m	22260409	52	
			1.0 m																							10.0 m	22260416	52	
			2.0 m																							25.0 m	22260760	52	
M12 socket shielded	straight socket shielded (M12FS-SH)	3-pos.																							2.0 m	22260450	55		
																									5.0 m	22260451	55		
																									10.0 m	22260452	55		
		4-pos.																								2.0 m	22260456	55	
																										5.0 m	22260457	55	
																										10.0 m	22260458	55	
																										20.0 m	22260823	55	
		5-pos.																									2.0 m	22260462	55
																										5.0 m	22260463	55	
																										10.0 m	22260464	55	

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request. Please see detailed technical information on the data sheet ([www.lappautomation.com](http://www.lappautomation.com)).

1b. Valve connectors

S/A

Connectortyp		with M12 connector straight					Free conductor end to the direct connection at field attachable connectors				
Article designation	Version	Length	3-pos.	Page	5-pos.	Page	Length	3-pos.	Page	5-pos.	Page
Typ A (18 mm)	PE bridged with 1 LED and protective circuit (Z diode) PUR cable	0.3 m	22260550	61			2.0 m	22260584	60		
		0.6 m	22260551	61			5.0 m	22260576	60		
		1.0 m	22260552	61			10.0 m	22260577	60		
		2.0 m	22260553	61							
Typ B (10 mm)		0.3 m	22260558	61			2.0 m	22260585	60		
		0.6 m	22260559	61			5.0 m	22260578	60		
		1.0 m	22260560	61			10.0 m	22260579	60		
		2.0 m	22260561	61							
Typ BI (11 mm)		0.3 m	22260554	61			2.0 m	22260586	60		
		0.6 m	22260555	61			5.0 m	22260580	60		
		1.0 m	22260556	61			10.0 m	22260581	60		
		2.0 m	22260557	61							
Typ C (8 mm)		0.3 m	22260566	61			2.0 m	22260587	60		
		0.6 m	22260567	61			5.0 m	22260582	60		
		1.0 m	22260568	61			10.0 m	22260583	60		
		2.0 m	22260569	61							
Typ CI (9.4 mm)		0.3 m	22260562	61			2.0 m	22260588	60		
		0.6 m	22260563	61			5.0 m	22260574	60		
		1.0 m	22260564	61			10.0 m	22260575	60		
		2.0 m	22260565	61							
Typ AD (18 mm)	for pressure switch 2 LEDs PUR cable	0.3 m			22260573	63	2.0 m			22260589	62
		0.6 m			22260572	63	5.0 m			22260590	62
		1.0 m			22260571	63	10.0 m			22260591	62
		2.0 m			22260570	63					

Suitable field attachable connectors (screw connection)				
Connector		Part number	Page	
M8	3-pos.	Connector straight	22260120	70
	4-pos.	Connector straight	22260134	69
M12	5-pos.	Connector straight	22260129	69
		Connector angled	22260130	69

1c. Selector: Flush-type connectors

S/A

	Flush-type connector with 0.5 m PUR single liz					
	Connection	Number of poles	Mounting type	Article designation	Part number	Page
Front mounting	M8 socket	3	M8 x 0,5 (SW 10 mm)	AB-C3-M8FS-0,5	22260102	74
		4		AB-C4-M8FS-0,5	22260103	74
	M8 connector	3		AB-C3-M8MS-0,5	22260100	74
		4		AB-C4-M8MS-0,5	22260101	74
	M12 socket	4	M16 x 1,5 (SW 17 mm)	AB-C4-M12FS-M16-0,5	22260107	72
		4	PG9 (SW 17 mm)	AB-C4-M12FS-PG9-0,5	22260114	73
		5	M16 x 1,5 (SW 17 mm)	AB-C5-M12FS-M16-0,5	22260105	72
		5	PG9 (SW 17 mm)	AB-C5-M12FS-PG9-0,5	22260111	73
	M12 connector	4	M16 x 1,5 (SW 17 mm)	AB-C4-M12MS-M16-0,5	22260108	72
		4	PG9 (SW 17 mm)	AB-C4-M12MS-PG9-0,5	22260113	73
		5	M16 x 1,5 (SW 17 mm)	AB-C5-M12MS-M16-0,5	22260106	72
		5	PG9 (SW 17 mm)	AB-C5-M12MS-PG9-0,5	22260112	73
Rear mounting	M12 socket	4	PG9 (SW 17 mm)	AB-C4-DSI-M12FS-PG9-0,5	22260118	73
		5	PG9 (SW 17 mm)	AB-C5-DSI-M12FS-PG9-0,5	22260116	73
	M12 connector	4	PG9 (SW 17 mm)	AB-C4-DSI-M12MS-PG9-0,5	22260117	73
		5	PG9 (SW 17 mm)	AB-C5-DSI-M12MS-PG9-0,5	22260115	73

Suitable fitting nut		
SW [mm]	Part number	Page
10	22260104	75
19	22260110	75
18	22260109	75
19	22260110	75
18	22260109	75
19	22260110	75
18	22260109	75
19	22260110	75
18	22260109	75
18	included	
18	included	
18	included	
18	included	

Suitable S/A connection		
Number of poles	straight connector	angled connector
3	M8MS	M8MA
4	M8MS	M8MA
3	M8FS	M8FA
4	M8FS	M8FA
4	M12MS	M12MA
5	M12MS	M12MA
4	M12FS	M12FA
5	M12FS	M12FA
4	M12MS	M12MA
5	M12MS	M12MA
4	M12FS	M12FA
5	M12FS	M12FA

2. Selector: Structured Fieldbus wiring for passive S/A distribution box to PLC I/O

S/A connection (box)					Status indication (box)	Characteristics of S/A distribution box	Article designation	Part number							
Socket**	Number of S/A slots	S/A type of signal	PE-connection	Pins than a single slot							S/A box incl. master cable				
											5.0 m	Page	10.0 m	Page	
M12	4	2-/3-wire, PNP	x	simply	Power-/Signal-LED	S/A distribution box M12 with <b>fixed assembled master cable</b> , PUR, metal thread with quick locking system, drag chain suitable	AB-B4-M12L-4-x,yPUR		22260018	66	22260019	66			
	4	2-/3-/4-wire, PNP	x	double			AB-B4-M12L-8-x,yPUR		22260020	66	22260021	66			
	4	2-/3-wire, PNP/NPN	x	simply			AB-B4-M12-4-x,yPUR		22260010	66	22260011	66			
	4	2-/3-/4-wire, PNP/NPN	x	double			AB-B4-M12-8-x,yPUR		22260012	66	22260013	66			
	8	2-/3-wire, PNP	x	simply	Power-/Signal-LED		AB-B8-M12L-8-x,yPUR		22260022	66	22260023	66			
	8	2-/3-/4-wire, PNP	x	double			AB-B8-M12L-16-x,yPUR		22260024	66	22260025	66			
	8	2-/3-wire, PNP/NPN	x	simply			AB-B8-M12-8-x,yPUR		22260014	66	22260015	66			
	8	2-/3-/4-wire, PNP/NPN	x	double			AB-B8-M12-16-x,yPUR		22260016	66	22260017	66			
M8	4	2-/3-wire, PNP		simply	Power-/Signal-LED	S/A distribution box M8 with <b>fixed assembled master cable</b> , PUR, metal thread, drag chain suitable	AB-B4-M8L-4-x,yPUR		22260026	64	22260027	64			
	6	2-/3-wire, PNP					AB-B6-M8L-6-x,yPUR		22260028	64	22260029	64			
	8	2-/3-wire, PNP					AB-B8-M8L-8-x,yPUR		22260030	64	22260031	64			
	10	2-/3-wire, PNP					AB-B10-M8L-10-x,yPUR		22260032	64	22260033	64			
								S/A box	Page	Master cable, optional accessories for the S/A box					
										5.0 m	Page	10.0 m	Page	100 m ring	Page
M8	4	2-/3-wire, PNP		simply	Power-/Signal-LED	S/A distribution box M8 and <b>master cable connection M16</b>	AB-B4-M8L-4-M16	22260034	65	22260607	*	22260608	*		
	6	2-/3-wire, PNP					AB-B6-M8L-6-M16	22260035	65	22260609	*	22260610	*		
	8	2-/3-wire, PNP					AB-B8-M8L-8-M16	22260036	65	22260611	*	22260612	*		
	10	2-/3-wire, PNP					AB-B10-M8L-10-M16	22260037	65	22260613	*	22260614	*		
	4	2-/3-wire, PNP				S/A distribution box M8 and <b>master cable connection M12</b>	AB-B4-M8L-4-M12	22260038	65	22260615	*	22260616	*		
	6	2-/3-wire, PNP					AB-B6-M8L-6-M12	22260039	65	22260615	*	22260616	*		
M12	4	2-/3-wire, PNP/NPN	x	simply	Power-/Signal-LED	S/A distribution box M12 with <b>pluggable master cable connection</b> , metal thread with quick locking system, master cable as bulk stock (optional connection hood 22260009)	AB-B4-M12-4-C	22260005	67					7038880	68
	4	2-/3-wire, PNP	x				AB-B4-M12L-4-C	22260001	67						
	4	2-/3-/4-wire, PNP/NPN	x	double	Power-/Signal-LED		AB-B4-M12-8-C	22260006	67					7038881	68
	4	2-/3-/4-wire, PNP	x				AB-B4-M12L-8-C	22260002	67						
	8	2-/3-/4-wire, PNP/NPN	x	simply	Power-/Signal-LED		AB-B8-M12-8-C	22260007	67						
	8	2-/3-wire, PNP	x				AB-B8-M12L-8-C	22260003	67						
	8	2-/3-/4-wire, PNP/NPN	x	double	Power-/Signal-LED		AB-B8-M12-16-C	22260008	67					7038882	68
	8	2-/3-/4-wire, PNP	x				AB-B8-M12L-16-C	22260004	67						

Legend  
\*see www.lappgroup.com/products  
\*\*Screw plug for unoccupied sockets:  
M12 22260605  
M8 22260606  
Please see detailed technical information on the data sheet (www.lappautomation.com).

PLC

3. Selector: Bus-compatible S/A boxes active (IP65/67)



Bus	Digital inputs/outputs						Type of connection (M12)/type of signal			Article designation	Page	
	Inputs			Outputs			PNP		max. connectable type of connection (input)			
	4	8	16	4	8	I <sub>max</sub> /channel	Sensor	Actuator				
PROFIBUS			x					2-/3-,4-wire		4x 4-wire 3x 4-wire + 2x 3-/2-wire 2x 4-wire + 4x 3-/2-wire 1x 4-wire + 6x 3-/2-wire 8x 3-/2-wire	AB-PB-DI8-M12 22260738	78
				x				2-/3-,4-wire		8x 4-wire 7x 4-wire + 2x 2-/3-wire 6x 4-wire + 4x 2-/3-wire ... 16x 2-/3-wire	AB-PB-DI16-M12 22260739	78
	x				x		2 A	2-/3-,4-wire	2-/3-wire	2x 4-wire 1x 4-wire + 2x 2-/3-wire 4x 2-/3-wire	AB-PB-DI4DO4-M12-2A 22260740	78
			x			x	0,5 A	2-/3-,4-wire	2-/3-wire	4x 4-wire 3x 4-wire + 2x 3-/2-wire 2x 4-wire + 4x 3-/2-wire 1x 4-wire + 6x 3-/2-wire 8x 3-/2-wire	AB-PB-DI8DO8-M12A-0,5A 22260762	78
						x	2 A		2-/3-wire		AB-PB-DO8-M12-2A 22260742	78
DeviceNet			x					2-/3-,4-wire		4x 4-wire 3x 4-wire + 2x 3-/2-wire 2x 4-wire + 4x 3-/2-wire 1x 4-wire + 6x 3-/2-wire 8x 3-/2-wire	AB-DN-DI8-M12 22260743	79
				x				2-/3-,4-wire		8x 4-wire 7x 4-wire + 2x 2-/3-wire 6x 4-wire + 4x 2-/3-wire ... 16x 2-/3-wire	AB-DN-DI16-M12 22260744	79
	x				x		2 A	2-/3-,4-wire	2-/3-wire	2x 4-wire 1x 4-wire + 2x 2-/3-wire 4x 2-/3-wire	AB-DN-DI4DO4-M12-2A 22260745	79
			x			x	0,5 A	2-/3-,4-wire	2-/3-wire	4x 4-wire 3x 4-wire + 2x 3-/2-wire 2x 4-wire + 4x 3-/2-wire 1x 4-wire + 6x 3-/2-wire 8x 3-/2-wire	AB-DN-DI8DO8-M12A-0,5A 22260763	79
						x	2 A		2-/3-wire		AB-DN-DO8-M12-2A 22260747	79
CANopen			x					2-/3-,4-wire		4x 4-wire 3x 4-wire + 2x 3-/2-wire 2x 4-wire + 4x 3-/2-wire 1x 4-wire + 6x 3-/2-wire 8x 3-/2-wire	AB-CAN-DI8-M12 22260748	80
				x				2-/3-,4-wire		8x 4-wire 7x 4-wire + 2x 2-/3-wire 6x 4-wire + 4x 2-/3-wire ... 16x 2-/3-wire	AB-CAN-DI16-M12 2226049	80
	x				x		2 A	2-/3-,4-wire	2-/3-wire	2x 4-wire 1x 4-wire + 2x 2-/3-wire 4x 2-/3-wire	AB-CAN-DI4DO4-M12-2A 22260750	80
			x			x	0,5 A	2-/3-,4-wire	2-/3-wire	4x 4-wire 3x 4-wire + 2x 3-/2-wire 2x 4-wire + 4x 3-/2-wire 1x 4-wire + 6x 3-/2-wire 8x 3-/2-wire	AB-CAN-DI8DO8-M12A-0,5A 22260764	80
						x	2 A		2-/3-wire		AB-CAN-DO8-M12-2A 22260752	80

		Pre-assembled bus cables double-sided		Pre-assembled bus cables single-sided				Bus cable as bulk stock	Suitable M12 connector		Suitable EPIC® data connector (9-pos. D-Sub.) (see page 7)		PLC interface
		M12 connector on M12 socket		M12 connector on free conductor end		M12 socket on free conductor end			Part number	Page	Part number	Page	
Length	Part number	Page	Part number	Page	Part number	Page							
0.3 m	22260773	84					see UNITRONIC® bus cables	M12 socket 22260646 M12 connector 22260653	87	21700507 (35°)	*	PROFIBUS	
1 m	22260774	84								21700506 (35°, PG)	*		
2 m	22260775	84	22260767	83	22260770	83				21700504 (90°)	*		
5 m	22260776	84	22260768	83	22260771	83				21700503 (90°, PG)	*		
10 m	22260777	84	22260769	83	22260772	83				21700530 (90°, LED)	*		
										21700529 (90°, PG, LED)	*		
										21700543 (90°, ATEX)	*		
										21700542 (90°, PG, ATEX)	*		
										21700505 (AX)	*		
0.3 m	22260795	86					see UNITRONIC® bus cables	M12 socket 22260135 M12 connector 22260136	87	21700537 (90°)	*	DeviceNet	
1 m	22260796	86								21700536 (90°, PG)	*		
2 m	22260797	86	22260789	85	22260792	85				21700538 (AX)	*		
5 m	22260798	86	22260790	85	22260793	85							
10 m	22260799	86	22260791	85	22260794	85							
0.3 m	22260795	86					see UNITRONIC® bus cables	M12 socket 22260135 M12 connector 22260136	87	21700537 (90°)	*	CANopen	
1 m	22260796	86								21700536 (90°, PG)	*		
2 m	22260797	86	22260789	85	22260792	85				21700538 (AX)	*		
5 m	22260798	86	22260790	85	22260793	85							
10 m	22260799	86	22260791	85	22260794	85							

PLC

Power connection cable** (power cable) for external and operation voltage							
S/A box	Length	M12 connector on M12 socket		M12 connector on free conductor end		M12 socket on free conductor end	
		Part number	Page	Part number	Page	Part number	Page
PROFIBUS DeviceNet CANopen	0.3 m	22260784	90				
	1 m	22260785	90				
	2 m	22260786	90	22260778	89	22260781	89
	5 m	22260787	90	22260779	89	22260782	89
	10 m	22260788	90	22260780	89	22260783	89

**Legend**  
\*see [www.lappgroup.com/products](http://www.lappgroup.com/products)  
\*\*One operation voltage supply is needed for DI boxes  
Operation voltage and external supply voltage is needed for DI/DO boxes  
Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request.  
Please see detailed technical information on the data sheet ([www.lappautomation.com](http://www.lappautomation.com)).

4. Selector: Bus-compatible S/A boxes active (IP30/IP67)

PLC interface	Digital inputs/outputs								Type of connection/ type of signal		S/A distribution box (active), AS-Interface					Distributor on AS-Interface								Bus cable as bulk stock	
	Inputs			Outputs					PNP		Article designation	Part number	Page	Product features	Type of connection	for 1 AS-Interface flat cable				for 2 AS-Interface flat cable					
	2	4	8	2	3	4	8	I <sub>max</sub> /channel	Sensor	Actuator						1 m	2 m	5 m	10 m	1 m	2 m	5 m	10 m		
AS-Interface		x				x**		3 A	2-/3-wire	2-/3-wire	AB-ASI-DI4DOR4-3A	22260807	77	AS-Interface module (IP30), LED, metal housing, plug-in connection	Screw/tension plug terminal (see table AS-Interface network components (AB-ASI-XS/AB-ASI-XT))		22260800 & Power cable (22260778) see page 81 & 89	22260800 & Power cable (22260779) see page 81 & 89	22260800 & Power cable (22260780) see page 81 & 89		22260801 & Power cable (22260778) see page 81 & 89	22260801 & Power cable (22260779) see page 81 & 89	22260801 & Power cable (22260780) see page 81 & 89	see UNITRONIC® bus cable	
		x				x		2 A	2-/3-wire	2-/3-wire	AB-ASI-DI4DO4-2A	22260808	77												
			x				x	2 A	2-/3-wire	2-/3-wire	AB-ASI-DI8DO8-2A	22260809	77												
		x					x	1 A	2-/3-wire	2-/3-wire	AB-ASI-M12-DI4DO4-M8-1A	22260759	76	AS-Interface module (IP67), LED, metal thread	3-pos. M8	22260803 see page 81	22260804 see page 81			22260805 see page 81	22260806 see page 81				
		x							2-/3-wire	2-/3-wire	AB-ASI-M12-DI4-M8	22260758	76												
	x			x				2A	2-/3-/4-wire	2-/3-wire	AB-ASI-DI2DO2-M12-2A	22260755	76		4-pos. M12	integrated bus connection (UNITRONIC® BUS AS-i)									
		x			x			2 A	2-/3-/4-wire	2-/3-wire	AB-ASI-DI4DO3-M12-2A	22260756	76												
		x				x		2 A	2-/3-/4-wire	2-/3-wire	AB-ASI-DI4DO4-M12-2A	22260757	76												
		x							2-/3-/4-wire		AB-ASI-DI4-M12	22260753	76												
						x		2 A		2-/3-wire	AB-ASI-DO4-M12-2A	22260754	76												

Legend  
\*see [www.lappgroup.com/products](http://www.lappgroup.com/products)  
\*\*Relay contact  
Please see detailed technical information on the data sheet ([www.lappautomation.com](http://www.lappautomation.com)).

AS-Interface network components						
Product	Article designation	Part number	Page	Suitable accessories	Part number	Page
AS-Interface network extension with LED diagnostic	AB-ASI-NE200LED	22260813	*	Distributor M12 on AS-Interface bus cable	22260800	81
AS-Interface network extension with remote diagnostic	AB-ASI-NE200	22260814				
AS-Interface counter module	AB-ASI-C	22260810	*	Screw plug terminal (4x4 pos.) Tension plug terminal (4x4 pos.)	22260817	82
AS-Interface long distance repeater (Note: At least two long distance repeater and a two wire shielded Cat.5 data cable is required for network extension. e.g. 2170891, 2170886)	AB-ASI-LDR2000	22260811			22260818	
AS-Interface power supply	AB-ASI-PS-1A	22260812	*			
H-Distributor	AB-ASI-J-Y-Y-N	22260802	81			
Screw plug terminal (4x4 pos.)	AB-ASI-XS4	22260817	82			
Screw plug terminal (2x16 pos.)	AB-ASI-XS16	22260815	82			
Tension plug terminal (4x4 pos.)	AB-ASI-XT4	22260818	82			
Tension plug terminal (8x4 pos.)	AB-ASI-XT16	22260816	82			
SKINTOP® cable glands, black, M20	SKINTOP® ST-M 20x1,5 BK	53111220	*	SKINTOP® DIX-M ASI M20, seals for 1 AS-Interface bus cable	53611001	*
SKINTOP® cable glands, black, M25	SKINTOP® ST-M 25x1,5 BK	53111230	*	SKINTOP® DIX-M ASI DUO M25, seals for 2 AS-Interface bus cables	53611004	*
				SKINTOP® DIX-M RJ45 M25, seals for pre-assembled cable with RJ-45 connector	53440980	*
SKINTOP® cable glands, black, M32	SKINTOP® ST-M 32x1,5 BK	53111240	*	SKINTOP® DIX-M Fieldbus M32, seals for pre-assembled S/A cable	53440970	*



Type designation UNITRONIC® Fieldbus

1. S/A cabling



S/A cable

Example 1.1: AB-C3-M8MS-2,0PUR-M12FA-2L

AB-C	3	-	M8MS	-	2,0	-	PUR	-	M12FA	-	2L	
Automation bus cordset	Number of poles		Connection left		Cable length in m		Material of cable		Connection right		Number of LEDs	
	3		M8MS (M8 connector straight)		0,3		PUR		M8FA (M8 socket angled)		2L	
AB-PC	4		M12MS (M12 connector straight)		0,6				M8FS (M8 socket straight)		3L	
	5				1,0				M12FA (M12 socket angled)			
Automation bus Power cable					2,0				M12FS (M12 socket straight)			
AB-PC	4				...							
												SH
												shielded Version
												SH



Valve connector

Example 1.2 : AB-C3-M12MS-0,3PUR-A-1L-S

AB-C	3	-	M12MS	-	0,3	-	PUR	-	A	-	1L	-	S
Automation bus cordset	Number of poles		Connection left		Cable length in m		Material of cable		Type of valve connector		Number of LEDs		with protection
	3		M12MS (M12 connector straight)		0,3		PUR		A (Typ A)		1L		S (Z diode)
	4				0,6				AD(Typ AD)		2L		
	5				1,0				B (Typ B)				
					2,0				BI (Typ BI)				
					...				C (Typ C)				
					...				CI (Typ CI)				



Connector  
(field attachable)

Example 1.3 : AB-C5-M12FS-PG9-SH

AB-C	5	-	M12FS	-	PG9	-	SH	
Automation bus cordset	Number of poles		Connectors		Cable connection		shielded Version	
	3		M8MS (M8 connector straight)		PG7		SH	
	4		M8FS (M8 socket straight)		PG9			
	5		M12MS (M12 connector straight)		F0,34 (fast connect, max. 0.34 mm² conductor cross-section)			
			M12MA (M12 connector angled)		F0,75 (fast connect, max. 0.75 mm² conductor cross-section)			
			M12FS (M12 socket straight)		P (Piercing)			
			M12FA (M12 socket angled)		M16 -0,5 (flush-type connector with 0.5 m PUR litz wire)			
					PG9 -0,5 (flush-type connector with 0.5 m PUR litz wire)			
					0,5 (flush-type connector M8 with 0.5 m PUR litz wire)			
			DSI					
			Mounting type (flush-type connector)					
			DSI (Data Socket Inside – rear mounting)					

2. S/A box passiv



Example 2.1 : AB-B8-M12L-16-10,0PUR

AB-B	8	-	M12	-	L	-	16	-	10,0	-	PUR
Automation bus-Box	Number of slots		S/A connection		LED		Number of inputs/outputs		Master cable connection		Material of cable
	4		M8		L		4		5,0 (5.0 m length of master cable)		PUR
	6		M12				6		10,0 (10.0 m length of master cable)		
	8						8		C (pluggable, for master cable bulk stock)		
	10						10		M12 (M12 master cable connection)		
							12		M16 (M16 master cable connection)		
							16				

3. S/A box active



Example 3.1 : AB-ASI-DI4DO4-M12-2A

AB-	ASI	-	DI4	-	DO4	-	2A
Automation bus	Interface		Digital inputs		Digital outputs		max. output current each channel
	ASI (AS-Interface)		2		2		0.5A
	PB (PROFIBUS)		4		3		2A
	CAN (CANopen)		8		4		3A
	DN (DeviceNet)		16		8		
					R4 (4 outputs (relay contacts))		

4. Pre-assembled bus cables



Example 4.1: AB-PB-M12MS-10,0PUR-M12FS

AB-	PB	-	M12MS	-	10,0	-	PUR	-	M12FS
Automation bus	Interface		Connection left		Cable length in m		Material of cable		Connection right
	PB (PROFIBUS)		M12MS (M12 connector straight)		0,3		PUR		M12FS (M12 socket straight)
	CAN (CANopen)				0,6				
	DN (DeviceNet)				1,0				
					...				
					10,0				

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 not only lies in the integrated networking for a company, but rather in the fact that it forms 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, unliwithed expansion possibilities
- Fast commissioning due to simple connection technology with RJ45 or M12
- Dynamic bandwidth adjustment with 10/100 Mbit/s, 1Gbit up to a current 10 Gbit/s
- Networking of various applications areas (industrial, building, Automation, IT,...)

	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 Ohm)	25 m
	1000 Base-T	Twisted Pair	100 m
	1000 Base-SX 850 nm	62.5 µm Multimode LWL	275 m
		50 µm Multimode LWL	550 m
	1000 Base-LX 1300 nm	62.5 µm Multimode LWL	550 m
		50 µm Multimode LWL	550 m
10 Gigabit ETHERNET	10G Base-T	Twisted Pair	100 m
	10G Base-LX4 WWDM	Singlemode LWL	10.000 m
	10G Base-LX4 WWDM	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

Cables for fixed installation: solid conductors (AWG24/1, AWG23/1, AWG 22/1)  
Flexible cables: 7-wire stranded conductors (PROFINET AWG22/7, Patch cable AWG26/7)  
DUPLEX cables: 2x4 pairs, single cable can be seperated  
PROFINET cables: 2x2xAWG22/1 or 2x2xAWG22/7, TP or QP construction  
(TP Twisted Pair, QP Quad Pair/star quad)  
PROFINET cables are EMC optimized for industrial use

Application classes (LAN copper cabling)			
Application class	Category	Frequency	Services and applications
Class A	–	up to 100 kHz	Telephone, ISDN
Class B	–	up to 1 MHz	Telephone, ISDN
Class C	Cat.3	up to 16 MHz	Tel, ISDN, TokenRing, 10BASE-T
Class D	Cat.5	up to 100 MHz	10/100 Base-T
Class E	Cat.5e	up to 200 MHz	10/100/1000 Base-T
–	Cat.6	up to 250 MHz	10/100/1000 Base-T
Class EA	Cat.6a	up to 500 MHz	10/100/1000/10G Base-T
–	Cat.6 <sub>A</sub> (augmented)	up to 500 MHz	10/100/1000/10G Base-T
Class F	Cat.7	up to 600 MHz	10/100/1000/10G Base-T
Class FA	Cat.7 <sub>A</sub> (augmented)	up to 1 GHz	10/100/1000/10G Base-T
–	–	up to 1.2 GHz	10/100/1000/10G Base-T

Connectors							
No.	Cable type	Max. Ø-cable	Category	Core dimension	Article designation	Part number	Page
RJ45 connector							
1	flexible	5.8 mm	Cat.5	AWG26	RJ45 connector TM11 Hirose, beige	CE6321	99
2	flexible	5.72 mm	Cat.5	AWG26	RJ45 connector Stewart, grey	CE6323	99
3	solid + flexible	6.6 mm	Cat.6	solid: Ø 0.5 mm flexible: AWG26 – 24	RJ45 connector TM21 Hirose, beige	CE6324	99
4	solid + flexible	8 mm	Cat.5e	AWG26 – 22	RJ45 connector FM45	21700540	99

M12 connector							
5	solid + flexible	8 mm	Cat.5e	AWG26 – 22	AB-C4-M12MSD-SH (PROFINET)	22260820	87

LANmark SnapIn RJ45 socket							
6	solid	–	Cat.5e	AWG24/1 – 22/1	LANmark-5 EVO Snap-In connector	61103	*
7	flexible	–	Cat.5e	AWG26/7	LANmark-5 EVO Snap-In connector AWG26	61102	*
8	solid	–	Cat.6	AWG24/1 – 22/1	LANmark-6 EVO 250 MHz Snap-In connector	62104	*
9	flexible	–	Cat.6	AWG26/7	LANmark-6 EVO 250MHz Snap-In for AWG26	62105	*
10	solid	–	Cat.6a	AWG24/1 – 22/1	LANmark-6 EVO 10 G Snap-In connector	62106	*
11	solid + flexible	–	Cat.6	AWG24 – 22	SnapIn Rail mount adapter 1-single incl. Cat.6	60795	*

LANmark SnapIn GG45 socket							
12	solid	–	Cat.7	AWG24/1 – 22/1	LANmark-7, 600 MHz Snap-In GG45 connector	63103	*

Connector pin assignment RJ45			
PIN	TIA 568-A	TIA 568-B	PROFINET
1	White/Green	White/Orange	Yellow
2	Green	Orange	Orange
3	White/Orange	White/Green	White
4	Blue	Blue	–
5	White/Blue	White/Blue	–
6	Orange	Green	Blue
7	White/Brown	White/Brown	–
8	Brown	Brown	–

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

Quickfinder

Automation area	Inst. area	Category	Application/cabling	halogen-free	Shielding (standard description)	AWG	Outer diameter [mm]	Characteristics	Approvals	Article designation	Part number	Page	Connectors	Socket (SnapIn)
Building 4-pairs	indoor	Cat.5e	static	x	F/UTP	4x2xAWG24/1	6.1			UNITRONIC® LAN FTP-H 200 MHz Cat.5e	2170136	95	3,4	6
					SF/UTP	4x2xAWG24/1	6.5			UNITRONIC® LAN S-FTP-H 200 MHz Cat.5e	2170138	95	3,4	6
					SF/UTP	2x(4x2xAWG24/1)	2 x 6.5	DUPLEX		UNITRONIC® LAN S-FTP-H 200 MHz Cat.5e DUPLEX	2170140	95	3,4	6
					U/UTP	4x2xAWG24/1	5.5			UNITRONIC® LAN UTP 200 MHz Cat.5e	2170125	95	1,2,3,4	6
					F/UTP	4x2xAWG24/1	6.1			UNITRONIC® LAN FTP 200 MHz Cat.5e	2170126	95	3,4	6
					SF/UTP	4x2xAWG24/1	6.5			UNITRONIC® LAN S-FTP 200 MHz Cat.5e	2170128	95	3,4	6
			flexible		SF/UTP	2x(4x2xAWG24/1)	2 x 6.5	DUPLEX		UNITRONIC® LAN S-FTP 200 MHz Cat.5e DUPLEX	2170130	95	3,4	6
					F/UTP	4x2xAWG26/7	5.4			UNITRONIC® LAN FTP FLEX 200 MHz Cat.5e	2170127	95	1,2,3,4	7
					SF/UTP	4x2xAWG26/7	5.8			UNITRONIC® LAN S-FTP FLEX 200 MHz Cat.5e	2170129	95	1,2,3,4	7
				x	F/UTP	4x2xAWG26/7	5.4			UNITRONIC® LAN FTP-H FLEX 200 MHz Cat.5e	2170137	95	1,2,3,4	7
					SF/UTP	4x2xAWG26/7	5.8			UNITRONIC® LAN S-FTP-H FLEX 200 MHz Cat.5e	2170139	95	1,2,3,4	7
		Cat.6a	static		S/FTP	4x2xAWG23/1	7.1			UNITRONIC® STP/S PiMF 500 MHz Cat.6a	2170143	96	4	8,10,11
					S/FTP	2x(4x2xAWG23/1)	2 x 7.1	DUPLEX		UNITRONIC® STP/S PiMF 500 MHz Cat.6a DUPLEX	2170145	96	4	8,10,11
				x	S/FTP	4x2xAWG23/1	7.1			UNITRONIC® STP/S-H PiMF 500 MHz Cat.6a	2170147	96	4	8,10,11
					S/FTP	2x(4x2xAWG23/1)	2 x 7.1	DUPLEX		UNITRONIC® STP/S-H PiMF 500 MHz Cat.6a DUPLEX	2170149	96	4	8,10,11
			flexible		S/FTP	4x2xAWG26/7	6.5			UNITRONIC® STP/S PiMF FLEX 500 MHz Cat.6a	2170144	96	3,4	7,9
					S/FTP	4x2xAWG26/7	6.5			UNITRONIC® STP/S-H PiMF FLEX 500 MHz Cat.6a	2170148	96	3,4	7,9
				x	S/FTP	4x2xAWG26/7	6.5			UNITRONIC® STP/S-H PiMF FLEX 500 MHz Cat.6a	2170148	96	3,4	7,9
		Cat.7	static	x	S/FTP	4x2xAWG23/1	7.8			UNITRONIC® STP/S-H PiMF 600 MHz Cat.7	2170614	97	4	10,11,12
					S/FTP	4x2xAWG23/1	2 x 7.8	DUPLEX		UNITRONIC® STP/S-H PiMF 600 MHz Cat.7 DUPLEX	2170634	97	4	10,11,12
Cat.7a	static	x	S/FTP	4x2xAWG22/1	7.7			UNITRONIC® LAN 1200 H Cat.7	2170615	98	4	10,11,12		

Automation area	Inst. area	Category	Application/ cabling	halogen- free	Sheath material	AWG	Outer diameter [mm]	Characteristics	Approvals	Article designation	Part number	Page	Connectors	Socket (SnapIn)			
Industrial 2-pairs	indoor	Cat.5e	static	x	H	2x2xAWG24/1	5.8			ETHERLINE® H Cat.5e	2170280	91	3,4,5	6,8,10,11			
		Cat.5e	static		PVC	2x2xAWG22/1	6.5	QP	PN, UL/CSA(CMX)	ETHERLINE® Y UL/CSA Cat.5e	2170891	91	4,5	6,8,10,11			
		Cat.5e	flexible	x	H	2x2xAWG26/7	5.9			ETHERLINE® H FLEX Cat.5e	2170283	91	3,4,5	7,9			
		Cat.5e	high flexible	x	PUR	2x2xAWG26/19	6.1	drag chain suitable		ETHERLINE® FD P Cat.5e	2170289	91	3,4,5	7,9			
		Cat.5	high flexible	x	PUR	2x2xAWG22/7	6.5	QP, drag chain suitable, <b>Fast Connect</b>	PN, UL/CSA(CMX)	ETHERLINE® FD P FC UL/CSA (CMX) Cat.5	2170894	91	4,5	11			
	indoor and outdoor	Cat.5	torsion	x	PUR	2x2xAWG22/19	6.5	QP, torsion	PN, UL/CSA (AWM)	ETHERLINE® TORSION Cat.5	2170888	92	4,5	6,8,10,11			
		Cat.5	static		PVC	2x2xAWG22/1	6.5	QP, UV-resistant, <b>Fast Connect</b>	PN, UL/CSA (CMG)	ETHERLINE® Y FC UL/CSA (CMG) Cat.5	2170893	91	4,5	6,8,10,11			
		Cat.5e	static		PUR	2x2xAWG24/1	5.8	liwithed UV-resistant		ETHERLINE® P Cat.5e	2170281	91	3,4,5	6,8,10,11			
		Cat.5	flexible		PVC	2x2xAWG22/7	6.5	QP, UV-resistant, <b>Fast Connect</b>	PN, UL/CSA (CMG)	ETHERLINE® Y FLEX FC UL/CSA (CMG) .5	2170886	91	4,5	11			
		Cat.5e	flexible		PVC	2x2xAWG22/7	6.2	QP, black, UV-resistant	PN	ETHERLINE® YCat.5e BK	2170901	**	3,4,5	11			
		Cat.5e	flexible		PUR	2x2xAWG26/7	5.8	liwithed UV-resistant		ETHERLINE® P FLEX Cat.5e	2170284	91	3,4,5	7,9			
		outdoor and ground	Cat.5	static		PVC/PE	2x2xAWG22/1	9.3	QP, stahlarmoured, black, UV-resistant	PN	ETHERLINE® Y2Y ARM Typ A Cat.5	2170496	91				
	Cat.5e		static		PVC/PVC	2x2xAWG22/1	7.7	QP, double sheath, black, UV-resistant	PN, UL/CSA (CMG)	ETHERLINE® YY UL/CSA (CMG) Cat.5e	2170494	91	4,5	6,8,10,11			
Industrial 2-pairs combi	indoor	Cat.5	flexible	x	FRNC	2x2xAWG22/7 + 4x1.5	10.3	hybrid	PN, UL (AWM)	ETHERLINE® FRNC HYBRID FLEX UL (AWM) Cat.5	2170887	91					
Industrial 4-pairs	indoor	Cat.5e	static	x	H	4x2xAWG24/1	6.3			ETHERLINE® H Cat.5e	2170296	92	3,4	6,8,10,11			
			H/H		4x2xAWG24/1	7.5	double sheath		ETHERLINE® H-H Cat.5e	2170298	92	4	6,8,10,11				
			flexible		H	4x2xAWG26/7	6.1			ETHERLINE® H FLEX Cat.5e	2170299	92	3,4	7,9			
			static		PUR	4x2xAWG24/1	6.3	liwithed UV-resistant		ETHERLINE® P Cat.5e	2170297	92	3,4	6,8,10,11			
	indoor and outdoor		flexible		PUR	4x2xAWG26/7	6.1	liwithed UV-resistant		ETHERLINE® P FLEX Cat.5e	2170300	92	3,4	7,9			
			Cat.5		high flexible	x	PUR	4x2xAWG26/19	6.3	easy to wind, best for stage, drag chain suitable, black, UV-resistant		ETHERLINE® FD BK Cat.5	CE217489	93	3,4	7,9	
			Cat.5e				PUR	4x2xAWG22/1	8.7	drag chain suitable, liwithed UV-resistant		ETHERLINE® FD P Cat.5	2170489	92	3,4	7,9	
			Cat.6				PUR			drag chain suitable, liwithed UV-resistant	UL/CSA (CMX)	ETHERLINE® FD P Cat.6	2170488	93	4	7,9	
			indoor		Cat.6a	static				PVC			ETHERLINE® Y PiMF Cat.6e	2170464	94		10,12
							x			PUR			ETHERLINE® P PiMF Cat.6e	2170465	94		10,12
	x	H								ETHERLINE® H PiMF Cat.6e	2170466	94		10,12			
		PVC								ETHERLINE® Y PiMF Cat.7	2170474	94		10,12			
	x	PUR								ETHERLINE® P PiMF Cat.7	2170475	94		10,12			
	x	H								ETHERLINE® H PiMF Cat.7	2170476	94		10,12			

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

**Legend**  
PN = PROFINET, cables acc. to PROFINET standard  
QP = Quad Pair, star quad cable  
\*\*data sheet on [www.lappautomation.com](http://www.lappautomation.com)  
Please see detailed technical information on the data sheet ([www.lappautomation.com](http://www.lappautomation.com)).

Quickfinder

FO-fibre type	Cable type/standardisation (DIN VDE 0888)	Inst. area	Cabling	Application	No. of fibres	Max. pull force in [N]	Outer sheath material	Characteristics	Article designation	Part number	Page
GOF – Glass Optical Fibre	Outdoor cable A-DQ(ZN)B2Y	outdoor	static	Multimode 50/125 µm	4	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 4 G 50/125	2760041	110
					8	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 8 G 50/125	2760081	110
					12	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 12 G 50/125	2760121	110
					24	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 24 G 50/125	2760241	110
					4	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 4 G 50/125	276004	110
					8	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 8 G 50/125	276008	110
					12	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 12 G 50/125	276012	110
					24	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 24 G 50/125	276024	110
					4	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 4 G 50/125	276304	110
					8	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 8 G 50/125	276308	110
					12	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 12 G 50/125	276312	110
					24	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 24 G 50/125	276324	110
				Multimode 62,5/125 µm	4	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 4 G 62,5/125	2761041	110
					8	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 8 G 62,5/125	2761081	110
					12	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 12 G 62,5/125	2761121	110
					24	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 24 G 62,5/125	2761241	110
					4	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 4 G 62,5/125	276104	110
					8	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 8 G 62,5/125	276108	110
					12	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 12 G 62,5/125	276112	110
					24	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 24 G 62,5/125	276124	110
					4	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 4 G 62,5/125	276404	110
					8	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 8 G 62,5/125	276408	110
					12	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 12 G 62,5/125	276412	110
					24	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 24 G 62,5/125	276424	110
				Singlemode 9/125 µm	4	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 4 E 9/125	2762041	110
					8	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 8 E 9/125	2762081	110
					12	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 12 E 9/125	2762121	110
					24	1000	PE	UV-resistant, sheath halogen-free, rodent protection	HITRONIC® HQN1000 24 E 9/125	2762241	110
					8	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 8 E 9/125	276208	110
					12	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 12 E 9/125	276212	110
					24	1500	PE	burial, UV-resistant, sheath halogen-free, rodent protection, longitudinally and laterally watertight	HITRONIC® HQN1500 24 E 9/125	276224	110
					8	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 8 E 9/125	276508	110
					12	2500	PE	burial, UV-resistant, sheath halogen-free, enhanced rodent protection, longitudinally and laterally watertight	HITRONIC® HQN2500 12 E 9/125	276512	110
	Universal cable A/I-DQ(ZN)BH U-DQ(ZN)BH	outdoor and indoor	static	Multimode 50/125 µm	4	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 4 G 50/125	2740041	112
					8	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 8 G 50/125	2740081	112
					12	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 12 G 50/125	2740121	112
					24	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 24 G 50/125	2740241	112
					4	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 4 G 50/125	274004	112
					8	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 8 G 50/125	274008	112
					12	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 12 G 50/125	274012	112
					24	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 24 G 50/125	274024	112
				Multimode 62,5/125 µm	4	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 4 G 62,5/125	2741041	112
					8	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 8 G 62,5/125	2741081	112
					12	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 12 G 62,5/125	2741121	112
					24	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 24 G 62,5/125	2741241	112
					4	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 4 G 62,5/125	274104	112
					8	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 8 G 62,5/125	274108	112
					12	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 12 G 62,5/125	274112	112
					24	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 24 G 62,5/125	274124	112
				Singlemode 9/125 µm	4	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 4 E 9/125	2742041	112
					8	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 8 E 9/125	2742081	112
					12	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 12 E 9/125	2742121	112
					24	1000	FRNC	halogen-free and flame retardant cable sheath, rodant and water protected	HITRONIC® HUN1000 24 E 9/125	2742241	112
					4	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 4 E 9/125	274204	112
					8	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 8 E 9/125	274208	112
					12	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 12 E 9/125	274212	112
					24	1500	FRNC	halogen-free and flame retardant cable sheath, rodent protection, longitudinally and laterally watertight	HITRONIC® HUN1500 24 E 9/125	274224	112

Please see detailed technical information on the data sheet (www.lappautomation.com).

Quickfinder (continuation)

FO-fibre type	Cable type/standardisation (DIN VDE 0888)	Inst. area	Cabling	Application	No. of fibres	Max. pull force in [N]	Outer sheath material	Characteristics	Article designation	Part number	Page
GOF – Glass Optical Fibre	Mobile cable AT-VQ(ZN)11Y	FD Mobile cable (outdoor and indoor)	high flexible/ coilable	Multimode 50/125 µm	4	800	PUR	robust and flame retardant PUR outer sheath, for direct connector assembly, coilable, longitudinal watertight	HITRONIC® FD800 4 G 50/125	21807048	113
					6	950	PUR	robust and flame retardant PUR outer sheath, for direct connector assembly, coilable, longitudinal watertight	HITRONIC® FD950 6 G 50/125	21807047	113
				Multimode 62,5/125 µm	4	800	PUR	robust and flame retardant PUR outer sheath, for direct connector assembly, coilable, longitudinal watertight	HITRONIC® FD800 4 G 62,5/125	21807045	113
					6	950	PUR	robust and flame retardant PUR outer sheath, for direct connector assembly, coilable, longitudinal watertight	HITRONIC® FD950 6 G 62,5/125	21807050	113
	Outdoor cable, armoured A-DQ(ZN)BW2Y	outdoor	static	Singlemode, Multimode	1 – 24	1500	PE	with central loose tube, armoured, corrugated steel tape for higher and chemical resistance, UV-resistant and halogen-free cable sheath, longitudinally and laterally watertight	HITRONIC® HQW1500	on request	114
					12 – 144	3000	PE	with stranded loose tubes, armoured, corrugated steel tape for higher mechanical and chemical resistance, UV-light resistant and halogen-free cable sheath, longitudinally and laterally watertight	HITRONIC® HQW3000	on request	114
	Outdoor cable, armoured, Inner/outer sheath A-DQ(ZN)B2YW2Y	outdoor	static	Singlemode, Multimode	1 – 24	1500	PE	with central loose tube, PE inner sheath, armoured, corrugated steel tape for chemical resistance, PE outer sheath halogen-free and UV-light resistant, longitudinally and laterally watertight	HITRONIC® HQWplus1500	on request	114
					12 – 144	3000	PE	with stranded loose tubes, PE inner sheath, armoured, corrugated steel tape for higher mechanical and chemical resistance, PE outer sheath halogen-free and UV-light resistant, longitudinally and laterally watertight	HITRONIC® HQWplus3000	on request	114
FO-fibre type	Cable type/standardisation (DIN VDE 0888)	Inst. area	Cabling	Application	No. of fibres	Outer sheath material	Characteristics	Article designation	Part number	Page	
POF – Polymer Optical Fibre	J-V2Y 1P980/1000	indoor (industrial & building)	flexible	POF 980/100 µm	1 (simplex)	PE	fibre sheath halogen-free, non-ageing, direct connector assembly	HITRONIC® POF SIMPLEX PE	2185001	100	
	J-VY 1P980/1000				1 (simplex)	PVC	UL approval, direct connector assembly	HITRONIC® POF SIMPLEX PVC	2185201	101	
	J-V2X 1P980/1000				1 (simplex)	XPE	enhanced temperature range 105°C, fibre sheath halogen-free, non-ageing, direct connector assembly	HITRONIC® POF SIMPLEX 105 °C XPE	2185202	100	
	J-V2Y(ZN)11Y 1P980/1000				1 (simplex)	PUR	PUR outer sheath halogen-free, flame-retardant, direct connector assembly	HITRONIC® POF SIMPLEX PE-PUR	2185030	102	
	J-V2Y(ZN)11Y 1P980/1000				1 (simplex)	PUR	suitable for SERCOS system, PUR outer jacke halogen-free, direct connector assembly	HITRONIC® POF SIMPLEX S PE-PUR	2185205	103	
	J-V4Y(ZN)11Y 1P980/1000				1 (simplex)	PUR	suitable for SERCOS system, PUR outer jacke halogen-free, direct connector assembly	HITRONIC® POF SIMPLEX S PA-PUR	2185204	103	
	J-V2Y 2P980/1000			POF 980/1000 µm	2 (duplex)	PE	fibre sheath halogen-free, non-ageing, direct connector assembly	HITRONIC® POF DUPLEX PE	2185010	106	
	J-V2Y(ZN)11Y 2P980/1000				2 (duplex)	PUR	PUR outer sheath halogen-free, flame-retardant, direct connector assembly	HITRONIC® POF DUPLEX PE-PUR	2185040	106	
	J-V2Y(ZN)Y 2P980/1000				2 (duplex)	PVC	direct connector assembly	HITRONIC® POF DUPLEX PE-PVC	2185209	106	
	J-VY(ZN)Y 2P980/1000				2 (duplex)	PVC	direct connector assembly	HITRONIC® POF DUPLEX PVC-PVC	2185210	105	
	J-V2Y(ZN)11Y 2P980/1000				2 (duplex)	PUR	very robust outer sheath, halogen-free	HITRONIC® POF DUPLEX HEAVY PE-PUR	2185211	106	
	J-V2YY 6P980/1000			POF	6	PVC	6 coloured coded simplex fibres	HITRONIC® POF MULTI FIBRE PE-PVC	3036010	107	
	J-V2Y11P 2P980/1000, FFLiY 4x1,5			Hybrid (POF+Cu)	2 + 4	PUR	DESINA®-compliant highly-flexible hybrid cable, halogen-free outer sheath	HITRONIC® HYBRID FD P DESINA®	2186001	108	
	J-V2Y(ZN)11Y 1P980/1000 flex		high flexible	POF 980/1000 µm	1 (simplex)	PUR	drag chain suitable, PUR-sheath, halogen-free	HITRONIC® POF SIMPLEX FD PE-PUR	2185207	104	
	J-V2Y(ZN)11Y 2P980/1000 flex				2 (duplex)	PUR	drag chain suitable, PUR-sheath, halogen-free	HITRONIC® POF DUPLEX FD PE-PUR	2185213	104	
PCF – Polymer Cladded Fibre	J-V(ZN)H11Y 2K200/230	indoor	flexible	PCF 200/230 µm	2 (duplex)	PUR	PUR-sheath, halogen-free, for direct connector assembly	HITRONIC® BUS PCF PUR DUPLEX indoor	2185311	109	
	AT-VQ(ZN)HB2Y 2K200/230	outdoor	static	PCF 200/230 µm	2 (duplex)	PE	PE-sheath, halogen-free, for direct connector assembly	HITRONIC® BUS PCF PE DUPLEX outdoor	2185302	109	

Please see detailed technical information on the data sheet (www.lappautomation.com).

# UNITRONIC® FD CP plus



## Benefits

- UL/CSA approved, highly flexible data transmission cable with copper braiding and PUR outer sheath for power chain use

## Application range

- Highly flexible data cable meets the highest service life requirements, even under rough climatic conditions, UL/CSA approved (CMX), ideal for export-oriented machine manufacturer

## Product features

- Cable is halogen-free and has low capacitance
- PUR outer sheath, tear resistant and notch ductile, resistant to mineral oils and abrasion when used in power chains

- Adhesion free, resistant to hydrolysis and microbes
- Temperatures up to -40°C possible
- Flame retardant according to IEC 60332-1-2

## Approvals (Norm references)



## Design

- Stranded bare copper conductor, superfine
- Polyolefine core insulation
- Copper braiding, tinned
- PUR outer sheath
- Colour: grey (RAL 7001)

## Technical data

	<b>Core identification code</b> DIN 47100, see main catalogue 2010/11 Appendix T9
	<b>Approvals</b> CMX (UL/CSA)
	<b>Mutual capacitance</b> C/C approx. 60 nF/km
	<b>Peak working voltage</b> (not for power applications) 250 V
	<b>Specific insulation resistance</b> > 5 GOhm x km
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Conductor stranding</b> Strand, superfine wire in accordance with VDE 0295, single wire diameter 0.1 mm
	<b>Conductor resistance</b> see main catalogue 2010/11 Appendix T11
	<b>Minimum bending radius</b> For flexible applications: 7.5 x cable diameter
	<b>Test voltage</b> 1500 V
	<b>Range of temperature</b> -40°C to +70°C

Part number	Number of cores and mm² per conductor	AWG size	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
<b>UNITRONIC® FD CP plus</b>					
0028880	2 x 0.14	26 AWG	4.5	11.2	33.0
0028881	3 x 0.14	26 AWG	4.7	14.1	36.0
0028882	4 x 0.14	26 AWG	5.1	15.5	40.0
0028883	5 x 0.14	26 AWG	5.4	18.3	45.0
0028884	7 x 0.14	26 AWG	6.0	27.8	67.0
0028885	10 x 0.14	26 AWG	7.0	39.3	87.0
0028886	14 x 0.14	26 AWG	7.1	45.3	102.0
0028887	18 x 0.14	26 AWG	7.7	54.1	118.0
0028888	25 x 0.14	26 AWG	9.2	68.4	157.0
0028889	2 x 0.25	24 AWG	5.1	14.9	38.0
0028890	3 x 0.25	24 AWG	5.4	18.8	45.0
0028891	4 x 0.25	24 AWG	5.8	21.3	52.0
0028892	5 x 0.25	24 AWG	6.2	31.0	69.0
0028893	7 x 0.25	24 AWG	7.0	39.6	84.0
0028894	10 x 0.25	24 AWG	8.5	53.9	109.0
0028895	14 x 0.25	24 AWG	8.6	64.2	136.0
0028896	18 x 0.25	24 AWG	9.4	78.4	161.0
0028897	25 x 0.25	24 AWG	11.4	101.0	213.0
0028898	2 x 0.34	22 AWG	5.6	18.1	45.0
0028899	3 x 0.34	22 AWG	5.9	28.7	61.0
0028900	4 x 0.34	22 AWG	6.3	35.7	77.0
0028901	5 x 0.34	22 AWG	6.8	39.1	83.0
0028902	7 x 0.34	22 AWG	7.7	52.7	109.0
0028903	10 x 0.34	22 AWG	9.4	67.4	147.0
0028904	14 x 0.34	22 AWG	9.5	85.8	186.0
0028905	18 x 0.34	22 AWG	10.7	99.7	216.0
0028906	25 x 0.34	22 AWG	12.9	155.0	314.0

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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.

## UNITRONIC® LIYD11Y

## ■ Benefits

- PUR sheath is very resistant to mineral oils and abrasion

## ■ Application range

- Cables are intended for use in industrial environments, where screened cables are required that have very small cross-sections and must have excellent mechanical and chemical resistance.

## ■ Product features

- Spiralized Versions available except the 7 core version.
- Data transmission cable with wrapped copper wire screening and DIN colour code 47100

- UNITRONIC® LIYD11Y has an overall screening which prevents external electrical interference and guarantees precise pulse transmission.
- The polyurethane outer sheath is resistant against wear and tear.
- Flame retardant according to IEC 60332-1-2

## ■ Approvals (Norm references)



## ■ Design

- Stranded bare copper conductor, superfine
- PVC core insulation
- Screening: Copper wire wrapping
- PUR outer sheath
- Colour: black

## ■ Technical data



**Core identification code**  
DIN 47100 without colour repetition, see main catalogue 2010/11 Appendix T9



**Mutual capacitance**  
C/C approx. 140 nF/km  
C/S approx. 150 nF/km



**Peak working voltage**  
(not for power applications)  
at 0.14 mm<sup>2</sup>: 350 V  
at ≥ 0.25 mm<sup>2</sup>: 500 V



**Based on**  
VDE 0812



**Specific insulation resistance**  
> 20 GΩm x cm



**Inductivity**  
approx. 0.65 mH/km



**Conductor stranding**  
Strand, superfine wire



**Conductor resistance**  
see main catalogue 2010/11 Appendix T11



**Minimum bending radius**  
For flexible applications:  
10 x cable diameter  
Fixed installation:  
6 x cable diameter



**Test voltage**  
1200 V



**Range of temperature**  
Flexible use: -5°C up to +70°C  
Static:  
-30°C up to +80°C

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>UNITRONIC® LIYD11Y</b>				
0033202	2 x 0.14	4.1	8.0	20.0
0033203	3 x 0.14	4.3	10.5	25.0
0033204	4 x 0.14	4.5	12.0	27.0
0033205	5 x 0.14	4.8	14.5	33.0
0033206	6 x 0.14	5.5	17.0	38.0
0033207	7 x 0.14	5.9	18.5	41.0
0033212	12 x 0.14	7.2	29.0	62.0
0033218	18 x 0.14	8.0	39.0	83.0
0033302	2 x 0.25	4.7	11.4	25.0
0033303	3 x 0.25	5.3	15.0	31.0
0033304	4 x 0.25	5.6	18.2	36.0
0033305	5 x 0.25	6.0	21.4	42.0
0033306	6 x 0.25	6.8	24.4	49.0
0033312	12 x 0.25	8.4	44.2	81.0

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Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® BUS ASI



### Application range

- Communication at Sensor / Actuator level
- UNITRONIC® Fieldbus sensor-/actuator wiring requirements
- Fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- PUR version has an oil resistant outer sheath for use in industrial environments (e. g. wet areas in automotive industry, processing centres, also in connection with coolants/lubricants) which are mixed with water.

### Product features

- Data and energy are transmitted both via an unscreened, geometrically coded two-core flat cable (protection against polarity reversal).
- The conductor is contacted by "piercing technology" within the ASI-modules.

- Connection of sensors to the ASI module (coupling module) is carried out using round cables (connection cables).

### Approvals (Norm references)



- ASI is standardised Europe-wide in EN 50295 and internationally in IEC 62026-2.
- PVC version has UL/CSA (CMG) approval.

### Design

- Extra fine stranded copper conductor, 1.5 mm<sup>2</sup>
- Core insulation: Blue and brown)
- Profiled outer sheath of rubber (G), or polyurethane (PUR), or Polyvinylchloride (PVC)
- Colour: yellow (RAL 1023) or black (RAL 9005)

### Technical data

	<b>Approvals</b> UL/CSA version: CMGc(UL)us or (UL)CL2 or AWM 300V FT4 approved
	<b>Peak working voltage</b> (not for power applications) 300 V
	<b>Conductor resistance</b> (loop): max. 27.4 Ohm/km
	<b>Minimum bending radius</b> Fixed installation: 12 mm flexible 24 mm
	<b>Test voltage</b> Core/core: 2000 V
	<b>Range of temperature</b> Dependent on the outer sheath material: PVC -30°C up to +90°C other materials: -40°C up to +85°C During installation: PVC -20°C up to +90°C other materials: -30°C up to +85°C

Part number	Article designation	Sheath material	Sheath colour	Application	Number of cores and mm <sup>2</sup> per conductor	Copper index kg/km	Weight kg/m
<b>For fixed and flexible application (19 wires strand)</b>							
2170228	UNITRONIC® BUS ASI (G)	EPDM (rubber)	yellow	Data and energy transmission	2 x 1,5	29.0	57.0
2170229	UNITRONIC® BUS ASI (G)	EPDM (rubber)	black	Transmission auxiliary 30V DC	2 x 1,5	29.0	57.0
2170230	UNITRONIC® BUS ASI (TPE)	TPE	yellow	Data and energy transmission	2 x 1,5	29.0	57.0
2170231	UNITRONIC® BUS ASI (TPE)	TPE	black	Transmission auxiliary 30V DC	2 x 1,5	29.0	57.0
2170201	UNITRONIC® BUS ASI (PUR)	PUR	yellow	Data and energy transmission	2 x 1,5	29.0	57.0
2170202	UNITRONIC® BUS ASI (PUR)	PUR	black	Transmission auxiliary 30V DC	2 x 1,5	29.0	57.0
2170842	UNITRONIC® BUS ASI (PVC) A	PVC UL/CSA (CMG)	yellow	Data and energy transmission	2 x 1,5	29.0	57.0
2170843	UNITRONIC® BUS ASI (PVC) A	PVC UL/CSA (CMG)	black	Transmission auxiliary 30V DC	2 x 1,5	29.0	57.0

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### Accessories

- AS-I STRIP special
- SKINTOP® DIX ASI

## UNITRONIC® BUS ASI FD

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS ASI FD

LAPP KABEL STUTTGART UNITRONIC® BUS ASI FD



## Info

- “FD” = Drag chain suitable

## ■ Benefits

- For highly flexible application (power chains, frequently moved machine parts)
- Increased oil resistance

## ■ Application range

- Communication at Sensor / Actuator level
- UNITRONIC® Fieldbus sensor-/actuator wiring requirements

## ■ Product features

- PUR variant is halogen free in accordance with IEC 60754-1
- Flame retardant according to IEC 60332-1-2
- Data and energy are transmitted both via an unscreened, geometrically coded two-core flat cable (protection against polarity reversal).
- The conductor is contacted by “piercing technology” within the ASI-modules.

- Connection of sensors to the ASI module (coupling module) is carried out using round cables (connection cables).

## ■ Approvals (Norm references)



- 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

## ■ Design

- Extra fine strands of plain copper wires (Class 6)
- Core insulation: Blue and brown)
- Profiled outer sheath of thermoplastic elastomer (TPE) or polyurethane (PUR)
- Colour: yellow (RAL 1023) or black (RAL 9005)

## ■ Technical data



**Peak working voltage**  
(not for power applications) 300 V



**Conductor resistance**  
(loop): max. 27.4 Ohm/km



**Minimum bending radius**  
Fixed installation: 12 mm  
Flexing without fixing: 24 mm  
Flexing with fixing: 60mm (15xD)



**Test voltage**  
Core/core: 2000 V



**Range of temperature**  
Fixed installation:  
-40°C up to +85°C (TPE +105°C)  
Flexing - without fixing:  
-30°C up to +85°C (TPE +105°C)

Part number	Article designation	Sheath material	Sheath colour	Application	Number of cores and mm² per conductor	Copper index kg/km	Weight kg/m
<b>For highly flexible application (power chains, frequently moved machine parts)</b>							
2170306	UNITRONIC® BUS ASI FD P	PUR	yellow	Data and energy transmission	2 x 1,5	29.0	57.0
2170307	UNITRONIC® BUS ASI FD P	PUR	black	Transmission auxiliary 30V DC	2 x 1,5	29.0	57.0
2170830	UNITRONIC® BUS ASI FD (TPE) A	TPE UL/CSA (AWM)	yellow	Data and energy transmission	2 x 1,5	29.0	57.0
2170831	UNITRONIC® BUS ASI FD (TPE) A	TPE UL/CSA (AWM)	black	Transmission auxiliary 30V DC	2 x 1,5	29.0	57.0

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## ■ Accessories

- AS-I STRIP special
- SKINTOP® DIX ASI

## UNITRONIC® BUS PB

### Stationary application



#### Info

- Lapp Kabel is a member of the PROFIBUS user organisation e. V. (PNO)
- A for Advanced here: UL and CSA approvals



#### Application range

- For stationary installation of Bus Systems
- Maximal electromagnetic screening
- Dry and damp indoors

#### Product features

- These bus cables can be used for PROFIBUS-DP as well as for PROFIBUS-FMS and FIP
- The stated bit rates allow the following cable lengths (maximum) according of PROFIBUS User Organisation of one bus segment (Type A cable, 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

#### Approvals (Norm references)



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

#### Design

- FC: "Fast Connect" cable design.
- P: Polyurethan
- H: Halogen free
- PE: Polyethylen, eg. for food and beverage industry
- 7-W: 7-wire, eg. for applications where vibrations occur
- COMBI: Data transmission and power supply in one cable

#### Technical data

	<b>Approvals</b> For type of UL approval, see below
	<b>Resistance:</b> UV resistant products Article no. 2170233, 2170824, 2170333, 2170820, 2170826
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 250 V
	<b>Conductor resistance</b> (loop): max. 133 Ohm/km
	<b>Minimum bending radius</b> Fixed installation,: see data sheet
	<b>Test voltage</b> Core/core: 1500 V
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>For fixed installation - conventional cable assembly</b>					
2170220	UNITRONIC® BUS PB	1 x 2 x 0.64	8.0	30.1	74.0
2170233	UNITRONIC® PB PE	1 x 2 x 0.64	8.0	30.1	57.0
2170226	UNITRONIC® BUS PB H 7-W	1 x 2 x 0.64	8.0	30.1	55.0
2170225	UNITRONIC® BUS PB COMBI 7-W	1 x 2 x 0,64 Ø + 3 x 1,0 mm²	9.8	59.0	92.0
<b>For fixed installation - UL/CSA CMX approval</b>					
2170219	UNITRONIC® BUS PB A	1 x 2 x 0.64	8.0	30.1	57.0
<b>For fixed installation - UL/CSA CMG approbation</b>					
2170824	UNITRONIC® BUS PB 7-W A	1 x 2 x 0.64	8.0	30.1	55.0
<b>For fixed installation - "Fast Connect" cable assembly</b>					
2170333	UNITRONIC® BUS PB PE FC	1 x 2 x 0.64	8.0	26.0	67.0
<b>For fixed installation - UL/CSA CMX approval</b>					
2170330	UNITRONIC® BUS PB P FC	1 x 2 x 0.64	8.0	26.0	71.0
<b>For fixed installation - "Fast Connect" cable assembly - UL/CSA CMG approbation</b>					
2170820	UNITRONIC® BUS PB FC	1 x 2 x 0.64	8.0	26.0	84.0
2170826	UNITRONIC® BUS PB 7-W FC	1 x 2 x 0.64	8.0	26.0	67.0
2170326	UNITRONIC® BUS PB-H FC	1 x 2 x 0.64	8.0	26.0	72.0

## UNITRONIC® BUS PB ROBUST

### Stationary application



#### Product features

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

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>For fixed installation of INTERBUS system</b>					
2170620	UNITRONIC® BUS PB ROBUST	1 x 2 x 0.64	8.0	26.0	55.0

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP

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

## UNITRONIC® BUS PB 105

## Stationary application

## Benefits

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

## Application range

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

## Product features

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

## Approvals (Norm references)



## Design

- Stranded conductor, 7-wire, bare
- Core insulation: Polypropylene
- Aluminated foil
- Braided shielding made of tin-plated copper wires
- PVC outer sheath for use up to 105°C

## Technical data

	<b>Mutual capacitance</b> Approx. 28.5 nF/km
	<b>Peak working voltage</b> Max. 100 V (not for power applications)
	<b>Minimum bending radius</b> fixed installation: single 45 mm Flexing: 65 mm
	<b>Test voltage</b> 1500 V core/core Core/screen: 1500 V
	<b>Range of temperature</b> -30°C to +105°C
	<b>Characteristic impedance</b> (3 - 20 MHz): 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm approx.	Copper index kg/km	Weight kg/km approx.
2170630	UNITRONIC® BUS PB 105	1 x 2 x 0.64	8.0	30.1	71.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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## UNITRONIC® BUS PB FRNC FC

## Stationary application

## Benefits

- Halogen free and highly flame retardant
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- Application where the combination of halogen-free outer sheath with properties similar to polyurethane and enhanced flame retardancy is requested
- Fast Connect (FC) cable design

## Application range

- This cable provides special advantages for the use in sensitive areas, where flame propagation must be avoided and the presence of toxic fumes would cause personal injuries and damage of property.

## Product features

- Cable is UL/CSA approved (CMG)
- Halogen-free
- Flame retardant in accordance with IEC 60332-3
- Oil resistant

- The stated bit rates allow the following cable lengths (maximum) according to PROFIBUS User Organisation of one bus segment (Type A cable, 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

## Approvals (Norm references)



## Design

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



## Info

- **FRNC = Flame Retardant Non Corrosive**
  - Reduction of flame propagation and density and toxicity of smoke gases in event of fire
  - Minimisation of damage to buildings and production facilities
  - Safety for maintenance staff resp. in areas with high personnel concentration

## Technical data

	<b>Approvals</b> UL/CSA (CMG)
	<b>Mutual capacitance</b> Approx. 28.5 nF/km
	<b>Peak working voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> 80mm
	<b>Test voltage</b> 1500 V core/core Core/screen: 1500 V
	<b>Range of temperature</b> -30°C up to +80°C
	<b>Characteristic impedance</b> (3 - 20 MHz): 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm approx.	Copper index kg/km	Weight kg/km approx.
2170853	UNITRONIC® BUS BP FRNC FC	1 x 2 x 0.64	8.0	30.1	75.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® BUS PB ARM

### Stationary application



#### Benefits

- EMC optimised

#### Application range

- Use for PROFIBUS-DP or FIP in harsh industrial environment
- PROFIBUS® (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 to IEC 60332-1-2

- UV resistant

#### Approvals (Norm references)



#### Design

- Copper conductor, solid, bare
- Foam Skin - core isolation (O2YS)
- Alulaminated foil
- Plastic tape, overlapped
- Copper tape longitudinal welded outer sheath: PVC

#### Technical data

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 100 V
	<b>Minimum bending radius</b> Fixed installation: 7.5 x outer diameter Fixed installation: single 3,5 x core diameter
	<b>Test voltage</b> 3600 V DC (3 sec.)
	<b>Range of temperature</b> -40 °C to +70 °C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm approx.	Copper index kg/km	Weight kg/km approx.
2170247	UNITRONIC® BUS PB ARM	1 x 2 x 0.65	11.1	80.9	131.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® BUS PB Yv

### Outdoor installation / direct burial + UV-resistant



#### Benefits

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

#### Application range

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

#### Product features

- Reinforced PVC outer sheath

#### Approvals (Norm references)



#### Design

- Copper conductor, solid, bare
- Foam Skin - core isolation (O2YS)
- Alulaminated foil
- Braided shielding made of tin-plated copper wires
- Outer sheath: reinforced PVC (black)

#### Technical data

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 250 V
	<b>Minimum bending radius</b> fixed installation: single 75 mm Fixed installation: 150 mm
	<b>Test voltage</b> Core/core: 1500 V Core/screen: 1500 V
	<b>Range of temperature</b> Flexible application: -5°C up to +50°C Fixed installation: -40°C up to +80°C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm approx.	Copper index kg/km	Weight kg/km approx.
2170223	UNITRONIC® BUS PB Yv	1 x 2 x 0.64	10.0	30.1	106.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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**UNITRONIC® BUS PB YY**

Outdoor use / direct burial + UV-resistant

**Benefits**

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

**Application range**

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

**Product features**

- Doubled PVC outer sheath

**Approvals (Norm references)****Design**

- Copper conductor, solid, bare
- PE core insulation
- Alulaminated foil
- Braided shielding made of tin-plated copper wires
- Sheath, PVC violet, OD 7,5mm sheath, PVC black, OD 9,5mm

**Technical data**

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 250 V
	<b>Minimum bending radius</b> fixed installation: single 75 mm Fixed installation: 150 mm
	<b>Test voltage</b> Core/core: 1500 V Core/screen: 1500 V
	<b>Range of temperature</b> Flexible application: -5°C up to +50°C Fixed installation: -40°C up to +80°C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm approx.	Copper index kg/km	Weight kg/km approx.
2170236	UNITRONIC® BUS PB YY	1 x 2 x 0.64	9.5	30.1	87.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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**UNITRONIC® BUS PB BURIAL FC**

Outdoor use / direct burial + UV-resistant

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

**Product features**

- PE as second outer sheath

**Approvals (Norm references)****Design**

- Copper conductor, solid, bare
- Foam Skin - core isolation (O2YS)
- Alulaminated foil
- Braided shielding made of tin-plated copper wires
- Sheath, PVC violet, OD 8 mm sheath, PE black, OD 10,8 mm

**Technical data**

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 100 V
	<b>Minimum bending radius</b> Fixed installation: single 3,5 x core diameter Fixed installation: 7,5 x cable diameter
	<b>Test voltage</b> 3600 V DC (3 sec.)
	<b>Range of temperature</b> -40 °C to +60 °C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm approx.	Copper index kg/km	Weight kg/km approx.
2170323	UNITRONIC® BUS PB BURIAL FC	1 x 2 x 0.64	10.8	26.0	115.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® BUS PB FD P

Highly flexible application



### Benefits

- Application where the combination of halogen-free outer sheath with properties similar to polyurethane and enhanced flame retardancy is requested
- For highly flexible applications (power chains/cable tracks, moving machine parts etc.)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

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

### Product features

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

### Approvals (Norm references)



### Design

- Foam Skin - core isolation (O2YS)
- Aluminated foil
- Braided shielding made of tin-plated copper wires
- Outer sheath: Polyurethane (PUR) compound

### Technical data

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 250 V
	<b>Minimum bending radius</b> 65mm
	<b>Test voltage</b> Core/core: 1500 V
	<b>Range of temperature</b> Flexing: -30°C up to +70°C Fixed installation: -40°C up to +80°C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
For highly flexible application (power chains,...) - conventional cable assembly					
2170222	UNITRONIC® BUS PB FD P 1x2x0,64	1 x 2 x 0.64	8.0	30.1	64.0

## UNITRONIC® BUS PB FD P A

Highly flexible application



### Info

- A for Advanced here: UL and CSA approvals

### Benefits

- Application where the combination of halogen-free outer sheath with properties similar to polyurethane and enhanced flame retardancy is requested
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For highly flexible applications (power chains/cable tracks, moving machine parts etc.)

### Application range

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

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

### Approvals (Norm references)



- Approval: UL/CSA Typ CMX acc. UL 444 and CSA C22.2 No.214-02

### Design

- Stranded bare copper wires
- Foam Skin - core isolation (O2YS)
- Aluminated foil
- Screen braiding made from tinned copper wire
- Outer sheath: Polyurethane (PUR) compound

### Technical data

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 250 V
	<b>Minimum bending radius</b> 65mm
	<b>Test voltage</b> Core/core: 1500 V
	<b>Range of temperature</b> Flexing: -30°C up to +70°C Fixed installation: -40°C up to +80°C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170822	UNITRONIC® BUS PB FD P A	1 x 2 x 0.64	8.0	30.1	58.0

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® BUS PB FD P FC

## Highly flexible application

## ■ 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/cable tracks, moving machine parts etc.)

## ■ Application range

- PROFIBUS® (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 to IEC 60332-1-2
- Oil resistant

## ■ Approvals (Norm references)

- c(UL)us **RoHS** **PROFIBUS**
- Approval: UL/CSA Typ CMX acc. UL 444 and CSA C22.2 No.214-02

## ■ Design

- Stranded bare copper wires
- Foam Skin - core isolation (O2YS)
- Alulaminated foil
- Screen braiding made from tinned copper wire
- Outer sheath: Polyurethane (PUR) compound

## ■ Technical data

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 250 V
	<b>Minimum bending radius</b> Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 1500 V
	<b>Range of temperature</b> Flexing: -30°C up to +70°C Fixed installation: -40°C up to +80°C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170322	UNITRONIC® BUS PB FD P FC	1 x 2 x 0.64	8.0	26.0	79.0

## UNITRONIC® BUS PB FD FRNC FC

## Highly flexible application

## ■ Benefits

- Fast Connect (FC) system
- Application where the combination of halogen-free outer sheath with properties similar to polyurethane and enhanced flame retardancy is requested
- For highly flexible applications (power chains/cable tracks, moving machine parts etc.)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

## ■ Application range

- Intended for highly flexible use in power chains or permanently moving machines and linear robots
- This cable provides special advantages for the use in sensitive areas, where flame propagation must be avoided and the presence of toxic fumes would cause personal injuries and damage of property.

## ■ Product features

- Cable is UL/CSA approved (CMG)
- Halogen-free
- Flame retardant in accordance with IEC 60332-3
- Oil resistant

## ■ Approvals (Norm references)

- c(UL)us **RoHS** **PROFIBUS**

## ■ Design

- Stranded bare copper wires
- Foam Skin - core isolation (O2YS)
- Alulaminated foil
- Screen braiding made from tinned copper wire
- Outer sheath: Polyurethane (PUR) compound

## ■ Technical data

	<b>Mutual capacitance</b> nom. 28 nF/km
	<b>Peak working voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Fixed installation: 10 x cable diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> 1500 V core/core
	<b>Range of temperature</b> Flexing: -30°C up to +70°C Fixed installation: -40°C up to +80°C
	<b>Characteristic impedance</b> (3 - 20 MHz): 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170854	UNITRONIC® BUS PB FD FRNC FC	1x2x0,64	8.0	26.0	75.0

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® BUS PB FD P COMBI

Highly flexible application



### Benefits

- Application where the combination of halogen-free outer sheath with properties similar to polyurethane and enhanced flame retardancy is requested
- For highly flexible applications (power chains/cable tracks, moving machine parts etc.)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS® (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 (IEC 60332-1-2)

### Design

- Cores for Power Supply: 3 x 1,0mm<sup>2</sup> (AWG18)

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm max.	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 <sup>2</sup>	10.1	59.0	125.0

## UNITRONIC® BUS PB FD P HYBRID

Highly flexible application



### Benefits

- Application where the combination of halogen-free outer sheath with properties similar to polyurethane and enhanced flame retardancy is requested
- For highly flexible applications (power chains/cable tracks, moving machine parts etc.)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS® (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
- Oil resistant

### Design

- Cores for Power Supply: 4 x 1,5 mm<sup>2</sup> (AWG16)

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170495	UNITRONIC® BUS PB FD P HYBRID	1 x 2 x 0.64 Ø + 4 x 1.5 mm <sup>2</sup>	11.3	89.0	148.0

## UNITRONIC® BUS PB FD Y HYBRID

Highly flexible application



### Benefits

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

### Application range

- PROFIBUS® (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

### Approvals (Norm references)

- With UL/CSA-Approbation (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

### Design

- Outer sheath: special PVC compound
- Cores for Power Supply: 4 x 1,5 mm<sup>2</sup> (AWG16)

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170875	UNITRONIC® BUS PB FD Y HYBRID	1 x 2 x 0.64 Ø + 4 x 1.5 mm <sup>2</sup>	11.3	89.0	155.0

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® BUS PB FESTOON

## Highly flexible application

## ■ Benefits

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

## ■ Application range

- PROFIBUS® (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)

- The stated bit rates allow the following cable lengths (maximum) according of PROFIBUS User Organisation of one bus segment (Type A cable, 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

## ■ Approvals (Norm references)



- With UL/CSA-Approbation (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

## ■ Design

- Outer sheath: special PVC compound

## ■ Technical data

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> 600 V (not for power purpose)
	<b>Minimum bending radius</b> Flexing: 70 mm fixed installation: single 30 mm
	<b>Test voltage</b> C/C: 2000 V
	<b>Range of temperature</b> Flexing: -5°C up to +70°C Fixed installation: -40°C up to +80°C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm	Copper index kg/km	Weight kg/km
2170331	UNITRONIC® BUS PB Festoon	1 x 2 x 0.64	8.0	26.0	64.0

## UNITRONIC® BUS PB TORSION

## Highly flexible application

## ■ Benefits

- Application where the combination of halogen-free outer sheath with properties similar to polyurethane and enhanced flame retardancy is requested
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

## ■ Application range

- PROFIBUS® (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; ± 180° per 1m
- Halogen free

- Flame retardant according to IEC 60332-1-2
- The stated bit rates allow the following cable lengths (maximum) according of PROFIBUS User Organisation of one bus segment (Type A cable, 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

## ■ Approvals (Norm references)



- Approval: UL Typ CMX acc. UL 444

## ■ Design

- PE core insulation

## ■ Technical data

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power applications) 300 V
	<b>Minimum bending radius</b> Static: 4 x cable diameter Flexing: 7.5 x outer diameter
	<b>Test voltage</b> 3600 V DC (3 sec.)
	<b>Range of temperature</b> Operating temp.: -25°C up to 75°C Storage temp.: -40°C up to 80°C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm	Copper index kg/km	Weight kg/km
2170332	UNITRONIC® BUS PB TORSION	1 x 2 x 0.8	8.0	31.0	66.0

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® DeviceNet THICK + THIN



### Application range

- Stationary application
- DeviceNet™ connects industrial devices e. g. limit switches, photoelectric switches, variable frequency drives, valve islands, motor starters, PLCs, etc.

### Product features

- Oil resistant (except the ECO variant)
- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- Further details: see Data Sheet

### Approvals (Norm references)



- CMG UL/CSA approval 75°C or PLTC, Sun Res
- FRNC variant with Germanischer Lloyd approval

### Design

- A) Halogen-free (2170340 + 2170341)
- B) Polyvinylchloride (PVC) (2170342 + 2170343, 2170362 + 2170363)

### Technical data

	<b>Core identification code</b> Data pair: light blue + white Power supply: red + black
	<b>Mutual capacitance</b> (800 Hz): max. 39.8 nF/km
	<b>Peak working voltage</b> (not for power applications) 300 V
	<b>Conductor resistance</b> Thick (loop): max. 45 Ohm/km Thin (loop): max. 180 Ohm/km
	<b>Minimum bending radius</b> Fixed installation: 15 x cable diameter
	<b>Test voltage</b> Core/core: 2000 V
	<b>Range of temperature</b> Fixed installation: -25°C up to +80°C
	<b>Characteristic impedance</b> 120 ohms

Part number	Article designation	Number of pairs and AWG size	Outer diameter mm	Copper index kg/km	Weight kg/m
<b>Halogen free</b>					
2170340	UNITRONIC® BUS DN THICK FRNC	1x2xAWG18 + 1x2xAWG15	12.2	88.4	195.0
2170341	UNITRONIC® BUS DN THIN FRNC	1x2xAWG24 + 1x2xAWG22	6.9	33.4	69.5
<b>With PVC outer sheath</b>					
2170342	UNITRONIC® BUS DN THICK Y	1x2xAWG18 + 1x2xAWG15	12.2	88.4	192.0
2170343	UNITRONIC® BUS DN THIN Y	1x2xAWG24 + 1x2xAWG22	6.9	33.4	66.9
<b>Lower cost variant of PVC versions / not oil resistant</b>					
2170362	UNITRONIC® BUS DN THICK Y ECO	1x2xAWG18 + 1x2xAWG15	11.0	88.4	164.0
2170363	UNITRONIC® BUS DN THIN Y ECO	1x2xAWG24 + 1x2xAWG22	6.4	33.4	61.0

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

FRNC means Flame Retardant Non Corrosive DeviceNet and is a registered trademark of ODVA (USA)

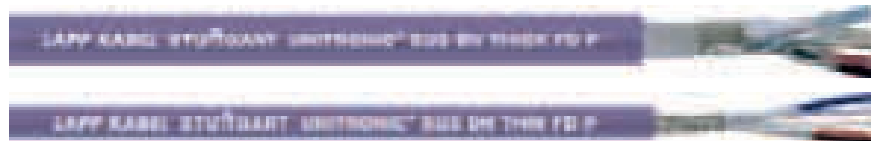
Lapp Kabel is a member of the PROFIBUS user organisation e. V. (PNO)

ECO is the cost-efficient version of part no. 2170342 and 2170343 with slight modification of the outer jacket including the UL/CSA CMG-approval

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 approved



### Application range

- For highly flexible applications.
- DeviceNet™ connects industrial devices e. g. limit switches, photoelectric switches, variable frequency drives, valve islands, motor starters, PLCs, etc.

### Product features

- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- Further details: see Data Sheet

### Approvals (Norm references)



- PUR: UL/CSA approved (CMX)
- PVC: UL/CSA CMG 75 °C or PLTC FT4 Sun Res Oil Res

### Design

- Polyurethane (PUR)  
(2170344 + 2170345)
- Polyvinylchloride (PVC)  
(2170346 + 2170347)

### Technical data

	<b>Core identification code</b> Data pair: light blue + white Power supply: red + black
	<b>Mutual capacitance</b> (800 Hz): max. 39.8 nF/km
	<b>Peak working voltage</b> (not for power applications) 300 V
	<b>Conductor resistance</b> Thick (loop): max. 45 Ohm/km Thin (loop): max. 180 Ohm/km
	<b>Minimum bending radius</b> Fixed installation: 7.5 x cable diameter Flexing: 15 x cable diameter
	<b>Test voltage</b> Core/core: 2000 V
	<b>Range of temperature</b> PUR: -40 °C to +80 °C PVC: -10 °C to +80 °C
	<b>Characteristic impedance</b> 120 ohms

Part number	Article designation	Number of pairs and AWG size	Outer diameter mm	Copper index kg/km	Weight kg/m
<b>Version P (PUR)</b>					
2170344	UNITRONIC® BUS DN THICK FD P	1x2xAWG18 + 1x2xAWG15	12.2	94.0	184.0
2170345	UNITRONIC® BUS DN THIN FD P	1x2xAWG24 + 1x2xAWG22	6.9	33.4	67.7
<b>Version Y (PVC)</b>					
2170346	UNITRONIC® BUS DN THICK FD Y	1x2xAWG18 + 1x2xAWG15	12.2	94.0	195.0
2170347	UNITRONIC® BUS DN THIN FD Y	1x2xAWG24 + 1x 2xAWG22	6.9	33.4	69.8

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

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

## UNITRONIC® BUS CAN



### Info

- CAN = Controller Area Network

LAPP KABEL SYSTEM UNITRONIC BUS CAN

## UNITRONIC® BUS CAN FD P

LAPP KABEL SYSTEM UNITRONIC BUS CAN FD P

### Application range

#### UNITRONIC® BUS CAN

- Stationary application

#### 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 crosssection necessary with increasing length  
See Table below (reference values from ISO 11898).
- For the segment length, cable cross-section and bit rate, ISO 11898 makes recommendations
- Flame retardant according to IEC 60332-1-2

#### UNITRONIC® BUS CAN FD P

- Halogen free
- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor crosssection necessary with increasing length  
See Table below (reference values from ISO 11898).

- For the segment length, cable cross-section and bit rate, ISO 11898 makes recommendations
- Flame retardant according to IEC 60332-1-2

### Approvals (Norm references)



- Standardised internationally in ISO 11898
- UL/CSA type CMX (UL 444)

### Design

#### UNITRONIC® BUS CAN

- Stranded 7-wire bare copper conductor
- Colour coded in accordance with DIN 47100
- Copper braid
- PVC outer sheath
- Colour: violet (RAL 4001)

#### UNITRONIC® BUS CAN FD P

- Stranded bare copper conductor
- Screen braiding made from copper wire
- PUR outer sheath
- Colour: violet (RAL 4001)
- UV-resistant (but colour change after some time possible)

### Technical data



#### Mutual capacitance

##### UNITRONIC® BUS CAN

(800 Hz): max. 40 nF/km

##### UNITRONIC® BUS CAN FD P

(800 Hz): max. 60 nF/km



#### Peak working voltage

##### UNITRONIC® BUS CAN

(not for power purposes) 250 V

##### UNITRONIC® BUS CAN FD P

250 V (not for power applications)



#### 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 cable diameter

##### UNITRONIC® BUS CAN FD P

Flexing: 15 x cable diameter



#### Test voltage

Core/core: 1500 V



#### Range of temperature

##### UNITRONIC® BUS CAN

Static:

-30°C up to +80°C

Flexing: -5°C up to +70°C

##### UNITRONIC® BUS CAN FD P

Fixed installation: -40°C up to +80°C

Flexing: -30°C up to +70°C



#### Characteristic impedance

120 ohms

Part number	Article designation	Number of pairs / conductor cross-section in mm²	Outer diameter mm	Copper index kg/km	Weight kg/km approx.
<b>For fixed installation</b>					
2170260	UNITRONIC® BUS CAN	1 x 2 x 0,22	5.7	16.7	42.0
2170261	UNITRONIC® BUS CAN	2 x 2 x 0,22	7.6	34.8	68.0
2170263	UNITRONIC® BUS CAN	1 x 2 x 0,34	6.8	22.1	55.0
2170264	UNITRONIC® BUS CAN	2 x 2 x 0,34	8.5	46.4	88.0
2170266	UNITRONIC® BUS CAN	1 x 2 x 0,5	7.5	41.6	90.0
2170267	UNITRONIC® BUS CAN	2 x 2 x 0,5	9.7	59.4	106.0
2170269	UNITRONIC® BUS CAN	1 x 2 x 0,75	8.7	52.7	108.0
2170270	UNITRONIC® BUS CAN	2 x 2 x 0,75	11.5	80.6	142.0
<b>For highly flexible application (power chains, frequently moved machine parts)</b>					
2170272	UNITRONIC® BUS CAN FD P	1 x 2 x 0,25	6.4	17.5	40.0
2170273	UNITRONIC® BUS CAN FD P	2 x 2 x 0,25	8.4	28.0	65.0
2170275	UNITRONIC® BUS CAN FD P	1 x 2 x 0,34	6.8	32.8	60.0
2170276	UNITRONIC® BUS CAN FD P	2 x 2 x 0,34	9.6	52.4	88.0
2170278	UNITRONIC® BUS CAN FD P	1 x 2 x 0,5	8.0	41.9	74.0
2170279	UNITRONIC® BUS CAN FD P	2 x 2 x 0,5	10.8	59.4	100.0

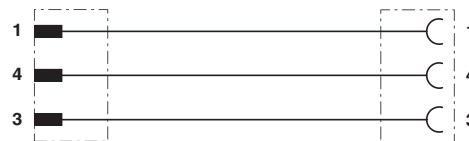
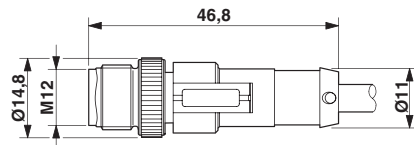
Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

## S/A cable: M12 connector on free conductor end



S/A cable: M12 connector on free conductor end

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 3-pos. connector

- Plug design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## ■ Approvals (Norm references)



## ■ Design

- Permanently flexible control cable
- Design: 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## ■ Technical data



## Degree of protection

IP65/IP68/IP69K



## Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

A - Standard

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>Straight connector</b>					
22260221	AB-C3-M12MS-2,0PUR	2	250	4	1
22260222	AB-C3-M12MS-5,0PUR	5	250	4	1
22260249	AB-C3-M12MS-10,0PUR	10	250	4	1
<b>Angled connector</b>					
22260223	AB-C3-M12MA-2,0PUR	2	250	4	1
22260224	AB-C3-M12MA-5,0PUR	5	250	4	1
22260256	AB-C3-M12MA-10,0PUR	10	250	4	1

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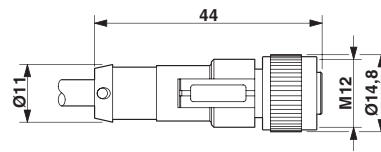
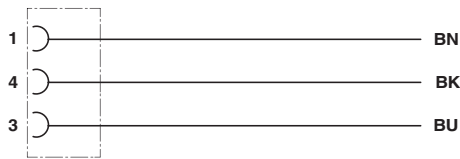
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M12 socket on free conductor end



S/A cable: M12 socket on free conductor end

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 3-pos. connector

- Socket design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0+1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260257	AB-C3-2,0PUR-M12FS	2	250	4	No	1
22260250	AB-C3-5,0PUR-M12FS	5	250	4	No	1
22260251	AB-C3-10,0PUR-M12FS	10	250	4	No	1
<b>Angled socket</b>						
22260258	AB-C3-2,0PUR-M12FA	2	250	4	No	1
22260259	AB-C3-5,0PUR-M12FA	5	250	4	No	1
22260260	AB-C3-10,0PUR-M12FA	10	250	4	No	1
<b>Straight socket with LEDs</b>						
22260252	AB-C3-2,0PUR-M12FS-2L	2	24	4	2 LEDs	1
22260265	AB-C3-5,0PUR-M12FS-2L	5	24	4	2 LEDs	1
22260266	AB-C3-10,0PUR-M12FS-2L	10	24	4	2 LEDs	1
<b>Angled socket with LEDs</b>						
22260253	AB-C3-2,0PUR-M12FA-2L	2	24	4	2 LEDs	1
22260254	AB-C3-5,0PUR-M12FA-2L	5	24	4	2 LEDs	1
22260255	AB-C3-10,0PUR-M12FA-2L	10	24	4	2 LEDs	1

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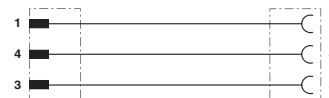
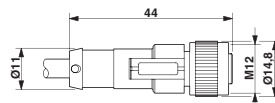
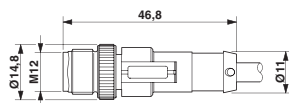
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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## S/A cable: M12 connector on M12 socket



S/A cable: M12 connector on M12 socket

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 3-pos. connector

- Plug design with M12 thread on socket with M12 thread
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## ■ Approvals (Norm references)



## ■ Design

- Permanently flexible control cable
- Design: 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## ■ Technical data



## Degree of protection

IP65/IP68/IP69K



## Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

A - Standard

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>n</sub> in V	Nominal current I <sub>n</sub> in A	Status display	PU
<b>Straight connector on straight socket</b>						
22260233	AB-C3-M12MS-0,3PUR-M12FS	0.3	250	4	No	1
22260234	AB-C3-M12MS-0,6PUR-M12FS	0.6	250	4	No	1
22260235	AB-C3-M12MS-1,0PUR-M12FS	1	250	4	No	1
22260236	AB-C3-M12MS-2,0PUR-M12FS	2	250	4	No	1
<b>Straight connector on angled socket</b>						
22260237	AB-C3-M12MS-0,3PUR-M12FA	0.3	250	4	No	1
22260238	AB-C3-M12MS-0,6PUR-M12FA	0.6	250	4	No	1
22260239	AB-C3-M12MS-1,0PUR-M12FA	1	250	4	No	1
22260240	AB-C3-M12MS-2,0PUR-M12FA	2	250	4	No	1
<b>Straight connector on angled socket with LEDs</b>						
22260261	AB-C3-M12MS-0,3PUR-M12FA-2L	0.3	24	4	2 LEDs	1
22260262	AB-C3-M12MS-0,6PUR-M12FA-2L	0.6	24	4	2 LEDs	1
22260263	AB-C3-M12MS-1,0PUR-M12FA-2L	1	24	4	2 LEDs	1
22260264	AB-C3-M12MS-2,0PUR-M12FA-2L	2	24	4	2 LEDs	1

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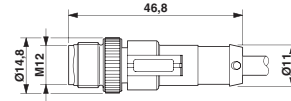
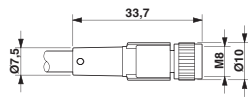
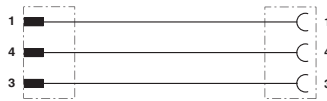
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Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M12 connector on M8 socket



S/A cable: M12 connector on M8 socket

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 3-pos. connector

- Plug design with M12 thread on socket with M8 thread
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 3 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0+1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on straight socket</b>						
22260225	AB-C3-M12MS-0,3PUR-M8FS	0.3	60	3	No	1
22260226	AB-C3-M12MS-0,6PUR-M8FS	0.6	60	3	No	1
22260227	AB-C3-M12MS-1,0PUR-M8FS	1	60	3	No	1
22260228	AB-C3-M12MS-2,0PUR-M8FS	2	60	3	No	1
<b>Straight connector on angled socket</b>						
22260229	AB-C3-M12MS-0,3PUR-M8FA	0.3	60	3	No	1
22260230	AB-C3-M12MS-0,6PUR-M8FA	0.6	60	3	No	1
22260231	AB-C3-M12MS-1,0PUR-M8FA	1	60	3	No	1
22260232	AB-C3-M12MS-2,0PUR-M8FA	2	60	3	No	1
<b>Straight connector on angled socket with LEDs</b>						
22260267	AB-C3-M12MS-0,3PUR-M8FA-2L	0.3	24	3	2 LEDs	1
22260268	AB-C3-M12MS-0,6PUR-M8FA-2L	0.6	24	3	2 LEDs	1
22260269	AB-C3-M12MS-1,0PUR-M8FA-2L	1	24	3	2 LEDs	1
22260270	AB-C3-M12MS-2,0PUR-M8FA-2L	2	24	3	2 LEDs	1

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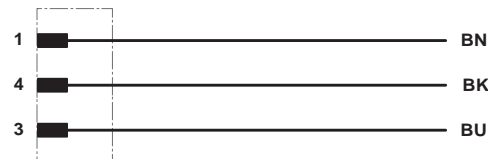
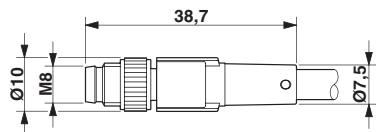
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M8 connector on free conductor end



## S/A cable: M8 connector on free conductor end

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 3-pos. connector

- Plug design with M8 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## ■ Approvals (Norm references)



## ■ Design

- Permanently flexible control cable
- Design: 3 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## ■ Technical data



## Degree of protection

IP65/IP68/IP69K



## Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

A - Standard

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>Straight connector</b>					
22260204	AB-C3-M8MS-2,0PUR	2	60	3	1
22260205	AB-C3-M8MS-5,0PUR	5	60	3	1
22260218	AB-C3-M8MS-10,0PUR	10	60	3	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

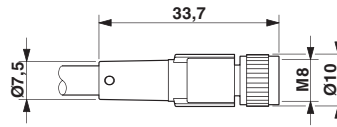
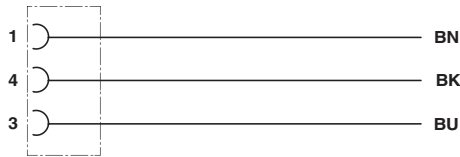
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T 17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M8 socket on free conductor end



S/A cable: M8 socket on free conductor end

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 3-pos. connector

- Socket design with M8 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 3 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data



#### Degree of protection

IP65/IP68/IP69K



#### Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

#### Contact material

CuSn

#### Contact surface material

Ni/Au

#### Coding

A - Standard

#### Material, knurls

Zinc die-cast, (nickel-plated)

#### Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260202	AB-C3-2,0PUR-M8FS	2	60	3	No	1
22260200	AB-C3-5,0PUR-M8FS	5	60	3	No	1
22260219	AB-C3-10,0PUR-M8FS	10	60	3	No	1
<b>Angled socket</b>						
22260203	AB-C3-2,0PUR-M8FA	2	60	3	No	1
22260201	AB-C3-5,0PUR-M8FA	5	60	3	No	1
22260220	AB-C3-10,0PUR-M8FA	10	60	3	No	1
<b>Angled socket with LEDs</b>						
22260275	AB-C3-2,0PUR-M8FA-2L	2	24	3	2 LEDs	1
22260276	AB-C3-5,0PUR-M8FA-2L	5	24	3	2 LEDs	1
22260277	AB-C3-10,0PUR-M8FA-2L	10	24	3	2 LEDs	1

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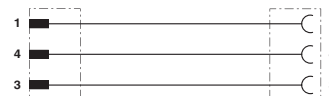
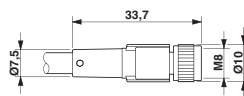
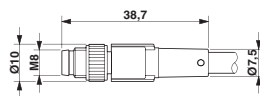
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Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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## S/A cable: M8 connector on M8 socket



S/A cable: M8 connector on M8 socket

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 3-pos. connector

- Plug design with M8 thread on socket with M8 thread
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## ■ Approvals (Norm references)



## ■ Design

- Permanently flexible control cable
- Design: 3 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## ■ Technical data



**Degree of protection**  
IP65/IP68/IP69K



**Ambient temperature (operation)**  
Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

**Contact material**

CuSn

**Contact surface material**

Ni/Au

**Coding**

A - Standard

**Material, knurls**

Zinc die-cast, (nickel-plated)

**Material of grip body**

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on straight socket</b>						
22260206	AB-C3-M8MS-0,3PUR-M8FS	0.3	60	3	No	1
22260207	AB-C3-M8MS-0,6PUR-M8FS	0.6	60	3	No	1
22260208	AB-C3-M8MS-1,0PUR-M8FS	1	60	3	No	1
22260209	AB-C3-M8MS-2,0PUR-M8FS	2	60	3	No	1
<b>Straight connector on angled socket</b>						
22260210	AB-C3-M8MS-0,3PUR-M8FA	0.3	60	3	No	1
22260211	AB-C3-M8MS-0,6PUR-M8FA	0.6	60	3	No	1
22260212	AB-C3-M8MS-1,0PUR-M8FA	1	60	3	No	1
22260213	AB-C3-M8MS-2,0PUR-M8FA	2	60	3	No	1
<b>Straight connector on angled socket with LEDs</b>						
22260214	AB-C3-M8MS-0,3PUR-M8FA-2L	0.3	24	3	2 LEDs	1
22260215	AB-C3-M8MS-0,6PUR-M8FA-2L	0.6	24	3	2 LEDs	1
22260216	AB-C3-M8MS-1,0PUR-M8FA-2L	1	24	3	2 LEDs	1
22260217	AB-C3-M8MS-2,0PUR-M8FA-2L	2	24	3	2 LEDs	1

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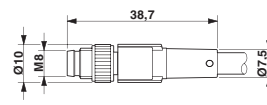
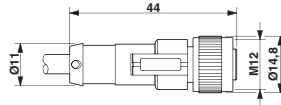
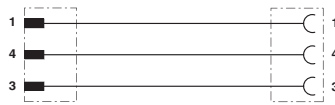
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## S/A cable: M8 connector on M12 socket



S/A cable: M8 connector on M12 socket

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 3-pos. connector

- Plug design with M8 thread on socket with M12 thread
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 3 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0-1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on straight socket</b>						
22260241	AB-C3-M8MS-0,3PUR-M12FS	0.3	60	3	No	1
22260242	AB-C3-M8MS-0,6PUR-M12FS	0.6	60	3	No	1
22260243	AB-C3-M8MS-1,0PUR-M12FS	1	60	3	No	1
22260244	AB-C3-M8MS-2,0PUR-M12FS	2	60	3	No	1
<b>Straight connector on angled socket</b>						
22260245	AB-C3-M8MS-0,3PUR-M12FA	0.3	60	3	No	1
22260246	AB-C3-M8MS-0,6PUR-M12FA	0.6	60	3	No	1
22260247	AB-C3-M8MS-1,0PUR-M12FA	1	60	3	No	1
22260248	AB-C3-M8MS-2,0PUR-M12FA	2	60	3	No	1
<b>Straight connector on angled socket with LEDs</b>						
22260271	AB-C3-M8MS-0,3PUR-M12FA-2L	0.3	24	3	2 LEDs	1
22260272	AB-C3-M8MS-0,6PUR-M12FA-2L	0.6	24	3	2 LEDs	1
22260273	AB-C3-M8MS-1,0PUR-M12FA-2L	1	24	3	2 LEDs	1
22260274	AB-C3-M8MS-2,0PUR-M12FA-2L	2	24	3	2 LEDs	1

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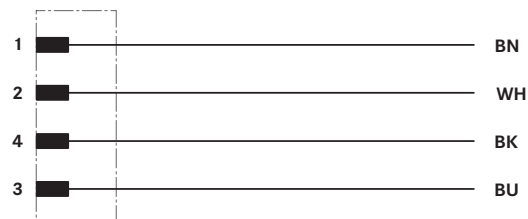
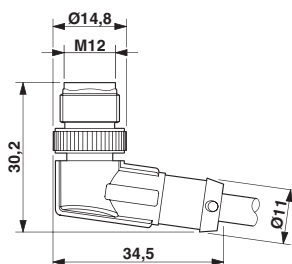
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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## S/A cable: M12 connector on free conductor end



S/A cable: M12 connector on free conductor end

## Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- 4-pos. connector

- Plug design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## Approvals (Norm references)



## Design

- Permanently flexible control cable
- Design: 4 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## Technical data



## Degree of protection

IP65/IP68/IP69K



## Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40°C up to +80°C

Cable, flexible installation

-5°C up to +80°C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

A - Standard

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>Straight connector</b>					
22260320	AB-C4-M12MS-2,0PUR	2	250	4	1
22260321	AB-C4-M12MS-5,0PUR	5	250	4	1
22260342	AB-C4-M12MS-10,0PUR	10	250	4	1
<b>Angled connector</b>					
22260301	AB-C4-M12MA-2,0PUR	2	250	4	1
22260302	AB-C4-M12MA-5,0PUR	5	250	4	1
22260303	AB-C4-M12MA-10,0PUR	10	250	4	1

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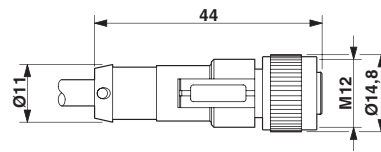
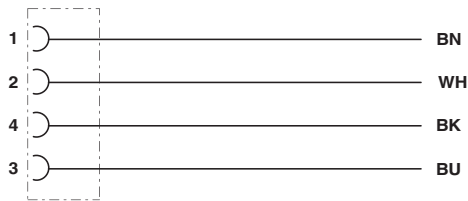
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Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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## S/A cable: M12 socket on free conductor end



S/A cable: M12 socket on free conductor end

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 4-pos. connector

- Socket design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 4 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0+1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260322	AB-C4- 2,0PUR-M12FS	2	250	4	No	1
22260323	AB-C4- 5,0PUR-M12FS	5	250	4	No	1
22260343	AB-C4-10,0PUR-M12FS	10	250	4	No	1
<b>Angled socket</b>						
22260324	AB-C4- 2,0PUR-M12FA	2	250	4	No	1
22260325	AB-C4- 5,0PUR-M12FA	5	250	4	No	1
22260341	AB-C4-10,0PUR-M12FA	10	250	4	No	1
<b>Straight socket with LEDs</b>						
22260344	AB-C4- 2,0PUR-M12FS-2L	2	24	4	2 LEDs	1
22260345	AB-C4- 5,0PUR-M12FS-2L	5	24	4	2 LEDs	1
22260346	AB-C4-10,0PUR-M12FS-2L	10	24	4	2 LEDs	1
<b>Angled socket with LEDs</b>						
22260326	AB-C4- 2,0PUR-M12FA-3L	2	24	4	3 LEDs	1
22260327	AB-C4- 5,0PUR-M12FA-3L	5	24	4	3 LEDs	1
22260340	AB-C4-10,0PUR-M12FA-3L	10	24	4	3 LEDs	1

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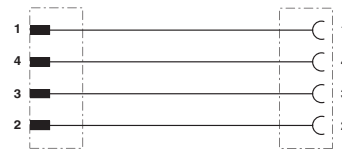
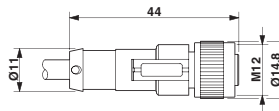
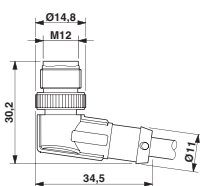
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## S/A cable: M12 connector on M12 socket



S/A cable: M12 connector on M12 socket

## Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- 4-pos. connector

- Plug design with M12 thread on socket with M12 thread
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## Approvals (Norm references)



## Design

- Permanently flexible control cable
- Design: 4 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## Technical data



Degree of protection  
IP65/IP68/IP69K



Ambient temperature (operation)

Plug/socket  
-25 °C to +90 °C  
Cable, fixed installation  
-40 °C up to +80 °C  
Cable, flexible installation  
-5 °C up to +80 °C

Contact material

CuSn

Contact surface material

Ni/Au

Coding

A - Standard

Material, knurls

Zinc die-cast, (nickel-plated)

Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on straight socket</b>						
22260328	AB-C4-M12MS-0,3PUR-M12FS	0.3	250	4	No	1
22260329	AB-C4-M12MS-0,6PUR-M12FS	0.6	250	4	No	1
22260330	AB-C4-M12MS-1,0PUR-M12FS	1	250	4	No	1
22260331	AB-C4-M12MS-2,0PUR-M12FS	2	250	4	No	1
<b>Straight connector on angled socket</b>						
22260332	AB-C4-M12MS-0,3PUR-M12FA	0.3	250	4	No	1
22260333	AB-C4-M12MS-0,6PUR-M12FA	0.6	250	4	No	1
22260334	AB-C4-M12MS-1,0PUR-M12FA	1	250	4	No	1
22260335	AB-C4-M12MS-2,0PUR-M12FA	2	250	4	No	1
<b>Angled connector on straight socket</b>						
22260304	AB-C4-M12MA-0,3PUR-M12FS	0.3	250	4	No	1
22260305	AB-C4-M12MA-0,6PUR-M12FS	0.6	250	4	No	1
22260306	AB-C4-M12MA-1,0PUR-M12FS	1	250	4	No	1
22260307	AB-C4-M12MA-2,0PUR-M12FS	2	250	4	No	1
<b>Straight connector on angled socket with LEDs</b>						
22260336	AB-C4-M12MS-0,3PUR-M12FA-3L	0.3	24	4	3 LEDs	1
22260337	AB-C4-M12MS-0,6PUR-M12FA-3L	0.6	24	4	3 LEDs	1
22260338	AB-C4-M12MS-1,0PUR-M12FA-3L	1	24	4	3 LEDs	1
22260339	AB-C4-M12MS-2,0PUR-M12FA-3L	2	24	4	3 LEDs	1

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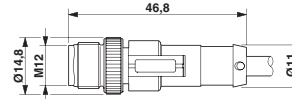
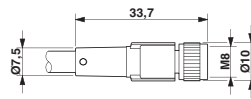
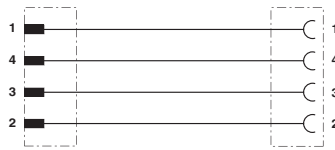
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## S/A cable: M12 connector on M8 socket



S/A cable: M12 connector on M8 socket

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 4-pos. connector

- Plug design with M12 thread on socket with M8 thread
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 4 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0-1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on straight socket</b>						
22260347	AB-C4-M12MS-0,3PUR-M8FS	0.3	30	3	No	1
22260349	AB-C4-M12MS-0,6PUR-M8FS	0.6	30	3	No	1
22260350	AB-C4-M12MS-1,0PUR-M8FS	1	30	3	No	1
22260348	AB-C4-M12MS-2,0PUR-M8FS	2	30	3	No	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

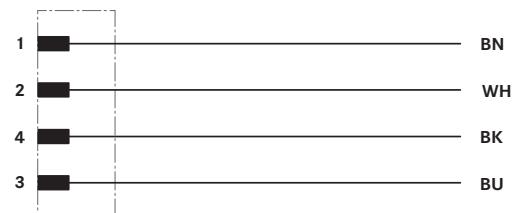
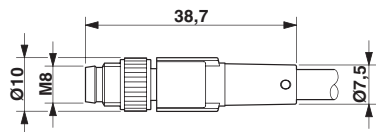
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M8 connector on free conductor end



S/A cable: M8 connector on free conductor end

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 4-pos. connector

- Plug design with M8 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## ■ Approvals (Norm references)



## ■ Design

- Permanently flexible control cable
- Design: 4 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## ■ Technical data



## Degree of protection

IP65/IP68/IP69K



## Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

A - Standard

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>Straight connector</b>					
22260300	AB-C4-M8MS-2,0PUR	2	30	3	1
22260308	AB-C4-M8MS-5,0PUR	5	30	3	1
22260318	AB-C4-M8MS-10,0PUR	10	30	3	1

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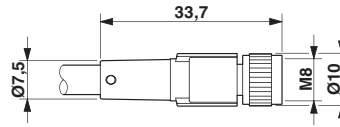
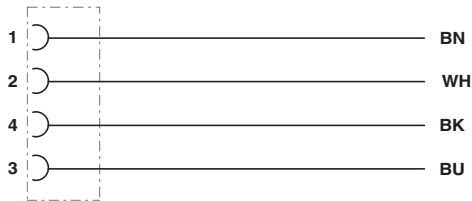
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T 17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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## S/A cable: M8 socket on free conductor end



S/A cable: M8 socket on free conductor end

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 4-pos. connector

- Socket design with M8 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 4 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data



#### Degree of protection

IP65/IP68/IP69K

#### Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

#### Contact material

CuSn

#### Contact surface material

Ni/Au

#### Coding

A - Standard

#### Material, knurls

Zinc die-cast, (nickel-plated)

#### Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260309	AB-C4- 2,0PUR-M8FS	2	30	3	No	1
22260310	AB-C4- 5,0PUR-M8FS	5	30	3	No	1
22260317	AB-C4-10,0PUR-M8FS	10	30	3	No	1
<b>Angled socket</b>						
22260311	AB-C4- 2,0PUR-M8FA	2	30	3	No	1
22260312	AB-C4- 5,0PUR-M8FA	5	30	3	No	1
22260319	AB-C4-10,0PUR-M8FA	10	30	3	No	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

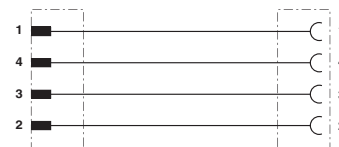
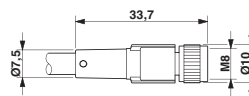
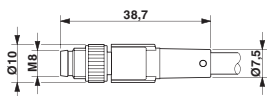
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M8 connector on M8 socket



S/A cable: M8 connector on M8 socket

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 4-pos. connector

- Plug design with M8 thread on socket with M8 thread
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## ■ Approvals (Norm references)



## ■ Design

- Permanently flexible control cable
- Design: 4 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## ■ Technical data



**Degree of protection**  
IP65/IP68/IP69K

**Ambient temperature (operation)**

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

**Contact material**

CuSn

**Contact surface material**

Ni/Au

**Coding**

A - Standard

**Material, knurls**

Zinc die-cast, (nickel-plated)

**Material of grip body**

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on straight socket</b>						
22260313	AB-C4-M8MS-0,3PUR-M8FS	0.3	30	3	No	1
22260314	AB-C4-M8MS-0,6PUR-M8FS	0.6	30	3	No	1
22260315	AB-C4-M8MS-1,0PUR-M8FS	1	30	3	No	1
22260316	AB-C4-M8MS-2,0PUR-M8FS	2	30	3	No	1

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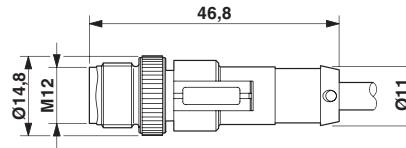
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M12 connector on free conductor end



S/A cable: M12 connector on free conductor end

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 5-pos. connector

- Plug design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 5 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, white, blue, black, green/yellow
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data

<b>IP</b>	<b>Degree of protection</b>
	IP65/IP68/IP69K
<b>0-11</b>	<b>Ambient temperature (operation)</b>
	Plug/socket
	-25 °C to +90 °C
	Cable, fixed installation
	-40 °C up to +80 °C
	Cable, flexible installation
	-5 °C up to +80 °C
	<b>Contact material</b>
	CuSn
	<b>Contact surface material</b>
	Ni/Au
	<b>Coding</b>
	A - Standard
	<b>Material, knurls</b>
	Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b>
	TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>n</sub> in V	Nominal current I <sub>n</sub> in A	PU
<b>Straight connector</b>					
22260400	AB-C5-M12MS-2,0PUR	2	60	4	1
22260401	AB-C5-M12MS-5,0PUR	5	60	4	1
22260414	AB-C5-M12MS-10,0PUR	10	60	4	1
<b>Angled connector</b>					
22260402	AB-C5-M12MA-2,0PUR	2	60	4	1
22260403	AB-C5-M12MA-5,0PUR	5	60	4	1
22260417	AB-C5-M12MA-10,0PUR	10	60	4	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

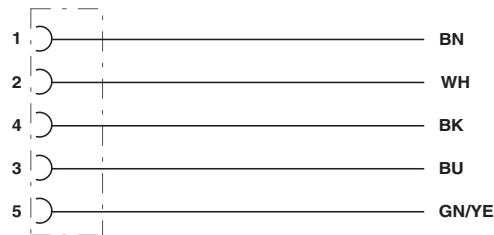
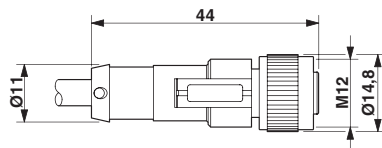
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable:, M 12 socket on free conductor end



## S/A cable:, M12 socket on free conductor end

## Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- 5-pos. connector

- Socket design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## Approvals (Norm references)



## Design

- Permanently flexible control cable
- Design: 5 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, white, blue, black, green/yellow
- Outer sheath: PUR, halogen-free
- Sheath color black

## Technical data



## Degree of protection

IP65/IP68/IP69K



## Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

A - Standard

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260404	AB-C5- 2,0PUR-M12FS	2	60	4	No	1
22260405	AB-C5- 5,0PUR-M12FS	5	60	4	No	1
22260415	AB-C5-10,0PUR-M12FS	10	60	4	No	1
<b>Angled socket</b>						
22260406	AB-C5- 2,0PUR-M12FA	2	60	4	No	1
22260407	AB-C5- 5,0PUR-M12FA	5	60	4	No	1
22260418	AB-C5-10,0PUR-M12FA	10	60	4	No	1
<b>Angled socket with LEDs</b>						
22260408	AB-C5- 2,0PUR-M12FA-3L	2	24	4	3 LEDs	1
22260409	AB-C5- 5,0PUR-M12FA-3L	5	24	4	3 LEDs	1
22260416	AB-C5-10,0PUR-M12FA-3L	10	24	4	3 LEDs	1
22260760	AB-C5-25,0PUR-M12FA-3L	25	24	4	3 LEDs	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

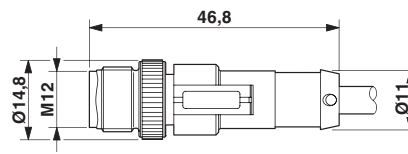
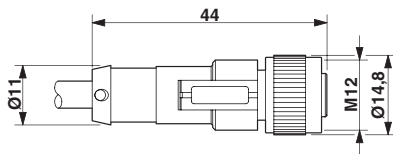
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T 17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## Sensor/actuator cable: M 12 connector on M 12 socket



Sensor/actuator cable: M 12 connector on M 12 socket

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 5-pos. connector

- Plug design with M12 thread on socket with M12 thread
- Drag chain suitable
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design: 5 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, white, blue, black, green/yellow
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data

<b>IP</b>	<b>Degree of protection</b>
	IP65/IP68/IP69K
<b>0-1</b>	<b>Ambient temperature (operation)</b>
	Plug/socket
	-25 °C to +90 °C
	Cable, fixed installation
	-40 °C up to +80 °C
	Cable, flexible installation
	-5 °C up to +80 °C
	<b>Contact material</b>
	CuSn
	<b>Contact surface material</b>
	Ni/Au
	<b>Coding</b>
	A - Standard
	<b>Material, knurls</b>
	Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b>
	TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on straight socket</b>						
22260410	AB-C5-M12MS-0,3PUR-M12FS	0.3	60	4	No	1
22260411	AB-C5-M12MS-0,6PUR-M12FS	0.6	60	4	No	1
22260412	AB-C5-M12MS-1,0PUR-M12FS	1	60	4	No	1
22260413	AB-C5-M12MS-2,0PUR-M12FS	2	60	4	No	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

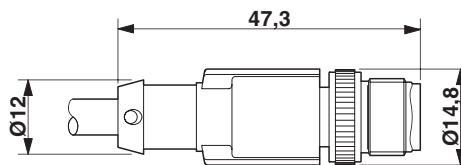
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: shielded, M12 connector on free conductor end



## Info

- Drag chain suitable

## S/A cable: shielded, M12 connector on free conductor end

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 3, 4 and 5-position version
- Plug design with M12 thread on free conductor end

- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## ■ Approvals (Norm references)



## ■ Design

- Permanently flexible control cable
- Design:
  - 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
  - 4 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
  - 5 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Outer sheath: PUR, halogen-free, shielded
- Sheath color black

## ■ Technical data



**Degree of protection**  
IP65/IP67/IP69K



**Ambient temperature (operation)**

Plug/socket  
-25 °C to +90 °C  
Cable, fixed installation  
-25 °C up to +80 °C  
Cable, flexible installation  
-5 °C up to +80 °C

**Contact material**

CuSn

**Contact surface material**

Ni/Au

**Coding**

A - Standard

**Material, knurls**

Zinc die-cast, (nickel-plated)

**Material of grip body**

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>3 pole straight connector</b>					
22260453	AB-C3-M12MS- 2,0PUR-SH	2	250	4	1
22260454	AB-C3-M12MS- 5,0PUR-SH	5	250	4	1
22260455	AB-C3-M12MS-10,0PUR-SH	10	250	4	1
<b>4 pole straight connector</b>					
22260459	AB-C4-M12MS- 2,0PUR-SH	2	250	4	1
22260460	AB-C4-M12MS- 5,0PUR-SH	5	250	4	1
22260461	AB-C4-M12MS-10,0PUR-SH	10	250	4	1
<b>5 pole straight connector</b>					
22260465	AB-C5-M12MS- 2,0PUR-SH	2	60	4	1
22260466	AB-C5-M12MS- 5,0PUR-SH	5	60	4	1
22260467	AB-C5-M12MS-10,0PUR-SH	10	60	4	1

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Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

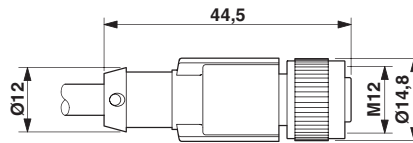
For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: shielded, M12 socket on free conductor end



### Info

- Drag chain suitable



S/A cable: shielded, M12 socket on free conductor end

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 3, 4 and 5-position version
- Socket design with M12 thread on free conductor end

- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design:
  - 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
  - 4 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
  - 5 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Outer sheath: PUR, halogen-free, shielded
- Sheath color black

### Technical data



**Degree of protection**  
IP65/IP67/IP69K



**Ambient temperature (operation)**

Plug/socket  
-25 °C to +90 °C

Cable, fixed installation

-25 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

**Contact material**

CuSn

**Contact surface material**

Ni/Au

**Coding**

A - Standard

**Material, knurls**

Zinc die-cast, (nickel-plated)

**Material of grip body**

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>3 pole straight socket</b>						
22260450	AB-C3- 2,0PUR-M12FS-SH	2	250	4	No	1
22260451	AB-C3- 5,0PUR-M12FS-SH	5	250	4	No	1
22260452	AB-C3-10,0PUR-M12FS-SH	10	250	4	No	1
<b>4 pole straight socket</b>						
22260456	AB-C4- 2,0PUR-M12FS-SH	2	250	4	No	1
22260457	AB-C4- 5,0PUR-M12FS-SH	5	250	4	No	1
22260458	AB-C4-10,0PUR-M12FS-SH	10	250	4	No	1
22260823	AB-C4-20,0PUR-M12FS-SH	20	250	4	No	1
<b>5 pole straight socket</b>						
22260462	AB-C5- 2,0PUR-M12FS-SH	2	60	4	No	1
22260463	AB-C5- 5,0PUR-M12FS-SH	5	60	4	No	1
22260464	AB-C5-10,0PUR-M12FS-SH	10	60	4	No	1

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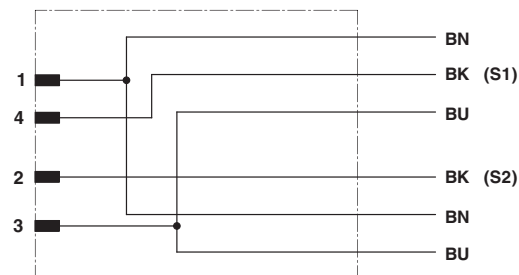
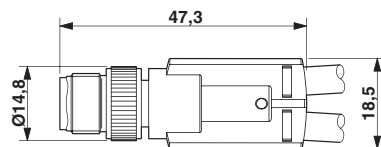
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/ 11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: straight M 12 Y plug on 2x free conductor end



S/A cable: straight M 12 Y plug on 2x free conductor end

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 4-pos. Y connector M 12

- Design as straight M 12 Y plug with 2 conductor exits
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## ■ Approvals (Norm references)



## ■ Design

- Permanently flexible control cable
- Design: 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## ■ Technical data



## Degree of protection

IP65/IP68/IP69K



## Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

A - Standard

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal current I <sub>N</sub> in A	PU
<b>Y plug on 2x free conductor end</b>				
22260500	AB-C3-M12Y-2,0PUR	2	4	1
22260513	AB-C3-M12Y-5,0PUR	5	4	1
22260526	AB-C3-M12Y-10,0PUR	10	4	1

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## S/A cable: straight M 12 Y plug on 2x M 12 socket



## Info

- PIN 2+4 are bridged on M 12 sockets



S/A cable: straight M 12 Y plug on 2x M 12 socket

## Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- 4-pos. Y connector M 12 on 2 x M 12 socket (4-pos.)

- Design as straight M 12 Y plug with 2 conductor exits
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## Approvals (Norm references)



## Design

- Permanently flexible control cable
- Design: 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0+T</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal current I <sub>n</sub> in A	Status display	PU
<b>Y plug on straight socket</b>					
22260501	AB-C3-M 12Y-0,3PUR-M 12FS-B	0.3	4	No	1
22260502	AB-C3-M 12Y-0,6PUR-M 12FS-B	0.6	4	No	1
22260503	AB-C3-M 12Y-1,0PUR-M 12FS-B	1	4	No	1
22260504	AB-C3-M 12Y-2,0PUR-M 12FS-B	2	4	No	1
<b>Y plug on angled socket</b>					
22260505	AB-C3-M 12Y-0,3PUR-M 12FA-B	0.3	4	No	1
22260506	AB-C3-M 12Y-0,6PUR-M 12FA-B	0.6	4	No	1
22260507	AB-C3-M 12Y-1,0PUR-M 12FA-B	1	4	No	1
22260508	AB-C3-M 12Y-2,0PUR-M 12FA-B	2	4	No	1
<b>Y plug on angled socket with LEDs</b>					
22260509	AB-C3-M 12Y-0,3PUR-M 12FA-2L-B	0.3	4	2 LEDs	1
22260510	AB-C3-M 12Y-0,6PUR-M 12FA-2L-B	0.6	4	2 LEDs	1
22260511	AB-C3-M 12Y-1,0PUR-M 12FA-2L-B	1	4	2 LEDs	1
22260512	AB-C3-M 12Y-2,0PUR-M 12FA-2L-B	2	4	2 LEDs	1

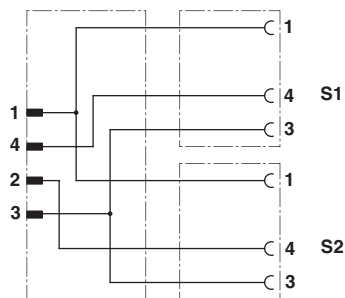
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## S/A cable: straight M 12 Y plug on 2x M8 socket



S/A cable: straight M 12 Y plug on 2x M8 socket

## Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- 4-pos. Y connector M 12 on 2 x M8 socket (3-pos.)

- Design as straight M 12 Y plug with 2 conductor exits
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## Approvals (Norm references)



## Design

- Permanently flexible control cable
- Design: 3 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

## Technical data



Degree of protection  
IP65/IP68/IP69K



Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

Cable, fixed installation

-40 °C up to +80 °C

Cable, flexible installation

-5 °C up to +80 °C

Contact material

CuSn

Contact surface material

Ni/Au

Coding

A - Standard

Material, knurls

Zinc die-cast, (nickel-plated)

Material of grip body

TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Y plug on straight socket</b>					
22260514	AB-C3-M12Y-0,3PUR-M8FS	0.3	3	No	1
22260515	AB-C3-M12Y-0,6PUR-M8FS	0.6	3	No	1
22260516	AB-C3-M12Y-1,0PUR-M8FS	1	3	No	1
22260517	AB-C3-M12Y-2,0PUR-M8FS	2	3	No	1
<b>Y plug on angled socket</b>					
22260518	AB-C3-M12Y-0,3PUR-M8FA	0.3	3	No	1
22260519	AB-C3-M12Y-0,6PUR-M8FA	0.6	3	No	1
22260520	AB-C3-M12Y-1,0PUR-M8FA	1	3	No	1
22260521	AB-C3-M12Y-2,0PUR-M8FA	2	3	No	1
<b>Y plug on angled socket with LEDs</b>					
22260522	AB-C3-M12Y-0,3PUR-M8FA-2L	0.3	3	2 LEDs	1
22260523	AB-C3-M12Y-0,6PUR-M8FA-2L	0.6	3	2 LEDs	1
22260524	AB-C3-M12Y-1,0PUR-M8FA-2L	1	3	2 LEDs	1
22260525	AB-C3-M12Y-2,0PUR-M8FA-2L	2	3	2 LEDs	1

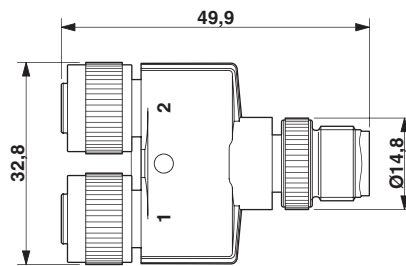
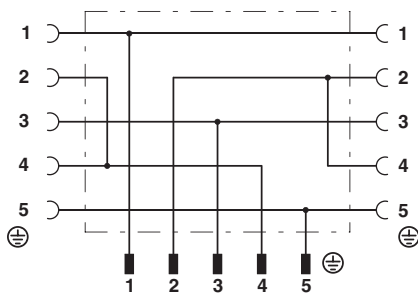
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## Y distributor



Y distributor

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering

- Tool shop
- Automotive industry

### Product features

- Design as M12 and M8
- M12 design with screw hole
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65 / IP67
<b>0+T</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C
	<b>Contact material</b> CuZn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Nominal voltage $U_N$ in V	Nominal current $I_N$ in A	PU
<b>Y-distributor M12, 3-pos. +PE, straight M12 connector on 2 x straight M12 socket, PIN 2+4 bridged</b>				
22260600	AB-C3-M12Y-2XM12FS B E	60	4	5
<b>Y-distributor M12, 3-pos. +PE, straight M12 connector on 2 x straight M12 socket</b>				
22260601	AB-C3-M12Y-2XM12FS E	60	4	5
<b>Y-distributor M12, 5-pos., straight M12 connector on 2 x straight M12 socket, parallel distributor</b>				
22260602	AB-C5-M12Y-2XM12FS V	60	4	5
<b>Y distributor M8, with 4-pos. M8 connector on 2x 3-pos. M8 socket</b>				
22260603	AB-C3-M8Y-2XM8FS	30	3	5
<b>Y-distributor M8, M8 connector on socket M8, 3-pos. parallel distributor</b>				
22260604	AB-C3-M8Y-2XM8FS V	60	3	5

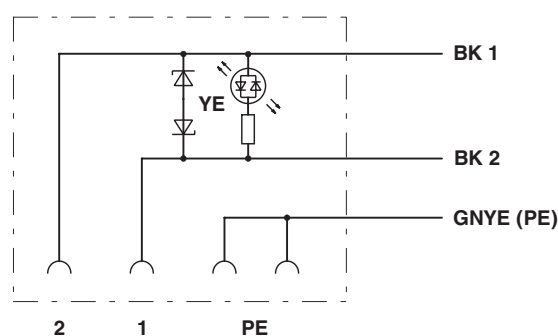
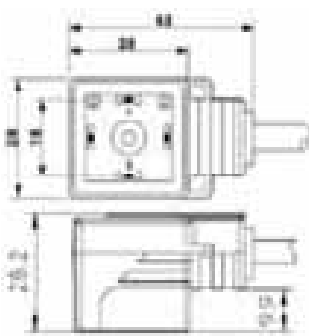
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Note: Tabular value 'Number of poles' is valid for sockets

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: 3-pos., valve connector on free conductor end



S/A cable: 3-pos., valve connector on free conductor end

## Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- 3-pos. valve plug

- With protective circuit (Z diode)  
PE bridged
- With LED status indicator (yellow)
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish

## Approvals (Norm references)



## Design

- Cable design: 3 x 0.5 mm<sup>2</sup> (28 x 0.15 mm)
- Conductor colors: black 1, black 2, green/yellow
- Outer sheath: PUR, halogen-free
- Sheath color: black (RAL 7021)
- Outer diameter: 4,5 mm
- Can be used in drag chain

## Technical data



Degree of protection  
IP 67



Ambient temperature (operation)

Valve plug  
-20°C up to +85°C  
Cable, fixed installation  
-40°C up to +80°C  
Cable, flexible installation  
-15°C up to +80°C

Contact material

CuSn

Contact surface material

Ag

Coding

A - Standard

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Valve connector Type A (18 mm)</b>						
22260584	AB-C3- 2,0PUR-A-1L-S	2	24	4	1 LED	1
22260576	AB-C3- 5,0PUR-A-1L-S	5	24	4	1 LED	1
22260577	AB-C3-10,0PUR-A-1L-S	10	24	4	1 LED	1
<b>Valve connector Type B (10 mm)</b>						
22260585	AB-C3- 2,0PUR-B-1L-S	2	24	4	1 LED	1
22260578	AB-C3- 5,0PUR-B-1L-S	5	24	4	1 LED	1
22260579	AB-C3-10,0PUR-B-1L-S	10	24	4	1 LED	1
<b>Valve connector Type BI (11 mm)</b>						
22260586	AB-C3- 2,0PUR-BI-1L-S	2	24	4	1 LED	1
22260580	AB-C3- 5,0PUR-BI-1L-S	5	24	4	1 LED	1
22260581	AB-C3-10,0PUR-BI-1L-S	10	24	4	1 LED	1
<b>Valve connector Type C (8 mm)</b>						
22260587	AB-C3- 2,0PUR-C-1L-S	2	24	4	1 LED	1
22260582	AB-C3- 5,0PUR-C-1L-S	5	24	4	1 LED	1
22260583	AB-C3-10,0PUR-C-1L-S	10	24	4	1 LED	1
<b>Valve connector Type CI (9.4 mm)</b>						
22260588	AB-C3- 2,0PUR-CI-1L-S	2	24	4	1 LED	1
22260574	AB-C3- 5,0PUR-CI-1L-S	5	24	4	1 LED	1
22260575	AB-C3-10,0PUR-CI-1L-S	10	24	4	1 LED	1

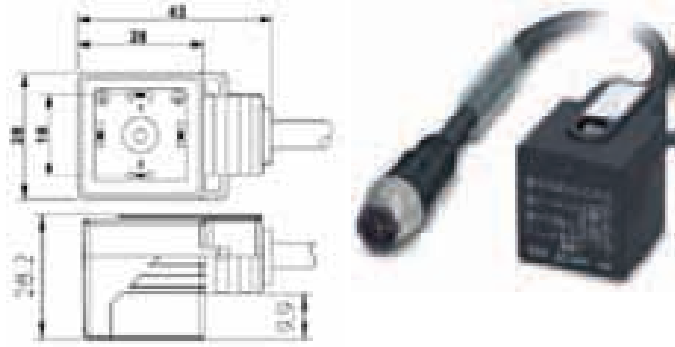
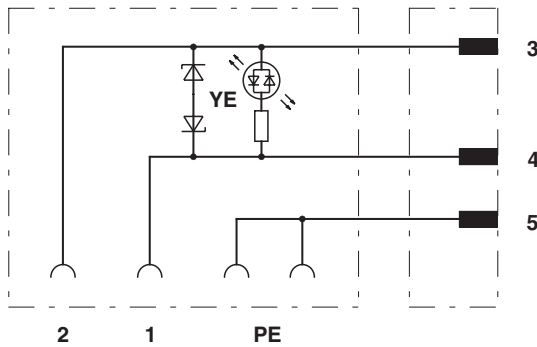
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## S/A cable: 3-pos., valve connector on straight M12 plug



S/A cable: 3-pos., valve connector on straight M12 plug

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 3-pos. valve plug

- With protective circuit (Z diode) PE bridged
- With LED status indicator (yellow)
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Design

- Cable design: 3 x 0.5 mm<sup>2</sup> (28 x 0.15 mm)
- Conductor colors: black 1, black 2, green/yellow
- Outer sheath: PUR, halogen-free
- Sheath color: black (RAL 7021)
- Outer diameter: 4,5 mm
- Can be used in drag chain

### Technical data

<b>IP</b>	<b>Degree of protection</b>
	IP 67
<b>0</b>	<b>Ambient temperature (operation)</b>
	Valve plug
	-20°C up to +85°C
	Plug / Socket
	-25°C to +90°C
	Cable, fixed installation
	-40°C up to +80°C
	Cable, flexible installation
	-15°C up to +80°C
	<b>Contact material</b>
	CuSn
	<b>Contact surface material</b>
	Ni/Au
	<b>Coding</b>
	A - Standard
	<b>Material, knurls</b>
	Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b>
	TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on valve connector type A (18 mm)</b>						
22260550	AB-C3-M12MS-0,3PUR-A-1L-S	0.3	24	4	1 LED	1
22260551	AB-C3-M12MS-0,6PUR-A-1L-S	0.6	24	4	1 LED	1
22260552	AB-C3-M12MS-1,0PUR-A-1L-S	1	24	4	1 LED	1
22260553	AB-C3-M12MS-2,0PUR-A-1L-S	2	24	4	1 LED	1
<b>Straight connector on valve connector type B (10 mm)</b>						
22260558	AB-C3-M12MS-0,3PUR-B-1L-S	0.3	24	4	1 LED	1
22260559	AB-C3-M12MS-0,6PUR-B-1L-S	0.6	24	4	1 LED	1
22260560	AB-C3-M12MS-1,0PUR-B-1L-S	1	24	4	1 LED	1
22260561	AB-C3-M12MS-2,0PUR-B-1L-S	2	24	4	1 LED	1
<b>Straight connector on valve connector type BI (11 mm)</b>						
22260554	AB-C3-M12MS-0,3PUR-BI-1L-S	0.3	24	4	1 LED	1
22260555	AB-C3-M12MS-0,6PUR-BI-1L-S	0.6	24	4	1 LED	1
22260556	AB-C3-M12MS-1,0PUR-BI-1L-S	1	24	4	1 LED	1
22260557	AB-C3-M12MS-2,0PUR-BI-1L-S	2	24	4	1 LED	1
<b>Straight connector on valve connector type C (8 mm)</b>						
22260566	AB-C3-M12MS-0,3PUR-C-1L-S	0.3	24	4	1 LED	1
22260567	AB-C3-M12MS-0,6PUR-C-1L-S	0.6	24	4	1 LED	1
22260568	AB-C3-M12MS-1,0PUR-C-1L-S	1	24	4	1 LED	1
22260569	AB-C3-M12MS-2,0PUR-C-1L-S	2	24	4	1 LED	1
<b>Straight connector on valve connector type CI (9.4 mm)</b>						
22260562	AB-C3-M12MS-0,3PUR-CI-1L-S	0.3	24	4	1 LED	1
22260563	AB-C3-M12MS-0,6PUR-CI-1L-S	0.6	24	4	1 LED	1
22260564	AB-C3-M12MS-1,0PUR-CI-1L-S	1	24	4	1 LED	1
22260565	AB-C3-M12MS-2,0PUR-CI-1L-S	2	24	4	1 LED	1

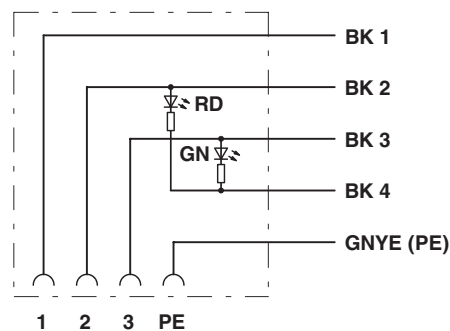
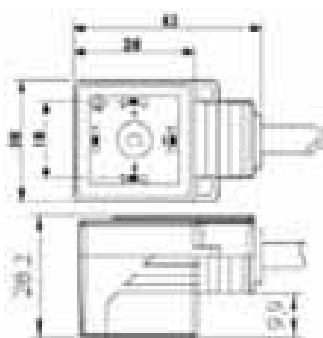
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## S/A cable: 5-pos., valve connector on free conductor end, for pressure switch



S/A cable: 5-pos., valve connector on free conductor end, for pressure switch

## ■ Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 5-pos. valve plug

- Valve plug for pressure switch, 18 mm contact spacing
- With display switch state (2 LEDs, red/green)
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish

## ■ Approvals (Norm references)



## ■ Design

- Cable design: 5 x 0.5 mm<sup>2</sup> (28 x 0.15 mm)
- Conductor colors: black 1, black 2, black 3, black 4, green/yellow
- Outer sheath: PUR, halogen-free
- Sheath color: black (RAL 7021)
- Outer diameter: 5,3 mm
- Can be used in drag chain

## ■ Technical data

<b>IP</b>	<b>Degree of protection</b>
IP 67	
<b>0+1</b>	<b>Ambient temperature (operation)</b>
	Valve plug
	-20°C up to +85°C
	Cable, fixed installation
	-40°C up to +80°C
	Cable, flexible installation
	-15°C up to +80°C
	<b>Contact material</b>
	CuSn
	<b>Contact surface material</b>
	Ag
	<b>Coding</b>
	A - Standard

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Valve connector for pressure switch (18 mm)</b>						
22260589	AB-C5-2,0PUR-AD-2L	2	24	4	2 LEDs	1
22260590	AB-C5-5,0PUR-AD-2L	5	24	4	2 LEDs	1
22260591	AB-C5-10,0PUR-AD-2L	10	24	4	2 LEDs	1

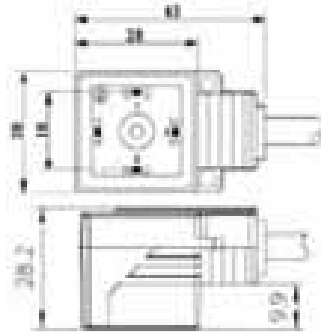
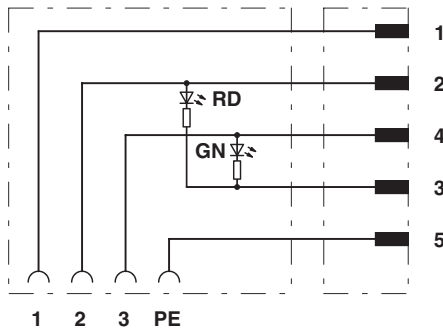
All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

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

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: 5-pos., valve connector on straight M12 plug, for pressure switch



S/A cable: 5-pos., valve connector on straight M12 plug, for pressure switch

### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 5-pos. valve plug

- Valve plug for pressure switch, 18 mm contact spacing
- With display switch state (2 LEDs, red/green)
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Design

- Cable design: 5 x 0.5 mm<sup>2</sup> (28 x 0.15 mm)
- Conductor colors: black 1, black 2, black 3, black 4, green/yellow
- Outer sheath: PUR, halogen-free
- Sheath color: black (RAL 7021)
- Outer diameter: 5,3 mm
- Can be used in drag chain

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP 67
<b>0-1</b>	<b>Ambient temperature (operation)</b> Valve plug -20°C up to +85°C Plug / Socket -25°C to +90°C Cable, fixed installation -40°C up to +80°C Cable, flexible installation -15°C up to +80°C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight connector on valve connector for pressure switch</b>						
22260573	AB-C5-M12MS-0,3PUR-AD-2L	0.3	24	4	2 LEDs	1
22260572	AB-C5-M12MS-0,6PUR-AD-2L	0.6	24	4	2 LEDs	1
22260571	AB-C5-M12MS-1,0PUR-AD-2L	1	24	4	2 LEDs	1
22260570	AB-C5-M12MS-2,0PUR-AD-2L	2	24	4	2 LEDs	1

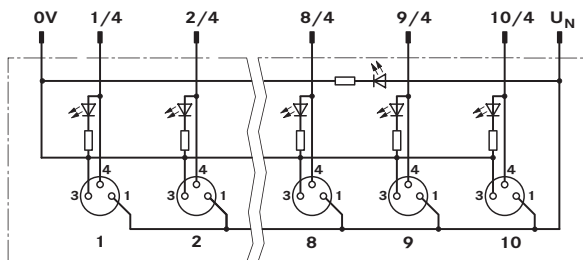
All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

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## S/A box with M8 slots and master cable



S/A box with M8 slots and master cable

## Benefits

- Inexpensive and efficient wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- The master cable is designed as a hybrid cable carrying signals and power
- There are no assembly costs because the master cable is pre-assembled

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- With permanently connected master cable

- Single-occupied sensor/actuator box
- LEDs indicate the operating mode of the distributor and the status of the sensors
- Free of substances which would hinder coating with paint or varnish

## Approvals (Norm references)



## Design

- PUR/PVC cable
- Permanently flexible control cable
- Sheath color black

## Suitable tools

- On request suitable tool (e.g. torque screwdriver M8) available

## Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP67
<b>0+1</b>	<b>Ambient temperature (operation)</b> -30°C up to +80°C Cable, fixed installation -40°C up to +90°C Cable, flexible installation -5°C up to 80°C
<b>Amp.</b>	<b>Current carrying capacity per slot</b> 2 A

Part number	Article designation	Length in m	Number of slots	Nominal voltage $U_N$ in V	SACB total current in A	Status display	PU
<b>with M 8 master cable connection</b>							
22260026	AB-B4-M8L-4-5,0PUR	5.0	4	24	6	LEDs	1
22260027	AB-B4-M8L-4-10,0PUR	10.0	4	24	6	LEDs	1
22260028	AB-B6-M8L-6-5,0PUR	5.0	6	24	6	LEDs	1
22260029	AB-B6-M8L-6-10,0PUR	10.0	6	24	6	LEDs	1
22260030	AB-B8-M8L-8-5,0PUR	5.0	8	24	6	LEDs	1
22260031	AB-B8-M8L-8-10,0PUR	10.0	8	24	6	LEDs	1
22260032	AB-B10-M8L-10-5,0PUR	5.0	10	24	6	LEDs	1
22260033	AB-B10-M8L-10-10,0PUR	10.0	10	24	6	LEDs	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

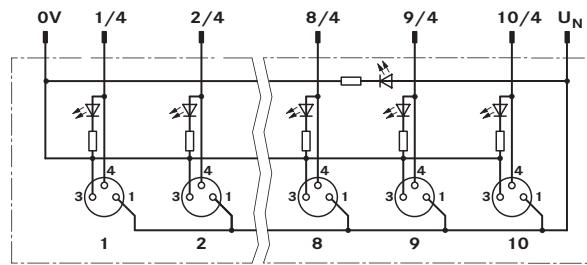
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T 17

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

Unused female connectors must be covered with protective caps (see main catalogue 2010/11 accessories) to ensure IP65/67

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A box, M8 slots and master cable connection M16/M12



S/A box, M8 slots and master cable connection M16/M12

### Benefits

- Inexpensive and efficient wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- The pluggable connection ensures universal pluggability as well as simple on-site assembly

### Product features

- With M12/M16 plug-in connection
- Single-occupied sensor/actuator box
- LEDs indicate the operating mode of the distributor and the status of the sensors
- Free of substances which would hinder coating with paint or varnish

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP67
<b>0</b>	<b>Ambient temperature (operation)</b> -30°C up to +80°C
<b>Amp.</b>	<b>Current carrying capacity per slot</b> 2 A

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Approvals (Norm references)



### Suitable tools

- On request suitable tool (e.g. torque screw-driver M8) available

Part number	Article designation	Number of slots	Nominal voltage $U_N$ in V	SACB total current in A	Status display	PU
<b>With M16, 8-pos. Master cable connection</b>						
22260034	AB-B4-M8L-4-M16	4	24	6	LEDs	1
<b>With M16, 10-pos. Master cable connection</b>						
22260035	AB-B6-M8L-6-M16	6	24	6	LEDs	1
<b>With M16, 12-pos. Master cable connection</b>						
22260036	AB-B8-M8L-8-M16	8	24	6	LEDs	1
<b>With M16, 14-pos. Master cable connection</b>						
22260037	AB-B10-M8L-10-M16	10	24	6	LEDs	1
<b>With M12, 8-pos. Master cable connection</b>						
22260038	AB-B4-M8L-4-M12	4	24	4	LEDs	1
22260039	AB-B6-M8L-6-M12	6	24	4	LEDs	1

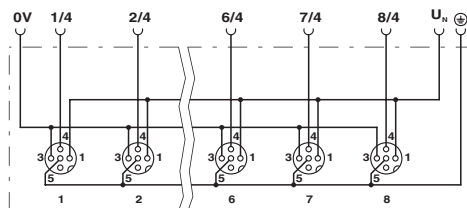
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Unused female connectors must be covered with protective caps (see main catalogue 2010/11 accessories) to ensure IP65/67

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A box with M12 slots and master cable



S/A box with M12 slots and master cable

### Benefits

- Inexpensive and efficient wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- The master cable is designed as a hybrid cable carrying signals and power
- There are no assembly costs because the master cable is pre-assembled

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- With permanently connected master cable

- Single or double-occupied sensor/actuator box
- With LEDs for sensor status display without LEDs for analog signals
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Design

- PUR/PVC cable
- Permanently flexible control cable
- Sheath color black

### Suitable tools

- On request suitable tool (e.g. torque screwdriver M12) available

### Technical data

IP	Degree of protection
	IP65/IP67/IP69K
Amp.	Max. current carrying capacity per path
	2 A
Amp.	Current carrying capacity per slot
	4 A

Part number	Article designation	Length in m	Number of slots	Nominal voltage U <sub>N</sub> in V	SACB total current in A	Status display	PU
<b>Single occupied boxes, without LEDs</b>							
22260010	AB-B4-M12-4-5,0PUR	5.0	4	120	12	No	1
22260011	AB-B4-M12-4-10,0PUR	10.0	4	120	12	No	1
22260014	AB-B8-M12-8-5,0PUR	5.0	8	120	12	No	1
22260015	AB-B8-M12-8-10,0PUR	10.0	8	120	12	No	1
<b>Single occupied boxes, with LEDs, 4 slots</b>							
22260018	AB-B4-M12L-4-5,0PUR	5.0	4	24	12	LEDs	1
22260019	AB-B4-M12L-4-10,0PUR	10.0	4	24	12	LEDs	1
22260022	AB-B8-M12L-8-5,0PUR	5.0	8	24	12	LEDs	1
22260023	AB-B8-M12L-8-10,0PUR	10.0	8	24	12	LEDs	1
<b>Double occupied boxes, without LEDs</b>							
22260012	AB-B4-M12-8-5,0PUR	5.0	4	120	12	No	1
22260013	AB-B4-M12-8-10,0PUR	10.0	4	120	12	No	1
22260016	AB-B8-M12-16-5,0PUR	5.0	8	120	12	No	1
22260017	AB-B8-M12-16-10,0PUR	10.0	8	120	12	No	1
<b>Double occupied boxes, with LEDs</b>							
22260020	AB-B4-M12L-8-5,0PUR	5.0	4	24	12	LEDs	1
22260021	AB-B4-M12L-8-10,0PUR	10.0	4	24	12	LEDs	1
22260024	AB-B8-M12L-16-5,0PUR	5.0	8	24	12	LEDs	1
22260025	AB-B8-M12L-16-10,0PUR	10.0	8	24	12	LEDs	1

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Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

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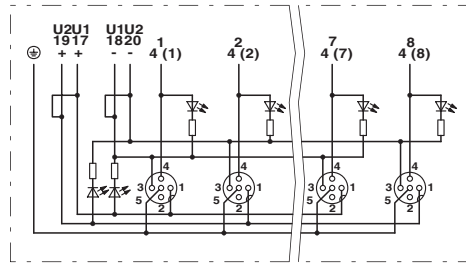
For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A box with M12 slots and master cable connection



### Info

- For individual mastercable assembly



S/A box with M12 slots and master cable connection

### Benefits

- Inexpensive and efficient wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- The pluggable connection ensures universal pluggability as well as simple on-site assembly

### Product features

- With pluggable screw connection
- Single or double-occupied sensor/actuator box
- With LEDs for sensor status display without LEDs for analog signals
- Free of substances which would hinder coating with paint or varnish

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP67/IP69K
<b>0-1</b>	<b>Ambient temperature (operation)</b> -30°C up to +80°C
<b>Amp.</b>	<b>Max. current carrying capacity per path</b> 2 A
<b>Amp.</b>	<b>Current carrying capacity per slot</b> 4 A

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Approvals (Norm references)



### Suitable tools

- On request suitable tool (e.g. torque screw-driver M12) available

Part number	Article designation	Number of slots	Nominal voltage $U_N$ in V	SACB total current in A	Status display	PU
<b>Single occupied boxes, without LEDs, 4 slots, <sup>1.)</sup></b>						
22260005	AB-B4-M12-4-C	4	120	10	No	1
<b>Single occupied boxes, without LEDs, 8 slots, <sup>2.)</sup></b>						
22260007	AB-B8-M12-8-C	8	120	10	No	1
<b>Single occupied boxes, with LEDs, 4 slots, <sup>1.)</sup></b>						
22260001	AB-B4-M12L-4-C	4	24	10	LEDs	1
<b>Single occupied boxes, with LEDs, 8 slots, <sup>2.)</sup></b>						
22260003	AB-B8-M12L-8-C	8	24	10	LEDs	1
<b>Double occupied boxes, without LEDs, 4 slots, <sup>2.)</sup></b>						
22260006	AB-B4-M12-8-C	4	120	10	No	1
<b>Double occupied boxes, without LEDs, 8 slots, <sup>3.)</sup></b>						
22260008	AB-B8-M12-16-C	8	120	10	No	1
<b>Double occupied boxes, with LEDs, 4 slots, <sup>2.)</sup></b>						
22260002	AB-B4-M12L-8-C	4	24	10	LEDs	1
<b>Double occupied boxes, with LEDs, 8 slots, <sup>3.)</sup></b>						
22260004	AB-B8-M12L-16-C	8	24	10	LEDs	1

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Unused female connectors must be covered with protective caps (see main catalogue 2010/11 accessories) to ensure IP65/67

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

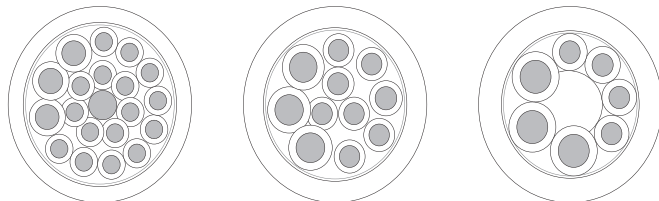
1.) Applicable master cable: 7038880; 2.) Applicable master cable: 7038881; 3.) Applicable master cable: 7038882

## UNITRONIC® SENSOR master cable bulk stock



Info

- Customised construction supported



## ■ Benefits

- Inexpensive and efficient wiring for S/A boxes with pluggable master cable connection
- Universally useable for S/A installations

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering

- Tool shop
- Automotive industry

## ■ Product features

- Cores for Power Supply:  
3x0.75 mm<sup>2</sup> and 3x1.0 mm<sup>2</sup>
- Cores for Signalling cable:  
4x0.34 mm<sup>2</sup>, 8x0.5 mm<sup>2</sup>, 16x0.5 mm<sup>2</sup>
- Can be used in drag chain
- Halogen-free

## ■ Design

- UNITRONIC® SENSOR Li9Y11 COMBI  
Conductor: bare copper strand, single wire diameter: 0.1 mm for 0.34 mm<sup>2</sup>, 0.18 mm for 0.5 mm<sup>2</sup>, 0.205 mm for 0.75 mm<sup>2</sup>, 0.15 mm for 1.0 mm<sup>2</sup>. Core insulation PP halogenfree, outer sheath PUR acc. DIN VDE 0250 part 818 halogenfree.
- Sheath color: black (similar RAL 9005)  
Core colors: see datasheet
- AWM UL Style 21198, 80°C / 300V

Part number	Article designation	Dimension in mm <sup>2</sup>	Outer diameter in mm	Core / sheath material	Colour	Copper index kg/km
<b>UNITRONIC® SENSOR COMBI</b>						
7038880	Li9Y11Y	3x0,75+4x0,34	6.6	PP/PUR	black	34.5
7038882	Li9Y11Y	3x1,0+16x0,5	9.8	PP/PUR	black	105.6
7038881	Li9Y11Y	3x1,0+8x0,5	8.4	PP/PUR	black	67.2

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Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Packaging size: Coil 100m

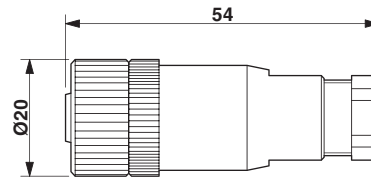
Cables are printed

Further types on request

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

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A M12 connectors that can be assembled



S/A M12 connectors that can be assembled

### Benefits

- Quick and easy on-site assembly
- Creating individual cable lengths
- Standardized interfaces
- No special tools required for connecting the cables (quick connection designs)

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 4, 5 and 8-position version
- Shielded and unshielded version
- Fast connection and screw connection design
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Technical data



<b>Degree of protection</b>	IP 67
<b>Ambient temperature (operation)</b>	Plug / socket -40°C to +85°C
<b>Contact material</b>	CuZn
<b>Contact surface material</b>	CuSnZn
<b>Coding</b>	A - Standard

Part number	Article designation	Number of poles	Conductor cross section stranded min. in mm <sup>2</sup>	Conductor cross section stranded max. in mm <sup>2</sup>	Cable Diameter min in mm	Cable Diameter max in mm	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>Straight connector, fast connection (Insulation-displacement)</b>									
22260132	AB-C4-M12MS-F0,34	4	0.14	0.34	3.5	6	125	4	1
22260134	AB-C4-M12MS-F0,75	4	0.34	0.75	4	8	250	4	1
<b>Straight connector, screw connection</b>									
22260129	AB-C5-M12MS-PG 7	5	0.25	0.75	4	6	60	4	1
<b>Straight socket, fast connection (Insulation-displacement)</b>									
22260131	AB-C4-M12FS-F0,34	4	0.14	0.34	3.5	6	125	4	1
22260133	AB-C4-M12FS-F0,75	4	0.34	0.75	4	8	250	4	1
<b>Straight socket, screw connection</b>									
22260127	AB-C5-M12FS-PG 7	5	0.25	0.75	4	6	60	4	1
<b>Angled connector, screw connection</b>									
22260130	AB-C5-M12MA-PG 7	5	0.25	0.75	4	6	60	4	1
<b>Angled socket, screw connection</b>									
22260128	AB-C5-M12FA-PG 7	5	0.25	0.75	4	6	60	4	1
<b>Straight connector, shielded, screw connection</b>									
22260135	AB-C5-M12MS-PG9-SH	5	0.25	0.75	6	8	60	4	1
22260825	AB-C8-M12MS-PG9-SH	8	0.25	0.75	6	8	30	2	1
<b>Straight socket, shielded, screw connection</b>									
22260136	AB-C5-M12FS-PG9-SH	5	0.25	0.75	6	8	60	4	1
22260826	AB-C8-M12FS-PG9-SH	8	0.25	0.75	6	8	30	2	1

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## S/A M8 connectors that can be assembled



S/A M8 connectors that can be assembled

## ■ Benefits

- Quick and easy on-site assembly
- Creating individual cable lengths
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop

- Automotive industry

## ■ Product features

- 3 and 4-position version
- Fast connection and screw connection design
- Free of substances which would hinder coating with paint or varnish

## ■ Approvals (Norm references)



## ■ Technical data



Degree of protection  
IP 68



Ambient temperature (operation)  
Plug/socket  
-25 °C to +90 °C

Contact material  
CuZn

Contact surface material  
Au

Coding  
A - Standard

Part number	Article designation	Number of poles	Conductor cross section stranded min. in mm <sup>2</sup>	Conductor cross section stranded max. in mm <sup>2</sup>	Cable Diameter min in mm	Cable Diameter max in mm	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>Straight connector, screw connection</b>									
22260120	AB-C3-M8MS	3	0.14	0.5	3.5	5	60	4	1
22260121	AB-C4-M8MS	4	0.14	0.5	3.5	5	30	4	1
<b>Straight connector, fast connection (Piercing)</b>									
22260122	AB-C3-M8MS-P	3	0.14	0.38	3	5	60	4	1
22260123	AB-C4-M8MS-P	4	0.14	0.38	3	5	30	4	1
<b>Straight socket, screw connection</b>									
22260125	AB-C3-M8FS	3	0.14	0.5	3.5	5	60	4	1
22260126	AB-C4-M8FS	4	0.14	0.5	3.5	5	30	4	1
<b>Straight socket, fast connection (Piercing)</b>									
22260124	AB-C3-M8FS-P	3	0.14	0.38	3	5	60	4	1
22260119	AB-C4-M8FS-P	4	0.14	0.38	3	5	30	4	1

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## UNITRONIC® SENSOR



### ■ Application range

- Cables for UNITRONIC® Fieldbus sensor-/actuator wiring requirements
- Data transmission cables to connect to M8, M12 connectors
- Automation technology
- Mechanical engineering
- Plant engineering

### ■ Product features

- Core colour in accordance with DIN EN 50044
- 3x 0.34 mm<sup>2</sup>  
1= brown, 2= blue, 3= black
- 4x 0.34 mm<sup>2</sup>  
1= brown, 2= white, 3= blue, 4= black

- 25x 0.25mm<sup>2</sup> or 0.34mm<sup>2</sup>  
1= brown, 2= white, 3= blue, 4= black, 5=grey
- 8x 0.25mm<sup>2</sup>  
1= white, 2=brown, 3= green, 4= yellow, 5= grey, 6= pink, 7=blue, 8= red

### ■ Approvals (Norm references)



### ■ Design

- UNITRONIC® SENSOR LifYY  
Conductor: Superfine bare copper strand in accordance with DIN VDE 0295 Class 6; Core insulation PCV, Outer sheath PVC vinyl

- UNITRONIC® SENSOR DESINA® LifY11Y  
Stranded bare copper conductor, superfine. In accordance with VDE 0295 Class 6, special PVC insulation, cores twisted in layers, core ident code in accordance with DESINA® (brown, white, blue, black). Outer sheath of special polyurethane based compound; colour yellow in acc. to RAL 1021; flame retardant acc. to IEC 60332-1-2. Operating voltage= 48 V, Peak working voltage= 300 V.
- UNITRONIC® SENSOR FD LifY11Y Approved AWM UL-style 20549, 80°C / 300 V. Conductor: Cu wire, bare, super-fine strands in accordance with DIN VDE 0295 class 6. Core insulation: modified polypropylene (PP), outer sheath: halogen-free polyurethane (PUR), matt, adhesion free
- UNITRONIC® SENSOR FD series cables are especially suited for power chain use

Part number	Article designation	Dimension in mm <sup>2</sup>	Outer diameter in mm	Core / sheath material	Colour	Copper index kg/km
<b>UNITRONIC® SENSOR</b>						
7038859	S-LifYY	3x0,34	4.8	PVC/PVC	black	9.8
7038860	S-LifYY	4x0,34	4.8	PVC/PVC	black	13.1
0040434	DESINA	4x0,34	5.2	PVC/PVC	yellow RAL 1021	13.5
7038861	S-LifY11Y	4x0,34	4.8	PVC/PUR	black	13.1
7038862	S-LifY11Y	5x0,25	4.9	PVC/PUR	black	12.0
<b>UNITRONIC® SENSOR FD</b>						
7038864	Li9Y11Y	3x0,34	4.6	PP/PUR	black	9.8
7038865	Li9Y11Y	4x0,34	4.7	PP/PUR	black	13.0
7038866	Li9Y11Y	5x0,34	5.1	PP/PUR	black	16.0
7038867	Li9Y11Y	5x0,25	4.7	PP/PUR	black	12.0
7038868	Li9Y11Y	8x0,25	5.9	PP/PUR	black	19.0

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

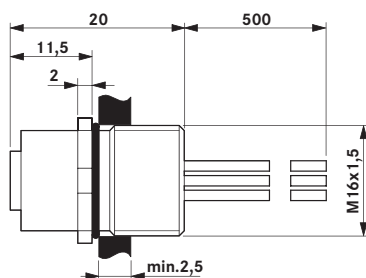
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Cables are printed

Further types on request

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

## S/A M12 flush-type connectors with M16 fastening thread



S/A M12 flush-type connectors with M16 fastening thread

## Benefits

- Flexible connection solutions for individual device concepts
- Simple installation in devices
- Standardized interfaces

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- M12 panel feed-through with punched on single litz wires
- Panel feed-through with M16 fastening thread
- Front mounting
- M12 A-coded with quick locking system
- Free of substances which would hinder coating with paint or varnish

## Approvals (Norm references)



## Design

- PUR halogen-free single litz wires, l = 0.5 m
- 0,34 mm<sup>2</sup>

## Technical data



**Degree of protection**  
IP 67

**Ambient temperature (operation)**  
Plug/socket  
-25°C to +85°C

**Contact material**  
CuZn

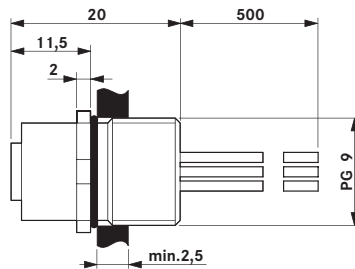
**Contact surface material**  
Au

**Coding**  
A - Standard

Part number	Article designation	Number of poles	Conductor cross section in mm <sup>2</sup>	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>M12 flush-type connector pin for front mounting</b>						
22260108	AB-C4-M12MS-M16-0,5	4	0.34	250	4	1
22260106	AB-C5-M12MS-M16-0,5	5	0.34	60	4	1
<b>M12 flush-type connector socket for front mounting</b>						
22260107	AB-C4-M12FS-M16-0,5	4	0.34	250	4	1
22260105	AB-C5-M12FS-M16-0,5	5	0.34	60	4	1

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Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17  
Photographs are not to scale and do not represent detailed images of the respective products.  
For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A M12 flush-type connectors with PG9 fastening thread



S/A M12 flush-type connectors with PG9 fastening thread

### Benefits

- Flexible connection solutions for individual device concepts
- Simple installation in devices
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- M12 panel feed-through with punched on single litz wires
- Panel feed-through with PG9 fastening thread
- Models for front and rear mounting
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Design

- PUR halogen-free single litz wires, l = 0.5 m
- 0,34 mm<sup>2</sup>

### Technical data

<b>IP</b>	<b>Degree of protection</b>
IP 67	
<b>0</b>	<b>Ambient temperature (operation)</b>
	Plug/socket
	-25°C to +85°C
	<b>Contact material</b>
	CuZn
	<b>Contact surface material</b>
	Au
	<b>Coding</b>
	A - Standard

Part number	Article designation	Number of poles	Conductor cross section in mm <sup>2</sup>	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>M12 flush-type connector pin for rear mounting (fitting nut inclusive)</b>						
22260117	AB-C4-DSI-M12MS-PG9-0,5	4	0.34	250	4	1
22260115	AB-C5-DSI-M12MS-PG9-0,5	5	0.34	60	4	1
<b>M12 flush-type connector socket for rear mounting (fitting nut inclusive)</b>						
22260118	AB-C4-DSI-M12FS-PG9-0,5	4	0.34	250	4	1
22260116	AB-C5-DSI-M12FS-PG9-0,5	5	0.34	60	4	1
<b>M12 flush-type connector pin for front mounting</b>						
22260113	AB-C4-M12MS-PG9-0,5	4	0.34	250	4	1
22260112	AB-C5-M12MS-PG9-0,5	5	0.34	60	4	1
<b>M12 flush-type connector socket for front mounting</b>						
22260114	AB-C4-M12FS-PG9-0,5	4	0.34	250	4	1
22260111	AB-C5-M12FS-PG9-0,5	5	0.34	60	4	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

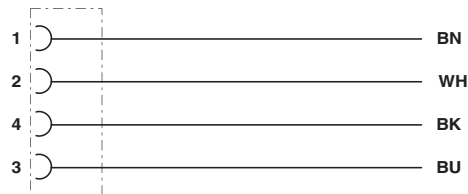
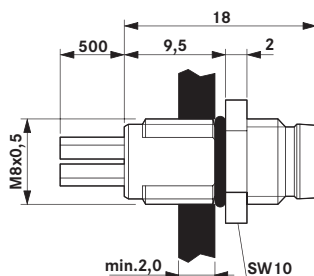
Photographs are not to scale and do not represent detailed images of the respective products.

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A M8 flush-type connectors



S/A M8 flush-type connectors



### Benefits

- Flexible connection solutions for individual device concepts
- Simple installation in devices
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- M8 panel feed-through with punched on single litz wires

- Panel feed-through with M8 fastening thread
- Front mounting
- IP65/IP67 protection
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Design

- PUR halogen-free single litz wires, l = 0.5 m
- 0,25 mm<sup>2</sup>

### Technical data



Degree of protection  
IP 67



Ambient temperature (operation)  
Plug/socket  
-25°C to +85°C

Contact material  
Copper alloy

Contact surface material  
Au

Coding  
A - Standard

Part number	Article designation	Number of poles	Conductor cross section in mm <sup>2</sup>	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>M8 flush-type connector pin for front mounting</b>						
22260100	AB-C3-M8MS-0,5	3	0.25	60	4	1
22260101	AB-C4-M8MS-0,5	4	0.25	30	4	1
<b>M8 flush-type connector socket for front mounting</b>						
22260102	AB-C3-M8FS-0,5	3	0.25	60	4	1
22260103	AB-C4-M8FS-0,5	4	0.25	30	4	1

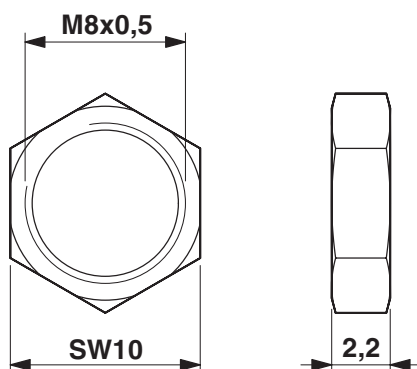
All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

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## Fitting nut for flush-type connectors



Fitting nut for flush-type connectors

### ■ Benefits

- Fitting nut as accessory for flush-type connectors

### ■ Product features

- Material: Nickel-plated brass

### ■ Approvals (Norm references)



Part number	Article designation	PU
M8 thread (M8x0,5 - SW10), h = 2.2 mm		
22260104	AB-C-M8-CN	100
PG9 thread (PG9 - SW18), h = 2.8 mm		
22260109	AB-C-PG9-CN	100
M16 thread (M16x1,5 - SW19), h = 2.8 mm		
22260110	AB-C-M16-CN	100

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## AS-Interface Modules (IP67)



AS-Interface Modules (IP67)



## Info

- With M 12 quick locking system, metal thread
- AS-Interface installation without tools

## ■ Benefits

- Standardized interfaces
- For decentralized automatization
- Space saving because of compact dimensions
- Easy installation
- Fast and easy error tracking

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- AS-Interface module slave

- Integration of field bus activation and input/output-level
- Connection type of digital Input/output as M 12 or M 8 for sensors/actuators
- Flat-ribbon cable cable penetration technique as connection type for module M 12
- M 12 connection type for M 8 module
- LED diagnostic and status indication
- Short circuit- /overload protection

## ■ Approvals (Norm references)



## ■ Suitable tools

- On request suitable tool (e.g. torque screwdriver M 12) available

## ■ Technical data

## Fieldbus system

AS-Interface

## Connection type

Flat-ribbon cable penetration technique / M 12 connection type

## Installation

Panel mounting for M 12/M 8 Module  
DIN rail adapter (35 mm) for M 12 Module

## Number of poles

2



## Degree of protection

IP67

## Protection class

III



## Ambient temperature (operation)

-25 °C bis +70 °C

## Ambient temperature (storage/transport)

-25°C up to +85°C

## Voltage consumption

26.5 V DC PELV to 31.6 V DC PELV

Part number	Article designation	Connection method (Sensor/Actuator)	Number of inputs	Number of outputs	Slave type	AS-i specification	Master specification	PU
<b>With digital in-/outputs, M 8, total current: 4 A</b>								
22260759	AB-ASI-M12-DI4DO4-M8-1A	2, 3-wire	4	4	Single-Slave	2	>= 2.0	1
<b>With digital in-/outputs, M 12, total current: 4A</b>								
22260755	AB-ASI-DI2DO2-M12-2A	2, 3, 4-wire	2	2	A/B-Slave	2.1	>= 2.0	1
22260756	AB-ASI-DI4DO3-M12-2A	2, 3, 4-wire	4	3	A/B-Slave	2.1	>= 2.0	1
22260757	AB-ASI-DI4DO4-M12-2A	2, 3, 4-wire	4	4	A/B-Slave	3	>= 3.0	1
<b>With digital inputs, M 8</b>								
22260758	AB-ASI-M12-DI4-M8	2, 3-wire	4		Single-Slave	2	>= 2.0	1
<b>With digital inputs, M 12</b>								
22260753	AB-ASI-DI4-M12	2, 3, 4-wire	4		A/B-Slave	2.1	>= 2.0	1
<b>With digital outputs, M 12, total current: 4A</b>								
22260754	AB-ASI-DO4-M12-2A	2, 3-wire		4	Single-Slave	2	>= 2.0	1

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

Unused female connectors must be covered with protective caps (see main catalogue 2010/11 accessories) to ensure IP65/67

For detailed information please see the data sheet or installation procedure ([www.lappautomation.com](http://www.lappautomation.com))

## AS-Interface Modules (IP30)


**Info**

- Fully industrialised


**AS-Interface Modules (IP30)**
**Benefits**

- Standardized interfaces
- For decentralized automatization
- Space saving because of compact dimensions
- Easy installation
- Fast and easy error tracking

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

**Product features**

- AS-Interface module slave
- Integration of field bus activation and input/output-level
- Metal housing
- Connection by screw-plug terminals or spring-plug terminals
- Digital Inputs/outputs for connection of sensors/actuators
- LED diagnostic and status indication
- Short circuit- /overload protection

**Approvals (Norm references)**

**Technical data**

	<b>Fieldbus system</b>
	AS-Interface
	<b>Dimensions W x H x D in mm</b>
	105 mm x 85 mm x 22,5 mm
	<b>Connection type</b>
	Connector for screw-plug terminals or spring-plug terminals
	<b>Installation</b>
	DIN rail adapter (35 mm)
	<b>Degree of protection</b>
	IP30
	<b>Protection class</b>
	II
	<b>Ambient temperature (operation)</b>
	-25 °C up to +60 °C
	<b>Ambient temperature (storage/transport)</b>
	-40 °C up to +85 °C
	<b>Permissible humidity (storage/transport)</b>
	max. 95 %, not condensing
	<b>Voltage consumption</b>
	26.5 V DC to 31.6 V DC

Part number	Article designation	Connection method (Sensor/Actuator)	Number of inputs	Number of outputs	Slave type	AS-i specification	Master specification	PU
<b>4 Outputs Relay 3A</b>								
22260807	AB-ASI-DI4DOR4-3A	2, 3-wire	4	4	Single-Slave	3.01	>= 3.0	1
<b>4 Outputs 2A</b>								
22260808	AB-ASI-DI4DO4-2A	2, 3-wire	4	4	Single-Slave	3.01	>= 3.0	1
<b>8 Outputs 2A</b>								
22260809	AB-ASI-DI8DO8-2A	2, 3-wire	8	8	Single-Slave	3.01	>= 3.0	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Plug terminals are not included, may be obtained as accessory

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For detailed information please see the data sheet or installation procedure ([www.lappautomation.com](http://www.lappautomation.com))

## PROFIBUS Modules



PROFIBUS Modules



### Info

- With M 12 quick locking system

### Benefits

- Standardized interfaces
- For decentralized automatization
- Space saving because of compact dimensions
- Easy installation
- Fast and easy error tracking

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- PROFIBUS Interface

- Integration of field bus activation and input/output-level
- Connection to PROFIBUS DP using M 12 connectors (B-coded)
- Connection type of digital Input/output as M 12 for sensors/actuators
- LED diagnostic and status indication
- Flexible power supply concept
- Short circuit- /overload protection

### Approvals (Norm references)



### Suitable tools

- On request suitable tool (e.g. torque screw-driver M 12) available

### Technical data

#### Fieldbus system

PROFIBUS-DP

#### Transmission speed

12 MBit/s

Automatic baud rate detection

#### Transmission physics

PROFIBUS-DP-compliant copper cable

#### Address space assignment

1 ... 99, can be set from front side

#### Connection type

2 M 12 plug connectors, B-coded

#### Installation

Panel mounting

#### Number of poles

5



#### Degree of protection

IP65/IP67 acc. IEC 60529

#### Protection class

Class 3 as per VDE 0106, IEC 61440



#### Ambient temperature (operation)

-25°C up to +60°C

#### Ambient temperature (storage/transport)

-25°C up to +85°C

#### Permissible humidity (storage/transport)

95 %

#### Transmission rate

9.64 Kbaud to 12 Mbaud automatic detection

#### Voltage consumption

24V DC

Part number	Article designation	Connection method (Sensor/Actuator)	Number of inputs	Number of outputs	Maximum output current per channel [A]	PU
<b>With digital in-/outputs</b>						
22260740	AB-PB-DI4DO4-M12-2A	2, 3, 4-wire	4	4	2	1
22260762	AB-PB-DI8DO8-M12-0,5A	2, 3, 4-wire	8	8	0.5	1
<b>With digital inputs</b>						
22260738	AB-PB-DI8-M12	2, 3, 4-wire	8			1
22260739	AB-PB-DI16-M12	2, 3, 4-wire	16			1
<b>With digital outputs</b>						
22260742	AB-PB-DO8-M12-2A	2, 3-wire		8	2	1

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Unused female connectors must be covered with protective caps (see main catalogue 2010/11 accessories) to ensure IP65/67

For detailed information please see the data sheet or installation procedure ([www.lappautomation.com](http://www.lappautomation.com))



**Info**

- With M12 quick locking system

## DeviceNet Modules



DeviceNet Modules

### Benefits

- Standardized interfaces
- For decentralized automatization
- Space saving because of compact dimensions
- Easy installation
- Fast and easy error tracking

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- DeviceNet Interface

- Integration of field bus activation and input/output-level
- Connection to DeviceNet™ using M12 connectors (A-coded)
- Connection type of digital Input/output as M12 for sensors/actuators
- LED diagnostic and status indication
- Flexible power supply concept
- Short circuit- /overload protection

### Approvals (Norm references)



### Suitable tools

- On request suitable tool (e.g. torque screw-driver M12) available

### Technical data

#### Fieldbus system

DeviceNet

#### Transmission speed

125 kBit/s, 250 kBit/s, 500 kBit/s  
Automatic baud rate detection

#### Transmission physics

Copper cable in acc. with 176524 specification

#### Address space assignment

1 ... 63, can be set

#### Connection type

2 M12 plug connectors, A-coded

#### Installation

Panel mounting

#### Number of poles

5



#### Degree of protection

IP65/IP67

#### Protection class

Class 3 as per VDE 0106, IEC 61440



#### Ambient temperature (operation)

-25°C up to +60°C

#### Ambient temperature (storage/transport)

-25°C up to +85°C

#### Permissible humidity (storage/transport)

95 %

#### Transmission rate

125 kBaud, 250 kBaud, 500 kBaud automatic detection

#### Voltage consumption

24V DC

Part number	Article designation	Connection method (Sensor/Actuator)	Number of inputs	Number of outputs	Maximum output current per channel [A]	PU
<b>With digital in-/outputs</b>						
22260745	AB-DN-DI4DO4-M12-2A	2, 3, 4-wire	4	4	2.0	1
22260763	AB-DN-DI8DO8-M12-0,5A	2, 3, 4-wire	8	8	0.5	1
<b>With digital inputs</b>						
22260743	AB-DN-DI8-M12	2, 3, 4-wire	8			1
22260744	AB-DN-DI16-M12	2, 3, 4-wire	16			1
<b>With digital outputs</b>						
22260747	AB-DN-DO8-M12-2A	2, 3-wire		8	2.0	1

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DeviceNet is a registered trademark of ODVA

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

Unused female connectors must be covered with protective caps (see main catalogue 2010/11 accessories) to ensure IP65/67

For detailed information please see the data sheet or installation procedure ([www.lappautomation.com](http://www.lappautomation.com))

## CANopen Modules



CANopen Modules



## Info

- With M 12 quick locking system

## ■ Benefits

- Standardized interfaces
- For decentralized automatization
- Space saving because of compact dimensions
- Easy installation
- Fast and easy error tracking

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- CANopen Interface

- Integration of field bus activation and input/output-level
- Connection to CANopen using M12 connectors (A-coded)
- Connection type of digital Input/output as M12 for sensors/actuators
- LED diagnostic and status indication
- Flexible power supply concept
- Short circuit- /overload protection

## ■ Approvals (Norm references)



## ■ Suitable tools

- On request suitable tool (e.g. torque screw-driver M12) available

## ■ Technical data

## Fieldbus system

CANopen

## Transmission speed

10, 20, 50, 125, 250, 500, 1000 kBit/s

Automatic baud rate detection

## Transmission physics

Copper cable with optional power supply in acc. with CAN standard

## Address space assignment

1 ... 126, can be set

## Connection type

2 M12 plug connectors, A-coded

## Installation

Panel mounting

## Number of poles

5



## Degree of protection

IP65/IP67

## Protection class

Class 3 as per VDE 0106, IEC 61440



## Ambient temperature (operation)

-25°C up to +60°C

## Ambient temperature (storage/transport)

-25°C up to +85°C

## Permissible humidity (storage/transport)

95 %

## Transmission rate

Maximum 1 Mbaud automatic detection

## Voltage consumption

24V DC

Part number	Article designation	Connection method (Sensor/Actuator)	Number of inputs	Number of outputs	PU
<b>With digital in-/outputs</b>					
22260750	AB-CAN-DI4DO4-M12-2A	2, 3, 4-wire	4	4	1
22260764	AB-CAN-DI8DO8-M12-0,5A	2, 3, 4-wire	8	8	1
<b>With digital inputs</b>					
22260748	AB-CAN-DI8-M12	2, 3, 4-wire	8		1
22260749	AB-CAN-DI16-M12	2, 3, 4-wire	16		1
<b>With digital outputs</b>					
22260752	AB-CAN-DO8-M12-2A	2, 3-wire		8	1

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Unused female connectors must be covered with protective caps (see main catalogue 2010/11 accessories) to ensure IP65/67

For detailed information please see the data sheet or installation procedure ([www.lappautomation.com](http://www.lappautomation.com))

## AS-Interface Distributor



### Info

- For data- and power supply



AS-Interface Distributor

### Benefits

- Inexpensive and efficient wiring for AS-Interface installations
- Space saving because of compact dimensions
- Easy installation
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- Passive AS-Interface distributor for 1 or 2 AS-Interface flat-ribbon conductors

- Distributor with integrated M12 socket (A-coded)
- H Distributor for distribution from 1 to 2 flat-ribbon conductors
- Distributor with round conductor connected on M12 socket (A-coded)
- Colour: black
- Rated current  $\leq 4$  A  
(H-distributor:  $I \leq 8$  A)

### Approvals (Norm references)



### Design

- Permanently flexible control cable
- Design:  $4 \times 0.34 \text{ mm}^2$  ( $42 \times 0.1 \text{ mm}$ )
- Conductor colours brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath color black

### Technical data

#### Fieldbus system

AS-Interface

#### Connection type

Flat-ribbon cable penetration technique

#### Installation

Panel mounting



#### Degree of protection

IP 67

(H-distributor: IP69k)



#### Ambient temperature (operation)

-25°C up to +75°C

Part number	Article designation	PU
<b>Distributor for 2 flat-ribbon conductors on integrated 4-pos. M12 socket</b>		
22260801	AB-ASI-J-Y-B-M12FS	1
<b>Distributor for 2 flat-ribbon conductors, 1m PUR round conductor on straight 4-pos. M12 socket</b>		
22260805	AB-ASI-J-Y-B-PUR-1,0-M12FS	1
<b>Distributor for 2 flat-ribbon conductors, 2m PUR round conductor on straight 4-pos. M12 socket</b>		
22260806	AB-ASI-J-Y-B-PUR-2,0-M12FS	1
<b>Distributor for 1 flat-ribbon conductor on integrated 2-pos. M12 socket</b>		
22260800	AB-ASI-J-Y-N-M12FS	1
<b>Distributor for 1 flat-ribbon conductor, 1m PUR round conductor on straight 2-pos. M12 socket</b>		
22260803	AB-ASI-J-Y-N-PUR-1,0-M12FS	1
<b>Distributor for 1 flat-ribbon conductor, 2m PUR round conductor on straight 2-pos. M12 socket</b>		
22260804	AB-ASI-J-Y-N-PUR-2,0-M12FS	1
<b>H Distributor for distribution from 1 to 2 flat-ribbon conductors</b>		
22260802	AB-ASI-J-Y-Y-N	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## AS-Interface plug terminals



### Info

- Fully industrialised

### Benefits

- Easy assembly
- Fast connect adapter terminals
- Enables the individual usage as tension or screw plug terminals
- Flexible connection solutions

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- Optional plug terminals for AS-Interface module IP20/IP30
- Fast-connect connection type
- 1 packing unit for 16 or 32 contacts
- Black

### Approvals (Norm references)



### Suitable tools

- Kraftform® adjustable torque screwdriver/  
Kraftform Kompakt® Set see main catalogue  
2010/11 page 982

Part number	Article designation	PU
<b>AS-Interface screw plug terminals, 2x16 pos, 0.14-2.5 mm</b>		
22260815	AB-ASI-XS16	1
<b>AS-Interface screw plug terminals, 4x4 pos, 0.14-2.5 mm</b>		
22260817	AB-ASI-XS4	1
<b>AS-Interface tension plug terminals, 8x4 pos, 0.2-2.5 mm</b>		
22260816	AB-ASI-XT16	1
<b>AS-Interface tension plug terminals, 4x4 pos, 0.2-2.5 mm</b>		
22260818	AB-ASI-XT4	1

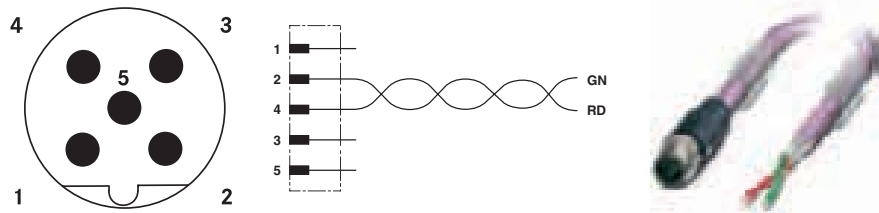
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For detailed information please see [www.lappautomation.com](http://www.lappautomation.com)

## PROFIBUS cable: M 12 connector on free conductor end



### Info

- Pre-assembled PROFIBUS signal cable



PROFIBUS cable: M 12 connector on free conductor end

### Benefits

- Inexpensive and efficient wiring for PROFIBUS installations
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 2-pos. PROFIBUS cable shielded

- 5-pos. connector, M12 B-coded (inverse) with quick locking system
- Design with straight socket or straight plug on free conductor end
- The cables have marker carries
- Drag chain suitable

### Approvals (Norm references)



### Design

- PUR halogen-free shielded cable
- Permanently flexible control cable
- Structure: 19 x 0,13 mm
- Conductors colors red, grün
- Sheath violet

### Technical data

<b>Number of poles</b>	2
<b>Degree of protection</b>	IP65/IP67/IP69K
<b>Ambient temperature (operation)</b>	Plug/socket -25°C to +90°C Cable, fixed installation -40°C up to +80°C Cable, flexible installation -20°C up to +80°C
<b>Contact material</b>	CuSn
<b>Contact surface material</b>	Ni/Au
<b>Coding</b>	B - inverse
<b>Material, knurls</b>	Zinc die-cast, (nickel-plated)
<b>Material of grip body</b>	TPU, hardly inflammable, self-extinguishing
<b>Wire colour</b>	red, green
<b>External cable diameter</b>	7,8 mm
<b>Conductor cross section</b>	0,25 mm <sup>2</sup>
<b>External sheath, color</b>	violett RAL 4001
<b>Outer sheath, material</b>	PUR

Part number	Article designation	Length in m	Nominal current I <sub>N</sub> in A	Nominal voltage U <sub>N</sub> in V	Number of poles	PU
<b>Straight connector</b>						
22260767	AB-PB-M12MS-2,0PUR	2	4	250	2	1
22260768	AB-PB-M12MS-5,0PUR	5	4	250	2	1
22260769	AB-PB-M12MS-10,0PUR	10	4	250	2	1
<b>Straight socket</b>						
22260770	AB-PB-2,0PUR-M12FS	2	4	250	2	1
22260771	AB-PB-5,0PUR-M12FS	5	4	250	2	1
22260772	AB-PB-10,0PUR-M12FS	10	4	250	2	1

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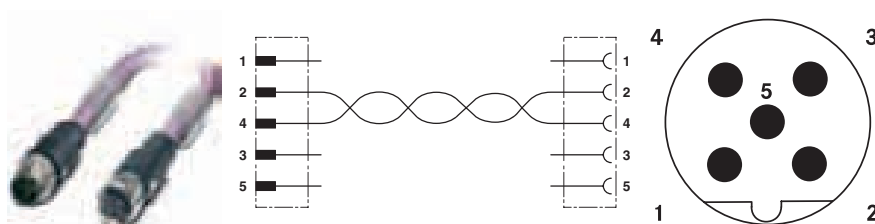
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable length on request

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

For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## PROFIBUS Cable: straight M12 connector M12 on straight M12 socket



PROFIBUS Cable: straight M12 connector M12 on straight M12 socket

### Benefits

- Inexpensive and efficient wiring for PROFIBUS installations
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 2-pos. PROFIBUS cable shielded

- 5-pos. connector, M12 B-coded (inverse) with quick locking system
- Design with straight connector on straight socket
- The cables have marker carries
- Drag chain suitable

### Approvals (Norm references)



### Design

- PUR halogen-free shielded cable
- Permanently flexible control cable
- Structure: 19 x 0,13 mm
- Conductors colors red, grün
- Sheath violet



### Info

- PROFIBUS signal cable ready for connection

### Technical data

**Number of poles**  
2



**Degree of protection**  
IP65/IP67/IP69K



**Ambient temperature (operation)**

Plug/socket

-25°C to +90°C

Cable, fixed installation

-40°C up to +80°C

Cable, flexible installation

-20°C up to +80°C

**Contact material**

CuSn

**Contact surface material**

Ni/Au

**Coding**

B - inverse

**Material, knurls**

Zinc die-cast, (nickel-plated)

**Material of grip body**

TPU, hardly inflammable, self-extinguishing

**Wire colour**

red, green

**External cable diameter**

7,8 mm



**Conductor cross section**

0,25 mm²

**External sheath, color**

violett RAL 4001

**Outer sheath, material**

PUR

Part number	Article designation	Length in m	Nominal current $I_N$ in A	Nominal voltage $U_N$ in V	Number of poles	PU
22260773	AB-PB-M12MS-0,3PUR-M12FS	0,3	4	250	2	1
22260774	AB-PB-M12MS-1,0PUR-M12FS	1	4	250	2	1
22260777	AB-PB-M12MS-10,0PUR-M12FS	10	4	250	2	1
22260775	AB-PB-M12MS-2,0PUR-M12FS	2	4	250	2	1
22260776	AB-PB-M12MS-5,0PUR-M12FS	5	4	250	2	1

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Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable length on request

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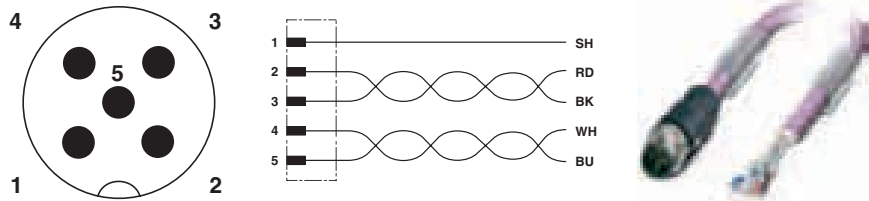
For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## DeviceNet/CANopen Cable, M12 connector on free conductor end



### Info

- Pre-assembled DeviceNet/CANopen signal cable



DeviceNet/CANopen Cable, M12 connector on free conductor end

### Benefits

- Inexpensive and efficient wiring for BUS installations, sensors and actuators
- Space saving because of compact dimensions
- Robust design
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 5-pos. DeviceNet/CANopen cable, shielded

- M12 A-coded with quick locking system

- Design with straight socket or straight plug on free conductor end
- The cables have marker carries
- Drag chain suitable

### Approvals (Norm references)



### Design

- PUR halogen-free shielded cable
- Permanently flexible control cable
- Structure (signal line): 19 x 0,12 mm
- Conductors colors red-black, blue-white

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP67/IP69K
<b>0+T</b>	<b>Ambient temperature (operation)</b> Plug/socket -25°C to +90°C Cable, fixed installation -40°C up to +80°C Cable, flexible installation -20°C up to +80°C
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing
	<b>External cable diameter</b> 6,7 mm
	<b>Conductor cross section</b> 0,2 mm²
	<b>External sheath, color</b> violett RAL 4001
	<b>Outer sheath, material</b> PUR

Part number	Article designation	Length in m	Nominal voltage $U_N$ in V	Nominal current $I_N$ in A	Number of poles	PU
22260791	AB-DN-M12MS-10,0PUR	10	60	4	5	1
<b>5 pole straight connector</b>						
22260789	AB-DN-M12MS-2,0PUR	2	60	4	5	1
22260790	AB-DN-M12MS-5,0PUR	5	60	4	5	1
22260794	AB-DN-10,0PUR-M12FS	10	60	4	5	1
<b>5 pole straight socket</b>						
22260792	AB-DN-2,0PUR-M12FS	2	60	4	5	1
22260793	AB-DN-5,0PUR-M12FS	5	60	4	5	1

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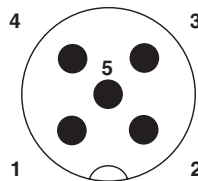
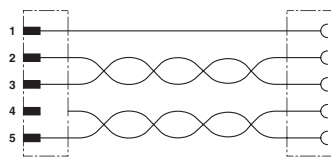
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable length on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A DeviceNet/CANopen cable, M 12 connector on M 12 socket



## Info

- DeviceNet/CANopen signal cable ready for connection

## S/A DeviceNet/CANopen cable, M 12 connector on M 12 socket

## ■ Benefits

- Inexpensive and efficient wiring for BUS installations, sensors and actuators
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- 5-pos. DeviceNet/CANopen cable, shielded

- M 12 A-coded with quick locking system
- Design with straight connector on straight socket
- The cables have marker carries
- Drag chain suitable

## ■ Approvals (Norm references)

**RoHS** ✓ **DeviceNet™**

## ■ Design

- PUR halogen-free shielded cable
- Permanently flexible control cable
- Structure (signal line): 19 x 0,12 mm
- Structure (voltage line): 19 x 0,15 mm
- Conductors colors red-black, blue-white

## ■ Technical data



**Degree of protection**  
IP65/IP67/IP69K



**Ambient temperature (operation)**  
Plug/socket  
-25°C to +90°C

Cable, fixed installation  
-40°C up to +80°C  
Cable, flexible installation  
-20°C up to +75°C

**Contact surface material**  
Ni/Au

## ■ Coding

A - Standard

**Material, knurls**  
Zinc die-cast, (nickel-plated)

**Material of grip body**  
TPU, hardly inflammable, self-extinguishing

**External cable diameter**  
6,7 mm



**Conductor cross section**  
0,2 mm<sup>2</sup>

**External sheath, color**  
violett RAL 4001

**Outer sheath, material**  
PUR

Part number	Article designation	Length in m	Nominal voltage $U_N$ in V	Nominal current $I_N$ in A	Number of poles	PU
<b>Straight connector on straight socket</b>						
22260795	AB-DN-M12MS-0,3PUR-M12FS	0,3	60	4	5	1
22260796	AB-DN-M12MS-1,0PUR-M12FS	1	60	4	5	1
22260799	AB-DN-M12MS-10,0PUR-M12FS	10	60	4	5	1
22260797	AB-DN-M12MS-2,0PUR-M12FS	2	60	4	5	1
22260798	AB-DN-M12MS-5,0PUR-M12FS	5	60	4	5	1

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DeviceNet is a registered trademark of ODVA

Special cable length on request

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For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## BUS M12 connectors that can be assembled



### Info

- For
  - PROFIBUS
  - CANopen
  - DeviceNet
  - PROFINET
  - ETHERNET



BUS M12 connectors that can be assembled

### Benefits

- Quick and easy on-site assembly
- Creating individual cable lengths
- Inexpensive and efficient wiring for BUS installations
- Space saving because of compact dimensions
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- Shielded version
- For CANopen/DeviceNet applications (A-coded)

- For PROFIBUS applications (B-inverse coded)
- For PROFINET applications (D-coded)
- For Ethernet applications (D-coded)

### Approvals (Norm references)



### Suitable cables

- Cables for BUS-Systems PROFIBUS-DP/FMS/FIP see main catalogue 2010/11 page 292
- Cables for Bus-System CAN page 35
- Cables for Bus-System DeviceNet page 33
- PROFIBUS cable: M12 connector on free conductor end page 83
- ETHERLINE® 2-pairs CAT.5/5e page 91

### Technical data

<b>Number of poles</b>	5 (PROFIBUS/CANopen/DeviceNet) 4 (PROFINET/ETHERNET)
<b>Degree of protection</b>	IP67
<b>Ambient temperature (operation)</b>	Plug / socket -40 °C to +85 °C
<b>Contact material</b>	CuSn
<b>Contact surface material</b>	Au (PROFIBUS/CANopen/DeviceNet) Ni/Au (PROFINET/ETHERNET)
<b>Coding</b>	A - CANopen/DeviceNet B - inverse (PROFIBUS) D - data (PROFINET/ETHERNET)
<b>Material, knurls</b>	Nickel-plated brass
<b>Material of grip body</b>	Zinc die-cast, (nickel-plated)
<b>Sealing material</b>	NBR (PROFIBUS/CANopen/DeviceNet) Neoprene (PROFINET/ETHERNET)
<b>Contact carrier material</b>	PA 66
<b>Nominal voltage U<sub>N</sub></b>	60 V
<b>Nominal current I<sub>N</sub></b>	4 A (PROFIBUS/CANopen/DeviceNet) 1,75 A (PROFINET/ETHERNET)
<b>Cable screw connection PG</b>	PG 9 (PROFIBUS/CANopen/DeviceNet)

Part number	Article designation	Conductor cross section stranded min. in mm <sup>2</sup>	Conductor cross section stranded max. in mm <sup>2</sup>	Conductor cross section AWG/kcmil min.	Conductor cross section AWG/kcmil max.	Cable Diameter min in mm	Cable Diameter max in mm	PU
<b>PROFIBUS, 5 pole straight connector, screw connection</b>								
22260653	AB-C5-M12MSB-PG9-SH-AU	0.25	0.75	24	18	6	8.5	1
<b>PROFIBUS, 5 pole straight socket, screw connection</b>								
22260646	AB-C5-M12FSB-PG9-SH-AU	0.25	0.75	24	18	6	8.5	1
<b>PROFINET/ETHERNET, 4 pole straight connector, fast connect</b>								
22260820	AB-C4-M12MSD-SH	0.14	0.34	26	22	4	8	1
<b>CANopen/DeviceNet, 5 pole straight connector, screw connection</b>								
22260135	AB-C5-M12MS-PG9-SH	0.25	0.75	24	18	6	8	1
<b>CANopen/DeviceNet, 5 pole straight socket, screw connection</b>								
22260136	AB-C5-M12FS-PG9-SH	0.25	0.75	24	18	6	8	1

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DeviceNet is a registered trademark of ODVA

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

## Terminating resistor M 12 for DeviceNet/CANopen/PROFIBUS



Terminating resistor M 12 for DeviceNet/CANopen/PROFIBUS



## Info

- Fully industrialised

## ■ Benefits

- Inexpensive termination of BUS cables
- Space saving because of compact dimensions
- Robust design
- Standardized interfaces

## ■ Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## ■ Product features

- Free of substances which would hinder coating with paint or varnish
- For DeviceNet und CANopen applications (A-Standard coded)
- For PROFIBUS applications (B-inverse coded)

## ■ Approvals (Norm references)



## ■ Design

- Straight connector M 12 and integrated termination resistor

## ■ Technical data



## Degree of protection

IP65/IP67/IP69K



## Ambient temperature (operation)

Plug/socket

-25 °C to +90 °C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

B - inverse (PROFIBUS)

A - Standard (DeviceNet/CANopen)

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

## Contact carrier material

TPU GF

Nominal voltage  $U_N$ 

60 V

Nominal current  $I_N$ 

4 A

Part number	Article designation	Nominal current $I_N$ in A	Nominal voltage $U_N$ in V	Coding	Number of poles	PU
For PROFIBUS applications (B-inverse coded)						
22260722	AB-C4-M12MS-PB-TR	4	60	B - inverse	4	5
For DeviceNet und CANopen applications (A-Standard coded)						
22260766	AB-C5-M12MS-DN-TR	4	60	A - Standard	5	5

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

DeviceNet is a registered trademark of ODVA

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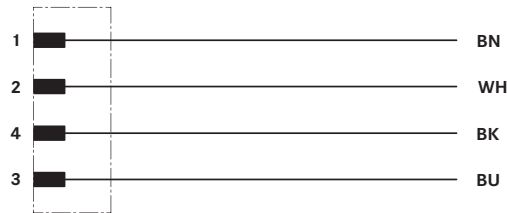
For detailed information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## Power cable: M12 connector on free conductor



### Info

- Power cable, universally useable



Power cable: M12 connector on free conductor

### Benefits

- Power connecting cable for active fieldbus modules
- Inexpensive and efficient wiring of sensors and actuators
- Space saving because of compact dimensions
- Customised construction of free conductor end
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 4-pos. Power cable
- M12 A-coded with quick locking system
- Design with straight connector or straight socket on free conductor end
- The cables have marker carries
- Drag chain suitable

### Approvals (Norm references)



### Design

- PUR/PVC cable
- Permanently flexible control cable
- Design: 4 x 0.75 mm<sup>2</sup> (42 x 0.15 mm)
- Conductor colours brown, white, blue, black

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP67/IP69K
<b>0+1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25°C to +90°C Cable, fixed installation -25°C up to +80°C Cable, flexible installation -5°C up to +80°C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing
	<b>Wire colour</b> brown, white, blue, black
	<b>External cable diameter</b> 5,9 mm
	<b>Conductor cross section</b> 0,75 mm <sup>2</sup>
	<b>External sheath, color</b> black RAL 9005
	<b>Outer sheath, material</b> PUR

Part number	Article designation	Length in m	Nominal current I <sub>N</sub> in A	Nominal voltage U <sub>N</sub> in V	Number of poles	PU
<b>4 pole straight connector</b>						
22260778	AB-PC4-M12MS-2,0PUR	2	4	250	4	1
22260779	AB-PC4-M12MS-5,0PUR	5	4	250	4	1
22260780	AB-PC4-M12MS-10,0PUR	10	4	250	4	1
<b>4 pole straight socket</b>						
22260781	AB-PC4-2,0PUR-M12FS	2	4	250	4	1
22260782	AB-PC4-5,0PUR-M12FS	5	4	250	4	1
22260783	AB-PC4-10,0PUR-M12FS	10	4	250	4	1

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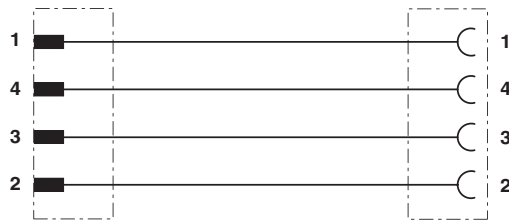
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

For detailed information please see [www.lappautomation.com](http://www.lappautomation.com)

## Power cable: straight M12 connector on straight M12 socket



## Info

- Powercable M12 ready for connection

Power cable: straight M12 connector on straight M12 socket

## Benefits

- Power connecting cable for aktive fieldbus modules
- Inexpensive and efficient wiring for BUS installations, sensors and actuators
- Space saving because of compact dimensions
- Fast and easy assembly
- Standardized interfaces

## Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

## Product features

- 4-pos. Power cable
- M12 A-coded with quick locking system
- Design with straight connector on straight socket
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

## Approvals (Norm references)



## Design

- PUR/PVC cable
- Permanently flexible control cable
- Design: 4 x 0.75 mm<sup>2</sup> (42 x 0.15 mm)

## Technical data



## Degree of protection

IP65/IP67/IP69K



## Ambient temperature (operation)

Plug/socket

-25°C to +90°C

Cable, fixed installation

-25°C up to +80°C

Cable, flexible installation

-5°C up to +80°C

## Contact material

CuSn

## Contact surface material

Ni/Au

## Coding

A - Standard

## Material, knurls

Zinc die-cast, (nickel-plated)

## Material of grip body

TPU, hardly inflammable, self-extinguishing

## External cable diameter

5,9 mm



## Conductor cross section

0,75 mm<sup>2</sup>

## External sheath, color

black RAL 9005

## Outer sheath, material

PUR

Part number	Article designation	Length in m	Nominal current $I_N$ in A	Nominal voltage $U_N$ in V	Number of poles	PU
22260784	AB-PC4-M12MS-0,3PUR-M12FS	0.3	4	250	4	1
22260785	AB-PC4-M12MS-1,0PUR-M12FS	1	4	250	4	1
22260786	AB-PC4-M12MS-2,0PUR-M12FS	2	4	250	4	1
22260787	AB-PC4-M12MS-5,0PUR-M12FS	5	4	250	4	1
22260788	AB-PC4-M12MS-10,0PUR-M12FS	10	4	250	4	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

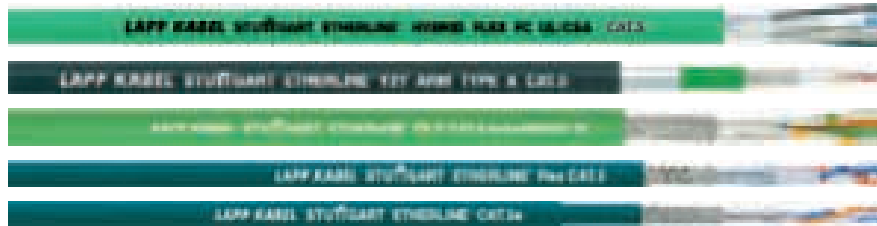
For detailed technical information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## ETHERLINE® 2-pairs CAT.5/5e



### Info

- Industrial Ethernet Cable
- CAT.5/5e



### Benefits

- ETHERNET with the globally accepted TCP/IP protocol will most probably either provide a connection to the established "Fieldbus World" or the Sensor-Actuator level. Either via a gateway to the "Fieldbus World" or straight through downwards to the lowest communication level. The transmission rates are presently either 10 Mbit/s (ETHERNET) or at least 100 Mbit/s = LAN CAT.5 requirements (Fast Ethernet = Industrial Ethernet) respectively CAT.6a or CAT.7 requirements.
- With regard to transmission rates, the "ETHERNET world" is cut into:
  - ETHERNET = 10 Mbit/s
  - FAST ETHERNET = 100 Mbit/s
  - GIGABIT ETHERNET = 1000 Mbit/s

### Product features

- In order to reach 100 m link length (like in the office area acc. to ISO 11801) for flexible and highly flexible cable types a cross section of AWG22 is necessary.
- All ETHERLINE® cables with a cross section of AWG22 are PROFINET® compliant.

### Approvals (Norm references)



### Design

- Cables with conductor cross-section
- AWG24/AWG26:  
Colour: water blue (RAL 5021)
- AWG22:  
Colour: yellow green (RAL 6018)

### Technical data



#### Info

Further technical data:  
see Data Sheet



**Characteristic impedance**  
100 Ohm at 1 - 100 MHz

Part number	Article designation	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
<b>Conductor AWG24 (outer sheath colour marine blue RAL 5021)</b>					
2170280	ETHERLINE® H CAT.5e	2 x 2 x AWG24/1	5.8	22.0	45.0
2170281	ETHERLINE® P CAT.5e	2 x 2 x AWG24/1	5.8	22.0	53.0
<b>Conductor AWG22 = PROFINET-conform (outer sheath colour yellow-green RAL 6018)</b>					
<b>For fixed installation (solid conductor) = type A</b>					
2170891	ETHERLINE® Y UL/CSA CAT.5e	2 x 2 x AWG22/1	6.4	30.4	56.0
2170893	ETHERLINE® Y FC UL/CSA (CMG) CAT.5	2 x 2 x AWG22/1	6.5	30.4	70.0
2170494	ETHERLINE® YY UL/CSA (CMG) CAT.5e	2 x 2 x AWG22/1	7.8	30.4	62.0
<b>For fixed installation, outdoor installation/direct burial = type A</b>					
2170496	ETHERLINE® Y2Y ARM Type A CAT.5	2 x 2 x AWG22/1	9.3	30.4	124.0
<b>For flexible application (7 wire stranded conductor) = Type B</b>					
2170283	ETHERLINE® H Flex CAT.5e	2 x 2 x AWG26/7	5.4	19.0	43.0
2170284	ETHERLINE® P Flex CAT.5e	2 x 2 x AWG26/7	5.8	19.0	45.0
<b>For highly flexible application / 19 wires</b>					
<b>Only for patchcords (max. 60 m)</b>					
2170289	ETHERLINE® FD P CAT.5e	2 x 2 x AWG26/19	6.1	20.0	48.0
<b>Conductor AWG22 = PROFINET-conform</b>					
<b>For flexible application (7 wire stranded conductor) = Type B</b>					
2170886	ETHERLINE® Y FLEX FC UL/CSA (CMG) CAT.5	2 x 2 x AWG22/7	6.5	31.3	67.0
2170887	ETHERLINE® FRNC HYBRID FLEX CAT.5 UL (AWM)	2x2xAWG22/7 + 4x1.5	10.3	94.2	153.0
<b>For highly flexible application (7 wire stranded conductor) = Type C</b>					
2170894	ETHERLINE® FD P FC UL/CSA (CMX) CAT.5	2 x 2 x AWG22/7	6.5	31.3	63.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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.

## ETHERLINE® TORSION UL (AWM) CAT.5

LAPP KABEL SYSTEM ETHERLINE TORSION UL AWM CAT.5

## Benefits

- This cable is an important supplement to the range of ETHERLINE® Industrial Ethernet cables.
- Cable suitable for torsion stress. Tested with more than 1 million bending cycles and a right / left movement of 180° on 1 meter.

## Application range

- Many applications with Industrial Ethernet, e. g. PROFINET, i.e. fixed installation, flexible and highly flexible use as well as TORSION.

## Product features

- Flame retardant according to IEC 60332-1-2
- Outer sheath high abrasion resistance

## Approvals (Norm references)



- UL AWM (Style 21161)

## Design

- Stranded conductor, tinned
- AWG 22 (19-wire)
- PE core insulation
- Star quad
- PUR outer sheath halogen-free



## Info

- Industrial Ethernet Cable, 2-pair, suitable for torsion stress

## Technical data

	<b>Peak working voltage</b> Max. 100 V (not for power applications)
	<b>Minimum bending radius</b> Installation: 5 x cable diameter
	<b>Test voltage</b> 700 V
	<b>Range of temperature</b> -40°C up to +80°C
	<b>Characteristic impedance</b> At 1 - 100 MHz: 100 +/- 15 Ohm

Part number	Article designation	Number of pairs and AWG size/number of wires per conductor	Outer diameter in mm max.	Copper index kg/km	Weight kg/km approx.
2170888	ETHERLINE® TORSION CAT.5	2 x 2 x AWG22/19	6.5	31.3	52.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## Accessories

- Multipurpose shears A and B see main catalogue 2010/11 page 902
- SMARTSTRIP stripping tool see main catalogue 2010/11 page 909

## ETHERLINE® 4-pairs solidwire CAT.5e

LAPP KABEL SYSTEM ETHERLINE 4P Solid CAT.5e

## ETHERLINE® 4-pairs flexible/high flexible CAT.5e

LAPP KABEL SYSTEM ETHERLINE 4P Flex CAT.5e

## Benefits

- With regard to transmission rates, the "ETHERNET world" is cut into:
- ETHERNET = 10 Mbit/s
- FAST ETHERNET = 100 Mbit/s
- GIGABIT ETHERNET = 1000 Mbit/s (1Gbit/s)

## Application range

## ETHERLINE® 4-pairs solidwire CAT.5e

- Stationary application
- Connection with the "Fieldbus World" via gateway or straight through downwards to the Sensor-Actuator level

## ETHERLINE® 4-pairs flexible/high flexible CAT.5e

- Flexible and highly flexible applications
- Connection with the "Fieldbus World" via gateway or straight through downwards to the Sensor-Actuator level

## Approvals (Norm references)



## Design

- Technical data: see detailed Data Sheet (on request)

## Technical data

	<b>Characteristic impedance</b> 100 Ohm at 1 - 100 MHz
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Part number	Article designation	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km approx.
<b>Conductor AWG24 + AWG26 (outer sheath colour marine blue RAL 5021)</b>					
<b>For fixed installation (solid conductor)</b>					
2170296	ETHERLINE® H CAT.5e	4 x 2 x AWG24/1	6.3	32.0	54.0
2170297	ETHERLINE® P CAT.5e	4 x 2 x AWG24/1	6.3	32.0	62.0
2170298	ETHERLINE® H-H CAT.5e	4 x 2 x AWG24/1	6.0 / 7.5	32.0	80.0
<b>For flexible application (7-wire stranded conductor)</b>					
2170299	ETHERLINE® H Flex CAT.5e	4 x 2 x AWG26/7	6.1	25.0	48.0
2170300	ETHERLINE® P Flex CAT.5e	4 x 2 x AWG26/7	6.1	25.0	54.0
<b>For highly flexible application / 19 wires</b>					
<b>Only for patchcords (max. 60 m)</b>					
2170489	ETHERLINE® FD P CAT.5e	4 x 2 x AWG26/19	6.3	27.0	54.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

## ETHERLINE® 4-pairs high flexible CAT.6



### Info

- CAT.6 for drag chain!



### Benefits

- PUR outer sheath largely resistant against a multitude of oils, against abrasion and UV radiation
- Premium screening against electromagnetic radiation

### Application range

- Use for drag chains and permanent moved machine parts in dry or damp rooms

### Product features

- Flame retardant according to IEC 60332-1-2

### Approvals (Norm references)

- UL/CSA type CMX (UL 444)

### Design

- Stranded conductor, tinned
- AWG 26 (19-wire)
- PP core insulation
- PUR outer sheath halogen-free

### Technical data

- Peak working voltage**  
Max. 100 V (not for power applications)
- Minimum bending radius**  
Static:  
4 x cable diameter  
Flexing: 7.5 x outer diameter
- Test voltage**  
700 V
- Range of temperature**  
Fixed installation: -40°C up to +80°C  
Flexing: -30°C up to +80°C
- Characteristic impedance**  
At 1 - 100 MHz: 100 +/- 15 Ohm

Part number	Article designation	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170488	ETHERLINE® FD P CAT.6	4 x 2 x AWG26/19	7.8	31.7	63.0

## ETHERLINE® 4-pairs high flexible CAT.5

The Ethernet cable for event technique



### Info

- Outdoor, direct burial
- Usable for road
- CAT.5-Performance



### Benefits

- Due to usage of Etherline cables the cost of installation is very low
- Additional application due to outdoor use
- Good flexibility - easy installation with tight space requirements
- Screened against interference
- Easy to wind for mobile use

### Application range

- Suitable for the transfer of audio data (ETHERSOUND), light control data (DMX over Ethernet), or for computer networking

### Product features

- ETHERLINE® CAT.5 FD BK is a halogen-free CATEGORY 5 high speed data transmission cable suitable for application in road environments

- Complied standards EIA/TIA-568, TSB-36 und ISO/IEC IS 11801

### Approvals (Norm references)



### Design

- Bare copper wire, 26AWG (19x 0.10), (0.14 mm²)
- Insulation: foam-skin, core diameter max. 1.0 mm
- Twisting: 2 cores twisted pairs, stranding from 4 pairs
- Inner sheath: halogen-free compound of TPE
- Screening: braid of tinned copper wires, coverage 85% ± 5
- Sheath: PUR, halogen-free, black

### Technical data

- Minimum bending radius**  
95 mm
- Range of temperature**  
Flexible application:  
-5°C up to +50°C  
Fixed installation: -40°C up to +70°C

Part number	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
CE217489	4x2xAWG26/19	6.3	27.0	54.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Standard lengths: (100; 500; 1000) m

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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.

## ETHERLINE® 4-pairs CAT.6a + CAT.7



## ■ Benefits

- ETHERNET with the globally accepted TCP/IP protocol will most probably either provide a connection to the established "Fieldbus World" or the Sensor-Actuator level. Either via a gateway to the "Fieldbus World" or straight through downwards to the lowest communication level. The transmission rates are presently either 10 Mbit/s (ETHERNET) or at least 100 Mbit/s = LAN CAT.5 requirements (Fast Ethernet = Industrial Ethernet) respectively CAT.6a or CAT.7 requirements.
- CAT.6a = 500 MHz

- CAT.7 = 600 MHz

## ■ Product features

- All ETHERLINE® cables with a cross section of AWG22 are PROFINET® compliant.
- Characteristic impedance: 100 Ohm at 1-100 MHz

## ■ Approvals (Norm references)



## ■ Technical data



## Info

Further technical data:  
see Data Sheet



**Characteristic impedance**  
100 Ohm at 1 - 100 MHz

Part number	Article designation	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170466	ETHERLINE® H PiMF CAT.6a	4 x 2 x AWG22 / 1	8.7	53.0	99.0
2170476	ETHERLINE® H PiMF CAT.7	4 x 2 x AWG22 / 1	8.7	53.0	99.0
2170465	ETHERLINE® P PiMF CAT.6a	4 x 2 x AWG22 / 1	8.7	53.0	91.0
2170475	ETHERLINE® P PiMF CAT.7	4 x 2 x AWG22 / 1	8.7	53.0	91.0
<b>Conductor AWG22 = PROFINET-conform (outer sheath colour yellow-green RAL 6018) for fixed installation (solid conductor) = Type A</b>					
2170464	ETHERLINE® Y PiMF CAT.6a	4 x 2 x AWG22 / 1	8.7	53.0	98.0
2170474	ETHERLINE® Y PiMF CAT.7	4 x 2 x AWG22 / 1	8.7	53.0	98.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

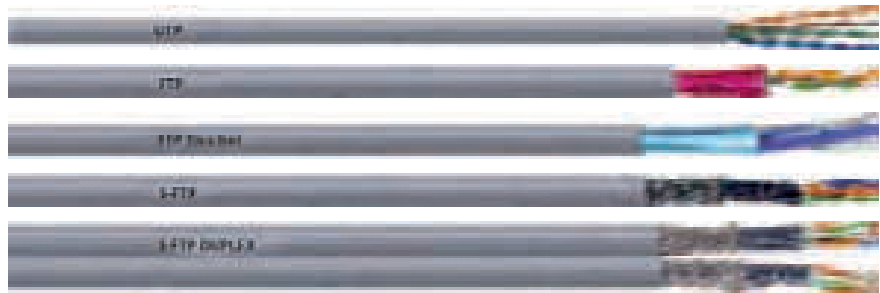
Photographs are not to scale and do not represent detailed images of the respective products.

## UNITRONIC® LAN 200 MHz - CAT.5e



### Info

- EIA = Electronic Industries Association
- TIA = Telecommunication Industries Association
- TSB = Technical Systems Bulletin



### Benefits

- LAN cables for structured cabling - EN 50173

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).

### Product features

- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

- The impedance of these cables is 100 Ohm +/-15%
- FTP and S-FTP cables are specified up to 200 MHz
- Cables with auxiliary -H = halogen-free version

### Technical data

**Characteristic impedance**  
100 Ohm +/- 15%

### Approvals (Norm references)



- LAN CAT.5e cables from Lapp Kabel for "Structured cabling systems" meet the requirements in accordance with EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class D).
- Class D in ISO/IEC 11801 standard corresponds to CAT.5

Part number	Article designation	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
<b>PVC version</b>					
2170125	UTP 200 MHz CAT.5e	4 x 2 x AWG24/1	5.5	17.0	32.0
2170126	FTP 200 MHz CAT.5e	4 x 2 x AWG24/1	6.1	18.0	42.0
2170127	FTP 200 MHz CAT.5e flexible (for patchcable)	4 x 2 x AWG26/7	5.4	13.0	30.0
2170128	S-FTP 200 MHz CAT.5e	4 x 2 x AWG24/1	6.5	32.0	60.0
2170129	S-FTP 200 MHz CAT.5e flexible (for patchcable)	4 x 2 x AWG26/7	5.8	22.0	41.0
2170130	S-FTP 200 MHz CAT.5e DUPLEX	2 x (4 x 2 x AWG24/1)	6.5 x 13.2	64.0	120.0
<b>Halogen-free versions</b>					
2170136	FTP-H 200 MHz CAT.5e	4 x 2 x AWG24/1	6.1	18.0	43.0
2170137	FTP-H 200 MHz CAT.5e flexible (for patchcable)	4 x 2 x AWG26/7	5.4	13.0	31.0
2170138	S-FTP-H 200 MHz CAT.5e	4 x 2 x AWG24/1	6.5	32.0	61.0
2170139	S-FTP-H 200 MHz CAT.5e flexible (for patchcable)	4 x 2 x AWG26/7	5.8	22.0	42.0
2170140	S-FTP-H 200 MHz CAT.5e DUPLEX	2 x (4 x 2 x AWG24/1)	6.5 x 13.2	64.0	122.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil 100 m; Drum (500; 1000) m

More detailed data sheet on request. Please specify the required type.

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

## UNITRONIC® LAN 500 MHz - CAT.6a



## Info

- EIA = Electronic Industries Association
- TIA = Telecommunication Industries Association
- TSB = Technical Systems Bulletin

## Benefits

- LAN cable for "Structured Cabling" - Class EA

## Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).

## Product features

- Cables with auxiliary -H = halogen-free version
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

- The impedance of these cables is 100 Ohm +/- 15%

## Approvals (Norm references)



- LAN CAT.6a cables from Lapp Kabel for "Structured cabling systems" meet the requirements in accordance with EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class D).
- Class EA in draft standard corresponds to CAT.6a

## Technical data



Characteristic impedance  
100 Ohm +/- 15%

Part number	Article designation	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
<b>PVC version</b>					
2170143	STP/S PiMF 500 MHz CAT.6a	4 x 2 x AWG23/1	7.1	27.0	53.0
2170144	STP/S PiMF 500 MHz CAT.6a (flexible for patchcable)	4 x 2 x AWG26/7	6.5	21.0	40.0
2170145	STP/S PiMF 500 MHz CAT.6a DUPLEX	2 x (4 x 2 x AWG23/1)	7.1 x 14.6	54.0	106.0
<b>Halogen-free versions</b>					
2170147	STP/S-H PiMF 500 MHz CAT.6a	4 x 2 x AWG23/1	7.1	27.0	53.0
2170148	STP/S-H PiMF 500 MHz CAT.6a (flexible for patchcable)	4 x 2 x AWG26/7	6.5	21.0	40.0
2170149	STP/S-H PiMF 500 MHz CAT.6a DUPLEX	2 x (4 x 2 x AWG23/1)	7.1 x 14.6	54.0	106.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil 100 m; Drum (500; 1000) m

CAT.6a is at present a draft

More detailed data sheet on request. Please specify the required type.

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

## UNITRONIC® LAN 600 MHz - CAT.7



### ■ Benefits

- LAN cables for structured cabling - Class F

### ■ Application range

- LAN CAT.7\* cable for high speed networks (e.g. Gigabit-ETHERNET). They exceed the requirements according to EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class D).

### ■ Product features

- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

- All STP/STP PiMF cables: characteristic impedance 100 Ohm ± 15 %.
- LAN CAT-7\* cables are specified up to 600 MHz

### ■ Approvals (Norm references)



- Class F in standard corresponds to CAT.7

### ■ Technical data

<b>Z<sub>∞</sub></b>	<b>Characteristic impedance</b> 100 Ohm ± 15%
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### ■ Design

- Shielded Twisted Pair / Screened PiMF
- 4 individually screened pairs (aluminium foil) with overall screening (copper braid)
- Solid conductor

Part number	Article designation	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
<b>Halogen-free versions</b>					
2170614	STP/S-H PiMF 600 MHz CAT.7*	4 x 2 x AWG23/1	7.9	29.0	78.0
2170634	STP/S-H PiMF 600 MHz CAT.7* DUPLEX	2 x (4 x 2 x AWG23/1)	7.9 x 16.8	58.0	156.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil 100 m; Drum (500; 1000) m

More detailed data sheet on request. Please specify the required type.

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

## UNITRONIC® LAN 1200 MHz - CAT.7



## Info

- NEU:  
revised outer diameter 7,7 mm  
and outer sheath with grey colour

## ■ Application range

- LAN cables for structured cabling

## ■ Product features

- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

- The cable is specified up to 1.2 GHz

## ■ Approvals (Norm references)



- Meets requirements according to draft of Standard prEN 50288-4-1 (August 2000)
- Exceeds the requirements of Standard EN 50173 and ISO/IEC 11801

## ■ Design

- Solid bare copper wire AWG22
- Cell polyolefin core insulation, diameter max. 1.6 mm
- Pair screen made of aluminium-lined plastic foil, overall screening of tinned copper braiding
- Outer sheath: halogen-free, flame retardant compound
- Colour: grey (RAL 7035)

Part number	Article designation	Number of pairs and dimensions	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170615	UNITRONIC® LAN 1200 H CAT.7	4 x 2 x AWG22/1	7.7	36.0	80.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Drum

More detailed data sheet on request. Please specify the required type.

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

## Connector RJ45 CAT.5 Hirose TM11

### Product features

- Shielded version
- Suitable for stranded conductors (AWG26)
- Including bend protection and guide plate
- Bend protection: beige

- Max. outer sheath diameter: 5,8 mm

### Approvals (Norm references)



Part number	Article designation	PU
CE6321	Connector RJ45 CAT.5 Hirose TM11	50 pieces

Hirose is a registered trademark of the HIROSE ELECTRIC Group

Also further different-coloured versions available.

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

## Connector RJ45 CAT.5 Stewart SS37

### Product features

- Shielded version
- Suitable for stranded conductors (AWG26)
- Including bend protection and guide plate
- Bend protection: light grey

- Max. outer sheath diameter: 5.72 mm

### Approvals (Norm references)



Part number	Article designation	PU
CE6323	Connector RJ45 CAT.5 Stewart SS37	50 pieces

Stewart is a registered trademark of Bel Fuse Inc.

Also further different-coloured versions available.

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

## Field-Terminable Connector RJ45 CAT.5e FM45

### Product features

- Shielded version
- FM45 is a tool-free switchable, field-terminable RJ45 Connector with IDC contacting and CAT.5e performance. The eight pin connection can be re-switched, tension-resistant, and vibration-resistant. The connecting block can accommodate both screened as well as unscreened cable up to 8 mm diameter.
- Suitable for AWG23 - 26, AWG22 possible with restrictions

- IDC/piercing terminal in acc. with 60352-4
- Suitable for solid and stranded/flexible conductors
- Suitable for use in industrial applications
- Protection type: IP20

### Approvals (Norm references)



Part number	Article designation	PU
21700540	Field-Terminable Connector RJ45 CAT.5e FM45	1 piece

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

## Connector RJ45 CAT.6 Hirose TM21

### Product features

- Channel Class E up to 250 MHz (CAT.6)
- Fully shielded
- Conductor: Ø 0.5 mm solid wire, AWG 24 & 26 strands cable, guide plate accept 1.1 mm diameter wire, Seath outer diameter: 6.6 mm
- Easy to handle

- Including bend protection and guide plate
- Bend protection: beige
- Suitable for solid and stranded/flexible conductors

### Approvals (Norm references)



Part number	Article designation	PU
CE6324	Connector RJ45 CAT.6 Hirose TM21	50 pieces

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Also further different-coloured versions available.

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

## HITRONIC® POF SIMPLEX PE

## ■ Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

## ■ Application range

- Plastic optical fibres for industrial use in the optical signal transmission
- Especially for fixed installation in control cabinets, cable ducts or pipes with simple mechanical stress
- Direct connector assembly

## ■ Product features

- PE buffer tube is halogen-free
- In Simplex version

## ■ Approvals (Norm references)



## ■ Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- Without outer sheath
- Standard designation: J-V2Y 1P980/1000



## Info

- Transmission lengths up to 70 m

## ■ Technical data



## Dimensions

POF 980/1000/2200 µm

## Fibre type

Step index fibre

Core material:

Polymethylmethacrylate (PMMA)

Cladding material:

Fluoropolymers

## Optical values

Attenuation at 650 nm wavelength:

160 dB/km

Bandwidth-length product:

10 MHz x 100 m

Numerical aperture: 0.5±0.05



## Range of temperature

-40 °C to +70 °C



## Permissible bending radius

Fixed installation: 25 mm



## Permissible tensile force

Temporarily: max. 15 N

Fixed installation: max. 5 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
2185001	HITRONIC® POF SIMPLEX PE	POF	1	2.2	4.2

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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

## HITRONIC® POF SIMPLEX 105°C XPE

## ■ Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

## ■ Application range

- These plastic fibre-optic cables for industrial application are used especially for optical signal transmission at elevated temperatures up to 105°C.
- These conditions frequently occur in industrial environments, e.g. in cleaning and drying plants.
- For data transmission in steam or gas turbines for power generation or in brick works
- Direct connector assembly
- Transmission lengths up to 70 m

## ■ Product features

- XPE buffer tube is halogen-free
- In Simplex version

## ■ Approvals (Norm references)



## ■ Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- Without outer sheath
- Standard designation: J-V2X1P 980/1000 200A 10



## Info

- Polymer optical fibre (POF) for use up to 105°C

## ■ Technical data



## Dimensions

POF 980/1000/2200 µm

## Fibre type

Step index fibre

Core material:

Polymethylmethacrylate (PMMA)

Cladding material:

Fluoropolymers

## Optical values

Attenuation at 650 nm wavelength:

200 dB/km

Numerical aperture: 0.58



## Range of temperature

-55 °C to +105 °C



## Permissible bending radius

25 mm



## Permissible tensile force

Temporarily: max. 15 N

Fixed installation: max. 5 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
2185202	HITRONIC® POF SIMPLEX 105 °C XPE	POF	1	2.2	4.2

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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## ■ Accessories for HITRONIC® POF SIMPLEX PE and HITRONIC® POF SIMPLEX 105°C XPE

- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

# HITRONIC® POF SIMPLEX PVC



## Info

- Polymer optical fibre (POF) with UL approval
- Transmission lengths up to 70 m

## Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

## Application range

- Plastic optical fibres for industrial use in the optical signal transmission
- Especially for fixed installation in control cabinets, cable ducts or pipes with simple mechanical stress
- Due to the UL approval, the fibre is suitable for applications in the USA and other countries where the approval is required.

- Transmission lengths up to 70 m
- Direct connector assembly

## Approvals (Norm references)



## Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover directly over the step index fibre is grey PVC
- Colour: pebble grey (RAL 7032)
- Standard designation: J-VY 1P980/1000

## Technical data



### Dimensions

POF 980/1000/2200 µm



### Approvals

In accordance with UL 1581 - Style 5237

### Fibre type

Step index fibre

Core material:

Polymethylmethacrylate (PMMA)

Cladding material:

Fluoropolymers



### Minimum bending radius

25 mm

### Optical values

Attenuation at 650 nm wavelength:

160 dB/km

Bandwidth-length product:

10 MHz x 100 m

Numerical aperture: 0.5±0.05



### Range of temperature

-20°C up to +80°C



### Permissible tensile force

SIMPLEX PVC

Temporary: max. 15 N

Fixed installation: max. 5 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
2185201	HITRONIC® POF SIMPLEX PVC	POF	1	2.2	4.2

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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## Accessories

- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

## HITRONIC® POF SIMPLEX PE-PUR



## ■ Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

## ■ Application range

- Plastic optical fibres for industrial use in the optical signal transmission at higher mechanical stress

## ■ Product features

- Transmission lengths up to 70 m
- Outer sheath consists of a flame retardant polyurethane mixture and is resistance against oil, abrasion and microbes

- The polyurethane outer sheath is also halogen free, adhesion free and resistant against hydrolysis.

## ■ Approvals (Norm references)



## ■ Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- This type of fibre also has a strain relief made of aramide fibres and an outer sheath of PUR (orange)
- Standard designation: J-V2Y(ZN)11Y 1P980/1000

## ■ Technical data



## Dimensions

POF 980/1000/5500 µm

## Fibre type

Step index fibre

Core material:

Polymethylmethacrylate (PMMA)

Cladding material:

Fluoropolymers

## Optical values

Attenuation at 650 nm wavelength:

160 dB/km

Bandwidth-length product:

10 MHz x 100 m

Numerical aperture: 0.5±0.05



## Range of temperature

-40 °C to +70 °C



## Permissible bending radius

Temporary: 30 mm

Fixed installation: 50 mm



## Permissible tensile force

SIMPLEX PE-PUR

Temporary: max. 350 N

Fixed installation: max. 100 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
2185030	HITRONIC® POF SIMPLEX PE-PUR	POF	1	5.5	25.0

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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## ■ Accessories

- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

# HITRONIC® POF SIMPLEX S PE-PUR / S PA-PUR



## Info

- SERCOS - Serial Realtime Communication System

## Benefits

- Compatible with the international standardised SERCOS interface

## Application range

- Plastic optical fibres for industrial use in the optical signal transmission at higher mechanical stress
- Compatible with the international standardised SERCOS interface IEC 61491 for communication between control and drives in digitally controlled machines
- Transmission lengths up to 70 m

## Product features

- Polymer optical fibre (POF) in SIMPLEX version with outer sheath
- Outer sheath consists of a flame retardant polyurethane mixture and is resistance against oil, abrasion and microbes

- The polyurethane outer sheath is also halogen free, adhesion free and resistant against hydrolysis.

## Approvals (Norm references)



## Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- A type with **PE** protective cover and **PUR** sheath (red), strain relief: longitudinal Aramide fibres, outer diameter: 3.6 mm
- Standard designation (PE-PUR): J-V2Y(ZN) 11Y 1P980/1000
- A type with polyamide (**PA**) protective cover and polyurethane (**PUR**) sheath (red), strain relief: longitudinal Aramide fibres, outer diameter: 6 mm
- Standard designation (PA-PUR): J-V4Y(ZN) 11Y 1P980/1000

## Technical data



### Dimensions

POF 980/1000/... µm

### Fibre type

Step index fibre

Core material:

Polymethylmethacrylate (PMMA)

Cladding material:

Fluoropolymers

### Optical values

Attenuation at 650 nm wavelength:

160 dB/km

Bandwidth-length product:

10 MHz x 100 m

Numerical aperture: 0.5±0.05



### Range of temperature

SIMPLEX S PE-PUR

-40°C to +70°C

SIMPLEX S PA-PUR

-40°C to +80°C



### Permissible bending radius

SIMPLEX S PE-PUR

Temporary: 30 mm

Fixed installation: 50 mm

SIMPLEX S PA-PUR

Temporary: 30 mm

Fixed installation: 50 mm



### Permissible tensile force

SIMPLEX S PE-PUR

Temporary: max. 250 N

Fixed installation: max. 100 N

SIMPLEX S PA-PUR

Temporary: max. 400 N

Fixed installation: max. 100 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
2185205	HITRONIC® POF SIMPLEX S PE-PUR	POF	1	3.6	11.2
2185204	HITRONIC® POF SIMPLEX S PA-PUR	POF	1	6.0	33.2

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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## Accessories

- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

## HITRONIC® POF FD PE-PUR



## Info

- For highly flexible industrial applications

## Application range

- These plastic optical fibres for industrial application are used for optical signal transmission when the required space is limited or where high flexibility is required.
- This highly flexible cable can also be used in the local network (LAN), computer periphery, as well as in the audio field.
- Transmission lengths up to 70 m

## Product features

- Outer sheath consists of a flame retardant polyurethane mixture and is resistance against oil, abrasion and microbes
- The polyurethane outer sheath is also halogen free, adhesion free and resistant against hydrolysis.

## Approvals (Norm references)



## Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- This fibre consists of 217 individual cores and is known as a Multicore-Stepindex-POF. This version offers high flexibility and very low bending attenuation.
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- This type of fibre also has a strain relief made of aramide fibres and an outer sheath of PUR (orange)
- Standard designation:  
J-V2Y(ZN)11Y 1P 980/1000 400A 10 (Simplex)

## Technical data



## Dimensions

POF 980/1000/... µm

## Fibre type

Step index fibre made of polymethylmethacrylate (PMMA)



## Minimum bending radius

SIMPLEX

Temporary: 15 mm

Fixed installation: 15 mm

DUPLEX

Temporary: 50 mm

Fixed installation: 75 mm

## Optical values

Bandwidth-length product:

10 MHz x 100 m

Numerical aperture:

SIMPLEX 0.47

DUPLEX 0.45



## Range of temperature

-20 °C up to +70 °C



## Permissible tensile force

Temporarily: max. 400 N

Fixed installation: max. 100 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
2185207	HITRONIC® POF SIMPLEX FD PE-PUR	POF	1	6.0	33.2
2185213	HITRONIC® POF DUPLEX FD PE-PUR	POF	2	7.4	60.0

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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

## Accessories

- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

# HITRONIC® POF DUPLEX PE



## Info

- Polymer optical fibre (POF) in DUPLEX version without outer sheath
- Transmission lengths up to 70 m

## Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

## Application range

- Plastic optical fibres for industrial use in the optical signal transmission
- Especially for fixed installation in control cabinets, cable ducts or pipes with simple mechanical stress
- Direct connector assembly

## Product features

- In Duplex version

- PE buffer tube is halogen-free

## Approvals (Norm references)



## Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- The two fibres of the DUPLEX cable are connected with a strap
- Without outer sheath
- Standard designation: J-V2Y 2x1P980/1000

## Technical data



### Dimensions

POF 980/1000/... µm

### Fibre type

Step index fibre

Core material:

Polymethylmethacrylate (PMMA)

Cladding material:

Fluoropolymers



### Minimum bending radius

DUPLEX PE

Briefly: min. 25 mm

Fixed installation: min. 25 mm

### Optical values

Attenuation at 650 nm wavelength:

160 dB/km

Bandwidth-length product:

10 MHz x 100 m

Numerical aperture: 0.5±0.05



### Range of temperature

DUPLEX PE

-40 °C up to +70 °C



### Permissible tensile force

DUPLEX PE

Temporarily: max. 30 N

Fixed installation: max. 10 N

Part number	Article designation	Fibre type	Number of fibres	Weight kg/km
2185010	HITRONIC® POF DUPLEX PE	POF	2	7,6

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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## Accessories

- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

## HITRONIC® POF DUPLEX



## Info

- PE - 2Y
- PVC - Y
- PUR - 11Y

## ■ Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

## ■ Application range

- Plastic optical fibres for industrial use in the optical signal transmission at higher mechanical stress
- Transmission lengths up to 70 m

## ■ Product features

- In Duplex version
- Versions PE-PVC, PVC-PVC, PE-PUR, HEAVY PE-PUR
- Outer sheath is resistant against acid, lye and water

## ■ Approvals (Norm references)



## ■ Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover directly over the step index fibre is black PVC or PE. The two fibres of the DUPLEX cable are connected with a strap. This type also has a strain relief made of aramide fibres and outer sheath of PVC or PUR.
- Standard designation (PE-PVC): J-V2Y(ZN)Y 2P980/1000
- Standard designation (PVC-PVC): J-VY(ZN)Y 2P980/1000
- Standard designation (PE-PUR): J-V2Y(ZN)11Y 2P980/1000

## ■ Technical data



## Dimensions

POF 980/1000 µm

## Fibre type

Every model:  
Step index fibre  
Core material:  
Polymethylmethacrylate (PMMA)  
Cladding material:  
Fluoropolymers

## Optical values

Attenuation at 650 nm wavelength:  
160 dB/km  
Bandwidth-length product:  
10 MHz x 100 m  
Numerical aperture: 0.5±0.005



## Range of temperature

PE-PVC, PVC-PVC:  
-30 °C to +70 °C  
PE-PUR:  
-40 °C to +70 °C  
HEAVY PE-PUR:  
-20 °C to +85 °C



## Permissible bending radius

PE-PVC, PVC-PVC, PE-PUR: 50 mm  
HEAVY PE-PUR: 80 mm



## Permissible tensile force

PE-PVC, PVC-PVC, PE-PUR:  
Temporarily: max. 400 N  
Fixed installation: max. 100 N  
HEAVY PE-PUR:  
Temporarily: max. 400 N  
Fixed installation: max. 130 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
2185209	HITRONIC® POF DUPLEX PE-PVC	POF	2	6.0	37.4
2185210	HITRONIC® POF DUPLEX PVC-PVC	POF	2	6.1	38.4
2185040	HITRONIC® POF DUPLEX PE-PUR	POF	2	5.5	28.0
2185211	HITRONIC® POF DUPLEX HEAVY PE-PUR	POF	2	8.0	28.0

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

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## ■ Accessories

- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

## HITRONIC® POF MULTI FIBRE PE-PVC



### Info

- POF Multi fibre cable
- With 6 coloured coded fibers

### Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

### Application range

- Plastic optical fibres for industrial use in the optical signal transmission
- For fixed installation in control cabinets, cable ducts or pipes with simple mechanical stress
- The cable is only for static laying, not free hanging (approx. 10 m connecting between electric control box)

### Approvals (Norm references)



### Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover directly over the step index fibre is made of coloured polyethylene (PE)
- With 6 coloured coded fibers and tear strip
- Colour code fibres: black, white, red, green, grey and orange
- The type of fibres are stranded and with an outer sheath of PVC (black)

### Technical data



#### Dimensions

POF 6 x 980/1000/2200 µm

#### Fibre type

Step index fibre

Core material:

Polymethylmethacrylate (PMMA)

Cladding material:

Fluoropolymers

#### Optical values

Attenuation at 650 nm wavelength:

160 dB/km

Bandwidth-length product:

120 MHz x 20 m at 650 nm

Numerical aperture: 0.5±0.05



#### Range of temperature

For installation: -5°C up to +50°C

After installation: -30°C up to +70°C



#### Permissible bending radius

Fixed installation: 7.5 x cable diameter



#### Permissible tensile force

#### MULTI FIBRE

400 N

#### SIMPLEX FIBRE

Temporary: max. 15 N

Fixed installation: max. 5 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
<b>MULTI FIBRE</b>					
3036010	HITRONIC® POF MULTI FIBRE 6 PE-PVC	POF	6	8.8	63.0
<b>SIMPLEX FIBRE</b>					
3035565	HITRONIC® POF SIMPLEX PE black	POF	1	2.2	4.2
3035566	HITRONIC® POF SIMPLEX PE white	POF	1	2.2	4.2
3035567	HITRONIC® POF SIMPLEX PE red	POF	1	2.2	4.2
3035568	HITRONIC® POF SIMPLEX PE green	POF	1	2.2	4.2
3035569	HITRONIC® POF SIMPLEX PE grey	POF	1	2.2	4.2
3035570	HITRONIC® POF SIMPLEX PE orange	POF	1	2.2	4.2

Also versions with more fibres available.

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

### Accessories

- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

## HITRONIC® HYBRID FD P DESINA®



## Info

- DESINA® compliant highly-flexible hybrid cable

## Benefits

- Standardisation bodies (DESINA®, PNO=Profibus User Organisation) have defined a standard hybrid cable with copper conductors and POF for equipment and assemblies in distributed machine and system applications that guarantees the data transmission via a fibre-optic cable and the supply of power from a remote source via copper conductors.
- Combines the advantages of FD technology and optical fibre engineering

## Product features

- For the application described, Lapp Kabel offers the HITRONIC® HYBRID FD P DESINA®, which maintains the cable specification.
- An increased resistance against oil, wear and tear and microbes is achieved by the polyurethane outer sheath
- The polyurethane outer sheath is also halogen free, adhesion free and resistant against hydrolysis.

- Flame retardant according to IEC 60332-1-2

## Approvals (Norm references)



## Design

- Superfine strands of plain copper wires; PVC core insulation black with white printed numbers 1 - 4
- Twisted together with 2 polymer optical fibres 980/1000
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- PUR outer sheath, colour: violet according to RAL 4001
- Standard designation: J-2Y11Y2P 980/1000 220A 10 FFLiY 4x1,5 300/500V

## Technical data



## Core identification code

Black with printed white numbers



## Conductor stranding

Extra fine wire



## Minimum bending radius

7,5 x outer diameter



## Rated voltage

U<sub>0</sub>/U:

300/500 V

## Optical values

Attenuation at 650 nm wavelength:

160 dB/km

Bandwidth-length product:

10 MHz x 100 m

Numerical aperture: 0.5±0.05



## Optical fibre type

Step index fibre made of

polymethylmethacrylate (PMMA)

Dimension: POF 980/1000 µm



## Range of temperature

Flexible use: -5°C up to +70°C

Fixed installation: -40°C up to +80°C

## Tension load

max. 100 N

Part number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter mm	Copper index kg/km	Weight kg/km
2186001	HITRONIC® HYBRID FD P DESINA®	4 x 1,5 + 2 x POF 980 / 1000	10.0 ± 0,4 mm	57.6	135.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see main catalogue 2010/11 Appendix T17

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## Accessories

- Connectors, tools and further accessories on request

## HITRONIC® BUS PCF DUPLEX indoor + outdoor



### Info

- Polymer cladded fibre (PCF)
- Data transmission up to approx. 500 m



### Benefits

- To be used for direct connector assembly
- Easy to assemble
- PCF fibre » very robust
- EMC security
- High mechanical resistance

### Application range

- Application in industrial environments, in particular for data transmission in field bus systems, such as PROFIBUS, INTERBUS etc.

### Product features

- Data transmission up to approx. 500 m
- Useable wavelengths: 650 nm and 850 nm
- In Duplex version

- Good resistance against oil, petrol and acids
- PE-/PUR- outer sheath is halogen-free

### Approvals (Norm references)



### Design

- DUPLEX cable with fibre core of quartz glass and a fluorinated polymer (plastic, ETFE) sheath
- 2 step index fibres PCF 200/230 (Plastic Cladded Fibre)
- Outer sheath of PUR (indoor) or PE (outdoor)
- Standard designation (indoor): J-V(ZN)H11Y 2K200/230
- Standard designation (outdoor): AT-VQ(ZN)HB2Y 2K200/230

### Technical data

- Dimensions**  
PCF 200/230 µm
- Fibre type**  
Step index fibre
- Minimum bending radius**  
(indoor) 120 mm  
(outdoor) 200 mm
- Optical values**  
Attenuation at 850 nm wavelength: 8 dB/km  
Bandwidth-length product: 20 MHz x km (850 nm)  
Numerical aperture: 0.37
- Range of temperature**  
For installation: -5 °C up to +50 °C  
Operation: -20 °C up to +70 °C
- Permissible tensile force**  
Fixed installation (indoor): 400 N  
Fixed installation (outdoor): 500 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km
2185311	HITRONIC® BUS PCF PUR DUPLEX indoor	PCF	2	8.0	55.0
2185302	HITRONIC® BUS PCF PE DUPLEX outdoor	PCF	2	10.5	90.0

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### Accessories

- Damage free cable bundles through: Mille-Tie™

## HITRONIC® HQN Outdoor Cable



## Info

- Outdoor cable with central buffer tube
- UV light resistant
- halogen-free

## Benefits

- F.O. Glass Fibre Optical cable for outdoor with nonmetallic Glass yarn strength members
- Easy to install due to compact structure, high flexibility, robust sheath and small bending radius
- Methods of Deployment: empty plastic pipes, ducts and trays
- Suitable for direct burial

## Application range

- For outdoor use
- Campus backbone
- Direct burial
- WAN applications
- Industrial environment

## Product features

- Central loose tube with up to 24 fibres
- Robust and halogen-free PE outer sheath
- Longitudinal watertight
- Protection against rodent
- High permissible tensile force

## Approvals (Norm references)



## Design

- Fibres with primary coating
- Gel-filled loose tube
- Glass yarns with water-blocking tape
- PE outer sheath
- Colour: black (similar to RAL 9005)

## Technical data

**Standard designation**  
A-DQ(ZN)B2Y

**Range of temperature**

Operation: -20°C up to +60°C  
Installation: 0°C up to +50°C  
Storage: -25°C up to +70°C  
(HQN 1000)  
-40°C up to +70°C  
(HQN 1500, HQN 2500)

**Permissible bending radius**

With tensile:  
20 x cable diameter

Without tensile:  
15 x cable diameter



**Permissible tensile force**  
1.000 N to 2.500 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
<b>HITRONIC® HQN 1000 Multimode G 50</b>					
2760041	HITRONIC® HQN 1000 4G 50/125	50/125	4	1,000	6.5
2760081	HITRONIC® HQN 1000 8G 50/125	50/125	8	1,000	6.5
2760121	HITRONIC® HQN 1000 12G 50/125	50/125	12	1,000	6.5
2760241	HITRONIC® HQN 1000 24G 50/125	50/125	24	1,000	6.8
<b>HITRONIC® HQN 1000 Multimode G 62.5</b>					
2761041	HITRONIC® HQN 1000 4G 62.5/125	62.5/125	4	1,000	6.5
2761081	HITRONIC® HQN 1000 8G 62.5/125	62.5/125	8	1,000	6.5
2761121	HITRONIC® HQN 1000 12G 62.5/125	62.5/125	12	1,000	6.5
2761241	HITRONIC® HQN 1000 24G 62.5/125	62.5/125	24	1,000	6.8
<b>HITRONIC® HQN 1000 Singlemode E 9</b>					
2762041	HITRONIC® HQN 1000 4E 9/125	9/125	4	1,000	6.5
2762081	HITRONIC® HQN 1000 8E 9/125	9/125	8	1,000	6.5
2762121	HITRONIC® HQN 1000 12E 9/125	9/125	12	1,000	6.5
2762241	HITRONIC® HQN 1000 24E 9/125	9/125	24	1,000	6.8
<b>HITRONIC® HQN 1500 Multimode G 50</b>					
2760004	HITRONIC® HQN 1500 4G 50/125	50/125	4	1,500	7.5
2760008	HITRONIC® HQN 1500 8G 50/125	50/125	8	1,500	7.5
2760012	HITRONIC® HQN 1500 12G 50/125	50/125	12	1,500	7.5
<b>HITRONIC® HQN 1500 Multimode G 62.5</b>					
2761004	HITRONIC® HQN 1500 4G 62.5/125	62.5/125	4	1,500	7.5
2761008	HITRONIC® HQN 1500 8G 62.5/125	62.5/125	8	1,500	7.5
2761012	HITRONIC® HQN 1500 12G 62.5/125	62.5/125	12	1,500	7.5
2761024	HITRONIC® HQN 1500 24G 62.5/125	62.5/125	24	1,500	7.8
<b>HITRONIC® HQN 1500 Singlemode E 9</b>					
2762008	HITRONIC® HQN 1500 8E 9/125	9/125	8	1,500	7.5
2762012	HITRONIC® HQN 1500 12E 9/125	9/125	12	1,500	7.5
2762024	HITRONIC® HQN 1500 24E 9/125	9/125	24	1,500	7.8
<b>HITRONIC® HQN 2500 Multimode G 50</b>					
2763004	HITRONIC® HQN 2500 4G 50/125	50/125	4	2,500	9.6
2763008	HITRONIC® HQN 2500 8G 50/125	50/125	8	2,500	9.6
2763012	HITRONIC® HQN 2500 12G 50/125	50/125	12	2,500	9.6
2763024	HITRONIC® HQN 2500 24G 50/125	50/125	24	2,500	9.8
<b>HITRONIC® HQN 2500 Multimode G 62.5</b>					
2764004	HITRONIC® HQN 2500 4G 62.5/125	62.5/125	4	2,500	9.6
2764008	HITRONIC® HQN 2500 8G 62.5/125	62.5/125	8	2,500	9.6
2764012	HITRONIC® HQN 2500 12G 62.5/125	62.5/125	12	2,500	9.6
<b>HITRONIC® HQN 2500 Singlemode E 9</b>					
2765008	HITRONIC® HQN 2500 8E 9/125	9/125	8	2,500	9.6
2765012	HITRONIC® HQN 2500 12E 9/125	9/125	12	2,500	9.6

The cables can also be supplied as cut-to-measure LWL trunks. Special multimode fibres (50/125 OM3) for 10 Gigabit Ethernet operation on request. Photographs are not to scale and do not represent detailed images of the respective products.

## HITRONIC® HIH Indoor Cable



### Info

- With central buffer tube and rodent protection
- Fire Security Cable with a flame-retardant, non-corrosive (halogen-free) sheath (FRNC)



### Benefits

- F.O. Glass Fibre Optical cable for indoor with nonmetallic Glass yarn strength members
- Easy to install due to compact structure, high flexibility, robust sheath and small bending radius
- Methods of Deployment: laying in trunking, ducts and trays, building riser, empty plastic pipes, raised floors and plenums

### Application range

- For indoor use
- Secondary and tertiary areas
- Premise cabling – backbone

### Product features

- Central loose tube with up to 24 fibres

- Halogen-free and flame retardant FRNC outer sheath
- Longitudinal watertight
- Low protection against rodent
- High permissible tensile force

### Approvals (Norm references)



### Design

- Fibres with primary coating
- Gel-filled loose tube
- FRNC outer sheath
- Colour: orange

### Technical data

#### Standard designation

I-D(ZN)H



#### Range of temperature

Operation: -20°C up to +60°C

Installation: 0°C up to +50°C

Storage: -25°C up to +70°C



#### Permissible bending radius

With tensile:

140 mm

Without tensile:

100 mm



#### Permissible tensile force

1.000 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
<b>HITRONIC® HIH 1000 Multimode G 50</b>					
270004	HITRONIC® HIH 1000 4G 50/125	50/125	4	1,000	5.9
270008	HITRONIC® HIH 1000 8G 50/125	50/125	8	1,000	5.9
270012	HITRONIC® HIH 1000 12G 50/125	50/125	12	1,000	5.9
270024	HITRONIC® HIH 1000 24G 50/125	50/125	24	1,000	6.3
<b>HITRONIC® HIH 1000 Multimode G 62.5</b>					
270104	HITRONIC® HIH 1000 4G 62.5/125	62.5/125	4	1,000	5.9
270108	HITRONIC® HIH 1000 8G 62.5/125	62.5/125	8	1,000	5.9
270112	HITRONIC® HIH 1000 12G 62.5/125	62.5/125	12	1,000	5.9
270124	HITRONIC® HIH 1000 24G 62.5/125	62.5/125	24	1,000	6.3
<b>HITRONIC® HIH 1000 Singlemode E 9</b>					
270204	HITRONIC® HIH 1000 4E 9/125	9/125	4	1,000	5.9
270208	HITRONIC® HIH 1000 8E 9/125	9/125	8	1,000	5.9
270212	HITRONIC® HIH 1000 12E 9/125	9/125	12	1,000	5.9
270224	HITRONIC® HIH 1000 24E 9/125	9/125	24	1,000	6.3

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

## HITRONIC® HUN Universal Cable



## Info

- F.O. Universal cable
- Fire Security Cable with a flame-retardant, non-corrosive (halogen-free) sheath (FRNC)

## ■ Benefits

- F.O. Glass Fibre Optical cable for outdoor and indoor with nonmetallic Glass yarn strength members
- Easy to install due to compact structure, high flexibility, robust sheath and small bending radius
- Methods of Deployment: laying in trunking, ducts and trays, building riser, plastic pipes, raised floors and plenums

## ■ Application range

- For indoor and outdoor use
- Secondary and tertiary areas
- Premise cabling – backbone
- Industrial environment

## ■ Product features

- Central loose tube with up to 24 fibres
- Halogen-free and flame retardant FRNC outer sheath
- Longitudinal watertight
- Protection against rodent
- High permissible tensile force

## ■ Approvals (Norm references)



## ■ Design

- Fibres with primary coating
- Gel-filled loose tube
- Glass yarns with water-blocking tape
- FRNC outer sheath
- Colour: green (similar to RAL 6018)

## ■ Technical data

## Standard designation

A/I-DQ(ZN)BH



## Range of temperature

Operation: -20°C up to +60°C

Installation: 0°C up to +50°C

Storage: -20°C up to +70°C



## Permissible bending radius

With tensile:

20 x cable diameter

Without tensile:

15 x cable diameter



## Permissible tensile force

1,000 N to 1,500 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
<b>HITRONIC® HUN 1000 Multimode G 50</b>					
2740041	HITRONIC® HUN 1000 4G 50/125	50/125	4	1,000	6.5
2740081	HITRONIC® HUN 1000 8G 50/125	50/125	8	1,000	6.5
2740121	HITRONIC® HUN 1000 12G 50/125	50/125	12	1,000	6.5
2740241	HITRONIC® HUN 1000 24G 50/125	50/125	24	1,000	6.8
<b>HITRONIC® HUN 1000 Multimode G 62.5</b>					
2741041	HITRONIC® HUN 1000 4G 62.5/125	62.5/125	4	1,000	6.5
2741081	HITRONIC® HUN 1000 8G 62.5/125	62.5/125	8	1,000	6.5
2741121	HITRONIC® HUN 1000 12G 62.5/125	62.5/125	12	1,000	6.5
<b>HITRONIC® HUN 1000 Singlemode E 9</b>					
2742041	HITRONIC® HUN 1000 4E 9/125	9/125	4	1,000	6.5
2742081	HITRONIC® HUN 1000 8E 9/125	9/125	8	1,000	6.5
2742121	HITRONIC® HUN 1000 12E 9/125	9/125	12	1,000	6.5
2742241	HITRONIC® HUN 1000 24E 9/125	9/125	24	1,000	6.8
<b>HITRONIC® HUN 1500 Multimode G 50</b>					
274004	HITRONIC® HUN 1500 4G 50/125	50/125	4	1,500	8.5
274008	HITRONIC® HUN 1500 8G 50/125	50/125	8	1,500	8.5
274012	HITRONIC® HUN 1500 12G 50/125	50/125	12	1,500	8.5
<b>HITRONIC® HUN 1500 Multimode G 62.5</b>					
274104	HITRONIC® HUN 1500 4G 62.5/125	62.5/125	4	1,500	8.5
274112	HITRONIC® HUN 1500 12G 62.5/125	62.5/125	12	1,500	8.5
274124	HITRONIC® HUN 1500 24G 62.5/125	62.5/125	24	1,500	8.8
<b>HITRONIC® HUN 1500 Singlemode E 9</b>					
274204	HITRONIC® HUN 1500 4E 9/125	9/125	4	1,500	8.5
274208	HITRONIC® HUN 1500 8E 9/125	9/125	8	1,500	8.5
274212	HITRONIC® HUN 1500 12E 9/125	9/125	12	1,500	8.5
274224	HITRONIC® HUN 1500 24E 9/125	9/125	24	1,500	8.8

The cables can also be supplied as cut-to-measure LWL trunks. Special multimode fibres (50/125 OM3) for 10 Gigabit Ethernet operation on request. Photographs are not to scale and do not represent detailed images of the respective products.

## HITRONIC® FD Mobile Cable



### ■ Benefits

- F.O. Glass Fibre Optical cable for mobile applications outdoor and indoor with nonmetallic Glass yarn strength members
- Very easy to install due to small dimensions, very high flexibility, very small bending radius and suitable for field assembly
- Suitable for field assembly
- Designed for despooling and respooling repeatedly

### ■ Application range

- Connection cable
- Mini-Breakout cable
- Industrial environment
- High flexibility environment (power chain)
- Premise cabling – backbone

### ■ Product features

- Robust and flame retardant PUR outer sheath
- Longitudinal watertight
- Suitable for field assembly
- Very high flexibility




### ■ Approvals (Norm references)



### ■ Design

- Tight buffered fibres
- Mobile installation cable with up to 8 tight buffered fibres
- Glass yarns with water-blocking tape
- PUR outer sheath

### ■ Technical data

	<b>Standard designation</b> AT-VQ(ZN) 11Y
	<b>Range of temperature</b> Operation: -30 °C up to +70 °C Laying: -5 °C up to +50 °C
	<b>Permissible bending radius</b> 15 x cable diameter
	<b>Permissible tensile force</b> 800 N, 950 N, 1100 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
<b>HITRONIC® FD Multimode G 50</b>					
21807048	HITRONIC® FD800 4G 50/125	50/125	4	800	5.8
21807047	HITRONIC® FD950 6G 50/125	50/125	6	950	6.3
<b>HITRONIC® FD Multimode G 62.5</b>					
21807045	HITRONIC® FD800 4G 62.5/125	62.5/125	4	800	5.8
21807050	HITRONIC® FD950 6G 62.5/125	62.5/125	6	950	6.3

The cables can also be supplied as cut-to-measure LWL trunks. Also with 8 fibers available.  
Photographs are not to scale and do not represent detailed images of the respective products.



HYBRID cable



Corrugated steel tape cables



Aerial cable

## HITRONIC® HQH

### HYBRID cable

A-DQS(ZN)B2Y

This cable can accommodate up to 264 glass fibres. The co-stranded copper quads (maximum of 6) can be used for signal transmission or for locating the cable. Longitudinal water tightness and the abrasion-resistant PE outer sheath make this cable highly suitable for drawing into empty pipes and cable ducts. The glass fibre yarns are introduced through the cable core assembly, guaranteeing strain relief and protection against rodent attack.

#### Applications

- Feeding into occupied cable conduits
- Blowing into suitable pipe installations
- Laying in cable ducts and on cable racks at risk of rodent attack
- Laying in industrial environments

#### Technical data

Max. number of fibres  
264 + 6 copper quads  
Max. number of bundle cores  
11



Operating temperature  
-40 °C to +70 °C



Max. tensile force

9000 N

Max. transverse pressure  
300 N/cm

## HITRONIC® HQW HITRONIC® HQWplus

### Corrugated steel tape cables

A-DQ(ZN)BW2Y/  
A-DQ(ZN)B2YW2Y

This cable can accommodate up to 144 glass fibres. Thanks to its tensile strength, longitudinal water tightness (with swell strips), cor-rugated steel tape and abrasion-resistant PE outer sheath, this cable is highly suitable for drawing into empty plastic pipes, laying in cable ducts and laying directly in the earth. It is especially suitable for use in mechanically and chemically challenging environments. The corrugated steel tape guarantees not only high tensile strength but also protection against rodent attack.

#### Applications

- Feeding into cable conduits
- Laying directly in the earth
- Laying in cable ducts and on cable racks at risk of rodent attack
- Laying in industrial environments
- Chemical industry applications

#### Technical data

Max. number of fibres  
144  
Max. number of bundle cores  
12



Operating temperature  
-40 °C to +70 °C



Max. tensile force

5700 N

Max. transverse pressure  
450 N/cm

## HITRONIC® HQA

### Aerial cable

A-DQ(ZN)B2Y (ADSS)

This cable has been specially developed as a dielectric aerial cable. The longitudinally watertight design with gel-filled bundle cores and swell strips protects the fibres against penetrating water and moisture. The special glass-fibre yarn strain relief withstands the heaviest vibration and oscillation. The UV-resistant sheath in high density polyethylene protects the cable against extreme environmental influences. The cable can be fixed using conventional tension rods and armour rods.

#### Applications

- Dielectric self-supporting aerial cable ADSS for free-hanging applications
- Resistant to environmental influences such as wind, rain, snow, ice and sunlight
- In electrical fields with field strengths < 12 kV/m

#### Technical data

Max. number of fibres  
144  
Max. number of bundle cores  
12



Operating temperature  
-40 °C to +75 °C






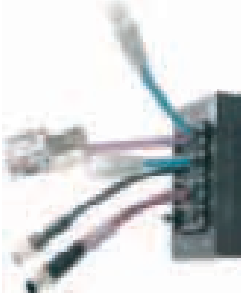
Max. tensile force



13.800-25.000 N depending  
on number of fibres



Max. transverse pressure  
400 N/cm


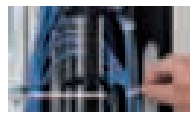
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The conformity of our products with the relevant European directives and compliance with the provisions contained therein shall be indicated by the CE marking.

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 authorized 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 laid down 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 001 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 our main catalogue 2010/11. 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 specialized personnel and for the purpose for

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