



Cable excellence engineered through quality

PROFIBUS

Cables for Industrial Automation





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Descriptions are correct at time of publication, however these may be reviewed at any time and are subject to change without notice. E&OE (Errors and Omissions Excepted) which means that whilst every effort has been made to ensure that the information contained within this publication is accurate, specifications may vary or be subject to change at Belcom's discretion. As such, this publication should be used as a guide only. Exact details can be confirmed at point of enquiry. All cable renders are indicative of the product specified.

PROFIBUS is the world's leading fieldbus system with over 40 million devices installed. Belcom Cables are proud to be members of PROFIBUS international (PI) , who offer worldwide support and run the extensive website www.profibus.com .PROFIBUS is a completely open fieldbus standard and is especially developed for high speed digital communication between digital field devices at the sensor, actuator level to higher level automation control systems .

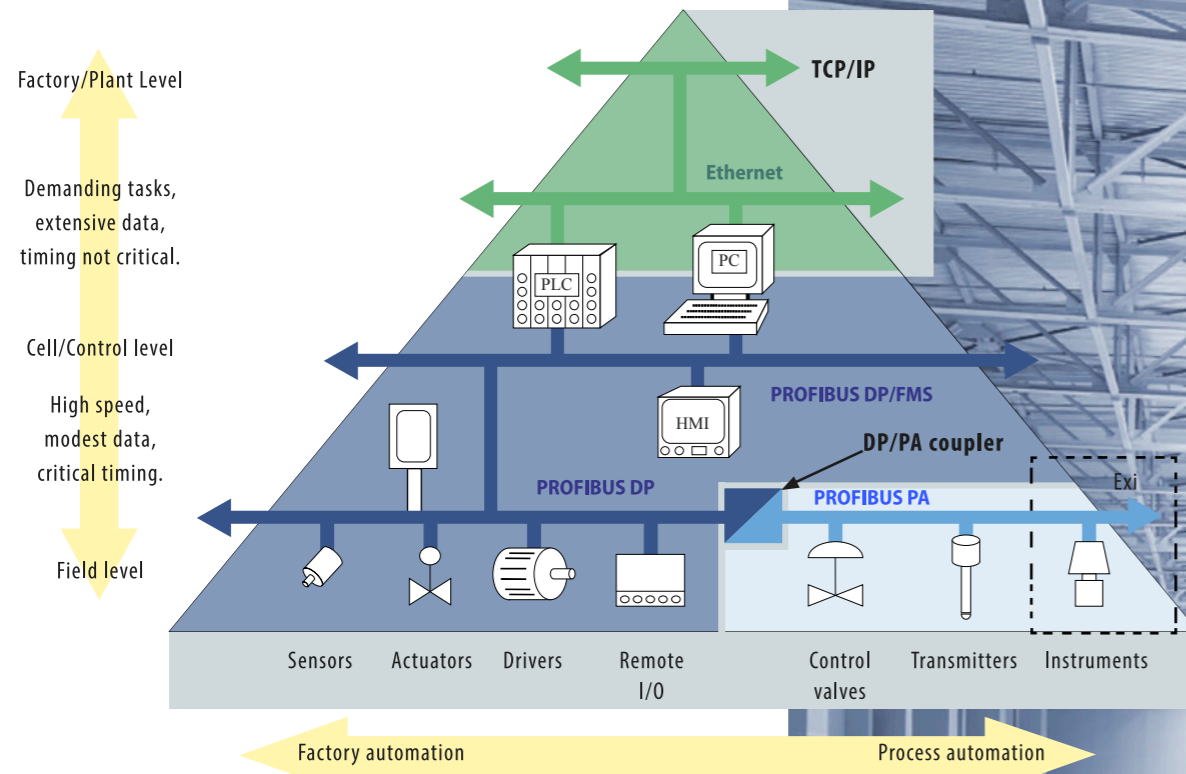
PROFIBUS (PROcess Field BUS) was developed with funding from the German Government and the support of 12 companies and 5 research institutes originally standardised in Germany in 1989 as DIN 19245 . In 1993 the standard was adopted as European Standard EN 50170 and in 2000 it was incorporated into IEC 61158, the international fieldbus standard.

PROFIBUS FMS (Fieldbus Message Specification)
This was the original form of PROFIBUS developed by the German working group. FMS provided sophisticated multi-function communications which was aimed at cell or controller level. FMS provides very sophisticated, flexible transmission of structured data. Unfortunately, FMS was quite complex and expensive to implement. Thus after a few years of experience a new simplified but improved specification was developed (PROFIBUS DP). FMS is no longer supported by PI. However, some manufacturers (e.g. Siemens) continue to provide FMS capability. This is not a problem since FMS is totally compatible with the other versions of PROFIBUS.

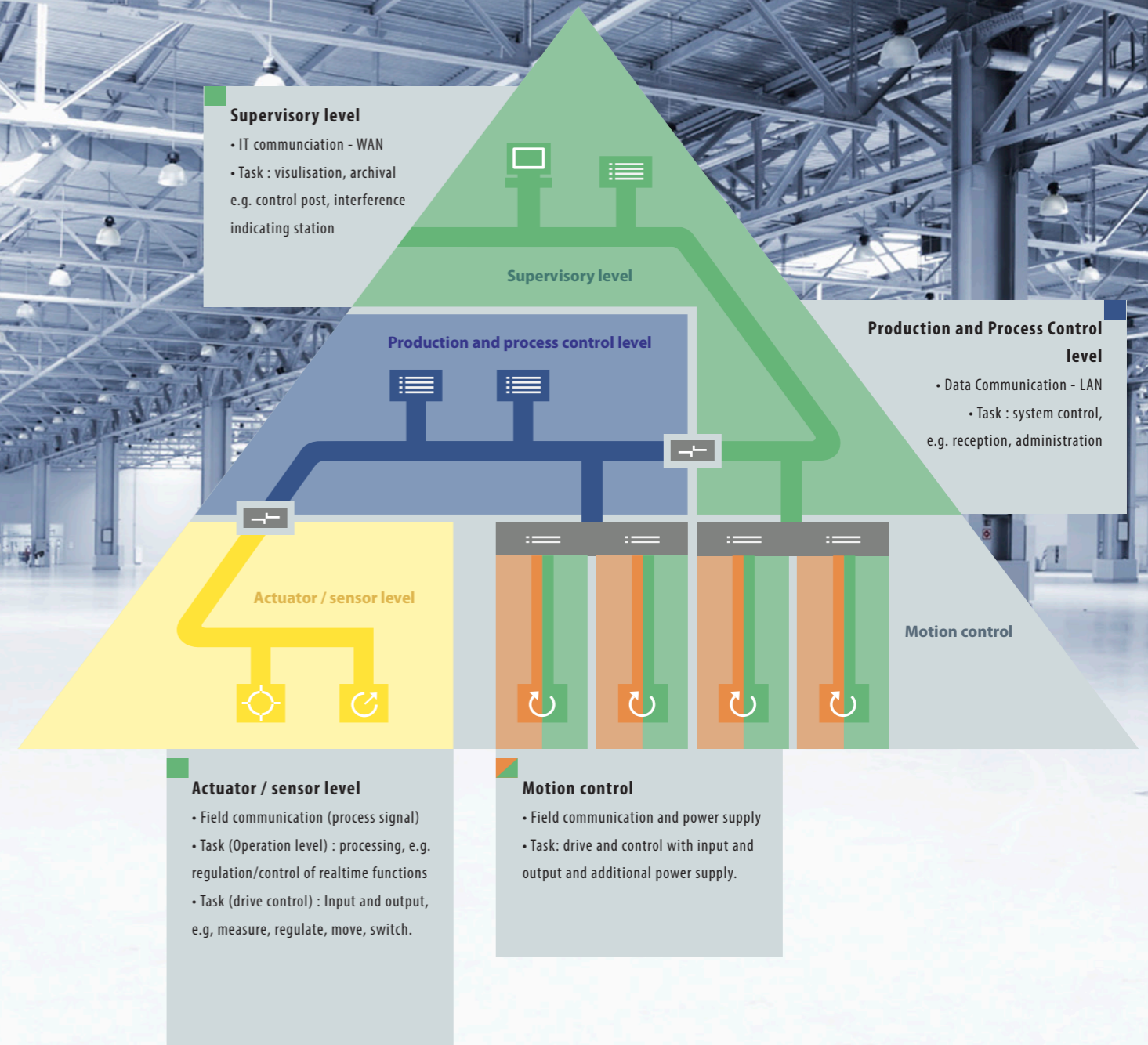
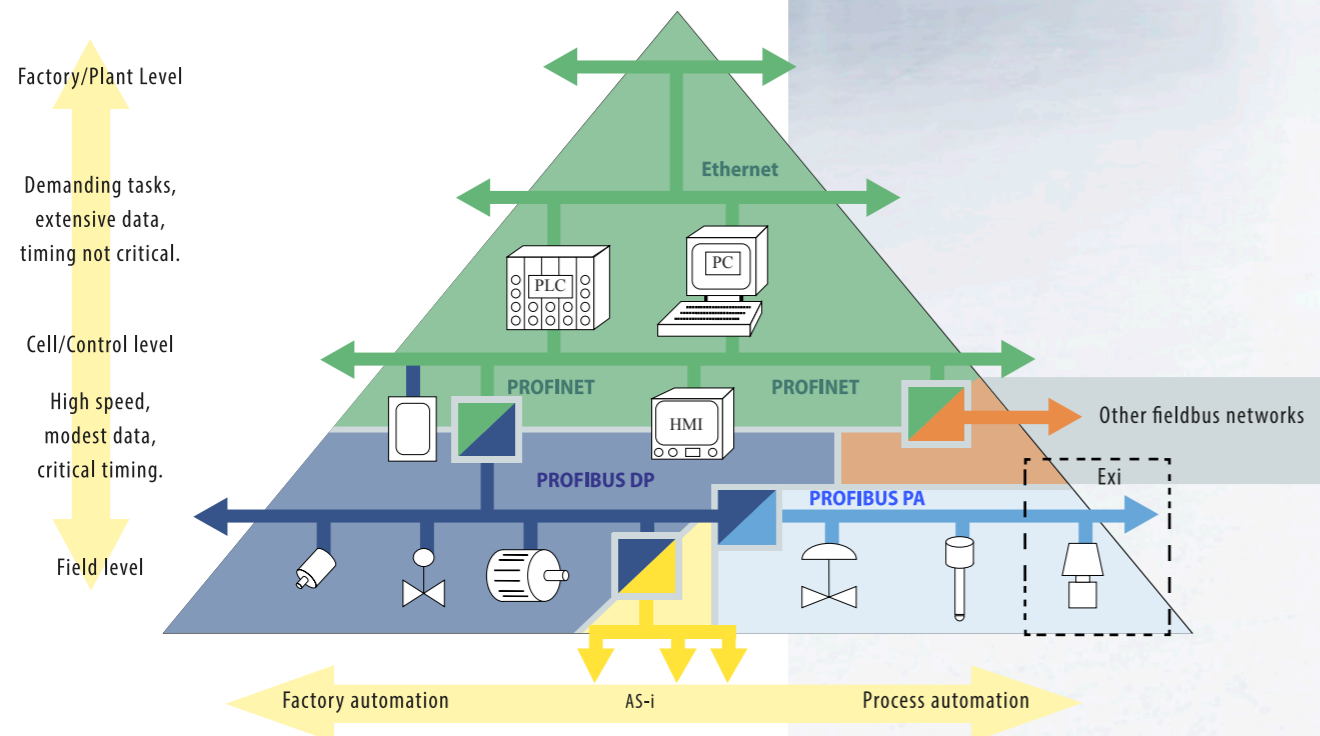
PROFIBUS DP - (Decentralised Periphery)
PROFIBUS DP was developed from the basic FMS technology as a low cost, simple, high speed field-level communication. The DP specification was very well thought out to meet the requirements of the automation and control industries. PROFIBUS DP has now become the dominant technology used in factory automation and general control and monitoring systems. PROFIBUS DP is used in all modern PROFIBUS application.

PROFIBUS PA - (Process Automation)
PROFIBUS PA was developed in the mid 1990's specifically for the process industry to replace 4-20mA transmission. 4-20mA transmission provides device power and data over a single cable (two cores). PA similarly provides device power and data over a single cable. However, we must remember that PROFIBUS is a network, so PA provides power and data communications for many devices in one two-core cable. PA uses different transmission and wiring from DP, but the messages are identical. Therefore PA can be used in conjunction with DP (and FMS is desired). Thus all three members of the PROFIBUS family can operate together on the same network. DP and FMS share the same electrical transmission system, based on RS485, an international standard used by many different fieldbusses and other communication applications. PA uses a different electrical transmission system called "Manchester Bus Powered" (MBP).

Fields of Application



The Control system hierarchy and use of PROFIBUS and Ethernet technology



PROFIBUS

Cable Finder

Click on the cable cross section to view the product specification

Profibus international formulates the technical and functional features of a serial fieldbus system that can network field automation devices from the lower (sensor/ actuator level) up to the middle level (field level). Profibus differentiates master and slave devices. The users requirements for an open communication systems are not fixed on one producer and lead to the specification and standardisation of the Profibus protocol.

Profibus DP is especially conceived to a fast, cyclic data interchange with field devices. This system (protocols) distinguishes through very short response time and high interference immunity and replaces the cost -intensive parallel signalling. Profibus PA is the version for the use in the process automation (Specification IEC 61158-2), e.g. large chemical plants and oil + petrochem installations.

Several different types of Profibus are available from stock at Belcom .

- Standard Solid Conductors.
- Stranded Conductor for extra flexibility and resistance to vibration.
- PVC or LSZH FireFighter® Sheath as well as other special sheaths for food and chemical industries.
- DataGuard® Steel Wire Armoured for mechanical protection.
- Festoon or Trailing cable up to 5 Million Bending Cycles.
- Marine approved.
- High temperature.
- Fire Performance Circuit Integrity for critical system protection against fire



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www.profinet.com



PROFIBUS DP

- | | | | | | |
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PROFIBUS PA

- | | | | | | |
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PROFIBUS DP

FieldLink®

ES Cable for Permanent Installation (PVC)

Cable Design

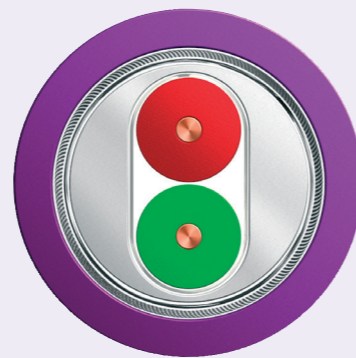
Wire

Conductor	Solid bare copper wire (22awg)	Ø 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	Ø 6,20 mm

Outer Jacket	Polyvinylchloride (PVC), Violet	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-24 and UL 1685 (CSA FT 4),
- Cold bending resistant acc. to IEC 60811-1-4,
- Sunlight resistant acc. to UL 2556 Sec. 4.2.8.5,
- UL-Style 21694 (600 V)

Specification

Part Number	Type
L45467-G16-C185	PROFIBUS DP ES cable for permanent installation (easy to strip), 2x22AWG1, UL listed: CMG and CL3

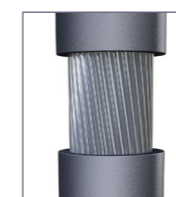
Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance	3-20 MHz	150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz	185±18,5	Ohm
Characteristic Impedance	9,6 kHz	270±27	Ohm
Attenuation	16 MHz	≤ 42	dB/100m
Attenuation	4 MHz	≤ 22	dB/100m
Attenuation	38,4 kHz	≤ 4	dB/100m
Attenuation	9,6 kHz	≤ 2,5	dB/100m
Inductance (31,25 kHz)	≈	1000	µH/km
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
UL-Rating		600	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range	-40 ~ +80	°C
Bending diameter	≥ 150	mm
Pulling force with	≤ 100	N
Weight (approx.)	80	kg/km

Also available with DataGuard® armoured protection :



DataGuard® SWA
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PROFIBUS DP

FieldLink®

ES Cable for Vibration Resistant Installation (PVC)

Cable Design

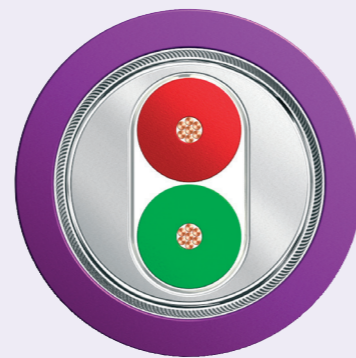
Wire

Conductor	Stranded bare copper wire 7/0,25mm (22awg)	Ø 0,76 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 6,20 mm

Outer Jacket	Polyvinylchloride (PVC), Violet	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1

Specification

Part Number	Type
231P22111	PROFIBUS DP ES cable for Vibration Resistant installation (easy to strip), 2x22AWG7

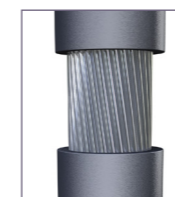
Electrical Data @ 20°C

Loop resistance		≤	110	Ohm/km
Insulation resistance		≥	16	GOhm*km
Characteristic Impedance	3-20 MHz		150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz		185±18,5	Ohm
Characteristic Impedance	9,6 kHz		270±27	Ohm
Attenuation	16 MHz	≤	42	dB/100m
Attenuation	4 MHz	≤	22	dB/100m
Attenuation	38,4 kHz	≤	4	dB/100m
Attenuation	9,6 kHz	≤	2,5	dB/100m
Capacitance (1 kHz)		≈	28,5	nF/km
Capacitance Unbalance to ground		≤	1500	pF/km
Operating voltage		≤	60	V
Test Voltage (wire/wire/screen rms 50Hz 1min)			1000	V

Mechanical & Thermal Characteristics

Permissible temperature range			-25 ~ +80	°C
Min. Bending radius allowed	repeated		10	x Ø
Min. Bending radius allowed	single		5	x Ø
Weight (approx.)			89	kg/km

Also available with DataGuard® armoured protection :



DataGuard® SWA
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PROFIBUS DP

FieldLink®

ES Cable for Permanent Installation (LSZH FireFighter®)

Cable Design

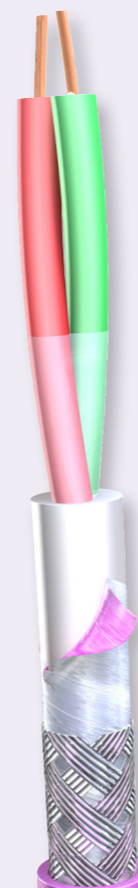
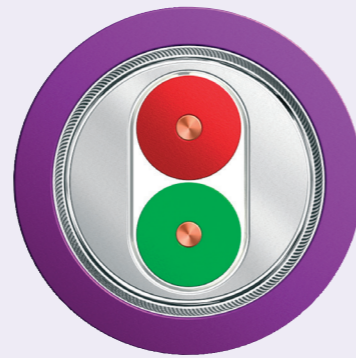
Wire

Conductor	Solid bare copper wire (22awg)	∅ 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	∅ 6,20 mm

Outer Jacket	LSZH FireFighter®, Violet	∅ 8,0 ± 0,40 mm
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PROFIBUS DP L45467-G16-C286

Characteristics

- Flame retardant acc. to IEC 60332-3-24 and UL 1685 Sec. 1160 (Vertical Tray),
- Halogen free acc. to IEC 60754,
- Sunlight resistant acc. to UL 2556 Sec. 4.2.8.5,
- Limited oil resistant,

Specification

Part Number	Type
L45467-G16-C286	PROFIBUS DP ES, cable for permanent installation (easy to strip, LSZH), 2x22AWG1, UL listed: CM

Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
UL-Rating		600	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-25 ~ +80	°C
Min. Bending diameter allowed	repeated	20	x ∅
Min. Bending diameter allowed	single	15	x ∅
Pulling force with	≤	100	N
Weight (approx.)		72	kg/km

Also available with DataGuard® armoured protection :



DataGuard® SWA
Page 58-59



DataGuard® GSWB
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PROFIBUS DP

FieldLink®

ES Cable for Intrinsically Safe applications (LSZH FireFighter®)

Cable Design

Wire

Conductor	Solid bare copper wire (22awg)	∅ 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	∅ 6,20 mm

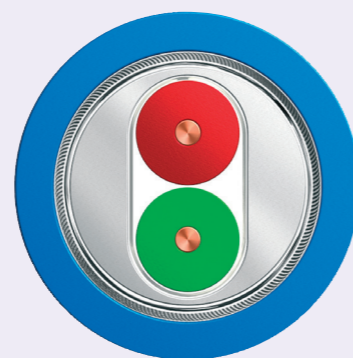
Outer Jacket	LSZH FireFighter®, Blue	∅ 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-1
- Halogen free acc. to IEC 60754,
- Sunlight resistant acc. to UL 1581 Sec. 1200
- Limited oil resistant (4 Std. 60°C)

Specification

Part Number	Type
L45467-G16-C516	PROFIBUS DP ES, cable for Intrinsically Safe applications (easy to strip, LSZH), 2x22AWG1



Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Operating voltage (effective value)	≤	100	V
UL-Rating		300	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-25 ~ +80	°C
Min. Bending diameter allowed	repeated	10	x ∅
Min. Bending diameter allowed	single	7,5	x ∅
Pulling force with		≤ 100	N
Weight (approx.)		72	kg/km



PROFIBUS DP

FieldLink®

ES Cable for Vibration Resistant Installation (LSZH FireFighter®)

Cable Design

Wire

Conductor	Stranded bare copper wire 7/0,25mm (22awg)	Ø 0,76 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	Ø 5,50 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 6,20 mm

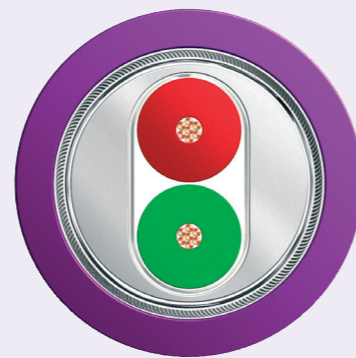
Outer Jacket	LSZH FireFighter®, Violet	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1
- Halogen free acc. to IEC 60754,-1
- Smoke density acc. to IEC 61034

Specification

Part Number	Type
231P2244	PROFIBUS DP ES cable for Vibration Resistant installation (easy to strip), 2x22AWG7



Electrical Data @ 20°C

Loop resistance		≤	110	Ohm/km
Insulation resistance		≥	16	GOhm*km
Characteristic Impedance	3-20 MHz		150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz		185±18,5	Ohm
Characteristic Impedance	9,6 kHz		270±27	Ohm
Attenuation	16 MHz	≤	42	dB/100m
Attenuation	4 MHz	≤	22	dB/100m
Attenuation	38,4 kHz	≤	4	dB/100m
Attenuation	9,6 kHz	≤	2,5	dB/100m
Capacitance (1 kHz)		≈	28,5	nF/km
Capacitance Unbalance to ground		≤	1500	pF/km
Operating voltage		≤	60	V
Test Voltage (wire/wire/screen rms 50Hz 1min)		=	1000	V

Mechanical & Thermal Characteristics

Permissible temperature range			-25 ~ +80	°C
Min. Bending radius allowed	repeated		10	x Ø
Min. Bending radius allowed	single		5	x Ø
Weight (approx.)			84	kg/km



PROFIBUS DP

FieldLink®

ES Cable for Flexible Installation LSZH FireFighter®

Cable Design

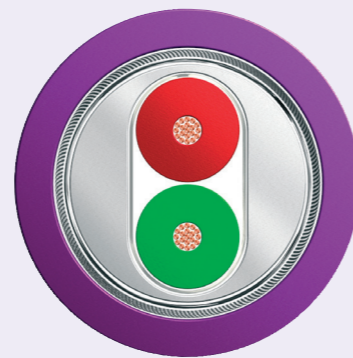
Wire

Conductor	Stranded bare copper wire 19/0,14mm	Ø 0,67 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,56 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	
Tape	Plastic tape overlapped	
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	Ø 6,20 mm

Outer Jacket	LSZH FireFighter®, Violet	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-24 and UL 1685 (CSA FT 4),
- Halogen free acc. to IEC 60754,-1
- Smoke density acc. to IEC 61034

Specification

Part Number	Type
231P24114	PROFIBUS DP ES, cable for flexible installation (easy to strip), similar to 2x23AWG19, UL listed: CMG and CL3

Electrical Data @ 20°C

Loop resistance	≤	133	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance	3-20 MHz	150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz	185±18,5	Ohm
Characteristic Impedance	9,6 kHz	270±27	Ohm
Attenuation	16 MHz	≤	49 dB/100m
Attenuation	4 MHz	≤	25 dB/100m
Attenuation	38,4 kHz	≤	4 dB/100m
Attenuation	9,6 kHz	≤	3 dB/100m
Inductance (31,25 kHz)	≈	1000	µH/km
Capacitance (1 kHz)	≈	28	nF/km
Capacitance Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-40 ~ +80	°C
Min. Bending radius allowed	single	5	x Ø
Min. Bending radius allowed	repeated	7	x Ø
Weight (approx.)		74	kg/km



PROFIBUS DP

FieldLink®

ES Cable for Permanent Installation in Harsh Environments

Cable Design

Wire

Conductor	Solid bare copper wire (22awg)	∅ 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	∅ 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 60% coverage	∅ 6,20 mm

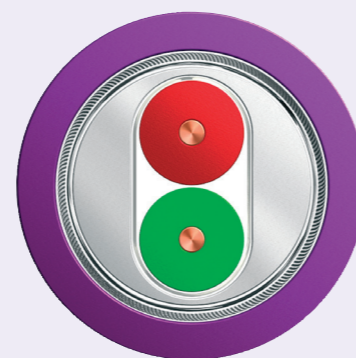
Outer Jacket	Thermoplastic Polyurethane (TPU), Violet	∅ 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Cold bending resistant acc. to IEC 60811-1-4,
- Sunlight resistant,
- Mineral oil and fat resistant,
- Oil resistant acc. to UL 2556 Sec. 4.2.8.3,

Specification

Part Number	Type
L45467-G16-C118	PROFIBUS DP ES, cable for permanent installation in harsh environments (easy to strip), 2x22AWG1, UL listed: CMX



Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Inductance (31,25 kHz)	≈	1000	μH/km
Capacitance (1 kHz)	≈	28,5	nF/km
Capacitance Unbalance to ground	≤	1500	pF/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Operating voltage (effective value)	≤	100	V
UL-Rating		300	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-40 ~ +60	°C
Bending diameter	≥	150	mm
Pulling force with	≤	100	N
Weight (approx.)		71	kg/km



PROFIBUS DP

FieldLink®

Trailing Cable

Cable Design

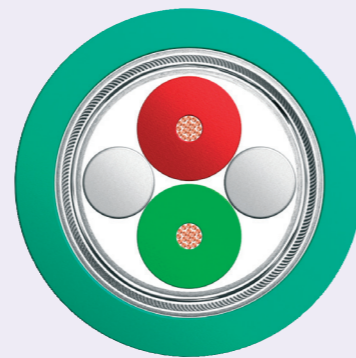
Wire

Conductor	Stranded bare copper wire 19/0,14mm	Ø 0,64 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,56 mm

Core

Pair	2 wires twisted to a pair (RD-GN) with fillers	
Tape	Plastic tape overlapped	
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 65% coverage	
Tape	Plastic tape overlapped	Ø 6,50 mm

Outer Jacket	Thermoplastic Polyurethane (TPU), Petrol green	Ø 8,50 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Halogen free acc. to IEC 60754,
- Smoke density acc. to IEC 61034,
- Oil resistant acc. to UL 13 Sec. 40 (60 °C),
- Sunlight resistant acc. to UL 2556 Sec. 4.2.8.5,

Specification

Part Number	Type
L45467-G16-C88	PROFIBUS DP, trailing cable (LSZH), Similar to 2x23AWG19, UL listed: CMX

Electrical Data @ 20°C

Loop resistance	≤	133	Ohm/km
Screen resistance	≤	15	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance	3-20 MHz	150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz	185±18,5	Ohm
Characteristic Impedance	9,6 kHz	270±27	Ohm
Attenuation	16 MHz	≤ 49	dB/100m
Attenuation	4 MHz	≤ 25	dB/100m
Attenuation	38,4 kHz	≤ 4	dB/100m
Attenuation	9,6 kHz	≤ 3	dB/100m
Capacitance (1 kHz)	≈	28	nF/km
Capacitance Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
UL Rating		300	V
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-40 ~ +80	°C
Min. Bending radius allowed	single	5	x Ø
Pulling force with		≤ 70	N
Weight (approx.)		62	kg/km
Trailing Cable for following requirements		5 million bending cycles	
		bending radius 7,5 x max. Ø	
		acceleration 4 m/s ²	
		not adapted for garland mounting	



PROFIBUS DP

FieldLink®

ES Trailing Cable

Cable Design

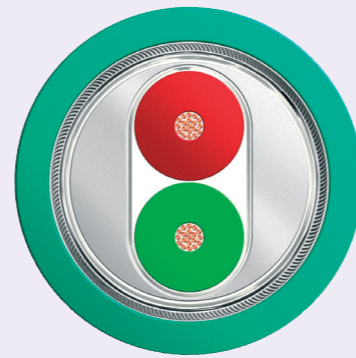
Wire

Conductor	Stranded bare copper wire 19/0,14mm	Ø 0,64 mm
Insulation	Foamed Polyethylene (PE)	Ø 2,56 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Tape	Plastic tape overlapped	
Screen	Alulamine foil overlapped	
Braid	Tinned copper wire braid, 70% coverage	Ø 6,30 mm

Outer Jacket	Thermoplastic Polyurethane (TPU), Petrol green	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Cold bending resistant acc. to IEC 60811-1-4,
- Mineral oil and fat resistant,
- Oil resistant acc. to UL 13 Sec. 40 (60 °C),
- Oil resistant acc. to UL 2556 Sec. 4.2.8.3,

Specification

Part Number	Type
L45467-G16-C98	PROFIBUS DP ES, trailing cable (easy to strip), Similar to 2x23AWG19, UL listed: CMX

Electrical Data @ 20 °C

Loop resistance	≤	133	Ohm/km
Screen resistance	≤	15	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance	3-20 MHz	150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz	185±18,5	Ohm
Characteristic Impedance	9,6 kHz	270±27	Ohm
Attenuation	16 MHz	≤ 49	dB/100m
Attenuation	4 MHz	≤ 25	dB/100m
Attenuation	38,4 kHz	≤ 4	dB/100m
Attenuation	9,6 kHz	≤ 3	dB/100m
Inductance (31,25 kHz)	≈	1000	µH/km
Capacitance (1 kHz)	≈	28	nF/km
Capacitance Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range	-40 ~ +80	°C
Min. Bending radius allowed	single	5 x Ø
Tensile strength	≤	100 N
Weight (approx.)		77 kg/km
Trailing Cable for following requirements		3 million bending cycles
		bending radius 15 x max. Ø
		acceleration 5 m/s ²
		not adapted for garland mounting



PROFIBUS DP

FieldLink®

Festoon Cable

Cable Design

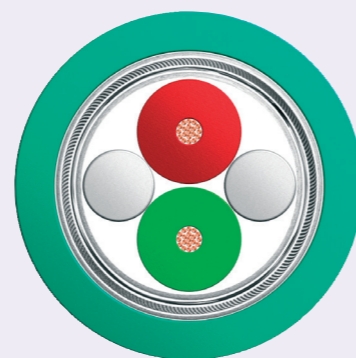
Wire

Conductor	Stranded bare copper wire 19/0,14mm	Ø 0,67 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,56 mm

Core

Pair	2 wires twisted to a pair (RD-GN) with fillers	
Tape	Plastic tape overlapped	
Screen	Alulamine foil overlapped	
Braid	Tinned copper wire braid, 70% coverage	
Tape	Plastic tape overlapped	Ø 5,80 mm

Outer Jacket	Polyvinylchloride (PVC), Petrol green	Ø 8,50 ± 0,40 mm
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Characteristics

- Flame retardant acc. to UL 1685 (Vertical tray),
- Oil resistant acc. to UL 758 Sec. 15 (60 °C),
- Sunlight resistant acc. to UL 1581 Sec. 1200,
- UL-Style 21694 (600 V)

Specification

Part Number	Type
L45467-G16-C255	PROFIBUS DP, Festoon cable, similar to 2x23AWG19, UL listed: CM and CL3

Electrical Data @ 20°C

Loop resistance	≤	133	Ohm/km
Screen resistance	≤	19	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance	3-20 MHz	150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz	185±18,5	Ohm
Characteristic Impedance	9,6 kHz	270±27	Ohm
Attenuation	16 MHz	≤ 49	dB/100m
Attenuation	4 MHz	≤ 25	dB/100m
Attenuation	38,4 kHz	≤ 4	dB/100m
Attenuation	9,6 kHz	≤ 3	dB/100m
Inductance (31,25 kHz)	≈	750	µH/km
Capacitance (1 kHz)	≈	28	nF/km
Surface transfer impedance	20 MHz	≤ 75	mOhm/m
Capacitance Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
Rel. Velocity of Propagation	≈	81	%
UL Rating		600	V
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-40 ~ +80	°C
Min. Bending radius allowed	single	≥ 30	mm
Tensile strength		≤ 80	N
Weight (approx.)		64	kg/km
Festoon Cable for following requirements		5 million bending cycles	
		bending radius ≥ 70 mm	
		acceleration 4 m/s ²	

Assembling Regulation

When Installed, the cable has to pay off from the drum in a tangential way and to install free of torsion into the cable roller assembly. The cable must mount tangential on a flat cable roller assembly with a round half shell (angle between line and half shell 90 degree), whereby the radius of the half shell has to be ≥ 70 mm). The strain reliefs of the cable roller assembly must be fitted out with rubber clutches in order to avoid too strong bruise of the conductor. Other cables, which are also in the festoon, must not curse underruns of the minimal bending radii of the assembling conductors.



PROFIBUS DP

FieldLink®

for Torsional Stress Applications

Cable Design

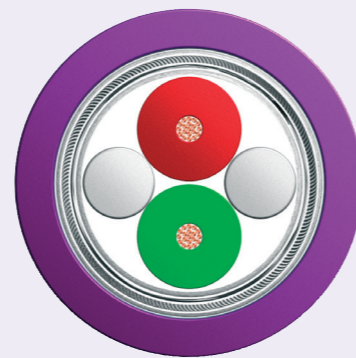
Wire

Conductor	Stranded bare copper wire 19/0,16mm	Ø 0,80 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,56 mm

Core

Pair	2 wires twisted to a pair (RD-GN) with fillers	
Tape	Plastic tape conductiv	
Screen	Alulaminat foil overlapped	
Braid	Tinned copper wire braid, 80% coverage	
Tape	Plastic tape overlapped	Ø 6,0 mm

Outer Jacket	Thermoplastic Polyuretahn (TPU) violet	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Halogen free acc. to IEC 60754,
- Sunlight resistant,
- Oil resistant acc. to UL 13 Sec. 40 (60 °C),

Specification

Part Number	Type
L45467-G18-C18	PROFIBUS DP, flexible cable for torsional stress applications (LSZH), 2x22AWG19, UL listed: CMX

Electrical Data @ 20°C

Loop resistance	≤	98	Ohm/km
Screen resistance	≤	14	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 49 dB/100m
Attenuation		4 MHz	≤ 25 dB/100m
Attenuation		38,4 kHz	≤ 3 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Capacitance (1 kHz)	≈	29	nF/km
Operating voltage (effective value)	≤	100	V
UL Rating		300	V
Rel. Velocity of Propagation	≈	85	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Temperature Range	Operating	-25 ~ +75	°C
Temperature Range	Transport and Storage	-40 ~ +80	°C
Temperature Range	Installation	-25 ~ +75	°C
Min. Bending radius allowed	single	4	x Ø
Min. Bending radius allowed	repeated	7,5	x Ø
Tensile strength		< 100	N
Weight (approx.)		66	kg/km
Torsional Strength		For 360° torsion	
		5 million cycles at ± 180° on 1 meter	
		not adapted for garland mounting	



PROFIBUS DP

FieldLink®

ES Cable for Food Industry Applications

Cable Design

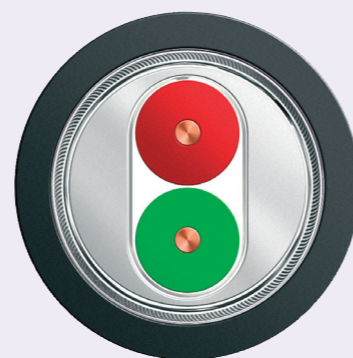
Wire

Conductor	Solid bare copper wire (22awg)	Ø 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulamine foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	Ø 6,20 mm

Outer Jacket	Polyethylene (PE), Black	Ø 8,0 ± 0,40 mm
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Characteristics

- Cold bending resistant acc. to IEC 60811-1-4,
- Sunlight resistant,
- Limited mineral oil and fat resistant

Specification

Part Number	Type
L45467-G16-C246	PROFIBUS DP ES, cable for food industry (easy to strip), 2x22AWG1

Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Inductance (31,25 kHz)	≈	1000	µH/km
Capacitance (1 kHz)	≈	28,5	nF/km
Capacitance Unbalance to ground	≤	1500	pF/km
Operating voltage (peak)	≤	100	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-40 ~ +60	°C
Bending diameter	≥	150	mm
Pulling force with	≤	100	N
Weight (approx.)		67	kg/km



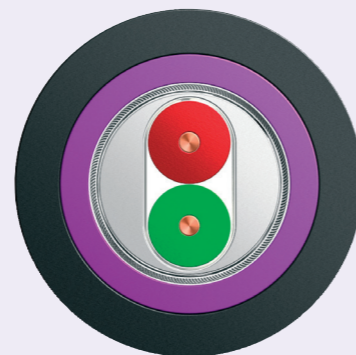
PROFIBUS DP

FieldLink®

ES Cable Duct Grade

Cable Design

Wire		
Conductor	Solid bare copper wire (22awg)	Ø 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm
Core		
Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 56% coverage	Ø 6,20 mm
Inner Jacket	Polyvinylchloride (PVC), Violet	Ø 8,0 ± 0,40 mm
Outer Jacket	Polyethylene (PE), Black	Ø 10,8 ± 0,50 mm



Characteristics

- Cold bending resistant acc. to IEC 60811-1-4,
- Sunlight resistant,
- Limited mineral oil and fat resistant

Specification

Part Number	Type
L45467-G16-C236	PROFIBUS DP ES, cable for direct burial (easy to strip), 2x22AWG1

Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Inductance (31,25 kHz)	≈	1000	µH/km
Capacitance (1 kHz)	≈	28,5	nF/km
Capacitance Unbalance to ground	≤	1500	pF/km
Operating voltage (peak)	≤	100	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-40 ~ +60	°C
Min. Bending radius allowed	repeated	15	x Ø
Min. Bending radius allowed	single	7,5	x Ø
Pulling force with	≤	100	N
Weight (approx.)		117	kg/km



PROFIBUS DP

FieldLink®

Armada® ES Cable for Flexible Installation in Marine Applications SHF-1

Cable Design

Wire

Conductor	Stranded bare copper wire 7/0,25mm (22awg)	Ø 0,76 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	Ø 5,50 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 6,20 mm

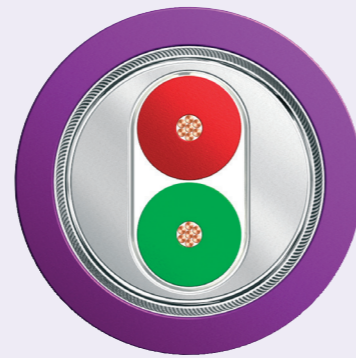
Outer Jacket	Low Smoke Zero Halogen FireFighter® SHF-1	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2 and 60332-3-22 (CAT. A/F),
- Halogen free acc. to IEC 60754,
- Smoke density acc. to IEC 61034,
- Oil resistant acc. to EN 60811-2-1 (4 hours/70 °C),
- Sunlight resistant,
- IEC 60092-359 / SHF-1
- **Maritime and offshore approvals: Germanischer Lloyd, Lloyds Register of Shipping, ABS Europe, Bureau Veritas, Det Norske Veritas**

Specification

Part Number	Type
L45467-G17-C46	PROFIBUS DP ES, cable for flexible installation in marine applications (easy to strip, LSZH SHF-1), 2x22AWG7



Electrical Data @ 20 °C

Loop resistance		≤	110	Ohm/km
Insulation resistance		≥	16	GOhm*km
Characteristic Impedance	3-20 MHz		150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz		185±18,5	Ohm
Characteristic Impedance	9,6 kHz		270±27	Ohm
Attenuation	16 MHz	≤	42	dB/100m
Attenuation	4 MHz	≤	22	dB/100m
Attenuation	38,4 kHz	≤	4	dB/100m
Attenuation	9,6 kHz	≤	2,5	dB/100m
Capacitance (1 kHz)		≈	28,5	nF/km
Capacitance Unbalance to ground		≤	1500	pF/km
Operating voltage		≤	60	V
Test Voltage (wire/wire/screen rms 50Hz 1min)			1000	V

Mechanical & Thermal Characteristics

Permissible temperature range			-25 ~ +80	°C
Min. Bending radius allowed	repeated		10	x Ø
Min. Bending radius allowed	single		5	x Ø
Weight (approx.)			84	kg/km



PROFIBUS DP

FieldLink®

Armada® ES Cable for Flexible Installation in Marine Applications SHF-2

Cable Design

Wire

Conductor	Stranded bare copper wire 7/0,25mm (22awg)	Ø 0,75 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	Ø 5,50 mm
Screen	Alulamine foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 6,20 mm

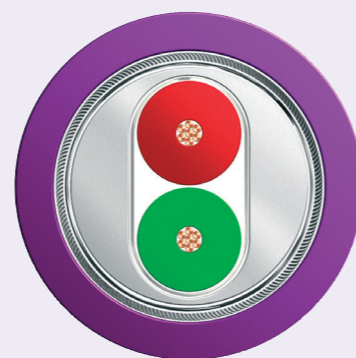
Outer Jacket	Low Smoke Zero Halogen FireFighter® SHF-2	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2 and 60332-3-22 (CAT. A/F),
- Halogen free acc. to IEC 60754,
- Smoke density acc. to IEC 61034,
- Oil resistant acc. to EN 60811-2-1 (24 hours/100 °C),
- Sunlight resistant,
- IEC 60092-359 / SHF-2
- **Maritime and offshore approvals: Germanischer Lloyd, Lloyds Register of Shipping, ABS Europe, Bureau Veritas, Det Norske Veritas**

Specification

Part Number	Type
L45467-G17-C56	PROFIBUS DP ES, cable for flexible installation in marine applications with higher oil res. (easy to strip, LSZH SHF-2), 2x22AWG7



Electrical Data @ 20°C

Loop resistance		≤	110	Ohm/km
Insulation resistance		≥	16	GOhm*km
Characteristic Impedance	3-20 MHz		150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz		185±18,5	Ohm
Characteristic Impedance	9,6 kHz		270±27	Ohm
Attenuation	16 MHz	≤	42	dB/100m
Attenuation	4 MHz	≤	22	dB/100m
Attenuation	38,4 kHz	≤	4	dB/100m
Attenuation	9,6 kHz	≤	2,5	dB/100m
Capacitance (1 kHz)		≈	28,5	nF/km
Capacitance Unbalance to ground		≤	1500	pF/km
Operating voltage		≤	60	V
Test Voltage (wire/wire/screen rms 50Hz 1min)			1000	V

Mechanical & Thermal Characteristics

Permissible temperature range			-25 ~ +80	°C
Min. Bending radius allowed	repeated		10	x Ø
Min. Bending radius allowed	single		5	x Ø
Weight (approx.)			84	kg/km



PROFIBUS DP

FieldLink®

Armada® ES Cable for Flexible Installation in Offshore Applications MUD-resistant

Cable Design

Wire

Conductor	Stranded bare copper wire 7/0,25mm (22awg)	∅ 0,76 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,50 mm
Screen	Alulamine foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	∅ 6,30 mm

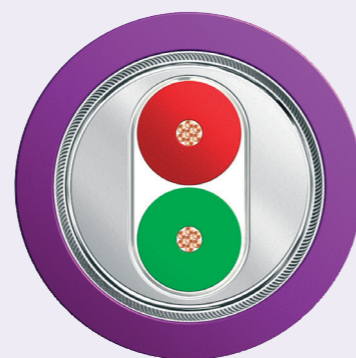
Outer Jacket	Low Smoke Zero Halogen FireFighter® SHF-2	∅ 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-22 (CAT. A),
- Halogen free acc. to IEC 60754,
- Mud resistant acc. to NEK606,
- Sunlight resistant
- IEC 60092-359 / SHF-2

Specification

Part Number	Type
L45467-G17-C106	PROFIBUS DP ES, cable for flexible installation in offshore applications with higher oil res. acc. to NEK606 (LSZH SHF-2), 2x22AWG7



Electrical Data @ 20°C

Loop resistance		≤	110	Ohm/km
Insulation resistance		≥	16	GOhm*km
Characteristic Impedance	3-20 MHz		150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz		185±18,5	Ohm
Characteristic Impedance	9,6 kHz		270±27	Ohm
Attenuation	16 MHz	≤	42	dB/100m
Attenuation	4 MHz	≤	22	dB/100m
Attenuation	38,4 kHz	≤	4	dB/100m
Attenuation	9,6 kHz	≤	2,5	dB/100m
Capacitance (1 kHz)		≈	28,5	nF/km
Capacitance Unbalance to ground		≤	1500	pF/km
Operating voltage		≤	60	V
Test Voltage (wire/wire/screen rms 50Hz 1min)			1000	V

Mechanical & Thermal Characteristics

Permissible temperature range			-40 ~ +80	°C
Min. Bending radius allowed	repeated		10	x ∅
Min. Bending radius allowed	single		5	x ∅
Weight (approx.)			82	kg/km



PROFIBUS DP

FieldLink®

Armada® SIENOPYR M-02Y(ST)CHX for Fixed Installation in Offshore Applications

Cable Design

Wire

Conductor 7 bare copper wires, E-Cu58 F21 to DIN 40500 part 4 0.35 mm²
Insulation Polyethylene foam (cellular HDPE)

Core

Pair 2 cores twisted to a pair, Red and Green + Fillers
Tape Nonwoven plastic textile band
Screen Laminated aluminium foil
Shield Tinned copper wire braid
Inner Jacket Halogen-free polymer (HM4) , acc. DIN VDE 0207 part 24
Diameter Ø 8,0 mm

Outer Jacket

Halogen-free, cross-linked polymer, acc. IEC 60092-359

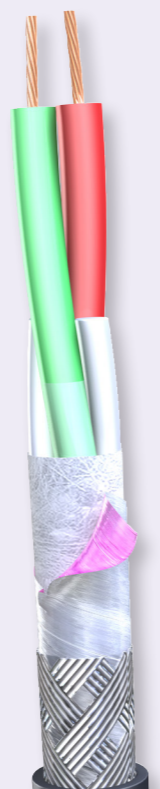
Diameter Ø 9,80 mm (min.) - 10,8 mm (max.)

Characteristics

- Flame retardant acc. to IEC 60332-3
- Halogen free acc. to IEC 60754-2,
- Smoke density acc. to IEC 61034,
- Ozone resistant acc. to DIN VDE 0472 part 805 test B
- IEC 60092-359, DIN 19245-3; EN 50170-Vol.2
- Maritime and offshore approvals: Det Norske Veritas (DNV)**

Specification

Part Number	Type
L45551-P21-B6	SIENOPYR-FR-PROFIBUS M-02Y(ST)CHX for fixed installation in offshore applications



Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Insulation resistance	≥	16000	MOhm*km
Surface resistance of the outer sheath	≥	10 ⁹	Ohm
Characteristic Impedance		3- 20 MHz	(150±15) Ohm
Characteristic Impedance		38.4 kHz	(185 ± 18.5) Ohm
Characteristic Impedance		9.6 kHz	(250±25) Ohm
Wave Attenuation		16 MHz	≤ 45 dB/km
Wave Attenuation		4 MHz	≤ 22 dB/km
Wave Attenuation		38.4 kHz	≤ 5 dB/km
Wave Attenuation		9,6 kHz	≤ 3 dB/km
Mutual Capacitance	≤	30	nF/km
Nominal Voltage	≤	100	V

Resistance to chemicals (tests to VG 95218 part 2)

Diesel fuel	to DIN VDE 51601
ASTM oil No. 2	to DIN 53521
Oils, NATO code 0-178, BW-TL 9150-0031/2	to VG 95214 part 4
Hydraulic fluids, NATO code H-515, BW-TL 9150-0020	to VG 95214 part 4
Solvent cleansing agents, BW-TL 6850-0017	to VG 95214 part 4
De-ionized water	to VG 95214 part 4
De-ionized water with 3.5% NaCl	

Mechanical & Thermal Characteristics

Permissible ambient temperatures during ¹⁾	laying	min.	-40	°C
Permissible ambient temperatures during ¹⁾	operation	min.	-10	°C
Permissible Temp. at the conductor under permanent load		max.	80	°C
Minimum bending radius	single		10	x Ø
Minimum bending radius	repeated		20	x Ø
Tensile stress ²⁾		max.	100	N
Weight approx.			109	kg/km

¹⁾ At ambient temperatures below -10 °C the cables should be subjected to no further mechanical movement than normal ship's vibrations.

²⁾ For the value of the tensile stress, the sum off cross-section of all conductors have to be taken into account.



PROFIBUS DP

FieldLink®

High Temperature Cable for Permanent Installation

Cable Design

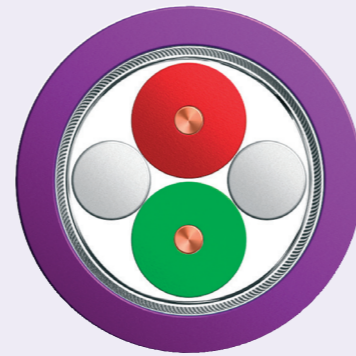
Wire

Conductor	Solid bare copper wire (22awg)	∅ 0,64 mm
Insulation	Foamed Fluorethylen	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN) with fillers	
Screen	Alulamine foil overlapped	
Braid	Tinned copper wire braid, 60% coverage	∅ 5,90 mm

Outer Jacket	Perfluorethylenpropylen (FEP), Violet	∅ 7,20 ± 0,25 mm
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Characteristics

- High temperature range (up to 180 °C),
- Oil resistant,
- Sunlight resistant,

Specification

Part Number	Type
L45467-G16-N17	PROFIBUS DP, high temperature cable for permanent installation, (up to 180°C) 2x22AWG1

Electrical Data @ 20°C

Loop resistance		≤	110	Ohm/km
Insulation resistance		≥	16	GOhm*km
Characteristic Impedance	3-20 MHz		150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz		185±18,5	Ohm
Characteristic Impedance	9,6 kHz		270±27	Ohm
Attenuation	16 MHz	≤	42	dB/100m
Attenuation	4 MHz	≤	22	dB/100m
Attenuation	38,4 kHz	≤	4	dB/100m
Attenuation	9,6 kHz	≤	2,5	dB/100m
Capacitance (1 kHz)		≈	28	nF/km
Operating voltage (effective value)		≤	250	V
Test Voltage (DC 3 sec)		=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range			-50 ~ +180	°C
Min. Bending diameter allowed	repeated		7	x ∅
Min. Bending diameter allowed	single		5	x ∅
Weight (approx.)			64	kg/km



PROFIBUS DP

FieldLink®

Insulation Integrity under fire conditions FE90

Cable Design

Wire

Conductor	Solid bare copper wire (22awg)	∅ 0,64 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm
Fire Barrier	Flame resistant foil overlapped	∅ 2,75 mm

Core

Pair	2 wires twisted to a pair (RD-GN) with fillers	
Fire Barrier	Flame resistant foil overlapped	
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 65% coverage	
Fire Barrier	Flame resistant foil overlapped	∅ 6,80 mm

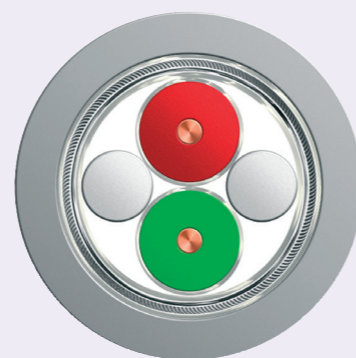
Outer Jacket	LSZH FireFighter®, Grey	∅ 8,80 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-22 (Cat.A)
- Halogen free acc. to IEC 60754,
- Smoke density acc. to IEC 61034,
- Insulation effect under fire conditions acc. to IEC 60331-21,
- Halogen free

Specification

Part Number	Type
L45467-G16-C266	PROFIBUS DP, cable for permanent installation with 90 minutes insulation integrity under fire conditions (FE90, LSZH), 2x22AWG1



Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Inductance (31,25 kHz)	≈	750	μH/km
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Operating voltage (peak)	≤	100	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-25 ~ +70	°C
Bending diameter	≥	150	mm
Pulling force with	≤	100	N
Weight (approx.)		87	kg/km



PROFIBUS DP

FieldLink®

Insulation Integrity under fire conditions FE180

Cable Design

Wire

Conductor	Solid bare copper wire (22awg)	∅ 0,64 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm
Fire Barrier	Flame resistant foil overlapped	∅ 2,75 mm

Core

Pair	2 wires twisted to a pair (RD-GN) with fillers	
Fire Barrier	Flame resistant foil overlapped	
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 65% coverage	
Fire Barrier	Flame resistant foil overlapped	∅ 6,80 mm

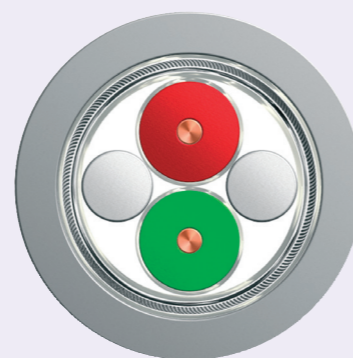
Outer Jacket	LSZH FireFighter®, Grey	∅ 8,80 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-22 (Cat.A)
- Halogen free acc. to IEC 60754,
- Smoke density acc. to IEC 61034,
- Insulation effect under fire conditions acc. to IEC 60331-23,
- Halogen free

Specification

Part Number	Type
L45467-G16-C436	PROFIBUS DP, cable for permanent installation with 180 minutes insulation integrity under fire conditions (FE180, LSZH), 2x22AWG1



Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Inductance (31,25 kHz)	≈	750	μH/km
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Operating voltage (peak)	≤	100	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range		-25 ~ +70	°C
Bending diameter	≥	150	mm
Pulling force with	≤	100	N
Weight (approx.)		85	kg/km



PROFIBUS DP

FieldLink®

Desina, Hybrid Cable for Trailing Applications

Cable Design

Power Core

Conductor	Stranded bare copper wire (84x0,15mm) 1,50 mm ²	Ø 1,55 mm
Insulation	LSZH FireFighter® Black with white numerals	Ø 2,40 mm

Shielded Pair

Conductor	Stranded tinned copper wire 19/0,14mm	Ø 0,67 mm
Insulation	Foamed Polyethylene (PE)	Ø 2,56 mm
Pair	2 insulated cores twisted to a pair	
Tape	Plastic tape overlapped	
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 65% coverage	

Core

Assembly	1 shielded pair + 4 cores numbered 1-2-3-4	
Fillers	Fillers in interstices	
Tape	Plastic tape overlapped	Ø 9,00 mm

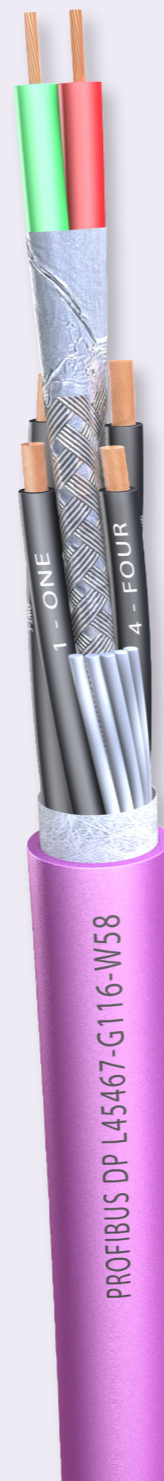
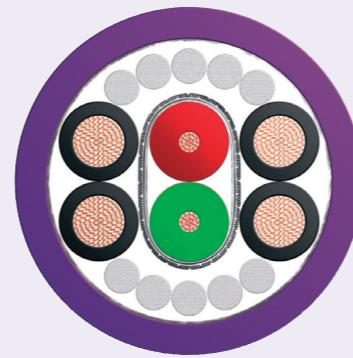
Outer Jacket	Thermoplastic Polyurethane (TPU) violet	Ø 11,0 ± 0,3 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Halogen free acc. to IEC 60754,
- Oil resistant acc. to UL 758 Sec. 15 (60 °C),
- Sunlight resistant acc. to UL 2556 Sec. 4.2.8.5,
- UL-Style 21198

Specification

Part Number	Type
L45467-G116-W58	PROFIBUS DP-Desina, hybrid cable for trailing application (LSZH), 2x23AWG19 + 4x1.5mm ² , UL recognised: AWM



Electrical Data @ 20°C Power Cores

Conductor resistance	≤	14	Ohm/km
Ampacity (up to 25°C)	≤	12	A

Electrical Data @ 20°C Shielded Pair

Loop resistance	≤	138	Ohm/km
Screen resistance	≤	15	Ohm/km
Insulation resistance	≥	20	MOhm*km
Characteristic Impedance	3-20 MHz	150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz	185±18,5	Ohm
Characteristic Impedance	9,6 kHz	270±27	Ohm
Attenuation	16 MHz	≤ 49	dB/100m
Attenuation	4 MHz	≤ 25	dB/100m
Attenuation	38,4 kHz	≤ 4	dB/100m
Attenuation	9,6 kHz	≤ 3	dB/100m
Capacitance (1 kHz)		≈ 30	nF/km
Operating voltage (effective value)		≤ 100	V
Surface transfer impedance	20 MHz	≤ 60	mOhm/m
Rel. Velocity of Propagation		≈ 81	%
Test Voltage (wire/wire/screen rms 50Hz 1min.)		= 2000	V

Mechanical & Thermal Characteristics

Permissible temperature range		-40 ~ +60	°C
Min. Bending radius allowed	single	7	x Ø
Pulling force with		≤ 300	N
Weight (approx.)		150	kg/km
Trailing Cable for following requirements		5 million bending cycles	
		bending radius 7,5 x max. Ø	
		acceleration 2,5 m/s ²	
		5 million bending cycles	
		bending radius 150 mm	
		at a speed of 3 m/s	
		acceleration 9 m/s ²	



PROFIBUS DP

FieldLink®

ET200X Hybrid Cable for Trailing Applications

Cable Design

Power Core

Conductor	Stranded bare copper wire (24x0,20mm) 0,75mm ²	Ø 1,15 mm
Insulation	Polyvinylchloride (PVC)	Ø 1,70 mm

Shielded Pair

Conductor	Stranded tinned copper wire 19/0,13mm	Ø 0,65 mm
Insulation	Foamed Polyethylene (PE)	Ø 2,56 mm
Pair	2 insulated cores twisted to a pair	
Tape	Plastic tape overlapped	
Screen	Aluluminum foil overlapped	
Braid	Tinned copper wire braid, 65% coverage	

Core

Assembly	1 shielded pair (RD/GN) + 3 cores (BK/BU/GNYE)	
Fillers	Fillers in interstices	
Tape	Plastic tape overlapped	

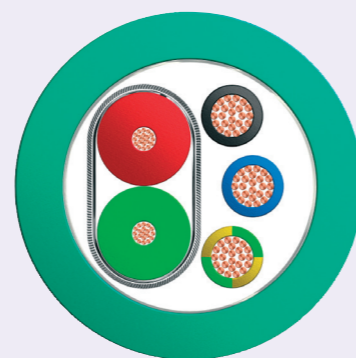
Outer Jacket	Thermoplastic Polyurethane (TPU) petrol green	Ø 9,50 ± 0,5 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Oil resistant acc. to IEC 60811-2-1 (4h, 70°C),,
- UL-Style 20351

Specification

Part Number	Type
L45467-G116-W38	PROFIBUS DP-ET 200X, hybrid cable for trailing application, 2x22AWG19 + 3x0.75mm ² , UL recognised: AWM



Electrical Data @ 20°C Power Cores

Conductor resistance	≤	26	Ohm/km
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Electrical Data @ 20°C Shielded Pair

Conductor resistance	≤	69	Ohm/km
Insulation resistance	≥	20	MOhm*km
Characteristic Impedance	3-20 MHz	135 - 165	Ohm
Attenuation	0,2 MHz	≤	0,6 dB/100m
Attenuation	16 MHz	≤	4,9 dB/100m
Operating voltage (peak)	≤	300	V
Test Voltage (wire/wire rms 50Hz 1min.)	=	1500	V
Test Voltage (wire/screen rms 50Hz 1min.)	=	1000	V

Mechanical & Thermal Characteristics

Permissible temperature range	-5 ~ +60	°C
Weight (approx.)	105	kg/km
Trailing Cable for following requirements	1 million bending cycles	
	bending diameter 140 mm	
	acceleration 2,5 m/s ²	



PROFIBUS DP

FieldLink®

ET200C Hybrid Cable for Flexible Installation

Cable Design

Power Core

Conductor	Stranded bare copper wire (24x0,20mm) 0,75mm ²	Ø 1,15 mm
Insulation	Polyvinylchloride (PVC)	Ø 1,70 mm

Pair

Conductor	Stranded tinned copper wire 19/0,13mm	Ø 0,65 mm
Insulation	Foamed Polyethylene (PE)	Ø 2,56 mm
Pair	2 insulated cores twisted to a pair	
Tape	Plastic tape overlapped	

Core

Assembly	1 shielded pair (RD/GN) + 3 cores (BK/BU/GNYE)	
Fillers	Polyester yarn	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 6,40 mm

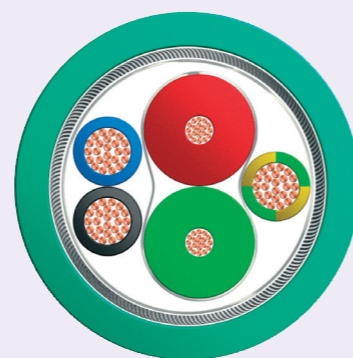
Outer Jacket	Polyvinylchloride (PVC) petrol green	Ø 8,0 ± 0,4 mm
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Characteristics

- UL-Style 2464

Specification

Part Number	Type
L45551-W59-W15	PROFIBUS DP-ET 200C, hybrid cable for flexible installation, 2x22AWG19 + 3x0.75mm ² , UL recognised: AWM



Electrical Data @ 20°C Power Core

Conductor resistance	≤	26	Ohm/km
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Electrical Data @ 20°C Pair

Conductor resistance	≤	84	Ohm/km
Insulation resistance	≥	20	MOhm*km
Capacitance (1 KHz)	≈	30	nF/km
Characteristic Impedance		3-20 MHz	135 - 165 Ohm
Attenuation		0,2 MHz	≤ 0,6 dB/100m
Operating voltage	≤	300	V
Test Voltage (rms 50Hz 1min.)		2000	V

Mechanical & Thermal Characteristics

Permissible temperature range		-30 ~ +80	°C
Min. Bending radius allowed	repeated	7,5	x Ø
Min. Bending radius allowed	single	5	x Ø
Weight (approx.)		90	kg/km



PROFIBUS DP

FieldLink®

ES Cable for Permanent Installation DataGuard® (SWA) PVC

Cable Design

Wire

Conductor	Solid bare copper wire (22awg)	Ø 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulaminated foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	Ø 6,20 mm

Inner Jacket	Polyvinylchloride (PVC), Violet	Ø 8,0 ± 0,40 mm
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Armour	DataGuard® Steel Wire Armour (DSWA)	
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Outer Jacket	Polyvinylchloride (PVC), Violet or Black UV-Stable and colourfast	Ø 12,80 ± 0,80 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-24 and UL 1685 (CSA FT 4),
- Cold bending resistant acc. to IEC 60811-1-4,
- Sunlight resistant acc. to UL 2556 Sec. 4.2.8.5,
- UL-Style 21694 (600 V)

[Click cross section to show 3D image](#)

Specification

Part Number	Type
11L45467-G16-C185-01	Black PROFIBUS DP ES cable for permanent installation (easy to strip), 2x22AWG1, PVC / DataGuard® (SWA) / PVC
11L45467-G16-C185-09	Violet PROFIBUS DP ES cable for permanent installation (easy to strip), 2x22AWG1, PVC / DataGuard® (SWA) / PVC

Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance	3-20 MHz	150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz	185±18,5	Ohm
Characteristic Impedance	9,6 kHz	270±27	Ohm
Attenuation	16 MHz	≤ 42	dB/100m
Attenuation	4 MHz	≤ 22	dB/100m
Attenuation	38,4 kHz	≤ 4	dB/100m
Attenuation	9,6 kHz	≤ 2,5	dB/100m
Inductance (31,25 kHz)	≈	1000	µH/km
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
UL-Rating		600	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range	-40 ~ +80	°C
Min. Bending radius	10	x Ø (see Ø tolerance)
Weight (approx.)	370	kg/km



PROFIBUS DP

FieldLink®

ES Cable for Vibration Resistant Installation DataGuard® (SWA) PVC

Cable Design

Wire

Conductor	Stranded bare copper wire 7/0,25mm (22awg)	Ø 0,76 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulaminat foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 6,20 mm

Inner Jacket Polyvinylchloride (PVC), Violet Ø 8,0 ± 0,40 mm

Armour DataGuard® Steel Wire Armour (DSWA)

Outer Jacket Polyvinylchloride (PVC), Violet or Black
UV-Stable and colourfast Ø 12,80 ± 0,80 mm

[Click cross section to show 3D image](#)

Specification

Part Number	Type
11231P22111-01	Black PROFIBUS DP ES cable for Vibration Resistant installation (easy to strip), 2x22AWG7, PVC / DataGuard® (SWA) / PVC
11231P22111-09	Violet PROFIBUS DP ES cable for Vibration Resistant installation (easy to strip), 2x22AWG7, PVC / DataGuard® (SWA) / PVC

Electrical Data @ 20°C

Loop resistance		≤	110	Ohm/km
Insulation resistance		≥	16	GOhm*km
Characteristic Impedance	3-20 MHz		150±15	Ohm
Characteristic Impedance	31,25 - 38,4 kHz		185±18,5	Ohm
Characteristic Impedance	9,6 kHz		270±27	Ohm
Attenuation	16 MHz	≤	42	dB/100m
Attenuation	4 MHz	≤	22	dB/100m
Attenuation	38,4 kHz	≤	4	dB/100m
Attenuation	9,6 kHz	≤	2,5	dB/100m
Capacitance (1 kHz)		≈	28,5	nF/km
Capacitance Unbalance to ground		≤	1500	pF/km
Operating voltage		≤	60	V
Test Voltage (wire/wire/screen rms 50Hz 1min)			1000	V

Mechanical & Thermal Characteristics

Permissible temperature range	-25 ~ +80	°C
Min. Bending radius	10	x Ø (see Ø tolerance)
Weight (approx.)	379	kg/km



PROFIBUS DP

FieldLink®

ES Cable for Permanent Installation DataGuard® (SWA) LSZH FireFighter®

Cable Design

Wire

Conductor	Solid bare copper wire (22awg)	∅ 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	∅ 6,20 mm

Inner Jacket	LSZH FireFighter®, Violet	∅ 8,0 ± 0,40 mm
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Armour	DataGuard® Steel Wire Armour (DSWA)	
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Outer Jacket	LSZH FireFighter®, Violet, Black or Blue UV-Stable and colourfast	∅ 12,80 ± 0,80 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-24
- Halogen Free acc. to IEC 60754-1/2
- Smoke density acc. to IEC 61034-1/2

[Click cross section to show 3D image](#)

Specification

Part Number	Type
14L45467-G16-C286-01	Black PROFIBUS DP ES, cable for permanent installation (easy to strip, LSZH), 2x22AWG1, LSZH / DataGuard® (SWA) / LSZH FireFighter®
14L45467-G16-C286-02	Blue PROFIBUS DP ES, cable for permanent installation (easy to strip, LSZH), 2x22AWG1, LSZH / DataGuard® (SWA) / LSZH FireFighter®
14L45467-G16-C286-09	Violet PROFIBUS DP ES, cable for permanent installation (easy to strip, LSZH), 2x22AWG1, LSZH / DataGuard® (SWA) / LSZH FireFighter®

Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
UL-Rating		600	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range	-25 ~ +80	°C
Min. Bending radius	10	x ∅ (see ∅ tolerance)
Weight (approx.)	362	kg/km

Also available with DataGuard® GSWB armoured protection :



DataGuard® GSWB
Page 60-61



PROFIBUS DP

FieldLink®

ES Cable for Permanent Installation DataGuard® (GSWB) LSZH FireFighter®

Cable Design

Wire

Conductor	Solid bare copper wire (22awg)	∅ 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	∅ 6,20 mm

Inner Jacket	LSZH FireFighter®, Violet	∅ 8,0 ± 0,40 mm
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Armour	DataGuard® Galvanised Steel Wire Braid (GSWB)	
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Outer Jacket	LSZH FireFighter®, Black or Blue UV-Stable and colourfast	∅ 11,60 ± 0,80 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-24
- Halogen Free acc. to IEC 60754-1/2
- Smoke density acc. to IEC 61034-1/2

[Click cross section to show 3D image](#)

Specification

Part Number	Type
24L45467-G16-C286-01	Black PROFIBUS DP ES, cable for permanent installation (easy to strip, LSZH), 2x22AWG1, LSZH / DataGuard® (GSWB) / LSZH FireFighter®
24L45467-G16-C286-02	Blue PROFIBUS DP ES, cable for permanent installation (easy to strip, LSZH), 2x22AWG1, LSZH / DataGuard® (GSWB) / LSZH FireFighter®

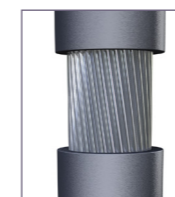
Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
UL-Rating		600	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range	-25 ~ +80	°C
Min. Bending radius	10	x ∅ (see ∅ tolerance)
Weight (approx.)	212	kg/km

Also available with DataGuard® SWA armoured protection :



DataGuard® SWA
Page 58-59



PROFIBUS DP

FieldLink®

ES DataGuard® (SWA) Lead Covered

Cable Design

Wire

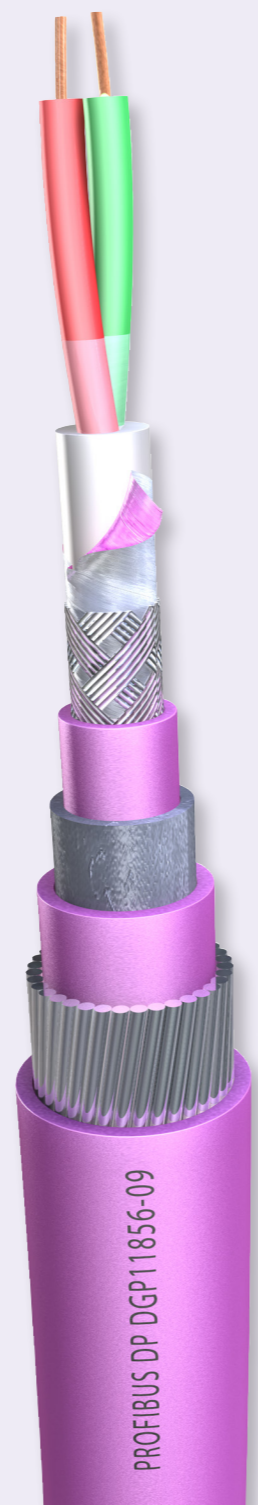
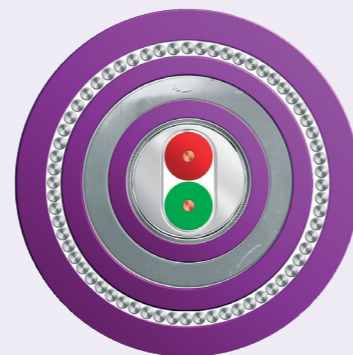
Conductor	Solid bare copper wire (22awg)	Ø 0,65 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 55% coverage	Ø 6,20 mm
Inner Jacket	Flame Retardant PVC compound, Violet	Ø 8,0 ± 0,40 mm
Lead Jacket	Lead compound, 2,40mm thickness	Ø 12,80 ± 0,40 mm
Intermediate Jacket	Flame Retardant PVC compound, Violet	Ø 14,80 ± 0,40 mm

Armour	DataGuard® Steel Wire Armour (DSWA)	Ø 18,00 ± 0,40 mm
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Outer Jacket	Flame Retardant PVC compound, Violet UV-Stable and colourfast	Ø 21,00 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1
- Hydrocarbon Resistant
- UV-Resistant

Specification

Part Number	Type
DGP11856-09	PROFIBUS DP ES, cable for permanent installation (easy to strip, FR-PVC), 2x22AWG1. FR-PVC/LEAD/FR-PVC/DataGuard® (SWA)/FR-PVC

Electrical Data @ 20°C

Loop resistance	≤	110	Ohm/km
Screen resistance	≤	9,5	Ohm/km
Insulation resistance	≥	16	GOhm*km
Characteristic Impedance		3-20 MHz	150±15 Ohm
Characteristic Impedance		31,25 - 38,4 kHz	185±18,5 Ohm
Characteristic Impedance		9,6 kHz	270±27 Ohm
Attenuation		16 MHz	≤ 42 dB/100m
Attenuation		4 MHz	≤ 22 dB/100m
Attenuation		38,4 kHz	≤ 4 dB/100m
Attenuation		9,6 kHz	≤ 2,5 dB/100m
Inductance (31,25 kHz)	≈	1000	µH/km
Capacitance (1 kHz)	≈	28,5	nF/km
Unbalance to ground	≤	1500	pF/km
Operating voltage (effective value)	≤	100	V
UL-Rating		600	V
Rel. Velocity of Propagation	≈	81	%
Test Voltage (DC 3 sec)	=	3600	V

Mechanical & Thermal Characteristics

Permissible temperature range	-25 ~ +80	°C
Min. Bending radius	-	x Ø (see Ø tolerance)
Weight (approx.)	-	kg/km



PROFIBUS PA

FieldLink®

ES Cable for Permanent Installation (PVC)

Cable Design

Wire

Conductor	Solid bare copper wire (18awg)	Ø 1,05 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulaminat foil overlapped	
Braid	Tinned copper wire braid, 90% coverage	Ø 6,20 mm

Outer Jacket	Polyvinylchloride (PVC)	Ø 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to UL 1685 (Vertical tray),
- Oil resistant acc. to UL 758 Sec. 15 (60 °C),
- Sunlight resistant acc. to UL 1581 Sec. 1200,

[Click cross section to show 3D image](#)

Specification

Part Number	Type
L45467-J20-C105	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x18AWG1, UL listed: CM and CL3
L45467-J20-C95	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x18AWG1, UL listed: CM and CL3

Electrical Data @ 20 °C

Conductor resistance	≤	22	Ohm/km
Insulation resistance	≥	10	MOhm*km
Capacitance (1 kHz) wire/wire	≈	50	nF/km
Capacitance (1 kHz) wire/screen	≈	92	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 3 dB/100m
Capacitance unbalance e	≤	2	nF/km
Inductance		31,25 kHz	650 µH/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	81	%
Operating voltage		100	V
UL-Rating		600	V
Test Voltage (wire/wire/screen rms 50Hz 1min.)		2000	V

Mechanical & Thermal Characteristics

Permissible temperature range		-20 ~ +80	°C
Min. Bending radius allowed	repeated	10	x Ø
Min. Bending radius allowed	single	5	x Ø
Tensile strength	≤	150	N
Weight (approx.)		103	kg/km

Also available with DataGuard® armoured protection :



DataGuard® SWA
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PROFIBUS PA

FieldLink®

ES Cable for Vibration Resistant Installation (PVC)

Cable Design

Wire

Conductor	Stranded bare copper wire 7/0,40mm (18awg)	Ø 1,20 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	Ø 5,40 mm
Screen	Alulamine foil overlapped	
Braid	Tinned copper wire braid, 90% coverage	Ø 6,10 mm

Outer Jacket	Polyvinylchloride (PVC)	Ø 8,0 ± 0,20 mm
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Characteristics

- Sunlight resistant acc. to UL 1581 Sec. 1200,
- UL-Style 2464 (80°C/300V)

[Click cross section to show 3D image](#)

Specification

Part Number	Type
231P18211	Black PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, PVC
231P18211-2	Blue PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, PVC
231P18211-8	Orange PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, PVC

Electrical Data @ 20°C

Conductor resistance	≤	22	Ohm/km
Screen resistance	≤	9	Ohm/km
Insulation resistance	≥	10	MOhm*km
Capacitance (1 kHz)	≈	54	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 3 dB/100m
Capacitance unbalance e	≤	2	nF/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	72	%
UL-Rating		300	V
Test Voltage (wire/wire/screen rms 50Hz 1min.)		2000	V

Mechanical & Thermal Characteristics

Permissible temperature range		-25 ~ +80	°C
Min. Bending radius allowed	repeated	10	x Ø
Min. Bending radius allowed	single	5	x Ø
Weight (approx.)		104	kg/km

Also available with DataGuard® armoured protection :



DataGuard® SWA
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PROFIBUS PA

FieldLink®

ES Cable for Vibration Resistant Installation LSZH FireFighter®

Cable Design

Wire

Conductor	Stranded bare copper wire 7/0,40mm (18awg)	Ø 1,20 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	Ø 5,40 mm
Screen	Alulaminated foil overlapped	
Braid	Tinned copper wire braid, 90% coverage	Ø 6,10 mm

Outer Jacket	Low Smoke Zero Halogen FireFighter®	Ø 8,0 ± 0,20 mm
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Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Halogen free acc. to IEC 60754,
- Smoke density acc. to IEC 61034,
- UV-resistant

[Click cross section to show 3D image](#)

Specification

Part Number	Type
231P1854-1	Black PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, LSZH FireFighter®
231P1854-2	Blue PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, LSZH FireFighter®
231P1854-8	Orange PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, LSZH FireFighter®

Electrical Data @ 20°C

Conductor resistance	≤	22	Ohm/km
Screen resistance	≤	9	Ohm/km
Insulation resistance	≥	10	MOhm*km
Capacitance (1 kHz)	≈	54	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 3 dB/100m
Capacitance unbalance e	≤	2	nF/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	72	%
Operating voltage (peak)	≤	100	V
Test Voltage (wire/wire rms 50Hz 1min.)		1000	V
Test Voltage (wire/screen rms 50Hz 1min.)		800	V

Mechanical & Thermal Characteristics

Temperature range	Transport and fixed installation	-35 ~ +80	°C
Temperature range	Installation and flexible use	-25 ~ +80	°C
Min. Bending radius allowed	repeated	8	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		94	kg/km



PROFIBUS PA

FieldLink®

ES Cable for Permanent Installation LSZH FireFighter®

Cable Design

Wire

Conductor	Solid bare copper wire (18awg)	∅ 1,05 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,40 mm
Screen	Alulamine foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	∅ 6,20 mm

Outer Jacket	LSZH FireFighter®	∅ 8,0 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60331-2, IEC 60332-3-24
- Halogen free acc. to IEC 60754-1/2
- Smoke density acc. to IEC 61034
- Oil resistant acc. to UL 758 Sec. 15 (60 °C),
- Sunlight resistant acc. to UL 1581 Sec. 1200,

[Click cross section to show 3D image](#)

Specification

Part Number	Type
L45467-J20-C46	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x18AWG1, UL listed: CM and CL3, FireFighter®
L45467-J20-C86	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x18AWG1, UL listed: CM and CL3, FireFighter®

Electrical Data @ 20 °C

Conductor resistance	≤	22	Ohm/km
Insulation resistance	≥	10	MOhm*km
Capacitance (1 kHz) wire/wire	≈	50	nF/km
Capacitance (1 kHz) wire/screen	≈	92	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 3 dB/100m
Capacitance unbalance e	≤	2	nF/km
Inductance		31,25 kHz	650 μH/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	81	%
Operating voltage			100 V
UL-Rating			600 V
Test Voltage (wire/wire/screen rms 50Hz 1min.)			2000 V

Mechanical & Thermal Characteristics

Permissible temperature range		-20 ~ +80	°C
Min. Bending radius allowed	repeated	10	x ∅
Min. Bending radius allowed	single	5	x ∅
Tensile strength	≤	150	N
Weight (approx.)		96	kg/km

Also available with DataGuard® armoured protection :



DataGuard® SWA
Page 78-79



DataGuard® GSWB
Page 80-81



PROFIBUS PA

FieldLink®

Long Distance Cable FR-PVC

Cable Design

Wire

Conductor	Solid bare copper wire 7/0,50mm	(16awg)
	Solid bare copper wire 7/0,64mm	(14awg)
Insulation	Polyethylene (PE)	Ø 3,20 mm

Core

Pair	2 wires twisted to a pair (RD-GN) with fillers
Tape	Plastic tape overlapped
Screen	Alulaminare foil overlapped
Braid	Tinned copper wire braid, 85% coverage

Outer Jacket

	Flame Retardant Polyvinylchloride (FR-PVC)
Diameter	16AWG : Ø 9,50 ± 0,30 mm
	14AWG : Ø 11,50 ± 0,30 mm

Characteristics

- Flame retardant acc. to IEC 60332-1

[Click cross section to show 3D image](#)

Specification

Part Number	Type
231P16211-01	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x16AWG7. FR-PVC
231P14211-01	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x14AWG7. FR-PVC
231P16211-02	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x16AWG7. FR-PVC
231P14211-02	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x14AWG7. FR-PVC

Electrical Data @ 20°C 1x2x16AWG/7

Max. Conductor DC Resistance	≤	13,3	Ohm/km
Shield resistance	≤	7,0	Ohm/km
Min. Insulation Resistance		5	G0hm*km
Max. Capacitance (800 Hz)		60	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Max. Attenuation		39 kHz	≤ 2,6 dB/km
Nom. Attenuation		100 kHz	≤ 3,5 dB/km
Nom. Attenuation		1 MHz	≤ 13,8 dB/km
Inductance		31,25 kHz	0,7 mH/km
Dielectric strength (c/c - c/s)		2,5	kVac 1min.
Max. Voltage rating (peak)		300	V

Electrical Data @ 20°C 1x2x14AWG/7

Max. Conductor DC Resistance	≤	17,5	Ohm/km
Shield resistance	≤	8,0	Ohm/km
Min. Insulation Resistance		5	G0hm*km
Max. Capacitance (800 Hz)		60	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Max. Attenuation		39 kHz	≤ 2,7 dB/km
Nom. Attenuation		100 kHz	≤ 3,8 dB/km
Nom. Attenuation		1 MHz	≤ 14,0 dB/km
Inductance		31,25 kHz	0,7 mH/km
Dielectric strength (c/c - c/s)		2,5	kVac 1min.
Max. Voltage rating (peak)		300	V

Mechanical & Thermal Characteristics

Permissible temperature range	-40 ~ +80	°C
Min. Bending radius allowed	10	x Ø
Weight (approx.)	-	kg/km



PROFIBUS PA

FieldLink®

acc. IEC61158-2 Type A Extended Distance
LSZH FireFighter® IEC60332-3-24

Cable Design

Wire

Conductor	Stranded bare copper wire (16awg)	∅ 1,60 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,70 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,80 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	∅ 6,60 mm

Outer Jacket	LSZH FireFighter® Black, Blue or Orange	∅ 8,0 ± 0,20 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-24 (Cat.C)
- Halogen free acc. to IEC 60754-1/2
- Smoke density acc. to IEC 61034
- Sunlight resistant acc. to UL 1581

[Click cross section to show 3D image](#)

Specification

Part Number	Type
2301P1654	PROFIBUS PA cable for Extended Distance Applications LSZH Black
2301P1654-2	PROFIBUS PA cable for Extended Distance Applications LSZH Intrinsically Safe Blue
2301P1654-8	PROFIBUS PA cable for Extended Distance Applications LSZH Orange

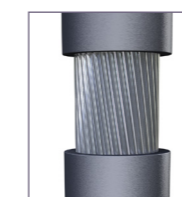
Electrical Data @ 20°C

Conductor resistance	≤	14	Ohm/km
Screen resistance	≤	8	Ohm/km
Insulation resistance	≥	200	MOhm*km
Capacitance (1 kHz)	≈	54	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 2 dB/km
Capacitance unbalance e	≤	2	nF/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	72	%
Operating voltage (peak)	≤	100	V
Test Voltage (wire/wire rms 50Hz 1min.)		1000	V
Test Voltage (wire/screen rms 50Hz 1min.)		800	V

Mechanical & Thermal Characteristics

Permissible temperature range		-25 ~ +80	°C
Min. Bending radius allowed	repeated	8	x ∅
Min. Bending radius allowed	single	4	x ∅
Weight (approx.)		108	kg/km

Also available with DataGuard® armoured protection :



DataGuard® SWA
Page 86-87



DataGuard® GSWB
Page 88-89



PROFIBUS PA

FieldLink®

ES Cable for Permanent Installation DataGuard® (SWA) PVC

Cable Design

Wire

Conductor	Solid bare copper wire (18awg)	∅ 1,05 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	∅ 5,40 mm
Screen	Alulaminated foil overlapped	
Braid	Tinned copper wire braid, 90% coverage	∅ 6,20 mm

Inner Jacket	Polyvinylchloride (PVC)	∅ 8,0 ± 0,40 mm
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Armour	DataGuard® Steel Wire Armour (DSWA)	
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Outer Jacket	Polyvinylchloride (PVC), Black or Blue UV-Stable and colourfast	∅ 12,80 ± 0,80 mm
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Characteristics

- Flame retardant acc. to UL 1685 (Vertical tray),
- Oil resistant acc. to UL 758 Sec. 15 (60 °C),
- Sunlight resistant acc. to UL 1581 Sec. 1200,

[Click cross section to show 3D image](#)

Specification

Part Number	Type
11L45467-J20-C105	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x18AWG1, PVC / DataGuard® (SWA) / PVC
11L45467-J20-C95	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x18AWG1, PVC / DataGuard® (SWA) / PVC
11L45467-J20-C185	Orange PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x18AWG1, PVC / DataGuard® (SWA) / PVC

Electrical Data @ 20 °C

Conductor resistance	≤	22	Ohm/km
Insulation resistance	≥	10	MOhm*km
Capacitance (1 kHz) wire/wire	≈	50	nF/km
Capacitance (1 kHz) wire/screen	≈	92	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 3 dB/100m
Capacitance unbalance e	≤	2	nF/km
Inductance		31,25 kHz	650 μH/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	81	%
Operating voltage		100	V
UL-Rating		600	V
Test Voltage (wire/wire/screen rms 50Hz 1min.)		2000	V

Mechanical & Thermal Characteristics

Permissible temperature range	-20 ~ +80	°C
Min. Bending radius allowed	10	x ∅ (see ∅ tolerance)
Weight (approx.)	393	kg/km



PROFIBUS PA

FieldLink®

ES Cable for Permanent Installation DataGuard® (SWA) / LSZH FireFighter®

Cable Design

Wire

Conductor	Solid bare copper wire (18awg)	∅ 1,05 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,40 mm
Screen	Alulaminated foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	∅ 6,20 mm

Inner Jacket	LSZH FireFighter®, Black or Blue	∅ 8,0 ± 0,40 mm
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Armour	DataGuard® Steel Wire Armour (DSWA)	
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Outer Jacket	LSZH FireFighter®, Black or Blue UV-Stable and colourfast	∅ 12,80 ± 0,80 mm
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Characteristics

- Flame retardant acc. to IEC 60331-2, IEC 60332-3-24
- Halogen free acc. to IEC 60754-1/2
- Smoke density acc. to IEC 61034

[Click cross section to show 3D image](#)

Specification

Part Number	Type
14L45467-J20-C46	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x18AWG1, DataGuard® (SWA)/FireFighter®
14L45467-J20-C86	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x18AWG1, DataGuard® (SWA)/FireFighter®

Electrical Data @ 20°C

Conductor resistance	≤	22	Ohm/km
Insulation resistance	≥	10	MOhm*km
Capacitance (1 kHz) wire/wire	≈	50	nF/km
Capacitance (1 kHz) wire/screen	≈	92	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 3 dB/100m
Capacitance unbalance e	≤	2	nF/km
Inductance		31,25 kHz	650 μH/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	81	%
Operating voltage		100	V
UL-Rating		600	V
Test Voltage (wire/wire/screen rms 50Hz 1min.)		2000	V

Mechanical & Thermal Characteristics

Permissible temperature range	-20 ~ +80	°C
Min. Bending radius allowed	10	x ∅ (see ∅ tolerance)
Weight (approx.)	386	kg/km

Also available with DataGuard® GSWB armoured protection :



DataGuard® GSWB
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PROFIBUS PA

FieldLink®

ES Cable for Permanent Installation DataGuard® (GSWB) / LSZH FireFighter®

Cable Design

Wire

Conductor	Solid bare copper wire (18awg)	∅ 1,05 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	∅ 6,20 mm

Inner Jacket	LSZH FireFighter®	∅ 8,0 ± 0,40 mm
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Armour	DataGuard® Galvanised Steel Wire Braid (GSWB)	
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Outer Jacket	LSZH FireFighter®, Black or Blue UV-Stable and colourfast acc. to ISO 4892-3 cycle 1	∅ 11,40 ± 0,40 mm
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Characteristics

- Flame retardant acc. to IEC 60331-2, IEC 60332-3-24
- Halogen free acc. to IEC 60754-1/2
- Smoke density acc. to IEC 61034

[Click cross section to show 3D image](#)

Specification

Part Number	Type
24L45467-J20-C46	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x18AWG1, (GSWB)
24L45467-J20-C86	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x18AWG1, DataGuard® (GSWB)

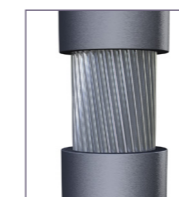
Electrical Data @ 20°C

Conductor resistance	≤	22	Ohm/km
Insulation resistance	≥	10	MOhm*km
Capacitance (1 kHz) wire/wire	≈	50	nF/km
Capacitance (1 kHz) wire/screen	≈	92	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 3 dB/100m
Capacitance unbalance e	≤	2	nF/km
Inductance		31,25 kHz	650 μH/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	81	%
Operating voltage		100	V
UL-Rating		600	V
Test Voltage (wire/wire/screen rms 50Hz 1min.)		2000	V

Mechanical & Thermal Characteristics

Permissible temperature range	-20 ~ +80	°C
Min. Bending radius allowed	10	x ∅ (see ∅ tolerance)
Weight (approx.)	236	kg/km

Also available with DataGuard® SWA armoured protection :



DataGuard® SWA
Page 78-79



PROFIBUS PA

FieldLink®

ES Cable for Vibration Resistant Installation DataGuard® (SWA) PVC

Cable Design

Wire

Conductor	Stranded bare copper wire 7/0,40mm (18awg)	∅ 1,20 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,55 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Polyvinylchloride (PVC)	∅ 5,40 mm
Screen	Alulaminare foil overlapped	
Braid	Tinned copper wire braid, 90% coverage	∅ 6,10 mm

Inner Jacket	Polyvinylchloride (PVC)	∅ 8,0 ± 0,20 mm
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Armour	DataGuard® Steel Wire Armour (DSWA)	
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Outer Jacket	LSZH FireFighter®, Black, Blue or Orange UV-Stable and colourfast	∅ 12,80 ± 0,80 mm
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[Click cross section to show 3D image](#)

Specification

Part Number	Type
11231P18211	Black PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, PVC / DataGuard® (SWA) / PVC
11231P18211-2	Blue PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, PVC / DataGuard® (SWA) / PVC
11231P18211-8	Orange PROFIBUS PA ES cable for Vibration Resistant installation (easy to strip), 2x18AWG7, PVC / DataGuard® (SWA) / PVC

Electrical Data @ 20°C

Conductor resistance	≤	22	Ohm/km
Screen resistance	≤	9	Ohm/km
Insulation resistance	≥	10	MOhm*km
Capacitance (1 kHz)	≈	54	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 3 dB/100m
Capacitance unbalance e	≤	2	nF/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	72	%
UL-Rating		300	V
Test Voltage (wire/wire/screen rms 50Hz 1min.)		2000	V

Mechanical & Thermal Characteristics

Permissible temperature range	-25 ~ +80	°C
Min. Bending radius allowed	10	x ∅ (see ∅ tolerance)
Weight (approx.)	394	kg/km



PROFIBUS PA

FieldLink®

Long Distance Cable DataGuard® (SWA)

Cable Design

Wire

Conductor	Solid bare copper wire 7/0,50mm	(16awg)
	Solid bare copper wire 7/0,64mm	(14awg)
Insulation	Polyethylene (PE)	Ø 3,20 mm

Core

Pair	2 wires twisted to a pair (RD-GN) with fillers
Tape	Plastic tape overlapped
Screen	Alulaminare foil overlapped
Braid	Tinned copper wire braid, 85% coverage
Inner Jacket	Flame Retardant Polyvinylchloride (FR-PVC)
Diameter	16AWG : Ø 9,50 ± 0,30 mm
	14AWG : Ø 11,50 ± 0,30 mm

Armour

DataGuard® Steel Wire Armour (DSWA)

Outer Jacket

Flame Retardant Polyvinylchloride (FR-PVC)

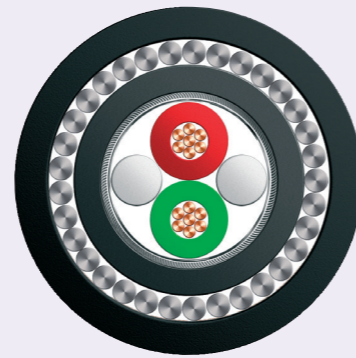
Diameter	16AWG : Ø 13,30 ± 0,30 mm
	14AWG : Ø 15,30 ± 0,30 mm

Characteristics

- Flame retardant acc. to IEC 60332-1

Specification

Part Number	Type
11231P16211-01	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x16AWG7. DataGuard® (SWA) / FR-PVC
11231P14211-01	Black PROFIBUS PA ES, cable for permanent installation (easy to strip), 2x14AWG7. DataGuard® (SWA) / FR-PVC
11231P16211-02	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x16AWG7. DataGuard® (SWA) / FR-PVC
11231P14211-02	Blue PROFIBUS PA ES, cable for permanent installation in hazardous Ex-areas (easy to strip), 2x14AWG7. DataGuard® (SWA) / FR-PVC



Electrical Data @ 20°C 1x2x16AWG/7

Max. Conductor DC Resistance	≤	13,3	Ohm/km
Shield resistance	≤	7,0	Ohm/km
Min. Insulation Resistance		5	GOhm*km
Max. Capacitance (800 Hz)		60	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Max. Attenuation		39 kHz	≤ 2,6 dB/km
Nom. Attenuation		100 kHz	≤ 3,5 dB/km
Nom. Attenuation		1 MHz	≤ 13,8 dB/km
Inductance		31,25 kHz	0,7 mH/km
Dielectric strength (c/c - c/s)		2,5	kVac 1min.
Max. Voltage rating (peak)		300	V

Electrical Data @ 20°C 1x2x14AWG/7

Max. Conductor DC Resistance	≤	17,5	Ohm/km
Shield resistance	≤	8,0	Ohm/km
Min. Insulation Resistance		5	GOhm*km
Max. Capacitance (800 Hz)		60	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Max. Attenuation		39 kHz	≤ 2,7 dB/km
Nom. Attenuation		100 kHz	≤ 3,8 dB/km
Nom. Attenuation		1 MHz	≤ 14,0 dB/km
Inductance		31,25 kHz	0,7 mH/km
Dielectric strength (c/c - c/s)		2,5	kVac 1min.
Max. Voltage rating (peak)		300	V

Mechanical & Thermal Characteristics

Permissible temperature range	-40 ~ +80	°C
Min. Bending radius allowed	10	x Ø
Weight (approx.)	-	kg/km



PROFIBUS PA

FieldLink®

acc. IEC61158-2 Type A Extended Distance
DataGuard® (SWA) LSZH FireFighter® IEC60332-3-24

Cable Design

Wire

Conductor	Stranded bare copper wire (16awg)	∅ 1,60 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,70 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,80 mm
Screen	Alulaminat foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	∅ 6,60 mm

Inner Jacket	LSZH FireFighter®	∅ 8,0 ± 0,20 mm
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Armour	DataGuard® Steel Wire Armour (DSWA)	
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Outer Jacket	LSZH FireFighter®, Black, Blue or Orange UV-Stable and colourfast	∅ 12,80 ± 0,80 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-24 (Cat.C)
- Halogen free acc. to IEC 60754-1/2
- Smoke density acc. to IEC 61034

[Click cross section to show 3D image](#)

Specification

Part Number	Type
142301P1654	PROFIBUS PA cable for Extended Distance Applications LSZH DataGuard® (SWA) Black
142301P1654-2	PROFIBUS PA cable for Extended Distance Applications LSZH DataGuard® (SWA) Intrinsically Safe Blue
142301P1654-8	PROFIBUS PA cable for Extended Distance Applications LSZH DataGuard® (SWA) Orange

Electrical Data @ 20°C

Conductor resistance	≤	14	Ohm/km
Screen resistance	≤	8	Ohm/km
Insulation resistance	≥	200	MOhm*km
Capacitance (1 kHz)	≈	54	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 2 dB/km
Capacitance unbalance e	≤	2	nF/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	72	%
Operating voltage (peak)	≤	100	V
Test Voltage (wire/wire rms 50Hz 1min.)		1000	V
Test Voltage (wire/screen rms 50Hz 1min.)		800	V

Mechanical & Thermal Characteristics

Permissible temperature range	-25 ~ +80	°C
Min. Bending radius allowed	10	x ∅ (see ∅ tolerance)
Weight (approx.)	398	kg/km

Also available with DataGuard® GSWB armoured protection :



DataGuard® GSWB
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PROFIBUS PA

FieldLink®

acc. IEC61158-2 Type A Extended Distance
DataGuard® (GSWB) LSZH FireFighter® IEC60332-3-24

Cable Design

Wire

Conductor	Stranded bare copper wire (16awg)	∅ 1,60 mm
Insulation	Foamed Polyethylene (PE) with skin	∅ 2,70 mm

Core

Pair	2 wires twisted to a pair (RD-GN)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	∅ 5,80 mm
Screen	Alulaminat foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	∅ 6,60 mm

Inner Jacket	LSZH FireFighter®	∅ 8,0 ± 0,20 mm
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Armour	DataGuard® Galvanised Steel Wire Braid (GSWB)	
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Outer Jacket	LSZH FireFighter®, Black, Blue or Orange UV-Stable and colourfast	∅ 11,60 ± 0,80 mm
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Characteristics

- Flame retardant acc. to IEC 60332-3-24 (Cat.C)
- Halogen free acc. to IEC 60754-1/2
- Smoke density acc. to IEC 61034

[Click cross section to show 3D image](#)

Specification

Part Number	Type
242301P1654	PROFIBUS PA cable for Extended Distance Applications LSZH DataGuard® (GSWB) Black
242301P1654-2	PROFIBUS PA cable for Extended Distance Applications LSZH DataGuard® (GSWB) Intrinsically Safe Blue
242301P1654-8	PROFIBUS PA cable for Extended Distance Applications LSZH DataGuard® (GSWB) Orange

Electrical Data @ 20°C

Conductor resistance	≤	14	Ohm/km
Screen resistance	≤	8	Ohm/km
Insulation resistance	≥	200	MOhm*km
Capacitance (1 kHz)	≈	54	nF/km
Characteristic Impedance		31,25 kHz	100±20 Ohm
Attenuation		39 kHz	≤ 2 dB/km
Capacitance unbalance e	≤	2	nF/km
Surface transfer impedance		20 MHz	≤ 5 mOhm/m
Rel. Velocity of Propagation	≈	72	%
Operating voltage (peak)	≤	100	V
Test Voltage (wire/wire rms 50Hz 1min.)		1000	V
Test Voltage (wire/screen rms 50Hz 1min.)		800	V

Mechanical & Thermal Characteristics

Permissible temperature range	-25 ~ +80	°C
Min. Bending radius allowed	10	x ∅ (see ∅ tolerance)
Weight (approx.)	248	kg/km

Also available with DataGuard® SWA armoured protection :



DataGuard® SWA
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Stripping Tool



1. After consulting the scale table on the back of the cutter, mark the cable with your thumb. Insert the cable using your thumb as a guide.



2. Close the clamp by turning the dial, for the best results first click the dial by 2 notches.



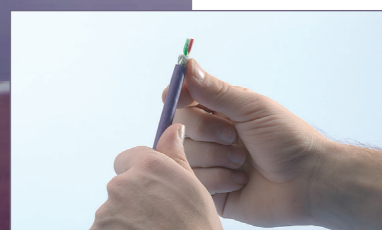
3. Rotate the tool twice away from you, then close the clamp fully and rotate twice more.



4. Pull the stripping tool lengthways from the cable. Avoid tilting the tool as this could damage the wires inside.

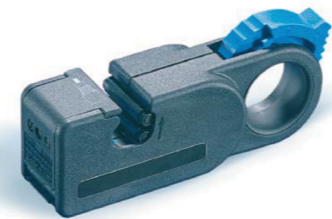


5. Inspect the resulting cable strip, if unsatisfactory rotate or replace the blade cassette and retry.



6. Remove the remaining plastic foil by slitting up the cable with a small slotted screw driver. Once clear attach the stripped cable to the connector of your choice.

Siemens 6GK1905-6AA Profibus Easy Strip (Fast Connect) Stripping tool



FireFighter®

FireFighter cables are produced to exacting IEC standards for fire performance covering 60332-1 flame resistance for single cables and section 3 for bunched cables as well as low smoke generation (61034) and negligible halogen gas emission (60754-1). In addition to these, all FireFighter® cables are sheathed according to IEC60092-359 where applicable for electrical installation in ships as well as being 600 V rated for Tray Cable applications.

In order to meet demanding and diverse customer applications, FireFighter® performance materials are used in conjunction with other brands including DataGuard® (Armoured Cables), Armada® (MOG Cables), SureLAN® (Local area network cables), SureLIGHT® (Fibre Optic) and EventSeries® (Audio & Broadcast).

Whatever the application or installation, where public safety and reliability are concerned, FireFighter® Low smoke zero halogen properties have been proven to perform. It's not just LSZH sheath, It's a FireFighter® Cable.





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Quality Management

Belcom recognise the importance of quality control and constantly monitor our quality performance to ensure compliance with relevant standards whether they are self imposed, satutory or regulatory.

Our management system is approved by DNV to BS-EN-ISO 9001:2008 standard and is an imperative part of our organisation.

Environmental documentation is available at www.belcom.co.uk/qa-environmental





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