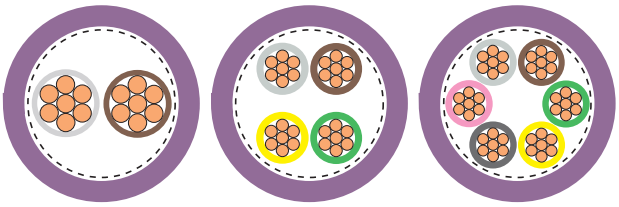
UNITRONIC® BUS LD

Flexible buscable with PVC outer sheath, for use in different bussystems



2170203 2170204 2170205

Info

- LD is a LAPP abbreviation for long distance

Benefits

- Suitable for multiple Bus systems based on RS485 / RS422

Application range

- For fixed installation
  Maximum electromagnetic screening
- Bus cables for bus systems such as e.g. Modbus, SUCOnet P, Modulink P, VariNet-P)
- Dry or damp rooms

Product features

- The stated bit rates result in the following cable lengths (maximum) of one bus segment:
- 9.6-93.75 kbit/s = 1200m
- 187.5 kbit/s = max. 1,000 m
- 500 kbit/s = max. 400 m

Norm references / Approvals

- UNITRONIC® BUS LD A:
  UL versions with certification:
  UL/CSA type CMX acc. to UL 444
  and CSA C22.2 no. 214-02
- Flame retardant acc. to IEC 60332-1-2

Product Make-up

- Stranded conductor, bare, 7-wire
- Core insulation: PE
- Colour code DIN 47100
- Overall screening of braided tinned-copper strands
- Outer sheath: PVC, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
Flexible use: 10 x outer diameter

Peak operating voltage
(not for power applications) 250 V

Conductor resistance
(loop): max. 186 ohm/km

Minimum bending radius
Fixed installation: 8 x outer diameter

Test voltage
Core/core: 1500 V rms

Characteristic impedance
100 - 120 Ohm

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

Article number	Article designation	Number of pairs and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
for fixed installation					
2170203	UNITRONIC® BUS LD	1 x 2 x 0,22	5.7	18	37
2170204	UNITRONIC® BUS LD	2 x 2 x 0,22	7.1	28	45
2170205	UNITRONIC® BUS LD	3 x 2 x 0,22	7.2	37	72
For fixed installation - UL/CSA CMX certification					
2170803	UNITRONIC® BUS LD A	1 x 2 x 0,22	5.7	18	39

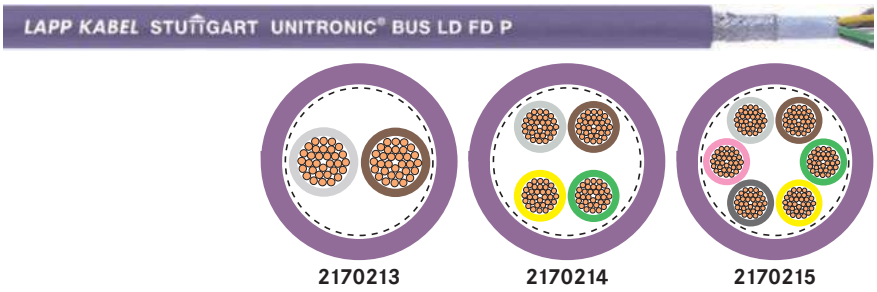
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
Modubus is owned by the Modbus-IDA Organisation. SUCOnet P is a registered trademark of the Moeller Group. Modulink P is a registered trademark of Weidmüller GmbH & Co. VariNet is a registered trademark of Pepperl+Fuchs GmbH.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

UNITRONIC® BUS LD FD P

Highly flexible buscable with PUR outer sheath, for use in different bussystems

Info

- LD is a LAPP abbreviation for long distance



Benefits

- Suitable for multiple Bus systems based on RS485 / RS422
- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in power chains
- Under consideration of the temperature range also suitable for outdoor use

Application range

- For highly flexible applications (power chains, moving machine parts)
- Bus cables for bus systems such as e.g. Modbus, SUCOnet P, Modulink P, VariNet-P)

Product features

- The stated bit rates result in the following cable lengths (maximum) of one bus segment:
- 9.6-93.75 kbit/s = 1200m
- 187.5 kbit/s = max. 1,000 m
- 500 kbit/s = max. 400 m
- UV-resistant (but colour may change after some time)

Norm references / Approvals

- UNITRONIC® BUS LD FD P A: UL versions with certification: UL/CSA type CMX acc. to UL 444 and CSA C22.2 no. 214-02
- Flame-retardant according IEC 60332-1-2

Product Make-up

- Extra-fine wire strand made of bare copper
- Colour code DIN 47100
- Core insulation: PE
- Overall screening of braided tinned-copper strands
- Outer sheath: PUR, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz) max. 60 nF/km

Peak operating voltage
(not for power applications) 250 V

Conductor resistance
(loop): max. 159.8 ohm/km

Minimum bending radius
Fixed installation: 6 x core diameter
One bend at end of core: 3 x cable diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 1500 V rms

Characteristic impedance
100 - 120 Ohm

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

Article number	Article designation	Number of pairs and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
For highly flexible applications					
2170213	UNITRONIC® BUS LD FD P	1 x 2 x 0,25	6	18	39
2170214	UNITRONIC® BUS LD FD P	2 x 2 x 0,25	7.9	33	65
2170215	UNITRONIC® BUS LD FD P	3 x 2 x 0,25	8	39	77
For highly flexible applications - with UL/CSA CMX certification					
2170813	UNITRONIC® BUS LD FD P A	1 x 2 x 0,25	6.2	18	39
2170814	UNITRONIC® BUS LD FD P A	2 x 2 x 0,25	8.3	33	65
2170815	UNITRONIC® BUS LD FD P A	3 x 2 x 0,25	8.4	39	77

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- SMART STRIP stripping tool

UNITRONIC® BUS ASI

AS-INTERFACE cables for networking systems in the field

Info

- "LD" = Long Distance

Benefits

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

Application range

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

Product features

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

Norm references / Approvals

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

Product Make-up

- Conductor: fine-wire tinned-copper strands
- Core insulation: blue and brown
- Outer sheath:
  rubber (G), halogenfree
  thermoplastic elastomers (TPE)
  PVC
- Outer sheath: yellow (RAL 1023), black (RAL 9005), red (RAL 3000)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

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

Minimum bending radius
Fixed installation: 12 mm
Flexible use 24 mm

Test voltage
Core/core: 2000 V

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

Article number	Article designation	Outer sheath colour	Application	Number of cores and mm² per conductor	Copper index (kg/km)	Weight (kg/km)
Gummi/EPDM						
2170228	UNITRONIC® BUS ASI (G)	yellow	Data and power transmission	2 x 1,5	29	85
2170229	UNITRONIC® BUS ASI (G)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	85
2170371	UNITRONIC® BUS ASI LD (G)	yellow	Data and power transmission	2 x 2,5	48	85
2170372	UNITRONIC® BUS ASI LD (G)	black	Transmission of 30 V DC auxiliary power	2 x 2,5	48	85
TPE						
2170230	UNITRONIC® BUS ASI (TPE)	yellow	Data and power transmission	2 x 1,5	29	64
2170231	UNITRONIC® BUS ASI (TPE)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64
2170232	UNITRONIC® BUS ASI (TPE)	red	Transmission of 230 V AC auxiliary power	2 x 1,5	29	64
PVC UL/CSA						
2170842	UNITRONIC® BUS ASI (PVC) A	yellow	Data and power transmission	2 x 1,5	29	70
2170843	UNITRONIC® BUS ASI (PVC) A	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	70
2170844	UNITRONIC® BUS ASI (PVC) A	red	Transmission of 230 V AC auxiliary power	2 x 1,5	29	70

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Lapp Kabel is a member of the AS-International Association
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- SKINTOP® DIX-M AUTOMATION refer to page 714
- AS-I clip clamp / AS-I end sealing
- UNIVERSAL STRIP stripping tool refer to page 963
- AS-I STRIP special stripping tool refer to page 961
- AS-I STRIP special
- SKINTOP® DIX ASI

UNITRONIC® BUS ASI FD

High flexible AS-INTERFACE cables for networking systems in the field

Info

- "FD" = suitable for power chains
- "LD" = Long Distance

Benefits

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

Application range

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

Product features

- PUR versions are halogen-free according to IEC 60754-1
- Flame-retardant according to IEC 60332-1-2, UL FT-2 flame test
- Data and power are transmitted via an unscreened, geometrically coded two-core flat cable (protection against polarity reversal).
- The conductor is contacted by "piercing technology" within the ASI modules.
- The sensors are connected to the ASI modules (coupling modules) using round cables (connection cables).

Norm references / Approvals

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

Product Make-up

- Extra-fine wire, tinned copper strands
- Core insulation: halogen-free compound
- Outer sheath: TPE PUR
- Outer sheath: yellow (RAL 1023), black (RAL 9005)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
300 V (not for power applications)

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

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

Test voltage
Core/core: 2000 V

Temperature range
Fixed installation:
-40°C to +80°C (TPE +105°C)
Flexing without fixing:
-30 °C to +70 °C (TPE +105 °C)

Article number	Article designation	Outer sheath colour	Application	Number of cores and mm² per conductor	Copper index (kg/km)	Weight (kg/km)
For highly flexible applications (power chains, moving machine parts)						
2170357	UNITRONIC® BUS ASI FD P FRNC	yellow	Data and power transmission	2 x 1,5	29	64
2170358	UNITRONIC® BUS ASI FD P FRNC	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64
2170317	UNITRONIC® BUS ASI LD FD P	yellow	Data and power transmission	2 x 2,5	48	74
2170318	UNITRONIC® BUS ASI LD FD P	black	Transmission of 30 V DC auxiliary power	2 x 2,5	48	74
For high flexible application - TPE UL/CSA (AWM)						
2170830	UNITRONIC® BUS ASI FD (TPE) A	yellow	Data and power transmission	2 x 1,5	29	64
2170831	UNITRONIC® BUS ASI FD (TPE) A	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Lapp Kabel is a member of the AS-International Association
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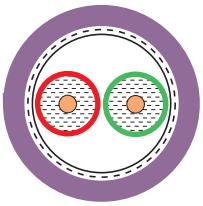
Accessories

- SKINTOP® DIX-M AUTOMATION refer to page 714
- AS-I clip clamp / AS-I end sealing
- UNIVERSAL STRIP stripping tool refer to page 963
- AS-I STRIP special stripping tool refer to page 961
- AS-I STRIP special
- SKINTOP® DIX ASI

UNITRONIC® BUS PB TRAY

PROFIBUS cable with PLTC-ER approval for unprotected use on cable trays



2170856

Info

- PLTC-ER (power limited tray cable - epxosed run)

Benefits

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

Application range

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

Product features

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
  (cable type A, PROFIBUS-DP):
  93.75 kbit/s = 1200 m
  187.5 kbit/s = 1000 m
  500 kbit/s = 400 m
  1.5 Mbit/s = 200 m
  12.0 Mbit/s = 100 m
- UV-resistant UL SUN RES
- Flame retardant acc. UL 1685 - FT4 (vertical tray)

Norm references / Approvals

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

Product Make-up

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

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(1 kHz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Impedance
150 +/- 15 Ohm

Conductor resistance
(loop): max. 110 ohm/km

Minimum bending radius
Fixed installation: 8 x outer diameter

Test voltage
Core/core: 2000 V

Characteristic impedance
150 ± 15 Ohm

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

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

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Sub-D Bus-Connectors

UNITRONIC® BUS PB

PROFIBUS cables for fixed applications

Info

- Lapp Kabel is a member of the PROFIBUS User Organisation (PNO)
- A for Advanced here: UL and CSA certifications
- CPR: Article number choice under www.lappkabel.com/cpr

Application range

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

Product features

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

Norm references / Approvals

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

Product Make-up

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

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Conductor resistance
(loop): max. 186 Ohm/km.
see also datasheet

Minimum bending radius
Fixed installation: see data sheet

Test voltage
Core/core: 1500 V rms

Characteristic impedance
150 ± 15 Ohm

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

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

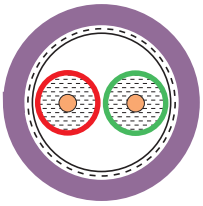
- UNITRONIC® BUS PB ROBUST refer to page 330
- UNITRONIC® BUS PB 105 refer to page 331

Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 960
- SENSOR STRIP stripping tool refer to page 961

UNITRONIC® BUS PB ROBUST

PROFIBUS cable - resistant to a wide range of chemical media



2170620

Info

- Excellent weather resistance
- Good chemical resistance

Benefits

- Robust PROFIBUS cable for use under harsh environmental conditions

Application range

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

Product features

- Significantly extended use and application areas, water and chemical resistance for use in industrial conditions.
- High resistance to tensides, soaps etc.
- UV-resistant
- Flame-retardant according IEC 60332-1-2
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
  93.75 kbit/s = 1200 m
  187.5 kbit/s = 1000 m
  500 kbit/s = 400 m
  1.5 Mbit/s = 200 m
  12.0 Mbit/s = 100 m

Product Make-up

- Solid and bare copper conductor
- Core insulation: cellular PE, O2Y(S)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: Specially formulated TPE, violet (RAL 4001)
- With conventional cable design

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(1 kHz): approx. 28.5 nF/km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
Fixed installation: 75 mm

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

Characteristic impedance
(3 - 20 MHz): 150 ± 15 Ohm

Temperature range
-40°C to +80°C

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

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)
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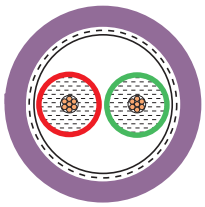
Accessories

- Sub-D Bus-Connectors

UNITRONIC® BUS PB 105

PROFIBUS cable with an extended temperature range up to +105°C



2170630

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
Approx. 28.5 nF/km

Peak operating voltage
max. 100 V (not for power applications)

Minimum bending radius
Fixed installation: 45 mm once
Flexing: 65 mm

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

Characteristic impedance
(3 - 20 MHz): 150 ± 15 Ohm

Temperature range
-30°C to +105°C

Application range

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

Product features

- High temperature resistance
- Flame-retardant according IEC 60332-1-2
- Oil-resistant

Product Make-up

- Stranded conductor, 7-wire, bare
- Conductor diameter: 0,64 mm (AWG24)
- Core insulation: PP
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PVC, violet (RAL 4001)

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

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)
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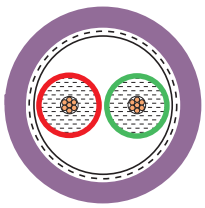
Accessories

- Multipurpose shears A and B

UNITRONIC® BUS PB 105 plus

PROFIBUS cable with an extended temperature range up to +105°C; short term +120°C



2170635

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
Fixed installation: 45 mm once
Flexing: 65 mm

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

Characteristic impedance
(3 - 20 MHz): 150 ± 15 Ohm

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

Benefits

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

Application range

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

Product features

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

Norm references / Approvals

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

Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: polypropylene (PP)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: TPE, violet (RAL 4001)

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

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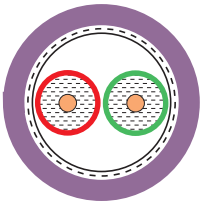
UNITRONIC® BUS PB HEAT 180

PROFIBUS cable with an extended temperature range up to +180°C



3031981

Benefits

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

Application range

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

Product features

- High oil-resistance

Product Make-up

- Solid and bare copper conductor
- Wire insulation Fluorethylen
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: FEP, violet (RAL 4001)

Suitable connectors

- Sub-D Bus-Connectors

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
approx. 28 nF / km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
Repeated: 7 x Outer Diameter
Single: 5 x Outer Diameter

Test voltage
3600 V DC (3 sec.)

Characteristic impedance
(3 - 20 MHz): 150 ± 15 Ohm

Temperature range
-50 to +180°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB HEAT 180				
3031981	UNITRONIC® BUS PB HEAT 180	1 x 2 x 0,64	21.7	64.1

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

FRNC PROFIBUS cable UL/CSA certified

Info

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

Benefits

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

Application range

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

Product features

- Halogen-free
- Vertical Tray Flame Test according to UL 1685
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
  (cable type A, PROFIBUS-DP):
  93.75 kbit/s = 1200 m
  187.5 kbit/s = 1000 m
  500 kbit/s = 400 m
  1.5 Mbit/s = 200 m
  12.0 Mbit/s = 100 m

Norm references / Approvals

- UL/CSA-certified

Product Make-up

- Solid and bare copper conductor
- Core insulation: PE
- Inner sheath, screening foil and braiding
- Outer sheath: PUR, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Certifications
UL/CSA (CM)

Mutual capacitance
Approx. 28.5 nF/km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
80 mm

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

Characteristic impedance
(3 - 20 MHz): 150 ± 15 Ohm

Temperature range
-30°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
Fixed Installation					
2170996	UNITRONIC® BUS PB FRNC FC	1 x 2 x 0.64	8	30.1	74

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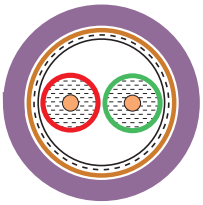
Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 960

UNITRONIC® BUS PB ARM

Armored PROFIBUS cable for use in harsh industrial environments



2170247

Benefits

- EMC-optimised design

Application range

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

Product features

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

Product Make-up

- Solid and bare copper conductor
- Core insulation: cellular PE, O2Y(S)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Overlapping plastic tape
- Copper tape, welded longitudinally Outer sheath: PVC, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 100 V

Minimum bending radius
Fixed installation: 7.5 x outer diameter
Fixed installation: 3.5 x cable diameter once

Test voltage
3600 V DC (3 sec.)

Characteristic impedance
150 ± 15 Ohm

Temperature range
-40°C to +70°C

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

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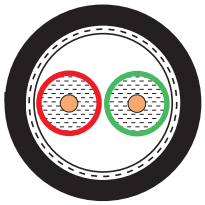
UNITRONIC® BUS PB Yv

PROFIBUS cable with reinforced PVC outer sheath for outdoor/direct burial use



2170223

Benefits

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

Application range

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

Product features

- Reinforced outer sheath made of PVC

Product Make-up

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

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
Fixed installation: 75 mm once
Fixed installation: 150 mm

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

Characteristic impedance
150 ± 15 Ohm

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

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

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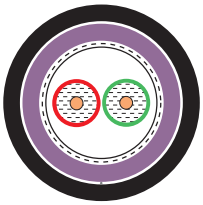
UNITRONIC® BUS PB YY

PROFIBUS cable with double PVC outer sheath for outdoor/direct burial use - Fast Connect cable make up



2170236

Benefits

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

Application range

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

Product features

- Double PVC outer sheath

Product Make-up

- Solid and bare copper conductor
- Core insulation: PE
- Overall screening with copper braid and plastic-laminated aluminium foil
- Inner sheath: PVC, violet RAL (4001), outer diameter: 7.4 mm
- Outer sheath, PVC, black RAL (9005), outer diameter: 9.5 mm

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
Fixed installation: 75 mm once
Fixed installation: 10 x outer diameter

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

Characteristic impedance
150 ± 15 Ohm

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

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

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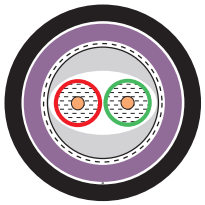
Accessories

- Sub-D Bus-Connectors
- Multipurpose shears A and B

UNITRONIC® BUS PB BURIAL FC

PROFIBUS cable with double outer sheath for outdoor/direct burial use



2170323

Benefits

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

Application range

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

Product features

- Second PE outer sheath

Product Make-up

- Solid and bare copper conductor
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Inner sheath: PVC, violet RAL (4001), outer diameter: 8.0 mm
- Outer sheath, PE, black RAL (9005), outer diameter: 10.8 mm

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 100 V

Minimum bending radius
Fixed installation: 3.5 x cable diameter once
Fixed installation: 7.5 x outer diameter

Test voltage
3600 V DC (3 sec.)

Characteristic impedance
150 ± 15 Ohm

Temperature range
-40 °C to +60 °C

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

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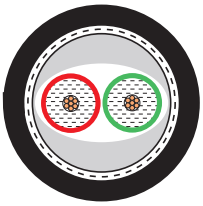
Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 960

UNITRONIC® BUS PB Y 7-W FC BK

UV-resistant PROFIBUS cable for outdoor applications



2170310

Benefits

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

Application range

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

Product features

- UV-resistant and weather-resistant
- Resistant to acids, alkalis and certain oils at room temperature

Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PVC, black RAL (9005)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
Fixed installation: 8 x outer diameter
Flexing: 15 x outer diameter

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

Characteristic impedance
150 ± 15 Ohm

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

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

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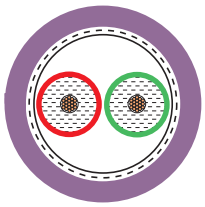
Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 960

UNITRONIC® BUS PB FD P

Halogenfree, highly flexible PROFIBUS cable



2170222

Benefits

- Due double screening it is suitable for installation in electromagnetically demanding areas
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required

Application range

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

Product features

- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
  (cable type A, PROFIBUS-DP):
  93.75 kbit/s = 1200 m
  187.5 kbit/s = 1000 m
  500 kbit/s = 400 m
  1.5 Mbit/s = 200 m
  12.0 Mbit/s = 100 m

Product Make-up

- Stranded bare copper wire
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PUR, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Torsion movement in WTG (wind turbine generator)
TW-0 & TW-2, refer to Appendix T0

Minimum bending radius
65 mm

Test voltage
Core/core: 1500 V rms

Characteristic impedance
150 ± 15 Ohm

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

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

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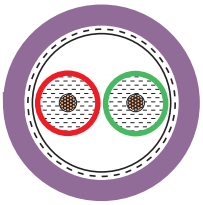
Accessories

- Sub-D Bus-Connectors

UNITRONIC® BUS PB FD P A

Halogenfree, highly flexible PROFIBUS cable - UL/CSA certified



2170822

Info

- A for Advanced
  here: UL and CSA certifications

Benefits

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

Application range

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

Product features

- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
  (cable type A, PROFIBUS-DP):
  93.75 kbit/s = 1200 m
  187.5 kbit/s = 1000 m
  500 kbit/s = 400 m
  1.5 Mbit/s = 200 m
  12.0 Mbit/s = 100 m

Norm references / Approvals

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

Product Make-up

- Stranded bare copper wire
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PUR, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Torsion movement in WTG (wind turbine generator)
TW-0 & TW-2, refer to Appendix T0

Minimum bending radius
65 mm

Test voltage
Core/core: 1500 V rms

Characteristic impedance
150 ± 15 Ohm

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

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

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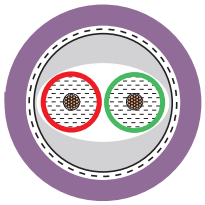
Accessories

- Sub-D Bus-Connectors

UNITRONIC® BUS PB FD P FC

Halogenfree, highly flexible PROFIBUS cable - with fast connect cable make up, UL/CSA certified



2170322

Benefits

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

Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).
- For highly flexible applications (power chains, moving machine parts)

Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
  (cable type A, PROFIBUS-DP):
  93.75 kbit/s = 1200 m
  187.5 kbit/s = 1000 m
  500 kbit/s = 400 m
  1.5 Mbit/s = 200 m
  12.0 Mbit/s = 100 m

Norm references / Approvals

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

Product Make-up

- Stranded bare copper wire
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Fast connect inner sheath: PVC, nature
- Outer sheath: PUR, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
Flexing: 15 x outer diameter

Test voltage
3600 V DC (3 sec.)

Characteristic impedance
150 ± 15 Ohm

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

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

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

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 960

UNITRONIC® BUS PB FD FRNC FC

Flame retardant, highly flexible PROFIBUS cable - with fast connect cable make up, UL/CSA certified

Benefits

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

Application range

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

Product features

- Halogen-free
- Oil-resistant
- Vertical Tray Flame Test according to UL 1685
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
  (cable type A, PROFIBUS-DP):
  93.75 kbit/s = 1200 m
  187.5 kbit/s = 1000 m
  500 kbit/s = 400 m
  1.5 Mbit/s = 200 m
  12.0 Mbit/s = 100 m

Norm references / Approvals

- The cable is UL/CSA-certified (CM)

Product Make-up

- Stranded bare copper wire
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Fast connect inner sheath: PVC, nature
- Outer sheath: PUR, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
nom. 28 nF/km

Peak operating voltage
(not for power applications) 250 V

Minimum bending radius
Fixed installation: 10 x outer diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 1500 V rms

Characteristic impedance
(3 - 20 MHz): 150 ± 15 Ohm

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

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter [mm]	Copper index (kg/km)
UNITRONIC® BUS PB FD FRNC FC				
2170997	UNITRONIC® BUS PB FD FRNC FC	1x2x0,64	8	26

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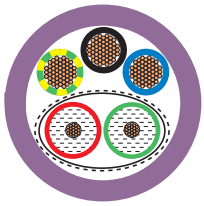
Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 960

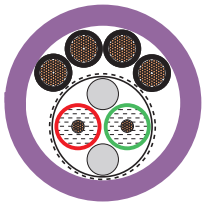
UNITRONIC® BUS PB FD P COMBI

Highly flexible, halogenfree PROFIBUS HYBRID cables



2170227

UNITRONIC® BUS PB FD P HYBRID



2170495

Benefits

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

Application range

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

Product features

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

Product Make-up

UNITRONIC® BUS PB FD P COMBI

- Fine-wire, bare copper strand
- 1x2x0.64: red, green
  3x1.0 (AWG18): grenn/yellow, black, blue
- Core insulation: PE
- Tin-plated copper wire braiding
- Outer sheath: PUR, violet (RAL 4001)

UNITRONIC® BUS PB FD P HYBRID

- Fine-wire, bare copper strand
- 1x2x0.64 : red, green
  4 x 1.5 (AWG16): black with white numbers
- Core insulation: PE
- Tin-plated copper wire braiding
- Outer sheath: PUR, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications) 100 V

UNITRONIC® BUS PB FD P HYBRID
Flexing: 15 x outer diameter

Test voltage
UNITRONIC® BUS PB FD P COMBI
Core/core: 600 V
UNITRONIC® BUS PB FD P HYBRID
Core/core: 600 V
Core/screen: 600 V

Characteristic impedance
150 ± 15 Ohm

Temperature range
UNITRONIC® BUS PB FD P COMBI
Flexing: -5°C to +50°C
Fixed installation: -40°C to +80°C
UNITRONIC® BUS PB FD P HYBRID
Flexing: -30°C to +60°C
Fixed installation: -40°C to +70°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB FD P COMBI					
2170227	UNITRONIC® BUS PB FD P COMBI	1 x 2 x 0.64 Ø + 3 x 1.0 mm²	10.1	59	125
UNITRONIC® BUS PB FD P HYBRID					
2170495	UNITRONIC® BUS PB FD P HYBRID	1 x 2 x 0.64 Ø + 4 x 1.5 mm²	11.3	89	148

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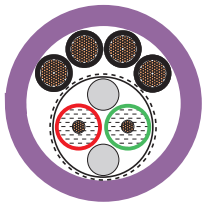
UNITRONIC® BUS PB FD Y HYBRID

Highly flexible PROFIBUS HYBRID cable, UL-verified



2170882

Benefits

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

Application range

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

Product features

- HYBRID: cable for data transmission + power supply

Norm references / Approvals

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

Product Make-up

- Fine-wire, bare copper strand
- 1x2x0.64: red, green
  Core insulation: Foam Skin PE
  4x1.5: black with white numbers 1-4
  Core insulation: PVC
- Tin-plated copper wire braiding
- Outer sheath: PVC, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
600 V (not for power applications)

Minimum bending radius
Fixed installation:
5 x outer diameter
Flexing: 15 x outer diameter

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

Characteristic impedance
150 ± 15 Ohm

Temperature range
-5°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB FD Y HYBRID					
2170882	UNITRONIC® BUS PB FD Y HYBRID	1 x 2 x 0.64 Ø + 4 x 1.5 mm²	11.3	89	155

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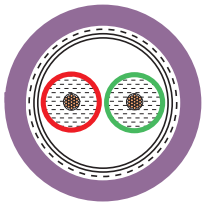
UNITRONIC® BUS PB TORSION

Flame retardant, highly flexible PROFIBUS cable for torsion load



2170332

Benefits

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

Application range

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

Product features

- TORSION: for torsional stress, e.g. robot application; ± 180° per 1 m
- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply
  (cable type A, PROFIBUS-DP):
  93.75 kbit/s = 1200 m
  187.5 kbit/s = 1000 m
  500 kbit/s = 400 m
  1.5 Mbit/s = 200 m
  12.0 Mbit/s = 100 m

Norm references / Approvals

- Certification: UL type CMX in accordance with UL 444

Product Make-up

- Stranded bare copper wire
- Core insulation: PE
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PUR, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
(not for power applications)
300 V

Torsion movement in WTG (wind turbine generator)
Max. torsion load
± 180°/m

Minimum bending radius
Fixed installation: 4 x outer diameter
Flexing: 7.5 x outer diameter

Test voltage
3600 V DC (3 sec.)

Characteristic impedance
150 ± 15 Ohm

Temperature range
Operating temperature: -25°C to 75°C
Storage temp.: -40°C to 80°C

Article number	Article designation	Number of cores and mm² per conductor	Dimension and cross section in mm²	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
Highly flexible application						
2170332	UNITRONIC® BUS PB TORSION	1 x 2 x 0.38	1 x 2 x 0.38	8	31	66

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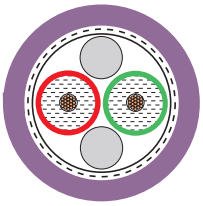
Accessories

- Sub-D Bus-Connectors

UNITRONIC® BUS PB FESTOON

PROFIBUS cable for cable trolley applications



2170331

Benefits

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

Application range

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

Product features

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

Norm references / Approvals

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

Product Make-up

- Outer sheath: special PVC compound

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz): max. 30 nF/km

Peak operating voltage
600 V (not for power applications)

Minimum bending radius
Flexing: 70 mm
Fixed installation: 30 mm once

Test voltage
Core/core: 2000 V

Characteristic impedance
150 ± 15 Ohm

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

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

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

- Sub-D Bus-Connectors

EPIC® DATA PB Sub-D

PROFIBUS connectors with screw terminals | REPEATER function | ATEX

Info

- Optional with LED diagnostic
- M12, REPEATER and ATEX version
- Versions with 2nd Sub-D interface

21700507

21700503

LED
21700530
21700529

21700520

21700505

Benefits

- Easy connection with tried-and-tested M12 / screw terminal technology
- Sensor/ ac
- Terminating resistor (integrated) can be switched
- REPEATER version: Regeneration of data signal (slope, power and mark-to-space ratio)
- ATEX version: For use within intrinsically-safe circuits in zone 2 areas with an explosion hazard (explosive gas atmosphere occurs only rarely and briefly)

Product features

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

Norm references / Approvals

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

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Improved electromagnetic compatibility (EMC) by metallized housing
- Versions with additional Sub-D interface for programming/diagnostic ('PG')
- For cable outer diameter: 5 8 mm / M12 B-coded cordsets
- LED Version indicate: bus operation - (green) station transmission - (blue) terminating resistor "on" - (orange)

Suitable cables

- UNITRONIC® BUS PB Page 329
- UNITRONIC® BUS PB M12 Page 351
- UNITRONIC® BUS PB M12-M12

Suitable tools

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001132
ETIM 5.0/6.0 Class-Description: D-Sub connector

Dimensions
54 mm x 40 mm x 17 mm - 35°
64 mm x 40 mm x 17 mm - 90°
68 mm x 40 mm x 17 mm - 180°
70 mm x 40 mm x 17 mm - M12
(LxWxH)

Connection type
Screwing
M12

Protection rating
IP 20

Terminating resistor
150 Ω

Interfaces
Sub-D socket, 9-pin
Terminal blocks up to 1.0 mm² /M12
B-coded

Permissble ambient conditions
Operating temperature: -25 °C to +85 °C
*The max. temperature for UL is 60 °C

Article number	Article designation	Version	PG-Interface	Diagnostic LEDs	PU
35° cable outlet					
21700507	ED-PB-35		no	no	1
21700506	ED-PB-35-PG		yes	no	1
90° cable outlet					
21700504	ED-PB-90		no	no	1
21700503	ED-PB-90-PG		yes	no	1
21700530	ED-PB-90-LED		no	yes	1
21700529	ED-PB-90-PG-LED		yes	yes	1
21700520	ED-PB-PG-90-M12	M12	yes	no	1
21700541	ED-PB-90-RP-PG	REPEATER	yes	yes	1
21700543	ED-PB-90-ATEX	ATEX	no	no	1
21700542	ED-PB-90-PG-ATEX	ATEX	yes	no	1
180° (AX) cable outlet					
21700505	ED-PB-AX		no	no	1

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EPIC® DATA PB Sub-D FC

PROFIBUS Connectors Fast Connect

21700513

21700502

LED
21700547
21700546

21700544

Info

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

Benefits

- Quick installation with Fast Connect ('FC') technology
- Sensor/ ac
- No loose parts
- Visual bus connection control
- Terminating resistor (integrated) can be switched

Product features

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

Norm references / Approvals

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

Product Make-up

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

Suitable cables

- Bus system PROFIBUS-DP/FMS/FIP

Suitable tools

- FC STRIP stripping tool refer to page 960
- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001132
ETIM 5.0/6.0 Class-Description: D-Sub connector

Dimensions
95 mm x 70 mm x 17 mm - 35°
72 mm x 40 mm x 17 mm - 90°
70 mm x 35 mm x 17 mm - 180°
(LxWxH)

Connection type
Fast Connect

Protection rating
IP 20

Terminating resistor
150 Ω

Interfaces
Sub-D socket, 9-pin
PROFIBUS FC standard cable,
Ø 0.64 mm

Permissble ambient conditions
Operating temperature: -25°C to +85°C
*The max. temperature for UL is 60 °C

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

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

EPIC® DATA PB Sub-D PRO

PROFIBUS Connectors full-metall M12 connection /spring type connection

Info

- For high mechanical stress
- High EMC protection

21700563

21700562

21700565

Benefits

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

Product features

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

Norm references / Approvals

- IEC 61158, IEC 61784

Product Make-up

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

Suitable cables

- UNITRONIC® BUS PB M12 Page 351
- UNITRONIC® BUS PB M12-M12]

Suitable tools

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001132
ETIM 5.0/6.0 Class-Description: D-Sub connector

Dimensions
see technical data sheet

Connection type
M12 or
Internal spring type terminal

Protection rating
IP 30

Terminating resistor
150 Ω

Interfaces
Sub-D socket, 9-pin
Spring terminal for solid conductors / M12 B-coded
0,08 - 0,5 mm² (AWG28 - AWG14)
Cable diameter: 8 - 9 mm

Permissble ambient conditions
Operating temperature:
-20°C to +70°C

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

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

EPIC® DATA PB Sub-D FO

PROFIBUS Connectors Optical Link Modul

21700570

Info

- PROFIBUS repeater with integrated optical interface

Benefits

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

Product features

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

Norm references / Approvals

- IEC 61158, IEC 61784

Product Make-up

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

Suitable cables

- HITRONIC® POF DUPLEX BUFFERED FIBRES Page 468
- HITRONIC® POF DUPLEX CABLE Page 469
- HITRONIC® POF cables for PROFINET Applications Page 470

Suitable connectors

- HBFR, SMA and BFOC(ST)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001132
ETIM 5.0/6.0 Class-Description: D-Sub connector

Dimensions
64 mm x 40 mm x 17 mm (LxWxH)

Protection rating
IP 20

Interfaces
Sub-D socket, 9-pin
Fibre optic cable: POF / PCF, 650 nm

Permissble ambient conditions
Operating temperature: 0°C to +60°C

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

Applicable optical connectors (POF) included
Photographs and graphics are not to scale and do not represent detailed images of the respective products.
Note: For one optical link 2 modules are required

Accessories

- PCF Assembly Sets refer to page 482
- PCF Connector HFBR refer to page 481
- PCF Connector F-SMA and ST(BFOC) refer to page 481
- POF Assembly Sets refer to page 474
- POF Connector F-SMA and ST(BFOC) refer to page 472
- POF Connector SC-RJ refer to page 473

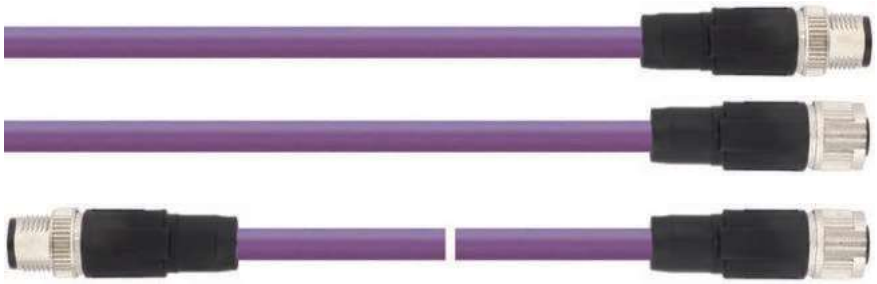
UNITRONIC® BUS PB M12 | M12-M12

PROFIBUS cable: M12 plug/socket on free conductor end

PROFIBUS Cable: M12 connector on M12 socket

Info

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



Benefits

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

Application range

- Mechanical and plant engineering

Product features

- 2-core PROFIBUS cable, shielded
- Connector M12, B-coded with quick locking system
- Suitable for drag chains
- Including tag carrier

Norm references / Approvals

- UL-AWM-Style 21198 (80 °C / 300 V)

Product Make-up

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

Suitable connectors

- Sub-D Bus-Connectors
- EPIC® DATA PB M12 Page 352
- EPIC® DATA PB M12/M12 Page 353

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001855
ETIM 5.0/6.0 Class-Description: Sensor-actuator patch cord

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

Protection rating
IP65/IP67

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

Coding
B - inverse

Rated current (A)
4 A

Article number	Article designation	Length (m)	Number of pins	Design	Rated voltage (V)	PU
Plug						
22260767	AB-PB-M12MS-2,0PUR	2	2	straight	250	1
22260768	AB-PB-M12MS-5,0PUR	5	2	straight	250	1
22260769	AB-PB-M12MS-10,0PUR	10	2	straight	250	1
22260956	AB-PB-M12MA-2,0PUR	2	2	angled	250	1
Socket						
22260770	AB-PB-2,0PUR-M12FS	2	2	straight	250	1
22260771	AB-PB-5,0PUR-M12FS	5	2	straight	250	1
22260772	AB-PB-10,0PUR-M12FS	10	2	straight	250	1
Plug on socket						
22260955	AB-PB-M12MS-0,2PUR-M12FS	0.2	2	straight-straight	250	1
22260773	AB-PB-M12MS-0,3PUR-M12FS	0.3	2	straight-straight	250	1
22260774	AB-PB-M12MS-1,0PUR-M12FS	1	2	straight-straight	250	1
22260775	AB-PB-M12MS-2,0PUR-M12FS	2	2	straight-straight	250	1
22260869	AB-PB-M12MS-3,0PUR-M12FS	3	2	straight-straight	250	1
22260776	AB-PB-M12MS-5,0PUR-M12FS	5	2	straight-straight	250	1
22260777	AB-PB-M12MS-10,0PUR-M12FS	10	2	straight-straight	250	1
22260907	AB-PB-M12MS-15,0PUR-M12FS	15	2	straight-straight	250	1
22260908	AB-PB-M12MS-20,0PUR-M12FS	20	2	straight-straight	250	1
22260079	AB-PB-M12MA-5,0PUR-M12FA	5	2	angled-angled	250	1
22260904	AB-PB-M12MA-10,0PUR-M12FA	10	2	angled-angled	250	1
22260905	AB-PB-M12MA-15,0PUR-M12FA	15	2	angled-angled	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- FLEXIMARK® Label LMB refer to page 921

EPIC® DATA PB M12

Field mountable M12 BUS-connectors, shielded for PROFIBUS

Benefits

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

Product features

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

Suitable cables

- Bus system PROFIBUS-DP/FMS/FIP
- UNITRONIC® BUS PB M12 Page 351

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC002062
ETIM 5.0/6.0 Class-Description: Sensor-actuator connector

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

Protection rating
IP 67

Ambient temperature (operation)
Plug/socket -40°C to +85°C

Coding
B - inverse (PROFIBUS)

Rated current (A)
4 A

Article number	Article designation	Number of pins	Conductor cross-section (mm²)	Cable diameter in mm	Rated voltage (V)	PU
Plug, straight						
22260653	AB-C5-M12MSB-PG9-SH-AU	5	0.25 - 0.75	6.0 - 8.5	60	1
22262078	AB-C5-M12MSB-PG11-SH-AU	5	0.25 - 0.75	8.0 - 10.0	60	1
Socket, straight						
22260646	AB-C5-M12FSB-PG9-SH-AU	5	0.25 - 0.75	6.0 - 8.5	60	1
22260889	AB-C5-M12FSB-PG11-SH-AU	5	0.25 - 0.75	8.0 - 10.0	60	1

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

EPIC® DATA PB M12/M12

PROFIBUS M12 control cabinet feed-through, shielded

22262021

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC002061
ETIM 5.0/6.0 Class-Description:
Sensor-actuator connector chassis

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

Protection rating
IP 67

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

Coding
B - inverse (PROFIBUS)

Rated current (A)
4 A

Benefits

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

Application range

- Mechanical and plant engineering

Product features

- For PROFIBUS applications
- Bipolar/screw mounting

Product Make-up

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

Suitable cables

- UNITRONIC® BUS PB M12 Page 351
- UNITRONIC® BUS PB M12-M12

Suitable connectors

- EPIC® DATA PB M12 352

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

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

EPIC® DATA PB TR M12

M12 Terminating resistor for PROFIBUS

Info

- Fully suitable for industrial use

22260722

22261001

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000448
ETIM 5.0/6.0 Class-Description:
Terminal resistor

Protection rating
IP65/IP67 (plug)
IP 67 (socket)

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

Contact material
CuSn

Coding
B - inverse (PROFIBUS)

Rated current (A)
4 A

Benefits

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

Application range

- Mechanical and plant engineering

Product features

- 150 Ω terminating resistor for PROFIBUS

Product Make-up

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

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

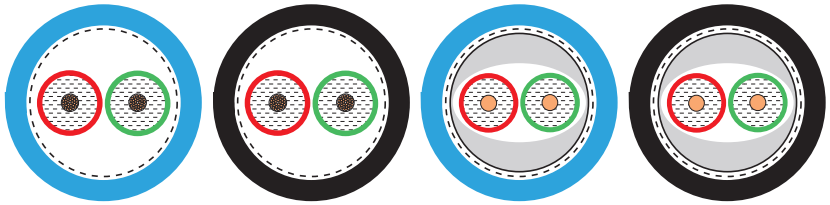
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PB M12T

UNITRONIC® BUS PA

PROFIBUS cables for applications in manufacturing and process automation



2170234 2170235 2170334 2170335

Info

- PA = Process Automation
- Variant with UL/CSA CMG

Benefits

- FC (Fast Connect) version is oil and UV-resistant

Application range

- Process-automation application for connecting sensors and actuators - including areas with risks of explosion.
- Fixed Installation

Product features

- Bit rate = 31.25 kbit/s. Transmission technology RS485 also possible but bit rate is limited to 1.5 Mbit/s
- Maximum cable length is dependent on several factors (e.g. supply voltage, current demand).
- Technical Data: refer to the overview on "UNITRONIC® Bus Cables"
- Flame-retardant according IEC 60332-1-2

Norm references / Approvals

- PROFIBUS® PA is standardised in EN 50170 as PROFIBUS® DP and PROFIBUS® FMS
- Transmission technology for PROFIBUS-PA in accordance with international standard IEC 61158-2
- FC variant with UL/CSA certification (CMG / PLTC)

Product Make-up

- UNITRONIC® BUS PA
  Stranded conductor
  Copper braiding
  Outer sheath: PVC, blue, (RAL 5015)
  intrinsically safe area, black (RAL 9005)
- UNITRONIC® BUS PA FC
  Bare copper wire
  Fast Connect inner sheath
  Cu-Geflecht
  Puter sheath: PVC, blue (RAL 5015), black (RAL 9005)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 250 V

Conductor resistance
(loop): max. 44 ohm/km

Minimum bending radius
Fixed installation: 10 x outer diameter

Test voltage
Core/core: 1500 V rms

Characteristic impedance
100 ± 20 Ohm

Temperature range
Fixed installation: -30°C to +80°C
During installation: -5°C to +50°C

Article number	Article designation	Number of pairs and cable diameter per conductor in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
Conventional cable makeup					
2170234	UNITRONIC® BUS PA (BU)	1 x 2 x 1,3	8	45	84
2170235	UNITRONIC® BUS PA (BK)	1 x 2 x 1,3	8	45	84
Fast Connect cable makeup - UL/CSA CMG certification					
2170334	UNITRONIC® BUS PA FC (BU)	1 x 2 x 1.00	8	45.5	103
2170335	UNITRONIC® BUS PA FC (BK)	1 x 2 x 1.00	8	45.5	103

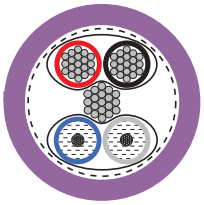
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
SIMATIC® is a registered trademark of Siemens AG
Armoured
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Multipurpose shears A and B
- STAR STRIP stripping tool refer to page 957
- FC STRIP stripping tool refer to page 960

UNITRONIC® DeviceNet THICK + THIN

DeviceNet Buscable based on the CAN technology



2170340/2170341/2170342/2170343

Application range

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

Product features

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

Norm references / Approvals

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

Product Make-up

- Tinned copper wire
- Core insulation: foam skin
- Tinned-copper braiding with drain wire
- Outer sheath: FRNC or PVC

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Core identification code
Data pair: light blue + white
Power supply: red + black

Mutual capacitance
(800 Hz): max. 39.8 nF/km

Peak operating voltage
300 V (not for power applications)

Conductor resistance
Thick (loop): max. 45 ohm/km
Thin (loop): max. 180 ohm/km

Minimum bending radius
Fixed installation: 15 x outer diameter

Test voltage
Core/core: 2000 V

Characteristic impedance
120 ohm

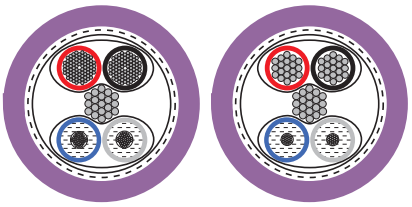
Temperature range
Fixed installation: -25°C to +80°C

Article number	Article designation	Number of pairs and AWG size	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
Halogen-free					
2170340	UNITRONIC® BUS DN THICK FRNC	1x2xAWG18 + 1x2xAWG15	12.2	82.8	195
2170341	UNITRONIC® BUS DN THIN FRNC	1x2xAWG24 + 1x2xAWG22	6.9	33.4	69.5
PVC					
2170342	UNITRONIC® BUS DN THICK Y	1x2xAWG18 + 1x2xAWG15	12.2	88.4	192
2170343	UNITRONIC® BUS DN THIN Y	1x2xAWG24 + 1x2xAWG22	6.9	33.4	66.9

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
FRNC means Flame-Retardant, Non-Corrosive; and DeviceNet is a registered trademark of ODVA.
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)
ECO is the cost-efficient version of article no. 2170342 and 2170343, with a slight modification to the outer sheath and UL/CSA-approved (CMG).
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

UNITRONIC® DeviceNet FD THICK+THIN

High flexible DeviceNet Buscable based on the CAN technology



2170344/2170346 2170345/2170347

Application range

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

Product features

- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- Refer to data sheet for more details
- PUR (P) Version: Halogene free
  PVC (Y) Version: Flame retardant (UL FT4)
- UV-resistant (but colour may change after some time)

Norm references / Approvals

- PUR: UL/CSA-certified (CMX)
- PVC: UL/CSA CMG 75°C FT4 Sun Res Oil Res, at 2170346 also PLTC

Product Make-up

- Core insulation: PE
- Outer sheath of Polyurethan (PUR) or Polyvinylchlorid (PVC)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Core identification code
Data pair: light blue + white
Power supply: red + black

Mutual capacitance
(800 Hz): max. 39.8 nF/km

Peak operating voltage
300 V (not for power applications)

Conductor resistance
Thick (loop): max. 45 ohm/km
Thin (loop): max. 180 ohm/km

Minimum bending radius
Fixed installation: 7.5 x outer diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 2000 V

Characteristic impedance
120 ohm

Temperature range
PUR: -40°C to +80°C
PVC: -10°C to +80°C

Article number	Article designation	Number of pairs and AWG size	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
PUR					
2170344	UNITRONIC® BUS DN THICK FD P	1x2xAWG18 + 1x2xAWG15	12.2	94	184
2170345	UNITRONIC® BUS DN THIN FD P	1x2xAWG24 + 1x2xAWG22	6.9	33.4	67.7
PVC					
2170346	UNITRONIC® BUS DN THICK FD Y	1x2xAWG18 + 1x2xAWG15	12.2	94	195
2170347	UNITRONIC® BUS DN THIN FD Y	1x2xAWG24 + 1x 2xAWG22	6.9	33.4	69.8

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
DeviceNet is a registered trademark of ODVA
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- SMART STRIP stripping tool

UNITRONIC® BUS CAN

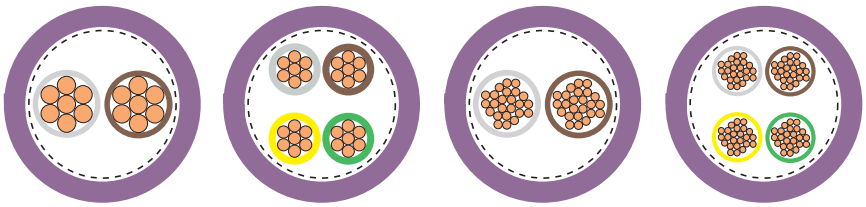
CAN Buscables for fixed installation - UL/SCA certified

Info

- CAN = Controller Area Network

UNITRONIC® BUS CAN FD P

CAN Buscables for high flexible application - UL/SCA certified



2170260/2170263/ 2170266 | 2170261/2170264/ 2170267 | 2170269/2170272/ 2170275 | 2170270/2170273/ 2170276

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz) max. 40 nF/km

Peak operating voltage
UNITRONIC® BUS CAN
(not for power applications) 250 V
UNITRONIC® BUS CAN FD P
250 V (not for power transmission)

Conductor resistance
UNITRONIC® BUS CAN
(loop): max. 186 ohm/km
UNITRONIC® BUS CAN FD P
(loop): max. 159.8 ohm/km

Minimum bending radius
UNITRONIC® BUS CAN
Fixed installation: 8 x outer diameter
UNITRONIC® BUS CAN FD P
Flexing: 15 x outer diameter

Test voltage
Core/core: 1500 V rms

Characteristic impedance
120 ohm

Temperature range
UNITRONIC® BUS CAN
Fixed installation: -30°C to +80°C
Flexing: -5°C to +70°C
UNITRONIC® BUS CAN FD P
Fixed installation: -40°C to +80°C
Flexing: -30°C to +70°C

Application range

UNITRONIC® BUS CAN
- Fixed Installation

UNITRONIC® BUS CAN FD P
- For highly flexible applications

Product features

UNITRONIC® BUS CAN
- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according IEC 60332-1-2

UNITRONIC® BUS CAN FD P
- Halogen-free
- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according IEC 60332-1-2

Norm references / Approvals

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

Product Make-up

UNITRONIC® BUS CAN
- 0.22 + 0.34 + 0.5: bare stranded conductor, 7-wire
  0.75: bare stranded conductor, fine-wire
- Core insulation: foam skin
- Colour-coded in accordance with DIN 47100
- Copper braid
- Outer sheath: PVC, violet (RAL 4001)

UNITRONIC® BUS CAN FD P
- Stranded bare conductor
- Core insulation: foam skin
- Copper braid
- Outer sheath: PUR, violet (RAL 4001)
- UV-resistant (but colour may change after some time)

Article number	Article designation	Number of pairs/conductor cross section (mm²)	Outer diameter [mm]	Conductor resistance	Copper index (kg/km)	Weight (kg/km)
for fixed installation						
2170260	UNITRONIC® BUS CAN	1 x 2 x 0,22	5.7	186	16.7	42
2170261	UNITRONIC® BUS CAN	2 x 2 x 0,22	7.6	186	34.8	68
2170263	UNITRONIC® BUS CAN	1 x 2 x 0,34	6.8	115	25	55
2170264	UNITRONIC® BUS CAN	2 x 2 x 0,34	8.5	115	46.4	88
2170266	UNITRONIC® BUS CAN	1 x 2 x 0,5	7.5	78	41.6	90
2170267	UNITRONIC® BUS CAN	2 x 2 x 0,5	9.6	78	59.4	106
2170269	UNITRONIC® BUS CAN	1 x 2 x 0,75	8.7	52	52.7	108
2170270	UNITRONIC® BUS CAN	2 x 2 x 0,75	11.5	52	80.6	142
For highly flexible applications (power chains, moving machine parts)						
2170272	UNITRONIC® BUS CAN FD P	1 x 2 x 0,25	6.4	159.8	24	40
2170273	UNITRONIC® BUS CAN FD P	2 x 2 x 0,25	8.4	159.8	33	65
2170275	UNITRONIC® BUS CAN FD P	1 x 2 x 0,34	6.8	122	32.8	60
2170276	UNITRONIC® BUS CAN FD P	2 x 2 x 0,34	9.6	122	52.4	88
2170278	UNITRONIC® BUS CAN FD P	1 x 2 x 0,5	8	72.8	41.9	74
2170279	UNITRONIC® BUS CAN FD P	2 x 2 x 0,5	10.1	72.8	59.4	100

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Multipurpose shears A and B
- SENSOR STRIP stripping tool refer to page 961
- SMART STRIP stripping tool

UNITRONIC® BUS CAN TRAY

CAN Bus cable with PLTC-ER approval - for open wiring between cable trays and industrial machines

Info

- CAN = Controller Area Network

Benefits

- PLTC-ER approval for open wiring between cable tray and industrial machines/plants acc. to NEC 725.154 (D)
- No additional protection of the cable needed

Application range

- Fixed Installation

Product features

- Maximum bit rate: 1 Mbit/s for 40 m segment length
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- UV-resistant UL SUN RES
- Oil-resistant according to UL OIL RES I
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test

Norm references / Approvals

- Standardised internationally in ISO 11898
- C(UL)us Typ CMG (75°C) acc.to UL 444 / CSA 22.2
- UL Type PLTC-ER acc. to UL 13

Product Make-up

- 7-wire bare stranded copper conductor
- Core insulation: foam skin
- Inner sheath: PVC
- Copper braid
- Outer sheath: PVC, violet (RAL 4001)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz) max. 40 nF/km

Peak operating voltage
(not for power applications) 250 V
Rated voltage: 600 V (UL)

Conductor resistance
(loop): max. 110,8 ohm/km

Minimum bending radius
Fixed installation: 8 x outer diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 2000 V

Characteristic impedance
120 ohm

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

Article number	Article designation	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
UNITRONIC® BUS CAN TRAY					
2170857	UNITRONIC® BUS CAN TRAY	2 x 2 x 0,34	7.5	35	81

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Multipurpose shears A and B
- SMART STRIP stripping tool

UNITRONIC® BUS CAN BURIAL

CAN bus cable with double outer sheath for outdoor/direct burial use

Info

- Suitable for direct burial

Benefits

- Suitable for CAN communication according to ISO 11898
- Double-sheathed version, extremely tough, for installation without corrugated tubing
- Rugged, UV-resistant and weatherproof
- Diameter of inner sheath suitable for common connectors

Application range

- Useable for CAN based communication systems like CANopen
- Suitable for direct burial
- For outdoor applications
- For fixed installation or applications with occasional movements

Product Make-up

- Copper stranded 7x0,32
- Core insulation: PE
- Overall screening of braided tinned-copper strands
- Inner sheath: PVC, violet RAL (4001), outer diameter: 7.1 mm
- Outer sheath: PE, black RAL (9005), outer diameter: 9.0 mm

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(1 kHz): max. 40 nF/km

Peak operating voltage
300 V (not for power applications)

Conductor resistance
(Loop): max. 74 Ohm /km

Minimum bending radius
Flexible use: 8 x Outer Diameter
Fixed Installation: 4 x Outer Diameter

Test voltage
Core/core: 1500 V rms

Characteristic impedance
120 ohm

Temperature range
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
UNITRONIC® BUS CAN BURIAL					
2170500	UNITRONIC® BUS CAN BURIAL 4x1x0,5	4 x 1 x 0,5	9	41.8	91

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Sub-D Bus-Connectors

UNITRONIC® BUS HEAT 6722

CAN bus cable for utility vehicles

Info

- Designed according to ISO 6722
- Tested acc.to ECE-R 118.01

Benefits

- Star-quad stranding, thus less space requirement and weight
- Extended temperature range
- Good resistance to oil, petrol, acids and alkalis

Application range

- Suitable for connecting to of e.g. camera systems, enter-/ infotainment for passengers, ticketing systems
- For fixed, occassionally flexible and protected use inside of utility vehicles

Product features

- Halogen-free outer sheath
- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Temperature class B on the basis of ISO 6722-1
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according IEC 60332-1-2

Norm references / Approvals

- Standardised internationally in ISO 11898

Product Make-up

- Stranded bare conductor
- PUR outer sheath
- Colour: black
- UV-resistant (but colour may change after some time)
- Screening: wrapped with braided copper wires

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
40 nF/km (800 Hz)

Peak operating voltage
250 V (not for power transmission)

Conductor resistance
(loop): max. 159.8 ohm/km

Minimum bending radius
Flexing: 15 x outer diameter

Test voltage
Core/core: 1500 V rms

Characteristic impedance
120 ohm

Temperature range
Fixed installation: -40 °C to +105 °C
occasionally flexing: -30 °C to +105 °C

Article number	Article designation	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
UNITRONIC® BUS HEAT 6722					
2170385	UNITRONIC® BUS HEAT 6722	1 x 4 x 0,25	6.45	26	46
2170386	UNITRONIC® BUS HEAT 6722	1 x 4 x 0,34	7.54	33	61
2170387	UNITRONIC® BUS HEAT 6722	1 x 4 x 0,5	8.36	41	70
2170388	UNITRONIC® BUS HEAT 6722	1 x 4 x 0,75	9.79	59	95

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Multipurpose shears A and B
- SENSOR STRIP stripping tool
- SMART STRIP stripping tool

NEW

UNITRONIC® TRAIN

Bus cables - MVB and WTB - Electron beam cross-linked for high requirements in railway applications

Info

- Small outer diameters for maximum saving of space and weight
- Extremely low attenuation ≤ 5 MHz

Benefits

- Good chemical resistance
- Resistant to mechanical influences in harsh environmental conditions
- Extended temperature range
- Reduced flame spreading increases the protection against damage to persons and property in the event of a fire
- EMC-optimised design

Application range

- The communication systems WTB (wire train bus) and MVB (multifunction vehicle bus) make up the so-called TCN (train communication network)
- UNITRONIC® TRAIN bus cables are designed for use in TCN acc. IEC 61375
  MVB according IEC 61375-3-1
  WTB according IEC 61375-2-1
- For use in railway vehicles and buses, for fixed installations and applications where limited movement may occur
- Also applicable within oily environments and areas with increased ambient temperature

Product features

- Fire behaviour according to EN/IEC:
  - Halogen-free acc. to EN 60754-1
  - No corrosive gases acc. to EN 60754-2
  - No fluorine acc. to EN 60684-2
  - No toxic gases acc. to EN 50305
  - Low smoke density acc. to EN 61034-2
  - Flame-retardant acc. to EN 60332-1-2
  - No fl ame propagation acc. to EN 60332-3-25
- Fire behaviour according to NF:
  - Toxicity of gases acc. to NF X 70-100
  - Low smoke density acc. to NF X 10-702
  - No flame propagation acc. to NF C 32-070, Cat. C1 and C2
- Chemical properties:
  - Oil resistant acc. to EN 50264-1
  - Fuel resistant acc. to EN 50264-1
  - Acid resistant acc. to EN 50264-1
  - Alkali resistant acc. to EN 50264-1
  - Ozone resistant acc. to EN 50264-3-2

Norm references / Approvals

- EN 45545-2 HL1, HL2, HL3
- EN 50264-1

Product Make-up

- Stranded tinned 19-wire conductor
- Core insulation: Based on Polyolefin
- Outer sheath: electron beam cross-linked polymer-compound EM 104
- Outer sheath colour: Black

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Flexing: 10 x outer diameter
Fixed installation: 6 x outer diameter

Test voltage
Core/core: 1000 V
Core/screen: 1000 V

Characteristic impedance
120 ohm (± 10%)

Temperature range
Fixed installation:
-45°C to +90°C
Occasional flexing: -35°C up to +90°C

Article number	Article designation	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)
Cables for MVB				
2173000	UNITRONIC® TRAIN MVB 1x2x0,5	1x2x0,5	7.6	29
2173001	UNITRONIC® TRAIN MVB 1x2x0,5+1x0,5	1x2x0,5+1x0,5	7.6	34
2173002	UNITRONIC® TRAIN MVB 2x2x0,5	2x2x0,5	8.3	40
2173003	UNITRONIC® TRAIN MVB 2x2x0,5+4x0,25	2x2x0,5+4x0,25	8.3	50
Cables for WTB				
2173004	UNITRONIC® TRAIN WTB 1x2x0,75	1x2x0,75	8.4	41

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

EPIC® DATA CAN Sub-D

CAN Bus-Connectors with screw connection

21700537 21700536 21700536 21700538

Benefits

- Terminating resistor (integrated) can be switched
- Sensor/ ac
- No loose parts
- With additional 24 V DC output to supply external devices (90° version only)

Product features

- Max. transmission rate 1 Mbit/s possible
- Terminating resistor "ON" - the outbound bus cable is disconnected
- The integrated, connectable terminating resistor enable the CAN-Bus to be terminated or connected through
- Sub-D pin assignment:
  CAN Low = Pin 2
  CAN High = Pin 7
  CAN Gnd = Pin 3
  GND = Pin 6 (90° version only)
  CAN V+ = Pin 9 (90° version only)
  (shield = housing)

Norm references / Approvals

- UL File No. E331560

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Screw connection
- Improved electromagnetic compatibility (EMC) by metallized housing
- For cable outer diameter: 5 - 8 mm

Suitable cables

- Bus system CAN / DeviceNet Page

Suitable tools

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001132
ETIM 5.0/6.0 Class-Description: D-Sub connector

Dimensions
60 mm x 40 mm x 17 mm - 90°
67,5 mm x 35 mm x 17 mm - 180°
(LxWxH)

Connection type
Screwing

Protection rating
IP 20

Terminating resistor
120 Ω

Interfaces
CAN bus station:
D-Sub socket, 9-pin
CAN bus cable:
6 terminal blocks for wires up to 0.8 mm²

Permissble ambient conditions
Operating temperature:
-25°C to +85°C
*The max. temperature for UL is 60 °C

Article number	Article designation	Cable outlet	PG-Interface	PU
Sub-D connector				
21700537	ED-CAN-90	90°	no	1
21700536	ED-CAN-90-PG	90°	yes	1
21700538	ED-CAN-AX	180° axial	no	1

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DeviceNet CANopen

EPIC® DATA CAN Sub-D PRO

CAN Bus-Connectors full-metall

Info

- High EMC protection
- For cable diameters up to 10 mm

21700590

21700591

Benefits

- High flexibility by extended cable clamping range
- Cost-saving due to quick and easy installation
- Robust housing material for harsh environments
- For EMC critical environments

Product features

- Extended temperature range
- High mechnical strength (200 contact durability)
- Less transmission loss
- Bus termination is integrated
- Sub-D pin assignment:
  CAN Low = Pin 2
  CAN High = Pin 7
  CAN Gnd = Pin 3
  GND = Pin 6 (90° version only)
  CAN V+ = Pin 9 (90° version only)
  (shield = housing)

Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- 360° shielding due full-metall housing (ZnAl)
- External cable clamp connection (7 - 10 mm)
- 90° version: With additional Sub-D port for programming/diagnostic ('PG')
- 90° version: PG port with undetachable EMC Sub-D protection

Suitable cables

- UNITRONIC® DeviceNet THICK + THIN Page 355
- UNITRONIC® BUS CAN Page 357
- UNITRONIC® DeviceNet FD THICK+THIN Page 356
- UNITRONIC® BUS CAN FD P Page 357
- UNITRONIC® BUS CAN TRAY Page 358
- UNITRONIC® BUS HEAT 6722 Page 360
- UNITRONIC® BUS CAN BURIAL Page 359

Suitable tools

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001132
ETIM 5.0/6.0 Class-Description: D-Sub connector

Dimensions
63 x 45 x 18 - 90°
81 x 36 x 15 - 180°
(LxWxH)

Connection type
Screwing

Protection rating
IP 30

Terminating resistor
120 Ω

Interfaces
CAN-Bus station:
D-SUB socket, 9-pin
CAN-Bus cable:
- srew terminals for wires 0.14 - 0.5 mm²

Permissble ambient conditions
Operating temperature:
-20°C to +70°C

Article number	Article designation	Cable outlet	PG-Interface	PU
Sub-D connector				
21700590	ED-CAN-90-PG-PRO	90°	yes	1
21700591	ED-CAN-AX-PRO	180° axial	no	1

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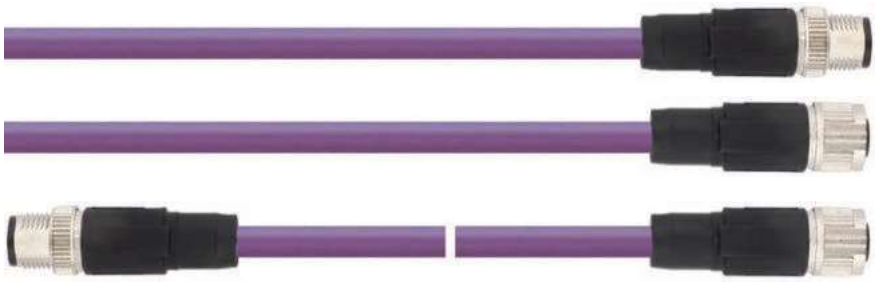
UNITRONIC® BUS CAN M12 | M12-M12

DeviceNet/CANopen Cable: M12 plug/socket on free conductor end

DeviceNet/CANopen Cable: M12 connector on M12 socket



Info

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

Benefits

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Robust design

Application range

- Mechanical and plant engineering

Product features

- 5-core DeviceNet/CANopen cable, shielded
- M12 connector, A-coded with quick-locking system
- Suitable for drag chains
- Including tag carrier

Norm references / Approvals

- UL-AWM-Style 21198 (80 °C / 300 V)

Product Make-up

- Signal line: 2 x 0.25 mm²
  Power supply: 2 x 0.34 mm²
  Drain wire: 1 x 0.34 mm²
- Core colours: red/black, blue/white
- Outer sheath: PUR halogen-free, violett
- Outer diameter: 6.7 mm
- Shielded version

Suitable connectors

- Sub-D Bus-Connectors
- EPIC® DATA CAN M12 Page 365
- EPIC® DATA CAN M12/M12 Page 365
- EPIC® DATA CAN TR M12 Page 366
- EPIC® DATA CAN M12T Page 367
- EPIC® DATA CAN CCR Page 367

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001855
ETIM 5.0/6.0 Class-Description: Sensor-actuator patch cord

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

Protection rating
IP65/IP67

Ambient temperature (operation)
Plug/socket -25°C to +90°C
Fixed installation -40°C to +80°C
Flexing -20°C to +70°C

Coding
A-standard

Rated current (A)
4 A

Article number	Article designation	Length (m)	Number of pins	Design	Rated voltage (V)	PU
Plug						
22260789	AB-DN-M12MS-2,0PUR	2	5	straight	60	1
22260790	AB-DN-M12MS-5,0PUR	5	5	straight	60	1
22260791	AB-DN-M12MS-10,0PUR	10	5	straight	60	1
22262004	AB-DN-M12MA-2,0PUR	2	5	angled	60	1
Socket						
22260792	AB-DN-2,0PUR-M12FS	2	5	straight	60	1
22260793	AB-DN-5,0PUR-M12FS	5	5	straight	60	1
22260794	AB-DN-10,0PUR-M12FS	10	5	straight	60	1
Plug on socket						
22260795	AB-DN-M12MS-0,3PUR-M12FS	0.3	5	straight-straight	60	1
22260796	AB-DN-M12MS-1,0PUR-M12FS	1	5	straight-straight	60	1
22260797	AB-DN-M12MS-2,0PUR-M12FS	2	5	straight-straight	60	1
22260798	AB-DN-M12MS-5,0PUR-M12FS	5	5	straight-straight	60	1
22260799	AB-DN-M12MS-10,0PUR-M12FS	10	5	straight-straight	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- FLEXIMARK® Label LMB refer to page 921

EPIC® DATA CAN M12

Field mountable M12 BUS-connectors shielded for DeviceNet/CANopen

Technical data

Connection type
Screwing

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

Protection rating
IP 67

Ambient temperature (operation)
Plug/socket -40°C to +85°C

Coding
A - Standard
(CANopen/DeviceNet/CC-Link)

Rated current (A)
4 A

22260135

22260136

Benefits

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

Product Make-up

- M12 plug, 5-pins, A-coded
- Screw connection
- PG9 thread
- Screened version

Article number	Article designation	Design	Number of pins	Cross-section in mm²	Cable diameter in mm	Rated voltage (V)	PU
Plug, straight							
22260135	AB-C5-M12MS-PG9-SH	screw	5	0.25 - 0.75	6.0 - 8.0	60	1
Socket, straight							
22260136	AB-C5-M12FS-PG9-SH	screw	5	0.25 - 0.75	6.0 - 8.0	60	1

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EPIC® DATA CAN M12/M12

M12 control cabinet feed-through, shielded for CAN/DeviceNet/ S/A cabling

Technical data

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

Protection rating
IP 67

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

Coding
A - Standard
(CANopen/DeviceNet/CC-Link)

Rated current (A)
4 A

22262020

Benefits

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

Product features

- For CANopen/DeviceNet applications
- For sensor/actuator cabling
- Bipolar/screw mounting

Product Make-up

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

Article number	Article designation	Number of pins	Rated voltage (V)	PU
Control cabinet feed through				
22262020	AB-C5-DSI-M12MS-M12FS-M16-SH	5	24	1

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EPIC® DATA CAN TR M12

M12 Terminating resistor for DeviceNet/CANopen

22260766

Info

- Fully suitable for industrial use

Benefits

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

Application range

- Mechanical and plant engineering

Product features

- 120 Ω terminating resistor for DeviceNet/CANopen

Product Make-up

- Straight connector M12 with integrated termination resistor

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000448
ETIM 5.0/6.0 Class-Description: Terminal resistor

Protection rating
IP65/IP67

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

Contact material
CuSn

Coding
A - Standard (CANopen/DeviceNet)

Rated current (A)
4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
Plug, unshielded (terminating resistor)				
22260766	AB-C5-M12MS-DN-TR	5	60	5

DeviceNet is a registered trademark of ODVA
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA CAN M12T refer to page 367

DeviceNet CANopen

EPIC® DATA CAN M12T

M12 T parallel distributor for CAN/ DeviceNet/ S/A cabling

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC002585
ETIM 5.0/6.0 Class-Description:
Passive sensor-actuator interface

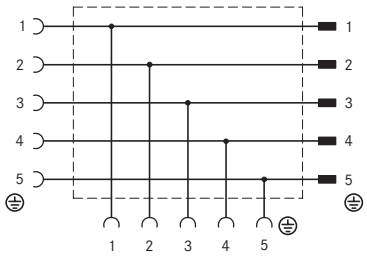
Material
Contact: CuZn
Contact surface: Ni/Au
Contact carrier: TPU GF
Knurl: Zinc die-cast, nickel-plated
Gripping body: TPU, flame-retardant, self-extinguishing
Sealing: NBR

Protection rating
IP65/IP67

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

Coding
A - Standard
(CANopen/DeviceNet/CC-Link)

Rated current (A)
4 A



222607656

Benefits
- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Robust design

Product features
- For CANopen/DeviceNet applications
- PWIS-free

Product Make-up
- 5-pin parallel distributor
- M12 socket on M12 plug and M12 socket

Article number	Article designation	Number of pins	Rated voltage (V)	PU
T distributor				
22260765	AB-C5-M12T-2XM12FS DN	5	60	5

DeviceNet is a registered trademark of ODVA
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

DeviceNet CANopen

EPIC® DATA CAN CCR

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

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC002925
ETIM 5.0/6.0 Class-Description:
Sensor-actuator adapting connector

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

Protection rating
IP65/IP67

Ambient temperature (operation)
-40°C to +85°C

Rated current (A)
4 A

21700641

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

Application range
- To extend existing cable systems
- Repairkit for damaged cables

Product features
- 5-pin cable coupler round
- Screened version

Article number	Article designation	Number of pins	Cross-section in mm²	Cable diameter in mm	Rated voltage (V)	PU
Cable coupler round						
21700641	AB-C5-CCR-SH	5	0.14 - 0.50	5.0 - 9.7	60	1

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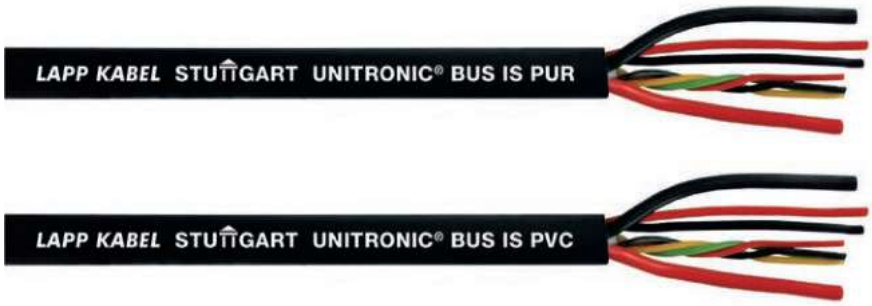
UNITRONIC® BUS IS

ISOBUS cables for use in agricultural vehicles



Info

- Lapp cable is member of the AEF - Agricultural Industry Electronics Foundation

Benefits

- Cable according ISOBUS standard (ISO 11783-2) for use in agricultural vehicles.
- HYBRID: cable for data transmission + power supply

Application range

- For outdoor applications
- Connection cable between tractor and pulled machinery

Product features

- Flame-retardant according to IEC standard 60332-1
- UV-resistant
- Resistant against oil, benzine and diesel
- PUR (Polyurethane) Version with increased robustness

Norm references / Approvals

- ISO 11783-2:2012

Product Make-up

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- 4x 0,5 mm² (red, yellow, black, green)
  2x 2,5 mm² (red, black)
  2x 6 mm² (red, black)
- Outer sheath: PUR and PVC, black (RAL 9005)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
60 V

Minimum bending radius
Fixed installation: 10 x outer diameter
Flexing: 15 x outer diameter

Test voltage
0,5 mm - 2,5 mm² core / core = 1,5 kV;
6 - 10 mm² core / core = 2,5 kV

Characteristic impedance
Characteristic impedance: 75 ohm

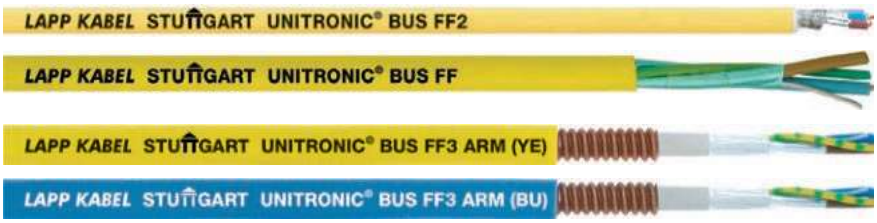
Temperature range
PUR: -40°C to +85°C
PVC: -30°C to +85°C

Article number	Article designation	Number of cores/pairs and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)
PUR				
2170561	UNITRONIC® BUS IS PUR 2x6+2x2,5+1x4x0,5	2x6+2x2,5+1x4x0,5	15.6	182.4
PVC				
2170560	UNITRONIC® BUS IS PVC	2x6+2x2,5+1x4x0,5	15.6	182.4

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

UNITRONIC® BUS FF

FOUNDATION Fieldbus cable for use in Process Automation - UL-verified



Benefits

- Cables meet the requirements of ISA/SP50 and the FOUNDATION™ field bus for the cable type A.

Application range

- FOUNDATION™ Fieldbus is used in intrinsically safe areas, especially in the field of Process Automation
- Fixed Installation

Product features

- UV-resistant
- Extended temperature range

Norm references / Approvals

- With UL/CSA certification (CMG/PLTC)

Product Make-up

- 2-core, not armoured, with device ground
- 3-core, unarmoured, with device ground
- 3-core, armoured (longitudinally welded, spiral corrugated copper sheath) with device ground
- Outer sheath: PVC, yellow
  Armoured Version: PVC, yellow and blue

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
300 V

Conductor resistance
≤ 24 Ohm/km

Minimum bending radius
15 x outer diameter

Test voltage
1500 V

Characteristic impedance
100 ± 20 Ohm at 31.25 kHz

Temperature range
-40 °C or -25 °C to +105 °C, see data sheet

Article number	Article designation	Number of pairs and cable diameter	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS FF					
2170350	UNITRONIC® BUS FF 3	1x2x1.1 + 1x1.1 Ø	7.9	48.3	93
PVC - Armoured					
2170351	UNITRONIC® BUS FF 3 ARM (YE)	1x2x1.1 + 1x1.1 Ø	12.3	125	182
2170353	UNITRONIC® BUS FF 3 ARM (BU)	1x2x1.1 + 1x1.1 Ø	12.3	125	182
PVC					
2170352	UNITRONIC® BUS FF 2	1 x 2 x 1.1	7.9	39.7	82

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Foundation™ is a trademark of the Fieldbus Foundation
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

UNITRONIC® BUS CC

CC-Link bus cable for fixed installation - UL-verified

Info

- Lapp Kabel is a regular member of the user organisation CC-Link Partner Association (CLPA), Japan.

Benefits

- The CC-Link® system was developed by Mitsubishi Electric Automation, Japan.
- This CC-Link® bus cable has successfully passed the CC-Link® Conformance Test in Japan.

Application range

- CC-Link® (Control & Communication Link) = field bus network, for both control as well as information data to provide efficient, integrated factory and process automation.
- Fixed installation of the CC-Link® network

Product features

- Transmission rate in relation to the distance
- 156 kbit/s 1.200 m
  625 kbit/s 600 m
  2,5 Mbit/s 200 m
  5,0 Mbit/s 110-150 m
  10 Mbit/s 50-100 m
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- SUN RES acc. to UL 1581

Norm references / Approvals

- CM UL/CSA certification 75°C or PLTC Sun Res

Product Make-up

- Bare stranded copper wires
- Core insulation: PE
- Overall screening of braided tinned-copper strands
- Outer sheath: PVC, red (RAL 3000)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
300 V

Conductor resistance
11 ohm/1,000 ft. (305 m) at 20°C

Minimum bending radius
Fixed installation: 5 x outer diameter
Flexing: 8 x outer diameter

Test voltage
2000 V

Characteristic impedance
110 ohm at 1 MHz

Temperature range
-40°C to +70°C

Article number	Article designation	Number of cores and AWG size	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS CC					
2170360	UNITRONIC® BUS CC	3 x 1 x AWG20	7.7	38.8	76.6

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
CC-Link® is a registered trademark of CC-Link Partner Association, Japan (CLPA)
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

UNITRONIC® BUS CC FD P FRNC

CC-Link bus cable for high fleible applications - UL-verified

Info

- Lapp Kabel is a regular member of the user organisation CC-Link Partner Association (CLPA), Japan.

Benefits

- The CC-Link® system was developed by Mitsubishi Electric Automation, Japan.

Application range

- CC-Link® (Control & Communication Link) = field bus network, for both control as well as information data to provide efficient, integrated factory and process automation.
- For highly flexible applications (power chains, moving machine parts)

Product features

- Transmission rate in relation to the distance
- 156 kbit/s 1.200 m
  625 kbit/s 600 m
  2,5 Mbit/s 200 m
  5,0 Mbit/s 110-150 m
  10 Mbit/s 50-100 m
- Halogen-free
- Flame-retardant according IEC 60332-1-2

Norm references / Approvals

- AWM 20233 80 °C 300V

Product Make-up

- Bare stranded copper wires
- Core insulation: PE
- Inner sheath: FRNC
- Overall screening of braided tinned-copper strands
- Outer sheath: PUR, red (RAL 3000)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Certifications
UL AWM Style 20233

Peak operating voltage
300 V

Conductor resistance
11 ohm/1,000 ft. (305 m) at 20°C

Minimum bending radius
Fixed installation: 4 x outer diameter
Moved: 10 x outer diameter

Test voltage
2000 V

Characteristic impedance
110 ohm at 1 MHz

Temperature range
-40°C to +80°C

Article number	Article designation	Number of cores and AWG size	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS CC FD P FRNC					
2170370	UNITRONIC® BUS CC FD P FRNC	3 x 1 x AWG20	8.5	39.9	84

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
CC-Link® is a registered trademark of CC-Link Partner Association, Japan (CLPA)
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UNITRONIC® BUS SAFETY

SafetyBUS cables for transmission of safety-oriented datas

Benefits

- For serial transmission of safety-oriented data

Application range

- UNITRONIC® BUS SAEFTY - fixed Installation
  UNITRONIC® BUS SAEFTY FD P - highly flexible applications
- For systems such as SafetyBUS p®, based on the well-known CAN bus system

Product features

- The stated bit rates result in the following cable lengths (maximum) for a bus segment:
- 500 kbit/s = max.100 m
- 250 kbit/s = max. 250 m
- 125 kbit/s = max. 500 m
- 50 kbit/s = max. 1,000 m

Norm references / Approvals

- Flame retardant acc. to IEC 60332-1-2

Product Make-up

- Bare stranded copper wires
- Core insulation: foam skin
- Tin-plated copper wire braiding
- Outer sheath: halogen-free, flame-retardant compound
- Outer sheath: yellow

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Certifications
Version UNITRONIC® BUS SAFETY FC: AWM Style 2464 (80°C 300 V)

Mutual capacitance
(800 Hz): max. 45 nF/km

Peak operating voltage
(not for power applications) 250 V

Conductor resistance
(loop): max. 52 ohm/km

Minimum bending radius
Fixed installation:
5 x outer diameter

Test voltage
Core/core: 3000 V
Core/core: 1500 V (FD- version)

Characteristic impedance
120 ohm

Temperature range
UNITRONIC BUS SAFETY:
Fixed installation: -30°C to +80°C
UNITRONIC BUS SAFETY FD P:
Fixed installation -40°C to +80°C
Moved: -30 to +80°C

Article number	Article designation	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
Fixed Installation					
2170295	UNITRONIC® BUS SAFETY	3 x 0.75	7.6	49	68
For highly flexible applications					
2170885	UNITRONIC® BUS SAFETY FD P	3 x 0.75	7.8	49	68

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
SafetyBUS p® is a registered trademark of Pilz GmbH & Co.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- FC STRIP stripping tool refer to page 960

UNITRONIC® BUS IBS

INTERBUS cables for different applications

Benefits

- Applications:
  fixed Installation,
  high flexible use,
  outdoor use/direct burial

Application range

- Remote bus/ installation remote bus cable

Product features

- **UNITRONIC® BUS IBS**
  fixed installation
  UNITRONIC® BUS IBS Combi
  with power supply
  UNITRONIC® BUS IBS A
  UL-verified
- **UNITRONIC® BUS Yv**
  outdoor use/ direct burial
  UNITRONIC® BUS Yv Combi
  with power supply
- **UNITRONIC® BUS IBS FD P**
  fixed installation
  UNITRONIC® BUS IBS FD P Combi
  with power supply
  UNITRONIC® BUS IBS FD P Combi A
  UL-verified

Norm references / Approvals

- Refer to data sheet for more details
- According to DIN EN 61158

Product Make-up

- See data sheet

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 250 V

Conductor resistance
see data sheet

Minimum bending radius
Fixed installation: 8 x outer diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 1500 V rms

Characteristic impedance
100 Ohm

Temperature range
UNITRONIC® BUS IBS
fixed installation: -30°C to +80°C
flexing: -5°C to +70°C
UNITRONIC® BUS IBS FD P
fixed installation: -40°C to +80°C
flexing: -5°C to +70°C
UNITRONIC® BUS IBS Yv
Fest verlegt: -40°C to +70°C

Article number	Article designation	Number of pairs and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
Fixed Installation					
2170206	UNITRONIC® BUS IBS	3 x 2 x 0.22	7.2	37	72
2170208	UNITRONIC® BUS IBS P COMBI	3 x 2 x 0,22 + 3 x 1,0	7.9	60	85
Fixed installation - suitable for outdoor use and direct burial					
2170207	UNITRONIC® BUS IBS Yv COMBI	3 x 2 x 0.22	9.3	37	94
2170217	UNITRONIC® BUS IBS Yv COMBI	3 x 2 x 0,22 + 3 x 1,0	9.4	60	128
For fixed installation - UL CMX certification					
2170209	UNITRONIC® BUS IBS A	3 x 2 x 0.22	7.2	37	72
For highly flexible applications					
2170216	UNITRONIC® BUS IBS FD P	3 x 2 x 0.25	7.9	39	64
2170218	UNITRONIC® BUS IBS FD P COMBI	3 x 2 x 0,25 + 3 x 1,0	7.9	62	92
Highly flexible applications - with UL (CMX) certification					
2170818	UNITRONIC® BUS IBS FD P COMBI A	3 x 2 x 0,25 + 3 x 1,0	7.9	62	92

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
INTERBUS is a registered trademark of Phoenix Contact GmbH & Co.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- SENSOR STRIP stripping tool refer to page 961

UNITRONIC® BUS EIB / KNX

Info

- EIB / European Installation Bus
- KNX/communication in building management
- CPR: Article number choice under www.lappkabel.com/cpr

Application range

- The product is designed for use in building management, e.g. for decentralised control of lighting, heating, air-conditioning, ventilation, energy management, blinds, time management, locking systems etc.
- The cable can be laid on or under plaster; in pipes, cable ducts; in dry, damp or wet environments.
- EIB installation mainly consists of sensors/command-transmitters (e.g. light barriers, switches, thermostats, infrared, wind meters, timers), and actuators (e.g. engines, heaters, ventilators, lights, blinds).
- KNX technology was formed from the merging of three established European bus standards: EIP, EHS (household appliances and consumer electronics) and Batibus (heating/ventilation/air conditioning)

Product features

- Serial data transmission
- EIB cable has been tested at 4 kV (1 min.) in a water bath

Product Make-up

- Screened installation cable based on type J-Y(ST)Y according to DIN VDE 0815
- **UNITRONIC® BUS EIB**
  Bare solid copper wire
  2x2x0,8: red and black, white and yellow
  Core insulation: PVC
  Overall aluminum foil
  Outer sheath: PVC, green (RAL 6017)
- **UNITRONIC® BUS EIBCOMBI**
  Bare solid copper wire
  Core insulation: PVC
  2x2x0,8: red and black, white and yellow
  3x1,5: brown, blue, green/yellow
  Overall aluminum foil
  Outer sheath: PVC, green (RAL 6017)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Mutual capacitance
(800 Hz) max. 100 nF/km

Peak operating voltage
(not for power applications) 250 V

Conductor resistance
(loop): max. 73.2 ohm/km

Minimum bending radius
Fixed installation:
5 x outer diameter

Test voltage
Core/core: 4000 V

Temperature range
Fixed installation: -30°C to +70°C

Article number	Article designation	Number of pairs and mm or mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/m)
PVC					
2170240	UNITRONIC® BUS EIB	2 x 2 x 0.8	6.6	21	54
2170242	UNITRONIC® BUS EIB COMBI	2 x 2 x 0,8 mm + 3 x 1,5 mm²	12.7	64	128
Halogen-free					
2170241	UNITRONIC® BUS EIB H	2 x 2 x 0.8	6.6	21	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- SENSOR STRIP stripping tool refer to page 961