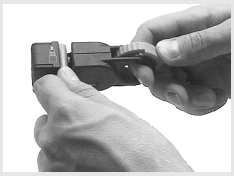
Overview


①
Measure the length of the cable to be stripped by placing it in the template. Stop with the index finger of your left hand

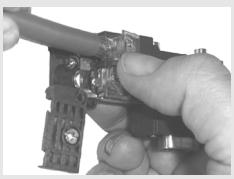

②
Insert the measured cable end into the tool. The stop for the insertion depth is indicated by the index finger of the left hand.


③
Fix the cable end in the stripping tool up as far as the stop.


④
Rotate stripping tool 4 times in the direction of the arrow to strip the wire.


⑤
Pull the closed stripping tool away from the end of the cable.


⑥
Remove core protection film.


⑦
After stripping the cable it can be mounted directly in the PROFIBUS connector.


⑧

- Fast and easy assembly of PROFIBUS copper cables
- Rules out mounting errors such as short-circuits between the shield and adapter

Application

PROFIBUS FastConnect is a system for fast and easy assembly of PROFIBUS copper cables.

Design

The system comprises 3 compatible components:

- FastConnect bus cables for rapid installation
- FastConnect stripping tool
- FastConnect PROFIBUS bus connector

Note:
The PROFIBUS FastConnect bus cables can also be connected to conventional bus connectors.

Functions

The FastConnect stripping method enables fast and easy connection of PROFIBUS connectors to the PROFIBUS cables.

The special structure of the FastConnect bus cables enables the use of the FastConnect stripping tool with which the outer casing and the woven shield can be stripped with perfect precision in one step.

The cable prepared in this way is connected in the FastConnect bus connector using the insulation displacement method.

- Shorter connection times for terminals by stripping of the outer cladding and woven shield in one step
- Rules out mounting errors such as short-circuits between the shield and adapter

- Easy assembly due to preset insulation stripping tool (FC stripping tool)

- Termination can be checked in the assembled state through the transparent cover for the insulation piercing terminals thanks to color coding.

Bus cables for PROFIBUS

Overview

- Different versions for different applications (e.g. underground installation, trailing cables)
- High immunity to interference due to double shielding.
- Flame-retardant bus cable (halogen-free).
- Length can easily be determined due to meter length markings printed on the cable
- Hybrid cable for common transmission of data and power supply

3

Application

Different types of cables are available for the different application options for configuring PROFIBUS networks.

Generally, the cables listed should be used. For further details on network configuration, refer to the PROFIBUS network manual.

The ECOFAST hybrid cable is particularly suitable for connecting locally installed ECOFAST components.

Design

Shielded, twisted-pair cable with circular cross-section.

The following applies to all PROFIBUS bus cables:

- Due to double-shielding, these cables are particularly suitable for industrial environments subject to electromagnetic interference.
- Grounding continuity may be implemented through the outer casing of the bus cable and the bus terminal's ground terminals.
- Meter length markings are printed on the cable.

Cable types

The FastConnect (FC) bus cables are of a radially symmetric design which allows a stripping tool to be used. In this way bus connectors can be assembled quickly and easily.

- PROFIBUS FC Standard Cable:
  Standard bus cable specially designed for fast assembly.
- PROFIBUS FC Robust Cable:
  This cable is specially designed to withstand aggressive chemicals and mechanical stress.
- PROFIBUS FC food cable:
  The use of PE casing material makes this bus cable suitable for use in the food, beverages and tobacco industry
- PROFIBUS FC Underground Cable:
  This cable is specially designed for underground installation. It differs from the standard PROFIBUS bus cable in that it is equipped with an additional casing.
- PROFIBUS FC Trailing Cable:
  Bus cable for special use in cases of forced movement in mobile cable handlers, e.g. for continuously moving machine parts (stranded conductor).
- PROFIBUS FC FRNC Cable:
  Two-wire shielded, flame retardant and halogen-free bus cable with copolymer outer casing FRNC (Flame Retardant Non Corrosive).

Bus cables without FastConnect method (design-related)

- PROFIBUS Festoon Cable
  Flexible bus cable (stranded conductor) for special application in festoons.
  For round cables, the operation of a cable cart is recommended.
- PROFIBUS Flexible Cable
  Bus cable for highly flexible applications:
  Special cable (stranded conductor) for use on moving machine parts (5 million torsional movements on 1 m cable, ±180 °).
- PROFIBUS ECOFAST Hybrid Cable:
  The rugged and trailing-type hybrid cable contains two copper conductors for the data transfer and four copper conductors for the power supply to ECOFAST stations.
- SIENOPYR PROFIBUS Marine Cable:
  Halogen-free, tread-resistant, flame retardant marine approved PROFIBUS bus cable for installation on-board ships and offshore units in rooms and on open deck. Available by the meter.

Mounting

Bus cables are sold by the meter.

If a bus segment has to be assembled from two parts (e.g. >1000 m segment length), sleeves can be used for this (connect wires with low resistance to terminals, ensure complete connection of shields).

FastConnect

Using the FastConnect stripping tool it is possible to strip the outer casing and the shield of the new FastConnect bus cables to the right length in one step.

In this way the bus connectors (except 6ES7 972-0BA30-0XA0) can be connected quickly and easily to the bus cable.

Cable installation

Keep the bus cable sealed with a shrink-on cap at each end during storage, transportation and installation.

Do not exceed bending radii and tensile stress!

The ground cable should be used for installation outdoors, e.g. directly in the ground, in sand or in concrete as well as in underground or overground protective steel or plastic conduits.

The surge voltage protection regulations must be observed particularly when underground cables are installed.

- Wide range of applications due to special bus cables.
- Resistance of network to interference due to double shielded cables and integrated grounding concept.
- Time saved by simple and fast connector mounting with FastConnect cables
- One cable (ECOFAST hybrid cable) for common transmission of data and power supply
- Silicone-free, thus particularly suitable for use in the automotive industry (e.g.as enameling lines)

3

Technical specifications

Cable type [1]	PROFIBUS FC Standard Cable	PROFIBUS FC Robust Cable	PROFIBUS FC Food Cable
			
Applications	Universally applicable	Environments exposed to chemical and mechanical stress	Food, beverages and tobacco industry
Attenuation			
• at 16 MHz	< 42 dB/km	< 42 dB/km	< 42 dB/km
• at 4 MHz	< 22 dB/km	< 22 dB/km	< 22 dB/km
• at 9.6 kHz	< 2.5 dB/km	< 2.5 dB/km	< 2.5 dB/km
Impedance			
• at 9.6 kHz	270 ± 27 Ω	270 ± 27 Ω	270 ± 27 Ω
• at 38.4 kHz	185 ± 18.5 Ω	185 ± 18.5 Ω	185 ± 18.5 Ω
• at 3 to 20 MHz	150 ± 15 Ω	150 ± 15 Ω	150 ± 15 Ω
Rated value	150 Ω	150 Ω	150 Ω
Loop resistance	≤ 110 Ω/km	≤ 110 Ω/km	≤ 110 Ω/km
Shield resistance	≤ 9.5 Ω/km	≤ 9.5 Ω/km	≤ 9.5 Ω/km
Effective capacitance at 1 kHz	approx. 28.5 nF/km	approx. 28.5 nF/km	approx. 28.5 nF/km
Operating voltage (rms value)	≤ 100 V	≤ 100 V	≤ 100 V
Type of cable (standard code)	02YSY (ST) CY 1 × 2 × 0.64/2.55-150 KF 40 FR VI	02YSY (ST) C11Y 1 × 2 × 0.64/2.55-150 KF 40 FR VI	02YSY (ST) C2Y 1 × 2 × 0.64/2.55-150 KF 40
Sheath			
• Material	PVC	PUR	PE
• Diameter	8.0 ± 0.4 mm	8.0 ± 0.4 mm	8.0 ± 0.4 mm
• Color	purple	purple	black
Perm. ambient conditions			
• Operating temperature	–40 °C to +60 °C	–40 °C to +60 °C	–40 °C to +60 °C
• Transport/storage temperature	–40 °C to +60 °C	–40 °C to +60 °C	–40 °C to +60 °C
• Installation temperature	–40 °C to +60 °C	–40 °C to +60 °C	–40 °C to +60 °C
Bending radii			
• First & final bending	≥ 75 mm	≥ 75 mm	≥ 75 mm
• Repeated bending	≥ 150 mm	≥ 150 mm	≥ 150 mm
Permissible tensile load	100 N	100 N	100 N
Weight	76 kg/km	73 kg/km	67 kg/km
Halogen-free	No	No	No
Behavior in fire	flame-retardant acc. to VDE 0472 T804 C test type	flame-retardant acc. to VDE 0472 T804 B test type	Flammable
UL listing/300 V rating	Yes/CMX	Yes/CMX	No
Resistance to mineral oils and greases	Conditionally resistant	Good resistance	Conditionally resistant
UV resistance	No	Yes	Yes
Silicone-free	Yes	Yes	Yes
FastConnect cable construction	Yes	Yes	Yes

1) Electrical characteristics at 20 °C, tested according to DIN 47 250 Part 4 or DIN VDE 0472.

Technical specifications

Cable type [1]	PROFIBUS FC Underground Cable	PROFIBUS FC Trailing Cable [2] [3]	PROFIBUS Festoon Cable [3]
			
Applications	Suitable for underground installation	Track chain application	Suitable for suspension from railings
Attenuation			
• at 16 MHz	< 42 dB/km	< 49 dB/km	< 49 dB/km
• at 4 MHz	< 22 dB/km	< 25 dB/km	< 25 dB/km
• at 9.6 kHz	< 2.5 dB/km	< 3 dB/km	< 3 dB/km
Impedance			
• at 9.6 kHz	270 ± 27 Ω	270 ± 27 Ω	270 ± 27 Ω
• at 38.4 kHz	185 ± 18.5 Ω	185 ± 18.5 Ω	185 ± 18.5 Ω
• at 3 to 20 MHz	150 ± 15 Ω	150 ± 15 Ω	150 ± 15 Ω
Rated value	150 Ω	150 Ω	150 Ω
Loop resistance	≤ 110 Ω/km	≤ 133 Ω/km	≤ 133 Ω/km
Shield resistance	≤ 9.5 Ω/km	≤ 14 Ω/km	≤ 19 Ω/km
Effective capacitance at 1 kHz	approx. 28.5 nF/km	approx. 28.5 nF/km	approx. 28 nF/km
Operating voltage (rms value)	≤ 100 V	≤ 100 V	≤ 100 V
Type of cable (standard code)	02YSY (ST) CY2Y 1 × 2 × 0.64/2.55-150 KF 40 SW	02Y Y (ST) C11Y 1×2×0.64/2.55-150 LI KF 40 FR petrol	02Y (ST) CY 1 × 2 × 0.65/2.56-150 LI petrol FR
Sheath			
• Material	PE/PVC	PUR	PVC
• Diameter	10.8 ± 0.5 mm [4]	8.0 ± 0.4 mm	8.0 ± 0.3 mm
• Color	black	petrol	petrol
Perm. ambient conditions			
• Operating temperature	–40 °C to +60 °C	–40 °C to +60 °C	–40 °C to +60 °C
• Transport/storage temperature	–40 °C to +60 °C	–40 °C to +60 °C	–40 °C to +60 °C
• Installation temperature	–40 °C to +60 °C	–40 °C to +60 °C	–40 °C to +60 °C
Bending radii			
• First & final bending	≥ 80 mm	≥ 40 mm	≥ 30 mm
• Repeated bending	≥ 150 mm	≥ 60 mm	≥ 70 mm
Permissible tensile load	100 N	100 N	80 N
Weight	117 kg/km	74 kg/km	56 kg/km
Halogen-free	No	No	No
Behavior in fire	flammable	flame-retardant acc. to VDE 0472 T804 B test type	flame-retardant acc. to VDE 0472 T804 B test type
UL listing/300 V rating	No	Yes/CMX	Yes/CMX
Resistance to mineral oils and greases	Conditionally resistant	Good resistance	Conditionally resistant
UV resistance	Yes	Yes	Yes
Silicone-free	Yes	Yes	Yes
FastConnect cable construction	Yes	Yes	No

1) Electrical characteristics at 20 °C, tested according to DIN 47 250 Part 4 or DIN VDE 0472.

2) Trailing-type cables for the following requirements: min. 4 million bending cycles at the specified bending radius and an acceleration of max. 4 m/s^2

3) Restricted segment lengths (see the manual for PROFIBUS networks).

4) Outside diameter >8 mm; bus connectors can only be connected after removing the outer casing

Bus cables for PROFIBUS

Technical specifications

Cable type [1]	PROFIBUS FC FRNC Cable	PROFIBUS Flexible Cable [2] [3]	SIENOPYR [6] PROFIBUS Marine Cable
			
Applications	Halogen-free and highly flammable applications	Moving machine parts	Marine engineering;
Attenuation			
• at 16 MHz	< 42 dB/km	< 82 dB/km	< 45 dB/km
• at 4 MHz	< 22 dB/km	< 28 dB/km	< 22 dB/km
• at 38.4 kHz			< 5 dB/km
• at 9.6 kHz	< 2.5 dB/km	< 2.5 dB/km	< 3 dB/km
Impedance			
• at 9.6 kHz	270 ± 27 Ω	270 ± 27 Ω	250 ± 25 Ω
• at 38.4 kHz	185 ± 18.5 Ω	185 ± 18.5 Ω	185 ± 18.5 Ω
• at 3 to 20 MHz	150 ± 15 Ω	150 ± 15 Ω	150 ± 15 Ω
Rated value	150 Ω	150 Ω	150 Ω
Loop resistance	≤ 110 Ω/km	≤ 98 Ω/km	≤ 110 Ω/km
Shield resistance	≤ 9.5 Ω/km	≤ 14 Ω/km	–
Effective capacitance at 1 kHz	approx. 28.5 nF/km	approx. 29 nF/km	approx. 30 nF/km [4]
Operating voltage (rms value)	≤ 100 V	≤ 100 V	≤ 100 V
Type of cable (standard code)	02Y SH (ST) CH 1 × 2 × 0.64/2.55-150 VI KF 25 FRNC	02Y (ST) C 11Y 1 × 2 × 0.65/2.56-150 LI FR VI	M-02Y (ST) CH X 1 × 2 × 0.35 100 V
Sheath			
• Material	FRNC	PUR	Polymer [5]
• Diameter	8.0 ± 0.4 mm	8.0 ± 0.4 mm	10.3 ± 0.5 mm
• Color	light purple	purple	black
Perm. ambient conditions			
• Operating temperature	–25 °C to +60 °C	–40 °C to +60 °C	–40 °C to +80 °C
• Transport/storage temperature	–25 °C to +60 °C	–40 °C to +60 °C	–40 °C to +80 °C
• Installation temperature	–25 °C to +60 °C	–40 °C to +60 °C	–10 °C to +50 °C
Bending radii			
• First & final bending	≥ 40 mm	≥ 60 mm	≥ 108 mm
• Repeated bending	≥ 75 mm	≥ 120 mm	≥ 216 mm
Permissible tensile load	100 N	100 N	100 N
Weight	67 kg/km	65 kg/km	approx. 109 kg/km
Halogen-free	Yes	No	Yes
Behavior in fire	flame-retardant acc. to VDE 0472 T804 C test type	flame-retardant acc. to VDE 0472 T804 B test type	flame-retardant acc. to VDE 0472 T804 C test type
UL listing/300 V rating	Yes/CM	Yes/CMX	No
Resistance to mineral oils and greases	Conditionally resistant	Good resistance	Very good resistance
UV resistance	Yes	Yes	Yes
Silicone-free	Yes	Yes	Yes
FastConnect cable construction	Yes	No	No

1) Electrical characteristics at 20 °C, tested according to DIN 47 250 Part 4 or DIN VDE 0472.

2) Restricted segment lengths (see the manual for PROFIBUS networks).

3) Torsionally resistant cable for following requirements: min. 5 million torsional movements on 1 m cable ±180°

4) At 800 Hz

5) Outside diameter >8 mm; bus connectors can only be connected after removing the outer casing

6) Shipbuilding approvals
– Lloyds Register of Shipping
– Germanischer Lloyd

Technical specifications

Cable type [1]	PROFIBUS ECOFAST Hybrid Cable [2]	PROFIBUS Cable for ET 200X
		
Applications	Connection for ECOFAST station	ET 200 X
Attenuation		
• at 16 MHz	< 49 dB/km	–
• at 4 MHz	< 25 dB/km	–
• at 9.6 kHz	< 3 dB/km	–
Impedance		
• at 9.6 kHz	270 ± 27 Ω	–
• at 38.4 kHz	185 ± 18.5 Ω	–
• at 3 to 20 MHz	150 ± 15 Ω	135 – 165 Ω
Rated value	≤ 150 Ω	–
Loop resistance	≤ 168 Ω/km	–
Shield resistance	≤ 15 Ω/km	–
Effective capacitance at 1 kHz	30 pF/m	30 pF/m
Operating voltage (rms value)	100 V	35 V
Type of cable (standard code)	02Y (ST)C 1×2×0.65/2.56 –150 LI LIH-Z 11Y 4×1×1.5 VI FRNC	02Y (ST)C 1×2×0.65/2.56 –150 LI LIY-J Y 3×1×0.75 VI KF30
Sheath		
• Material	PUR	PUR
• Diameter	approx. 11 mm	approx. 9.5 mm
• Color	purple	petrol
Perm. ambient conditions		
• Operating temperature	–40 °C to +60 °C	–30 °C to +60 °C
• Transport/storage temperature	–40 °C to +60 °C	–40 °C to +60 °C
• Installation temperature	–40 °C to +60 °C	–40 °C to +60 °C
Bending radii		
• First & final bending	38 mm	70 mm
• Repeated bending	55 mm	140 mm
Permissible tensile load	≤ 300 N	≥ 300 N
Weight	approx. 154 kg/km	approx. 105 kg/km
Halogen-free	Yes	No
Behavior in fire	flame-retardant acc. to VDE 0472 T804 B test type	flame-retardant acc. to VDE 0472 T804 B test type
UL listing	No	Yes
Resistance to mineral oils and greases	Conditionally resistant	Conditionally resistant
UV resistance	No	No
Silicone-free	Yes	Yes
FastConnect cable construction	No	No

1) Electrical characteristics at 20 °C, tested according to DIN 47 250 Part 4 or DIN VDE 0472.

2) Trailing-type cables for the following requirements:
min. 2.5 million bending cycles at the specified bending radius and an acceleration of 2.5 m/s^2

Bus cables for PROFIBUS

Ordering data

Order No.

Bus cables for PROFIBUS:

PROFIBUS FC Standard Cable ▶ **6XV1 830-0EH10**
Standard type specially designed for rapid installation, two-wire, shielded, sold by the meter;
Consignment max. 1000 m max., min. odering quantity 20 m

Preferred lengths

• 20 m	▶	**6XV1 830-0EN20**
• 50 m	▶	**6XV1 830-0EN50**
• 100 m	▶	**6XV1 830-0ET10**
• 200 m	▶	**6XV1 830-0ET20**
• 500 m	▶	**6XV1 830-0ET50**

PROFIBUS FC Robust Cable ▶ **6XV1 830-0JH10**
2-wire, shielded
sold by the meter:
max. consignment 1000 m,
minimum order 20 m

PROFIBUS FC Food Cable ▶ **6XV1 830-0GH10**
2-wire, shielded
sold by the meter:
max. consignment 1000 m,
minimum order 20 m

PROFIBUS FC Ground Cable ▶ **6XV1 830-3FH10**
2-wire, shielded
sold by the meter:
max. consignment 1000 m,
minimum order 20 m

PROFIBUS FC Trailing Cable ▶ **6XV1 830-3EH10**
2-wire, shielded
sold by the meter:
max. consignment 1000 m,
minimum order 20 m

PROFIBUS FastConnect Stripping Tool ▶ **6GK1 905-6AA00**
Pre-set stripping tool for rapid stripping of insulation from PROFIBUS FastConnect bus cables

PROFIBUS FastConnect Blade Cassettes ▶ **6GK1 905-6AB00**
spare blade cassettes for the PROFIBUS FastConnect stripping tool, 5 pcs.

PROFIBUS FastConnect Bus Connector RS 485 with 90° cable outlet
with insulation displacement method

• without PG interface	▶	**6ES7 972-0BA50-0XA0**
• with PG interface	▶	**6ES7 972-0BB50-0XA0**

PROFIBUS FastConnect RS 485 Bus Connector Plug 180 ▶ **6GK1 500-0FC00**
with 180° cable outlet
using insulation displacement method

1) Order from:
DEHN & Söhne
Hans-Dehn-Str. 1
92318 Neumarkt/Opf., Germany

Note:
Additional components for the SIMATIC NET cable range can be ordered from your local contact.
For technical support, please contact:
J. Hertlein, A&D SE PS
Tel.: +49 91 17 50 44 65
Fax: +49 91 17 50 99 91
E-mail: juergen.hertlein@fthw.siemens.de

Order No.

PROFIBUS Festoon Cable ▶ **6XV1 830-3GH10**
2-wire, shielded
sold by the meter:
max. consignment 1000 m,
minimum order 20 m

PROFIBUS FC FRNC Cable ▶ **6XV1 830-0LH10**
2-wire shielded
flame retardant,
with copolymer outer casing FRNC, sold by the meter:
max. consignment 1000 m,
minimum order 20 m

PROFIBUS Flexible Cable ▶ **6XV1 830-0PH10**
2-wire, shielded
sold by the meter:
max. consignment 1000 m,
minimum order 20 m

PROFIBUSECOFAST Hybrid Cable
Trailing-type cable with
2 copper conductors (0.64 mm^2) and
4 copper conductors (1.5 mm^2)

• Sold by the meter	▶	**6XV1 830-7AH10**
• Non-preassembled		
– 20 m	▶	**6XV1 830-7AN20**
– 50 m	▶	**6XV1 830-7AN50**
– 100 m	▶	**6XV1 830-7AT10**
• Preassembled lengths and connectors		See page 3/26

PROFIBUS Cable for ET 200X

• 5-wire, sold by the meter, for bus signals, power supply: oil resistant, conditional resistance to welding, can be used	▶	**6ES7 194-1LY10-0AA0-Z** Z = length (specify in m)
• 5-wire, sold by the meter, for bus signals, power supply: standard, PVC casing	▶	**6ES7 194-1LY00-0AA0-Z** Z = length (specify in m)

Special bus cables

SIENOPYR PROFIBUS Marine Cable ▶ **6XV1 830-0MH10**
Copper cable for installation on-board ships and offshore units
sold by the meter:
max. consignment 1000m
min. order 20 m

Manual for PROFIBUS networks [1]
Network architecture, configuring, network components, installation

• German	▶	**6GK1 970-5CA20-0AA0**
• English	▶	**6GK1 970-5CA20-0AA1**

Lightning protection module for reliable transmission between buildings through overvoltage protection [1]

Coarse protection	
• Basic unit	**919506**
• Protection module type B	**919510**
• Protective housing	**906055**
• Shield connection terminal	**919508**
Fine protection	
• Basic unit	**919506**
• Protection module	**919570**
• Shield connection terminal	**919508**

SIMATIC NET manual collection ▶ **6GK1 975-1AA00-3AA0**
Electronic manuals for communication systems, protocols, products
on CD-ROM
German/English

1) Additional language versions and manuals can be found for the various products at:
http://www.siemens.de/automation/csi/net