

SUBCON-PLUS-PROFIB...

Fast connection connector for PROFIBUS systems



Data sheet
101610_en_07

© PHOENIX CONTACT 2011-11-17

1 Description

The D-SUB series **SUBCON-PLUS-PROFIB...** is specially designed for use in PROFIBUS systems up to 12 Mbps. Under field conditions, it allows convenient and fast connection of the incoming and outgoing bus cable. The spectrum comprises seven fast connection connectors:

Cable entry	Connection	Programming interface
35° angled	Screw connection	Included
35° angled	Screw connection	Not included
90° angled	Screw connection	Included
90° angled	Screw connection	Not included
90° angled	IDC connection	Included
90° angled	IDC connection	Not included
Axial	Screw connection	Not included

All connectors can be used for PROFIBUS cables with a solid or stranded copper conductor.

The terminating resistor is already integrated in all versions. It can be connected externally by means of a slide switch. At the same time the outgoing bus segment is switched off.

This makes it easy to start up segment by segment while incorrect terminations are avoided.

In addition, the connector housing with high-quality shielding guarantees high immunity to interference even at maximum transmission rates.

A special feature of the 35° angled connector is that the internal connection unit can be turned round. Whether the cable is to be inserted from the right or left can thus be decided on-site. If the angled versions cannot be used, the SUBCON-PLUS.../AX compact connector with axial cable entry can be used instead.

The connectors are designed for all standard PROFIBUS cables with an outside diameter of 8 mm (types A and B). If the Fast Connect cable is used, work is reduced to a minimum by using the quick stripping tool, PSM-STRIP-FC/PROFIB: Strip cable and individual wires, insert in connector and close housing cover.



If you have any technical problems, which you cannot resolve with the aid of this documentation, please contact us during the usual office hours at: PSI hotline: +49 - (0) 52 35 - 31 98 90; Fax: +49 - (0) 52 35 - 33 09 99
E-mail: interface-service@phoenixcontact.com



The connectors are specified for cable type A according to EN 50170. Cable type B, also described in EN 50170, is out-of-date and should no longer be used.
You will find other innovative solutions for PROFIBUS at www.phoenixcontact.com.



Make sure you always use the latest documentation.
This can be downloaded from www.phoenixcontact.net/catalog..



This data sheet is valid for the products listed on the following page:

Table of contents

1	Description.....	1
2	Ordering data	2
3	Fast connection connector SUBCON-PLUS-PROFIB/(PG)SC 2	3
	3.1 Function block diagram	3
	3.2 Dimensions.....	3
	3.3 Structure	4
	3.4 Connection	4
4	Fast connection connector SUBCON-PLUS-PROFIB/AX/SC	6
	4.1 Function block diagram	6
	4.2 Dimensions.....	6
	4.3 Structure	7
	4.4 Connection	7
5	Fast connection connector SUBCON-PLUS-PROFIB/90/(PG)/IDC	8
	5.1 Function block diagram	8
	5.2 Dimensions.....	8
	5.3 Structure	9
	5.4 Connection	9
6	Fast connection connector SUBCON-PLUS-PROFIB/90/(PG)/SC	10
	6.1 Function block diagram	10
	6.2 Dimensions.....	10
	6.3 Structure	11
	6.4 Connection	11
7	Termination resistor	12
	7.1 Activating termination resistor and disabling outgoing bus cables	12
	7.2 Linear extension according to PROFIBUS specification	12

2 Ordering data

Connectors with screw connection

Description	Type	Order No.	Pcs./Pkt.
PROFIBUS connector up to 12 Mbps, 35° angled version, integrated termination resistor that can be connected externally , screw connection	SUBCON-PLUS-PROFIB/SC 2	2708232	1
PROFIBUS connector up to 12 Mbps, 35° angled version, integrated termination resistor that can be connected externally , with PG-D-SUB socket for the connection of a programming device, screw connection	SUBCON-PLUS-PROFIB/PG/SC 2	2708245	1
PROFIBUS connector up to 12 Mbps, axial version, integrated termination resistor that can be connected externally , screw connection	SUBCON-PLUS-PROFIB/AX/SC	2744380	1
PROFIBUS connector up to 12 Mbps, 90° angled version, integrated termination resistor that can be connected externally, screw connection	SUBCON-PLUS-PROFIB/90/SC	2313698	1
PROFIBUS connector up to 12Mbps, 90° angled version, integrated termination resistor that can be connected externally, with PG-D-SUB socket for the connection of a programming device, screw connection	SUBCON-PLUS-PROFIB/90/PG/SC	2313708	1

Connectors with IDC terminal connection

Description	Type	Order No.	Pcs./Pkt.
PROFIBUS connector up to 12 Mbps, 90° angled version, integrated termination resistor that can be connected externally , IDC terminal connection	SUBCON-PLUS-PROFIB/90/IDC	2313672	1
PROFIBUS connector up to 12 Mbps, 90° angled version, integrated termination resistor that can be connected externally , with PG-D-SUB socket for the connection of a programming device, IDC terminal connection	SUBCON-PLUS-PROFIB/90/PG/IDC	2313685	1

Accessories

Description	Type	Order No.	Pcs./Pkt.
Quick stripping tool for PROFIBUS cable, type Fast Connect	PSM-STRIP-FC/PROFIB	2744623	1
Stripping pliers	QUICK-WIREFOX 6	1204384	1
PROFIBUS cable, type Fast Connect	PSM-CABLE-PROFIB/FC	2744652	1

3 Fast connection connector SUBCON-PLUS-PROFIB(/PG)/SC 2

Technical data for SUBCON-PLUS-PROFIB(/PG)/SC 2

Connector	9-pos. D-SUB male connector
Programming connection	9-pos. D-SUB socket
Cable entry	either left or right
Connection cross section of screw terminal blocks	
solid	0.14 mm ² ... 1.5 mm ² (AWG 26-16)
stranded	0.14 mm ² ... 1 mm ² (AWG 26-18)
Insertion/withdrawal cycles	> 200
Cable cross section (max./min.)	8 mm (± 0.4 mm)
Mounting screws	4-40 UNC
Maximum torque	0.4 Nm
Temperature range	
Operation	-20 °C ... +75 °C
Storage/transport	-25 °C ... +80 °C
Relative humidity	75 % at 25 °C
Degree of protection	IP40
Housing material	ABS, metal-plated
Pin assignment	3, 5, 6, 8 (see Figure 1)
Nominal current I _N	100 mA
Nominal voltage U _N	50 V DC
Termination resistors	220 Ω / 390 Ω, can be connected externally
UL approval	File No. E123528 Vol. 5 Sec. 3

3.1 Function block diagram

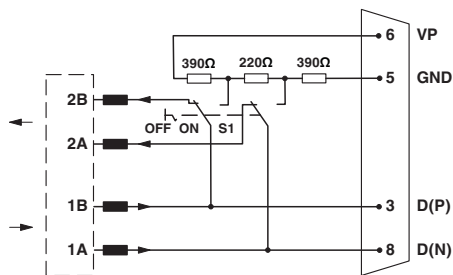


Figure 1 Function block diagram for SUBCON-PLUS-PROFIB/PF/SC 2

3.2 Dimensions

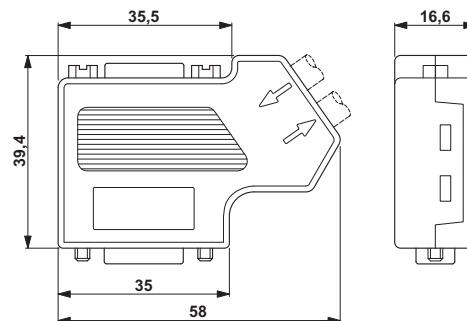


Figure 2 Dimensions (in mm)

3.3 Structure

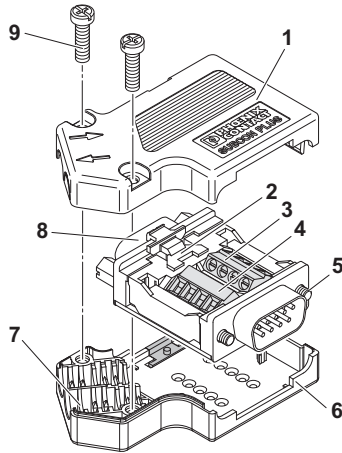


Figure 3 Structure

- | | |
|-------------------------------------|---|
| 1 Upper housing part | 6 Lower housing part |
| 2 Slide switch | 7 Strain relief |
| 3 Connection block for incoming bus | 8 PG connection (for SUBCON-PLUS-PROFIB/PG/SC 2 only) |
| 4 Connection block for outgoing bus | 9 Housing screws |
| 5 Mounting screws | |

3.4 Connection

Stripping

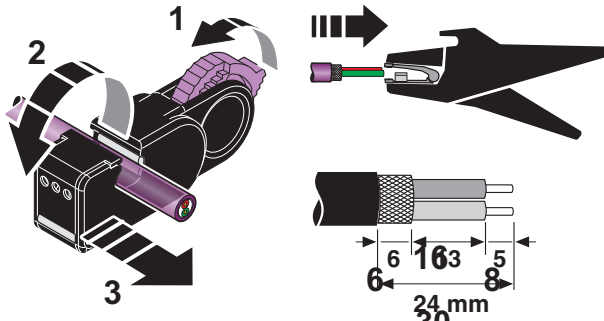


Figure 4 Stripping

We recommend the following stripping tools for quick and convenient stripping:
 PSM-STRIP-FC/PROFIB (Order No. 2744623) and
 QUICK-WIREFOX 6 (Order No. 1204384).

Cable entry

The SUBCON-PLUS-PROFIB/(PG)/SC 2 connectors enable cable entry on the left or right. The connector is supplied preassembled for left-hand entry.



To ensure reliable operation, observe the recommended stripping lengths according to Figure 4.

Connection for cable entry on left

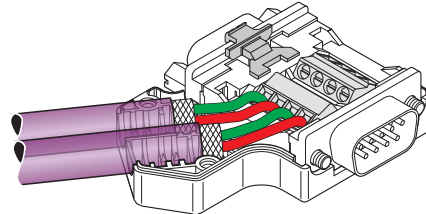


Figure 5 Connection for cable entry on left

- Strip the cable according to Figure 4.
- Loosen the housing screws and lift off upper housing part.
- Screw stripped conductors into the corresponding connection block contacts.
- Always connect the incoming bus cable (BUS IN) to the 1A/1B terminal connections (also at start of bus system!).
- Always connect outgoing bus cable (BUS OUT) to 2A/2B terminal connections. The color of the connecting terminal blocks labeling must then be observed.
- To finish, mount the upper housing part and screw it together. This provides the strain relief for the bus cable.

Connection for cable entry on right

- Strip the cable according to Figure 4.

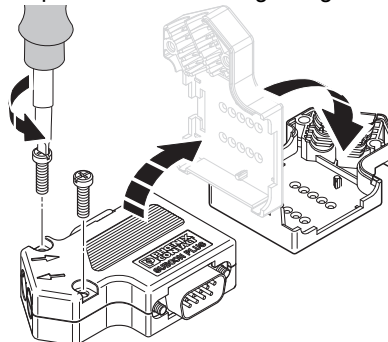


Figure 6 Cable entry on right (1)

- Loosen the housing screws and lift off upper housing part (Figure 6).

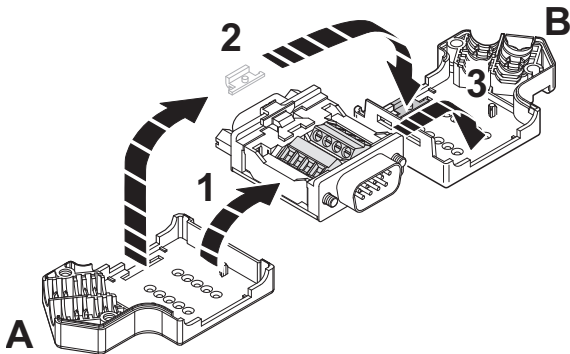


Figure 7 Cable entry on right (2)

- Use a screwdriver to pry the PCB out of the upper housing part, inserting screwdriver near cable entry.
- Place PCB in upper housing part (B in Figure 6) and screw stripped conductors into corresponding connection block contacts.
- Always connect the incoming bus cable (BUS IN) to the 1A/1B terminal connections (also at start of bus system!).
- Always connect the outgoing bus cable (BUS OUT) to the 2A/2B terminal connections.
The color of the connecting terminal blocks labeling must then be observed.
- To finish, mount the housing upper part and screw it together. This provides the strain relief for the bus cable.

4 Fast connection connector SUBCON-PLUS-PROFIB/AX/SC

Technical data for SUBCON-PLUS-PROFIB/AX/SC	
Connector	9-pos. D-SUB male connector
Cable entry	axial
Connection cross section of screw terminal blocks	
solid	0.14 mm ² ... 1.5 mm ² (AWG 26-16)
stranded	0.14 mm ² ... 1 mm ² (AWG 26-18)
Insertion/withdrawal cycles	> 200
Cable cross section (max./min.)	8 mm (± 0.4 mm)
Mounting screws	4-40 UNC
Maximum torque	0.4 Nm
Temperature range	
Operation	-20 °C ... +75 °C
Storage/transport	-25 °C ... +80 °C
Relative humidity	75 % at 25 °C
Degree of protection	IP40
Housing material	ABS, metal-plated
Pin assignment	3, 5, 6, 8 (see Figure 8)
Nominal current I _N	100 mA
Nominal voltage U _N	50 V DC
Termination resistors	220 Ω / 390 Ω, can be connected externally
UL approval	File No. E123528 Vol. 5 Sec. 3

4.1 Function block diagram

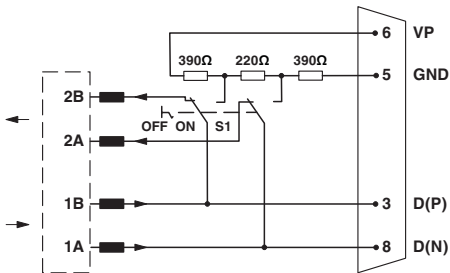


Figure 8 Function block diagram

4.2 Dimensions

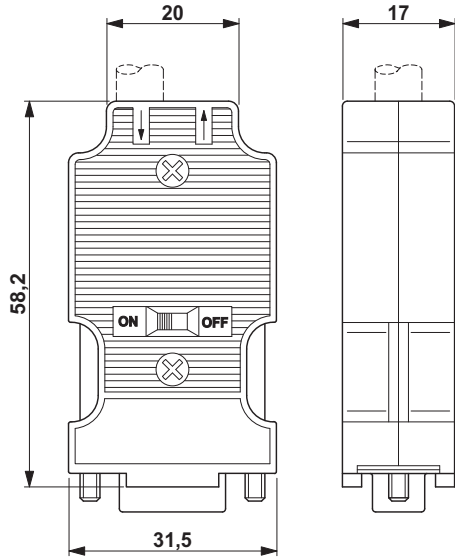


Figure 9 Dimensions (in mm)

4.3 Structure

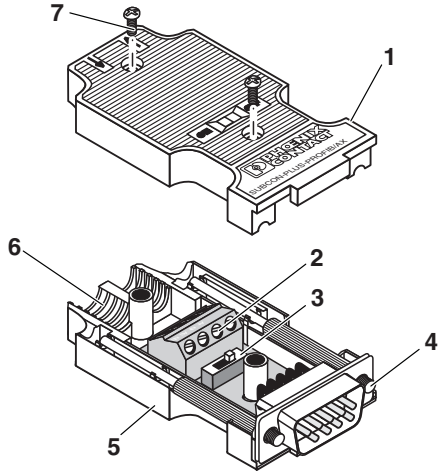


Figure 10 Structure

- | | |
|----------------------|----------------------|
| 1 Upper housing part | 5 Lower housing part |
| 2 Connection block | 6 Strain relief |
| 3 Slide switch | 7 Housing screws |
| 4 Mounting screws | |

4.4 Connection

Stripping

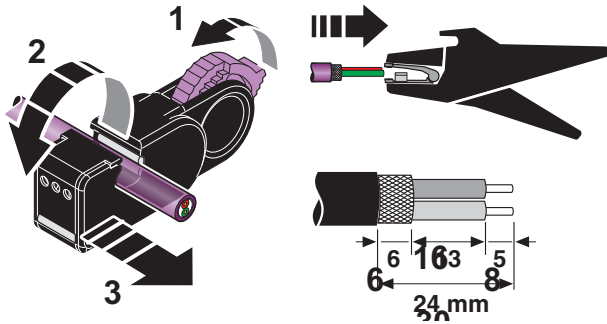


Figure 11 Stripping

We recommend the following stripping tools for quick and convenient stripping:

PSM-STRIP-FC/PROFIB (Order No. 2744623) and QUICK-WIREFOX 6 (Order No. 1204384).

Connecting

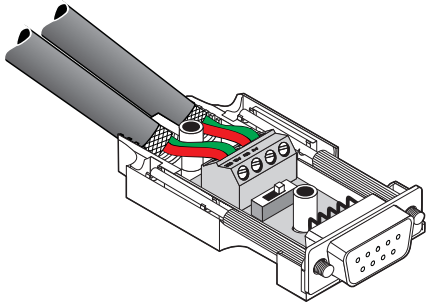


Figure 12 Connection

- Strip the cable according to Figure 11.
- Loosen the housing screws and lift off upper housing part.
- Screw stripped conductors into the corresponding connection block contacts.
- Always connect the incoming bus cable (BUS IN) to the 1A/1B terminal connections (also at start of bus system!).
- Always connect outgoing bus cable (BUS OUT) to 2A/2B terminal connections.

5 Fast connection connector SUBCON-PLUS-PROFIB/90/(PG)/IDC

Technical data for SUBCON-PLUS-PROFIB/90/(PG)/IDC	
Connector	9-pos. D-SUB male connector
Programming connection	9-pos. D-SUB socket
Interface connection	IDC fast connection (insulation displacement connection method)
Cable entry	90° angled cable outlet
Connection cross section of IDC terminal blocks (single-wire)	
solid	0.32 mm ² ... 1 mm ² (AWG 22-18)
stranded	0.32 mm ² ... 1 mm ² (AWG 22-18)
Insertion/withdrawal cycles	> 200
Cable cross section (max./min.)	8 mm (± 0.4 mm)
SUBCON fixing	
Mounting screws	4-40 UNC
Tightening torque	0.4 Nm
Temperature range	
Operation	-20 °C ... +75 °C
Storage/transport	-25 °C ... +80 °C
Relative humidity	75 % at 25 °C
Degree of protection	IP40
Housing material	ABS, metal-plated
Pin assignment	3, 5, 6, 8 (see Figure 13)
Nominal current I _N	100 mA
Nominal voltage U _N	50 V DC
Termination resistors	220 Ω / 390 Ω, can be connected externally
UL approval	UL File No. E123528 Vol. 5 Sec. 3
Cable types	

i All common Fast Connect PROFIBUS cables with solid and stranded individual wires are supported, e.g. PSM-CABLE-PROFIB/FC (Order No. 2744652).

5.1 Function block diagram

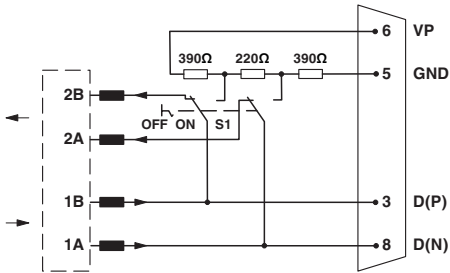


Figure 13 Function block diagram for SUBCON-PLUS-PROFIB/90...

5.2 Dimensions

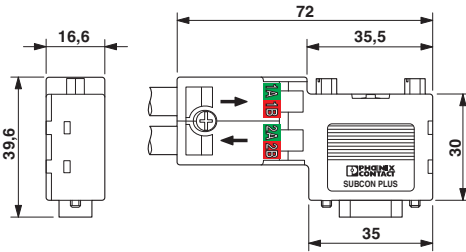


Figure 14 Dimensions (in mm) SUBCON-PLUS-PROFIB/90/(PG)/IDC

5.3 Structure

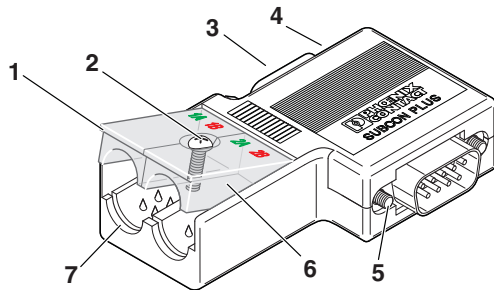


Figure 15 Setup

- | | |
|----------------------|--------------------|
| 1 Upper housing part | 5 Mounting screws |
| 2 Housing screw | 6 Connection block |
| 3 PG connection | 7 Strain relief |
| 4 Slide switch | |

5.4 Connection

Stripping

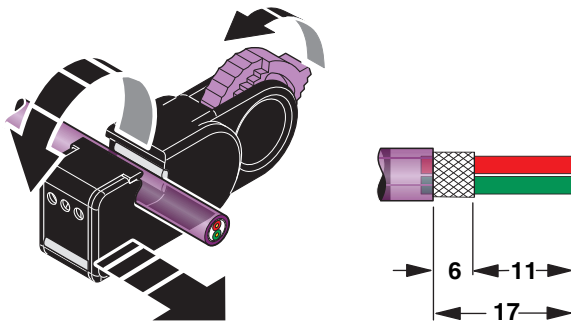


Figure 16 Stripping

We recommend the PSM-STRIP-FC/PROFIB (Order No. 2744623) stripping tool for quick and convenient stripping.

Connecting

The connector allows the incoming and outgoing bus cables to be quickly connected. The connector contacts are routed onto IDC terminal blocks with color labeling.

The termination resistor is integrated such that it can be connected and also disables the outgoing bus cable when activated. This allows the bus system to be started up segment by segment.

The strain relief is integrated in the upper housing parts and is designed for the standard PROFIBUS type A cable.

The programming connection of the SUBCON-PLUS-PROFIB/90/PG/IDC variant also integrated allows a programming or service device to be connected without interrupting the bus operation.



To ensure reliable operation, observe the recommended stripping lengths according to Figure 16.

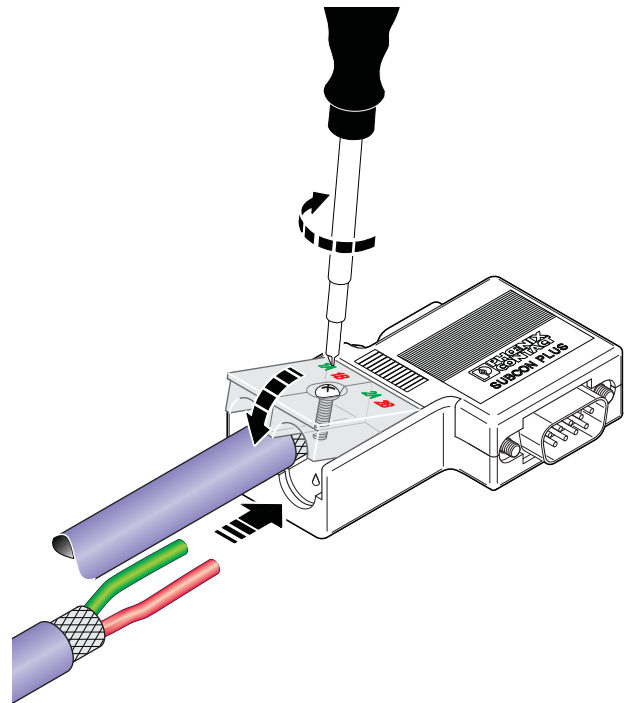


Figure 17 Connection

- Strip the cable as per the specified stripping lengths (see Figure 16).
- Remove the separating foil if required.
- Insert the individual wires into the connecting terminal blocks as far as they can be inserted.
- Always connect the incoming bus cable to the 1A/1B terminal connections (also at start of bus system!).
- The outgoing bus line is always connected to terminal connections 2A/ 2B (see Figure 22). The color of the connecting terminal blocks labeling must then be observed.
- To finish, mount and screw tight the connecting terminal blocks. This creates the shield connection and the strain relief for the bus line.

6 Fast connection connector SUBCON-PLUS-PROFIB/90(/PG)/SC

Technical data for SUBCON-PLUS-PROFIB/90(/PG)/SC	
Connector	9-pos. D-SUB male connector
Programming connection	9-pos. D-SUB socket
Interface connection	screw connection terminal blocks
Cable entry	90° angled cable outlet
Connection cross section of screw terminal blocks	
solid	0,14 mm ² ... 1,5 mm ² (AWG 26-16)
stranded	0,14 mm ² ... 1 mm ² (AWG 26-18)
Insertion/withdrawal cycles	> 200
Frequency of reconnection	5
Cable cross section (max./min.)	8 mm (± 0.4 mm)
Mounting screws	4-40 UNC
Maximum torque	0.4 Nm
Temperature range	
Operation	-20 °C ... +75 °C
Storage/transport	-25 °C ... +80 °C
Relative humidity	75 % at 25 °C
Degree of protection	IP40
Housing material	ABS, metal-plated
Pin assignment	3, 5, 6, 8 (see Figure 18)
Nominal current I _N	100 mA
Nominal voltage U _N	50 V DC
Termination resistors	220 Ω / 390 Ω, can be connected externally
UL approval	UL File No. E123528 Vol. 5 Sec. 3
Cable types	

i All common Fast Connect PROFIBUS cables with solid and stranded individual wires are supported, e.g. PSM-CABLE-PROFIB/FC (Order No. 2744652).

6.1 Function block diagram

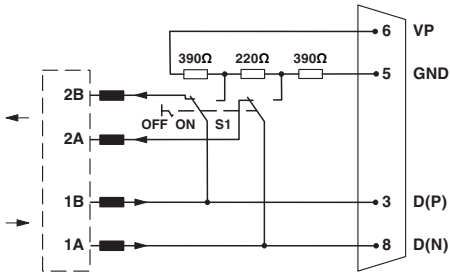


Figure 18 Function block diagram for SUBCON-PLUS-PROFIB/90...

6.2 Dimensions

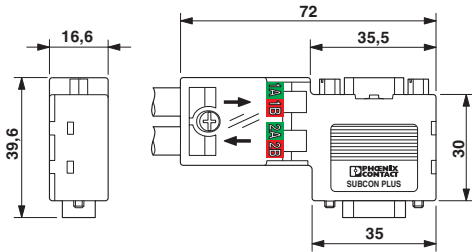


Figure 19 Dimensions (in mm) SUBCON-PLUS-PROFIB/90/P...

6.3 Structure

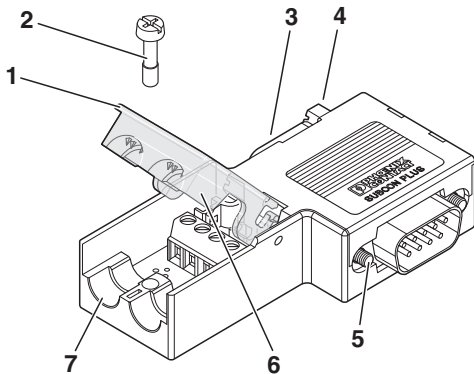


Figure 20 Structure

- | | |
|----------------------|--------------------|
| 1 Upper housing part | 5 Mounting screws |
| 2 Housing screw | 6 Connection block |
| 3 PG connection | 7 Strain relief |
| 4 Slide switch | |

6.4 Connection

Stripping

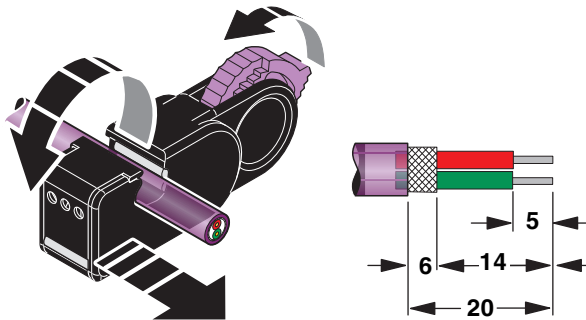


Figure 21 Stripping

We recommend the PSM-STRIP-FC/PROFIB (Order No. 2744623) stripping tool for quick and convenient stripping.

Connecting

The connector allows the incoming and outgoing bus cables to be quickly connected. The connector contacts are routed onto screw terminal blocks with colored labeling.

The termination resistor is integrated such that it can be connected and also disables the outgoing bus cable when activated. This allows the bus system to be started up segment by segment.

The strain relief is integrated in the upper housing parts and is designed for the standard PROFIBUS type A cable.

The programming connection of the SUBCON-PLUS-PROFIB/90/PG/SC variant also integrated allows a programming or service device to be connected without interrupting the bus operation.



To ensure reliable operation, observe the recommended stripping lengths according to Figure 21.

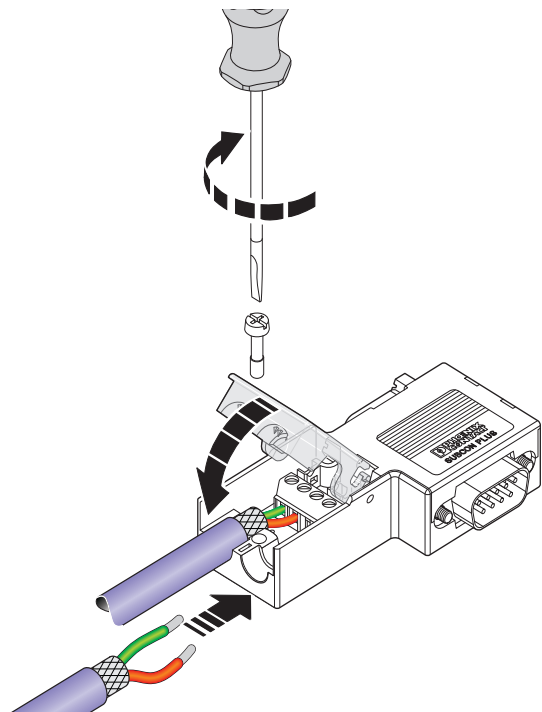


Figure 22 Connection

- Strip the cable as per the specified stripping lengths (see Figure 21).
- Remove the separating foil if required.
- Insert the individual wires into the connecting terminal blocks as far as they can be inserted.
- Always connect the incoming bus cable to the 1A/1B terminal connections (also at start of bus system!).
- The outgoing bus line is always connected to terminal connections 2A/ 2B (see Figure 22). The color of the connecting terminal blocks labeling must then be observed.
- To finish, mount and screw tight the connecting terminal blocks. This creates the shield connection and the strain relief for the bus line.

7 Termination resistor

7.1 Activating termination resistor and disabling outgoing bus cables

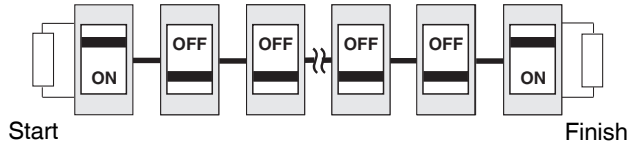


Figure 23 Termination resistor

The termination resistors are activated at the start and finish of the bus system using the slide switch (pos. **2** in Figure 3, pos. **3** in Figure 10 and pos. **4** in Figure 20). The connection terminal blocks (2A/2B) for the outgoing bus cable are disabled at the same time.

The termination resistor must be deactivated at all the bus system's other node points.

7.2 Linear extension according to PROFIBUS specification

Speed	Segment length	Permissible branch lengths per bus segment
9.6 kbps	1200 m	32 x 3 m
19.2 kbps	1200 m	32 x 3 m
45.45 kbps	1200 m	32 x 3 m
93.75 kbps	1200 m	32 x 3 m
187.5 kbps	1200 m	32 x 2m
500 kbps	400 m	32 x 1 m
1.5 Mbps	200 m	32 x 0,3 m
3-12 Mbps	100 m	Not permitted