

# SUBCON-PLUS/...



**Fast connector with screw terminal block connection for fieldbus systems**



Data sheet  
100287\_en\_02

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## 1 Description

The **SUBCON-PLUS/...** D-SUB series is specifically designed for use in RS-485 fieldbus systems. Under field conditions, it enables the quick and easy connection of the incoming and outgoing bus line.

The product range includes eleven fast connectors:

Bus system	Pin assignment	D-SUB	Cable entry	Type	Order No.	
Modbus, MODBUS-PLUS, BITBUS, ARCNET, MULTI/MININET (B&R), SYSTEM 2003 (B&R), P-NET	1, 2, 3, 5, 6, 8	Pin	Angled 35°	SUBCON-PLUS M1	2761826	
		Socket		SUBCON-PLUS F1	2744267	
SUCONET K1, K2 (EATON/Moeller), S-BUS (SAIA), J-BUS (Merlin Gerin)	2, 3, 4, 5, 7, 9	Pin		SUBCON-PLUS M2	2761839	
		Socket		SUBCON-PLUS F2	2799490	
CANopen <sup>®</sup> , FIP	2, 3, 6, 7, 8, 9	Socket		SUBCON-PLUS F3	2761871	
CAN, KEBA	2, 3, 4, 5, 6, 7			SUBCON-PLUS F4	2744089	
Modbus, CEGELEC	1, 1, 2, 3, 6, 7	Pin		SUBCON-PLUS F5	2744102	
Universal type	1, 2, 3, 4, 5, 6, 7, 8, 9			Socket	SUBCON-PLUS 9/M	2744018
				Pin	SUBCON-PLUS 9/F	2744241
				Pin	Axial	SUBCON-PLUS-M/AX9
		Socket	SUBCON-PLUS-F/AX9	2311797		



**WARNING: Explosion hazard when used in potentially explosive areas**

Follow the instructions provided here during installation. Always observe the safety notes.



Make sure you always use the latest documentation.

It can be downloaded at [phoenixcontact.net/products](http://phoenixcontact.net/products).

**Features**

- Assembly under field conditions
- Separate terminal blocks for each cable
- High transmission speed
- For the angled connectors: cable entry is flexibly selectable
- Easy assembly thanks to knurled screws

**Variants**

- Bus-specific types with matching partial assignment
- Universal type with full assignment
- Short mounting screw as an accessory when space is limited

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### 3 Ordering data

SUBCON-PLUS/...	Type	Order No.	Pcs./Pkt.
D-SUB connector, with two cable entries for Modbus, MODBUS-PLUS, BITBUS, ARCNET, MULTI/MININET (B&R), SYSTEM 2003 (B&R), P-NET, pin assignment 1, 2, 3, 5, 6, 8			
Angled 35°, 9-pos., pin	SUBCON-PLUS M1	2761826	1
Angled 35°, 9-pos., socket	SUBCON-PLUS F1	2744267	1
D-SUB connector, with two cable entries for SUCONET K1, K2 (EATON/Moeller), S-BUS (Saia), J-BUS (Merlin Gerin), pin assignment 2, 3, 4, 5, 7, 9			
Angled 35°, 9-pos., pin	SUBCON-PLUS M2	2761839	1
Angled 35°, 9-pos., socket	SUBCON-PLUS F2	2799490	1
D-SUB connector, with two cable entries for CANopen®, FIP, pin assignment 2, 3, 6, 7, 8, 9			
Angled 35°, 9-pos., socket	SUBCON-PLUS F3	2761871	1
D-SUB connector, with two cable entries for CAN, KEBA, pin assignment 2, 3, 4, 5, 6, 7			
Angled 35°, 9-pos., socket	SUBCON-PLUS F4	2744089	1
D-SUB connector, with two cable entries for Modbus, CEGELEC, pin assignment 1, 1, 2, 3, 6, 7			
Angled 35°, 9-pos., socket	SUBCON-PLUS F5	2744102	1
D-SUB connector, with two cable entries, universal type, pin assignment 1, 2, 3, 4, 5, 6, 7, 8, 9 on every screw terminal block			
Angled 35°, 9-pos., pin	SUBCON-PLUS 9/M	2744018	1
Angled 35°, 9-pos., socket	SUBCON-PLUS 9/F	2744241	1
Axial, 9-pos., pin	SUBCON-PLUS-M/AX9	2904467	1
Axial, 9-pos., socket	SUBCON-PLUS-F/AX9	2311797	1
<b>Accessories</b>	<b>Type</b>	<b>Order No.</b>	<b>Pcs./Pkt.</b>
Stripping pliers for PVC-insulated cables, stripping range: 0.08 to 6 mm <sup>2</sup> , can cut wires up to 6 mm <sup>2</sup> stranded and 4 mm <sup>2</sup> solid	QUICK-WIREFOX 6	1204384	1
Optional mounting screw, without knurl for narrow installation conditions, slotted head, length: 40 mm, UNC 4-40 thread. Scope of supply: 1 bag of 20 screws	SUBCON-SHORT-SCREW	2799694	1
Screwdriver, slotted, VDE-insulated, size: 0.4 x 2.5 x 80 mm, 2-component handle, with non-slip grip	SZS 0.4X2.5 VDE	1205037	10

## 4 Safety regulations and installation notes



### WARNING:

Observe the following safety notes when using the connector.

- The category 3 device is designed for installation in Zone 2 potentially explosive areas. It meets the requirements of EN 60079-0:2012+A11:2013 and EN 60079-15:2010.
- Installation, operation, and maintenance may only be carried out by qualified electricians. Follow the installation instructions as described. When installing and operating the device, the applicable regulations and safety directives (including national safety directives) as well as general technical regulations must be observed. The safety data is provided in the packing slip and on the certificates (conformity assessment, additional approvals where applicable).
- Do not open or modify the device. Do not repair the device yourself; replace it with an equivalent device instead. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage resulting from non-compliance.
- The IP20 degree of protection (IEC 60529/EN 60529) of the device is intended for use in a clean and dry environment. Do not subject the device to mechanical and/or thermal loads that exceed the specified limits.
- This device is not designed for use in atmospheres with a risk of dust explosions.
- The device must be stopped and immediately removed from the Ex area if it is damaged, was subjected to an impermissible load, stored incorrectly or if it malfunctions.

### 4.1 Installation in potentially explosive areas



#### WARNING: Explosion hazard when used in potentially explosive areas

Make sure that the following notes and instructions are observed.



#### WARNING: Explosion hazard when used in potentially explosive areas

D-SUB interfaces may only be connected or disconnected when the voltage is disconnected. Screw the D-SUB mounting screws tight on all connectors.

- Observe the specified conditions for use in potentially explosive areas.
- The device should be installed so that a degree of protection of at least IP54 is achieved in accordance with EN 60529. To this end, a suitable, approved housing that meets the requirements of EN 60079-15 should be used.
- Only devices which are designed for operation in Ex zone 2 and are suitable for the conditions at the installation location may be connected to the circuits in zone 2.
- For safe operation, lockable plug connections must have a functional interlock (e.g. locking clip, screw connection etc.). Insert the interlock. Repair any damaged connectors immediately.
- In potentially explosive areas, only connect and disconnect cables when the power is disconnected.
- Connection to the D-SUB interface is only permitted if the screw connection is fully tightened.
- Temporary malfunctions (transients) must not exceed the rated voltage by more than 40 %.

## 5 35° angled connector

### 5.1 Technical data

<b>SUBCON-PLUS M...</b>	
<b>SUBCON-PLUS F...</b>	
<b>SUBCON-PLUS 9/...</b>	
<b>Connection</b>	
Connector connection	9-pos. D-SUB pin strip or D-SUB socket strip
Interface connection	Screw connection
Cable entry	35°, either left or right
Connection cross section of screw terminal blocks	
Solid	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (26-16 AWG)
Stranded	0.14 mm <sup>2</sup> ... 1 mm <sup>2</sup> (26-18 AWG)
Insertion cycles	>200
Cable diameter	8 mm (±2 mm)
Mounting screws	4-40 UNC
Maximum tightening torque	0.4 Nm
<b>General data</b>	
Degree of protection	IP20
Housing material	ABS, metal-plated
Nominal current I <sub>N</sub>	100 mA
Max. operating voltage	50 V DC
<b>Ambient conditions</b>	
Temperature range	
Operation	-20 °C ... +75 °C
Storage/transport	-25 °C ... +80 °C
Altitude	5000 m (for restrictions see manufacturer's declaration)
<b>Approvals</b>	
ATEX	Ex II 3 G Ex nA IIC T4 Gc X
Please follow the special installation instructions in the documentation.	

### 5.2 Dimensions

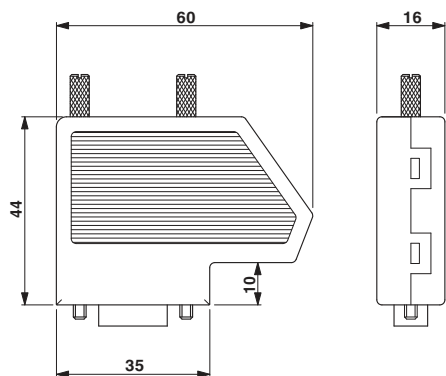


Figure 1 Dimensions

### 5.3 Structure

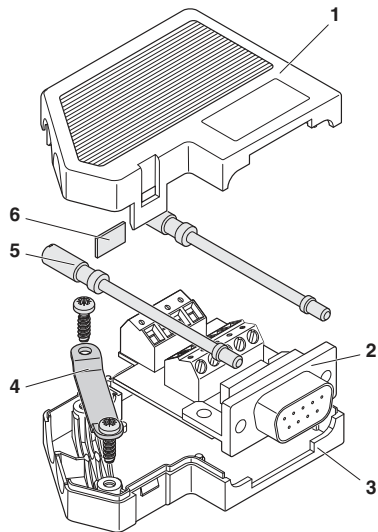


Figure 2 Structure

1	Upper housing part
2	D-SUB connection
3	Lower housing part
4	Strain relief
5	D-SUB mounting screws
6	Label

### 5.4 Opening the housing

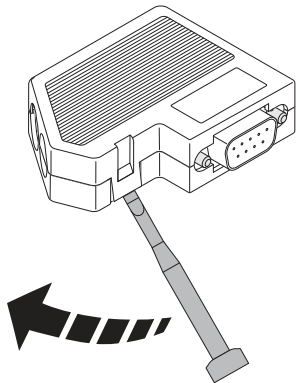


Figure 3 Opening the housing

- Release the housing cover using a screwdriver.
- Fold the housing upward to open.

### 5.5 Stripping

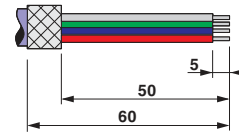


Figure 4 Stripping

The following stripping tool is recommended:

- QUICK WIREFOX 6, Order No. 1204384



#### **NOTE: Malfunction**

Observe the specified stripping lengths.

- Strip the cable according to the specified stripping lengths.
- Fold back 10 mm of the braided shield over the outer sheath.
- Remove the aluminum foil.

## 5.6 Connection



**WARNING: Explosion hazard when used in potentially explosive areas**

D-SUB interfaces may only be connected or disconnected when the voltage is disconnected. Screw the D-SUB mounting screws tight on all connectors.

Cable entry can be from the right or left side. The connector supplied is pre-assembled for left-hand side entry.

### Left-hand side cable entry

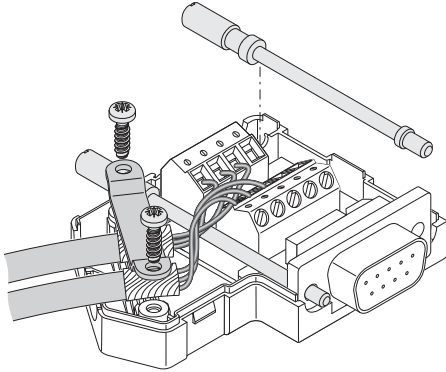


Figure 5 Left-hand side cable entry

- Screw the stripped conductors into the corresponding connection block contacts:

D-SUB contact 1	=	Screw connection 1
D-SUB contact 2	=	Screw connection 2
...	=	...

### Right-hand side cable entry

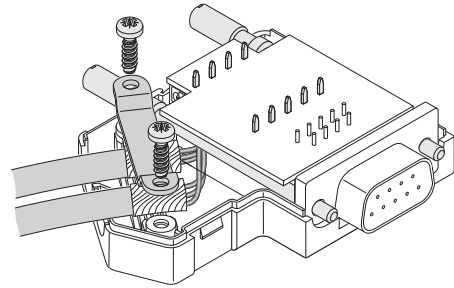


Figure 6 Right-hand side cable entry

- Lift the PCB out of the lower housing part using a screwdriver.
- Insert the PCB in the upper housing part.
- Screw the stripped conductors into the corresponding connection block contacts:

D-SUB contact 1	=	Screw connection 1
D-SUB contact 2	=	Screw connection 2
...	=	...

## 5.7 Strain relief

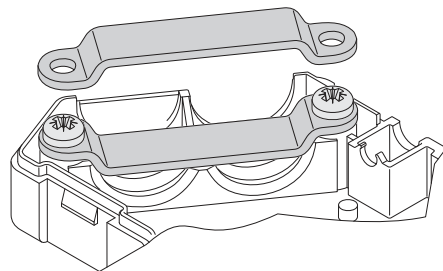


Figure 7 Turn clip bracket

- For cable type A in accordance with EN 50170: Turn the clip bracket.
- Lay the shielding under the clip bracket of the strain relief. Screw it on.
- Close the housing and attach the label.

## 6 Axial connectors

### 6.1 Technical data

<b>SUBCON-PLUS-M/AX9</b>	<b>2904467</b>
<b>SUBCON-PLUS-F/AX9</b>	<b>2311797</b>
<b>Connection</b>	
Connector connection	9-pos. D-SUB pin strip or D-SUB socket strip
Interface connection	Screw connection
Cable entry	Axial
Connection cross section of screw terminal blocks	
Solid	0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> (26-20 AWG)
Stranded	0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> (26-20 AWG)
Insertion cycles	>200
Cable diameter	8 mm (±0.4 mm)
Mounting screws	4-40 UNC
Maximum tightening torque	0.4 Nm
Stripping length	4.5 mm
<b>General data</b>	
Degree of protection	IP20
Housing material	ABS, metal-plated
Nominal current I <sub>N</sub>	100 mA
Max. operating voltage	50 V DC
<b>Ambient conditions</b>	
Temperature range	
Operation	-20°C ... +75°C
Storage/transport	-25 °C ... +80 °C
Altitude	5000 m (for restrictions see manufacturer's declaration)
<b>Approvals</b>	
ATEX	⊕ II 3 G Ex nA IIC T4 Gc X
Please follow the special installation instructions in the documentation.	

### 6.2 Dimensions

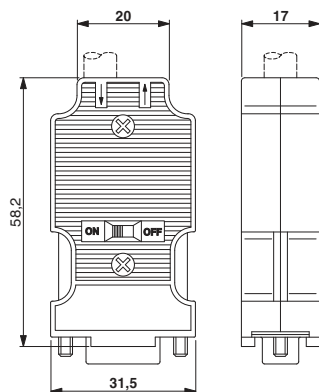


Figure 8 Dimensions



### 6.3 Structure

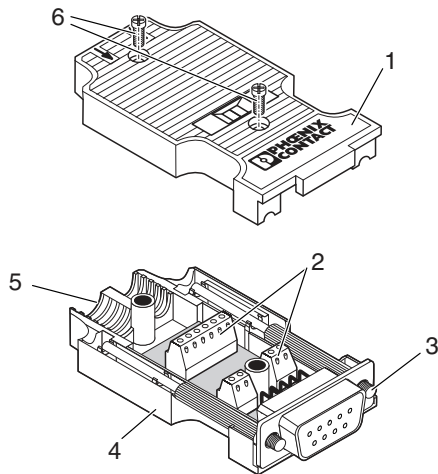


Figure 9 Structure

1	Upper housing part
2	Connection block
3	D-SUB mounting screws
4	Lower housing part
5	Strain relief
6	Housing screws

### 6.4 Stripping

The following stripping tool is recommended:

- QUICK WIREFOX 6, Order No. 1204384

- Strip off the conductors. Stripping length: 4.5 mm

### 6.5 Connection



**WARNING: Explosion hazard when used in potentially explosive areas**

D-SUB interfaces may only be connected or disconnected when the voltage is disconnected. Screw the D-SUB mounting screws tight on all connectors.

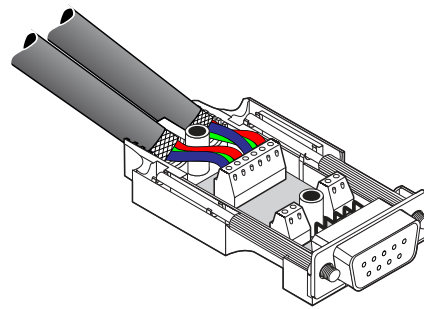


Figure 10 Connecting

- Loosen the housing screw. Lift off the top cover.
- Feed the cable into the housing.
- Screw the stripped conductors into the corresponding connection block contacts.

D-SUB contact 1 = Screw connection 1

D-SUB contact 2 = Screw connection 2

... = ...

- Finally, close and screw tight the housing half shells. This creates the shield connection and the strain relief for the bus line.