FL-PP-RJ45.../ FL CAT5...

Mini patch panel

Data sheet
104622_en_02

1 Description

The mini patch panels **FL-PP-RJ45.../ FL CAT5...** provide the transition from the field cabling to the cabling inside the control cabinet.

The connection from the patch panel to the termination device takes place via the RJ45 socket. Pre-assembled patch cables in different connection lengths from 0.24 m to 10 m are available for this.

The field cabling is applied easily to spring-cage, screw, or IDC connection terminal blocks, depending on the version. The individual terminal blocks are clearly labeled for connection according to Ethernet standard TIA 568 A and B as well as PROFINET.

This eliminates the need to crimp an RJ45 connector to the field line.

You can establish the shield contact to the DIN rail using a plug-in bridge either directly or using an RC element.

Features

The comprehensive range of DIN rail patch panel products opens up multiple possibilities for securing the field cable.

- Spring-cage connection terminal blocks
- Screw connection terminal blocks
- IDC connection terminal blocks
- RJ45-RJ45 transition

They offer the following features:

- CAT5e
- 8-pin assignment: 1:1
- 10/100/1000 Mbps
- Mounted on DIN rails
- Safe connection to ground potential

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

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

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3 Ordering data

Products

Description	Type	Order No.	Pcs. / Pkt.
Patch panel, an RJ45 female connector on 8 spring-cage connection terminal blocks (1:1 assignment), CAT5e, 10/100/1000 Mbps, DIN rail mounting, IP20, option of shield contacting on DIN rail via jumpers	FL-PP-RJ45-SCC	2901642	1
Patch panel, an RJ45 female connector on 8 screw connection terminal blocks (1:1 assignment), CAT5e, 10/100/1000 Mbps, DIN rail mounting, IP20, option of shield contacting on DIN rail via jumpers	FL-PP-RJ45-SC	2901643	1
Patch panel, an RJ45 female connector on 8 IDC connection terminal blocks (1:1 assignment), CAT5e, 10/100/1000 Mbps, DIN rail mounting, IP20, option of shield contacting on DIN rail via jumpers	FL-PP-RJ45-LSA	2901645	1
Patch panel, two RJ45 female connectors (1:1 assignment), CAT5e, 10/100/1000 Mbps, DIN rail mounting, IP20, option of shield contacting on DIN rail via jumpers	FL-PP-RJ45/RJ45	2901646	1
Patch panel, an RJ45 female connector on 4 screw connection terminal blocks (assignment 1, 2, 3, 6), CAT5e, 10/100 Mbps, DIN rail mounting, IP20, shield contacting on DIN rail	FL-CAT5 TERMINAL BOX	2744610	1

Accessories

Description	Type	Order No.	Pcs. / Pkt.
General			
Passive network isolator for electrical isolation in Ethernet networks. For the protection of Ethernet devices from potential differences up to 4 kV. Can be used for transmission speeds of up to 100 Mbit/s. Connection via RJ45 and COMBICON plug-in screw terminal block.	FL ISOLATOR 100-RJ/SC	2313928	1
Passive network isolator for electrical isolation in Ethernet networks. For the protection of Ethernet devices from potential differences up to 4 kV. Can be used for transmission speeds of up to 100 Mbit/s. Connection for two RJ45 male connectors possible.	FL ISOLATOR 100-RJ/RJ	2313931	1
Passive network isolator for electrical isolation in Ethernet networks. For the protection of Ethernet devices from potential differences up to 4 kV. Can be used for transmission speeds of up to 1 Gbps. Connection for two RJ45 male connectors possible.	FL ISOLATOR 1000-RJ/RJ	2313915	1
Cables			
Patch cable, CAT5, pre-assembled, 0.24 m	FL CAT5 PATCH 0.24	2700301	10
Patch cable, CAT5, pre-assembled, 0.3 m	FL CAT5 PATCH 0.3	2832250	10
Patch cable, CAT5, pre-assembled, 0.5 m	FL CAT5 PATCH 0.5	2832263	10
Patch cable, CAT5, pre-assembled, 1.0 m	FL CAT5 PATCH 1.0	2832276	10
Patch cable, CAT5, pre-assembled, 1.5 m	FL CAT5 PATCH 1.5	2832221	10
Patch cable, CAT5, pre-assembled, 2.0 m	FL CAT5 PATCH 2.0	2832289	10
Patch cable, CAT5, pre-assembled, 3.0 m	FL CAT5 PATCH 3.0	2832292	10
Patch cable, CAT5, pre-assembled, 5.0 m	FL CAT5 PATCH 5.0	2832580	10
Patch cable, CAT5, pre-assembled, 7.5 m	FL CAT5 PATCH 7.5	2832616	10
Patch cable, CAT5, pre-assembled, 10.0 m	FL CAT5 PATCH 10.0	2832629	10
CAT5-SF/UTP cable (J-02YS(ST)C HP 2 x 2 x 24 AWG), heavy-duty installation cable, 2 x 2 x 0.22 mm², solid conductor, shielded, outer sheath: 7.8 mm diameter, inner sheath: 5.75 mm ± 0,15 mm diameter (Length in meters according to customer requirements)	FL CAT5 HEAVY	2744814	1
CAT5-SF/UTP cable (J-02YS(ST)C HP 2 x 2 x 24 AWG), heavy-duty installation cable 2 x 2 x 0.22 mm², solid conductor, shielded, outer sheath: 7.8 mm diameter, inner sheath: 5.75 mm ± 0.15 mm diameter, pre-assembled on both sides with RJ45 male connector, crossover or line (Length in meters according to customer requirements)	FL CAT5 HEAVY CONF/	2744827	1
CAT 5-SF/UTP cable (J-LI02YS(ST)C H 2 x 2 x 26 AWG), light-duty, flexible installation cable 2 x 2 x 0.14 mm², fine strand, shielded, outer sheath: 5.75 mm ± 0.15 mm diameter (Length in meters according to customer requirements)	FL CAT5 FLEX	2744830	1

Accessories [...]

Description	Type	Order No.	Pcs. / Pkt.
CAT 5-SF/UTP cable (J-LI02YS(ST)C H 2 x 2 x 26 AWG), light-duty, flexible installation cable 2 x 2 x 0.14 mm², fine strand, shielded, outer sheath: 5.75 mm ± 0.15 mm diameter, pre-assembled on both sides with RJ45 male connector, crossover or line assignment (Length in meters according to customer requirements)	FL CAT5 FLEX CONF/	2744843	1
Tools			
Crimping pliers, for assembling the RJ45 connectors FL PLUG RJ45... , for on-site assembly	FL CRIMPTOOL	2744869	1
Actuation tool, for ST terminal blocks, also suitable for use as a slotted screwdriver, size: 0.4 x 2.5 x 75 mm, 2-component handle, with non-slip grip	SZF 0-0.4X2.5	1204504	1
Split-core tool for connecting cables to LSA-Plus strips	CT-WZ/A	2765505	1
Stripping tool, for the multi-level stripping of shielded cables	VS-CABLE-STRIP-VARIO	1657407	1

4 Technical data

Ethernet interface	FL-PP-...-SCC	FL-PP-...-LSA	FL-PP-...-RJ45	FL-PP-...-SC	FL-CAT5 TERMINAL BOX
Connection	Spring-cage connection	IDC	RJ45 CAT5 e	Screw connection	Screw connection
Cable diameter	6 ... 10 mm	6 ... 10 mm	-	6 ... 10 mm	6 ... 10 mm
Conductor cross section, solid	0.2 ... 1.5 mm²	0.128 ... 0.325 mm²	-	0.14 ... 1.5 mm²	0.14 ... 1.5 mm²
Conductor cross section, stranded	0.2 ... 1.0 mm²	0.128 ... 0.325 mm²	-	0.14 ... 1.0 mm²	0.14 ... 1.0 mm²
AWG	24 ... 16	26 ... 22	-	26 ... 16	26 ... 16
Transmission speed	10/100/1000 Mbps				10/100 Mbps
Transmission length	100 m (incl. patch cables)				
Pin assignment	1 :1				
Cable impedance	100 Ω				
Connection	RJ45 CAT5 e				
Insertion/withdrawal cycles	≤ 2500				
General data					
Degree of protection	IP20				
Weight	45 g	55 g	39 g	55 g	39 g
Dimensions W/H/D	29 x 90 x 53 mm	29 x 90 x 53 mm	29 x 90 x 53 mm	29 x 90 x 53 mm	25 x 90 x 52 mm
Housing material	PVC/PA				
Ambient conditions					
Ambient temperature (operation)	-25 °C ... 70 °C				
Ambient temperature (assembly)	-10 °C ... 70 °C				
Ambient temperature (storage / transport)	-25 °C ... 85 °C				
Max. perm. relative humidity (operation)	25 % ... 95% (no condensation)				
Vibration resistance according to IEC 60068-2-6	5 g, 150 Hz, 2.5 h, in XYZ direction				
Shock test according to IEC 60068-2-27	25 g, 11 ms period, half-sine shock pulse				

5 Safety regulations and installation notes

WARNING:

- Only qualified specialist personnel may install, start up, and operate the device.
- Observe the national safety and accident prevention regulations.
- Installation should be carried out as described in the installation instructions.
- Access to circuits within the device is not permitted.
- The device does not require maintenance. Repairs may only be carried out by the manufacturer.
- The device is a built-in device.

6 Patch panel FL-PP-RJ45-SCC with spring-cage connection terminal blocks

6.1 Construction

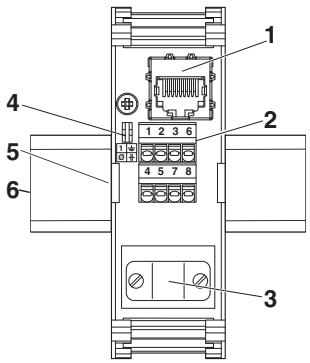


Figure 1 Position of the components

1. RJ45 female connector (TP port)
2. Spring-cage connection terminal blocks for field cabling
3. Strain relief with shield connection
4. Plug-in bridge for selecting shield grounding
5. Universal snap-on foot for EN DIN rails
6. EN DIN rail

6.2 Dimensions

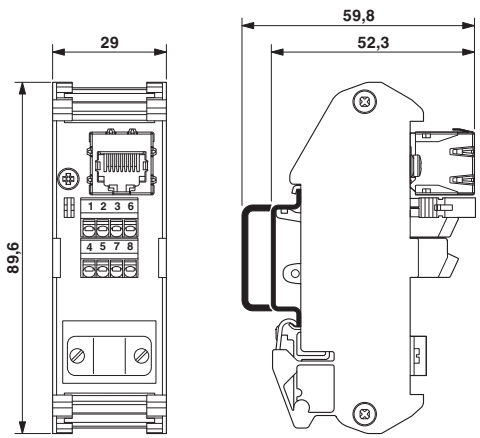


Figure 2 Dimensions FL-PP-RJ45-SCC

6.3 Ethernet network connection

Twisted pair interface (TP port)

Push the Ethernet patch cable to the termination device with the RJ45 connector into the RJ45 socket (TP port) until the connector audibly snaps in.

Only use shielded twisted pair cables and corresponding shielded RJ45 connectors.

Pin assignment

Pin assignment for Ethernet (IEC 80.3u: TIA 568 A, TIA 568 B) and PROFINET including color coding

Color coding: OG = orange, WH = white, GN = green, YE = yellow, BU = blue, BN = brown

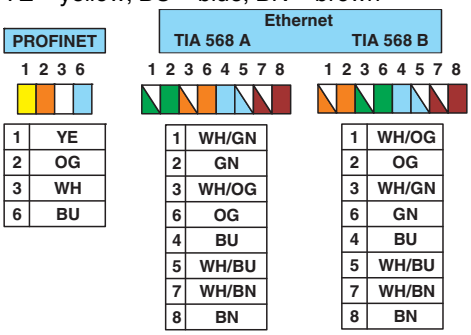
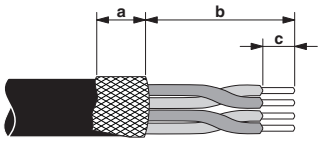


Figure 3 Pin assignment and color coding

FL-PP-RJ45-SCC (Spring-cage connection terminal blocks)

Required stripping lengths: a = 10 mm, b = 40 mm, c = 8 mm



1. Remove cable sheath in accordance with length B.
2. Fold back 10 mm of the braided shield over the outer sheath.
3. Remove the aluminum foil.
4. Shorten wires 4, 5, 7, and 8 to 10 mm as required for the lower terminal blocks.
5. Strip off all individual wires to 8 mm.
6. Lay the shield under the clip bracket of the strain relief and screw them tight.
7. Connect all individual wires to the spring-cage connection terminal blocks. If possible, make sure the individual wires remain twisted up to the connection terminal blocks.

7 Patch panel FL-PP-RJ45-LSA with IDC connection terminal blocks

7.1 Construction

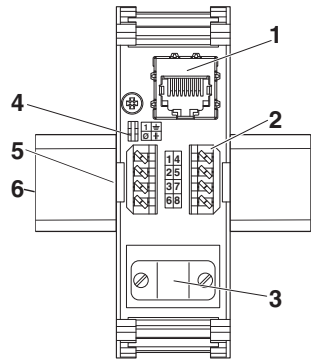


Figure 4 Position of the components

1. RJ45 female connector (TP port)
2. IDC connection terminal blocks for field cabling
3. Strain relief with shield connection
4. Plug-in bridge for selecting shield grounding
5. Universal snap-on foot for EN DIN rails
6. EN DIN rail

7.2 Dimensions

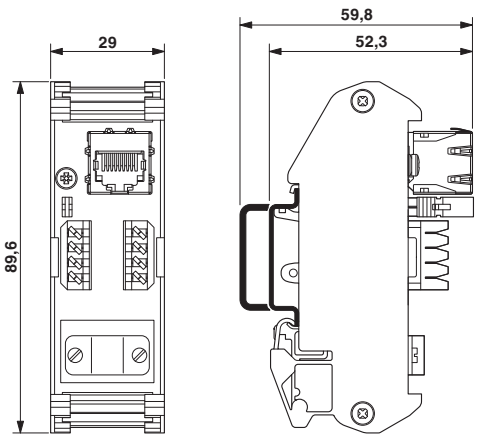


Figure 5 Dimensions FL-PP-RJ45-LSA

7.3 Ethernet network connection

Twisted pair interface (TP port)

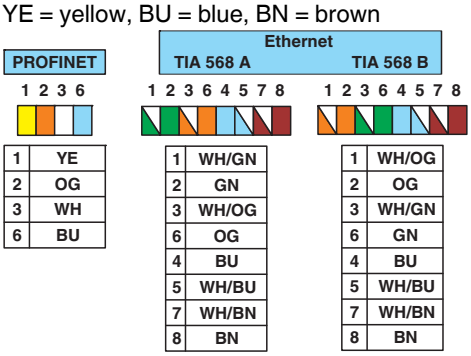
Only use shielded twisted pair cables and corresponding shielded RJ45 connectors.

Push the Ethernet patch cable to the termination device with the RJ45 connector into the RJ45 socket (TP port) until the connector audibly snaps in.

Pin assignment

Pin assignment for Ethernet (IEC 80.3u: TIA 568 A, TIA 568 B) and PROFINET including color coding

Color coding: OG = orange, WH = white, GN = green, YE = yellow, BU = blue, BN = brown



1	YE
2	OG
3	WH
6	BU

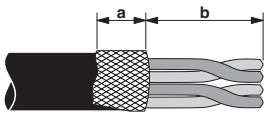
1	WH/GN
2	GN
3	WH/OG
6	OG
4	BU
5	WH/BU
7	WH/BN
8	BN

1	WH/OG
2	OG
3	WH/GN
6	GN
4	BU
5	WH/BU
7	WH/BN
8	BN

Figure 6 Pin assignment and color coding

FL-PP-RJ45-LSA (IDC connection terminal blocks)

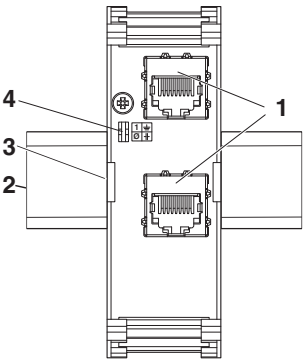
Required stripping lengths: a = 10 mm, b = 50 mm.



1. Remove cable sheath in accordance with length B.
2. Fold back 10 mm of the braided shield over the outer sheath.
3. Remove the aluminum foil.
4. Lay the shield under the clip bracket of the strain relief and screw them tight.
5. Connect the wire pairs to the insulation-displacement terminal strip with the help of the insulation-displacement connector split-core tool. If possible, make sure the individual wires remain twisted up to the terminal strips.
6. Make sure that the wires are flush with the terminal strip.

8 Patch panel FL-PP-RJ45/RJ45 with RJ45 female connector

8.1 Construction



1. RJ45 female connector (TP port)
2. EN DIN rail
3. Universal snap-on foot for EN DIN rails
4. Plug-in bridge for selecting shield grounding

8.2 Dimensions

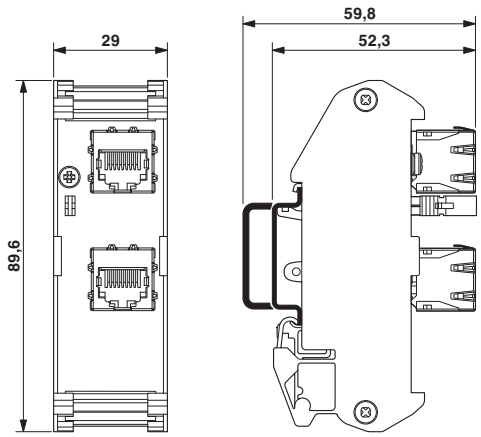


Figure 7 Dimensions FL-PP-RJ45/RJ45

8.3 Ethernet network connection

The device is equipped with two RJ45 Ethernet interfaces for connection of twisted-pair cables.

Only use shielded twisted pair cables and corresponding shielded RJ45 connectors.

1. Push the Ethernet patch cable to the termination device with the RJ45 connector into the RJ45 socket (TP port) until the connector audibly snaps in.
2. Push the field cable with the RJ45 connector into the second RJ45 socket until the connector audibly snaps in.

The port that is assigned for incoming and outgoing lines is not important for the correct function of the device.

9 Patch panel FL-PP-RJ45-SC with screw connection terminal blocks

9.1 Construction

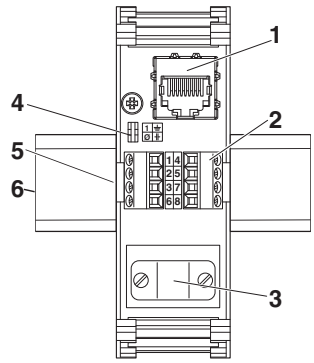


Figure 8 Position of the components

1. RJ45 female connector (TP port)
2. Screw connection terminal blocks for field cabling
3. Strain relief with shield connection
4. Plug-in bridge for selecting shield grounding
5. Universal snap-on foot for EN DIN rails
6. EN DIN rail

9.2 Dimensions

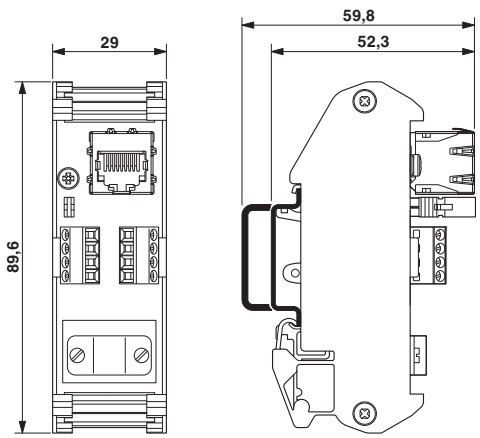


Figure 9 Dimensions FL-PP-RJ45-SC

9.3 Ethernet network connection

Twisted pair interface (TP port)

Only use shielded twisted pair cables and corresponding shielded RJ45 connectors.

Push the Ethernet patch cable to the termination device with the RJ45 connector into the RJ45 socket (TP port) until the connector audibly snaps in.

Pin assignment

Pin assignment for Ethernet (IEC 80.3u: TIA 568 A, TIA 568 B) and PROFINET including color coding

Color coding: OG = orange, WH = white, GN = green, YE = yellow, BU = blue, BN = brown

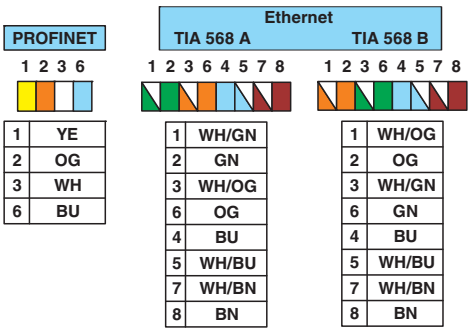
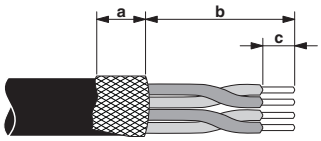


Figure 10 Pin assignment and color coding

FL-PP-RJ45-SC (Screw connection terminal blocks)

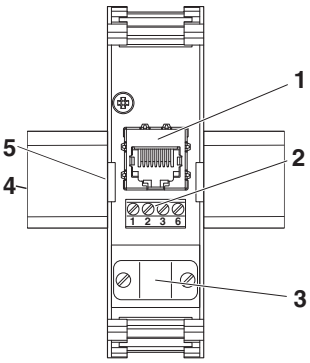
Required stripping lengths: a = 10 mm, b = 35 mm, c = 5 mm.



1. Remove cable sheath in accordance with length B.
2. Fold back 10 mm of the braided shield over the outer sheath.
3. Remove the aluminum foil.
4. Strip off each individual wire to 5 mm.
5. Lay the shield under the clip bracket of the strain relief and screw them tight.
6. Connect the individual wires to the screw terminal blocks. If possible, make sure the individual wires remain twisted up to the connection terminal blocks.

10 Patch panel FL-CAT5 TERMINAL BOX with screw connection terminal blocks

10.1 Construction



1. RJ45 female connector (TP port)
2. Screw connection terminal blocks
3. Strain relief with shield connection
4. EN DIN rail
5. Universal snap-on foot for EN DIN rails

10.2 Dimensions

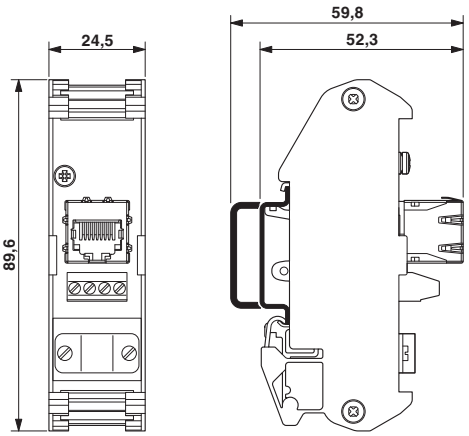


Figure 11 Dimensions FL-CAT5 TERMINAL BOX

10.3 Ethernet network connection

Twisted pair interface (TP port)

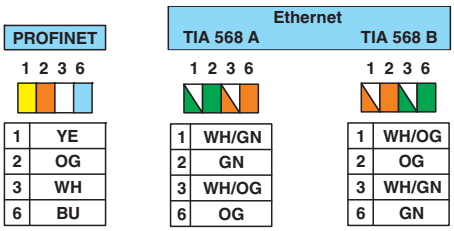
Only use shielded twisted pair cables and corresponding shielded RJ45 connectors.

Push the Ethernet patch cable to the termination device with the RJ45 connector into the RJ45 socket (TP port) until the connector audibly snaps in.

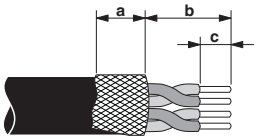
FL-CAT5 TERMINAL BOX (Screw connection terminal blocks)

Pin assignment for Ethernet (IEC 80.3u: TIA 568 A, TIA 568 B) and PROFINET including color coding

Color coding: YE = yellow, OG = orange, WH = white, BU = blue



Required stripping lengths: a = 10 mm, b = 10 mm, c = 5 mm.



1. Remove cable sheath in accordance with length B.
2. Fold back 10 mm of the braided shield over the outer sheath.
3. Remove the aluminum foil.
4. Strip off each individual wire to 5 mm.
5. Lay the shield under the clip bracket of the strain relief and screw them tight.
6. Connect the individual wires to the screw terminal blocks. If possible, make sure the individual wires remain twisted up to the connection terminal blocks.

11 Shield grounding selection

The FL-CAT5 TERMINAL BOX has no plug-in bridge, and the shield is fundamentally connected to the DIN rail via the universal snap-on foot.

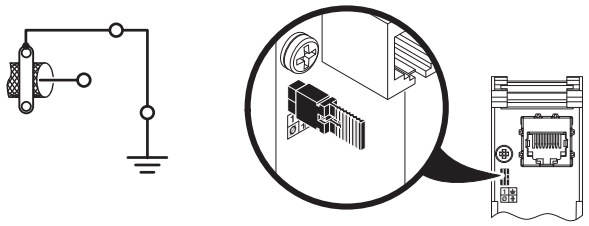
Depending on the application, you can set two different shield groundings via the jumpers.

For default upon delivery, the plug-in bridge is inserted and the shield is positioned directly on the PE. With this arrangement, there is a low-ohmic electrical connection between the shield and the ground potential.

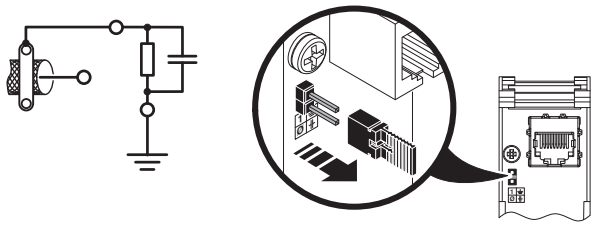
By removing the plug-in bridge, the shield is connected to the ground potential via an RC combination. A high-ohmic resistance parallel to a capacitor ensures that high-frequency disturbances are delivered effectively against PE without constituting a low-ohmic electrical connection.

A single-sided grounding of the shield between two patch panels is best suited for suppressing electrical fields and ground loops.

Shield connection direct to PE (factory setting)



Shield connection to PE via RC element



12 Circuit diagrams

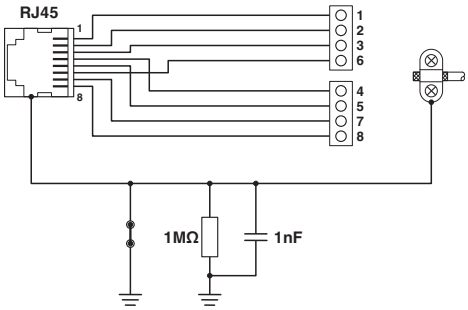


Figure 12 FL-PP-RJ45-SCC (2901642), FL-PP-RJ45-SC (2901643) and FL-PP-RJ45-LSA (2901645)

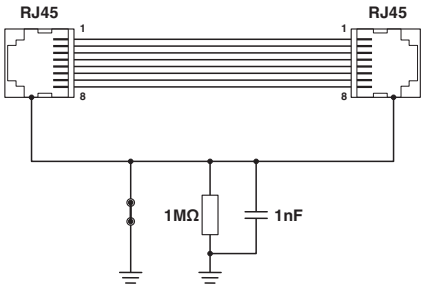


Figure 13 FL-PP-RJ45/RJ45 (2901646)

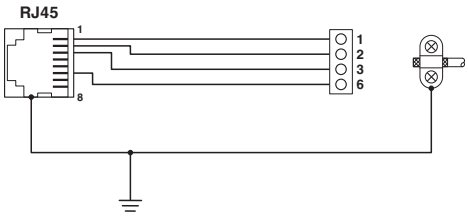


Figure 14 FL CAT5 TERMINAL BOX (2744610)