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MINI MCR-SL-PTB-FM

Power terminal block

Data sheet
105449_en_00

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1 Description

The MINI MCR-SL-PTB-FM(-SP) power terminal is used to supply the supply voltage to the DIN rail connector.

Two separate voltage inputs allow for redundant voltage supply, which is decoupled from diodes, up to a maximum current of 2 A.

The MINI MCR-SL-PTB-FM(-SP) power terminal provides the following functions:

- Monitoring in conjunction with the MINI MCR-SL-FM-RC-NC fault monitoring module (Order No. 2902961) or MINI MCR-SL-FM-RC-SP-NC (Order No. 2902962)
- Flexible redundant supply from one or both module sides
- Extended supply voltage range from 0...30 V DC

Features

- Approval for Ex-zone 2 (nA)
- Screw or spring-cage connection can be provided



WARNING: Correct usage in potentially explosive areas

The module is a category 3 item of electrical equipment. It is absolutely vital to follow the instructions provided here during installation and observe the information in the "Safety regulations and installation notes".



Make sure you always use the latest documentation.

It can be downloaded from the product at www.phoenixcontact.net/products.



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

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3 Ordering data

Description	Type	Order No.	Pcs. / Pkt.
The MINI MCR-SL-PTB-FM(-SP) power terminal block is used to supply the supply voltage to the T-connector. The FM power terminal block offers the additional function of monitoring in combination with the fault monitoring module. Screw connection.	MINI MCR-SL-PTB-FM	2902958	1
The MINI MCR-SL-PTB-FM(-SP) power terminal block is used to supply the supply voltage to the T-connector. The FM power terminal block offers the additional function of monitoring in combination with the fault monitoring module. Spring-cage connection.	MINI MCR-SL-PTB-FM-SP	2902959	1
Accessories	Type	Order No.	Pcs. / Pkt.
The fault monitoring module is used to evaluate and report group errors from the fault monitoring system and to monitor the supply voltages. The error is reported via an N/O contact. Screw connection, standard configuration.	MINI MCR-SL-FM-RC-NC	2902961	1
The fault monitoring module is used to evaluate and report group errors from the fault monitoring system and to monitor the supply voltages. The error is reported via an N/O contact. Spring-cage connection, standard configuration.	MINI MCR-SL-FM-RC-SP-NC	2902962	1
DIN rail connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rails according to EN 60715	ME 6,2 TBUS-2 1,5/5-ST-3,81 GN	2869728	10
Fold up transparent cover for MINI MCR modules with additional labeling option using insert strips and flat Zack marker strip 6.2 mm	MINI MCR DKL	2308111	10
Label for extended marking of MINI MCR modules in connection with the MINI MCR-DKL	MINI MCR-DKL-LABEL	2810272	10

4 Technical data

Input

Input voltage	0 V DC ... 30 V DC
Max. input current	2 A
Protection against polarity reversal	Yes

Output

Output voltage	(Input voltage - 0.8 V)
Output current	≤ 2 A

Diagnostic and status indicators

Status display	Green LED (supply)
Indication	Red LED

General data

Maximum temperature coefficient	< 0.01 %/K
Mounting position	Any
Degree of protection	IP20
Dimensions W / H / D	6.2 mm / 93.1 mm / 102.5 mm
Type of housing	PBT green

Connection data

Screw connection

Spring-cage conn.

Conductor cross section, solid	0.2 mm ² ... 2.5 mm ²	0.2 mm ² ... 2.5 mm ²
Conductor cross section, stranded	0.2 mm ² ... 2.5 mm ²	0.2 mm ² ... 2.5 mm ²
Stripping length	12 mm	8 mm

Ambient conditions

Ambient temperature (operation)	-20 °C ... 65 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

Conformance with EMC Directive 2004/108/EC

Noise immunity according to EN 61000-6-2
When being exposed to interference, there may be minimal deviations.
Noise emission according to EN 61000-6-4

Conformance / approvals

Conformance	CE-compliant
ATEX	Ⓔ II 3 G Ex nA IIC T4 Gc X
UL, USA / Canada	UL 508 Recognized applied for
UL, USA / Canada	Class I, Div. 2, Groups A, B, C, D T5 applied for
Shipbuilding	GL applied for

5 Safety regulations and installation notes

5.1 Installation notes

- The category 3 device is suitable for installation in the zone 2 potentially explosive area. It fulfills the requirements of EN 60079-0:2009 and EN 60079-15:2010.
- Installation, operation, and maintenance may only be carried out by qualified electricians. Follow the installation instructions 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 technical data is provided in this package slip and on the certificates (conformity assessment, additional approvals where applicable).
- It is not permissible to open or modify the device. Do not repair the device yourself but replace it with an equivalent device. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage resulting from violation.
- 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 any load that exceeds the described limits.
- The device is not designed for use in atmospheres with a danger of dust explosions.

5.2 Installation in the Ex area (zone 2)

- Observe the specified conditions for use in potentially explosive areas.
- The device must be installed in a housing (control or distributor box) which meets the requirements of EN 60079-15 and provides at least IP54 (EN 60529) degree of protection.
- During installation and when connecting the supply and signal circuits, observe the requirements of EN 60079-14. Devices may only be connected to circuits in zone 2 if they are suitable for operation in Ex zone 2 and for the prevailing conditions at the place of use.
- In potentially explosive areas, terminals may only be snapped onto or off the DIN rail connector and wires may only be connected or disconnected when the power is switched off.
- The device must be stopped and immediately removed from the Ex area if it is damaged, has been subjected to an impermissible load, has been stored incorrectly, or if it malfunctions.
- You can download the latest documents for these devices from www.phoenixcontact.net/products.

6 Installation

6.1 Connection notes



NOTE: Electrostatic discharge!

The device contains components that can be damaged or destroyed by electrostatic discharge. When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD) according to EN 61340-5-1 and EN 61340-5-2.

6.2 Structure

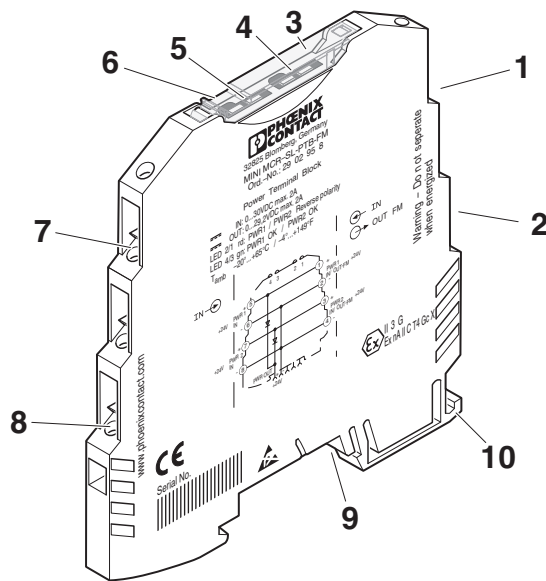


Figure 1 Structure

1. Input: supply voltage 1 or fault monitoring output
2. Input: supply voltage 2 or fault monitoring output
3. Cover
4. Diagnostic LEDs 1 + 2: supply voltage connected with reverse polarity
5. Diagnostic LEDs 3 + 4: supply voltage present
6. Groove for ZBF 6 zack marker strip
7. Input: supply voltage 1
8. Input: supply voltage 2
9. Connection for DIN rail connector
10. Universal snap-on foot for EN DIN rails

6.3 Block diagram

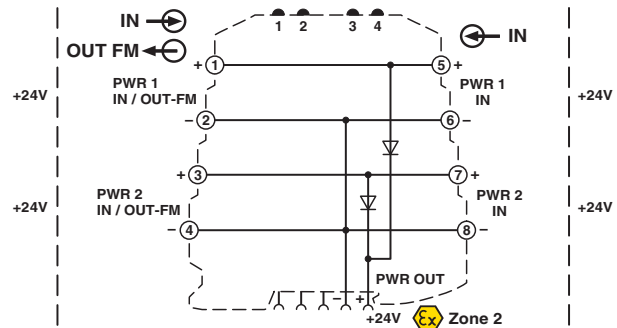


Figure 2 Block diagram

6.4 Power supply



NOTE: Never connect the supply voltage directly to the DIN rail connector. It is not permitted to draw power from the DIN rail connector or from individual modules.



Recommended fuse for power terminal block:

Fuse in acc. with IEC 60127-2/V
Nominal current: 2.5 A
Characteristics: Slow-blow
(e.g. Wickmann 5 x 20 mm/No. 195 - glass fuse)

6.5 Use in the MINI Analog system

- Up to 80 MINI Analog modules are supplied at a supply voltage of 18...30 V DC.
- In the event of a supply voltage below 18 V DC, the number of modules is reduced according to the increasing current flow.
- Up to 40 MINI Analog modules are supplied at a supply voltage of 12 V DC (50 mA per device).



NOTE

The total current in both supply paths must not exceed 2 A.

Connect at least one supply to the power terminal in order to supply the DIN rail connector.

- Wire the second input to provide redundancy.



For additional mechanical redundancy, two power terminals and two fault monitoring modules can be used. Only one supply may be connected to each power terminal. In the second fault monitoring module, fault monitoring of external measuring transducers must be deactivated because evaluation can only take place via a module in a group.

6.6 Assembly

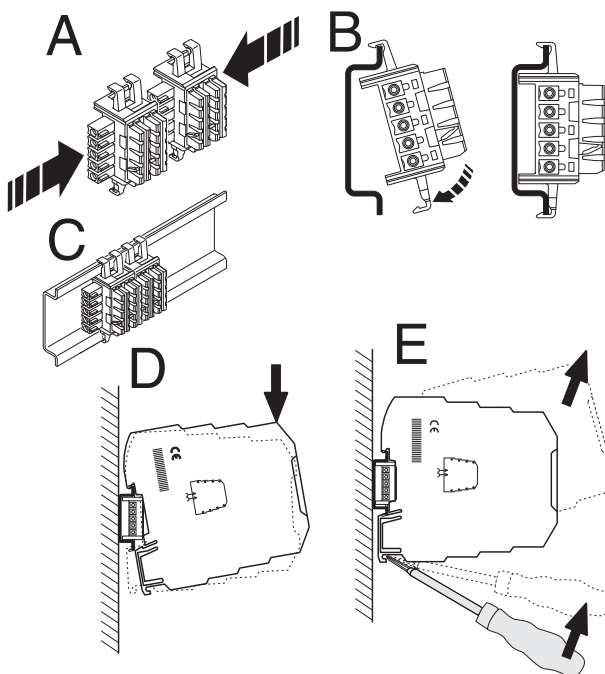


Figure 3 Mounting and removing

- Mount the module on a 35 mm DIN rail according to EN 60715.
- When using the DIN rail connector, first place it into the DIN rail (see A – C). It is used to bridge the power supply. It is also absolutely vital that you snap the module and the DIN rail connector into position in the correct direction: the snap-on foot should be at the bottom and the connector on the left.

6.7 Connecting the wires

The module is available in two connection versions:

- Screw terminal blocks (for MINI MCR-SL-PTB-FM)
- Spring-cage terminal blocks (for MINI MCR-SL-PTB-FM-SP)

Screw connection:

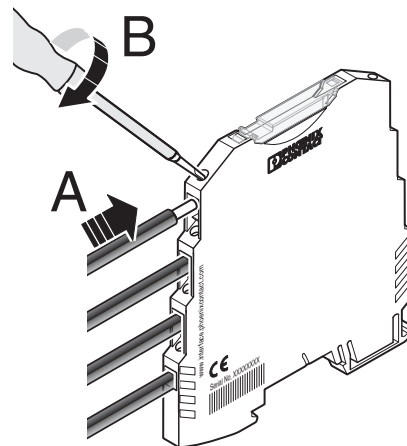


Figure 4 Screw connection

- Insert the wire into the corresponding connection terminal block.
- Use a screwdriver to tighten the screw in the opening above the connection terminal block.

Spring-cage connection:

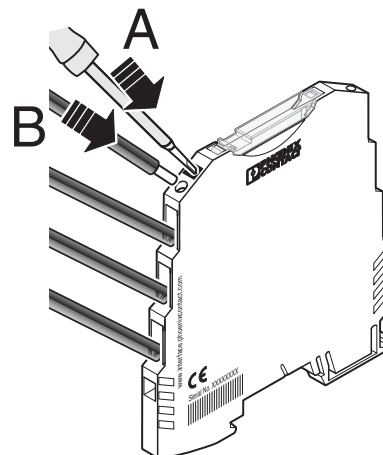


Figure 5 Spring-cage connection

- Insert a screwdriver into the opening above the connection terminal block.
- Insert the wire into the corresponding connection terminal block.

7 Fault monitoring FM

Fault monitoring simplifies error evaluation in multi-channel isolation amplifier applications using a group error message.

7.1 Fault monitoring for group error detection

- Use MINI Analog signal conditioners that support fault monitoring.
- Connect these signal conditioners to the MINI MCR-SL-FM-RC(-SP)-NC fault monitoring module via the DIN rail connector .

Detected errors on the signal input of a MINI Analog isolation amplifier or in the isolation amplifier are reported to the fault monitoring module via the DIN rail connector. The module reports the error centrally via an N/C contact.

7.2 Fault monitoring for redundancy monitoring

With "supply via power terminal", the fault monitoring module can be used to monitor the supply voltage in the group. Failure of the supply voltage generates a central message via an N/C contact.

- Install a power terminal and a fault monitoring module of the same shape side-by-side without spacing.
- Bridge terminals 1 to 4 of the power terminal with terminals 1 to 4 of the fault monitoring module. Use the provided plug-in bridges FB S2-6 (Order No. 3030336) or normal cables.

8 Diagnostic indicator

- The green LEDs on the front indicate that the relevant supply voltages are present on the DIN rail connector.
- Red LEDs light up when supply voltages are connected to the wrong poles. In the case of a correctly connected supply voltage, the red LED goes out.