MINI MCR-SL-1(2)CP-I-I



Single- and dual-channel input isolators

Data sheet
101948_en_03

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1 Description

The input isolators are used for the electrical isolation and filtering of 0(4) mA ... 20 mA current standard signals without additional supply voltage.

Features

- Single- or dual-channel input isolator
- Input and output signal range 0 mA ... 20 mA or 4 mA ... 20 mA
- Screw connection available

Make sure you always use the latest documentation.
It can be downloaded from the product at phoenixcontact.com/products.

This document is valid for the products listed in the “Ordering data” chapter.

2 Table of contents

1 Description 1
2 Table of contents 2
3 Ordering data 3
4 Technical data 4
5 Safety regulations and installation notes 6
5.1 Installation notes 6
5.2 UL notes 6
6 Installation 7
6.1 Connection notes 7
6.2 Structure 7
6.3 Block diagram 8
6.4 Power supply 8
6.5 Mounting 9
6.6 Partition plate 9
6.7 Connection of the cables 9
7 Connection/application example 10

3 Ordering data

Description	Type	Item no.	Pcs./Pkt.
MCR passive isolator, 2-channel, for the electrical isolation of current signals without auxiliary power, with screw connection	MINI MCR-SL-2CP-I-I	2864655	1
MCR loop-powered isolator, 1-channel, for the electrical isolation of current signals without auxiliary power, with screw connection	MINI MCR-SL-1CP-I-I	2864419	1

Accessories	Type	Item no.	Pcs./Pkt.
The partition plate is used to maintain Ex i isolating distances when Ex i and non-Ex i devices are mounted side by side on a DIN rail.	MCR-DP	1430594	1
Universal termination carrier for connecting 16 MINI Analog signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection), with HART multiplexer connection	TC-D37SUB-AIO16-M-PS-UNI	2902934	1
Universal termination carrier for connecting 16 MINI Analog signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)	TC-D37SUB-ADIO16-M-P-UNI	2902933	1
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
Actuation tool, for ST terminal blocks, insulated, also suitable for use as a bladed screwdriver, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip	SZS 0,6X3,5	1205053	10

4 Technical data

Input Current input	
Number of inputs	2
Configurable/programmable	no
Max. voltage input signal	18 V
Current input signal	0 mA ... 20 mA 4 mA ... 20 mA
Max. current input signal	40 mA
Response current	approx. 190 µA
Input voltage limitation	< 2 V (20 mA)
Voltage dissipation	1.9 V (I = 20 mA)
Output Current output	
Number of outputs	2
Current output signal	0 mA ... 20 mA 4 mA ... 20 mA
Configurable/programmable	no
Ripple	< 10 mV_{rms} (600 Ω)
Load/output load current output	< 600 Ω (at I = 20 mA output signal)
Supply	
Supply voltage range	loop-powered, no external supply necessary
Power consumption	34 mW (per channel)
General data	
Limit frequency (3 dB)	75 Hz
Maximum transmission error	≤ 0.1 % (of final value)
Signal transmission behavior	In = Out
Additional error, load-dependent	< 0.03 % (of measured value / 100 Ω load)
Temperature coefficient, typical	< 0.002 %/K (of measured value / 100 Ω load)
Maximum temperature coefficient	≤ 0.002 %/K (of measured value / 100 Ω load)
Step response (10-90%)	5 ms (at 600 Ω load)
Degree of protection	IP20
Mounting position	any
Dimensions W/H/D	6.2 mm / 93.1 mm / 101.2 mm
Type of housing	PBT

Electrical isolation	
Electrical isolation	2-way isolation
Overvoltage category Pollution degree	II 2
Input/output Standards/regulations Rated insulation voltage Test voltage Insulation	 IEC/EN 61010 50 V AC/DC 1.5 kV AC (50 Hz, 60 s) Basic insulation

Connection data	
Connection method	Screw connection
Conductor cross-section rigid	0.2 mm² ... 2.5 mm²
Conductor cross-section flexible	0.2 mm² ... 2.5 mm²
Conductor cross-section AWG	26 ... 12
Stripping length	12 mm

Ambient conditions	
Ambient temperature (operation)	-20 °C ... 65 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (non-condensing)
Maximum altitude for use above sea level	≤ 2000 m

Conformance with EMC directive
Immunity in accordance with EN 61000-6-2 When being exposed to interference, there may be minimal deviations.
Noise emission in accordance with EN 61000-6-4

Conformance/approvals	
CE CE-compliant	
UL, USA/Canada	UL 508 Recognized Class I, Div. 2, Groups A, B, C, D

5 Safety regulations and installation notes

5.1 Installation notes

- Installation, operation, and maintenance may only be carried out by qualified electricians. Follow the installation instructions as described.
- When installing and operating the device, observe the applicable regulations and safety directives (including national safety directives), as well as the generally recognized technical regulations.
- Observe the safety information, conditions, and limits of use specified in the product documentation. Comply with them.
- The device must not be opened or modified. Do not repair the device yourself, 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/EN 60529) specifies that the device is intended for use in a clean and dry environment. Do not subject the device to mechanical and/or thermal stress that exceeds the specified limits.
- The device is not designed for use in atmospheres with a danger of dust explosions.

5.2 UL notes

PROCESS CONTROL EQUIPMENT FOR HAZARDOUS LOCATIONS 31ZN

1 WARNING - Explosion Hazard - Substitution of any components may impair suitability for Class I, Division 2.

2 WARNING - Explosion Hazard - Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

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 Two-channel

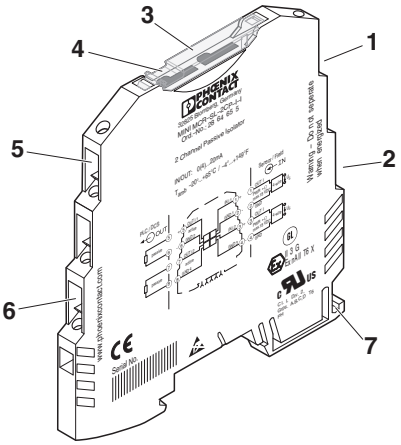
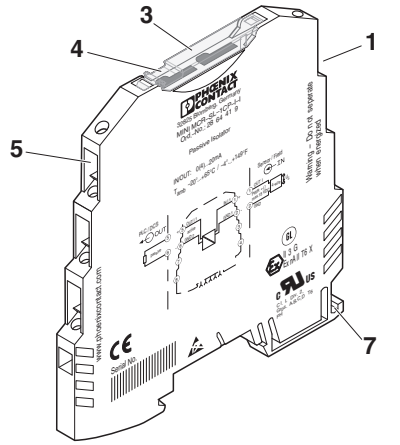


Figure 2 Single-channel



1 Input: Standard signals (channel 1)
2 Input: Standard signals (channel 2)
3 Cover
4 Groove for ZBF 6 Zack marker strip
5 Output: Standard signals (channel 1)
6 Output: Standard signals (channel 2)
7 Universal snap-on foot for EN DIN rails

6.3 Block diagram

Figure 3 Two-channel

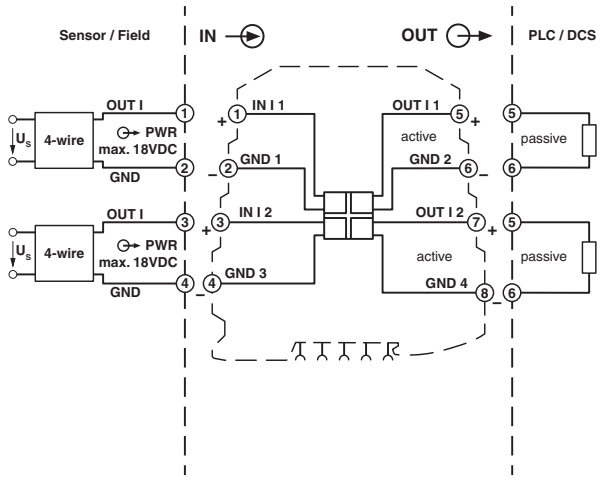
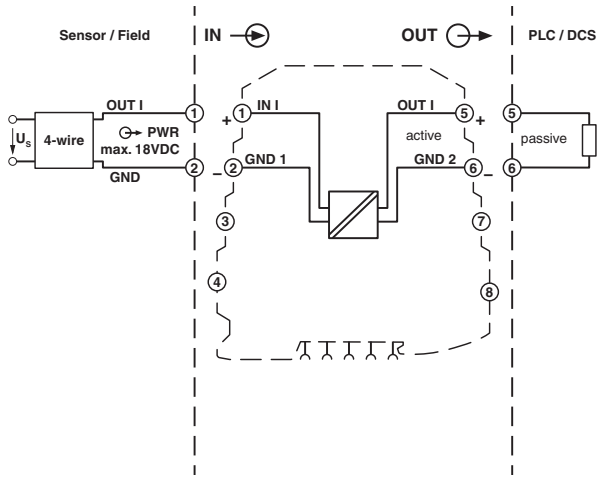


Figure 4 Single-channel



6.4 Power supply

You must refer to the “MACX and MINI Analog power manual“ for the design of the power supply; it is available to download at www.phoenixcontact.com/products under the item listing.

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.

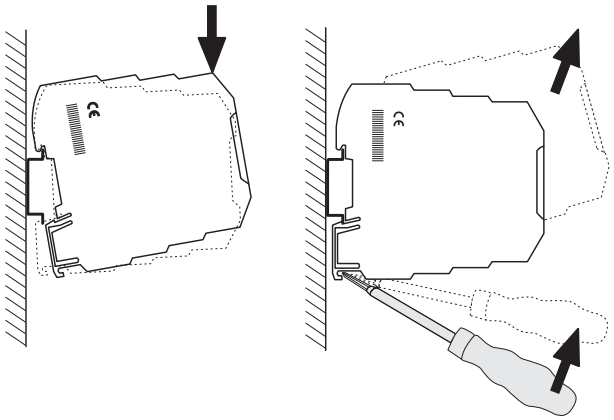
Supply via the module

The input isolators do not require a separate power supply. The required supply energy is provided by the input-side current loop, e.g., by a transmitter (see section “Connection/application example”).

However, the input isolators can be snapped onto a DIN rail bus connector - no electrically conductive connection is established. This means that it is not necessary to disconnect an existing DIN rail bus connector element connection.

6.5 Mounting

Figure 5 Mounting and removing



– Mount the module on a 35 mm DIN rail in accordance with 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.

6.6 Partition plate

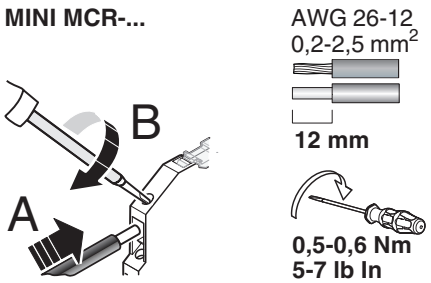
If you want to mount Ex i and non-Ex i devices next to each other on a DIN rail, you will require the MCR-DP partition plate (item no. 1430594). The partition plate ensures that Ex i isolating distances are maintained.

The partition plate is tailored to the MINI Analog, MINI Analog Pro, and MACX Analog device series and the QUINT4 system power supply (item no. 2904614).

The partition plate is compatible with the ME … TBUS DIN rail connectors (e.g., item no. 1090049, 2695439).

6.7 Connection of the cables

Figure 6 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.

7 Connection/application example

When using input isolators, make sure that the current sourcing voltage of the measuring transducer U_B is sufficient to drive the maximum current of 20 mA via the input isolator with a voltage drop U_V = 1.7 V and load R_B.
Which means:
$U_B \geq U_E = 1.7\ V + 20\ mA \times R_B$

Figure 7 Power supply

