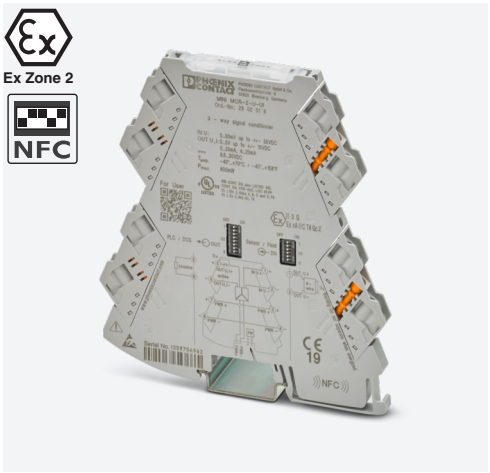
MINI MCR-2-U-UI(-PT)(-C)



Input signal conditioner

Data sheet
106936_en_05

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1 Description

The 3-way signal conditioner with plug-in connection technology and calibrated measuring range changeover can be configured using DIP switches and is used for the electrical isolation, conversion, amplification, and filtering of unipolar and bipolar voltage signals.

These devices make it possible, for example, to record direct currents flowing through a shunt resistor. The voltage drop of a few mV via the resistor is applied at the signal conditioner and converted into a standard signal.

Input signals see technical data

Features

- Configurable 3-way signal conditioner with plug-in connection technology
- Input and output signal range configurable via DIP switches
- Bipolar input/output signals
- Calibrated measuring range switch-over
- Approval for Ex zone 2 (ec, ic)
- Screw or push-in connection available
- Reinforced insulation according to IEC 61010-1
- Supply voltage range 9.6 V DC ... 30 V DC
- More than 60 different input signals can be selected

NFC

This device offers the option of NFC communication.

You can use the Signal Conditioner app to call-up DIP switch setting help and comprehensive module information via the NFC interface of your mobile end device.

The Signal Conditioner App is available free of charge.

Alternatively, you can use the CLIPX ENGINEER DEVICE PARAMETRIZATION - software (item no.: 1371665) and the TWN4 MIFARE NFC USB ADAPTER - programming adapter (item no.: 2909681).

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.

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3 Ordering data

Description	Type	Item no.	Pcs./Pkt.
3-way signal conditioner, with configurable input/output, for electrical isolation and conversion of analog signals in the mV and V range, unipolar as well as bipolar. Screw connection technology, standard configuration.	MINI MCR-2-U-UI	2902019	1
3-way signal conditioner, with configurable input/output, for electrical isolation and conversion of analog signals in the mV and V range, unipolar as well as bipolar. Push-in connection technology, standard configuration.	MINI MCR-2-U-UI-PT	2902021	1
3-way signal conditioner, with configurable input/output, for electrical isolation and conversion of analog signals in the mV and V range, unipolar as well as bipolar. Push-in connection technology, order configuration.	MINI MCR-2-U-UI-PT-C	2902020	1

Accessories	Type	Item no.	Pcs./Pkt.
DIN rail bus connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rail in accordance with EN 60715	ME 6,2 TBUS-2 1,5/5-ST-3,81 GY	2695439	10
DIN rail bus connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.	ME 6,2 TBUS-2 1,5/5-ST-3,81 GN	2869728	10
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 Pro 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-MP-PS-UNI	2906640	1
Universal Termination Carrier for connecting 16 MINI Analog Pro signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)	TC-D37SUB-ADIO16-MP-P-UNI	2906639	1
Eight MINI Analog Pro signal conditioners and measuring transducers can be connected to a controller with minimal cabling effort and without any errors using system adapters and system cabling.	MINI MCR-2-V8-FLK 16	2901993	1
Eight MINI Analog Pro signal conditioners and measuring transducers are quickly and easily integrated into a Modbus/RTU network via a communication adapter.	MINI MCR-2-V8-MOD-RTU	2905634	1
Eight MINI Analog Pro signal conditioners and measuring transducers are quickly and easily integrated into a Modbus/TCP network via a communication adapter.	MINI MCR-2-V8-MOD-TCP	2905635	1
Eight MINI Analog Pro signal conditioners and measuring transducers are quickly and easily integrated into a PROFIBUS DP network via a communication adapter.	MINI MCR-2-V8-PB-DP	2905636	1
Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a PROFINET network via a communication adapter.	MINI MCR-2-V8-PN	2905637	1

Accessories	Type	Item no.	Pcs./Pkt.
FASTCON Pro plug set consisting of four plugs with screw connection, one for each position on the module. Suitable for all MINI Analog Pro modules.	FASTCON PRO-SET	2906227	1
FASTCON Pro plug set consisting of four plugs with push-in connection, one for each position on the module. Suitable for all MINI Analog Pro modules.	FASTCON PRO-SET-PT	2906228	1
Marker for end clamp, Sheet, white, unmarked, can be labeled with: BLUEMARK E.CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME 2.0, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, TOPMARK NEO, TOPMARK LASER, mounting type: latching, Number of individual labels: 24, text field height: 5 mm, text field width: 30 mm	UCT-EM (30X5)	0801505	10
Marker for end clamp, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: snapped into marker carrier, Number of individual labels: 24, text field height: 5 mm, text field width: 30 mm	UCT-EM (30X5) CUS	0801589	1
Marker strip, Roll, white, unmarked, can be labeled with: THERMOMARK E.300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: adhesive, Number of individual labels: 10, text field height: 5 mm, text field width: 90000 mm	SK 5,0 WH:REEL	0805221	1
Plastic label, Sheet, white, unmarked, can be labeled with: BLUEMARK E.CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 5 mm, text field width: 15 mm	UC-EMLP (15X5)	0819301	10
Plastic label, Sheet, yellow, unmarked, can be labeled with: BLUEMARK E.CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 5 mm, text field width: 15 mm	UC-EMLP (15X5) YE	0822615	10
Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, text field height: 5 mm, text field width: 15 mm	UC-EMLP (15X5) CUS	0824550	1
Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, text field height: 5 mm, text field width: 15 mm	UC-EMLP (15X5) YE CUS	0824551	1
Plastic label, Sheet, silver, unmarked, can be labeled with: BLUEMARK E.CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 5 mm, text field width: 15 mm	UC-EMLP (15X5) SR	0828095	10
Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, Number of individual labels: 10, text field height: 5 mm, text field width: 15 mm	UC-EMLP (15X5) SR CUS	0828099	1

Accessories	Type	Item no.	Pcs./Pkt.
Plastic label, Card, white, unmarked, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, THERMOMARK PRIME 2.0, mounting type: adhesive, Number of individual labels: 189, text field height: 5 mm, text field width: 15 mm	US-EMLP (15X5)	0828790	10
Plastic label, Card, yellow, unmarked, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, THERMOMARK PRIME 2.0, mounting type: adhesive, Number of individual labels: 189, text field height: 5 mm, text field width: 15 mm	US-EMLP (15X5) YE	0828873	10
Plastic label, Card, silver, unmarked, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, THERMOMARK PRIME 2.0, mounting type: adhesive, Number of individual labels: 189, text field height: 5 mm, text field width: 15 mm	US-EMLP (15X5) SR	0828874	10
Plastic label, Card, can be ordered: by card, white, labeled according to customer specifications, mounting type: adhesive, Number of individual labels: 189, text field height: 5 mm, text field width: 15 mm	US-EMLP (15X5) CUS	0830076	1
Plastic label, Card, can be ordered: by card, yellow, labeled according to customer specifications, mounting type: adhesive, Number of individual labels: 189, text field height: 5 mm, text field width: 15 mm	US-EMLP (15X5) YE CUS	0830077	1
Plastic label, Card, can be ordered: by card, silver, labeled according to customer specifications, mounting type: adhesive, Number of individual labels: 189, text field height: 5 mm, text field width: 15 mm	US-EMLP (15X5) SR CUS	0830078	1
Marker for end clamp, Sheet, yellow, unmarked, can be labeled with: BLUEMARK E.CARD, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME 2.0, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, TOPMARK NEO, TOPMARK LASER, mounting type: latching, Number of individual labels: 24, text field height: 5 mm, text field width: 30 mm	UCT-EM (30X5) YE	0830340	10
Marker for end clamp, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: snapped into marker carrier, Number of individual labels: 24, text field height: 5 mm, text field width: 30 mm	UCT-EM (30X5) YE CUS	0830348	1
Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Screw connection technology	MINI MCR-2-PTB	2902066	1
Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Push-in connection technology	MINI MCR-2-PTB-PT	2902067	1

Accessories	Type	Item no.	Pcs./Pkt.
Primary-switched power supply, QUINT POWER, screw connection, DIN rail mounting, supply of devices possible via the TBUS DIN rail connector, protective coating, input: single-phase, output: 24 V DC/2.5 A	QUINT4-SYS-PS/1AC/24DC/2.5/SC	2904614	1
Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Screw connection technology, standard configuration	MINI MCR-2-FM-RC	2904504	1
Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Push-in connection technology, standard configuration	MINI MCR-2-FM-RC-PT	2904508	1
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

Hardware/firmware version	
Hardware/firmware version (2902019)	08 / -
Hardware/firmware version (2902021)	08 / -
Hardware/firmware version (2902020)	08 / -
The technical data and safety characteristics are valid as of the specified HW/FW version.	

Input Voltage input	
Number of inputs	1
Configurable/programmable	Yes
Voltage input signal	-50 mV ... 50 mV (via DIP switch) 0 mV ... 50 mV (via DIP switch) -60 mV ... 60 mV (via DIP switch) 0 mV ... 60 mV (via DIP switch) -75 mV ... 75 mV (via DIP switch) 0 mV ... 75 mV (via DIP switch) -80 mV ... 80 mV (via DIP switch) 0 mV ... 80 mV (via DIP switch) -100 mV ... 100 mV (via DIP switch) 0 mV ... 100 mV (via DIP switch) -120 mV ... 120 mV (via DIP switch) 0 mV ... 120 mV (via DIP switch) -150 mV ... 150 mV (via DIP switch) 0 mV ... 150 mV (via DIP switch) -200 mV ... 200 mV (via DIP switch) 0 mV ... 200 mV (via DIP switch) -240 mV ... 240 mV (via DIP switch) 0 mV ... 240 mV (via DIP switch) -300 mV ... 300 mV (via DIP switch) 0 mV ... 300 mV (via DIP switch) -500 mV ... 500 mV (via DIP switch) 0 mV ... 500 mV (via DIP switch) -600 mV ... 600 mV (via DIP switch) 0 mV ... 600 mV (via DIP switch) -750 mV ... 750 mV (via DIP switch) 0 mV ... 750 mV (via DIP switch) -800 mV ... 800 mV (via DIP switch) 0 mV ... 800 mV (via DIP switch)

Input Voltage input	
Voltage input signal	-1 V ... 1 V (via DIP switch) 0 V ... 1 V (via DIP switch) -1.2 V ... 1.2 V (via DIP switch) 0 V ... 1.2 V (via DIP switch) -1.5 V ... 1.5 V (via DIP switch) 0 V ... 1.5 V (via DIP switch) -2 V ... 2 V (via DIP switch) 0 V ... 2 V (via DIP switch) -2.4 V ... 2.4 V (via DIP switch) 0 V ... 2.4 V (via DIP switch) -3 V ... 3 V (via DIP switch) 0 V ... 3 V (via DIP switch) -5 V ... 5 V (via DIP switch) 0 V ... 5 V (via DIP switch) -6 V ... 6 V (via DIP switch) 0 V ... 6 V (via DIP switch) -7.5 V ... 7.5 V (via DIP switch) 0 V ... 7.5 V (via DIP switch) -8 V ... 8 V (via DIP switch) 0 V ... 8 V (via DIP switch) -10 V ... 10 V (via DIP switch) 0 V ... 10 V (via DIP switch) -12 V ... 12 V (via DIP switch) 0 V ... 12 V (via DIP switch) -15 V ... 15 V (via DIP switch) 0 V ... 15 V (via DIP switch) -20 V ... 20 V (via DIP switch) 0 V ... 20 V (via DIP switch) -24 V ... 24 V (via DIP switch) 0 V ... 24 V (via DIP switch) -30 V ... 30 V (via DIP switch) 0 V ... 30 V (via DIP switch)
Max. voltage input signal	33 V
Input resistance of voltage input	> 10 kΩ

Output Voltage output / current output	
Number of outputs	1
Voltage output signal	0 V ... 5 V (via DIP switch) 1 V ... 5 V (via DIP switch) -5 V ... 5 V (via DIP switch) 0 V ... 10 V (via DIP switch) 2 V ... 10 V (via DIP switch) -10 V ... 10 V (via DIP switch)
Short-circuit current	< 32 mA
Current output signal	0 mA ... 20 mA (via DIP switch) 4 mA ... 20 mA (via DIP switch)
Max. current output signal	22 mA
Open-circuit voltage	< 17 V
Configurable/programmable	Yes
Load/output load voltage output	≥ 10 kΩ
Ripple	< 20 mV_{PP} (at 600 Ω)
Load/output load current output	≤ 600 Ω (at 20 mA)

Supply	
Nominal supply voltage	24 V DC
Supply voltage range	9.6 V DC ... 30 V DC (The DIN rail connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, item no. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail in accordance with EN 60715)
Typical current consumption	25 mA (Current output, at 24 V DC incl. load) 54 mA (Current output, at 12 V DC incl. load)
Power consumption	≤ 800 mW (at I_{OUT} = 20 mA, 9.6 V DC, 600 Ω load)

Status and diagnostics indicators	
Status display	Green LED (supply voltage)

General data	
Limit frequency (3 dB)	30 Hz (via DIP switch) 5 kHz (via DIP switch)
Maximum transmission error	≤ 0.1 % (of final value)
Maximum temperature coefficient	0.01 %/K
Step response (10-90%)	< 8.5 ms (with 30 Hz filter)
Overvoltage category	II
Pollution degree	2
Degree of protection	IP20 (not assessed by UL)
Mounting position	any
Dimensions W/H/D	6.2 mm / 109.81 mm / 119.2 mm
Type of housing	PBT

Electrical isolation	
Electrical isolation	3-way isolation
Input/output/power supply Rated insulation voltage Test voltage Insulation	 300 V_{rms} 3 kV AC (50 Hz, 60 s) Reinforced insulation according to IEC/EN 61010-1

Connection data	Screw connection	Push-in connection
Conductor cross-section rigid with ferrule	0.2 mm² … 1.5 mm²	0.2 mm² … 2.5 mm²
Conductor cross-section rigid without ferrule	0.14 mm² … 2.5 mm²	0.14 mm² … 2.5 mm²
Conductor cross-section flexible	0.14 mm² … 2.5 mm²	0.14 mm² … 2.5 mm²
Conductor cross-section AWG flexible	24 … 12	24 … 12
Tightening torque	0.5 Nm … 0.6 Nm	
Stripping length	10 mm	10 mm

Ambient conditions	
Ambient temperature (operation)	-40 °C … 70 °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	
ATEX BVS 19 ATEX E 047 X	⟨Ex⟩ II 3 G Ex ec ic IIC T4 Gc
IECEx IECEx BVS 19.0041X	Ex ec ic IIC T4 Gc
CCC / China-Ex	Ex ec ic IIC T4 Gc
UL, USA/Canada	UL 508 Listed Class I, Div. 2, Groups A, B, C, D T6 Class I, Zone 2, Group IIC T6
Shipbuilding approval DNV GL TAA00002UA Temperature Humidity Vibration EMC Enclosure	 B B A A Required protection according to the Rules shall be provided upon installation on board

5 Safety regulations and installation notes

5.1 Installation notes

- The EPL Gc (ATEX category 3) device is suitable for installation in zone 2 potentially explosive areas. It satisfies the requirements of the following standards:
  IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 60079-11
  GB/T 3836.1, GB/T 3836.3, GB/T 3836.4
  For detailed information, please refer to the declarations of conformity.
- 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.
- While the devices are in operation, contact-dangerous voltages may be present on the control elements. For this reason parameterization, conductor connection, and opening of the module lid are allowed only when devices are in a de-energized state unless the connected circuits are exclusively SELV or PELV circuits.
- 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.
- The device complies with the EMC regulations for industrial areas (EMC class A). When using the device in residential areas, it may cause radio interference.
- If the device is not used as described in the documentation, the intended protection can be negatively affected.
- To protect the device against mechanical or electrical damage, install it in suitable housing with an appropriate degree of protection according to IEC/EN 60529.
- Provide a switch/circuit breaker close to the device, which is labeled as the disconnecting device for this device.
- Provide for a overcurrent protection device (I ≤ 4 A) in the installation.
- There is a double isolation of 300 V_{eff} between neighboring modules of the same type oriented the same way. The device has a base isolation of 150 V_{eff} to other neighboring modules on the side with the DIP switch.
- The voltages present at the input, output and supply are extra-low voltages (ELV). Depending on the application, dangerous voltage (> 30 V) against ground could occur. For this event, safe electrical isolation from the other connections has been implemented.
- The device must be stopped if it is damaged, has been subjected to an impermissible load, stored incorrectly, or if it malfunctions.
- UL requirement: Use copper cables approved for at least 75 °C.

5.2 Installation in Zone 2

- Observe the specified conditions for use in potentially explosive areas. Install the device in a suitable approved housing with at least IP54 protection in accordance with IEC/EN 60529 or another recognized degree of protection in accordance with IEC/EN 60079-0, Section 1 or GB/T 3836.1. Ensure sufficient UV protection.
- 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 the Ex zone.
- In potentially explosive areas, connecting and disconnecting cables and plugs in non-intrinsically safe circuits, the latching of devices onto and unlatching devices from the DIN rail connector, and the actuation of DIP switches is only permitted in a de-energized state or when the atmosphere is not potentially explosive.
- The device must be stopped and immediately removed from the Ex area if it is damaged, was subject to an impermissible load, stored incorrectly or if it malfunctions.
- The specified ambient temperature range of $-40°C \leq T_{amb} \leq +70°C$ refers to the temperature inside the IP54 housing.
- In Ex zone 2, the device may only be operated when all connectors are fully plugged in.

5.3 UL notes

INDUSTRIAL CONTROL EQUIPMENT FOR HAZARDOUS LOCATIONS 45FP

1 Suitable for use in class 1, division 2, groups A, B, C and D hazardous locations, or nonhazardous locations only.

2 WARNING - EXPLOSION HAZARD: Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.

3 NFC communication and Bluetooth communication must not be used unless the area is known to be non-hazardous.

4 This device is open-type and is required to be installed in an enclosure suitable for the environment and can only be accessed with the use of a tool or key.

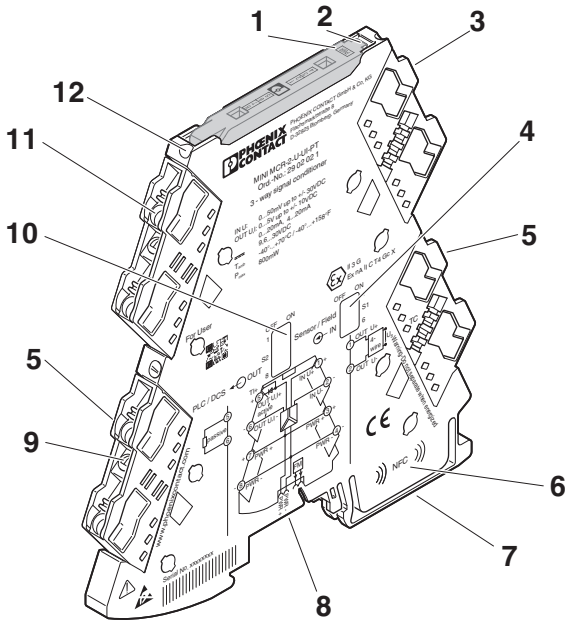
6 Installation

6.1 Connection notes

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

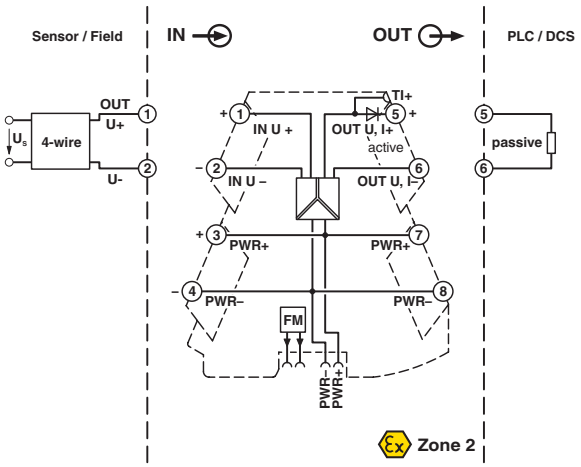
Figure 1 Structure



1 Green “PWR” LED, power supply
2 Cover with labeling option
3 Voltage input
4 DIP switch S1
5 Supply voltage
6 NFC coil
7 Universal snap-on foot for EN DIN rails
8 Connection for DIN rail connector
9 Spindle screw
10 DIP switch S2
11 Voltage output / current output
12 Current measuring socket

6.3 Block diagram

Figure 2 Block diagram



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. Drawing power from individual devices is not permitted!.

Supply via the module

Where the total current consumption of the aligned modules does not exceed 400 mA, the power can be supplied directly at the connection terminal blocks of the module.

We recommend connecting a 630 mA fuse (normal-blow or slow-blow) upstream.

Supply via a power terminal block

The MINI MCR-2-PTB power terminal block (Item No. 2902066) or the MINI MCR-2-PTB-PT power terminal block (Item No. 2902067) of the same shape is used to supply the supply voltage to the DIN rail connector.

We recommend connecting a 4 A fuse upstream.

Supply via a system power supply unit

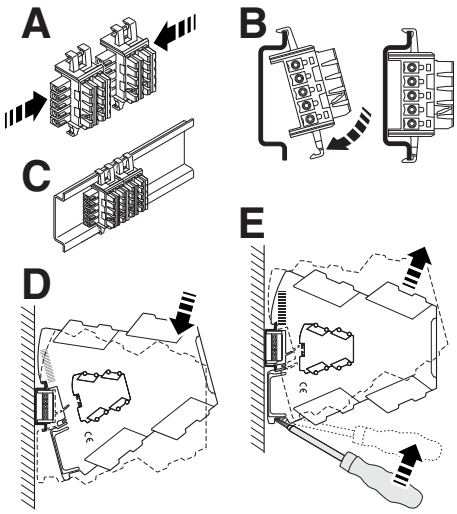
Use the QUINT4-SYS-PS/1AC/24DC/2.5/SC (Item No. 2904614) as the system power supply.

The power supply can be installed on all 35 mm DIN rails in accordance with EN 60715. The normal mounting position is horizontal (input terminals facing down). The minimum clearance to other devices is 30 mm above/below.

If you would like to supply adjacent items using the power supply, use a DIN rail bus distributor. To do so, insert the DIN rail bus adapter ME 22,5 TBUS ADAPTER KMGY (Item No.: 2201756) and the DIN rail connector ME 17,5 TBUS 1,5/ 5-ST-3,81 KMGY (Item No.: 2713645) plugged together in the DIN rail.

6.5 Mounting

Figure 3 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.

NOTE:

It is essential to observe the snap-in direction of the MINI analog module and DIN rail connector: Snap-on foot (D) below and plug component (C) 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 FASTCON Pro plugs

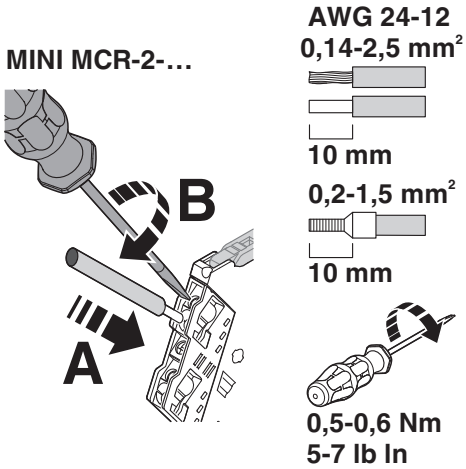
The device has pluggable connection terminals with an integrated test disconnect terminal block, with either push-in or screw-in connection technology.

You can plug or screw the FASTCON Pro plugs onto the device directly without tools. You can use the integrated spindle screw to easily remove the plugs from the module or set the isolating position, even when the plugs are connected. For this purpose, use a screwdriver of sufficient width, e.g., SZF 1-0.6x3.5 (Item No.: 1204517).

4-way coding prevents incorrect insertion into the module.

Screw connection:

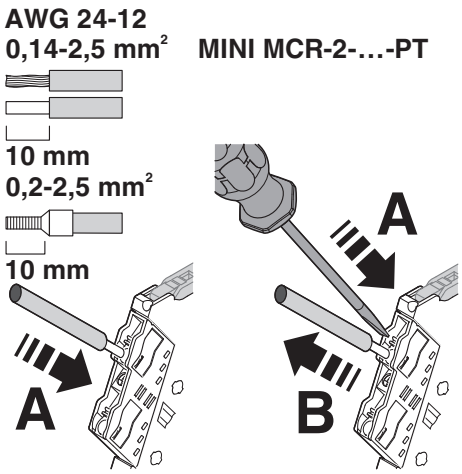
Figure 4 Screw connection



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

Push-in connection:

Figure 5 Push-in connection



If you want to use conductors with ferrule:

- Strip the wire by approximately 10 mm and crimp ferrules to the end of the wire.
- Insert the wire into the corresponding connection terminal block.
- Push in the pushbutton with a screwdriver to release.

If you want to use conductors without ferrule:

- Push the pushbutton in with a screwdriver.
- Insert the wire into the corresponding connection terminal block.
- Push in the pushbutton with a screwdriver to release.

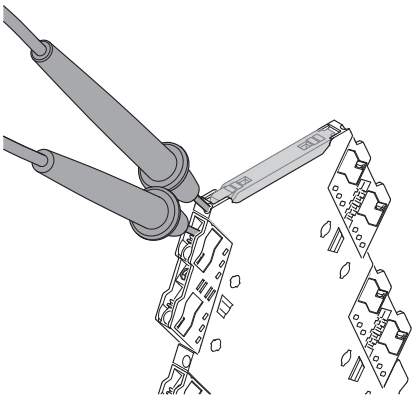
6.8 Current measurement

Thanks to integrated measurement diodes, the device enables the current to be measured without disconnecting the conductors.

Test sockets which support current measurement are marked TI+ or TI-.

For the current measurement, use 2 mm probe tips of the type Fluke TL75-1 or probe tips with a comparable tip shape.

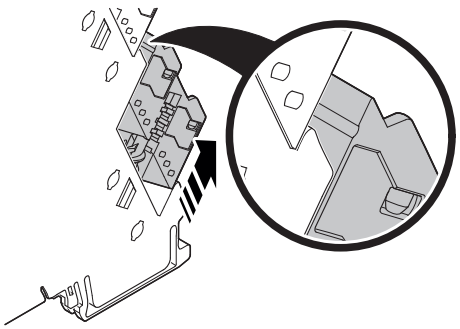
Figure 6 Test disconnect terminal block



Furthermore, individual circuits can be specifically disconnected, e.g. for commissioning.

You can set the isolating position by turning the integrated spindle screw through 180°. The isolating position is indicated by the marking on the plugs.

Figure 7 Disconnect position



6.9 Marking

Standard UCT-EM... or UC-EMLP... tags are available for marking the devices and can be printed as per customer requirements. In addition, the covers provide enough space for the use of freely chosen sticky labels such as SK 5.0 WH:REEL without concealing the LED diagnostic indicators.

6.10 Fault monitoring FM

In addition to module and power supply failures, known faults in the signal input of the module are reported via the DIN rail connector to the form-matched
MINI MCR-2-FM-RC (Item no. 2904504) or
MINI MCR-2-FM-RC-PT (Item no. 2904508) fault monitoring module. The module reports the error centrally via a N/C contact.

A fault monitoring module is only required once in a group. There is no need for individual evaluation of up to 115 connected Mini Analog Pro signal conditioners.

For the behavior of the fault monitoring contact for the different DIP switch configurations, please refer to the corresponding table.

7 Configuration

Standard configuration for devices not configured to order:

Input 0 mV ... 50 mV, output 0 mA ... 20 mA,
cut-off frequency 5 kHz

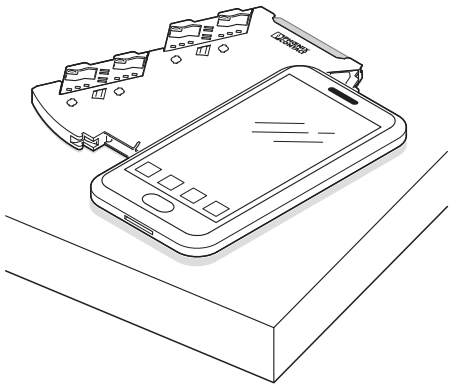
The module can also be configured with the supply voltage not connected.

DIP switches

You can use DIP switches S1 and S2 to specify the combination of the input and output standard signal range (see the configuration table) or you can use the DIP switch settings aid in the Signal Conditioner app to display the DIP switch positions for the desired configuration.

Alternatively, you can use the clipx ENGINEER DEVICE PARAMETERIZATION - software (item no.: 1371665) and the TWN4 MIFARE NFC USB ADAPTER - programming adapter (item no. 2909681).

Figure 8 Configuration



There is no need for readjustment following a measuring range switch-over.

All 60 adjustable measuring ranges are already calibrated ex works.

	• ≙ ON			DIP S1						DIP S2		
	Unipolar	Bipolar	Live zero	1	2	3	4	5	6	1	2	3
Input	0 ... 50 mV	±50 mV										
	0 ... 60 mV	±60 mV				•						
	0 ... 75 mV	±75 mV			•		•					
	0 ... 80 mV	±80 mV			•	•						
	0 ... 100 mV	±100 mV			•	•	•					
	0 ... 120 mV	±120 mV		•			•					
	0 ... 150 mV	±150 mV		•	•							
	0 ... 200 mV	±200 mV		•		•	•					
	0 ... 240 mV	±240 mV		•	•		•					
	0 ... 300 mV	±300 mV		•	•	•						
	0 ... 500 mV	±500 mV						•				
	0 ... 600 mV	±600 mV				•		•				
	0 ... 750 mV	±750 mV			•		•	•				
	0 ... 800 mV	±800 mV			•	•		•				
	0 ... 1 V	±1 V			•	•	•	•				
	0 ... 1.2 V	±1.2 V		•			•	•				
	0 ... 1.5 V	±1.5 V		•	•			•				
	0 ... 2 V	±2 V		•		•	•	•				
	0 ... 2.4 V	±2.4 V		•	•		•	•				
	0 ... 3 V	±3 V		•	•	•		•				
	0 ... 5 V	±5 V							•			
	0 ... 6 V	±6 V				•			•			
	0 ... 7.5 V	±7.5 V			•		•		•			
	0 ... 8 V	±8 V			•	•			•			
	0 ... 10 V	±10 V			•	•	•		•			
	0 ... 12 V	±12 V		•			•		•			
	0 ... 15 V	±15 V		•	•				•			
	0 ... 20 V	±20 V		•		•	•		•			
	0 ... 24 V	±24 V		•	•		•		•			
	0 ... 30 V	±30 V		•	•	•			•			
Output	0 ... 5 V	±5 V	1 ... 5 V							•	•	
	0 ... 10 V	±10 V	2 ... 10 V							•		•
	0 ... 20 mA		4 ... 20 mA									

		DIP S2				Example	
Input	**Output**	**4**	**5**	**6**	**7**	**Input**	**Output**
Bipolar	Bipolar					±3 V	±10 V
Bipolar	Unipolar		•	•		±3 V	0 ... 10 V
Bipolar	Live zero		•		•	±3 V	4 ... 20 mA
Unipolar	Unipolar					0 ... 3 V	0 ... 10 V
Unipolar	Bipolar	•		•		0 ... 3 V	±10 V
Unipolar	Live zero		•			0 ... 3 V	4 ... 20 mA
Live zero	Live zero						
Live zero	Unipolar	•					
Live zero	Bipolar	•			•		

30 Hz filter	**DIP S2 8**
30 Hz	•
5 kHz	

8 Diagnostics and status indicators

Name	Color/status	Description
PWR	Green	Supply voltage
	Lit	Supply voltage present

9 Digital nameplate

The digital nameplate provides the option of obtaining product-specific data related to a specific serial number.

If you scan the QR code (digital nameplate) on the device, you can, for example, retrieve documents on the production status as well as clearly identify the hardware and firmware status of the device at hand.