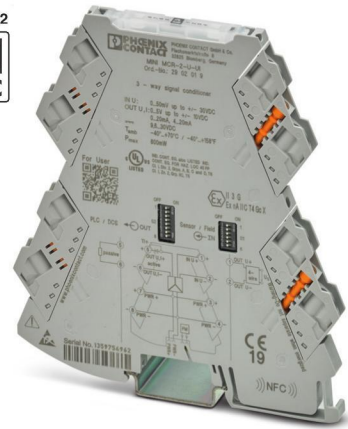


# MINI MCR-2-U-UI(-PT)(-C)

## 3-way signal conditioner

Data sheet  
106936\_en\_01

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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



### 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".



This device offers the option of NFC communication.

You can use the MINI Analog Pro Smartphone app to call-up DIP switch setting help and comprehensive module information via the NFC interface of your Smartphone.

The MINI Analog Pro Smartphone app is available to you free.



Make sure you always use the latest documentation.

It can be downloaded from the product at [phoenixcontact.net/products](https://www.phoenixcontact.net/products).

This document is valid for the products listed in the "Ordering data".



<b>2</b>	<b>Table of contents</b>	
1	Description .....	1
2	Table of contents .....	2
3	Ordering data .....	3
4	Technical data .....	7
5	Safety regulations and installation notes.....	10
	5.1 Installation notes .....	10
	5.2 Installation in Zone 2.....	10
	5.3 UL notes.....	11
6	Installation .....	12
	6.1 Connection notes .....	12
	6.2 Structure .....	12
	6.3 Block diagram.....	12
	6.4 Power supply.....	12
	6.5 Mounting .....	13
	6.6 FASTCON Pro plugs .....	13
	6.7 Current measurement .....	14
	6.8 Marking .....	14
	6.9 Fault monitoring FM .....	14
7	Configuration .....	15
8	Diagnostics and status indicators .....	16

### 3 Ordering data

Description	Type	Order 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. Screw connection technology, order configuration.	MINI MCR-2-U-UI-C	2902018	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	Order No.	Pcs./Pkt.
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 GY	2695439	10
DIN rail 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
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
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
Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A	MINI-SYS-PS-100-240AC/24DC/1.5	2866983	1
Primary-switched power supply MINI POWER for DIN rail mounting, input: 1-phase, output: 24 V DC/1,5 A, for the potentially explosive area	MINI-PS-100-240AC/24DC/1.5/EX	2866653	1

Accessories	Type	Order No.	Pcs./Pkt.
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 can be 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 can be 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 can be quickly and easily integrated into a PROFIBUS DP network via a communication adapter.	MINI MCR-2-V8-PB-DP	2905636	1
Marker for end clamp, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24	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, lettering field size: 30 x 5 mm, Number of individual labels: 24	UCT-EM (30X5) CUS	0801589	1
Marker for end clamp, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24	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, lettering field size: 30 x 5 mm, Number of individual labels: 24	UCT-EM (30X5) YE CUS	0830348	1
Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10	UC-EMLP (15X5)	0819301	10
Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm	UC-EMLP (15X5) CUS	0824550	1
Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID, BLUEMARK ID COLOR, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 20	UC-EMLP (15X5)L	0820138	5



Accessories	Type	Order No.	Pcs./Pkt.
Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm	UC-EMLP (15X5)L CUS	0824552	1
Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10	UC-EMLP (15X5) YE	0822615	10
Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm	UC-EMLP (15X5) YE CUS	0824551	1
Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK CLED, BLUEMARK LED, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 20	UC-EMLP (15X5)L YE	0825325	5
Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 20	UC-EMLP (15X5)L YE CUS	0826680	1
Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10	UC-EMLP (15X5) SR	0828095	10
Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10	UC-EMLP (15X5) SR CUS	0828099	1
Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 20	UC-EMLP (15X5)L SR	0828103	5
Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189	US-EMLP (15X5)	0828790	10
Plastic label, can be ordered: By card, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189	US-EMLP (15X5) CUS	0830076	1
Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189	US-EMLP (15X5) YE	0828873	10

Accessories	Type	Order No.	Pcs./Pkt.
Plastic label, can be ordered: By card, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189	US-EMLP (15X5) YE CUS	0830077	1
Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189	US-EMLP (15X5) SR	0828874	10
Plastic label, can be ordered: By card, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189	US-EMLP (15X5) SR CUS	0830078	1
Marker strip, Roll, white, unlabeled, can be labeled with: THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: adhesive, for terminal block width: 5 mm, lettering field size: continuous x 5 mm, Number of individual labels: 90000	SK 5,0 WH:REEL	0805221	1

## 4 Technical data

Input	
Number of inputs	1 / 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) -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)

<b>Input</b>	
Voltage input signal	-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 k $\Omega$
<b>Output</b>	
Number of outputs	1 / 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
Non-load voltage	< 17 V
Configurable/programmable	Yes
Load/output load voltage output	$\geq$ 10 k $\Omega$
Ripple	< 20 mV <sub>PP</sub> (at 600 $\Omega$ )
Load/output load current output	$\leq$ 600 $\Omega$ (at 20 mA)
<b>Supply</b>	
Nominal supply voltage	24 V DC
Supply voltage range	9.6 V DC ... 30 V DC (The DIN rail bus connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, Order No. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail according to 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	$\leq$ 800 mW (at I <sub>OUT</sub> = 20 mA, 9.6 V DC, 600 $\Omega$ load)
<b>Status and diagnostics indicators</b>	
Operating voltage display	Green LED



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)
Electrical isolation	Reinforced insulation in accordance with IEC 61010-1
Overvoltage category	II
Mounting position	any
Degree of protection	IP20 (not assessed by UL)
Degree of pollution	2
Rated insulation voltage	300 V
Test voltage, input/output/supply	3 kV (50 Hz, 1 min.)
Dimensions W/H/D	6.2 mm / 109.81 mm / 119.2 mm
Type of housing	PBT gray

Connection data	Screw connection	Push-in connection
Conductor cross section solid with ferrule	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section solid without ferrule	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section AWG flexible	24 ... 12	24 ... 12
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**

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	
CE	CE-compliant
ATEX BVS 19 ATEX E 047 X	⊕ II 3 G Ex ec ic IIC T4 Gc
IECEX IECEX BVS 19.0041X	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

## 5 Safety regulations and installation notes

### 5.1 Installation notes

- The EPL Gc (ATEX category 3) device is designed for installation in zone 2 potentially explosive areas. It satisfies the requirements of the following standards. Comprehensive details are to be found in the EU Declaration of Conformity which is enclosed and also available on our website in the latest version: IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 60079-11
- 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 generally approved technical regulations, must be observed. The safety data is provided in this package slip and on the certificates (conformity assessment, additional approvals where applicable).
- 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 an overcurrent protection device ( $I \leq 4 \text{ A}$ ) in the installation.
- There is a double isolation of  $300 V_{\text{eff}}$  between neighboring modules of the same type oriented the same way. The device has a base isolation of  $150 V_{\text{eff}}$  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 ( $> 30 \text{ V}$ ) 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  $75 \text{ }^\circ\text{C}$ .

### 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 that meets the requirements of IEC/EN 60529 and ensure sufficient UV protection or another type of recognized protection type in accordance with IEC/EN 60079-0, Section 1.
- 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, 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, was subject to an impermissible load, stored incorrectly or if it malfunctions.
- The specified ambient temperature range of  $-40^\circ\text{C} \leq T_{\text{amb}} \leq +70^\circ\text{C}$  refers to the temperature inside the 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 IEC 61340-5-1.

### 6.2 Structure

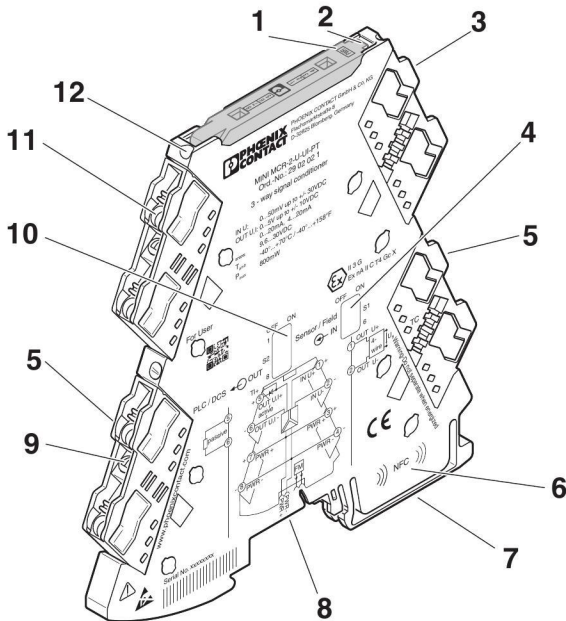


Figure 1 Structure

- 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

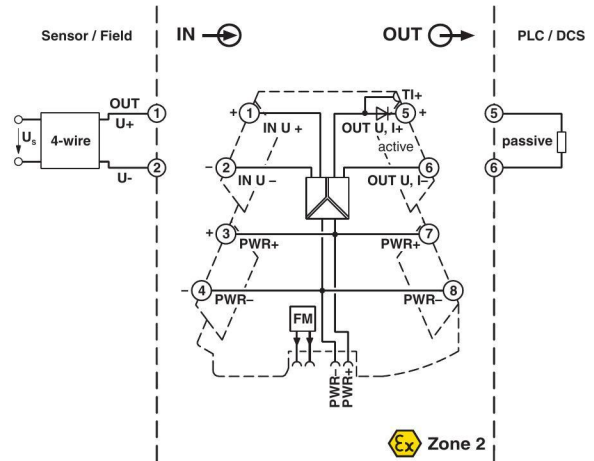


Figure 2 Block diagram

### 6.4 Power supply

You must refer to the MACX and MINI Analog power manual for the design of the power supply.



#### 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 (Order No. 2902066) or the MINI MCR-2-PTB-PT power terminal block (Order 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**

The system power supply unit with 1.5 A output current connects the DIN rail connector to the supply voltage and can thus be used to supply several modules from the mains.

- MINI-SYS-PS-100-240AC/24DC/1.5 (Order No. 2866983)
- Potentially explosive areas:  
MINI-PS-100-240AC/24DC/1.5/EX (Order No. 2866653)

**6.5 Mounting**

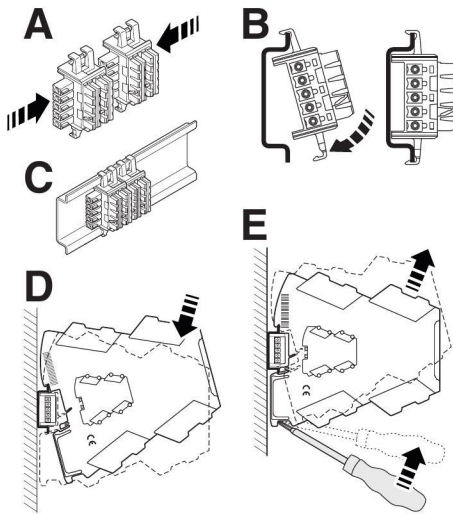


Figure 3 Mounting and removing

- 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.

**6.6 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 (order number: 1204517).

4-way coding prevents incorrect insertion into the module.

**Screw connection:**

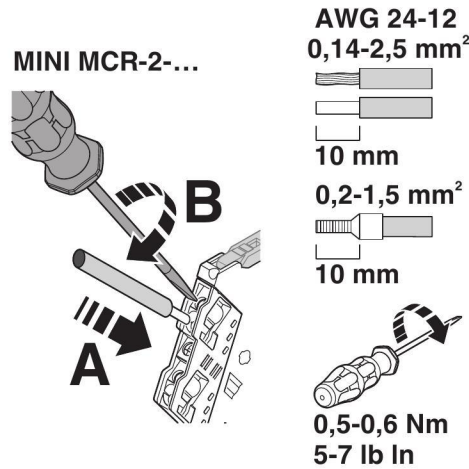


Figure 4 Screw connection

- 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:**

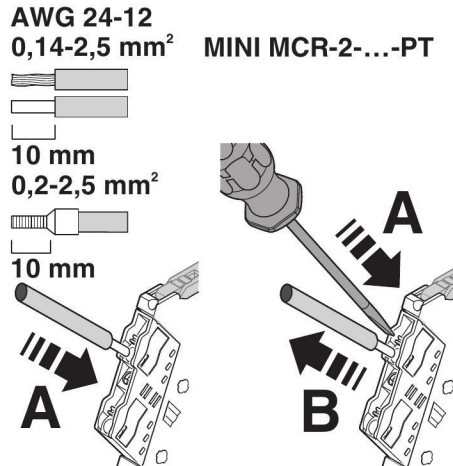


Figure 5 Push-in connection

- Insert the wire into the corresponding connection terminal block.

### 6.7 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.

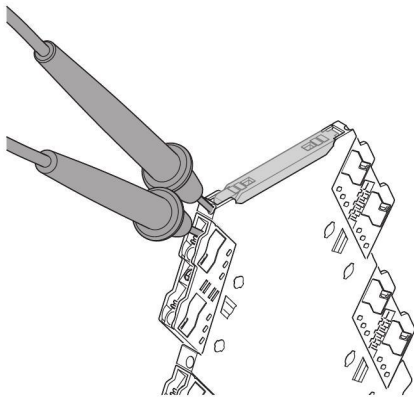


Figure 6 Test disconnect terminal block

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.

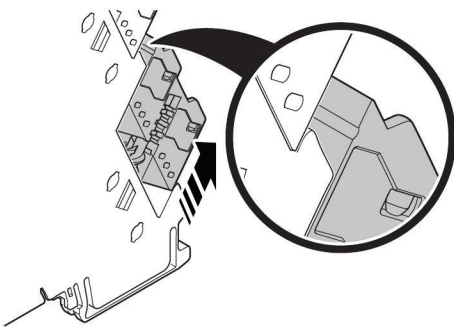


Figure 7 Disconnect position

### 6.8 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.

### 6.9 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 (order number 2904504) or MINI MCR-2-FM-RC-PT (order number 2904508) fault monitoring module. The module reports the error centrally via an 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

### 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 setting help in the MINI Analog Pro app to display the DIP switch positions for the desired configuration.

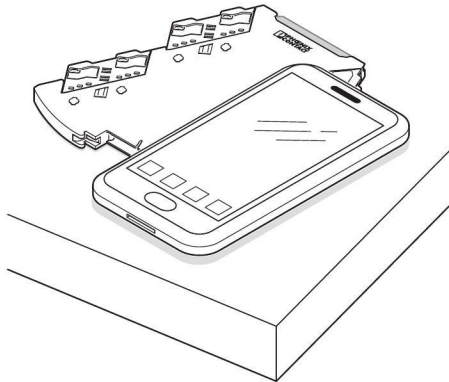


Figure 8 Configuration

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

All 60 adjustable measuring ranges are already calibrated ex works.

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

Input	Output	DIP S2				Example	
		4	5	6	7	Input	Output
Bipolar	Bipolar					$\pm 3$ V	$\pm 10$ V
Bipolar	Unipolar	•	•			$\pm 3$ V	0 ... 10 V
Bipolar	Live zero	•		•		$\pm 3$ V	4 ... 20 mA
Unipolar	Unipolar					0 ... 3 V	0 ... 10 V
Unipolar	Bipolar	•		•		0 ... 3 V	$\pm 10$ 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
30 Hz	8
5 kHz	•

## 8 Diagnostics and status indicators

Green LED      PWR      Supply voltage  
 Lit              Supply voltage present