# MINI MCR-2-UNI-UI-UIRO - Input signal conditioner

2902026

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Universally configurable 4-way signal conditioner, with switching output and plug-in connection technology for the electrical isolation of analog signals. Configurable via DIP switch or software. Screw connection technology, standard configuration.

## Product description

Configurable, freely adjustable 4-way signal conditioner with switching output and plug-in connection technology for the electrical isolation, conversion, amplification, and filtering of standard signals. Current signals between 0 mA ... 24 mA and voltage signals between 0 V ... 12 V can be processed on the input side. Signals between 0 mA ... 21 mA and 0 V ... 10.5 V are possible on the output side. The minimum measuring span is 1 mA and 0.5 V. Full accuracy is maintained with a measuring span greater than 10 mA and 5 V. You can configure the device using one of the free software solutions. Default settings can also be made directly on the device by simply using the DIP switches (see configuration table). The measuring transducer supports fault monitoring and NFC communication.

## Commercial data

| | |
|---|---|
| Item number | 2902026 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DK1 |
| Product key | DK1121 |
| GTIN | 4046356649681 |
| Weight per piece (including packing) | 123.6 g |
| Weight per piece (excluding packing) | 70.53 g |
| Customs tariff number | 85437090 |
| Country of origin | DE |

# Technical data

## Notes

Utilization restriction

| | |
|---|---|
| EMC note | EMC: class A product, see manufacturer's declaration in the download area |

## Product properties

| | |
|---|---|
| Product type | Input signal conditioner |
| Product family | MINI Analog Pro |
| No. of channels | 1 |
| Configuration | DIP switches |
| | Software |
| | App |

Insulation characteristics: GB Standard

| | |
|---|---|
| Overvoltage category | II |
| Pollution degree | 2 |

## System properties

Functionality

| | |
|---|---|
| Configuration | DIP switches |
| | Software |
| | App |

## Electrical properties

| | |
|---|---|
| Electrical isolation | 4-way isolation |
| Electrical isolation between input and output | yes |
| Step response (0–99%) | 140 ms (15 Hz sample rate) |
| | 45 ms (60 Hz sample rate) |
| | 25 ms (240 Hz sample rate, can only be set via software) |
| Maximum temperature coefficient | 0.01 %/K |
| Temperature coefficient, typical | 0.01 %/K |
| Maximum transmission error | 0.1 % (of final value) |

Electrical isolation Input/output/power supply

| | |
|---|---|
| Rated insulation voltage | 300 $V_{rms}$ |
| Test voltage | 3 kV AC (50 Hz, 60 s) |
| Insulation | Reinforced insulation according to IEC/EN 61010-1 |

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 | 32 mA (24 V DC) |
| | 63 mA (12 V DC) |
| Power consumption (I output) | ≤ 1 W (at $I_{OUT}$ = 20 mA, 9.6 V DC, 600 Ω load) |

## Input data

Signal: Voltage/current

| | |
|---|---|
| Number of inputs | 1 |
| Configurable/programmable | Yes |
| Voltage input signal | 0 V ... 10 V (via DIP switch) |
| | 2 V ... 10 V (via DIP switch) |
| | 0 V ... 5 V (via DIP switch) |
| | 1 V ... 5 V (via DIP switch) |
| | 10 V ... 0 V (via DIP switch) |
| | 10 V ... 2 V (via DIP switch) |
| | 5 V ... 0 V (via DIP switch) |
| | 5 V ... 1 V (via DIP switch) |
| | 0 V ... 12 V (can be set via software) |
| Max. voltage input signal | 12 V |
| Current input signal | 0 mA ... 20 mA (via DIP switch) |
| | 4 mA ... 20 mA (via DIP switch) |
| | 0 mA ... 10 mA (via DIP switch) |
| | 2 mA ... 10 mA (via DIP switch) |
| | 20 mA ... 0 mA (via DIP switch) |
| | 20 mA ... 4 mA (via DIP switch) |
| | 10 mA ... 0 mA (via DIP switch) |
| | 10 mA ... 2 mA (via DIP switch) |
| | 0 mA ... 24 mA (can be set via software) |
| Max. current input signal | 24 mA |
| Input resistance of voltage input | > 120 kΩ |
| Input resistance current input | approx. 50 Ω (+0.7 V for test diode) |

## Output data

Switching: Transistor

| | |
|---|---|
| Number of outputs | 1 |
| Contact switching type | 1 N/O contact |
| Minimum switching voltage | 1 V |
| Maximum switching voltage | 30 V DC |
| Min. switching current | 100 µA |
| Max. switching current | 100 mA (at 30 V) |

Signal: Voltage/current

| | |
|---|---|
| Number of outputs | 1 |
| Configurable/programmable | Yes |
| Voltage output signal | 0 V ... 10 V (via DIP switch) |
| | 2 V ... 10 V (via DIP switch) |
| | 0 V ... 5 V (via DIP switch) |
| | 1 V ... 5 V (via DIP switch) |
| | 0 V ... 10.5 V (can be set via software) |
| Max. voltage output signal | approx. 12.3 V |
| Current output signal | 0 mA ... 20 mA (via DIP switch) |
| | 4 mA ... 20 mA (via DIP switch) |
| | 0 mA ... 10 mA (via DIP switch) |
| | 2 mA ... 10 mA (via DIP switch) |
| | 0 mA ... 21 mA (can be set via software) |
| Max. current output signal | 24.6 mA |
| Load/output load voltage output | ≥ 10 kΩ |
| Load/output load current output | ≤ 600 Ω (at 20 mA) |
| Ripple | < 20 $mV_{PP}$ (at 600 Ω) |
| | < 20 $mV_{PP}$ (at 600 Ω) |

## Connection data

| | |
|---|---|
| Connection method | Screw connection |
| Stripping length | 10 mm |
| Screw thread | M3 |
| Conductor cross-section rigid | 0.2 mm² ... 1.5 mm² (with ferrule) |
| | 0.14 mm² ... 2.5 mm² (without ferrule) |
| Conductor cross-section flexible | 0.14 mm² ... 2.5 mm² |
| Conductor cross-section AWG | 24 ... 12 (flexible) |
| Tightening torque | 0.5 Nm ... 0.6 Nm |

## Ex data

| | |
|---|---|
| Ex installation (EPL) | Gc |
| | Div. 2 |

## Interfaces

Data: IFS interface

| | |
|---|---|
| Connection method | Micro USB type B |

## Signaling

| | |
|---|---|
| Status display | Green LED (supply voltage) |
| | Yellow LED (switching output) |
| Error indication | Red LED |

## Dimensions

| | |
|---|---|
| Width | 6.2 mm |
| Height | 109.81 mm |
| Depth | 119.2 mm |

## Material specifications

| | |
|---|---|
| Color | gray (RAL 7042) |
| Housing material | PBT |
| Fire protection for rail vehicles (DIN EN 45545-2) R22 | HL 1 - HL 2 |
| Fire protection for rail vehicles (DIN EN 45545-2) R23 | HL 1 - HL 2 |
| Fire protection for rail vehicles (DIN EN 45545-2) R24 | HL 1 - HL 2 |

## Environmental and real-life conditions

### Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 (not assessed by UL) |
| Ambient temperature (operation) | -40 °C ... 70 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Altitude | ≤ 2000 m |
| Permissible humidity (operation) | 5 % ... 95 % (non-condensing) |

## Approvals

### CE

| | |
|---|---|
| Certificate | CE-compliant |

### ATEX

| | |
|---|---|
| Identification | Ⓔx II 3 G Ex ec IIC T4 Gc |
| Certificate | BVS 19 ATEX E 083 X |

### IECEx

| | |
|---|---|
| Identification | Ex ec IIC T4 Gc |
| Certificate | IECEx BVS 19.0072X |

### CCC / China-Ex

| | |
|---|---|
| Identification | Ex ec IIC T4 Gc |

### UL, USA/Canada

| | |
|---|---|
| Identification | UL 508 Listed |
| | Class I, Div. 2, Groups A, B, C, D T6 |
| | Class I, Zone 2, Group IIC T6 |

### Shipbuilding approval

| | |
|---|---|
| Certificate | DNV GL TAA000021E Rev. 1 |

### EAC Ex

| | |
|---|---|
| Identification | EAC Ex ⅂⎽⎽⌡Ex ec IIC T4 Gc |
| Certificate | BY/112 02.01 TP012 103.01 00079 |

### Shipbuilding data

| | |
|---|---|
| Temperature | B |
| Humidity | B |
| Vibration | A |
| EMC | A |
| Enclosure | Required protection according to the Rules shall be provided upon installation on board |

## EMC data

| | |
|---|---|
| Electromagnetic compatibility | Conformance with EMC directive |
| Noise immunity | EN 61000-6-2 |
| Note | When being exposed to interference, there may be minimal deviations. |

Noise emission

| | |
|---|---|
| Standards/regulations | EN 61000-6-4 |

Electrostatic discharge

| | |
|---|---|
| Standards/regulations | EN 61000-4-2 |

Electrostatic discharge

| | |
|---|---|
| Comments | Safety measures must be taken to prevent electrostatic discharge. |

Electromagnetic HF field

| | |
|---|---|
| Designation | Electromagnetic RF field |
| Standards/regulations | EN 61000-4-3 |
| Typical deviation from the measuring range final value | 0.2 % |

Fast transients (burst)

| | |
|---|---|
| Designation | Fast transients (burst) |
| Standards/regulations | EN 61000-4-4 |
| Typical deviation from the measuring range final value | 0.1 % |

Surge current load (surge)

| | |
|---|---|
| Standards/regulations | EN 61000-4-5 |

Conducted interference

| | |
|---|---|
| Designation | Conducted interferences |
| Standards/regulations | EN 61000-4-6 |
| Typical deviation from the measuring range final value | 2.8 % |

## Standards and regulations

| | |
|---|---|
| Electrical isolation | 4-way isolation |

GB Standard

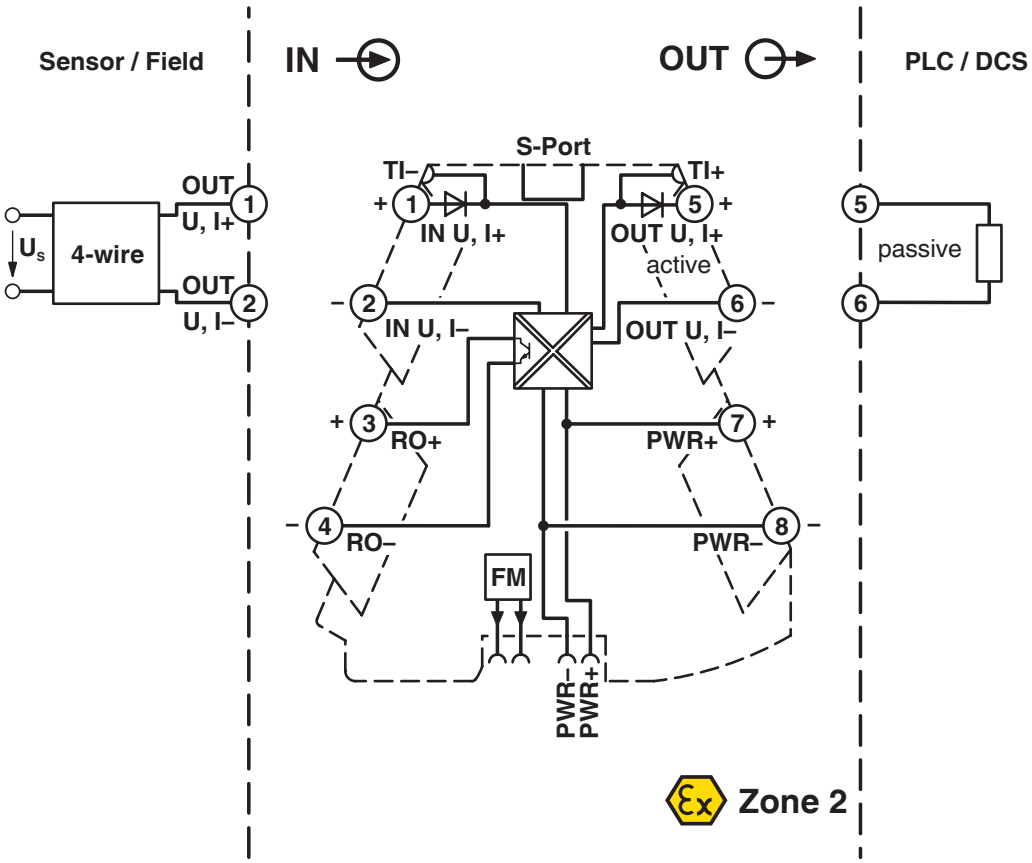
| | |
|---|---|
| Standards/regulations | GB/T 3836.1 |
| | GB/T 3836.3 |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly note | The DIN rail connector can be used for bridging the supply voltage. It can be snapped onto a 35 mm EN 60715 DIN rail. |
| Mounting position | any |

## Drawings

Block diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/ae/products/2902026

**UL Listed**
Approval ID: FILE E 238705

**cUL Listed**
Approval ID: FILE E 238705

**DNV**
Approval ID: TAA000021E

**IECEx**
Approval ID: IECEx BVS 19.0072X

**cUL Listed**
Approval ID: E196811

**UL Listed**
Approval ID: E196811

**ATEX**
Approval ID: BVS 19 ATEX E 083 X

**EAC Ex**
Approval ID: TP012 103.01 00079

**CCC**
Approval ID: 2022122310115964

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27210120 |
| ECLASS-15.0 | 27210120 |

### ETIM

| | |
|---|---|
| ETIM 9.0 | EC002653 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 39121000 |

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(c)-I |

China RoHS

| | |
|---|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|---|---|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
| | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7) |
| SCIP | b3ccb4f7-9f18-43c5-9313-fc7a7d5d3530 |

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PHOENIX CONTACT Middle East FZ LLC
1201N-1206N, Dubai Science Park Towers – North
P.O. Box 345002, Dubai, United Arab Emirates
(+971) 4 437-0324
info-me@phoenixcontact.com