# MINI MCR-SL-SHUNT-UI-NC - Input signal conditioner

2810780

https://www.phoenixcontact.com/us/products/2810780

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MCR 3-way signal conditioner, with configurable input/output, for electrical isolation and conversion of analog signals in the mV range, both unipolar and bipolar with screw connection, not preconfigured

## Your advantages

- Power supply possible via the foot element (TBUS)
- Ideal for converting signals for shunt measurements
- Low power consumption
- Highly-compact isolating amplifier for electrical isolation, conversion, amplification, and filtering of mV signals to create standard analog signals
- Up to 280 signal combinations can be configured using DIP switches
- 3-way isolation

## Commercial data

| | |
|---|---|
| Item number | 2810780 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C403 |
| Product key | DK1131 |
| GTIN | 4046356305341 |
| Weight per piece (including packing) | 61.9 g |
| Weight per piece (excluding packing) | 117.7 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 |
| No. of channels | 1 |
| Configuration | DIP switches |

## System properties

Functionality

| | |
|---|---|
| Configuration | DIP switches |

## Electrical properties

| | |
|---|---|
| Electrical isolation | 3-way isolation |
| Electrical isolation between input and output | yes |
| Limit frequency (3 dB) | 100 Hz / 30 Hz switchable |
| Step response (10-90%) | 3.5 ms (100 Hz) |
| Maximum temperature coefficient | < 0.01 %/K |
| Temperature coefficient, typical | < 0.002 %/K |
| Maximum transmission error | ≤ 0.2 % |
| | < 0.4 % (Without adjustment) |

Electrical isolation

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

Electrical isolation Input/output/power supply IEC/EN 61010

| | |
|---|---|
| Standards/regulations | IEC/EN 61010 |
| Rated insulation voltage | 30 V AC |
| | 50 V DC |
| Test voltage | 1.5 kV AC (50 Hz, 60 s) |
| Insulation | Basic insulation |

Supply

| | |
|---|---|
| Nominal supply voltage | 24 V DC |
| Supply voltage range | 19.2 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) |
| Max. current consumption | < 25 mA |

| | |
|---|---|
| Power consumption | < 450 mW (Current output) |

## Input data

Signal: Voltage

| | |
|---|---|
| Number of inputs | 1 |
| Configurable/programmable | Yes, unconfigured |
| Voltage input signal | -50 mV ... 50 mV |
| | -60 mV ... 60 mV |
| | -75 mV ... 75 mV |
| | -80 mV ... 80 mV |
| | -100 mV ... 100 mV |
| | -120 mV ... 120 mV |
| | -150 mV ... 150 mV |
| | -200 mV ... 200 mV |
| | -240 mV ... 240 mV |
| | -300 mV ... 300 mV |
| | -500 mV ... 500 mV |
| | -600 mV ... 600 mV |
| | -750 mV ... 750 mV |
| | -800 mV ... 800 mV |
| | -1 V ... 1 V |
| | -1.2 V ... 1.2 V |
| | -1.5 V ... 1.5 V |
| | -2 V ... 2 V |
| | -2.4 V ... 2.4 V |
| | -3 V ... 3 V |
| | 0 mV ... 50 mV (additional areas can be configured, see table) |
| | 0 mV ... 60 mV |
| | 0 mV ... 75 mV |
| | 0 mV ... 80 mV |
| | 0 mV ... 100 mV |
| | 0 mV ... 120 mV |
| | 0 mV ... 150 mV |
| | 0 mV ... 200 mV |
| | 0 mV ... 240 mV |
| | 0 mV ... 300 mV |
| | 0 mV ... 500 mV |
| | 0 mV ... 600 mV |
| | 0 mV ... 750 mV |
| | 0 mV ... 800 mV |
| | 0 V ... 1 V |
| | 0 V ... 1.2 V |
| | 0 V ... 1.5 V |

| | |
|---|---|
| | 0 V ... 2 V |
| | 0 V ... 2.4 V |
| | 0 V ... 3 V |
| Max. voltage input signal | approx. 3 V DC |
| Input resistance of voltage input | approx. 10 kΩ |

## Output data

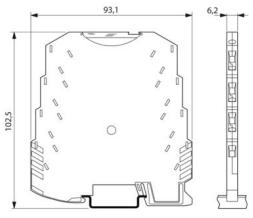
Signal: Voltage/current

| | |
|---|---|
| Number of outputs | 1 |
| Configurable/programmable | Yes, unconfigured |
| Voltage output signal | 0 V ... 10 V |
| | 2 V ... 10 V |
| | 0 V ... 5 V |
| | 1 V ... 5 V |
| | -10 V ... 10 V (The bi-polar output can be used only for bi-polar input signals.) |
| | -5 V ... 5 V (The bi-polar output can be used only for bi-polar input signals.) |
| Current output signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA |
| Load/output load voltage output | ≥ 10 kΩ |
| Load/output load current output | < 500 Ω (at 20 mA) |
| Ripple | < 20 $mV_{PP}$ (at 500 Ω) |
| | < 20 $mV_{PP}$ (at 10 kΩ) |

## Connection data

| | |
|---|---|
| Connection method | Screw connection |
| Connection technology | 2-conductor |
| Stripping length | 12 mm |
| Screw thread | M3 |
| 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 |

## Dimensions

| | |
|---|---|
| Dimensional drawing |  |
| Width | 6.2 mm |
| Height | 93.1 mm |
| Depth | 102.5 mm |

## Material specifications

| | |
|---|---|
| Color | green (RAL 6021) |
| 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 |
| Ambient temperature (operation) | -20 °C ... 65 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Altitude | ≤ 2000 m |
| Permissible humidity (operation) | 5 % ... 95 % (non-condensing) |

## Approvals

### CE

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

### UL, USA/Canada

| | |
|---|---|
| Identification | UL 508 Recognized |
| | Class I, Div. 2, Groups A, B, C, D T4 |

## 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 upper range value | 6 % |

### Fast transients (burst)

| | |
|---|---|
| Designation | Fast transients (burst) |

| | |
|---|---|
| Standards/regulations | EN 61000-4-4 |
| Typical deviation from the upper range value | 6 % |

Surge current load (surge)

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

Surge current load (surge)

| | |
|---|---|
| Comments | Criterion B |

Conducted interference

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

## Standards and regulations

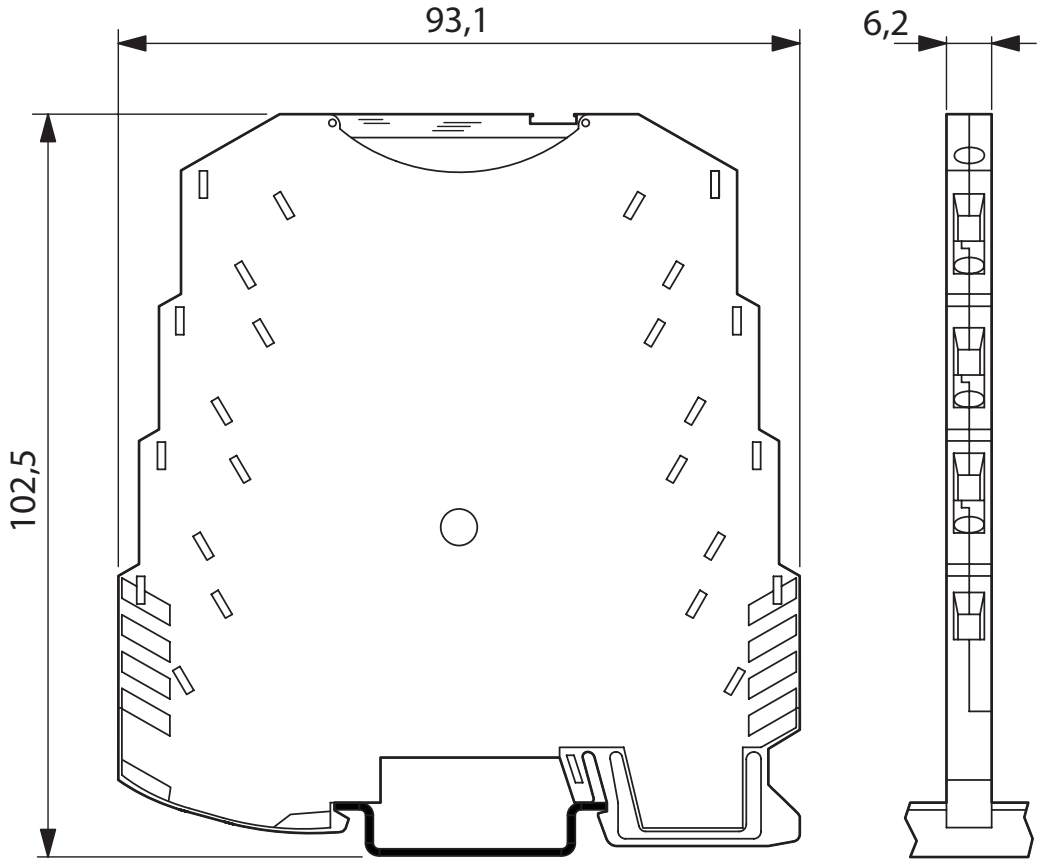
| | |
|---|---|
| Electrical isolation | 3-way isolation |

## Mounting

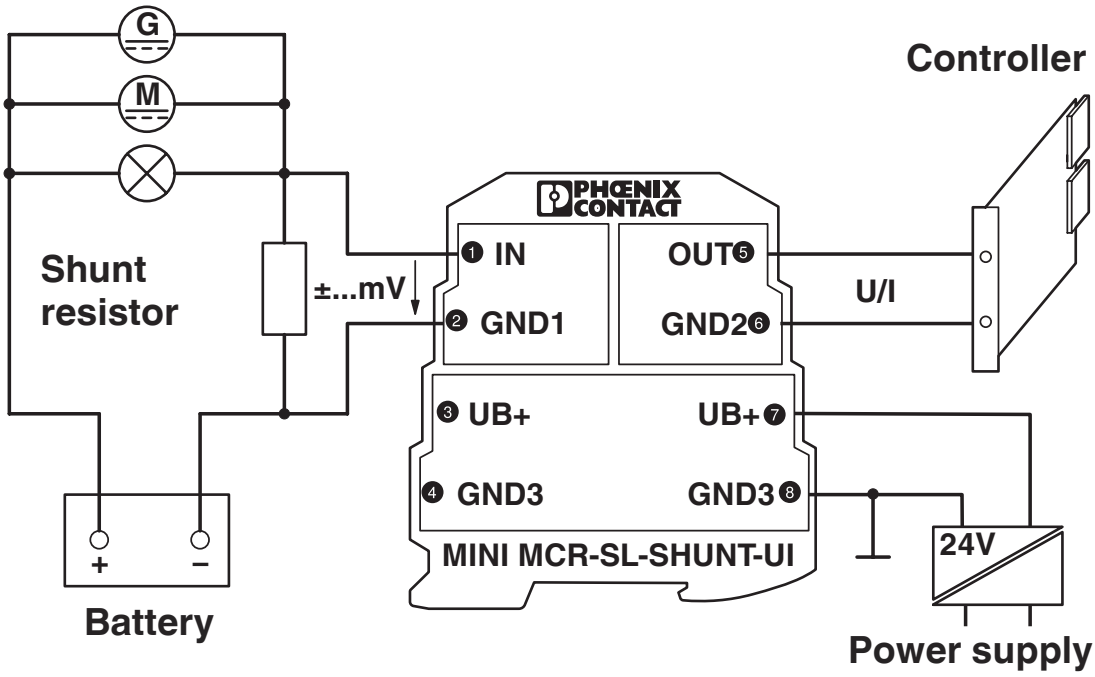
| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly note | The DIN rail connector can be used for bridging the supply voltage. It can be snapped onto a 35 mm EN 60715 DIN rail. |
| Mounting position | any |

## Drawings

Dimensional drawing

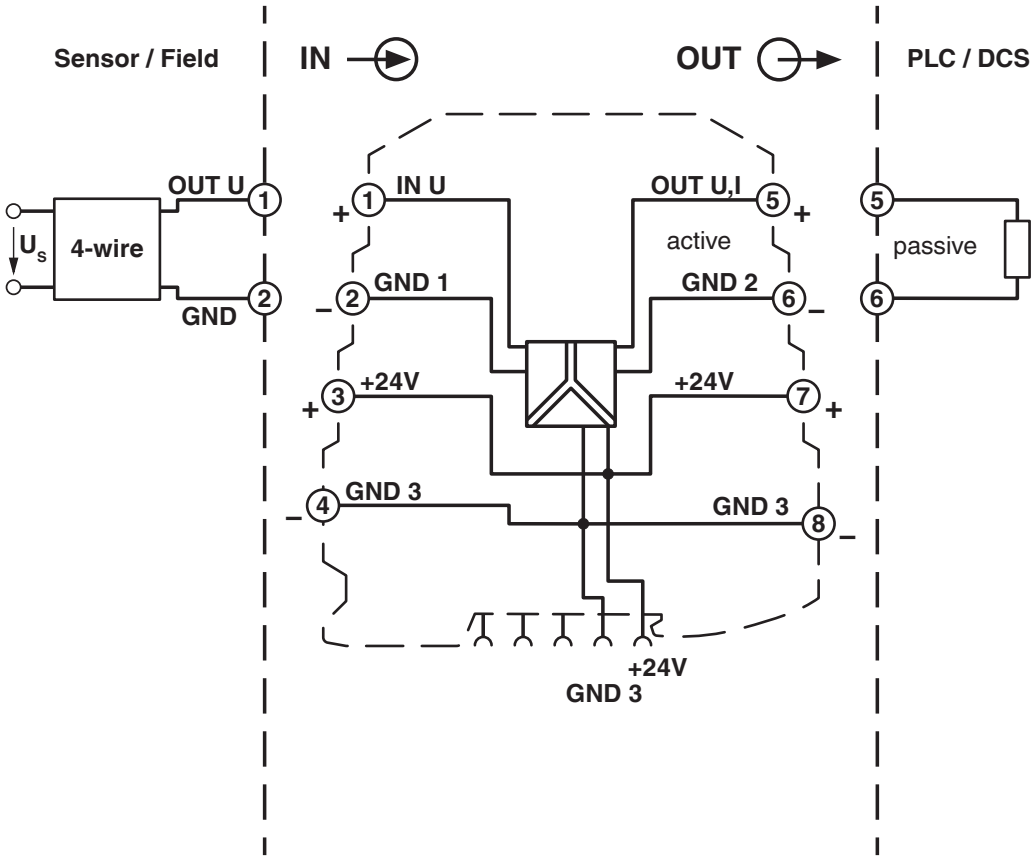


Application drawing




Monitoring of loading and unloading currents

Block diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2810780

**cUL Recognized**
Approval ID: E238705

**UL Recognized**
Approval ID: E238705

**cUL Listed**
Approval ID: E199827

**UL Listed**
Approval ID: E199827

## Classifications

### ECLASS

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

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC002653 |

### UNSPSC

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

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 6(c), 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) |
| SCIP | 7975b2f4-38e1-460a-af8d-0a3645e9af5f |

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