

## Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

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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, single-pos. as well as 2-pos. with spring-cage connection, not pre-configured. Replacement part: 2902021 MINI MCR-2-U-UI-PT.

### Your advantages

- ✓ Power supply possible via the foot element (TBUS)
- ✓ Low power consumption
- ✓ Ideal for converting signals for shunt measurements
- ✓ 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



### Key Commercial Data

|                                      |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Packing unit                         | 1 pc                                                                                                    |
| GTIN                                 | <br>4 046356 305358 |
| GTIN                                 | 4046356305358                                                                                           |
| Weight per Piece (excluding packing) | 109.600 g                                                                                               |
| Custom tariff number                 | 85437090                                                                                                |
| Country of origin                    | Germany                                                                                                 |
| Note                                 | Made to Order (non-returnable)                                                                          |

### Technical data

#### Dimensions

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

#### Ambient conditions

|                                 |                  |
|---------------------------------|------------------|
| Ambient temperature (operation) | -20 °C ... 65 °C |
|---------------------------------|------------------|

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## Technical data

### Ambient conditions

|                                         |                                                                                   |
|-----------------------------------------|-----------------------------------------------------------------------------------|
| Ambient temperature (storage/transport) | -40 °C ... 85 °C                                                                  |
| Maximum altitude                        | ≤ 2000 m                                                                          |
| Permissible humidity (operation)        | 5 % ... 95 % (non-condensing)                                                     |
| Degree of protection                    | IP20                                                                              |
| Noise immunity                          | EN 61000-6-2 When being exposed to interference, there may be minimal deviations. |

### Input data

|                           |                    |
|---------------------------|--------------------|
| 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     |
|                           | 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    |

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## Technical data

### Input data

|                                   |                 |
|-----------------------------------|-----------------|
|                                   | 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. input voltage                | approx. 3 V DC  |
| Input resistance of voltage input | approx. 10 kΩ   |

### Output data

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| 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 <sub>PP</sub> (at 500 Ω)                                                  |
|                                 | < 20 mV <sub>PP</sub> (at 10 kΩ)                                                  |

### Power supply

|                          |                           |
|--------------------------|---------------------------|
| Nominal supply voltage   | 24 V DC                   |
| Supply voltage range     | 19.2 V DC ... 30 V DC     |
| Max. current consumption | < 25 mA                   |
| Power consumption        | < 450 mW (Current output) |

### Connection data

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Spring-cage connection                      |
| Connection technology            | 2-wire                                      |
| Stripping length                 | 8 mm                                        |
| Conductor cross section solid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section AWG      | 24 ... 12                                   |

# Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

## Technical data

### General

|                                                        |                                                                                                                          |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| No. of channels                                        | 1                                                                                                                        |
| Maximum transmission error                             | ≤ 0.2 %                                                                                                                  |
|                                                        | < 0.4 % (Without adjustment)                                                                                             |
| Maximum temperature coefficient                        | < 0.01 %/K                                                                                                               |
| Temperature coefficient, typical                       | < 0.002 %/K                                                                                                              |
| Limit frequency (3 dB)                                 | 100 Hz / 30 Hz switchable                                                                                                |
| Step response (10-90%)                                 | 3.5 ms (At 100 Hz)                                                                                                       |
| Electrical isolation                                   | Basic insulation according to EN 61010                                                                                   |
| Overvoltage category                                   | II                                                                                                                       |
| Degree of pollution                                    | 2                                                                                                                        |
| Rated insulation voltage                               | 50 V AC/DC                                                                                                               |
| Test voltage, input/output/supply                      | 1.5 kV (50 Hz, 1 min.)                                                                                                   |
| Electromagnetic compatibility                          | Conformance with EMC directive                                                                                           |
| Noise emission                                         | EN 61000-6-4                                                                                                             |
| Noise immunity                                         | EN 61000-6-2 When being exposed to interference, there may be minimal deviations.                                        |
| Color                                                  | green                                                                                                                    |
| Housing material                                       | PBT                                                                                                                      |
| Mounting position                                      | any                                                                                                                      |
| Assembly instructions                                  | The T connector can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail according to EN 60715. |
| Conformance                                            | CE-compliant                                                                                                             |
| ATEX                                                   | # II 3 G Ex nA IIC T4 Gc X                                                                                               |
| UL, USA/Canada                                         | UL 508 Recognized                                                                                                        |
|                                                        | Class I, Div. 2, Groups A, B, C, D T4                                                                                    |
| Certificate of classification                          | DNV GL TAA00000N1                                                                                                        |
| 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                                                                                                              |

### EMC data

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Designation                                            | Electromagnetic RF field |
| Standards/regulations                                  | EN 61000-4-3             |
| Typical deviation from the measuring range final value | 6 %                      |
| Designation                                            | Fast transients (burst)  |
| Standards/regulations                                  | EN 61000-4-4             |
| Typical deviation from the measuring range final value | 6 %                      |
| Designation                                            | Conducted interferences  |
| Standards/regulations                                  | EN 61000-4-6             |
| Typical deviation from the measuring range final value | 6 %                      |

### Standards and Regulations

## Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

### Technical data

#### Standards and Regulations

|                                                        |                                        |
|--------------------------------------------------------|----------------------------------------|
| Electromagnetic compatibility                          | Conformance with EMC directive         |
| Noise emission                                         | EN 61000-6-4                           |
| Connection in acc. with standard                       | CUL                                    |
| Standards/regulations                                  | EN 61000-4-2                           |
| Designation                                            | Electromagnetic RF field               |
| Standards/regulations                                  | EN 61000-4-3                           |
|                                                        | EN 61000-4-4                           |
|                                                        | EN 61000-4-5                           |
| Designation                                            | Conducted interferences                |
| Standards/regulations                                  | EN 61000-4-6                           |
| Electrical isolation                                   | Basic insulation according to EN 61010 |
| Conformance                                            | CE-compliant                           |
| ATEX                                                   | # II 3 G Ex nA IIC T4 Gc X             |
| UL, USA/Canada                                         | UL 508 Recognized                      |
|                                                        | Class I, Div. 2, Groups A, B, C, D T4  |
| 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                            |

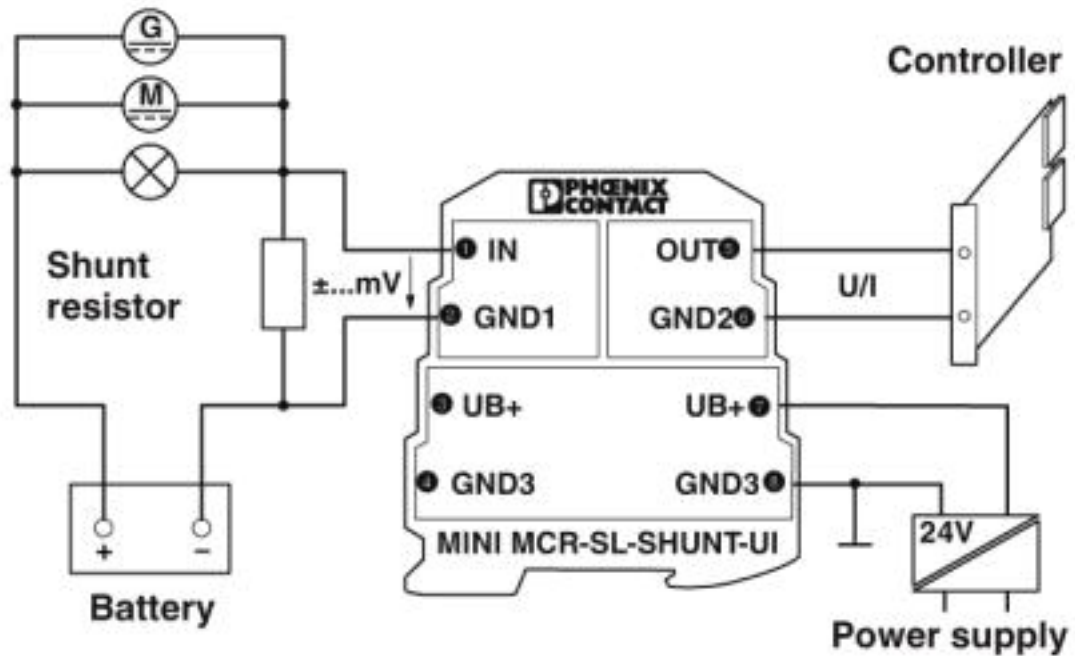
#### Environmental Product Compliance

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| China RoHS | Environmentally Friendly Use Period = 50                                                            |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

### Drawings

## Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

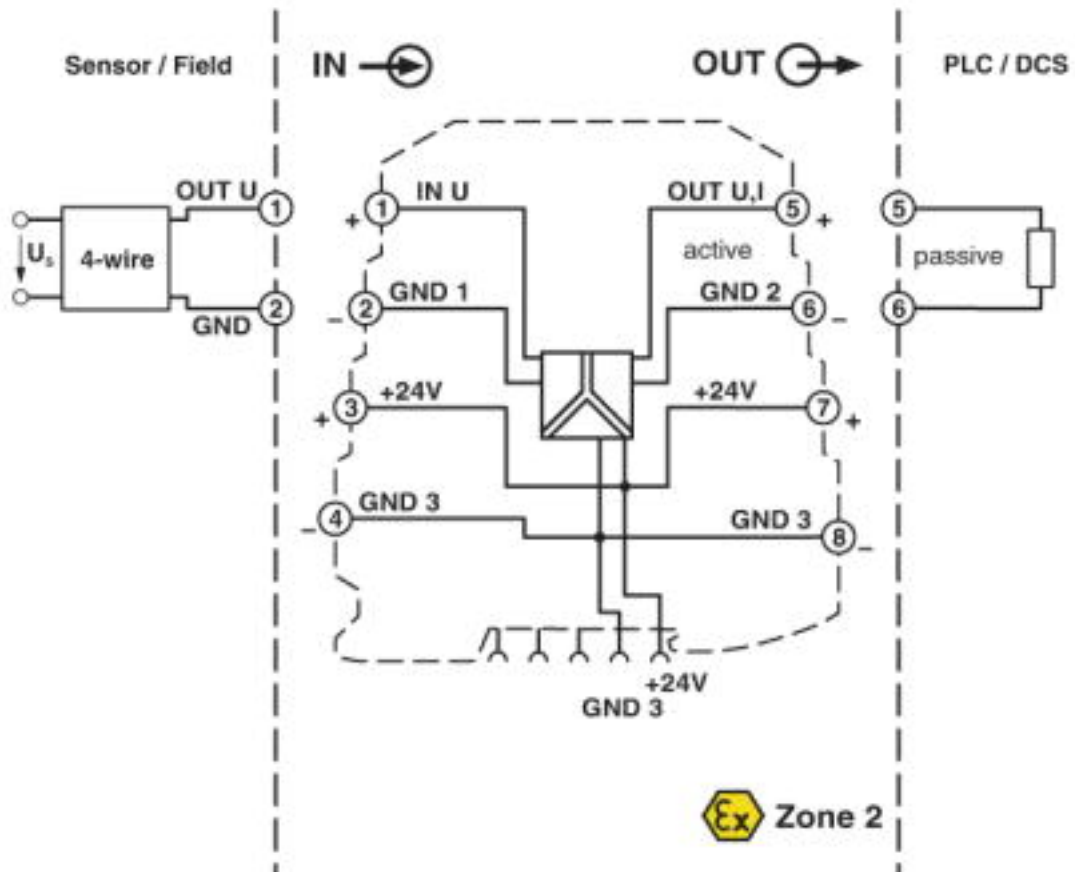
Application drawing



Monitoring of loading and unloading currents

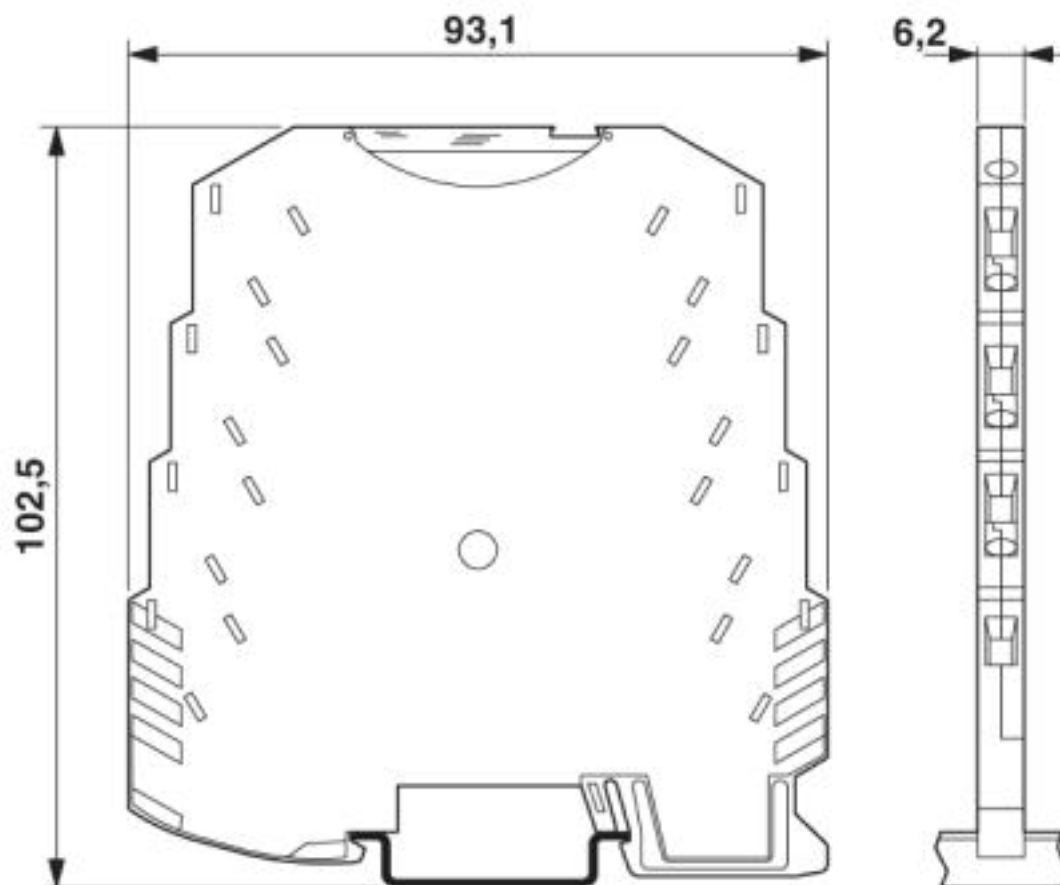
## Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

Block diagram



## Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

Dimensional drawing



### Classifications

#### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 27210100 |
| eCl@ss 4.1 | 27210100 |
| eCl@ss 5.0 | 27210100 |
| eCl@ss 5.1 | 27210100 |
| eCl@ss 6.0 | 27210100 |
| eCl@ss 7.0 | 27210120 |
| eCl@ss 8.0 | 27210120 |
| eCl@ss 9.0 | 27210120 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC002653 |
| ETIM 5.0 | EC002653 |
| ETIM 6.0 | EC002653 |
| ETIM 7.0 | EC002653 |

## Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

### Classifications

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211506 |
| UNSPSC 7.0901 | 39121008 |
| UNSPSC 11     | 39121008 |
| UNSPSC 12.01  | 39121008 |
| UNSPSC 13.2   | 39121008 |
| UNSPSC 19.0   | 39121008 |

### Accessories

#### Accessories

##### DIN rail connector

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GN - 2869728



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

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### Marking material

Transparent cover - MINI MCR DKL - 2308111



Fold up transparent cover for MINI MCR modules with additional labeling option using insert strips and flat Zack marker strip 6.2 mm

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Marking label - MINI MCR-DKL-LABEL - 2810272



Label for extended marking of MINI MCR modules in connection with the MINI MCR-DKL

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### Multiplexer

## Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

### Accessories

Multiplexer - MINI MCR-SL-MUX-V8-FLK 16 - 2811815



MINI analog multiplexer, generates one analog output from 8 analog input signals, for MINI analog module with screw connection.

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### Power module

Power terminal block - MINI MCR-SL-PTB - 2864134



MCR power terminal block for supplying several MINI Analog modules via the DIN rail connector, with screw connection, maximum current consumption of up to 2 A

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Power terminal block - MINI MCR-SL-PTB-SP - 2864147



MCR feed-in terminal for supplying several MINI Analog modules via a DIN rail connector, with spring-cage connection, maximum current consumption of up to 2 A. Replacement part: 2902067 MINI MCR-2-PTB-PT.

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### Power supply

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983



Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A

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Power supply unit - MINI-PS-100-240AC/24DC/1.5/EX - 2866653



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

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### System adapter

## Signal conditioner - MINI MCR-SL-SHUNT-UI-SP-NC - 2810793

### Accessories

System adapter - MINI MCR-SL-V8-FLK 16-A - 2811268



Eight MINI analog signal converters with screw connection method can be connected to a control system using a system adapter and system cabling with a minimum of wiring and very low error risk.