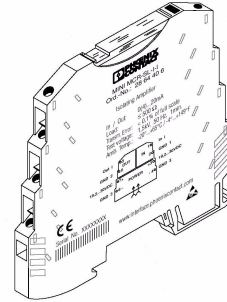


MINI MCR-SL-I-I(-SP) MINI MCR-SL-U-U(-SP)

Standard Signal 3-Way Isolating Amplifier



Data Sheet

04/2005

Functions

The standard signal 3-way isolating amplifier MINI MCR-SL-I-I(-SP) / MINI MCR-SL-U-U(-SP) is used to electrically isolate, condition, amplify, and standard normalized signals.

On the input and output side, the analog standard signals 0...20 mA or 4...20 mA (MINI MCR-SL-I-I(-SP)), or 0...10 V or ± 10 V (MINI MCR-SL-U-U(-SP)) are available, electrically isolated.

The voltage supply (19.2...30 V DC) can either be provided via connecting terminal blocks "3"/"4" or "7"/"8" of the modules, or together, via the DIN rail connector (see Figure 5 on page 6). Please also observe "Power Supply" on page 7.

Features

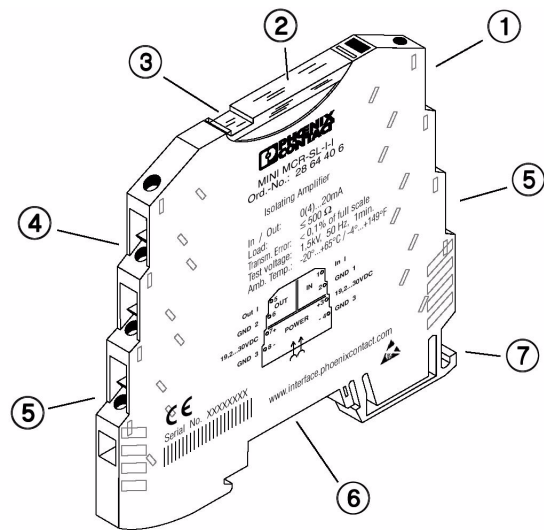


Figure 1 Features

- 1 Input: Standard signals
- 2 Transparent cover
- 3 Groove for ZBF 6 Zack marker strip
- 4 Output: Standard signals
- 5 Supply voltage
- 6 Connection option for DIN rail connector
- 7 Universal snap-on foot for EN mounting rails

Technical Data

| General Data | | |
|--|--|--|
| Supply voltage | 19.2...30 V DC | |
| Current consumption at 24 V DC | MINI MCR-SL-I-I(-SP): < 20 mA, incl. 20 mA load current | MINI MCR-SL-U-U(-SP): < 10 mA |
| Power consumption | MINI MCR-SL-I-I(-SP): < 450 mW | MINI MCR-SL-U-U(-SP): < 200 mW |
| Transmission error | 0.1% of end value | |
| Temperature coefficient | | |
| max. | < 0.01%/K | |
| typ. | < 0.002%/K | |
| Cut-off frequency (3 dB) | 100 Hz | |
| Step response (10...90%) | 3.5 ms | |
| Test voltage (input / output / supply) | 1.5 kV, 50 Hz, 1 min. | |
| Ambient temperature range | | |
| Operation | -20°C...+65°C | |
| Storage | -40°C...+85°C | |
| Dimensions (W x H x D) | 6.2 mm x 93.1 mm x 102.5 mm | |
| Conductor cross section | 0.2...2.5 mm ² (AWG 24...12) | |
| Stripping length | | |
| Screw connection | 12 mm | |
| Spring-cage connection | 8 mm | |
| Housing design | Polybutylenterephthalate PBT, green | |
| Tests / Approvals | <p>CE cULus UL</p> <p>cULus PROCESS CONTROL EQUIPMENT FOR HAZARDOUS LOCATIONS</p> <p>LISTED 31ZN</p> <p>Class I Div 2 Groups A, B, C, D T5</p> <p>A) This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.</p> <p>B) Warning - explosion hazard - substitution of components may impair suitability for Class 1, Division 2.</p> <p>C) Warning - explosion hazard - do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.</p> | |
| Statement of conformity in acc. with EN 60079-15 | Ex II 3 G Ex nA II T4 X | |

| Input (see Figure 1, detail 1) | I_{IN} | U_{IN} |
|--------------------------------|-----------------------|--------------------------|
| Input signal range | 0...20 mA, 4...20 mA | 0...10 V, ± 10 V |
| Max. input signal | 50 mA | 30 V |
| Input resistance | 50 Ω , approx. | 100 k Ω , approx. |

| Output (see Figure 1, detail 4) | I_{OUT} | U_{OUT} |
|---------------------------------|---------------------------------------|-----------------------|
| Output signal range | 0...20 mA, 4...20 mA | 0...10 V, ± 10 V |
| Load | < 500 Ω (20 mA) | ≥ 10 k Ω |
| Ripple | < 20 mV _{SS} (500 Ω) | < 20 mV _{SS} |
| Max. output signal | 28 mA / 12.5 V | 12.5 V / 22 mA |

| Conformance With EMC Guideline 89/336/EEC And Low Voltage Directive 73/23/EEC | | |
|---|-----------------------|--------------------------|
| Immunity to Interference According to EN 61000-6-2¹ | | |
| Discharge of static electricity (ESD) | EN 61000-4-2 | Criterion B ² |
| Electromagnetic HF field | EN 61000-4-3 | Criterion A ³ |
| Fast transients (Burst) | EN 61000-4-4 | Criterion B ⁴ |
| Surge voltage capacities (Surge) | EN 61000-4-5 | Criterion B ⁴ |
| Conducted disturbance | EN 61000-4-6 | Criterion A ³ |
| Noise Emission According to EN 61000-6-4 | | |
| Noise emission of housing | EN 55011 ⁵ | Class A ⁶ |

¹ EN 61000 corresponds to IEC 1000

² Criterion B: Take protective measures against electrostatic discharge.

³ Criterion A: Normal operating behavior within the defined limits.

⁴ Criterion B: Temporary impairment to operational behavior that is corrected by the device itself.

⁵ EN 55011 corresponds to CISPR11

⁶ Class A: Area of application industry.

Ordering Data

| Description | Order Designation | Order No. |
|---|--------------------|------------|
| Standard signal 3-way isolating amplifier Screw terminal block | MINI MCR-SL-I-I | 28 64 40 6 |
| Standard signal 3-way isolating amplifier Spring-cage terminal block | MINI MCR-SL-I-I-SP | 28 64 72 3 |
| Standard signal 3-way isolating amplifier Screw terminal block | MINI MCR-SL-U-U | 28 64 68 4 |
| Standard signal 3-way isolating amplifier Spring-cage terminal block | MINI MCR-SL-U-U-SP | 28 64 69 7 |

Accessories

| Description | Order Designation | Order No. |
|--|--------------------------------|------------|
| DIN rail connector | ME 6,2 TBUS-2 1,5/5-ST-3,81 GN | 28 69 72 8 |
| Power terminal block with screw connection | MINI MCR-SL-PTB | 28 64 13 4 |
| Power terminal block with spring-cage connection | MINI MCR-SL-PTB-SP | 28 64 14 7 |
| System power supply (not for Zone 2!) | MINI-SYS-PS-100-240AC/24DC/1,5 | 28 66 98 3 |

Installation

Screw Connection

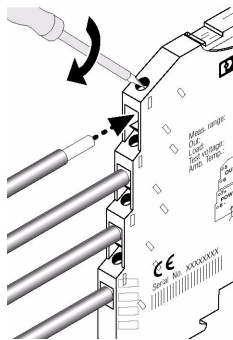


Figure 2 MINI MCR-SL-I-I
MINI MCR-SL-U-U

Spring-Cage Connection

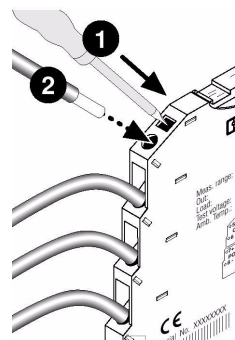


Figure 3 MINI MCR-SL-I-I-SP
MINI MCR-SL-U-U-SP



The device may only be installed and put into operation by qualified personnel. The corresponding national regulations (e.g. VDE, DIN) must be observed.



Notes for Ex:

The device is category 3 electrical apparatus. Please observe the instructions given here for installation. The device must be installed in a housing with IP54 protection in acc. with EN 60529. The limits for mechanical or thermal loads described for the device must not be exceeded. Only devices designed for operation in the hazardous areas of Zone 2 may be connected. Under no circumstances may repairs be carried out by the user.



Only engage or connect conductors in the hazardous area when the device is deenergized!

The assignment of the connecting terminal blocks is shown in Figure 4.

Block Diagram

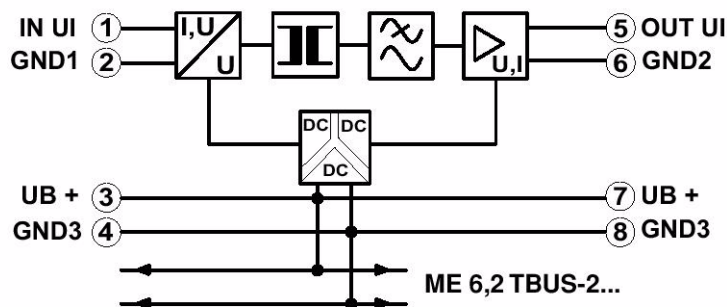


Figure 4 Block diagram

The MINI Analog module can be snapped onto all 35 mm DIN rails corresponding to EN 60715.

Using DIN rail connector ME 6,2 TBUS-2 1,5/5-ST-3,81 GN (Order No.: 28 69 72 8)



Please also pay particular attention to the direction of the MINI Analog module and DIN rail connector when snapping into position:

Snap-on foot (Figure 5, detail D 7) below and plug (Figure 5, detail C 8) left!

- First position the DIN rail connector in the DIN rail to bridge the voltage supply (see Figure 5).

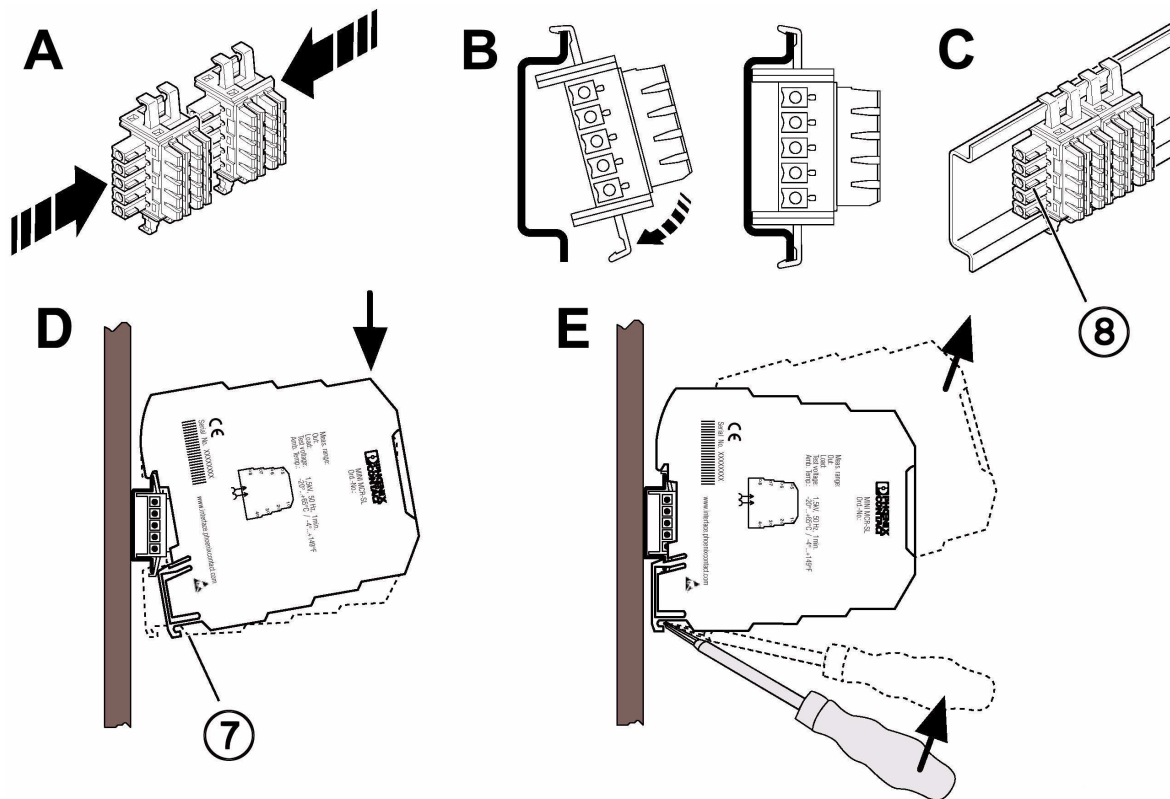


Figure 5 Mounting/Removing

Power Supply



Never connect the supply voltage directly to the DIN rail connector!

It is not permitted to draw power from the DIN rail connector or from individual MINI Analog modules!

Feeding in power via the MINI Analog module

Where the total current consumption of the aligned MINI Analog modules does not exceed 400 mA, the power can be fed in directly at the connecting terminal blocks of a MINI Analog module. We recommend connecting a 400 mA fuse upstream.

Feeding in power with a power terminal block

Power terminal block MINI MCR-SL-PTB (Order No.: 28 64 13 4) or MINI MCR-SL-PTB-SP (Order No.: 28 64 14 7), of the same shape, is used to feed in the supply voltage to the DIN rail connector. We recommend connecting a 2 A fuse upstream.

Feeding in the power with a system power supply unit

System power supply unit MINI-SYS-PS-... (Order No.: 28 66 98 3) with 1.5 A output current contacts the DIN rail connector with the supply voltage, allowing several MINI Analog modules to be supplied from the network.



Make sure you always use the latest documentation. It can be downloaded at www.download.phoenixcontact.com.

A conversion table is available on the Internet at www.download.phoenixcontact.com/general/7000_en_00.pdf.

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