

# Power/input isolating amplifier - MACX MCR-EX-SL-RPSSI-I-UP - 2865793

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Ex-i repeater power supply and input isolating amplifier, HART Sends fed or active 0/4-20 mA signals from the Ex area to a load (active or passive) to the safe area. Electrical 3-way isolation; SIL 2, wide range power supply.

## Product Features

- ✔ 250 Ω resistor that can be activated via DIP switches to increase HART impedance for low-resistance systems
- ✔ Installation in zone 2, protection type "n" (EN 60079-15) permitted
- ✔ Up to SIL 2 according to EN 61508
- ✔ Wide-range power supply of 19.2 ... 253 V AC/DC
- ✔ 3-way electrical isolation
- ✔ Plug-in screw or spring-cage connection technology (Push-in technology), with integrated sockets for HART communicators
- ✔ 0/4 ... 20 mA input, [Ex ia] IIC (powered or not powered)
- ✔ Bidirectional transmission of digital HART communication signals
- ✔ 0/4 ... 20 mA output (active or passive), 0/1 ... 5 V, can be selected via DIP switches



## Key commercial data

|                         |               |
|-------------------------|---------------|
| <b>package_quantity</b> | 1             |
| <b>GTIN</b>             | 4046356324694 |

## Technical data

Note:

|                                |   |
|--------------------------------|---|
| <b>Utilization restriction</b> | EMC: class A product, see manufacturer's declaration in the download area |
|--------------------------------|---|

## Dimensions

|               |          |
|---------------|----------|
| <b>Width</b>  | 17.5 mm  |
| <b>Height</b> | 99 mm    |
| <b>Depth</b>  | 114.5 mm |

## Ambient conditions

|  |  |
|--|--|
| <b>Ambient temperature (operation)</b>         | -20 °C ... 60 °C (Any mounting position) |
| <b>Ambient temperature (storage/transport)</b> | -40 °C ... 80 °C                         |
| <b>Maximum altitude</b>                        | ≤ 2000 m                                 |

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## Technical data

### Ambient conditions

|   |   |
|---|---|
| <b>Permissible humidity (operation)</b> | 10 % ... 95 % (no condensation)   |
| <b>Noise immunity</b>                   | EN 61000-6-2 When being exposed to interference, there may be minimal deviations. |
| <b>Degree of protection</b>             | IP20  |

### Input data

|                                   |  |
|-----------------------------------|--|
| <b>Current input signal</b>       | 0 mA ... 20 mA                                   |
| <b>Current input signal</b>       | 4 mA ... 20 mA                                   |
| <b>Transmitter supply voltage</b> | > 16 V (at 20 mA)                                |
| <b>Voltage drop</b>               | < 3.5 V (in input isolating amplifier operation) |

### Output data

|  |  |
|--|--|
| <b>Signal output</b>                   | Current output                                   |
| <b>Voltage output signal</b>           | 0 V ... 5 V (internal resistance, 250 Ω, 0.1%)   |
| <b>Current output signal</b>           | 0 mA ... 20 mA (active)                          |
| <b>Current output signal</b>           | 4 mA ... 20 mA (active)                          |
| <b>Current output signal</b>           | 0 mA ... 20 mA (14 ... 26 V ext. source voltage) |
| <b>Current output signal</b>           | 4 mA ... 20 mA (14 ... 26 V ext. source voltage) |
| <b>Transmission Behavior</b>           | 1:1 to input signal                              |
| <b>Load/output load current output</b> | < 600 Ω (I output)                               |
| <b>Output ripple</b>                   | < 20 mV <sub>rms</sub>                           |

### Power supply

|                                 |  |
|---------------------------------|--|
| <b>Supply voltage range</b>     | 24 V ... 230 V AC/DC (-20%/+10%, 50/60 Hz) |
| <b>Max. current consumption</b> | < 80 mA (at 24 V DC)                       |
| <b>Power consumption</b>        | < 1.6 W                                    |

### Connection data

|   |                     |
|---|---------------------|
| <b>Conductor cross section solid min.</b>     | 0.2 mm <sup>2</sup> |
| <b>Conductor cross section solid max.</b>     | 2.5 mm <sup>2</sup> |
| <b>Conductor cross section stranded min.</b>  | 0.2 mm <sup>2</sup> |
| <b>Conductor cross section stranded max.</b>  | 2.5 mm <sup>2</sup> |
| <b>Conductor cross section AWG/kcmil min.</b> | 24                  |
| <b>Conductor cross section AWG/kcmil max</b>  | 14                  |
| <b>Stripping length</b>                       | 7 mm                |
| <b>Screw thread</b>                           | M3                  |
| <b>Connection method</b>                      | Screw connection    |
| <b>Tightening torque, min</b>                 | 0.5 Nm              |
| <b>Tightening torque max</b>                  | 0.6 Nm              |

### General

|                                   |                          |
|-----------------------------------|--------------------------|
| <b>No. of channels</b>            | 1                        |
| <b>Maximum transmission error</b> | < 0.1 % (of final value) |

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## Technical data

### General

|   |   |
|---|---|
| Transmission error, typical             | < 0.05 % (of final value)   |
| Maximum temperature coefficient         | < 0.01 %/K  |
| Step response (10-90%)                  | < 600 µs (for 4 mA ... 20 mA step)  |
| Status display                          | Green LED (supply voltage)  |
| Inflammability class according to UL 94 | V0  |
| Pollution degree                        | 2   |
| Surge voltage category                  | II  |
| Electromagnetic compatibility           | Electromagnetic HF field  |
| Housing material                        | PA 66-FR  |
| Color                                   | green   |
| Name                                    | Input/output/power supply   |
| Electrical isolation                    | 300 V <sub>rms</sub> (Rated insulation voltage (surge voltage category II; pollution degree 2, safe isolation as per EN 61010-1)) |
| Electrical isolation                    | 2.5 kV (50 Hz, 1 min., test voltage)  |
| Name                                    | Input/output  |
| Electrical isolation                    | 375 V (Peak value in accordance with EN 60079-11)   |
| Name                                    | Input/power supply  |
| Electrical isolation                    | 375 V (Peak value in accordance with EN 60079-11)   |
| Conformance                             | CE-compliant, additionally EN 61326   |
| ATEX                                    | # II (1) G [Ex ia Ga] IIC/IIB   |
| ATEX                                    | # II (1) D [Ex ia Da] IIIC  |
| ATEX                                    | # II 3(1) G Ex nA [ia Ga] IIC/IIB T4 Gc   |
| IECEX                                   | [Ex ia Ga] IIC/IIB  |
| IECEX                                   | [Ex ia Da] IIIC   |
| IECEX                                   | Ex nA [ia Ga] IIC/IIB T4 Gc   |
| UL, USA / Canada                        | Class I Div 2; IS for Class I, II, III Div 1  |
| Functional safety (SIL)                 | SIL 2 according to EN 61508   |

### Data communication (bypass)

|                     |      |
|---------------------|------|
| HART function       | Yes  |
| Protocols supported | HART |

### Safety data

|   |                     |
|---|---------------------|
| Max. output voltage U <sub>o</sub>            | 25.2 V              |
| Max. output current I <sub>o</sub>            | 93 mA               |
| Max. output power P <sub>o</sub>              | 587 mW              |
| Gas group                                     | IIC                 |
| Max. external inductivity L <sub>o</sub>      | 2 mH                |
| Max. external capacity C <sub>o</sub>         | 107 nF              |
| Safety-related maximum voltage U <sub>m</sub> | 253 V AC (125 V DC) |

### EMC data

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## Technical data

### EMC data

|   |                          |
|---|--------------------------|
| <b>Name</b>   | Electromagnetic RF field |
| <b>Standards/regulations</b>                                  | EN 61000-4-3             |
| <b>Typical deviation from the measuring range final value</b> | 1 %                      |
| <b>Name</b>   | Fast transients (burst)  |
| <b>Standards/regulations</b>                                  | EN 61000-4-4             |
| <b>Typical deviation from the measuring range final value</b> | 1 %                      |
| <b>Name</b>   | Conducted interferences  |
| <b>Standards/regulations</b>                                  | EN 61000-4-6             |
| <b>Typical deviation from the measuring range final value</b> | 1 %                      |

### classifications

#### eCl@ss

|                   |          |
|-------------------|----------|
| <b>eCl@ss 4.0</b> | 27210121 |
| <b>eCl@ss 4.1</b> | 27210121 |
| <b>eCl@ss 5.0</b> | 27210121 |
| <b>eCl@ss 5.1</b> | 27210121 |
| <b>eCl@ss 6.0</b> | 27210121 |
| <b>eCl@ss 7.0</b> | 27210121 |
| <b>eCl@ss 8.0</b> | 27210121 |

#### ETIM

|                 |          |
|-----------------|----------|
| <b>ETIM 2.0</b> | EC001431 |
| <b>ETIM 3.0</b> | EC001596 |
| <b>ETIM 4.0</b> | EC001596 |
| <b>ETIM 5.0</b> | EC001596 |

#### UNSPSC

|                      |          |
|----------------------|----------|
| <b>UNSPSC 6.01</b>   | 30211506 |
| <b>UNSPSC 7.0901</b> | 39121008 |
| <b>UNSPSC 11</b>     | 39121008 |
| <b>UNSPSC 12.01</b>  | 39121008 |
| <b>UNSPSC 13.2</b>   | 39121008 |

### approvals

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IECEX / UL Listed / cUL Listed / ATEX / cULus Listed / UL Listed / cUL Listed / Functional Safety / cULus Listed / GL /

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#### Approval details

|       |
|-------|
| IECEX |
|-------|

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approvals

UL Listed

cUL Listed

ATEX

cULus Listed

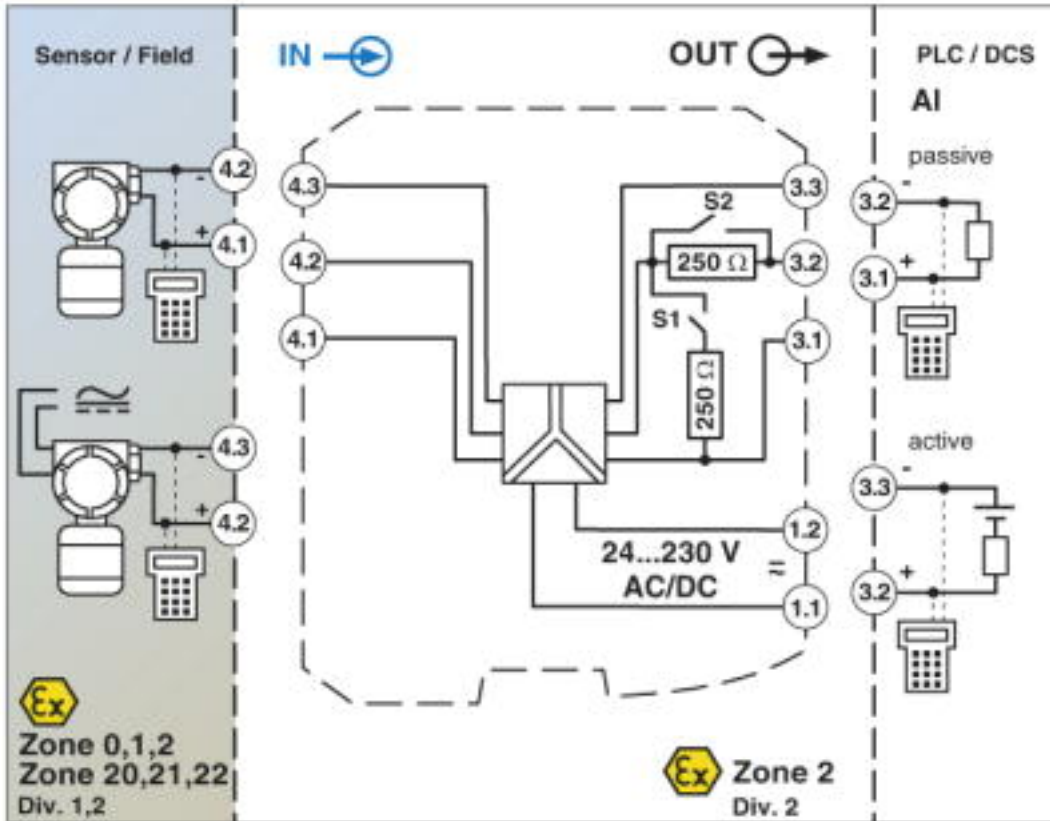
Functional Safety

GL

Drawings

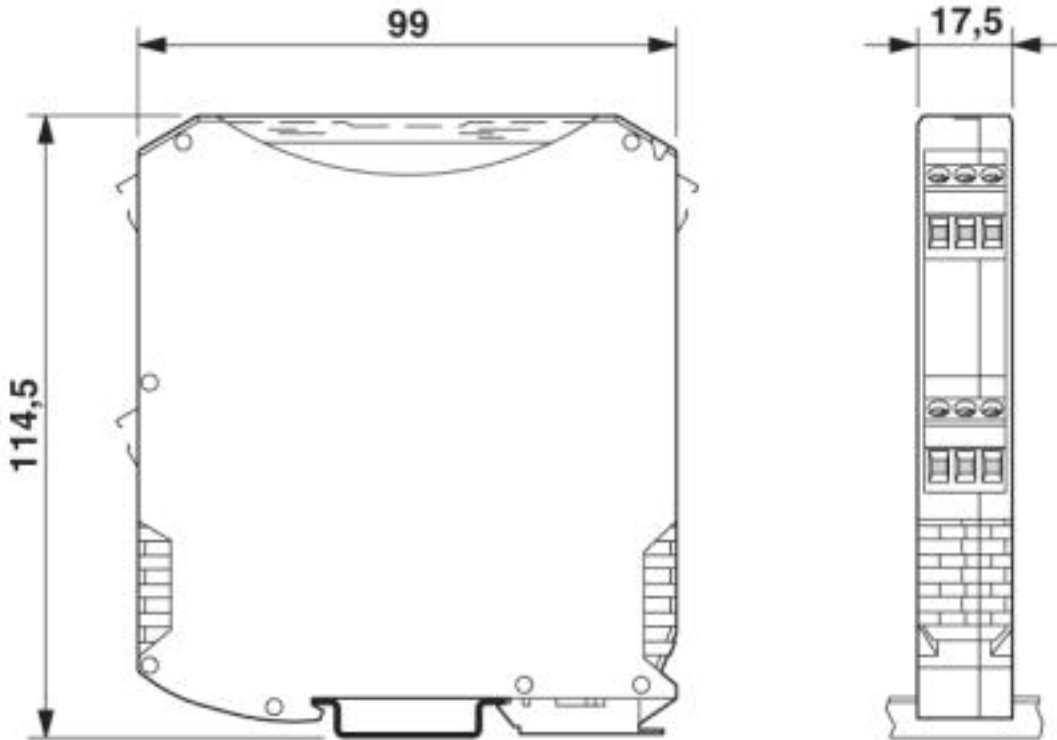
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Block diagram



# Power/input isolating amplifier - MACX MCR-EX-SL-RPSSI-I-UP - 2865793

Dimensioned drawing



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