

# MACX MCR-SL-RPSSI-2I-SP - Repeater power supply



2924838

<https://www.phoenixcontact.com/us/products/2924838>

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Measuring transducer repeater power supply and input signal conditioner, HART-transparent. Transmits supplied or active 0/4 mA ... 20 mA electrically isolated signals from the field to two loads. 4-way electrical isolation, Push-in connection, SIL, PL.

## Your advantages

- Power supply possible via DIN rail connector
- Up to SIL 2 in accordance with EN 61508
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Two electrically isolated 0/4 mA ... 20 mA (active) outputs
- Bidirectional transmission of digital HART communication signals (both outputs)
- Plug-in screw or spring-cage connection technology (Push-in technology), with integrated sockets for HART communicators
- Input: 0/4 mA ... 20 mA (powered or not powered)
- 4-way electrical isolation

## Commercial data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2924838             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | C402                |
| Product key                          | CK1111              |
| Catalog page                         | Page 121 (C-5-2019) |
| GTIN                                 | 4046356572057       |
| Weight per piece (including packing) | 238.2 g             |
| Weight per piece (excluding packing) | 153 g               |
| Customs tariff number                | 85437090            |
| Country of origin                    | DE                  |

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## Technical data

### Product properties

|                 |   |
|-----------------|---|
| Product type    | Repeater power supplies                               |
| Product family  | MACX Analog   |
| No. of channels | 1   |
| Type            | Signal conditioners with SIL and PL Functional Safety |

### Data management status

|                  |    |
|------------------|----|
| Article revision | 07 |
|------------------|----|

### Electrical properties

|   |   |
|---|---|
| Electrical isolation                            | 3-way isolation                           |
| Electrical isolation between input and output   | yes                                       |
| Maximum power dissipation for nominal condition | 1.45 W (24 V DC / 20 mA)                  |
| Signal transmission behavior                    | In = Out                                  |
| Step response (10-90%)                          | 1.3 ms (for jump 4 mA ... 20 mA, typical) |
| Maximum temperature coefficient                 | < 0.01 %/K                                |
| Maximum transmission error                      | < 0.1 % (of final value 20 mA)            |
| Transmission error, typical                     | < 0.05 % (of final value 20 mA)           |

### Electrical isolation

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

### Electrical isolation Input/output/power supply IEC/EN 61010-1

|                          |                         |
|--------------------------|-------------------------|
| Standards/regulations    | IEC/EN 61010-1          |
| Rated insulation voltage | 300 V <sub>rms</sub>    |
| Test voltage             | 2.5 kV AC (50 Hz, 60 s) |
| Insulation               | Safe isolation          |

### Electrical isolation Output 1/output 2

|              |                         |
|--------------|-------------------------|
| Test voltage | 1.5 kV AC (50 Hz, 60 s) |
|--------------|-------------------------|

### Supply

|                          |                                 |
|--------------------------|---------------------------------|
| Designation              | Repeater power supply operation |
| Nominal supply voltage   | 24 V DC -20 % ... +25 %         |
| Supply voltage range     | 19.2 V DC ... 30 V DC           |
| Max. current consumption | < 75 mA (24 V DC / 20 mA)       |
| Power dissipation        | < 1.45 W (24 V DC / 20 mA)      |
| Power consumption        | ≤ 1.8 W                         |

### Supply

|                        |                              |
|------------------------|------------------------------|
| Designation            | Signal conditioner operation |
| Nominal supply voltage | 24 V DC -20 % ... +25 %      |
| Supply voltage range   | 19.2 V DC ... 30 V DC        |

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|                          |                           |
|--------------------------|---------------------------|
| Max. current consumption | < 46 mA (24 V DC / 20 mA) |
| Power dissipation        | < 1.2 W (24 V DC / 20 mA) |

## Input data

Signal: Repeater power supply operation

|                                 |  |
|---------------------------------|--|
| Description of the input        | Repeater power supply operation                              |
| Number of inputs                | 1  |
| Current input signal            | 4 mA ... 20 mA   |
| Transmitter supply voltage      | > 21.5 V (20 mA)<br>> 21 V (23 mA)                           |
| Underload/overload signal range | 0 mA ... 24 mA (Extended transmission range for diagnostics) |

Signal: Signal conditioner operation

|                                 |  |
|---------------------------------|--|
| Description of the input        | Signal conditioner operation                                 |
| Current input signal            | 0 mA ... 20 mA<br>4 mA ... 20 mA                             |
| Voltage drop                    | < 3.9 V (in input isolating amplifier operation)             |
| Underload/overload signal range | 0 mA ... 24 mA (Extended transmission range for diagnostics) |

## Output data

Signal: Repeater power supply operation

|  |   |
|--|---|
| Output description                       | Repeater power supply operation   |
| Number of outputs                        | 2   |
| Current output signal                    | 4 mA ... 20 mA (active)<br>0 mA ... 20 mA                                     |
| Load/output load current output          | < 450 Ω (20 mA)<br>< 380 Ω (23 mA)  |
| Output ripple                            | < 20 mV <sub>rms</sub>  |
| Output behavior in the event of an error | 0 mA (Cable break in the input)<br>≥ 23 mA (Cable short-circuit in the input) |
| Underload/overload signal range          | 0 mA ... 24 mA (Extended transmission range for diagnostics)                  |

Signal: Signal conditioner operation

|  |  |
|--|--|
| Output description                       | Signal conditioner operation   |
| Current output signal                    | 0 mA ... 20 mA (active)<br>4 mA ... 20 mA (active)                         |
| Load/output load current output          | < 450 Ω (20 mA)<br>< 380 Ω (23 mA)   |
| Output ripple                            | < 20 mV <sub>rms</sub>   |
| Output behavior in the event of an error | 0 mA (Cable break in the input)<br>0 mA (Cable short-circuit in the input) |
| Underload/overload signal range          | 0 mA ... 24 mA (Extended transmission range for diagnostics)               |

## Connection data

# MACX MCR-SL-RPSSI-2I-SP - Repeater power supply



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|   |   |
|---|---|
| Connection method   | Push-in connection  |
| Stripping length  | 10 mm   |
| Conductor cross section rigid   | 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 flexible (2 conductors with same cross section) | 0.25 mm <sup>2</sup> ... 0.34 mm <sup>2</sup> (TWIN ferrule without plastic sleeve) |
|   | 0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (TWIN ferrule with plastic sleeve)      |
| Conductor cross section AWG   | 24 ... 14   |
|   | 24 ... 22 (TWIN ferrule without plastic sleeve)                                     |
|   | 20 ... 16 (TWIN ferrule with plastic sleeve)  |

## Ex data

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

## Interfaces

### Data communication (bypass)

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

## Signaling

|                |                            |
|----------------|----------------------------|
| Status display | Green LED (supply voltage) |
|----------------|----------------------------|

## Dimensions

|                     |  |
|---------------------|--|
| Dimensional drawing |  |
| Width               | 12.5 mm  |
| Height              | 107.9 mm   |
| Depth               | 113.7 mm   |
| Depth NS 35/7,5     | 114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715) |

## Material specifications

|  |                 |
|--|-----------------|
| Color                                  | gray (RAL 7042) |
| Flammability rating according to UL 94 | V0 (Housing)    |
| Housing material                       | PA 6.6-FR       |

## Environmental and real-life conditions

### Ambient conditions

|                      |                           |
|----------------------|---------------------------|
| Degree of protection | IP20 (not assessed by UL) |
|----------------------|---------------------------|

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|   |  |
|---|--|
| Ambient temperature (operation)         | -40 °C ... 60 °C (Any mounting position) |
|   | -40 °C ... 70 °C (Derating)              |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C                         |
| Permissible humidity (operation)        | 10 % ... 95 % (non-condensing)           |

## Altitude range (≤ 2000 m)

|                                 |  |
|---------------------------------|--|
| Altitude                        | ≤ 2000 m (The technical data refers to altitudes ≤2000 m above mean sea level. For altitudes >2000 m above mean sea level, refer to the data sheet.) |
| Ambient temperature (operation) | -40 °C ... 60 °C   |
|                                 | -40 °C ... 70 °C (Derating)  |
| Rated insulation voltage        | 375 V <sub>PP</sub> (Power supply, input / output)   |

## Altitude range (≤ 3000 m)

|                                 |   |
|---------------------------------|---|
| Height range                    | > 2000 m ... 3000 m                     |
| Ambient temperature (operation) | -40 °C ... 54 °C                        |
|                                 | -40 °C ... 63 °C (Derating)             |
| Rated insulation voltage        | 190 V AC (Power supply, input / output) |
|                                 | 110 V DC (Power supply, input / output) |

## Altitude range (≤ 4000 m)

|                                 |   |
|---------------------------------|---|
| Height range                    | > 3000 m ... 4000 m                       |
| Ambient temperature (operation) | -40 °C ... 48 °C                          |
|                                 | -40 °C ... 56 °C (Derating)               |
| Rated insulation voltage        | 60 V AC/DC (Power supply, input / output) |

## Altitude range (≤ 5000 m)

|                                 |   |
|---------------------------------|---|
| Height range                    | > 4000 m ... 5000 m                       |
| Ambient temperature (operation) | -40 °C ... 42 °C                          |
|                                 | -40 °C ... 49 °C (Derating)               |
| Rated insulation voltage        | 60 V AC/DC (Power supply, input / output) |

## Approvals

### CE

|             |                |
|-------------|----------------|
| Certificate | CE-compliant   |
| Note        | and EN 61326-1 |

### ATEX

|                |                            |
|----------------|----------------------------|
| Identification | ⊕ II 3 G Ex ec IIC T4 Gc X |
| Certificate    | PxCCIF11ATEX2924825        |

### IECEX

|                |                    |
|----------------|--------------------|
| Identification | Ex ec IIC T4 Gc    |
| Certificate    | IECEX BVS 10.0097X |

### CCC / China-Ex

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

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|             |                  |
|-------------|------------------|
| Certificate | 2022122316115971 |
|-------------|------------------|

## UL, USA/Canada

|                |  |
|----------------|--|
| Identification | UL 508 Listed                            |
|                | UL 61010 Listed                          |
|                | Class I, Div. 2, Groups A, B, C, D T4    |
|                | Class I, Zone 2, Groups IIC, IIB, IIA T4 |

## UL, USA/Canada

|                |                                       |
|----------------|---------------------------------------|
| Identification | UL 61010 Listed                       |
|                | Class I, Div. 2, Groups A, B, C, D T4 |
|                | Class I, Zone 2, Group IIC T4         |

## Shipbuilding approval

|             |                   |
|-------------|-------------------|
| Certificate | DNV GL TAA000020C |
|-------------|-------------------|

## Safety Integrity Level (SIL, IEC 61508)

|                |                        |
|----------------|------------------------|
| Identification | 2                      |
| Certificate    | IN-AT-AS-MRL-23-00432A |

## Systematic Capability

|                |   |
|----------------|---|
| Identification | 3 |
|----------------|---|

## Performance Level (ISO 13849)

|                |           |
|----------------|-----------|
| Identification | d / KAT 2 |
|----------------|-----------|

## INMETRO

|                |                 |
|----------------|-----------------|
| Identification | Ex ec IIC T4 Gc |
| Certificate    | DNV 18.0139 X   |

## DNV GL 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

|                               |  |
|-------------------------------|--|
| Noise immunity                | EN 61000-6-2   |
| Note                          | When being exposed to interference, there may be minimal deviations. |
| Electromagnetic compatibility | Conformance with EMC directive                                       |
| Noise emission                | EN 61000-6-4   |

## Electromagnetic HF field

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

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## Fast transients (burst)

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

## Conducted interference

|  |                         |
|--|-------------------------|
| Designation  | Conducted interferences |
| Standards/regulations                                  | EN 61000-4-6            |
| Typical deviation from the measuring range final value | 3 %                     |

## Standards and regulations

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

## Mounting

|               |                   |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
|---------------|-------------------|

# MACX MCR-SL-RPSSI-2I-SP - Repeater power supply

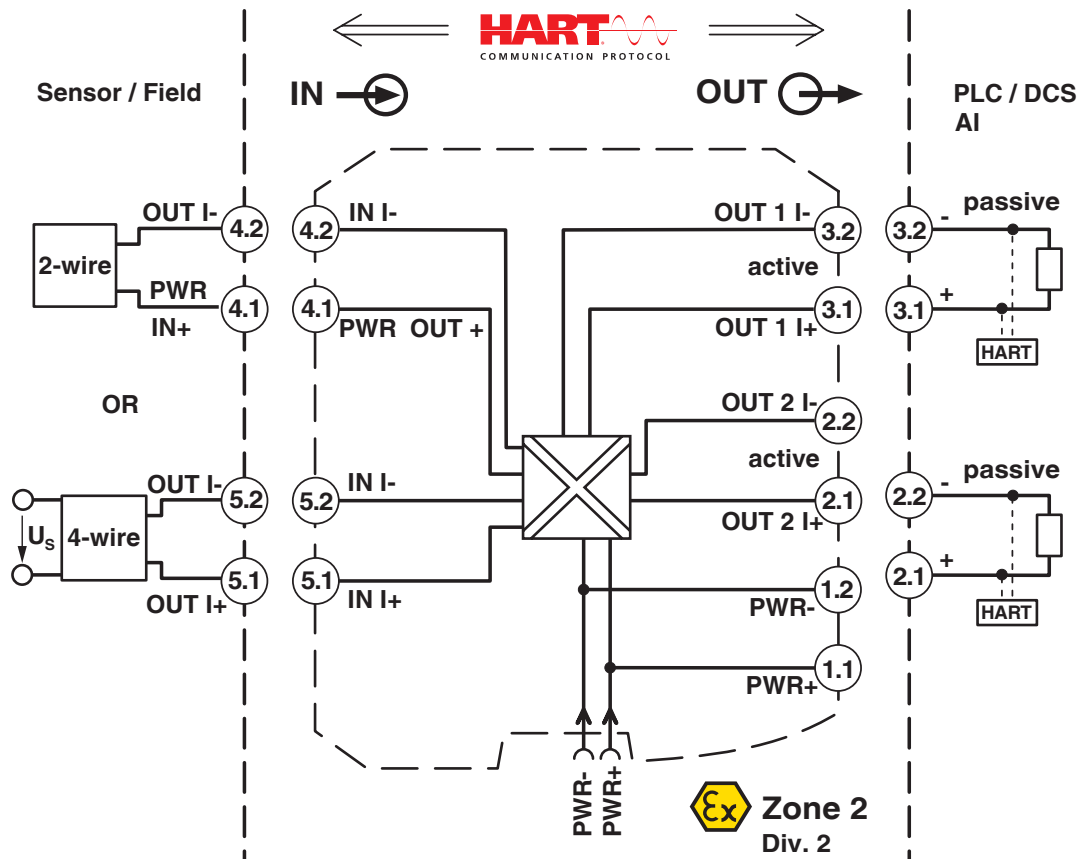


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## Drawings

Block diagram





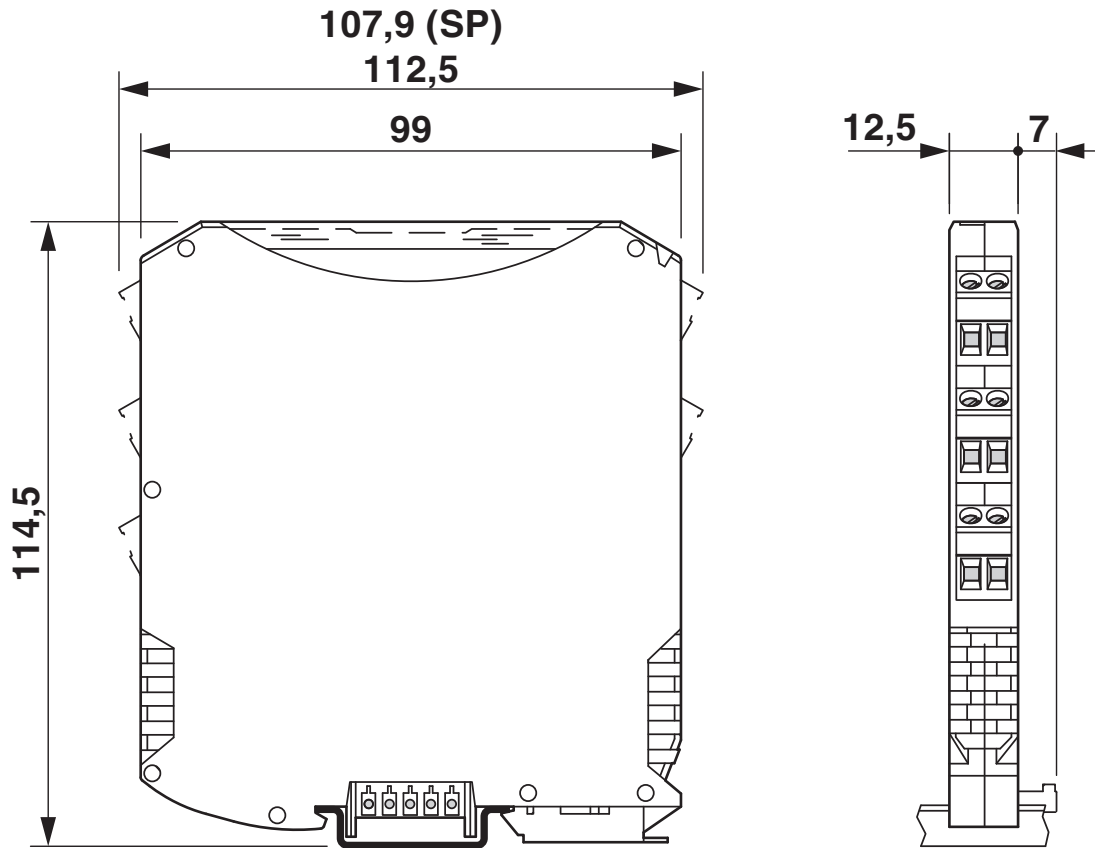
# MACX MCR-SL-RPSSI-2I-SP - Repeater power supply



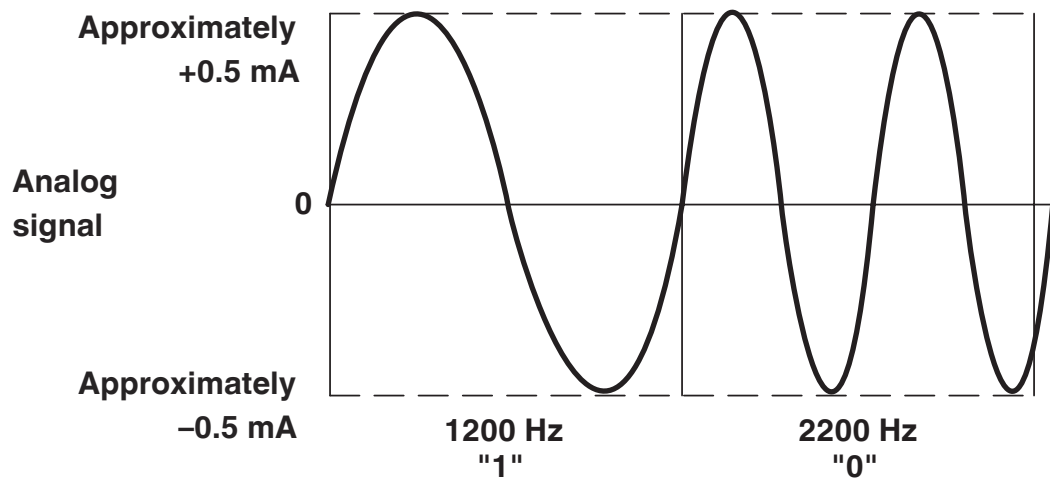
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Dimensional drawing



Diagram



Signal transmission analog and digital at the same time

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2924838>



**DNV GL**

Approval ID: TAA000020C



**UL Listed**

Approval ID: E330267



**cUL Listed**

Approval ID: E330267

**Functional Safety**

Approval ID: BVS PB 13-10-04



**EAC Ex**

Approval ID: TP012 103.01 00078



**cUL Listed**

Approval ID: FILE E 199827



**UL Listed**

Approval ID: FILE E 199827



**IECEX**

Approval ID: IECEX BVS 10.0097X



**CCC**

Approval ID: 2022122316115971

**cULus Listed**

**cULus Listed**

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27210120 |
| ECLASS-12.0 | 27210120 |
| ECLASS-13.0 | 27210120 |

### ETIM

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

### UNSPSC

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

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## 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                                | f14a7259-76c2-44b8-b736-209837a72a63 |

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