

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



2904090

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2-channel repeater power supply for operating 2-conductor measuring transducers, input: 4 ... 20 mA (supplying), output: 4 ... 20 mA (active), bidirectional transmission with digital HART transparency, Push-in connection, SIL, PL.

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2904090       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | C402          |
| Product key                          | DK1111        |
| GTIN                                 | 4046356773362 |
| Weight per piece (including packing) | 245 g         |
| Weight per piece (excluding packing) | 140 g         |
| Customs tariff number                | 85437090      |
| Country of origin                    | DE            |

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## Technical data

### Product properties

|                 |                       |
|-----------------|-----------------------|
| Product type    | Repeater power supply |
| Product family  | MACX Analog           |
| Application     | Analog IN             |
| No. of channels | 2                     |

### Electrical properties

|   |                                    |
|---|------------------------------------|
| Electrical isolation between input and output | yes                                |
| Signal transmission behavior                  | In = Out                           |
| Step response (10-90%)                        | < 1.3 ms (for 4 mA ... 20 mA step) |
| 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/ power supply

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

### Supply

|                          |                            |
|--------------------------|----------------------------|
| Nominal supply voltage   | 24 V DC -20 % ... +25 %    |
| Supply voltage range     | 19.2 V DC ... 30 V DC      |
| Max. current consumption | < 100 mA (24 V DC / 20 mA) |
| Power dissipation        | < 1.4 W (24 V DC / 20 mA)  |
| Power consumption        | ≤ 2.4 W                    |

### Input data

#### Signal: Current

|                                 |                |
|---------------------------------|----------------|
| Number of inputs                | 2              |
| Current input signal            | 4 mA ... 20 mA |
| Transmitter supply voltage      | > 16 V (20 mA) |
| Underload/overload signal range | 0 mA ... 24 mA |

### Output data

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2904090

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## Signal

|  |   |
|--|---|
| Output description                       | Current output  |
| Number of outputs                        | 2   |
| Current output signal                    | 4 mA ... 20 mA (active)   |
| Load/output load current output          | ≤ 450 Ω (20 mA)   |
|  | ≤ 375 Ω (24 mA)   |
| Output behavior in the event of an error | < 3.6 mA (In the event of cable break at the input (as per NE 43))          |
|  | > 22.5 mA (In the event of cable short circuit at the input (as per NE 43)) |
| Underload/overload signal range          | 0 mA ... 24 mA  |

## Connection data

|   |   |
|---|---|
| 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       | HART transparency |
| Protocols supported | HART              |

## Signaling

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

## Dimensions

|                     |          |
|---------------------|----------|
| Dimensional drawing |          |
| Width               | 12.5 mm  |
| Height              | 107.9 mm |

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|                 |  |
|-----------------|--|
| 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 (Housing) | V0 (Housing)    |
| Housing material                                 | PA 6.6-FR       |

## Environmental and real-life conditions

### Ambient conditions

|   |   |
|---|---|
| Degree of protection                    | IP20 (not assessed by UL)   |
| Ambient temperature (operation)         | -40 °C ... 60 °C (Any mounting position)<br>-40 °C ... 70 °C (Derating) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C  |
| Permissible humidity (operation)        | 10 % ... 95 % (non-condensing)  |

### Altitude range ( $\leq 2000$ m)

|                                 |   |
|---------------------------------|---|
| Altitude                        | $\leq 2000$ m (The technical data refers to altitudes $\leq 2000$ 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<br>-40 °C ... 70 °C (Derating)   |
| Rated insulation voltage        | 375 V <sub>PP</sub> (Power supply, input / output)  |

### Altitude range ( $\leq 3000$ m)

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

### Altitude range ( $\leq 4000$ m)

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

### Altitude range ( $\leq 5000$ m)

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

## Approvals

CE

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2904090

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

## ATEX

|                |                            |
|----------------|----------------------------|
| Identification | Ⓜ II 3 G Ex ec IIC T4 Gc X |
| Certificate    | PxCIF11ATEX2924825X        |

## UKCA Ex (UKEX)

|                |                          |
|----------------|--------------------------|
| Identification | Ⓜ II 3 G Ex nA IIC T4 Gc |
| Certificate    | PxCIF21UKEX2904089X      |

## IECEX

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

## CCC / China-Ex

|                |                  |
|----------------|------------------|
| Identification | Ex ec IIC T4 Gc  |
| Certificate    | 2022122316115972 |

## 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 |

## Shipbuilding approval

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

## Safety Integrity Level (SIL, IEC 61508)

|                |              |
|----------------|--------------|
| Identification | 3            |
| Certificate    | BVS PB 04-13 |

## Performance Level (ISO 13849)

|                |   |
|----------------|---|
| Identification | d |
|----------------|---|

## Shipbuilding 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

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

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## Noise emission

Standards/regulations

EN 61000-6-4

## Mounting

Mounting type

DIN rail mounting

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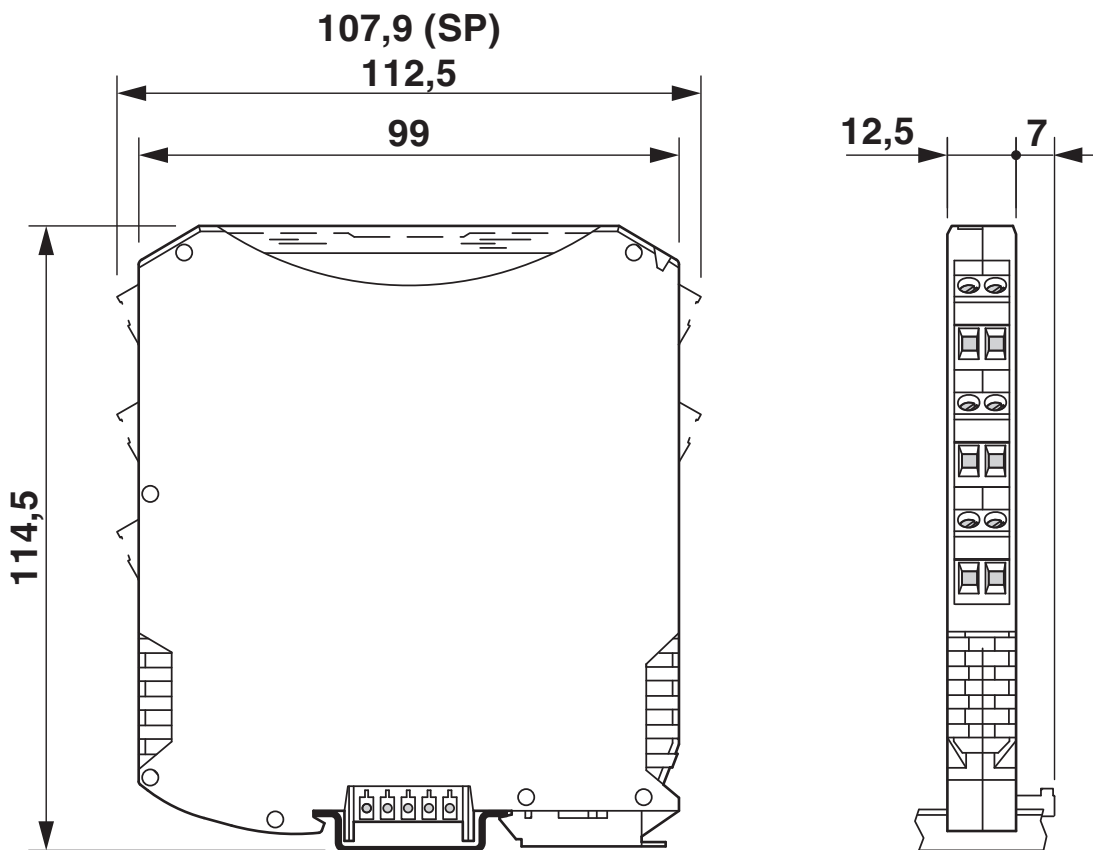


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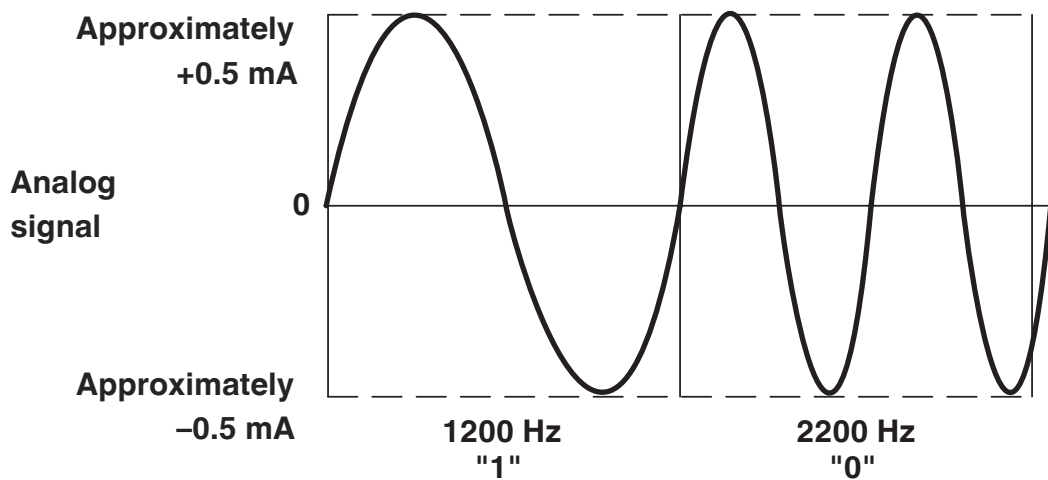
<https://www.phoenixcontact.com/us/products/2904090>

## Drawings

Dimensional drawing



Diagram



Signal transmission analog and digital at the same time

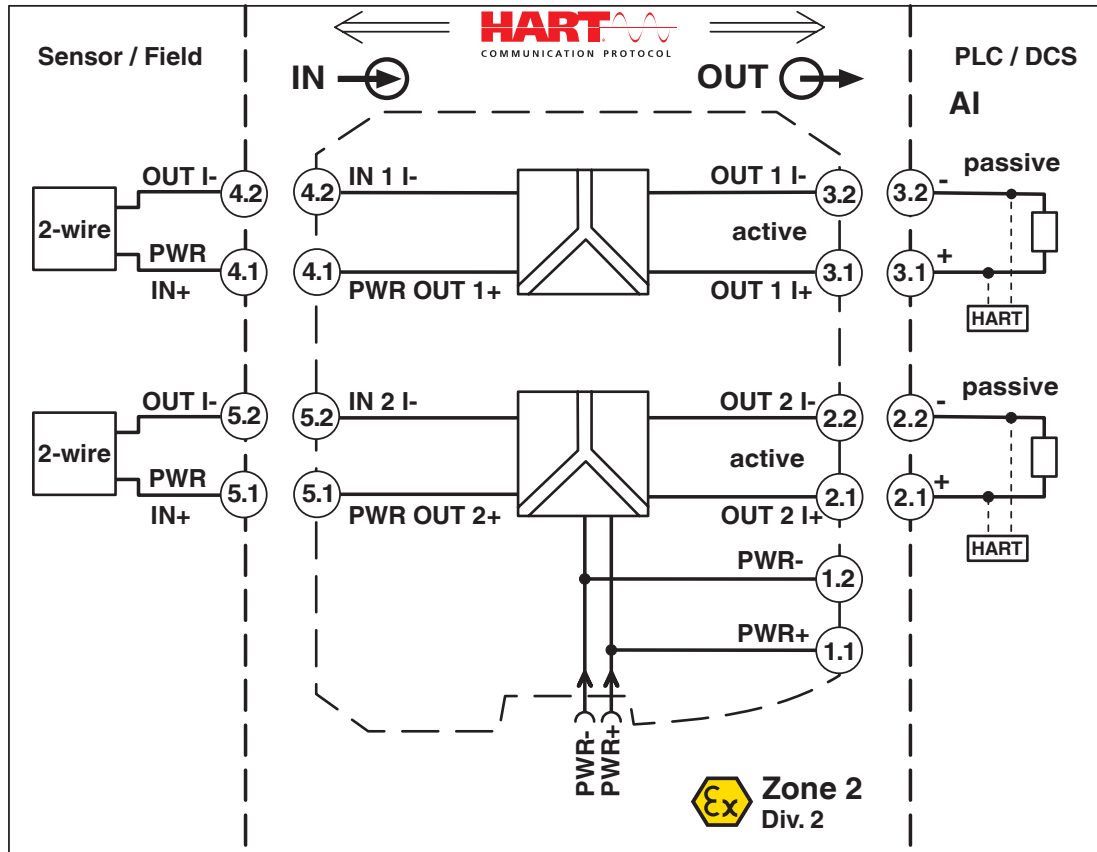
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Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2904090>

### DNV

Approval ID: TAA000020C



### UL Listed

Approval ID: E330267

### Functional Safety

Approval ID: BVS Pb 04/13



### EAC Ex

Approval ID: BY/112 02.01 TP012xx



### IECEx

Approval ID: IECEx BVS 10.0097X



### CCC

Approval ID: 2022122316115972



### cUL Listed

Approval ID: E199827



### UL Listed

Approval ID: FILE E 199827

### INMETRO

Approval ID: DNV 18.0139 X

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## Classifications

### ECLASS

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

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | 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)   |
|                                     | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7) |
| SCIP                                | 06aa4af7-3a02-45b5-abe7-fdb02556d301                           |

### EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 9.064 kg CO2e |
|---------|---------------|

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