

MACX MCR-SL-RPSSI-I-UP-SP - Repeater power supply



2924210

<https://www.phoenixcontact.com/us/products/2924210>

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Repeater power supply for supplying 2- and 4-conductor transmitters with HART transparency and wide-range power supply, SIL 2 (1oo1)/SIL 3 (1oo2), Push-in connection

Your advantages

- 250 Ω resistor that can be activated via DIP switches to increase HART impedance for low-resistance systems
- Up to SIL 2 in accordance with EN 61508
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- 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
- Input: 0/4 mA ... 20 mA (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

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2924210 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C402 |
| Product key | DK1111 |
| GTIN | 4046356449502 |
| Weight per piece (including packing) | 176.1 g |
| Weight per piece (excluding packing) | 144.5 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 | 1 |
| Configuration | DIP switches |

Electrical properties

| | |
|---|---|
| Electrical isolation | 3-way isolation |
| Electrical isolation between input and output | yes |
| Signal transmission behavior | In = Out |
| Step response (10-90%) | < 600 μ s (for 4 mA ... 20 mA step) |
| Maximum temperature coefficient | < 0.01 %/K |
| Maximum transmission error | < 0.1 % (of final value) |
| Transmission error, typical | < 0.05 % (of final value) |

Electrical isolation

| | |
|----------------------|-------------------------|
| Test voltage | 2.5 kV AC (50 Hz, 60 s) |
| 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 _{rms} |
| Insulation | Safe isolation |

Supply

| | |
|------------------------------|---|
| Designation | Repeater power supply operation |
| Nominal supply voltage range | 24 V AC/DC ... 230 V AC/DC -20 % ... +10 % (50/60 Hz) |
| Supply voltage range | 19.2 V AC/DC ... 253 V AC/DC (50/60 Hz) |
| Max. current consumption | < 75 mA (24 V DC / 20 mA) |
| Power dissipation | < 1.6 W (24 V DC / 20 mA) |
| Power consumption | < 1.9 W |

Supply

| | |
|------------------------------|---|
| Designation | Signal conditioner operation |
| Nominal supply voltage range | 24 V AC/DC ... 230 V AC/DC -20 % ... +10 % (50/60 Hz) |
| Supply voltage range | 19.2 V AC/DC ... 253 V AC/DC (50/60 Hz) |
| Max. current consumption | < 45 mA (24 V DC / 20 mA) |
| Power dissipation | < 1.1 W (24 V DC / 20 mA) |
| Power consumption | < 1.1 W |

Input data

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Signal: Repeater power supply operation

| | |
|----------------------------|----------------------|
| Description of the input | Active current input |
| Number of inputs | 1 |
| Current input signal | 4 mA ... 20 mA |
| Transmitter supply voltage | > 16 V (20 mA) |
| | > 15.3 V (22.5 mA) |

Signal: Signal conditioner operation

| | |
|--------------------------|--|
| Description of the input | Passive current input |
| Current input signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA |
| Voltage drop | < 3.5 V (in input isolating amplifier operation) |

Output data

Signal: Repeater power supply operation

| | |
|--|--|
| Output description | Current output (active and passive) |
| Number of outputs | 1 |
| Voltage output signal | 1 V ... 5 V (internal resistance, 250 Ω, 0.1%) |
| | Configurable via DIP switches |
| Current output signal | 4 mA ... 20 mA (active) |
| | 4 mA ... 20 mA (14 ... 26 V ext. source voltage) |
| Load/output load current output | < 600 Ω (20 mA) |
| | < 525 Ω (22.5 mA) |
| Output ripple | < 20 mV _{rms} |
| Output behavior in the event of an error | 0 mA (Cable break in the input) |
| | ≥ 22.5 mA (Cable short-circuit in the input) |

Signal: Signal conditioner operation

| | |
|--|--|
| Output description | Current output (active and passive) |
| Voltage output signal | 0 V ... 5 V (internal resistance, 250 Ω, 0.1%) |
| | 1 V ... 5 V (internal resistance, 250 Ω, 0.1%) |
| Current output signal | 0 mA ... 20 mA (active) |
| | 4 mA ... 20 mA (active) |
| | 0 mA ... 20 mA (14 ... 26 V ext. source voltage) |
| | 4 mA ... 20 mA (14 ... 26 V ext. source voltage) |
| Load/output load current output | < 600 Ω (20 mA) |
| | < 525 Ω (22.5 mA) |
| Output ripple | < 20 mV _{rms} |
| Output behavior in the event of an error | 0 mA (Cable break in the input) |
| | 0 mA (Cable short-circuit in the input) |

Connection data

| | |
|-------------------|--------------------|
| Connection method | Push-in connection |
| Stripping length | 10 mm |

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| | |
|---|---|
| Conductor cross-section rigid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section flexible (2 conductors with same cross section) | 0.25 mm ² ... 0.34 mm ² (TWIN ferrule without plastic sleeve) |
| | 0.5 mm ² ... 1.5 mm ² (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 | 17.5 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 (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) |
| | -40 °C ... 70 °C (Derating) |

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| | |
|---|--------------------------------|
| 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 _{PP} (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 | PxCIF08ATEX2865968X |

UKCA Ex (UKEX)

| | |
|----------------|--------------------------|
| Identification | Ⓜ II 3 G Ex nA IIC T4 Gc |
| Certificate | PxCIF21UKEX2865968X |

IECEX

| | |
|----------------|--------------------|
| Identification | Ex ec IIC T4 Gc |
| Certificate | IECEX BVS 08.0035X |

UL, USA/Canada

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

Safety Integrity Level (SIL / SILCL, IEC 61508)

| | |
|----------------|------------|
| Identification | 2 |
| Certificate | ZP/C031/20 |

Systematic Capability (SC / SILCL)

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

EMC data

| | |
|-------------------------------|--------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive |
| Noise immunity | EN 61000-6-2 |

Noise emission

| | |
|-----------------------|--------------|
| Standards/regulations | EN 61000-6-4 |
|-----------------------|--------------|

Standards and regulations

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

Mounting

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

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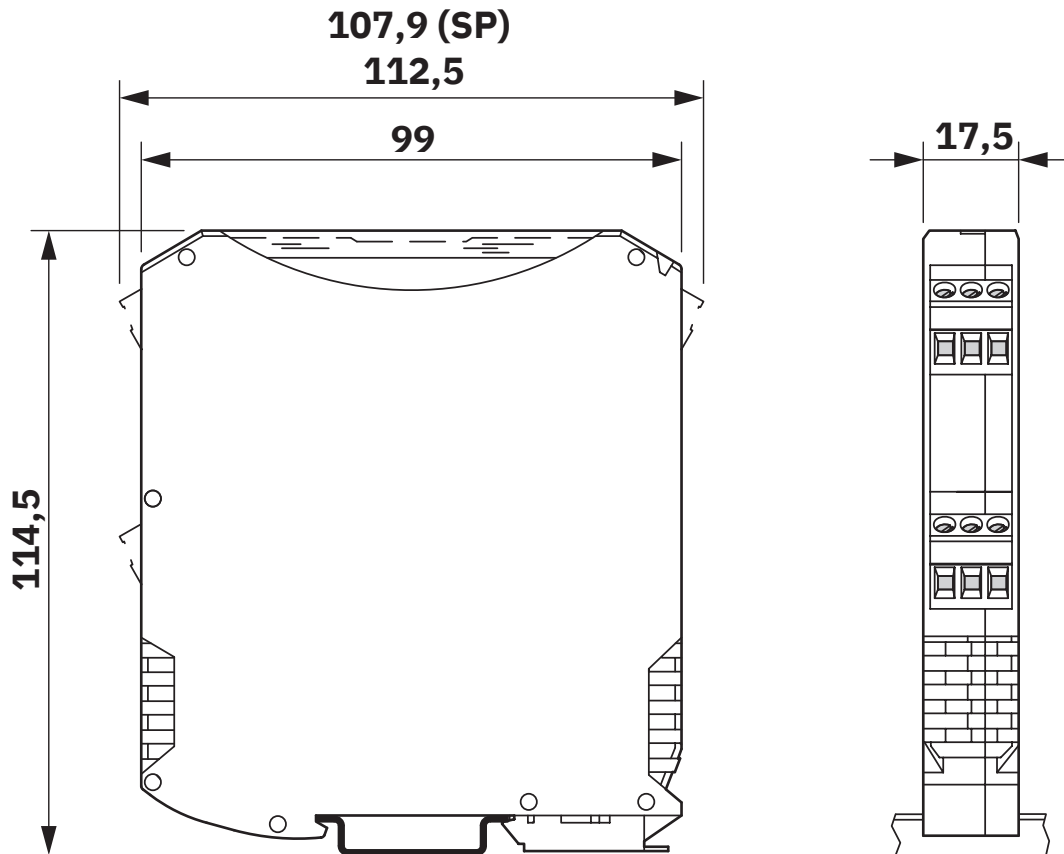


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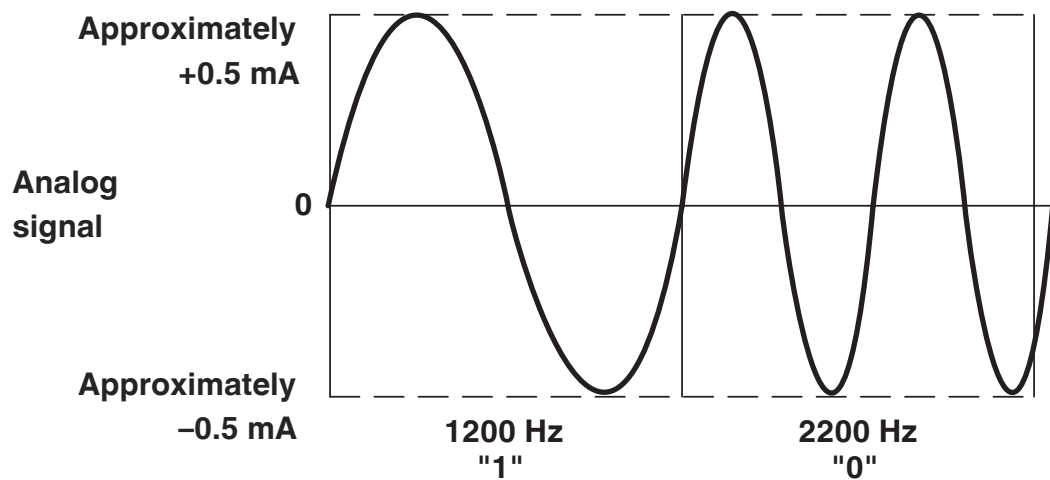
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Drawings

Dimensional drawing



Diagram



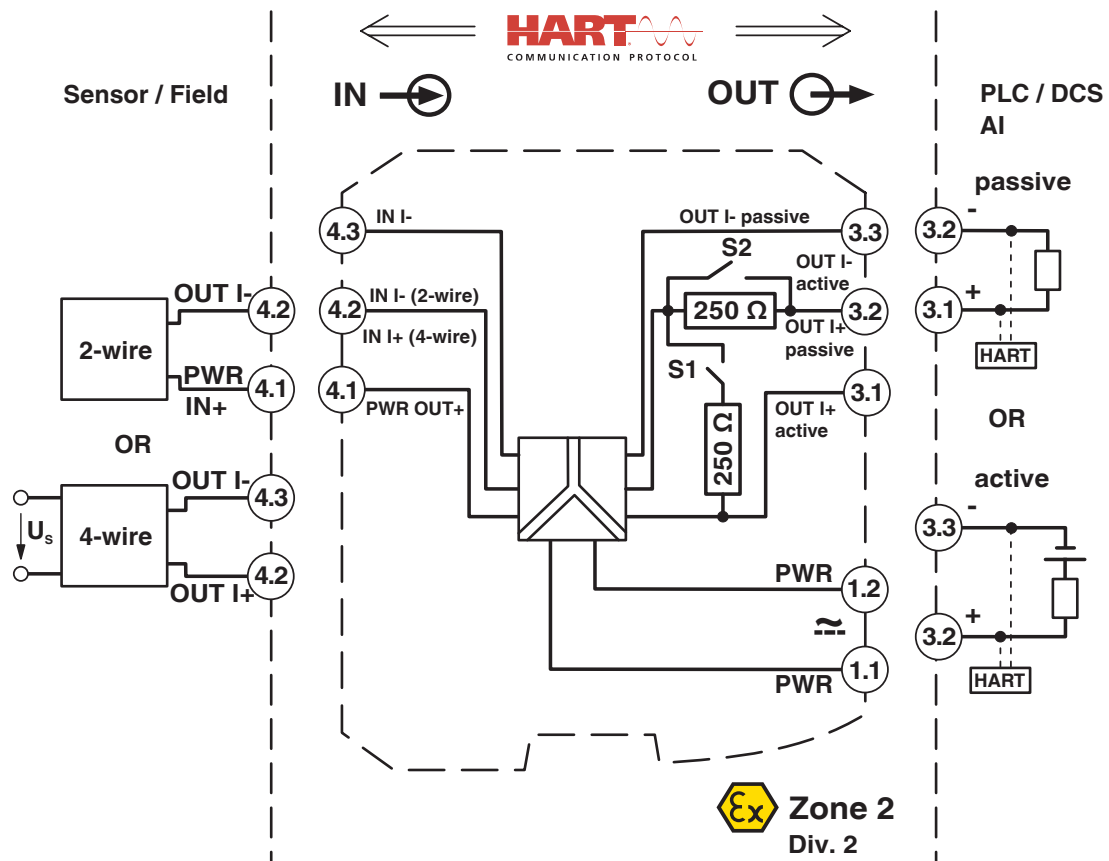
Signal transmission analog and digital at the same time

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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/2924210>


 **UL Listed**
Approval ID: E330267


 **cUL Listed**
Approval ID: E330267

Functional Safety
Approval ID: ZP/C031/20

 **EAC Ex**
Approval ID: BY/112 02.01 TP012xx

 **cUL Listed**
Approval ID: E199827

 **UL Listed**
Approval ID: FILE E 199827

 **IECEx**
Approval ID: IECEx BVS 08.0035X

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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 | c7ab9d4b-0920-4f27-b5f1-a18540c1f140 |

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Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com