

MACX MCR-EX-AP-RPSS-I-I - Repeater power supply



1291191

<https://www.phoenixcontact.com/us/products/1291191>

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Ex i-Feed and input signal conditioner feeds 2-, 3- and 4-conductor measuring transducer and transmits 1:1 passive or active 0 mA / 4 mA ... 20 mA Ex i input signals as active non Ex i output signal. number of channels: 1, Standard configuration, 3-way isolation, Safety Integrity Level (SIL, IEC 61508): 3, Screw connection

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1291191 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C430 |
| Product key | DK121W |
| GTIN | 4063151522698 |
| Weight per piece (including packing) | 199 g |
| Weight per piece (excluding packing) | 160 g |
| Customs tariff number | 85437090 |
| Country of origin | DE |

Technical data

Notes

| | |
|---------------------|---|
| Note on application | Accuracy, typically specified as a percentage of the measuring span (20 mA) at U_N , 23°C |
| Notes on operation | Installation conditions influence the ambient temperature. Please refer to the "Control cabinet installation instructions". |
| Notes on operation | Output behavior = input signal |

Product properties

| | |
|-----------------|-----------------------|
| Product type | Repeater power supply |
| Product family | MACX Analog |
| No. of channels | 1 |

Electrical properties

| | |
|---|-----------------|
| Electrical isolation | 3-way isolation |
| Electrical isolation between input and output | yes |
| Signal transmission behavior | In = Out |
| Temperature coefficient, typical | ≤ 0.05 % (10 K) |
| Reverse polarity protection | yes |

Electrical isolation Input/output IEC/EN 60079-11

| | |
|--------------------------|---------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _{PP} |

Electrical isolation Input/power supply IEC/EN 60079-11

| | |
|--------------------------|---------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _{PP} |

Electrical isolation Input/error message output IEC/EN 60079-11

| | |
|--------------------------|---------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _{PP} |

Electrical isolation Input 1 / input 2 IEC/EN 60079-11

| | |
|--------------------------|---------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _{PP} |

Electrical isolation Output/supply

| | |
|--------------|---------------------|
| Test voltage | 350 V (50 Hz, 60 s) |
|--------------|---------------------|

Electrical isolation Output 1/output 2

| | |
|--------------|---------------------|
| Test voltage | 350 V (50 Hz, 60 s) |
|--------------|---------------------|

Electrical isolation Output/supply/error message output

| | |
|--------------|---------------------|
| Test voltage | 350 V (50 Hz, 60 s) |
|--------------|---------------------|

Supply

| | |
|------------------------|---------|
| Nominal supply voltage | 24 V DC |
|------------------------|---------|

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| | |
|----------------------|------------------------------|
| Supply voltage range | 18 V ... 31.2 V |
| Power dissipation | 2.2 W (R_L 250 Ω) |
| Power consumption | 2.7 W (20 mA) |

Input data

Signal: Repeater power supply operation

| | |
|--------------------------------|--|
| Description of the input | active and passive current input, intrinsically safe |
| Input signal | Current |
| Current input signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA (with HART) |
| | 0 mA ... 24 mA (Function area) |
| Input resistance current input | $\leq 100 \Omega$ (for mA sources) |
| Input current | ≤ 50 mA (for mA sources) |
| Short-circuit current | ≤ 35 mA |
| Line fault detection | < 3.6 mA (Line break) |
| | > 20.5 mA (Short circuit) |
| Open-circuit voltage | ≤ 26 V |

Signal: Signal conditioner operation

| | |
|--------------------------------|---|
| Description of the input | Passive current input, intrinsically safe |
| Current input signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA (with HART) |
| | 0 mA ... 24 mA (Function area) |
| Input resistance current input | $\leq 100 \Omega$ (for mA sources) |
| Input current | ≤ 50 mA |
| Short-circuit current | ≤ 35 mA |
| Line fault detection | < 3.6 mA (Line break) |
| | > 20.5 mA (Short circuit) |
| Open-circuit voltage | ≤ 26 V |

Output data

Signal: Error message output

| | |
|---------------------------|--------|
| Maximum switching voltage | 30 V |
| Max. switching current | 100 mA |

Signal: Repeater power supply operation

| | |
|-------------------------|--|
| Output description | Current output (active) |
| Current output signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA (with HART) |
| | 0 mA ... 24 mA (Function area) |
| Load | 0 Ω ... 600 Ω |
| | 0 Ω ... 379 Ω (with internal 221 Ω resistance for HART) |
| Output ripple (current) | $\leq 40 \mu$ A (effective) |
| Line fault detection | < 3.6 mA (Line break) |

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Signal: Signal conditioner operation

| | |
|-------------------------|---|
| Output description | Signal conditioner operation |
| Current output signal | 0 mA ... 20 mA |
| | 4 mA ... 20 mA (with HART) |
| | 0 mA ... 24 mA (Function area) |
| Load | 0 Ω ... 600 Ω |
| | 0 Ω ... 379 Ω (with internal 221 Ω resistance for HART) |
| Output ripple (current) | ≤ 40 μA (effective) |

Connection data

| | |
|----------------------------------|---|
| Connection method | Screw connection |
| Stripping length | 7 mm |
| Screw thread | M3 |
| 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 AWG | 24 ... 14 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |

Ex data

| | |
|-----------------------|------|
| Ex installation (EPL) | Gc |
| Ex i circuits (EPL) | [Ga] |
| | [Da] |
| | [Ma] |

Safety data: Repeater power supply operation

| | |
|--|---|
| Max. internal inductance L_i | negligible |
| Max. internal capacitance C_i | negligible |
| Max. output voltage U_o | 27 V |
| Max. output current I_o | 88 mA |
| Max. output power P_o | 576 mW |
| Safety-related maximum voltage U_m | 253 V AC |
| I/A (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 28 mH / 2330 nF |
| IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 17 mH / 705 nF |
| IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 2.3 mH / 90 nF |
| I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 40 mH / 3750 nF |
| I/A (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 28 mH / 410 nF, 2 mH / 480 nF, 1 mH / 540 nF, 0.2 mH / 820 nF |
| IIB/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 17 mH / 290 nF, 2 mH / 320 nF, 0.5 mH / 460 nF, 0.2 mH / 600 nF |
| IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 2 mH / 42 nF, 1 mH / 56 nF, 0.5 mH / 72 nF, 0.2 mH / 90 nF |

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| | |
|--|---|
| I (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 40 mH / 480 nF, 20 mH / 660 nF, 0.5 mH / 810 nF, 0.1 mH / 1200 nF |
|--|---|

Safety data: Signal conditioner operation

| | |
|--------------------------------------|----------------------------------|
| Note | With connection of power sources |
| Input voltage U_i | 30 V |
| Input current I_i | 100 mA |
| Input power P_i | limited internally |
| Max. internal inductance L_i | negligible |
| Max. internal capacitance C_i | negligible |
| Max. output voltage U_o | 4.1 V |
| Safety-related maximum voltage U_m | 253 V AC |

Interfaces

Data communication (bypass)

| | |
|---------------------------|--|
| Protocols supported | HART-transparent |
| Frequency measuring range | 0.5 kHz ... 10 kHz (bidirectional HART transmission) |

Signaling

| | |
|----------------|----------------------------|
| Status display | Green LED (supply voltage) |
| | Red LED (line errors) |

Dimensions

| | |
|---------------------|--|
| Dimensional drawing | |
| Width | 17.5 mm |
| Height | 112.5 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

| | |
|--|--------|
| Flammability rating according to UL 94 | V0 |
| Housing material | PA 6.6 |

Environmental and real-life conditions

Ambient conditions

| | |
|----------------------|--|
| Degree of protection | IP20 (Terminal blocks) |
| | IP30 (Housing) |
| | -20 °C ... 70 °C (Stand-alone device: any mounting position) |

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| | |
|---|--|
| Ambient temperature (operation) | -20 °C ... 55 °C (Group assembly: vertical DIN rail without circulating air) |
| | -20 °C ... 65 °C (Group assembly: vertical DIN rail with circulating air) |
| | -20 °C ... 60 °C (Group assembly: horizontal DIN rail without circulating air) |
| | -20 °C ... 65 °C (Group assembly: horizontal DIN rail with circulating air) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |
| Altitude | ≤ 2000 m |
| Permissible humidity (operation) | ≤ 95 % (non-condensing) |

Approvals

ATEX

| | |
|----------------|---|
| Identification | ⊕ II (1) G [Ex ia Ga] IIC |
| | ⊕ II (1) D [Ex ia Da] IIIC |
| | ⊕ II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc |
| | ⊕ I (M1) [Ex ia Ma] I |

IECEX

| | |
|----------------|----------------------------|
| Identification | [Ex ia Ga] IIC |
| | [Ex ia Da] IIIC |
| | Ex nA nC [ia Ga] IIC T4 Gc |
| | [Ex ia Ma] I |

Safety Integrity Level (SIL, IEC 61508)

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

EMC data

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|-------------------------------|---|
| Electromagnetic compatibility | Tested in accordance with the following standards and regulations: EN 61326-1 For industrial use, NAMUR NE 21 |
|-------------------------------|---|

Standards and regulations

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

Mounting

| | |
|-------------------|----------------------|
| Mounting type | NS 35/15, NS 35/7,5 |
| Mounting position | vertical, horizontal |

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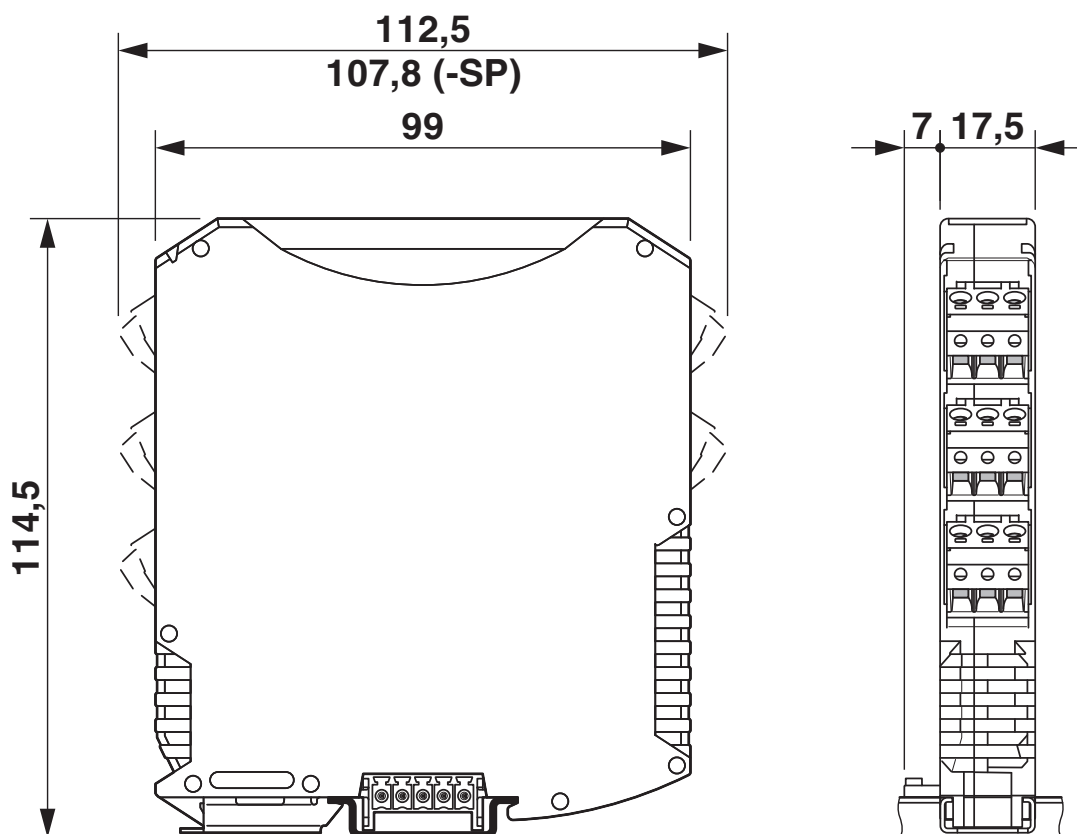


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Drawings

Dimensional drawing



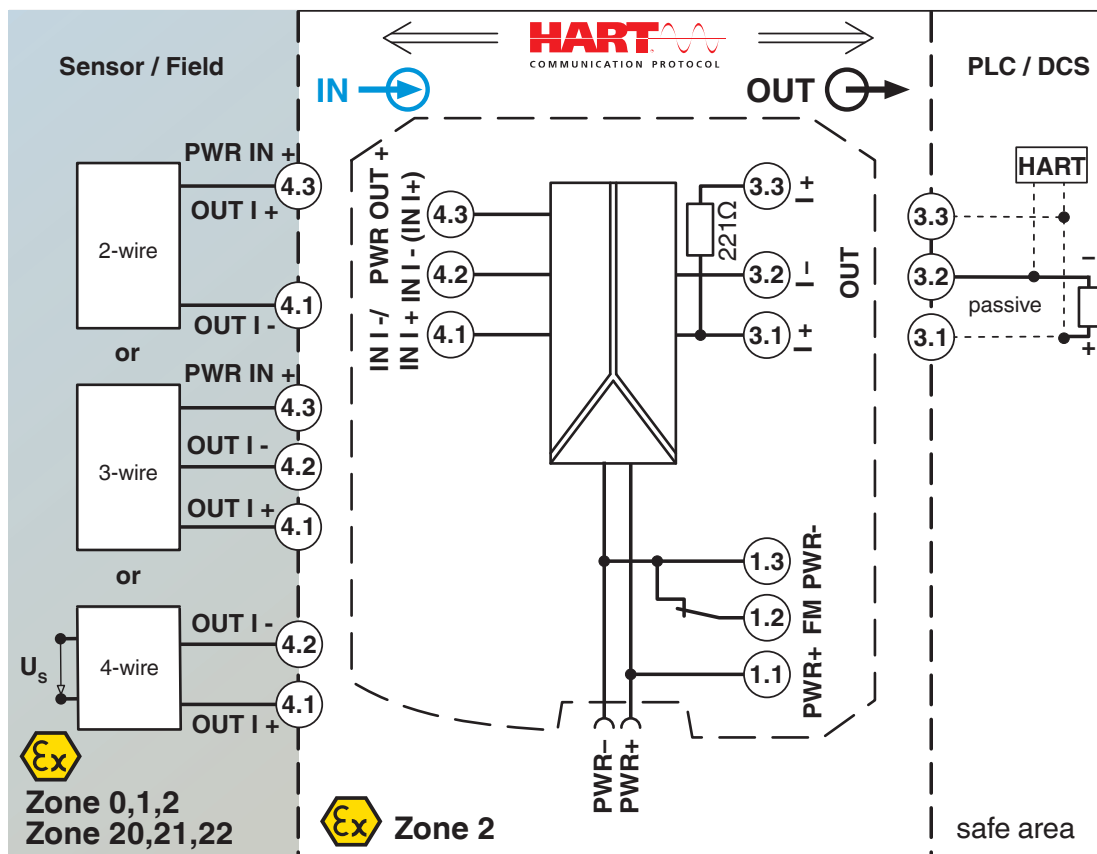
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Block diagram



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Approvals

 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1291191>

Functional Safety

Approval ID: 22/05-248 R029 V1R0



IECEX

Approval ID: IECEx BVS 21.0019X



ATEX

Approval ID: BVS 21 ATEX E 017X

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Classifications

ECLASS

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

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC002653 |
|-----------|----------|

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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 | 4b176659-68ca-4889-9cce-3fffba2742ba |

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