

MACX MCR-EX-AP-RTD-RTD-SP - Temperature measuring transducer



1291955

<https://www.phoenixcontact.com/us/products/1291955>

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Ex i-Resistance isolator for intrinsically safe operation of Pt 100 resistance thermometers in 2, 3, or 4-conductor technology and resistance-type sensors. The values measured at the Ex i input are transmitted 1:1 to the non Ex i output. number of channels: 1, Standard configuration, 3-way isolation, Push-in connection

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1291955 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C430 |
| Product key | DK121W |
| GTIN | 4063151524289 |
| Weight per piece (including packing) | 178.5 g |
| Weight per piece (excluding packing) | 22.22 g |
| Customs tariff number | 85437090 |
| Country of origin | DE |

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Technical data

Notes

| | |
|---------------------|---|
| Note on application | Accuracy, typically specified as a percentage of the basic measuring range 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 | Sensor set via DIP switches |
| Notes on operation | 2-conductor comparison set via DIP switch ADJ |

Product properties

| | |
|-----------------|-------------------------|
| Product type | Temperature transmitter |
| 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 | ≤ 0.1 % (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/configuration interface IEC/EN 60079-11

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

Electrical isolation Output 1/output 2

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

Electrical isolation Output/supply

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

Electrical isolation Output/configuration interface

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

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Electrical isolation Output/supply/error message output

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

Supply

| | |
|------------------------|-----------------|
| Nominal supply voltage | 24 V DC |
| Supply voltage range | 18 V ... 31.2 V |
| Power dissipation | ≤ 600 mW |
| Power consumption | ≤ 650 mW |

Input data

Measurement

| | |
|---|---|
| Description of the input | intrinsically safe |
| Sensor types (RTD) that can be used | Pt 100 |
| Connection technology | 2-, 3-, 4-conductor |
| Linear resistance measuring range | 18 Ω ... 391 Ω (Pt 100) |
| Max. permissible overall conductor resistance | ≤ 50 Ω (per wire, 2-conductor circuit) ≤ 100 Ω (per wire, 3-, 4-conductor circuit) |

Output data

Analog: Resistance thermometer

| | |
|--------------------------------|---|
| Output signal Voltage | 2 V DC (Nominal voltage) |
| Output signal Current | 5 mA (Nominal current) |
| Output signal Resistance | 400 Ω |
| Output signal Resistance range | 18 Ω ... 391 Ω (Pt 100) |
| Settling time | < 10 ms (10% ... 90%, multiplexer mode) |
| Setting range | < 1 s (Input/output) |
| Sensor input current | 200 μA ... 5 mA |
| Connection technology | 2-, 3-, 4-conductor |

Signal: Error message output

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

Connection data

| | |
|----------------------------------|---|
| Connection method | Push-in connection |
| Stripping length | 8 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section flexible | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section AWG | 24 ... 16 |

Ex data

| | |
|-----------------------|----|
| Ex installation (EPL) | Gc |
|-----------------------|----|

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

Safety data

| | |
|--|---|
| Max. internal inductance L_i | negligible |
| Max. internal capacitance C_i | negligible |
| Max. output voltage U_o | 6.5 V |
| Max. output current I_o | 16.5 mA |
| Max. output power P_o | 27 mW |
| Safety-related maximum voltage U_m | 253 V AC |
| I/A (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 900 mH / 1000 μ F |
| IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 450 mH / 570 μ F |
| IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 120 mH / 25 μ F |
| I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 1000 mH / 1000 μ F |
| IIB/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 5.3 μ F, 20 mH / 6.9 μ F, 2 mH / 11 μ F, 0.5 mH / 15 μ F |
| IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 50 mH / 1.1 μ F, 5 mH / 1.7 μ F, 1 mH / 2.3 μ F, 0.2 mH / 3.4 μ F |

Signaling

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

Dimensions

| | |
|---------------------|--|
| Dimensional drawing | |
| Width | 17.5 mm |
| Height | 107.8 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 |

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Environmental and real-life conditions

Ambient conditions

| | |
|---|--|
| Degree of protection | IP20 (Terminal blocks) |
| | IP30 (Housing) |
| Ambient temperature (operation) | -20 °C ... 70 °C (Stand-alone device: any mounting position) |
| | -20 °C ... 60 °C (Group assembly: vertical DIN rail without circulating air) |
| | -20 °C ... 65 °C (Group assembly: vertical DIN rail with circulating air) |
| | -20 °C ... 65 °C (Group assembly: horizontal DIN rail without circulating air) |
| | -20 °C ... 70 °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 |

EMC data

| | |
|-------------------------------|---|
| 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 |

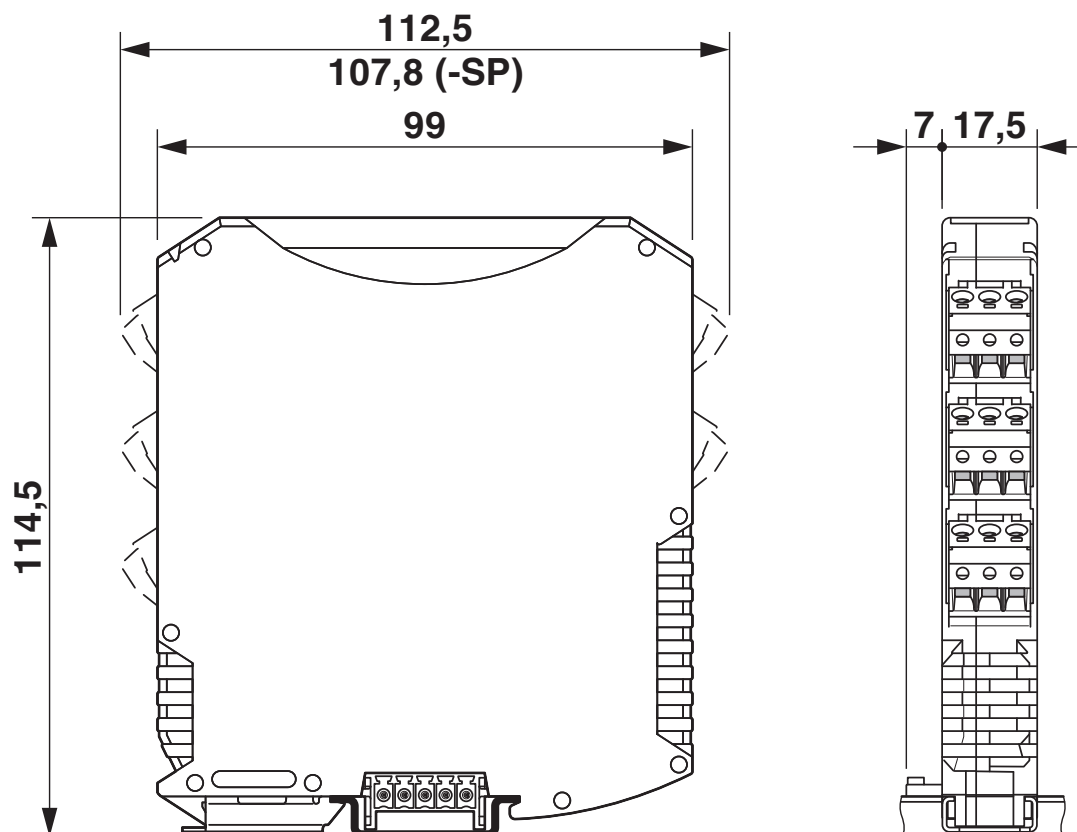
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Drawings

Dimensional drawing



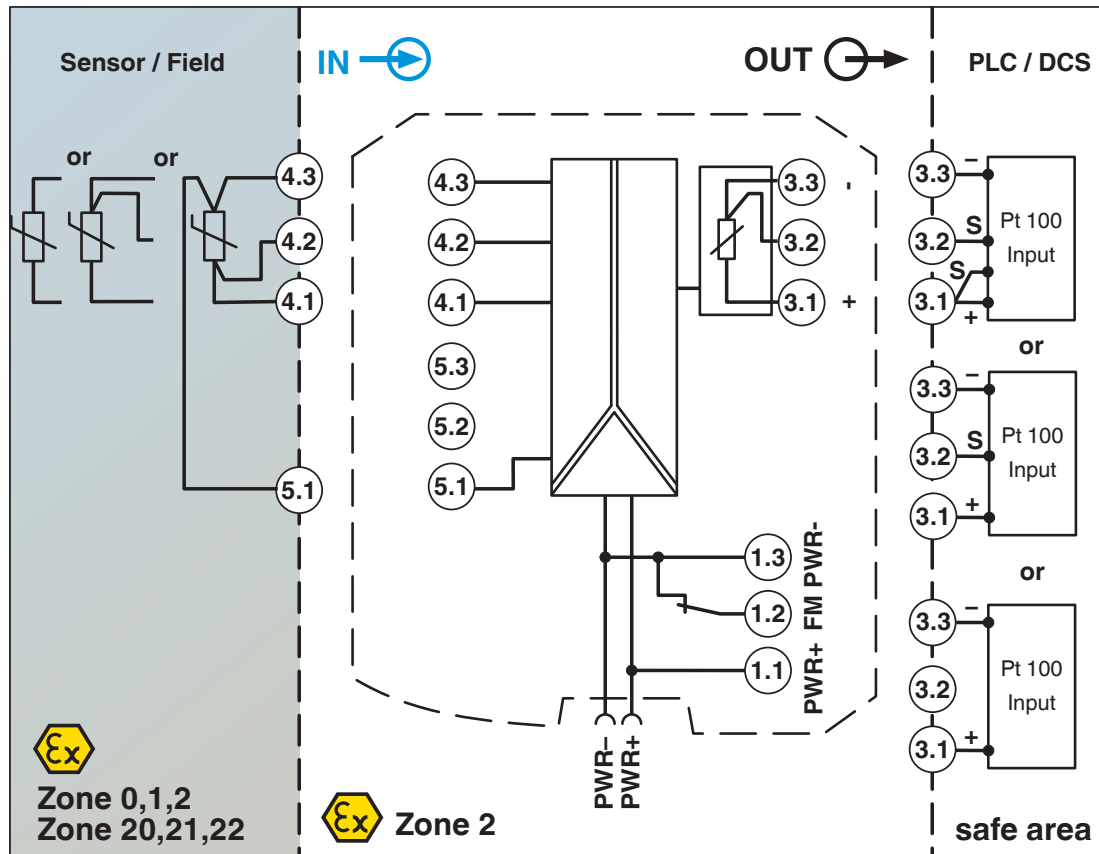
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Block diagram



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Approvals

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IECEX

Approval ID: IECEX BVS 21.0033X



ATEX

Approval ID: BVS 21 ATEX E 031X

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27210129 |
| ECLASS-15.0 | 27210129 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC002919 |
|-----------|----------|

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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 titanium zirconium oxide(CAS: 12626-81-2) |
| | Lead(CAS: 7439-92-1) |
| SCIP | a361b992-65aa-4a08-8e43-f0cb9b6da872 |

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