

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



Ex i temperature transducer: converts signals from resistance temperature detectors installed in the Ex area and transmits a 0/4 - 20 mA signal to a load in the safe area. Freely programmable. 3-way isolation, SIL, screw connection, standard configuration.

Your advantages

- Power supply possible via DIN rail connector
- Programming during operation with Ex measuring circuit connected and also voltage-free using IFS-USB-PROG-ADAPTER programming adapter
- Input for resistance thermometers and resistance-type sensors, [Ex ia] IIC
- Installation in zone 2, protection type "ec" (EN 60079-7) permitted
- 3-way electrical isolation
- Status indicator for supply voltage, cable, sensor, and module errors
- Configuration via software (FDT/DTM): sensor type, connection technology, measuring range, measuring unit, filter, alarm signal, and output range
- Output: 0 mA ... 20 mA or 4 mA ... 20 mA

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1050222 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CK3 |
| Product key | DK1215 |
| GTIN | 4055626666075 |
| Weight per piece (including packing) | 171,5 g |
| Weight per piece (excluding packing) | 130 g |
| Customs tariff number | 85437090 |
| Country of origin | DE |

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

Technical data

Notes

Utilization restriction

| | |
|----------|---|
| EMC note | EMC: class A product, see manufacturer's declaration in the download area |
|----------|---|

Product properties

| | |
|-----------------|-------------------------|
| Product type | Temperature transmitter |
| Product family | MACX Analog |
| Application | Temperature |
| No. of channels | 1 |
| Configuration | Software |

System properties

Functionality

| | |
|---------------|----------|
| Configuration | Software |
|---------------|----------|

Electrical properties

| | |
|---|--|
| Electrical isolation | 3-way isolation |
| Electrical isolation between input and output | yes |
| Step response (0–99%) | ≤ 1.7 s |
| Temperature coefficient, typical | 0.01 %/K |
| Transmission error, typical | 0.1 % (e.g. for Pt 100, 300 K span, 4 ... 20 mA) |

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 |

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} |

Supply

| | |
|------------------------|-------------------------|
| Nominal supply voltage | 24 V DC -20 % ... +25 % |
|------------------------|-------------------------|

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

| | |
|----------------------|-----------------------|
| Supply voltage range | 19.2 V DC ... 30 V DC |
| Power dissipation | ≤ 0.76 W |
| Power consumption | ≤ 1 W |

Input data

Signal

| | |
|------------------|---|
| Number of inputs | 1 |
|------------------|---|

Measurement

| | |
|---|--|
| Description of the input | intrinsically safe |
| Sensor types (RTD) that can be used | Pt, Ni, Cu sensors: 2, 3, 4-wire |
| Temperature measuring range | -200 °C ... 850 °C (Range depending on the sensor type) |
| Linear resistance measuring range | 0 Ω ... 50 kΩ |
| Potentiometer resistance range | 0 Ω ... 50 kΩ |
| Max. permissible overall conductor resistance | 50 Ω (Per cable) |
| Sensor input current | 10 μA ... 210 μA (Up to 2x 210 μA with 3-conductor technology) |
| Temperature measuring range | ≥ 50 K |

Output data

Signal: Current

| | |
|---|---|
| Number of outputs | 1 |
| Configurable/programmable | Yes |
| Current output signal | 0 mA ... 20 mA 4 mA ... 20 mA (SIL) |
| Max. current output signal | ≥ 21 mA |
| Load/output load current output | ≤ 600 Ω |
| Output ripple (current) | < 15 μA _{pp} < 10 μA _{rms} |
| Behavior in the event of a sensor error | Freely definable |

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 |

Test socket

| | |
|---------------|------|
| Max. diameter | 2 mm |
|---------------|------|

Ex data

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

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

| | |
|---------------------|----------|
| | Div. 2 |
| Ex i circuits (EPL) | [Ga] |
| | [Da] |
| | [Ma] |
| | [Div. 1] |

Safety data: Terminals: 4.1, 4.2, 5.1, 5.2

| | |
|--|--|
| Max. internal capacitance C_i | 44 nF |
| Max. output voltage U_o | 6 V |
| Max. output current I_o | 16.6 mA (RTD in 4-conductor technology) |
| | 13 mA (RTD in 3-conductor technology) |
| | 7.1 mA (RTD in 2-conductor technology) |
| | 16.6 mA (2x RTD in 2-conductor technology) |
| | 13 mA (Potentiometer) |
| Max. output power P_o | 25.2 mW (Linear) |
| Safety-related maximum voltage U_m | 253 V AC |
| | 125 V DC |
| | 30 V DC (Zone 2: 3.1, 3.2) |
| IIA/I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 850 mH / 1000 μ F |
| IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 460 mH / 1000 μ F |
| IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 40 μ F |
| IIB/IIA (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 950 nF |
| IIIC/I (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 950 nF |
| IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 555 nF |

Signaling

| | |
|----------------|--|
| Status display | Green LED (supply voltage) |
| | Red LED, flashing 2.8 Hz (cable error, sensor error on input or output, ERR) |
| | Red LED, flashing 1.2 Hz (simulation mode, ERR) |
| | Red LED, permanently on (module error, ERR) |

Dimensions

| | |
|---------------------|---------|
| Dimensional drawing | |
| Width | 12.5 mm |

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

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

| | |
|--|-----------------|
| 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 |
| Ambient temperature (operation) | -40 °C ... 70 °C (Any mounting position) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |
| Permissible humidity (operation) | 5 % ... 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 ... 70 °C |
| Test voltage | 2.5 kV |
| Rated insulation voltage | 300 V _{rms} (IEC/EN 60079-11) 375 V _{pp} (IEC/EN 60079-11) |

Altitude range (≤ 3000 m)

| | |
|---|--|
| Height range | > 2000 m ... 3000 m |
| Ambient temperature (operation) | -40 °C ... 60 °C |
| Test voltage | 2.25 kV |
| Safety-related maximum voltage U _m | 190 V AC 110 V DC |
| Rated insulation voltage | 190 V _{rms} (IEC/EN 60079-11) |

Altitude range (≤ 4000 m)

| | |
|---|---------------------------------------|
| Height range | > 3000 m ... 4000 m |
| Ambient temperature (operation) | -40 °C ... 55 °C |
| Test voltage | 2 kV |
| Safety-related maximum voltage U _m | 60 V AC/DC |
| Rated insulation voltage | 60 V _{rms} (IEC/EN 60079-11) |

Altitude range (≤ 5000 m)

| | |
|---|-----------------------|
| Height range | > 4000 m ... 5000 m |
| Ambient temperature (operation) | -40 °C ... 49 °C |
| Test voltage | 1.75 kV |
| Safety-related maximum voltage U _m | 60 V AC/DC |

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

| | |
|--------------------------|---------------------------------------|
| Rated insulation voltage | 60 V _{rms} (IEC/EN 60079-11) |
|--------------------------|---------------------------------------|

Approvals

CE

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

ATEX

| | |
|----------------|--|
| Identification | Ⓢ I (M1) [Ex ia Ma] I |
| | Ⓢ II (1) G [Ex ia Ga] IIC |
| | Ⓢ II (1) D [Ex ia Da] IIIC |
| | Ⓢ II 3(1) G Ex ec ic [ia Ga] IIC T4 Gc |
| Certificate | IBExU19ATEX1006 X |

IECEX

| | |
|----------------|----------------------------|
| Identification | [Ex ia Ma] I |
| | [Ex ia Ga] IIC |
| | [Ex ia Da] IIIC |
| | Ex ec ic [ia Ga] IIC T4 Gc |
| Certificate | IECEX IBE 19.0001 X |

UL, USA/Canada

| | |
|----------------|--|
| Identification | UL 61010 Listed |
| | Class I Div 2; IS for Class I, II, III Div 1 |
| Certificate | Ⓢ.Ⓢ.Ⓢ. C.D.-No 83104549 |

Shipbuilding approval

| | |
|-------------|-------------------|
| Certificate | DNV GL TAA00000AG |
|-------------|-------------------|

Safety Integrity Level (SIL, IEC 61508)

| | |
|----------------|------------------------|
| Identification | 2 |
| Certificate | SEBS-A.150520/17, V2.0 |

Systematic Capability

| | |
|----------------|---|
| Identification | 2 |
|----------------|---|

INMETRO

| | |
|----------------|----------------------------|
| Identification | [Ex ia Ma] I |
| | [Ex ia Ga] IIC |
| | [Ex ia Da] IIIC |
| | Ex ec ic [ia Ga] IIC T4 Gc |
| Certificate | DNV 21.0064 X |

EAC Ex

| | |
|----------------|---------------------------------|
| Identification | Ⓢ [Ex ec ic [ia Ga] IIC T4 Gc |
| Certificate | BY/112 02.01 TP012 103.01 00082 |

Shipbuilding data

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

| | |
|-------------|---|
| Temperature | B |
| Humidity | B |
| Vibration | A |
| EMC | B |
| 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. |

Noise emission

| | |
|-----------------------|--------------|
| Standards/regulations | 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 | 1 % |

Fast transients (burst)

| | |
|--|-------------------------|
| Designation | Fast transients (burst) |
| Standards/regulations | EN 61000-4-4 |
| Typical deviation from the measuring range final value | 1 % |

Conducted interference

| | |
|--|-------------------------|
| Designation | Conducted interferences |
| Standards/regulations | EN 61000-4-6 |
| Typical deviation from the measuring range final value | 1 % |

Standards and regulations

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

Mounting

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

MACX MCR-EX-RTD-I - Temperature measuring transducer

1050222

<https://www.phoenixcontact.com/za/products/1050222>

Drawings

Dimensional drawing



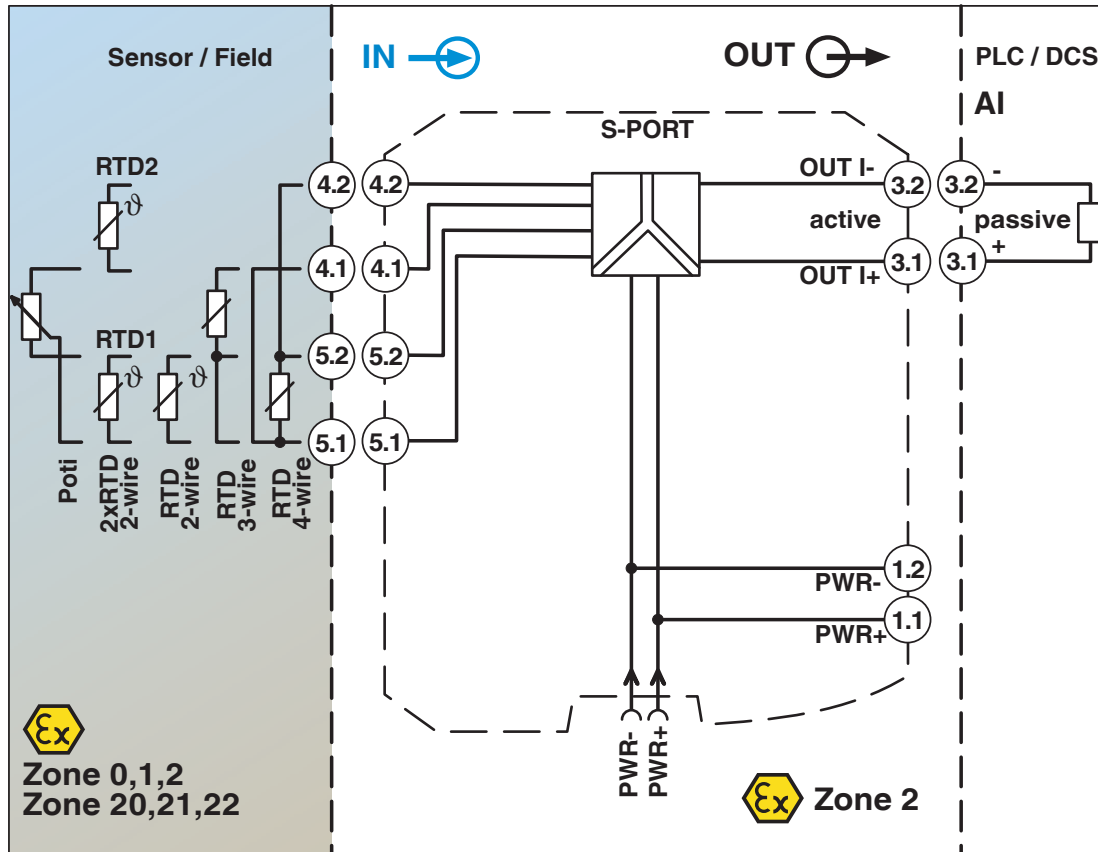
MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

Block diagram



MACX MCR-EX-RTD-I - Temperature measuring transducer





1050222


<https://www.phoenixcontact.com/za/products/1050222>

Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/za/products/1050222>


 **UL Listed**
Approval ID: E330267


 **cUL Listed**
Approval ID: FILE E 330267


 **Functional Safety**
Approval ID: SEBS-A.20170608


DNV
Approval ID: TAA00000AG


ECAS
Approval ID: 163742 E25 08 169509

 **EAC Ex**
Approval ID: RU C-DE.AB72.B.00093

 **IECEX**
Approval ID: IECEX IBE 19.0001X

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

 **UL Listed**
Approval ID: E199827

 **ATEX**
Approval ID: IBExU 19 ATEX 1006 X

INMETRO
Approval ID: DNV 21.0064 X

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

Classifications

ECLASS

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

ETIM

| | |
|----------|----------|
| ETIM 9.0 | EC002919 |
|----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 41112100 |
|-------------|----------|

MACX MCR-EX-RTD-I - Temperature measuring transducer



1050222

<https://www.phoenixcontact.com/za/products/1050222>

Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 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 | c047a32e-3c91-42b0-bc2b-2fa27278b863 |

Phoenix Contact 2026 © - all rights reserved
<https://www.phoenixcontact.com>

PHOENIX CONTACT (Pty) Ltd.
36 Lyn Road P.O. Box 916 ZA-Ferndale 2160

+27/11/801-8200
info@phoenixcontact.co.za