

MACX MCR-T-UI-UP - Temperature measuring transducer



2811394

<https://www.phoenixcontact.com/us/products/2811394>

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Freely programmable temperature measuring transducer with analog output and 1 limit value relay, resistance thermometer in 2-, 3-, or 4-conductor technology, thermocouples, wide-range supply. Standard configuration, 4-way isolation, Safety Integrity Level (SIL, IEC 61508): 2, Performance Level (ISO 13849-1): d, Systematic Capability: 2, Screw connection

Your advantages

- Cold junction compensation with separate plug
- Configuration via software (FDT/DTM) or IFS-OP-UNIT operator interface and display unit
- Up to SIL 2 in accordance with EN 61508
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Programming during operation and also voltage-free using IFS-USB-PROG-ADAPTER programming adapter
- Plug-in screw or spring-cage connection technology (Push-in technology)
- Freely programmable input and output
- Input for resistance thermometers, thermocouples, resistance-type sensors, potentiometers, and mV sources
- Measure differential temperatures
- Relay switching output
- Inverse output signal ranges as an option

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2811394 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C402 |
| Product key | DK1115 |
| GTIN | 4046356520294 |
| Weight per piece (including packing) | 264.2 g |
| Weight per piece (excluding packing) | 193.9 g |
| Customs tariff number | 85437090 |
| Country of origin | DE |

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Technical data

Product properties

| | |
|----------------|-------------------------|
| Product type | Temperature transmitter |
| Product family | MACX Analog |
| Configuration | DIP switches |
| | Software |

Insulation characteristics

| | |
|----------------------|----|
| Overvoltage category | II |
| Pollution degree | 2 |

System properties

Functionality

| | |
|---------------|--------------|
| Configuration | DIP switches |
| | Software |

Electrical properties

| | |
|---|--|
| Electrical isolation | 4-way isolation |
| Electrical isolation between input and output | yes |
| Maximum power dissipation for nominal condition | 1.26 W |
| Step response (0–99%) | ≤ 1.75 s (SIL on) |
| | 1.3 s (SIL off) |
| Maximum temperature coefficient | 0.01 %/K |
| Maximum transmission error | 0.1 % (E.g., at Pt 100, 300 K min. span) |

Electrical isolation Input/output/power supply IEC/EN 61010-1

| | |
|--------------------------|-------------------------|
| Standards/regulations | IEC/EN 61010-1 |
| Rated insulation voltage | 300 V _{rms} |
| Test voltage | 2.5 kV AC (50 Hz, 60 s) |
| Insulation | Safe isolation |

Electrical isolation Input/output IEC/EN 60079-11

| | |
|--------------------------|--------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _P |

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

| | |
|--------------------------|--------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _P |

Electrical isolation Input/switching output IEC/EN 60079-11

| | |
|--------------------------|--------------------|
| Standards/regulations | IEC/EN 60079-11 |
| Rated insulation voltage | 375 V _P |

Supply

| | |
|------------------------------|---|
| Nominal supply voltage range | 24 V AC/DC ... 230 V AC/DC -20 % ... +10 % (50/60 Hz) |
|------------------------------|---|

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| | |
|-----------------------------|---|
| Supply voltage range | 19.2 V AC/DC ... 253 V AC/DC (50/60 Hz) |
| Typical current consumption | < 50 mA (24 V DC) |
| Power consumption | < 1.5 W |

Input data

Signal

| | |
|------------------|-------------|
| Number of inputs | 1 |
| Input signal | Temperature |
| | Resistor |
| | Voltage |

Measurement

| | |
|-------------------------------------|---|
| Sensor types (RTD) that can be used | Pt, Ni, Cu sensors: 2, 3, 4-wire |
| Sensor types that can be used (TC) | B, E, J, K, N, R, S, T, L, U, CA, DA, A1G, A2G, A3G, MG, LG |
| Temperature measuring range | -250 °C ... 2500 °C (Range depending on the sensor type) |
| Linear resistance measuring range | 0 Ω ... 50 kΩ |
| Potentiometer resistance range | 0 Ω ... 50 kΩ |
| Linear mV signal range | -1000 mV ... 1000 mV |

Output data

Switching: Relay

| | |
|---------------------------|---------------------------------------|
| Configurable/programmable | Yes |
| Contact switching type | 1 changeover contact |
| Contact material | AgSnO ₂ , hard gold-plated |
| Maximum switching voltage | 30 V AC/DC |
| Max. switching current | 0.5 A (30 V AC) |
| | 1 A (30 V DC) |

Signal: Current

| | |
|---|--------------------------|
| Number of outputs | 1 |
| Configurable/programmable | Yes |
| Max. voltage output signal | ± 11 V |
| Current output signal | 0 mA ... 20 mA (SIL off) |
| | 4 mA ... 20 mA (SIL on) |
| Max. current output signal | 22 mA |
| Load/output load voltage output | ≥ 10 kΩ |
| Load/output load current output | ≤ 600 Ω (20 mA) |
| Behavior in the event of a sensor error | freely programmable |

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 |

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

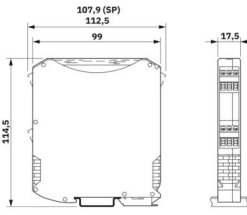
Ex data

| | |
|-----------------------|--------|
| Ex installation (EPL) | Gc |
| | Div. 2 |

Signaling

| | |
|----------------|---|
| Status display | LED supply voltage, PWR (green) |
| | Red LED, flashing (line, sensor error, ERR) |
| | Red LED (module error, ERR) |
| | Yellow LED (switching output) |

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

| | |
|--|-----------------|
| 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) | -20 °C ... 65 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Permissible humidity (operation) | typ. 5 % ... 95 % (non-condensing) |
| Shock (operation) | 15g (IEC 60068-2-27) |
| Vibration (operation) | 5g (IEC 60068-2-6) |

Altitude range (≤ 2000 m)

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| | |
|--------------------------------------|--|
| 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) | -20 °C ... 65 °C |
| Safety-related maximum voltage U_m | 30 V (Installation in zone 2) |
| Altitude range (≤ 3000 m) | |
| Height range | > 2000 m ... 3000 m |
| Ambient temperature (operation) | -20 °C ... 55 °C |
| Safety-related maximum voltage U_m | 30 V (Installation in zone 2) |
| Altitude range (≤ 4000 m) | |
| Height range | > 3000 m ... 4000 m |
| Ambient temperature (operation) | -20 °C ... 50 °C |
| Safety-related maximum voltage U_m | 30 V (Installation in zone 2) |
| Altitude range (≤ 5000 m) | |
| Height range | > 4000 m ... 5000 m |
| Ambient temperature (operation) | -20 °C ... 45 °C |
| Safety-related maximum voltage U_m | 30 V (Installation in zone 2) |

Approvals

CE

| | |
|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

ATEX

| | |
|----------------|--------------------------------|
| Identification | Ⓜ II 3 G Ex ec ic nC IIC T4 Gc |
| Certificate | IBExU 10 ATEX 1044 X |

IECEX

| | |
|----------------|-----------------------|
| Identification | Ex ec ic nC IIC T4 Gc |
| Certificate | IECEX IBE 10.0004 X |

INMETRO

| | |
|----------------|-----------------------|
| Identification | Ex ec ic nC IIC T4 Gc |
| Certificate | DNV 18.0143 X |

UL, USA/Canada

| | |
|----------------|---------------------------------------|
| Identification | UL 508 Listed |
| | Class I, Div. 2, Groups A, B, C, D T6 |
| | Class I, Zone 2, Group IIC T6 |

Shipbuilding approval

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

Safety Integrity Level (SIL, IEC 61508)

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

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Systematic Capability

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

Performance Level (ISO 13849-1)

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

EAC Ex

| | |
|----------------|---------------------------------|
| Identification | Ex ec ic IIC T4 Gc |
| Certificate | BY/112 02.01 TP012 103.01 00078 |

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. |

Noise emission

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

Standards and regulations

| | |
|----------------------|-----------------|
| Electrical isolation | 4-way isolation |
|----------------------|-----------------|

Mounting

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

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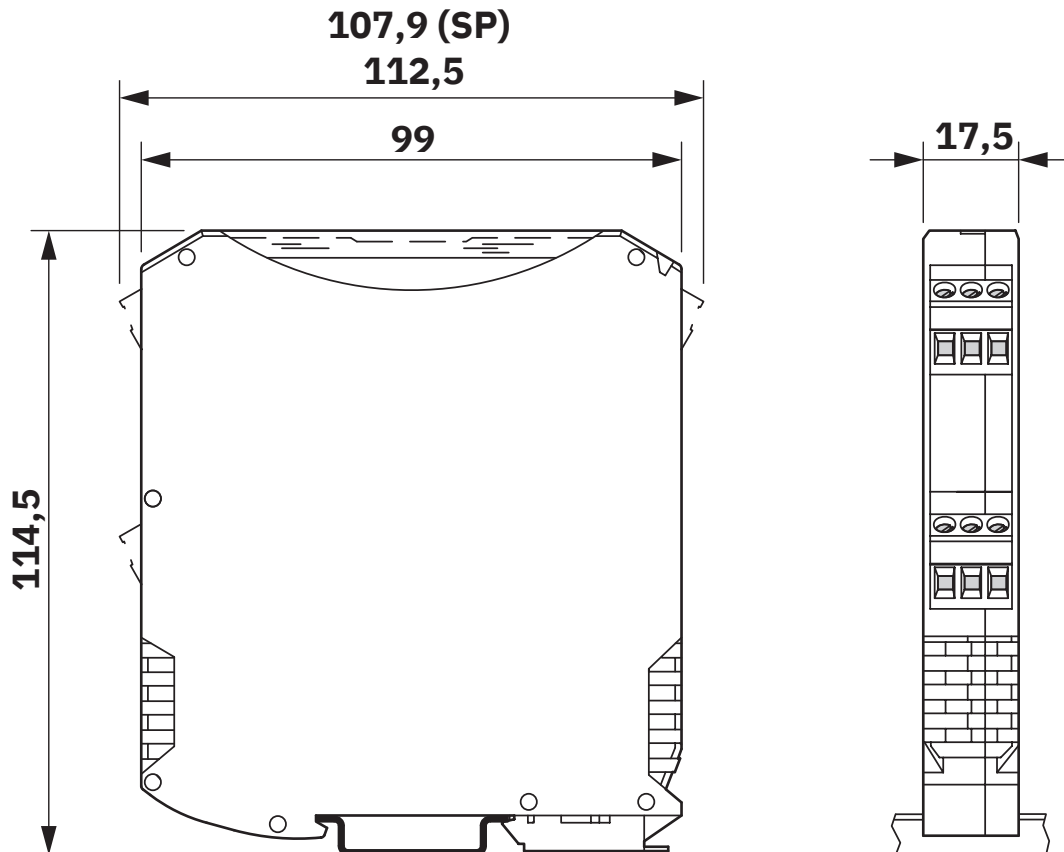


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Drawings

Dimensional drawing

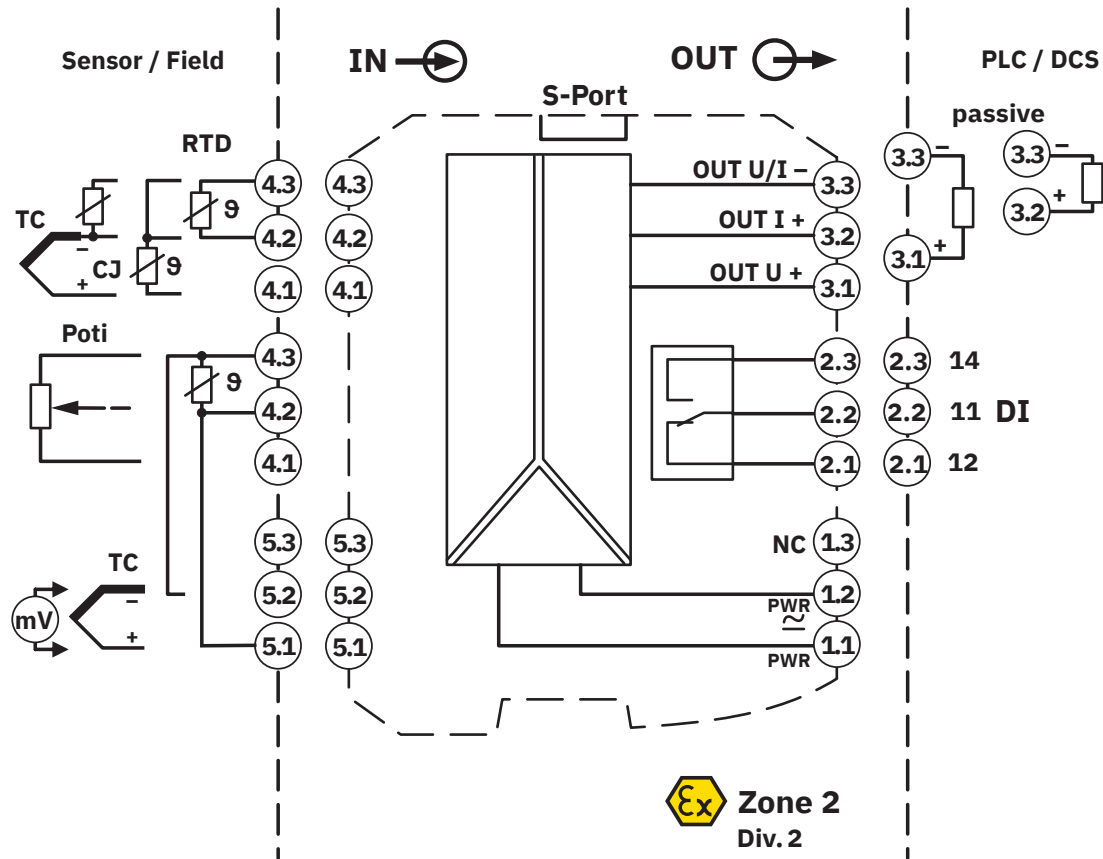


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Block diagram



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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2811394>

DNV

Approval ID: TAA000020C



UL Listed

Approval ID: E238705



cUL Listed

Approval ID: E238705



Functional Safety

Approval ID: SEBS-A.20170608



EAC Ex

Approval ID: TP012 103.01 00078



IECEX

Approval ID: IECEX IBE 10.0004X



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: E199827



ATEX

Approval ID: IBExU 10 ATEX 1044

INMETRO

Approval ID: DNV 18.0143 X

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Classifications

ECLASS

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

ETIM

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

UNSPSC

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

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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 | e87dd5d2-a43a-43f6-a498-d9c6724ed079 |

EF3.1 Climate Change

| | |
|---------|----------------|
| CO2e kg | 10.083 kg CO2e |
|---------|----------------|

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