

# MINI MCR-2-TC-UI - Temperature measuring transducer



2902055

<https://www.phoenixcontact.com/us/products/2902055>

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Configurable temperature transducer with plug-in connection technology for connecting thermocouples. Configurable via DIP switch or software. Screw connection technology, standard configuration

## Product description

Configurable, 3-way isolated temperature transducer with plug-in connection technology. The device is suitable for the connection of thermocouples. The measured values are converted into a linear and freely adjustable current or voltage signal. You can configure the device using one of the free software solutions. Default settings can also be made directly on the device by simply using the DIP switches (see configuration table). The measuring transducer supports fault monitoring and NFC communication.

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2902055       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | C404          |
| Product key                          | DK1125        |
| GTIN                                 | 4046356649766 |
| Weight per piece (including packing) | 125 g         |
| Weight per piece (excluding packing) | 116 g         |
| Customs tariff number                | 85437090      |
| Country of origin                    | DE            |

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## 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 | MINI Analog Pro         |
| Configuration  | DIP switches            |
|                | Software                |
|                | App                     |

### System properties

#### Functionality

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

### Electrical properties

|   |  |
|---|--|
| Electrical isolation                          | 3-way isolation  |
| Electrical isolation between input and output | yes  |
| Typical cold point errors                     | 2 K (2 K + (0.2 K * ΔT))   |
| Protective circuit                            | Transient protection   |
| Step response (0–99%)                         | 300 ms   |
|   | 570 ms   |
| Maximum temperature coefficient               | ≤ 0.01 %/K   |
| Transmission error thermocouples              | 0.1% * 600 K / set measuring range; 0.1% > 600 K (C, E, J, K, N, T, L, U, M Gost, L Gost)                |
|   | 0.2 % * 600 K / set measuring range; 0.2 % > 600 K (B, R, S, A1, A2, A3)                                 |
|   | 0.2 % * 600 K / set measuring range; 0.2 % > 600 K (E, J, K, N, T, L, U, M Gost, L Gost); Highspeed Mode |
|   | 0.4% * 600 K / set measuring range; 0.4% > 600 K (B, R, S, A1, A2, A3); Highspeed Mode                   |

#### Electrical isolation

|                      |    |
|----------------------|----|
| 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 <sub>rms</sub>  |
| Test voltage             | 3 kV AC (50 Hz, 60 s) |

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|                             |  |
|-----------------------------|--|
| Insulation                  | Reinforced insulation  |
| Supply                      |  |
| Supply voltage range        | 9.6 V DC ... 30 V DC (The DIN rail connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, item no. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail in accordance with EN 60715) |
| Typical current consumption | 32.7 mA (24 V DC)  |
|                             | 66.8 mA (12 V DC)  |
| Power consumption           | ≤ 850 mW (at I <sub>OUT</sub> = 20 mA, 9.6 V DC, 600 Ω load)   |

## Input data

### Signal

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

### Measurement

|  |  |
|--|--|
| Number of inputs                                       | 1  |
| Configurable/programmable                              | Yes  |
| Input voltage range                                    | - 500 mV ... 500 mV (can be set via software)  |
| Sensor types that can be used (TC)                     | B, C, E, J, K, N, R, S, T, L, U, A-1, A-2, A-3, M, L   |
| Temperature measuring range                            | -250 °C ... 2500 °C (Range depends on sensor type, range can be set freely via software or in increments from -150°C to 1350°C via DIP switches) |
| Temperature measuring range                            | ≥ 50 K   |
| Voltage measuring range                                | 3 mV   |
| Temperature measuring range: Type B thermocouple       | 500 °C ... 1820 °C   |
| Temperature measuring range: Type E thermocouple       | -230 °C ... 1000 °C  |
| Temperature measuring range: Type J thermocouple       | -210 °C ... 1200 °C  |
| Temperature measuring range: Type K thermocouple       | -250 °C ... 1372 °C  |
| Temperature measuring range: Type N thermocouple       | -200 °C ... 1300 °C  |
| Temperature measuring range: Type R thermocouple       | -50 °C ... 1768 °C   |
| Temperature measuring range: Type S thermocouple       | -50 °C ... 1768 °C   |
| Temperature measuring range: Type T thermocouple       | -200 °C ... 400 °C   |
| Temperature measuring range: Type L thermocouple       | -200 °C ... 900 °C   |
| Temperature measuring range: Type U thermocouple       | -200 °C ... 600 °C   |
| Temperature measuring range: Type A1 GOST thermocouple | 0 °C ... 2500 °C   |
| Temperature measuring range: Type A2 GOST thermocouple | 0 °C ... 1800 °C   |
| Temperature measuring range: Type A3 GOST thermocouple | 0 °C ... 1800 °C   |
| Temperature measuring range: Type M GOST thermocouple  | -200 °C ... 100 °C   |
| Temperature measuring range: Type L GOST thermocouple  | -200 °C ... 800 °C   |

## Output data

### Signal: Voltage/current


|                           |     |
|---------------------------|-----|
| Number of outputs         | 1   |
| Configurable/programmable | Yes |

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|                                 |   |
|---------------------------------|---|
| Voltage output signal           | 0 V ... 5 V (via DIP switch)  |
|                                 | 1 V ... 5 V (via DIP switch)  |
|                                 | 0 V ... 10 V (via DIP switch)   |
|                                 | 10 V ... 0 V (via DIP switch)   |
|                                 | 0 V ... 10.5 V (can be set via software)  |
| Max. voltage output signal      | ≈  V |
| Open-circuit voltage            | < 17.5 V  |
| Current output signal           | 0 mA ... 20 mA (via DIP switch)   |
|                                 | 4 mA ... 20 mA (via DIP switch)   |
|                                 | 20 mA ... 0 mA (via DIP switch)   |
|                                 | 20 mA ... 4 mA (via DIP switch)   |
|                                 | 0 mA ... 21 mA (can be set via software)  |
| Max. current output signal      | 24.6 mA   |
| Short-circuit current           | < 31.5 mA   |
| Load/output load voltage output | ≥ 10 kΩ   |
| Load/output load current output | ≤ 600 Ω (20 mA)   |
| Ripple                          | < 10 mV <sub>rms</sub>  |
|                                 | < 10 mV <sub>rms</sub> (600 Ω)  |
| Resolution, outputs (voltage)   | 1 mV  |
| Resolution, outputs (current)   | 2 μA  |

## Connection data

|                                  |  |
|----------------------------------|--|
| Connection method                | Screw connection   |
| Stripping length                 | 10 mm  |
| Screw thread                     | M3   |
| Conductor cross-section rigid    | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (with ferrule)     |
|                                  | 0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (without ferrule) |
| Conductor cross-section flexible | 0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>                   |
| Conductor cross-section AWG      | 24 ... 12 (flexible)   |
| Tightening torque                | 0.5 Nm ... 0.6 Nm  |

## Ex data

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

## Interfaces

Data: IFS interface

|                   |                  |
|-------------------|------------------|
| Connection method | Micro USB type B |
|-------------------|------------------|

## Signaling

|                  |                            |
|------------------|----------------------------|
| Status display   | Green LED (supply voltage) |
| Error indication | Red LED                    |

## Dimensions

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|        |           |
|--------|-----------|
| Width  | 6.2 mm    |
| Height | 109.81 mm |
| Depth  | 119.2 mm  |

## Material specifications

|  |                 |
|--|-----------------|
| Color  | gray (RAL 7042) |
| Housing material                                       | PBT             |
| Fire protection for rail vehicles (DIN EN 45545-2) R22 | HL 1 - HL 2     |
| Fire protection for rail vehicles (DIN EN 45545-2) R23 | HL 1 - HL 2     |
| Fire protection for rail vehicles (DIN EN 45545-2) R24 | HL 1 - HL 2     |

## Environmental and real-life conditions

### Ambient conditions

|   |                               |
|---|-------------------------------|
| Degree of protection                    | IP20 (not assessed by UL)     |
| Ambient temperature (operation)         | -40 °C ... 70 °C              |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C              |
| Altitude                                | ≤ 2000 m                      |
| Permissible humidity (operation)        | 5 % ... 95 % (non-condensing) |

## Approvals

### CE

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

### ATEX

|                |                          |
|----------------|--------------------------|
| Identification | ⊕ II 3 G Ex ec IIC T4 Gc |
| Certificate    | BVS 20 ATEX E 024 X      |

### IECEX

|                |                    |
|----------------|--------------------|
| Identification | Ex ec IIC T4 Gc    |
| Certificate    | IECEX BVS 20.0017X |

### 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 TAA00002UA |
|-------------|-------------------|

### EAC Ex

|                |                                 |
|----------------|---------------------------------|
| Identification | ⊕ Ex ec IIC T4 Gc               |
| Certificate    | BY/112 02.01 TP012 103.01 00079 |

### Shipbuilding data

|             |   |
|-------------|---|
| Temperature | B |
| Humidity    | B |

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

## Electrostatic discharge

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-2 |
|-----------------------|--------------|

## Electrostatic discharge

|          |   |
|----------|---|
| Comments | Safety measures must be taken to prevent electrostatic discharge. |
|----------|---|

## Electromagnetic HF field

|  |                          |
|--|--------------------------|
| Designation  | Electromagnetic RF field |
| Standards/regulations                                  | EN 61000-4-3             |
| Typical deviation from the measuring range final value | 0.06 %                   |

## Fast transients (burst)

|  |                         |
|--|-------------------------|
| Designation  | Fast transients (burst) |
| Standards/regulations                                  | EN 61000-4-4            |
| Typical deviation from the measuring range final value | 0.1 %                   |

## Surge current load (surge)

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-5 |
|-----------------------|--------------|

## Conducted interference

|  |                         |
|--|-------------------------|
| Designation  | Conducted interferences |
| Standards/regulations                                  | EN 61000-4-6            |
| Typical deviation from the measuring range final value | 0.05 %                  |

## Standards and regulations

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

## Mounting

|                   |   |
|-------------------|---|
| Mounting type     | DIN rail mounting   |
| Assembly note     | The DIN rail connector can be used for bridging the supply voltage. It can be snapped onto a 35 mm EN 60715 DIN rail. |
| Mounting position | any   |

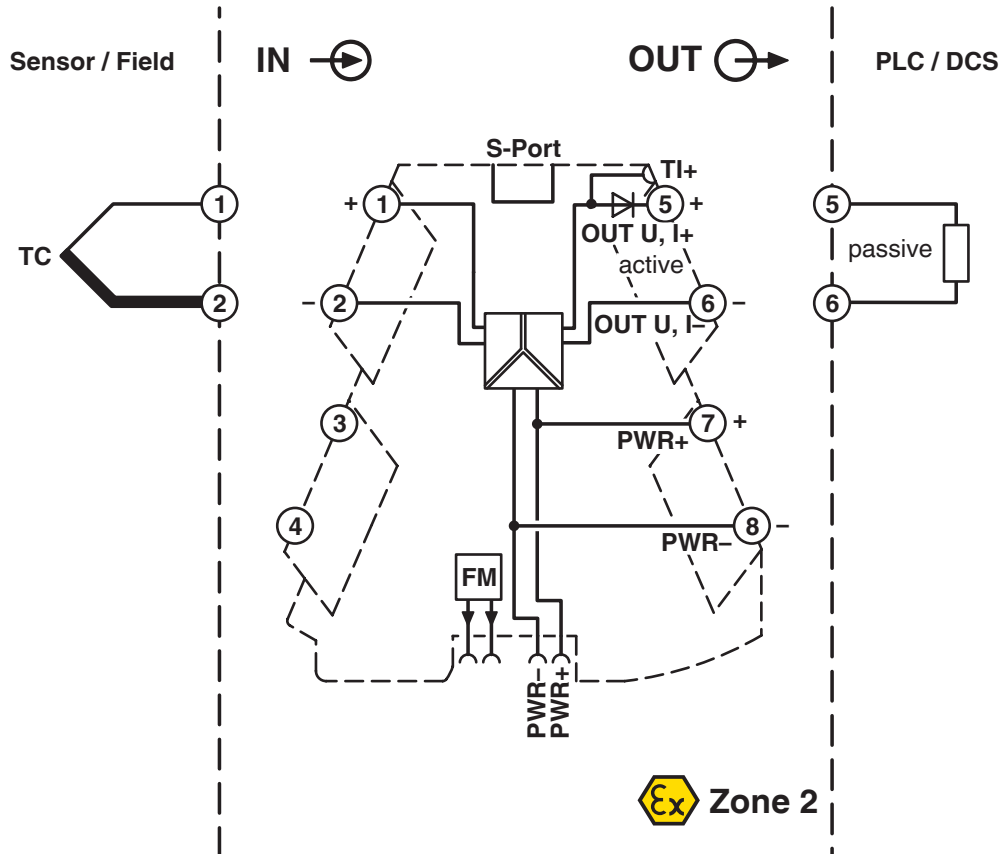
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## Drawings

Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2902055>



### UL Listed

Approval ID: FILE E 238705



### cUL Listed

Approval ID: FILE E 238705



### IECEX

Approval ID: IECEX\_BVS\_20.0017X



### cUL Listed

Approval ID: E196811



### UL Listed

Approval ID: E196811



### ATEX

Approval ID: BVS 20 ATEX E 024 X



### EAC Ex

Approval ID: TP012 103.01 00079



### CCC

Approval ID: 2025122310128087

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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                                | 6fd57326-a253-4c34-89d0-81b3b89a6e1a |

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