

# MACX PL-EX-T-UIREL-UP - Temperature measuring transducer



2904910

<https://www.phoenixcontact.com/us/products/2904910>

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Programmable temperature transducer with analog output and 3 limit value relays, intrinsically safe signal inputs, resistance thermometer in 2-, 3-, or 4-conductor technology, thermocouples, screw connection, PLd. Replacement part: 2865751 MACX MCR-EX-T-UIREL-UP.

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 2904910                        |
| Packing unit                         | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | C430                           |
| Product key                          | DK1215                         |
| GTIN                                 | 4046356899789                  |
| Weight per piece (including packing) | 321.8 g                        |
| Weight per piece (excluding packing) | 180 g                          |
| Customs tariff number                | 85437090                       |
| Country of origin                    | DE                             |

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## Technical data

### Product properties

|              |                         |
|--------------|-------------------------|
| Product type | Temperature transmitter |
|--------------|-------------------------|

### Insulation characteristics

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

### Electrical properties

|                                 |   |
|---------------------------------|---|
| Electrical isolation            | 4-way, between input/output/power supply/switching output |
| Step response (0–99%)           | 1000 ms (With SIL)  |
|                                 | 700 ms (Without SIL)                                      |
| Maximum temperature coefficient | 0.01 %/K  |
| Maximum transmission error      | 0.1 % (e.g. for Pt 100, 300 K span, 4 ... 20 mA)          |

### Electrical isolation Input/output/power supply

|              |                         |
|--------------|-------------------------|
| Test voltage | 2.5 kV AC (50 Hz, 60 s) |
|--------------|-------------------------|

### Electrical isolation Input/output

|                      |   |
|----------------------|---|
| Electrical isolation | 375 V (Peak value in accordance with IEC/EN 60079-11) |
|----------------------|---|

### Electrical isolation Input/power supply

|                      |   |
|----------------------|---|
| Electrical isolation | 375 V (Peak value in accordance with IEC/EN 60079-11) |
|----------------------|---|

### Electrical isolation Input/switching output

|                      |   |
|----------------------|---|
| Electrical isolation | 375 V (Peak value in accordance with IEC/EN 60079-11) |
|----------------------|---|

### Electrical isolation Output/supply

|                          |  |
|--------------------------|--|
| Rated insulation voltage | 300 V <sub>rms</sub>                             |
| Insulation               | Safe isolation in accordance with IEC/EN 61010-1 |

### Supply

|                             |   |
|-----------------------------|---|
| Supply voltage range        | 24 V ... 230 V AC/DC (-20 % ... +10 %, 50 Hz ... 60 Hz) |
| Typical current consumption | < 100 mA (24 V DC)                                      |
| Power consumption           | < 2.4 W   |

## Input data

### Signal

|              |             |
|--------------|-------------|
| Input signal | Temperature |
|              | Resistor    |
|              | Voltage     |

### Measurement

|                                     |                                  |
|-------------------------------------|----------------------------------|
| Sensor types (RTD) that can be used | Pt, Ni, Cu sensors: 2, 3, 4-wire |
|-------------------------------------|----------------------------------|

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|                                    |   |
|------------------------------------|---|
| 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        | -200 °C ... 850 °C  |
| 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

|                           |   |
|---------------------------|---|
| Output description        | 1 SIL/PL  |
| Configurable/programmable | Yes   |
| Contact switching type    | 2 changeover contacts                               |
| Contact material          | AgSnO <sub>2</sub> , hard gold-plated               |
| Maximum switching voltage | 250 V AC (250 V DC)                                 |
| Maximum inrush current    | 2 A (250 V AC)<br>2 A (28 V DC)<br>0.2 A (120 V DC) |

### Signal

|   |   |
|---|---|
| Configurable/programmable               | Yes   |
| Current output signal                   | 4 mA ... 20 mA (in the case of SIL; further free configuration without SIL) |
| Max. current output signal              | 22 mA   |
| Load/output load current output         | ≤ 600 Ω (20 mA)   |
| Behavior in the event of a sensor error | according to NE 43 or freely configurable                                   |

## Connection data

|                                  |   |
|----------------------------------|---|
| Connection method                | Screw connection                            |
| Stripping length                 | 7 mm  |
| Screw thread                     | M3  |
| Conductor cross-section rigid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross-section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross-section AWG      | 24 ... 14                                   |
| Tightening torque                | 0.5 Nm ... 0.6 Nm                           |

## Ex data

### Safety data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Max. internal inductance $L_i$       | negligible                     |
| Max. internal capacitance $C_i$      | 44 nF                          |
| Max. output voltage $U_o$            | 6 V                            |
| Max. output current $I_o$            | 7.4 mA                         |
| Max. output power $P_o$              | 11 mW                          |
| Safety-related maximum voltage $U_m$ | 253 V AC/DC<br>100 mH / 1.3 μF |

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|  |                      |
|--|----------------------|
| IIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 10 mH / 1.7 $\mu$ F  |
|  | 1 mH / 2.6 $\mu$ F   |
|  | 0 mH / 10 $\mu$ F    |
| IIB: Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 100 mH / 6.8 $\mu$ F |
|  | 10 mH / 9.2 $\mu$ F  |
|  | 1 mH / 15 $\mu$ F    |

## 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

|        |          |
|--------|----------|
| Width  | 35 mm    |
| Height | 112.5 mm |
| Depth  | 114.5 mm |

## Material specifications

|  |                   |
|--|-------------------|
| Color  | yellow (RAL 1018) |
| 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 (not assessed by UL)          |
| Ambient temperature (operation)         | -20 °C ... 65 °C                   |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C                   |
| Altitude                                | $\leq$ 2000 m                      |
| Permissible humidity (operation)        | typ. 5 % ... 95 % (non-condensing) |
| Shock (operation)                       | 15g (IEC 60068-2-27)               |
| Vibration (operation)                   | 5g (IEC 60068-2-6)                 |

## Approvals

### CE

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

### ATEX

|                |                                  |
|----------------|----------------------------------|
| Identification | Ⓜ II (1) G [Ex ia Ga] IIC        |
|                | Ⓜ II (1) D [Ex ia Da] IIIC       |
|                | Ⓜ II 3 G Ex nA nC ic IIC T4 Gc X |
| Certificate    | IBExU 10 ATEX 1044               |

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## IECEX

|                |                         |
|----------------|-------------------------|
| Identification | [Ex ia Ga] IIC          |
|                | [Ex ia Da] IIIC         |
|                | Ex nA nC ic IIC T4 Gc X |
| Certificate    | IECEX IBE 10.0004 X     |

## UL, USA/Canada

|                |                     |
|----------------|---------------------|
| Identification | UL 508 Listed       |
| Certificate    | UL C.D.-No 83104549 |

## Shipbuilding approval

|                |                    |
|----------------|--------------------|
| Identification | C, EMC2            |
| Certificate    | DNV GL 11 564-14HH |

## Safety Integrity Level (SIL, IEC 61508)

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

## Performance Level (ISO 13849)

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

## 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. |

## Electromagnetic HF field

|  |                          |
|--|--------------------------|
| Designation  | Electromagnetic RF field |
| Standards/regulations                                  | EN 61000-4-3             |
| Typical deviation from the measuring range final value | 2 %                      |

## Fast transients (burst)

|  |                         |
|--|-------------------------|
| Designation  | Fast transients (burst) |
| Standards/regulations                                  | EN 61000-4-4            |
| Typical deviation from the measuring range final value | 2 %                     |

## Conducted interference

|  |                         |
|--|-------------------------|
| Designation  | Conducted interferences |
| Standards/regulations                                  | EN 61000-4-6            |
| Typical deviation from the measuring range final value | 2 %                     |

## Standards and regulations

|                      |   |
|----------------------|---|
| Electrical isolation | 4-way, between input/output/power supply/switching output |
|----------------------|---|

## Mounting

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

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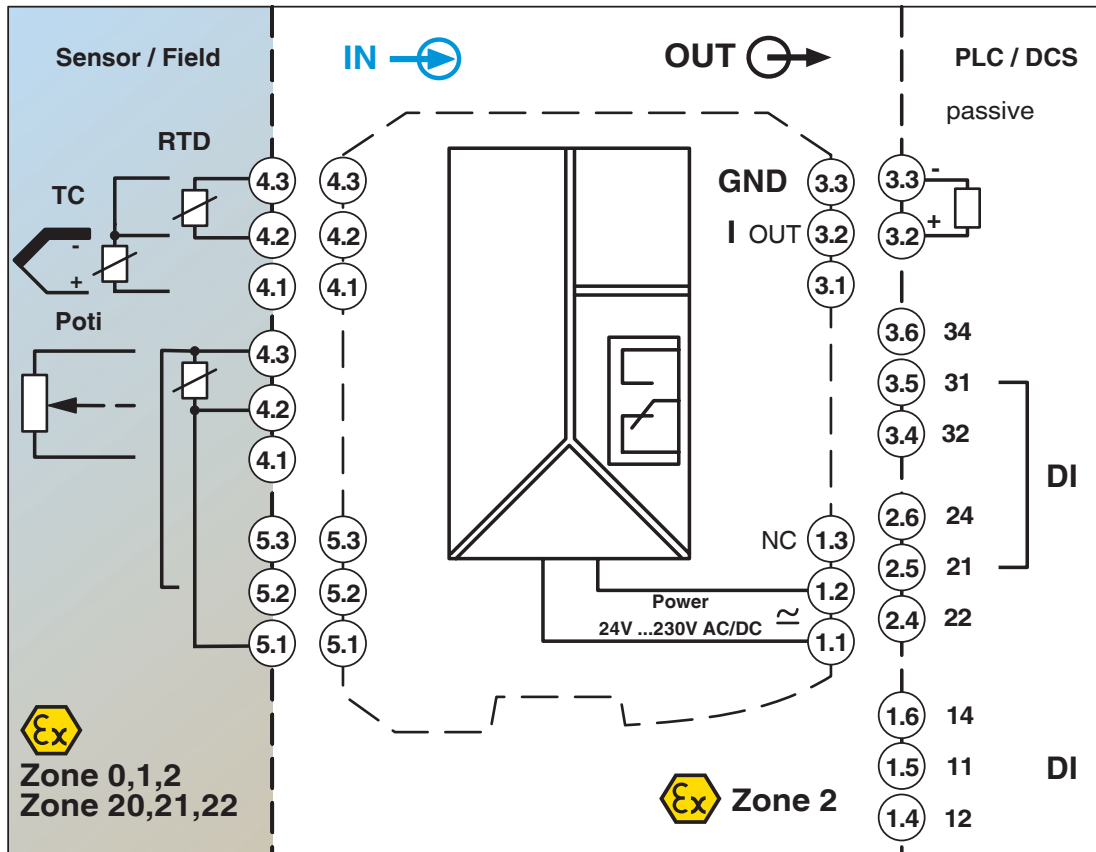


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## Drawings

Block diagram



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## Classifications

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 41112105 |
|-------------|----------|

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## Environmental product compliance

### 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.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

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