

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



## Key Commercial Data

|                                      |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Packing unit                         | 1 pc                                                                                                    |
| GTIN                                 | <br>4 046356 899789 |
| GTIN                                 | 4046356899789                                                                                           |
| Weight per Piece (excluding packing) | 180.000 g                                                                                               |
| Custom tariff number                 | 85437090                                                                                                |
| Country of origin                    | Germany                                                                                                 |
| Note                                 | Made to Order (non-returnable)                                                                          |

## Technical data

### Dimensions

|        |          |
|--------|----------|
| Width  | 35 mm    |
| Height | 99 mm    |
| Depth  | 114.5 mm |

### Ambient conditions

|                                         |                                                                                   |
|-----------------------------------------|-----------------------------------------------------------------------------------|
| Ambient temperature (operation)         | -20 °C ... 65 °C                                                                  |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C                                                                  |
| Maximum altitude                        | ≤ 2000 m                                                                          |
| Permissible humidity (operation)        | typ. 5 % ... 95 % (non-condensing)                                                |
| Noise immunity                          | EN 61000-6-2 When being exposed to interference, there may be minimal deviations. |
| Shock                                   | 15g, according to IEC 60068-2-27                                                  |

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## Technical data

### Ambient conditions

|                       |                                 |
|-----------------------|---------------------------------|
| Vibration (operation) | 5g, accordance to IEC 60068-2-6 |
|-----------------------|---------------------------------|

### Input data

|                                     |                                                             |
|-------------------------------------|-------------------------------------------------------------|
| 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         | -200 °C ... 850 °C                                          |
| Input signal range                  | 0 Ω ... 50 kΩ                                               |
| Potentiometer resistance range      | 0 Ω ... 50 kΩ                                               |
| Input signal range                  | -1000 mV ... 1000 mV                                        |

### Output data

|                                         |                                                                             |
|-----------------------------------------|-----------------------------------------------------------------------------|
| 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                                   |
| Output name                             | Relay output                                                                |
| Output description                      | 1 SIL/PL                                                                    |
| Configurable/programmable               | Yes                                                                         |
| Contact type                            | 2 PDT                                                                       |
| 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)                                                              |
|                                         | 2 A (28 V DC)                                                               |
|                                         | 0.2 A (120 V DC)                                                            |
| Mechanical service life                 | 1x 10 <sup>5</sup> cycles                                                   |

### Power supply

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

### General

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| Maximum transmission error      | 0.1 % (e.g. for Pt 100, 300 K span, 4 ... 20 mA) |
| Maximum temperature coefficient | 0.01 %/K                                         |
| Step response (0–99%)           | typ. 1000 ms (With SIL)                          |
|                                 | typ. 700 ms (Without SIL)                        |
| Status display                  | Green LED (supply voltage, PWR)                  |
|                                 | Red LED, flashing (line, sensor error, ERR)      |
|                                 | Red LED (module error, ERR)                      |
|                                 | Yellow LED (switching output)                    |

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## Technical data

### General

|                               |                                                                                                                                    |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Degree of pollution           | 2                                                                                                                                  |
| Overvoltage category          | II                                                                                                                                 |
| Electromagnetic compatibility | Conformance with EMC directive                                                                                                     |
| Housing material              | PA 6.6-FR                                                                                                                          |
| Color                         | yellow                                                                                                                             |
| Designation                   | Input/output/power supply                                                                                                          |
| Electrical isolation          | 2.5 kV (50 Hz, 1 min., test voltage)                                                                                               |
| Designation                   | Input/output                                                                                                                       |
| Electrical isolation          | 375 V (Peak value in accordance with EN 60079-11)                                                                                  |
| Designation                   | Input/power supply                                                                                                                 |
| Electrical isolation          | 375 V (Peak value in accordance with EN 60079-11)                                                                                  |
| Designation                   | Input/switching output                                                                                                             |
| Electrical isolation          | 375 V (Peak value in accordance with EN 60079-11)                                                                                  |
| Designation                   | Output/supply                                                                                                                      |
| Electrical isolation          | 300 V <sub>rms</sub> (Rated insulation voltage (overvoltage category II; degree of pollution 2, safe isolation as per EN 61010-1)) |
| Conformance                   | CE-compliant                                                                                                                       |
| ATEX                          | # 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                                                                                                   |
| IECEx                         | [Ex ia Ga] IIC                                                                                                                     |
|                               | [Ex ia Da] IIIC                                                                                                                    |
|                               | Ex nA nC ic IIC T4 Gc X                                                                                                            |
| UL, USA/Canada                | UL 508 Listed                                                                                                                      |
| SIL                           | 2                                                                                                                                  |

### 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       |
| Group                           | IIC         |
| Max. external inductivity $L_o$ | 100 mH      |
| Max. external capacitance $C_o$ | 1.3 $\mu$ F |
| Group                           | IIC         |
| Max. external inductivity $L_o$ | 10 mH       |
| Max. external capacitance $C_o$ | 1.7 $\mu$ F |
| Group                           | IIC         |
| Max. external inductivity $L_o$ | 1 mH        |

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## Technical data

### Safety data

|                                      |             |
|--------------------------------------|-------------|
| Max. external capacitance $C_o$      | 2.6 $\mu$ F |
| Group                                | IIC         |
| Max. external inductivity $L_o$      | 0 mH        |
| Max. external capacitance $C_o$      | 10 $\mu$ F  |
| Group                                | IIB         |
| Max. external inductivity $L_o$      | 100 mH      |
| Max. external capacitance $C_o$      | 6.8 $\mu$ F |
| Group                                | IIB         |
| Max. external inductivity $L_o$      | 10 mH       |
| Max. external capacitance $C_o$      | 9.2 $\mu$ F |
| Group                                | IIB         |
| Max. external inductivity $L_o$      | 1 mH        |
| Max. external capacitance $C_o$      | 15 $\mu$ F  |
| Safety-related maximum voltage $U_m$ | 253 V AC/DC |

### EMC data

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Designation                                            | Electromagnetic RF field |
| Standards/regulations                                  | EN 61000-4-3             |
| Typical deviation from the measuring range final value | 2 %                      |
| Designation                                            | Fast transients (burst)  |
| Standards/regulations                                  | EN 61000-4-4             |
| Typical deviation from the measuring range final value | 2 %                      |
| Designation                                            | Conducted interferences  |
| Standards/regulations                                  | EN 61000-4-6             |
| Typical deviation from the measuring range final value | 2 %                      |

### Standards and Regulations

|                               |                                                           |
|-------------------------------|-----------------------------------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive                            |
| Designation                   | Electromagnetic RF field                                  |
| Standards/regulations         | EN 61000-4-3                                              |
|                               | EN 61000-4-4                                              |
| Designation                   | Conducted interferences                                   |
| Standards/regulations         | EN 61000-4-6                                              |
| Electrical isolation          | 4-way, between input/output/power supply/switching output |
| Shock                         | 15g, according to IEC 60068-2-27                          |
| Vibration (operation)         | 5g, accordance to IEC 60068-2-6                           |
| Conformance                   | CE-compliant                                              |
| ATEX                          | # 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                          |

## Temperature measuring transducer - MACX PL-EX-T-UIREL-UP - 2904910

### Technical data

#### Standards and Regulations

|                |                         |
|----------------|-------------------------|
| IECEX          | [Ex ia Ga] IIC          |
|                | [Ex ia Da] IIIC         |
|                | Ex nA nC ic IIC T4 Gc X |
| UL, USA/Canada | UL 508 Listed           |
| Group          | IIC                     |
|                | IIC                     |
|                | IIC                     |
|                | IIC                     |
|                | IIB                     |
|                | IIB                     |

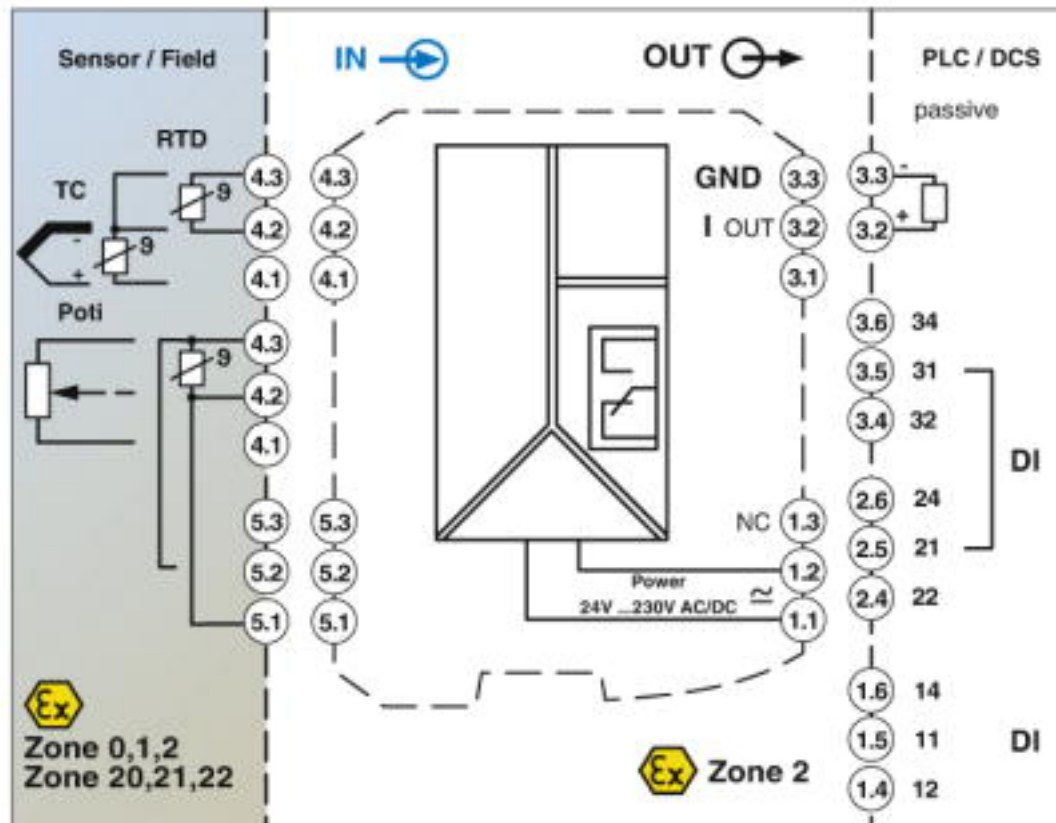
#### Environmental Product Compliance

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                                                                      |
| China RoHS | Environmentally Friendly Use Period = 50                                                            |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

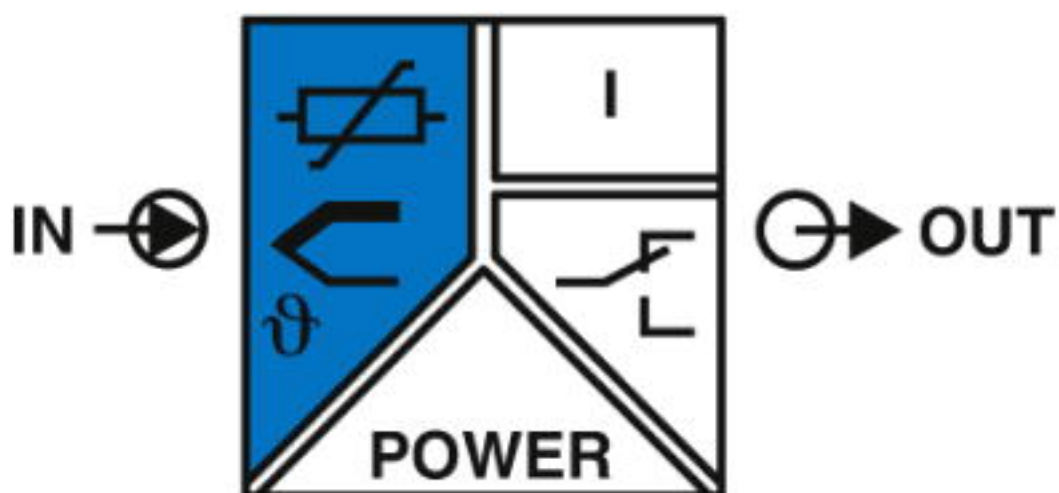
### Drawings

# Temperature measuring transducer - MACX PL-EX-T-UIREL-UP - 2904910

Block diagram



Pictogram



# Temperature measuring transducer - MACX PL-EX-T-UIREL-UP - 2904910

## Classifications

### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 27200200 |
| eCl@ss 4.1 | 27200200 |
| eCl@ss 5.0 | 27200200 |
| eCl@ss 5.1 | 27200200 |
| eCl@ss 6.0 | 27200200 |
| eCl@ss 7.0 | 27200206 |
| eCl@ss 8.0 | 27200206 |
| eCl@ss 9.0 | 27210129 |

### ETIM

|          |          |
|----------|----------|
| ETIM 2.0 | EC001446 |
| ETIM 3.0 | EC001446 |
| ETIM 4.0 | EC001446 |
| ETIM 5.0 | EC001446 |
| ETIM 6.0 | EC002919 |
| ETIM 7.0 | EC002919 |

### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211506 |
| UNSPSC 7.0901 | 39121008 |
| UNSPSC 11     | 39121008 |
| UNSPSC 12.01  | 39121008 |
| UNSPSC 13.2   | 41112105 |
| UNSPSC 18.0   | 41112105 |
| UNSPSC 19.0   | 41112105 |
| UNSPSC 20.0   | 41112105 |
| UNSPSC 21.0   | 41112105 |

## Accessories

### Accessories

#### Cradle unit

Adapter module - IFS-OP-CRADLE - 2811886



The adapter (IFS-OP-CRADLE) for the operator interface is ideal for use as a remote operator panel and display device for 17.5 mm / 35 mm modules. Can be mounted directly on the DIN rail. Replacement part: 2905872 IFS-BT-PROG-ADAPTER.

### Device marking

# Temperature measuring transducer - MACX PL-EX-T-UIREL-UP - 2904910

## Accessories

### Plastic label - UC-EMLP (11X9) - 0819291



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

### Plastic label - UC-EMLP (11X9) YE - 0822602



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

### Plastic label - UC-EMLP (11X9) SR - 0828094



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

### Plastic label - US-EMLP (11X9) - 0828789



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

### Plastic label - US-EMLP (11X9) YE - 0828871



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

# Temperature measuring transducer - MACX PL-EX-T-UIREL-UP - 2904910

## Accessories

Plastic label - US-EMLP (11X9) SR - 0828872



Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

Device marker - LS-EMLP (11X9) WH - 0831678



Device marker, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

Device marker - LS-EMLP (11X9) YE - 0831732



Device marker, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

Device marker - LS-EMLP (11X9) SR - 0831705



Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

## Insulating sleeve

Insulating sleeve - MPS-IH BK - 0201731



Insulating sleeve, color: black

## Temperature measuring transducer - MACX PL-EX-T-UIREL-UP - 2904910

### Accessories

Insulating sleeve - MPS-IH GY - 0201728

Insulating sleeve, color: gray



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Insulating sleeve - MPS-IH GN - 0201702

Insulating sleeve, color: green



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Insulating sleeve - MPS-IH YE - 0201692

Insulating sleeve, color: yellow



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Insulating sleeve - MPS-IH BU - 0201689

Insulating sleeve, color: blue



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Insulating sleeve - MPS-IH RD - 0201676

Insulating sleeve, color: red



# Temperature measuring transducer - MACX PL-EX-T-UIREL-UP - 2904910

## Accessories

Insulating sleeve - MPS-IH WH - 0201663

Insulating sleeve, color: white



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## Labeled device marker

Plastic label - UC-EMLP (11X9) CUS - 0824547



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

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Plastic label - UC-EMLP (11X9) YE CUS - 0824548



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

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Plastic label - UC-EMLP (11X9) SR CUS - 0828098



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

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## Operator interface

Operator interface - IFS-OP-UNIT - 2811899



The operator interface facilitates straightforward parameterization and operation of the MACX MCR(-EX)-...-UI(REL) (-UP) on-site, even without software. Can be snapped onto the 35 mm module. Replacement part: 2905872 IFS-BT-PROG-ADAPTER.

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## Plug

# Temperature measuring transducer - MACX PL-EX-T-UIREL-UP - 2904910

## Accessories

Plug - MACX MCR-EX-I20 - 2905679



Connection terminal block for current signals +20 mA ...-20 mA for safe switching of limit values, in combination with MACX...EX-T-UI... temperature transducers.

Plug - MACX MCR-EX-CJC - 2925002



Plug for cold junction compensation for thermocouples, for safe switching of limit values, in combination with MACX ...EX-T-UI... temperature transducers.

## Programming adapter

Programming adapter - IFS-USB-PROG-ADAPTER - 2811271



Programming adapter with USB interface, for programming with software. The USB driver is included in the software solutions for the products to be programmed, such as measuring transducers or motor managers.

## Test plug terminal block

Test plugs - MPS-MT - 0201744



Test plugs, with solder connection up to 1 mm<sup>2</sup> conductor cross section, color: gray