

MCR-FL-T-LP-I-EX - Temperature measuring transducer

2864574

<https://www.phoenixcontact.com/us/products/2864574>

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MCR head-mounted temperature transducers: Programmable loop-powered temperature transducers. Resistance thermometers, thermocouples, resistance-type sensors and voltage sensors.

Your advantages

- Input for resistance thermometers, thermocouples, and linear mV signals, Ex ia IIC
- Configuration via software
- Can be installed in zone 1
- 2-way electrical isolation
- 1-channel
- Loop-powered
- HART-compatible (MCR-FL-TS-LP-I-EX)
- Output: 4 mA ... 20 mA/20 mA ... 4 mA

Commercial data

| | |
|--------------------------------------|--------------------------------|
| Item number | 2864574 |
| Packing unit | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | C430 |
| Product key | DK1XXX |
| GTIN | 4017918907273 |
| Weight per piece (including packing) | 104 g |
| Weight per piece (excluding packing) | 104 g |
| Customs tariff number | 85437090 |
| Country of origin | DE |

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Technical data

Product properties

| | |
|---------------|--|
| Product type | Temperature transmitter |
| Application | Temperature |
| Configuration | Using MCR-PI-CONF-WIN configuration software package |

System properties

Functionality

| | |
|---------------|--|
| Configuration | Using MCR-PI-CONF-WIN configuration software package |
|---------------|--|

Electrical properties

| | |
|---|--|
| Switch-on delay | 4 s |
| Line monitoring | NE 43 |
| Test voltage input/output | 2 kV AC (50 Hz, 60 s) |
| Step response (10-90%) | < 2 s |
| Transmission error voltage sensor | ±20 µV (-10 mV ... 100 mV) |
| Transmission error thermocouples | typ. 0.5 K (K, J, T, E, L, U), 1.0 K (N, C, D), 2.0 K (S, B, R) |
| Transmission error resistance-type sensor | ±0.1 Ω (10 ... 400 Ω), ±1.5 Ω (10 ... 2000 Ω) |
| Transmission error resistance thermometer | 0.2 K (Pt 100, Ni 100), 0.5 K (Pt 500, Ni 500), 0.3 K (Pt 1000, Ni 1000) |

Supply

| | |
|--------------------------|---------------------|
| Designation | Loop-powered |
| Supply voltage range | 12 V DC ... 30 V DC |
| Max. current consumption | < 3.5 mA |

Input data

Signal

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

Measurement

| | |
|--|---|
| Configurable/programmable | Yes, programmable |
| Sensor types (RTD) that can be used | Pt, Ni (100, 500, 1000); min. measurement range 10 K |
| Sensor types that can be used (TC) | B, C, D, E, J, K, L, N, R, S, T, U; min. measurement range 50 K/500 K |
| Temperature measuring range: Pt 100 | -200 °C ... 850 °C (freely adjustable) |
| Temperature measuring range: Pt 500 | -200 °C ... 250 °C (freely adjustable) |
| Temperature measuring range: Pt 1000 | -200 °C ... 250 °C (freely adjustable) |
| Temperature measuring range: Ni 100 | -60 °C ... 180 °C (freely adjustable) |
| Temperature measuring range: Ni 500 | -60 °C ... 150 °C (freely adjustable) |
| Temperature measuring range: Ni 1000 | -60 °C ... 150 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ B | 0 °C ... 1820 °C (freely adjustable) |

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| | |
|--|---|
| Temperature measuring range: Thermoelement Typ C | 0 °C ... 2320 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ D | 0 °C ... 2495 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ E | -270 °C ... 1000 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ J | -210 °C ... 1200 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ K | -270 °C ... 1372 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ L | -200 °C ... 900 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ N | -270 °C ... 1300 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ R | -50 °C ... 1760 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ S | -50 °C ... 1760 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ T | -270 °C ... 400 °C (freely adjustable) |
| Temperature measuring range: Thermoelement Typ U | -200 °C ... 600 °C (freely adjustable) |
| Connection technology | 2-, 3-, 4-conductor |
| Linear resistance measuring range | 10 Ω ... 400 Ω (min. measurement range 10 Ω) |
| | 10 Ω ... 2000 Ω (min. measurement range 100 Ω) |
| Linear mV signal range | -10 mV ... 100 mV (min. measurement range 5 mV) |

Output data

Switching:

| | |
|---------------------------|----|
| Configurable/programmable | no |
|---------------------------|----|

Signal

| | |
|--|---|
| Output description | Current output |
| Number of outputs | 1 |
| Configurable/programmable | Yes |
| Current output signal | 4 mA ... 20 mA |
| | 20 mA ... 4 mA |
| Max. current output signal | ≤ 23 mA |
| Output current with short-circuit | ≤ 3.6 mA or ≥ 21 mA (adjustable, not for thermocouples) |
| Output current with wire break | ≤ 3.6 mA or ≥ 21 mA (adjustable) |
| Output current range with overrange/underrange | 3.8 mA ... 20.5 mA |
| Load/output load current output | ≤ 520 Ω (At $U_V = 24 \text{ V}$; $U_{\text{supply}} - 12 \text{ V} / 0.023 \text{ A}$) |

Connection data

| | |
|----------------------------------|---|
| Connection method | Screw connection |
| Stripping length | 8 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 |

Ex data

Safety data

| | |
|--------------------|------|
| Max. voltage U_i | 30 V |
|--------------------|------|

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| | |
|--|------------------------------------|
| Max. current I_i | 100 mA |
| Max. power P_i | 750 mW |
| Max. output voltage U_o | 4.4 V DC |
| Max. output current I_o | 9.6 mA |
| Max. output power P_o | 10.6 mW |
| Max. ambient temperature | T4 = 85 °C, T5 = 65 °C, T6 = 50 °C |
| Safety-related maximum voltage U_m | 250 V |
| IIA: Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 12 μ F |
| IIB: Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 12 μ F |
| IIC: Max. external inductivity L_o / Max. external capacitance C_o | 100 mH / 2.4 μ F |

Dimensions

| | |
|---------------------|----------|
| Dimensional drawing | |
| Width | 12.5 mm |
| Height | 99 mm |
| Depth | 114.5 mm |

Material specifications

| | |
|--|-----------------------------|
| Color | green (RAL 6021) |
| Flammability rating according to UL 94 | V0 |
| Housing material | Polyamide PA non-reinforced |

Environmental and real-life conditions

Ambient conditions

| | |
|---------------------------------|------------------|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -40 °C ... 55 °C |

Approvals

CE

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

ATEX

| | |
|----------------|-------------------------------|
| Identification | ⊕ II 2(1) G Ex ia IIC T4...T6 |
|----------------|-------------------------------|

UL, USA/Canada

| | |
|----------------|-------|
| Identification | cULus |
|----------------|-------|

Standards and regulations

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Standards

| | |
|-----------------------|----------------------------|
| Standards/regulations | NAMUR recommendation NE 21 |
|-----------------------|----------------------------|

Mounting

| | |
|-------------------|-------------------|
| Mounting type | DIN rail mounting |
| Mounting position | any |

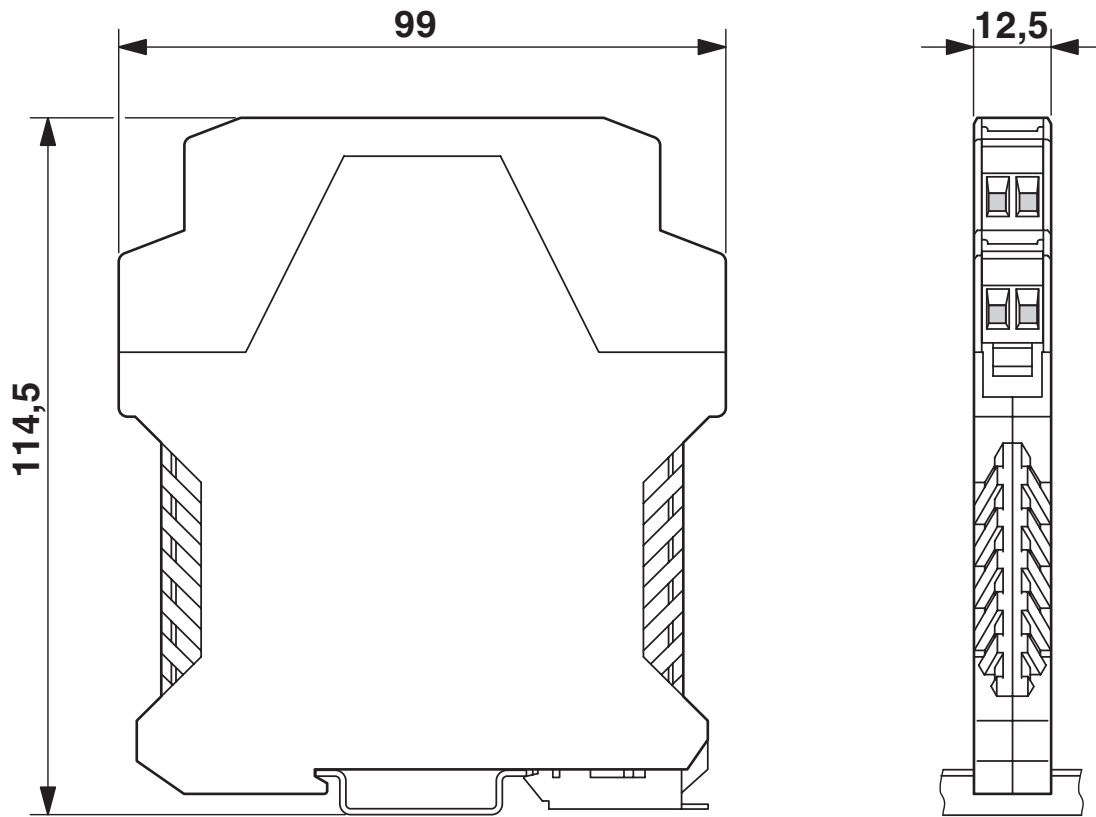
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Drawings

Dimensional drawing

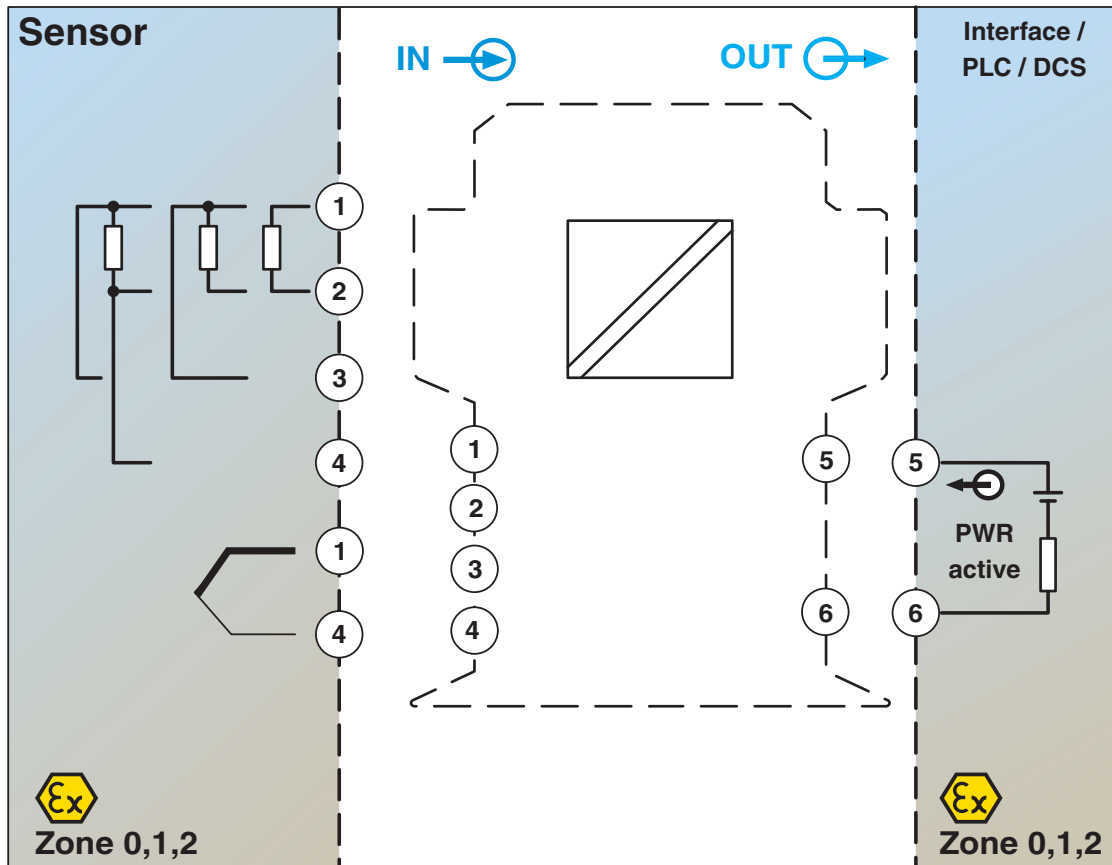


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Block diagram



Block diagram MCR-FL-T-LP-I-EX

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Classifications

UNSPSC

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

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Environmental product compliance

EU RoHS

| | |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|---|--------------------|

China RoHS

| | |
|--|--|
| Environment friendly use period (EFUP) | EFUP-E |
| | No hazardous substances above the limits |

EU REACH SVHC

| | |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

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