

# MCR-FL-HT-TS-I-EX - Head-mounted transducer



2864545

<https://www.phoenixcontact.com/it/products/2864545>

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Measurement and control temperature transducer, for resistance thermometers, thermocouples, resistance-type sensors, and voltage sensors. For Pt 100 resistance temperature detectors. Replacement part: 2908742 FA MCR-HT-TS-I-OLP-PT.

## Your advantages

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

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 2864545                        |
| Packing unit                         | 1 pc                           |
| Minimum order quantity               | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | CK3                            |
| Product key                          | CK3322                         |
| Catalog page                         | Page 188 (C-5-2017)            |
| GTIN                                 | 4017918893200                  |
| Weight per piece (including packing) | 83.6 g                         |
| Weight per piece (excluding packing) | 78.2 g                         |
| Customs tariff number                | 85437090                       |
| Country of origin                    | DE                             |

## Technical data

### Product properties

|               |                         |
|---------------|-------------------------|
| Product type  | Temperature transmitter |
| Application   | Temperature             |
| Configuration | With HART protocol      |

### Electrical properties

|                                           |                                                                          |
|-------------------------------------------|--------------------------------------------------------------------------|
| Switch-on delay                           | 6 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 ... 75 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 |
| Sensor type:                        | -200 °C ... 850 °C (freely adjustable)                                |
|                                     | -200 °C ... 250 °C (freely adjustable)                                |
|                                     | -200 °C ... 250 °C (freely adjustable)                                |
|                                     | -60 °C ... 250 °C (freely adjustable)                                 |
|                                     | -60 °C ... 150 °C (freely adjustable)                                 |
|                                     | -60 °C ... 150 °C (freely adjustable)                                 |
|                                     | 50 °C ... 1820 °C (freely adjustable)                                 |
|                                     | 0 °C ... 2320 °C (freely adjustable)                                  |
|                                     | 0 °C ... 2495 °C (freely adjustable)                                  |
|                                     | -270 °C ... 1000 °C (freely adjustable)                               |
|                                     | -210 °C ... 1200 °C (freely adjustable)                               |

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|                                   |                                                |
|-----------------------------------|------------------------------------------------|
|                                   | -270 °C ... 1372 °C (freely adjustable)        |
|                                   | -200 °C ... 900 °C (freely adjustable)         |
|                                   | -270 °C ... 1300 °C (freely adjustable)        |
|                                   | -50 °C ... 1768 °C (freely adjustable)         |
|                                   | -50 °C ... 1768 °C (freely adjustable)         |
|                                   | -270 °C ... 400 °C (freely adjustable)         |
|                                   | -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 ... 75 mV (min. measurement range 5 mV) |

## Output data

Switching:

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

Signal

|                                                |                                                              |
|------------------------------------------------|--------------------------------------------------------------|
| Number of outputs                              | 1                                                            |
| Configurable/programmable                      | Yes, programmable                                            |
| 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 (linear increase/decrease)                |
| Load/output load current output                | ≤ 630 Ω (At UV = 24 V; U <sub>supply</sub> - 10 V / 0.023 A) |

## Connection data

|                                  |                                              |
|----------------------------------|----------------------------------------------|
| Connection method                | Screw connection                             |
| Stripping length                 | 8 mm                                         |
| Screw thread                     | M3                                           |
| Conductor cross section rigid    | 0.2 mm <sup>2</sup> ... 1.75 mm <sup>2</sup> |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 1.75 mm <sup>2</sup> |
| Conductor cross section AWG      | 24 ... 15                                    |
| Tightening torque                | 0.5 Nm ... 0.6 Nm                            |

## Ex data

Safety data

|                                    |        |
|------------------------------------|--------|
| Max. voltage U <sub>i</sub>        | 30 V   |
| Max. current I <sub>i</sub>        | 100 mA |
| Max. power P <sub>i</sub>          | 750 mW |
| Max. output voltage U <sub>o</sub> | 5 V DC |
| Max. output current I <sub>o</sub> | 5.4 mA |
| Max. output power P <sub>o</sub>   | 6.6 mW |

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|                                                                        |                                             |
|------------------------------------------------------------------------|---------------------------------------------|
| Max. ambient temperature                                               | Category 1: T4 = 60°C, T5 = 50°C, T6 = 40°C |
|                                                                        | Category 2: T4 = 85°C, T5 = 70°C, T6 = 55°C |
| Safety-related maximum voltage $U_m$                                   | 250 V                                       |
| IIA: Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 100 mH / 9.9 $\mu$ F                        |
| IIB: Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 100 mH / 9.9 $\mu$ F                        |
| IIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 100 mH / 2 $\mu$ F                          |

## Material specifications

|                                        |                   |
|----------------------------------------|-------------------|
| Color                                  | green (RAL 6021)  |
| Flammability rating according to UL 94 | V0                |
| Housing material                       | Polycarbonate, PC |

## Environmental and real-life conditions

### Ambient conditions

|                                 |                                         |
|---------------------------------|-----------------------------------------|
| Degree of protection            | IP00                                    |
|                                 | IP66 (Installed in the connection head) |
| Ambient temperature (operation) | -40 °C ... 55 °C                        |

## Approvals

### CE

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

### ATEX

|                |                                          |
|----------------|------------------------------------------|
| Identification | Ex II 1 G bzw. II 2 G Ex ia IIC T6/T5/T4 |
|----------------|------------------------------------------|

### UL, USA/Canada

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

### Safety Integrity Level (SIL, IEC 61508)

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

## Standards and regulations

### Standards

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

## Mounting

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Assembly instructions | Installation in connection head according to DIN 43729 form B |
| Mounting position     | Connecting head in acc. with DIN 43729 form B                 |

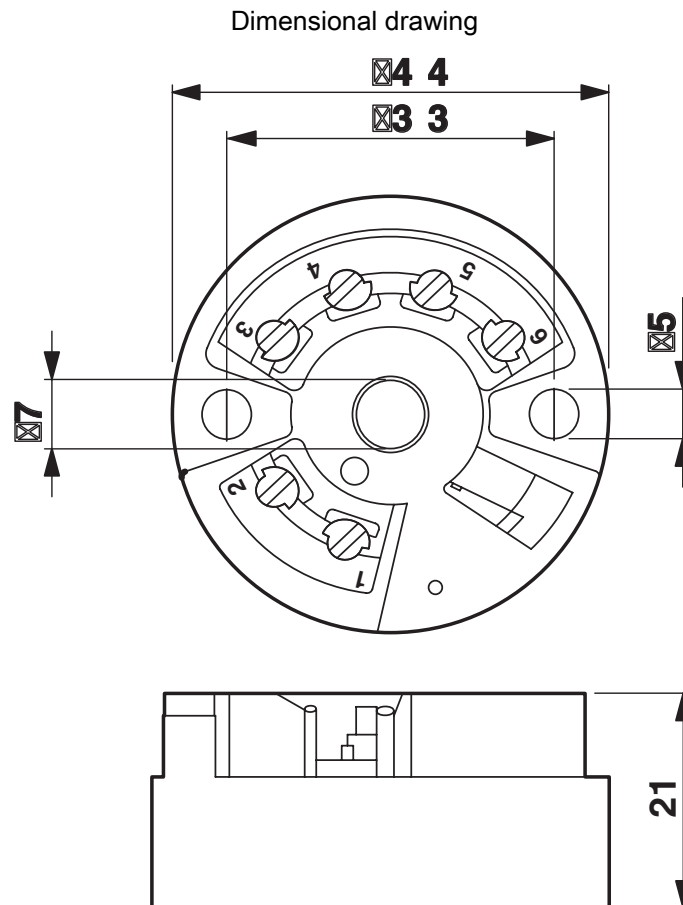
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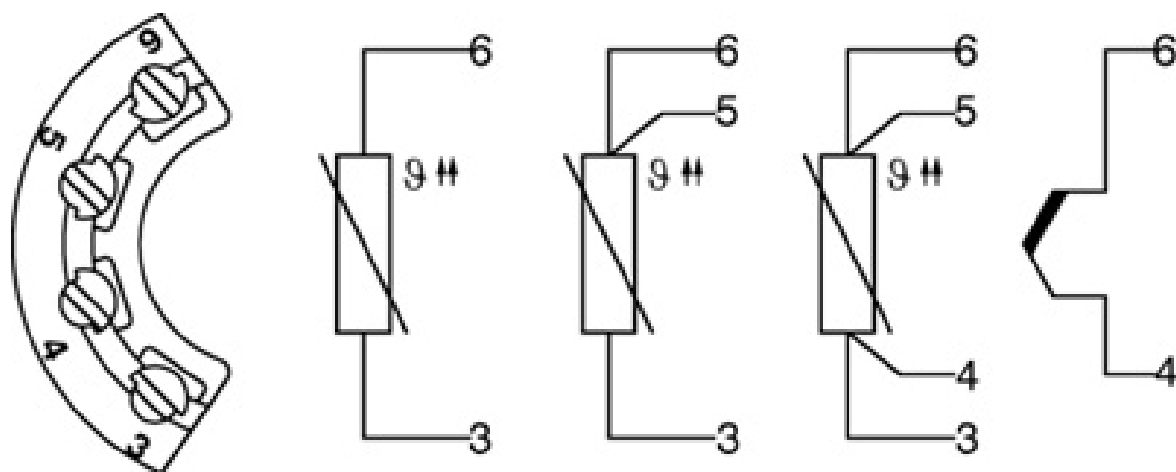


## Drawings



Dimensional drawing

## Connection diagram



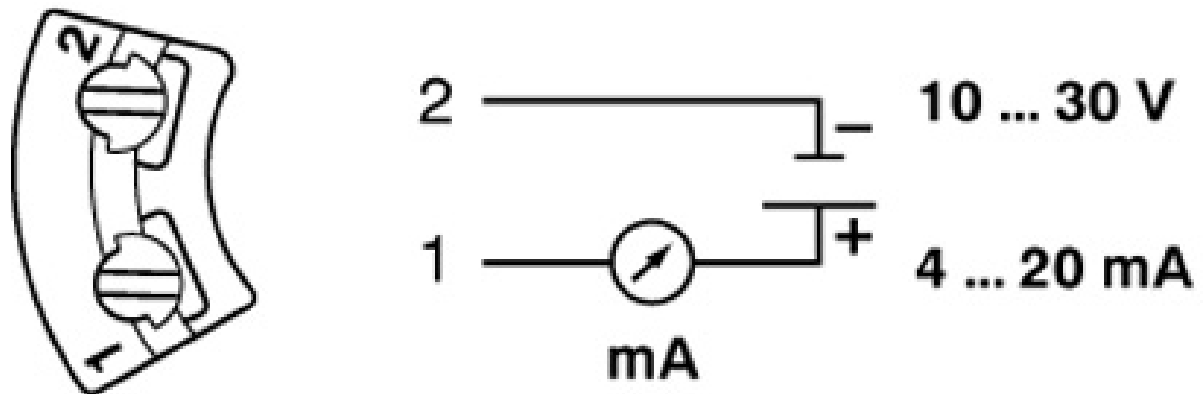
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### Connection diagram



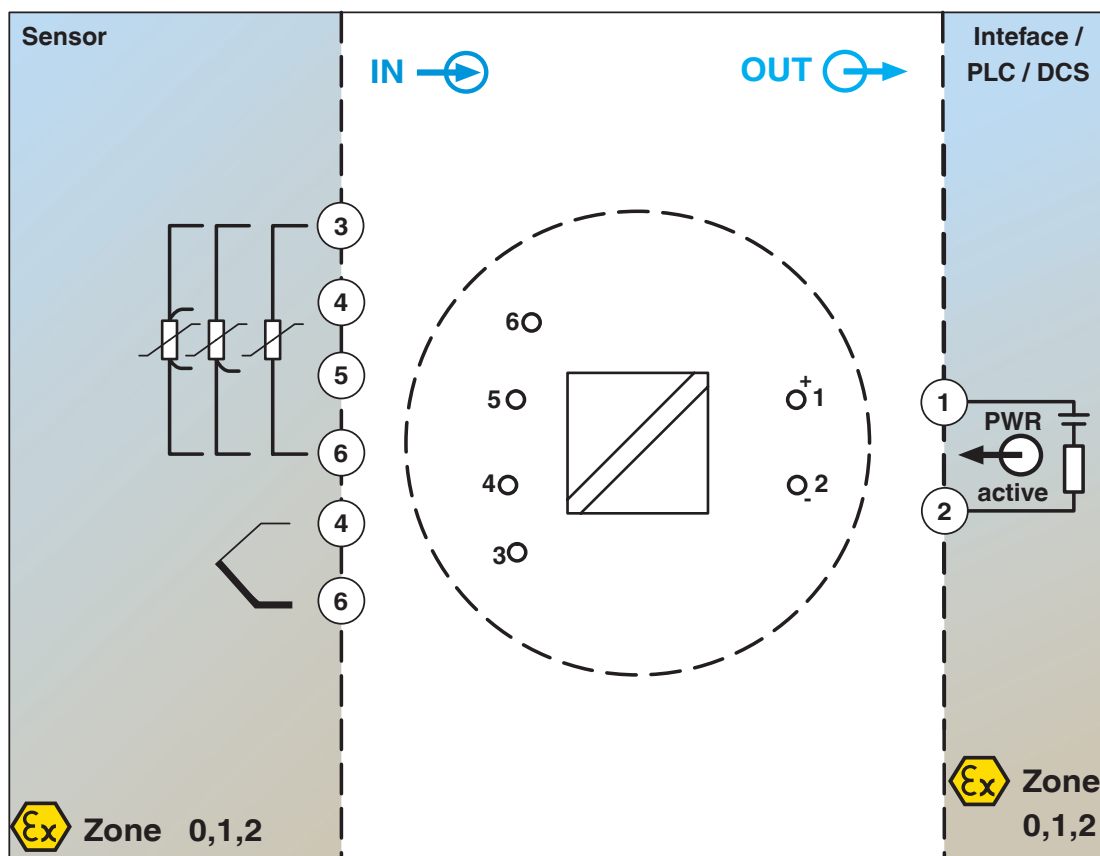
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Block diagram



Block diagram MCR-FL-HT-TS-I-EX

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27210129 |
|-------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002919 |
|----------|----------|

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## Environmental product compliance

|            |                                                         |
|------------|---------------------------------------------------------|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|            | No hazardous substances above threshold values          |

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Phoenix Contact UAB  
Svitrigailos str. 11B  
03228 Vilnius  
+370 5 2106321  
[balticinfo@phoenixcontact.com](mailto:balticinfo@phoenixcontact.com)