

# MCR-FL-TS-LP-I-EX - Temperature measuring transducer



2864587

<https://www.phoenixcontact.com/us/products/2864587>

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Measurement and control temperature transducers, resistance thermometers, thermocouples, resistance-type sensors, and voltage sensors. Replacement part: 2908660 MACX MCR-EX-TS-I-OLP.

## 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
- Output: 4 mA ... 20 mA/20 mA ... 4 mA
- Loop-powered
- 1-channel
- HART-compatible (MCR-FL-TS-LP-I-EX)

## Commercial data

Item number	2864587
Packing unit	1 pc
Note	Made to order (non-returnable)
Sales key	C430
Product key	DK1XXX
GTIN	4017918907266
Weight per piece (including packing)	124.8 g
Weight per piece (excluding packing)	104.3 g
Customs tariff number	85437090
Country of origin	DE

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## Technical data

### Product properties

Product type	Temperature transmitter
Application	Temperature
Configuration	With HART protocol

### System properties

#### Functionality

Configuration	With HART protocol
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### Electrical properties

Switch-on delay	4 s
Line monitoring	NE 43
Maximum power dissipation for nominal condition	105 mW
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)

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Temperature measuring range: Thermoelement Typ B	0 °C ... 1820 °C (freely adjustable)
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
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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 <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

# MCR-FL-TS-LP-I-EX - Temperature measuring transducer

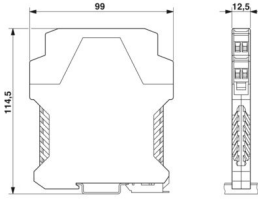


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Max. voltage $U_i$	30 V
Max. current $I_i$	100 mA
Max. power $P_i$	750 mW
Max. output voltage $U_o$	5 V DC
Max. output current $I_o$	5.9 mA
Max. output power $P_o$	7.2 mW
Max. ambient temperature	T4 = 85 °C, T5 = 70 °C, T6 = 55 °C
Safety-related maximum voltage $U_m$	250 V
IIA: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 10 $\mu$ F
IIB: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 10 $\mu$ F
IIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 2 $\mu$ 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
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### ATEX

Identification	⊕ II 2(1) G Ex ia IIC T6
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### UL, USA/Canada

Identification	cULus
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Safety Integrity Level (SIL, IEC 61508)

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Identification	2
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## Standards and regulations

### Standards

Standards/regulations	NAMUR recommendation NE 21
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## Mounting

Mounting type	DIN rail mounting
Mounting position	any

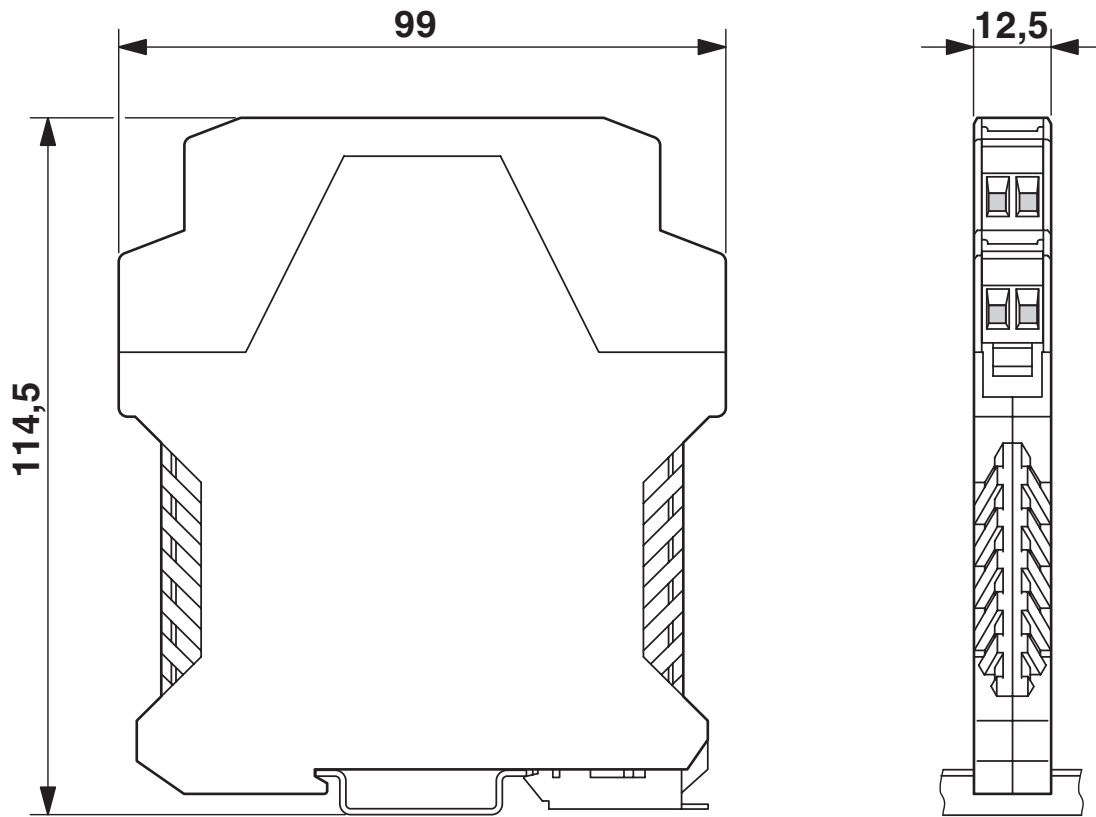
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## Drawings

Dimensional drawing

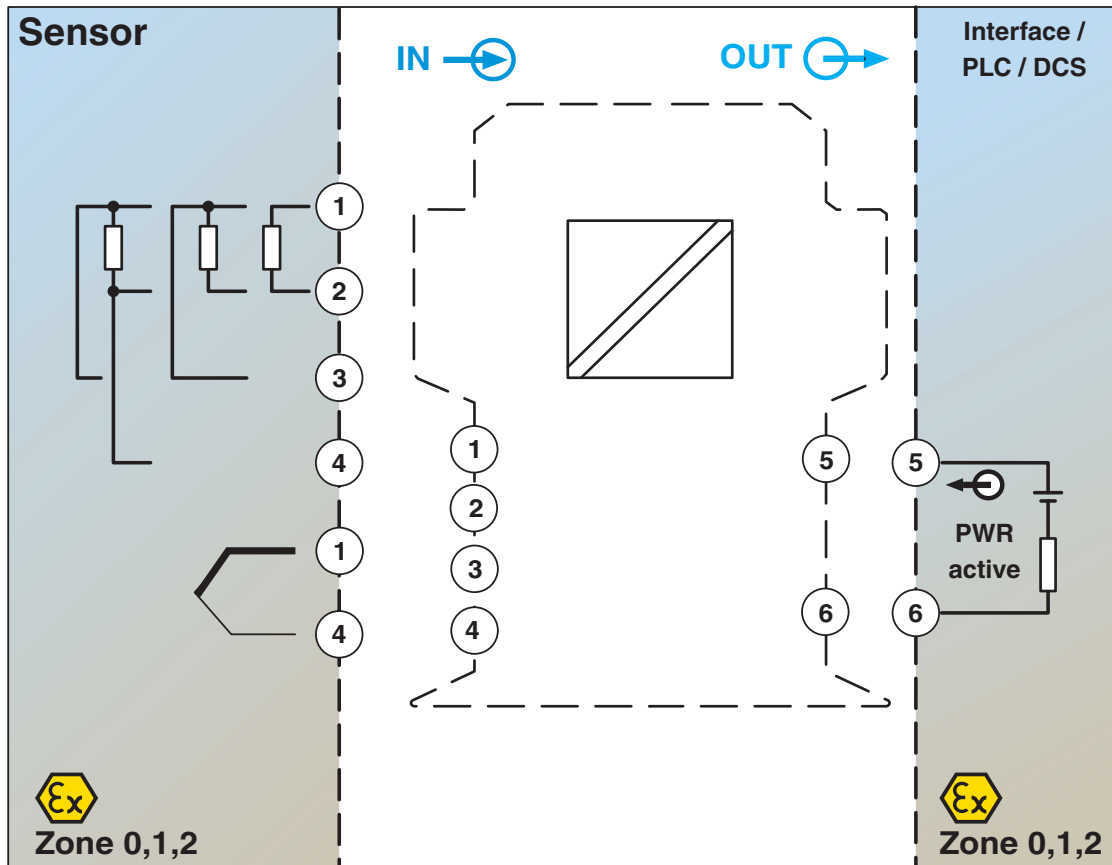


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Block diagram



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

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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c)

### China RoHS

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

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
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