

MACX MCR-EX-SL-TC-I-NC - Temperature measuring transducer



2865586

<https://www.phoenixcontact.com/us/products/2865586>

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Ex i temperature transducer: converts signals from thermocouples installed in the Ex area and mV sources and transmits a 0/4 - 20 mA signal to a load in the safe area. Freely programmable, 3-way isolation. Replacement item: 1050233 MACX MCR-EX-TC-I.

Your advantages

- Power supply possible via DIN rail connector
- Input for resistance thermometers and resistance-type sensors, [Ex ia] IIC
- Programming during operation with Ex measuring circuit connected and also voltage-free using IFS-USB-PROG-ADAPTER programming adapter
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- 3-way electrical isolation
- Status indicator for supply voltage, cable, sensor, and module errors
- Configuration via software (FDT/DTM): sensor type, connection technology, measuring range, measuring unit, filter, alarm signal, and output range
- Output: 0 mA ... 20 mA or 4 mA ... 20 mA

Commercial data

Item number	2865586
Packing unit	1 pc
Note	Made to order (non-returnable)
Sales key	C430
Product key	DK1215
GTIN	4046356160513
Weight per piece (including packing)	165 g
Weight per piece (excluding packing)	165 g
Customs tariff number	85437090
Country of origin	DE

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Technical data

Product properties

Product type	Temperature transmitter
Application	Temperature
No. of channels	1

Insulation characteristics

Overvoltage category	II
Pollution degree	2

Electrical properties

Alignment span	$\pm 5 \%$
Alignment zero	$\pm 5 \%$
Typical cold point errors	$\pm 1 \text{ K}$
Step response (0–99%)	$\leq 1100 \text{ ms}$ (when oversampling = 10 and moving average value = 1)
Temperature coefficient, typical	0.01 %/K

Electrical isolation Input/output/power supply

Rated insulation voltage	300 V _{rms}
Test voltage	2.5 kV AC (50 Hz, 60 s)
Insulation	Safe isolation in accordance with IEC/EN 61010-1

Electrical isolation Input/output

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

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

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Max. current consumption	< 40 mA (24 V DC)
Power dissipation	< 1 W

Input data

Signal

Number of inputs	1
Input signal	Temperature Voltage
Voltage input signal	-20 mV ... 70 mV

Measurement

Description of the input	intrinsically safe
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Sensor types that can be used (TC)	E, J, K, N as per IEC / EN 60584, L as per DIN 43760
Temperature measuring range	-250 °C ... 1372 °C (Range depending on the sensor type)
Temperature measuring range: Type J thermocouple	-210 °C ... 1200 °C
Temperature measuring range: Type K thermocouple	-200 °C ... 1372 °C
Temperature measuring range: Type N thermocouple	-200 °C ... 1300 °C
Temperature measuring range: Type E thermocouple	-226 °C ... 1000 °C
Temperature measuring range: Type L thermocouple	-200 °C ... 900 °C
Linear mV signal range	-20 mV ... 70 mV
Temperature measuring range	Min. 50 K for thermocouples, 3 mV for mV sources

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	0 mA ... 20 mA 4 mA ... 20 mA
Load/output load current output	≤ 500 Ω
Output ripple (current)	< 50 μA _{pp} < 10 μA _{rms}
Behavior in the event of a sensor error	As per NE 43 or can be freely defined

Connection data

Connection method	Screw connection
Stripping length	7 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. output voltage U _o	6 V
Max. output current I _o	4.7 mA
Max. output power P _o	7 mW
Safety-related maximum voltage U _m	253 V AC 125 V DC
IIC: Max. external inductivity L _o / Max. external capacitance C _o	100 mH / 1.5 μF, 10 mH / 1.9 μF, 1 mH / 2.7 μF

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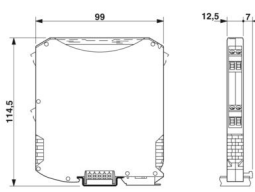
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IIB: Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 7 μ F, 10 mH / 9.4 μ F, 1 mH / 15 μ F
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Signaling

Status display	LED supply voltage, PWR (green)
	Red LED, flashing 2.8 Hz (cable error, sensor error on input or output, ERR)
	Red LED, flashing 1.2 Hz (simulation mode, ERR)
	Red LED, permanently on (module error, ERR)

Dimensions

Dimensional drawing	
Width	12.5 mm
Height	106.4 mm
Depth	114.5 mm

Material specifications

Color	gray (RAL 7042)
Flammability rating according to UL 94 (Housing)	V0 (Housing)
Housing material	PA 6.6-FR

Characteristics

Safety data

Safety Integrity Level (SIL)	2
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Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	\leq 2000 m
Permissible humidity (operation)	5 % ... 95 % (non-condensing)

Approvals

CE

Certificate	CE-compliant
Note	and EN 61326

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ATEX

Identification	⊕ II (1) G [Ex ia Ga] IIC/IIB
	⊕ II (1) D [Ex ia Da] IIIC
	⊕ II 3(1) G Ex nA ic [ia Ga] IIC T4 Gc X
Certificate	IBExU 09 ATEX 1030

IECEX

Identification	[Ex ia Ga] IIC/IIB
	[Ex ia Da] IIIC
	Ex nA ic [ia Ga] IIC T4 Gc
Certificate	IECEX IBE 09.0002X

UL, USA/Canada

Identification	Class I Div 2; IS for Class I, II, III Div 1
Certificate	Ⓢ C.D.-No 83104549

KC-s

Identification	[Ex ia] IIC/IIB
Certificate	17-KA4BO-0415X

Shipbuilding approval

Identification	C, EMC1
Certificate	GL 86 644-10HH

EAC Ex

Identification	Ⓢ [Ex ia Ga] IIC
	Ⓢ [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19

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.

Noise emission

Standards/regulations	EN 61000-6-4
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Electromagnetic HF field

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3

Fast transients (burst)

Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4

Conducted interference

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Designation	Conducted interferences
Standards/regulations	EN 61000-4-6

Mounting

Mounting type	DIN rail mounting
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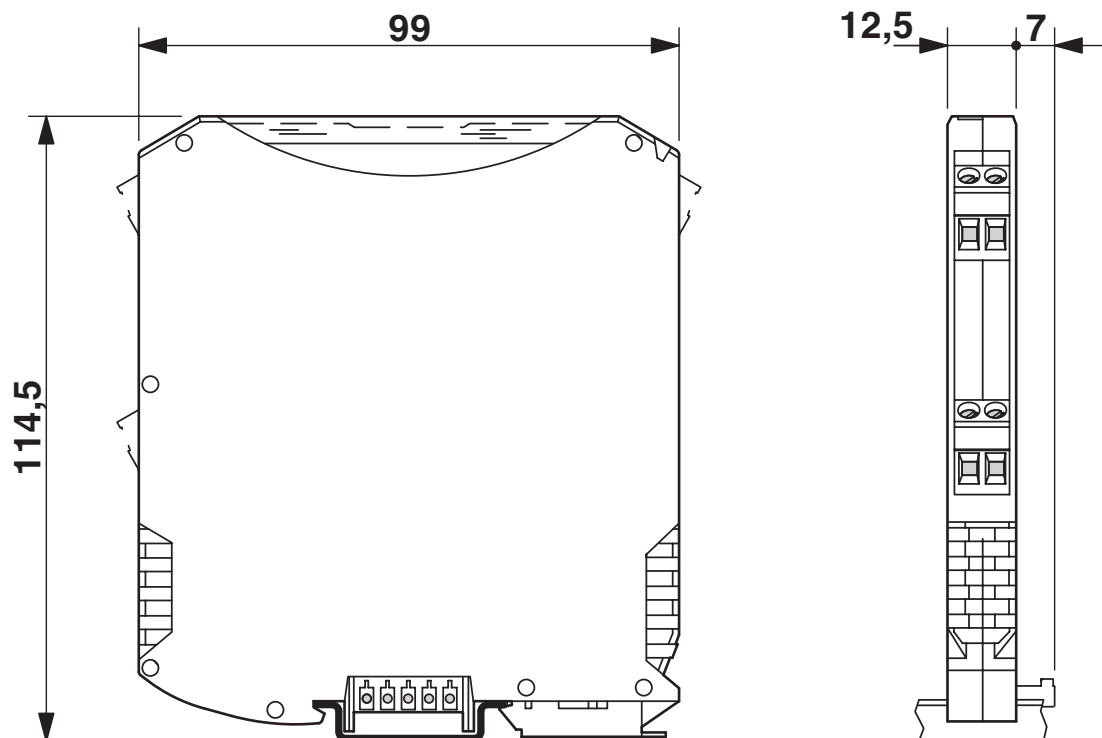
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Drawings

Dimensional drawing



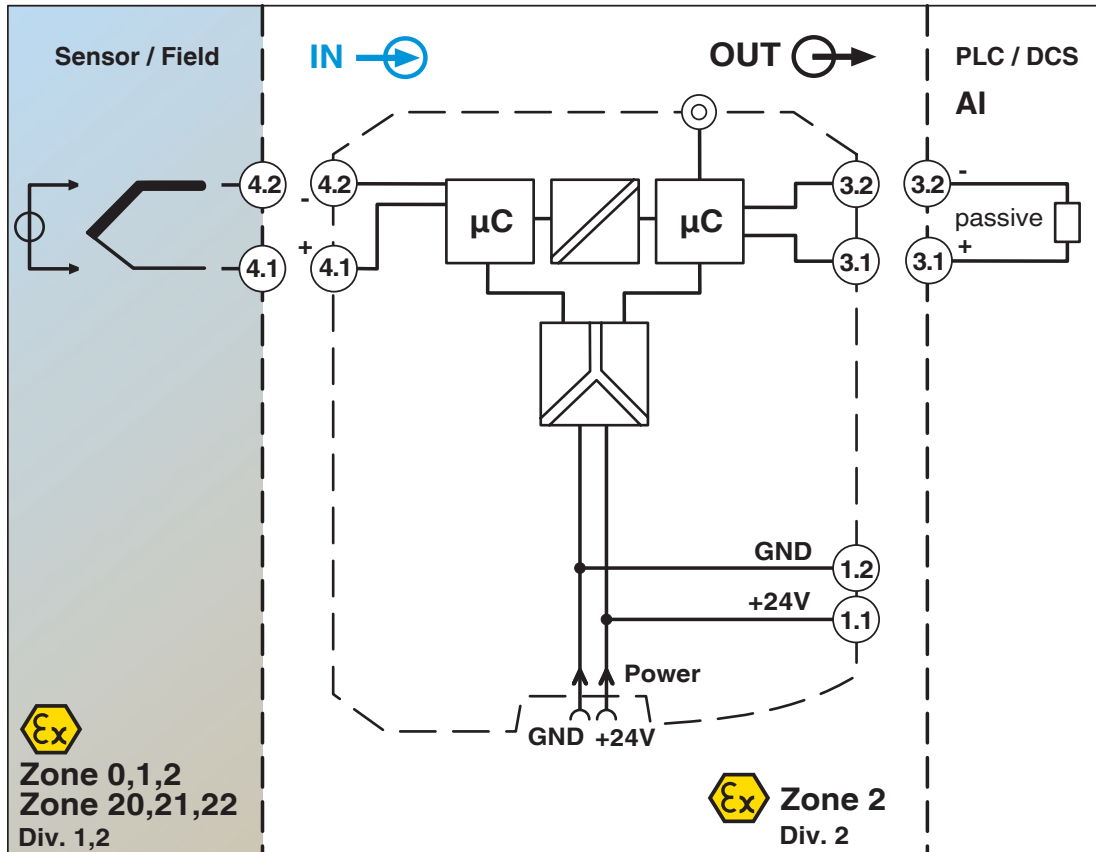
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Block diagram



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Classifications

ETIM

ETIM 9.0	EC002919
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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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