

MACX MCR-RTD-I-SP - Temperature measuring transducer



1050201

<https://www.phoenixcontact.com/us/products/1050201>

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Temperature transducer, converts signals from resistance temperature detectors and resistors into analog 0/4 - 20 mA signals. Freely programmable, Push-in connection, SIL, 3-way electrical isolation, standard configuration.

Your advantages

- Power supply possible via DIN rail connector
- Programming possible during operation, when measuring circuit is connected, and also when power is switched off using the IFS-USB-PROG-ADAPTER programming adapter
- Installation in zone 2, protection type "ec" (EN 60079-7) 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	1050201
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C402
Product key	CK1121
Catalog page	Page 130 (C-5-2019)
GTIN	4055626651293
Weight per piece (including packing)	170.8 g
Weight per piece (excluding packing)	150 g
Customs tariff number	85437090
Country of origin	DE

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Technical data

Notes

Utilization restriction

EMC note	EMC: class A product, see manufacturer's declaration in the download area
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Product properties

Product type	Temperature transmitter
Product family	MACX Analog
Application	Temperature
No. of channels	1
Type	Signal conditioners with SIL functional safety
Configuration	Software

Insulation characteristics: GB Standard

Overvoltage category	II
Pollution degree	2

Electrical properties

Alignment span	± 5 %
Alignment zero	± 5 %
Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Step response (0–99%)	1 s
	≤ 1.7 s
Temperature coefficient, typical	0.01 %/K
Transmission error, typical	0.1 % (e.g. for Pt 100, 300 K span, 4 ... 20 mA)

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 %)
Power dissipation	≤ 0.76 W
Power consumption	≤ 1 W

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Input data

Signal

Number of inputs	1
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Measurement

Sensor types (RTD) that can be used	Pt, Ni, Cu sensors: 2, 3, 4-wire
Temperature measuring range	-200 °C ... 850 °C (Range depending on the sensor type)
Linear resistance measuring range	0 Ω ... 50 kΩ
Potentiometer resistance range	0 Ω ... 50 kΩ
Max. permissible overall conductor resistance	50 Ω (Per cable)
Sensor input current	10 µA ... 210 µA (Up to 2x 210 µA with 3-conductor technology)
Temperature measuring range	≥ 50 K

Output data

Signal: Current

Number of outputs	1
Configurable/programmable	Yes
Current output signal	0 mA ... 20 mA 4 mA ... 20 mA (SIL)
Max. current output signal	≥ 21 mA
Load/output load current output	≤ 600 Ω
Output ripple (current)	< 15 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	Push-in connection
Stripping length	8 mm
Conductor cross section rigid	0.2 mm ² ... 1.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section AWG	24 ... 16

Ex data

Ex installation (EPL)	Gc
	Div. 2

Signaling

Status display	Green LED (supply voltage)
	Red LED, flashing 2.4 Hz (cable error, sensor error on input or output, ERR)
	Red LED, flashing 1.2 Hz (service operation, ERR)
	Red LED, permanently on (module error, ERR)

Dimensions

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Dimensional drawing		
Width		12.5 mm
Height		116 mm
Depth		113.7 mm
Depth NS 35/7,5		114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715)

Material specifications

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

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 70 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Permissible humidity (operation)	5 % ... 95 % (non-condensing)

Altitude range (≤ 2000 m)

Altitude	≤ 2000 m (The technical data refers to altitudes ≤2000 m above mean sea level. For altitudes >2000 m above mean sea level, refer to the data sheet.)
Ambient temperature (operation)	-40 °C ... 70 °C
Test voltage	2.5 kV
Rated insulation voltage	300 V _{rms}

Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Test voltage	2.25 kV
Rated insulation voltage	150 V _{rms}

Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Test voltage	2 kV
Rated insulation voltage	150 V _{rms}

Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
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Ambient temperature (operation)	-40 °C ... 49 °C
Test voltage	1.75 kV
Rated insulation voltage	150 V _{rms}

Approvals

CE

Certificate	CE-compliant
Note	and EN 61326

ATEX

Identification	II 3 G Ex ec ic IIC T4 Gc
Certificate	PxCIF19ATEX1050192X

UKCA Ex (UKEX)

Identification	II 3 G Ex ec ic IIC T4 Gc
Certificate	CML 22UKEX3531X

IECEX

Identification	Ex ec ic IIC T4 Gc
Certificate	IECEX IBE 19.0001 X

CCC / China-Ex

Identification	Ex nA ic IIC T4 Gc
Certificate	NEPSI GYJ20.1305X

UL, USA/Canada

Identification	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, Group IIC T4

Shipbuilding approval

Certificate	DNV GL TAA00000AG
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Safety Integrity Level (SIL, IEC 61508)

Identification	2
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EAC Ex

Identification	Ex ec ic IIC T4 Gc
Certificate	BY/112 02.01 TP012 103.01 00082

DNV GL data

Temperature	B
Humidity	B
Vibration	A
EMC	B
Enclosure	Required protection according to the Rules shall be provided upon installation on board

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EMC data

Noise immunity	EN 61000-6-2
Note	When being exposed to interference, there may be minimal deviations.
Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4

Electromagnetic HF field

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Typical deviation from the measuring range final value	1 %

Fast transients (burst)

Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	1 %

Conducted interference

Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	1 %

Standards and regulations

Electrical isolation	3-way isolation
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GB Standard

Standards/regulations	GB 3836.1
	GB 3836.4
	GB 3836.8

Mounting

Mounting type	DIN rail mounting
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Classifications

ECLASS

ECLASS-11.0	27210129
ECLASS-12.0	27210129
ECLASS-13.0	27210129

ETIM

ETIM 9.0	EC002919
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UNSPSC

UNSPSC 21.0	41112100
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Environmental product compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com