

# MACX MCR-T-UIREL-UP - Temperature measuring transducer



2811378

<https://www.phoenixcontact.com/us/products/2811378>

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Freely programmable temperature transducer with analog output and 3 limit value relays, standard configuration, resistance thermometer in 2-, 3-, or 4-conductor technology, thermocouples, electrical isolation, wide-range power supply, screw connection, SIL, PL.

## Your advantages

- Cold junction compensation with separate plug
- Configuration via software (FDT/DTM) or IFS-OP-UNIT operator interface and display unit
- Up to SIL 2 in accordance with EN 61508
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Programming during operation and also voltage-free using IFS-USB-PROG-ADAPTER programming adapter
- Plug-in screw or spring-cage connection technology (Push-in technology)
- Freely programmable input and output
- Input for resistance thermometers, thermocouples, resistance-type sensors, potentiometers, and mV sources
- Measure differential temperatures
- Three limit value relays, can be used in combination as a safe limit value relay
- Inverse output signal ranges as an option

## Commercial data

Item number	2811378
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C402
Product key	CK1121
Catalog page	Page 126 (C-5-2019)
GTIN	4046356288903
Weight per piece (including packing)	351.6 g
Weight per piece (excluding packing)	351.6 g
Customs tariff number	85437090
Country of origin	DE

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## Technical data

### Product properties

Product type	Temperature transmitter
Product family	MACX Analog
Type	Signal conditioners with SIL and PL Functional Safety
Configuration	DIP switches
	Software

### Insulation characteristics

Overvoltage category	II
Pollution degree	2

### Electrical properties

Electrical isolation	4-way isolation
Step response (0–99%)	≤ 1.75 s (SIL on)
	1.3 s (SIL off)
Maximum temperature coefficient	0.01 %/K
Maximum transmission error	0.1 % (e.g. for Pt 100, 300 K span, 4 ... 20 mA)

### Electrical isolation Input/output/power supply

Rated insulation voltage	300 V <sub>rms</sub>
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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### Electrical isolation Input/switching output

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

Nominal supply voltage range	24 V AC/DC ... 230 V AC/DC (50/60 Hz)
Supply voltage range	19.2 V AC/DC ... 253 V AC/DC (24 V AC/DC ... 230 V AC/DC (-20 % ... +10 %, 50/60 Hz))
Power consumption	< 2.4 W

## Input data

### Signal

Number of inputs	1
Input signal	Temperature
	Resistor

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	Voltage
<b>Measurement</b>	
Sensor types (RTD) that can be used	Pt, Ni, Cu sensors: 2, 3, 4-wire
Sensor types that can be used (TC)	B, E, J, K, N, R, S, T, L, U, CA, DA, A1G, A2G, A3G, MG, LG
Temperature measuring range	-250 °C ... 2500 °C (Range depending on the sensor type)
Linear resistance measuring range	0 Ω ... 50 kΩ
Potentiometer resistance range	0 Ω ... 50 kΩ
Linear mV signal range	-1000 mV ... 1000 mV

## Output data

### Switching: Relay

Configurable/programmable	Yes
Contact switching type	3 changeover contacts
Contact material	AgSnO <sub>2</sub> , hard gold-plated
Maximum switching voltage	250 V AC (250 V DC)
Max. switching current	2 A (250 V AC)
	0.1 A (250 V DC)
	2 A (28 V DC)

### Signal: Current

Number of outputs	1
Configurable/programmable	Yes
Max. voltage output signal	± 11 V
Current output signal	4 mA ... 20 mA (in the case of SIL; further free configuration without SIL)
Max. current output signal	22 mA
Load/output load voltage output	≥ 10 kΩ
Load/output load current output	≤ 600 Ω (20 mA)
Behavior in the event of a sensor error	according to NE 43 or freely configurable

## Connection data

Connection method	Screw connection
Stripping length	7 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

### Test socket

Max. diameter	2 mm
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## Ex data

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Ex installation (EPL)	Gc
	Div. 2

## Signaling

Error indication	Red LED
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## Dimensions

Width	35 mm
Height	112.5 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

Ambient temperature (operation)	-20 °C ... 65 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	typ. 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.)
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### Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-20 °C ... 55 °C

### Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-20 °C ... 50 °C

### Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-20 °C ... 45 °C

## Approvals

### CE

Certificate	CE-compliant
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## ATEX

Identification	⊕ II 3 G Ex ec ic nC IIC T4 Gc
Certificate	PxCIF20ATEX2811378

## UKCA Ex (UKEX)

Identification	⊕ II 3 G Ex ec ic nC IIC T4 Gc X
Certificate	CML 22UKEX3529X

## IECEX

Identification	Ex ec ic nC IIC T4 Gc
Certificate	IECEX IBE 10.0004 X

## UL, USA/Canada

Identification	UL 508 Listed
	Class I, Div. 2, Groups A, B, C, D T6
	Class I, Zone 2, Group IIC T6

## Shipbuilding approval

Certificate	DNV GL TAA000020C
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## Safety Integrity Level (SIL, IEC 61508)

Identification	2
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## Performance Level (ISO 13849)

Identification	d
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## INMETRO

Identification	Ex ec ic nC IIC T4 Gc
Certificate	DNV 18.0143 X

## EAC Ex

Identification	⊕ Ex ec ic IIC T4 Gc
Certificate	BY/112 02.01 TP012 103.01 00078

## DNV GL data

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

## 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

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Noise emission	EN 61000-6-4
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## Standards and regulations

Electrical isolation	4-way isolation
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## 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 8.0	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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