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

2811378

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CRA-READY



Freely programmable temperature measuring transducer with analog output and 3 limit value relays, resistance thermometer in 2, 3, or 4-conductor technology, thermocouples, wide-range supply. number of channels: 1, Standard configuration, 4-way isolation, Safety Integrity Level (SIL, IEC 61508): 2, Performance Level (ISO 13849): d, Systematic Capability: 2, Screw connection

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	DK1115
GTIN	4046356288903
Weight per piece (including packing)	359 g
Weight per piece (excluding packing)	351.6 g
Customs tariff number	85437090
Country of origin	DE

Technical data

Notes

Note on application

Note on application	As things stand now, we are preparing the product so that, as of December 11, 2027, it will comply with the requirements of the EU Cyber Resilience Act (CRA) based on the information currently available regarding the CRA.

Product properties

Product type	Temperature transmitter
Product family	MACX Analog
No. of channels	1
Configuration	DIP switches
	Software

Insulation characteristics

Overvoltage category	II
Pollution degree	2

System properties

Functionality

Configuration	DIP switches
	Software

Electrical properties

Electrical isolation	4-way isolation
Electrical isolation between input and output	yes
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 IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V_{rms}
Test voltage	2.5 kV AC (50 Hz, 60 s)
Insulation	Safe isolation

Electrical isolation Input/output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V_P

Electrical isolation Input/power supply IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V_P

Electrical isolation Input/switching output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V_P

Supply

Nominal supply voltage range	24 V AC/DC ... 230 V AC/DC -20 % ... +10 % (50/60 Hz)
Supply voltage range	19.2 V AC/DC ... 253 V AC/DC (50/60 Hz)
Typical current consumption	< 100 mA (24 V DC)
Power consumption	< 2.4 W

Input data

Signal

Number of inputs	1
Input signal	Temperature
	Resistor
	Voltage

Measurement

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	$AgSnO_2$, hard gold-plated
Maximum switching voltage	250 V AC/DC
Max. switching current	2 A (250 V AC)
	0.1 A (250 V DC)
	2 A (28 V DC)

Signal: Voltage/current

Number of outputs	1
Configurable/programmable	Yes
Max. voltage output signal	± 11 V
Current output signal	0 mA ... 20 mA (SIL off)
	4 mA ... 20 mA (SIL on)

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	freely programmable

Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm² ... 2.5 mm²
Conductor cross-section flexible	0.2 mm² ... 2.5 mm²
Conductor cross-section AWG	24 ... 14
Tightening torque	0.5 Nm ... 0.6 Nm

Test socket

Max. diameter	2 mm

Ex data

Ex installation (EPL)	Gc
	Div. 2

Signaling

Status display	LED supply voltage, PWR (green)
	Red LED, flashing (line, sensor error, ERR)
	Red LED (module error, ERR)
	Yellow LED (switching output)

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 (Housing)	V0 (Housing)
Housing material	PA 6.6-FR

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-20 °C ... 65 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

Permissible humidity (operation)	typ. 5 % ... 95 % (non-condensing)
Shock (operation)	15g (IEC 60068-2-27)
Vibration (operation)	5g (IEC 60068-2-6)

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)	-20 °C ... 65 °C
Safety-related maximum voltage U_m	30 V (Installation in zone 2)

Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-20 °C ... 55 °C
Safety-related maximum voltage U_m	30 V (Installation in zone 2)

Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-20 °C ... 50 °C
Safety-related maximum voltage U_m	30 V (Installation in zone 2)

Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-20 °C ... 45 °C
Safety-related maximum voltage U_m	30 V (Installation in zone 2)

Approvals

CE

Certificate	CE-compliant

ATEX

Identification	Ⓔx II 3 G Ex ec ic nC IIC T4 Gc
Certificate	IBExU 10 ATEX 1044 X

IECEx

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

INMETRO

Identification	Ex ec ic nC IIC T4 Gc
Certificate	DNV 18.0143 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

Safety Integrity Level (SIL, IEC 61508)

Identification	2
Certificate	SEBS-A.150520/17, V2.0

Systematic Capability

Identification	2

Performance Level (ISO 13849)

Identification	d

EAC Ex

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

Shipbuilding 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

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

Standards and regulations

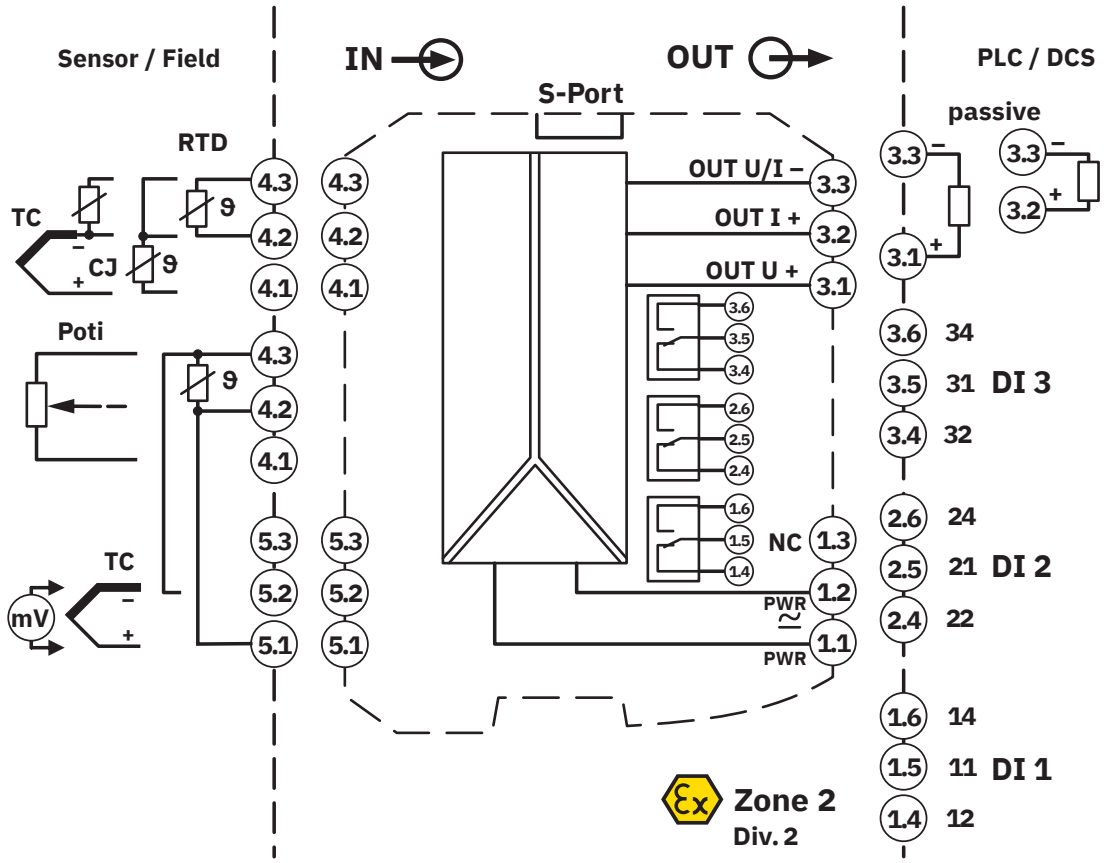
Electrical isolation	4-way isolation

Mounting

Mounting type	DIN rail mounting

Drawings

Block diagram



Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2811378

UL Listed
Approval ID: E238705

cUL Listed
Approval ID: E238705

Functional Safety
Approval ID: SEBS-A.20170608

cULus Listed
Approval ID: E330267

IECEx
Approval ID: IECEx IBE 10.0004X

cUL Listed
Approval ID: E199827

UL Listed
Approval ID: E199827

ATEX
Approval ID: IBExU 10 ATEX 1044

INMETRO
Approval ID: DNV 18.0143 X

cULus Listed
Approval ID: E199827

Classifications

ECLASS

ECLASS-13.0	27210129
ECLASS-15.0	27210129

ETIM

ETIM 10.0	EC002919

UNSPSC

UNSPSC 21.0	41112100

Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(a)-I, 7(c)-I

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.)	Lead(CAS: 7439-92-1)
SCIP	fece8391-b091-4215-bf13-36cb99bf41a6

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