MINI MCR-EX-T-I - Temperature measuring transducer

2908813

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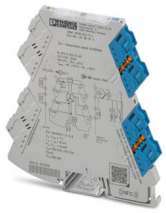
CRA-READY



Ex i-Temperature transducer for converting and transmitting intrinsically safe signals from RTD and TC sensors to a load in the safe area. number of channels: 1, Standard configuration, 3-way isolation, Safety Integrity Level (SIL, IEC 61508): 2, Systematic Capability: 3, Screw connection

Commercial data

Item number	2908813
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1225
GTIN	4055626357591
Weight per piece (including packing)	126.8 g
Weight per piece (excluding packing)	115 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	MINI Analog Pro
Application	Temperature
No. of channels	1
Configuration	Software
	App

System properties

Functionality

Configuration	Software
	App

Electrical properties

Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Step response (0–99%)	≤ 400 ms (with filter factor = 1)

Electrical isolation

Overvoltage category	II (≤ 5000 m)
Pollution degree	2 (≤ 5000 m)

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	Double/reinforced insulation

Electrical isolation Output/power supply, input IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	265 V_{rms}

Electrical isolation Input/output/power supply IEC/EN 60079-7

Standards/regulations	IEC/EN 60079-7
Rated insulation voltage	251 V_{rms}

Supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Power consumption	≤ 900 mW

Input data

Measurement

Description of the input	intrinsically safe
Sensor types (RTD) that can be used	Pt, Ni, Si, Cu sensors
Sensor types that can be used (TC)	J, K, B, E, N, R, S, T, C, A, L, U, A-1, A-2, A-3, Lr, M
Temperature measuring range	Range depending on the sensor type
Connection technology	2-, 3-, 4-conductor
Linear resistance measuring range	0 Ω ... 40 kΩ (Minimum measuring span: 10% of the selected measuring range)
Potentiometer resistance range	0 Ω ... 40 kΩ (Minimum measuring span: 10% of the selected measuring range)
Linear mV signal range	-1000 mV ... 1000 mV
	0 mV ... 1000 mV (SIL)
Max. permissible overall conductor resistance	≤ 25 Ω (adjustable, 3-, 4-conductor, per cable)
	≤ 50 Ω (adjustable, 2-conductor)

Output data

Signal: Current

Number of outputs	1
Configurable/programmable	Yes
Current output signal	4 mA ... 20 mA (SIL)
	4 mA ... 20 mA (NE 43)
	0 mA ... 20 mA
	20 mA ... 0 mA
	0 mA ... 21 mA (freely adjustable)
	21 mA ... 0 mA (freely adjustable)
Max. current output signal	21.5 mA
Load/output load current output	≤ 600 Ω

Connection data

Connection method	Screw connection
Stripping length	10 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm² ... 1.5 mm² (with ferrule)
	0.14 mm² ... 2.5 mm² (without ferrule)
Conductor cross-section flexible	0.14 mm² ... 2.5 mm²
Conductor cross-section AWG	24 ... 12 (flexible)
Tightening torque	0.5 Nm ... 0.6 Nm

Ex data

Ex installation (EPL)	Gc
	Div. 2
Ex i circuits (EPL)	[Ga]
	[Da]
	[Ma]
	[Div. 1]

Safety data: Terminal 1-2; 3-4

Max. internal inductance L_i	negligible
Max. internal capacitance C_i	44 nF
Max. output voltage U_o	7 V
Max. output current I_o	10 mA
Max. output power P_o	18 mW
Safety-related maximum voltage U_m	253 V AC (≤ 2000 m)
	125 V DC (≤ 2000 m)
	121 V AC (> 2000 m ... 3000 m)
	110 V DC (> 2000 m ... 3000 m)
	33 V AC/DC (> 3000 m ... 4000 m)
	33 V AC/DC (> 4000 m ... 5000 m)
IIA/I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	1000 mH / 1000 µF
IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	1000 mH / 300 µF
IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	300 mH / 15.7 µF
IIB/IIA/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 950 nF, 50 mH / 950 nF, 5 mH / 950 nF, 1 mH / 950 nF
IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 555 nF, 50 mH / 555 nF, 5 mH / 555 nF, 1 mH / 555 nF, 10 µH / 555 nF

Interfaces

Connection method	S-PORT

Signaling

Status display	Green LED (supply voltage)
	Red LED (error messages)

Dimensions

Width	6.2 mm
Height	109.81 mm
Depth	119.2 mm

Material specifications

Color	gray (RAL 7042)
Housing material	PBT

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 ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (at 25 °C, non-condensing)

Altitude range (IEC/EN 61010-1)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	300 V_{rms} (Input/output/power supply)
Insulation	Double/reinforced insulation

Altitude range (IEC/EN 61010-1)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	300 V_{rms} (Input/output/power supply)
Insulation	Double/reinforced insulation

Altitude range (IEC/EN 61010-1)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	150 V_{rms} (Input/output/power supply)
Insulation	Double/reinforced insulation

Altitude range (IEC/EN 60079-11)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	150 V_{rms} (Output/supply, input)

Altitude range (IEC/EN 60079-11)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	60 V_{rms} (Output/supply, input)

Altitude range (IEC/EN 60079-11)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	60 V_{rms} (Output/supply, input)

Altitude range (IEC/EN 60079-7)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	162 V_{rms} (Input/output/power supply)

Altitude range (IEC/EN 60079-7)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C

Rated insulation voltage	60 V_{rms} (Input/output/power supply)

Altitude range (IEC/EN 60079-7)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	60 V_{rms} (Input/output/power supply)

Approvals

CE

Certificate	CE-compliant

ATEX

Identification	Ⓔx I (M1) [Ex ia Ma] I
	Ⓔx II (1) G [Ex ia Ga] IIC
	Ⓔx II (1) D [Ex ia Da] IIIC
	Ⓔx II 3 (1) G Ex ec [ia Ga] ic IIC T4 Gc
Certificate	IBExU 21 ATEX 1035 X

IECEx

Identification	[Ex ia Ma] I
	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] ic IIC T4 Gc
Certificate	IECEx IBE 21.0017 X

CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] ic IIC T4 Gc
Certificate	2023122310116238

INMETRO

Identification	[Ex ia Ma] I
	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] ic IIC T4 Gc
Certificate	DNV 23.0187 X

UL, USA/Canada

Identification	UL 61010-2-201 Listed
	Class I, Div. 1, Groups A, B, C, D
	Class II, Div. 1, Groups E, F, G
	Class III, Div. 1
	Class I, Zone 0, 1, 2, Groups IIC, IIB, IIA
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2

	AEx ec [ia Ga] IIC T4 Gc; AEx ec [ia IIIC Da] IIC T4 Gc
	Ex ec [ia Ga] IIC T4 Gc X; Ex ec [ia IIIC Da] IIC T4 Gc X
	Class I, Zone 0, [AEx ia Ga] IIC, [Ex ia Ga] IIC X
	Class I, Zone 20, [AEx ia Da] IIIC, [Ex ia Da] IIIC X
Certificate	C.D.-No 097285872

Shipbuilding approval

Certificate	DNV TAA00003FZ

Safety Integrity Level (SIL, IEC 61508)

Identification	2
Note	single-channel

Systematic Capability

Identification	3

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	Tested in accordance with the following standards and regulations: EN 61326-1 For industrial use, NAMUR NE 21
Noise immunity	EN 61000-6-2
	EN 61326-3-2

Noise emission

Standards/regulations	EN 61000-6-4

Standards and regulations

Electrical isolation	3-way isolation

GB Standard

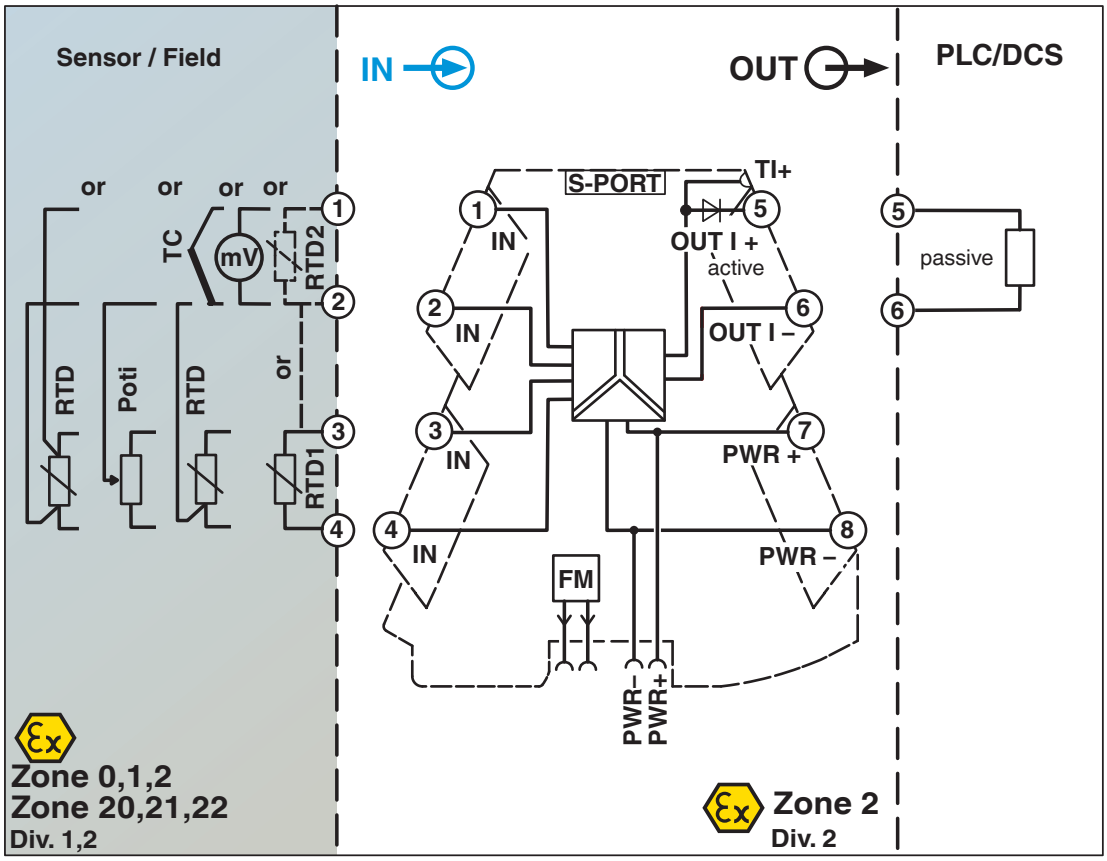
Standards/regulations	GB/T 3836.1
	GB/T 3836.3
	GB/T 3836.4

Mounting

Mounting type	DIN rail mounting
Mounting position	any

Drawings

Block diagram



Approvals

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cULus Listed
Approval ID: E238705

DNV
Approval ID: TAA00003FZ

Functional Safety
Approval ID: 1435IM112346

cULus Listed
Approval ID: E238705

IECEx
Approval ID: IECEx IBE 21.0017X

CCC
Approval ID: 2023122310116238

ATEX
Approval ID: IBExU21ATEX1035 X

cULus Listed
Approval ID: E196811

cULus Listed
Approval ID: E196811

INMETRO
Approval ID: DNV 23.0187 X

Classifications

ECLASS

ECLASS-13.0	27210129
ECLASS-15.0	27210129

ETIM

ETIM 10.0	EC002919

UNSPSC

UNSPSC 21.0	41112105

Environmental product compliance

EU RoHS

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

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