

# MINI MCR-2-TC-UI - Thermocouple measuring transducer



2902055

<https://www.phoenixcontact.com/us/products/2902055>

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Configurable temperature transducer with plug-in connection technology for connecting thermocouples. Configurable via DIP switch or software. Screw connection technology, standard configuration

## Product description

Configurable, 3-way isolated temperature transducer with plug-in connection technology. The device is suitable for the connection of thermocouples. The measured values are converted into a linear and freely adjustable current or voltage signal. You can configure the device using one of the free software solutions. Default settings can also be made directly on the device by simply using the DIP switches (see configuration table). The measuring transducer supports fault monitoring and NFC communication.

## Commercial data

Item number	2902055
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C404
Product key	CK1421
Catalog page	Page 84 (C-5-2019)
GTIN	4046356649766
Weight per piece (including packing)	123.5 g
Weight per piece (excluding packing)	116 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	MINI Analog Pro
Type	Signal conditioner
Configuration	DIP switches
	Software
	App

#### Data management status

Article revision	16
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#### Insulation characteristics

Overvoltage category	II
Pollution degree	2

### Electrical properties

Electrical isolation	3-way isolation
Typical cold point errors	2 K (2 K + (0.2 K * ΔT))
Protective circuit	Transient protection
Step response (0–99%)	300 ms
	570 ms
Maximum temperature coefficient	≤ 0.01 %/K
Transmission error thermocouples	0.1% * 600 K / set measuring range; 0.1% > 600 K (C, E, J, K, N, T, L, U, M Gost, L Gost)
	0.2 % * 600 K / set measuring range; 0.2 % > 600 K (B, R, S, A1, A2, A3)
	0.2% * 600 K / set measuring range; 0.2% > 600 K (E, J, K, N, T, L, U, M Gost, L Gost); Highspeed Mode
	0.4% * 600 K / set measuring range; 0.4% > 600 K (B, R, S, A1, A2, A3); Highspeed Mode

#### Electrical isolation Input/output/power supply

Rated insulation voltage	300 V <sub>rms</sub>
Test voltage	3 kV AC (50 Hz, 60 s)
Insulation	Reinforced insulation according to IEC/EN 61010-1

### Supply

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Supply voltage range	9.6 V DC ... 30 V DC (The DIN rail connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, item no. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail in accordance with EN 60715)
Typical current consumption	32.7 mA (24 V DC)
	66.8 mA (12 V DC)
Power consumption	≤ 850 mW (at I <sub>OUT</sub> = 20 mA, 9.6 V DC, 600 Ω load)

## Input data

### Signal

Number of inputs	1
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### Measurement

Number of inputs	1
Configurable/programmable	Yes
Input voltage range	- 500 mV ... 500 mV (can be set via software)
Sensor types that can be used (TC)	B, C, E, J, K, N, R, S, T, L, U, A-1, A-2, A-3, M, L
Temperature measuring range	-250 °C ... 2500 °C (Range depends on sensor type, range can be set freely via software or in increments from -150°C to 1350°C via DIP switches)
Temperature measuring range	≥ 50 K
Voltage measuring range	3 mV
Sensor type:	500 °C ... 1820 °C
	-230 °C ... 1000 °C
	-210 °C ... 1200 °C
	-250 °C ... 1372 °C
	-200 °C ... 1300 °C
	-50 °C ... 1768 °C
	-50 °C ... 1768 °C
	-200 °C ... 400 °C
	-200 °C ... 900 °C
	-200 °C ... 600 °C
	0 °C ... 2500 °C
	0 °C ... 1800 °C
	0 °C ... 1800 °C
	-200 °C ... 100 °C
-200 °C ... 800 °C	

## Output data

### Signal: Voltage/current


Number of outputs	1
Configurable/programmable	Yes
Voltage output signal	0 V ... 5 V (via DIP switch)
	1 V ... 5 V (via DIP switch)
	0 V ... 10 V (via DIP switch)

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	10 V ... 0 V (via DIP switch)
	0 V ... 10.5 V (can be set via software)
Max. voltage output signal	≈  V
Non-load voltage	< 17.5 V
Current output signal	0 mA ... 20 mA (via DIP switch)
	4 mA ... 20 mA (via DIP switch)
	20 mA ... 0 mA (via DIP switch)
	20 mA ... 4 mA (via DIP switch)
	0 mA ... 21 mA (can be set via software)
Max. current output signal	24.6 mA
Short-circuit current	< 31.5 mA
Load/output load voltage output	≥ 10 kΩ
Load/output load current output	≤ 600 Ω (20 mA)
Ripple	< 10 mV <sub>rms</sub>
	< 10 mV <sub>rms</sub> (600 Ω)
Resolution, outputs (voltage)	1 mV
Resolution, outputs (current)	2 μA

## Connection data

Connection method	Screw connection
Stripping length	10 mm
Screw thread	M3
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (with ferrule)
	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (without ferrule)
Conductor cross section flexible	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section AWG	24 ... 12 (flexible)
Tightening torque	0.5 Nm ... 0.6 Nm

## Ex data

Ex installation (EPL)	Gc
	Div. 2

## Interfaces

Data: IFS interface

Connection method	Micro USB type B
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## Signaling

Status display	Green LED (supply voltage)
Error indication	Red LED

## Dimensions

Width	6.2 mm
Height	109.81 mm
Depth	119.2 mm

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## Material specifications

Color	gray (RAL 7042)
Housing material	PBT
Fire protection for rail vehicles (DIN EN 45545-2) R22	HL 1 - HL 2
Fire protection for rail vehicles (DIN EN 45545-2) R23	HL 1 - HL 2
Fire protection for rail vehicles (DIN EN 45545-2) R24	HL 1 - HL 2

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	5 % ... 95 % (non-condensing)

## Approvals

### CE

Certificate	CE-compliant
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### ATEX

Identification	⊕ II 3 G Ex ec IIC T4 Gc
Certificate	BVS 20 ATEX E 024 X

### IECEX

Identification	Ex ec IIC T4 Gc
Certificate	IECEX BVS 20.0017X

### 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 TAA00002UA
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### EAC Ex

Identification	⊕ Ex ec IIC T4 Gc
Certificate	BY/112 02.01 TP012 103.01 00079

### DNV GL data

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

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	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

## Electrostatic discharge

Standards/regulations	EN 61000-4-2
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## Electrostatic discharge

Comments	Safety measures must be taken to prevent electrostatic discharge.
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## Electromagnetic HF field

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Typical deviation from the measuring range final value	0.06 %

## Fast transients (burst)

Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	0.1 %

## Surge current load (surge)

Standards/regulations	EN 61000-4-5
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## Conducted interference

Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	0.05 %

## Standards and regulations

Electrical isolation	3-way isolation
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## Mounting

Mounting type	DIN rail mounting
Assembly note	The DIN rail connector can be used for bridging the supply voltage. It can be snapped onto a 35 mm EN 60715 DIN rail.
Mounting position	any

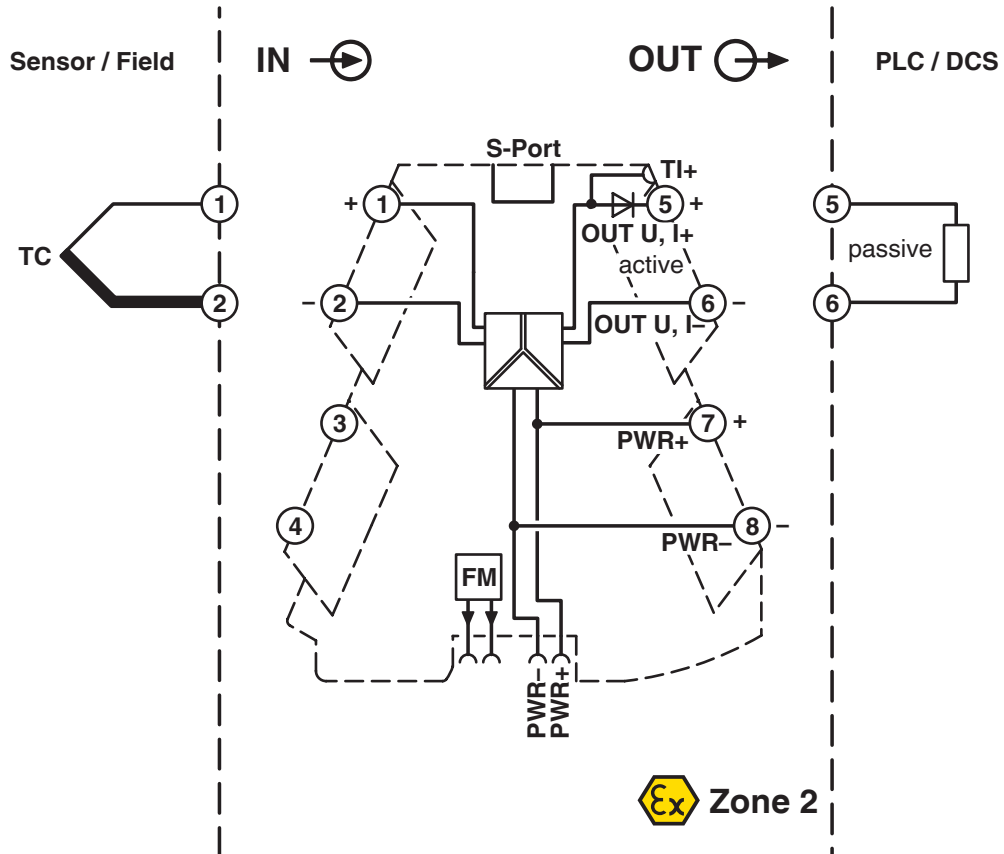
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## Drawings

Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2902055>



**DNV GL**

Approval ID: TAA00002UA



**UL Listed**

Approval ID: FILE E 238705



**cUL Listed**

Approval ID: FILE E 238705



**IECEx**

Approval ID: IECEx\_BVS\_20.0017X



**cUL Listed**

Approval ID: E196811



**UL Listed**

Approval ID: E196811



**ATEX**

Approval ID: BVS 20 ATEX E 024 X

**cULus Listed**

**cULus Listed**



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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

### 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)
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7)
SCIP	6fd57326-a253-4c34-89d0-81b3b89a6e1a

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