MINI MCR-TC-UI-NC

Temperature measuring transducer



Data sheet
105447_en_03

© Phoenix Contact 2026-04-21

1 Description

Configurable 3-way isolated temperature transducer. The device is suitable for the connection of thermocouples.

The measured values are converted into a linear current or voltage signal.

The device can either be configured via DIP switches or, with extended functionality, via the S-PORT using the software (FDT/DTM).

The device supports fault monitoring.

Features

- Configurable 3-way temperature transducer
- Configurable via DIP switch
- Extended functionality configurable with free software
- Screw connection available

Make sure you always use the latest documentation.
It can be downloaded from the product at phoenixcontact.com/products.

This document is valid for the products listed in the “Ordering data” chapter.

2 Table of contents

1 Description 1
2 Table of contents 2
3 Ordering data 3
4 Technical data 5
5 Safety regulations and installation notes 8
5.1 Installation notes 8
5.2 UL notes 8
6 Installation 9
6.1 Connection notes 9
6.2 Structure 9
6.3 Block diagram 9
6.4 Power supply 10
6.5 Mounting 10
6.6 Partition plate 11
6.7 Connection of the cables 11
7 Notes on using thermocouples 12
7.1 Cold junction compensation 12
7.2 Thermocouple types 12
8 Fault monitoring FM 13
9 Configuration 14
9.1 Configuration via DIP switches 14
9.2 Configuration via software (FDT/DTM) 17
10 Diagnostic indicator 17

3 Ordering data

Description	Type	Item no.	Pcs./Pkt.
Configurable temperature transducer for the connection of thermocouples. Can be configured via DIP switches or, with extended functionality, using the software. Screw connection, standard configuration.	MINI MCR-TC-UI-NC	2902851	1

Accessories	Type	Item no.	Pcs./Pkt.
DIN rail bus connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rail in accordance with EN 60715	ME 6,2 TBUS-2 1,5/5-ST-3,81 GY	2695439	10
DIN rail bus connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.	ME 6,2 TBUS-2 1,5/5-ST-3,81 GN	2869728	10
The partition plate is used to maintain Ex i isolating distances when Ex i and non-Ex i devices are mounted side by side on a DIN rail.	MCR-DP	1430594	1
Universal termination carrier for connecting 16 MINI Analog signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection), with HART multiplexer connection	TC-D37SUB-AIO16-M-PS-UNI	2902934	1
Universal termination carrier for connecting 16 MINI Analog signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)	TC-D37SUB-ADIO16-M-P-UNI	2902933	1
Bluetooth adapter with micro USB and S-PORT interface for wireless communication with the MINI Analog, MINI Analog Pro, MACX Analog, Interface System Gateways, and PLC logic device series.	IFS-BT-PROG-ADAPTER	2905872	1
Programming adapter with USB interface, for programming with software. The USB driver is included in the software solutions for the products to be programmed, such as measuring transducers or motor managers.	IFS-USB-PROG-ADAPTER	2811271	1
Parameterization software for Phoenix Contact devices. It includes online monitoring of current device process values, adjustment of device parameters, and logging of parameter changes. Windows installation version with online update.	CLIPX ENGINEER DEVICE PARAMETERIZATION	1371665	1
Parameterization software for Phoenix Contact devices. It includes online monitoring of current device process values, adjustment of device parameters, and logging of parameter changes. Windows version can be used straight away without online update.	CLIPX ENGINEER DEVICE PARAMETERIZATION P	1371666	1
Fold up transparent cover for MINI MCR modules with additional labeling option using insert strips and flat Zack marker strip 6.2 mm	MINI MCR DKL	2308111	10
Label for extended marking of MINI MCR modules in connection with the MINI MCR-DKL	MINI MCR-DKL-LABEL	2810272	10

Accessories	Type	Item no.	Pcs./Pkt.
MCR power terminal block for supplying several MINI Analog modules via the DIN rail connector, with screw connection, maximum current consumption of up to 2 A	MINI MCR-SL-PTB	2864134	1
The MINI MCR-SL-PTB-FM(-SP) power terminal block is used to supply the supply voltage to the DIN rail connector. The FM power terminal block offers the additional function of monitoring in combination with the fault monitoring module. Screw connection.	MINI MCR-SL-PTB-FM	2902958	1
The fault monitoring module is used to evaluate and report group errors from the fault monitoring system and to monitor the supply voltages. The error is reported via an N/O contact. Screw connection, standard configuration.	MINI MCR-SL-FM-RC-NC	2902961	1
Primary-switched power supply, QUINT POWER, screw connection, DIN rail mounting, supply of devices possible via the TBUS DIN rail connector, protective coating, input: single-phase, output: 24 V DC/2.5 A	QUINT4-SYS-PS/1AC/24DC/2.5/SC	2904614	1
Actuation tool, for ST terminal blocks, insulated, also suitable for use as a bladed screwdriver, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip	SZS 0,6X3,5	1205053	10

4 Technical data

Input Thermocouples	
Number of inputs	1
Configurable/programmable	Yes
Sensor types that can be used (TC)	B, 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	min. 50 K
Output Voltage output / current output	
Number of outputs	1
Voltage output signal	0 V ... 5 V 1 V ... 5 V 0 V ... 10 V 10 V ... 0 V
Max. voltage output signal	approx. 12.3 V
Short-circuit current	< 31.5 mA
Current output signal	0 mA ... 20 mA 4 mA ... 20 mA 20 mA ... 0 mA 20 mA ... 4 mA
Max. current output signal	24.6 mA
Open-circuit voltage	< 17.5 V
Configurable/programmable	Yes
Load/output load voltage output	≥ 10 kΩ
Ripple	< 20 mV_{PP}
Load/output load current output	< 500 Ω (at 20 mA)
Supply	
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	< 27 mA (at 24 V DC)
Max. current consumption	72 mA
Power consumption	≤ 700 mW (at I_{OUT} = 20 mA, 9.6 V DC, load 500 Ω)

Status and diagnostics indicators	
Status display	LED (red)
General data	
Transmission error thermocouples	0.1 % * 600 K / set measuring range; 0.1 % > 600 K (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
Maximum temperature coefficient	≤ 0.01 %/K
Step response (0–99%)	400 ms (Highspeed Mode: typ. 150 ms)
Typical cold point errors	< 2 K
Cold point error, max.	< 3 K
Degree of protection	IP20
Mounting position	any
Dimensions W/H/D	6.2 mm / 93.1 mm / 101.2 mm
Type of housing	PBT
Electrical isolation	
Electrical isolation	3-way isolation
Overvoltage category Pollution degree	II 2
Input/output/power supply Standards/regulations Rated insulation voltage Test voltage Insulation	 IEC/EN 61010 50 V AC/DC 1.5 kV AC (50 Hz, 60 s) Basic insulation
Connection data	
Connection method	Screw connection
Conductor cross-section rigid	0.2 mm² … 2.5 mm²
Conductor cross-section flexible	0.2 mm² … 2.5 mm²
Conductor cross-section AWG	26 … 12
Stripping length	12 mm
Ambient conditions	
Ambient temperature (operation)	-20 °C … 65 °C
Ambient temperature (storage/transport)	-40 °C … 85 °C
Permissible humidity (operation)	5 % … 95 % (non-condensing)
Maximum altitude for use above sea level	≤ 2000 m
Conformance with EMC directive	
Immunity in accordance with EN 61000-6-2 When being exposed to interference, there may be minimal deviations.	
Noise emission in accordance with EN 61000-6-4	

Conformance/approvals	
CE CE-compliant	
UL, USA/Canada	UL 508 Listed Class I, Div. 2, Groups A, B, C, D T4 Class I, Zone 2, Group IIC

5 Safety regulations and installation notes

5.1 Installation notes

- Installation, operation, and maintenance may only be carried out by qualified electricians. Follow the installation instructions as described.
- When installing and operating the device, observe the applicable regulations and safety directives (including national safety directives), as well as the generally recognized technical regulations.
- Observe the safety information, conditions, and limits of use specified in the product documentation. Comply with them.
- The device must not be opened or modified. Do not repair the device yourself, replace it with an equivalent device. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage resulting from violation.
- The IP20 degree of protection (IEC/EN 60529) specifies that the device is intended for use in a clean and dry environment. Do not subject the device to mechanical and/or thermal stress that exceeds the specified limits.
- The device is not designed for use in atmospheres with a danger of dust explosions.

5.2 UL notes

PROCESS CONTROL EQUIPMENT FOR HAZARDOUS LOCATIONS 31ZN

1 Suitable for use in class 1, division 2, groups A, B, C and D hazardous locations, or nonhazardous locations only.

2 WARNING - EXPLOSION HAZARD: Do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.

3 WARNING - EXPLOSION HAZARD: Substitution of any components may impair suitability for Class I, Division 2.

4 CAUTION: Use copper supply wires that are approved up to 60 °C.

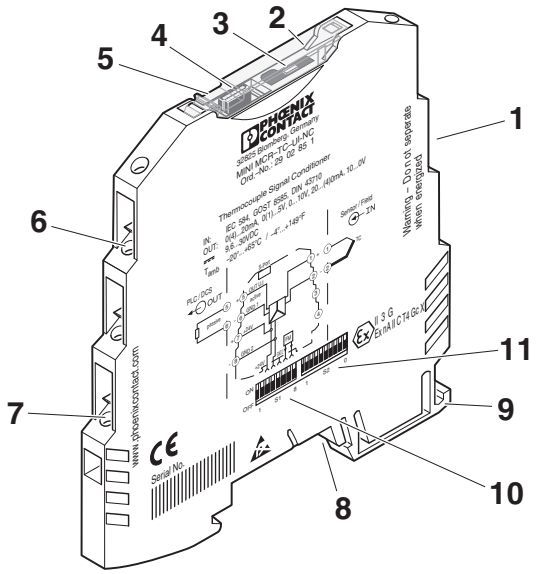
6 Installation

6.1 Connection notes

NOTE: Electrostatic discharge!
The device contains components that can be damaged or destroyed by electrostatic discharge. When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD) according to EN 61340-5-1 and IEC 61340-5-1.

6.2 Structure

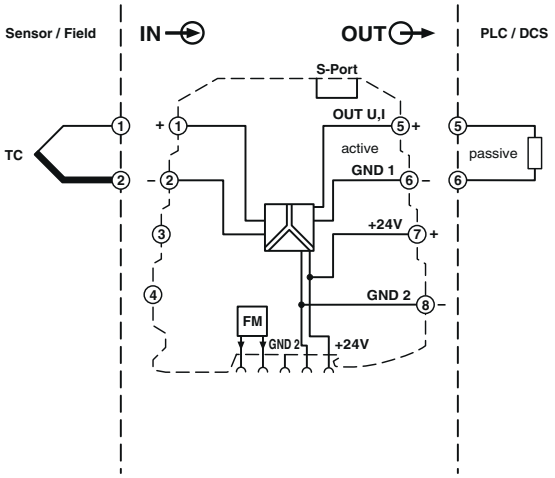
Figure 1 Structure



1 Input: thermocouple
2 Cover
3 Diagnostics LED
4 S-PORT interface
5 Groove for ZBF 6 Zack marker strip
6 Output: Standard signals
7 Supply voltage
8 Connection for DIN rail connector
9 Universal snap-on foot for EN DIN rails
10 DIP switch S1
11 DIP switch S2

6.3 Block diagram

Figure 2 Block diagram



6.4 Power supply

NOTE: Never connect the supply voltage directly to the DIN rail connector. It is not permitted to draw power from the DIN rail connector or from individual modules.

You must refer to the “MACX and MINI Analog power manual“ for the design of the power supply; it is available to download at www.phoenixcontact.com/products under the item listing.

Supply via the MINI Analog Module

Where the total current consumption of the aligned MINI Analog modules does not exceed 400 mA, the power can be supplied directly at the connection terminal blocks of one MINI Analog module.

A 400 mA fuse should be connected upstream.

Supply via a Power Terminal Block

The MINI MCR-SL-PTB power terminal block (Item No. 2864134) of the same shape is used to feed in the supply voltage to the DIN rail connector.

We recommend connecting a 2.5 A slow-blow fuse (e.g., SIBA 179 120.2,5 20x5).

Supply via a system power supply unit

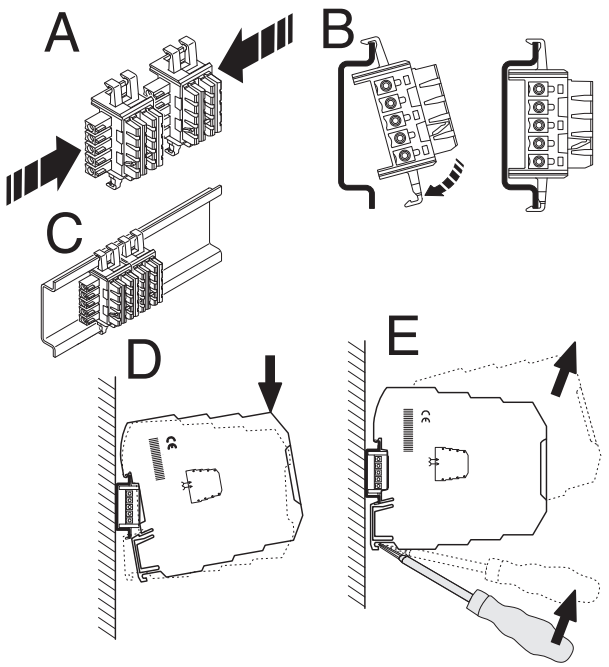
Use the QUINT4-SYS-PS/1AC/24DC/2.5/SC (Item No. 2904614) as the system power supply.

The power supply can be installed on all 35 mm DIN rails in accordance with EN 60715. The normal mounting position is horizontal (input terminals facing down). The minimum clearance to other devices is 30 mm above/below.

If you would like to supply adjacent items using the power supply, use a DIN rail bus distributor. To do so, insert the DIN rail bus adapter ME 22,5 TBUS ADAPTER KMGY (Item No.: 2201756) and the DIN rail connector ME 17,5 TBUS 1,5/ 5-ST-3,81 KMGY (Item No.: 2713645) plugged together in the DIN rail.

6.5 Mounting

Figure 3 Mounting and removing



– Mount the module on a 35 mm DIN rail in accordance with EN 60715.
– When using the DIN rail connector, first place it into the DIN rail (see A – C). It is used to bridge the power supply. It is also absolutely vital that you snap the module and the DIN rail connector into position in the correct direction: the snap-on foot should be at the bottom and the connector on the left.

6.6 Partition plate

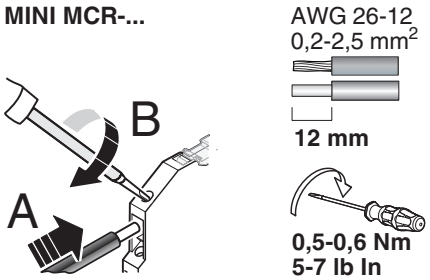
If you want to mount Ex i and non-Ex i devices next to each other on a DIN rail, you will require the MCR-DP partition plate (item no. 1430594). The partition plate ensures that Ex i isolating distances are maintained.

The partition plate is tailored to the MINI Analog, MINI Analog Pro, and MACX Analog device series and the QUINT4 system power supply (item no. 2904614).

The partition plate is compatible with the ME … TBUS DIN rail connectors (e.g., item no. 1090049, 2695439).

6.7 Connection of the cables

Figure 4 Screw connection



- Insert the wire into the corresponding connection terminal block.
- Use a screwdriver to tighten the screw in the opening above the connection terminal block.

7 Notes on using thermocouples

Thermocouples consist of two conductors made from different metals with different thermoelectric properties which are connected together on one side and are exposed to a temperature gradient and, therefore, convert heat flow to electrical voltage. Electrical voltage is measured at both thermocouple connections.

7.1 Cold junction compensation

In a thermocouple, however, voltage will not only be generated at the contact point of the connected conductors, but also at both connection points of the measuring transducer, as each of these points together with the connected thermocouple cable will form another thermocouple.

In order to be able to calculate the absolute measurement point temperature value from this voltage difference, and thus also the temperature difference, the temperature of the connection points must be the same and known.

To this end, the connection points are artificially maintained at a known temperature: for laboratory measurements, for example, at 0°C using ice water, in industrial applications with thermostatically controlled heating and cooling.

When considering the connection point temperature, this is referred to as cold junction compensation.

Cold junction compensation can also be implemented with a separate temperature measurement at the connection points.

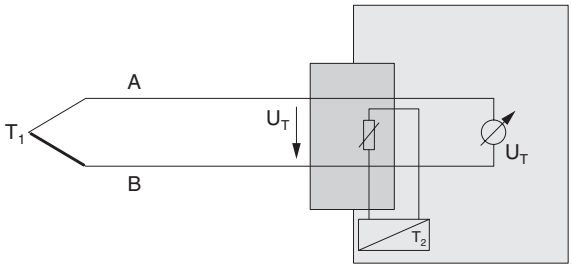
Interface modules are available for the connection of thermocouples, in which cold junction compensation is already integrated. Interface modules of this type are also signal transformers with cable connections to the evaluation unit.

Thermocouples are often referred to with the abbreviation TC.

Thermocouples are suitable for high temperatures or large temperature ranges.

Resistance thermometers are more suitable for temperatures up to a maximum of 800°C.

Figure 5 Thermocouple and interface module at the sensor including cold junction compensation



T_1 Temperature at the measurement point

T_2 Temperature at the connection point

U_T Voltage generated between the measurement point and the connection point. Indicates the absolute temperature T_1 at the measurement point by considering the connection point temperature T_2.

7.2 Thermocouple types

Type	Standard	Temperature range [°C]	IEC color code
B	IEC 584	+500 ... +1820	Not defined
E	IEC 584	-230 ... +1000	Purple
J	IEC 584	-210 ... +1200	Black
K	IEC 584	-250 ... +1372	Green
N	IEC 584	-200 ... +1300	Pink
R	IEC 584	-50 ... +1768	Orange
S	IEC 584	-50 ... +1768	Not defined
T	IEC 584	-200 ... +400	Brown
L	DIN 43710	-200 ... +900	-
U	DIN 43710	-200 ... +600	-
A-1	GOST 8.585	0 ... +2500	-
A-2	GOST 8.585	0 ... +1800	-
A-3	GOST 8.585	0 ... +1800	-
M	GOST 8.585	-200 ... +100	-
L	GOST 8.585	-200 ... +800	-

8 Fault monitoring FM

Detected errors on the signal input or in the device itself are reported via the DIN rail bus connector to the MINI MCR-SL-FM-RC-NC fault monitoring module (item no. 2902961), which is the same shape. The module reports the error centrally via a N/C contact.

Only one fault monitoring module is required per group. Any individual evaluation of the up to 80 Phoenix Contact signal conditioners can be omitted.

The fault monitoring module can also be used to monitor the supply voltage.

- For the behavior of the fault monitoring contact for the different DIP switch configurations, please refer to the table.

Error response		**Fault monitoring: N/C contact**		
		Measuring range overrange	Measuring range underrange	Cable break
A		activated	deactivated	activated
B		activated	activated	activated
C		deactivated	deactivated	activated
D		deactivated	deactivated	deactivated
NE43	Upscale	activated	activated	activated
	Downscale			
	0 mA			
	Upscale/downscale			
Module error		activated (error is always reported)		
Invalid DIP switch configuration		activated (error is always reported)		

9 Configuration

The modules have the standard configuration:

- TC sensor type J IEC 584
- Cold junction compensation “ON”
- -200 °C ... 1200 °C
- Output 4 mA ... 20 mA
- Error evaluation according to NE43 (downscale)
- Fault monitoring contact reacts to all errors

The module can also be configured with the supply voltage not connected.

9.1 Configuration via DIP switches

At delivery, all DIP switches are in the "OFF" position.

Configure the DIP switches according to the planned application using the configuration tables.

DIP switch S1 is used to define the sensor type, the cold point compensation, the output signal range, and the start of the measuring range.

DIP switch S2 is used to specify the measuring range final value, configuration method, and error contact behavior.

Configuration tables

		• ≙ ON **DIP S1**							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Sensor type	J (IEC 584)								
	K (IEC 584)	•							
Cold junction compensation	OFF								
	ON		•						
Analog output signal	0...20 mA								
	20...0 mA			•					
	4...20 mA				•				
	20...4 mA			•	•				
	0...10 V					•			
	10...0 V			•		•			
	0...5 V				•	•			
	1...5 V			•	•	•			
Starttemperature	0°C ≙ 32°F								
	-10°C ≙ 14°F						•		
	-20°C ≙ -4°F							•	
	-30°C ≙ -22°F						•	•	
	-40°C ≙ -40°F								•
	-50°C ≙ -58°F						•		•
	-100 °C ≙ -148°F							•	•
	-150 °C ≙ -238°F						•	•	•

Measuring range final value	DIP S2							DIP S2									
	1	2	3	4	5	6		1	2	3	4	5	6	7	8	9	0
0°C ≙ 32°F							340°C ≙ 644°F						•				
10°C ≙ 50°F	•						360°C ≙ 680°F	•					•				
20°C ≙ 68°F		•					380°C ≙ 716°F		•				•				
30°C ≙ 86°F	•	•					400°C ≙ 752°F	•	•				•				
40°C ≙ 104°F			•				420°C ≙ 788°F			•			•				
50°C ≙ 122°F	•		•				440°C ≙ 824°F	•		•			•				
60°C ≙ 140°F		•	•				460°C ≙ 860°F		•	•			•				
70°C ≙ 158°F	•	•	•				480°C ≙ 896°F	•	•	•			•				
80°C ≙ 176°F				•			500°C ≙ 932°F				•		•				
90°C ≙ 194°F	•			•			520°C ≙ 968°F	•			•		•				
100°C ≙ 212°F		•		•			540°C ≙ 1004°F		•		•		•				
110°C ≙ 230°F	•	•		•			560°C ≙ 1040°F	•	•		•		•				
120°C ≙ 248°F			•	•			580°C ≙ 1076°F			•	•		•				
130°C ≙ 266°F	•		•	•			600°C ≙ 1112°F	•		•	•		•				
140°C ≙ 284°F		•	•	•			620°C ≙ 1148°F		•	•	•		•				
150°C ≙ 302°F	•	•	•	•			640°C ≙ 1184°F	•	•	•	•		•				
160°C ≙ 320°F					•		660°C ≙ 1220°F					•	•				
170°C ≙ 338°F	•				•		680°C ≙ 1256°F	•				•	•				
180°C ≙ 356°F		•			•		700°C ≙ 1292°F		•			•	•				
190°C ≙ 374°F	•	•			•		750°C ≙ 1382°F	•	•			•	•				
200°C ≙ 392°F			•		•		800°C ≙ 1472°F			•		•	•				
210°C ≙ 410°F	•		•		•		850°C ≙ 1562°F	•		•		•	•				
220°C ≙ 428°F		•	•		•		900°C ≙ 1652°F		•	•		•	•				
230°C ≙ 446°F	•	•	•		•		950°C ≙ 1742°F	•	•	•		•	•				
240°C ≙ 464°F				•	•		1000°C ≙ 1832°F				•	•	•				
250°C ≙ 482°F	•			•	•		1050°C ≙ 1922°F	•			•	•	•				
260°C ≙ 500°F		•		•	•		1100° ≙ 2012°F		•		•	•	•				
270°C ≙ 518°F	•	•		•	•		1150°C ≙ 2102°F	•	•		•	•	•				
280°C ≙ 536°F			•	•	•		1200°C ≙ 2192°F			•	•	•	•				
290°C ≙ 554°F	•		•	•	•		1250°C ≙ 2282°F	•		•	•	•	•				
300°C ≙ 572°F		•	•	•	•		1300°C ≙ 2372°F		•	•	•	•	•				
320°C ≙ 608°F	•	•	•	•	•		1350°C ≙ 2462°F	•	•	•	•	•	•				

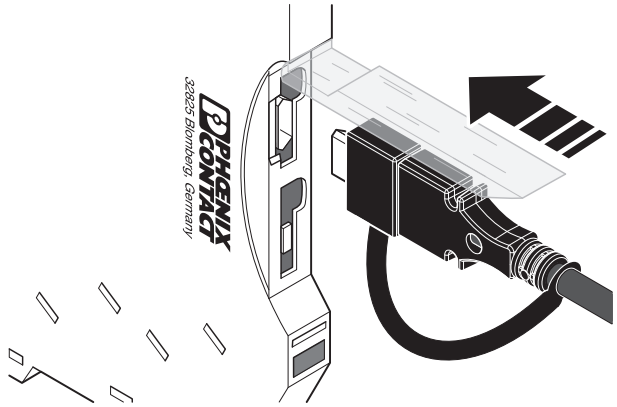
• ≙ ON

Fault evaluation		Analog OUT								• ≙ ON DIP S2			
										7	8	9	0
		0...20 mA	20...0 mA	4...20 mA	20...4 mA	0...10 V	10...0 V	0...5 V	1...5 V				
A	Cable break	21 mA	21 mA	21 mA	21 mA	10.5 V	10.5 V	5.25 V	5.25 V				
	Overrange	20.5 mA	20.5 mA	20.5 mA	20.5 mA	10.25 V	10.25 V	5.125 V	5.125 V				
	Underrange	0 mA	0 mA	4 mA	4 mA	0 V	0 V	0 V	1 V				
B	Cable break	21 mA	21 mA	21 mA	21 mA	10.5 V	10.5 V	5.25 V	5.25 V				
	Overrange	20.5 mA	20.5 mA	20.5 mA	20.5 mA	10.25 V	10.25 V	5.125 V	5.125 V	•			
	Underrange	0 mA	0 mA	3.5 mA	3.5 mA	0 V	0 V	0 V	0.875 V				
C	Cable break	21 mA	21 mA	21 mA	21 mA	10.5 V	10.5 V	5.25 V	5.25 V				
	Overrange	20 mA	20 mA	20 mA	20 mA	10 V	10 V	5 V	5 V		•		
	Underrange	0 mA	0 mA	4 mA	4 mA	0 V	0 V	0 V	1 V				
D	Cable break	0 mA	0 mA	4 mA	4 mA	0 V	0 V	0 V	1 V				
	Overrange	20 mA	20 mA	20 mA	20 mA	10 V	10 V	5 V	5 V	•	•		
	Underrange	0 mA	0 mA	4 mA	4 mA	0 V	0 V	0 V	1 V				
NE43	(Only OUT = 4...20 mA or 20...4 mA)												
	Upscale	Cable break, overrange, underrange							= 21.5 mA			•	
	Downscale	Cable break, overrange, underrange							= 3.5 mA	•		•	
	0 mA	Cable break, overrange, underrange							= 0 mA		•	•	
	Up/downscale	Cable break					= 3.5 mA			•	•	•	
		Overrange, underrange					= 21.5 mA						
Configuration		Via software											
		Via DIP switch											•

9.2 Configuration via software (FDT/DTM)

Use the IFS-USB-PROG-ADAPTER (Item No.: 2811271) for connecting the device to the PC.

Figure 6 Connection for programming adapter



Software configuration provides advantages such as 15 different sensor types, customer-specific characteristic curves, free adjustment of signal output, temperature ranges, and error indication.

The software consists of the FDT framework application and a driver (DTM) for every device. The software is available free of charge on the Internet at phoenixcontact.com.

- Enter the order number of your measuring transducer in the search field. The installation packages can be found under Downloads.
- If you are already using an FDT framework application, only download the DTMs.
- In any other case, download the IFS-CONF software package. It contains both the framework application and the pre-installed DTMs.

ANALOG-CONF standard software

- If you do not require an FDT/DTM-based software solution, you can use the ANALOG-CONF standard software. This software also allows for performing all the settings on the device. The software is available free of charge on the Internet at phoenixcontact.com.

The USB driver for the programming adapter is part of the IFS-CONF, ANALOG-CONF, and of the DTM installation package.

10 Diagnostic indicator

The red LED indicates the following error states:

State	Description
On	Internal device error
Flashing (1.4 Hz)	Simulation mode
Flashing (2.8 Hz)	Sensor fault or invalid DIP switch configuration