

Digital temperature transmitter

- Type TE46 -



FEATURES

- UNIVERSAL TEMPERATURE TRANSMITTER
- LOW STORAGE COSTS, AS ONLY ONE PRODUCT TYPE FOR ALL APPLICATIONS
- QUICK CONFIGURATION WITH SETUP PLUG ON-SITE AND PC PARAMETRIZATION OR PRECONFIGURED
- 2-WIRE TECHNOLOGY 4-20 mA
- HIGH MEASURING ACCURACY AND LONG-TERM STABILITY
- FOR Pt100 AND Pt1000 METERING PROBES ACCORDING TO DIN EN IEC 60751

INTENDED USE

The TE46 is a universal and configurable temperature transmitter with a sensor input for measuring resistors and a 4-20 mA analog output. It can be used for temperature measurement in liquid and gaseous media. The transmitter is designed for mounting in a stainless steel field housing or connection head B. The transmitter may only be used for the purpose specified by the manufacturer. The manufacturer is not liable for damage resulting from improper or unintended use.

DESCRIPTION

The temperature transmitter is a 2-wire device with a measuring input and an analog output. The device transmits signals from resistance sensors via a 4-20 mA loop current signal. Measuring line compensation up to max. 50 Ω is possible. The 4-20 mA output signal can be inverted to a 20-4 mA signal. The signal limits can be configured in accordance with NAMUR recommendation NE43 for failure detection. The device has reverse polarity protection for the power supply.

CONFIGURATION / INTERFACE

The TE46 temperature transmitter can be configured for the task in hand using the configuration set TZ45 and a PC directly via a connector in the transmitter. This means time savings, flexibility and simple commissioning. The TE46 is also available with a factory setting in accordance with predefined specifications (see ordering information).

CONFIGURATION SET TZ45

The TZ45 configuration set consists of the programming software, the adapter and the serial connection cable. The adapter features a galvanic isolation. Data is exchanged between the transmitter and the PC in both directions, so that the configuration and serial number of the transmitter can be called up from any PC with the configuration set.



Digital temperature transmitter

- Type TE46 -

TECHNICAL DATA

General information						
Type designation / measurand	TE46 / Temperature (temperature-linear transmission behavior)					
Measuring insert						
Resistance adjustment	4-wire circuit					
Weight	45 g					
Input variables Resistance thermometer (RTD)						
Measuring current on sensor	< 0.3 mA					
Max. sensor cable resistance	50 Ω per wire					
Line compensation (2-wire)	0 ... 30 Ω					
Standard	DIN EN IEC 60751					
Accuracy (the higher value is valid)	No.	Type	Measuring range	Min. margin	Measurement deviation	
	1	Pt100	-200 ... 850°C	10 K	≤ 0.15 K	0.07% of measuring range
	2	Pt100	-50 ... 250°C	10 K	≤ 0.10 K	0.07% of measuring range
	3	Pt1000	-200 ... 250°C	10 K	≤ 0.15 K	0.07% of measuring range
	4	Pt1000	-50 ... 250°C	10 K	≤ 0.10 K	0.07% of measuring range
Maximum measurement deviation	According to DIN EN IEC 60770 and specified reference conditions. The information on the measurement deviation correspond to ±2 σ (Gaussian normal distribution). The specifications include non-linearities and repeatability.					
Reference conditions						
Calibration temperature	+25°C ± 3°C					
Power supply voltage	10 ... 36 V DC					
Output variables						
Power consumption	3.5 ... 22.5 mA		Circuit type		2-wire	
Permissible operating voltage	10 V ≤ U _b ≤ 36 V		Output signal		4-20 mA / 20-4 mA (invertible)	
Switch-on delay	≤ 5 s		max. load resistance		(V _{ref} -10 V)/0.023 A	
Response time	≤ 0.5 s		Climate class (acc. to EN 60654-1)		C1	
Protection class acc. to EN 60529	IP 00. When installed, depends on the connection head or housing used for field mounting.					
Failure information acc. to NAMUR NE 43	Measuring range undercut		linear decrease from 4.0 ... 3.8 mA			
	Measuring range exceeded		linear increase from 20.0 ... 20.5 mA			
	Failure, e.g. sensor break		≤ 3.6 mA (low), ≥ 21 mA (high)			
Measuring accuracy						
Long-term stability	after 1 year ±0.05 K or ±0.03% of the measuring range after 2 years ±0.06 K or ±0.04% of the measuring range after 3 years ±0.07 K or ±0.05% of the measuring range					
Influence of the ambient temperature per 1°C change	max. ±0,04°C in the entire range max. ±0,02°C in the range 0...200°C					
Influence of the supply voltage per 1 V change	max. ±0,02°C in the entire range max. ±0,01°C in the range 0...200°C					
Operating conditions						
Ambient temperature range	-40...+85°C					
Storage temperature range	-50...+100°C					
Humidity (acc. to IEC 60068-2-30)	Max. rel. humidity 95%. Condensation permissible.					
Shock and vibration resistance	Vibration resistance according to DNVGL-CG-0339 : 2015 and DIN EN 60068-2-27 8.6 ... 150 Hz at 3 g, shock resistance according to KTA 3505 (section 5.8.4. Shock test)					
Conformity						
Low Voltage Directive 2014/35/EU	EN 61010-1					
EMC Directive 2014/30/EU	IEC/EN 61326					
RoHS Directive 2011/65/EU	IEC/EN 63000					

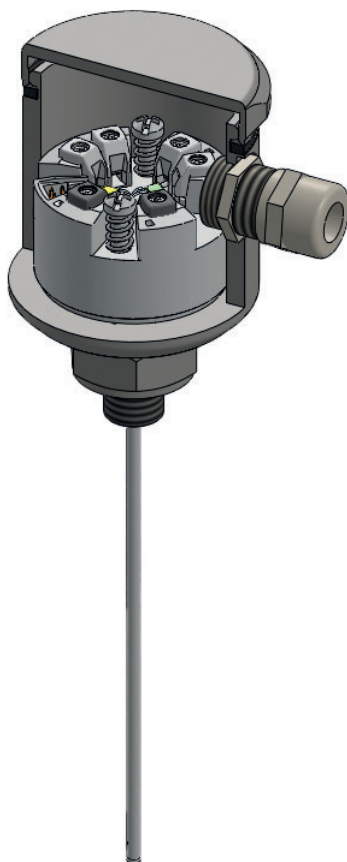
Digital temperature transmitter

- Type TE46 -

TECHNICAL DATA

Constructive Design	
Electrical connection	Screw terminals
Cable version	Rigid or flexible
Cable cross-section	$\leq 1.5 \text{ mm}^2$ (16 AWG)
Installation position	any
Dimensions	$\varnothing 44 \text{ mm} \times 24.1 \text{ mm}$ height
Materials	Housing: Polycarbonate (PC) Connection/screw terminals: Nickel-plated brass Potting compound: SIL gel
Usability	
Remote control unit	Device-specific parameters are configured via the CDI interface (service interface) of the device. The configuration tool TZ45 is available for this purpose. For further information, please contact our technical support at technik@hengesbach.com
Accessories	
Z-SET TZ45	Configuration set for configuring the measurement range
Z-CLAFNNM	DIN rail clip adapter for mounting of the TE46
Programming software HengCom	Download at www.hengesbach.com/downloads
Certificates and declarations	Calibration certificate, declaration of conformity (CE)

DIMENSIONS in mm



Installation example with cable gland

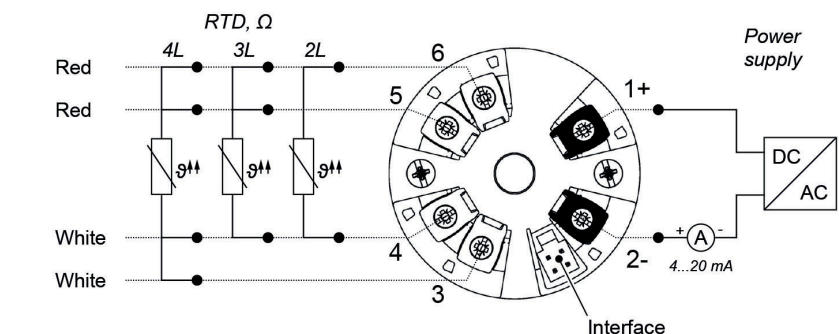


Fig. 1: Function and connection diagram

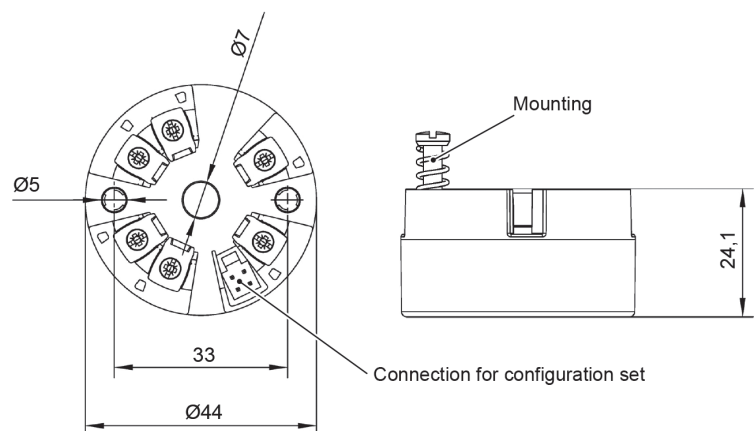
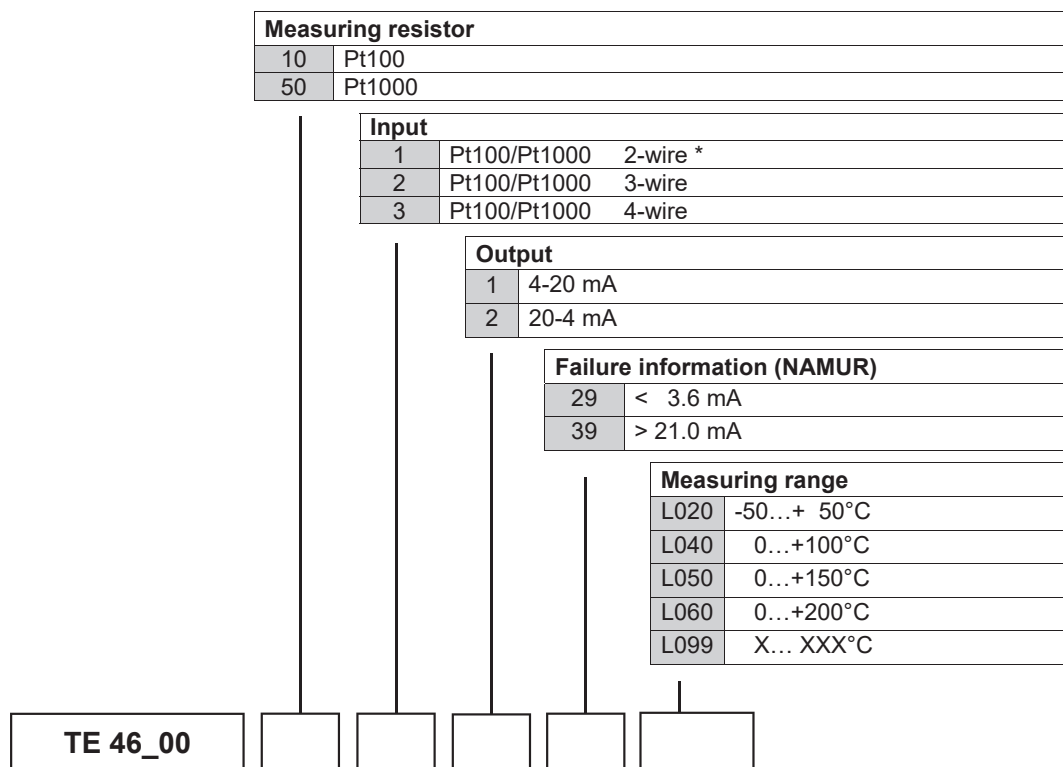


Fig. 2: Dimensions

Digital temperature transmitter - Type TE46 -



ORDERING INFORMATION



* Please specify cable resistance (max. 30Ω).

Ordering example: TE46_00103139L040

Transmitter TE46 (TE46_00) with measuring resistor Pt100 (10), Input 4-wire (3), Output 4-20mA (1), Failure information > 21.0 mA (39), Measuring range 0...100°C (L040)

Notes on the document:

This document provides all technical data on the device. The texts and illustrations have been compiled with the utmost care. Nevertheless, errors cannot be ruled out. The system operator is responsible for ensuring that the material is compatible with the process conditions and peripheral equipment. The devices are not suitable for use in potentially explosive atmospheres or safety-relevant system components (SIL). Our devices are constantly being further developed and are therefore subject to change.