Temperature Sensor TE-K
Screw-in thermocouple temperature sensor

- Thermocouple type K
- 2 electronic switching outputs, programmable
- Display: 7-segment, mirrorable by 180°

Schmidt Mess- und Regeltechnik

Temperature Sensor TE-K
Screw-in thermocouple temperature sensor

Applications

For use in climating, ventilating and heating installations and the whole range of industrial application. With it's two configurable limit value contacts, the integrated display and the numerous electrical connections, the temperature sensor is also suitable for applications with higher requirements.

Technical features
- Measuring element: thermocouple type K
- Potting: electronics completely potted
- Material: process connection stainless steel 1.4571
- Process connection: 1/4", 3/8", 1/2", 3/4", 1", 1/4" NPT, 3/8" NPT, 1/2" NPT
- Output: 4...20 mA HART
- Limit value contacts: 2 electronically
- Configuration: with keys/software
- Connection: M12, Super Seal, Deutsch, Bayonet, valve, cable
- Protection: at least degree IP65

Characteristics	
Input	Thermocouple Type K (-50…+200 °C)
Output	4...20 mA current loop HART (2-wire)
Voltage supply	Out of current loop (12...40 VDC)
Accuracy	See technical details
Process connection	Several options
Electrical connection	Several plugs
Temperature range	-20…+80 °C (ambient)
Limit value contacts	2 electronically (NPN / PNP)
Adjustment	keys / software
Material	Stainless steel 1.4571 (medium contact)
Protection	At least IP65

Important instructions!

Technical changes and errors reserved.
Pictures can be similar.
The operating instructions belonging to this device must be observed! Download at www.schmidt-messtechnik.com.

Technical data		
Input	Thermo couple	Type K, NiCr-Ni (-50...200 °C, minimum range: 50°C)
Output	Current signal	4...20 mA with superimposed communication signal (HART), 2-wire current loop
	Current range	3,8...20,5 mA
	Signal on error	3,6 mA (sensor short circuit, underflow) 21 mA (sensor break, sensor open circuit, overflow

Schmidt Mess- und Regeltechnik

Temperature Sensor TE-K
Screw-in thermocouple temperature sensor

Technical data			
Performance	Sensor	Type K	±1,5 °C (according DIN EN 60584-2 class 1)
	Measuring amplifier	Accuracy	0,3 % of range
		Resolution	16 Bit
		Filter setting	0…99 s
		Transmission behaviour	Temperature linear
		Measuring rate	10 measurements / s
		Configuration	Keys on display / via software (HART communication)
		Turn-on delay	<5 s
		Response time	20 ms
	Indicator / limit values	Resolution	-9999...9999 digits
		Error of measurement	±0,2% of range, +/- 1 digit
		Temperature drift	100 ppm/K
		Features / operation	according VDMA 24574-1 up to 24574-4
Programmable features	Measuring amplifier	Measuring range start / measuring range end	
	Display	range of indication / time of indication / decimal point / units / stabilisation of zero point / locking of programming / calibration points / TAG number	
	Limit contacts	limit value 1 and 2 / hysteresis 1 and 2 / delay times 1 and 2	
Indication	Display	7- segment, 8,5 mm, red, 4 digits, representation mirror-inverted 180° possible	
	Head of display	Rotatable approx. 330°	
	Memory	minimum / maximum values	
	Indication	- Measuring value – unit of measurement – control menu	
	Decimal point	automatically or manually, dependent on measuring range / unit	
	Representation	xxxx / xxx.x / xx.xx / x.xxx	

Temperature Sensor TE-K
Screw-in thermocouple temperature sensor

Technical data			
Limit contacts	Electronically	2x PNP or NPN (30 VDC, 200 mA) Option: 2x PNP or NPN (30 VDC, 1000 mA)	
	Indication	1 LED red for each limit value	
	Voltage across	<1 V	
	Settings	With 3 keys (TouchM-Technology)	
	Setting range	Switch point and hysteresis: any value within measuring range	
	Switching delay	0,0...999,9 s	
	Failsafe function:	Adjustable	
	Galvanical insulation	Switching outputs are separated from measuring amplifier	
Supply	Voltage	HART current loop:12...40 VDC	
	Load	R = (U$_B$-12 V) / 22 mA	
	Reverse battery protection	Available (no function, no damage)	
Environmental conditions	Temperature	Operating range	-20…+80 °C
		Medium	-50…+200 °C
		Storing	-40…+100 °C
	Condensation	Uncritical	
Mechanics	Dimensions	See page 6	
	Process connection	1/4" /3/8" / 1/2" / 3/4" / 1" / 1/4NPT / 3/8NPT / 1/2NPT	
	Extension	100 mm (option)	
	Electrical connection	See page 5	
	Material	Protection tube	Stainless steel 1.4571 (standard 6x0,5 mm)
		Extension	Stainless steel 1.4571
		Process connection	Stainless steel 1.4571
		Body	PBT GF30
		Head of display	Polycarbonate (Makrolon)
	Weight	Approx.150 g (70 mm, 1/2", M12)	
	Fitting position	Any	
	System pressure	PN 25	
	Protection of device	Ingress protection	At least IP65 (Electronics)
		PCB	potted

Temperature Sensor TE-K
Screw-in thermocouple temperature sensor

Connection M12 plug (example)

Assignment plug M12x1, 8-pole				
Current loop 4...20 mA HART	Electronical limit value contacts	Shielding		
+ 1 − 3	2 4 5	8		
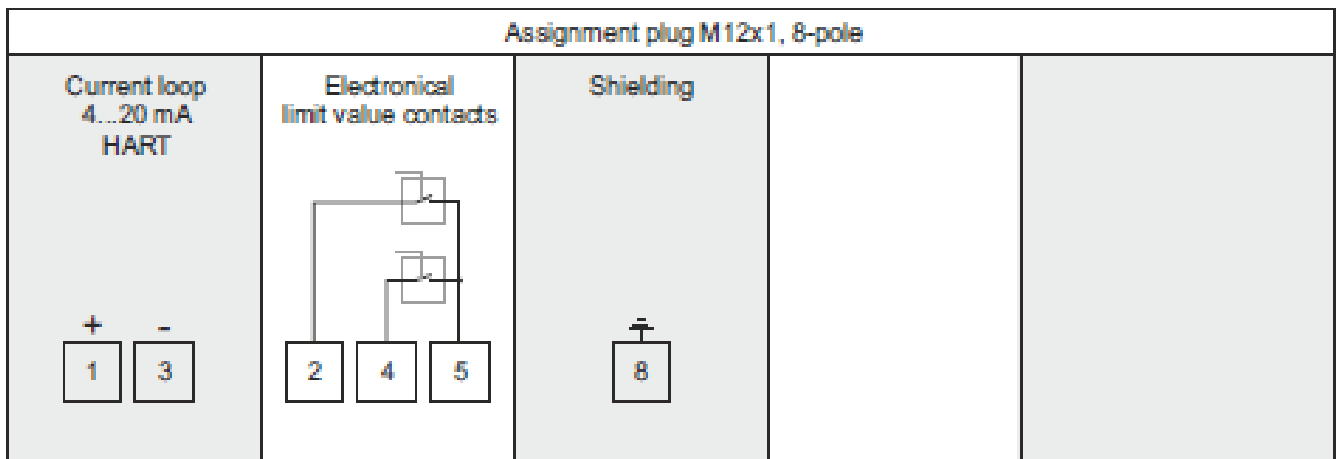
Electrical connection

M12x1	Super Seal	Deutsch	Deutsch	Bayonet	Valve	MIL	
4-, 5-, 8-pole	3-pole	3-pole	4-pole	4-pole	4-pole	6-pole	

Connection / Limit value (LV)	M12 4-pole	M12 5-pole	M12 8-pole	Bayonet 4-pole	Deutsch 4-pole	Deutsch 3-pole	Super Seal 3-pole	Valve 4-pole	MIL 6-pole	
1 electronical LV	X	X	X	X	X			X	X	
2 electronical LV		X	X						X	

Temperature Sensor TE-K
Screw-in thermocouple temperature sensor

HART communication and configuration

The HART-Tool is a graphical user interface for the ME series with menu-driven progam for configuration. It can be used for putting into operation, configuration, analysis of signals, data backup and documentation of the device. Operating systems: Windows 2000, Windows XP, 7, 8.1 and 10. Connection via HART interface (modem) with USB interface of a PC or hand-held HART communicator.

Settings:
- Adjustment of output current
- Simulation of output current
- Filter function
- Limits of measuring range
- Linear output signal
- HART address
- HART Tag number
- 2-point calibration
- 6-point calibration (linearization)

Please note: When using communication via a HART modem, please take the comunication resistance of 250 Ω into account.

Dimensions (mm)
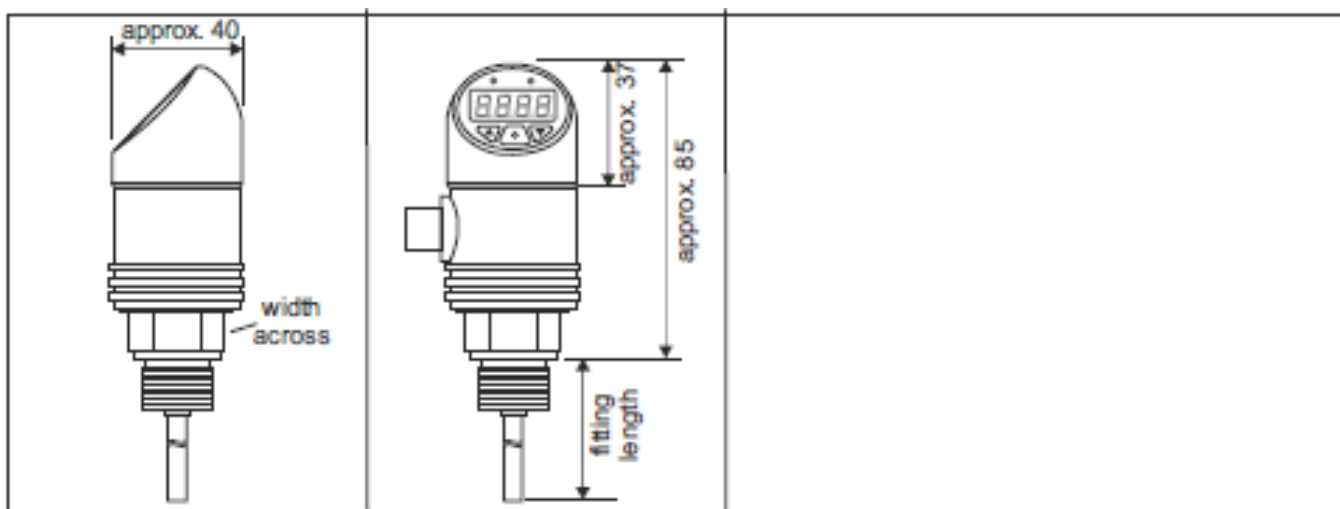
Accessories

Interface HART, USB, software

Schmidt Mess- und Regeltechnik

Temperature Sensor TE-K
Screw-in thermocouple temperature sensor

Ordering code

TE-K X X X X X X - X X X

Category	Description	Code
Input:	Thermocouple type K	0
Sensor type:	±1,5°C (according DIN EN 60584-2 class 1)	0
Thermowell:	Ø6x0,5 mm	0
	Other well (please specify)	1
	Ø6x0,5 mm with extension 100 mm	2
	Other well with extension 100 mm (please specify)	3
Fitting length:	50 mm	0
	100 mm	1
	200 mm	2
	250 mm	3
	400 mm	4
	600 mm	5
	1000 mm	6
	Other length (please specify)	7
Process connection:	1/4"	0
	3/8"	1
	1/2"	2
	3/4"	3
	1"	4
	1/4 NPT	5
	3/8" NPT	6
	1/2" NPT	7
Limit value contacts:	2x PNP, 30 VDC, 200 mA (standard)	0
	1x PNP, 30 VDC, 200 mA	1
	Without	2
	2x NPN, 30 VDC, 200 mA	3
	1x NPN, 30 VDC, 200 mA	4
	2x PNP, 30 VDC, 1000 mA	5
	1x PNP, 30 VDC, 1000 mA	6
	2x NPN, 30 VDC, 1000 mA	7
	1x NPN, 30 VDC, 1000 mA	8
Electrical connection:	M12, 4-pole	0
	M12, 5-pole	1
	M12, 8-pole	2
	Deutsch DT04, 3-pole	3
	Deutsch DT04, 4-poe	4
	Super Seal 1.5, 3-pole	5
	Bayonet (DIN), 4-pole	6
	Valve plug, 4-pole	7
	MIL, 6-pole	9
Configuration:	Factory setting[1]	0
	Customized (please specify)[2]	1
Other:	Special model	0

[1] Measuring range: indicating range / Limit values: 40% / 80%
[2] All settings possible according to Technical Data can be selected. For values not selected factory settings will be chosen.

D-EN-TEK-20191024