Temperature Sensor TE-IR

Screw-in infrared temperature sensor HART

- Non-contact temperature measurement
- Maximum measuring range -40 ° C… +1000 ° C
- 4-20 mA output (HART)

D-EN-TEIR-20200123

Fon 0 67 32 - 91 91 20 Fax 0 67 32 - 96 24 42 info@schmidt-messtechnik.de

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Technical features	
Measuring element	Infrared radiation
Maximum range	-40…+1000 °C
Output	4-20 mA HART
Voltage supply	24 VDC ±10%
Accuracy	See Technical Data
Process connection	1/2", 3/4", 1", 1/2" NPT
Connection	M12 male, 8-pole
Limit value contacts	2 electronically
Configuration	with keys/software
Protection	at least degree IP65
Material	stainless steel 1.5471 (medium contact)

Applications
The TE-IR is designed for process monitoring with a non-contact measurement of temperature. With its two configurable limit value contacts, the integrated display and the numerous electrical connections, the temperature sensor is also suitable for applications with higher requirements.

HART Communication
The HART-Tool is a graphical user interface for the TE 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, XP, Windows 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
- HARTTAG number
- 2-point calibration

Please note: When using communication via a HART modem, a comunication resistance of 250 Ω has to be taken into account.

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Technical data			
Input	infrared radiation	-40...1000 °C (minimum range: 100 °C)	
Output	Current signal	4...20 mA with superimposed communication signal (HART), 3-wire system	
	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	
Performance parameter	Infrared sensor	Spectral region	8…14 µm
		Optical resolution	15:1
		Accuracy*	±1,5 °C, ±1,5%
		Repeatability*	±0,75 °C, ±0,75%
		Temperature coefficient	±0,05 K/K, ±0,05%/K (ambient temperature: <18 °C, >28 °C)
		Resolution	0,1 K
		Response time	30 ms (t90)
		Warm-up time	10 min
		Emissivity, amplification	0,100...1,100
		Transmittance	0,100...1,100
	*Reference value	Temperature: ambient = 23 ±5 °C, test object = >0 °C / whichever is greater / ε = 1 / response time = 1 s / distance D = 20 cm, measuring point S = 16,6 mm	
	Measuring amplifier	Accuracy	0,3% of range
		Resolution	16 Bit
		Filter setting	0…99 s
		Transmission behavior	Temperature linear
		Measuring rate	10 measurements / s
		Configuration	Keys on display / via software (HART-communication)
		Turn-on delay time	<5 s
		Response time	20 ms

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Technical data			
Performance parameters	Indicator / limit values	Resolution	-9999...9999 digit
		Error on measurement	±0,2% of range, +/- 1 digit
		Temperature drift	100 ppm/K
Indication	Display	7 segment, 8,5 mm, red, 4 digits, representation mirror-inverted 180° possible	
	Display head	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	
Limit value 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 isolation	switching outputs are separated from measuring amplifier	
Supply	Voltage	24 VDC ±10%	
	Reverse battery protection	available (no function, no damage)	
Environmental Conditions	Temperature	Operating range	-20...+80 °C
		Sensing head	-20...+120 °C
		Storage	-40...+85 °C
	Humidity	10...95% rH (no condensation)	
Mechanics	Dimensions	See page 6	
	Process connection	1/2” / 3/4” / 1” / 1/2NPT	
	Electrical connection	M12 male, 8-pole	

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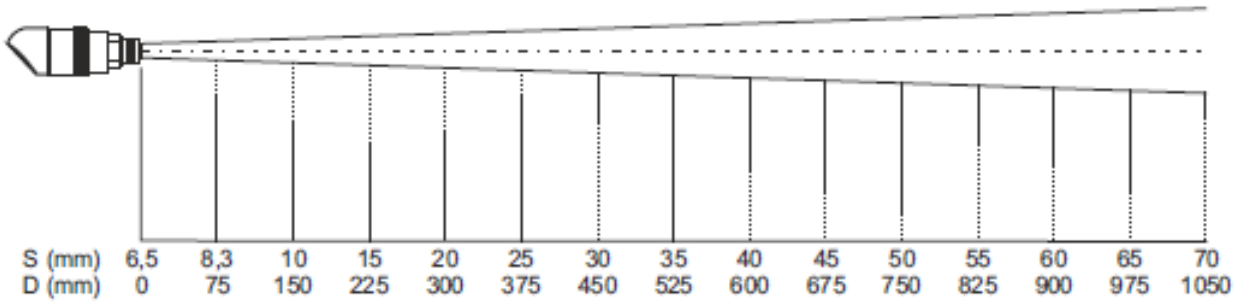
Technical data			
Mechanics	Material	Process connection	Stainless steel 1.4571
		Sensing head	Stainless steel
		Body	PBT GF30
		Display head	polycarbonate (Makrolon)
	Weight	approx. 240 g	
	Fitting position	any (avoid deposition on lens)	
	System pressure	0 bar (barometric pressure)	
	Device protection	Protection class	At least IP 65 (electronics)
		PCB	potted
	Vibration	IEC 68-2-6: 3G, 11 – 200 Hz, any axis	
	Shock	IEC 68-2-27: 50G, 11 ms, any axis	
Programmable features	Measuring amplifier	Measuring range start (LRV) / Measuring range end (URV) / Adjustment, output simulation current / Filter function / Linear output signal / HART address / 2-point calibration	
	Display	indication range / indication time / decimal point / units / zero point stabilisation /programming lock / calibration points / TAG number	
	Limit contacts	imit value 1 and 2 / hysteresis 1 and 2 / delay times 1 and 2	
	Features, operation	according VDMA 24574-1 up to 24574-4	

Optical charts



S = Measuring point size
D = Distance from sensing head front to the object
For valid measurement the point size should be as large as the object or smaller.

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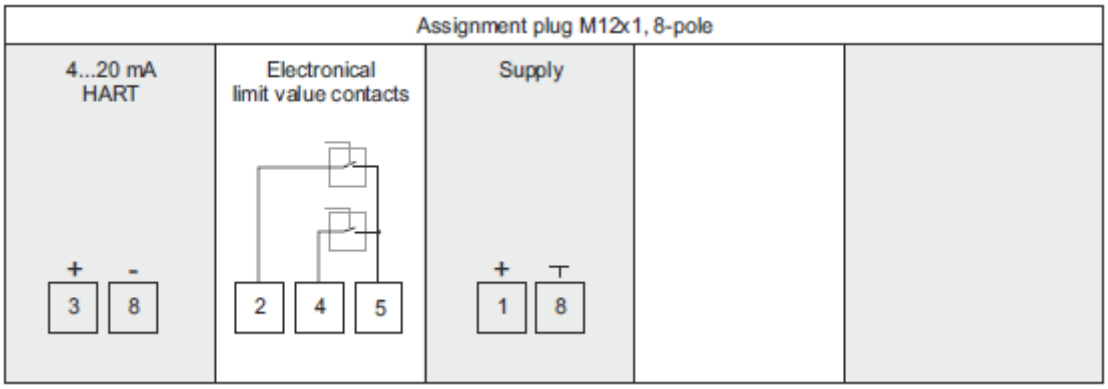
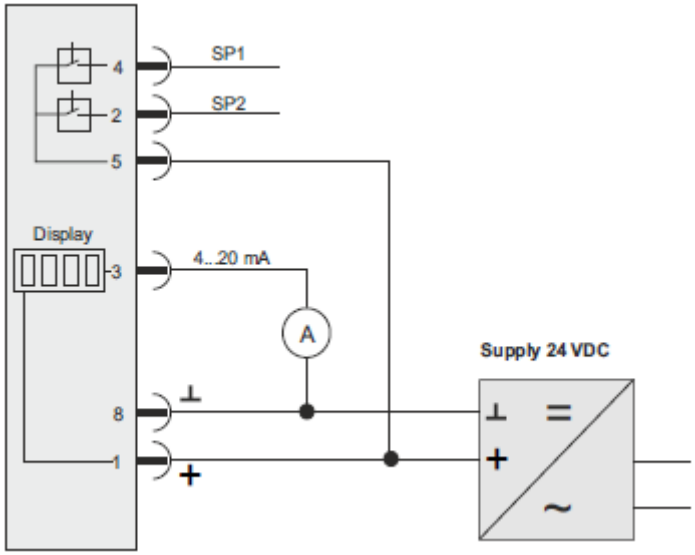
Electrical connection

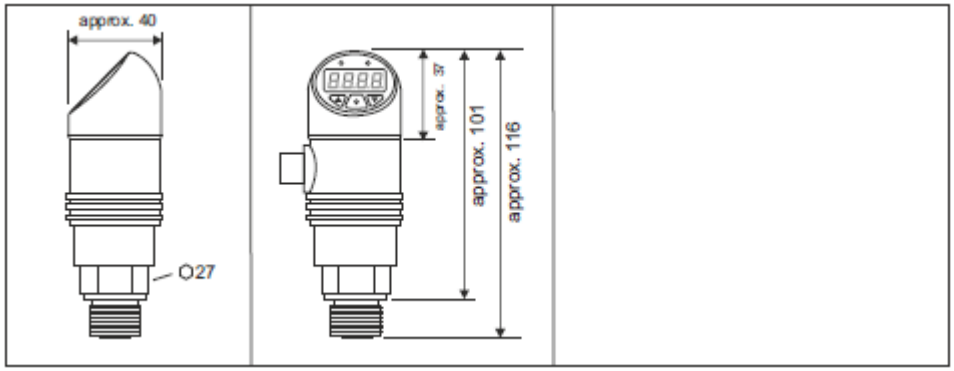


Electrical connection (example)

TE-IR



Dimensions (in mm)



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Order code

TE-IR X X X X X X - X X X

Input:	Infrared radiation	0
Sensor type:	MIELT15	1
Process connection:	1/2"	3
	3/4"	4
	1"	5
	1/2" NPT	9
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, 8-pole	2
Configuration:	Factory setting[1)]	1
	Customized (please specify)[2)]	2
Special model:	No	0
	Yes (please specify)	1

1) Measuring range: Indicating range / Limit values: 40% / 80%
2) Please select settings as per technical data. For values not given, factory settings will be used.

Accessories

HART-Interface, USB, Software

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.

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