Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

Easytemp® TSM187

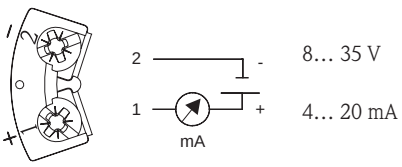
Compact thermometer with screw-in thread for challenging applications

- Various measuring ranges selectable
- 2-wire technology, 4… 20 mA
- High accuracy of sensor and electronics
- Replaceable mineral insulated insert
- Replaceable electronics

Measuring ranges (selectable): ■ -30... +170 °C (-22... +338 °F) ■ 0... +100 °C (32... +212 °F) ■ 0... +200 °C (32... +392 °F) ■ 0... +300 °C (32... +572 °F)	**Accuracy:** ≤ 0.08%, Pt100 class A **Response time:** ≤ 18 s (T_{50}); ≤ 55 s (T_{90})
Immersion lengths: mm: 120, 160, 250, 400 (Ø 9) Inch: 4.7, 6.3, 9.9, 15.8 (Ø 0.35)	**Operating conditions:** ■ 50 bar at +20 °C (725 PSI at +68 °F) ■ 1 bar at +400 °C (14.5 PSI at +752 °F)

Electrical connection

Supply voltage and current output



Application

The TSM187 compact thermometer range covers a wide variety of market needs worldwide. Typical application can be found in the chemical and pharmaceutical industry, food, water and waste water and power plants. Preferred applications are in vessels or in pipes, where requirements are short response time mechanical strength.

Function

The compact thermometer assembly includes a replaceable insert in mineral insulated cable which is protected by a thermowell with process connection G½". The terminal head is according to DIN 43729, form B, and is thermally uncoupled by a extension neck. The built-in head transmitter converts the resistance value into a temperature linear 4...20 mA analog output signal.

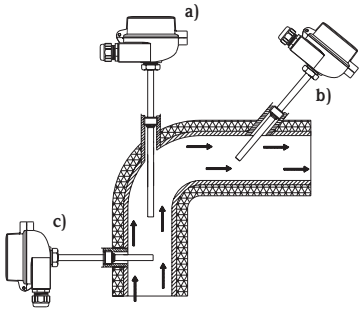
Application example

Pipe installation:

a) at elbows, against the flow

b) in smaller pipes, leant against the flow

c) perpendicular to the flow



Ordering information

TSM187	**Compact thermometer TSM187, RTD** Head transmitter: TMT187; replaceable mineral (MgO) insulated insert with diameter 6 mm (0.24"), 1.4404/SS316L Sensor type: 1xPt100 class A 4-wire; process connection G½"		
	Immersion length		
	A	120 mm	
	B	160 mm	
	C	250 mm	
	D	400 mm	
		Measuring range TMT187	
		DD	4... 20 mA; -30... 170 °C
		FE	4... 20 mA; 0... 100 °C
		FH	4... 20 mA; 0... 200 °C
		FI	4... 20 mA; 0... 300 °C
TSM187-			⇐ **order code**

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Endress+Hauser

People for Process Automation

Easytemp® TSM187

Technical data

Sensor

Sensing element	Platinum resistance element, 1x Pt100 (100 Ω at 0 °C)
Measuring range	-30... 170 °C (-22... 338 °F), 0... 100 °C (32... 212 °F), 0... 200 °C (32... 392 °F), 0... 300 °C (32... 572 °F)
Accuracy	Class A acc. to IEC 751: -50… +250 °C
Wiring	4-wire connection, MgO isolated
Insulation resistance	≥ 100 MΩ, test voltage 250 V at ambient temperature
Sheat diameter	6 mm (0.24")
Response time	T_{50}/18 s; T_{90}/55 s; according to IEC 751
Operating conditions	50 bar at +20 °C (725 PSI at +68 °F) 1 bar at +400 °C (14.5 PSI at +752 °F)

Thermowell

Shape	DIN 43772 form 2G
Diameter	9 mm (0.36")
Material	SS 316Ti/1.4571

Process connection

Shape	DIN 43772 form 2G
Material	SS 316Ti/1.4571
Thread	G½"

Terminal head

Type	DIN 43729 form B
Protection class	IP 66/68
Cable entry	M20x1.5
Material	Aluminum, polyester powder coated

Electronics (replaceable)

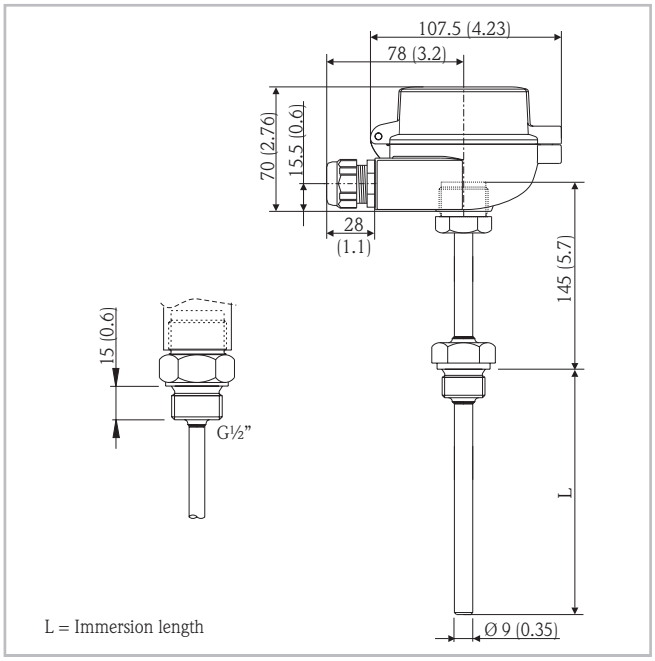
Output

Output signal	4… 20 mA, temperature and resistance linear
Max. load	($V_{power\ supply}$ -8 V)/0.022 A
Min. current consumption	≤ 3.5 mA
Current limit	≤ 23 mA
Switch on delay	4 s (during power up I_a= 3.8 mA)
Response time	1s

Signal on alarm

Under ranging	Linear drop to 3.8 mA
Over ranging	Linear rise to 20.5 mA
Sensor break/ Sensor short circuit	≥ 21 mA

Dimensions in mm (inch)



Electronics (replaceable)

Electrical connection

Supply voltage	U_b = 8... 35 V, reverse polarity protection
Galvanic isolation	$\hat{U}$ = 3.75 kV
Residual ripple	U_{ss} ≤ 5 V at U_b ≥ 13 V, $f_{max.}$ = 1kHz
Reference operating conditions	Calibration temperature: +23 °C (73 °F) ± 5 K (9 °F)

Accuracy

Influence of supply voltage	≤ ±0.01 %/V deviation from 24 V
Influence of load	≤ ±0.02 %/100 Ω
Temperature drift	T_d= ±(15 ppm/K * max. meas. range + 50 ppm/K * preset meas. range) *Δϑ
Pt100	0.2 K or 0.08 %

Environment conditions

Ambient temperature	-40… +85 °C (-58... +185 °F)
Climate class	As per IEC 60 654-1, class C
Shock and vibration resistance	4g / 2 to 150 Hz as per IEC 60 068-2-6
EMC	Shock resistance and interference emission as per IEC 61326 and NAMUR NE 21

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