



Level



Pressure



Flow



Temperature

Liquid
Analysis

Registration

Systems
Components

Services



Solutions

Technical Information

Easytemp[®] TSM187

Compact thermometer with screw-in thread
for challenging applications

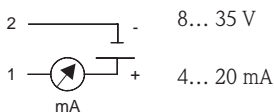
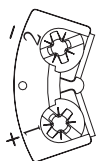


- Various measuring ranges selectable
- 2-wire technology, 4... 20 mA
- High accuracy of sensor and electronics
- Replaceable mineral insulated insert
- Replaceable electronics

| | |
|--|--|
| Measuring ranges (selectable): <ul style="list-style-type: none"> ■ -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: <ul style="list-style-type: none"> ■ 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.

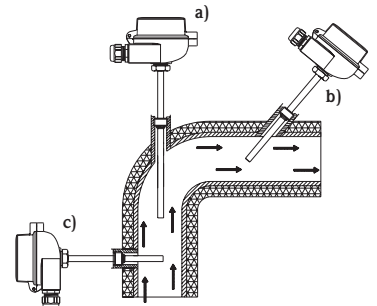
Function

The compact thermometer assembly includes a replaceable insert in mineral insulated cable which is protected by a thermowell with process connection G¹/₂". 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:

- at elbows, against the flow
- in smaller pipes, leant against the flow
- 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 G ¹ / ₂ " |
| 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 |

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 G $\frac{1}{2}$ "

Terminal head

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

Electronics (replaceable)

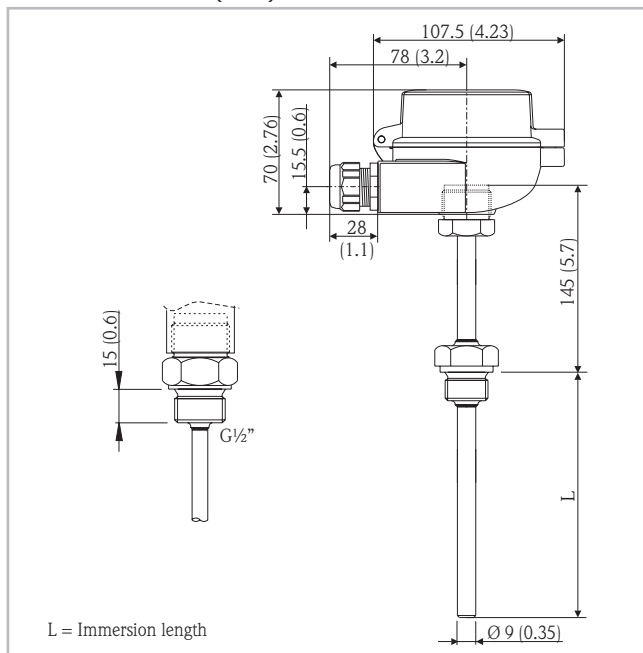
Output

- Output signal 4... 20 mA, temperature and resistance linear
- Max. load ($V_{\text{power supply}} - 8$ 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 1 s

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 $\bar{U} = 3.75$ kV
- Residual ripple $U_{ss} \leq 5$ V at $U_b \geq 13$ V, $f_{\text{max}} = 1$ kHz
- 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 $T_d = \pm(15 \text{ ppm/K} * \text{max. meas. range} + 50 \text{ ppm/K} * \text{preset meas. range}) * \Delta\theta$
- 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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