

Temperature sensor with Pt100 or 4 to 20mA output

Easytemp TMR31



€ 65.-
11-35 pcs.

- PC programmable transmitter with 4 to 20 mA output or Pt100 sensor
- Fast response times without reduced tip
- Selectable sensor length

i Specs at a glance:

- **Temperature range:**
-50 to +200 °C (-58 to 392 °F)
- **Accuracy:**
<0.08 %, Pt100 class A
- **Immersion length (diameter):**
40 to 600 mm (Ø 6 mm)
(1.6 to 23.6" (Ø 0.24))
- **Sensor response time:**
<1.0 s (T₅₀), <2.0 s (T₉₀)

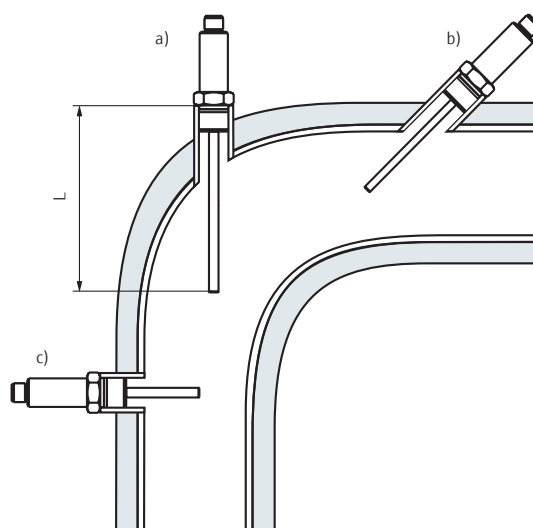
Application The Easytemp TMR31 is a compact cost-effective thermometer that has been designed for use in all general applications across the process industries.

Function The compact thermometer consists of a Pt100 class A sensor, (optional) transducer and housing with process connection. The TMR31 is available without a process connection so that it can be combined with a TW251 thermowell (with compression fitting) for insertion into a process. The built-in electronics can be programmed using a PC and TXU10-BA configuration kit to convert the Pt100 input signal into a temperature linear 4 to 20 mA signal.



Complete product information:
www.e-direct.endress.com/tmr31

Installation instructions



Pipe installation
a) At angle sections, against the direction of flow
b) In smaller pipes, turned against the direction of flow
c) Perpendicular to the direction of flow

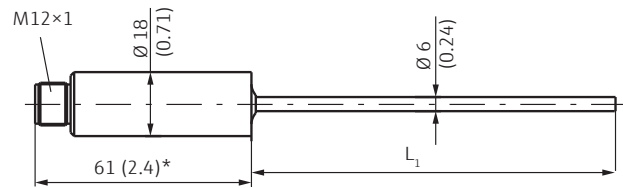
L = Insertion length

Technical data

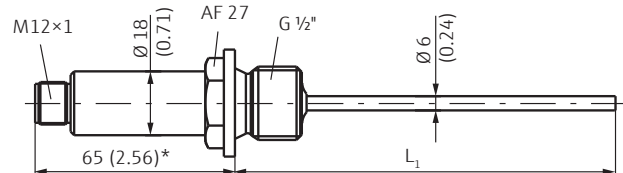
| Sensor | |
|--|---|
| Sensing element | 1 × Pt100 |
| Tolerance | Class A to IEC 751 |
| Process temperature | -50 to +150 °C (-58 to 302 °F) (200 °C (392 °F) extension neck) |
| Material | 316L |
| Diameter | 6 mm (Ø 0.24") |
| Length | 40 to 600 mm (1.6 to 23.6") selectable (please specify) |
| Response time | T ₅₀ = <1.0 s; T ₉₀ = <2.0 s |
| Max. pressure | 100 bar / 1500 psi (at 100 mm / 3.94" and 20 °C / 68 °F, depending on process conn.) |
| Process connection | |
| Version | G½", 316L; without (flange welding boss or compression fitting needed) |
| Transmitter housing | |
| Degree of protection | IP 66/67 |
| Electrical connection | M12×1-plug-in connector |
| Material | 304 |
| Output characteristics | |
| Output signal | With electronics 4 to 20 mA, 20 to 4 mA without electronics Pt100 |
| Signal on alarm | Under measuring range: linear decrease to 3.8 mA Over measuring range: linear increase to 20.5 mA Sensor break; Sensor short-circuit: ≤3.6 mA or 21.0 mA |
| Load | Max. (U _{power supply} -10 V)/0.023 A |
| Induced current requirement | ≤3.5 mA |
| Current limitation | ≤23 mA |
| Switch-on delay | 2 s |
| Power supply | |
| Supply voltage | U _b = 10 to 35 V DC |
| Residual ripple | Permitted residual ripple U _{ss} ≤3 V at U _b ≥13 V, f _{max} = 1 kHz |
| Accuracy | |
| Transmitter response time | 1 s |
| Reference operating conditions | 0 °C (32 °F) (ice bath) |
| Measuring error | 0.1 K (0.18 °F) or 0.08 % |
| Influence of supply voltage | ≤ ±0.01 %/V deviation from 24 V |
| Influence of ambient temperature (temperature drift) | T _d = ±(15 ppm/K × (full scale value of measuring range + 200) + 50 ppm/K × set measuring range) × Δθ Δθ = deviation of ambient temperature from the reference operating condition |
| Long term stability | ≤0.1 K/year or 0.05 %/year |
| Influence of load | ≤ ±0.02 %/100 Ω |
| Operating conditions | |
| Ambient temperature | -40 to +85 °C (-40 to 185 °F) |
| Storage temperature | -40 to +85 °C (-40 to 185 °F) |
| Climate class | As per EN 60 654-1, Class C |
| Condensation | Permitted |
| Shock resistance | 4 g/2 to 150 Hz as per IEC 60068-2-6 |
| EMC | According to IEC 61326 Series and NAMUR NE21 |

Dimensions in mm (inches)

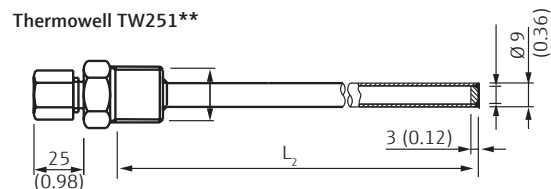
Without process connection



With G ½" process connection



Thermowell TW251**



L₁ = selectable length from 40 to 600 mm (1.6" to 23.6")

L₂ = 50 / 100 / 150 / 200 mm (1.97" / 3.94" / 5.9" / 7.87")

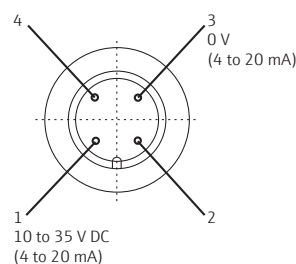
* Version with extension neck add 35 mm (1.38")

** The TMR31 has to be at least 50 mm (1.97") longer than L₂

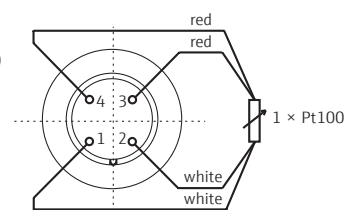
Installation according to instruction manual.

Electrical connection

4 to 20 mA



1 × Pt100



Price table

| Neck | |
|------|---------------|
| Code | Neck |
| A | W/o |
| B | 35 mm (1.38") |

| Easytemp TMR31 | | | Order no. | Price/pcs. in € | | |
|----------------------------|--------------------|-------------------------|---|-----------------|---------|----------|
| Output | Process Connection | Length* | ** | 1 to 3 | 4 to 10 | 11 to 35 |
| 4 to 20 mA max.150° | Without | <input type="text"/> mm | TMR31-A1X <input type="checkbox"/> AAAX1AAA | 121.- | 112.- | 106.- |
| | G½" | <input type="text"/> mm | TMR31-A1X <input type="checkbox"/> BBAX1AAA | 128.- | 119.- | 113.- |
| 4 to 20 mA max 200 | Without | <input type="text"/> mm | TMR31-A1XBAAAX1AAA | 121.- | 112.- | 106.- |
| | G½" | <input type="text"/> mm | TMR31-A1XBBBAX1AAA | 128.- | 119.- | 113.- |
| Pt100, DIN class A, 4-wire | Without | <input type="text"/> mm | TMR31-A11 <input type="checkbox"/> AAAX1AAA | 74.- | 69.- | 65.- |
| | G½" | <input type="text"/> mm | TMR31-A11 <input type="checkbox"/> BBAX1AAA | 81.- | 75.- | 71.- |

* Please specify sensor length (40 to 300 mm)!

** Please add code for measuring range.

| Accessories | Order no. | Price/pcs. in € |
|---|-----------|-----------------|
| Flange welding boss for TMR31 without process connection | 51004751 | 44.97 |
| Flange welding boss for TMR31 with process connection G½" | 51004752 | 23.75 |
| Compression Fitting TA50 6mm; G1/2"; PTFE | TA50-HP | 54.79 |
| Configuration kit with USB-connection | TXU10-BA | 121.87 |
| 5 m cable with M12×1 plug | 51005148 | 9.28 |

Prices are applicable for Austria until 31/08/2018, in Euro per unit, net excluding value added tax (VAT), cost of packing and dispatch. The terms of sales and delivery of Endress+Hauser are applicable. Delivery times: 48 hours or 5 working days – please check www.e-direct.endress.com for exact delivery times. Endress+Hauser retains the right to change or modify pricing at any time. Prices can be verified prior to ordering on www.e-direct.endress.com.



Complete product information:

www.e-direct.endress.com/tmr31

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Pressure sensor
Cerabar PMC21



Process meters
RIA45



Process transmitter
RMA42