

Temperature sensor with Pt100 or 4 to 20mA output

Easytemp TMR31



\$ 89.00

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 (∅ 6 mm)
(1.6 to 23.6" (∅ 0.24))
- **Sensor response time:**
<1.0 s (T₅₀), <2.0 s (T₉₀)

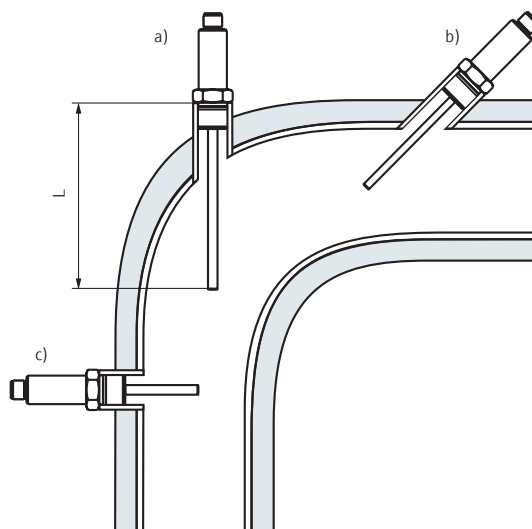
Application The Easytemp TMR31 is a compact cost-effective thermometer that has been designed for use in all general applications across the process industries.

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

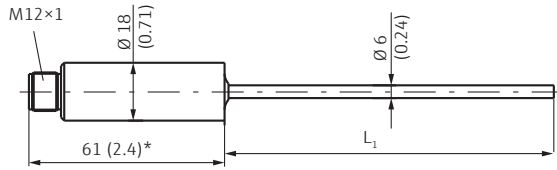
L = Insertion length

Technical data

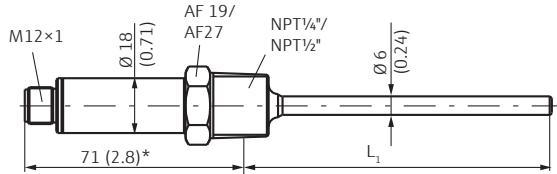
Sensor		Accuracy	
Sensing element	1 × Pt100	Transmitter response time	1 s
Tolerance	Class A to IEC 751	Reference operating conditions	0 °C (32 °F) (ice bath)
Process temperature	-50 to +150 °C (-58 to +302 °F) (200 °C (392 °F) extension neck)	Measuring error	0.1 K (0.18 °F) or 0.08 %
Material	316L	Influence of supply voltage	≤ ±0.01 %/V deviation from 24 V
Diameter	6 mm (ø 0.24")	Influence of ambient temperature (temperature drift)	$T_d = \pm(15 \text{ ppm/K} \times (\text{full scale value of measuring range} + 200) + 50 \text{ ppm/K} \times \text{set measuring range}) \times \Delta\theta$ $\Delta\theta = \text{deviation of ambient temperature from the reference operating condition}$
Length	40 to 600 mm (1.6 to 23.6") selectable (please specify)	Long term stability	≤0.1 K/year or 0.05 %/year
Response time	$T_{s0} = <1.0 \text{ s}$; $T_{90} = <2.0 \text{ s}$	Influence of load	≤ ±0.02 %/100 Ω
Max. pressure	100 bar / 1500 psi (at 100 mm / 3.94" and 20 °C / 68 °F, depending on process conn.)	Operating conditions	
Process connection		Ambient temperature	-40 to +85 °C (-40 to 185 °F)
Version	NPT $\frac{1}{4}$ ", NPT $\frac{1}{2}$ ", G $\frac{1}{4}$ ", G $\frac{1}{2}$ ", 316L; without (flange welding boss or compression fitting needed)	Storage temperature	-40 to +85 °C (-40 to 185 °F)
Transmitter housing		Climate class	As per EN 60 654-1, Class C
Degree of protection	IP 66/67	Condensation	Permitted
Electrical connection	M12×1-plug-in connector	Shock resistance	4 g/2 to 150 Hz as per IEC 60068-2-6
Material	304	EMC	According to IEC 61326 Series and NAMUR NE21
Output characteristics		Approvals	
Output signal	With electronics 4 to 20 mA, 20 to 4 mA without electronics Pt100	Approvals	DNV GL
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. $(U_{\text{power supply}} - 10 \text{ V})/0.023 \text{ A}$		
Induced current requirement	≤3.5 mA		
Current limitation	≤23 mA		
Switch-on delay	2 s		
Power supply			
Supply voltage	$U_b = 10 \text{ to } 35 \text{ V DC}$		
Residual ripple	Permitted residual ripple $U_{ss} \leq 3 \text{ V}$ at $U_b \geq 13 \text{ V}$, $f_{\text{max}} = 1 \text{ kHz}$		

Dimensions in mm (inches)

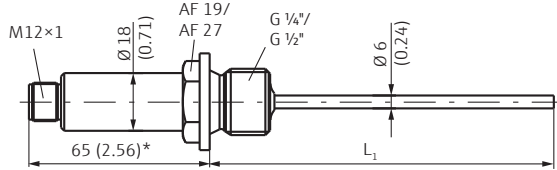
Without process connection



With NPT 1/4" / NPT 1/2" process connection



With G 1/4" / G 1/2" process connection



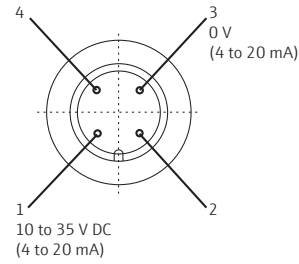
L_1 = selectable length from 40 to 600 mm (1.6" to 23.6")

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

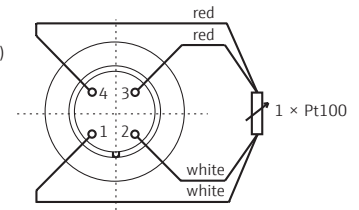
Installation according to instruction manual.

Electrical connection

4 to 20 mA



1 × Pt100



Price table

Process Connection

Code	Process Connection
BA	Thread ISO228 G $\frac{1}{4}$ " 316L
BB	Thread ISO228 G $\frac{1}{2}$ " 316L

Insertion length

Code	Length
AA	30 mm; 6 mm (1.18"; $\frac{1}{4}$ ")
AB	50 mm; 6 mm (1.97"; $\frac{1}{4}$ ")
AC	100 mm; 6 mm (3.94"; $\frac{1}{4}$ ")
AE	150 mm; 6 mm (5.9"; $\frac{1}{4}$ ")

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Process connection	Output; meas. range	Insertion length; diameter D	Order no.	Price/pcs. in USD		
				1 to 3	4 to 10	11 to 35
Thread ANSI NPT $\frac{1}{4}$ "	4 to 20mA; 0 to 100°C (32 to 212°F)	30/50/100/150 mm (1.18/1.97/3.94/ 5.9") mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1AAAB <input type="checkbox"/> 1AAA	163.00	151.00	143.00
			TMR31-A1AAABAX1AAA	163.00	151.00	143.00
	4 to 20mA; -50 to +150°C (-58 to +302°F)	30/50/100/150 mm (1.18/1.97/3.94/ 5.9") mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1DAAB <input type="checkbox"/> 1AAA	163.00	151.00	143.00
			TMR31-A1DAABAX1AAA	163.00	151.00	143.00
	Pt100, DIN class A, 4-wire	mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1AABAX1AAA	109.00	102.00	96.00
Thread ANSI NPT $\frac{1}{2}$ "	4 to 20mA; 0 to 100°C (32 to 212°F)	30/50/100/150 mm (1.18/1.97/3.94/ 5.9") mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1AAAC <input type="checkbox"/> 1AAA	163.00	151.00	143.00
			TMR31-A1AAACAX1AAA	163.00	151.00	143.00
	4 to 20mA; -50 to +150°C (-58 to +302°F)	30/50/100/150 mm (1.18/1.97/3.94/ 5.9") mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1DAAC <input type="checkbox"/> 1AAA	163.00	151.00	143.00
			TMR31-A1DAACAX1AAA	163.00	151.00	143.00
	Pt100, DIN class A, 4-wire	mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1AACAX1AAA	109.00	102.00	96.00
Thread ISO228 G $\frac{1}{4}$," ISO228 G $\frac{1}{2}$ "	4 to 20mA; 0 to 100°C (32 to 212°F)	30/50/100/150 mm (1.18/1.97/3.94/ 5.9") mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1AA <input type="checkbox"/> <input type="checkbox"/> 1AAA	163.00	151.00	143.00
			TMR31-A1AA <input type="checkbox"/> AX1AAA	163.00	151.00	143.00
	4 to 20mA; -50 to +150°C (-58 to +302°F)	30/50/100/150 mm (1.18/1.97/3.94/ 5.9") mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1DA <input type="checkbox"/> <input type="checkbox"/> 1AAA	163.00	151.00	143.00
			TMR31-A1DA <input type="checkbox"/> AX1AAA	163.00	151.00	143.00
	Pt100, DIN class A, 4-wire	mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A11A <input type="checkbox"/> AX1AAA	109.00	102.00	96.00
W/o; compr. fitting, L \geq 100 mm (3.94") insertion length Compr. fitting, to order separately.	4 to 20mA, 0 to 100°C (32 to 212°F)	mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1AAAAAX1AAA	155.00	144.00	136.00
	4 to 20mA, -50 to +150°C (-58 to +302°F)	mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A1DAAAAX1AAA	155.00	144.00	136.00
	Pt100, DIN class A, 4-wire; w/o neck	mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A11AAAAX1AAA	101.00	94.00	89.00
	Pt100, DIN class A, 4-wire; with neck	mm* (40 to 300 mm/1.57 to 11.81")	TMR31-A11BAAAX1AAA	101.00	94.00	89.00

* Please specify immersion length in your order.

Accessories

	Order no.	Price/pcs. in USD
Compression fitt.kpl. welded d6 PEEK sealed compression fitting	51004751	103.29
Compression fitt.kpl. welded d6 PEEK	51004752	61.87
Compression Fitting TA50 6 mm; G $\frac{1}{2}$; PTFE	TA50-HP	69.96
Configuration kit TXU10- for PC-programmable devices. Set-up programme+ interface cable for PC with USB-Port. 4 pin plug+ReadWin2000+adapter M12	TXU10-BA	168.84
Cable M12x1, l=5 m, cable 4x 0.34 mm ² , molded PVC angled connector	51005148	14.26

Prices valid until 09.30.2019 in U.S. dollars per unit (not including shipping and applicable sales tax). See Endress+Hauser, Inc. Terms and Conditions of Sale for shipping, tax and payment terms. 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.



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More products to complete
your measuring point ...



Pressure sensor
Cerabar PMC21



Process meters
RIA45



Process transmitter
RMA42