

Temperature sensor for protection tube or compression fitting, type TAV131 with integrated signal amplifier



Measuring principle	Pt100 with 2- or 3-wire circuit
Temperature range	Measuring tip: 0 ... 100 °C, 0 ... 120 °C, 0 ... 150 °C, -30 ... 120 °C Cable outlet: -40 ... 105 °C
Protection class	IP66/IP67
Auxiliary voltage	2-wire: 8 ... 24 VDC; 3-wire: 12 ... 29 VDC
Output signal	2-wire: 4 ... 20 mA; 3-wire: 0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V
Mounting	Protection tube or compression fitting
Material	Measuring tip: Brass nickel-plated Sensor tube: Stainless steel Housing: Aluminium anodised
Immersion depth	Nominal length 71 mm with immersion depth 56 mm; Nominal length 115 mm with immersion depth 100 mm



Temperature sensor TAV131



Application range

Temperature sensors of the TAV131 series are especially designed for use in: Shipbuilding industry, machinery and equipment for temperature measurement in engines, generators, gearboxes and bearings.

Measurement principle

Temperature sensors of the TAV131 series operate according to the measurement principle / with the measuring element: Pt100 with 2- or 3-wire circuit.

Functioning of platinum measuring elements

With this measuring principle the temperature-sensitive resistance value of the measuring element is acquired. For platinum measuring elements the electrical resistance increases with increasing temperature and decreases with decreasing temperature (temperature linear). Advantages of platinum measuring elements are:

- accurate and reproducible thermoelectric characteristics
- nearly linear temperature characteristic
- easy to replace (no calibration necessary, corresponding to international standards, e. g. IEC 751 / DIN EN 60751)
- easier handling towards thermocouples as cold junction is not necessary

Specific features

- Compact and robust design up to protection class IP68
- High accuracy, with integrated signal converter (industry standard signals)
- Available in different immersion depths
- Overvoltage and overload protection
- Available with 2-wire or 3-wire circuit
- Universal application; suitable for high cable lengths
- Customisable measuring range

Dimensions, connections and drawings

Unless specified differently all dimensions in the following drawings in [mm].

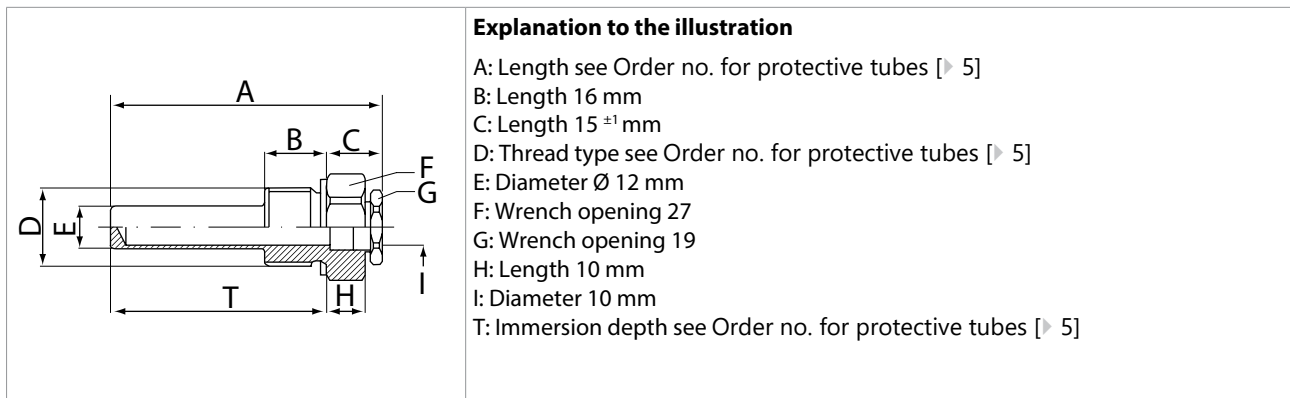
Dimensions Temperature sensor

	<p>Explanation to the illustration</p> <p>A: Immersion depth + 45 mm (see Order no. for protective tubes [▷ 5]) B: Length 45 ±2 mm C: Diameter Ø 10 mm D: Diameter Ø 34 +1 mm E: Euro M12x1 male connector</p>
	<p>Explanation to the illustration</p> <p>A: Length 42 mm B: Diameter Ø 6 +1 mm C: Length: 27 mm D: Length 31 mm</p>

Plug and electrical connection

2-wire type, type I8	3-wire type, type I1, I2	3-wire type, type U1, U2
$R_b < (U_s - 7 V) / 25 \text{ mA}$	$R_b < U_s / 25 \text{ mA}$	$R_i \geq 500 \Omega, I_{out} \leq 20 \text{ mA}$

	<p>Explanation to the illustration</p> <p>1: U_s 2: Out (only as 3-wire type) 3: GND 4: NC 5: NC 6: coding key</p>
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Dimensions protection tube RS2...

Technical Data

Electrical connection	
Auxiliary voltage	2-wire: 8 ... 24 VDC; 3-wire: 12 ... 29 VDC
Nominal voltage U_{NOM}	No information
Current consumption I_s	Max. 3 mA + signal current (max. 25 mA)
Polarity reversal protection	Yes
Overvoltage protection	Yes
Connection	Euro M12x1; Option: fixed connection cable TP-E 4 x 0.34 mm ² (AWG22)

Electrical output	
Output signal	2-wire: 4 ... 20 mA; 3-wire: 0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V
Galvanic isolation	No

Signal acquisition	
Measuring principle	Pt100 with 2- or 3-wire circuit
Temperature range	Measuring tip: 0 ... 100 °C, 0 ... 120 °C, 0 ... 150 °C, -30 ... 120 °C Cable outlet: -40 ... 105 °C Connection cable: No information
Accuracy / Tolerance class	IEC 51-1: class 0.5
Transmission behaviour	Temperature linear
Response time	In water 0.4 ms; t 0.5 = 6 s / t 0.9 = 15 s; With protection tube RS2 and thermal compound 0.5 = 15 s / t 0.9 = 45 s; without thermal compound t x 3

Environmental influences	
Storage temperature	-40 ... 105 °C
Protection class	IP66/IP67
Vibration resistance	DIN IEC 60068-T2-6: 4g @ 25...100 Hz
Shock resistance	DIN IEC 60068-T2-27: 300 m/s ² @ 18 ms
Insulation voltage	500 VAC, 50 Hz @ 1 min
Insulation resistance	>10 MΩ @ 500 VDC
Fire protection class	On request
Applied standards	None

Mechanical properties	
Material	Measuring tip: Brass nickel-plated Sensor tube: Stainless steel Housing: Aluminium anodised
Mounting	Protection tube or compression fitting
Immersion depth	Nominal length 71 mm with immersion depth 56 mm; Nominal length 115 mm with immersion depth 100 mm
Installation position	Any (note possible liquid inlet)
Weight	Approx. 80 g (depending on tube length)

Type code

Type code structure						
TAV131	-15	05	-2	U2	E	Example: TAV131-1505-2U2E
	Nominal length N and immersion depth					
	Sensor tube diameter					
	Measuring range					
	Output					
	Electrical connection					

Type code						
Nominal length N and immersion depth	-11	Nominal length 71 mm, Immersion depth 56 mm				
	-15	Nominal length 115 mm, Immersion depth 100 mm				
Sensor tube diameter	05	Ø 10 mm				
		Other sensor tube diameters from 6... 10 mm on request				
Measuring range	-1	0...120 °C				
	-2	0...150 °C				
	-11	-30...120 °C				
	-12	0...100 °C				
Output signal		U1	0...10 V			
		U2	2...10 V			
		I1	0...20 mA			
		I2	4...20 mA			
		I8	4...20 mA (s-wire)			
Electrical connection		E	EURO M12x1 pin connector 5 pins, gold plated			
		X	Cable end with sheath length 2 m; other lengths on request			
TAV131	---	---	---	---	-	Example: TAV131-1505-2U2E

Special types

If our standard types do not correspond with your expectations, we are pleased to develop a special solution together with you.

Order no. for protective tubes

Order-No.	Immersion depth F	Length A	Thread D	Material
RS207-1183	56 mm	71 ± 1 mm	G1/2	CuZn39Pb3
RS207-1125	56 mm	71 ± 1 mm	M22x1.5	CuZn39Pb3
RS207-1124	56 mm	71 ± 1 mm	M20x1.5	CuZn39Pb3
RS207-1123	56 mm	71 ± 1 mm	M18x1.5	CuZn39Pb3
RS207-1583	100 mm	115 ± 1 mm	G1/2	CuZn39Pb3
RS207-1525	100 mm	115 ± 1 mm	M22x1.5	CuZn39Pb3
RS207-1524	100 mm	115 ± 1 mm	M20x1.5	CuZn39Pb3
RS207-1523	100 mm	115 ± 1 mm	M18x1.5	CuZn39Pb3
RS208-1183	56 mm	71 ± 1 mm	G1/2	1.4301
RS208-1125	56 mm	71 ± 1 mm	M22x1.5	1.4301
RS208-1124	56 mm	71 ± 1 mm	M20x1.5	1.4301
RS208-1123	56 mm	71 ± 1 mm	M18x1.5	1.4301
RS208-1583	100 mm	115 ± 1 mm	G1/2	1.4301
RS208-1525	100 mm	115 ± 1 mm	M22x1.5	1.4301
RS208-1524	100 mm	115 ± 1 mm	M20x1,5	1.4301
RS208-1523	100 mm	115 ± 1 mm	M18x1,5	1.4301