

Temperature sensor type TAV131 , Construction type 31, plug-in sensor for clamp screwing



Temperature sensor TAV131

Measuring element/ Measuring principle	Pt100
Temperature range (measuring tip)	Mesasuring tip: -40...+150 °C; Option: up to 200 °C Cable outlet: -40...105 °C
Protection class	IP68
Supply 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 clamp screwing
Material	Measuring tip: Brass nickel-plated Sensor tube: stainless steel Adapter: Aluminium anodized
Length	Nominal length 71 mm with Immersion depth 56 mm; Nominal length 115 mm with Immersion 100 mm



Application range

Temperature sensors of the TAV131 series are especially designed for use in: Shipbuilding industry, mechanical engineering for temperature measurement in engines, generators, gear-boxes and bearings.

Measurement principle

Temperature sensors of the TAV131 series operate according to the measurement principle / with the measuring element: Pt100.

Functioning of platinum measuring elements

With this measurement 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:

- 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)
- measurement is faster and more precise than with thermocouples

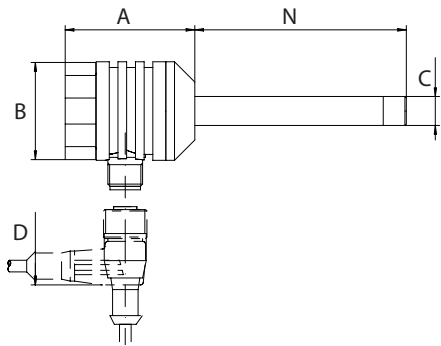
Specific features

- 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 as 2-wire or 3-wire type
- 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

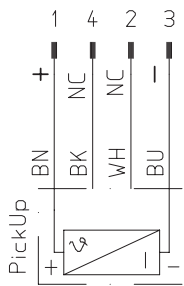


Explanation to the illustration

- N: Nominal length ± 1 mm (see type code)
- A: 45 ± 2 mm
- B: $\varnothing 34 \pm 1$ mm
- C: $\varnothing 10$ mm
- D: R60

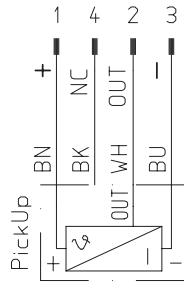
Plug and electrical connection

2-wire type, type I8



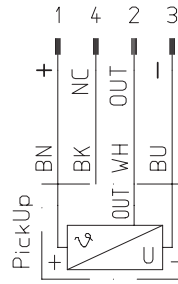
$$R_b < (U_s - 7 V) / 25 \text{ mA}$$

3-wire type, type I1, I2

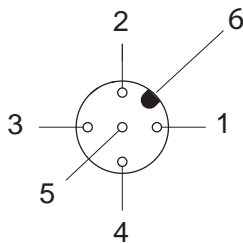


$$R_b < U_s / 25 \text{ mA}$$

3-wire type, type U1, U2

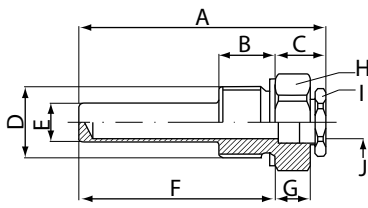


$$R_l \geq 500 \Omega, I_{out} \leq 20 \text{ mA}$$



Explanation to the illustration

- 1: U_s
- 2: Out (only as 3-wire type)
- 3: GND
- 4: NC
- 5: NC
- 6: coding key

Dimensions protection tube RS2...**Explanation to the illustration**

- A: Length see next table
- B: Length 16 mm
- C: Length 15 ±1 mm
- D: Thread type see next table
- E: Diameter Ø 12 mm
- F: Immersion depth see next table
- G: Length 10 mm
- H: wrench opening 27
- I: wrench opening 19
- J: Diameter 10 mm

Technical Data

Electrical connection	
Supply voltage U_s	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 connection	
Output signal	2-wire: 4...20 mA; 3-wire: 0...20 mA, 4...20 mA, 0...10 V, 2...10 V
Galvanic isolation	No information

Signal acquisition	
Measuring element/Measuring principle	Pt100
Temperature range (measuring tip)	Mesasuring tip: -40...+150 °C; Option: up to 200 °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 $t \times 3$

Environmental influences	
Storage temperature	-40...+105 °C
Protection class	IP68
Vibration resistance	DIN IEC60068-T2-6: 4g @ 25...100 Hz
Shock resistance	DIN IEC60068-T2-27: 300 m/s ² @ 18 ms
Insulation voltage	500 VAC, 50 Hz @ 1 min
Isolation resistance	>10MΩ @ 500V/DC
Fire protection class	On request
Approvals / Standards	None

Mechanical quantities	
Material	Measuring tip: Brass nickel-plated Sensor tube: stainless steel Adapter: Aluminium anodized
Mounting	Protection tube or clamp screwing
Length	Nominal length 71 mm with Immersion depth 56 mm; Nominal length 115 mm with Immersion 100 mm
Installation position	Any
Weight	Approx. 80 g (depending on tube length)

Other	
Approvals	None

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 diameters from 6...10 mm on request				
Measuring range	-1	0...120 °C			✱	
	-2	0...150 °C			✱	
	-3	0...200 °C				
	-11	-30...120 °C				
	-12	0...100 °C				
Output	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	

Preferred types

Features marked with a ✱ symbol at the end of the line (see previous table) are preferred features. If you select a preferred feature for each placeholder, the device is specified as preferred type. Preferred types are available quickly from stock. Other types will be delivered according to scheduled appointments.

Special types

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

Order no. for protection 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