

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



Temperature sensor TAV131

Measuring principle	Pt100
Temperature range	Measuring tip: 0...100 °C, 0...120 °C, 0...150 °C, -30...+120 °C; Option: up to 200 °C Cable outlet: -40...105 °C
Protection class	IP68
Auxiliary voltage UA	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
Immersion depth	Nominal length 71 mm with immersion depth 56 mm; Nominal length 115 mm with immersion depth 100 mm



## 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.

## 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

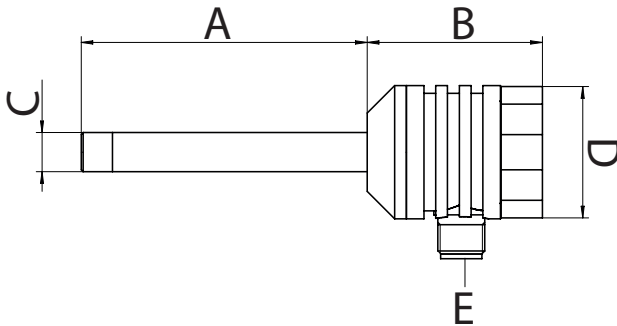
## Specific features

- 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 as 2-wire or 3-wire type
- Universal application; suitable for high cable lengths
- Customisable measuring range

# Dimensions, connections and drawings

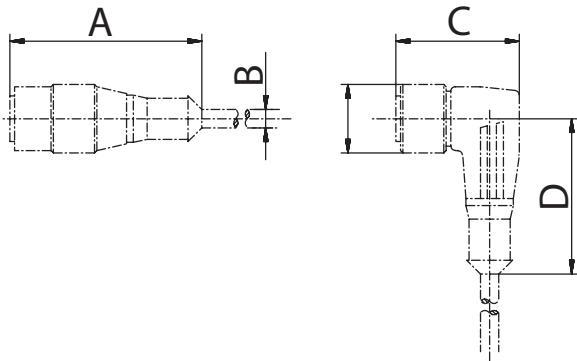
Unless specified differently all dimensions in the following drawings in [mm].

## Dimensions Temperature sensor



### Explanation to the illustration

- A: Immersion depth + 45 mm (see Order no. for protective tubes [▶ 6])
- B: Length 45 ±2 mm
- C: Diameter Ø 10 mm
- D: Diameter Ø 34 +1 mm
- E: Euro M12x1 male connector

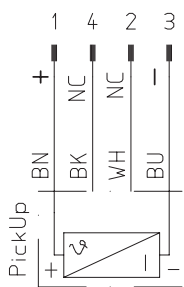


### Explanation to the illustration

- A: Length 42 mm
- B: Diameter Ø 6 +1 mm
- C: Length: 27 mm
- D: Length 31 mm

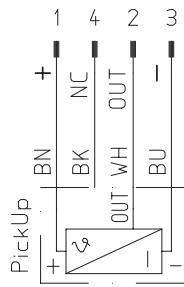
## Plug and electrical connection

2-wire type, type I8



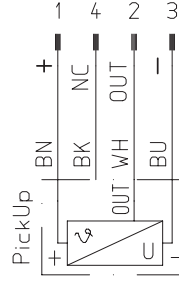
$$R_b < (U_s - 7 V) / 25 \text{ mA}$$

3-wire type, type I1, I2

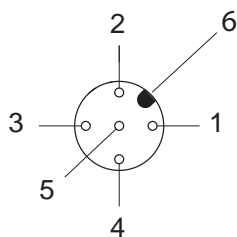


$$R_b < U_s / 25 \text{ mA}$$

3-wire type, type U1, U2

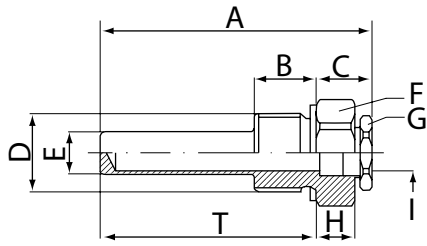


$$R_i \geq 500 \Omega, I_{out} \leq 20 \text{ mA}$$



### 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 Order no. for protective tubes [▶ 6]

B: Length 16 mm

C: Length 15 ±1 mm

D: Thread type see Order no. for protective tubes [▶ 6]

E: Diameter Ø 12 mm

F: Wrench opening 27

G: Wrench opening 19

H: Length 10 mm

I: Diameter 10 mm

T: Immersion depth see Order no. for protective tubes [▶ 6]

## 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 <sup>2</sup> (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	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 x 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 <sup>2</sup> @ 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						
<b>Nominal length N and immersion depth</b>	-11	Nominal length 71 mm, Immersion depth 56 mm				*
	-15	Nominal length 115 mm, Immersion depth 100 mm				
<b>Sensor tube diameter</b>	05	Ø 10 mm				*
		Other diameters from 6...10 mm on request				
<b>Measuring range</b>		-1	0...120 °C			*
		-2	0...150 °C			*
		-3	0...200 °C			
		-11	-30...120 °C			
		-12	0...100 °C			
<b>Output signal</b>		U1	0...10 V			
		U2	2...10 V			
		I1	0...20 mA			
		I2	4...20 mA			
		I8	4...20 mA (s-wire)			*
<b>Electrical connection</b>		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 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