

# Temperature sensor, flange housing, type TA18, stainless steel sensor tube



Temperature sensor TA18

Measuring principle	Pt100 with 2-, 3- or 4-wire circuit, Pt1000 with 2-wire circuit
Temperature range	Measuring tip: -40 ... 250 °C Cable outlet: -40 ... 120 °C (short time 150 °C) Connection cable: -40 ... 120 °C (short time 150 °C)
Protection class	IP66/IP68
Mounting	Flange mounting
Material	Sensor tube: Stainless steel Housing: Aluminium anodised
Immersion depth	75 mm, 100 mm (other lengths on request)



## Application range

Temperature sensors of the TA18 series are especially designed for use in: Transport technology. They measure the temperature e. g. in traction motors, gear boxes, wheelset bearings, compressor- and air conditioning systems.

## Measuring principle

Temperature sensors of the TA18 series operate with the measuring element: Pt100 with 2-, 3- or 4-wire circuit, Pt1000 with 2-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, robust and closed design
- Easy installation via flange mounting
- Available in different immersion depths
- Simple customisable assembly, optionally with increased insulation > 2kVAC
- Pt100 with 2-, 3- or 4-wire circuit, Pt1000 with 2-wire circuit
- Maintenance-free
- Weight optimised design; also available with lateral or angled cable outlet (see TA14, TA17)

# Dimensions, connections and drawings

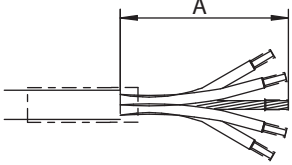
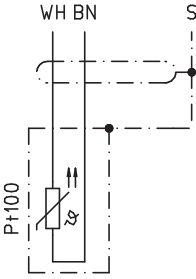
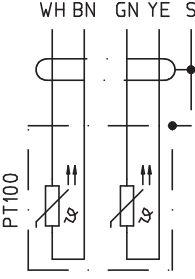
	<p><b>Explanation to the illustration</b></p> <p>N: Nominal length 75 <math>\pm 0.5</math> mm (other lengths on request)          A: Length 25 mm          B: <math>\varnothing 5 \pm 0.05</math> mm          C: Measuring tip nickel plated          D: Stainless steel tube</p>	<p>E: Sensor head aluminium anodised          F: Length 33 <math>\pm 2</math> mm          G: 15 <math>\pm 1</math> mm</p>
	<p><b>Explanation to the illustration</b></p> <p>A: Length 32 <math>^{-1}</math> mm          B: Length 9 mm          C: Length 9 mm          D: <math>\varnothing 17</math> mm          E: <math>\varnothing 6.5</math> mm</p>	<p>Boreholes top view:          F: Length 17 <math>\pm 0.2</math> mm          G: Length 9 mm          H: <math>\varnothing 5.2^{H11}</math> mm</p>

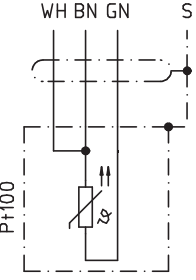
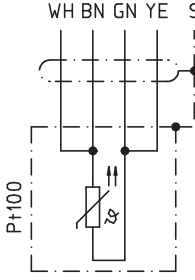
## Cable and protective tubing variants

Cable standard (without protective tubing)	Cable with polyamide protective tubing	Cable with special protective tubing
<p><b>Explanation to the illustration</b></p> <p>A: Length (see type code)          B: <math>\varnothing 5 \pm 0.5</math> mm          C: Min. bending radius R25 min.          D: Cable halogen-free, 0.33 mm<sup>2</sup> / 0.34 mm<sup>2</sup>          E: <math>\varnothing 14</math> mm          F: Length 26 <math>\pm 2</math> mm</p>	<p><b>Explanation to the illustration</b></p> <p>A: Length (see type code)          B: <math>\varnothing 10 \pm 0.5</math> mm          C: Min. bending radius R25 min.          D: Cable halogen-free, 0.33 mm<sup>2</sup> / 0.34 mm<sup>2</sup>          E: <math>\varnothing 14</math> mm          F: Length 36 <math>\pm 2</math> mm          G: Protection hose polyamide PMA-PCST</p>	<p><b>Explanation to the illustration</b></p> <p>A: Length (see type code)          B: <math>\varnothing 13.4 \pm 0.7</math> mm          C: Min. bending radius R40 min.          D: Cable halogen-free, 0.33 mm<sup>2</sup> / 0.34 mm<sup>2</sup>          E: <math>\varnothing 15</math> mm          F: Length 33 <math>\pm 2</math> mm          G: Protection hose textile-reinforced (Eaton GH585)</p>

**Connection**

Standard connection is an open cable end (see next Fig.). Other customised connections (e. g. plug connectors, terminal box, etc.) are available on request. Also available combined with other sensors in one sensor group (temperature and/or speed).

<p><b>Cable end</b></p> 	<p><b>2-wire type</b></p> 	<p><b>2 x 2-wire type</b></p> 
<p><b>Explanation to the illustration</b>  A: wire length 80 ±10 mm</p>		

	<p><b>3-wire type</b></p> 	<p><b>4-wire type</b></p> 
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## Technical Data

Signal acquisition	
Measuring principle	Pt100 with 2-, 3- or 4-wire circuit, Pt1000 with 2-wire circuit
Temperature range	Measuring tip: -40 ... 250 °C Cable outlet: -40 ... 120 °C (short time 150 °C) Connection cable: -40 ... 120 °C (short time 150 °C)
Accuracy / Tolerance class	DIN EN 60571: class F0.3 (B) (other classes on request)
Transmission behaviour	Temperature linear
Response time	In water >0.2 m/s: $t_{0.5} = 5 \text{ s}$ / $t_{0.9} = 12 \text{ s}$

Environmental influences	
Storage temperature	-40 ... 120 °C
Protection class	IP66/IP68
Vibration resistance	DIN EN 61373: 30 g eff. @ 20 ... 500 Hz (Random)
Shock resistance	DIN EN 61373: 1.000 m/s <sup>2</sup> @ 6 ms
Insulation voltage	500 VAC, 50 Hz @ 1 min
Insulation resistance	>200 MΩ @ 500 VDC
Fire protection class	EN 45545, DIN 5510, NF F 16-101
Applied standards	EN 50155, DIN EN 60571

Mechanical properties	
Material	Measuring tip: Brass nickel-plated Sensor tube: Stainless steel Housing: Aluminium anodised
Mounting	Flange mounting
Immersion depth	75 mm, 100 mm (other lengths on request)
Installation position	Any (note possible liquid inlet)
Weight	Depending on connection: approx. 400 g with 2 m cable (special protection hose) and connector HAN 3 HPR

Other	
Approvals	CE

# Type code

Type code structure										
<b>TA</b>	<b>P</b>	<b>1</b>	<b>18-</b>	<b>14</b>	<b>11-</b>	<b>X</b>	<b>05-</b>	<b>L3-</b>	<b>S0</b>	<b>Example: TAP118-1411-X05-L3-S0</b>
Measuring principle										
Number of measuring elements										
Construction type										
Nominal length N (immersion depth)										
Sensor tube diameter										
Electrical connection										
Cable length										
Wire type design										
Shield										

Type code type TA18										
<b>Measuring principle</b>	<b>P</b>	Pt100								
	<b>PT</b>	Pt1000								
<b>Number of measuring elements</b>	<b>1</b>	One measuring element								
	<b>2</b>	Two measuring elements								
<b>Construction type</b>	<b>18-</b>	Flange sensor, lateral 90° cable outlet								
	<b>181-</b>	Flange sensor, lateral 90° cable outlet, increased insulation resistance								
<b>Nominal length N (immersion depth)</b>	<b>14</b>	75 mm								
	<b>15</b>	100 mm								
	Customised lengths on request									
<b>Sensor tube diameter</b>	<b>06-</b>	Ø 12 mm								
	<b>11-</b>	Ø 5 mm								
	Customised diameters from 4...12 mm on request									
<b>Electrical connection</b>	<b>X</b>	Standard cable end (without protection hose)								
	<b>XP</b>	Cable end with polyamide protection hose								
	<b>XGS</b>	Cable end with special protection hose (steel mesh)								
	<b>XGT</b>	Cable end with special protection hose (textile-reinforced)								
	Cable length									
<b>Cable length</b>	<b>05-</b>	Sheath length 2.0 m, halogen-free								
	<b>07-</b>	Sheath length 5.0 m, halogen-free								
	<b>09-</b>	Sheath length 10.0 m, halogen-free								
<b>Wire type design</b>	--	Without code means 2-wire								
	<b>L3-</b>	3-wire type								
	<b>L4-</b>	4-wire type								
<b>Shield</b>	--	Without code: Shield attached to the sensor housing								
	<b>S0</b>	Shield not attached to the sensor housing								
<b>TA</b>	--	--	--	--	--	--	--	--	--	<b>Example: TAP118-1406-XGT05</b>