

PROCESS TEMPERATURE SENSOR

TSP-Series

FEATURES

- Universal dimensions
- Simple installation
- Easy connection
- Robust
- IP54 connector cover
- -20...150°C
- Direct/indirect measurement
- EN 60730-2-9 approved

OPTIONS

- Dual sensor (2 x NTC/Pt)
- Analog output (4...20mA)
- Private label

APPLICATIONS

- Central heating systems
- Boilers
- Heat exchangers
- Air conditioning equipment
- Heat pumps



GENERAL INFORMATION

The process temperature sensors are easy to build into an application thanks to their universal dimensions. They enable direct measurement when immersed in the medium (water) via standardised process 1/2" BSP screw thread or in gas (air) via a sliding flange mounting.

Indirect measurement is done by placing it in an immersion well. This offers advantages in applications with an aggressive medium, high pressures or simply to allow for easy replacement.

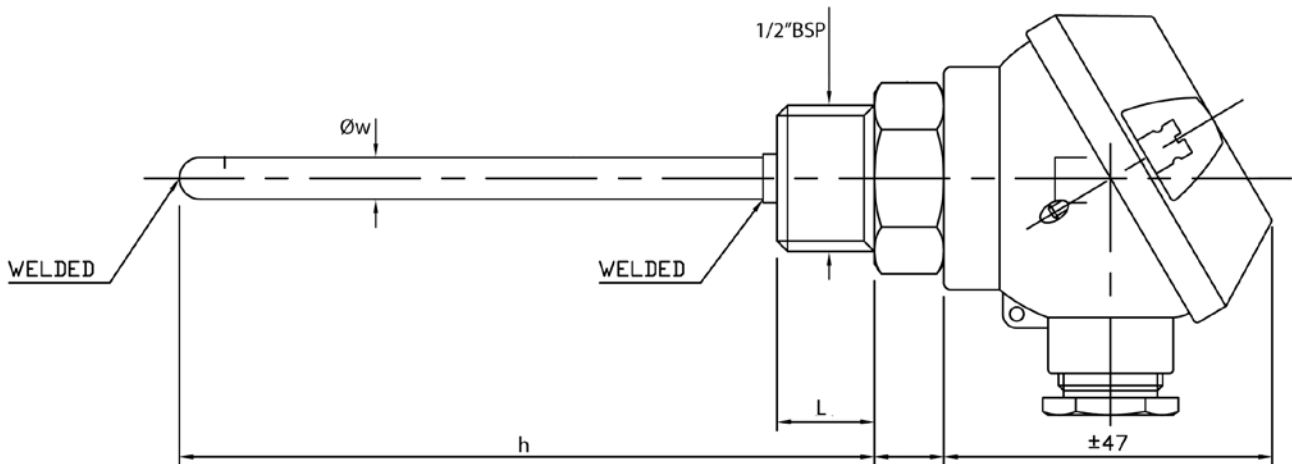
Furthermore this sensor differentiates itself with its robust and IP54 aluminium connector head. They can also be supplied to third parties under your label or logo, along with the installation manual and appropriate packaging.

Besides the standard (single) model with one measurement element, there are also models with two separate measurement elements (duplex) or with built-in transmitter for an analog output (4...20mA).

GENERAL TECHNICAL INFORMATION

Characteristic	Parameter	Value	Unit
Operating temperature	T_{op}	-20...150	°C
Resistance tolerance NTC (@25°C)	ΔR_R	±1	%
Resistance tolerance Pt100 (Class B)	ΔR_R	±0,12	Ω
Resistance tolerance Pt500 (Class B)	ΔR_R	±0,6	Ω
Resistance tolerance Pt1000 (Class B)	ΔR_R	±1,2	Ω
Temperature coefficient Pt100/Pt1000	TCR	3850	ppm/K
Insulation resistance	R_{ins}	>200	MΩ
Test Voltage (t = 1s)	V_{test}	2000	V_{AC}

MEASUREMENTS & MATERIALS



Standard

Tube diameter (\varnothing_w)	: Ø6 mm
Immersion depth (h)	: 50 / 80 / 100 / 150 / 200 mm
Mounting	: 1/2" BSP, L= 14mm / sliding flange
Housing/tube material	: Stainless Steel AISI 304 / Copper
Connector cover	: Aluminium
Electrical connection	: Screw / Spring-loaded connectors

Options

Dual sensor (Duplex)	: 2 x NTC/Pt
Built-in transmitter	: analogue output (4...20mA)

(Other dimensions or connectors on request)

Suggested accessoire: Immersion well



OPTIONAL TRANSMITTER

The process temperature sensor can be fitted with a transmitter to create a current loop with a 4...20mA analog output. It is powered through the 10-35 VDC loop.

The transmitter makes the sensor suitable for monitoring the temperature over a long distance without loss of signal value. The signal is not sensitive to interference or increase of resistance.

The transmitter with connected measuring element can be exchanged while keeping the sensor well in place.

A signal range from -10...50°C or 0...130°C can be selected with a jumper (see table below).

Thanks to the small electronics, the transmitter fits inside the small connection head type MA.



AVAILABLE SENSOR VALUES

T °C	NTC 3K B 3988K 1%@25°C		NTC 5K B 3977K 3%@60°C	
	R Ohm	dT ±°C	R Ohm	dT ±°C
-50	201030	1		
-40	100950	0,7	167136	0,9
-30	53100	0,7	88066	0,9
-20	29121	0,6	48380	0,9
-10	16599	0,5	27609	0,9
0	9795	0,4	16312	0,9
10	5970	0,4	9948	0,9
20	3747	0,3	6246	0,9
25	3000	0,2	5000	0,9
30	2417	0,3	4028	0,9
40	1598	0,4	2662	0,8
50	1081	0,5	1799	0,8
60	746,4	0,7	1242	0,8
70	525,6	0,8	874	0,9
80	377,4	1,0	626	1,0
90	275,3	1,1	456	1,1
100	204,0	1,3	337	1,2
110	153,4	1,4	253	1,4
120	116,8	1,6	192	1,5
130	90,3	1,8	148	1,6
140	70,4	2,0	115	1,7
150	55,6	2,2	91	1,8

T °C	Pt100	Pt500	Pt1000	Pt-serie Tolerance Class	
	IEC751 A/B	IEC751 A/B	IEC751 A/B	A	B
R Ohm	R Ohm	R Ohm	dT ±°C	dT ±°C	
-50	80,3	401,5	803	0,25	0,55
-40	84,3	421,4	843	0,23	0,50
-30	88,2	441,1	882	0,21	0,45
-20	92,2	460,8	922	0,19	0,40
-10	96,1	480,4	961	0,17	0,35
0	100	500	1000	0,15	0,30
10	103,9	519,5	1039	0,17	0,35
20	107,8	539,0	1078	0,19	0,40
25	109,7	548,7	1097	0,20	0,43
30	111,7	558,4	1117	0,21	0,45
40	115,5	577,7	1155	0,23	0,50
50	119,4	597,0	1194	0,25	0,55
60	123,2	616,2	1232	0,27	0,60
70	127,1	635,4	1271	0,29	0,65
80	130,9	654,5	1309	0,31	0,70
90	134,7	673,5	1347	0,33	0,75
100	138,5	692,5	1385	0,35	0,80
110	142,3	711,5	1423	0,37	0,85
120	146,1	730,3	1461	0,39	0,90
130	149,8	749,2	1498	0,41	0,95
140	153,6	767,9	1536	0,43	1,00
150	157,3	786,6	1573	0,45	1,05

T °C	4...20mA		with Pt100 Tolerance Class B
	without jumper	with jumper	
I mA	I mA	dT ±°C	
-50			0,55
-40			0,50
-30			0,45
-20			0,40
-10	4,00		0,35
0	6,66	4,00	0,30
10	9,33	5,23	0,35
20	12,00	6,46	0,40
25	13,33	7,08	0,43
30	14,66	7,69	0,45
40	17,33	8,92	0,50
50	20,00	10,15	0,55
60		11,38	0,60
70		12,61	0,65
80		13,85	0,70
90		15,08	0,75
100		16,31	0,80
110		17,54	0,85
120		18,77	0,90
130		20,00	0,95
140			1,00
150			1,05

Other signal range on request.
Other tolerance on request.

ORDERING INFORMATION

Please contact our sales department to select the process temperature sensor (TSP-series) to match your specific application

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