

# THERMOCONT TSP Encapsulated Temperature Sensors

The wide range of THERMOCONT temperature sensors covers almost all demands in the area of industrial temperature measurement. The numerous versions and multiple kinds of applicable probes make THERMOCONT a suitable choice for all industries.

The THERMOCONT TSP sensors are installed in various kinds of mediums (e.g., liquids, gas, fumes) inside pipes, tanks and furnaces. PFA-coated probe versions having a steel flange with a PTFE-insert can be used in chemical and petrochemical applications where aggressive mediums could damage the steel probes. The shock-proof stainless steel construction includes the inner and external (double) tube and the welded flange.

## FEATURES

- Single or dual Pt100 sensor versions
- 2 or 4-wire types
- Double sensor protection tube
- Fast response sensor version
- Plastic-coated or stainless steel protection tub
- Up to 3 m (9.8 ft) insertion length
- Vibration-resistant version
- Explosion-proof variants
- Can be mounted to special technological places, tanks, tubes, furnaces or boilers
- Special versions for unique applications

## APPLICATIONS

- Temperature measurement of liquids, gases, vapors
- Coated version for temperature measurement in aggressive media
- Construction Materials
- Chemical Industry
- Food & Beverage
- Oil Industry
- Metallurgy
- Recycling

## CERTIFICATES

- ATEX (Ex ia G / Ex d G / Ex d ia G)



TSP  
– standard temperature sensor

## TECHNICAL DATA

		THERMOCONT T			
		Standard [TSP]	Vibration-resistant [TSV]	Fast response [TSG]	Plastic-coated [TPP]
Sensor	Accuracy class <sup>(1)</sup>	"A" or "B" accuracy class in accordance to EN 60751			
	Type		Single or dual	Single-sensor only	Single or dual
	Vibration resistance	–	EN 60751.4.4.2		–
	Grounding		Ground-independent		
Head	Material of inner protective tube		A38		
	Housing material		Painted EN AC 44100 aluminum		
	Cable gland		M20×1.5 plastic		
	Cable		Ø6...Ø12 mm (Ø.236...Ø.472"), see "Ex Information"		
External Protection	Electrical connection		Terminal with fixing screw		
	Material		1.4571 stainless steel		PFA / (PTFE / PVDF)
	Probe length		60...3000 mm (2.4"...10 ft)		
	Process connection		As per order code		
General data	Range		–50...+600 °C (–58...+1112 °F)		–50...+200 °C (–58...+392 °F)
	Medium pressure	25 bar (363 psi) at +20 °C (+68 °F); 16 bar (232 psi) at +400 °C (752 °F)			1 bar (14.5 psi)
	Time-constant		< 3 min	< 20 s	4.5 min
	Ambient temperature		–20...+80 °C (–4...+176 °F), see "Ex Information"		
	Grounding		External, grounding screw on the housing		
	Electrical protection		Class III		
	Ingress protection		IP65		
	Ex marking		See "Ex information" for TS / TP types table		
Ex Information					

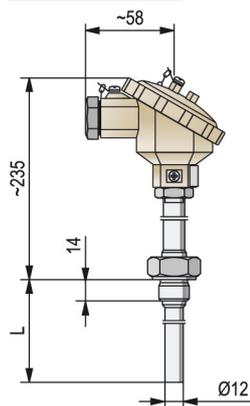
<sup>(1)</sup> In standard temperature ranges (below +400 °C [+752 °F]), the margin of error for class "A" resistance temperature sensors is below ±1 °C (±1.8 °F); in the case of class "B" temperature sensors, it is ±2.3 °C (±39.4 °F) maximum.

Temperature Classes					
T6	T5	T4	T3	T2	T1
Ambient temperature from –20 °C (–4 °F)					
+65 °C (+149 °F)	+70 °C (+158 °F)			+80 °C (+176 °F)	
Process temperature from –20 °C (–4 °F)					
+85 °C (+185 °F)	+100 °C (+212 °F)	+135 °C (+275 °F)	+200 °C (+392 °F)	+300 °C (+572 °F)	+450 °C (+842 °F)

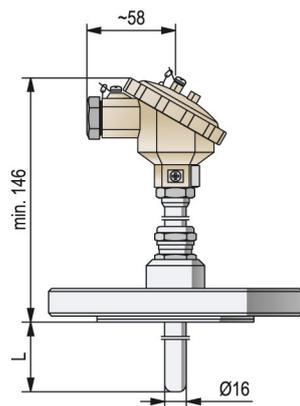
## Ex INFORMATION

	TSG-□□□-□ Ex	TPO-□□□-□ Ex	TSP-□□□-□ Ex (except: TSG)
Ex marking (ATEX)	⊕ II 1 G Ex ia IIC T6...T1 Ga	⊕ II 1 G Ex ia IIB T6...T1 Ga ⊕ II 1/2 G Ex d ia IIB T6...T1 Ga/Gb	⊕ II 1 G Ex ia IIC T6...T1 Ga
Intrinsic safety data	$U_{imax} = 30\text{ V}; I_{imax} = 100\text{ mA};$ $P_{imax} = 750\text{ mW}; C_i = 0\text{ nF}; L_i = 0\text{ mH}$	$U_{imax} = 30\text{ V}; I_{imax} = 140\text{ mA};$ $P_{imax} = 1\text{ W}; C_i = 0\text{ nF}; L_i = 0\text{ mH}$	$U_{imax} = 30\text{ V}; I_{imax} = 100\text{ mA};$ $P_{imax} = 750\text{ mW}; C_i = 0\text{ nF}; L_i = 0\text{ mH}$
Ex marking (ATEX)		⊕ II 2 G Ex d IIB T6...T1 Gb	⊕ II 2 G Ex d IIB T6...T1 Gb
Intrinsic safety data		$U_{imax} = 30\text{ V}; I_{imax} = 140\text{ mA}$	
Ex marking (ATEX)			⊕ II 1/2 G Ex d ia IIB T6...T1 Ga/Gb
Intrinsic safety data			$U_{imax} = 30\text{ V}; I_{imax} = 140\text{ mA};$ $P_{imax} = 1\text{ W}; C_i = 0\text{ nF}; L_i = 0\text{ mH}$
Electrical protection		Class III	
Ingress protection		IP67	
Electrical connection		Wire cross section: 0.5...1.5 mm <sup>2</sup> (AWG20...16)	
Housing		Painted aluminum (EN AC 43100)	
Cable length	Ex ia: $\varnothing 6 \dots \varnothing 12\text{ mm}$ (0.236...0.472"); Ex d, Ex d ia: $\varnothing 7 \dots \varnothing 12\text{ mm}$ (0.275...0.472")		

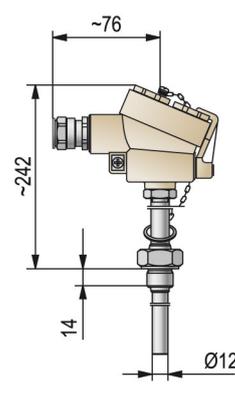
## DIMENSIONS



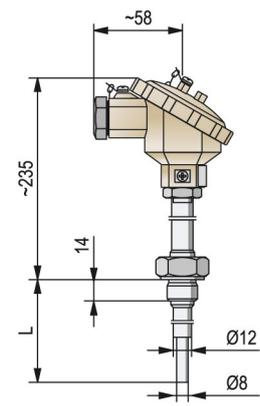
TSP / TSV-□□□



TPP-□□□



TSP / TSV-□□□-8 Ex  
TSP / TSV-□□□-9 Ex



TSG-□□□

## ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

### Encapsulated temperature sensor

#### THERMOCONT T ■■■-■■■-■■■<sup>(1)</sup>

Version	Code	Process connection <sup>(5)</sup>	Code	Pt100 Sensor	Code	Code	Probe length <sup>(5)</sup>	Code	Ex certificate	Code	
1.4571 (stainless steel)	S	Flange DN25 PN25, KO35	0	Class "A"	1	0	60 mm (2.4")	1000 mm (39.4")	5	-	0
PFA/(PTFE or PVDF)-coated stainless steel <sup>(2)</sup>	P	M20×1.5 external thread	1	Class "B"	2	1	160 mm (6.3")	1500 mm (59.1")	6	Ex ia G	7
		½" BSP	2	Class "A", dual	4	1	250 mm (9.8")	2000 mm (78.7")	7	Ex d ia G	8
		½" NPT	3	Class "B", dual	5	2	400 mm (15.7")	2500 mm (98.4")	8	Ex d G	9
		¾" BSP	4	Class "B"	6	3	500 mm (19.7")	3000 mm (118")	9		
Pt100	P	Flange DN40 PN25/16, A38	5	Class "A", dual + 4-wire	7	4					
Pt100 / Shock-proof	V	Flange DN50 PN25/16, A38	6	Class "B"							
Pt100 / Fast response <sup>(3)</sup>	G	Flange DN80 PN25/16, A38	7	Class "A"							
Pt100 / Shock-proof, dismantlable <sup>(4)</sup>	B	Flange DN100 PN25, A38	8	Class "B"							
		Flange DN150 PN25, A38	9	Class "A", dual + 4-wire							

<sup>(1)</sup> The order code of an Ex version product should end in "Ex".

<sup>(2)</sup> Only with flange and M20×1.5 or ½" process connection.

<sup>(3)</sup> Only Ex ia version is available.

<sup>(4)</sup> Ex version available soon.

<sup>(5)</sup> On request: other process connections and probe lengths.