

## Application

- Equipment/tank design
- Technological process installations in all branches of industry
- Machine design
- Heating systems, air conditioning and ventilation

## Features

- Standard protective tube material: acid resistant steel 1H18N9T (1.4541/AISI321)\*
- Connector M12x1, 4-pole according to IEC 60 947-5-2
- Measuring range: -50 .. +260°C (depends on construction model)
- Optionally built-in 2-wire temperature transmitter, 4-20 mA signal output
- High measurement accuracy
- Compact, economical design
- Resistant to vibrations
- Protection type IP67 according to DIN EN 60529

The sensor consists of a non-replaceable measuring insert, a welded protection tube with process connection and a Hirschmann brand, M12x1 4-pole connector according to IEC 60947-5-2. The measuring transmitter is installed in the top part of the casing.

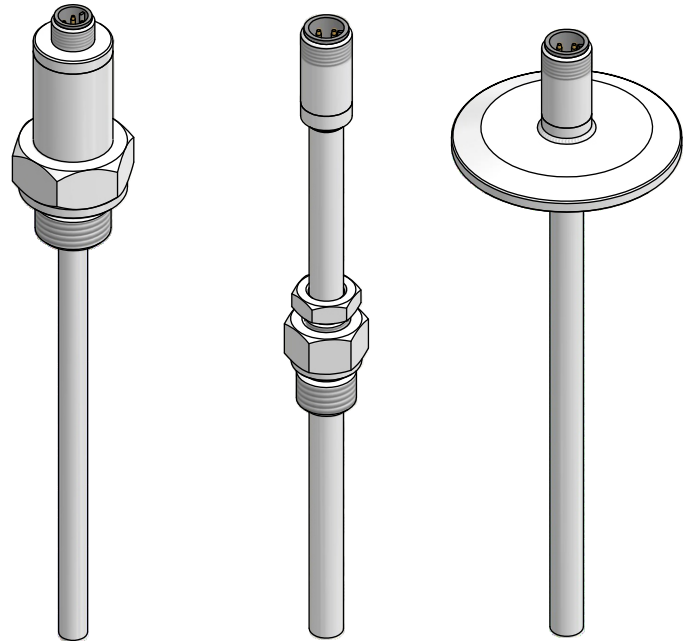
The integrated programmable two-wire transmitter converts the resistance value into a current signal.

The RTD temperature probe with programmable two-wire transmitter is used to measure temperatures from -50°C to +100°C, with extension tube up to 260°C.

The output signal 4 to 20 mA is available in a linearized way (temperature linear). The device is designed for industrial applications and complies with the respective European standards to guarantee electromagnetic compatibility (EMC).

These thermometers are appropriate for a maximum pressure of 40 bar (depending on the length of the immersion part and the diameter). All electrical parts are protected from splash water and are resistant to vibrations.

Immersion length, process connection, length of the thermowell, shape and material of the protection tube can be selected depending on the requirements of the application.



**APTOPSPT-M12-GB**  
(with 4..20mA transmitter)

**TOPSPT-M12-P**  
(with compression fitting UG)

**TOPSPT-M12-CL**  
(with flange CLAMP)

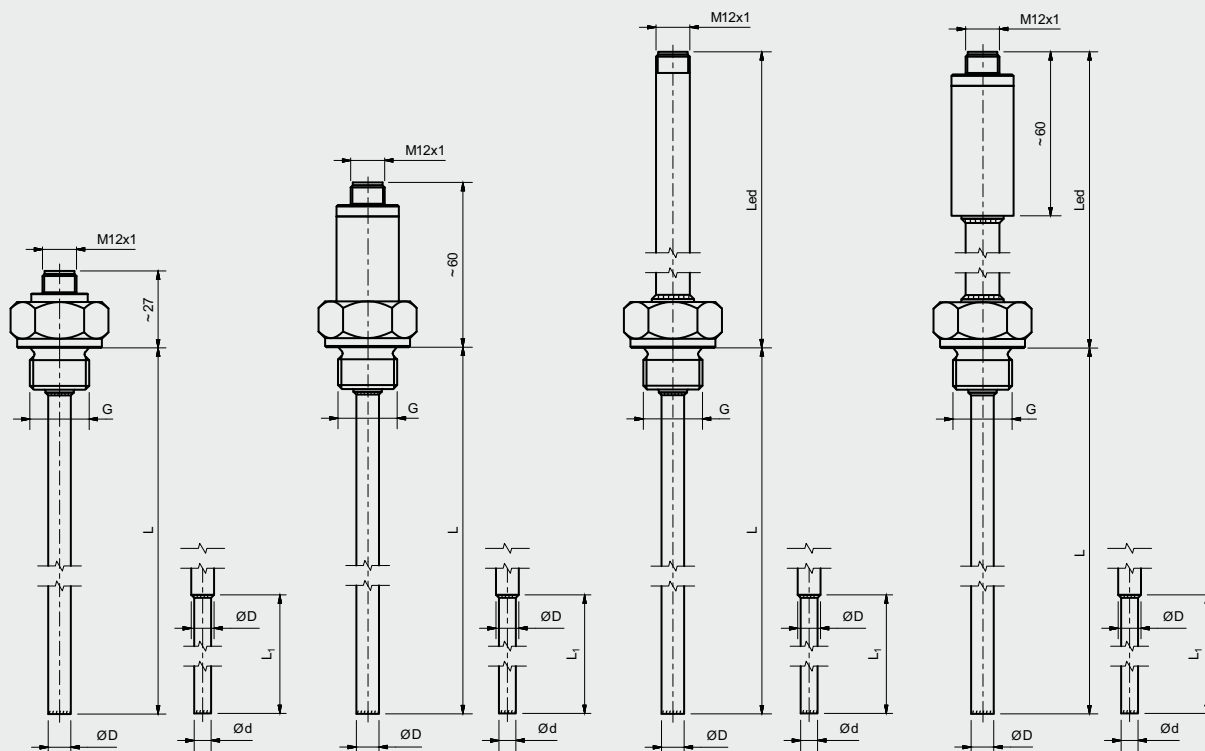
## Other versions

This data sheet contains only a small portion of our program of supplying resistance thermometers with Hirschmann M12 connector.

Other versions can be supplied upon customer's request.

\* other materials, see: "Thermowell materials"

## Designs

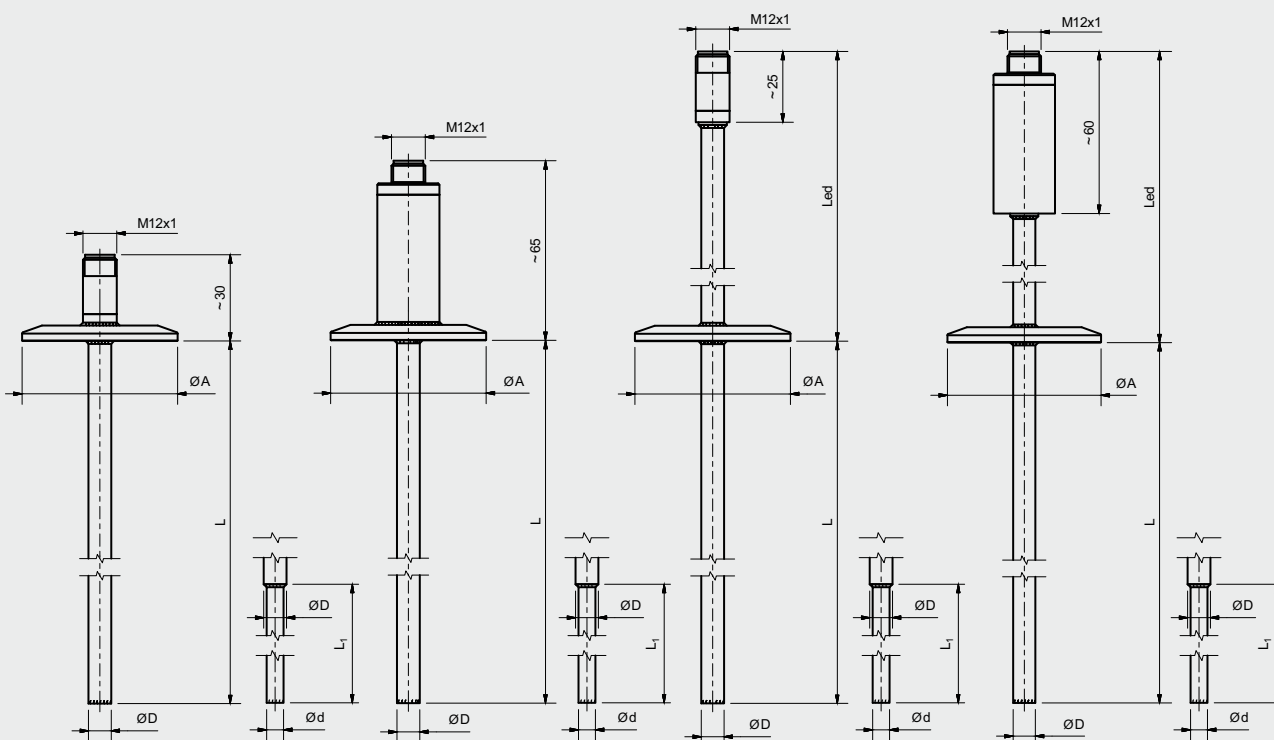


Model  
**TOPSPT-M12-GB**  
up to +200°C

Model  
**APTOPSPT-M12-GB**  
(with 4..20mA transmitter)  
up to +100°C

Model  
**TOPSPT-M12-GN**  
up to +260°C

Model  
**APTOPSPT-M12-GN**  
(with 4..20mA transmitter)  
up to +260°C



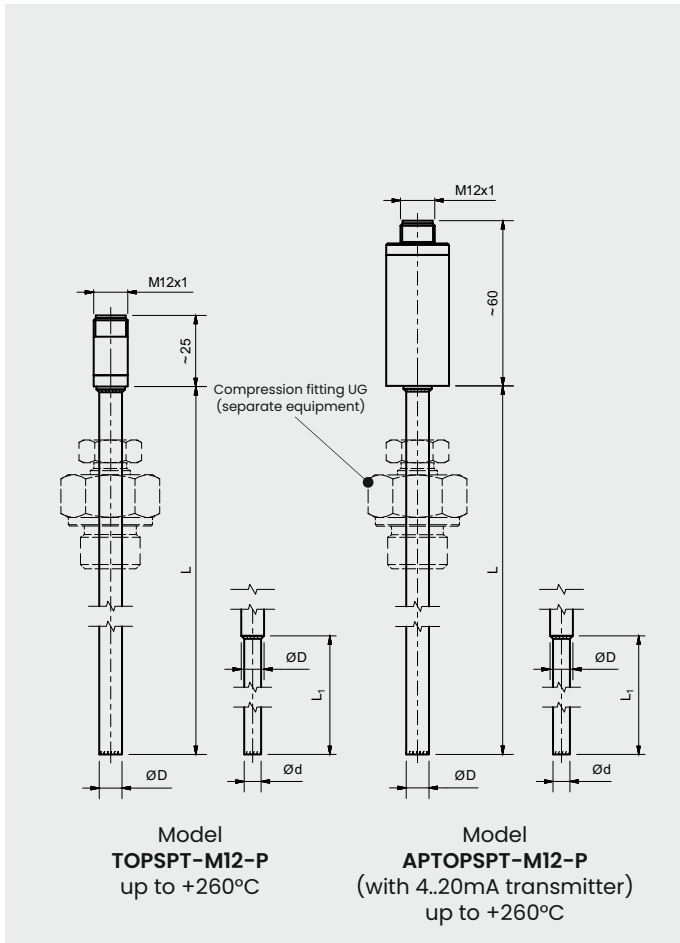
Model  
**TOPSPT-M12-CL**  
up to +200°C

Model  
**APTOPSPT-M12-CL**  
(with 4..20mA transmitter)  
up to +100°C

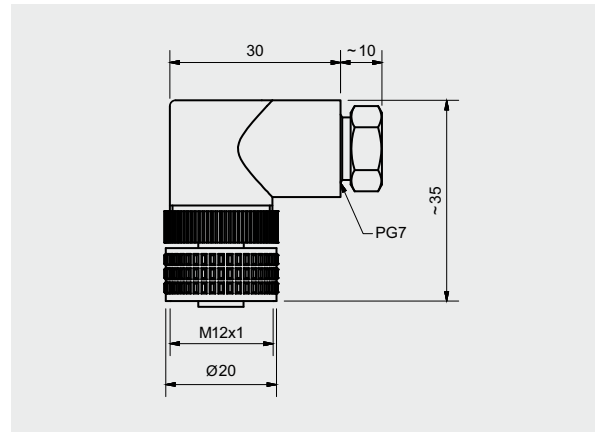
Model  
**TOPSPT-M12-CLN**  
up to +260°C

Model  
**APTOPSPT-M12-CLN**  
(with 4..20mA transmitter)  
up to +260°C

**Designs**



**Accessorie - Angled cable socket**



- PG7 cable gland (suitable for cables Ø4...Ø6 mm)
- Maximal cross section: 0.75 mm<sup>2</sup>
- Contact termination: screw
- Contact material: CuZn
- Housing material: poliamide
- Nut material: Zn Al/Ni
- Sealing: NBR
- Protection degree: Ip67
- Working temperature: -25°C to +90°C



The transmitter and connector must be protected from temperatures above 85°C

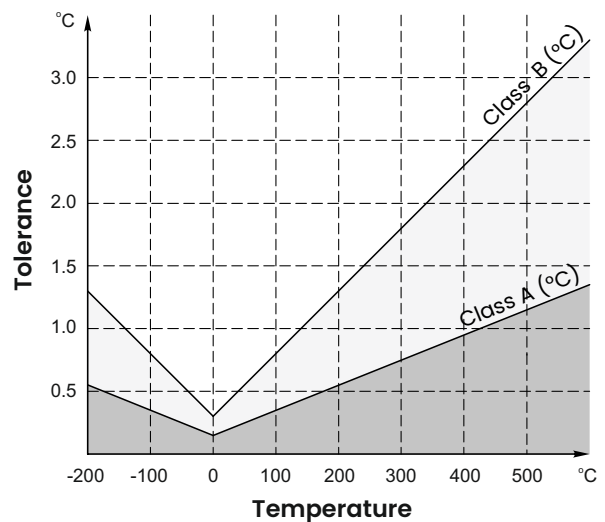
**Tolerances**

PN-EN 60751 Standard defines the formulas for calculating acceptable measure tolerance. More information in the general resistance thermometer sheet.

Class	Tolerance in °C
A	$\pm 0.15 + (0.002 \times  t )$
B	$\pm 0.30 + (0.005 \times  t )$

**Resistance to vibrations**

The standard vibration resistance of these models is 3 g (PN-EN 60751). For high vibration applications there are products of special design available withstanding vibrations of max. 10 g (PN-EN 60751).

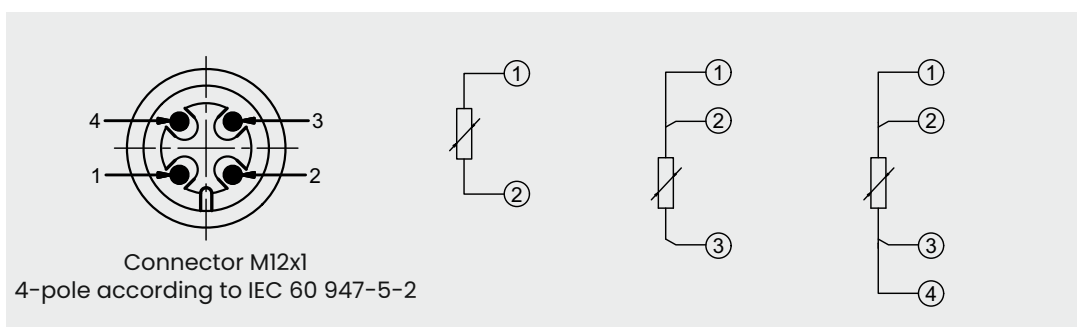


## Signal output Pt100

Method of sensor connection:

- 2-wire: consider the wire resistance
- 3-wire: in case of 30 m long wires (or longer) measurements faults may occur
- 4-wire: internal resistance of disconnected wires is irrelevant

## Connections



## Signal output 4..20 mA

Transmitter 4..20 mA is built-in in the pipe casing of the thermometer.

## Transmitter parameters

Power voltage, DC	7.5...45 V
Voltage drop	7.5 VDC
Vibrations	IEC 60068-26, 4g / 2..150 Hz
Sensor current	nom. 0.2 mA
Accuracy	0.2°C lub 0.08%

## Current output

Signal range	4..20 mA
Refresh rate	1 s
Load resistance	$< (U - 7.5) / 0.0208$

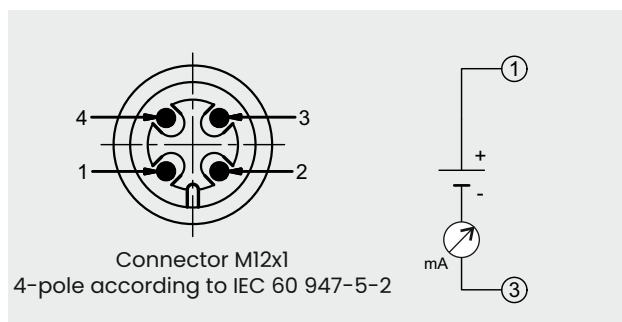
## Sensor fault signalization

3.9 mA

## Compliance with standards:

EMC 89/336/EEC, emission and resistance:  
GB/T17626.2-1998 conforming with IEC 61000-4-3:1995

## Connections



**Ordering code**

1                      2                      3                      4                      5                      6                      7                      8                      9                      10                      11  
 TOPSPT - M12 -  -  -  -  -  -  -  -  -  -  -

<b>Version</b>		
1	<input type="checkbox"/>	without 4..20 mA transmitter, RTD signal output AP with 4..20 mA transmitter
<b>Sensing element</b>		
2	<input type="checkbox"/>	Pt100 Pt100 (100 Ω in temperature 0°C) according to DIN-EN 60751 Pt500 Pt500 (500 Ω in temperature 0°C) according to DIN-EN 60751 Pt1000 Pt1000 (1000Ω in temperature 0°C) according to DIN-EN 60751 xxx other, please specify
<b>Protection tube model</b>		
3	<input type="checkbox"/>	GB model GB, with threaded process connection GN model GN, with neck and threaded process connection P model P., straight CL model CL, with flange CLAMP CLN model CLN, with neck and flange CLAMP
<b>Length L [mm]</b>		
4	<input type="checkbox"/>	50 50 mm 100 100 mm xxx other, please specify
<b>Neck length Led [mm] (does not apply to protection tubes GB, P., CL)</b>		
5	<input type="checkbox"/>	50 50 mm 100 100 mm xxx other, please specify
<b>Protection tube diameter D / d x L [mm]</b>		
6	<input type="checkbox"/>	6 Ø 6 mm 8 Ø 8 mm 6/3x30 Ø 6 mm, with reduced tip to diameter Ø 3 mm at 30 mm xxx other, please specify
<b>Process connection (does not apply to protection tube P.)</b>		
7	<input type="checkbox"/>	G3/8" G3/8" G1/2" G1/2" M20x1.5 M20x1.5 DN25 flange CLAMP DN25 / 1" / Ø50.5mm according to DIN 32 676 DN40 flange CLAMP DN40 / 1.5" / Ø50.5mm according to DIN 32 676 DN50 flange CLAMP DN50 / 2" / Ø64mm according to DIN 32 676 xxx other, please specify
<b>Protection tube material</b>		
8	<input type="checkbox"/>	1.4541 Stainless steel 1.4541 ( AISI321 ) 1.4404 Stainless steel 1.4404 ( AISI316L ) xxx other, please specify
<b>Tolerance</b>		
9	<input type="checkbox"/>	A Class A according to DIN-EN 60751 B Class B according to DIN-EN 60751 xxx other, please specify
<b>Connection line</b>		
10	<input type="checkbox"/>	2 2-wire 3 3-wire 4 4-wire
<b>Measuring range of temperature transmitter</b>		
11	<input type="checkbox"/>	0..100 input signal for 4..20mA: 0..100°C xxx other, please specify

**Example**

Temperature sensor TOPSPT-M12-GB-50-6-G1/2"-1.4404-A-4  
 ( sensor 1xPt100, protection tube GB, length L=50mm, diameter Ø6 mm, thread G1/2", material 1.4404,

Temperature sensor APTOPSPT-M12-CLN-160-60-6-DN50-1.4404-B-2-0..200°C  
 ( sensor 1xPt100, protection tube CLN, length L=160mm, neck Led=60mm, flange CLAMP DN50, material 1.4404, class B 2-wire, measuring range 0..200°C for output signal 4..20 mA ).