TEMPERATURE SENSORS (IP 68) UP TO 600 °C WITH PROGRAMMABLE CONVERTER 4–20 mA

DESCRIPTION AND APPLICATION

These resistance-type sensors are intended for contact measurements of temperatures up to 600 °C. Temperature sensors, in combination with a central holder or thermowell, can be used to measure the temperature in various applications of an industrial environment. The sensor variant with welded thread is ideal for direct measuring of various media in ducts. **These sensors meet the IP 68 rating** in accordance with EN 60 529. The standard operating temperature range is -50 to 600 °C. The sensors can be utilised for any control systems that are compatible with output signal 4–20 mA. The sensors are designed to be operated in a chemically non-aggressive environment.

ACCESSORIES

- The metal central holder K 120
- The thermowell JPTS 41

DECLARATION, CERTIFICATES, CALIBRATION

EC Declaration of Conformity – in accordance with Act No. 22/1997 Coll. as amended for sensors with an output of 4 to 20 mA.

Calibration – we perform standard calibration of resistance temperature sensors in accordance with EN ISO/IEC 17025 standard in the temperature range of the stated type of sensor.

MAXIMUM STREAM VELOCITY OF THE MEASURED MEDIUM - AIR AND WATER VAPOUR / WATER [m.s⁻¹]

Length of the thermowell/stem	> 60 to 100 mm	> 100 to 160 mm	> 160 to 220 mm	> 220 to 400 mm
Values for the versions with screw joint	15 / 1.5	8.0 / 1.0	2.5 / 0.6	0.6 / 0.3

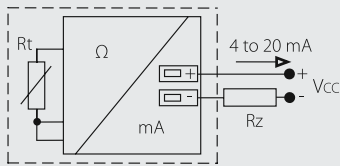## SPECIFICATIONS

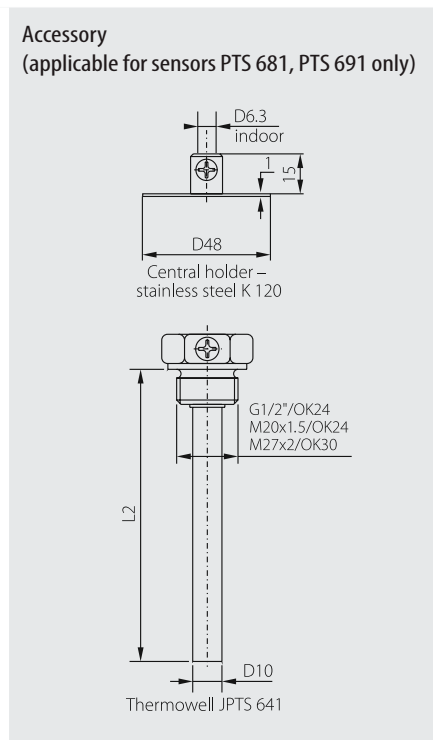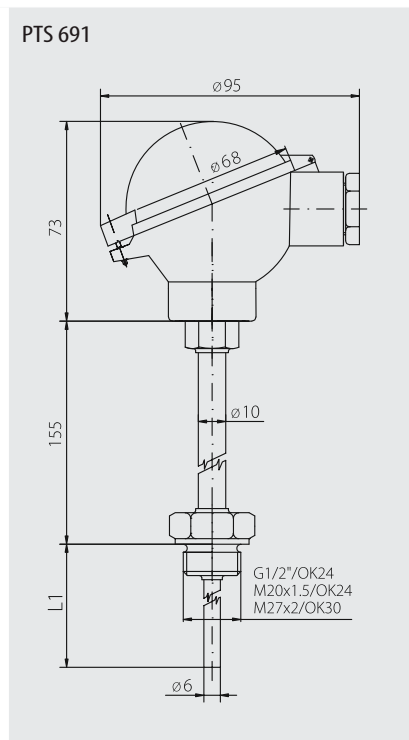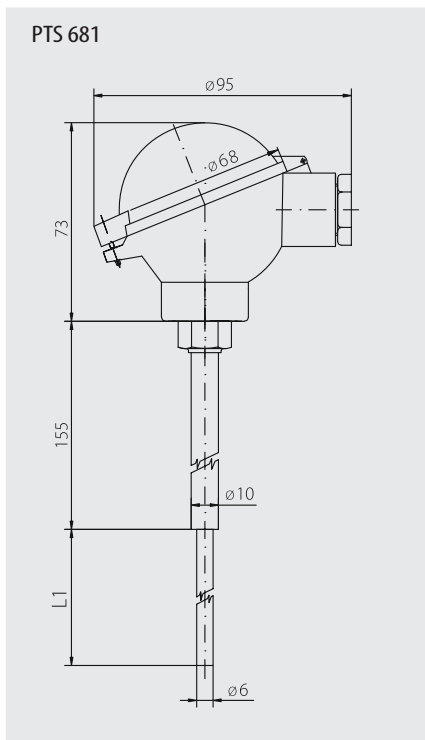|	
Sensor type with smooth stem	PTS 681
Sensor type with welded-on screwing	PTS 691
Type of sensing element	Pt 100
Output signal	4 to 20 mA
Maximum measurement range	-50 to 600 °C, on a short term to 650 °C
Adjustable measurement range	optional, minimum interval 10 °C
Accuracy of sensing element	class B according to IEC 751
Accuracy of converter	temperature error < 0.05 °C
	error of setting < 0.12 °C
	error of linearity < 0.05 % from the set range, minimum 0.16 °C
	influence of supply voltage < 0.005 %/V from the range
Current limitation	sensing element short < 3.2 mA
	sensing element break > 22.7 mA
Lead-in connection	recommended wire 1.5 to 2.5 mm²
Ingress protection	IP 68 according to EN 60 529
Material of sensor stem	stainless steel EN X6CrNiTi 18-10 (DIN 1.4541),
Standard length of the stem L1	50, 100, 160, 220, 280, 400 mm
Way of programming	PK – USB adapter *
Thread types by PTS 691	G ½"; M 20 x 1.5; M 27 x 2
Insulation resistance	> 200 MΩ at 500 V DC, 25 °C ± 3 °C; humidity < 85 %
Material of connection head	aluminium, LIMATHERM B
Operating conditions	ambient temperature: -25 to 80 °C
	relative humidity: max. 85 % (at the ambient temperature 25 °C)
	atmospheric pressure: 87 to 107 kPa
Weight	approximately 0.25 kg

*programming software is free

● WIRING DIAGRAM

With a converter 4 to 20 mA

● DIMENSIONAL DRAFT

PTS 681

PTS 691

Accessory
(applicable for sensors PTS 681, PTS 691 only)

Central holder – stainless steel K 120

G1/2"/OK24
M20x1.5/OK24
M27x2/OK30

Thermowell JPTS 641

● SENSOR INSTALLATION AND SERVICING

Before connecting the supply lead-in cable, position the sensor in the location of temperature measurement, and screw off the lid of the metal connection head. The lead-in cable is connected to the terminals according to the wiring diagram after pushing it through the loosened grommet. The recommended wire cross section is 1.5 to 2.5 mm^2, the outer diameter of the circular cross-section cable can range between 4 and 8 mm. In case the lead-in cable is laid in the vicinity of high voltage conductors or those supplying equipment creating disturbing electromagnetic field (e.g. inductive load equipment), a shielded cable should be used. To ensure the ingress protection value of IP 68 the grommet has to be tightened and the lid has to be screwed on after connecting the lead-in cable. In case of using a stainless steel thermowell or a holder these accessories have first to be installed in the temperature measurement location, then the sensor shall be pushed into the holder (or eventually to the thermowell bottom), finally the sensor is secured with a screw. The openings for the stainless steel holder installation have to be drilled according to the attached template, on which the opening diameters are marked, too. (This applies for the PTS 681 sensor only). After installing and connecting the sensor to the appropriate evaluating electrical equipment the sensor is ready to use. The sensor does not require any special servicing or maintenance. The device can be operated in any working position, but the grommet must not be directed upwards.

We can offer two options for programming the required temperature range:

c) when placing the order, the desired temperature range is clearly communicated. During production this temperature range will be programmed. The end-user will not have the possibility to change this setting afterwards, or

d) by purchasing the optional USB-adapter cable & software (item PK-USB), the end-user does have the opportunity to (re)program the temperature sensor at the desired range.

● CUSTOMER SPECIFIC MODIFICATIONS

REGARDING TO SENSORS MANUFACTURED IN A STANDARD VERSION THE FOLLOWING PARAMETERS CAN BE MODIFIED:

– variable stem design – L1 length, materials, diameters, option of thread design
– thermowell thread type options

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replaced 122.1a

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