

DESCRIPTION AND APPLICATION

These resistance-type sensors are intended for contact temperature measurements up to 600 °C. They consist of a measuring stem made of metal and a metal connection head, in which a programmable converter of the type temperature-current 4-20 mA is encased. The sensors are produced in PTS 681 version with a smooth stem or in PTS 691 version with welded-on screwed joint. The sensor stem is made of the stainless steel EN X6CrNiTi 18-10 (DIN 1.4541), the connection head is made of aluminium alloy. The basic lengths of the measuring stems are 50, 100, 160, 220, 280 and 400 mm. The metal connection head is provided by a cable outlet ending. All these sensor types meet the IP 68 ingress protection requirements according to the EN 60 529 standard.

By combination of the sensor and a stainless steel central holder or a thermowell, which are both available optionally, it is possible to use the sensors for temperature measurements in various applications of the industrial sphere. The sensors can be utilised for any control system that is compatible with the active output 4-20 mA.

The maximum operating temperature range is -50 to 600 °C.

The sensors are designed to be operated in a chemically non-aggressive environment.



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

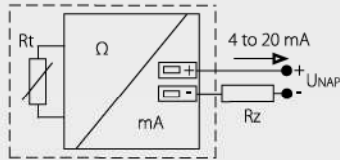
SPECIFICATIONS

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 temperature error < 0,05 °C
Accuracy of converter	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 mm ²
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
Grommet type	M 20 x 1,5
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 ambient temperature: -25 to 80 °C
Operating conditions	relative humidity: max. 85 % (at the ambient temperature 25 °C) atmospheric pressure: 87 to 107 kPa
Mass	approximately 0,25 kg

*programming software is free

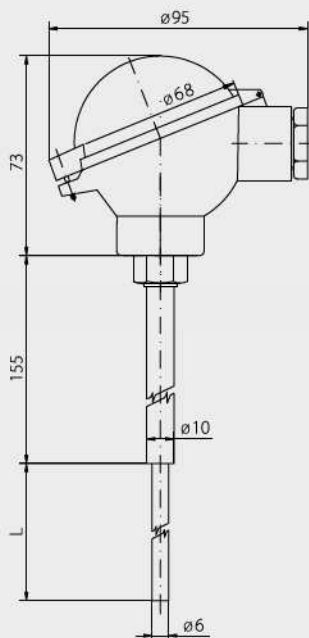
WIRING DIAGRAM

With a converter 4 to 20 mA

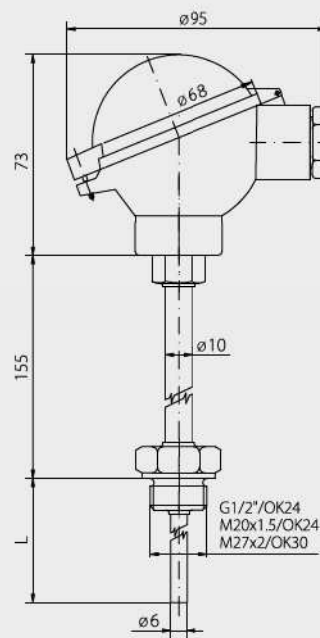


DIMENSIONAL DRAFT

PTS 681

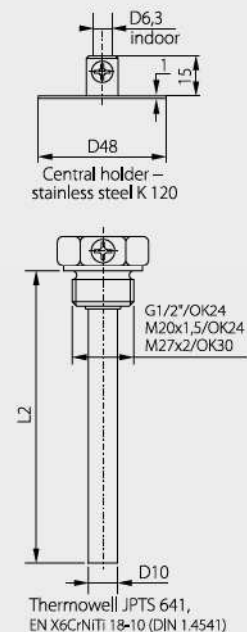


PTS 691



Accessory

(by the sensors PTS 681, PTS 691 only)



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 2,5mm², 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 insure 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 will be pushed into the holder or eventually to the thermowell bottom, after which 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.

Programming of required range is possible by two ways. The range can be defined directly in the order and afterward it is programmed and user has no possibility to change it. The second way is purchasing the programming adapter PK-USB including software and in this case the range can be programmed user-own.

CUSTOMER SPECIFIC MODIFICATIONS

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

- changing the sensor length (from the length of 600 mm the pipe D8 x 1 must be used)
- changing the stem version

HOW TO ORDER

Platinum temp. sensors for measuring up to 600 °C										1	2	E	0	A	D	D	0	E	G	G	G	G
										Thread		Unthreaded		0								
												G 1/2		1								
												M 20 x 1,5		3								
												M 27 x 2		4								
										Stem length L1		50 mm		0	0	5	0					
												100 mm		0	1	0	0					
												160 mm		0	1	6	0					
												220 mm		0	2	2	0					
												280 mm		0	2	8	0					
												400 mm		0	4	0	0					

Note: Temperature range DD is necessary to state in the form of text in the order.

Thermowell – Stainless steel, JPTS 641 (only for PTS 681)										9	0	2	2	B	B	0	1	0	0	G	G	G	G
										Thread		G 1/2"		0	1								
												M 20 x 1,5		0	3								
										Stem length L2		50 mm		0	0	5	0						
												100 mm		0	1	0	0						
												160 mm		0	1	6	0						
												220 mm		0	2	2	0						
												280 mm		0	2	8	0						
												400 mm		0	4	0	0						

Central holder – Stainless steel, K 120 (only for PTS 681)										9	0	0	0	0	0	0	1	0	0	0	0	0	0
Programming adapter PK-USB										P	K	-	U	S	B								

WHEN ORDERING GOODS, THE FOLLOWING DATA ARE REQUIRED:

Required data	Example 1	Required data	Example 2
Product type	PTS 681	Product type	PTS 691
Stem length	220 mm	Stem length	160 mm
Measuring range	-10 to 150 °C	Measuring range	-
Acc. – thermowell (length, thread)	Thermowell JPTS 641 (220 mm, G 1/2")	Thread	M 20 x 1,5
– central holder	NO	Adapter PK-USB	YES
– adapter PK-USB	NO		

DELIVERY

The sensors are packed in pasteboard boxes in accordance with the ordered quantity.

In addition, the following accessories and documents may be provided together with the product:

- thermowell, central holder K 120 (for PTS 681 type only)
- calibration sheet
- adapter PK-USB
- the EU Certificate of Conformity.