



INSTRUMENTS
SATRAP DAMA
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Temperature Sensors with Transmitter Model TT 301

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Protection Tube

Construction	Mineral insulator
Material	Stainless Steel 310, 316, 321 / Inconel 600
Insertion length "L" in mm	Order in different lengths
Outside diameter "D" in mm	Order in different diameters (ø25 mm , ...)
RTD (Pt100 - Pt1000)	Order in different diameters (3 mm , ...)

Connection Head

Material	Alloy Aluminum, Stainless Steel, Cast Iron
Protection Tube Entry	PF1/2", 3/4", NPT1/2", 3/4", BSP1/2", 3/4"
Extension Wire Entry	PF1/2", 3/4", NPT1/2", 3/4", BSP1/2", 3/4"
Protection Class	IP 65, IP 66, IP 67, IP 68
Model	KN, KP, DP, DN, BP

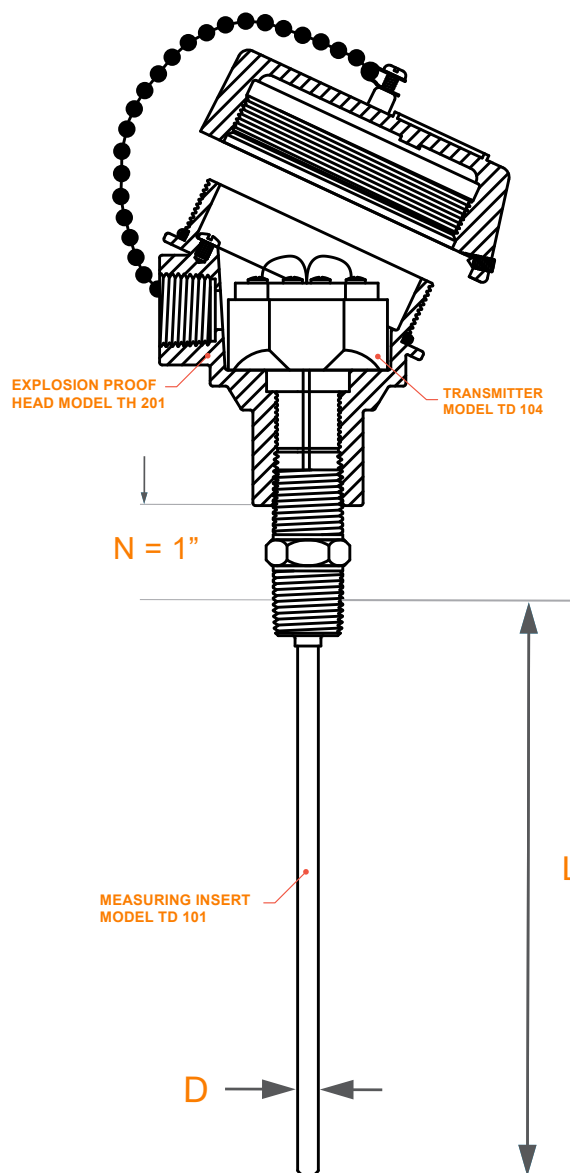
Temperature Element

Calibration K	Type K (Nickel-Chromium/Nickel-Aluminum)
Calibration J	Type J (Iron (Fe) / Constantan (Cu-Ni))
Calibration E	Type E (Nickel-Chromium / Copper-Nickel)
Calibration N	Type N (Nicrosil / Nisil)
Calibration T	Type T (Copper / Copper-Nickel)
Calibration RTD	RTD (Pt100 - Pt1000)
Accuracy	According IEC 584-1 / DIN 43710
Number of Elements	Simplex or Duplex

Installation Compression Fittings

Material	Brass or Stainless Steel
Form	Tapered and Parallel
Thread Pitch	BSPT 1/8", 1/4", 1/2" - BSP 1/8", 1/4", 1/2"

Please contact us for further information!



Technical Information

Temperature Transmitter

Before I go into details of this subject, let's see what a "Temperature Sensor" (Temperature Transducer) is and what does a "Temperature Transmitter" mean. Generally, a sensor or transducer is a physical device which is capable of transforming one type of process variable to my favorite signal type.

To elaborate on this generalized sentence, let me give you an example.

Temperature, pressure, flow, etc., are some process variables and actually, they are physical characteristics of our real world. With modern technology and because of tremendous advances in Electrical Engineering in the past century, we like to transform every measurable process value into an electrical signal and a temperature sensor is a device which will transform the Temperature into an electrical signal, no matter how tiny the amount of this signal might be!

A temperature transmitter is a device that connects to a temperature sensor to transmit the signal elsewhere for monitoring and control purposes. Typically, the temperature sensor is either an RTD, Thermistor or Thermocouple type sensor and will interface with a PLC, DCS, data logger or display hardware.

The temperature transmitter's role is to isolate the temperature signal, filter any EMC noise, amplify and convert the temperature sensor's signal to a 4-20mA or 0-10V DC range for further use.

4-20ma temperature transmitters are common in manufacturing as the majority of industrial equipment communicates via this signal range. The transmitted temperature signal can be scaled inside the temperature transmitter to accommodate the needs of the application, e.g. the 4mA can be used to represent -17.7°C (0° Fahrenheit) and the highest value in the range (20mA) can be used to represent 37.7° C (100° Fahrenheit).

Input signals types for a temperature transmitter

An RTD (Resistance Temperature Detector or Resistance Temperature Device) is one of the most prevalent temperature sensors used in industry today. Also commonly referred to as PT100, its resulting popularity is due to its accuracy and response at temperatures between -300 to + 600 ° F. The RTD sensor comprises of a resistor that changes value with temperature. The most common RTD by far is the PT100 385. This element measures 100 Ohms @ 0 degrees C (32 °F) and 138.5 Ohms @ 100 °C (212.0 °F). A thermocouple sensor has a pair of dissimilar metal wires joined at one end. The junction produces a low level voltage proportional to the difference in temperature between the open and closed ends.



Temperature Sensor



Standard Specifications

Model Transmitter: Siemens / Rosemount
 Ambient Temperature Limits: -40 and +85°C (-40 and +185°F)
 Supply Voltage Limits: 8 and 30 V dc
 Accuracy: Loop mA Output / 2000) or 5μA
 Vibration Limits: 40 m/s² (4 "g") from 2 to 500 Hz
 Output: 2, 3 or 4 Wire 4-20mA Current

Span and Range Limits - RTD Input

RTD Type	Span Limits		Range Limits	
	°C	°F	°C	°F
Platinum, 100 Ω	10 to 1,050	50 to 1,890	-200 to +850	-328 to +1,562
Nickel, 100 Ω	10 to 310	50 to 558	-60 to +250	-76 to +482

Span and Range Limits - T/C Input

TC Type	Span Limits		Range Limits	
	°C	°F	°C	°F
K	50 to 1,552	122 to 2,794	-180 to +1,372	-292 to +2,502
J	50 to 1,300	122 to 2,340	-100 to +1,200	-148 to +2,192
E	50 to 1,100	122 to 1,980	-100 to +1,000	-148 to +1,832
N	50 to 1,480	122 to 2,664	-180 to +1,300	-292 to +2,372
T	50 to 600	22 to 1,080	-200 to +400	-328 to +752

We manufacture types of sensors whit transmitters to your specifications or as replacements to existing sensors. We have manufactured thermocouples and RTD for near 15 years and are solely focused on the design and manufacture of temperature sensors.



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