

RTDs

RTD Specifications

One of the most important industrial process variables is temperature which affects the quality of product and the safety of the installation. There is no single sensor which is equally suitable for all applications, so sensors of different sizes are manufactured by different production methods. Therm-x uses the highest quality Resistance elements in the manufacturing of our sensors.

Tolerances

the platinum sensor Pt 100 is defined by the international Standard IEC 751. This definition covers the characteristics and two tolerance classes, Class A and Class B. The permitted error limit increases with the measurement temperature. Each class consists of a tolerance on the nominal value (resistance at 0.°C)and a deviation depending on temperature. Class tolerances are tested in the element form. Packaging and lead terminations affect the stated tolerance. Therm-x standard assemblies incorporate thin film elements conforming to IEC class B. Controlled assembly procedures are utilized to minimize packaging effects to tolerances. Special tolerances and N.I.S.T. certifications are available upon request for a nominal charge. See page 9 for calibration services offered.

For a Class A sensor the following relationship applies where "T" is the absolute temperature:

$$\square T = \pm(0.15 + 0.002 * t) \text{ For } t = 75 \text{ }^\circ\text{C, the tolerance is therefore: } \square T = \pm(0.15 + 0.002 * 75) = \pm 0.3^\circ\text{C}$$

For a Class B sensor the following relationship applies:

$$\square T = \pm(0.3 + 0.005 * t). \text{ In the above example the deviation is therefore: } \square T = \pm(0.3 + 0.005 * 75) = \pm 0.675 \text{ }^\circ\text{C}$$

For applications where closer tolerances are required, detectors are available in the following band tolerances

Band	Ohms
1	.1 (Standard)
2	.05
3	.03
4	.02
5	.01

Design

Thin film elements have a sensitive platinum film deposited onto the ceramic former. These types offer smaller dimensions and the possibility for higher nominal resistances. Wire wound ceramic elements consist of a ceramic body having the heat sensitive resistance wire encapsulated into longitudinal bores.

Characteristic

All versions described conform to the basic values and tolerances of DIN IEC 751 for platinum sensors. Sensors with 5 or 10 times the nominal value of 100 Ohm have the electrical tolerances increased by a factor of 5 and 10 respectively.

Stability

Compared with other temperature sensors, PT precision resistance elements possess good long term stability at the upper application limit.

