

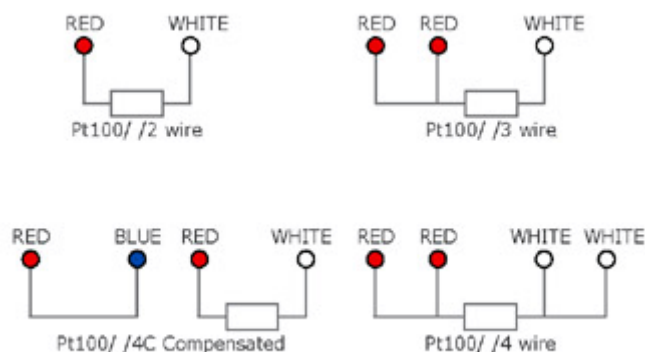
PLATINUM RESISTANCE PT100 SENSORS

The resistance to the flow of electricity in metallic materials varies with temperature. This can be used to good effect in platinum resistance detectors. Platinum is particularly stable both electrically and mechanically and is also stable with respect to time, producing a relatively linear change in resistance versus temperature.

Because the output resistance change to temperature is relatively small, it follows that lead lengths and resistances are therefore important features. In general when lead lengths are short, or can be considered as an acceptable additive content, two wire configuration is sufficient.

Three wire is the most commonly used and unless otherwise specified is supplied as standard, the third wire is the compensator for lead length and providing that all three wires have equal resistance, compensates for any ZERO or SPAN errors. (Not true for all bridges)

CONNECTION CONFIGURATION



Platinum resistors are most commonly 100 ohms at 0°C and 138.51 at 100°C. They are available in different grades according to the accuracy required and can be supplied as duplex sensors, two independent sensors on a single former.

The respective accuracies of the three main specification types, BS.EN 60751 Class A, BS.EN 60751 Class B and 1/10th Class B. Pt100 Platinum Resistance sensors are shown in the tolerance table below.

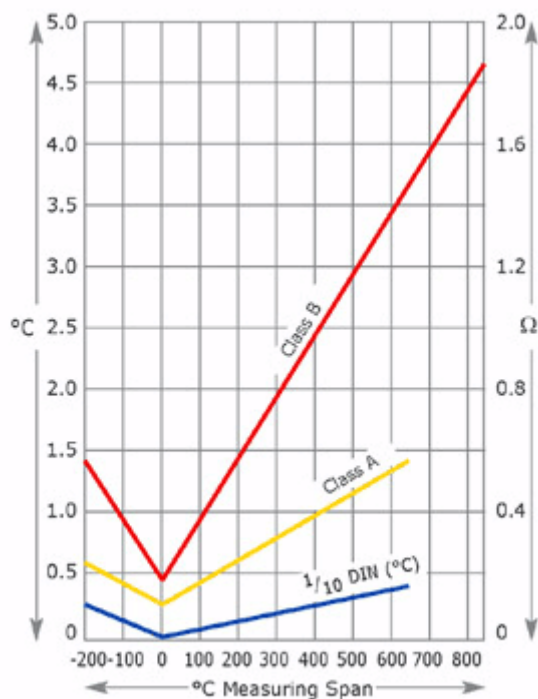
Resistance at 38.51 ohms fundamental interval			Tolerances for 100 ohms Thermometers					
Temperature		Nominal Value	Class A		Class B		1/10 Class B	
°C	°F		± °C	± ohm	± °C	± ohm	± °C	± ohm
-200	-328	18.52	0.55	0.24	1.3	0.56	0.13	0.06
-100	-148	60.26	0.35	0.14	0.8	0.32	0.08	0.03
0	32	100.00	0.15	0.06	0.3	0.12	0.03	0.01
100	212	138.51	0.35	0.13	0.8	0.30	0.08	0.03
200	392	175.86	0.55	0.20	1.3	0.48	0.13	0.05
300	572	212.05	0.75	0.27	1.8	0.64	0.18	0.06
400	752	247.09	0.95	0.33	2.3	0.79	0.23	0.08
500	932	280.98	1.15	0.38	2.8	0.93	0.28	0.09
600	1112	313.71	1.35	0.43	3.3	1.06	0.33	0.10
700	1292	345.28	-	-	3.8	1.17	-	-
800	1472	375.70	-	-	4.3	1.28	-	-



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TECHNICAL INFORMATION

TOLERANCE VALUES AS A FUNCTION OF TEMPERATURE FOR 100 ohms THERMOMETERS



LEADS

Pt100 sensors are supplied with 2, 3 or 4 wire connections and, unless otherwise specified, will be supplied as 3 wire type 7 x 0.2 mm Cu PTFE insulated, with two red wires indicating one end of the element and one white wire indicating the other. Alternative types of wire insulation can be supplied.

Material	Maximum Range	Application
PVC	-10 to +105 °C	Low cost, moisture resistant, short lengths
PTFE	-60 to +250 °C	Abrasion resistant, long lengths
Woven Asbestos	to +700 °C	Fireclay impregnated
Woven Silica	to +1000 °C	
Aluminous Porcelain	to +1400 °C	Electrical resistance declines above 900 °C
Recrystallised Alumina	to +1950 °C	Electrical resistance declines above 900 °C

Flying lead sensors can be supplied with an optional stainless steel over braid or convolute sheathing for arduous environments.