

RTD Sensors (Pt100, Pt1000, PRT)

Accuracies of Pt100 Elements

Grade of Element BS EN 60751:1996 (FI 38.5Ω)	Accuracy at 0°C	Accuracy at 100°C
B	±0.30°C	±0.80°C
A	±0.15°C	±0.35°C
1/3	±0.08°C	±0.19°C
1/5	±0.05°C	±0.15°C
1/10	±0.03°C	±0.12°C

Note: Accuracies quoted are for the element and may not be the actual accuracy of the completed assembly

Basic and Tolerance Values for Pt100 Sensors IEC 60751 (2008)

Pt100 Standard

For a Pt100 sensor the R0 value is 100 ohms

The basic values for Pt temperature sensors can be calculated using the following formula:

For range 0°C to +600°C use: $R_t = R_0 (1 + At + Bt^2)$

For range -200°C to 0°C use: $R_t = R_0 (1 + At + Bt^2 + Ct^3(t-100))$

Where:

R_t = resistance in Ohms at temperature t $A = 3.9083 \times 10^{-3}$

R_0 = nominal resistance at 0°C $B = -5.775 \times 10^{-7}$

t = temperature in °C $C = -4.183 \times 10^{-12}$

All Pt temperature sensors we supply are to class B tolerance as standard:

Δt in °C = ± (0,3 + 0,005[t])

The class A tolerance is defined as follows:

Δt in °C = ± (0,15 + 0,002[t])

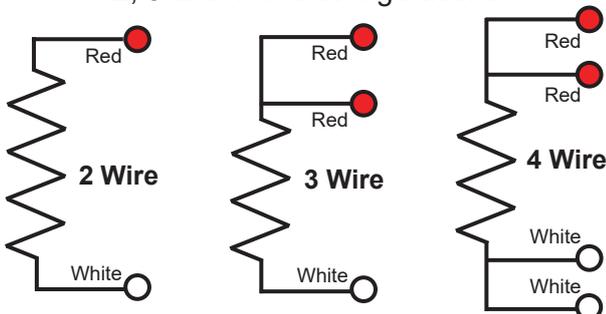
Temperature Coefficient 0.00385 Ohms/Ohm/°C

Basic values for Pt100 sensors (ITS-90)					
°C	Ω	Ω/°C	°C	Ω	Ω/°C
-200	18.52	0.432	350	229.72	0.35
-150	39.72	0.417	400	247.09	0.345
-100	60.26	0.405	450	264.18	0.339
-50	80.31	0.397	500	280.98	0.333
0	100.00	0.391	550	297.49	0.327
50	119.40	0.385	600	313.71	0.322
100	138.51	0.379	650	329.64	0.316
150	157.33	0.374	700	345.28	0.310
200	175.86	0.368	750	360.64	0.304
250	194.10	0.362	800	375.7	0.298
300	212.05	0.356	850	390.48	0.293

°C	Tolerance values for Pt100 sensors			
	Class A		Class B	
	°C	Ohm	°C	Ohm
-200	±0.55	±0.24	±1.30	±0.56
-100	±0.35	±0.14	±0.80	±0.32
0	±0.15	±0.06	±0.30	±0.12
100	±0.35	±0.13	±0.80	±0.30
200	±0.55	±0.20	±1.30	±0.48
300	±0.75	±0.27	±1.80	±0.64
400	±0.95	±0.33	±2.30	±0.79
500	±1.15	±0.38	±2.80	±0.93
600	±1.35	±0.43	±3.30	±1.06
650	±1.45	±0.46	±3.60	±1.13
700	–	–	±3.80	±1.17
800	–	–	±4.30	±1.28
850	–	–	±4.60	±1.34

Standard Wiring Schematics

Pt100 & Pt1000 sensors
2, 3 and 4 wire configurations



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