Pt100 and Thermocouple Tables

Quick reference for instrumentation and control engineers

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Pt100 resistance (IEC 60751)

°C	Ω
−50	80.31
0	100.00
25	109.73
50	119.40
100	138.51
150	157.33
200	175.86
250	194.10
300	212.05
400	247.09
500	280.98

Pt1000 = Pt100 values × 10.

Type K, J, T (mV)

°C	−100	0	25	50	100	200	300	400	500	600	800	1000	1200
K	−3.554	0	1.000	2.023	4.096	8.138	12.209	16.397	20.644	24.905	33.275	41.276	48.838
J	−4.633	0	1.277	2.585	5.269	10.779	16.327	21.848	27.393	33.102	45.494	57.953	69.553
T	−3.379	0	0.992	2.036	4.279	9.288	14.862	20.872					

Type N, E (mV)

°C	−100	0	25	50	100	200	300	400	500	600	800	1000	1200
N	−2.407	0	0.659	1.340	2.774	5.913	9.341	12.974	16.748	20.613	28.455	36.256	43.846
E	−5.237	0	1.495	3.048	6.319	13.421	21.036	28.946	37.005	45.093	61.017	76.373	

Type R, S, B (mV)

°C	0	100	200	400	600	800	1000	1200	1400	1600
R	0	0.647	1.469	3.408	5.583	7.950	10.506	13.228	16.040	18.849
S	0	0.646	1.441	3.259	5.239	7.345	9.587	11.951	14.373	16.777
B	0	0.033	0.178	0.787	1.792	3.154	4.834	6.786	8.956	11.263

Cold junction check (example K)

- Measure mV at the terminals: 3.096 mV.
- Terminal temperature 25 °C → add 1.000 mV.
- Total 4.096 mV → 100 °C.
- Add mV, never °C.

Tolerances

Sensor	Class	Tolerance
Pt100	A	± (0.15 + 0.002 |t|) °C
Pt100	B	± (0.3 + 0.005 |t|) °C
K, N	1	± 1.5 °C or 0.4 % |t|
J	1	± 1.5 °C or 0.4 % |t|
T	1	± 0.5 °C or 0.4 % |t|