

# Resistance Temperature Detectors (RTDs)

Resistance Temperature Detectors (RTD's). These detectors are frequently used in the plastics industries and many others. Care must be taken to eliminate moisture and vibration effects can be troublesome as well. Thermo Sensors provides the utmost in current state of the art in materials, techniques and research.

Thermo Sensors offers the Reliatemp RTD. This RTD features lifetime moisture free use as well as excellent vibration resistance.

Please refer to our order guide to assist in determining your needs. We can also provide technical design assistance and application suggestions. Give us a call.



## Resistance vs. Temperature Tables

The condensed Resistance VS Temperature Tables on the following pages are provided to aid in the proper RTD element selection.

Notice that the tables for the various platinum curves are for the standard 100 ohm @ 0°C sensor.

To calculate the resistance of:

- 50 ohm, multiply the values by .5;
- 200 ohm, multiply the values by 2;
- 500 ohm, multiply the values by 5;
- 1000 ohm, multiply the values by 10.

Table C100 for the 100 ohm @ 25°C Copper (90.35 ohms @ 0°C) is published. To calculate the resistance of the 10 ohm at 25°C (9.035 ohms @ 0°C) multiply the value shown by .1.

100 Ω Platinum (.00385 Ω/Ω/°C) @ 0° C (DIN 43760)										
Temp. °C	-100	-0	Temp. °C	0	100	200	300	400	500	600
-0	60.25	100.00	0	100	138.50	175.84	212.03	247.06	280.90	313.59
-10	56.19	96.09	10	103.90	142.29	179.51	215.58	250.50	284.22	316.80
-20	52.11	92.16	20	107.79	146.06	183.17	219.13	253.93	287.53	319.99
-30	48.00	88.22	30	111.67	149.82	186.82	222.66	257.32	290.83	323.18
-40	43.67	84.27	40	115.54	153.58	190.46	226.18	260.72	294.11	326.35
-50	39.71	80.31	50	119.40	157.32	194.08	229.69	264.11	297.39	329.51

-60	35.53	76.33	60	123.24	161.04	197.69	233.19	267.49	300.65	332.66
-70	31.32	72.33	70	127.07	164.76	201.30	236.67	270.86	303.91	335.79
-80	27.08	68.33	80	130.89	168.47	204.88	240.15	274.22	307.15	338.92
-90	22.80	64.30	90	134.70	172.16	208.46	243.61	277.56	310.38	342.13
-100	18.49	60.25	100	138.50	175.84	212.03	247.06	280.90	313.59	345.13

Interchangeability Tolerance ± (0.12% Element)								
Temp. °C	Tolerance		Temp. °C	Tolerance		Temp. °C	Tolerance	
	-0	-0		±°C	±ohm		±°C	±ohm
-200	1.3	.56	100	.08	.30	400	2.3	.79
-100	0.8	.32	200	1.3	.48	500	2.8	.93
0	0.3	.12	300	1.8	.64	600	3.3	1.06

100 Ω Platinum (.003916 Ω/Ω/°C) @ 0°C										
Temp. °C	-100	-0	Temp. °C	0	100	200	300	400	500	600
-0	57.57	100.00	0	100.00	139.16	177.13	213.93	249.56	284.02	317.28
-10	55.44	96.09	10	103.97	143.01	180.86	217.54	253.06	287.40	320.54
-20	51.29	92.02	20	107.93	146.85	184.58	221.15	256.55	290.77	323.78
-30	47.11	88.01	30	111.88	150.67	188.29	224.74	260.02	294.12	327.02
-40	42.91	83.99	40	115.81	154.49	191.99	228.32	263.49	297.47	-
-50	38.68	79.96	50	119.73	158.29	195.67	231.89	266.94	300.80	-
-60	34.42	75.91	60	123.64	162.08	199.35	235.45	270.38	304.12	-
-70	30.12	71.85	70	127.54	165.86	203.01	238.99	273.80	307.43	-
-80	25.80	67.77	80	131.42	169.63	206.66	242.53	277.22	310.72	-
-90	21.46	63.68	90	135.30	173.38	210.30	246.05	280.63	314.01	-
-100	17.14	59.57	100	139.16	177.13	213.93	249.56	284.02	317.28	-

Interchangeability Tolerance ± (0.12% Element)								
Temp. °C	Tolerance		Temp. °C	Tolerance		Temp. °C	Tolerance	
	-0	-0		±°C	±ohm		±°C	±ohm
-200	1.3	.56	100	0.8	.30	400	2.3	.79
-100	0.8	.32	200	1.3	.48	500	2.8	.93
0	0.3	.12	300	1.8	.64	600	3.3	1.06

100 Ω Platinum (.003902 Ω/Ω/°C) @ 0°C										
Temp. °C	-100	-0	Temp. °C	0	100	200	300	400	500	600
-0	59.39	100.00	0	100.00	139.02	176.85	213.52	249.03	283.36	316.50
-10	55.55	96.03	10	103.96	142.86	180.57	217.12	252.51	286.73	316.75
-20	51.40	92.05	20	107.90	146.68	184.28	220.71	255.99	290.09	322.99
-30	47.22	88.06	30	111.83	150.49	187.98	224.29	259.45	293.43	326.21
-40	43.01	84.05	40	115.75	154.29	191.66	227.89	262.90	296.76	329.42
-50	38.77	80.03	50	119.66	158.08	195.33	231.42	266.34	300.08	332.62
-60	34.49	75.99	60	123.55	161.63	198.99	234.96	269.77	303.39	-
-70	30.17	71.94	70	127.44	165.63	202.64	238.50	273.19	306.69	-
-80	25.82	67.87	80	131.31	169.38	206.28	242.02	276.59	309.97	-
-90	21.44	63.79	90	135.17	173.12	209.91	245.53	279.98	313.24	-
-100	17.07	59.68	100	139.02	176.85	213.52	249.03	283.36	316.50	-

Interchangeability Tolerance ± (0.12% Element)								
Temp. °C	Tolerance		Temp. °C	Tolerance		Temp. °C	Tolerance	
	-0	-0		±°C	±ohm		±°C	±ohm
-200	1.2	.50	100	0.7	.27	400	2.5	.88
-100	0.7	.30	200	1.2	.45	500	3.0	1.01
0	0.3	.10	300	1.8	.65	600	3.7	1.21

100 Ω (Nominal) Platinum (SAMA Std. RC21-4-1966) (98.129 Ω/Ω/°C) @ 0°C										
Temp. °C	-100	-0	Temp. °C	0	100	200	300	400	500	600
-0	59.399	98.129	0	136.129	136.625	173.972	210.171	245.221	279.122	311.875
-10	54.337	94.216	10	102.030	140.412	177.644	213.728	248.663	282.449	315.086
-20	50.255	90.292	20	105.920	144.187	181.304	217.273	252.093	285.764	318.287
-30	46.151	86.355	30	109.799	147.950	184.953	220.807	255.512	289.068	321.476
-40	42.023	82.405	40	113.665	151.702	188.581	224.329	258.919	292.361	324.654
-50	37.871	78.442	50	117.521	155.442	192.215	227.840	262.315	295.642	327.820
-60	33.691	74.465	60	121.365	159.171	195.829	231.339	265.699	298.911	-
-70	29.483	70.474	70	125.197	162.889	199.432	234.827	269.072	302.169	-
-80	25.244	66.466	80	129.018	166.595	203.023	238.303	272.434	305.416	-
-90	20.972	62.441	90	132.827	170.289	206.603	241.768	275.784	308.651	-
-100	16.665	58.399	100	136.625	173.972	210.171	245.221	279.122	311.875	-

Interchangeability Tolerance ± (0.12% Element)								
Temp. °C	Tolerance		Temp. °C	Tolerance		Temp. °C	Tolerance	
	-0	-0		±°C	±ohm		±°C	±ohm
-200	1.2	.50	100	100	.7	400	2.5	.85
-100	0.7	.30	200	200	1.2	500	3.0	1.0
0	0.3	.10	300	300	1.8	600	3.7	1.2

120 Ω Nickel (.00672 Ω/Ω) @0°C							
Temp. °C	-100	-0	Temp. °C	0	100	200	300
-0		120.00	0	120.00	200.64	303.46	439.44
-10		113.00	10	127.17	209.85	315.31	455.20
-20		106.15	20	134.52	219.29	327.53	471.20
-30		99.41	30	142.06	228.96	340.14	-
-40		92.46	40	149.79	238.85	353.14	-

-50		86.17	50	157.74	248.95	366.53	-
-60		79.62	60	165.90	259.30	380.31	-
-70		73.10	70	174.25	269.91	394.49	-
-80		66.60	80	182.84	280.77	409.07	-
			90	191.64	291.96	424.05	-
			100	200.64	303.46	439.44	-

Interchangeability Tolerance ± (0.12% Element)								
Temp. °C	Tolerance		Temp. °C	Tolerance		Temp. °C	Tolerance	
	-0	-0		±°C	±ohm		±°C	±ohm
-200	1.3	.56	100	.08	.30	400	2.3	.79
-100	0.8	.32	200	1.3	.48	500	2.8	.93
0	0.3	.12	300	1.8	.64	600	3.3	1.06

100 Ω Platinum (.003916 Ω/Ω/°C) @ 0°C										
Temp. °C	-100	-0	Temp. °C	0	100	200	300	400	500	600
-0	57.57	100.00	0	100.00	139.16	177.13	213.93	249.56	284.02	317.28
-10	55.44	96.09	10	103.97	143.01	180.86	217.54	253.06	287.40	320.54
-20	51.29	92.02	20	107.93	146.85	184.58	221.15	256.55	290.77	323.78
-30	47.11	88.01	30	111.88	150.67	188.29	224.74	260.02	294.12	327.02
-40	42.91	83.99	40	115.81	154.49	191.99	228.32	263.49	297.47	-
-50	38.68	79.96	50	119.73	158.29	195.67	231.89	266.94	300.80	-
-60	34.42	75.91	60	123.64	162.08	199.35	235.45	270.38	304.12	-
-70	30.12	71.85	70	127.54	165.86	203.01	238.99	273.80	307.43	-
-80	25.80	67.77	80	131.42	169.63	206.66	242.53	277.22	310.72	-
-90	21.46	63.68	90	135.30	173.38	210.30	246.05	280.63	314.01	-
-100	17.14	59.57	100	139.16	177.13	213.93	249.56	284.02	317.28	-