



47K Thermistor Output Table

°F	°C	Ohms	°F	°C	Ohms	°F	°C	Ohms
-39	-39.44	1531956	37	2.78	135211	113	45.00	20153
-37	-38.33	1425406	39	3.89	127847	115	46.11	19278
-35	-37.22	1326920	41	5.00	120927	117	47.22	18445
-33	-36.11	1235843	43	6.11	114422	119	48.33	17653
-31	-35.00	1151576	45	7.22	108304	121	49.44	16899
-29	-33.89	1073571	47	8.33	102549	123	50.56	16175
-27	-32.78	1001327	49	9.44	97134	125	51.67	15493
-25	-31.67	934386	51	10.56	91991	127	52.78	14842
-23	-30.56	872330	53	11.67	87192	129	53.89	14223
-21	-29.44	814274	55	12.78	82672	131	55.00	13632
-19	-28.33	760902	57	13.89	78412	133	56.11	13070
-17	-27.22	711353	59	15.00	74395	135	57.22	12533
-15	-26.11	665333	61	16.11	70608	137	58.33	12021
-13	-25.00	622569	63	17.22	67035	139	59.44	11533
-11	-23.89	582814	65	18.33	63663	141	60.56	11064
-9	-22.78	545838	67	19.44	60480	143	61.67	10620
-7	-21.67	511432	69	20.56	57448	145	62.78	10196
-5	-20.56	479403	71	21.67	54611	147	63.89	9791
-3	-19.44	449314	73	22.78	51929	149	65.00	9404
-1	-18.33	421538	75	23.89	49395	151	66.11	9035
1	-17.22	395646	77	25.00	46998	153	67.22	8682
3	-16.11	371501	79	26.11	44731	155	68.33	8345
5	-15.00	348974	81	27.22	42586	157	69.44	8022
7	-13.89	327948	83	28.33	40557	159	70.56	7711
9	-12.78	308315	85	29.44	38635	161	71.67	7416
11	-11.67	289975	87	30.56	36799	163	72.78	7135
13	-10.56	272835	89	31.67	35076	165	73.89	6865
15	-9.44	256671	91	32.78	33443	167	75.00	6607
17	-8.33	241692	93	33.89	31895	169	76.11	6359
19	-7.22	227677	95	35.00	30428	171	77.22	6123
21	-6.11	214557	97	36.11	29036	173	78.33	5896
23	-5.00	202271	99	37.22	27715	175	79.44	5679
25	-3.89	190762	101	38.33	26462	177	80.56	5469
27	-2.78	179975	103	39.44	25272	179	81.67	5270
29	-1.67	169862	105	40.56	24133	181	82.78	5079
31	-0.56	160377	107	41.67	23061	183	83.89	4896
33	0.56	151399	109	42.78	22042	185	85.00	4721
35	1.67	143050	111	43.89	21073	187	86.11	4552

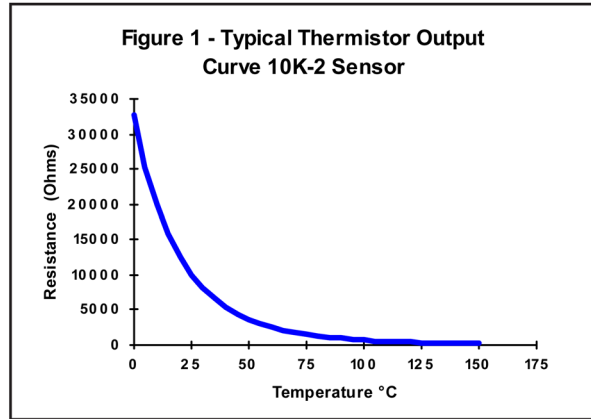


Thermistor Description

BAPI Thermistors are thermally sensitive resistors known for exhibiting a large change in resistance with only a small change in temperature. It is important to note that a thermistor's change in resistance is non-linear. It follows a pre-defined curve which is provided by the thermistor manufacturer. An example of a thermistor output curve can be seen in **Figure 1**.

Thermistors are manufactured to follow a specific curve with a high degree of accuracy. All BAPI thermistors have a standard accuracy of ± 0.2 °C throughout the commercial temperature range of 0 to 70 °C. BAPI also has available a higher accuracy sensor for meeting tougher specs. The extra precision [XP] line has an initial accuracy of ± 0.1 °C throughout the commercial temperature range of 0 to 70 °C. Please call for availability and pricing on [XP] line thermistors. Both accuracy levels allow BAPI thermistors to be interchanged without the extra expense of offsetting the controller.

* All Passive Thermistors 10K Ω and smaller are CE compliant.



Thermistor Specifications

DEFINITION OF SPECIFICATION TERMS

Interchangeability Tolerance (Accuracy):
The maximum amount that thermistors following the same curve will differ from each other.

Dissipation Constant:
The power needed to raise the thermistor's body temperature by 1°C. At the heart of all BAPI thermistor products is a sensor with a 2.7 mW/°C dissipation constant to ensure that self-heating stays at an absolute minimum.

Stability (drift):
The amount that the resistance characteristics of a thermistor will change. BAPI uses only the highest quality, "pre-aged" thermistors with very small drift values. Over a ten year span, BAPI thermistors will not change more than 0.1°C.

Operating Range:
The operating range shown is for the thermistor only. The mounting package may further limit the operating range and is described on each mounting type specification. The thermal time constant will also be affected based on the added mass of the stainless steel probe and moisture protection encapsulation.

Thermal Time Constant
Bare sensors are typically measured and specified in still air and are timed at the statistical 63.2% of the step temperature change. A stirred liquid test will typically result in a much faster response time and is also timed at 63.2% of the step temperature change. The time constant is always the same whatever the temperature step change may be.

Thermistor Specifications

Interchangeability Tolerance (Accuracy):
Standard Sensor: ± 0.2 °C (0 to 70 °C)
High Accuracy [XP] Sensor: ± 0.1 °C (0 to 70 °C)

Dissipation Constant: 2.7 mW/°C

Stability (drift): Less than 0.02 °C / year

Thermal Time Constant: 5 seconds (bead in still air)
.5 seconds (stirred liquid)

Sensor Type	Reference Resistance	Operating Range
1.8K	1.8 K Ω @ 25 °C	-55 to 150 °C
2.2K	2.2 K Ω @ 25 °C	-55 to 150 °C
3K**	3 K Ω @ 25 °C	-55 to 150 °C
3.3K	3.3 K Ω @ 25 °C	-55 to 150 °C
10K-2**	10 K Ω @ 25 °C	-55 to 150 °C
10K-3**	10 K Ω @ 25 °C	-55 to 150 °C
10K-3(11K)**	5.2 K Ω @ 25 °C	-55 to 150 °C
10K-4	10 K Ω @ 25 °C	-55 to 150 °C
20K**	20 K Ω @ 25 °C	-55 to 150 °C
47K	47 K Ω @ 25 °C	-55 to 150 °C
50K	50 K Ω @ 25 °C	-80 to 150 °C
100K**	100 K Ω @ 25 °C	-55 to 150 °C

Other Thermistors are available. Contact BAPI for availability and specifications of additional thermistors.

**Available as an [XP] high accuracy sensor. Minimum quantities and long lead times may apply. 10K-2[XP] and 10K-3[XP] thermistors are typically stocked items

