



2.2K Thermistor Output Table

°F	°C	Ohms	°F	°C	Ohms	°F	°C	Ohms
-39	-39.44	72730	37	2.78	6388	113	45.00	983
-37	-38.33	67606	39	3.89	6043	115	46.11	942
-35	-37.22	62878	41	5.00	5719	117	47.22	902
-33	-36.11	58513	43	6.11	5414	119	48.33	864
-31	-35.00	54481	45	7.22	5128	121	49.44	828
-29	-33.89	50753	47	8.33	4858	123	50.56	794
-27	-32.78	47306	49	9.44	4605	125	51.67	761
-25	-31.67	44116	51	10.56	4364	127	52.78	730
-23	-30.56	41162	53	11.67	4139	129	53.89	700
-21	-29.44	38403	55	12.78	3927	131	55.00	672
-19	-28.33	35869	57	13.89	3727	133	56.11	645
-17	-27.22	33519	59	15.00	3539	135	57.22	619
-15	-26.11	31338	61	16.11	3361	137	58.33	595
-13	-25.00	29314	63	17.22	3194	139	59.44	571
-11	-23.89	27434	65	18.33	3035	141	60.56	549
-9	-22.78	25687	67	19.44	2886	143	61.67	528
-7	-21.67	24063	69	20.56	2743	145	62.78	507
-5	-20.56	22552	71	21.67	2610	147	63.89	488
-3	-19.44	21134	73	22.78	2484	149	65.00	469
-1	-18.33	19826	75	23.89	2365	151	66.11	451
1	-17.22	18607	77	25.00	2252	153	67.22	434
3	-16.11	17471	79	26.11	2145	155	68.33	418
5	-15.00	16412	81	27.22	2044	157	69.44	402
7	-13.89	15424	83	28.33	1949	159	70.56	387
9	-12.78	14502	85	29.44	1858	161	71.67	373
11	-11.67	13641	87	30.56	1771	163	72.78	359
13	-10.56	12837	89	31.67	1690	165	73.89	346
15	-9.44	12079	91	32.78	1613	167	75.00	333
17	-8.33	11376	93	33.89	1540	169	76.11	321
19	-7.22	10719	95	35.00	1471	171	77.22	310
21	-6.11	10104	97	36.11	1405	173	78.33	299
23	-5.00	9529	99	37.22	1342	175	79.44	288
25	-3.89	8989	101	38.33	1283	177	80.56	278
27	-2.78	8484	103	39.44	1226	179	81.67	268
29	-1.67	8011	105	40.56	1172	181	82.78	259
31	-0.56	7566	107	41.67	1122	183	83.89	250
33	0.56	7146	109	42.78	1073	185	85.00	241
35	1.67	6755	111	43.89	1027	187	86.11	233

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

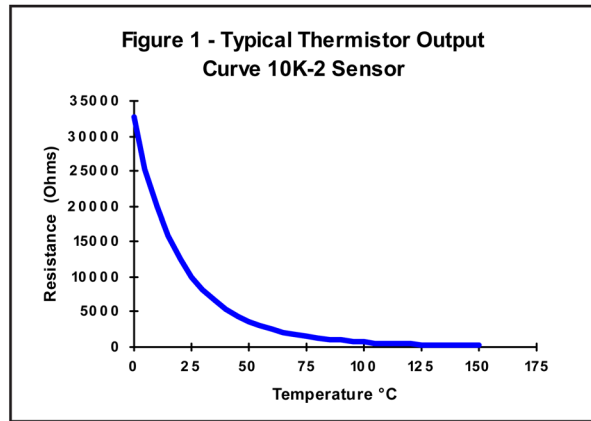


Thermistor Description

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 $\pm 0.2\text{ }^\circ\text{C}$ throughout the commercial temperature range of 0 to 70 $^\circ\text{C}$. BAPI also has available a higher accuracy sensor for meeting tougher specs. The extra precision [XP] line has an initial accuracy of $\pm 0.1\text{ }^\circ\text{C}$ throughout the commercial temperature range of 0 to 70 $^\circ\text{C}$. 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 $^\circ\text{C}$. At the heart of all BAPI thermistor products is a sensor with a 2.7 mW/ $^\circ\text{C}$ 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 $^\circ\text{C}$.

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: $\pm 0.2\text{ }^\circ\text{C}$ (0 to 70 $^\circ\text{C}$)
High Accuracy [XP] Sensor: $\pm 0.1\text{ }^\circ\text{C}$ (0 to 70 $^\circ\text{C}$)

Dissipation Constant: 2.7 mW/ $^\circ\text{C}$

Stability (drift): Less than 0.02 $^\circ\text{C}$ / 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 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
2.2K	2.2 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
3K**	3 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
3.3K	3.3 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
10K-2**	10 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
10K-3**	10 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
10K-3(11K)**	5.2 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
10K-4	10 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
20K**	20 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
47K	47 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$
50K	50 K Ω @ 25 $^\circ\text{C}$	-80 to 150 $^\circ\text{C}$
100K**	100 K Ω @ 25 $^\circ\text{C}$	-55 to 150 $^\circ\text{C}$

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