50K Thermistor Output Table

°F	°C	Ohms
-39	-39.44	1956240
-37	-38.33	1812199
-35	-37.22	1679700
-33	-36.11	1557748
-31	-35.00	1445439
-29	-33.89	1341952
-27	-32.78	1246540
-25	-31.67	1158525
-23	-30.56	1077290
-21	-29.44	1001621
-19	-28.33	932353
-17	-27.22	868317
-15	-26.11	809086
-13	-25.00	754271
-11	-23.89	703517
-9	-22.78	656499
-7	-21.67	612919
-5	-20.56	572506
-3	-19.44	534686
-1	-18.33	499905
1	-17.22	467604
3	-16.11	437592
5	-15.00	409692
7	-13.89	383745
9	-12.78	359601
11	-11.67	337126
13	-10.56	316194
15	-9.44	296522
17	-8.33	278353
19	-7.22	261408
21	-6.11	245599
23	-5.00	230842
25	-3.89	217062
27	-2.78	204189
29	-1.67	192156
31	-0.56	180906
33	0.56	170291
35	1.67	160449
37	2.78	151235
39	3.89	142605
41	5.00	134519
43	6.11	126941
45	7.22	119834
47	8.33	113168
49	9.44	106912
51	10.56	100988
53	11.67	95475
55	12.78	90296
57	13.89	85428
59	15.00	80852
61	16.11	76547
63	17.22	72497
65	18.33	68685
67	19.44	65095
69	20.56	61685
71	21.67	58500
73	22.78	55499
75	23.89	52669
77	25.00	50000
79	26.11	47481
81	27.22	45104
83	28.33	42859
85	29.44	40739
87	30.56	38718
89	31.67	36826
91	32.78	35037
93	33.89	33345
95	35.00	31745
97	36.11	30230
99	37.22	28796
101	38.33	27438
103	39.44	26152
105	40.56	24923
107	41.67	23768
109	42.78	22674
111	43.89	21635
113	45.00	20651
115	46.11	19716
117	47.22	18829
119	48.33	17987
121	49.44	17187
123	50.56	16421
125	51.67	15699
127	52.78	15013
129	53.89	14360
131	55.00	13740
133	56.11	13150
135	57.22	12588
137	58.33	12053
139	59.44	11544
141	60.56	11055
143	61.67	10593
145	62.78	10154
147	63.89	9734
149	65.00	9335
151	66.11	8954
153	67.22	8590
155	68.33	8243
157	69.44	7912
159	70.56	7593
161	71.67	7292
163	72.78	7004
165	73.89	6729
167	75.00	6466
169	76.11	6215
171	77.22	5975
173	78.33	5745
175	79.44	5526
177	80.56	5314
179	81.67	5113
181	82.78	4921
183	83.89	4737
185	85.00	4561
187	86.11	4392

Thermistor Overview

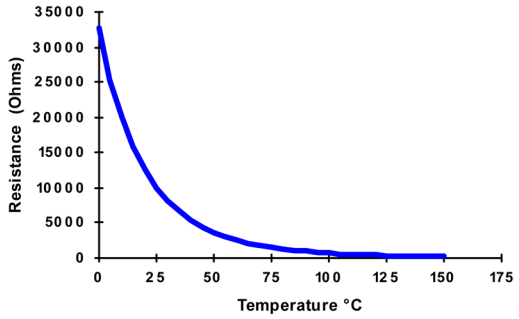
BAPI Sensor Specifications

Rev. 11/09/17

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**.

Figure 1 - Typical Thermistor Output Curve 10K-2 Sensor



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 KΩ @ 25 °C	-55 to 150 °C
2.2K	2.2 KΩ @ 25 °C	-55 to 150 °C
3K**	3 KΩ @ 25 °C	-55 to 150 °C
3.3K	3.3 KΩ @ 25 °C	-55 to 150 °C
10K-2**	10 KΩ @ 25 °C	-55 to 150 °C
10K-3**	10 KΩ @ 25 °C	-55 to 150 °C
10K-3(11K)**	5.2 KΩ @ 25 °C	-55 to 150 °C
20K**	20 KΩ @ 25 °C	-55 to 150 °C
47K	47 KΩ @ 25 °C	-55 to 150 °C
50K	50 KΩ @ 25 °C	-80 to 150 °C
100K**	100 KΩ @ 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

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