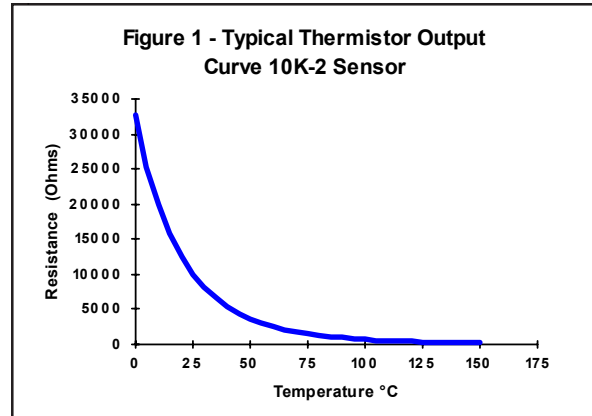


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Thermistor Description

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 $\pm 0.2^\circ\text{C}$ 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 $\pm 0.1^\circ\text{C}$ 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 incurring the extra expense of offsetting the controller.



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 amount of 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 3 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 thermistor products will not change more than 0.1 $^\circ\text{C}$.

Thermistor Specifications

Interchangeability Tolerance (Accuracy):

$\pm 0.2^\circ\text{C}$ (0 to 70 $^\circ\text{C}$) Standard
 $\pm 0.1^\circ\text{C}$ (0 to 70 $^\circ\text{C}$) XP Option

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

Stability (drift): Less than 0.02 $^\circ\text{C}$ / year

Sensor Type	Reference Resistance	Operating Range
1.8K	1.8 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 $^\circ\text{C}$	-80 to 150 $^\circ\text{C}$
10K-3(11K)	5.2 K Ω @ 25 $^\circ\text{C}$	-80 to 150 $^\circ\text{C}$
20K	20 K Ω @ 25 $^\circ\text{C}$	-80 to 150 $^\circ\text{C}$
50K	50 K Ω @ 25 $^\circ\text{C}$	-80 to 150 $^\circ\text{C}$
100K	100 K Ω @ 25 $^\circ\text{C}$	-80 to 150 $^\circ\text{C}$

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



10K-3 Thermistor Output Table

Temperature, Humidity & Pressure Sensors & Transmitters

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10K-3 Thermistor Output Table

°F	°C	Ohms
-39	-39.44	232,032
-37	-38.33	217,394
-35	-37.22	203,774
-33	-36.11	191,093
-31	-35.00	179,281
-29	-33.89	168,275
-27	-32.78	158,013
-25	-31.67	148,442
-23	-30.56	139,511
-21	-29.44	131,100
-19	-28.33	123,317
-17	-27.22	116,045
-15	-26.11	109,247
-13	-25.00	102,889
-11	-23.89	96,941
-9	-22.78	91,374
-7	-21.67	86,160
-5	-20.56	81,276
-3	-19.44	76,659
-1	-18.33	72,371
1	-17.22	68,348
3	-16.11	64,574
5	-15.00	61,031
7	-13.89	57,703
9	-12.78	54,578
11	-11.67	51,641
13	-10.56	48,879
15	-9.44	46,259
17	-8.33	43,817
19	-7.22	41,519
21	-6.11	39,354
23	-5.00	37,316
25	-3.89	35,395
27	-2.78	33,585
29	-1.67	31,878
31	-0.56	30,267
33	0.56	28,735
35	1.67	27,302

°F	°C	Ohms
37	2.78	25,948
39	3.89	24,670
41	5.00	23,462
43	6.11	22,320
45	7.22	21,241
47	8.33	20,220
49	9.44	19,254
51	10.56	18,332
53	11.67	17,467
55	12.78	16,648
57	13.89	15,872
59	15.00	15,136
61	16.11	14,439
63	17.22	13,778
65	18.33	13,151
67	19.44	12,556
69	20.56	11,987
71	21.67	11,451
73	22.78	10,942
75	23.89	10,459
77	25.00	10,000
79	26.11	9,564
81	27.22	9,149
83	28.33	8,754
85	29.44	8,379
87	30.56	8,019
89	31.67	7,679
91	32.78	7,355
93	33.89	7,047
95	35.00	6,754
97	36.11	6,474
99	37.22	6,208
101	38.33	5,954
103	39.44	5,712
105	40.56	5,479
107	41.67	5,258
109	42.78	5,048
111	43.89	4,847

°F	°C	Ohms
113	45.00	4,656
115	46.11	4,473
117	47.22	4,298
119	48.33	4,131
121	49.44	3,971
123	50.56	3,817
125	51.67	3,671
127	52.78	3,532
129	53.89	3,398
131	55.00	3,271
133	56.11	3,149
135	57.22	3,032
137	58.33	2,920
139	59.44	2,812
141	60.56	2,709
143	61.67	2,610
145	62.78	2,516
147	63.89	2,425
149	65.00	2,339
151	66.11	2,256
153	67.22	2,176
155	68.33	2,099
157	69.44	2,026
159	70.56	1,955
161	71.67	1,887
163	72.78	1,822
165	73.89	1,760
167	75.00	1,700
169	76.11	1,642
171	77.22	1,587
173	78.33	1,534
175	79.44	1,483
177	80.56	1,433
179	81.67	1,386
181	82.78	1,341
183	83.89	1,297
185	85.00	1,255
187	86.11	1,214