10K-4 Thermistor Output Table

Temperature, Humidity & Pressure Sensors & Transmitters

Rev. 12/17/10

Deg F	Deg C	Ohms	Deg F	Deg C	Ohms	Deg F	Deg C	Ohms
-25.00	-31.67	121337.68	41.00	5.00	22123.34	107.00	41.67	5526.53
-23.00	-30.56	114680.68	43.00	6.11	21124.21	109.00	42.78	5309.32
-21.00	-29.44	107902.80	45.00	7.22	20118.13	111.00	43.89	5115.09
-19.00	-28.33	102315.81	47.00	8.33	19198.17	113.00	45.00	4940.96
-17.00	-27.22	96577.40	49.00	9.44	18355.72	115.00	46.11	4762.40
-15.00	-26.11	91592.14	51.00	10.56	17534.65	117.00	47.22	4579.39
-13.00	-25.00	86349.14	53.00	11.67	16815.62	119.00	48.33	4414.63
-11.00	-23.89	81677.48	55.00	12.78	16068.06	121.00	49.44	4266.17
-9.00	-22.78	77464.02	57.00	13.89	15367.29	123.00	50.56	4107.56
-7.00	-21.67	73626.54	59.00	15.00	14712.78	125.00	51.67	3968.75
-5.00	-20.56	69730.75	61.00	16.11	14094.43	127.00	52.78	3824.52
-3.00	-19.44	65790.68	63.00	17.22	13509.16	129.00	53.89	3693.44
-1.00	-18.33	62411.94	65.00	18.33	12890.21	131.00	55.00	3557.25
1.00	-17.22	59195.27	67.00	19.44	12363.62	133.00	56.11	3433.21
3.00	-16.11	56395.35	69.00	20.56	11835.75	135.00	57.22	3320.24
5.00	-15.00	53402.02	71.00	21.67	11352.68	137.00	58.33	3201.62
7.00	-13.89	50741.53	73.00	22.78	10887.19	139.00	59.44	3093.24
9.00	-12.78	48116.13	75.00	23.89	10436.13	141.00	60.56	2991.41
11.00	-11.67	45744.71	77.00	25.00	10000.00	143.00	61.67	2886.83
13.00	-10.56	43586.77	79.00	26.11	9624.30	145.00	62.78	2790.85
15.00	-9.44	41442.56	81.00	27.22	9209.57	147.00	63.89	2702.95
17.00	-8.33	39415.48	83.00	28.33	8849.35	149.00	65.00	2609.54
19.00	-7.22	37530.55	85.00	29.44	8495.83	151.00	66.11	2523.56
21.00	-6.11	35578.85	87.00	30.56	8173.71	153.00	67.22	2444.57
23.00	-5.00	33907.51	89.00	31.67	7829.49	155.00	68.33	2360.03
25.00	-3.89	32315.09	91.00	32.78	7527.17	157.00	69.44	2282.17
27.00	-2.78	30786.74	93.00	33.89	7227.13	159.00	70.56	2208.35
29.00	-1.67	29312.33	95.00	35.00	6962.64	161.00	71.67	2141.84
31.00	-0.56	28020.79	97.00	36.11	6697.32	163.00	72.78	2070.24
33.00	0.56	26674.98	99.00	37.22	6431.78	165.00	73.89	2013.64
35.00	1.67	25431.90	101.00	38.33	6196.38	167.00	75.00	1942.42
37.00	2.78	24206.93	103.00	39.44	5959.41	169.00	76.11	1885.14
39.00	3.89	23110.43	105.00	40.56	5740.43	171.00	77.22	1823.37

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Thermistor Overview

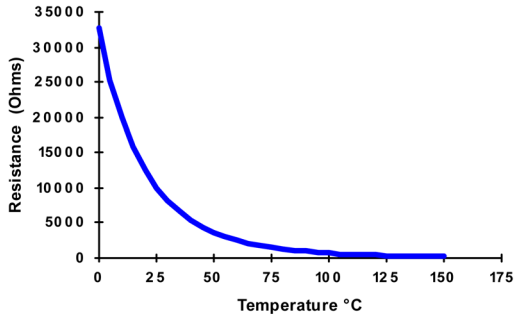
BAPI Sensor Specifications

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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