

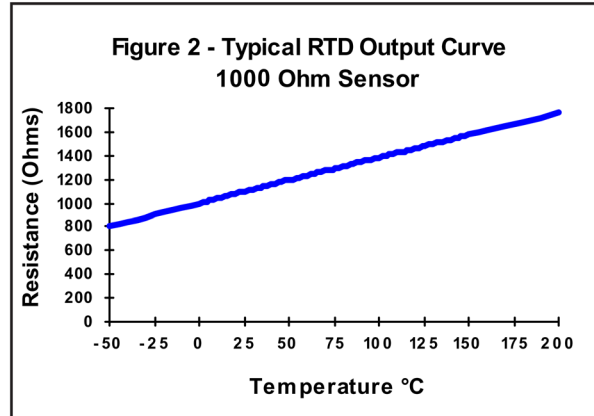


RTD Description

BAPI RTDs (Resistance Temperature Detectors) are thermally sensitive resistive elements that exhibit a small change in resistance per degree of temperature change. RTDs are especially recognized for excellent linearity throughout their temperature range with a high degree of accuracy and repeatability. An example of an RTD output curve can be seen in **Figure 2**.

RTDs supplied in BAPI products feature a standard interchangeability tolerance of $\pm 0.3^{\circ}\text{C}$ measured at 0°C . Higher accuracy sensors are also available. The Class A line [A] has an interchangeability tolerance of $\pm 0.15^{\circ}\text{C}$ measured at 0°C . Please call for availability and pricing on Class A RTDs. Whether standard or Class A, BAPI RTDs have such a high accuracy that they can be interchanged without the expense of offsetting the controller.

Most RTD sensing elements can be packaged to withstand an extremely broad temperature range (-200 to 600°C). For most purposes, the standard operating range should be sufficient, but we also have RTDs with a higher or lower operating temperature range. BAPI offers 1K Ω Platinum RTDs with the ranges shown in the table at right.



Standard & Extreme Temperature Ranges for the 1 K Ω Platinum RTD

Range	$^{\circ}\text{C}$	$^{\circ}\text{F}$
Standard	-60 to 150	-76 to 302
Low Temp [1]	-200 to 0	-328 to 32
High Temp [2]	25 to 260	77 to 500
Very High Temp [3]	25 to 600	77 to 1,112

When ordering a sensor with an "extreme" temperature range, include the number in brackets [] after the sensor type. Ex: **BA/1K[2]** is a 1K Ω RTD with an operating range of 25 to 260°C .

RTD Specifications

Definition of Specification Terms

Tolerance of Resistance (Accuracy)

The maximum amount any RTD will differ from the standard resistance curve.

Stability (drift)

The amount that the resistance characteristics of a RTD will change over time under certain conditions.

Operating Range

The operating range shown is for the RTD sensor only. The mounting package may further limit the operating range and is described on each mounting type specification.

RTD Specifications

Tolerance of Resistance (Accuracy):

- Single Point Standard: 0.12% at 0°C
- Single Point Class A: 0.06% at 0°C
- Averaging Standard: 0.2% at 0°C

Tolerance in $^{\circ}\text{C}$:

- Single Point Standard: $\pm(0.3 + 0.005T)$; T= Temp in $^{\circ}\text{C}$
- Single Point Class A: $\pm(0.15 + 0.002T)$; T= Temp in $^{\circ}\text{C}$
- Averaging Standard: $\pm(0.5 + 0.005(T-25))$; T= Temp in $^{\circ}\text{C}$

Stability (drift):

- 0.14 $^{\circ}\text{C}$ with 6,000 continuous hours at 400°C

Sensitivity:

- 1K Ω : 3.85 $\Omega/^{\circ}\text{C}$ (2.14 $\Omega/^{\circ}\text{F}$)

Self Heating (1K RTD only):

- 0.4 $^{\circ}\text{C}/\text{mW}$ at 0°

Standardization:

- DIN 43760-1980, IEC Pub 751-1983, JIS C1604-1989

Sensor Type	Reference Resistance	Temp. Coefficient	Operating Range
BA/1K[375]	1K Ω @ 0°C	3.75 $\Omega/^{\circ}\text{C}$	-60 to 150°C
BA/1K[Ni]	1K Ω @ 21°C	5.68 $\Omega/^{\circ}\text{C}$	-60 to 200°C
BA/1K*	1K Ω @ 0°C	3.85 $\Omega/^{\circ}\text{C}$	-60 to 150°C

*Available as an [A] high accuracy sensor.
Example: BA/1K[A]-I-2" (high accuracy immersion sensor)

