

MODEL RO105

RUTHENIUM OXIDE SENSORS

The Series RO105 Ruthenium Oxide Sensors are thick-film resistors which adhere to a single resistance-versus-temperature curve. They offer excellent performance characteristics in magnetic field environments. These sensors do not exhibit magnetoresistance in fields up to 2 T over their range. A small positive (but negligible) magnetoresistance may be present at larger fields. No orientation dependence of sensor mounting to field direction has been observed. Ruthenium oxide sensors are available as uncalibrated, grouping, or calibrated units and feature good reproducibility, fast response time and miniature size, all at a reasonable cost.

SPECIFICATIONS*

Useful Temperature Range:

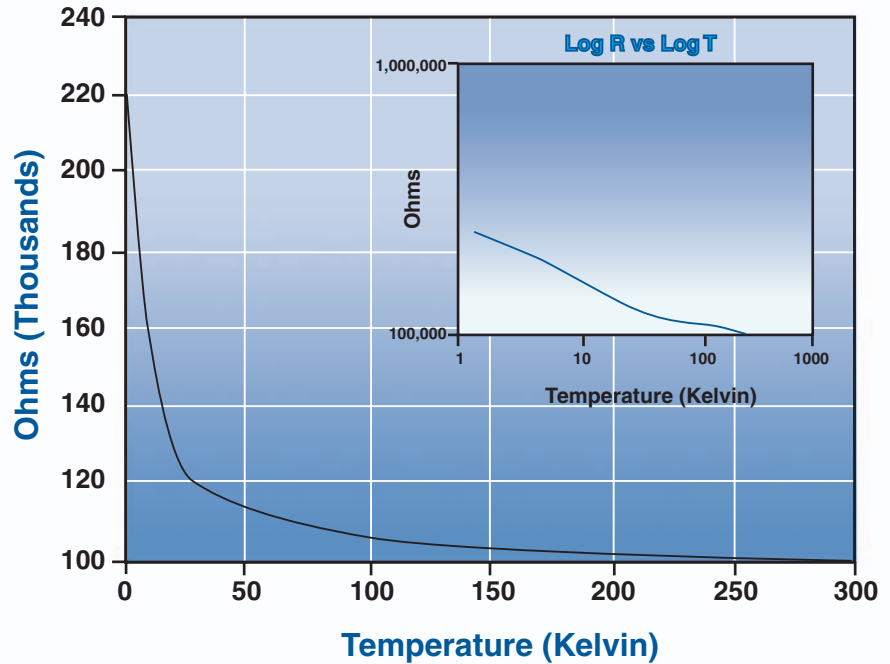
2.0 K to 273K

Nominal Sensitivity dR/dT:

- 17,390 ohms/K @ 2.0K
- 11,060 ohms/K @ 4.2K
- 1,400 ohms/K @ 20K
- 162 ohms/K @ 77K
- 91 ohms/K @ 100K
- 18 ohms/K @ 273K

Nominal Resistivity:

- 239kohms @ 2.0K
- 205kohms @ 4.2K
- 139kohms @ 20K
- 112kohms @ 77K
- 109kohms @ 100K
- 101kohms @ ambient



Standard Configuration:

Copper Can – Diameter 2.362mm (.093"); Length 5.080mm (.200")
 Exposed Chip – Length 1.396mm (.055"); Width 1.269mm (.050");
 Thickness .508mm (.020")



Available Models:

The RO105 Ruthenium Oxide Sensors are available as uncalibrated units, dip-point selected to a standard curve or calibrated units.

Uncalibrated Model RO105

± 0.3 @ 4.2K

Model RO105 Group A

- ± 0.10K @ 4.2K
- ± 0.75K @ 77K
- ± 20.0K @ 273K

Model RO105 Group AA

- ± 0.10K @ 4.2K
- ± 0.50K @ 77K
- ± 15.0K @ 273K

Calibrated Model RO105

- D1 = 2.0K to 20K
- G1 = 2.0K to 100K
- GG1 = 2.0K to 273K
- H = 4.2K to 20K
- L = 4.2K to 100K
- LL1 = 4.2K to 273K

*Data is subject to change as a result of product improvement.

*TABLE I RO105 THERMOMETER

Temperature (Kelvin)	2.2	0	1.5	2
	4.2	0	0.4	--
	75	0	0.01	--
		2	7	10
Magnetic Field (TESLA)				

Percent Change
of Resistance

$$\frac{\Delta R(H)}{R(0)} \times 100$$

*TABLE II RO105 THERMOMETER

Table entries are approximate temperature errors in Kelvin

Temperature (Kelvin)	2.2	0	.250	.350
	4.2	0	.080	--
	75	0	.090	--
		2	7	10
Magnetic Field (TESLA)				

*CALIBRATION – RO105

The Model RO105 Ruthenium Oxide sensors are calibrated over the range of 2K to 273K. Calibrations performed are based on the International Temperature Scale of 1990 (ITS-90) using traceable Germanium + Platinum resistance thermometers as standards. These standards are routinely verified and periodically recalibrated.

Calibration Accuracy

2K to 4.2K	± .05K
4.2K to 20K	± .05K to .1K
20K to 80K	± .1K to .2K
80K to 100K	± .2K to .4K
100K to 273K	± .4K to 1K

* Data is subject to change as a result of product improvement.



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