Model RO-600

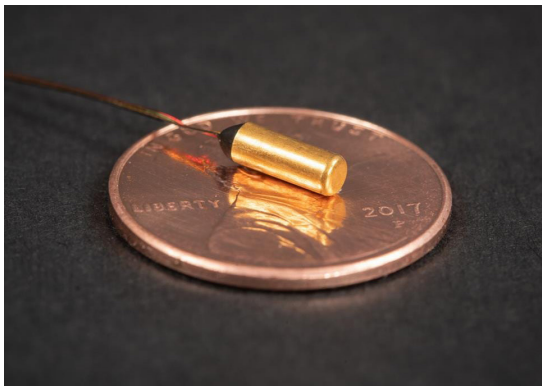
Ruthenium Oxide Temperature Sensor

SCIENTIFIC INSTRUMENTS

INTERCHANGEABILITY: Besides being remarkably repetitive on successive cooldowns, RO-600 series exhibit uniform response within groups. FIGURE 3 shows a typical R vs T curve for Grouping Sensors. Resistance variation at a given temperature is less than 1% for temperatures above 70mK.

SENSITIVITY: FIGURE 4 represents the sensitivity of a typical RO-600. This sensitivity is a smooth and monotonic increase at lower temperatures.

*All data collected and analyzed by G.G. Ihas, L. Frederick, and J.P. McFarland, J. Low Temp. Phy. 113, 963 (1998).



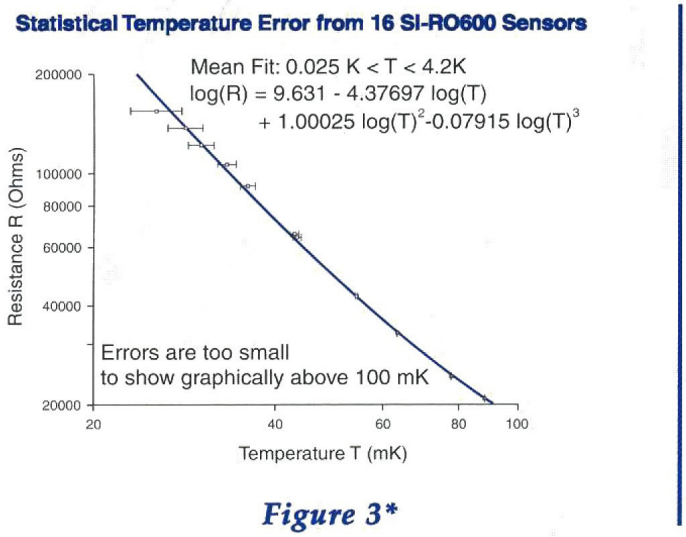


*Figure 3**

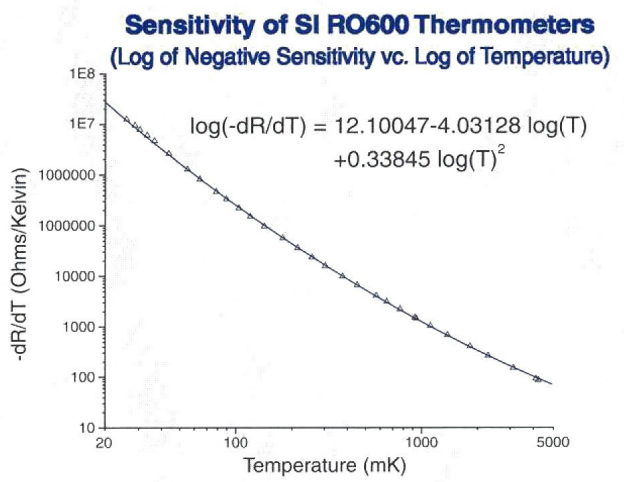
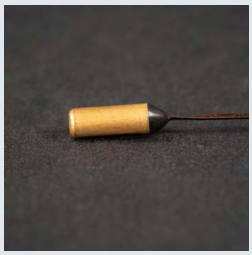


*Figure 4**



Available Models

Model RO-600
Uncalibrated Accuracy
+/- 0.01K @ 0.05K
+/- 0.10K @ 1.5K
+/- 0.20K @ 4.2K
+/- 1.0K @ 20K

Model RO-600
Group "A" Accuracy
+/- 0.01K @ 0.05K
+/- 0.06K @ 1.5K
+/- 0.10K @ 4.2K
+/- 0.60K @ 20K

Model RO-600
Calibration Ranges*
D=1.5K to 20K
E3=0.02K to 20K

Calibration Accuracy

0.020K to 0.15K	± 0.005K
0.150K to 1.50K	± 0.010K
1.500K to 4.20K	± 0.025K
4.200K to 20.0K	± 0.050K

*Custom configurations available upon request

Data is subject to change as a result of product improvement

Model RO-600

Ruthenium Oxide Temperature Sensor

SCIENTIFIC INSTRUMENTS

The Series RO-600 Ruthenium Oxide Temperature Sensors are thick film resistors which are interchangeable and usable in large magnetic fields with excellent accuracy without special calibrations. These sensors are available as uncalibrated, grouped, or calibrated (FIGURE 1) units at reasonable cost.

PERFORMANCE IN MAGNETIC FIELDS: FIGURE 2 shows the remarkable performance of the RO-600 in high magnetic fields. With a temperature error of less than ±1.6%, a simple linear formula allows correction of any apparent temperature, measured in a field up to 16 Tesla, to the actual temperature. This result may extend to higher fields and is useful for a broad temperature range down to 36mK. It is independent of the orientation of the sensor in the magnetic field.

Features

- Excellent Magnetic Field Performance
- Interchangeability
- Repeatability
- Fast Thermal Response
- Rugged
- Temperature Range: .02K to 20K
  (Custom ranges available, consult factory)

Physical Specifications

- Gold plated OFHC copper enclosure,
  Dia. 0.093" (2.4mm) x Length 0.200" (5.1mm)
- Phosphor-bronze lead wire standard,
  4-leaded, Polyimide coated, 36 AWG,
  Custom leads available

ISO9001 CERTIFIED

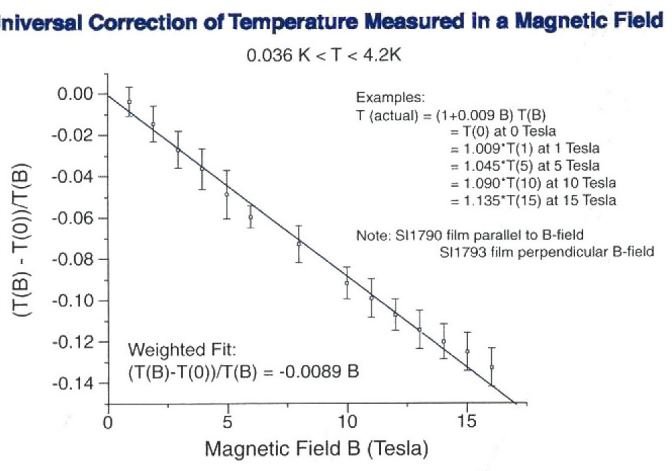


*Figure 1**

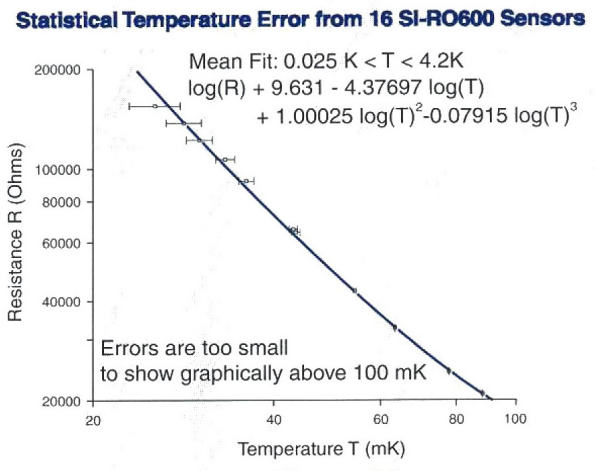


*Figure 2**

Since errors in temperature for uncalibrated thermometers, in any magnetic field up to 16 Tesla, accumulate to only a few percent, the RO-600 is exceedingly useful in most low temperature applications, and is versatile enough to use in most low temperature environments.