



Primary Standard Performance

Introducing the **Harwell RS-3** Series precision metrology resistance standard, delivering exceptionally low drift and low TCR performance. Developed over five years, the *RS-3* rivals higher-priced alternatives while serving metrological labs, industry, and demanding professionals. Each instrument features an advanced hermetic foil resistor array assembly housed in an silicone fluid environment for long-term stability, encased in a environmentally sealed aerospace-grade aluminum enclosure, all while assembled in the U.S.A — making the *RS-3* a confident choice for both primary and secondary calibration needs.

Stability by Design

A metrological-grade standard is defined by the stability of its value. Harwell has invested significant effort in minimization of temperature and time dependent effects of our resistors. Each instrument is subjected to conditioning to relieve internal stresses, promote grain-structure realignment, and stabilize foil-to-substrate bonding. These steps reduce drift mechanisms associated with creep, grain boundary motion, and adhesive fatigue. All components are cleaned to reduce any harmful outgassing and environmentally sealed against humidity and pressure influences. Our engineering practices draw on materials-science methods and aerospace component reliability for consistent performance over time.

Key Characteristics

- 1 Ω - 10MΩ Variants
- Hermetic Metal Foil Resistors
- Aluminum Oil-Filled Enclosure
- Tellurium Copper Binding Posts
- Assembled in the U.S.A.
- Includes Characterization

Performance Characteristics

- Stable Long Term Drift < 2 PPM/year (Typical)
- Very Low TCR < 0.3 PPM/°C (18-28°C) (Typical)

Technical Specifications

Model	Nominal Value	TCR (18–28 °C)	Long-term Drift (1 year)	Max input voltage	Max input current	Recommended Current
RS3-1	1Ω	<0.8 ppm/°C	<5 ppm	0.5V	500mA	10mA
RS3-25	25Ω	<0.8 ppm/°C	<5 ppm	1V	40mA	1mA
RS3-100	100Ω	<0.8 ppm/°C	<5 ppm	2V	20mA	1mA
RS3-400	400Ω	<0.8 ppm/°C	<5 ppm	4V	10mA	1mA
RS3-1K	1kΩ	<0.8 ppm/°C	<5 ppm	10V	10mA	1mA
RS3-10K	10kΩ	<0.5 ppm/°C	<5 ppm	30V	3mA	100 μA
RS3-100K	100kΩ	<1 ppm/°C	<5 ppm	100V	1mA	50 μA
RS3-500K	500kΩ	<1 ppm/°C	<5 ppm	100V	200μA	5μA
RS3-1M	1MΩ	<1 ppm/°C	<5 ppm	100V	100μA	5μA

Operating & Storage Characteristics

Operating temperature range: 18 °C to 28 °C

Storage temperature: 0 °C to 50 °C

Physical Characteristics

Construction:

- Tellurium copper machined binding posts
- Removable Polycarbonate insulator knobs
- Solvent Resistance Lexan Decals
- Machined Aluminum Housings
- Viton & PTFE Gaskets
- Silicone Oil Filled

Dimensions:

Metric: 119 × 80 × 104 mm

Imperial: 4.7 × 3.2 × 4.1 in

Connections:

- Through hole connections
- Spade/lug terminals
- 4mm male banana plug compatible

Weight:

Metric: 980g

Imperial: 2lb 3oz

Designed to ISO/IEC 61010 specifications and to meet CE and EU specs.

Safety Information:

Read all instructions before use. Ensure proper grounding and voltage use. Follow manufacturer instructions and safety precautions.

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