

Series 9330 Standard Resistors

Very High Stability High Value Calibration Laboratory Standards



9330 Features

- > *Stability < 3.5 ppm*
- > *Low thermal EMF design*
- > *Nominal Accuracy to < 2.5 ppm*
- > *Report of Calibration traceable to NIST or NRCC included*
- > *Available from 0.1 W through 100M W in decade values*
- > *4-terminal design up to 1M W*
- > *Special values available on request*
- > *Temperature Coefficient < 2 ppm/°C*
- > *Hermetically sealed in oil*
- > *Designed for use in temperature controlled oil baths*
- > *Operating Range 18 °C to 40 °C*

Guildline series 9330 Standard Resistors contain hermetically sealed resistance elements. Its design is based on a thorough reappraisal of all earlier resistor designs, the aim of the program being the significant reduction of each "classical" source of error; temperature coefficients and variations therein; thermal as well as electrical time constants; thermal EMF's; and voltage and power coefficients.

The resistance wire element is suspended in oil in a hermetically sealed case with a cover plate of low leakage acrylic. The connections to the resistance element are made in a four-terminal configuration, with the potential terminals mounted on the cover plate and the current terminals on the horns.

All terminals are solid thermal copper to reduce thermal EMF's. Models 9330-10M & 100M have a cover plate made from Delrin acetyl thermoplastic and use a two-terminal configuration plus a ground terminal (no horns).

Values below 10M Ω are designed to be immersed in temperature controlled oil or air baths.

The 9330 Series hermetically sealed resistance element design is based on a thorough reappraisal of earlier designs.

9330 Standard Resistors

9330 Series Specifications

Model	Nominal Resistance Value (Ohms)	Nominal Initial Tolerance (+/-ppm) note 1	Calibration Uncertainty (+/-ppm) note 2	Stability		Temperature Coefficient (<+/-ppm/C)	Maximum Current (mA)	Maximum Voltage (Volts)
				6 Months (+/-ppm)	12 Months (+/-ppm)			
9330-0.1	0.1	5	1.5	3	5	3	1000	0.1
9330-1	1	2.5	1	2.5	3.5	2	320	0.32
9330-10	10	2.5	1	2.5	3.5	2	100	1
9330-25	25	2.5	1	2.5	3.5	2	64	1.6
9330-100	100	2.5	1	2.5	3.5	2	32	3.2
9330-1k	1k	2.5	1	2.5	3.5	2	10	10
9330-10k	10k	2.5	1	2.5	3.5	2	3.2	32
9330-100k	100k	3	3	4	8	2	1	100
9330-1M	1M	8	7	10	15	5	0.32	320
9330-10M	10M	15	15	15	20	5	0.1	1000
9330-100M	100M	30	25	20	30	5	0.01	1000

Note 1: Nominal initial tolerance is the maximum variation of resistance mean value as adjusted initially at the point of sale.

Note 2: Values below 10M Ω are calibrated in flowing oil at 25 °C, referred to the unit of resistance as maintained by the National Research Council of Canada (NRCC) or the National Institute of Standards and Technology (NIST) and expressed as a total uncertainty with a coverage factor of k=2. Values above 1M Ω are calibrated in air at 23 °C. A traceable calibration report stating the measured value and uncertainty is provided with each resistor.

Note 3: Special Values and calibration points available on request.

General Specifications

Dimensions:	9330-0.1 to 1M	9330-10M & 100M
Height:	81 mm (3.19 in)	115 mm (4.53 in)
Diameter:	90 mm (3.54 in)	53 mm (2.09 in)
Weight:	330 gms (.73 lbs)	350 gms (.77 lbs)

Environment:

Operating:	18 °C to 28 °C	< 70% RH, non-condensing
	28 °C to 40 °C	< 50% RH, non-condensing
Storage:	-20 °C to 60 °C	15 to 80% RH, non-condensing

9330 ORDERING INFORMATION

9330-(ohmic value)	4-terminal Standard Resistor
TM9330	Technical Manual (included)
	Certificate of Calibration (included)
	Report of Calibration (included)

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