

# 9330A SERIES

## PRECISION DC OIL BASED RESISTANCE STANDARDS

Very Stabil Oil Based Primary Resistance Standards



**GUILDLINE INSTRUMENTS 9330A SERIES** of Oil Based DC Resistance Standards are designed for very accurate resistance calibration in oil (i.e. fluid baths) or in air. They range in ohmic value from 0.001  $\Omega$  to 10 M $\Omega$ .

Having developed the most advanced series of Fluid Baths (Model 5600 Series), Guildline has now re-designed our traditional 9330 Oil-Based DC Resistance Standards. The 9330A Standards can work in either oil or air.

**THE 9330A SERIES PRECISION OIL BASED RESISTANCE STANDARDS ARE A MODERN, BETTER PERFORMING REPLACEMENT FOR GUILDLINE'S PROVEN 9330 RESISTANCE STANDARDS.**

### FEATURES

- Stability < 2  $\mu\Omega/\Omega/\text{Year!}$
- Temperature Coefficient Low as < 0.2  $\mu\Omega/\Omega/^{\circ}\text{C}$  (< 0.0002  $\mu\Omega/\Omega/^{\circ}\text{C}$  ambient when used with Guildline 5600 Oil Bath)
- Perfect for Oil or Air Baths
- Resistance Range 0.001  $\Omega$  to 10 M $\Omega$
- Unique Compact Design
- Nominal Accuracy < 2  $\mu\Omega/\Omega!$
- ISO/IEC 17025 Calibration Included
- Guard and Shield Compliant!
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With a standard range from 0.001  $\Omega$  to 10 M $\Omega$  the 9330A Resistance Standards are designed to work in a wide variety of applications. They are used as references for DC Resistance and Temperature Bridges, for the calibration of resistance ranges of multi-function calibrators and high accuracy DMMs; as well as being used in more classical standards and calibration resistance measurements.

The 9330As use multiple resistor elements that are individually graded and matched to offer the best performance possible, both with respect to their stability and temperature/voltage coefficients. With a ruggedized case these resistance standards are designed to last for many years.

# 9330A Series DC Precision Resistance Standards

## GENERAL SPECIFICATIONS

Environmental	Temperature		Humidity			
Operating	18 °C to 28 °C		<70 % RH non-condensing			
Storage	-20 °C to 60 °C		15 % to 80 % RH			
Dimensions	Height		Diameter		Weight	
	mm	Inches	mm	Inches	kg	lbs
9330A Models 0.001 & 0.01	156.2	6.15	78.7	3.1	0.30	0.7
9330A Models 0.1 to 100k	105.4	4.15	78.7	3.1	0.36	0.8
9330A Models 1M & 10M	109.2	4.3	78.7	3.1	0.36	0.8

Model (Nominal $\Omega$ )	Nominal Value ( $\Omega$ )	Initial <sup>1</sup> Tolerance $\pm \mu\Omega/\Omega$	Stability <sup>2</sup> Initial 12 Months $\pm \mu\Omega/\Omega$	Stability <sup>2</sup> 2 <sup>nd</sup> Year $\pm \mu\Omega/\Omega$	Maximum Excitation Current	Temperature Coefficient $< \mu\Omega/\Omega / ^\circ\text{C}$	Voltage Coefficient $< \mu\text{V/V} / ^\circ\text{C}$
9330A-0.001	0.001	20	15	10	6 A	5	NA
9330A-0.01	0.01	10	10	5	3.2 A	2	NA
9330A-0.1	0.1	5	2.5	2	1 A	0.3	NA
9330A-1	1	2	2.5	2	320 mA	0.25	NA
9330A-2.5	2.5	2	2.5	2	200 mA	0.25	NA
9330A-10	10	2	2.5	2	100 mA	0.2	NA
9330A-25	25	2	2.5	2	64 mA	0.2	NA
9330A-100	100	2	2.5	2	32 mA	0.2	NA
9330A-300	300	2	2.5	2	18 mA	0.2	NA
9330A-400	400	2	2.5	2	16 mA	0.2	NA
9330A-1k	1 k	2	2.5	2	10 mA	0.2	NA
9330A-10k	10 k	2	2	1.5	3.2 mA	0.2	0.01
9330A-12.9064k	12.9064 k	2	2	1.5	2.8 mA	0.2	0.01
9330A-100k	100 k	3	2.5	2	1 mA	0.3	0.03
9330A-1M	1 M	5	4	3	0.32 mA	0.3	0.05
9330A-10M	10 M	15	5	4	100 $\mu\text{A}$	3	0.1

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

**Note 2:** Initial 12-month stability is for after the first year of ownership. The initial 12-month drift is higher due to stabilization of elements. 2<sup>nd</sup> year stability is after the first 24 months of ownership and is used as the maximum yearly drift specification.

**Note 3:** Calibrated under DC excitation in oil at 25 °C, traceable to the SI unit of electrical resistance. Calibration uncertainties expanded and expressed at the 95 % level of confidence. A calibration certificate and report of calibration stating the calibrated value and estimated uncertainty is provided with each resistor and is ISO/IEC 17025 Accredited.

# 9330A Series DC Precision Resistance Standards

## ORDERING INFORMATION

9330A-Value	Resistance Standard (List Ohmic Value)
	Includes ISO 17025 Accreditation
/CC	Certificate of Calibration Included
/OM9330A	Operator Manual (included)
SCW-30:18AWG	30 Meter SCW 18 Gauge Wire (4 Wire)
SCW-30:22AWG	30 Meter SCW 22 Gauge Wire (4 Wire)
SCW-100:18AWG	100 Meter SCW 18 Gauge Wire (4 Wire)
SCW-100:22AWG	100 Meter SCW 22 Gauge Wire (4 Wire)
5600	Oil / Fluid Bath
Other Accessories, Lead Sets available. Contact Guildline.	

## **GUILDLINE IS DISTRIBUTED BY:**

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