

ULTRA PRECISE AIR RESISTANCE STANDARDS

Very High Stability Calibration Laboratory Resistance Standards



9334A SERIES FEATURES

- ◆ 12 Month Stabilities Low as 2 ppm
- ◆ Wide Operating Range 18 °C to 28 °C
- ◆ Resistance Range 1 $\mu\Omega$ to 100 G Ω
- ◆ Report of Calibration at 3 Temperatures Points Included
- ◆ ISO 17025 Calibration Available
- ◆ Compact and Ruggedized
- ◆ Nominal Initial Accuracy < 2 ppm
- ◆ Low Temperature Coefficients
- ◆ Voltage Hysteresis < 0.1 ppm
- ◆ High Power Rating, Low Power Coefficients
- ◆ Guard and Shield Compliant
- ◆ Direct Plug-In Models for Wavetek 1271 & 1281 DMMs
- ◆ 1 G Ω Direct Plug-In for Agilent 3458A & 1 G Ω & 10 G Ω Fluke 8508A DMMs
- ◆ Special Values Available On Request

GUILDLINE INSTRUMENTS 9334A SERIES of Resistance Standards are designed as very high stability calibration laboratory standards for high accuracy resistance calibration in air, without the need for stabilization in a temperature controlled bath.

They can be used as working standards or highly reliable and rugged transportable transfer standards. They are extremely useful for the calibration of resistance ranges of multi-function calibrators and high accuracy DVMs, as well as being used in more classical standards and calibration laboratory applications.

Hysteresis error is typically better than negligible to 0.1 ppm when stressed at three times the maximum voltage, and less than 0.3 ppm over a temperature cycle from 0 °C and 40 °C.

Connections to these resistance standards are by conventional 4-terminal connection up to 1M Ω and two terminal connections for values above 1M Ω . Models 9334AH-1G and the 9334AW-1G are designed to answer a difficult calibration need for owners of the HP/Agilent 3458A and the Wavetek/Datron 1271 & 1281 model DMMs.

The 9334A Series Precision Resistance Standards are available in a wide range of off the shelf and custom values to satisfy demanding applications between 1 $\mu\Omega$ and 100 G Ω .

Recommended instrument verification at the 1 G Ω & 10 G Ω points (with voltages up to 200V) and typical connection methods make it difficult to obtain very stable readings. These special 9334A's are designed to fit directly into the appropriate DMM's input terminals, without the necessity of external leads and the inherent problems of noise pickup and handle voltages up to 1500V's!

The 9334AH-1G and 9334AH-10G are also specially designed to support the calibration of the Fluke 8508 & Agilent 3458A.

Special values such as 0.25 Ω are available for precision thermometry. Standards available for Quantum Hall Effect applications include 6.4532 k Ω and 12.9064 k Ω . If linearity verification of a long scale DVM is your challenge, 1.9 x cardinal resistance points are available. If you have a special resistance application between 1 $\mu\Omega$ and 100 G Ω , Guildline can supply a precision standard to fulfill your requirement.



For The Ultimate In Resistance Standard Check Out The **6634A TEMPERATURE STABILIZED RESISTANCE STANDARD!**

9334A SERIES OF PRECISION AIR RESISTANCE STANDARDS

9334A SERIES SPECIFICATIONS

Model (Nominal Ω)	Initial ¹ Tolerance \pm ppm	Stability (\pm ppm) ²		Maximum Limits		Temperature Coefficient \pm ppm/ $^{\circ}$ C	Voltage ³ Coefficient \pm ppm/ V_{dc}
		6 Month	12 Month	mAmps	Voltage		
9334A-1 μ	500	35	35	100A	0.0001	35	-
9334A-10 μ	200	20	25	50A	0.0005	20	-
9334A-100 μ	25	15	20	20A	0.002	6	-
9334A-1m	15	10	20	6A	0.006	1.5	-
9334A-10m	10	5	10	3A	0.03	0.5	-
9334A-100m	3	3	5	1A	0.1	0.3	-
9334A-1	2	2	2.5	320	0.32	0.2	-
9334A-10	2	2	2.5	100	1	0.2	-
9334A-25	2	2	2.5	64	1.6	0.2	-
9334A-100	2	2	2.5	32	3.2	0.2	-
9334A-400	2	2	2.5	16	6.3	0.2	-
9334A-1k	2	2	2.5	10	10	0.2	-
9334A-10k	2	2	2	3.2	32	0.2	0.01
9334A-100k	3	3	4	1	100	0.3	0.03
9334A-1M	5	3	5	0.32	320	0.3	0.05
9334A-10M	15	4	6	0.1	1000	2.5	0.1
9334A-100M	35	12	20	0.015	1500	5	0.2
9334A-1G	50	12	25	0.0015	1500	6	0.3
9334AH-1G	50	12	25	0.0015	1500	6	0.3
9334AW-1G	50	12	25	0.0015	1500	6	0.3
9334A-10G	100	50	100	0.15 μ A	1500	25	0.5
9334AH-10G	100	50	100	0.15 μ A	1500	25	0.5
9334A-100G	350	100	200	0.015 μ A	1500	250	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: Calibrated in air at 21, 23 and 25 $^{\circ}$ C referred to the unit of resistance as maintained by the National Research Council of Canada or the National Institute of Standards and Technology, and expressed as a total uncertainty with a coverage factor of $k = 2$. A traceable report of calibration stating the measured values and uncertainty is provided with each resistor. Calibration Uncertainty can be located on Guildline's Scope of Accreditation.

Note 3: Voltage hysteresis: negligible to < 0.1 ppm. Temperature hysteresis: < 0.3 ppm between 0 $^{\circ}$ C and 40 $^{\circ}$ C

Note 4: Special/Custom Values available upon request including 1.9X values.

Guildline provides Extended Warranties and Calibration Support Plans up to 5 years for *total* customer service and support.

ORDERING INFORMATION

GUILDLINE IS DISTRIBUTED BY:

9334A-Model	Resistance Standard (List Ohmic Value For Model)			
9334A-X	Customer Specified Value (State Value)			
/TM9334A	Technical Manual included at no charge.			
Optional Calibration Services (ISO 17025 Service Available)				
/Temp	Additional Customer Specified Temp Cal Point (Charge)			
/Voltage	Additional Customer Specified Voltage Point (Charge)			
/Current	Additional Customer Specified Current Point (Charge)			
*Precision Low Thermal Leads Are Available – Call and tell us your requirements				
GENERAL SPECIFICATIONS				
Environmental	Temperature		Humidity	
Operating	18 $^{\circ}$ C to 28 $^{\circ}$ C		$< 70\%$ RH non-condensing	
Storage	-20 $^{\circ}$ C to 60 $^{\circ}$ C		15% to 80% RH	
Dimensions	Height	Width	Depth	Weight
Models $\leq 100\mu\Omega$	97 mm / 3.8"	124 mm / 4.9"	79 mm / 3.1"	1.1 kg / 2.4 lbs
Models $\geq 1m\Omega$	82 mm / 3.2"	124 mm / 4.9"	79 mm / 3.1"	0.6 kg / 1.4 lbs

Guildline Instruments Limited

21 Gilroy Street, PO Box 99

Smiths Falls, Ontario,

Canada K7A 4S9

Phone: (613) 283-3000

Fax: (613) 283-6082

Web: www.guildline.com

Email: sales@guildline.com