GUILDLINE INSTRUMENTS

SERIES 9334A

RESISTANCE STANDARDS

VERY HIGH STABILITY CALIBRATION LABORATORY STANDARDS

Guildline 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 between 0 ^{0}C and 40 ^{0}C.

Connections to these resistance standards are by conventional 4-terminal connection up to 1M Ω and two terminal connection for values above 1M Ω. The model 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 and 1281 model DMMs.

9334A FEATURES

- *Stability < 2.5 ppm*
- *Oil or Air Baths not required*
- *Operating Range 18 ^{0}C to 28 ^{0}C*
- *Resistance Range 1μΩ to 100G Ω*
- *Compact and ruggedized*
- *Report of Calibration traceable to NIST or INMS/NRCC included*
- *Nominal Accuracy < 2 ppm*
- *Low Temperature Coefficient*
- *High Power Rating, Low Power coefficient*
- *Guard and Shield compliant*
- *1G Ω Direct plug-in for Wavetek 1271 & 1281 DMMs*
- *1G Ω Direct plug-in for HP/Agilent HP3458A and Fluke 8508A DMMs*
- *10GΩ Direct plug-in for Fluke 8508A DMM*
- *Voltage Hysteresis < 0.1 ppm*
- *Special values available on request*

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

Both manufacturers' instruments require verification at the 1 gigaohm level and typical connection methods make it difficult to obtain a satisfactory stable reading. 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.

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

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 1μ Ω and 100G Ω, Guildline can supply a precision standard to fulfill your requirement.

9334A SERIES SPECIFICATIONS

Model	Nominal Resistance Value (Ohms)	Nominal Initial Tolerance (± ppm) (Note 1)	Calibration Uncertainty (± ppm) (Note 2)	Stability 6 Months (ppm)	Stability 12 Months (ppm)	Temp. Coeff. (±ppm/°C)	Max. Voltage (Volts)	Max. Current (mA)	Voltage Coefficient (± ppm/V)
9334A-1µ	0.000001	500	500	25	35	25	0.0001	100A	-
9334A-10µ	0.00001	200	200	15	20	10	0.0005	50A	-
9334A-100µ	0.0001	25	15	10	20	5	0.002	20A	-
9334A-0.001	0.001	15	5	10	20	1	0.01	10A	-
9334A-0.01	0.01	10	3	5	10	0.5	0.03	3A	-
9334A-0.1	0.1	3	1.5	3	5	0.3	0.1	1000	-
9334A-1	1	2	1	2	2.5	0.2	0.32	320	-
9334A-10	10	2	1	2	2.5	0.2	1	100	-
9334A-25	25	2	1	2	2.5	0.2	1.6	64	-
9334A-100	100	2	1	2	2.5	0.2	3.2	32	-
9334A-400	400	2	1	2	2.5	0.2	6.3	16	-
9334A-1k	1k	2	1	2	2.5	0.2	10	10	-
9334A-10k	10k	2	1	2	2	0.2	32	3.2	0.01
9334A-100k	100k	3	3	3	4	0.3	100	1	0.03
9334A-1M	1M	5	7	3	5	0.3	320	0.32	0.05
9334A-10M	10M	15	10	4	6	2.5	1000	0.1	0.1
9334A-100M	100M	35	15	12	20	5	1500	0.015	0.2
9334A-1G	1G	50	80	12	25	6	1500	0.0015	0.3
9334AH-1G	1G	50	80	12	25	6	1500	0.0015	0.3
9334AW-1G	1G	50	80	12	25	6	1500	0.0015	0.3
9334A-10G	10G	100	100	50	100	25	1500	0.15uA	0.5
9334AH-10G	10G	100	100	50	100	25	1500	0.15uA	0.5
9334A-100G	100G	350	500	100	200	250	1500	0.015uA	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 ^{0}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.
Note 3: Voltage hysteresis: negligible to < 0.1 ppm
Temperature hysteresis: < 0.3 ppm between 0 ^{0}C and 40 ^{0}C
Note 4: Special values available on request.

ORDERING INFORMATION

9334A-ohmic value	Resistance Standard
TM 9334A	Technical Manual (included)
	Certificate of Calibration (included)
	Report of Calibration (included)

GENERAL SPECIFICATIONS

Environment:	Operating	18 ^{0}C to 28 ^{0}C < 70% RH, non-condensing
	Storage	-20 ^{0}C to 60 ^{0}C < 90% RH, non-condensing
Dimensions:	µ ohm values	values above 100µ ohm
	H97mm(3.8in)	H 88 mm (3.5 in)
	W124mm(4.9in)	W 124 mm (4.9 in)
	D79mm(3.1in)	D 79 mm (3.1 in)
Weight:	1.1kg(2.4lbs)	0.6 kg (1.4 lbs)

GUILDLINE IS DISTRIBUTED BY:

Guildline Instruments Limited
P.O. Box 99
21 Gilroy Street
Smiths Falls, Ontario Canada K7A 4S9
Phone: (613) 283-3000
Fax: (613) 283-6082
Web: www.guildline.ca