



SERIES 7334

AC/DC RESISTANCE STANDARDS

VERY HIGH STABILITY CALIBRATION LABORATORY STANDARDS



7334 FEATURES

- > AC/DC error < 0.8 ppm at 1kHz
- > Stability < 0.5 ppm/year
- > Temperature coefficient < 0.2 ppm/°C, oil or air Baths not required
- > Resistance Range 1 Ω to 10k Ω
- > Nominal Accuracy < 2 ppm
- > Voltage Hysteresis < 0.1 ppm
- > Compact and ruggedized
- > Report of Calibration traceable to NIST, NPL UK or INMS/NRCC included
- > Guard and Shield compliant
- > Operating Range 18°C to 28°C
- > Special values available on request

Guildline 7334 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. These standards are suitable for both AC and DC applications.

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 in resistance and temperature measurements.

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 °C and 40 °C.

Connections to these resistance standards are made via the gold plated 5-way binding posts. In DC measurement, these gold plated binding posts yield the lowest thermal EMF when connected with gold, copper or silver.

The 7334 Series Precision Resistance Standards are true AC/DC standards with minimal AC/DC error up to 1 kilo-Hertz, and are available in a wide range of off the shelf and custom values

The impedance of the resistor is expressed as:

$$Z(f) = R(f) \cdot (1 + j2\pi f\tau)$$

Where $R(f)$ is the real part of the impedance, f is the frequency in Hz and τ is the time constant of the standard. Parameter $R(0)$ is the resistance measured with DC energisation. The 7334 standards have very flat frequency response. The resistive component is virtually independent of frequency, with far less than 0.8 ppm of AC/DC difference between DC and 1000Hz. The 7334 series of standards are almost purely resistive with very small time constant. For a 7334-100Ω, the time constant is typically less than 10ns.

The AC/DC difference is so insignificant that it is almost negligible, when compared to measurement noise. A user can confidently use the Guildline model 7334 for DC resistance calibration, as a reference with an AC temperature bridge, as an AC impedance standard, or elsewhere in AC/DC metrology that calls for a stable, precision standard.

Special values such as 0.25Ω and 12.9064kΩ, are available for highly specialized applications.

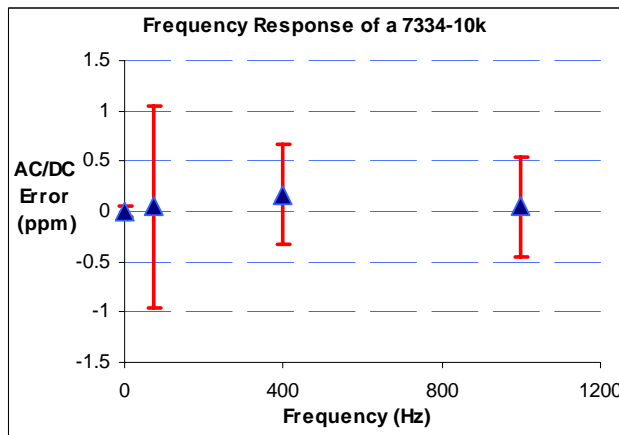
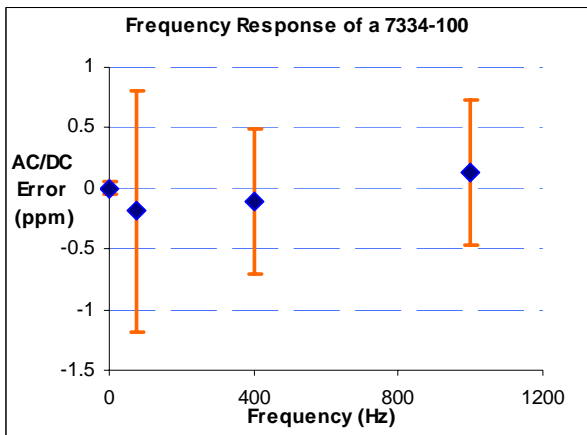
7334 RESISTANCE STANDARDS

7334 SERIES SPECIFICATIONS

Model	Nominal Value (Ω)	Nominal Initial Tolerance (± ppm) (Note 1)	Calibration Uncertainty (± ppm) (Note 2)	Stability 12 Months (ppm)	Temperature Coefficient (±ppm/°C)	Max. Excitation (mA)	AC/DC difference at 1kHz (ppm)
7334-1	1	2	1	1.5	1	316	< 3
7334-2.5	2.5	2	1	1.5	1	200	<3
7334-10	10	2	1	0.5	0.2	100	<0.8
7334-25	25	2	1	0.5	0.2	64	<0.8
7334-100	100	2	1	0.5	0.2	32	<0.8
7334-1k	1k	2	1	0.5	0.2	10	<0.8
7334-10k	10k	2	1	0.5	0.2	3.2	<0.8

Special values available on request.

- 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 under DC excitation, in air at 21, 23 and 25 °C referred to the unit of resistance as maintained by the National Research Council of Canada (NRC), National Physical Laboratory (NPL UK) or the National Institute of Standards and Technology (NIST), 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 °C and 40 °C



AC/DC error of a 7334-100Ω and a 7334-10kΩ, calibrated by National Physical Laboratory (NPL) of UK

ORDERING INFORMATION

7334-ohmic value	Resistance Standard	6664A-13	SCW lead pair with gold plated banana, xm in length
TM 7334	Technical Manual (included)	73340-1	Teflon insulated lead with 4 stranded silver coated copper conductors and guard, trimmed ends, 2m in length
	Certificate of Calibration (included)	73340-2	Teflon insulated lead with 4 stranded silver coated copper conductors and guard, trimmed ends, xm in length
	Report of Calibration (included)		
6664A-12	Solid copper wire (SCW) lead pair with gold plated banana plugs, 2m in length		

GENERAL SPECIFICATIONS

Environment: Operating	18 °C to 28 °C < 70% RH, non-condensing
Storage	-20 °C to 60 °C < 90% RH, non-condensing
Dimensions:	H 97mm (3.8in) H 88 mm (3.5 in)
	W 124mm (4.9in) W 124 mm (4.9 in)
	D 79mm (3.1in) D 79 mm (3.1 in)
Weight:	1.1kg (2.4lbs) 0.6 kg (1.4 lbs)

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