GUILDLINE INSTRUMENTS

SERIES 7320

AC CURRENT SHUNTS

A COST EFFECTIVE PRECISION AC CURRENT CALIBRATION STANDARD

Guildline 7320 series of four terminal AC Current Shunts feature low uncertainty (high accuracy), low temperature coefficients, and excellent stability. The shunts are designed to be purely resistive with extremely small values of reactance. The shunts may be used over a wide frequency range from DC to 100 kHz.

The shunts will operate at power levels up to 10 watts, or as limited by a maximum of 25 amperes, or 300 volts. They are specified for use with natural convection cooling, but the performance can be improved by using forced air cooling.

Originally made to verify the performance of the Guildline 7620 Transconductance Amplifier, the AC Current Shunts can be used for a variety of other applications.

They are useful for the calibration of ac current ranges of multi-function calibrators and high accuracy DVM's.

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7320 FEATURES

- *Accuracy to ± 100 ppm*
- *Four terminal design*
- *Non-inductive*
- *Wide bandwidth, DC-100 kHz*
- *1 Year stability <200 ppm*
- *Temp. Coeff. <10 ppm/^{0}C*
- *Range: decades 10m Ω to 10k Ω*

The accurate measurement of ac current up to 25 amperes and at frequencies up to 100 kHz is possible using the 7320 shunts and an accurate ac voltmeter. The lower value shunts (below 10 Ω), may also be used as burdens for current transformers, making the measurement of high currents possible. The shunts can be placed in ac current circuits where the phase relationships between currents or voltages is desired.

These shunts are also valuable when making ac power and energy measurements using wattmeters or watthour meters. The very small phase shift due to the shunts makes accurate high-frequency power measurements possible. As a result of the very small phase shift across the shunts, the output voltage of the shunts faithfully reproduces the current waveform even under badly distorted or pulsed current conditions. This makes the shunts useful when examining complex and distorted current waveforms. Additionally, the shunts are effective in many other classical measurement, standards, or calibration laboratory applications.

There are two UHF Type connectors. The connector on the back face of the shunt is for connection to the current source to be measured. The connector on the front face is for connection to the potential measuring device.

7320 AC Current Shunt

7320 Series Specifications

AC-DC Accuracy (Relative to Calibration Standards)

Model	Nominal Value (Ohms)	Accuracy 24 hr 23 °C ± 1 °C (Note 1, 2)			Accuracy 6 mos 23 °C ± 1 °C (Note 1, 2)			Accuracy 1 yr 23 °C ± 1 °C (Note 1, 2)		
		1kHz (ppm)	10kHz (ppm)	100kHz (ppm)	1kHz (ppm)	10kHz (ppm)	100kHz (ppm)	1kHz (ppm)	10kHz (ppm)	100kHz (ppm)
7320/0.01	0.01 Ω	± 100	± 100	-	± 150	± 150	-	± 200	± 200	-
7320/0.1	0.1 Ω	± 100	± 120	± 300	± 150	± 170	± 350	± 200	± 220	± 400
7320/1	1 Ω	± 100	± 150	± 200	± 150	± 200	± 250	± 200	± 250	± 300
7320/10	10 Ω	± 100	± 200	± 400	± 150	± 250	± 450	± 200	± 300	± 500
7320/100	100 Ω	± 100	± 300		± 150	± 350		± 200	± 400	
7320/1K	1K Ω	± 150	± 1250		± 200	± 1400		± 250	± 1500	
7320/10K	10K Ω	± 400			± 450			± 500		

Note 1: Calibrated in air at 23 °C ± 1 °C referred to the unit of resistance as maintained by the National Research Council of Canada or the National Institute of Standards and Technology.

Note 2: A report of calibration is provided with each shunt with values at DC, 1 kHz, 10 kHz, and 100 kHz.

DC Performance (Total Uncertainty)

Model	Nominal Value (Ohms)	Temp. Coefficient ppm/ °C	DC Accuracy 23 °C ± 1 °C			Power Coefficient (ppm/W)	Maximum Current Amps
			24 hr (ppm)	6 mos (ppm)	1 yr (ppm)		
7320/0.01	0.01 Ω	< 30	± 100	± 150	± 200	< 50	25
7320/0.1	0.1 Ω	< 10	± 100	± 150	± 200	< 30	10
7320/1	1 Ω	< 10	± 100	± 150	± 200	< 30	3.16
7320/10	10 Ω	< 10	± 100	± 150	± 200	< 30	1.0
7320/100	100 Ω	< 10	± 100	± 150	± 200	< 30	0.316
7320/1K	1K Ω	< 10	± 100	± 150	± 200	< 30	0.1
7320/10K	10K Ω	< 20	± 200	± 250	± 300	< 60	0.03

Calibration at other points available on request at time of order.
AC performance is expressed as an AC-DC Difference with an uncertainty of measurement expressed as a total uncertainty with a coverage factor of k = 2.
The AC Current Shunt design is based on work performed by the National Institute of Standards and Technology.
Custom values available upon request.

7320 Ordering Information

7320/Ohmic Value	AC Current Shunt
TM7320	Technical Manual (included)
	Certificate of Calibration (included)
	Report of Calibration (included)

Accessories:

73201	Cable/Adapter Kit

General Specifications

Environment	Operating:	18 °C to 28 °C < 50% RH non-condensing
	Storage:	Storage -20 °C to 60 °C 15% to 80% RH
Exterior Dimensions:		H 148 mm (5.83 in) W 148 mm (5.83 in) D 62 mm (2.44 in)
Weight:		0.5 kg (1.1 lbs)

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