

Model SR1010

RESISTANCE STANDARDS & INSTRUMENTS

- Each device configurable to 10R, 1R, and R/10
- Accuracy of transfer better than 1 ppm
- Six models, decade values from 1 Ω /step to 100k Ω /step
- Establish decade resistances from 0.1 Ω to 1M Ω
- Calibration readings traceable to NIST are provided

Resistance Transfer Standards

The SR1010 meets or exceeds all of the requirements for resistance transfer standards in precision measurement applications. It is easily configured to transfer resistances up or down a decade from their initial resistance value. When used with the connecting networks and shorting bars, it provides 1 ppm transfer accuracies.

Each transfer standard contains twelve equal value precision resistors connected in series by specially designed true 4-terminal junctions. These special junctions assure that a 4-terminal measurement of a series of resistors agrees with the sums of the individual resistors in the series. Accurate parallel connections can be made with the Parallel Compensation Network and the Shorting Bars connected to the junctions.

These standards can be connected to provide three decade values: 10 resistors in series, 10R: 9 resistors in series — parallel, 1R: and 10 resistors in parallel, R/10. The part per million accuracy is assured as the

series value is equal to 100 times the parallel value to better than 1 ppm. The series — parallel value relative to either the series value or the parallel value can be found to better than 1 ppm by making a 1:1 comparison with the remaining tenth resistor and a simple calculation.

The accuracy and precision of the individual resistors also make the Model SR1010 ideal for use as a multi-value standard resistor or reference voltage divider.



Model SR1010

RESISTANCE TRANSFER STANDARDS

Specifications

Standard Values

1, 10, 100 Ω /step; 1, 10, 100 k Ω /step

Accuracy

Transfer*** $\pm(1 \text{ ppm} + 0.1 \mu\Omega)$ at parallel value for 100:1 transfer

$\pm(1 \text{ ppm} + 1 \mu\Omega)$ at series-parallel value for 10:1 transfer

Initial $\pm 20 \text{ ppm}$ of nominal value matched with in 10 ppm

Long-Term $\pm 50 \text{ ppm}$ of nominal value

Calibration $\pm 10 \text{ ppm}$

Calibration Conditions

23 $^{\circ}\text{C}$, low power, four-terminal measurement

Temperature Coefficient

$\pm 5 \text{ ppm}/^{\circ}\text{C}$ matched within 3 ppm/ $^{\circ}\text{C}$ for 100 Ω and higher

$\pm 1 \text{ ppm}/^{\circ}\text{C}$ for 10 Ω

$\pm 15 \text{ ppm}/^{\circ}\text{C}$ matched within 5 ppm/ $^{\circ}\text{C}$ for 1 Ω

Power Coefficient

$\pm 0.1 \text{ ppm}/\text{mW}$ per resistor for 100 Ω and higher

$\pm 0.02 \text{ ppm}/\text{mW}$ per resistor for 10 Ω

$\pm 0.3 \text{ ppm}/\text{mW}$ per resistor for 1 Ω

Maximum Power Rating

1 Ω /step or 5 W distributed over 10 resistors

Breakdown Voltage

1500 V peak to case

Leakage Resistance

Greater than $10^{12} \Omega$ from terminal to case

Calibration Data

Initial calibration readings are affixed to instrument

Dimensions

Height 11.20 cm (4.4 in)

Width 31.00 cm (12.2 in)

Depth 10.15 cm (4.0 in)

Weight 1.5 kg (3.25 lb)

Included Accessories

Manual P/N 8502

Z540 Compliant Calibration for

SR1010 with Certificate and Data

P/N OPT-Z540

Optional Accessories

Shorting Bars P/N SB103

Series Parallel Compensation Network

P/N SPC102

Parallel Compensation Network

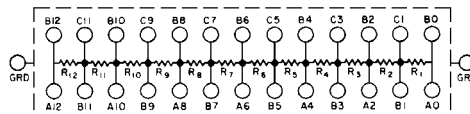
P/N PC101

R Value	(Per Step)	1 Ω	10 Ω	100 Ω	1k Ω	10k Ω	100k Ω
One Resistor Alone	max mA	1000	320	100	32	10	3.2
	max V	1	3.2	10	32	100	321
10 Resistors in Parallel R/10	max mA	7100	2300	710	230	71	23
	max V	0.71	2.3	7.1	23	71	230
10 Resistors in Series 10R	max mA	710	230	71	23	7.1	2.3
	max V	7.1	23	71	230	710	2300**

*10 Ω standard is SR1010/LTC

**Do not exceed 1500 V to case

***With Model SB103 and Model PC101 or SPC102



Initial Accuracy:

The specifications stated in the TEGAM instrument catalogs and data sheets are intended as acceptance specifications and are guaranteed for 60 days from the date of shipment. They are typically maintained for a much longer period of time.

Long-Term Accuracy:

These specifications are guaranteed for the standard warranty period, and are typically maintained for the life of the instrument. Long-term accuracy is implied when not otherwise stated.

Calibration Accuracy:

Calibration accuracy is the accuracy of TEGAM calibration data relative to the legal units maintained by the U.S. National Institute of Standards and Technology.



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10 TEGAM WAY • GENEVA, OHIO 44041
440-466-6100 • FAX 440-466-6110
www.tegam.com • e-mail: sales@tegam.com