



# Measurements International

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## 1310B AccuRes Resistance Standard

Developed for Automated Calibration of DVM and Calibrators



### Featuring

- ▶ Combines Primary Level Resistors with Scanner and Temperature Controlled Chamber
- ▶ Touch screen controller shows cal value and drift information
- ▶ Designed for use as DC Calibration HUB for automated Calibrator and DMM stations
- ▶ 0.1  $\Omega$  to 1 G $\Omega$
- ▶ 0.1  $\Omega$  capable of 3 A

### Overview

The 1310B was designed to meet the requirements of automated DVM and calibrator calibration. Built around a low-thermal scanner, and temperature controlled enclosure the 1310B provides 11 high-stability standard reference resistors ranging from 0.1  $\Omega$  to 1 G $\Omega$ , covering the full range of resistance standards required for precision calibration. The 0.1  $\Omega$  and 1  $\Omega$  standards are also capable of handling the

majority of current levels needed for verifying current input and output on units under test (UUTs).

Additionally, the system includes two external channels that function as a connection hub for auxiliary AC and DC calibration equipment.

Feature	Benefit
11 resistors values ranging from 0.1 $\Omega$ up to 1 G $\Omega$ .	Complete line of decade value standards in one temperature-controlled enclosure.
User Friendly Touch Screen Interface.	Resistor Tracking and history graph.
Internal resistance elements in a temperature-controlled chamber.	Excellent stability and extremely low-temperature coefficients.
Single output cable for direct plug-in.	Easy operation without the requirement for changing wires.
Built for calibration of calibrators and DVMs.	Best stability < 2.5 $\mu\Omega/\Omega/\text{Year}$ .
Built-in 4-terminal scanner.	Combining multiple instruments into one simple to use instrument (resistors, air bath, scanner).
Two external extra channels.	Connect to the resistance value of your choice.
Front panel or GPIB controlled.	Simplifies operation for the user.
Internally mounted temperature sensor PT100.	Users can connect to the front panel and monitor internal oven.



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### Specifications: Rev 0

Nominal Resistance (Ohms)	Nominal Resistance ( $\pm \mu\Omega/\Omega$ ) ( $\pm \text{ppm}$ )	24 Hour Stability ( $\pm \mu\Omega/\Omega$ ) ( $\pm \text{ppm}$ )	12 Month Stability ( $\pm \mu\Omega/\Omega$ ) ( $\pm \text{ppm}$ )	Temperature Coefficient ( $\pm \mu\Omega/\Omega/^\circ\text{C}$ ) ( $\pm \text{ppm}/^\circ\text{C}$ )	Max. Voltage (Volts)
1 G $\Omega$	100	0.8	40	0.06	200
100 M $\Omega$	50	0.4	10	0.025	200
10 M $\Omega$	35	0.25	10	0.025	200
1 M $\Omega$	25	0.03	2.5	0.02	200
100 k $\Omega$	15	0.02	2.5	0.01	100
10 k $\Omega$	10	0.01	2.5	0.005	32
1 k $\Omega$	10	0.01	2.5	0.005	10
100 $\Omega$	10	0.01	2.5	0.005	3.2
10 $\Omega$	10	0.01	2.5	0.005	1.0
1 $\Omega$	10	0.01	2.5	0.005	0.32
0.1 $\Omega$	100	0.1	10*	0.0125	0.3
Internal Temperature Stability			$\pm 0.1^\circ\text{C}$ Over a 1 Year Period		
Ambient Temperature Range			$23^\circ\text{C} \pm 5^\circ\text{C}$		
Ambient Humidity Range			20 to 70 % RH		

### Scanner Specifications

Operation	Four-Terminal
Error Contribution	< 20 Nanovolts
Contact Configuration	Relay - Two Coil Latching
Max Carrying/Switching Current	4/2 Amps @ < 30 Volt (DC)
Maximum Working/Switching Voltage	1000/220 Volts @ < 100 mA (DC)
Contact Resistance	< 0.05 $\Omega$
Expected Relay Life	$10^8$ Operations
Insulation Resistance	> $10^{12}$ $\Omega$

\*Stability specifications based on using the shunt as a standard resistor

\*\* 0.1  $\Omega$  Power Coefficient < 1  $\mu\Omega/\Omega$

**Dimensions (L x W x H):**  
572 x 445 x 203 (mm)

**Weight:**  
9 kg

**Shipping Weight:**  
13 kg

**Mains Power:**  
85 to 264 V<sub>ac</sub> - 47 to 440 Hz

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