



4310 TEMPERATURE STABILIZED RESISTANCE STANDARD



Featuring

- ▶ 6 to 10 Decade Values
- ▶ Resistance Range 0.1 Ω to 100 M Ω
- ▶ Other Values Available
- ▶ Thermometry Values Available
- ▶ Four Terminal Connections
- ▶ < 2.5 ppm/Year Stability
- ▶ Temperature Coefficient < 0.005 ppm/°C
- ▶ Temperature Regulation \pm 0.01 °C Per Year

Feature	Benefit
10 Resistance Values	Covers most typical workloads
Temperature Controlled	Practically eliminates temperature coefficient
Custom Values Available	Any value that is needed can be installed
Compact	A set of resistors in a rack mountable case



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The model 4310 is a series of ten-element precision resistance standards. The model 4310 insures that you get the best performance on the market today. Combined with MI's experience in automated resistance measurements the 4310 is a temperature controlled, 10-element working resistance reference.

The ten-resistance elements cover the range from 0.1 Ω to 100 M Ω . The resistance elements are housed in a single temperature controlled chamber and feature excellent stability and extremely low temperature coefficients. Each resistance element is accessible from the back panel with four terminal binding posts, suitable for banana plugs, spade lugs or wires. Other resistor values other than the decade values shown above are also available.

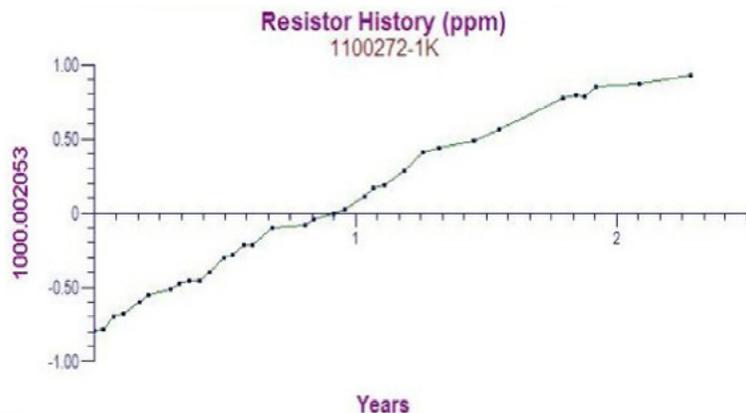


The resistor elements mounted in the chamber are the same elements that are used in the MI 9331 series of standard air resistors. The temperature coefficient of these resistors is reduced by controlling the temperature of the internal chamber to achieve its excellent long term stability.

The internal chamber of the 4310 is isolated from the case and can be grounded or guarded. The temperature of the chamber is monitored using a thermistor and bridge circuit. A variable gain potentiometer on the front panel can be adjusted to read the temperature shift.

The resistor elements are maintained at 30 °C, with an operating environment temperature range extending from 18 to 28 °C. Other chamber temperatures are also available.

The model 4310 can be used as a bench top or can be mounted in any standard 19-inch instrument rack. A typical drift graph of the 1 k Ω element is shown below. These graphs will vary from element to element.





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Specifications: Rev 9

Nominal Resistance (Ohms)	Nominal Resistance Tolerance (\pm ppm)	24 Hour Stability (\pm ppm)	12 Month Stability (\pm ppm)	Temperature Coefficient (\pm ppm/ $^{\circ}$ C)	Max. Voltage (Volts)
100 M	50	0.4	10	0.025	100
10 M	35	0.25	10	0.025	100
1 M	25	0.03	2.5	0.02	100
100 k	15	0.02	2.5	0.01	100
10 k	10	0.01	2.5	0.005	32
1 k	10	0.01	2.5	0.005	10
100	10	0.01	2.5	0.005	3.2
10	10	0.01	2.5	0.005	1.0
1	10	0.01	2.5	0.005	0.32
0.1	100	0.1	10	0.025	0.2
Temperature Stability			± 0.01 $^{\circ}$ C Over 1 Year Period		
Ambient Temperature Range			23 $^{\circ}$ C ± 5 $^{\circ}$ C		
Ambient Humidity Range			20 to 50 % RH		
Warranty			Standard 1 Year Parts & Labour		

Dimensions (L x W x H):
445 x 432 x 127 (mm)

Weight:
9 kg

Shipping Weight:
13 kg

Mains Power:
85 to 264 V_{ac}, 47 to 440 Hz

Corporate Headquarters
Measurements International
PO Box 2359, 118 Commerce Drive
Prescott, Ontario, Canada K0E 1T0
Phone: 613-925-5934
Fax: 613-925-1195
Email: sales@mintl.com
Toll Free: 1-800-324-4988

