Measurements International

A Metrology Company

Model 6242A

Automated
Resistance Bridge

0.01 to 100M Ohm Range
Accuracy to < 0.2 PPM
Maximum Ratio: 1.3:1
DC Current Comparator Technology

General Description:

The Model 6242A Automated Resistance Bridge is ideal for those laboratories involved in resistance and temperature measurements that do not require the accuracy level of a national laboratory. It is also designed as an automated, direct replacement for the ESI 242-resistance measurement system. The 6242A is based on the same Direct Current Comparator technology found in the bridge used by major laboratories to maintain their primary standards, the Model 6010B. Therefore, it has some of the same features that metrologists have come to expect in an MIL bridge, such as four terminal measurements over the complete range, automatic current reversal to eliminate thermal EMF's and a built-in self-calibration routine.

The 6242A features include a front panel display, standard IEEE488 interface and two input channels. The number of input channels can be increased to a maximum of 40 by adding two Model 4220A, 20-channel low thermal matrix scanners. A Model 4220-1 SR Series Hamon Adapter can also be added to form a complete "turn-key" system capable of automating calibrations for resistors and ESI SR1010 & SR1060 transfer standards. A precision DC Range Extender can also be added to further increase the measurement range of the bridge.

An optional, easy to use Windows® based software package is also available. It offers the features that metrologists expect such as the ability to perform automatic data acquisition, real time uncertainty analysis, graphing, history logging and regression analysis.

Advantages of current ratio measurement techniques over voltage ratio techniques can now be fully realized:

- Power is dissipated in the lower value resistor when performing ratio measurements of greater than 1:1
- Automatic direct inter-comparison of transformer windings for system self-verification.
- Thermometry applications to < 0.1 mK.
- Measurement results in less than 20 seconds from start-up.
- Automates ESI SR1010 & SR1060 calibrations w/ 4220-1 SR Series Hamon Adapter & 4220A Low Thermal Matrix Scanner. (Approx. 15 minutes per box)
- Cascading of Range Extenders for extending current capability to 2000 Amps.
- Up to 40 resistive elements can be measured automatically.
- Generation of unlimited data points for improved measurement analysis.

Model 6242A

Specifications:

Maximum Ratio	1.3:1
Resistance Range	Accuracy (ppm)
0.01 to 0.1 Ohms	< 5.0
0.1 to 10K Ohms	< 0.2
10K to 100K Ohms	<0.5
100K to 1M Ohms	< 1.0
1M to 10M Ohms	< 5.0
10M to 100M Ohms	< 10.0
100M to 1G Ohms	< 20.0
Linearity	±0.01 ppm
Input Channels	2 (expandable to 40), Tellurium Copper - Rear Panel
Test Current Range	20µ to 200m Amps FS
Current Resolution	16 bit
Extended Test Current Option	2 to 2000 Amps FS
Current Reversal	4 to 1000 Seconds
Time to Stated Accuracy (warm-up)	<1 Minute
Temperature Co-efficient	±0.01 ppm/°C
Resolution	± 0.001 ppm of full scale
Mode of Operation	Manual or Automatic (IEEE488)
Operating Environment	15 to 36°C, 10 to 80% RH
Operating Power (Selectable)	100, 120, 220, 240V - 50/60Hz
Warranty	1 Year Parts & Labor

Accessories:

4220A Low Thermal Matrix Scanner
6011B 100 Amp Range Extender
6012M 2000 Amp Range Extender
6242A Software for W95/98/NT
SPSCW XX YY 4
4220-1R Hamon Adapter
6100A 100 Amp DC Current Source
6013M 400 Amp Range Extender
1225 mm (48 inch) high Equipment Rack

Distributed By:

How to Order:

Model 6242A Automated Resistance Bridge

Data Subject to Change

Printed in Canada

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