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>145,523286 64486,22-2689 966 56-203 88849<
>368,688789 12437,23-2933 977 56-203 55549<

DATA SHEET

MODEL 6010C



Automated Resistance Thermometry Bridge

- **Binary Wound Direct Current Comparator**
- **Quantum Hall Applications – 13:1 Ratio**
- **DC Current Reversal**
- **100, 400 & 2,000 Amp Capability**
- **< 0.05 PPM Accuracy**
- **Automatic or Manual Operation**

MODEL INFORMATION

The Model 6010C is a fully automated resistance ratio bridge based on the Direct-Current-Comparator (DCC) principle. Using innovative technology, the Model 6010's speed and measurement accuracy accounts for its preferred status as the primary resistance measurement system in many national laboratories throughout the world. It is designed for flexibility and ease of use and is perfectly suited for stand-alone use or with Measurements International's Windows based Software with real time uncertainty analysis, history logging, and graphing and regression analysis.

Only after many years of research and development is it possible to elaborate on this remarkable instrument. Recognized as the worlds leading Automated Resistance/Thermometry Bridge, the Model 6010 is ideal for both resistance and temperature measurements. Automatic current reversal insures that dc offsets and thermals are cancelled out during the measurement. Self-calibration of the DCC can be

carried out at any time. The Model 6010C has two inputs for Rx and Rs. The number of inputs can be expanded to 40 when the 6010 is used in conjunction with Models 4210A and 4220A, ten and twenty channel, Low Thermal Four Terminal Matrix Scanners. Measurements and values can be performed automatically and with Measurements International's Model 6010SW, delayed or scheduled measurements can all be done at any time.

The range of the Model 6010C can be extended, when used in conjunction with the 6011B 100 Amp Range Extender and 6100A 100 Amp Power Supply to 100 $\mu\Omega$ (Model 6010C/100). The range can be extended further to 1 $\mu\Omega$ with the Model 6013M 400 Amp Range Extender (Model 6010C/400) and with the Model 6012M 2000 Amp Range extender (Model 6010C/2000).



The Model 6010C Current Comparator achieves a permanent linearity to 1 part in 10^8 with no need for frequent calibration. The instrument determines resistance by measuring the ratio of the unknown resistance to a known resistance standard. To achieve the remarkable accuracy, the range of the Model 6010 is limited from 0.01 ohms to 13,000 ohms at accuracy's to < 0.05 PPM.

As a stand-alone device, the Model 6010C will measure both ratio and absolute values. Menu driven functions are selectable using the front panel keys for calibration, ratio measurements and absolute measurements where the value and related uncertainty are entered in from the front panel keyboard. Measurement functions such as current through the unknown resistor and settle time, number of measurements and number of statistics are all that is required to make measurements. The large LCD display chosen for its low noise characteristics displays two measurements at a time. When the reading is complete the average value and uncertainty based on the number for statistics are displayed. All uncertainty calculations are 2 sigma calculations.

System Software:

The Measurements International's Model 6010SW controls all of the above automatically. The software features report generation, historical analysis and tracks and corrects for resistor drift rates. Combined with the Measurements International Model 9301JW Standard Resistor Oil Bath, alpha and beta calculations can be performed automatically on resistors under test. All data can be exported directly to Excel for various test patterns or mainframe applications. External atmospheric pressure, humidity and temperature indicators are optional and the entire system can be enclosed in a 4 or 6 ft. rack. Resistor baths (oil or air), instrument controllers, printers, system software, IEEE interface, installation and training are all available for complete system packages. See section on Model 6010SW for more details on the software.

System Requirements:

To run the MI Software (Model 6010SW) requires a computer, PIII or higher, with 128 MB of RAM, Windows 98 or newer and a National Instruments IEEE488 Interface Card (not included).

Measurements International's Model 6010SW was developed by metrologists for metrologists. The software features real time uncertainty analysis, graphing, history logging, and data storage with export to Excel and regression analysis. The Model 6010SW provides ultimate programmability and control for all your resistors and temperature calibrations, now and in the future.

Model 6010SW – Windows Operating Software:

System & Rack Menu

Resistor ID Menu

Program ID Menu

Measurement Menu

History Menu

Measurement Options



>366,666785 12437,22 200 977 56-203 88849
 >163,65546 67818,7 23987 911 56-203 88849
 >198,65546 65612,23 2829 95556 203 46549
 >152,698016 68818,28 2399 92356 203 85549
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 >124,634546 78672,23 7779 683 56-203 88349
 >458,11142 83417,73 2397 876 56-203 83339
 >145,523286 64486,22 2689 986 56-203 88849
 >368,688789 12437,23 2333 977 56-203 55549



Specifications:

Range	Accuracy (95%)
0.001 to 0.01 Ohm	< 5 PPM
0.01 to 0.1 Ohm	<0.5 PPM
0.1 to 1.0 Ohm	<0.1 PPM
1.0 to 10k Ohm	<0.05 PPM
Maximum Ratio	14:1
Resolution	.001 PPM
Linearity	< 0.01 PPM
Test Currents	10uA to 150mA
Automatic DC Current Reversal	4 to 1000 Seconds
Insulation Resistance	>10 ¹¹ , typically 10 ¹²
Operating Environment	15 to 35°C, 10 to 80% RH
Product Details	
Warranty	1 Year Parts & Labor
Dimensions	265 x 439 x 380 mm
Weight	19 kg
Shipping Weight	23 kg
Operating Power	100, 120, 220, 240V - 50/60 Hz

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