



Automated Potentiometer Binary Voltage Divider

- 20 Channel Scanner
- Best Accuracy <0.05 ppm at 10V Range
- Voltage Maintenance Programs
- Range of 1200 Volts
- Calibration of Fluke 5700A/5720A
- Linearity Calibration of DMM's
- Bipolar Voltage Measurements
- Self Calibration
- Traceability to 10V Zener Reference

MODEL 8000B/8001B



MODEL INFORMATION

The Model 8000B is a highly versatile, accurate, self-balancing instrument that meets laboratory requirements for scaling between 10-volt references or any voltage between 1 mV to 10 volts. Automatic self-calibration ensures ratios to nine significant digits with linearity deviations of less than 0.02 ppm. The Model 8000B has a 20 channel "built-in" scanner addressed individually via the Windows operating software for performing automatic measurements. Both hardware and software standard cell protection circuits are built in.

In order to address the increasing demand for automated calibration of DCV ranges of most precise Multifunction calibrators, as well as the linearity verification of the long scale DVM's, the option of fully automated bipolar measurement has been developed. This allows user to do measurement of +/- 10V range with 8000A and extend it to +/- 1200V when the 8001B extender is used.

Fully documented calibration of bipolar voltages at the output of the calibrator is traceable to laboratory's 10V reference standard. Determining the 8000B correction factors and Standardizing the source at both polarities gives additional confidence on calibration results.

The Model 8000B's range can be extended to 1200 volts with Measurements International's precision divider extender (Model 8001B). Latest development HW and SW features of 8000B allows fully automated bipolar measurements without manual intervention. This, in combination with model 8001B extender, brings full automation of DCV ranges calibration and linearity verification of multifunction calibrators and long scale DVM's at range up to +/- 1200V.

The 4220A has 20 four terminal tellurium copper binding posts and 2 outputs consisting of 8 tellurium copper binding posts. The Model 4220B has 20 four-conductor Teflon cable inputs with 2 four-conductor Teflon cable outputs. The 4220A is also available in a 30 amp model to handle currents up to 30A (model 4220A/30).



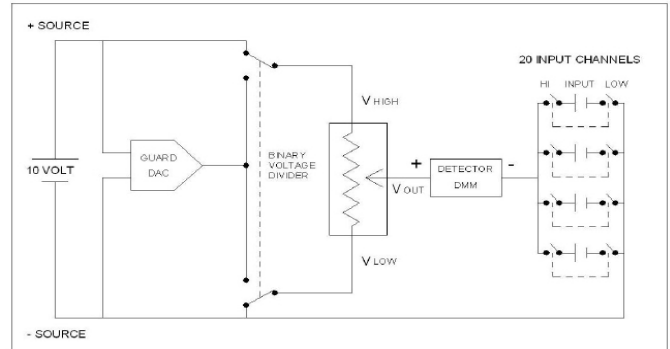
MODEL INFORMATION 8000B/8001B

Operation:

The principle of the 8000B Automatic Potentiometer is based on the Binary Voltage Divider (BVD). The BVD requires two voltage references and a DMM detector.

The first reference or source is a low drift, stable, noise free 10-Volt Source which is connected to the rear on the 8000B-source input. The most important thing about the source is its stability. The reference to the BVD is supplied from a calibrated stable voltage reference, MI Model 1000A or Fluke Model 732A or B. The source and 8000B are standardized against the calibrated reference for making absolute voltage measurements.

The DMM detector with an input impedance of 10G or higher is then used to measure the difference between the output of the BVD and the voltage under test. An isolated guard circuit is provided to guard the BVD and the DMM detector when performing measurements.



8000B Block Diagram

The guard voltage can also be used to drive the guards of the cell enclosures under test to reduce leakage problems.

8000B Ratio Verification (RVB)

The Model 8000B ratio can be calibrated directly against the 10V Josephson Array or the ratio can be verified by measuring the normal and inverse ratio of two stable resistors using the 8000B Ratio Verification Box.



The RVB contains a low thermal reversing switch and wiring so that the 8000B can be calibrated within its linearity specification. The program is built into the software, and all measurements and data are stored to the measurement file. The software also performs the calculations of the ratio of the two resistors and the error of the bridge. Only the short term

stability of the resistors is important.

Model 8001B 1200 Volt Range Extender

The model 8001B Range Extender extends the measurement range of the model 8000A Potentiometer to 1200 volts. All voltages are calibrated directly against the 10V reference on the 8000B. The 8001B includes ranges of 10, 30, 120, 300 and 1200 volts.

The 8001B maintains excellent short term drift and is self-calibrating using the 8000B Potentiometer and a stable 10-volt reference. The 8000B and 8001B combination can be used to calibrate and verify the linearity of both calibrators and DMM's up to 1200V.





MODEL INFORMATION 8000B/8001B

System Software:

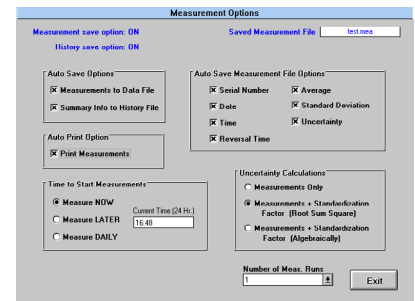
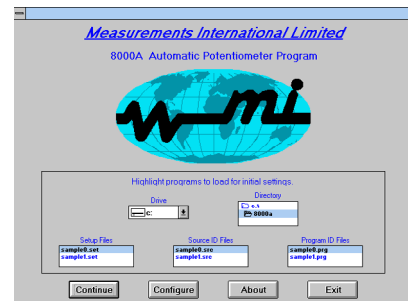
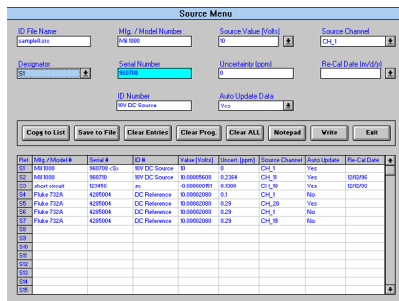
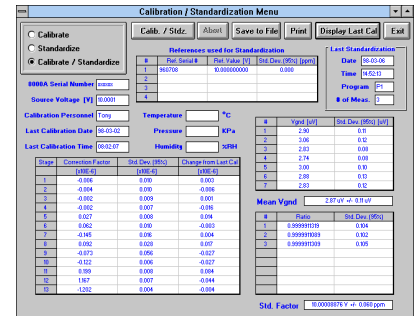
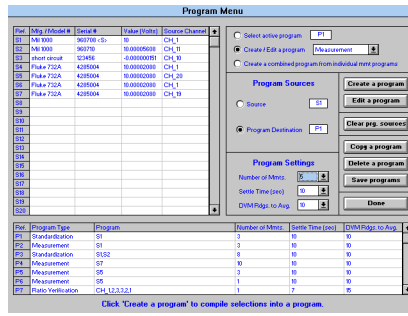
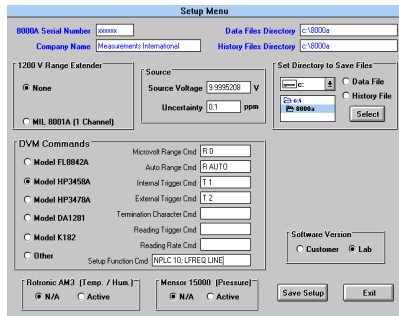
Measurements International's Model 8000SW was developed by metrologists for metrologists. The software features "real-time" uncertainty analysis and graphing of measurement data and corrects for drift rates. Upon completion, measurement results can be saved for historical and regression analysis, report generation and can be exported to spreadsheet format.

Combined with the Measurements International Model 8001B Extender, automatic voltage measurements can be performed to 1200 Volts. Graphing, history logging, and data storage with export to Excel and regression analysis.

The software includes drivers for Fluke 5700 and 5720 calibrators so that the DC voltage portion can be calibrated automatically. Drivers for other calibrators or DMM's can also be created. All data can be exported directly to Excel for various test patterns or mainframe applications.

System Requirements:

To run the MI Software (Model 8000SW) requires a computer running Windows 7 or later and USB to IEEE488 Interface (not included). Graphing, history logging, and data storage with export to Excel and regression analysis





MODEL 8000B/8001B Automated Potentiometer Binary Voltage Divider

Specifications: Rev 3

Automatic Self Calibration	Completely Self Checking
Range: 8000B (8001B)	100nV to 10 Volts DC (10V to 1200V)
Best Measurement Uncertainty <small>*Stated at the 10V Range</small>	0.05 ppm of Reading (<2 ppm with range extender)
Insulation Resistance	$10^{11} \Omega$
Effective Linearity	<0.02 ppm of Full Scale
Long Term Drift	N/A - Corrected by Self Calibration
Short Term Drift	Dependant on drift of source
Input Impedance	40 k Ω
Output Impedance (8001B)	1.2 M Ω Maximum
Operating Environment	18 to 34°C, 10 to 80% RH
Warranty	1 Year Parts & Labor

Dimensions: (L x W x H)
Provide with Quote

Weight:
Provide with Quote

Shipping Weight:
Provide with Quote

Main Power:
100, 240 V - 50/60 Hz

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