



Model 2100A Power Calibration System 240 Volt - 5 Amp

*Menu Driven Software
Watt Hour & Energy Meter Calibration
Uncertainty to <20 PPM
All Power Factors*

General Description:

The Model 2100A is designed to generate voltages up to 240V and currents to 5A at any power factor from zero lag through unity, to zero lead. Completely automated, the 2100A is ideal for calibrating wattmeters, energy meters, watt hour meters, watt transducers and VA measurements to <20 ppm.

Traceability is provided through a built in standard resistor (12 k ohms) for in-phase measurements and a standard capacitor (0.22 uf for 60 Hz) for quadrature measurements. The system is also capable of calibrating it's own resistance standard directly against an external standard. A controller and software are used to control the units together using an IEEE488 interface. The system is supplied in a 1.8 meter equipment rack on castors for mobility. The rack is equipped with a pull out tray for placing the unit under test (UUT). All connections to the UUT are made from the front panel of the system. Up to 3 wattmeters can be calibrated at a time.

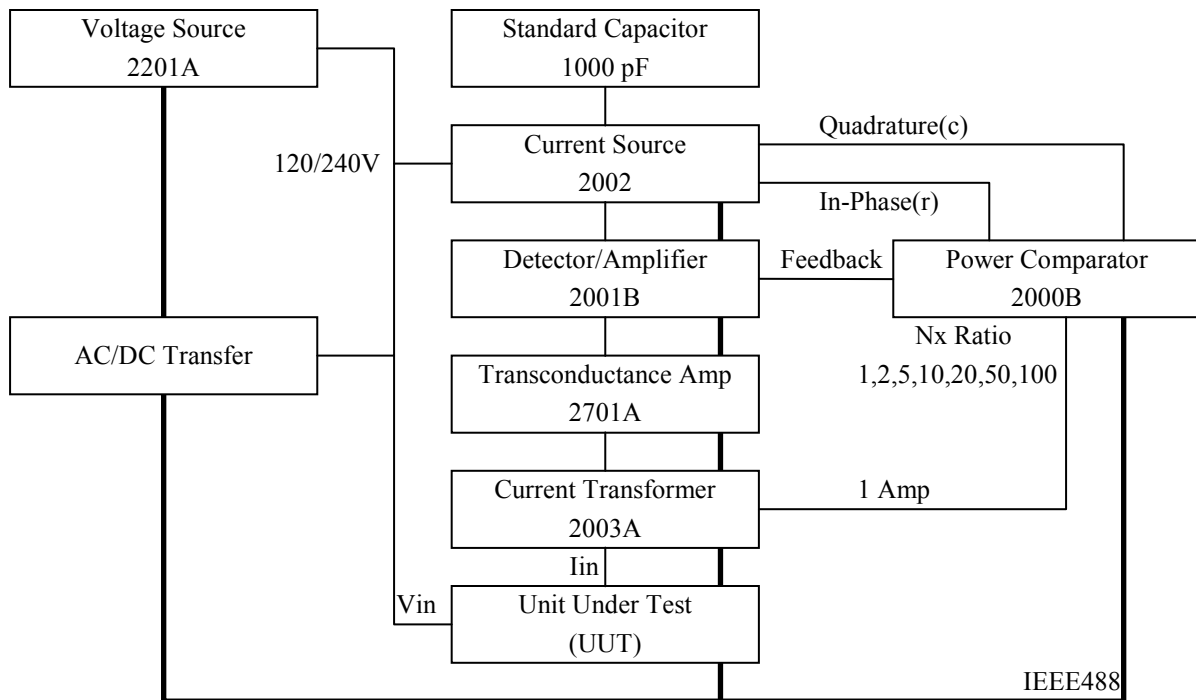
The system is comprised of a Power Comparator (2000B), a 10mA in phase Quadrature Current Source (2002), Transconductance Amplifier (2701A), an Auto Ranging Current Transformer (2003A), a Detector Amplifier (2001B) and a AC Voltage Source (2201A). A commercially available AC/DC Transfer Standard is required to measure the AC voltage. Several wattmeter's, DVM's and AC/DC Transfer Standards have drivers built into the system software. The source code maybe purchased allowing other measurement devices to be added at anytime.

Model 2100A

The 2100A Reference Power Calibration System is fully automated and programmable primary standard for AC power measurements. It can be used for calibrating both active and reactive power and energy meters under sinusoidal conditions. Traceability for the measurements is provided by a standard resistor and standard capacitor internal to the 2002 current source and the AC/DC Transfer Standard. The resistor and capacitor are supplied with a calibration report.

The system, using model 2000B AC Comparator and 2001B Detector, is capable of calibrating the standard resistor against external standards to better than 3 ppm uncertainty. The model 7050, 12K Ohm AC Standard Resistor, may be sent out for calibration periodically.

Software menus allow for changing voltages, currents, power factors and number of readings easily. The MEAN, SIGMA, STD. DEVIATION and VARIANCE are calculated and displayed on the calibration report.



In the 2100A system, the AC/DC Transfer Standard must be capable of measuring both 120V and 240V. Accuracy of the system is based on the uncertainty of the resistor, capacitor and AC/DC transfer standard. The resistor and capacitor in the 2002 are supplied with an NRCC calibration report. Calibration of the resistor and capacitor are performed at the test voltages of the system; 120 and 240 volts, 50 or 60 Hz.



Model 2100A

Model 2100 Power Reference System Software Main Menu

MEASUREMENTS INTERNATIONAL PRESCOTT, ONTARIO, CANADA		
SELF-BALANCING POWER & ENERGY CALIBRATION SYSTEM		
POWER CALIBRATION	<E> - ENERGY	<P> - POWER
Actual Parameters	<F1=Start Balancing>	Ready For Balancing
AC Voltage - <F2=Change> 100.0000 Vrms +/- 2.00ppm	<F12=No of Measurements> 5	Reference Capacitor 1000.0000pF +/- 2.0 ppm
Current/Power Fact. Pairs Entered: 1 <F3=Change>	<F11=Set Readings To Mean> 5	Reference Resistor 11.999436KΩ +/- 2.1 ppm
Wattmeter: none Voltmeter: not used	<F7=Choose Wattmeter> <F10=Printer On/Off>	<Ctrl+F5=New Value of C> <Ctrl+F6=New Value of R>
<F4=Set Waiting Time> 4 sec	Frequency 50 Hz +/- 2.0 ppm	<F8=Exit To DOS>

SELF-BALANCING POWER & ENERGY REFERENCE CALIBRATION SYSTEM CALIBRATION REPORT

Wattmeter Under Test: MIL 2010A Serial Number: 950701
 Voltmeter: not used
 Time 09:15:22 Date: 06-11-1997

WATTMETER RANGE
 Voltage [V]..... 120
 Current [mA].... 1000
 SI UNITS.....WATTS

TEST CONDITIONS
 Voltage [V].....120 +/- 1.00 ppm
 Current[mA].....1000 mA
 Power Factor... 1

MIL Watts	MIL Uncertainty	Test Watts	Test Uncertainty	Test Error
+120.0000	+4.73	+120.0005	+5.49	+4.35
+120.0000	+4.73	+120.0003	+5.37	+2.29
+120.0000	+4.73	+120.0004	+5.28	+3.43
+120.0000	+4.73	+120.0004	+5.68	+3.23
+120.0000	+4.73	+120.0006	+5.25	+5.24
+120.0000	+4.73	+120.0004	+6.02	+3.67
+120.0000	+4.73	+120.0005	+5.57	+4.20
+120.0000	+4.73	+120.0003	+6.10	+2.86
+120.0000	+4.73	+120.0007	+5.23	+5.44
+120.0000	+4.73	+120.0007	+5.32	+5.93

Test Meter =====	
MEAN.....	+4.06
SIGMA.....	+0.38
STD.DEVIATION.....	+1.19
VARIANCE.....	+1.41

Data Subject to Change

Printed in Canada



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Model 2100A

Specifications:

Output Voltage	120/240 Volts Maximum
Voltage Accuracy	10 PPM
Output Current	5 Amps Maximum
Current Accuracy	10 PPM
Test Frequency	50 and 60 Hz
Current Ratios	1, 2, 5, 10, 20, 50, 100, 250, 500
Power Factor	-0 to 1 to +0 (All)
Power Accuracy	20 PPM Magnitude 20 PPM Quadrature
Operating Environment	18 to 34°C, 10 to 80% RH
Warranty	1 Year Parts & Labor

Dimensions:

1.8 Meter Rack
484 mm Width

Weight:

300 kg

Shipping Weight:

350 kg

Accessories:

7050 AC Resistor
5790 AC/DC Transfer Standard

Operating Power:

100, 120, 220, 240Volts - 50/60 Hz

Distributed By:

How to Order:

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