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TODAY'S STANDARD FOR POWER AND ENERGY CALIBRATION

ROTEK[®]



ROTEK POWER ENERGY

model **MSB100**
POWER ENERGY STANDARD

ANALOG OUTPUT
200V ~ MAX

DIGITAL I/O

VOLTAGE INPUT
700V ~ MAX

CURRENT INPUT
50A ~ MAX

THE ROTEK MODEL MSB100

is a primary watt and watthour standard that performs at a new level of power and energy measurement accuracy. It provides reliable, accurate traceability to N.I.S.T. or other national standards worldwide. Versatile measurement ranges and unparalleled accuracy allow the MSB100 to be the single instrument necessary to calibrate any watt/watthour measurement instrument available today.

The sophisticated power measurement technology used by the Model MSB100 allows measurement accuracies that are unsurpassed by any instrument in its class. This exceptional performance is maintained regardless of phase angle, greatly improving power measurements at near zero power factor.

Five current input ranges are provided from 50mA to 5A. Four voltage input ranges are provided from 120 to 640VAC. Optional current ranges of 10, 50 and 200A greatly extend the functionality of this instrument.

Power measurements are displayed on the large easy-to-read LCD graphic display. For added flexibility, an analog output is also provided on the front panel. This 10VDC signal is directly proportional to the applied power.

The MSB100 is ideally suited for use as a primary watthour reference meter. Energy measurements are indicated on the front panel graphic display. In addition, watthour measurements are available from the digital I/O connector on the front panel as a 5V digital output.

The Model MSB100's digital I/O connector may also be used as a pulse input. Watthour meters equipped with a pulse output may be connected directly to the Model MSB100 and compared automatically using the built in comparator. No additional test equipment, computers or complicated test setups are required.

The Model MSB100 has a single set of voltage input connectors and a single set of current input connectors. Range selection is accomplished using the simple, intuitive front panel controls. Ranging and all other front panel functions may be implemented remotely using the standard IEEE-488 or RS-232 interfaces. These uncomplicated connections combined with a comprehensive remote interface make the MSB100 ideal for systems use and other automated testing applications.

In addition to the measured power or energy the comprehensive front panel display includes information on range status, internal temperature and configuration menus. The MSB100 monitors the signals at voltage and current input terminals displaying the voltage amplitude, current amplitude, phase angle and frequency.

The measurement accuracy of the Model MSB100 is maintained by two internal precision DC voltage references that are available at the front panel. Periodic monitoring of these reference voltages will provide the user with total confidence throughout the calibration cycle.

The Model MSB100 is designed to work seamlessly with the Rotek Model 8000 Power and Energy Calibrator to provide an integrated solution for the support and calibration of a wide range of watt and watthour meters.

The Model MSB100, used in conjunction with an AC voltage standard, is the only test equipment required to calibrate and certify the Rotek Model 8000. Rotek's 8Cal calibration software controls the MSB100 and makes all adjustments to the Model 8000 automatically.



*0.005% Power Accuracy
0.010% Energy Accuracy
Voltage Inputs to 640V
Current Inputs to 200A
Frequencies from 40 – 400Hz
Traceable to N.I.S.T.*

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MODEL MSB100 SPECIFICATIONS

All accuracy specifications are obtained within 60 minutes after turn-on, at a temperature of $\pm 1^{\circ}\text{C}$ from Calibration Temperature, at a line frequency of 45 to 70Hz and a nominal line voltage $\pm 15\%$. Accuracy specifications are maintained for a period of not less than 1 year. All specifications describe maximum limits unless stated otherwise and are subject to change without notice.

RANGES OF OPERATION

Voltage Ranges: 120V, 240V, 480V and 640V

Current Ranges: 50mA, 100mA, 500mA, 1A, 5A
10A, 50A, 200A (optional)

Frequency Range: 45 – 65Hz
400Hz (optional)

RESOLUTION

Display: 7 digits and better than 0.0001% of full scale

Pulse Output: 10 μ Whr/Pulse

OUTPUT

Analog: 10VDC at Full Scale VA and unity power factor

Digital: 5V CMOS output

READING RATE

Maximum 10 readings/second

SHORT TERM STABILITY

Better than 0.0005% per day non-accumulating

ACCURACY

Power Accuracy: \pm (% of rated power at full scale voltage and current)

Voltage Range	Current Range	Power Accuracy	Energy Accuracy
120V, 240V	0.05A, 0.1A	0.010%	0.015%
	0.5A, 1A, 5A	0.005%	0.010%
	10A, 50A	0.010%	0.015%
	200A	0.025%	0.030%
480V, 640V	0.05A, 0.1A	0.015%	0.020%
	0.5A, 1A, 5A	0.010%	0.015%
	10A, 50A	0.020%	0.025%
	200A	0.040%	0.045%

DISPLAY PARAMETERS

Watt/Watthour Reading

Voltage Range

Current Range

Internal Temperature

Input Frequency

Input Voltage (optional)

Input Current (optional)

Input Phase Angle (optional)

DIGITAL FILTERS

Mean

Noise Reject

Low Pass

REMOTE INTERFACES

IEEE-488

RS-232

10BASE-T Ethernet (optional)

GENERAL

Power:	50 Watts at Nominal Line Voltage
Line Voltage:	100 – 138V, 204 – 276V
Line Frequency:	45 – 70Hz
Width:	430mm (17")
Height:	140mm (5.5")
Length:	537mm (19")
Weight:	6.3Kg (14lbs)
	8.2kg (18lbs.) w/option 50A
	8.6kg (19lbs.) w/option 200A
	10.5kg (23lbs.) w/option 50A and 200A

OPTIONS AND ACCESSORIES

MSB100-RM	Rack Mount Hardware
MSB100-50A	10A/50A Current Ranges
MSB100-RPIC	Rear Panel Input Connectors
MSB100-200A	200A Current Range
MSB100-ETH	10BASE-T Ethernet Interface, TCP/IP Protocol
MSB100-CASE	Transit Case
MSB100-LS/50	50A Lead Set
LS/200	200A Lead Set
LS/LC	Low Current Lead Set
LS/V	Voltage Lead Set

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