

TODAY'S STANDARD FOR POWER AND ENERGY CALIBRATION

**ROTEK**

model **8000**  
CALIBRATION ENERGY CALIBRATOR

120.000 V  
5.00000 A  
600.000 W

60.00 Hz  
0.000°

8000  
Power  
Voltage  
Current  
Power  
Energy  
Power  
Energy

**CAUTION**  
750V AC

SENSE OUTPUT

LO S

CURRENT INPUT

ON/OFF

Volt

Current

Power

ROTEK

**THE ROTEK MODEL 8000**  
*is a precision source of AC voltage, current and phase angle used in the calibration and test of a wide range of electrical metering instrumentation including watt, var, watthour, volt, amp and phase angle meters and transducers. It has been designed to be nothing less than the ultimate power calibration standard in both accuracy and flexibility. This single instrument replaces the complicated combinations of individual voltage sources, current sources and phase angle meters otherwise required to calibrate power and energy meters. The Model 8000's wide range of outputs and traceability to N.I.S.T. make it the ideal instrument to meet the calibration requirements of ISO 9000.*

A unique, menu-driven front panel and simple, intuitive controls make the Model 8000 extremely easy to use. Output settings and menus are displayed on two, large, easy-to-read LCD graphic displays. The power setting may be expressed in Volt-Amperes, Watts, or VARs. Similarly, the phase angle setting may be expressed in Power Factor, Degrees or Radians. Such flexibility allows the Model 8000 to be configured to meet the specific requirements of any user.

The Model 8000 makes use of sophisticated high-speed Digital Signal Processing (DSP) technology to generate extremely accurate

outputs for a wide range of real world loads. The internal circuits of the Model 8000 monitor and verify the accuracy of the voltage and current outputs simultaneously, at more than 10,000 times per second. Its high-power output amplifiers provide levels of burden and compliance required to drive even the most difficult loads.

The deviation function of the Model 8000 may be set to indicate meter errors in any of the output parameters including voltage, current, power, phase angle or frequency. Deviation units may be expressed as a percentage, in parts per million, or in the units of the selected output parameter.

Transducer calibration is simplified using the Model 8000's optional, built-in 4 1/2 digit multimeter. This meter may be used to monitor transducer outputs from 0 to 25mA, 0 to 1000V and frequency to 100kHz, eliminating the need for an external meter.

The Model 8000 facilitates the test and calibration of energy meters by delivering precise, user-defined quantities of energy. The Model 8000 is also able to accept up to six independent pulse inputs for testing energy meters equipped with this type of output. In this pulse-counting mode, the Model 8000 is able to test multiple meters simultaneously and accept an external energy standard for transportable traceability.

All aspects of the Model 8000 may be controlled remotely using the standard IEEE-488.2 compatible interface. The remote command set adheres to the protocol defined by the Standard Commands for Programmable Instrumentation (SCPI).

The optional Three Phase Power Extender enables the Model 8000 to calibrate three phase power and energy meters. This option may be installed in the field and connects to the Model 8000 by a single cable. Output settings of all three phases are controlled by the Model 8000 front panel.

The Model 8000 is entirely software-calibrated and requires no internal adjustments during the calibration process. All adjustments are made through the front panel controls or the IEEE-488 interface. The Model 8000 has been designed to require a minimum amount of test equipment further simplifying the adjustment process and making on-site calibration possible.

Unequaled performance, simplicity of operation, and flexible system configuration make the Model 8000 today's standard for power and energy calibration.

*100ppm Power Accuracy  
Voltages to 700V  
Currents to 200A  
Phase Angle from -180° to +180°  
Frequency from 25 to 1000Hz  
No internal adjustments  
Accuracy traceable to N.I.S.T.*



**ROTEK®**

## MODEL 8000 SPECIFICATIONS

All accuracy specifications are obtained within 60 minutes after turn-on, at a temperature of 23°C ±5°C, a line frequency of 50Hz to 60Hz, and a nominal line voltage ±10% including loading and compliance except as otherwise specified. Accuracy specifications are maintained for a period of not less than 6 months. All specifications describe maximum limits unless stated otherwise and are subject to change without notice.

### VOLTAGE

**Setting Range:** 1 - 700 Volts  
**Setting Resolution:** 6 digits  
**Settling Time:** < 1 second  
**Stability, 24hr:** 0.001%

### ACCURACY

Setting	Uncertainty ±(% of Setting + mV)
1 - 109V	0.020% + 1.0mV
110 - 130V	0.012% + 1.0mV
131 - 219V	0.020% + 1.0mV
220 - 250V	0.012% + 1.0mV
251 - 700V	0.020% + 1.0mV

### LOADING

Setting	Current
1 - 140V	300mA
141 - 280V	150mA
281 - 560V	75mA
561 - 700V	60mA

### FREQUENCY

**Setting Range:** 25 - 1000Hz  
**Setting Resolution:** 4 digits  
**Settling Time:** < 2 seconds  
**Stability:** 0.010%

### ACCURACY

Frequency	Uncertainty ±(% of Setting)
25.00 - 100.0Hz	±0.005%
100.1 - 400.0Hz	±0.015%
400.1 - 500.0Hz	±0.025%
500.1 - 1000Hz	±0.100%

### CURRENT

**Setting Range:** 0.001 - 10A  
 0.001 - 25A (Optional)  
 0.001 - 50A (Optional)  
 0.001 - 200A (Optional)

**Setting Resolution:** 6 digits  
**Settling Time:** < 1 second  
**Stability, 24hr:** 0.002%

### ACCURACY

Setting	Uncertainty ±(% of Setting + nA)
0.001 - 0.5A	0.030% + 25nA
0.51 - 5.0A	0.015% + 25nA
5.1 - 10.0A	0.025% + 25nA

### LOADING

Setting	Voltage
0.001 - 10A	4.0V

### PHASE ANGLE

**Setting Range:** ±180°  
**Setting Resolution:** 4 digits  
**Units:** Degrees, Radians  
 or Power Factor  
**Settling Time:** < 2 seconds

### POWER

**Setting Range:** 0.001 - 7000W  
 0.001 - 17500W (Optional)  
 0.001 - 35000W (Optional)  
 0.001 - 140000W (Optional)

**Setting Resolution:** 6 digits  
**Units:** W, VA, VAR  
**Settling Time:** < 1 second  
**Stability, 24hr:** 0.0025%

### ACCURACY

Voltage	Current	Uncertainty ±(% of VA Setting + mW)
110 - 130V*	0.5 - 5.0A	0.010% + 3.5mW
70 - 140V	0.001 - 0.1A	0.100% + 3.5mW
	0.11 - 1.0A	0.030% + 3.5mW
	1.1 - 10.0A	0.025% + 3.5mW
220 - 250V*	0.5 - 5.0A	0.010% + 7.0mW
	140 - 280V	0.001 - 0.1A
0.11 - 1.0A		0.030% + 7.0mW
1.1 - 10.0A		0.025% + 7.0mW

\* Enhanced Accuracy Mode

### GENERAL

**Power:** 520 Watts at Nominal Line Voltage  
**Line Voltage:** 90 - 132V, 175 - 264V  
**Line Frequency:** 50 - 60Hz  
**Width:** 442mm (17 3/8")  
**Height:** 267mm (10 1/2")  
**Depth:** 537mm (21 1/8")  
**Weight:** 31.8Kg (70lbs)

### OPTIONS AND ACCESSORIES

8000-25A 25 Ampere Current Extension  
 8000-50A 50 Ampere Current Extension  
 8000-200A 200 Ampere Current Extension  
 8000-3P Three Phase Power Extender  
 8000-DMM Internal 4 1/2 Digit DMM  
 8000-CTRO Energy Pulse Counter  
 8000-CTRn Additional Pulse Counter Channels, 5 Maximum  
 8000-RPO Rear Panel Voltage and Current Output Terminals  
 8000-OPT Optical Disk Rotation Detector  
 8000-RM Rack Mount Handles  
 8000-PFC Line Power-Factor Correction

**ROTEK**®

**Rotek Instrument Corp.**

390 Main Street  
 P.O. Box 504  
 Waltham, MA 02254-0504 USA  
 Tel: 617-899-4611 Fax: 617-894-7273  
 e-mail: sales@rotek.com