

Model 347

DC-Stable Electrostatic Voltmeter



The Trek Model 347 is a precision electrostatic voltmeter for making noncontacting surface voltage measurements in the range of 0 to ± 3 kV DC or peak AC.

Industrial applications include surface voltage measurements of photoconductors or dielectric surfaces, charge monitoring in semiconductor production, and measuring electrostatic potentials on film, polymers, and paper.

The Model 347 employs a field-nulling technique for noncontacting voltage measurement that achieves DC stability and high accuracy even if the probe-to-surface spacing changes. This permits the measuring of either stationary or moving surfaces without the need to establish fixed spacing to maintain accuracy.

The Model 347 patented probe design, when compared to other probe designs, significantly improves noise and drift performance in the presence of contaminating particulates or under conditions of high humidity and wide temperature ranges.

The Digital Enable feature provides a connection for a remote device to turn on and off the internal high-voltage power supply. This makes the Model 347 suited for automated or computer-controlled systems.

A precision voltage monitor provides a low-voltage replica of the measured electrostatic potential for monitoring purposes, or for use as a feedback signal in a closed-loop system.

The Model 347 can be operated on a bench top or, with optional hardware, in a standard 19-inch rack.

- Measurement Range 0 to ± 3 kV DC or Peak AC
- Accuracy Better Than 0.05% of Full Scale
- Speed of Response Less Than 3 ms for a 1 kV Step
- Superb Noise and Drift Performance
- Variety of Probes available for different installation requirements
- Precision Voltage Monitor Output
- Digital Enable allows an external device to turn on and off the internal power supply
- Easy-to-Read LED Display
- CE Compliant



Measurement and Power Solutions™

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Model 347 Specifications

All specifications are with a 6000B-8 probe at a probe-to-surface separation of 2 mm.

Performance

Measurement Range

0 to ± 3 kV DC or peak AC.

Measurement Accuracy

Voltage Monitor

Better than $\pm 0.05\%$ of full scale.

Voltage Display

Better than $\pm 0.1\%$ of full scale, referred to the voltage monitor.

Speed of Response (10% to 90%)

Less than 3 ms for a 1 kV step.

Stability

Drift with Time

Less than 100 ppm/hour, noncumulative.

Drift with Temperature

Less than 100 ppm/ $^{\circ}$ C.

General

Line Voltage

Factory set for one of two ranges:
90 to 127 V AC or 180 to 250 V AC,
at 48 to 63 Hz (specify when ordering).

Operating Conditions

Temperature

0 $^{\circ}$ C to 40 $^{\circ}$ C.

Relative Humidity

To 90%, noncondensing.

Probe-to-Surface Separation

2 mm \pm 1 mm (recommended).

Features

Zero Control

A multitrans control to produce zero volts output when the probe is coupled to a known zero volt surface.

Response Control

A ten-position, push-button switch that adjusts the gain of the 347 to optimize the AC response. The response control is normally adjusted when changing the type of probe being used or when changing the probe-to-surface separation.

Voltage Monitor Output

A buffered output providing a low-voltage replica of the measured voltage.

Scale Factor

1/100th of the measured voltage.
(Other scale factors available.)

Output Noise

Less than 2 mV rms (measured with the true rms feature of the Hewlett Packard Model 34401A digital multimeter).

Output Impedance

Less than 0.1 Ω .

Voltage Display

3 $\frac{3}{4}$ digit LED display.

Resolution

1 V.

Zero Offset

± 1 count.

Sampling Rate

2.5 readings per second.

Features (cont.)

Digital Enable

An open collector, TTL compatible input to turn on and off the internal high-voltage power supply. A TTL high (or open) will turn off the high voltage. A TTL low will turn on the high voltage.

Mechanical

Dimensions

108 mm H x 223 mm W x 357 mm D
(4.25" H x 8.75" W x 14" D).

Weight

3 kg (6.6 lb).

Voltage Monitor Output Connector

BNC connector.

Digital Enable Connector

BNC connector.

Ground Receptacle

Banana jack.

AC Line Cord Receptacle

Standard three-prong line cord receptacle with an integral power switch and fuse holder.

Certification

TREK, INC. certifies that each Model 347 is tested and calibrated to specifications using measurement equipment traceable to the National Institute of Standards and Technology or traceable to consensus standards.

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All specifications are subject to change.

Model 347 Ordering Information

Model 347

Item	Part No.
± 3 kV Electrostatic Voltmeter (90 to 127 V AC).....	347-3-L
± 3 kV Electrostatic Voltmeter (180 to 250 V AC).....	347-3-H

Accessories

Item	Part No.
Supplied	
Operator's Manual.....	23106
Line Cord (90 to 127 V AC).....	N5002
Optional	
Full-Rack Mounting Kit (holds one unit).....	603RA
Full-Rack Mounting Kit (holds two units).....	603RA-2
$\frac{1}{2}$ Rack Mounting Kit.....	604RA

Probes

Item	Part No.
Standard Resolution	
End-viewing, round body.....	6000B-7C
Side-viewing, round body.....	6000B-8
End-viewing, square body.....	6000B-15C
Side-viewing, square body.....	6000B-16
High Resolution	
End-viewing, round body.....	6000B-5C
Side-viewing, round body.....	6000B-6
End-viewing, square body.....	6000B-13C
Side-viewing, square body.....	6000B-14
Miniature	
End-viewing, square body.....	555P-4
Side-viewing, square body.....	555P-1
High Temperature (up to 100 $^{\circ}$C)	
End-viewing, square body.....	6300-7
Side-viewing, square body.....	6300-8



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