Trek Model 347

DC-Stable Electrostatic Voltmeter

This non-contacting electrostatic voltmeter provides precision and value for surface voltage measurements in the range of ±3 kV DC or peak AC. Model 347 utilizes a field-nulling technique for non-contacting voltage measurement that achieves DC stability and high accuracy, with no need for fixed probe-to-surface spacing. This permits the accurate measuring of stationary or moving surfaces. Patented probe design enhances noise and drift performance in the presence of contaminating particulate or under conditions of high humidity and/or wide temperature ranges.

Key Specifications

- Measurement Range: 0 to ±3 kV DC or peak AC
- Measurement Accuracy: Better than 0.05% of full scale (monitor)
- Speed of Response: Less than 3 ms for a 1 kV step (10% to 90%)

Typical Applications Include

- Surface voltage measurements of photoconductors or dielectric surfaces
- Charge monitoring in semiconductor production
- Measuring of electrostatic potentials on film, polymers, and paper

Features and Benefits

- Superb noise and drift performance
- Precision voltage monitor output
- 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
- Digital Enable allows an external device to turn the internal HV power supply on/off
- Well-suited for automated or computer-controlled systems
- Easy-to-read LED display
- Large selection of optional probes offer versatility (order separately)
- Can be operated on a bench top, or with optional hardware, in a standard 19-inch rack
- NIST-traceable Certificate of Calibration provided with each unit
- CE compliant

Available Probes

Standard Resolution

PN 6000B-7C:	End-viewing, round body
PN 6000B-8:	Side-viewing, round body
PN 6000B-15C:	End-viewing, square body
PN 6000B-16:	Side viewing, square body

Miniature

PN 555P-4:	End-viewing, square body
PN 555P-1:	Side-viewing, square body

High Resolution

PN 6000B-5C:	End-viewing, round body
PN 6000B-6:	Side-viewing, round body
PN 6000B-13C:	End-viewing, square body
PN 6000B-14:	Side-viewing, square body

High Temperature (up to 100°C)

PN 6300-7:	End-viewing, square body
PN 6300-8:	Side-viewing, square body

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Model 347 Specifications

Performance

Measurement Range	0 to ±3 kV DC or peak AC
Measurement Accuracy	
Voltage Monitor Output	Better than ±0.05%
Voltage Display	Better than ±0.1% of full scale, referred to the voltage monitor
Speed of Response (10% to 90%)	Less than 3 ms for 1 kV step
Stability	
Drift with Time	Less than 100 ppm/hour, noncumulative
Drift with Temperature	Less than 100 ppm/˚C

Voltage Monitor

Output	A buffered output provides a low-voltage replica of the measured voltage
Ratio	1/100th of the measured voltage (Other scale factors available)
Output Noise	Less than 2 mV rms*
Output Impedance	Less than 0.1 Ω

Front Panel Meter

Voltage Display	3 ¾ digit LED display
Range	0 to ±3 kV
Resolution	1 V
Zero Offset	±1 count
Sampling Rate	2.5 readings per second

Features

Zero Control	A multi-turn control to produce zero volts output when the probe is coupled to a known zero volt surface
Automatic Gain 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.
Digital Enable	An open collector, TTL compatible input to turn on and off the internal high-voltage power supply. A TTL high will turn off the high voltage. A TTL low will turn on the high voltage.

*Measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter

Mechanical

Dimensions	108 mm H x 233 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
Probe to Surface Separation	2 mm, ±1 mm (recommended)

Operating Conditions

Temperature	0°C to 40°C (32°F to 104°F)
Relative Humidity	To 90%, noncondensing
Altitude	To 2000 m (6561.68 ft.)

Electrical

AC Line Cord Receptacle	Standard 3-prong with integral power switch and fuse holder
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
Power Consumption	50 VA, maximum

Supplied Accessories

Operator’s Manual	PN: 23106
Line Cord	PN: N5002 (for 90 to 127 V AC) PN: Determined by the geographical destination (for 180 to 250 V AC)

Optional Accessories

Probes	Please refer to Page 1
Probe Line Driver (required when the probe cable length exceeds 6 meters	Model: 6003B
Probe Extension Cable (from the 347 to the driver)	Model: 6004B-EC
Probe Extension Cable (from the 347 to the probe)	Model: 6005B-EC
Full-Rack Mount Kit Half-Rack Mount Kit	Model: 603RA Model: 604RA