

## TREK 344

Precision electrostatic voltmeter for non-contacting surface voltage measurements in the range of 0 to  $\pm 2$  kV DC or peak AC.



The Trek<sup>®</sup> 344 employs a field-nulling technique for non-contacting voltage measurement that achieves DC stability and high accuracy even if the probe-to-surface spacing changes. This permits measurements of either stationary or moving surfaces without the need to establish fixed spacing to maintain accuracy.

The Trek 344 patented probe design eliminates the need for close tolerance components. This significantly improves noise and drift performance, both in the presence of contaminating particulates and under conditions of high humidity and wide temperature ranges.

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.

### PRODUCT HIGHLIGHTS

- Superb noise and drift performance
- Variety of probes available for different installation requirements
- Precision voltage monitor output
- Easy-to-read LED display
- Operated on a bench top or with optional hardware, a standard 19 in rack. The rack adapter allows two Trek 344 units to mount together
- Digital enable feature provides a connection for a remote device to turn on and off the high voltage of the instrument. This makes the 344 suitable for automated or computer-controlled systems
- NIST-traceable Certificate of Calibration provided with each unit

### AT A GLANCE

#### Measurement Range

0 to  $\pm 2$  kVDC or peak AC

#### Measurement Accuracy

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

#### Speed of Response

Less than 3 ms for a 1 kV step

## TREK ELECTROSTATIC VOLTMETER 344

### TECHNICAL DATA

#### Performance Specifications

Measurement Range	0 to $\pm 2$ kVDC or peak AC	
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	Less than 3 ms for a 1 kV step change (10 to 90%)	
Stability	Drift with Time: Less than 100 ppm/hour, noncumulative	Drift with Temperature: Less than 100 ppm/ $^{\circ}$ C

#### Voltage Monitor

Output	A buffered output provides a low-voltage replica of the measured voltage
Scale	1/100th of the measured voltage
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 $\Omega$

#### Voltage Display

Voltage Display	3 $\frac{1}{2}$ digit LED display
Range	0 to $\pm 999$ V
Resolution	1 V
Zero Offset	$\pm 1$ count

#### Mechanical Specifications

Dimensions (H x W x D)	64 x 220 x 270 mm (2.5 x 8.7 x 10.6 in)
Weight	2 kg (4.4 lb)
Voltage Monitor Output Connector	BNC connector
Ground Receptacle	Banana jack
AC Line Cord Receptacle	Standard three-prong line cord receptacle

#### Operation Conditions

Temperature	0 to 40 $^{\circ}$ C (32 to 104 $^{\circ}$ F)
Relative Humidity	To 90%, noncondensing
Altitude	To 2000 m (6561.68 ft)
Probe-to-Surface Separation	3 mm $\pm$ 1 mm (recommended)

#### Electrical Specifications

Line Supply	100, 115, or 230 VAC $\pm 10\%$ , 50 to 60 Hz multimeter) (specify when ordering).
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#### Features

Zero Control	A ten-turn control to null offsets that may be present at the voltage monitor output when the 344 is measuring zero volts.
Response Control	A ten-position push-button switch that adjusts the gain of the Trek 344 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.
Probe-to-Surface Separation	2 mm $\pm$ 1 mm (recommended)

<sup>1</sup>All specifications are with a Trek 6000B-8 probe at a probe-to-surface separation of 2 mm.

## REFERENCE NUMBERS

Trek 344 Electrostatic Voltmeter	
344-F	Trek 344 $\pm 2$ kV Electrostatic Voltmeter (100 VAC)
344-G	Trek 344 $\pm 2$ kV Electrostatic Voltmeter (115 VAC)
344-K	Trek 344 $\pm 2$ kV Electrostatic Voltmeter (230 VAC)
344	Trek 344 1/100th voltage monitor ratio
344-1	Trek 344 1/100th voltage monitor ratio with rear panel probe connector
344-6	Trek 344 1/1000th voltage monitor option
344-9	Trek 344 1/200th voltage monitor option

Included Accessories	
23012	Operator's Manual
N5002	Line Cord, for 100 to 115 VAC

Optional Accessories	
C5006	Optional 611RA 19 in Rack Adapter (2 instrument capacity)
17102	6004B-EC Probe Extension Cable (from 344 to line driver)
17127	6005B-EC Probe Extension Cable (from 344 to probe)

Probes	
Standard Resolution	
17053	Trek 6000B-7C (end-viewing, round body)
17054	Trek 6000B-8 (side-viewing, round body).
17046	Trek 6000B-15C (end-viewing, square body)
17047	Trek 6000B-16 (side-viewing, square body)
High Resolution	
17051	Trek 6000B-5C (end-viewing, round body)
17052	Trek 6000B-6 (side-viewing, round body).
17044	Trek 6000B-13C (end-viewing, square body)
17045	Trek 6000B-14 (side-viewing, square body)
Minature	
17205	Trek 555P-4 (end-viewing, square body)
17184	Trek 555P-1 (side-viewing, square body).
High Temperature (up to 100°C)	
17287	Trek 6300B-7 (end-viewing, square body)
17288	Trek 6300B-8 (side-viewing, square body).



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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

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