

Model 344

DC-Stable Electrostatic Voltmeter



The Trek Model 344 is a precision electrostatic voltmeter for making noncontacting surface voltage measurements in the range of 0 to ± 2 kV DC or peak AC.

The Model 344 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 measurements of either stationary or moving surfaces without the need to establish fixed spacing to maintain accuracy.

The Model 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.

The Model 344 can be operated on a bench top or, with optional hardware, in a standard 19-inch rack. The rack adapter allows two 344 units to be mounted together.

The 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.

The Model 344 is designed to be operated on a bench top.

- **Measurement Range:**
0 to ± 2 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
- **Low noise and drift performance**
- **A variety of probes are available for different installation requirements**
- **Precision voltage monitor output**
- **Easy-to-read LED display**



Measurement and Power Solutions™

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Model 344 Specifications

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

Performance

Measurement Range

0 to ± 2 kV DC 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 (10% to 90%)

Less than 3 ms for a 1 kV step change.

Stability

Drift with Time

Less than 100 ppm/hour, noncumulative.

Drift with Temperature

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

General

Line Supply

100, 115, or 230 V AC $\pm 10\%$, 50-60 Hz (specify when ordering).

Operating Conditions

Temperature

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

Relative Humidity

To 90%, noncondensing.

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 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.

Voltage Monitor Output

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

Scale

1/100th of the measured voltage. (1/200th and 1/1000th ratios are 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 .

Probe-to-Surface Separation

2 mm \pm 1 mm (recommended).

Features (cont.)

Voltage Display

3½ digit LED display.

Range

0 to ± 999 V.

Resolution

1 V.

Zero Offset

± 1 count.

Mechanical

Dimensions

64 mm H x 220 mm W x 270 mm D (2.5" H x 8.7" W x 10.6" D).

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.

Certification

TREK, INC. certifies that each Model 344 is tested and calibrated to specifications using measurement equipment traceable to the National Institute of Standards and Technology. A Certificate of Calibration accompanies each instrument when it is shipped from the factory.

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Model 344 Ordering Information

Model 344

Item	Part No.
± 2 kV Electrostatic Voltmeter (100 V AC)	344-F
± 2 kV Electrostatic Voltmeter (115 V AC)	344-G
± 2 kV Electrostatic Voltmeter (230 V AC)	344-K
1/100th voltage monitor ratio	344
1/100th voltage monitor ratio with rear panel probe connector	344-1
1/1000th voltage monitor option	344-6
1/200th voltage monitor option	344-9

Accessories

Item	Part No.
Supplied	
Operator's Manual	23012
Line Cord (100 V AC and 115 V AC)	N5002
Optional 611RA 19-inch Rack Adapter (2 instrument capacity)	C5006
6003B Probe Line Driver (required when a very long probe extension cable is used)	17126
6004B-EC Probe Extension Cable (from 344 to line driver)	17102
6005B-EC Probe Extension Cable (from 344 to probe)	17127

Probes

Item	Part No.
Standard Resolution	
Model 6000B-7C (end-viewing, round body)	17053
Model 6000B-8 (side-viewing, round body)	17054
Model 6000B-15C (end-viewing, square body)	17046
Model 6000B-16 (side-viewing, square body)	17047
High Resolution	
Model 6000B-5C (end-viewing, round body)	17051
Model 6000B-6 (side-viewing, round body)	17052
Model 6000B-13C (end-viewing, square body)	17044
Model 6000B-14 (side-viewing, square body)	17045
Miniature	
Model 555P-4 (end-viewing, square body)	17205
Model 555P-1 (side-viewing, square body)	17184
High Temperature (up to 100 $^{\circ}$ C)	
Model 6300-7 (end-viewing, square body)	17287
Model 6300-8 (side-viewing, square body)	17288



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