

# Model 323

## High-Sensitivity , DC Stable Electrostatic Voltmeter



The Trek Model 323 Electrostatic Voltmeter performs highly sensitive voltage measurements using a variety of Trek side-view probes with various body types (round, square).

The Model 323 is a versatile instrument used for a variety of electrostatic applications including materials evaluation, electret studies, charge accumulation on disk drive assemblies, and other extremely sensitive ESD sensitive components.

The Model 323 is specifically designed for high sensitivity applications and performs highly accurate, noncontacting measurement of electrostatic potentials of 0 to 100 V over a wide range of probe-to-surface distances.

The Model 323 has adjustments to compensate for many sensitive testing conditions. The response Speed control adjusts the speed/noise tradeoff of the AC response. The Drift/Spacing Null Adjustment minimizes the variation in zero offset voltage as the probe to test surface spacing changes.

The front panel has an easy to read 3½ digit LED display. The detected output voltage can be monitored through a 1:1 voltage monitor output and a switch selectable scale of 10:1 or 20:1 voltage monitor output.

Trek patented low impedance probes assure measurement accuracy essentially independent of probe-to-test-surface spacing, humidity conditions, and contamination such as airborne dust, toner, ions and chemicals.

- **Measurement Range:**  
0 to  $\pm 100$  V DC or Peak AC
- **Sensitivity:** 5 mV
- **Speed of Response:**  
Less than 300 ms for a 100 V step
- **Measurement Accuracy:**  
Better Than 0.05% of Full Scale
- **Null Voltage Source:**  
10 Volt Nulling Supply
- **Response Speed Control:**  
AC Response Adjusted for Speed/Noise
- **Drift Spacing/Null Adjustment:** Minimizes Variations in voltage values as probe to test surface spacing changes
- **Available Monitor Outputs:**  
1:1 of Voltage Monitor Output  
10:1 or 20:1 (switch selectable)
- **Additional Probes Available**
- **CE Compliant**



Measurement and Power Solutions™

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# Model 323 Specifications

All specifications are with a Model 6000B-8 probe with a probe-to-surface separation of 1 mm.

## Performance

### Measurement Range

0 to  $\pm 100$  V DC or peak AC.

### Sensitivity

5 mV.

### Accuracy

#### DC Accuracy

Better than 0.05% of full scale.

#### Voltage Monitor Output

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

#### Voltage Display

Better than or equal to  $\pm 2$  counts, referred to the voltage monitor.

### Speed of Response (10% to 90%)

Less than 300 ms for a 100 V step (adjustable).

### Stability

#### Drift with Time

Less than 50 ppm/hour, noncumulative.

#### Drift with Temperature

1:1 Monitor Output

Less than 10 mV/ $^{\circ}$ C

10:1 Monitor Output

Less than 5 mV/ $^{\circ}$ C

20:1 Monitor Output

Less than 5 mV/ $^{\circ}$ C

## Features

### Null Voltage Source

A calibrated 10-turn dial representing a 10 volt supply, with switch selectable polarity, used to produce zero volts output when the probe is coupled to a known zero volt surface.

#### Range

$\pm 10$  volts

#### Accuracy

1%

#### Resolution

20 mV.

## Features (cont.)

### Probe-to-Surface Separation

1 mm to 3 mm.

### Response Speed Control

A front panel potentiometer that adjusts the speed/noise inter-relationship of the Model 323 AC response.

### Voltage Display

3½ digit LED display.

#### Range

Switch selectable for  $\pm 10$  V or  $\pm 100$  V full scale.

#### Resolution

10 V Range

0.01 V.

100 V Range

0.1 V.

#### Zero Offset

$\pm 2$  counts, referred to the voltage monitor.

#### Sampling Rate

3 readings per second.

### Drift/Spacing Null Adjustment

This back panel adjustment minimizes the variation in monitored voltage values as the probe to test surface spacing changes.

### Voltage Monitor Output (1:1 ratio)

A buffered 0 to  $\pm 100$  V output providing a representation of the measured voltage.

#### Scale Factor

1:1 of the measured voltage.

#### Output Noise

Less than 20 mV rms (measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter).

#### Output Current

5 mA.

#### Output Impedance

100  $\Omega$ , nominal.

## Features (cont.)

### Voltage Monitor Output

A buffered 0 to  $\pm 10$  V output providing a representation of the measured voltage.

#### Scale Factors

10:1 of the measured voltage or

20:1 of the measured voltage

(switch selectable).

#### Output Current

5 mA.

#### Output Impedance

0.1  $\Omega$ , nominal.

## General

### Dimensions

108 mm H x 223 mm W x 380 mm D  
(4.25" H x 8.75" W x 15" D).

### Weight

3.6 kg (8 lb).

### Voltage Monitor Connector

BNC connector.

### Ground Receptacle

Banana jack.

### AC Line Cord Receptacle

Standard three-prong line cord with integral fuse holder.

### Line Supply

Factory set for one of two voltage 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.

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## Model 323 Ordering Information

### Model 323 Electrostatic Voltmeter

Item	Part No.
Model 323-L (90 to 127 V AC) .....	323-L
Model 323-H (180 to 250 V AC) .....	323-H

### Probes

Model 6000B-8 Probe (side-viewing, round body) .....	17054
Model 6000B-16 Probe (side-viewing, square body) .....	17047

### Trek Certification

TREK, INC. certifies that each Model 323 is tested and calibrated to specifications using measurement equipment traceable to the National Institute of Standards and Technology or traceable to consensus standards. A Certificate of Calibration accompanies each instrument when it is shipped from the factory.



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