

# Model 520 Series

## Hand-Held Electrostatic Voltmeters



**Model 520 Measurement Range: 0 to  $\pm 2$  kV DC**

**Model 523 Measurement Range: 0 to  $\pm 20$  kV DC**

**Accurately measures surface voltage at a wide range of spacings**

**No need to maintain a fixed spacing**

**Inspect small spots for charge accumulation**

**Measure charge accumulation in difficult-to-reach locations**

**Chopper stabilized for drift-free operation in ionized environments**

**Low cost**

**CE compliant**

The Trek Model 520 series Hand-Held Electrostatic Voltmeters provide accurate, noncontacting measurements of electrostatic surface voltage for ESD applications in either ionized or non-ionized environments. Industrial applications include measuring charge accumulation in the LCD manufacturing process or measuring static charge in semiconductor production. The Model 520 series voltmeters utilize a new measurement technique that overcomes the disadvantage of the typical hand-held fieldmeter by providing surface voltage measurements which are essentially independent of the sensor probe-to-measured surface spacing.

### **Model 520**

Over a spacing range of 5 mm to 25 mm, the 520 voltmeter provides better than a 5% voltage measurement accuracy, while the typical fieldmeter provides a voltage measurement error in excess of 50%. An optional voltage monitor output is available.

### **Model 523**

Over a spacing range of 30 mm to 60 mm, the 523 voltmeter provides greater than a 5% voltage measurement accuracy, while the typical fieldmeter provides a voltage measurement error in excess of 50%.

The 520 series provides a measurement system which complies with standardized calibration equipment traceable to the National Institute of Standards and Technology. The 520 series hand-held voltmeters employ a slender sensor probe design that provides flexibility to make measurements in many locations which are impossible to reach using the large, bulky sensing surfaces of the typical hand-held fieldmeter. The slender design also allows for higher spatial resolution capability by allowing the measurement of small surface areas. A "hold" pushbutton retains the displayed measured voltage value for recording purposes.

**CONTROL WITHOUT COMPROMISE**



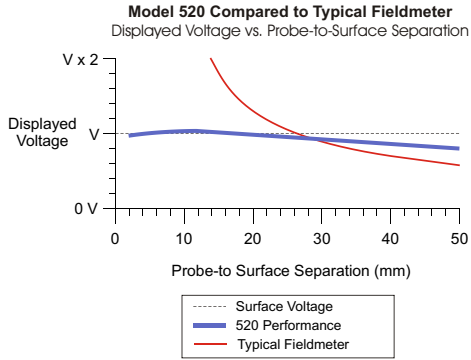
# Model 520 Series General Specifications

All Model 520 specifications are with a probe-to-surface separation of 15 mm,  $\pm 10$  mm.  
 All Model 523 specifications are with a probe-to-surface separation of 45 mm,  $\pm 15$  mm.

## Model 520 Performance

**Measurement Range**  
 0 to  $\pm 2$  kV DC.

**Accuracy**  
 Better than  $\pm 5\%$  of full scale over the entire recommended probe-to-surface separation range of 5 mm to 25 mm.



### Dimensions

31 mm H x 59 mm W x 173 mm D  
 (1.2" H x 2.3" W x 6.8" D).

### Weight

200 g (7 oz), with battery.

### Model 520-2 Voltage Monitor Output

A 1.3 mm jack provides a low-voltage replica of the measured voltage.

#### Ratio

1/1000th of the measured voltage.

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

Less than 25 ms for an input step change of 2 kV.

Output Impedance

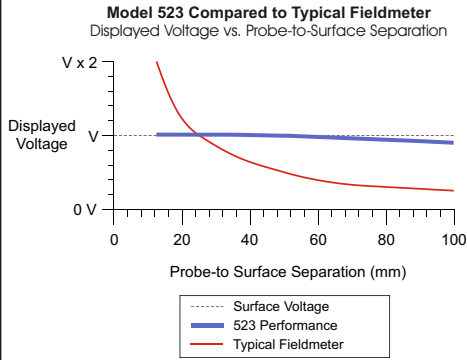
47  $\Omega$ .

For more information about these or other products, contact TREK, INC.

## Model 523 Performance

**Measurement Range**  
 0 to  $\pm 20$  kV DC.

**Accuracy**  
 Better than  $\pm 5\%$  of full scale over the entire recommended probe-to-surface separation range of 30 mm to 60 mm.



### Dimensions

31 mm H x 59 mm W x 183 mm D  
 (1.2" H x 2.3" W x 7.2" D).

### Weight

200 g (7 oz), with battery.

## Common Features

### Power On/Off

A push-button switch.

### Stability

#### Drift with Time

Less than 600 ppm/hour, noncumulative.

#### Drift with Temperature

Less than 600 ppm/ $^{\circ}$ C.

## Common Features (cont.)

### Operating Time

8 hours with a new battery.

### Hold

A push-button switch that, when pressed, commands the voltage display to hold the value displayed until the switch is released.

### Voltage Display

3 1/2 digit liquid crystal display.

#### Range (Model 520)

0 to  $\pm 1999$  V.

#### Range (Model 523)

0 to  $\pm 19.99$  kV.

#### Resolution (Model 520)

1 V.

#### Resolution (Model 523)

10 V.

#### Sampling Rate

2.5 readings per second.

### Zero Offset

Less than  $\pm 4$  counts.

### Power Requirements

One (1) 9-volt NEDA 1604 battery, IEC 6R61 battery, or equivalent.

### Ground Receptacle

Snap-on connector.

### Operating Conditions

#### Temperature

15  $^{\circ}$ C to 35  $^{\circ}$ C.

#### Relative Humidity

To 85%, noncondensing.

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## Ordering Information

### Model 520 Series

### Accessories Supplied

Item	Part No.	Item	Part No.
Hand-held Electrostatic Voltmeter (0 to $\pm 2$ kV DC).....	520-1-CE	Operating Instructions (Model 520).....	23100
Hand-held Electrostatic Voltmeter with Voltage Monitor Output (0 to $\pm 2$ kV DC).....	520-2-CE	Operating Instructions (Model 523).....	23099
Hand-held Electrostatic Voltmeter (0 to $\pm 20$ kV DC)..	523-1-CE	Voltage Monitor Output Cable Assembly (Model 520-2)	B6005
		Ground Reference Cable Assembly.....	N9079
		9-volt NEDA 1604 Battery, IEC 6R61 Battery, or equivalent.....	F1003



TREK, INC. 11601 Maple Ridge Road • Medina, NY 14103 • 800-FOR TREK  
 585-798-3140 • 585-798-3106 (fax) • www.trekinc.com • sales@trekinc.com

