

# Trek Model 520 Series

## Hand-Held Non-Contacting Electrostatic Voltmeters



Model 520

Model 523

The Trek Model 520 ( $\pm 2$ kV) and Model 523 ( $\pm 20$ kV) Hand-Held Electrostatic Voltmeters provide accurate, noncontacting measurements of electrostatic surface voltage for ESD applications in either ionized or non-ionized environments.

These two voltmeters utilize a measurement technique that overcomes the disadvantage of the typical hand-held field-meter by providing surface voltage measurements which are essentially independent of the sensor probe-to-measured surface spacing.

Model 520 is available in two versions. The 520-1 has a digital meter to display the measured voltage. The 520-2 has an analog output monitor in addition to the digital display. This analog output monitor can be used to record the measured voltage or to view it on an oscilloscope.

### Model 520 Key Specifications

- Measurement Range: 0 to  $\pm 2$  kV DC
- Measurement Accuracy: Better than  $\pm 5\%$  of full scale over the entire recommended probe-to-surface separation range of 5 mm to 25 mm
- Speed of Response (10% - 90%): Less than 25 ms for a 0 to  $\pm 2$  kV input step change (520-2 Voltage Monitor Output)

### Model 523 Key Specifications

- Measurement Range: 0 to  $\pm 20$  kV DC
- Measurement Accuracy: Better than  $\pm 5\%$  of full scale over the entire recommended probe-to-surface separation range of 30 mm to 60 mm
- Sampling Rate: 2.5 readings per second

### Typical Applications Include

- Measurement of electrostatic surface charge build up
- Manufacturing processes
- Electronic assembly testing
- Semiconductor material testing
- Dissipative material testing
- Automotive electronics testing
- ESD Auditing and troubleshooting

### Features and Benefits

- Accurately measures surface voltage at a wide range of spacings
- No need to maintain a fixed spacing
- Chopper stabilized for drift-free operation in ionized environments
- NIST-traceable Certificate of Calibration provided with each unit
- CE compliant

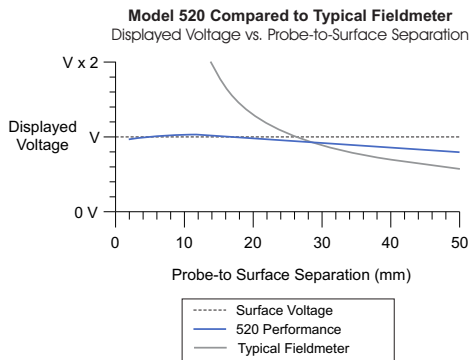


## Model 520 and 523 Specifications

### Model 520 Performance

Measurement Range 0 to  $\pm 2$  kV DC

Measurement Accuracy



Model 520-2 contains an analog monitor output (1.3 mm jack) which 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  $\Omega$

### Model 520 Mechanical

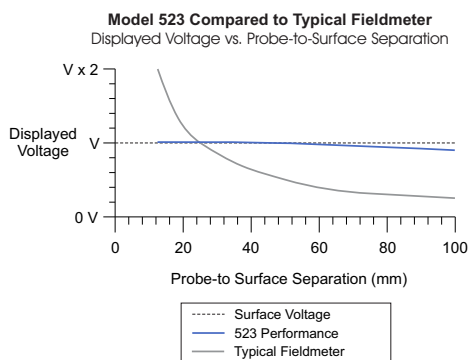
Dimensions 31 mm H x 59 mm W x 173 mm D  
(1.2" H x 2.4" W x 6.8" D)

Weight 200 g with battery  
(7 oz.) with battery

### Model 523 Performance

Measurement Range 0 to  $\pm 20$  kV DC

Measurement Accuracy



### Model 523 Mechanical

Dimensions 31 mm H x 59 mm W x 183 mm D  
(1.2" H x 2.4" W x 7.3" D)

Weight 200 g with battery  
(7 oz.) with battery

### Common Features

Power On/Off	Push-button switch
Stability	
<i>Drift with Time</i>	Less than 600 ppm/hour, noncumulative
<i>Drift with Temperature</i>	Less than 600 ppm/ $^{\circ}$ C
Operating Time	Approximately 8 hours with a full battery
Hold	A momentary push-button will command the voltage display to hold the value displayed until the switch is released
Voltage Display Range	A 3 1/2 digit liquid crystal display
<i>Model 520</i>	0 to $\pm 1999$ V
<i>Model 523</i>	0 to $\pm 19.99$ kV
Resolution	
<i>Model 520</i>	1 V
<i>Model 523</i>	10 V
Zero Offset	
<i>Model 520</i>	Less than $\pm 1$ count
<i>Model 523</i>	Less than $\pm 4$ counts
Sampling Rate	2.5 readings per second
Power Requirements	One (1) 9-volt NEDA 1604 battery, IEC 6R61 battery or equivalent
Ground Receptacle	Snap-on connector
Operating Conditions	
<i>Temperature</i>	15 $^{\circ}$ C to 35 $^{\circ}$ C
<i>Relative Humidity</i>	To 85%, noncondensing
<b>Supplied Accessories</b>	
Operating Instructions (Model 523)	PN: 23100
Operating Instructions (Model 523)	PN: 23099
Ground Reference Cable Assembly*	PN: N9079
<i>*Always use the original grounding cord without any safety resistor. Failure to do so will lead to measurement errors.</i>	
9-volt Battery	PN: F1003R
<b>Optional Accessories</b>	
Carrying Case	PN: 43469

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

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