

Trek Model 520 Series

Hand-Held Non-Contacting Electrostatic Voltmeters



Model 520

Model 523

The Trek Model 520 (± 2 kV) and Model 523 (± 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 ± 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 ± 2 kV input step change (520-2 Voltage Monitor Output)

Model 523 Key Specifications

- Measurement Range: 0 to ± 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

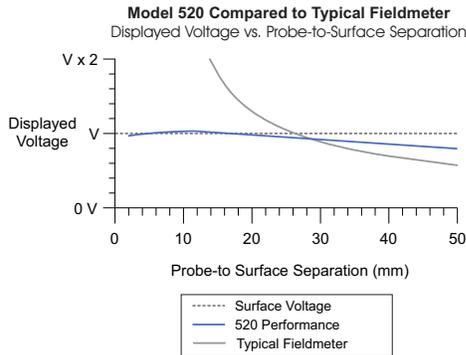


Model 520 and 523 Specifications

Model 520 Performance

Measurement Range 0 to ± 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 Ω

Model 520 Mechanical

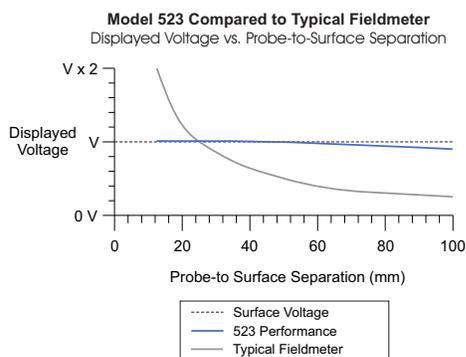
Dimensions 31 mm H x 59 mm W x 173 mm D
(1.2" H x 2.4" W x 6.8" D)

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

Model 523 Performance

Measurement Range 0 to ± 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 ½ digit liquid crystal display
<i>Model 520</i>	0 to ± 1999 V
<i>Model 523</i>	0 to ± 19.99 kV
Resolution	
<i>Model 520</i>	1 V
<i>Model 523</i>	10 V
Zero Offset	
<i>Model 520</i>	Less than ± 1 count
<i>Model 523</i>	Less than ± 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

Supplied Accessories

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

Optional Accessories

Carrying Case	PN: 43469
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*Measured using the true picture of the Hewlett Packard Model 34401A digital multimeter

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