

# TREK 320C

Versatile instrument used for a variety of electrostatic applications including contact potential measurements, materials evaluation, and electret studies.



The Trek® 320C makes highly accurate, noncontacting measurement of electrostatic potentials of 1 mV to 100 V over a wide range of probe-to-surface distances. The Trek 320C is specifically designed for high sensitivity applications.

The Trek 320C has adjustments to compensate for many sensitive testing conditions. A calibrated null voltage supply of  $\pm 10$  volts nulls contact potentials when measuring voltages on dissimilar materials. The null voltage source may be used to null different work function voltages of the test surface or to function as a zero suppression voltage source.

## PRODUCT HIGHLIGHTS

- Response speed control adjusts the speed/noise trade-off of the Trek 320C AC response
- Self-locking drift/spacing null adjuster minimizes the variation in monitored voltage values as the probe to test surface spacing changes
- Easy-to-read front panel 3.5 digit LED display
- Monitor the detected output voltage through a 1:1 voltage monitor output and a switch selectable scale of 10:1 or 20:1 voltage monitor output
- Patented low impedance probe assures measurement accuracy which is essentially independent of probe-to-test-surface spacing while eliminating the external environmental effects of high humidity and contamination, such as airborne dust, toner, ions and chemicals, on measurement accuracy.
- NIST-traceable Certificate of Calibration provided with each unit

## AT A GLANCE

### Measurement Range

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

### Sensitivity

1 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 for contact potential measurements

### 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

## TREK ELECTROSTATIC VOLTMETER 320C

### TECHNICAL DATA

Performance Specifications <sup>1</sup>			
Measurement Range	0 to ±100 VDC or peak AC		
Sensitivity	1 mV		
Accuracy	Voltage Monitor Output	Better than ±0.05% of full scale	
	Voltage Display	Better than or equal to ±2 counts, referred to the voltage monitor	
Stability	Drift with Time	Less than 50 ppm/hour, noncumulative	
	Drift with Temperature	1:1 monitor output	Less than 50 ppm/°C
		10:1/20:1 monitor output	Less than 100 ppm/°C

Mechanical Specifications <sup>1</sup>	
Dimensions (H x W x D)	108 x 223 x 370 mm (4.25 x 8.75 x 14.5 in)
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

Electrical Specifications <sup>1</sup>	
Line Supply	Factory set for one of two voltage ranges: 90 to 127 VAC or 180 to 250 VAC, at 48 to 63 Hz (specify when ordering)

Environmental Specifications <sup>1</sup>	
Operating Conditions Temperature	0 to 40°C (32 to 104°F)
Relative Humidity	To 90%, noncondensing

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. Also used to null contact potentials on dissimilar surfaces.		
	Range	±10 volts	
	Accuracy	1%	
	Resolution	20 mV	
Probe-to-Surface Separation	1 mm (recommended)		
Response Speed Control	A front panel potentiometer that adjusts the speed/noise tradeoff of the Trek 320C AC response		
Voltage Display	3½ digit LED display.		
	Range	Switch selectable for ±10 V or ±100 V full scale	
	Resolution	10 V Range: 0.01 V	
		100 V Range: 0.1 V	
	Zero Offset	±1 count, 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.		

<sup>1</sup> All specifications are with a probe-to-surface separation of 1 mm.

## TECHNICAL DATA

Features (Continued)		
Voltage Monitor Output (1:1 ratio)	A buffered 0 to $\pm 100$ V output providing a replica of the measured voltage	
	Scale Factor	1:1 of the measured voltage
	Output Noise	Less than 5 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
Voltage Monitor Output	A buffered 0 to $\pm 10$ V output providing a replica 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.

## REFERENCE NUMBERS

Trek 320C Electrostatic Voltmeter	
320C-L	Trek 320C-L (90 to 127 VAC)
320C-H	Trek 320C-H (180 to 250 VAC)

  

Probe	
17014	Trek 3250 High-Sensitivity Probe



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## ABOUT ADVANCED ENERGY

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AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

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