

# TREK 542A

Electrostatic voltmeter for accurate non-contacting measurements of the electrostatic surface voltage associated with EOS/ESD processes.



The Trek® 542A electrostatic voltmeter provides accurate non-contacting measurements of the electrostatic surface voltage associated with EOS/ESD processes. The instrument is configured with a miniature electrostatic field chopper probe that can be remotely located and easily positioned within process equipment to provide highly accurate, non-contacting, DC-stable, spacing-independent voltage measurements in either ionized or non-ionized environments. A 20x4 alphanumeric LCD screen displays the present measured voltage, the positive peak voltage value, the negative peak voltage value and additional menu information.

## PRODUCT HIGHLIGHTS

- Chopper probe is DC-stable with or without incident air ion flow
- Drift-free measurements
- LCD screen displays present voltage, the positive peak voltage, the negative peak voltage and additional menu information.
- Visual and audible alarms activate when the preset voltage threshold levels are reached
- Analog voltage monitor output
- USB and RS232 serial ports
- NIST-traceable Certificate of Calibration provided with each unit
- Optional walking test adapter kits available

## APPLICATIONS

- Semiconductor
- LCD
- Electronic assembly
- ESD-sensitive processes

## AT A GLANCE

### Measurement Range

**Trek 542A-1**  
±10 kVDC or peak AC

**Trek 542A-2**  
±20 kVDC or peak AC

### Measurement Accuracy

**Better than ±5% of the reading**  
**±0.2% of full scale over a probe-**  
**to-surface separation of:**

**Trek 542A-1: 15 to 30 mm**

**Trek 542A-2: 30 to 60 mm**

### Alphanumeric LCD Display

**20 x 4 characters**

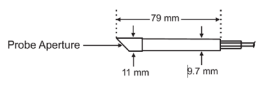
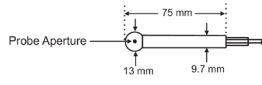
## TREK ELECTROSTATIC VOLTMETER 542A

### TECHNICAL DATA

Performance Specifications		
Measurement Range	Trek 542A-1	0 to ±10 kV DC or peak AC
	Trek 542A-2	0 to ±20 kV DC or peak AC
Speed of Response	Less than 50 ms for a ±1 kV step (10 to 90%)	
Accuracy	Better than ±5% of the reading ±0.2% of full scale over a probe-to-surface separation of:	
	Trek 542A-1	15 to 30 mm
	Trek 542A-2	30 to 60 mm
Drift with Time	Less than ±1% full scale, non-cumulative	
Monitor Output		
Trek 542A-1	1/1000th of the measured voltage	
Trek 542A-2	1/2000th of the measured voltage	
Output Noise	Less than 30 mV rms <sup>1</sup>	
Output Impedance	47 Ω	
Mechanical Specifications		
Dimensions (H x W x D)	97 x 152 x 204 mm (3.8 x 6 x 8 in)	
Weight	0.77 kg (1.7 lb)	
Electrical Specifications		
Power	15 VDC ±20%, 800 mA (minimum) adapter with a 2.1 mm DC plug	
Power ON/OFF	Rear panel switch	
Environmental Specifications		
Temperature	15 to 35°C (59 to 95°F)	
Relative Humidity	5 to 85% RH, noncondensing	
Altitude	To 2000 m (6561.68 ft.)	
Features		
Alarms	Activated if measured voltage exceeds preset threshold limits; positive/negative limits may be programmed separately	
	Visual	Front-panel LED illuminated at threshold
	Audible	ON/OFF programmable pulsating or continuous tone. (+) and (-) alarms have different tone rates for the pulsating tone selection
	Alarm Relay Output	Form C relay contact rated at 175 V maximum, 5 W
	Alarm Digital Output	TTL output with a TTL low as the alarm "ON" status
Reset Button	Resets alarms and peak hold to zero	
Zero Control	Adjustable to produce zero volts when probe coupled to a known zero voltage source	
Alphanumeric LCD Display	20 character by four line (20x4) LCD displays the present voltage and holds the most positive and most negative values	
Ground Receptacle	Banana jack	
Serial Port and USB Port	Provides control of specific functions and acquires sensor data utilizing Advanced Energy software and a PC connected to the RS232 serial port or the USB Type B port (connectors are on back panel)	
Current Output	Provides a current of 4 mA to 20 mA representing -10 kV to +10 kV (542A-1) and -20 kV to +20 kV (542A-2)	
Menu ↑↓ Buttons	Select and program menu options - the ↑↓ set the alarm threshold voltages, alarm conditions, and alarm reset type	

<sup>1</sup> Measured using the true rms feature of the HP Model 34401A digital multimeter

PROBES

Probe Specifications <sup>1</sup>	
Probe Cable Length	5 m (16 ft) nominal
<b>45° Orientation</b>	
Model	542P-45D
Aperture	3.8 mm (0.15 in) D
Dimensions	11 D x 79 mm (0.43 D x 3.1 in)
	
<b>Side Orientation</b>	
Model	542P-S
Aperture	4 mm (0.156 in) D
Dimensions	13 D x 75 mm (0.51 D x 3 in)
	

REFERENCE NUMBERS

Included Accessories	
24004	Operator's Manual (with software)
N9056	6P/4C Plug
BA108	Serial Cable
N9044	Ground Cord
F5054R	Universal AC Adapter

Optional Accessories	
1K040	Walking Test Adapter

<sup>1</sup> Vacuum application probes are also available



For international contact information,  
visit [advancedenergy.com](http://advancedenergy.com).

[sales.support@aei.com](mailto:sales.support@aei.com)  
+1.970.221.0108

## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

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.

PRECISION | POWER | PERFORMANCE

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