

# Trek Model 542A Non-Contacting Electrostatic Voltmeter for EOS/ESD



The Trek Model 542A Electrostatic Voltmeter (pictured at left with the Model 542P-S probe) 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.

## Key Specifications

- Measurement Range
  - Model 542A-1:  $\pm 10$  kV DC or peak AC
  - Model 542A-2:  $\pm 20$  kV DC or peak AC
- Measurement Accuracy -  
Better than  $\pm 5\%$  of the reading  $\pm 0.2\%$  of full scale over a probe-to-surface separation of
  - Model 542A-1: 15 mm to 30 mm
  - Model 542A-2: 30 mm to 60 mm
- Alphanumeric LCD Display: 20 x 4 characters

## Typical Applications Include

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

## Features and Benefits

- Chopper probe is DC-stable with or without incident air flow
- Drift-free measurements
- LCD screen displays present voltage and holds the most positive and negative values
- Visual and audible alarms activate when the preset voltage threshold levels are reached
- Analog voltage monitor output
- USB and RS-232 serial ports
- NIST-traceable Certificate of Calibration provided with each unit
- CE compliant
- Optional Walking Test Adapter kit available

### Walking Test Adapter



Optional walking test adapter kit [CN 1K040] for the model 542A allows analysis of charge levels on the human body in support of EN 1815, Assessment of Static Electrical Propensity on Resilient and Textile Floor Coverings.



## Model 542A Specifications

### Performance

#### Measurement Ranges

<i>Model 542A-1</i>	0 to ±10 kV DC or peak AC
<i>Model 542A-2</i>	0 to ±20 kV DC or peak AC

Speed of Response (10% to 90%) Less than 50 ms for a ±1 kV step

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

<i>Model 542A-1</i>	15 mm to 30 mm
<i>Model 542A-2</i>	30 mm to 60 mm

Drift with Time Less than ±1% full scale, non-cumulative

### Monitor Output

<i>Model 542A-1</i>	1/1000th of the measured voltage
<i>Model 542A-2</i>	1/2000th of the measured voltage
<i>Output Noise</i>	Less than 30 mV rms*
<i>Output Impedance</i>	47 Ω

### Features

Alarms	Activated if measured voltage exceeds preset threshold limits; positive/negative limits may be programmed separately
<i>Visual</i>	Front-panel LED illuminated at threshold
<i>Audible</i>	Programmable pulsating or continuous tone. (+) and (-) alarms have different tone rates for the pulsating tone selection
<i>Alarm Relay Output</i>	Form C relay contact rated at 175 V maximum, 5 W
<i>Alarm Digital Output</i>	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 measured values
Ground Receptacle	Banana jack
Serial Port and USB Port	Provides control of specific functions and acquires sensor data utilizing Trek software and a PC connected to the RS-232 serial port or the USB Type B port (connectors for each are on the back panel)

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

### Features (cont.)

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	Used to select and program menu options the ↑ ↓ set the alarm threshold voltages, alarm conditions and alarm reset type

### Mechanical

Dimensions	97 mm H x 152 mm W x 204 mm D (3.8" H x 6" W x 8" D)
Weight	0.77 kg (1.7 lb.)

### Operating Conditions

<i>Temperature</i>	15°C to 35°C (59°F to 95°F)
<i>Relative Humidity</i>	5% to 85% RH, non-condensing
<i>Altitude</i>	To 2000 m (6561.68 ft.)

### Electrical

Power	15 V DC ±20%, 800 mA, power bus or AC/DC adapter with a 2.1 mm DC plug. Positive polarity connected to the center contact
Power ON/OFF	Rear panel switch

### Supplied Accessories

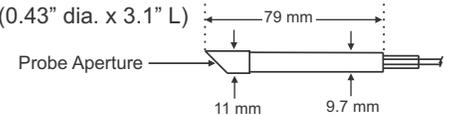
Operator's Manual	PN: 24004 (with PN 45833 software CD)
6P/4C Plug	PN: N9056
Serial Cable	PN: BA108
Ground Cord	PN: N9044

### Optional Accessories

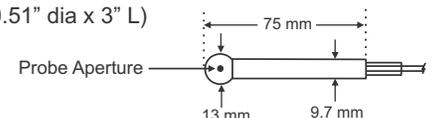
AC/DC Adapter	PN: F5054R
Walking Test Adapter	CN: 1K040

### Probes\*\*

45° Orientation Model No: 542P-45D. Aperture 3.8 mm (0.15") diameter. Dimensions 11 mm dia x 79 mm L (0.43" dia. x 3.1" L)



Side Orientation Model No: 542P-S. Aperture 4 mm (0.156") diameter. Dimensions 13 mm dia x 75 mm L (0.51" dia x 3" L)



Probe Cable Length 5 meters (16 ft.) nominal

\*\*Vacuum application probes are also available

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