

About Trek
Founded on Technology

TREK, INC. was established in 1968 to serve the needs of the electrophotography industry for highly accurate, stable, cost-effective measurement instrumentation and devices. Novel probe design technology provided the foundation for the company's first electrostatic voltmeter, which quickly became the industry standard. Trek's design ensures highly accurate measurements under extreme conditions.

Growth through Innovation

In the decades that followed, Trek established itself as a designer and manufacturer of high quality instrumentation.

Established Technical Expertise and Application Knowledge

Our scientifically based measurement expertise, coupled with our application knowledge, has enabled us to establish an enviable position in the markets we serve.

Dedicated to Excellence

Trek has a well-respected reputation for excellence. We are the premier resource for electrostatic measurement and high-voltage solutions due to our product leadership and engineering excellence.

Go to www.trekinc.com for additional information.

Probe Selection Table for the Model 152-1

Probe Model*	Measurement Range	Feature
152BP-5P Point-to-Point Probe	10 ³ to 10 ¹³ ohms	ANSI/ESD-STM4.1 standards Point-to-point or resistance to ground measurements
152P-CR-1 Concentric Ring Probe	10 ³ to 10 ¹³ ohms	Surface/Volume Resistance Measurements
152P-2P Two-Point Resistance Probe	10 ³ to 10 ¹³ ohms	Performs measurements on surface areas too small to be measured with conventional probes
152AP 3mm x 25.4mm	10 ³ to 10 ¹³ ohms	Performs point to point measurement on small surfaces with parallel electrodes.

Model 152-1 Resistance Meter Walking Test Adapter available now!

Charged-Plate Monitor Selection Table

Charged-Plate Monitor Model	Voltage Range (DC or Peak AC)	Plates Available	Feature
156A	0 to ±1100 V	EOS/ESD Standard 15 cm x 15 cm, 25 mm x 25 mm also Custom Sizes & Custom Capacitances	Ion Balance/Decay Measurements
157	0 to ±1100 V		Data Storage/ Transfer, Software Waveform Display,
540	0 to ±100 V	25 mm x 25 mm	Ion Balance Monitoring

Sensors, Monitors, and Electrostatic Voltmeter Selection Table (partial list)

Model	Measurement Range (DC or Peak AC)	Measurement Accuracy (full scale)	Probe -to-Surface Separation Distance	Cable Length	Features / Applications
884	0 to ±20 kV	±5%	45 mm ±15 mm	1.8 meter (6 ft)	Charge Accumulation in LCD Manufacturing, Static Charge in Semiconductor Manufacturing
523-1	0 to ±20 kV	±5%	45 mm ±15 mm	probe tip on unit	
542A-2	0 to ±20 kV	±5%	30 mm to 60 mm	5 meter (16 ft)	Static Charge Evaluation Semiconductor, LCD, Electronic Assembly
542A-1	0 to ±10kV	±5%	15 mm to 30 mm	5 meter (16 ft)	
347	0 to ±3 kV	±0.05%	2 mm ±1 mm	3 meter (10 ft)	Electrostatic Potential Measurement
820	0 to ±2 kV	±0.1%	Contacting*	3 meter (10 ft)	Measurement of ESD-sensitive components and circuitry
821HH (Hand-held)	0 to ±2 kV	±1%	2 mm ±1 mm	Less than 0.33m (< 1 ft)	Measurements in difficult-to-reach areas Battery or line operation Records temperature and humidity
520	0 to ±2 kV	±5%	15 mm ±10 mm	probe tip on unit	Charge Accumulation in LCD Manufacturing, Static Charge in Semiconductor Manufacturing
876	0 to ±2 kV	±5%	15 mm ±10 mm	1.8 meter (6 ft)	
706B	0 to +1 kV or -1 kV	±0.5%	3.2 mm ±1	1.8 meter (6 ft)	Measures photoreceptor surfaces in copiers and laser printers
541A-1	0 to ±1 kV	±1%	2.5 mm ±1 mm	3 meter (10 ft)	Static Charge Evaluation Semiconductor, LCD, Electronic Assembly
541A-2	0 to ±100 V	±1%	2.5 mm ±1 mm	3 meter (10 ft)	

*Infintron Technology - zero charge transfer upon contact

◆ **NEW! Model 875 enclosure mounts on a 35mm DIN rail and measures ±500 V**

High-Voltage Power Amplifiers / Piezo Drivers
Electrostatic Measurement Instruments



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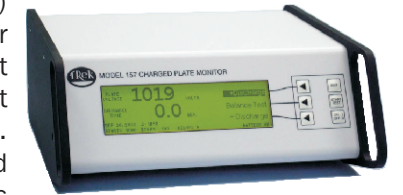
TREK INC.

ESD MEASUREMENT and EVALUATION

ESD MEASUREMENT INSTRUMENTS

ESD Measurement Control, Certified ESD Program Management

With increasing industry concern about electrostatic discharge (ESD) and the damage it can cause in highly-sensitive electronics and other high-tech manufacturing, Trek offers products and expertise to assist with the measurement and control of ESD. Our measurement instruments deliver not only high accuracy but also high confidence. Trek **charged-plate monitors** help with ionizer setup, calibration and auditing processes. Our **electrostatic monitors** verify that air ionizers are working correctly, automatically. Trek **hand-held electrostatic voltmeters** and **portable electrostatic voltmeters** are easy-to-use and provide accurate surface voltage measurements throughout manufacturing processes, whether in semiconductor, hard disk drive, flat panel display or other highly sensitive environments.



Model 157 Charged-Plate Monitor



Model 347 Electrostatic Voltmeter

For higher accuracy, Trek's **Model 347 electrostatic voltmeter** is designed for precision surface charge detection and measurement of semiconductor wafers, electronic circuitry and handling devices, in both on-line and off-line applications. Trek's **surface resistance/resistivity meters** deliver precise surface resistance measurements on virtually any conductive, dissipative or insulative material. These instruments enable quick and accurate checks on dissipative floors, work surfaces, table mats, and other static-controlled materials to insure that static charge is safely dissipated to ground.



Model 152-1 Resistance Meter with Surface/Volume CR Probe

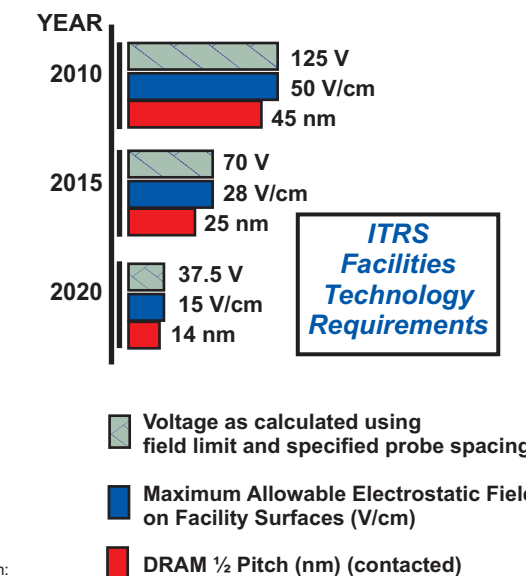
Materials Research

Trek instruments are utilized throughout the research community for charge measurements. For example, our high speed electrostatic voltmeters provide precise measurement of surface voltage, enabling the determination of work potential for various semiconductor materials and guiding design-of-experiment evaluations and other efforts in semiconductor physics.

Smaller Devices Require Improved ESD Control Programs

As device size decreases, the need to control electrostatic charge increases

Will YOU be ready?



Let Trek help you manage electrostatic charge: Trek sales personnel are certified by the ESDA with the designation of "ESD Certified Professional - Program Manager"

- Trek Surface Resistivity Meters**
 - ◆ to be sure materials are safely dissipating charge to ground
- Trek Charged-Plate Monitors**
 - ◆ for ionizer setup, calibration and performance checkups
- Trek Electrostatic Voltmeters**
 - ◆ to locate ESD problems and monitor processes in real time
- Trek Infintron®**
 - ◆ innovative high impedance contacting voltmeter for site-specific monitoring

Source of Data:
 The International Technology Roadmap for Semiconductors: 2010 (Factory Integration: Facilities Technology Requirements)

Model 157 Charged Plate Monitor
Model PD04002A Charged Plate Monitor
25 X 25mm Charged Plate
High Temperature 25 X 25mm Charged Plate
DI [De-ionized Water] Probe
15 X 15cm Charged Plate
Low Profile Charged Plate

◆ **Measure and calibrate ionizer balance and discharge time**
 ◆ **Selectable plate size and capacitance to match ESD sensitive device characteristics**

- Determine what type and how many ionizers are needed for a specific location
- Determine optimum location and placement of ionizers
- Perform periodic verification of ionizer performance

Charged-Plate Monitors (CPM) can be used for:

- Decay Measurements of Dissipative Materials
- Charge Dissipation of Hand-Held Tools
- Charge Dissipation of Finger Cots and other similar items
- “Walking Tests” to verify minimal charge generation of floors, foot ware and personnel

In accordance with official ESD /ANSI STM/IEC International Standard

- DI (de-ionized) Water Probes available
- Low profile Charged Plate available

Example of a Decay Curve
Example of a Walking Test

Model 157, 541A, 542A
 PC Software Records / Track Tests

Use a Charged-Plate Monitor to monitor/record electrostatic voltage. Use the Walking Test Adapter kit for the Model 541A/542A Electrostatic Voltmeters to measure, display, monitor and record electrostatic data. Use the Walking Test Adapter for the Model 152-1 Resistance Meter to measure body resistance to ground.

◆ **Ensure static charges on materials are dissipated safely to ground potential**

Resistance Meters can be used to measure and test:

- Automated handling equipment
- Dissipative (Antistatic or ESD safe) Trays
- Flooring Materials
- Footwear
- Garments
- Grounding
- Seating
- Soldering/desoldering hand tools
- Resistivity Measurement of Static Dissipative Planar Materials
- Small Area Measurements
- Work Surfaces
- Wrist straps
- Hand-Held One-Point Probe to verify resistance of floors, foot ware and personnel
- Volume Resistance Measurements
- Walking Test Adapter Available
- Optional TEST PLATE SET [17530] available as described in the ESD STM11.12 and IEC 61340-2-3 standards.

NEW! 152P-CR-1 Concentric Ring Probe for Surface/Volume resistance measurements.

Custom Designs Available

◆ **Measurements to Protect Sensitive Devices** ◆ **Other NEW Products from Trek**

The Trek Model 821 HH Infitron® high impedance voltmeter performs accurate contacting (or non contacting) measurements from 0 to ±2 kV

- Easily measures voltage levels of both conductive and insulative objects and surfaces with zero charge transfer
- Highly stable, highly accurate measurement capability for ESD sensitive components, including semiconductors, LCDs and MR head sensors
- Probe tips assume voltage level of the measured object surface, virtually ensuring that no ESD event will occur upon contact
- A record/hold feature captures data measurements and allows them to be stored for review at a later time

The Model 920 simultaneously tests the integrity of an operator’s wrist strap, footwear and the presence of an inline current limiting resistor to determine proper operator grounding without the necessity of separate testing

Trek’s Model 900A is able to detect and alert electrostatic discharge events related to CDM (Charge Device Model)

Trek Model 159HH is a lightweight hand-held charged plate monitor offering highly accurate measurements that can be used to evaluate ionizer performance

The compact 930 benchtop ionizer provides efficient ion balance to enable the quick neutralization of charge

The Model 950 ionizer neutralizes charged surfaces by emitting an ion-rich, direct air flow

◆ **Electrostatic measurements locate and measure static charge levels for compliance with SEMI E78**

Electrostatic Voltmeters are necessary to accurately measure surface voltages.....

- High Speed Measurement capability which enables measurement of moving devices in processes
- High Accuracy Measurements with a wide range of spacings between probe and surface areas
- Small Surface Area Resolution (For example: 3 mm for typical Trek Electrostatic Voltmeters)
- High Speed, High Resolution, and High Temperature Probes
- DC Feedback provides no field distortion
- Walking Test Adapter kits are available for Trek Models 541A and 542A Electrostatic Voltmeters

Charge Distribution on Plural Devices