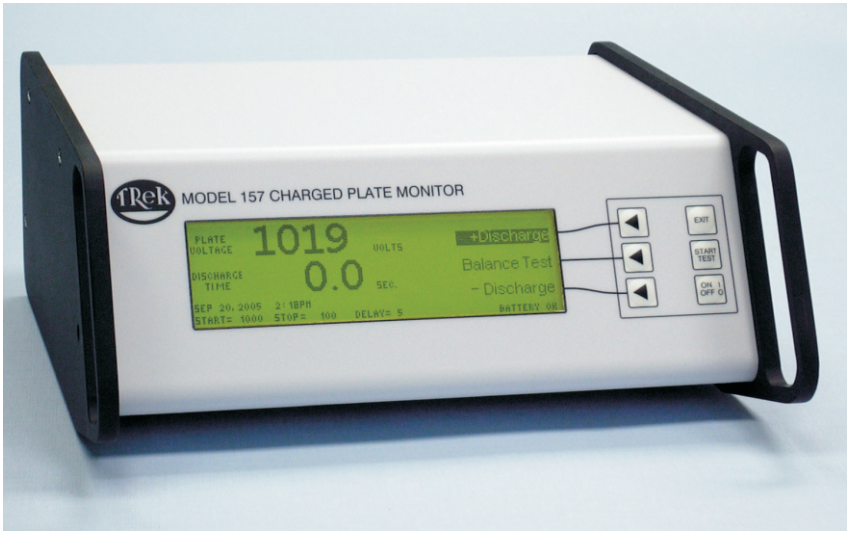
Model 157

Charged-Plate Monitor



Now with Enhanced Features!

- *Store & retrieve data as data points or graphs*
- *Record operator comments for reference*
- *"Fast" data acquisition mode now available*
- *Ideal for monitoring static charge in a manufacturing facility*
- *Suitable for dissipative testing of materials*

Trek's Model 157 Charged-Plate Monitor offers greater accuracy, stability and bandwidth than conventional designs. It combines Trek's patented precision charge measurement capability with features that drive down performance testing and maintenance costs.

Model 157 is suitable for semiconductor, disk drive, LCD and many other manufacturing environments that are sensitive to static charge. It can be used to test all types of ionizers including room ionization systems, AC and DC blowers, nuclear ionizers, gun type ionizers, and pulsed DC ionizers. It is also useful in materials evaluation for testing dissipative qualities.

Features include a user-friendly menu system with a clear and easy-to-read digital display, powerful graphics display, manual or bar code reading capability for quick ionizer identification (and storage of associated tests results), the capability of storing hundreds of ionizer tests on board for later download and data analysis, USB port for uploading/downloading test sequences and test results to a computer, optional thermohygrometer to record temp/humidity conditions, and a lightweight static-dissipative enclosure for optimum ease of transport.

Enhanced features now include the ability to store & retrieve data as data points or graphs, the option to record operator comments for future reference, and the addition of a "fast" data acquisition mode (1 ms/data point) for rapidly-changing discharge events, to complement the "normal" mode (10 ms/data point).

Technology: Trek's Model 157 employs a revolutionary charged-plate monitor design that utilizes an ultrahigh-impedance, high-voltage follower to monitor the ion collecting plate voltage. This technique provides high accuracy and virtually infinite impedance loading of the plate, while allowing the ion collecting plate to be charged and monitored through the same small-diameter cable connection.

Flexibility: The measurement capacitance is independent of the physical size and shape of the ion plate. Therefore, the size and shape of an ion collecting plate, as well as the measurement capacitance, may be customized to match a particular ESD-sensitive device within a manufacturing process, or be made to conform to the ANSI/ESD-STM3.1 standard test method.

Greater Bandwidth: Trek's technology also provides greater bandwidth enabling "true" responses to be observed, avoiding the masking of results which can occur with other systems.

Balance Tests: The Model 157 resolves 0.1 volts and features high accuracy with extremely low offset and drift, which is ideal for testing ionizers in facilities requiring critical ion balance such as in GMR and TMR manufacturing areas.

Discharge Tests: Start and stop voltages are programmable in 1 volt increments.

Ease of use: The Model 157 incorporates a user-friendly menu system. Frequently used functions are a keystroke away. A powerful graphics display emphasizes important information and provides operator prompts.

Portability: Designed to be small and lightweight, this unit is easily moved within a facility.

Battery Life: Features over 8 hours of battery life.

Model 157 Charged-Plate Monitor Specifications

Performance

Monitored Voltage Range
0 to ±1020 V DC or peak AC.

Bandwidth (-3 dB)
DC to 80 Hz.

Zero Stability (referred to plate voltage)
Drift with Time (no incident ion flow)
Less than 6 V/minute.
Drift with Temperature
Less than 10 mV/ °C, noncumulative.

Decay Mode Thresholds
Start Voltage
Programmable from
1 to ±1000 V in 1 V increments.
Start Accuracy
Within ±1 V of
programmed start voltage.
Stop Voltage
Programmable from
0 to ±999 V in 1 V increments.
Stop Accuracy
Within ±1 V of
programmed stop voltage or
±0.2 V if set less than or equal to 90 V.
Discharge Timer Resolution
0.1 seconds, from 0.1 to 999.9 seconds.

Plate Self-Discharge Rate
Less than 12 volts/minute.

Features

Menu Selection and Display
Six soft-keys and display prompts navigate the user through system operations. Automated or manual tests can be performed, programmed, or retrieved. Among the functions are:

+DISCHARGE, -DISCHARGE TESTS
Sets the plate voltage to a value just above the programmed start voltage and resets the discharge timer to zero.
BALANCE TEST
Sets the plate voltage to 0 V, ±0.5 V.

Memory
Can store or retrieve as many as 1500 manual tests or up to 1000 automated test sequences.

CE **compliant**

Features (cont.)

TEMP/RH Meter Connector
A connector receives an input from an optional thermohygrometer and enables the Model 157 to display environmental data on the LCD screen and also save or retrieve the information on test results.

Bar Code Input Connector
A connector receives an input from an optional bar code reader and enables the Model 157 to display bar code identification on the LCD screen and also save or retrieve the information on test results.

Data Retrieval and Analysis (USB Port)
Data can be exported from the Model 157 into a PC computer through a USB port for later analysis or record keeping.

Fast Mode (data acquisition)
When connected to a computer, data can be collected at a rate of 1 ms/data point (normal rate is 10 ms/data point). This is useful for evaluating the resistive or dissipative properties of materials.

Voltage Monitor Output
A BNC providing a low voltage replica of the plate voltage.
Scale Factor
1/200th of the plate voltage.
DC Accuracy
Better than 0.1% of full scale.
Offset Voltage
Less than ±10 mV.
Output Noise
Less than 10 mV rms.
Output Impedance
Less than 0.1 Ω.

LCD Display Screen with LED back light
127 mm x 38 mm (5″ x 1.5″) screen displays all data and program options.
Resolution
240 x 64 pixels.

Ion Collecting Plates (ordered separately)
Other capacitances and sizes available.
Dimensions
150 mm x 150 mm, (6″x 6″ square).
25 mm x 25 mm, (1″x 1″ square).
Capacitance
20 pF ±2 pF.

General

Power Requirements
Battery Eliminator/Charger Model 1K010 available for all nominal line voltages. Contact TREK, INC. or an authorized service organization for more information.
Output Connector
2.1 mm DC power plug.
Output Voltage
15 V DC.
Output Current
2 A.

Battery Operation
Rechargeable battery, supplied.
Operating Time
Greater than 8 hours from a full charge (with no LED back light).
Recharge Time
Less than 3 hours to full charge.
Recharge Degree
LCD screen battery status indicator.

Operating Conditions
Temperature
5 °C to 35 °C.
Relative Humidity
To 80%, noncondensing.

Instrument Dimensions
102 mm H x 254 mm W x 241 mm D
(4″ H x 10″ W x 9.5″ D).

Instrument Weight
2 kg (4.4 lb).

Voltage Monitor Connector
BNC connector.

Ground Receptacle
Banana jack.

Cable from Instrument to Floating Plate
Coaxial type. Diameter of 4.95 mm (0.195″). Length of 3 meters (10 ft), nominal.

USB Port Connector
Connects to a PC for data exchanges or transfers.

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All specifications are subject to change.
1124/DEC

Model 157 Ordering Information

Charged-Plate Monitor . . . . . Model 157
Charged-Plate Monitor with bar code reader. . . . . Model 157-1

Ion Collecting Plates

Standard Plates (ordered separately)
150 mm x150 mm (6″ x 6″ square) plate 17397
25 mm x 25 mm (1″ x 1″ square) plate 17375

Special Plates (ordered separately)

Included Accessories:
Operator's Manual 23280
Software CD-ROM 45833
Banana to Banana Stackable Cord (9 ft.) N9044
Universal AC Adapter (100 V to 240 V AC ±10%) 1K010
USB Cable BA103
Carrying Case for unit and accessories 43863

Optional Accessories:
Ion Collecting Plate Tripod DK142
Thermohygrometer Kit (Omega HH311& cable) 1K028
Bar Code Wand with DB9 Connector M1028

New Accessories for Charged Plate Monitors

Trek Models 156A, 157, and 158

DI Water Probe

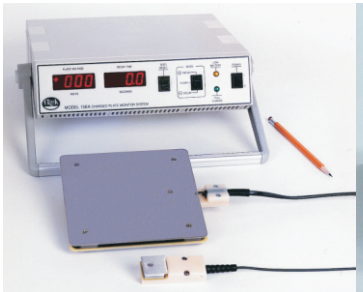
Trek's Model PM08035 probes can be used for electrostatic measurement of de-ionized water. The probe can be used during critical wafer sawing processes to monitor for charge accumulation. This probe can be used with other applications or processes involving de-ionized water.

Two probe models are available for user defined or application specific purposes. The Model PM08035A probe has a 0.25 inch sensor. The Model PM08035B probe has an independent wire sensor.

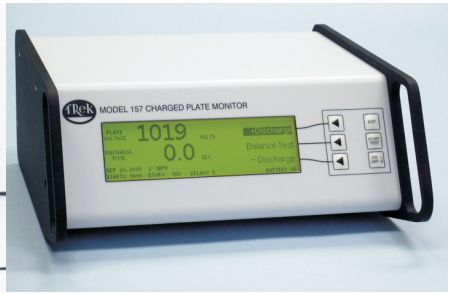
Low Profile Charged Plate

Trek's Model 156P-LP Low Profile Charged Plate provides a design used for ESD monitoring of sensitive manufacturing processes in tight spacing situations. The thin plate is under 7 mm in height, light-weight and can be hand-held for easy transport.

Model 156P-LP



Model 156A



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Model 156A and 157

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