

Trek Model 157

Charged Plate Monitor



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

Enhanced features, such as those that enable the operator to store and retrieve data as data points or graphs and record operator comments for reference, make the Model 157 ideal for use in dissipative testing of materials and monitoring of static charge.

Key Specifications

- Bandwidth (-3 dB): DC to 80 Hz
- Decay Mode Thresholds: Start and stop voltages are programmable from 1 to $\pm 1000V$ in 1 V increments
- Data Retrieval/Analysis: Data can be exported from the Model 157 into a PC through a USB port for subsequent analysis or record keeping
- Data Acquisition Speed: When connected to a computer in Fast Mode, data can be collected at a rate of 1 ms/data point (Normal mode generally collects at a rate of 10 ms per data point). This is useful for evaluating the resistive or dissipative properties of materials

Typical Applications Include

- ESD monitoring of sensitive manufacturing processes such as semiconductor, disk drive and LCD
- Testing of all types of ionizers, including room ionization systems, AC and DC blowers, nuclear ionizers, gun type ionizers, and pulsed DC ionizers
- High temperature applications
- ESD measurement of de-ionized water
- Dissipative testing applications

Features and Benefits

- Customizable measurement capacitance provides assurance that ESD process needs are met in manufacturing and that there is conformance to ANSI/ESD-STM3.1 and IEC61340-5-1 standard test methods
- Greater bandwidth enables "true" responses to be observed by avoiding the masking of results which can occur with other vendors' systems
- Extremely low offset and drift ensures high accuracy, making it ideal for applications requiring critical ion balance such as GMR and TMR manufacturing areas
- Compact and lightweight, for easy portability within a facility
- NIST-traceable Certificate of Calibration provided with each unit
- CE compliant



Model 157 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)	
<i>Drift with Time (no incident ion flow)</i>	Less than 6 V/minute
<i>Drift with Temperature</i>	Less than 10 mV/°C, noncumulative
Decay Mode Thresholds	
<i>Start Voltage</i>	Programmable from 1 to ± 1000 V in 1 V increments
<i>Start Accuracy</i>	Within ± 1 V of programmed start voltage
<i>Stop Voltage</i>	Programmable from 0 to ± 999 V in 1 V increments
<i>Stop Accuracy</i>	Within ± 1 V of programmed stop voltage or ± 0.2 V if set less than or equal to 90 V
<i>Discharge Timer Resolution</i>	0.1 sec., from 0.1 sec. to 999.9 sec.
Plate Self-Discharge Rate	Less than 12 V/minute

Voltage Monitor

Output	BNC provides low voltage replica of plate
<i>Scale Factor</i>	1/200th of the plate voltage
<i>DC Accuracy</i>	Better than 0.1% of full scale
<i>Offset Voltage</i>	Less than ± 10 mV
<i>Output Noise</i>	Less than 10 mV rms
<i>Output Impedance</i>	Less than 0.1 Ω

Features

Menu Selection and Display	Six soft-keys and display prompts enable the user to navigate through system operations. Automated or manual tests can be performed, programmed or retrieved. Among the functions are:
<i>+DISCHARGE, - DISCHARGE Tests</i>	Sets the plate voltage to a value just above the programmed start voltage and resets the discharge timer to zero
<i>BALANCE Test</i>	Sets the plate voltage to 0 V, ± 0.5 V
Memory	Store or retrieve up to 1500 manual tests or up to 1000 automated test sequences
TEMP/RH Meter Connector	Receives input from optional thermohygrometer to enable display of environmental data on LCD screen and to save or retrieve information on test results
Bar Code Input Connector	Receives input from optional code reader to enable display of bar code ID and to save/retrieve information on test results

Features (cont.)

Data Retrieval and Analysis	Export data to a PC through a USB port for subsequent analysis or record keeping
Fast Mode (Data Acquisition)	When connected to a PC, collect data at 1 ms/data point (normal is 10 ms/data point); useful in evaluating resistive or dissipative properties of materials
LCD Display Screen with LED back light	127 mm x 38 mm (5" x 1.5") screen displays all data and program options; Resolution is 240 x 64 pixels

Mechanical

Dimensions	102 mm H x 254 mm W x 241 mm D (4" H x 10" W x 9.5" D)
Weight	2 kg (4.4 lb.)
Voltage Monitor	BNC Connector
PC for Data Transfer	USB
Ground Receptacle	Banana Jack
Cable 157 to Plate	Coaxial (3 m length, 4.95 mm diameter)

Operating Conditions

Temperature	5°C to 35°C (41°F to 95°F)
Relative Humidity	To 80%, non-condensing
Altitude	To 2000 m (6561.68 ft.)

Electrical

Battery Eliminator	PN: 1K010 available for all line voltages
<i>Output Connector</i>	2.1 mm DC power plug
<i>Output Current</i>	2 A
Battery Operation	Rechargeable battery supplied
<i>Recharge Time</i>	Less than 3 hours to full charge
<i>Recharge Indicator</i>	LCD screen battery status indicator

Supplied Accessories

Operator's Manual w/ Software CD ROM	PN: 24007
Universal AC Adapter	PN: 1K010
Banana Jack	PN: N9044
USB Cable	PN: BA103
Carrying Case	PN: 43863

Optional Accessories

The Model 157 is optionally available with a Bar Code Reader	Model 157-1
Bar Code Wand with DB9 connector (only for use with the Model 157-1)	PN: M1028
Thermohygrometer Kit (Omega HH311 and serial cable)	PN: 1K028
Ion Collecting Plate Tripod	PN: DK232
Ion Collecting Plates (Capacitance: 20 pF ± 2 pF)	PN: 17397 - 150 mm x 150 mm (6" x 6" sq) PN: 17375 - 25 mm x 25 mm (1" x 1" sq)

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