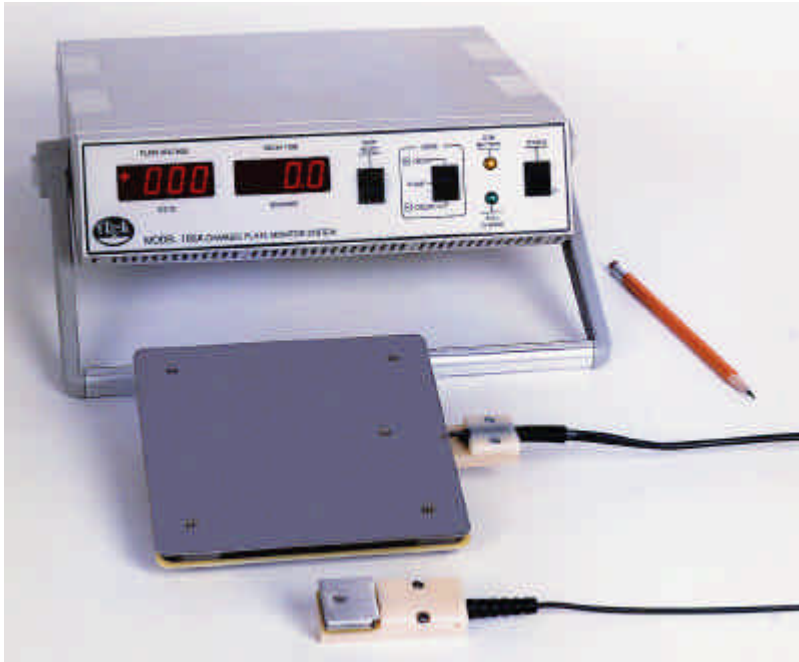


# Model 156A

## Charged-Plate Monitor



*Is your ionizer neutralizing charges as quickly and completely as needed?*

*Is the ion output balanced?*

*Can you evaluate your ionizers while they are installed in production?*

*Is the recording of your ionizer test data efficient and cost effective?*

### **Importance of Ionization Monitoring**

The Trek Model 156A Charged-Plate Monitor will enable you to confidently answer the above questions so that you can effectively monitor and maintain your ionization program.

- Use the Model 156A to verify that new ionizers meet your selection criteria.
- When evaluating newly setup or active ionizer installations, use the Model 156A to determine if the decay times and ion balance performance are satisfactory for your application.
- Use the compact and portable Model 156A to determine when an ionizer needs maintenance.

The Model 156A Charged-Plate Monitor is an important tool for evaluating the performance of the air ionizers used to neutralize static charges.

Trek offers the Model 156A/1 with a computer interface option. This option adds both a serial communications port and an applications software program to operate, analyze, and save data from the charged-plate monitor to a computer.

The Model 156A tests the efficiency of your ionizer's ion production by timing how long it takes air ions produced to discharge a floating plate that has been pre-charged to either a positive or negative value. The Model 156A also tests the balance between positive and negative air ions by measuring the offset voltage generated on a floating plate due to an imbalance of positive and negative air ions impinging on the plate from your ionizer.

Typically, as the ionizer ages, the rates of positive and negative air ion production decline. Consequently, the time required for the ionizer to neutralize static charges increases, and the balance of positive and negative air ions changes. The neutralization (decay) time may become too long for the ionizer to fully neutralize charges that are generated at a work location, or the ionizer may begin to charge objects that were initially uncharged. By using the Model 156A to periodically measure the decay times and the ion balance, the need for, and frequency of, ionizer preventative maintenance can be easily determined.

**CONTROL WITHOUT COMPROMISE**



# Model 156A Specifications

## Performance

- Monitored Voltage Range**  
0 to  $\pm 1100$  V DC or peak AC.
- Small Signal Bandwidth (-3 dB)**  
DC to 1 kHz (measured at 20 V p-p).
- Large Signal Bandwidth**  
DC to 10 Hz (measured at 2000 V p-p).
- 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**  
Unit and software programmable from 1 to  $\pm 1000$  V in 1 V increments.
  - Start Accuracy**  
Unit and Software within  $\pm 1$  V of programmed start voltage.
  - Stop Voltage**  
Unit and software programmable from 0 to  $\pm 999$  V in 1 V increments.
  - Stop Accuracy**  
Unit and Software within  $\pm 1$  V of programmed stop voltage.
- Plate Self-Discharge (unpolarized)**  
Less than 12 V/minute.

## Features

- Mode Select**  
A three-position toggle switch selects the +Decay, -Decay, or Float mode of operation. This switch is also used in combination with the Test/Reset Control switch to program the START and STOP voltages.
- Test/Reset Control**  
A momentary toggle switch used in conjunction with the Mode Select switch to program the START and STOP voltages.

## Features (cont.)

- Test/Reset Control (cont.)**
  - +Decay and -Decay Modes**  
Sets the plate voltage to a value greater than the programmed start voltage and resets the decay timer to zero.
  - Float Mode**  
Sets the plate voltage to 0 V  $\pm 2$  V.
- Voltage Monitor Output**  
A BNC providing a low voltage replica of the plate voltage.
  - Ratio**  
1/200th of the plate voltage.
  - DC Accuracy**  
Better than 0.1% of full scale.
  - Offset Voltage**  
Less than  $\pm 10$  mV.
  - Output Noise**  
Less than 10 mV rms (measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter).
  - Output Impedance**  
Less than 0.1  $\Omega$ .
- Plate Voltage Digital Panel Meter**  
3 1/2 digit red LED display.
  - Range**  
0 to  $\pm 1100$  V.
  - Resolution**  
1 volt.
  - Accuracy**  
Better than 0.1% of full scale  $\pm 1$  count.
- Decay Time Digital Panel Meter**  
4-digit red LED display.
  - Range**  
0 to 9999 seconds.
  - Resolution**  
0.1 seconds, from 0.1 to 999.9 seconds; 1 second, from 1000 to 9999 seconds. (The display will indicate "----" when the decay time exceeds 9999 seconds.)

## Features (cont.)

- Ion Collecting Plate (standard option)**
- Dimensions**  
15 cm x 15 cm square, (6"x 6" square).
- Capacitance**  
20 pF  $\pm 2$  pF.  
(Other capacitance options available)

## General

- Power Requirements**
  - Battery Eliminator/Charger**  
(ordered separately)
    - Specifications**
      - Output Connector**  
2.1 mm DC power plug.
      - Output Voltage**  
12 to 14 V DC.
      - Output Current**  
1 A.
    - Battery Operation**  
Rechargeable battery, supplied.
      - Operating Time**  
8 hours from a full charge (156A).
      - Recharge Time**  
3 hours to full charge.
      - Other**  
Low battery indicator.  
Full charge indicator.
  - Operating Conditions**
    - Temperature**  
5 °C to 35 °C.
    - Relative Humidity**  
To 80%, noncondensing.
  - Instrument Dimensions**  
83 mm H x 318 mm W x 280 mm D,  
(3.25" H x 12.5" W x 11" D).
  - Instrument Weight**  
Approx. 2 kg (4.4 lb).
- The Model 156A and 156A/1 are CE Compliant*

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## Model 156A and 156A/1 Ordering Information

### Model 156A

<u>Item</u>	<u>Part No.</u>
Charge Plate Monitor .....	Model 156A
Charge Plate Monitor with serial interface .....	Model 156A/1
Computer Requirements: Windows 9X or later, NT4, PC compatible computer, 486DX66 or better, 16 Mb of RAM, and high speed serial port with 16550 or equivalent UART.	

### Ion Collecting Plates

- Standard Plates (ordered separately)
  - 15 cm x 15 cm (6" x 6") plate ..... Model 156AP-C150x150-R3M
  - 25 mm x 25 mm (1" x 1") plate ..... Model 156P-C25x25-S3M
- Special Plates (ordered separately)  
Custom plate sizes are available by special order.

### Included Accessories

<u>Item</u>	<u>Part No.</u>
Operator's Manual .....	23126
PC Compatible Computer Software (156A/1 only).....	43267
Banana to Banana Stackable Cord (9 ft.).....	N9044

### Optional Accessories

Battery Eliminator/Charger (115 V AC) .....	L5111
Universal AC Adapter Kit (100 to 240 V AC).....	1K010
Ion Collecting Plate Tripod.....	DK142
Carrying Case .....	43433



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