TREK PD04002A

Versatile microprocessor-based charged plate monitor ideally suited to monitor the performance of air ionizers that are used in critical wide temperature operations.

The ultra-sensitive Trek® PD04002A makes it the ideal choice in air ionizer monitor applications where small area ion collecting sensors are used to meet the requirement for high accuracy ion balance measurement to levels of less than one volt. The voltage of the charged plate is initialized prior to discharge time testing. Balance tests, positive discharge tests, and negative discharge tests can be initialized from a remote location through digital command signals. The Trek PD04002A utilizes a new technique that requires less than 0.1 picoampere of ion field current to achieve full accuracy and stability. Other product designs require up to 2000 times more ion current to be drawn from the ion field to achieve stability.

AT A GLANCE

Charged Plate Voltage Range

0 to ±55 VDC or peak AC, nominal

Large Signal Bandwidth (-3 dB)

DC to greater than 200 Hz

Small Signal Bandwidth (-3 dB)

DC to 2.5 kHz

PRODUCT HIGHLIGHTS

- Utilizes standard, custom, and wide temperature range charged plates
- High temperature charged plate (Trek PD04002AP) 25 x 25 mm (1 x 1 in)
- Voltage monitor output for remote monitoring
- Exceptional accuracy and stability
- Compact design
- Remotely monitor the charged plate voltage using a rear panel connection
- Use on a table top or securely mount the monitor and charged plate with fasteners at the bottom of the unit
- The voltage output at the Output “HI” terminal in reference to the Output “LO” terminal (ground) is a proportional buffered representation of the charged plate voltage at a scale factor of 1 to 22 (other scale factors are available).
- CE compliant
- NIST-traceable Certificate of Calibration provided with each unit

TECHNICAL DATA

Performance Specifications	
Charged Plate Voltage Range	0 to ±55 V DC or peak AC, nominal
Charged Plate Voltage Weight Measurement Accuracy	0.2% of full scale
Large Signal Bandwidth	DC to greater than 200 Hz
Small Signal Bandwidth	DC to 2.5 kHz (-3 dB)
Charged Plate Self-Discharge Rate (no incident ion flow)	Less than 2 V per minute at 55 V for relative humidity up to 85%
Charged Plate Capacitance	20 pF ± 4 pF. (The capacitance is independent of charged plate connecting cable length.)

Voltage Monitor Output V[1]	
0 to +5 VDC represents a charged plate voltage of -55 V to +55 V (other scale factors are available).	
Accuracy	0.2% of full scale

Digital Command Terminals	
All digital command inputs are at a 10 VDC High Level. A minimum of 6 mA of current sink capability is required to pull the digital command inputs to ground (0 V).	
Plate (O)	Discharges the floating plate to zero volts
Plate (+)	Precharges the floating plate to +55 V
Plate (-)	Pecharges the floating plate to -55 V
Positive discharge tests, negative discharge tests, and balance tests can be initialized from a remote location through these digital command signals. The voltage of the charged plate is initialized to +55 V or -55 V for discharge time testing or zero for balance testing.	

High Temperature Charged Plate (Trek PD04002AP)	
25 x 25 mm (1 x 1 in)	
Cable Length	3 m
Capacitance	20 pF 5 pF
Operating Range	-60 to 160°C
Relative Humidity	To 85%, noncondensing

Mechanical Specifications	
Dimensions (H x W x D)	122 x 43 x 153 mm nominal (4.8 x1.7 x 6 in)
Weight	0.3 kg (0.6 lb)
Power	The Trek PD04002A operates from a +24 V ±10% supply @ 0.21 amps
Connection Block	Phoenix Contact Connector
	Connections include: +24 VDC power input (+), +24 VDC return (-), Voltage Monitor (Hi), Voltage Monitor (Lo), Digital Reset (plate 0), Digital Reset (plate +), and Digital Reset (plate-)
Charge Plate Assembly Input Connector	BNC connector

Environmental Specifications	
Temperature	5 to 35°C (41 to 95°F)
Relative Humidity	To 85% RH, noncondensing

[1] When the charged plate is at -55 volts, the voltage at the Voltage Monitor Output V HI is 0 V. When the charged plate is at 0 volts, the voltage at the voltage monitor is +2.5 volts. When the charged plate is at +55 volts, the voltage at the voltage monitor is +5 volts.
[2] These instruments are designed to make electrostatic voltage measurements only. Do not use this instrument to make measurements of "hard" voltage sources or voltage sources which can deliver currents high enough to cause harmful shocks or personal injury.

TECHNICAL DATA (CONTINUED)

Features		
Mounting	Trek PD04002A Monitor	Four M4 mounting screws can be used to secure the monitor assembly from the bottom
	Charged Plate	One (1) M4 mounting screw designed to make electrostatic can be used to secure the voltage measurements only. Do not charged-plate monitor assembly use this instrument to make measurements of “hard” voltage from the bottom.
User Connections	Connection block and M4 ground lug	

ABOUT ADVANCED ENERGY

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AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

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