

TREK 341B

High-speed, high voltage electrostatic voltmeter for non-contact surface voltage measurements using a field-nulling technique for DC stability and high accuracy.



The Trek® 341B is a DC-stable, precision electrostatic voltmeter for making non-contacting surface voltage measurements. The Trek 341B employs a field-nulling technique that achieves DC stability and high accuracy even if the probe-to-surface spacing changes. This permits measurements of either stationary or moving surfaces without the need to establish fixed spacing to maintain accuracy. The instrument also utilizes a patented probe design that eliminates the need for close tolerance components which significantly improves noise and drift under conditions of high humidity and wide temperature ranges.

PRODUCT HIGHLIGHTS

- Superb noise and drift performance
- Precision voltage monitor output
- Monitor provides a low voltage replica of the measured electrostatic potential for monitoring purposes or for use as a feedback signal in a closed loop system
- Easy-to-read LED display
- Optional probes offer versatility (ordered separately)
- Can be operated on a bench top, or with optional hardware, in a standard 19 in rack
- NIST-traceable Certificate of Calibration provided with each unit

TYPICAL APPLICATIONS

- Charge accumulation monitoring of LCD production processes
- Monitoring surface potentials in the electrostatic painting process
- Measuring of electrostatic potentials on polymers, rubber, fabrics, and paper

AT A GLANCE

Measurement Range

0 to ± 20 kVDC or peak AC

Measurement Accuracy

Better than $\pm 0.1\%$ of full scale

Speed of Response

Less than 200 μ s for a 1 kV step

TREK ELECTROSTATIC VOLTMETER 341B

TECHNICAL DATA

Performance Specifications	
Measurement Range	0 to ± 20 VDC or peak AC
Measurement Accuracy	Better than $\pm 0.1\%$ of full scale, referred to the voltage monitor
Speed of Response	Less than 200 μ s for 1 kV step. Less than 5 ms for 20 kV step change (10 to 90%)
Full Signal Bandwidth	DC to better than 25 Hz
Stability	Drift with Time: Less than 100 ppm/hour, noncumulative Drift with Temperature: Less than 100 ppm/ $^{\circ}$ C

Voltage Monitor	
Output	A buffered output provides a low-voltage replica of the measured voltage
Ratio	1/1000th of the measured voltage
Output Noise	Less than 20 mV rms ¹
Output Impedance	Less than 0.1 Ω

Voltage Display	
Voltage Display	4 $\frac{1}{2}$ digit LED display
Range	0 to ± 19.99 kV
Resolution	1 V
Zero Offset	± 2 counts, referred to the voltage monitor
Sampling Rate	3 readings per second

Mechanical Specifications	
Dimensions (H x W x D)	230 x 441 x 432 mm (9.06 x 17.36 x 17 in)
Weight	17 kg (37 lb)
Voltage Monitor Output Connector	BNC connector
Ground Receptacle	Green binding post

Operation Conditions	
Temperature	0 to 40 $^{\circ}$ C (32 to 104 $^{\circ}$ F)
Relative Humidity	17 kg (37 lb)
Altitude	To 2000 m (6561.68 ft)
Probe-to-Surface Separation	3 mm \pm 1 mm (recommended)

Electrical Specifications	
AC Line Cord Receptacle	Standard 3-prong with integral fuse holder
Line Voltage	Factory set for one of two ranges: 90 to 127 VAC or 180 to 250 VAC, at 48 to 63 Hz
Power ON/OFF	Two-position rocker switch that turns ON and OFF the main power to the instrument

Features	
High Voltage Ready LED	LED indicator illuminates when the Trek 341B is ready to make high voltage measurements
High Voltage ON-OFF	Two-position toggle switch that turns on and off the high voltage power supply inside the instrument
Zero Control	A 10-turn control to null offsets or other zero errors that occur within the system

¹ Measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter

REFERENCE NUMBERS

Trek 341B Electrostatic Voltmeter	
341B-L	Trek 341B Electrostatic Voltmeter (90 to 127 VAC)
341B-H	Trek 341B Electrostatic Voltmeter (180 to 250 VAC)

Trek 341B-1 Electrostatic Voltmeter (for use with 3460-1 Line Driver) ¹	
341B-1-L	341B-1 Electrostatic Voltmeter (90 to 127 VAC)
341B-1-H	341B-1 Electrostatic Voltmeter (180 to 250 VAC)
17181	Model 3460 Line Driver (used with 341B-1)

Supplied Accessories	
23306	Operator's Manual
N5002	Line Cord, for 90 to 127 VAC
Varies	Line Cord, for 180 to 250 VAC (determined by the geographical destination)

Optional Accessories	
3460-1	Probe Line Driver (required when used with the Trek 341B-1 and an extended cable length)
17218	Trek 3450EC Probe Extension Cable (from the Trek 341B to the probe)
612RA	19 in Full Rack Mount Kit

Probes	
17157	Standard Resolution, Trek 3450 Side-viewing
17284	High Temperature (up to 100°C), Trek 3455ET End-viewing
17285	High Temperature (up to 100°C), Trek 3453ST Side viewing

¹ Trek 341B-1 utilizes a separate line driver for extended probe cable lengths)



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ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

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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