

## 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  $\pm 20$  kVDC or peak AC

#### Measurement Accuracy

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

#### Speed of Response

Less than 200  $\mu$ s for a 1 kV step

## TECHNICAL DATA

| Performance Specifications |  |
|----------------------------|--|
| Measurement Range          | 0 to $\pm 20$ 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 $\mu$ 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 <sup>1</sup>   |
| Output Impedance | Less than 0.1 $\Omega$   |

  

| Voltage Display |   |
|-----------------|---|
| Voltage Display | 4 $\frac{1}{2}$ digit LED display               |
| Range           | 0 to $\pm 19.99$ kV                             |
| Resolution      | 1 V   |
| Zero Offset     | $\pm 2$ 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                  |

<sup>1</sup> 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)<sup>1</sup>

|          |   |
|----------|---|
| 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 |

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