The Trek Model 320C Electrostatic Voltmeter is a versatile instrument which is used for a variety of electrostatic applications including contact potential measurements, materials evaluation, and electret studies. The Model 320C makes highly accurate, noncontacting measurement of electrostatic potentials of 1 mV to 100 V over a wide range of probe-to-surface distances. The Model 320C is specifically designed for high sensitivity applications.

The Model 320C has adjustments to compensate for many sensitive testing conditions. A calibrated Null Voltage supply of ±10 volts nulls contact potentials when measuring voltages on dissimilar materials. The Null Voltage source may be used to null different work function voltages of the test surface or to function as a zero suppression voltage source.

A response Speed Control adjusts the speed/noise tradeoff of the Model 320C AC response. A self locking Drift/Spacing Null Adjustment minimizes the variation in monitored voltage values as the probe to test surface spacing changes.

The front panel has an easy to read 3½ digit LED display. The detected output voltage can be monitored through a 1:1 voltage monitor output and a switch selectable scale of 10:1 or 20:1 voltage monitor output.

The Trek patented low impedance probe assures measurement accuracy which is essentially independent of probe-to-test-surface spacing while eliminating the external environmental effects of high humidity and contamination, such as airborne dust, toner, ions and chemicals, on measurement accuracy.
Model 320C Specifications

All specifications are with a probe-to-surface separation of 1 mm.

### Performance

**Measurement Range**
0 to ±100 V DC or peak AC.

**Sensitivity**
1 mV.

**Accuracy**

**Voltage Monitor Output**
Better than ±0.05% of full scale.

**Voltage Display**
Better than or equal to ±2 counts, referred to the voltage monitor.

**Speed of Response (10% to 90%)**
Less than 300 ms for a 100 V step.

**Stability**

**Drift with Time**
Less than 50 ppm/hour, noncumulative.

**Drift with Temperature**
Less than 50 ppm/°C
(1:1 monitor output).
Less than 100 ppm/°C
(10:1/20:1 monitor output).

### Features

**Null Voltage Source**
A calibrated 10-turn dial representing a 10 volt supply, with switch selectable polarity, used to produce zero volts output when the probe is coupled to a known zero volt surface. Also used to null contact potentials on dissimilar surfaces.

**Range**
±10 volts

**Accuracy**
1%

**Resolution**
20 mV.

**Probe-to-Surface Separation**
1 mm (recommended).

### Features (cont.)

**Response Speed Control**
A front panel potentiometer that adjusts the speed/noise tradeoff of the Model 320C AC response.

**Voltage Display**
3½ digit LED display.

**Range**
Switch selectable for ±10 V or ±100 V full scale.

**Resolution**

**10 V Range**
0.01 V.

**100 V Range**
0.1 V.

**Zero Offset**
±1 count, referred to the voltage monitor.

**Sampling Rate**
3 readings per second.

**Drift/Spacing Null Adjustment**
This back panel adjustment minimizes the variation in monitored voltage values as the probe to test surface spacing changes.

**Voltage Monitor Output (1:1 ratio)**
A buffered 0 to ±100 V output providing a replica of the measured voltage.

**Scale Factor**
1:1 of the measured voltage.

**Output Noise**
Less than 5 mV rms (measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter).

**Output Current**
5 mA.

**Output Impedance**
100 Ω, nominal.

### Features (cont.)

**Voltage Monitor Output**
A buffered 0 to ±10 V output providing a replica of the measured voltage.

**Scale Factors**
10:1 of the measured voltage or 20:1 of the measured voltage (switch selectable)

**Output Current**
5 mA.

**Output Impedance**
0.1 Ω, nominal.

### General

**Dimensions**
108 mm H x 223 mm W x 370 mm D
(4.25” H x 8.75” W x 14.5” D).

**Weight**
3.6 kg (8 lb).

**Voltage Monitor Connector**
BNC connector.

**Ground Receptacle**
Banana jack.

**AC Line Cord Receptacle**
Standard three-prong line cord with integral fuse holder.

**Line Supply**
Factory set for one of two voltage ranges: 90 to 127 V AC or 180 to 250 V AC, at 48 to 63 Hz (specify when ordering).

**Operating Conditions**

**Temperature**
0 °C to 40 °C.

**Relative Humidity**
To 90%, noncondensing.

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Model 320C Ordering Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No.</th>
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<tbody>
<tr>
<td>Model 320C-L (90 to 127 V AC)</td>
<td>320C-L</td>
</tr>
<tr>
<td>Model 320C-H (180 to 250 V AC)</td>
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<tr>
<td>Probe</td>
<td>17014</td>
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TREK, INC. certifies that each Model 320C is tested and calibrated to specifications using measurement equipment traceable to the National Institute of Standards and Technology or traceable to consensus standards. A Certificate of Calibration accompanies each instrument when it is shipped from the factory.

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