The Trek Model 370TR is a precision electrostatic voltmeter with the unique capability of making noncontacting surface voltage measurements in the range of 0 to ±3 kV DC or peak AC.

The 370TR employs an electrostatic field-nulling technique which achieves high DC stability and high measurement accuracy even if the probe to measured surface spacing changes. This permits measurements of either stationary or moving surfaces without the need to establish fixed spacing to maintain accuracy.

The Model 3629A Transparent probe permits light to pass through the probe to provide simultaneous radiation and measurement of a surface. This is useful for photosensitive surface studies such as ‘time of flight’ measurements of photoconductor surfaces.

A Digital Enable connection permits remote ON/OFF measurement capability. An automatic gain control feature of the 370TR eliminates the need for manual adjustment when changing probes or when changing the probe to measured surface separation. The 370TR also features one-step, push-button zeroing. When the ZERO button on the front panel is pressed, the 370TR automatically adjusts the output to zero volts when the probe is coupled to a known zero volt surface.

A precision voltage monitor provides a low-voltage replica of the measured electrostatic voltage for external monitoring purposes, or for use as a feedback signal in a closed-loop system.

An optional data acquisition module is available, featuring an IEEE-488 compatible interface, 14-bit resolution, 12-bit accuracy, and a programmable sampling period from 10 µs to 30 minutes.
## Model 370TR Specifications

All specifications are with a 3627 or 3629A probe at a probe-to-surface separation of 2 mm unless otherwise noted.

### Performance

- **Measurement Range**
  - 0 to ±3 kV DC or peak AC.

- **Measurement Accuracy**
  - **At the Voltage Monitor**
    - Better than ±0.05% of full scale.
  - **At the Voltage Display**
    - Better than ±0.1% of full scale
    - ±1 count, referred to the voltage monitor.

- **Speed of Response (10% to 90%)**
  - Less than 200 µs for a 1 kV step.

- **Stability**
  - **Drift with Time**
    - Less than 150 ppm/hour, noncumulative.
  - **Drift with Temperature**
    - Less than 100 ppm/°C.

### Features

- **Zero Control**
  - A momentary push-button switch to produce zero volts output when the probe is coupled to a known zero voltage surface.

- **Automatic Gain Control**
  - The 370TR automatically optimizes the gain of the AC response when changing the type of probe being used or when changing the probe-to-surface separation.

- **Voltage Display**
  - 4-character, 7-segment LED display.
  - **Range**
    - 0 to ±3000 V.
  - **Resolution**
    - 1 V.
  - **Zero Offset**
    - ±1 count, referred to the voltage monitor.
  - **Sampling Rate**
    - 2.5 readings per second.

- **Voltage Monitor Output**
  - A buffered output providing a low-voltage replica of the measured voltage.
  - **Scale Factors**
    - 1/100th of the measured voltage.
    - (1/200, 1/300, 1/600, 1/1000 options available.)
  - **Offset Voltage**
    - Less than 10 mV.
  - **Output Noise**
    - Better than ±0.05% of full scale.
  - **Output Impedance**
    - Less than 0.1Ω.
  - **Output Current Limit**
    - ±10 mA

- **Digital Enable**
  - An open collector, TTL compatible input to enable or disable the measurement.
  - A TTL high will enable the measurement, while a TTL low will disable the measurement.

### General

- **Digital Enable**
  - BNC connector.
- **Voltage Monitor Output Connector**
  - BNC connector.
- **Ground Receptacle**
  - Binding post.
- **Power Requirements**
  - **Line Voltage**
    - 90 to 127 V AC at 48-63 Hz
    - (180 to 250 V AC at 48-63 Hz option available).
  - **Power Consumption**
    - 60 VA, maximum.
- **Operating Conditions**
  - **Temperature**
    - 0 °C to 40 °C.
  - **Relative Humidity**
    - To 85%, noncondensing.

### Probes

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

- **Model 3629A (Transparent)**
  - **Body Shape**
    - Square.
  - **Aperture Size**
    - 5.3 mm diameter.
  - **Aperture Location**
    - Side.
  - **Dimensions**
    - 11.8 mm sq. x 65.6 mm L.

- **Model 3627**
  - **Body Shape**
    - Square.
  - **Aperture Size**
    - 1.5 mm x 3.0 mm.
  - **Aperture Location**
    - Side.
  - **Dimensions**
    - 11.8 mm sq. x 76.2 mm L.

- **Certification and Compliance**
  - TREK, INC. certifies that each Model 370TR is tested and calibrated to specifications using measurement equipment traceable to the National Institute of Standards and Technology.

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### Model 370TR

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<tr>
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<tr>
<td>Electrostatic Voltmeter with 1/100 Monitor Output Ratio</td>
<td>370TR-1</td>
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<tr>
<td>Electrostatic Voltmeter with 1/200 Monitor Output Ratio</td>
<td>370TR-2</td>
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<td>Electrostatic Voltmeter with 1/300 Monitor Output Ratio</td>
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### Optional Accessories

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<td>16073</td>
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<tr>
<td>603RA Full Rack Mounting Kit</td>
<td>603RA</td>
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<tr>
<td>604RA 1/2 Rack Mounting Kit</td>
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<tr>
<td>Transparent Probe</td>
<td>Model 3629A (side-viewing).</td>
</tr>
<tr>
<td>Standard Probe</td>
<td>Model 3627 (side-viewing)</td>
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</tbody>
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