

TREK 370

Non-contacting electrostatic voltmeter provides precise surface voltage measurements in the range of 0 to ± 3 kVDC or peak AC.



The Trek[®] 370 precision electrostatic voltmeter for non-contacting surface voltage measurements in the range of 0 to ± 3 kV DC or peak AC. The Trek 370 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.

PRODUCT HIGHLIGHTS

- Automatic gain control eliminates manual adjustment when changing probes or changing the probe to measured surface separation
- One step, push-button zeroing automatically adjusts the output to zero volts when the probe is coupled to a known zero volt surface
- Precision voltage monitor 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
- Digital enable allows an external device to turn the internal HV power supply on/off
- Operated on a bench top, or with optional hardware, in a standard 19-inch rack
- NIST-traceable Certificate of Calibration provided with each unit

AT A GLANCE

Very High Speed Response

Less than 50 μ s for a 1 kV step

Measurement Range

0 to ± 3 kVDC or peak AC

Measurement Accuracy

Better than $\pm 0.05\%$ of full scale

TECHNICAL DATA

Performance Specifications		
Measurement Range	0 to ±3 kVDC or peak AC	
Accuracy	Voltage Monitor: Better than ±0.05% of full scale	Voltage Display: Better than ±0.1% of full scale ±1 count, referred to the voltage monitor.
Speed of Response	Less than 50 μs for a 1 kV step (10 to 90%)	
Stability	Drift with Time: Less than 150 ppm/hour, noncumulative	Drift with Temperature: Less than 100 ppm/°C
Probe-to-Surface Separation	2 mm ± 1 mm (recommended)	

Voltage Monitor Output	
A buffered output providing a low-voltage replica of the measured voltage. 1/200, 1/300, 1/600, 1/1000 options available. (Offset Voltage and Output Noise specifications vary based on output scale factor.)	
Scale Factor	1/100th of the measured voltage
Offset Voltage	Less than 10 mV (at 1/100th scale)
Output Noise	Less than 20 mV rms ¹ (at 1/100th scale)
Output Impedance	Less than 0.1 Ω
Output Current Limit	±10 mA

Mechanical Specifications	
Dimensions (H x W x D)	108 x 233 x 430 mm (4.25 x 8.75 x 17 in)
Weight	5 kg (11 lb)
Digital Enable	BNC connector
Voltage Monitor Output Connector	BNC connector
Ground Receptacle	Binding post

Operation Conditions		
Temperature	0 to 40°C (32 to 104°F)	
Relative Humidity	To 85%, noncondensing	
Altitude	To 2000 m (6561.68 ft)	
Low-Voltage Safety Compliance	EN 61010-1	
	Overvoltage Category	CAT II: Local-level mains, appliances, portable equipment
	Pollution Category	Degree 1: Operate in environments where no pollution or only dry, nonconductive pollution occurs.

Electrical Specifications	
Line Voltage	Factory set for one of two ranges: 90 to 127 VAC or 180 to 250 VAC, at 48 to 63 Hz
Power Consumption	60 VA, maximum

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

TECHNICAL DATA

Features		
Zero Control	A momentary push-button switch to produce zero volts output when the probe is coupled to a known zero volt surface.	
Automatic Gain Control	The Trek 370 automatically optimizes the gain of the AC response when changing the type of probe being used or when changing the probe-to-surface separation.	
Digital Enable	An open collector, TTL compatible input to enable or disable the measurement. A TTL high will disable the measurement, while a TTL low will enable the measurement.	
Voltage Display	Four-character, Seven-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

REFERENCE NUMBERS

Trek 370			
Reference Number	Description	Line Voltage	
		90 to 127 VAC	180 to 250 VAC
370-1	Electrostatic Voltmeter with 1/100 Monitor Output Ratio	370-1-L	Contact Factory
370-2	Electrostatic Voltmeter with 1/200 Monitor Output Ratio	370-2-L	Contact Factory
370-3	Electrostatic Voltmeter with 1/300 Monitor Output Ratio	370-3-L	Contact Factory
370-6	Electrostatic Voltmeter with 1/600 Monitor Output Ratio	370-6-L	Contact Factory
370-10	Electrostatic Voltmeter with 1/1000 Monitor Output Ratio	370-10-L	Contact Factory

Optional Accessories	
603RA	Full Rack Mount Kit
604RA	Half Rack Mount Kit

Probes	
Standard Resolution	
7000ER	Trek 7000ER (end-viewing)
Minature	
3800E-2	Trek 3800E-2 (end-viewing)
3800S-2	Trek 3800S-2 (side-viewing).