

Trek Model 820 InfiniTron[®]

High Impedance Contacting/Non-contacting Voltmeter



The ± 2 kV Trek Model 820 InfiniTron[®] Voltmeter may be used in either contacting or non-contacting mode to acquire precision surface voltage measurements. It is especially beneficial when used with applications that demand infinitely high loading impedance levels far beyond the reach of currently available high impedance voltmeter instruments. The Model 820 comes with a guarantee of virtually no modification of the object being measured. This allows the instrument to indicate, with high precision, the voltage level of both conductive and insulative objects and surfaces.

Key Specifications

- Measurement Range: 0 to ± 2 kV DC or peak AC
- Measurement Accuracy: Better than $\pm 0.1\%$ of full scale (voltage monitor output)
- Speed of Response: Less than 500 μs for a 1 kV input step
- Input Characteristics
 - Resistance: Greater than $1 \times 10^{15} \Omega$
 - Capacitance: Less than $1 \times 10^{-15} \text{ F}$

Typical Applications Include

- Accurate reading of electrostatic voltage levels associated with ESD sensitive components, circuits and surfaces

Features and Benefits

- Voltage monitor output scale factor at 1/200
- Probe electrode may be easily replaced with other sensor tips
- 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
- Digital Enable allows an external device to turn ON/OFF the internal HV power supply
- Easy-to-read LED display
- Designed to be operated on a bench top
- NIST-traceable Certificate of Calibration provided with each unit
- CE compliant



Model 820 Probe

Available Probes

- **Model 820 Probe**
 - **Sensor**
0.8 mm conducting ceramic electrode. The sensors may be easily replaced, dependent on the measurement requirements
 - **Orientation**
Pencil probe structure with end contact sensor.
 - **Probe Dimensions**
152 mm L x 20 mm Diameter (6" L x 0.75" Diameter)
 - **Probe Cable Length**
1.5 m ± 75 mm (5.3 ft ± 3 in.)



Model 820 Specifications

Performance

Measurement Range	0 to ± 2 kV DC or peak AC
Measurement Accuracy	
Voltage Monitor Output	Better than $\pm 0.1\%$ of full scale
Voltage Display	Better than $\pm 0.1\%$ of reading, ± 1 digit (referred to measured input)
Speed of Response (10% to 90%)	Less than 500 μ s for 1 kV step
Large Signal Bandwidth (-3 db)	DC to greater than 200 Hz for 4 kV pp
Stability	
<i>Contacting</i> - Drift with time at 22 °C	Less than 6 V/minute, cumulative (referred to input)
<i>Noncontacting</i>	Better than 100 ppm/°C
Input Resistance	Greater than $1 \times 10^{15} \Omega$
Input Capacitance	Less than 1×10^{-15} F

Voltage Monitor

Output	A BNC output provides a buffered low-voltage replica of the measured voltage
Ratio	1/200th (standard)
Output Current	± 5 mA (minimum)
Output Noise	Less than 10 mV rms
Output Impedance	Less than 0.1 Ω

Front Panel Meter

Voltage Display	3 ½ digit LED display
Range	0 to ± 1.9 kV
Resolution	1 V
Zero Offset	Less than or equal to ± 1 count
Sampling Rate	1 ms between data points

Features

USB Connector	Allows data transfer to a computer with a sampling rate of 1 ms between data points (stream data or block data transfer protocols). PC software can graph the unit's output
Reset Button/Connector	A momentary front panel push-button switch or rear panel external TTL input signal initiates a reset function.
Digital Enable	A TTL compatible input to enable or disable the unit's high-voltage measurement. A TTL high will disable while a TTL low will enable the measurement..

Mechanical

Dimensions	10.2 cm H x 22.9 cm W x 33 cm D (4" H x 9" W x 13" D)
Weight	1.8 kg (4 lb)
BNC Connectors	Voltage Monitor Digital Enable Reset
USB Port	Allows data transfer to a computer with a sampling rate of 1 ms between data points
Ground Receptacle	Threaded ground stud
Power ON/OFF	A momentary push-button
Probe Connector Location	Front panel

Operating Conditions

Temperature	10°C to 35°C (50°F to 95°F)
Relative Humidity	0 to 75%, noncondensing
Altitude	To 2000 m (6561.68 ft.)

Electrical

AC Line Cord Receptacle	A universal line PFC-type wall cube provides input power to the ESVM
Line Voltage	24 V DC, $\pm 5\%$ @ 1 A
DC Connector	2.1 mm DC power plug

Supplied Accessories

Operator's Manual with software	PN: 24003
Ground Cord	PN: N9082
AC/DC Universal Power Cube	PN: L5190 (Universal power cube at 90 V to 264 V AC)
Probe	Model 820P
Probe Tip	Ceramic tip of 0.8 mm diameter

Optional Accessories

Probe	Model 820P
Probe Tips	Ceramic tip of 0.8 mm
	Additional tips can be customized in various other sizes as small as 100 μ m to cater to a wide field of applications; please contact the factory for more information

Note: All specifications measured with a 5-minute warmup time.

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