

Model P0865

High-Speed, High-Voltage Electrostatic Voltmeter



The Trek Model P0865 is a DC stable, precision electrostatic voltmeter for making noncontacting surface voltage measurements in the range of 0 to ± 10 kV DC or peak AC.

Research and industrial applications include charge accumulation monitoring of the LCD production processes, monitoring surface potentials in the electrostatic painting process, research and development in the electrophotographic process, and measuring electrostatic potentials on polymers, rubber, fabrics, and paper.

The Model P0865 employs a field-nulling technique for noncontacting voltage measurement 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 Model P0865 patented probe design eliminates the need for close tolerance components. This significantly improves noise and drift performance, both in the presence of contaminating particulates and under conditions of high humidity and wide temperature ranges.

A precision voltage 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.

The Model 3450 probe assembly includes a sensitive electrode and preamplifier, which is driven to the same potential as the measured value to eliminate arcing there between. A three (3) meter cable permits remote probe positioning. The Model P0865 can be operated on a bench top or, with optional hardware, in a standard 19-inch rack.

- **Response Time**
less than 200 μ s
for a 1 kV step
- **Measurement**
Range ± 10 kV DC
or peak AC
- **Measurement**
Accuracy
better than
 $\pm 0.1\%$ of full
scale
- **Precision Voltage**
Monitor output
- **High**
Temperature
Probes available
- **Zero Control for**
offset nulling
- **Easy-to-Read**
LED display

Model P0865 Specifications

All specifications are with a Model 3450 probe at a probe-to-surface separation of 3 mm, ± 1 mm.

Performance

Measurement Range

0 to ± 10 kV DC or peak AC.

Accuracy

Better than $\pm 0.1\%$ of full scale
(as referred to the voltage monitor).

Speed of Response (10% to 90%)

Less than 200 μ s for a 1 kV step change. Less than 5 ms for a 20 kV step change.

Full Signal Bandwidth

DC to better than 50 Hz.

Stability

Drift with Time

Less than 100 ppm/hour,
noncumulative.

Drift with Temperature

Less than 200 ppm/ $^{\circ}$ C.

Features

High-Voltage Ready LED

A LED indicator illuminates when the Model P0865 is ready to make high-voltage measurements.

High Voltage On/Off

A two-position toggle switch that turns on and off the high-voltage power supply inside the instrument.

Zero Adjust

A 10-turn control to null offsets or other zero errors which occur within the system.

Features (cont.)

Voltage Monitor Output

A BNC output provides a low-voltage replica of the measured voltage.

Scale Factor

1/1000th of the measured voltage.

Output Noise

Less than 20 mV rms (measured using the true rms feature of the Hewlett Packard Model 34401A digital multimeter).

Output Impedance

Less than 0.1 Ω .

Voltage Display

4½ digit LED display.

Range

0 to $\pm 10,000$ V.

Resolution

1 V.

Zero Offset

Less than ± 2 counts,
referred to the voltage monitor.

Sampling Rate

3 readings per second.

Power On/Off

A two-position rocker switch that turns on and off the main power.

General

Dimensions

134 mm H x 432 mm W x 432 mm D
(5.25" H x 17" W x 17"D).

Weight

15 kg (33 lb).

Voltage Monitor Connector

BNC connector.

Ground Receptacle

Green binding post.

AC Line Cord Receptacle

Standard three-prong line cord receptacle with an integral fuse holder.

Line Supply

Factory set for one of three nominal AC line voltages: 100 V, 115 V, or 230 V AC [CE compliant], at 48 to 63 Hz (specify when ordering).

Operating Conditions

Temperature

0 $^{\circ}$ C to 40 $^{\circ}$ C.

Relative Humidity

To 90%, noncondensing.

Probe-to-Surface Separation

3 mm ± 1 mm (recommended).

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Model P0865 Ordering Information

Model P0865

<u>Item</u>	<u>Part No.</u>
P0865 Electrostatic Voltmeter (100 V AC)	13424F
P0865 Electrostatic Voltmeter (115 V AC)	13424G
P0865 Electrostatic Voltmeter (230 V AC)	13424K

Optional Accessories

<u>Item</u>	<u>Part No.</u>
Model 3450EC Probe Extension Cable (from unit to probe) . . .	17218
Model 3460-1 Line Driver	17181
Full Rack Mounting Kit	
607RA Rack Mount Kit (19-inch)	C4062

Probes

<u>Item</u>	<u>Part No.</u>
Standard Resolution Probe	
Model 3450 side-viewing	17157
High Temperature Probes (up to 100 $^{\circ}$ C)	
Model 3455ET end-viewing	17284
Model 3453ST side-viewing	17285

Certification

TREK, INC. certifies that each Model P0865 is tested and calibrated to specifications using measurement equipment traceable to the National Institute of Standards and Technology or traceable to consensus standards.