

JCI 148 Electrostatic Voltmeter

For accurate measurement of voltages with negligible current drain

The JCI 148 Electrostatic Voltmeter comprises a shielded enclosure in which an electrode, connected to the input, is supported by high quality insulation in a well defined and stable geometric arrangement relative to the sensing aperture of a JCI 140 Static Monitor. The geometry is such that the numbers shown on the display correspond directly to the applied voltage in kilovolts. The design, mounting and insulation of the high voltage electrode ensure low charge leakage even at the maximum operating voltage. The design also ensures there is negligible influence by any charge retained on the insulator surfaces.

The attraction of an electrostatic voltmeter based on the use of a 'field mill' type fieldmeter is the near zero current drain (limited only by insulation leakage, 10^{14} ohms or more), the high sensitivity (1V resolution up to 2kV), the low internal capacitance (approximately 7 pF) and the linearity of response. The frequency response is -3dB at 120Hz when using the standard JCI 140. The JCI 140F option provides a faster response, -3dB at 400Hz.

Analogue output signals are provided from the JCI 140 for separate display and recording of observations - for example using a multimeter, oscilloscope or paper chart recorder. A 'Picoscope' provides direct display and data logging on a microcomputer. This enables the full bandwidth capability of observations to be available for display with subsequent numerical processing via Spreadsheet software.



Why bother about static?

Many materials, in particular plastics, easily become electrostatically charged when rubbed against other materials. Such 'triboelectric' charging causes problems in many areas of industry. It can cause ignition of flammable gases and give shocks to personnel. It can make thin films and light fabrics cling, attract airborne dust and debris, damage semiconductor devices and upset the operation of microelectronic equipment. The risks and problems arising from static electricity are best avoided by ensuring that static charge can dissipate over and through the surfaces of materials and away to earth more quickly than charge is generated. For normal manual handling and body motion activities this means the charge decay is preferably below $\frac{1}{4}$ second

Specifications:

<i>Sensitivity:</i>	2,000 and 20,000 volts full scale Sensitivity selected via on/off switch or by external control signal.
<i>Zero stability:</i>	Zero stable +10 volts, 2000v Range.
<i>Noise:</i>	Within 4mV pk-pk on analogue output (equivalent to 4V pk-pk at 100mm on 2000V range). 10-15mV pk-pk for fast response (JCI 140F) instruments.
<i>Accuracy and linearity:</i>	Within +2%FSD.
<i>HV connection:</i>	Special JCI HV connector with 2m HV cable.
<i>Maximum voltage:</i>	30kV safety limit (20Kv Maximum Measurable Voltage).
<i>Response:</i>	-3dB at 120Hz. (-3dB at 400Hz for JCI 140 F).
<i>Internal capacitance:</i>	Approximately 7pF.
<i>Display:</i>	3½ digit liquid crystal display of surface voltage directly in kilovolts at 100mm with polarity and 'LO BATT' indication.
<i>Audio alarm:</i>	Pulsing audio signal when above user set level.
<i>Controls:</i>	On/off slide switch: off - range 1 - range 2. Screwdriver set alarm threshold. Screwdriver zero setting adjustment.
<i>JCI 140 Power supply:</i>	Replaceable PP3 battery via 8w mini DIN from external floating 12V supply 2.1mm d.c. power connector for 12v 'Wall Cube' external floating power supply input.
<i>External connections:</i>	Via 8w mini DIN connector: - analogue output signal (+2V FSD). - sensitivity range indication and sensitivity external control. - earth. - external power supply inputs. - 2.1mm d.c. power input.
<i>Earth bonding:</i>	Earth connection terminal on side of mounting frame.
<i>Dimensions:</i>	180x180 baseplate 330mm high without connector.
<i>Weight:</i>	Approximately 3 kg.
<i>Option F:</i>	Provides fast response (3ms) to enable rapidly changing events to be examined and observations made on 50/60Hz voltages.



JCI Chilworth manufactures a wide range of high quality, state of the art electrostatic instrumentation. We also carry out servicing and repairs for JCI instruments, and where appropriate calibration traceable to national and international standards. JCI Chilworth is part of Chilworth Global.

Chilworth Global brings together leading expert consultants in the fields of electrostatics and process safety, and GLP compliant laboratories, to provide a single point of contact for all electrostatic and process safety needs. Our laboratories provide material properties data for electrostatic problems and hazards, fire and explosion hazards (including liquids, vapours, gases and powders), chemical reaction hazards and regulatory testing. Our consultant engineers are all experienced in process safety, with individual expertise that includes electrostatics, chemical reaction hazards, and other particular aspects.

Contact Information ►

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