

JCI 145 AIR IONISATION TEST UNIT

For easy checking and measurement of the performance of air ionisation equipment

The ability of air ionisation equipment to remove charge from isolated surfaces is assessed with the JCI 145 Air Ionisation Test Unit. A JCI 140 Static Monitor to measure the voltage on an isolated plate. Performance is assessed by applying positive and negative voltages to this isolated plate and measuring the time taken for the decay of each polarity of charge.

Typically, performance is measured as the time for the decay of plate voltage from 1000V to 100V. The end point floating potential is also measured, as this indicates the quality of ionisation balance.

Decay times can be measured directly using the voltage values on the JCI 140 display and noting changes against time. Alternatively, measurements may be made from recordings of the analogue signal output on a paper chart recorder or using a digital storage oscilloscope (for example a 'Picoscope' linked to a PC).

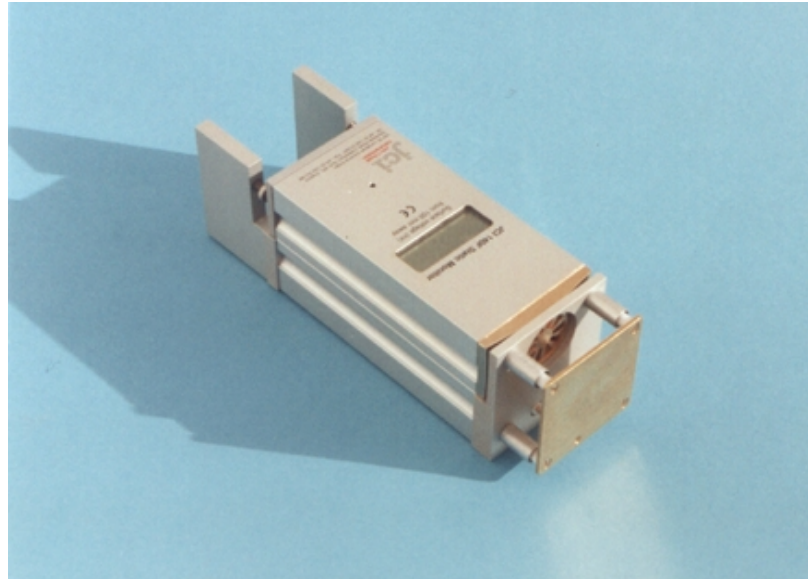
The JCI 145 is an attachment for the JCI 140 Static Monitor. The mechanical arrangement enables the JCI 140 Static Monitor to be easily placed into the unit for air ionisation measurements - and taken out for other applications. The combined unit can be used in the hand, stood with the test plate facing upwards or with the unit on its side with the test plate vertical.

The test plate is mounted on high quality insulation. The mounting is such that the insulation leakage resistance is over 10^{14} ohms and the natural leakage decay time constant is several hundred seconds. The insulation for the test plate is well shielded from the sensing aperture of the JCI 140 and this ensures readings are unaffected by any electrostatic charge trapped on the insulation. The basic capacitance of the test plate is about 10pF.

High voltage positive and negative supplies of about 1100V are switched on and connected to the test plate using a simple finger-tip operated rocker switch. A positive high voltage is provided when the left hand side of the rocker switch is pressed, and negative when the right hand side is pressed. Simultaneous pressing of both sides connects the test plate to earth. This enables the zero setting of the JCI 140 to be checked. After release from earthing, the JCI 140 will measure the floating potential of the plate.

All the normal features of the JCI 140 Static Monitor are available when the instrument is mounted in the JCI 145. The fast response JCI 140F may be used for checking transient electric field effects from ionisation equipment. For long duration studies the JCI 140 may be operated by an external power supply via the 2.1mm d.c. connector.

The JCI 145 unit can also be used as an electrostatic voltmeter - so, for example, the body voltages generated during walking and other practical activities can easily be measured and recorded by linking the body to the test plate. Measurements are not as well defined as with the JCI 148 Electrostatic Voltmeter arrangement because the JCI 140 will have some response to charged surfaces in the vicinity.



JCI 145 SPECIFICATION FEATURES

- Test plate:* 60x60mm area, 10pF capacitance
- Overall dimensions:* 195x68x68mm, 1kg (with JCI 140 mounted in the unit)
- High voltage supply:* $\pm 1100V$ with polarity selected by on/off rocker switch 10Mohm safety resistor
- Power supply:* PP3 replaceable or rechargeable battery
- Controls:*
- combination rocker switch ON+ve OFF ON-ve
 - the test plate is earthed, for checking the zero reading of the JCI 140, by simultaneous pressing of +ve and -ve switch pads

JCI 140 Static Monitor Features:

- Sensitivity ranges:* $\pm 1.999kV$ and $\pm 19.99 kV$ FSD
- Accuracy and linearity:* within $\pm 2\%$ FSD on JCI 140 display & analogue output
- Controls:*
- 3 position slide switch: OFF: ON 2kV: ON 20kV
 - multiturn potentiometer zero set adjustment.
- Display:* 3½ digit liquid crystal display with polarity and low battery indication. Display shows plate voltage in kV.
- Signal outputs:* analogue signal output $\pm 2.0V$ FSD. Sensitivity range indication signal
- Earth connection:* combination Durable Dot and 4mm bayonet pin socket
- Calibration:* The voltage sensitivity of the JCI 145 can be calibrated in conjunction with the selected JCI 140 Static Monitor using measurements whose accuracy is traceable to National Standards.
- Options:* JCI 140F Static Monitor with fast response (3ms) may be used. This will check for the presence of any alternating or pulsed signals from the air ionisation equipment



The business of JCI is the design, development, manufacture and marketing of high quality instruments for electrostatic measurements. JCI also carries out electrostatic testing of materials, consultancy and calibration of JCI instruments to BS 7506: Part 2: 1996.

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