

# JCI 255 CALIBRATOR UNIT

for checking performance and for formal calibration of JCI 155v4 and JCI 155v5 Charge Decay Test Units to BS 7506: Part 2: 1996



JCI 155v5 Charge Decay Test Unit on JCI 255 Calibrator Unit

## DESCRIPTION:

JCI 155v5 and JCI 155v4 Charge Decay Test Unit instruments should be formally calibrated every 12 months to confirm the performance for surface voltage and decay time measurement. The JCI 255 Calibrator unit enables these two aspects of calibration to be carried out conveniently to the procedure set out in BS 7506: Part 2: 1996 [1] using measurements whose accuracy is traceable to National Standards. The JCI 255 can also be used to spot check for correct operation of charge decay measuring instruments. Such spot checks should not be needed more frequently than, say, every 3 months or if operation of the instrument may have suffered from poor handling or internal exposure to powders or liquids.

The basic arrangement for calibration of JCI 155 instruments is to mount an isolated flat metal plate close up across the area of the test aperture of the JCI 155. To this plate calibrated voltages are applied for calibrating the fieldmeter response in terms of a uniform voltage across the whole test

aperture area. Combinations of calibrated good quality, high voltage resistors and capacitors are connected between the plate and earth to provide defined values of RC decay time constants.

The JCI 255, as illustrated below, is a diecast aluminium box with side and end location guides provided to define a location for a JCI 155 Charge Decay Test Unit resting on its upper surface, as shown above. The JCI 155 is positioned so its test aperture is over the test plate. The earth bonding point of the JCI 155 is connected to the earth (green) terminal on the JCI 255.

Two bayonet pin connector sockets at the front end of the unit are mounted in good quality insulation. The upper socket is connected directly to the test plate and the lower one to the two common (centre of arc, unlabelled) socket positions in the insulation on the back plate. The back plate mounts connectors to three calibration resistors on the right hand side (nominally 10, 100 and 1000M). On the

left side there are four calibration capacitors (nominally 1, 10, 100 and 1000nF). These resistors and capacitors are connected by the jumper connector leads to the common bayonet pin socket mounted at the centre of the arcs of sockets and connected to the test plate by the jumper between the two connectors on the front end of the unit

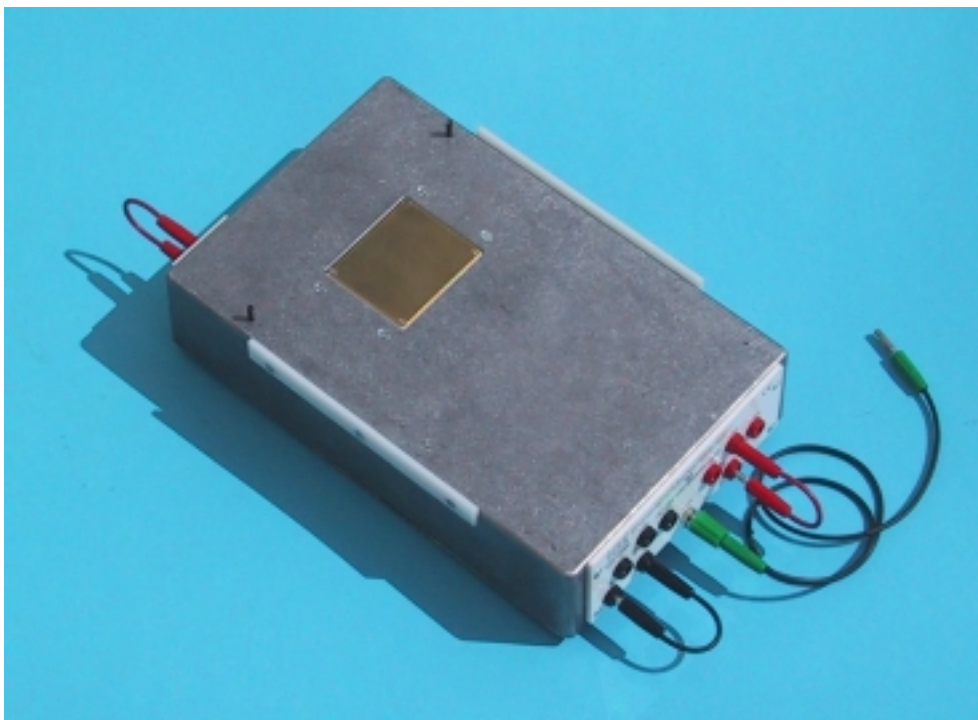
For voltage calibration: a calibrated high voltage supply, 0 -  $\pm 1000V$ , is connected directly to test plate via the upper of the two sockets on the front of the unit with the lower socket left unconnected.

For decay time calibration: the two sockets on the front plate are linked together and connection jumpers are used as links between the two common sockets and one resistor and one capacitor socket position. The high voltage corona charging capability of the

JCI 155 is used to put sufficient charge to the resistor/capacitor combination that a suitable initial peak voltage is achieved for decay time calibration. The corona voltage and duration are adjusted to achieve suitable initial peak voltages for calibration.

An earthing connector is provided in the middle of the back plate insulation for earthing the JCI 255 unit when making voltage calibrations using an external high voltage supply.

Decay time values (in milliseconds) are given by the product of the values of resistors (in megohms, M) and capacitors (in nanoFarads, nF)  $\tau = R C$ . Thus a nominal 1nF capacitor and 1000M resistor will give a decay time around 1000 milliseconds = 1 second. Exact decay time values will be the product of the actual calibrated resistor and capacitor values.



JCI 255 Calibrator Unit

#### **HELP LINE**

*JCI offers consultancy through which we advise and assist customers who need to assess and overcome problems with static electricity. We also test customer materials for static charge dissipation and capacitance loading performance*

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.

For further information contact Dr John Chubb at:

Unit 30, Lansdown Industrial Estate, Gloucester Road, Cheltenham, GL51 8PL, UK  
(Tel:+44 (0)1242 573347 Fax:+44 (0)1242 251388 jchubb@jci.co.uk <http://www.jci.co.uk>)

**jci**  
John Chubb  
Instrumentation