

Instruction Manual

Surface Resistance Test Kit

(SRM3)



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Introduction

Thank you for purchasing a Surface Resistance Test Kit. Please read this instruction manual in great detail before operating the device. Keep this manual readily accessible for later reference.

Description

This professional analogue auditors kit can be used for measuring surface resistivity, point-to-point resistance, point-to-ground resistance and bonding points to ground. The SRM3 kit has been designed specifically for the purpose of testing surface used in the EPA. Testing and auditing all elements within the EPA is essential to comply with industry standards. Incorporating the latest requirements of the IEC 613340-5 technical report. Calibration testing is recommended on a regular basis (annually). This product is CE approved and RoHS and REACH compliant.

SRM3 Packing List

Make sure each of the following items are included in the kit.

- 1) Unique analogue meter.....
- 2) 2 x 2.5kg weights.....
- 3) Connecting leads.....
- 4) 9V battery.....
- 5) Conductive foam discs.....
- 6) Carry case.....
- 7) Square probes.....
- 8) Instruction manual.....
- 9) Calibration certificate.....



Measurement Modes

Both 10v and 100v test voltages are incorporated in the tester with a choice of automatic ranging from 10v – 100v, cleverly detected as you move from Conductive to Dissipative and Insulative surfaces, or permanent switching to 10v only, an option preferred in very sensitive areas.

Coloured segments and LEDs indicate the following:

GREEN - Conductive $>10^3$ - $<10^6$

YELLOW - Dissipative $>10^6$ - $<10^{11}$

RED - Insulative $>10^{12}$

Operation

- 1) Check that a good quality Alkaline PP3 battery is fitted - the battery compartment is located at the rear of the enclosure. If at any time the battery voltage drops below 6.5 volts, the yellow battery low indicator will light.
- 2) The aluminum carry case comes with a carrying strap, locking keys and is lined with conductive foam.
- 3) Connect the RED test lead into the left side RED banana socket, and the BLACK test lead into the right side BLACK banana socket. To check the meter is functional, press the GREEN test button. The moving coil needle will move from left to right showing Insulative above 10/13.
- 4) Connect the two 2.5 kilo (51b) weights to the other end of both the RED and BLACK test leads. Place the weights gently onto the surface that requires testing and press the test button. The Resistance of the surface under test will be displayed in Ohms. The GREEN segment of the meter indicates conductive from $> 1.0 \times 10^3$ to $< 1.0 \times 10^6$. Conductive measurement is taken at a test voltage of 10 volts. The YELLOW segment indicates dissipative $> 1.0 \times 10^6$ to $< 1.0 \times 10^{12}$.

These measurements are taken automatically at a test voltage of 100 volts, unless the test voltage range switch is manually switched to 10 volts. 10 volts should only be used for measuring dissipative resistances, if there is a high risk of damaging components on or around the area under test. At any other time the meter should be set to 10/100 volts. The RED segment indicates Insulative $> 1.0 \times 10^{12}$.

For a simple visible check through its range, the meter will indicate Conductive, Dissipative and Insulative via three LEDs, GREEN = Conductive YELLOW = Dissipative RED = Insulative.

- 5) The model SRM-3 and the kit includes SP-01 square probe for checking surface resistance in Ohms per square as used in standard ASTM-D-257, as well as point to point resistance. When using SP-01 square probe, connect the RED and BLACK test leads to their corresponding RED and BLACK sockets. Place one 2.5 Kilo (51b) weight on the surface of the square probe and press the test button, the measurement now taken is in Ohms per square.

The SRM3 conforms to the current, IEC61340-5-2:2018, IEC61340-2-3, IEC61340-4-1, ANSI 20.20 standards.

Calibration

All resistances are in-built using matched fixed resistors. They are measured using an ohm meter which is of known accuracy and standards used are traceable to UKAS. No variable resistors e.g. potentiometers are used. The resistances should nevertheless be re-checked once a year. Calibration is carried out with a Resistance Decade Box.

The resistance decade box required will need a range of either from > 1 kilohm to 999 meg ohms or 10^9 . Measurements greater than 10^9 are calculated using cad generated techniques, as high resistances greater than 10^9 .

Connect the test leads from the resistance decade box to the RED and BLACK banana sockets of the checker. Set the decade box to the desired resistance i.e. $10^3 = 1$ K, then press and hold the checker's test button. The 10^3 LED should light and the analogue meter should read 10^3 , 10 K = 10^4 , the analogue meter should read this and so on. To measure the changeover point between decades, increase the resistance of the decade box while pressing the checker's test button. Record the resistance when the next analogue meter moves up decade permanently (this is the changeover resistance).

Please note that the checker has no internal parts to adjust, so verification of calibration can be achieved by using the above process. If verification cannot be achieved the unit should be returned to the supplier.