

Surface Resistance/Resistivity Checker Operation and Maintenance Instructions



Made in the
United States of America



Figure 1. Vermason [225718](#) Surface Resistance/Resistivity Checker

Description

The Vermason Surface Resistance/Resistivity Checker is a portable battery powered tester fitted with built in parallel electrodes that allows a quick test of material surface resistivity. Two 4mm plug sockets and an electrode selection switch allow the connection of external 2.27 kilogram electrodes measure surface resistance point to point (Rp-p) or resistance to protective earth ground (Rg).

Packaging

Remove the test unit from the carton and inspect for shipping damages.

Each [225717](#) unit should include the following:

- 1 Surface Resistance/Resistivity Checker
- 1 9V Battery

Each [225718](#) unit should include the following:

- 1 Surface Resistivity Checker
- 2 2.27kg Cylindrical Electrodes
- 1 Carrying Case
- 2 Black Test Leads
- 2 Croc Clips
- 1 Battery

ESD protective products should be tested:

- A. Prior to installation as product qualification for listing in user's ESD control plan. Measuring resistance of working surfaces (including storage racks and trolleys), flooring, seating, and garments.
- B. During initial installation
- C. For compliance verification of installed products as part of EN 61340-5-1 clause 5.2.3 Quality responsibilities In addition: Per EN 61340-5-2

clause 9.4 "When a new EPA is established, or an existing EPA is reconfigured, it should be thoroughly checked by the ESD coordinator and a certificate ... issued."

Instructions

- There are 2 tests that can be performed for working surface matting tests ("Rp-p" resistance Point to Point, and "Rg" Resistance to ground)
- It is recommended using a 2.27kg cylindrical external electrode for all tests
- For "Rp-p" point to point connect the external electrodes to the checker with the leads provided and place the 2 probes on the surface of the matting about 10 inches apart if possible. Push and hold down the test button, the LEDs will flash for about 15 seconds and when it finds a stable reading the LEDs will stop flashing and stabilise on one value – this is the value of the surface point to point resistance.
- For "Rg" resistance to ground, take 1 lead out of an external probe and plug to a protective earth ground (usually an EBP plug). Test by holding the test button until the LEDs stop flashing and give a stable value. This is the value of the matting to resistance to ground.

Features and Components

Resistance is indicated via a row of 10 LED's. As the electrification period is important when measuring surface resistance or resistivity, a 15 second timer has been fitted within the checker. The resistance indication LED's will flash during resistivity/resistance measurement and the correct LED will latch at the end of the timer, giving the tested material resistivity or resistance. This unit is fitted with an automatic test voltage selection; the test voltage will switch from 10 V to 100V should the measured resistance exceed 1×10^5 ohms. The checker is fitted with two sockets so that external electrodes can be used. To do so, connect the electrode to the checker sockets using leads fitted with 4 mm plugs and flick the switch to the position "external probes". At this time the meter's internal parallel electrodes are disabled, allowing the unit to be laid on any type of surface without influencing the resistance measurement. A battery low indicator will inform the user when the battery needs replacing. Do not use when the battery low indicator is on. It is recommended that any battery triggering the battery low indicator is properly discarded as battery leakage could occur and

damage the unit. Care must be taken when handling this checker; it is recommended that the checker be lifted off the surface to be tested and placed on the next area for test rather than sliding the checker along the surface. This will considerably reduce wear to the internal parallel electrodes. The instrument is CE compliant (i.e. meets European directive on EMI).

What is Resistance and Resistivity?

Theoretically Resistivity is 10 times greater than Resistance, i.e. a material that measures 10^7 ohms Rp-p, Surface Resistivity should measure 10^8 ohms. Ref: ANSI/ESD STM11.11 section 12.0 Conversion to Resistivity states, "When it is appropriate to convert a resistance obtained by this test method to an equivalent resistivity in ohms per square, multiply the resistance measurements obtained by this method by 10. The conversion factor of 10 is derived from the geometry of the electrode assembly." No conversion is required with the Vermason Surface Resistance/Resistivity Checker. The Checker will latch Surface Resistivity within one decade of accuracy using the internal parallel electrodes, and will display Surface Resistance using the external 2.27 kilogram electrodes.

The unit of measurement is surface resistance ohms for all the EN 61340-5-1 Table 3 EPA requirements ESD control items, not resistivity. Per EN 61340-5-2 clause 5, "point-to-point resistance has been discussed, rather than the surface and volume resistivity which was found in previous standards and reports. This change has been made to cater for nonhomogeneous materials, which are becoming increasingly common in these applications, as well as ease of measurement."

Resistance in an EPA according to EN 61340-5-1

Resistance below 1×10^5 ohms: the material is conductive. Resistance greater or equal to 1×10^5 ohms and less than 1×10^{11} ohms is static dissipative. Resistance of 1×10^{11} ohms or greater the material is insulative.

Specifications

- Power Source:** Passive device, no power source required
- Accuracy:** \pm one decade
- Weight:** 5.6 kg before packaging
- Dimensions:** 230 x 305 x 75mm
- Power supply:** 1 x 9 volt PP3 cell, preferably alkaline

Limited Warranty

Vermason expressly warrants that for a period of one (1) year from the date of purchase, Vermason's Surface Resistance/Resistivity Checkers will be free of defects in material (parts) and workmanship (labour). Within the warranty period, a unit will be tested, repaired or replaced at Vermason's option, free of charge. Call Customer Service at 0044 (0) 1462 672005 for a Return Material Authorisation (RMA) and for proper shipping instructions and address. Any unit under warranty should be shipped prepaid to the Vermason factory. You should include a copy of your original packing slip, invoice, or other proof of purchase date. Warranty repairs will take approximately two weeks.

If your unit is out of warranty, Vermason will quote repair charges necessary to bring your unit to factory standards. Call Customer Service at 0044 (0) 1462 672005 for a Return Material Authorisation (RMA) and proper shipping instructions and address.

Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

Limit of liability

In no event will Vermason or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.