

Surface Resistance Checker Installation, Operation and Maintenance



Made in the
United States of America



Figure 1. Vermason [225717](#) Surface Resistance Checker



Figure 2. Vermason [225718](#) Surface Resistance Checker Kit

Description

The Vermason Surface Resistance Checker is a portable battery powered checker fitted with built-in parallel electrodes that allow for tests of material surface resistance. This meter is designed for quick checks of surface resistance for ESD control applications in electronics manufacturing or handling environment. The Surface Resistance Checker is equipped with an automatic test voltage selector. The test voltage will switch from 10V to 100V should the measured resistance be 1×10^6 ohms or higher. Two banana jacks and an electrode toggle switch allow for the connection of two external 2.27 kg electrodes that measure surface resistance point-to-point (Rp-p).

Compliance Verification Plan

“A Compliance Verification Plan shall be established to ensure the Organization’s fulfillment of the technical requirements of the ESD Control Program Plan. Process monitoring (measurements) shall be conducted in accordance with a Compliance Verification Plan that identifies the technical requirements to be verified, the measurement limits and the frequency at which those verifications shall occur. The Compliance Verification Plan shall document the test methods and equipment used for process monitoring and measurements. If the test methods used by the Organization differ from any of the standards referenced in this document, then there must be a tailoring statement that is documented as part of the ESD Control Program Plan. Compliance verification records shall be established and maintained to provide evidence of conformity to the technical requirements.

The test equipment selected shall be capable of making the measurements defined in the Compliance Verification Plan.” (EN 61340-5-1 clause 5.2.3)

The Surface Resistance Checker is not recommended for use in Resistance to Ground (Rg) measurements.

Packaging

[225717](#) Surface Resistance Checker

- 1 Surface Resistance Checker
- 1 9V Battery
- 1 Certificate of Calibration

[225718](#) Surface Resistance Checker Kit

- 1 Surface Resistance Checker
- 2 Test Leads
- 2 2.27 kg Electrodes
- 1 9V Battery
- 2 Crocodile Clips
- 1 Plastic Carrying Case
- 1 Certificate of Calibration

Features and Components

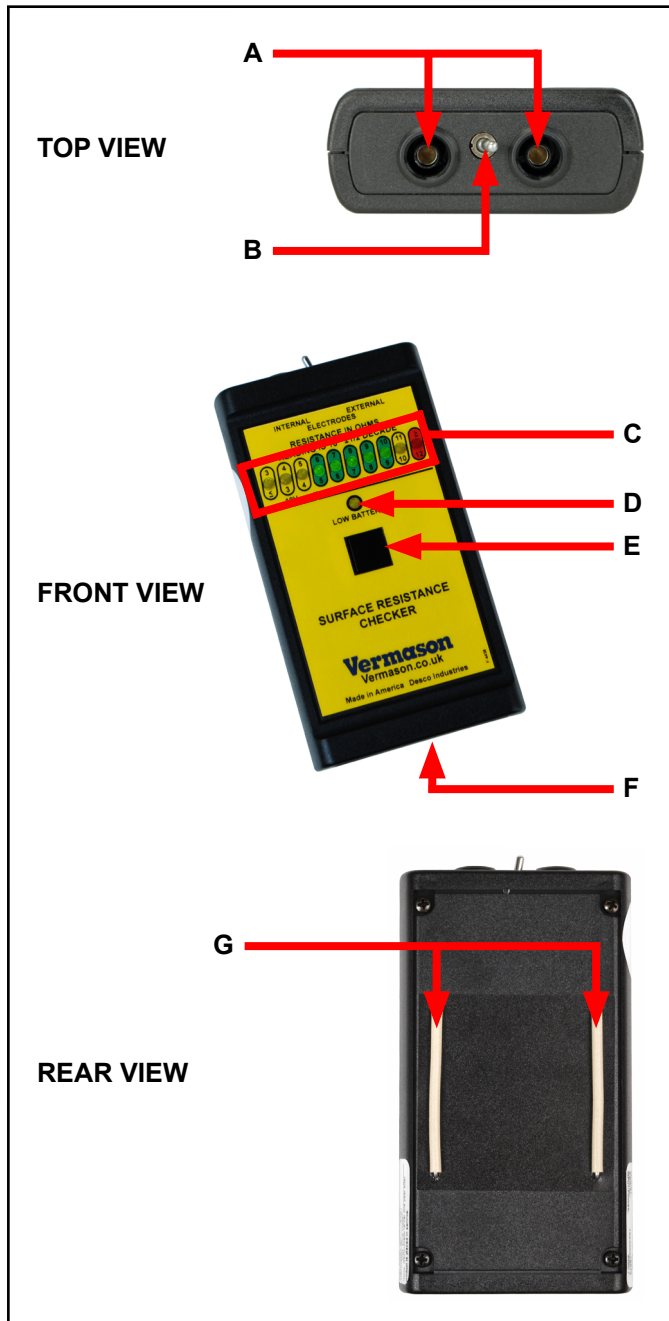


Figure 3. Surface Resistance Checker features and components

A. Electrode Banana Jacks: Insert the test leads from the 2.27 kg electrodes here.

B. Electrode Toggle Switch: Position the switch to the left (“INTERNAL”) to measure using the built-in parallel electrodes on the back of the Surface Resistance Checker. Position the switch to the right (“EXTERNAL”) to measure using two of the 2.27 kg electrodes.

C. Resistance Measurement LEDs: The resistance is measured in ohms and read as $10^X \pm 1/2$ decade where X is the range illuminated on the checker.

D. Low Battery LED: When illuminated, this LED indicates when the battery needs to be replaced. Do not use the Surface Resistance Checker when this LED is illuminated.

E. Test Contact: Use this contact area to make a surface resistance measurement. Press and continue to hold until one of the Resistance Measurement LEDs remains illuminated.

F. Battery Compartment: Remove the cover to allow access to the 9V battery compartment.

G. Parallel Electrodes: Be sure to position the Electrode Toggle Switch to “INTERNAL” when choosing to make a measurement using the parallel electrodes built-in on the back of the Surface Resistance Checker. Take care not to damage the electrodes’ conductive foam.

Operation

USING THE INTERNAL PARALLEL ELECTRODES

MEASURE RESISTANCE POINT-TO-POINT (Rp-p) ON THE SURFACE

- Do not clean the surface prior to testing.
- Remove all items from the surface that may interfere with the test.
- ESD sensitive devices should also be removed
- Place the Surface Resistance Checker on the most commonly used portion of the surface. (5 cm from any edge, 8 cm from any groundable point)
- Toggle the Electrode Switch located at the top of the Surface Resistance Checker to “INTERNAL”.
- Press and continue to hold the test contact until the measurement is displayed.
- If the measurement is outside acceptable limits, clean the surface and re-test to determine if the cause of failure is an insulative dirt layer or the surface material.

NOTE: For working surfaces, use the Vermason [229021 Reztore™ Antistatic Surface and Mat Cleaner](https://www.vermason.co.uk/products/229021-rezto-rezto-antistatic-surface-and-mat-cleaner) or other silicone-free ESD cleaner. Be sure the surface is dry before testing.

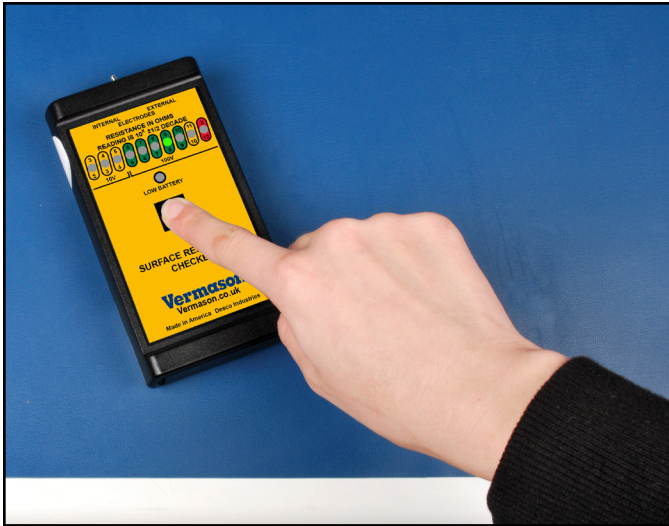


Figure 4. Using the internal parallel electrodes to measure surface resistance

USING THE TEST LEADS AND ONE OR TWO 2.27 kg ELECTRODES

GENERAL GUIDELINES

- Use both 2.27 kg electrodes for Rp-p.
- Ensure that the item being measured is electrically isolated (i.e. placed on an insulative surface) as the checker will measure the lowest resistance path.
- Ensure that the test leads are separated as a best practice.
- When using the 2.27 kg electrodes:
 - Place no closer than 5 cm from the edge of the surface being measured. Place no closer than 8 cm to any groundable point.
 - Place the 2.27 kg electrodes about 25 cm apart for Rp-p of worksurface and about 90 cm for floor.
- Preferred placements include: most commonly used surface portion, most worn, center, and furthest from groundable point.
- If surface has sections (floor tiles, garment panels), for Rp-p place the 2.27 kg electrodes on different sections.



Figure 5. Using the test leads and 2.27 kg electrodes to measure Rp-p

Recommended Frequency of Compliance Verification Checks of Installed Products

Per User guide CLC/TR 61340-5-2 Compliance Verification clause 4.3.3 Verification frequency “The frequency for checking the function of ESD control elements is dependent on a number of factors such as how often the item is used, the item’s durability and the impact on the ESD control program if the control item were to fail.”

“Some organizations may want to increase the time between verifications of an ESD control item after it has been in use for a period of time. This is typically done by monitoring the failures of the ESD control item. Once the organization has evidence that there is an acceptable period of time where no failures were found, the time between verifications can be increased. The new verification interval is then monitored. If an unacceptable level of failures is identified, then the verification frequency should revert back to the previous level.”

A GUIDE FOR PERIODIC TESTING

- Working surface, Trolley, Shelves - quarterly, test center or most worn area
- Footwear - “Incoming inspection on a lot sampling basis should be performed for all static control footwear.”
- Floor - quarterly, test heavy traffic, most worn areas
- Seating - annually, test seat area
- Garments - test point-to-point sleeve-to-sleeve resistance

Specifications

Accuracy	±1/2 decade
Weight	0.2 kg
Size	13 cm x 7 cm x 3 cm
Power Supply	9V alkaline battery

Maintenance

The area surrounding the cable jacks at the top end of the meter should be wiped with a clean cloth moistened with alcohol to remove skin oils that will accumulate and affect the accuracy at high resistances. The frequency of cleaning will depend on usage; once a month would be a good starting point.

“Clean the electrodes with a minimum 70% isopropanol alcohol-water solution.” Make sure electrodes are dry prior to use.

For compliance verification testing, do not clean surfaces. However, if any measurements lie outside acceptable range, then clean the material's surface and re-test.

NOTE: For working surfaces, use the Vermason [229021](#) Reztore™ Antistatic Surface and Mat Cleaner or other silicone-free ESD cleaner. Be sure the surface is dry before testing.

The Surface Resistance Checker requires little maintenance, and there are no user serviceable parts. If your unit requires service beyond cleaning the electrodes or replacing the batteries, please contact [Vermason Customer Service](#).

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions

See the Vermason Warranty -
<http://www.vermason.co.uk/Warranty.aspx>