

# 3M™ Surface Resistance Meter 625

## User's Guide



# Contents

Section	Page
SAFETY INFORMATION.....	3
1.0 Overview.....	4
2.0 Battery Replacement.....	6
3.0 Making Measurements.....	7
3.1 Surface Resistivity	
3.2 Resistance	
3.3 Resistance to Ground (RTG)	
3.4 Resistance Top to Top (RTT)	
4.0 Specifications.....	8
5.0 Calibration.....	8

## SAFETY INFORMATION

Please read, understand, and follow all safety information contained in these instructions prior to the use of this 3M™ Surface Resistance Meter 625.

Retain these instructions for future reference.

### Intended Use:

The Surface Resistance Meter 625 is designed to measure the resistance of static control work surfaces and flooring. Measurements described in this manual refer to the ASTM D-257. Refer to the User Guide for a complete use of this instrument. Use of other components may cause improper performance and/or an unsafe condition.

### Explanation of Signal Word Consequences

**WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury and/or property damage.

**CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage.

**NOTICE**

Indicates a situation which, if not avoided, could result in property damage.

**WARNING**

- Turn off the Instrument before connecting or disconnecting test lead, or before moving test weight.
- Do not use this Instrument with any accessories not specifically designed to be used with this product.
- Do not use this Instrument to measure live circuits.
- The circuitry enclosed in the Surface Resistance Meter 625 produces a test voltage

**CAUTION**

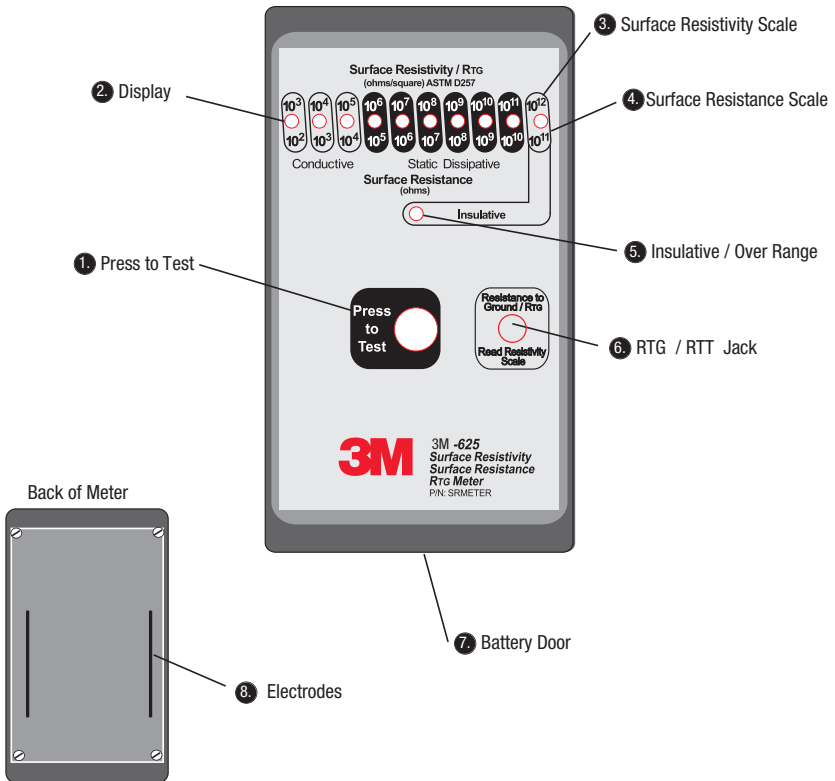
- Exercise care in handling.
- Improper battery installation will damage this instrument.

**CAUTION**

- Instrument to be used indoors only.

# 1.0 Overview

The 3M™ Surface Resistance Meter 625 is a wide range, multi-scale, auto-ranging meter. It measures surface resistivity, resistance, RTG and RTT. These measurements are useful for checking materials and products designed to control static electricity for the protection of electronics. The meter is battery-powered and simple to use. High-speed electronics help ensure repeatable measurements. Please read all instructions before using the Surface Resistance Meter 625.



## Overview (continued)

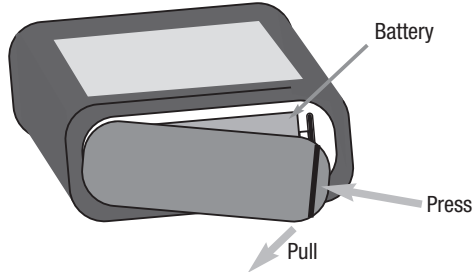
1. Press to Test Button: Press and hold this button to activate the meter.
2. Display: One of the eleven LED's illuminates to indicate the value the meter measures. The static control resistance ranges are color coded:

Green indicates Conductive values,  
Yellow indicates Static Dissipative values, and  
Red indicates Insulative values.

The "Insulative over range" LED lights when the item being measured has a value beyond the meter's ability to measure.

3. Surface Resistivity Scale: ASTM D-257 test method describes resistivity measurements using parallel bar electrodes. The 3M™ Surface Resistance Meter 625 uses parallel bar electrodes to make resistivity measurements per ASTM D-257. The top scale indicates surface resistivity in ohms per square. Surface resistivity is intended as a measurement of resistance to current flow across the surface of a material.
4. Surface Resistance: The Surface Resistance Meter lower scale for surface resistance is intended as a measure of the total resistance to current flow through a material without regard to the location or method of conduction.
5. Over Range: This LED lights when the item being measured has a value beyond the meter's ability to measure.
6. Resistance to Ground (RTG) Jack: Connecting the test lead here allows Resistance to Ground (RTG) and Resistance Top to Top (RTT) measurements to be made.
7. Battery Door: Meter uses standard 9 volt battery.
8. Electrodes: Contact materials to be measured. Electrodes are arranged to form one square per ASTM D-257.

## 2.0 Battery Replacement



1. Locate the battery door. Using your finger or a coin, press the lever and pull the door toward you.
2. Remove the old battery from the meter. Disconnect the battery lead and unwrap the foam from the battery.
3. Wrap the foam around the new battery. Connect the battery lead taking care to ensure proper polarity.
4. Place battery into the meter.
5. Replace the battery door.

## 3.0 Making Measurements

### 3.1 Surface Resistivity Measurements

1. Place the 3M™ Surface Resistance Meter 625, on the item to be measured so that both electrodes are in contact with the item's surface.
2. Press and hold the “Press to Test” button.
3. Read the surface resistivity from the top scale. Results are in ohms per square.

*NOTE: Measurement accuracy will be improved if the test item is placed on an insulative flat surface. Test with surface resistance meter to verify the surface is insulative.*

### 3.2 Surface Resistance Measurements

1. Place the meter on the item to be measured so that both electrodes are in contact with the item's surface.
2. Press and hold the “Press to Test” button.
3. Read the surface resistance from the bottom scale. Results are in ohms.

*NOTE: Measurement accuracy will be improved if the test item is placed on an insulative flat surface. Test with surface resistance meter to verify the surface is insulative.*

### 3.3 Resistance-To-Ground (RTG) Measurements

1. Connect the test lead to the RTG plug. The meter will measure the resistance between the left electrode and the test lead.
2. Place the meter on the item to be measured. Clip the test lead to the ground point of the item being measured.
3. Press and hold the “Press to Test” button.
4. Read the surface resistance from the top scale. Results are in ohms.

### 3.4 Resistance-Top-To-Top (RTT) Measurements

1. Connect the test lead to the RTT plug. Clip the test lead to an electrode such as a 5 lb NFPA mat electrode (not supplied). The Surface Resistance Meter 625, will measure the resistance between the left electrode and electrode clipped to the test lead.
2. Place the meter on the item to be measured. Place the NFPA electrode on the item.
3. Press and hold the “Press to Test” button.
4. Read the surface resistance from the top scale. Results are in ohms.

## 4.0 Specifications

Surface Resistivity Range	$10^3$ to $10^{12}$ ohms per square
Surface Resistance Range	$10^2$ to $10^{11}$ ohms
Resolution	One order of magnitude
Accuracy	$\pm \frac{1}{2}$ decade
Power Supply	9 volt alkaline battery
Test Voltage	9 volts
Weight	4 ounces
Dimensions	5.1 in. x 2.8 in. x 1.1 in. (130 mm x 72 mm x 27 mm)

## 5.0 Calibration

This solid state unit is non-adjustable. However, calibration may be checked using the following procedure:

Equipment:

Resistance Substitution Box >1kilohm to 999 megohms (Discrete resistors can be used in place of the substitution box.)

Test Leads

Connect the leads of the substitution box to the 3M™ Surface Resistance Meter 625's electrodes. Press and hold the red button. Adjust the substitution box to each of the following resistance values. The Surface Resistance Meter should display the proper value.

<u>Box</u>	<u>Model 625</u>
4 kilohms	$10^3$
3 megohms	$10^6$
1.300 megohms	$10^9$

## **CAUTION**

To reduce the risks associated with environmental contamination:

Dispose of the Surface Resistance Meter 625 in accordance with local, state and federal regulations.

## **WEEE Statement**

The following information is only for EU-members States: The mark shown to the right is in compliance with Waste Electrical and Electronic Equipment Directive 2002/96/EC (WEEE). The mark indicates the requirement NOT to dispose the equipment as unsorted municipal waste, but use the return and collection systems according to local law.

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