SHISHIDO ELECTROSTATIC, LTD.

Operation Manual

SURFACE RESISTANCE METER

MEG102

Thank you for purchasing MEG102 TESTER. Please read this manual before using the product in order to fully understand its functions. Also make sure to store this manual so that it can be referred to in the future.

Measuring Standard

Resisatnce Measurement	: ESD TR53
Work surface	: ANSI/ESD S4.1
Floors	: ANSI/ESD 7.1
Foot Grounder	: ESD SP9.2
Garments	: ANSI/ESD STM2.1
Seating	: ANSI/ESD STM12/1
Floor/Footware(with person)	: ANSI/ESD STM97.1

Features

1. With Wide range and it is suitable for many material check
2. Easy operation with AUTO range control
3. With several optional probe, it makes suitable measurement available.

Safety Precautions

This device is a presiion electrical instrument and using high voltage supply. For sake of sfety, be sure to follow the instructions described in this manual. ⚠ marks are precautions that must be followed in order to use the product safety.

⚠ Danger

This device does not conform to explosion-proof specifications. So not install it in locations where flammable gases or solvents are handlesd, such as paiting booths etc. Doing so many resuly in fire or explosion

⚠ Caution

This device is a precision electrical insturument. Avoid installing it in wet, oily, hot, and humid locations. In paticular, avoid location of high humidity and condensaion. There is a possibility of fire due to breakdown.

Installation

- Do not use this device in the following locations, as doing so many cause malfunctions.
- Locations subject to high or low temperature, or high humidiy
- Dusty locations
- Locations where the device may be ecposed to organig solvents such as thinner
- Locations where the device may be exposed to corrosive gas
- Locations subject to flames or explosions
- Locations subject to frequent vibrations
- Locations subject to sudden changes in temperature or humidity
- Locations subject to condensations
- Locations where the device may be exposed to water or oil

Maintenance

- Clean the tip of the probe with IPA before you use, the particle attach makes wrong reading.
- Make sure to turn the main power of the device OFF before cleaning.

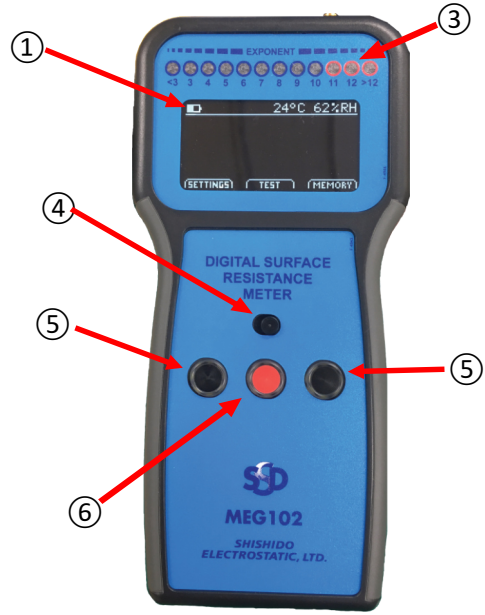
Handling

- Do not touch the probe while measuring
- Do not modify or open it.
- It might be possible to effect to the Medical equipment like Hearing aid or Pacemaker.
- Do not put any object inside main body; it will cause the fire or electrical shock by the short circuit.
- Even the power shut down, it still consumes the power. When you don’t use for long time, we recommend the battery keep out.
- When any strange smell or sound or smoke or high temperature happens, immediately turn off the power and call to our office or local distributor.
- Do not drop or any impact to the product.
- Do not remove any label of product out. Without label it will be sometime out of warranty.
- Do not do anything with the device that is not described in this manual.

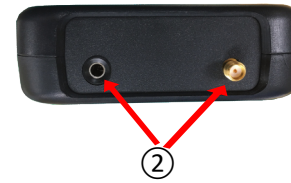
Items included with product and the name of each part

Confirm that the following items are included with the device before using it for the first time.

■Instruction manual/warranty x 1 (this document)



Side View



Back side View

①OLED Display: Shows resistivity, Temperature, Humidity, Battery level, Charged Voltage.

②Test Jacks: The Shielded black test cable's male connector connects into the meter's female connector, and the red test cable's banana plug connects into the meter's banana jack.

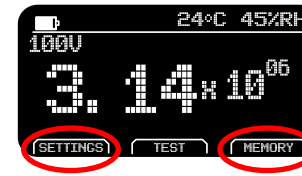
③Exponent LEDs: These LEDs indicate the surface resistance exponent value. They are colot coded for resistance decade quick checks.

Exponent level <3, 3 : Yellow
4, 5, 6, 7, 8, 9, 10 : Green
11, 12, >12 : Red
I.e. 8 = 108 ohms or 100,000,000ohms

④Power Switch: Slide the switch to the left to power the meter OFF. Slide the switch to the right to the power the meter ON.

⑤Black pushbuttons: Each black pushbutton corresponds to the prompts on the bottom-left and bottm-right of the display. These buttons are used to access the Settings and Memory Recall menus and scroll p and down between menu options.

⑥Red pushbutton: Corresponds to the prompts located in the bottom-center of the display. This button is used to perform tests and select menu options. Press and hld this button when in the Setin s and Memory Recall munus to exit and return to the hom screen.



⑦Battery case
Use AA Alkaline battery (4pcs).

Standard Accesories

Test Cable OMEG102-CA

OMEG102-CA-R (Red)

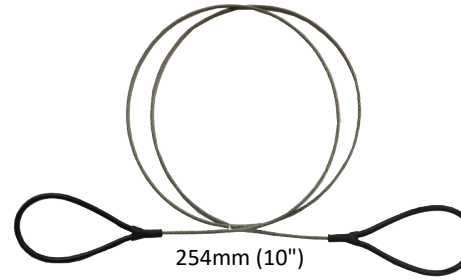
OMEG102-CA-B (Black)

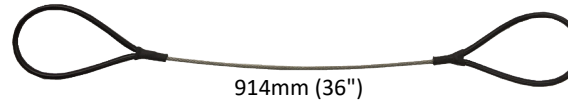
Gator Crip OMEG-CLIP

Ground plug adaptor

Electrode 2.27kg (5lbs) x 2 pcs OMEG-EP

Electrode spacer





Operation Manual

OPTIONAL PROBE

OMEG-RING (Optional Probe)

OMEG-RING probe is special probe for ANSi/ESD S541, ANSI/ESD11/11 standard
With flat conductive metal plate, you can measure the resistivity of flat materials.

OMEG-B (Optional)

For varous shapes you can measure the resistivity with Two small pins.

Before you start to measure, be sure about the contact pins to be straight.

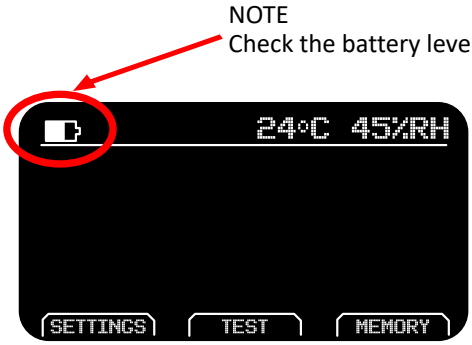
Before measuring.

1. Check the test jack to keep clean. In case any dirty or wet condition, the measurement result will be not stable or incorrect.
2. Be sure to any ESD sensitive equipment around mearuing area.
3. Each probes must be hold with the materials, unless to be incorrect measuring.
4. While measuring, sometime it happens unstable result with Electrical Noize. For such case, please re-start the power again for normal operation.
5. It is danger to cose the product or prove to the objec with big charge, it happens directly discharge and sometime damaged to this tester.

Preparation

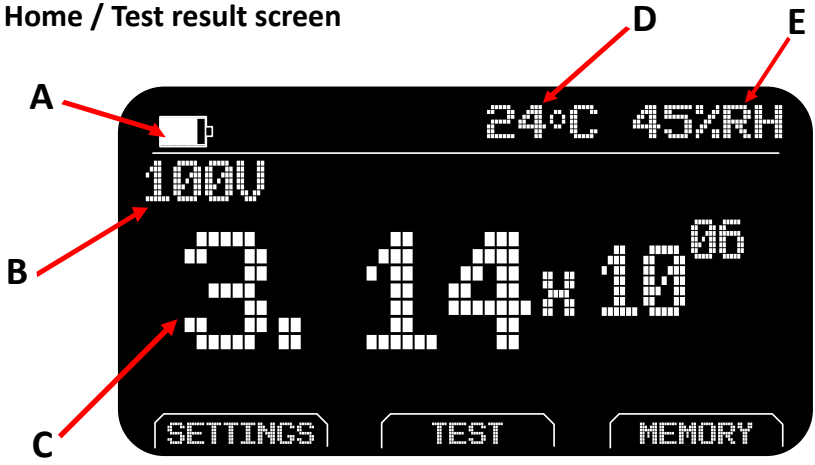
Setup the Battery and Probe

1. Opent the battery cover and set the AA type battery and put the cover.



Normal Operation and cautions

Home / Test result screen



A. Battery level indicator	**:** Displays the approximate level of the meter's 4 AA alkaline batteries.
B. Test Voltage	**:** Displays the test voltage used to complete the measurement
C. Resistance Measurement	**:** Displays the resistance measurement in ohms(Ω)
D. Tempareture	**:** Dispays the ambient tempareture.
E. Rlative Humidity	**:** Displays the relative humidity.

Setting Menu

F. Firmware Version : Display the meter's firmware vversion.

G. Temperture : Sets the unit of measurement for temperture to either Farrenheit(°F) or Celsius (°C)

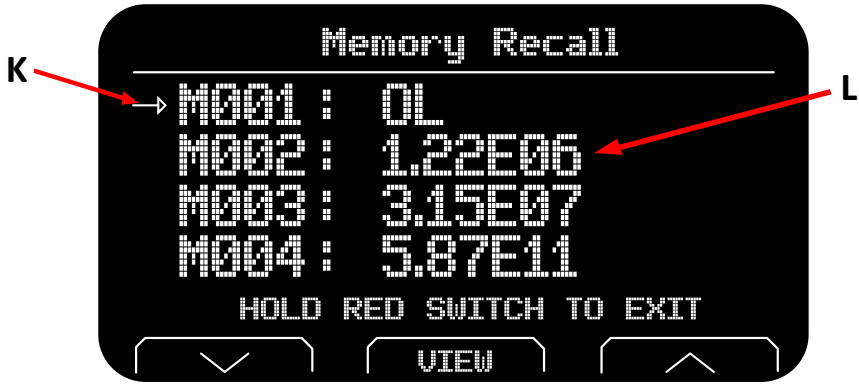
H. Stabilization Mode : Sets the meter's clecrification period setting to either Auto and Fixed Stabilization.

Auto - Enables a 15-second electrification period when the mersured resistance is 1 x 10^{10} Ohms or greater to maitain test accuracy.

Fixed - Complies with ANSI/ESD S4.1 and enables a 15-second electrification period when the mearured resistance is 1 x 10^{6} Ohms or greater.

I. Beep : Enables and disables the sudible beep when the meter's pushbuttons are pressed.

J. Erase all memory : Erase all stored measurement transactions saved in the meter's memory.



K. Memory Slot Number : Indicates the memory slot number.

L. Resistance Measurement : Indicates the resistance measurement value for the respsctive memory slot

OPERATION

Resistance to ground measurement: Use one OMEG-EP (2.27kg=5lbs) electrode, and connect the black test cable to the ground for Resistance-to-Ground(Rtg) measurements.

Resistance to Top(Surface point to point): Use two OMEG-EP (2.27kg=5lbs) electrodes for resistance Point to Point(Rtt) measurements.

Ensure that the item being measured is elecrically isolated (placed on an insulative surface).

The meter will measure the lowest resistance path.

The meter will automatically switchits test voltage from 10V to 10V when the measured resistance is 1 x 106 ohm or greater to meet the pocedure outlined in ESD TR53.

Minimized crossing the test leads whe possible.

When using OMEG-EP(2.27kg=5lbs) electrodes:

- Place them no closer than 50mm the edhe of the surfce being measured.
- Place them no closer than 76mm to any groundable point.
- Place them about 250mm apart from each other for Rtt measurements of worksurface.
- Place them about 76mm apart from each other for Rtt measurement of a floor.

Preferable electrode placements include:

- Most commonly used area of a surface
- Most worn area
- Center of surface
- Furtherst area from a ground point

If the suface to be measured has sections (i.e. floor tiles, garment panels), place the (2.27kg=5lbs) electrodes on different sections for Rtt measurements.

Clean the materials's surface for thest lab measurements, but do not clean the surface for materials that are already installed. Only clean and re-test the insutalled material if failure occurs.

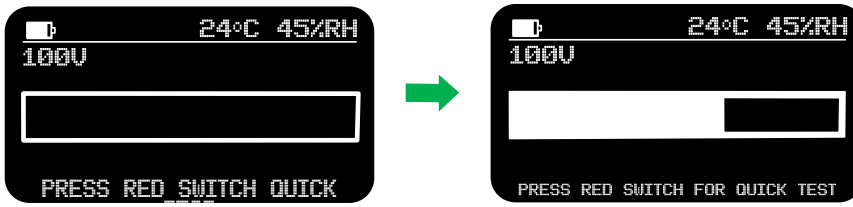
Measure Resistance-to-Ground(Rtg)

Test procedure in accordance with ANSIESD S4.1 section 6.4 Periodic Worksurface Testing:

1. Do not cean the surface of material
2. Remove from the surface only those items that might interfere with the test. ESD sensitive devices shall also be removed.
3. Connect the black test cable to a groundgable point.
4. Connect the red test cable to one (2.27kg=5lbs) electrode, and place the electrode on the furthest convenient point on the surface.
5. Push the red pushbutton to perform a measurement. Shoud the 15-second elecrification period appear, it may be bypassed by pusshing the red pushbutton again.
6. Push the right black puschbutton to save the measurement.
7. Perform additional measurements by placing the electrode on the most commonly used or worn area.

Measure Resistance Point -to-Point(Rtt)

1. Do not cean the surface of material
2. Remove from the surface only those items that might interfere with the test. ESD sensitive devices shall also be removed.
3. Connect both test cable to both (2.27kg=5lbs) electrodes, and place the electrode on the most commonly used area of the surface. Use the 10" electrode spacer to space from apart from each other.
4. Push the red pushbutton to perform a measurement. Shoud the 15-second elecrification period appear, it may be bypassed by pusshing the red pushbutton again.



6. Push the right black puschbutton to save the measurement.
7. Perform additional measurements by placing the electrode on the most commonly used or worn area.

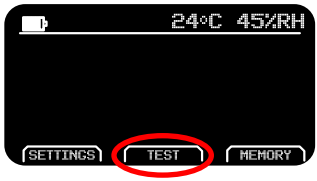
Precautions for measurement

The tempareture inside the testing area needs to be around 24℃±1.7℃(Temperature) at 40 ~60%(relative Humidity). The test equipements need to stay under such enviroment around 1 hour for proper readings. The meter cannot be noemalized inside objects, enclosed boxed, containers or cased. The temperature inside an eclosed case wil differ from the ourside temperture. These case will act as insulators. The test equipement must remain sttionay in the testing area for about 1 hour without any significant changes to the temperature.

Note: Accuracy is measured after normalizing the meter for a minimum of 1 hour.

Data Save

1. Start to mearure **[TEST]**
   Press Red Button.



2. Data saving **[SAVE]**
   Press right black button.

3. Memory select **[SELECT]**
   Select the memory number and press Red button.
   About Delete the memory data, please reffer Page 7

Maintenance

The digital surface Resistance Meter requires little maintenance. There are no user servieable parts. If the meter requires service beyond cleaning the electrodes or replacing the batteried, please contact SHISHIDO Local agents or SHISHIDO Japan.

Battery replacement

Replace the batteires onece the battery life indicator is empty. Open the battery cover at the back side to replace the batteries. The meter uses four AA alkaline batteries. Ensure that the batteries polarities are oriented in the correct direction to avoid any possible circuit damage.

Cleaning the Digital Surface Resistance Meter

The area surrounding the test jacks at the tp end of the meter shoud be wiped with aclean, isopropanol-alcohol and affect the meter's accuracy at high resistance. The frequency of cleaning this area at least onece a month. Cable jackets should also be cleaned in this fashion.

Trouble Shooting

In case the device does not operate correctly, it may be the result of one of the following

[The display pnel is no any indication when the power is turned on.]

Check the battery installation first. No battery, correct polarity, battery life.

[Measurement not available]

Confirm the cable connection to the probe.

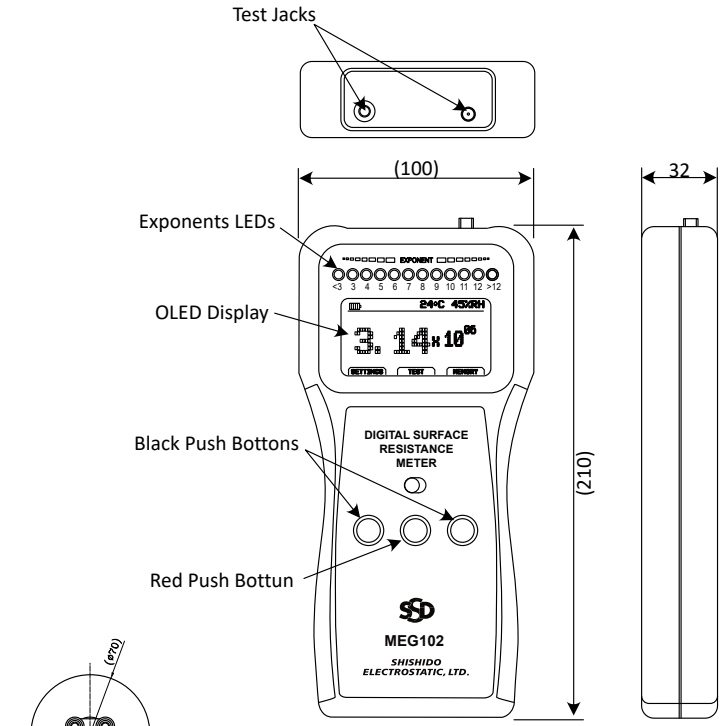
[Others]

Even you checked above items, stil have trouble, please try to contact our local agent or Shshido Japan.

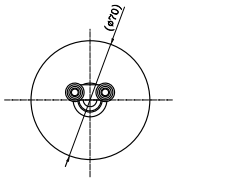
Specifications

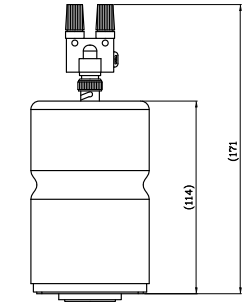
Measuring range	10 Volt supply: 1×10^{3}~$\times10^{6}\Omega$ 100 Volt supply: 1×10^{6}~$1\times10^{12}\Omega$
Accuracy	±10% (Over $10^{11}\Omega$ ± 20%)
Voltage supply	10 Volts, 100 Volts (±5%)
Memory capacity	100 data
Power supply	4 pcs AA Alkaline batteries
Battery Life	Approximately 1500 measurements
Weight	400g
Dimensions	100mm × 210mm × 32mm
Operating Environment	Temperature: 5 ~ 40°C Huidity: Under 80%RH

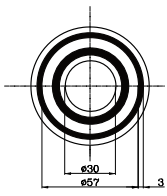
Dimension Diagram



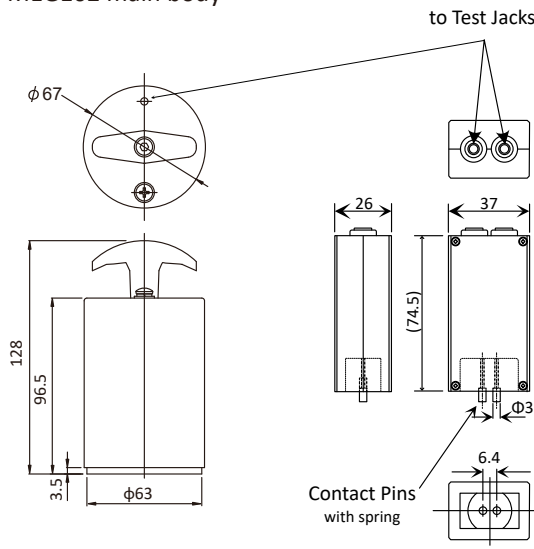
MEG102 main body







OMEG-RING
Optional



OMEG-EP
Standard Accesoy

OMEG-B
Optional

Warranty Valid for: 1 year after deliver

Product name	Digital Surface Resistance meter			
Model	MEG102	Serial Number		
Date of Delivery			Inspector	

1. This product has passed our company's product inspection. Even though the product has been used correctly, if any malfunctions or damages occur during the warranty period due to a defect in our design or production, we will repair the product free of charge.
2. If any malfunctions or damage occur to the product due to any of the following reasons, a charge will be incurred for repairing or replacing the product.
   - Malfunctions or damage occurring to the product due to misuse or improper storage.
   - Malfunctions or damage occurring to the product due to repairs or modifications conducted by a party other than SHISHIDO ELECTROSTATIC or a company specified by SHISHIDO ELECTROSTATIC.
   - Malfunctions or damage occurring to the product due to fire, natural disasters, or other acts of providence.
   - Other malfunctions or damage occurring to the product deemed not to be the responsibility of SHISHIDO ELECTROSTATIC.

For any queries relating to the product, contact the sales office where you purchased the product.

SHISHIDO ELECTROSTATIC, LTD. http://www.shishido-esd.co.jp/english/index.html

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OSAKA BRANCH

OSAKA ORUGAN BLDG. 2F-203, 4-2, TANIMACHI 1-CHOME, CHUO-KU, OSAKA, 540-0012

NAGOYA BRANCH

RAINBOW TSURUMAI 6F, 1-2, TSURUMAI 2-CHOME, HOWA-KU, NAGOYA, AICHI-PREF, 466-0064

FUKUOKA BRANCH

DAI10 UEMURA BLDG. 8F-A, 6-4, TAKASAGO 2-CHOME, CHUO-KU, FUKUOKA, FUKUOKA-PREF, 810-0011

SENDAI BRANCH

ITO BLDG. 8F-C, 4-11, TSUTSUMIDORIAMAMIYAMACHI, AOBA-KU, SENDAI, MIYAGI-PREF, 981-0914