

AUTORANGING RESISTANCE INDICATOR MODEL 880



OPERATING INSTRUCTIONS

6/08



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1.0 GENERAL

The Model 880 Autoranging resistance Indicator, shown in Figure 1, is a **CE** certified, precision, easy to use instrument that incorporates features found only in more expensive units. Twelve (12) LEDs indicate the Conductive (Green), Static Dissipative (Yellow) and Insulative (Red) ranges in one (1) decade steps from $<10^3$ to $>10^{12}$ Ohms.



Figure 1

Accuracy is $\pm 10\%$ of the mean value, with changeover points of $\frac{1}{2}$ decade on a logarithmic scale.

Measurements in the Conductive range ($<5 \times 10^5$ Ohms) are made at 10 Volts. All remaining measurements are made at 100 Volts.

The measurement electrodes, shown in Figure 2, consist of chrome-plated parallel bars 2.5" (62.5 mm) long, spaced 1.56" (40 mm) apart. The conversion to surface resistivity is 1.6, however, the measurement resolution of one decade enables the user to convert the indicated resistance in Ohms directly into surface resistivity in Ohms/sq.



Figure 2

Two auxiliary input banana jacks enable the user to plug in virtually any type of resistance measurement electrode having cables with standard 0.161" (4mm) banana plugs that converts the Model 880 to an independent wide range resistance indicator. When the auxiliary probe banana plug is inserted the built-in parallel bar electrodes are automatically disconnected. The supplied ground cable enables resistance-to-ground (RTG) measurements to be made by disconnecting one of the parallel bar electrodes and using the other parallel bar as the surface electrode for quick checks.

Using the optional ETS Model 850, 5lb (2.27kg), 2.5" (63.5mm) diameter Surface Resistance Probe(s) standard RTG and point-to-point resistance measurements can be made. Volume resistance, seating resistance per ESDA STM12.1 or other resistance measurements using the appropriate electrode configuration can also be made with the Model 880.

The Model 880 Autoranging Resistance Indicator comes complete with RTG cable, 9 Volt battery and vinyl carry case.

2.1 OPERATION

2.1.1 Surface Resistance

The Model 880 is designed to measure samples having a flat surface at least 2.5"x1.75" (64x45mm). The sample being tested should be placed on an insulated surface ($>10^{13}$ Ohms) to avoid parallel measurement paths, especially if the material has any bulk resistance.

Prior to making measurements first check the Indicator by holding it away from any surface and pressing the TEST button. The $>10^{12}$ Red LED should light. Place the Model 880 on the surface to be measured, then depress and hold the TEST button for approximately 3-5 seconds. The illuminated LED indicates the surface resistance of the material in Ohms or Ohms/sq., if desired.

2.2 Resistance-to-Ground (RTG)

To measure the RTG of a table top, mat or flooring plug the RTG cable supplied into one of the auxiliary banana jacks. This will disconnect the corresponding bar electrode. Clip the cable to the common point ground and place the Indicator on the surface to be measured. The other bar electrode performs the function of a surface probe. Depress and hold the TEST button for approximately 3-5 seconds. The illuminated LED indicates the RTG in Ohms.

2.3 Other Resistance Measurements

Plug the appropriate electrodes into the auxiliary jacks. The bar electrodes will now be disconnected. Place the probe(s) on the surface being measured. Follow the above test procedure. The illuminated LED indicates the measurement resistance in Ohms.

For volume resistance, either a standard volume resistance probe and test bed can be used or just simply connect the RTG cable to a test bed and then place the sample on the test bed and the Model 880 on the sample. The resulting measurement is the volume resistance in Ohms. To obtain volume resistivity, place the optional 2.5" (63.5mm) diameter conductive rubber electrode on top of the sample and the Model 880 on top of the electrode. The volume resistivity will be

$$\begin{aligned}\rho_v &= A/t R_m \\ &= 31.7/t R_m \text{ Ohms-cm}\end{aligned}$$

Where A is the area of the electrode in cm^2 and t is the thickness of the sample in cm.

3.0 MAINTENANCE

The Model 880 operates from a standard 9 Volt battery. The momentary nature of the measurements allows for a very long battery life. When the LEDs appear dim and/or the measurements are unstable, change the battery.

Remove the four (4) Phillips head screws and carefully remove the bottom cover. Replace the battery and reinstall the cover.

To clean the instrument, wipe with a clean, damp cloth. Do not use any solvents as these make react with the plastic case and may damage it.

4.0 WARRANTY

Electro-Tech Systems, Inc. warrants its equipment, accessories and parts of its manufacture to be and remain free from defects in material and workmanship for a period of one (1) year from date of invoice and will, at the discretion of Seller, either replace or repair without charge, F.O.B. Glenside, similar equipment or a similar part to replace any equipment or part of its manufacture which, within the above stated time, is proved to have been defective at the time it was sold. Equipment claimed defective must be returned properly identified to the Seller (or presented to one of its agents for inspection). This warranty only applies to equipment operated in accordance with Seller's operating instructions.

Seller's warranty with respect to those parts of the equipment that are purchased from other manufacturers shall be subject only to that manufacturer's warranty.

The Seller's liability hereunder is expressly limited to repairing or replacing any parts of the equipment manufactured by the manufacturer and found to have been defective. The Seller shall not be liable for damage resulting or claimed to result from any cause whatsoever.

This warranty becomes null and void should the equipment, or any part thereof, be abused or modified by the customer or if used in any application other than that for which it was intended. This warranty to replace or repair is the only warranty, either expressed or implied or provided by law, and is in lieu of all other warranties and the Seller denies any other promise, guarantee, or warranty with respect to the equipment or accessories and, in particular, as to its or their suitability for the purposes of the buyer or its or their performance, either quantitatively or qualitatively or as to the products which it may produce and the buyer is expected to expressly waive rights to any warranty other than that stated herein.

ETS must be notified before any equipment is returned for repair. ETS will issue an RMA (Return Material Authorization) number for return of equipment.

Equipment should be shipped prepaid and insured in the original packaging. If the original packaging is not available, the equipment must be packed in a sufficiently large box (or boxes if applicable) of double wall construction with substantial packing around all sides. The RMA number, description of the problem along with the contact name and telephone number must be included in formal paperwork and enclosed with the instrument. Round trip freight and related charges are the owner's responsibility.

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