



NEW MODEL OF THE MEGOHMMETER HAS TWO TEST VOLTAGES

The TYPE 1862-A Megohmmeter,¹ has found wide acceptance in the electrical and electronic industries for the rapid measurement of insulation resistance, the measurement of high-valued resistors, and for general resistance testing. In this instrument, the voltage across the resistance being measured is 500 volts, a value accepted as standard by most industrial and professional groups.

There have developed, however, a number of tests that should be made at a voltage considerably lower than 500, in order to avoid any damage to the specimen under test, and, to meet this requirement, a new model, the TYPE 1862-B, has been developed, in which two test voltages are provided, 500 volts and 50 volts, either of which can be selected by means of a panel switch.

The 50-volt test level will be found useful in resistance measurements on printed circuits and on components used in transistor circuits and in miniaturized equipment. The 500-volt level is used for measuring the insulation of rotating electrical machinery, transformers, capacitors, cables, appliances, and other power-line operated equipment.

From measurements made with both voltages, it is possible to determine the voltage coefficient of insulation resistance.

The selection of 50 volts as the low-voltage test potential permits a single meter scale to be used, thus preserving the simplicity and ease of interpretation inherent in the original design. The answer in megohms is still the product of a meter reading and a decimal multiplier. A neon lamp operated by the



Figure 1. View of the Type 1862-B Megohmmeter.

voltage-selection switch warns when the operating voltage is 500 volts.

The low end of the resistance range is one half megohm for both operating-voltage conditions. For the 500-volt condition, the limiting factor is short-circuit current. When the unknown resistance is a short-circuit, the current that flows is about ten milliamperes at the lowest multiplier setting and is proportionately less at the higher settings. For the 50-volt condition, the limiting factor is the source resistance of the 50-volt supply (about 27 kilohms), which accounts for the larger error at the low range of the low-voltage condition (see specifications).

The high end of the resistance range is ten times as great (2,000,000 megohms) for the 500-volt condition as for the 50-volt condition. This is inherent in the circuitry, which consists essentially of a d-c supply (50 or 500 volts), an unknown, and a standard resistance, all in a series loop; a vacuum-tube voltmeter of two volts full scale is connected

¹"A 500-Volt Megohmmeter for Insulation Testing," *General Radio Experimenter*, Vol. XXVI, No. 6, November, 1951.



across the standard and is calibrated to indicate megohms directly.

While the new megohmmeter is useful for measuring resistors and the leakage of both high-voltage and low-voltage

capacitors and insulators, the facility with which voltage coefficient can now be determined opens up new fields of application.

—A. G. BOUSQUET

SPECIFICATIONS

Voltage Across Unknown: 500 volts or 50 volts, as selected by means of a panel toggle switch. A neon lamp warns when the 500-volt supply has been selected.

Over a 105-125-volt range in line voltage and over the resistance range of the instrument, the variation in voltage across the unknown resistor will be less than ±10 volts at 500 volts and less than ±4.0 volts at 50 volts.

Range: 0.5 megohm to 2,000,000 megohms at 500 volts and to 200,000 megohms at 50 volts. There are six decade steps as selected by a multiplier switch.

Scale: Each resistance decade up to 500,000 megohms (50,000 megohms for 50 volts) utilizes 90% of the meter scale. Center scale values are 1, 10, 100, 1000, and 10,000 megohms, with an additional center scale value of 100,000 megohms for 500-volt operation.

Accuracy: For 500-volt operation, the accuracy in per cent of indicated value at all but the highest multiplier setting is ±3% at the low-resistance end of each decade, ±8% at mid-scale, and ±12% at the high-resistance end. There can be an additional ±2% error at the highest multiplier setting.

For 50-volt operation, there can be an additional ±2% error on all but the 0.5-5 megohms decade where the additional error can be ±5%.

Terminals: In addition to terminals for connecting the unknown, ground and guard terminals are provided. At two positions of the panel switch, all voltage is removed from all terminals to permit connection to be made in safety. In one of the positions, the UNKNOWN terminals are shunted to discharge the capacitive component of the unknown. All but the ground terminal are insulated.

Calibration Check: A switch position is provided for standardizing the calibration at 500 volts.

Design: Since field applications are more severe than laboratory use, the instrument was designed to be unusually rugged. The carrying case can be completely closed; accessory power cable and test leads are carried in the case. Controls are simplified for use by untrained personnel.

Tubes: Supplied with the instrument:

- 1 — 12AU7
1 — OA2
1 — 6X4
1 — 5651
1 — 2X2-A
1 — 6AB4
1 — 6AU6
1 — NE-51

Controls: A switch for selecting the operating voltage, a switch for selecting the multiplying factor, a control for standardizing the calibration, a control for setting the meter to the infinity reading, and a power switch.

Mounting: The instrument is assembled on an aluminum panel finished in black-crackle lacquer and is mounted in an aluminum cabinet with black-wrinkle finish and with black-phenolic protective sides. The aluminum-cover finish is black wrinkle. The case is provided with a carrying handle.

Power Supply: 115 (or 230) volts at 40 to 60 cycles. The power input is approximately 25 watts.

Accessories Supplied: Two color-coded test leads with phone tips, two insulated probes, two alligator clips, and a TYPE 274-MB plug.

Dimensions: (Height) 10 1/8" x (width) 9 1/8" x (depth) 11 3/4", overall.

Net Weight: 15 1/2 pounds.

Table with 4 columns: Type, Description, Code Word, Price. Row 1: 1862-B, Megohmmeter, JUROR, \$225.00

GENERAL RADIO COMPANY

275 MASSACHUSETTS AVENUE

CAMBRIDGE 39

MASSACHUSETTS

TELEPHONE: TRowbridge 6-4400

BRANCH ENGINEERING OFFICES

NEW YORK 6, NEW YORK
90 WEST STREET
TEL.—WOrth 4-2722

LOS ANGELES 38, CALIFORNIA
1000 NORTH SEWARD STREET
TEL.—Hollywood 9-6201

CHICAGO 5, ILLINOIS
920 SOUTH MICHIGAN AVENUE
TEL.—WAbash 2-3820

SILVER SPRING, MARYLAND
8055 13th STREET
TEL.—JUniper 5-1088