



1644-A Megohm Bridge

- 10^3 to 10^{15} ohms
- 1% accuracy to 10^{12} ohms
- ΔR measurements to $\pm 0.2\%$
- seven test voltages
- self-checking internal standards

The 1644-A will measure:

- **Insulation Resistance** of cables, transformers, chokes, components, connectors, wiring, terminals, resistors, capacitors, relays, printed circuits, rotating machines, switches, circuit breakers, meters, strain gages, thermocouples, delay lines, slip rings, commutators, heaters, filters, lightning arresters, and other devices.
- **Resistance** of high-valued resistors, resistance films, diodes, transistors, and piezoelectric elements.
- **Voltage and Temperature Coefficients** of resistance.
- **Volume and Surface Resistivity** of solids, such as printed-board material, resins, plastics, potting and casting compounds, rubber, refractories, and semiconductors; of liquids, such as oils, plasticizers, and solvents; and of sheet materials, including plastics, recording tape, and varnished fabrics.

The circuit is a dc Wheatstone bridge with a high-impedance, high-sensitivity detector. Precision, wire-wound resistors are used for the fixed bridge arm and the lowest-valued decade-step arm. For medium values of the ratio arm, precision metal film resistors are used; for the highest values, carbon film resistors with trimmers. The balancing arm is a wire-wound variable resistor.

The guard terminal eliminates the effects of stray resistances to ground. For capacitor leakage resistance measurement, charging time is a fraction of a second.

SPECIFICATIONS

Resistance Range: 1 k Ω to 1000 T Ω (10^3 to 10^{15} Ω) in ten ranges.

Accuracy: 10^3 Ω to 10^{10} Ω , $\pm 1\%$. After self-calibration: 10^{10} to 10^{12} Ω , $\pm 1\%$; 10^{12} Ω , $\pm 2\%$; 10^{14} Ω , $\pm 10\%$; 10^{15} Ω , \pm one scale division.

$\Delta R\%$ Dial: $\pm 5\%$ range; accurate to $\pm 0.2\%$ or, for small changes, to $\pm 0.1\%$.

Test Voltage: Voltage accuracy is $\pm 3\% \pm 0.5$ V.

Fixed Voltages**	10	20	50	100	200	500	1000	V
Minimum Unknown R	1	3	7	20	50	150	500	k Ω
Minimum Test Voltage for 1% Resolution: for approx 1-mm meter deflection	Multiplier Setting						Max R _x	Volts
	100 G or less						10^{11}	10
	100 G						10^{12}	100
	1 T						10^{13}	200

Short-Circuit Current: <15 mA, 10-50 V; <10 mA, 100-1000 V.

Power: 105 to 125 or 210 to 250 V, 50 to 400 Hz, 13 W.

Mechanical: Flip-Tilt case and rack mount. **DIMENSIONS** (wx hxd): Portable, 12.75x12.5x7.75 in. (324x318x197 mm); rack, 19x12.25x5 in. (483x312x127 mm). **WEIGHT:** 19 lb (9 kg) net, 31 lb (15 kg) shipping.

* At high voltages; 1% accuracy is obtainable at 10 V up to 10^{11} Ω .

** Any voltage between 10 and 1000 V may be obtained using an external resistor.

Description	Catalog Number
1644-A Megohm Bridge ◆	
115-V Portable Model	1644-9701
115-V Rack Model	1644-9820
230-V Portable Model	1644-9711
230-V Rack Model	1644-9821
Patent Number 2,966,257	



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