EXTENDED RANGE
Insulation Resistance Testers

- **Multiple test voltages**
- **Guard terminal to eliminate surface leakage current**
- **Voltage indicating range**
- **Large easy-to-read scale**

DESCRIPTION

These Major Megger® Extended Range Insulation Resistance Testers are the ideal instruments when high ranges are needed for measuring insulation resistance. Both provide excellent test voltage regulation and an external guard terminal to eliminate surface leakage current from the measurement. The instruments are all electronic; they generate a regulated dc high voltage and use low-zero-drift, high-accuracy circuits, with high current sensitivity. Designed for portability, each is enclosed in a molded, impact-resistance, flame-retardant case.

Both instruments are protected for connection to power distribution systems up to 300 V Line-Ground and 500 V Line-Line for Installation Category III. This relates to transient overvoltage likely to be found in fixed installation wiring.

Cat. No. 210170

This unit provides high-resistance readings up to 20,000 MΩ. It features an analog meter movement calibrated directly in megohms, ohms and ac volts. Test voltages of 100, 250, 500 and 1000 volts dc are selected by a rotary switch. Insulation resistance measurements up to 20 GΩ can be made on all voltage ranges.

The unit is also equipped with a 0- to 5000-ohm continuity range and a 0- to 600-volt ac or presence of dc voltage measuring range. Power is supplied by an ac generator, driven by a hand crank, through a gear train.

Cat. No. 210600

This digital, autoranging model provides insulation resistance readings up to 1999 MΩ. It has a 0- to 600-volt ac measuring range. Test voltages of 100, 250, 500 and 1000 volts dc are selected by a rotary switch, and insulation resistance to 1999 MΩ autoranging can be made on the 500 and 1000 V ranges. It incorporates a 3-1/2 digit LCD calibrated directly in megohms, ohms and ac/dc volts.

APPLICATIONS

Major Megger testers measure the insulation resistance of wires, power cables, motors, generators, transformers, switchboards and electrical controls. Both models offer multiple test voltages for performing spot and step-voltage tests. Typical applications include:

- Acceptance testing at time of installation to check conformance to specifications.
- Routine preventive maintenance testing after installation.
- Quality assurance testing by the manufacturer.
- Diagnostic testing to isolate faulty components for repair.

Major Megger insulation testers can be used for detecting high- or low-resistance grounds, short circuits in apparatus, cables, wiring, etc. whether caused by moisture, oil, dirt, corrosion, damage to insulation or natural deterioration. They can also be used to determine the presence of moisture, solvents and semiconducting foreign materials in wires, cables and other conductors, and in built-up insulation systems such as those found in motor windings.

Typically, these testers are used to take a series of measurements over a period of time which will show the gradual decline that takes place in the insulation during its operational life. Such monitoring enables the user or to anticipate future performance and to plan ahead for repairs. They are also used to show improvements in the insulation of motor, transformer and generator windings that result from drying-out procedures used after exposure to excessive humidity or water.

FEATURES AND BENEFITS

- Guard terminal to eliminate surface leakage current from the measurement
- High-resistance readings up to 20,000 MΩ (analog model)
- Digital autoranging with readings up to 1999 MΩ (digital model)
- Multiple test voltages

SPECIFICATIONS

Cat. No. 210170

Insulation Range
Accuracy: ±3% of scale length
Test Voltage: ±5%
Short-circuit Current: 220 mA nominal on all ranges
Scale Length: 3.08 in. (78 mm)
Low Resistance Range
Accuracy: ±3% of scale length
Test Voltage: 3 V ±5%
Short-circuit Current: 30 mA ±10%
Scale Length: 3.08 in. (78 mm)
Default Voltage Range
0 to 600 V ac/dc accuracy ±2.5% of scale length
Discharge
Capacitive circuits are automatically discharged when the "TEST" button is released following an insulation test.
Temperature Range
Operating: 14° F to 122° F (-10° C to +50° C)
Storage: 4° F to 158° F (-15° C to +70° C)
Humidity
Operating: 70% RH at 68° F (20° C); 50% RH at 104° F (40° C)
Storage: 95% RH at 95° F (35° C)

Cat. No. 210600

Insulation Range
Accuracy (73.4° F ±3.6° F):
<500 MΩ: ±3% ±2 digits
500 to 1999 MΩ: ±5% ±2 digits
Temperature Coefficient:
<500 MΩ: <86° F, ±0.06% per °F;
>86° F ±0.14% per °F
500 to 1999 MΩ: < 86° F ± 0.11% per °F;
>86° F ±0.28% per °F
Test Voltage: ±5% at open circuit
Short-circuit Current: 1.2 mA nominal
Hum Resistance
Within twice the normal accuracy if the noise current does not exceed 1 mA for the 1-kV range, or 0.5 mA for the other ranges, and is within 45 to 65 Hz.
Low Resistance Range
Accuracy: ±2% of reading ±1 digit
Temperature Coefficient: ±0.06% per °F
Maximum Test Voltage: 4.3 V nominal
Short-circuit Current: 2.75 mA nominal
Default Voltage Range
0 to 600 V ac/dc
Accuracy: ±2% of reading ±1 digit at 45 to 65 Hz
Temperature Coefficient: ±0.06% per °F
Input Impedance: 300 kΩ to 1 MΩ depending on input voltage
Display
3-1/2 digit LCD. Maximum reading 1999.
Battery Life
Typically 2100 x5 second operations
Discharge
Capacitive circuits are automatically discharged when the "TEST" button is released following an insulation test.
Temperature Range
Operating: 23° F to 122° F (-5° C to +50° C)
Storage: 4° F to 158° F (-15° C to +70° C)
Humidity
Operating: 70% RH at 68° F (20° C); 60% RH at 95° F (35° C); 50% at 104° F (40° C) for measurements <200 MΩ
Storage: 95% RH at 95° F (35° C)

Cat. No.	O/C Test Voltage (V dc)	Insulation Resistance Range (MΩ)	Resistance Range	Power Source	Voltage Range	Dimensions	Weight
210170	100 250 500 1000	0 to 20,000	0 to 5000 Ω (at 3 V dc)	Hand cranked	0 to 600 V ac or presence of dc	8.25 H x 5 W x 5 D in. 210 H x 125 W x 125 D mm	2.2 lb (.98 kg)
210600		0 to 199.9 at all test voltages 0 to 1999 at 500 and 1 kV	0.01 to 1.999 kΩ 2.00 to 19.99 kΩ (at 4.3 V dc Open Circuit)	6 AA cells (1.5 V)		7 H x 5 W x 5 D in. 180 H x 125 W x 125 D mm	

ORDERING INFORMATION

Item	Cat. No.
Extended Range Insulation Tester, Analog	210170
Extended Range Insulation Tester, Digital	210600
Included Accessories	
Test lead set, 6 ft (1.8 m) [1 pr]	210971
Carrying case	217720
Test record cards, universal	210949
Instruction manual for 210170	EV6172-382
Instruction manual for 210600	EV6172-373
Optional Accessories	
Carrying case	217740
Fuses 500 mA, 500 V (F) H.B.C. (pack of 5)	EV6121-289
Fused probe kit FPK5	EV6111-288
Black test lead with large alligator clip	EV6220-295
Red test lead with large alligator clip	EV6220-586
Green test lead with large alligator clip	EV6220-587
Test record cards (pack of 20)	EV6111-216
“A Stitch in Time” manual	AVTM21-P8B