



## **MEGGER® BM25**

- **Insulation resistance measured to >5 TΩ**
- **Automated testing**
- **Polarization index and step voltage tests**
- **Dielectric discharge test for multilayer insulation**
- **RS-232 download capability**
- **Weatherproof**

# Automated 5 kV Insulation Tester

## **DESCRIPTION**

The Megger® BM25 is a compact automated 5 kV insulation tester. It can be used to conduct polarization index, step voltage, dielectric discharge diagnostic and standard insulation tests up to 5 TΩ.

Results and test options are displayed on a large, clear analog/digital readout for both practicality and precision. The BM25 provides an optically isolated RS-232 port for direct download of test results. This enables the user to conduct cost-effective predictive maintenance programs.

The instrument displays leakage current down to <1 nA and the capacitance of the test piece up to 10 μF. A guard terminal allows surface leakage to be removed.

Standard test voltages are preset at 500 V, 1000 V, 2500 V and 5000 V and combined with an output voltage setting that is variable in 25 V steps. The integral timer starts automatically at the beginning of a test and can be used to control test duration.

The BM25 is powered by rechargeable lead-acid batteries. The built-in charger operates from 95 V to 265 V power supplies without switch selection. The instrument is supplied complete with test leads, RS-232 interface lead and file transfer utility software.

## **APPLICATIONS**

The BM25 is designed for testing the insulation of high-voltage electrical equipment. Its wide voltage range also allows applications to low-voltage equipment.

Generators, motors, transformers, cables and switchgear all require effective maintenance. The test techniques on the BM25 provide valuable diagnostic information.

Insulation suffers from gradual, steady decline as well as occasional sudden damage. The effects of dirt, grease, moisture, vibration and chemical attack can be tracked by recording polarization index tests which are not limited by the temperature-dependence of raw insulation resistance measurements.

Polarization index (PI) is a time-resistance dielectric absorption test. PI tests are also helpful when full test records have not been maintained.

To find more localized insulation problems, the BM25 includes both step voltage and dielectric discharge tests. Step voltage identifies local weak spots which respond differently as electrical stress is increased. The dielectric discharge test can show a single bad layer in multilayer insulation.

The key to predictive maintenance is the trending of diagnostic tests. The BM25 can download to a PC to store test results.

## **FEATURES AND BENEFITS**

- Durable, field-portable, weather-proof, tester gives long service life.
- Insulation test to >5 TΩ tracks insulation resistance on highly specified high-voltage equipment.
- Automated testing allows diagnostic tests to be applied to routine maintenance, saves time and avoids operator error.
- Polarization index tests track insulation condition on many different types of equipment with no need for temperature correction.
- Step voltage tests detect localized insulation problems.
- Dielectric discharge tests diagnose failed layers in multilayer insulation.
- Optically isolated RS-232 interface allows download of test results for storage on a PC.
- Integral timer eases test operation.
- Specifications are well-suited for accuracies and environmental performance.
- Capacitance measurement at the end of a test ensures confidence in test piece identification.
- Automatic charging control allows easy charging from 95 V to 265 V and prevents overcharging.

- Large custom analog/digital display clearly shows measurement results and test options.
- Wide range of test voltages covers all low-voltage and high-voltage equipment.

**SPECIFICATIONS**

**Insulation Resistance Ranges**

10 kΩ to 5 TΩ digital  
100 kΩ to > 1 TΩ analog

**Accuracies**

**32 to 86° F (0 to 30° C)**

±5% 1 MΩ to 1 TΩ at 5 kV

From 100 kΩ to 1 MΩ and 1 TΩ to 5 TΩ ±20%

Upper limits reduced pro-rata at lower voltages

**-4 to +122° F (-20 to +50° C)**

Percentage error doubles for extended temperature range.

**Test Voltages dc**

500 V, 1000 V, 2500 V, 5000 V and variable in 25 V steps to 5000 V

**Test Voltage Accuracy**

±5% of nominal for load resistance to 10 MΩ

**Short-Circuit Current**

2 mA maximum

**Additional Ranges**

**Leakage Current**

0.01 nA to 999 nA ±5% ±0.2 nA

**Capacitance**

0.01 μF to 10.0 μF ±15% ±0.03 μF

**Voltage Measurement**

50 V to 1000 V ac or dc (does not distinguish between ac and dc)

**Voltage Accuracy**

±5% ±1 V

**Interference Rejection**

1 mA rms per kV test voltage up to 2 mA max

**Guard Terminal**

Guards out parallel resistance down to 250 kΩ

**Capacitance Response**

<5 sec/μF to charge to 5 kV  
<2sec/μF to discharge to <50V

**Power Supply**

Two 12 V, 2 Ah, rechargeable, sealed lead-acid batteries; typical battery life 8 h continuous testing

Built-in charger operates from 95 V to 265 V ac; recharge time 8 h to 90%, 16 h to 100%

DC emergency charge socket from 12 V dc

Comprehensive battery state indicator on display

**Display**

Large, custom display with analog and digital readouts of resistance, plus test/applied voltage measurement, indicators for selected test voltage and time, test type selected, state of battery; warnings for breakdown, fuse and excess noise. Hazard lightning flashes appear when voltage >50 V exists at terminals.

Timer: 0 to 90 min

**Polarization Index (PI)**

PI=  $\frac{\text{value at 1 min}}{\text{value at 10 min}}$

**Step Voltage (SV)**

SV 500, 1000, 1500, 2000 and 2500 or SV 1000, 2000, 3000, 4000 and 5000

**Dielectric Discharge**

DD=  $\frac{\text{current after 1 min discharge}}{\text{test voltage x capacitance}}$

**Environmental**

**Temperature Range**

Operating: -4 to +122° F (-20 to +50° C)

Storage: -13 to +149° F (-25 C to +65° C)

**Temperature Coefficient**

0.11% per °F (0.2% per °C)  
test current >100 nA

0.05% per °F (0.1% per °C) for test voltage

**Humidity**

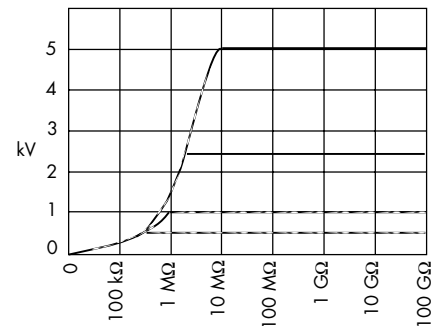
90% RH at 104° F (40° C) max

**Weatherproof**

Meets international specifications with charging cover closed

**Altitude**

To 6500 ft (2000 m) to retain full accuracy



Typical Terminal Voltage Characteristics

**Dimensions**

13.5 H x 9.6 W x 6.2 D in. (343 H x 245 W x 158 D mm)

**Weight:** 12.5 lb (5.6 KG)

**ORDERING INFORMATION**

Item	Cat. No.	Item	Cat. No.
BM25 5 kV Insulation Resistance Tester .....	BM25	<b>Optional Accessories</b>	
<b>Included Accessories</b>		Carrying case .....	218748
Three test leads, 10 ft (3 m) .....	210968	“A Stitch in Time” manual .....	AVTM21-P8B
Test record cards, universal .....	210954	High voltage test lead, 25 ft (8m) long .....	6220-543
Charging cord		High voltage test lead, 50 ft (16m) long .....	6220-588
Instruction manual .....	AVTMBM25	Shielded lead set, 50 ft (16m) long .....	6311-080
PC connector lead .....	25955-025	CB101, 5kV Calibration box .....	6311-077
BM25 download software .....	6139-085	Test record cards [pack of 20] .....	6111-217
		Charging lead, 12 V dc with automotive cigarette lighter plug, 10 ft (3m) long .....	6231-584



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