

# BMM500 Series

## Insulation and Continuity Testers



- 250 V, 500 V, 1000 V Insulation Ranges
- 200 mA Continuity Range
- Instant Response "ZAP" Buzzer
- Voltage Measurement to 600 V
- Megger Intelligent Safety System
- Patented backlit DART display
- K $\Omega$  range for servicing
- Probe support for other measurements
- Waterproof & Dustproof to IP54

### DESCRIPTION

The Megger® BMM500 series of Insulation/Continuity testers provide all the necessary features for electrical installation testing and servicing needs. The series incorporates the knowledge gained from over 100 years experience in insulation tester design. All instruments are microprocessor controlled combining outstanding performance with ease of use. For ultimate reliability the BMM500 series is waterproof and dustproof to IP54 and is supplied with a 3 year warranty.

The BMM500 series has been carefully designed to maximise features which are of real benefit to the electrical contractor or service engineer competing for business in today's market.

#### Intelligent Safety System (ISS)

With increased pressure of time to complete jobs it is inevitable that whilst performing tests on an electrical system mistakes will occasionally be made exposing the user to danger or under certain circumstances damaging the instrument. The BMM500 series incorporates Megger's Intelligent Safety System which has been designed to ensure that such mistakes don't become disasters.

The ISS consists of:

#### Live Circuit Warning,

Warns of accidental connection to a live circuit greater than 25 V on any range.

#### Safe Contact Detector

Prevents danger during continuity testing if contact is made with a live circuit and minimises the chances of blowing the instruments fuse.

#### Test Lockout

Prevents test being energised in presence of external voltages.

#### Default Voltmeter

Displays presence of dangerous voltages on connected circuit irrespective of instrument range selected.

#### Auto Discharge

Safely discharges connected circuits after insulation test.

#### Instant Response "ZAP" Buzzer

The audible buzzer range is frequently used for checking for correct polarity in installed circuits and for point to point connectivity in servicing. It is vital that the instrument provides an instant response in such situations. Many insulation testers take up to 1 second to respond making them highly tedious and frustrating in use. The BMM500 series features specially designed "instant response" circuitry some 80 times faster than rival products, making the instrument a pleasure to use.

The "Zap" Buzzer also features seven user selectable thresholds below which the buzzer will sound continuously. At values above the chosen limit the buzzer will sound an intermittent tone unless the value is above

3 k $\Omega$  in which case no sound will be emitted.

This provides a useful audible approximation of the value being measured.

#### **D.A.R.T. Display**

The BM500 series incorporates a large backlit digital LCD display combining Digital and Analog Response Technology. The patented design provides the benefits of true analog clarity, (with its ability to spot an momentary insulation breakdown or poor continuity connection), with the stability and simplicity of a digital reading. The display is backlit enabling use in dimly lit areas, which is especially useful when the installation power is turned off for testing.

#### **Insulation Testing**

Instruments are available with either one, two or three insulation test voltages to suit all needs.

**BM503** = 250 V, 500 V, 1000 V

**BM502** = 500 V, 1000 V

**BM501** = 500 V

Whichever model is chosen the ranges are capable of supplying 1mA test current at the minimum pass levels expressed by 16th Edition Wiring Regulations, (BS7671), IEC364, HD384 and VDE0413 Parts 1 and 4.

#### **Continuity Testing**

A hands free 200 mA continuity test range meeting the requirements of UK and European legislation is also included to ensure the accurate measurement of circuit final conductors and primary and supplementary bonding.

#### **Test Lead Zeroing**

The continuity range has a facility to automatically remove the resistance of the test leads from the measured value, a task that would normally have to be done manually. This ensures that the measurement displayed is due entirely to the conductors under test.

The insulation and continuity ranges are augmented by a number of additional measurement ranges such as autoranging voltage measurement up to 600 V ac/dc, and Kilohms resistance measurement enabling component diagnostic measurements during servicing. Current may be measured by connection of an external mV output clamp such as the optional Megger MCC10

#### **Pouch**

The BMM500 series has been designed to withstand the day to day handling and storage of a tool bag environment and also comes complete with durable carry pouch with provision for storage of all leads.

#### **Additional Servicing Measurements**

The BMM500 series supports the connection of virtually any mV probe. Such devices extend the range of possible measurements almost endlessly including such items as temperature probes, air speed indicators and high current clampmeters such as used in heating and ventilation (HVAC), and servicing.

## **APPLICATIONS**

### **ELECTRICAL CONTRACTORS**

The BMM500 series insulation continuity testers has a wide variety of applications for testing electrical installations to both the British and the International Wiring Regulations. Each instrument conforms to the requirements of Table 71A in BS7671 and to VDE 0413 parts 1 and 4, HD 384, IEC 364 and EN 61557. In addition the range meets the requirements of BSEN 61010-1 for safe connection to a 440V Installation Category III supply (300 V Phase to Earth).

The BMM500 series is designed to provide the electrical contractor with a highly functional tool for testing/ commissioning fixed installations. The inclusion of a power saving backlight ensures that the display can be clearly seen even where the distribution board is located in a dark cupboard, but without ruining battery life.

Three insulation test voltages of 250,500 and 1000 V are provided to ensure that the correct test voltage for the installation under test is always available. The 500 V range is suitable for the majority of testing on circuits with a nominal voltage up to 500 V. The 250 V insulation range is necessary where low voltage circuits supplied by an isolating transformer are tested whilst the 1000 V range is used for circuits with a nominal voltage exceeding 500 V and below 1000 V.

The instruments have a 200 mA continuity range which is ideal for testing the continuity of ring final circuit conductors, primary bonding of services and of supplementary bonding conductors. The zero offset adjustment allows the resistance of the test leads to be ignored so the measurement shown is due to the conductors under test only.

To aid operation in awkward situations where the instrument cannot be held in one hand the Megger SP6F switched probe is available to facilitate control of the instrument test button directly from the probe.

In addition to the electrical features above, the rugged design of the BMM500 range ensures that they can withstand the everyday handling, transportation and storage with other tools in the contractors toolbag and the BMM500 is supplied with a three year manufacturer's warranty.

### **SERVICING AND HVAC**

The BMM500 series is ideally suited to the service industry since they offer a comprehensive range of features in a single unit. The insulation ranges are useful for establishing the integrity of the internal parts such as motors, timers and transformers whilst the continuity range can verify the correct earth bonding of the case metalwork etc.

Voltage, and Resistance ranges find a multitude of uses in the measurement of component parts within consumer appliances, such as the verification of correct mains

supplies timer switching characteristics and component level measurements on control PCB's.

The unique probe range enables the BMM500 series to interface to a vast range of probes for measurement of the various parameters such as temperature, which is useful for verifying the correct operation of items such as oven thermostats, or the measurement of heated air temperature and humidity to be made.

**SPECIFICATIONS**

(All quoted accuracy's are at +20°C)

**Insulation Ranges**

<b>Measuring Range:</b>	1000 V	0,01 MΩ to 10,000 MΩ
	500 V	0,01 MΩ to 5,000 MΩ
	250 V	0,01 MΩ to 2,000 MΩ

Analogue scale 0 - 10 GΩ (all ranges)

**Test voltage accuracy:** +15% maximum on open circuit

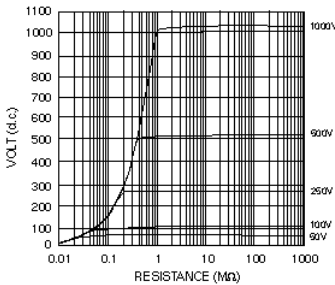
**EN61157 Operating range:** 0,10 MΩ to 1,000 MΩ

**Short circuit current:** < 2 mA

**Test Current on load:** 1 mA at min. pass value of insulation specified in BS7671, HD384 and IEC 364

<b>Accuracy:</b>	1000 V	±2% ±2 digits
		±0,2% per 1000 MΩ
	500 V	±2% ±2 digits
		±0,4% per 1000 MΩ
	250 V	±2% ±2 digits
		±0,8% per 1000 MΩ

Auto-Discharge facility safely discharges the connected circuit after a test



**Live Circuit Warning**

Provides automatic warning when connected to live circuits. Threshold 25 V

**Continuity**

**Measuring Range:** 0,01 Ω to 99,9 Ω autoranging (0 to 10 Ω on analogue scale)

**EN61577 Operating Range** 0,10 Ω to 99,9 Ω

**Accuracy:** ±2% ±2 digits

**Open circuit voltage:** 5 V ±1 V

**Test current:** 210 mA ±10 mA (0 - 2 Ω)

**Zero offset at probe tips:** 0,10 Ω typical

**Test Lead resistance zeroing:** Up to 9,99 Ω

**"Zap" Buzzer:** Operates continuously at less than selected limit or intermittent tone above limit but below 3 kΩ. (Silent above 3 kΩ)

**Selectable Limits:** 2 Ω, 5 Ω, 20 Ω, 50 Ω, 200 Ω, 500 Ω, 3 k

**Silent buzzer mode:** Replaces audible tone with visual indication on display when measured value below selected limit.

**Resistance**

**Measuring Range:** 0,01 kΩ to 9,99 MΩ (0 to 100 MΩ on analogue scale)

**Accuracy:** ±3% ±2 digits

**Open circuit voltage:** 5 V ±1 V

**Short circuit current:** 25 μA ±5 μA

**Voltage**

**Measuring Range:** ±1 V to ±600 V (0 to 1000 V on analogue scale)

**Accuracy:** 0 to ±600 V d.c. or a.c. (50/60 Hz) ± 2% ±3 digits  
0 to ±600 V 400 Hz a.c. ± 5% ±3 digits

**Millivolts/ Probe Range**

**Measuring Range:** ±0,1mV to ±1999 mV (0 to ±1000 mV on analogue scale)

**Accuracy:** 0,1 mV to 10 mV d.c./ a.c. (50/60 Hz) ±2% ±5 digits

10mV to 1999mV d.c./a.c. (50/60Hz) ±2% ±3 digits

0,1 mV to 10 mV a.c. (16-460 Hz) ±5% ±7 digits

10 mV to 1999 mV a.c. (16-460 Hz) ±5% ±3 digits

**Probe Compatibility**

Virtually any mV output probe may be connected to facilitate measurements of other parameters such as temperature, humidity etc. A unique probe offset adjustment facility is included.

**Probe Zeroing:** Up to 9,9 mV

**Backlight:**

User selectable LED backlight with auto turn off after 1 minute to extend battery life.

**Power Supply**

**Battery Type:** 6 x 1,5 V Alkaline cells IEC LR6 type

**Battery Life:** Typically Up to 4000 5-second tests.

**Auto Shut Off**

The BMM500 series feature a selectable auto shut off facility which turns the instrument off after approximately 5 minutes, (12minutes for insulation ranges), to conserve battery life. This can be extended by the user to 60 minutes.

**Safety**

The BMM500 series complies with the latest international directives concerning safety and electromagnetic compatibility.

The instruments meet the requirements for double insulation to IEC 61010-1 (1995), EN 61010-1 (1995) Safety Requirements for electrical equipment for measurement, control, and laboratory use. Category III\*\*, 300 Volts phase to earth (ground) and 440 Volts phase to phase, without the need for separately fused test leads. If required, fused test leads are available as an optional accessory.

\*\* Relates to the transient over-voltages likely to be met in fixed wiring installations.

Complies with the following parts of EN6155 Electrical safety in low voltage systems up to 1000 V a.c. and 1500 V d.c. - Equipment for testing, measuring or monitoring of protective