

# BMM2000 Series

## Premium Insulation Multimeters



- Insulation measurement up to 200 Gohm (BMM2080)
- 200 mA Continuity Range
- Voltage, current and low resistance measurement
- Backlight
- mV Transducer inputs
- Electronic Locking Test Button
- Remote control switched probe
- Waterproof and Dustproof to IP54

### DESCRIPTION

The Megger® BMM2000 series of Insulation Multimeters utilise advanced microprocessor technology to provide a host of new features not normally associated with standard insulation and continuity testers.

The instruments utilise a large backlit LCD display incorporating a patented analogue arc which incorporates the benefits of electronic analogue indication and unambiguous digital readings. The analogue scale provides rapid identification of insulation condition highlighting any variable readings and is complemented by the precision and simplicity of the digital display.

The BMM2000 provides the ideal mix of features for the electrical contractor requiring the top performance and functionality but without the need for data storage and download.

The instrument features three insulation test voltage ranges, (250 V, 500 V and 1000 V), each of which is capable of supplying 1 mA test current at the minimum pass levels expressed by BS 7671, IEC364, HD38 and VDE0413 Parts 1 and 4. Insulation measurements extending up to 20 GΩ may be made (200 GΩ BMM2080)

A live circuit warning is included to guard against inadvertent connection of the instrument to a live supply. Voltage in excess of 25 V will trigger the warning indicator.

A hands free 200 mA continuity test range meeting the requirements of European legislation is also included to

ensure the accurate measurement of ring circuit final conductors and primary and supplementary bonding. The range has a facility to null the resistance of the test leads ensuring that the measurement displayed is due entirely to the conductors under test. A continuity buzzer is incorporated and sounds when resistance's below approximately 5 Ω are encountered.

The insulation and continuity ranges are augmented by a number of features only to be found on a dedicated multimeter. The BMM2000 series includes autoranging voltage measurement up to 500 V a.c./d.c., resistance measurement from as low as 10 mΩ up to 10 MΩ and current measurement from 10 mA to 500 mA. Higher currents still may be measured using an external mV output current clamp such as the optional Megger MCC10

By incorporating all the above features into a single unit the BMM2000 series remove the need to carry a separate multimeter.

The BMM2080 offers all the feature of the 2000 but with the addition of 100 V and 50 V insulation ranges and a 10 uF capacitance range. These additional features make the instrument ideally suited for applications in the telecom industry.

The BMM2000 series has been designed to withstand the day to day handling and storage of a toolbag environment and comes complete with a three year warranty.

Both instruments feature mV ranges enabling connection of any transducer with a mV output. Such devices extend

the range of possible measurements almost endlessly including such items as temperature probes, airspeed indicators and high current clampmeters thus extending the scope of the BMM2000 series into key industries such as Heating and ventilation (HVAC), and Servicing.

## **ELECTRICAL CONTRACTORS**

The BMM2000 series insulation multimeters has a wide variety of applications and is ideal 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 5117. In addition the range meets the requirements of BSEN 61010-1 for safe connection to a 440V Installation Category III supply.

The BMM2000 series Insulation Multimeters are designed to provide the electrical contractor with a highly functional tool for testing/commissioning fixed installations.

Where certificates of test are required data may be manually entered onto the forms or manually entered into certification software such as PowerSuite for Windows™ or NICEone to create a professional certificates with the tracability necessary for safety critical applications. 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. An additional leakage facility allows any insulation measurement to be displayed in terms of microampere leakage currents.

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.

The feature set of the BMM2000 series extends to include measurement ranges for voltage, current, resistance enabling one instrument to be used where normally a separate multimeter would be called for.

To aid operation in awkward situations where the instrument cannot be held in one hand the Megger SP1 switched probe is included to facilitate control of the instrument test button directly from the probe.

In addition to the electrical features above the rugged design of the BMM2000 range ensures that they can withstand the everyday handling, transportation and storage with other tools in the contractors toolbox and is supplied with a three year manufacturer's warranty.

## **SERVICING AND HVAC**

The BMM2000 series are ideal tools for the service industry since they offer a comprehensive range of features addressing the requirements of the service engineer 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 and checking the operation of switches etc.

The multimeter functions of Voltage, Current and Resistance 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 mV transducer input ranges enable the BMM2000 series to interface to a vast range of transducers for measurement of the various parameters necessary during servicing and in the commissioning and verification of HVAC systems. Temperature measurement is one of the most important additions for the service industry enabling the correct operation of items such as oven thermostats or the measurement of heated air temperature and humidity to be made.

To further assist in servicing situations higher currents, (up to 10 A a.c.), may be measured by connecting the optional Megger MCC10 current clamp. This enables measurements of appliance element/motor currents etc to be made quickly and safely without interrupting the conductors.

## **TELECOMMUNICATIONS**

In addition to the standard installation testing functions the BMM2080 includes additional 50 V and 100 V insulation testing facilities and a 10 uF capacitance range. The low voltage insulation tests are necessary for the testing of delicate components and equipment found in telecom systems which would be damaged by higher voltages.

The instruments are designed to perform tests on systems with up to 25 V of electrical interference or crosstalk without the accuracy or reliability of results being effected and with no damage to the instrument.

A wide resistance measuring capability enables a degree of cable fault pre-location to be performed by using resistance to fault methods. Additionally the wide voltage ranges allow accurate measurement of line and battery voltages.

## SPECIFICATIONS

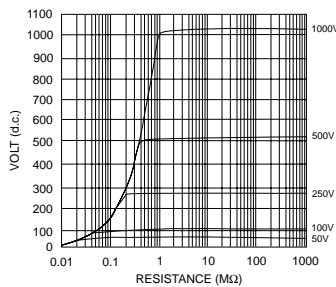
(All quoted accuracy's are at +20°C)

### Insulation Ranges

**Test Voltages (BMM2000):** 250, 500, 1000 V

**Test Voltages (BMM2080):** 50, 100, 250, 500, 1000 V

**Measuring Range:** 0,01 M $\Omega$  to 200 G $\Omega$  BMM2080  
0,01 M $\Omega$  to 20 G $\Omega$  BMM2000  
(0 - 100 G $\Omega$  on analogue scale )



**EN61157 Operating range:** 0,10  $\Omega$  to 99,9 M $\Omega$

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

**Short circuit current:** < 2 mA

**Test Current on load:** 1mA at min. pass value of insulation specified in BS7671, HD384 and IEC 364, 2 mA max.

**Accuracy:**  $\pm 2\%$   $\pm 2$  digits  $\pm 0.2\%$  per G $\Omega$

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  $\Omega$  to 99,9  $\Omega$  (0 to 10  $\Omega$  on analogue scale)

**EN61577 Operating Range:** 0,10  $\Omega$  to 99,9  $\Omega$

**Accuracy:**  $\pm 2\%$   $\pm 2$  digits

**Open circuit voltage:** 5 V  $\pm 1$  V

**Test current:** 210 mA  $\pm 10$  mA (0 - 2  $\Omega$ )

**Zero offset at probe tips:** 0,10  $\Omega$  typical

**Lead resistance zeroing:** Up to 9,99  $\Omega$

**Buzzer:** Operates continuously at less than 5  $\Omega$

**Resistance Measuring Range:** 0,01 k $\Omega$  to 9,99 M $\Omega$

(0 to 100 M $\Omega$  on analogue scale)  
with Auto Ranging or Range

**Accuracy:**  $\pm 3\%$   $\pm 2$  digits

**Open circuit voltage:** 5 V  $\pm 1$  V

**Short circuit current:** 25  $\mu$ A  $\pm 5$   $\mu$ A

### Voltage

**Measuring Range:**  $\pm 1$  V to  $\pm 500$  V  
(0 to 1000 V on analogue scale)  
**Accuracy:** 0 to 500 V d.c. or a.c. (50/60 Hz)  
 $\pm 2\%$   $\pm 3$  digit

0 to 500 V 400 Hz a.c.  
 $\pm 5\%$   $\pm 3$  digits

### Millivolts

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

**Accuracy:** 10 mV to 1999 mV d.c. or a.c. (50/60 Hz)  $\pm 2\%$   $\pm 3$  digit  
0,1 mV to 10 mV d.c. or a.c. (50/60 Hz)  $\pm 2\%$   $\pm 5$  digits  
10 mV to 1999 mV a.c. (16-460 Hz)  $\pm 5\%$   $\pm 3$  digit  
0,1 mV to 10 mV a.c. (16-460 Hz)  $\pm 5\%$   $\pm 5$  digits  
d.c. millivolts zeroing  
Up to 9,9 mV

### Transducer Compatibility

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

### Capacitance (BMM2080)

**Measuring Range:** 0,1 nF to 9,99  $\mu$ F

**Accuracy:** 3%  $\pm 2$  nF  $\pm 2$  digits  $\mu$ F zeroing:  
Up to 10 nF

### Milli-amps

**Measuring Range:** 0,1 mA to 500 mA (0 to 1000 mA on analogue scale)

**Accuracy:** 10 mA to 1999 mA d.c. or a.c. (50/60 Hz)  $\pm 2\%$   $\pm 3$  digit  
0,1 mA to 10 mA d.c. or a.c. (50/60 Hz)  $\pm 2\%$   $\pm 5$  digits  
10 mA to 1999 mA a.c. (16-460 Hz)  $\pm 5\%$   $\pm 3$  digit  
0,1 mA to 10 mA a.c. (16-460 Hz)  $\pm 5\%$   $\pm 5$  digits

### Frequency

**Measuring range:** 16 Hz to 460 Hz

**Accuracy:**  $\pm 1\%$   $\pm 1$  digit

### Backlight

User selectable LED backlight with auto turn off to save battery life

### Power Supply

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

**Battery Life:** Typically 3000, 5 second 1 kV tests

### Auto Shut Off

The BMM 2000 series feature an auto shut off facility which turns the instrument off after approximately 5 minutes, (12minutes for insulation ranges), to conserve battery life

### Safety

The BMM2000 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 EN 61557, 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 measures:-

- Part 1 - General requirements
- Part 2 - Insulation resistance
- Part 4 - Resistance of earth connection and equipotential bonding
- Part 10 - Combined Measuring Equipment

#### FUSE

500 mA (F) 500 V, 32 x 6 mm Ceramic HBC 10 kA minimum.

Electromagnetic Compatibility

RF Susceptibility

The BMM 2000 series comply with IEC 61326

RF Emission

The BMM 2000 series comply with IEC 61326

FCC Part 15 Class B

#### Environmental Conditions

**Operating range:** -5 to +40°C

**Operating humidity:** 90% RH at 40°C max.

**Storage temperature range:** -25 to +65°C

**Calibration Temperature:** +20°C

**Maximum altitude:** 2000 m

**Dust and water protection:** IP54

**Temperature coefficient:** <0,1% per °C

#### Physical Specifications

##### Dimensions

**Length:** 220 mm (8.66 inches)

**Depth:** 110 mm (4.33 inches)

**Height:** 45 mm (1.77 inches)

**Weight:** 742 g (1.63lbs)  
(including batteries)

#### Cleaning

Wipe with a clean cloth dampened with soapy water or Isopropyl Alcohol (IPA).

#### ORDERING INFORMATION

Item (Qty)	Order Code
250/500V/1000V Insulation Multimeter	BMM2000
50/100/250/500/1000V Insulation Multimeter	BMM2080
<b>Included Accessories</b>	
User Guide	Depends on language
Test lead set	6220-437
Test-&-carry case	6420-123
Switched probe SP1	6220-606
<b>Optional Accessories</b>	
Fused lead set, FPK8	6111-218
Test Record Cards (Pack of 20)	6111-216
MCC10 10A Current Clamp	6111-290
Service Manual BMM's	6172-458
<b>Optional Software</b>	
PowerSuite for Windows (Comprehensive Electrical Testing Software)	See supplier
NICEone (Certification software for producing NICEIC certificates)	6111-403
<b>Publications</b>	
'A Stitch in Time' (Video)	AVTM21-P8
Electrical Guide	6172-129
Testing Electrical Installations (Book)	6231-605

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Registered to ISO 14001 Reg no. EMS 61597

**BMM2000\_DS\_en\_V10**

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