

Versatile, Ergonomic & Easy To Use !

Survives 8000V Transients In CAT III 1kV Areas !



CE

BM650
SERIES Versatile Multimeter

BRYMEN®

BRIGHT PEOPLE'S CHOICE
<http://www.brymen.com>



BM658



BM656



BM655



BM653

658	656	655	653	FUNCTIONS & FEATURES
•	•	•	•	3-5/6 Digits 6,000 Counts Large Easy To Read LCD Display
•	•	•	•	0.5% Basic DCV Accuracy
•	•	•	•	Fast Measurements, 5/Sec
•	•	•	•	Fully Auto-Ranging
•	•	•	•	Intelligent Auto Power Off
•	•	•	•	Max/Min Recording Mode
•	•	•	•	Data Hold
•	•	•	•	Non-Contact EF-Detection (NCV)
•	•	•	•	Probe-Contact EF-Detection For More Precise Indication Of Live
•	•	•	•	True RMS AC Conversion
•	•	•	•	Beep-Jack™ Input Warning Against Improper A-Terminal Plug In
•	•	•	•	Back-Lighted Large Easy To Read LCD Display
•	•	•	•	DCV 0.1mV TO 1000V
•	•	•	•	ACV 0.1mV TO 1000V
•	•	•	•	DCA 0.1µA TO 10A
•	•	•	•	ACA 0.1µA TO 10A
•	•	•	•	DCA 0.001A TO 10A
•	•	•	•	ACA 0.001A TO 10A
•	•	•	•	Capacitance 60nF TO 2000µF
•	•	•	•	Ohm 0.1Ω TO 60MΩ
•	•	•	•	Line Level Frequency 40Hz TO 60kHz
•	•	•	•	Diode Tester
•	•	•	•	Fast Audible Continuity < 100µs
•	•	•	•	Rugged Fire Retarded Double Injected Casing
•	•	•	•	Battery Access Door With Probe Holders
•	•	•	•	600V General (Ohm, Capacitance ... e.g.) Input Protection
•	•	•	•	Transient Protection Up To 8kV 1.2/50µs Lightning Surge
•	•	•	•	LVD Meets EN61010-1 CAT III 1kV & CAT IV 600V
•	•	•	•	EMC EN61326(97/98A1)/EN61000-4-2(95)/EN61000-4-3(96)

Handy, Superior Safety and Full Features !

Equipped With EF-Detection For Live Lines Identifications !
Beep-Jack™ Guards Against Improper Plug In !



BM653, BM655, BM656 & BM658 GENERAL SPECIFICATIONS

Display: 3-5½ digits 6000 counts

Update Rate: 5 per second nominal

Operating Temperature: -10°C - 50°C

Relative Humidity: Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 50°C

Altitude: Operating below 2000m

Storage Temperature: -20°C - 60°C, < 80% R.H. (with battery removed)

Temperature Coefficient: Nominal 0.15 x (specified accuracy) / °C @ (-10°C - 18°C or 28°C - 50°C), or otherwise specified

Sensing: Average sensing for BM655; True RMS sensing for BM653, BM656 & BM658

Pollution Degree: 2

E.M.C.: Meets EN61326 (1997, 1998/A1), EN61000-4-2 (1995), & EN61000-4-3 (1998)

In an RF Field of 3V/m:

Capacitance function is not specified

Other function ranges:

Total accuracy = Specified accuracy + 4sd

Performance above 3V/m is not specified

Transient Protection: 8kV lightning surge (1.2/50µs)

Safety: The meter is protected, against the users, by double insulation per EN61010-1, IEC61010-1 2nd Ed., UL61010-1 2nd Ed. & CAN/CSA C22.2 No. 61010-1-0 to "CAT III 1000V & CAT IV 600V".

Terminals (to COM) ratings:

V: Category III 1000 Volts AC & DC, and CAT IV 600 Volts AC & DC

A: CAT IV 600 Volts AC & 500 Volts DC

Overload protection:

V: 1050Vrms, 1450Vpeak

A: 15A@600V, IR 100kA, F fuse (BM655, BM656 & BM658 only)

Ohm, µA (BM658 only) & others: 600VDC/VAC rms

Low Battery: Below approx. 5.5V

Power Supply: Standard 9V battery NEDA1604, JIS006P or IEC6F22; or 9V alkaline battery NEDA1604A, JIS6AM6 or IEC6LF22.

Power Consumption (typical): 3mA

APO Consumption (typical): 20µA typical except 50µA typical for BM655 & BM656 A functions

APO Timing: Idle approx. > 30 minutes

Dimension: L173mm x W83mm x H48.5mm

Weight: Approx. 300 gm

Accessories: Battery installed, Test lead pair and User's manual

Optional Accessories: soft carrying pouch

BM653, BM655, BM656 & BM658 Electrical Specification

Accuracy is given as +/- (% of reading digits + number of digits) or otherwise specified @ 23°C +/- 5°C and less than 75% R.H.

True RMS BM653, BM656 & BM658 ACV, ACA & ACµA, where available, accuracies are specified from 5% (10% for AC 600.0mV range) to 100% of range, or otherwise specified. Maximum Crest Factor < 2 : 1 at full scale & < 4 : 1 at half scale, and with frequency spectrums, besides fundamentals, fall within the meter specified AC bandwidth for non-sinusoidal waveforms.

DC Voltage

RANGE	Accuracy
600.0mV	0.7%+2d
6.000V	0.5%+3d
60.00V	0.5%+3d
600.0V	0.7%+2d
1000V	1.2%+6d

NMR: > 30dB @ 50Hz/60Hz

CMRR: > 90dB @ DC, 50Hz/60Hz; Rs=1kΩ

Input Impedance: Nominal 10MΩ, 90pF (1000MΩ, 90pF for 600.0mV range)

AC Voltage

RANGE	Accuracy
50Hz - 500Hz	
600.0mV	1.2%+3d
6.000V, 60.00V	1.0%+3d
600.0V	1.0%+3d
1000V	2.5%+6d

CMRR: > 60dB @ DC to 60Hz, Rs=1kΩ

Input Impedance: Nominal 10MΩ, 90pF for all ranges

Ohms

RANGE	Accuracy
600.0Ω	0.8%+4d
6.000KΩ	0.7%+2d
60.00KΩ	0.7%+2d
600.0KΩ	0.7%+2d
6.000MΩ	0.9%+4d
60.00MΩ	2.0%+4d

Open Circuit Voltage: 0.45VDC typical

Diode Tester

Test Current	Open Circuit Voltage
0.4mA typical	< 1.8VDC typical

Accuracy: 1.9%+3d

Continuity Beeper

RANGE	Accuracy
600.0Ω	0.8%+4d

Continuity Beeper Response: < 100µs

Open Circuit Voltage: 0.4VDC typical

Audible Threshold: between 10Ω and 150Ω

Non-Contact EF-Detection

Typical Voltage	Bar Graph Indication
20V to 60V	-
40V to 80V	--
60V to 110V	---
80V to 150V	----
above 120V	-----

Indication: Bar graph segments & audible beep tones

proportional to the field strength

Detection Frequency: 50/60Hz

Detection Antenna: Top end of the meter

Probe-Contact EF-Detection: For more precise indication of live wires, such as distinguishing between live and ground connections, use the Red (+) test probe for direct contact measurements.

Capacitance (BM655, BM656 & BM658 only)

RANGE	Accuracy
600.0nF ¹⁾	1.9%+2d
6.000µF, 60.00µF, 600.0µF	1.6%+4d
2000µF	1.6%+4d

Accuracies with film capacitor or better

¹⁾Accuracy below 60nF is not specified

DC Current (BM655, BM656 & BM658 only)

RANGE	Accuracy	Burden Voltage
600.0µA ¹⁾	1.2% + 3d	1.7mV/µA
2000µA ¹⁾	1.2% + 3d	1.7mV/µA
6.000A	0.9% + 3d	6.9mV/A
10.00A ²⁾	0.9% + 3d	6.9mV/A

¹⁾Range for BM658 only

²⁾8A continuous; 10A for 5 minutes max with 10 minutes cool down interval

AC Current (BM655, BM656 & BM658 only)

RANGE	Accuracy	Burden Voltage
50Hz - 500Hz		
600.0µA ¹⁾	1.2% + 3d	0.15mV/µA
2000µA ¹⁾	1.2% + 3d	0.15mV/µA
6.000A	1.2% + 3d	3.3mV/A
10.00A ²⁾	1.4% + 3d	3.3mV/A

¹⁾Range for BM658 only

²⁾8A continuous; 10A for 5 minutes max with 10 minutes cool down interval

FREQUENCY

Function	Sensitivity (Sine RMS)	Range
600.0mVac	400mV	40-500Hz
6.000Vac	4V	40-60kHz
60.00Vac	6V	40-60kHz
600.0Vac	60V	40-60kHz
1000Vac	600V	40-100Hz
600.0mVdc	400mV	40-500Hz
6.000Vdc	4V	40-30kHz
60.00Vdc	6V	40-30kHz
600.0Vdc	60V	40-30kHz
1000Vdc	600V	40-100Hz
600.0µA ¹⁾	300µA	40-10kHz
2000µA ²⁾	300µA	40-10kHz
6.000A ²⁾	5A	40-6kHz
10.00A ²⁾	5A	40-6kHz

Accuracy: 0.05%+1d

¹⁾BM658 only

²⁾BM655, BM656 & BM658 only



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