

GENERAL SPECIFICATION

Display: 3-5/6 digits 6,000 counts
Update Rate: 5 per second nominal
Operating Temperature: -10°C to 45°C
Relative Humidity: Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 45°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 ~ 45°C), or otherwise specified
Sensing: True RMS sensing
Pollution Degree: 2
Safety: Double insulation per IEC/UL/EN61010-1 Ed. 3.0, IEC/UL/EN61010-2-030 Ed. 1.0, IEC/UL/EN61010-2-033 Ed. 1.0, IEC/UL/EN61010-031 Ed. 1.1 and the corresponding CAN/CSA-C22.2 regulations to Measurement CAT II 1000V, CAT III 600V and CAT IV

Electrical Specification

Accuracy is given as ±(% of reading digits + number of digits) or otherwise specified @ 23°C ± 5°C
 ACV & ACA accuracies are specified from 1% to 100% of range or otherwise specified. Maximum Crest Factor <2:1 at full scale & <4:1 at half scale, and with frequency components fall within the meter specified frequency bandwidth for non-sinusoidal waveforms

AC Voltage

| RANGE | Accuracy |
|-------------------------------|-----------|
| 50Hz ~ 60Hz | |
| 6.000V, 60.00V, 600.0V, 1000V | 0.7% + 3d |
| 45Hz ~ 440Hz | |
| 6.000V, 60.00V, 600.0V, 1000V | 2.0% + 3d |
| 10Hz ~ 500Hz | |
| 60.00mV, 600.0mV | 1.0% + 3d |
| 500Hz ~ 800Hz | |
| 60.00mV, 600.0mV | 2.0% + 3d |

Input Impedance: 10MΩ, 54pF nominal

VFD_ACV (with Low Pass Filter)

| RANGE | Accuracy ¹⁾ |
|-----------------------------------|------------------------|
| 10Hz ~ 440Hz (fundamental) | |
| 600.0V, 1000V | 2.0%+3d |

¹⁾Not specified for fundamental frequency > 440Hz

AutoV_ACV

| RANGE | Accuracy ¹⁾ |
|---------------------|------------------------|
| 45Hz ~ 440Hz | |
| 600.0V, 1000V | 2.0% + 3d |

¹⁾Not specified at <1VAC

Threshold: > 1VAC nominal

Input Impedance:

Initially approx. 2.1kΩ, 164pF nominal; Impedance increases abruptly within a fraction of a second as display voltage is above 50V (typical). Ended up impedances vs display voltages typically are:

| | |
|-------|--------|
| 12kΩ | @100V |
| 100kΩ | @300V |
| 240kΩ | @600V |
| 580kΩ | @1000V |

DC Voltage

| RANGE | Accuracy |
|--|-----------|
| 60.00mV, 600.0mV, 6.000V, 60.00V, 600.0V, 1000V | 0.3% + 2d |

Input Impedance: 10MΩ, 54pF nominal

AutoV_DCV

| RANGE | Accuracy ¹⁾ |
|----------------------|------------------------|
| 600.0V, 1000V | 2.0% + 3d |

¹⁾Not specified at <1VDC

Threshold: > +1.0VDC or < -1.0VDC nominal

Input Impedance:

Initially approx. 2.1kΩ, 164pF nominal; Impedance increases abruptly within a fraction of a second as display voltage is above 50V (typical). Ended up impedances vs display voltages typically are:

| | |
|-------|--------|
| 12kΩ | @100V |
| 100kΩ | @300V |
| 240kΩ | @600V |
| 580kΩ | @1000V |

300V AC & DC

Transient Protection: 6.0kV (1.2/50μs surge)

Terminals (to COM) Measurement Category:

V / mA/μA / A / L3: Category II 1000V, CAT III 600V and CAT IV 300V AC & DC.

E.M.C.: Meets EN61326-1:2013

In an RF field of 3V/m:

Temperature function is not specified

Ohm function:

Total Accuracy = Specified Accuracy + 15 digits

Other functions:

Total Accuracy = Specified Accuracy

Performance above 3V/m is not specified

Overload Protection:

A: 11A/1000V DC/AC rms, IR 20kA, F Fuse; or better

V, Auto V & L3: 1100V DC/AC rms

mV, Ohm & others: 1000V DC/AC rms

Low Battery: Below approx. 2.5V

Power Supply: 1.5V AAA Size battery X 2

Power Consumption (typical): 3.2mA

APO Consumption (typical): 10μA

APO Timing: Idle for 30 minutes

Dimension: 161*80*50mm L*W*H (With Holster)

Weight: Approx. 334 gm (With Holster)

Special Features: AutoV (LoZ); 3-Phase Rotation detection; VFD; BeepLit™ Continuity Tester; Auto-ranging MAX/MIN/AVG Record; Backlighted LCD; Auto-ranging Relative Zero mode; Display Hold; EF-Detection (NCV) (BM237R & BM239R only); BeepJack™ on A terminal (BM237R & BM239R only)

Accessories: Test lead set; Alligator clip set; Batteries installed; User's manual; BKP60 banana plug type-K thermocouple (BM239R only)

Optional Purchase Accessories: BKB32 banana plug to type-K socket plug adaptor (BM239R only); BMH-01 magnetic hanger; BMP-25x soft carrying pouch

Ohm

| RANGE ¹⁾ | Accuracy |
|---|-------------------------|
| 600.0Ω, 6.000KΩ | 0.3% + 3d |
| 60.00KΩ, 600.0KΩ | 0.5% + 3d |
| 6.000MΩ ²⁾ , 60.00MΩ ³⁾ | 0.9% + 3d ⁴⁾ |

¹⁾Open Circuit Voltage: 1.6VDC typical

²⁾Constant Test Current: 0.2μA Typical

³⁾Constant Test Current: 0.02μA Typical

⁴⁾5%+20d @ >30MΩ

BeepLit™ Continuity Tester

Continuity Threshold: Between 30Ω and 480Ω

Response time: 64ms

Latch time: 128ms

Audible Response: Beep sound

Visible Response: LCD Backlight

Capacitance (BM237R & BM239R only)

| RANGE | Accuracy |
|----------------------------------|------------|
| 2000nF, 20.00μF, 200.0μF, 2000μF | 1.5% + 2d |
| 10.00mF | 4.5% + 10d |

Accuracies with film capacitor or better

DCμA & ACμA (BM239R only)

| RANGE | Accuracy | Burden Voltage |
|----------------------------|-----------|----------------|
| DCμA | | |
| 200.0μA, 2000μA | 0.7% + 3d | 2.5mV/μA |
| ACμA (50Hz ~ 400Hz) | | |
| 200.0μA, 2000μA | 1.0% + 3d | 2.5mV/μA |

Overload protection type: PTC protective impedance combination

DCA & ACA (BM237R & BM239R only)

| RANGE | Accuracy | Burden Voltage |
|------------------------------|-----------|----------------|
| DCA | | |
| 6.000A, 10.00A ¹⁾ | 0.7% + 3d | 0.04V/A |
| ACA (50Hz ~ 400Hz) | | |
| 6.000A, 10.00A ¹⁾ | 1.0% + 3d | 0.04V/A |

¹⁾10A continuous, >10A to 20A for 30 seconds max with 5 minutes cool down interval

Overload protection type: HBC fuse

Temperature (BM239R only)

| RANGE | Accuracy |
|--------------------|-----------|
| -40.0 °C ~ 99.9 °C | 1% + 1 °C |
| 100 °C ~ 400 °C | |
| -40.0 °F ~ 99.9 °F | 1% + 2 °F |
| 100 °F ~ 752 °F | |

Type-K thermocouple range & accuracy not included

Diode Tester

| RANGE | Accuracy |
|--------|-----------|
| 3.000V | 0.9% + 2d |

Test Current: 0.3mA typical

Open Circuit Voltage: < 3.2VDC typical

Line Frequency (BM237R & BM239R only)

| Function | Sensitivity (Sine RMS) | Range |
|--|------------------------|--------------|
| 60mV, 600mV | 50mV | 10Hz - 50kHz |
| 6V | 3V | 10Hz - 50kHz |
| 60V | 5V | 10Hz - 50kHz |
| 600V | 50V | 10Hz - 1kHz |
| 1000V | 500V | 10Hz - 1kHz |
| VFD 600V | 50V | 10Hz - 1kHz |
| VFD 1000V | 500V | 10Hz - 1kHz |
| 200μA ¹⁾ , 2000μA ¹⁾ | 500μA | 10Hz - 5kHz |
| 6A, 10A | 8A | 50Hz - 1kHz |

¹⁾Available for Model 239R only

Accuracy: 0.03% + 2d

Non-Contact EF-Detection (BM237R & BM239R only)

| Bar-Graph Indication | EF-H (Hi Sensitivity) | EF-L (Lo Sensitivity) |
|----------------------|-----------------------------|-----------------------|
| | Typical Voltage (Tolerance) | |
| - | 10V (3V~19V) | 40V (16V~71V) |
| -- | 20V (10V~38V) | 80V (32V~142V) |
| --- | 40V (21V~79V) | 160V (63V~285V) |
| ---- | 80V (40V~156V) | 300V (105V~608V) |
| ----- | 160V (>80V) | 500V (>300V) |

Indication: Bar-graph segments & audible beep tones proportional to the field strength

Detection Frequency: 50/60Hz

Detection Antenna: Top left end of the meter

Probe-Contact EF-Detection: For more precise indication of live wires, such as distinguishing between live and ground connections, use direct contact testing with one single test-probe via the input terminal COM or V. The COM terminal (Black) has the best sensitivity.

(R) & (Q) 3-Phase Rotation function

Hi-sensitivity mode (Q)

Voltage range: 0.4V ~ 1000V

Frequency range: 3Hz ~ 400Hz

Regular-sensitivity mode (R)

Voltage range: 65V ~ 1000V

Frequency range: 35Hz ~ 400Hz



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Specifications subject to change without notice

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Handy Electrical DMM + 3Φ Rotation Meter!

System & Motor 3Φ Rotation, Audible + Visible BeepLit™ Continuity, AutoV + Ghost Voltage Buster, VFD V & Hz Fundamentals, Hi & Lo EF-Detection, No Amps & 10 Amps Models, Records Min/Max/Average!



BM230R Series Electrical Multimeter



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

An Electrical DMM Engineered For Professionals!

LoZ AutoV, VFD V/Hz, 3Wire RST, °C/°F, μ A/10A, BeepLit™ Continuity, Hi/Lo EF-Detection, BeepJack™ Warning



● **BM239R**

● **BM237R**

● **BM236R**

| 239R | 237R | 236R | FUNCTIONS & FEATURES |
|------|------|------|---|
| ● | ● | ● | 3-5/6 Digits 6,000 Counts Large Easy To Read LCD Display |
| ● | ● | ● | Fast Measurements, 5/Sec; Fully Auto-Ranging |
| ● | ● | ● | Intelligent Auto Power Off |
| ● | ● | ● | True RMS AC Conversion |
| ● | ● | ● | Data Hold |
| ● | ● | ● | Records Max/Min Readings & Calculates Avg Readings Over Time |
| ● | ● | ● | VFD V & Hz Fundamental Readings Of Most Variable-Frequency-Drives |
| ● | ● | ● | Paper white Back-Lighted LCD Display |
| ● | ● | ● | BeepLit™ Continuity. Features Audible Beep & Visible Backlight Effects |
| ● | ● | ● | Relative Zero Mode |
| ● | ● | ● | Non-Contact EF-Detection (NCV) With Hi/Lo Selectable Sensitivities |
| ● | ● | ● | Probe-Contact EF-Detection For More Precise Indication Of Live |
| ● | ● | ● | (R) 3 Φ -Rotation-R (Regular-sensitivity mode) for Supply Systems (Probe-contact) |
| ● | ● | ● | (M) 3 Φ -Rotation-M (Hi-sensitivity mode) for Motors (Probe-contact) |
| ● | ● | ● | AutoV LoZ Feature. Automatic DC & AC 1000V Selection With Low Initial Impedance To Drain Ghost Voltages |
| ● | ● | ● | DC/AC V Ranges 600.0mV To 1000V |
| ● | ● | ● | Ohms Ranges 600.0 Ω To 60.00M Ω |
| ● | ● | ● | Cx Ranges 2000nF to 10.00mF For Start & Run Motor Capacitors |
| ● | ● | ● | Line Level Frequency Ranges 99.99Hz To 50.00kHz |
| ● | ● | ● | DC/AC A Ranges 6.000A To 10.00A (20A for 30s / 5 mins cool down) |
| ● | ● | ● | DC/AC μ A Ranges 200.0 μ A To 2000 μ A |
| ● | ● | ● | Type-K Temperature Readings -40°C To 400°C or -40°F To 752°F |
| ● | ● | ● | Beep-Jack™ Input Warning Against Improper A-Terminal Plug In |
| ● | ● | ● | Diode Tester |
| ● | ● | ● | Rugged Fire Retarded Housing |
| ● | ● | ● | Replaceable Protective Holster With Probe-Holders & Tilt-Stand |
| ● | ● | ● | Optional Purchase Magnetic Hanger |
| ● | ● | ● | Batteries And Fuses Access Door |
| ● | ● | ● | Transient Protection Up To 6kV 1.2/50 μ s Lightning Surge |
| ● | ● | ● | LVD: EN61010-1/-2-030/-2-033 CAT-II 1kV, CAT-III 600V & CAT-IV 300V |
| ● | ● | ● | EMC: EN61326-1:2013 |

White Display Backlight
For Easy Viewing In The Dark

Auto & Manual-ranging
Auto-ranging With Manual-ranging Override

True Rms Measurements
For Non-sinusoidal Waveforms Of AC Voltages & AC Currents

Large 6000 Counts LCD Display
5/sec Fast Nominal Update Rate

Max Min Avg Record
Record Max/Min And Calculates Average Readings Over Time

Relative Zero Mode
For Convenient Readings Comparison & Offset

Data Hold
Freezes The Displaying Reading For Later View

Hi/Lo Senses EF-Detection
Both Non-contact (NCV) & Single-probe Voltage Detection For Identifying Live Lines

RST Phase Rotation
Dual Sensitivity Modes For Both Motors And Supply Systems

BeepLit™ Continuity
Quick Open-short Tests. Beep and Backlight Effects For Noisy Environments

Type-k Temperature
Selectable °C & °F Readings

Intelligent Auto-power-off
To Extend Battery Life

Transient Protection
Up To 6kV 1.2/50 μ s Lightning Surge; Superb Protection For Serious Users

Function Selection
Toggle Conveniently Between Primary & Secondary Functions

Hz Of Line Level Voltage
Measures Noisy High Voltage ACV Frequencies

VFD V & Hz Feature
Measures Fundamental Voltage & Frequency Of Most Variable-Frequency-Drives

High Impedance Voltage
1000VAC/DC Measuring Capabilities; High Input Impedance For Load Sensitive Circuits

AutoV LoZ Feature
Automatic Selection Of LoZ DCV And LoZ ACV

Ghost-voltage-buster
AutoV LoZ Drains Ghost/ Stray Voltages Leaving Only Hard Signals On Meter Readings

Beep-jack™ Audible Warning
Beeps Against Improper A-terminal Plug In. Decreases Risks Of Damage

Protective Holster
With Holders For Probe Storage And "third Hand" Feature, Replaceable & Washable



EMC
Meets EN61326-1:2013

LVD Safety
Meets EN61010-1/-2-030/-2-033 CAT II 1kV & CAT III 600V