# A High Quality DC & AC Current Clamp-On!

## Plus 30ms Max Hold To Capture In-Rush Currents !
## And Full Industrial Features For Serious Users!


CE

# BM160 Series

**Versatile AC/DC Clamp-On Multimeter**

BRYMEN®

BRIGHT PEOPLE'S CHOICE

http://www.brymen.com

BM162

BM161

| 162 | 161 | FUNCTIONS & FEATURES |
|---|---|---|
| ● | ● | Versatile & Handy |
| ● | ● | DC1000A / AC800A Clamp-on + Full Multimeter ranges |
| ● | ● | 50mm Large jaws opening |
| ● | ● | Fully auto-ranging on all functions for ease of use |
| ● | ● | 4000 counts high resolution; Fast measurements |
| ● | ● | 600VAC/DC input protection on all functions |
| ● | | AC True RMS voltage and current functions |
| ● | | Back lighted display |
| ● | ● | 30ms Max HOLD to capture in-rush currents |
| ● | ● | Data HOLD |
| ● | ● | Relative Zero feature |
| ● | ● | DCV 0.1mV to 600V |
| ● | ● | ACV 0.1mV to 600V |
| ● | ● | DCA 0.1A to 1000A non-invasive current measurements |
| ● | ● | ACA 0.1A to 800A non-invasive current measurements |
| ● | ● | Ohm 0.1Ω to 40.00MΩ |
| ● | ● | Capacitance 50nF to 3000μF |
| ● | ● | Fast Audible Continuity |
| ● | ● | Diode Test |
| ● | ● | Battery cover with Probe holders |
| ● | ● | Rugged Fire retarded casing; Soft carrying pouch |
| ● | ● | Transient protection 6.5kV 1.2/50μs lightning surge |
| ● | ● | LVD EN61010-2-032 CAT III 600V |
| ● | ● | EMC EN61326(97/98A1)/EN61000-4-2(95)/EN61000-4-3(96) |

# Large Jaws, Large Display & Full Functions!

## An All-In-One DC & AC Clamp That Is Most Complete & Easy To Use !

**LARGE U-SHAPE CLAMP JAWS FOR DCA & ACA**
MEASURE CURRENTS OF LARGE SINGLE CONDUCTOR
OR DIFFERENTIAL CURRENTS OF MULTIPLE CONDUCTORS

**RUGGED & DURABLE**
HIGH-IMPACT FIRE-RETARDED ENCLOSURE
FOR REINFORCED SAFETY & RELIABILITY

**LVD CAT III 600V SAFETY**
MEETS EN61010-2-032 CAT III 600V

**TRUE RMS (BM162 ONLY)**
FOR NON-SINUSOIDAL WAVEFORMS
OF AC VOLTAGES & AC CURRENTS

**HIGH SPEED AUTO-RANGING**
SHORTENS THE TIME TO TEST
AND INCREASES THE EASE OF USE

**DISPLAY BACKLIGHT (BM162 ONLY)**
FOR EASY VIEWING IN THE DARK

**FUNCTION SELECTION**
CONVENIENTLY TOGGLE BETWEEN
PRIMARY & SECONDARY FUNCTIONS

**5 FULL DC VOLTAGE RANGES**
FROM 400mV RANGE
UP TO 600 V RANGE

**5 FULL AC VOLTAGE RANGES**
FROM 400mV RANGE
UP TO 600 V RANGE

**DC 1000 AMPS MEASUREMENTS**
2 NON-INVASIVE DC CURRENT AUTO-RANGES
VIA CLAMP JAWS; BEST RESOLUTION 0.1A

**AC 800 AMPS MEASUREMENTS**
2 NON-INVASIVE AC CURRENT AUTO-RANGES
VIA CLAMP JAWS; BEST RESOLUTION 0.1A

**EMC**
MEETS EN61326(1997, 1998/A1),
EN61000-4-2(1995), & EN61000-4-3(1996)


**STYLISH & HANDY**
ALSO COMES WITH A SOFT POUCH
FOR EASY CARRYING & PROTECTION

**30ms MAX HOLD**
CAPTURES PEAK IN-RUSH CURRENT
AS SHORT AS 30ms IN DURATION

**DATA HOLD**
FREEZES THE DISPLAYING
READING FOR LATER VIEWING

**BATTERY COMPARTMENT**
WITH ACCESS DOOR FOR
EASY BATTERY REPLACEMENT

**PROBE HOLDERS**
BUILT-IN PROBE STORAGE HOLDERS

**RELATIVE ZERO MODE**
FOR CONVENIENT READINGS COMPARISON
& DCA ZERO ADJUSTMENT

**LARGE EASY-TO-READ LCD DIGITS**
WITH 3/SEC NOMINAL UPDATE RATE

**MANUAL-RANGING MODE**
AUTO-RANGING WITH MANUAL-RANGING OVERRIDE

**DIODE TEST**
FOR TESTING DIODES AND RECTIFIERS

**CAPACITANCE**
6 RANGES; AUTO-RANGING
UP TO 3000μF WITH 600V PROTECTION

**AUDIBLE CONTINUITY**
FOR QUICK OPEN-SHORT TESTS
ON SWITCHES, FUSES, AND WIRES

**RESISTANCE**
6 RANGES; AUTO-RANGING
UP TO 40MEGA OHMS WITH 600V PROTECTION

**TRANSIENT PROTECTION**
UP TO 6.5kV 1.2/50μs LIGHTNING SURGE;
MORE CONFIDENCE FOR SERIOUS USERS

## BM161 & BM162 GENERAL SPECIFICATION

**Display:** 3-3/4 digits 4000 counts
**Update Rate:** 3 per second nominal
**Polarity:** Automatic
**Operating Temperature:** 0°C ~ 40°C
**Relative Humidity:** Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°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 @ (0°C ~ 18°C or 28°C ~ 40°C), or otherwise specified
**Sensing:**
Average sensing for BM161
True RMS sensing for BM162

**Safety:** Meets IEC61010-2-032 (2002), EN61010-2-032 (2002), UL61010B-2-032 (2003)
Measurement Category:
CAT III 600V ac & dc
**E.M.C.:** Meets EN61326 (1997, 1998/A1), EN61000-4-2 (1995), & EN61000-4-3 (1996)
In an RF Field of 3V/m:
Capacitance function is not specified
Other function ranges:
Total accuracy = Specified accuracy + 45 digits
Performance above 3V/m is not specified
**Overload Protection:**
Clamp-on jaws:
DC 1000A or AC 800A rms continuous
+ & COM terminals (all functions):
600VDC/VAC rms
**Pollution Degree:** 2

**Transient Protection:**
6.5kV (1.2/50μs surge) for both models
**Low Battery:** Below approx. 2.4V
**Power Supply:** standard 1.5V AAA size (NEDA 24G, NEDA 24A, IEC R03, or IEC LR03) battery x 2
**Power Consumption:** typical 11mA for DCA/ACA and 2.9mA for other functions
**APO Consumption:**
10μA typical for BM161;
190μA typical for BM162
**APO Timing:** Idle for 30 minutes
**Dimension:**
L227mm x W78mm x H40mm
**Weight:** approx. 290 gm
**Jaws opening & Conductor Diameter:**
50mm max
**Accessories:** Test leads pair, batteries installed, user's manual, soft carrying pouch

## BM161 & BM162 Electrical Specification

Accuracy is ± (% of reading digits + number of digits) or otherwise specified, at 23°C ± 5°C & less than 75% R. H.
True RMS model BM162 ACV & ACA clamp-on accuracies are specified from 5% to 100% of range or otherwise specified. Maximum Crest Factor are as specified below, and with frequency spectrums, besides fundamentals, fall within the meter specified AC bandwidth or non-sinusoidal waveform.

### DC Voltage

| RANGE | Accuracy |
|---|---|
| 400.0mV | 0.3% + 3d |
| 4.000V, 40.00V, 400.0V | 0.5% + 3d |
| 600V | 1.0% + 4d |

NMRR: > 50dB @ 50Hz/60Hz
CMRR: > 120dB @ DC, 50Hz/60Hz, Rs=1kΩ
Input Impedance: 10MΩ, 30pF nominal; (1000MΩ for 400.0mV range)

### AC Voltage

| RANGE | Accuracy |
|---|---|
| **50Hz ~ 500Hz** | |
| 400.0mV [1] | 4.0% + 4d |
| **50Hz ~ 60Hz** | |
| 4.000V, 40.00V, 400.0V | 1.0% + 4d |
| **60Hz ~ 500Hz** | |
| 4.000V, 40.00V, 400.0V | 1.5% + 4d |
| **50Hz ~ 500Hz** | |
| 600V | 2.0% + 4d |

CMRR: > 60dB @ DC to 60Hz, Rs=1kΩ
Input Impedance: 10MΩ, 30pF nominal
True RMS model BM162 Crest Factor:
< 1.6 : 1 at full scale & < 3.2 : 1 at half scale
[1]Selection by RANGE button manually, and is specified from AC 40mV (AC 60mV for True RMS model BM162) & up

### Ohms

| RANGE | Accuracy |
|---|---|
| 400.0Ω | 0.8% + 6d |
| 4.000kΩ, 40.00kΩ, 400.0kΩ | 0.6% + 4d |
| 4.000MΩ | 1.0% + 4d |
| 40.00MΩ | 2.0% + 4d |

Open Circuit Voltage: 0.4VDC typical

### Audible Continuity Tester

Open Circuit Voltage: 0.4VDC typical
Range: 400.0Ω; Accuracy: 1.5% + 6d
Audible threshold:
between 10Ω and 120Ω

### Diode Tester

| Open Circuit Voltage | Test Current (Typical) |
|---|---|
| < 1.6VDC | 0.4mA |

### Capacitance

| RANGE [1] | Accuracy [2] [3] |
|---|---|
| 500.0nF, 5.000μF, 50.00μF, 500.0μF 3000μF | 3.5% + 6d |

[1]Additional 50.00nF range accuracy is not specified
[2]Accuracies with film capacitor or better
[3]Specified with battery voltage above 2.8V (approximately half full battery). Accuracy decreases gradually to 12% at low battery warning voltage of approximately 2.4V

### DCA Current (Clamp-on)

| RANGE | Accuracy [1] [2] |
|---|---|
| *400.0A* | |
| 0A ~ 400A | 1.5% + 4d |
| *1000A* | |
| 400A ~ 800A | 1.5% + 4d |
| 800A ~ 900A | 2.0% + 4d |
| 900A ~ 1000A | 5.0% + 30d |

[1]Induced error from adjacent current-carrying conductor: < 0.01A/A
[2]Relative Zero Δ mode is applied to offset the non-zero residual readings, if any

### ACA Current (Clamp-on)

| RANGE | Accuracy [1] [2] |
|---|---|
| *400.0A* | |
| 15Hz ~ 40Hz | 2.0% + 5d [3] |
| 40Hz ~ 200Hz | 1.5% + 5d |
| 200Hz ~ 400Hz @ < 50A [4] | 1.5% + 5d |
| 400Hz ~ 1kHz @ < 50A [4] | 2.0% + 5d |
| *800A* | |
| 15Hz ~ 40Hz | 2.0% + 5d [3] |
| 40Hz ~ 100Hz | 1.5% + 5d |
| 15Hz ~ 60Hz | 5.0% + 30d |

[1]Induced error from adjacent current-carrying conductor: < 0.01A/A
[2]True RMS model BM162 Crest Factor:
< 1.6 at full scale & < 3.2 at half scale
[3]4.0%+5d for True RMS model BM162
[4]Accuracy is specified at < 50A in this frequency bandwidth due to limited calibrator output capability for testing

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