

Duo-core Dual Measurements A + V, VFD, HVAC, RST, AmpTip™ & Much More !

Convenient Measurements Of Amps + A DMM Function!

Large Ohms, DC μ A & Temperature For HVAC!

Patented AmpTip™ Jaws For Thin Conductors!

Patented 3-Terminal RST For Power & Motors!

EF-Detection (NCV) With Hi/Lo Sensitivities!

+Visible Continuity For Noisy Environments!

Measures VFD V/Hz With Low Pass Filter!

Peak-RMS To Capture In-rush Currents!

World-wide Patented:

I442059

D148257

1996509

D678091S

402011006274.7

M438628

2755507

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M429871

2359464

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BM170D Series

Convenient Clamp DMM Duo



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

Convenient Duo-core Meter Customized For Electrical Professionals!

Duo-core A+V, VFD V/Hz, AmpTip™ Jaws, In-rush Peak-RMS, °C/°F, DCμA, Ohms 6000kΩ, Motor RST, +Visible Continuity, Hi/Lo EF-Detection

**TYPE-K TEMPERATURE
(BM176D & 175D ONLY)**
Selectable °C And °F Readings;
Comes With Bkp60 Bead Probe

Hi/Lo EF-DETECTION
Both Non-Contact (NCV) &
Single-Probe Voltage Detection
For Identifying Live Lines;
Selectable Hi/Lo Sensitivities

LVD CAT III 600V & CAT IV 300V
Certified EN61010-2-032, EN61010-2-033,
EN61010-1 & Relevant UL Standards On
CAT III 600V & CAT IV 300V

ACA 30mm AmpTip™ CLAMP JAWS
For Large & Small Conductors With
AC TRMS 600A Capability

DIODE TEST
For Testing Diodes & Rectifiers

DCμA (BM176D & 175D ONLY)
For HVAC Flame Sensors
Testing Via Test Probes

AUDIBLE + VISIBLE CONTINUITY
For Quick Open-short Tests
On Switches, Fuses, And Wires;
Visible Flashing Icons

PHASE ROTATION (BM176D ONLY)
Two Sensitivity RST Modes For
Both Supply Systems And Motors

AUTO-POWER-OFF
Extends Battery Life

CAPACITANCE
2 Auto-ranges Up To 2500μF
To Measure Motor Capacitors

FULLY AUTO-RANGING DMM
Shortens The Time To Measure
And Increases The Ease Of Use

6000kΩ RESISTANCE
5 Auto-ranges Up To 6000kΩ
Best Resolution 0.1Ω At 600Ω Range

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

ERGONOMIC & STREAMLINE BODY
Also Comes With A Soft Pouch
For Easy Carrying & Protection

IN-RUSH PEAK-RMS
Captures In-rush Peak RMS Readings
At Durations As Short As 80ms

DUO-CORE MEASUREMENTS
To Conveniently Measure Amps +
Volts Or Another DMM Function

AmpTip™ LOW-CURRENTS
Calibrated To Measure At Jaw Tip For
Small-sized Conductors Up To 60 Amps

DATA HOLD
Freezes The Displaying
Reading For Later View

REGULAR CURRENT
Measures At Jaw Center For
Regular Conductors Up To 600 Amps

RUGGED & DURABLE
High-impact Fire-retarded
Enclosure With Battery
Compartment & Access Door

BACKLIGHTED LCD DISPLAY
For Easy Viewing In The Dark

EMC
Meets EN61326-1:2013

TRANSIENT PROTECTION
Up To 6kV 1.2/50μs Lightning Surge;
More Confidence For Serious Users

1.0% DCV BASIC ACCURACY
DCV Up To 600V;
ACV Up To 600V





● **BM176D**



● **BM175D**



● **BM173D**

176D	175D	173D	Functions & Features
●	●	●	VFD-V & Hz For Fundamental V/Hz Of Most Variable-Frequency-Drives
●	●	●	Fast Measurement Updates 5/Sec
●	●	●	Dual 3-5/6 Digits 6,000 Counts Large LCD Display
●	●	●	Duo-Core To Simultaneously Measure Clamp-On Amps + A DMM Function
●	●	●	30mm Conductor Size Ultra-Slim 600A AC Jaws
●	●	●	AmpTip™ Low-Current-Range Calibrated At Jaw-Tip For Slim-Conductors
●	●	●	AC True RMS Voltage And Current Functions
●	●	●	Intelligent Auto Power Off
●	●	●	Data HOLD
●	●	●	Fast 80ms PEAK-RMS Mode To Capture In-Rush Currents
●	●	●	Back-Lighted Easy-To-Read LCD Display
●	●	●	Non-Contact EF-Detection (NCV), Selectable Hi/Lo Sensitivities
●	●	●	Probe-Contact EF-Detection For More Precise Indication Of Live
●			Ⓜ 3Φ-Rotation-R For Supply Systems (Probe-Contact)
●			Ⓜ 3Φ-Rotation-M (Hi-Sensitivity Mode) For Motors (Probe-Contact)
●	●		Type-K Temperature -10.0°C To 400°C Or 14.0°F To 752°F Selectable
●	●		DCμA Ranges 200.0μA To 2000μA (Via Leads) For HVAC Flame Sensors
●	●	●	ACA Ranges 60.00A To 600.0A + AmpTip™ ACA 60.00A Range
●	●	●	DCV Range 600.0V
●	●	●	ACV Range 600.0V
●	●	●	Ohm Ranges 600.0Ω To 6000kΩ
●	●	●	Cx Ranges 200.0μF To 2500μF For Start & Run Motor Capacitors
●	●	●	Diode Test
●	●	●	Fast Audible+Visible Continuity
●	●	●	Line-Level ACV Frequency 10.00Hz To 999.9Hz
●	●	●	Soft Carrying Pouch
●	●	●	Rugged Fire Retarded Casing With Battery Access Door
●	●	●	Transient Protection 6kV 1.2/50μS Lightning Surge
●	●	●	LVD EN61010-2-032 & EN61010-1 CAT III 600V & CAT IV 300V
●	●	●	EMC EN61326-1:2013

GENERAL SPECIFICATIONS

Display: 3-5/6 digits 6000 counts; dual display
Polarity: Automatic
Update Rate: 5 per second nominal
Operating Temperature: 0°C to 40°C
Relative Humidity: Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C
Pollution degree: 2
Storage Temperature: -20°C to 60°C, < 80% R.H. (with battery removed)
Altitude: Operating below 2000m
Temperature Coefficient: nominal 0.15 x (specified accuracy) / °C @ (0°C – 18°C or 28°C – 40°C), or otherwise specified
Sensing: True RMS
Safety: Double insulation per UL/IEC/EN61010-1 Ed. 3.0, CAN/CSA C22.2 No. 61010-1 Ed. 3.0, UL/IEC/EN61010-2-032 Ed. 3.0, UL/IEC/EN61010-2-033 Ed. 1.0 to CAT III 600V

Electrical Specifications

Accuracy is \pm (% reading digits + number of digits) or otherwise specified, at 23°C \pm 5°C.
 Maximum Crest Factor < 2.5 : 1 at full scale & < 5 : 1 at half scale or otherwise specified, and with frequency components within the specified frequency bandwidth for non-sinusoidal waveforms.

DC Voltage

RANGE	Accuracy
600.0V	1.0% + 5d

Input Impedance: 10M Ω , 100 pF nominal

AC Voltage (with Digital Low Pass Filter)

RANGE	Accuracy
50Hz ~ 60Hz	
600.0V	1.0% + 5d

Input Impedance: 10M Ω , 100 pF nominal

Hz Line Level Frequency

Function	Sensitivity ¹⁾ (Sine RMS)	Range
600V	50V	5.00Hz ~ 999.9Hz

Accuracy: 1%+5d

¹⁾DC-bias, if any, not more than 50% of Sine RMS

Audible Continuity Tester

Audible Threshold: Between 10 Ω and 250 Ω

Response time: 32ms approx.

Ohm

RANGE	Accuracy
600.0 Ω , 6.000K Ω , 60.00K Ω	1.0% + 5d
600.0K Ω ¹⁾ , 6000K Ω ²⁾	1.2% + 5d

Open Circuit Voltage: 1.7VDC typical

¹⁾Test Current: 2 μ A typical

²⁾Test Current: 0.2 μ A typical

Capacitance

RANGE	Accuracy ¹⁾
200.0 μ F, 2500 μ F	2.0% + 4d

¹⁾Accuracies with film capacitor or better

Diode Tester

RANGE	Accuracy
3.000V	1.5% + 5d

Test Current: 0.3mA typical

Open Circuit Voltage: < 3.5VDC typical

and CAT IV 300V AC & DC

Transient Protection: 6.0kV (1.2/50 μ s surge)

Overload Protections:

Clamp-on jaws: 600A rms continuous

" + " & COM Terminals (all other functions):
600VDC/VAC rms

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

Temperature function at 80MHz ~ 150MHz:

In an RF field of 1V/m:

Total Accuracy = Specified Accuracy + 25 digits

Other functions:

In an RF field of 3V/m:

Total Accuracy = Specified Accuracy + 20 digits

Power Supply: 1.5V AAA Size battery X 2

Power Consumption: 6.2mA typical

Low Battery Indication:

Below approx. 2.85V for Capacitance & Hz

Below approx. 2.5V for other functions

APO Timing: Idle for 32 minutes approx.

APO Consumption: 5 μ A typical

Dimension (LxWxH): 217 x 76 x 37mm

Weight: 186gm

Jaw opening & Conductor diameter:

30mm max

Accessories: Test lead set, User's manual, Soft carrying pouch, Bkp60 banana plug K-type thermocouple (BM175D & BM176D only), Alligator Clip set (BM176D only)

Optional purchase accessories: BKB32 banana plug to type-K socket plug adaptor (BM175D & BM176D only)

Special Features: AmpTip™ low-current range; Display Hold; EF-Detection (NCV); Backlight LCD; 80ms Peak-RMS mode for inrush current; 3-Phase Rotation detection (BM176D only)

DC μ A (BM175D & BM176D only)

RANGE	Accuracy	Burden Voltage
200.0 μ A, 2000 μ A	1.0% + 5d	3.5mV/ μ A

Temperature (BM175D & BM176D only)

RANGE	Accuracy
-40.0°C ~ 99.9°C	1.0% + 0.8°C
100°C ~ 400°C	1.0% + 1°C
-40.0°F ~ 99.9°F	1.0% + 1.5°F
100°F ~ 752°F	1.0% + 2°F

K-type thermocouple range & accuracy not included

AmpTip™ Clamp-on ACA

RANGE	Accuracy ^{1) 2) 3) 4)}
50Hz ~ 60Hz	
60.00A	1.5% + 5d

¹⁾Induced error from adjacent current-carrying conductor: <0.06A/A

²⁾Induced error from ACV measurement < 0.60A

/kV @50/60Hz

³⁾Add 10d to the specified accuracy @ < 6A

⁴⁾Unspecified @ < 0.2A while Rotary-switch function is Continuity or Non-Contact EF-Detection

Regular Clamp-on ACA

RANGE	Accuracy ^{1) 2) 3) 4)}
50Hz ~ 100Hz	
60.00A ⁵⁾ , 600.0A	1.8% + 5d
100Hz ~ 400Hz	
60.00A ⁵⁾ , 600.0A	2.0% + 5d

¹⁾Induced error from adjacent current-carrying conductor: <0.06A/A

²⁾Induced error from ACV measurement < 0.60A

/kV @50/60Hz

³⁾Specified accuracy is for measurements made at the jaw center. When the conductor is not positioned at the jaw center, add 2% to specified accuracy for position errors

⁴⁾Unspecified @ < 0.2A while Rotary-switch function is Continuity or Non-Contact EF-Detection

⁵⁾ Add 10d to specified accuracy @ < 6A

80ms PEAK-RMS for Clamp-on ACA functions

Response: 80ms to > 90%

Accuracy: share clamp-on ACA function specifications except unspecified for < 2% of range

Non-Contact EF-Detection

Bar-Graph Indication	EF-H (High Sensitivity)	EF-L (Low Sensitivity)
	Typical Voltage (Tolerance)	
-	10V (5V ~ 25V)	40V (32V ~ 70V)
--	25V (20V ~ 66V)	110V (55V ~ 165V)
---	55V (50V ~ 125V)	220V (130V ~ 265V)
----	110V (90V ~ 200V)	400V (250V ~ 500V)
-----	220V (>180V)	550V (>430V)

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

Detection Frequency: 50/60Hz

Detection Antenna: Top side of the stationary jaw

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 an input terminal. The COM terminal (Black) has the best sensitivity.



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