

# Innovative AmpTip™ Jaws for Slim-Conductors In CAT-III 600V Areas

Ergonomic All-In-One AC/DC 600A,  
3-Terminal RST Phase-Rotation,  
HVAC, AC+DC TRMS

World-wide Patented:

D148256  
2001176  
D678,092S  
402011006273.9  
M438628  
2755507  
13486915  
202012102140.4  
M429871  
2359464  
202011052429.9



## BM070 Series

### AmpTip™ Jaws Clamp-on DMMs



BRIGHT PEOPLE'S CHOICE



**BM079**

**BM078**

**BM077**

**BM076**

**BM073**

**BM072**

079	078	077	076	073	072	FUNCTIONS & FEATURES
●	●	●	●	●	●	VFD-V & Hz for fundamental V/Hz of most Variable-Frequency-Drives
●	●	●	●	●	●	Fast measurement updates 5/sec
●	●	●	●	●	●	3-5/6 digits 6,000 counts display large LCD
●	●	●				35mm conductor size Hall-effect 600A DC/AC jaws
			●	●	●	30mm conductor size Ultra-slim 600A AC jaws
●	●	●	●	●	●	AmpTip™ Low-current-range calibrated at Jaw-tip for slim-conductors
●	●	AC	AC	AC	AC	AC+DC, AC True RMS voltage and current functions
●	●	●	●	●	●	600VAC/DC input protection on general functions
●	●	●	●	●	●	Auto Power Off
●	●	●	●	●	●	Data HOLD
●	●	●	●	●	●	Record MAX/MIN/AVG mode (Auto-ranging)
●	●	●	●	●		Relative mode (Auto-ranging) with DC-Zero mode on DCA, DC+ACA ranges
●	●		●			Fast 80ms PEAK-RMS mode to capture in-rush currents
●	●		●			Back-lighted easy-to-read LCD display
●	●	●	●	●	●	Non-Contact EF-Detection (NCV)
●	●	●	●	●	●	Probe-Contact EF-Detection for more precise indication of live
●			●			Ⓡ 3Φ-Rotation-R for MAINS supply (Probe-contact)
●			●			Ⓜ 3Φ-Rotation-M (Hi-sensitivity mode) for Motors (Probe-contact)
●			●			Type-K temperature -40.0°C to 400°C or -40.0°F to 752°F selectable
●			●			DCμA ranges 200.0μA to 2000μA (via leads) for HVAC flame sensors
●	●					DC+ACA ranges 60.00A to 600.0A + AmpTip™ DC+ACA 60.00A range
●	●	●				DCA ranges 60.00A to 600.0A + AmpTip™ DCA 60.00A range
●	●	●	●	●	●	ACA ranges 60.00A to 600.0A + AmpTip™ ACA 60.00A range
●	●					DC+ACV range 600.0V
●	●	●	●	●	●	DCV range 600.0V
●	●	●	●	●	●	ACV range 600.0V
●	●	●	●	●	●	Ohm ranges 600.0Ω to 60.00kΩ
●	●		●	●		Cx ranges 200.0μF to 2500μF for start & run motor capacitors
●	●	●	●	●	●	Diode test & Fast audible Continuity
●	●	●	●	●	●	Line-level ACV Frequency 5.00Hz to 999.9Hz
●	●	●	●	●	●	Soft carrying pouch
●	●	●	●	●	●	Rugged fire retarded casing with battery access door
●	●	●	●	●	●	Transient protection 6kV 1.2/50μs lightning surge
●	●	●	●	●	●	LVD EN61010-1/61010-2-032/61010-2-033 to CAT III 600V & CAT IV 300V
●	●	●	●	●	●	EMC EN61326-1 (EN55022, EN61000-3-2/-3 & EN61000-4-2/-3/-4/-5/-6/-8/-11)

# Handy 600A! CAT III 600V! Patented AmpTip™ Jaws & Phase Rotation!

Advanced Safety Compliance with IEC 61010-2-032 3rd Edition and IEC 61010-2-033 1st Edition

Investigated, Tested and Listed by UL, a global independent safety science company



**AC+DC TRUE RMS MEASUREMENTS (BM079, & 078 ONLY)**  
For Non-sinusoidal & Complex Waveforms Of Voltages & Currents

**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

**DIODE TEST**  
For Testing Diodes & Rectifiers

**FAST AUDIBLE CONTINUITY**  
For Quick Open-short Tests On Switches, Fuses, And Wires

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

**AmpTip™ LOW-CURRENT & Hz**  
Ergonomically Measures At Jaw Tip For Small-sized Conductors Up To 60 Amps

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

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

**AUTO-POWER-OFF**  
Extends Battery Life

**IN-RUSH PEAK-RMS (BM079, 078, & 076 ONLY)**  
Captures In-rush Peak RMS Readings At Durations As Short As 80ms

**RECORD MAX / MIN / AVG**  
Records Max, Min, & Calculates Avg Readings Over Time. Auto-ranging

**BACKLIGHTED LCD DISPLAY (BM079, 078, & 076 ONLY)**  
For Easy Viewing In The Dark

**EMC**  
Meets EN61326-1:2006 (EN55022, EN61000-3-2/-3 & EN61000-4-2/-3/-4/-5/-6/-8/-11)

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

**TYPE-K TEMPERATURE (BM079 & 076 ONLY)**  
Selectable °C And °F Readings; Comes With Bkp60 Bead Probe

**HANDY 35mm AmpTip™ CLAMP JAWS (30mm FOR ACA ONLY MODELS)**  
For Large & Small Conductors With AC Or DC+AC TRMS 600A Capability

**EF-DETECTION**  
Both Non-Contact (NCV) & Single-Probe Voltage Detection For Identifying Live Lines

**DCµA (BM079 & 076 ONLY)**  
For HVAC Flame Sensors Testing Via Test Probes

**PHASE ROTATION (BM079 & 076 ONLY)**  
Dual Sensitivity Modes For Both Motors And Supply Systems

**CAPACITANCE (EXCEPT BM072)**  
2 Auto-ranges Up To 2500µF To Measure Motor Capacitors

**RESISTANCE**  
3 Auto-ranges Up To 60kΩ Best Resolution 0.1Ω At 600Ω Range

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

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

**RELATIVE ZERO & DC\_ZERO**  
For Convenient Readings Comparison As Well As DC Jaws Hysteresis Offset

**DATA HOLD**  
Freezes The Displaying Reading For Later View

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

**BRYMEN® BM079 AC+DC TRMS AmpTip™ Jaws Clamp-on DMM**  
MAX 600A 600V CAT III 300V CAT IV Temp µA Ω Hz A Hz A EF OFF

**PEAK-RMS REC SELECT HOLD**  
L3 COM L2

**AUTO R P-RMS MAX MIN AVG (R) (M) VFD Δ**  
A MkΩHz µFAV

**CAT III 600V CAT IV 300V**

## GENERAL SPECIFICATIONS

**Display:** 3-5/6 digits 6000 counts  
**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, IEC/EN61010-2-033 Ed. 1, CAN/CSA C22.2 No. 61010-1 Ed. 3, IEC/EN61010-2-032 Ed. 3 & IEC/EN61010-031 Ed. 1.1 to CAT III 600V and CAT IV 300V AC & DC  
**Transient Protection:** 6.0kV (1.2/50µs surge)  
**Overload Protections:**  
 Current & Hz functions via jaws: 600ADC/AAC rms at

<400Hz  
 Voltage & 3-Phase Rotation functions via terminals: 600VDC / 920VAC rms  
 Other functions via terminals: 600VDC/VAC rms  
**E.M.C.:** Meets EN61326-1:2006 (EN55022, EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11):  
 DCA and DC+ACA Functions, in an RF field of 1V/m:  
 Total Accuracy = Specified Accuracy + 20 digits at around 405MHz  
 DCµA and Ohm Functions, 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:** Typical 13mA for Current functions of BM079, BM078 & BM077; 4.3mA for others  
**Low Battery:**  
 Below approx. 2.85V for Capacitance & Hz  
 Below approx. 2.5V for other functions  
**APO Timing:** Idle for 32 minutes

**APO Consumption:** 5µA typical  
**Dimension (LxWxH):** 223 x 76 x 37mm for BM079, BM078 & BM077; 217 x 76 x 37mm for BM076, BM073 & BM072  
**Weight:** 234gm for BM079, BM078 & BM077; 186gm for BM076, BM073 & BM072  
**Jaw opening & Conductor diameter:**  
 35mm max for BM079, BM078 & BM077  
 30mm max for BM076, BM073 & BM072  
**Accessories:** Test lead set, User's manual, Soft carrying pouch, Bkp60 banana plug K-type thermocouple (BM079 & BM076 only), Alligator Clip set (BM079 & BM076 only)  
**Optional purchase accessories:** BKB32 banana plug to type-K socket plug adaptor (BM079 & BM076 only)  
**Special Features:** AmpTip™ low-current range; MAX/MIN/AVG Recording mode; Display Hold; EF-Detection (NCV); Backlight LCD (BM079, BM078 & BM076 only); 80ms Peak-RMS mode for inrush current (BM079, BM078 & BM076 only); Relative-Zero (BM079, BM078 & BM076 only); 3-Phase Rotation detection (BM079 & BM076 only)

## Electrical Specifications

Accuracy is ±(% reading digits + number of digits) or otherwise specified, at 23°C ± 5°C.  
 Maximum Crest Factor < 2.5 : 1 at full scale & < 5 : 1 at half scale or otherwise specified, and with frequency spectrum not exceeding the specified frequency bandwidth for non-sinusoidal waveforms.

### DC Voltage

RANGE	Accuracy
600.0V	1.0% + 5d

Input Impedance: 10MΩ, 100 pF nominal

### AC Voltage (with Digital Low-Pass Filter)

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

Input Impedance: 10MΩ, 100 pF nominal

### DC+AC Voltage (with Digital Low-Pass Filter) (BM079 & BM078 Only)

RANGE	Accuracy
DC, 50Hz ~ 60Hz	
600.0V	1.2% + 7d

Input Impedance: 10MΩ, 100 pF nominal

### PEAK-rms (ACV & ACA of BM079, BM078 & BM076 only)

Response: 80ms to > 90%

### Audible Continuity Tester

Audible Threshold: At between 10Ω and 250Ω

Response time: 32ms approx.

### Ohm

RANGE	Accuracy
600.0Ω, 6.000KΩ, 60.00KΩ	1.0% + 5d

Open Circuit Voltage: 1.0VDC typical

### Capacitance (BM079, BM078, BM076 & BM073 only)

RANGE	Accuracy <sup>1)</sup>
200.0µF, 2500µF	2.0% + 4d

<sup>1)</sup>Accuracies with film capacitor or better

### Diode Tester

RANGE	Accuracy
2.000V	1.5% + 5d

Test Current: 0.3mA typically

Open Circuit Voltage: < 3.5VDC typically

### Temperature (BM079 & BM076 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 ~ 211.8 °F	1.0% + 1.5°F
212 °F ~ 752 °F	1.0% + 2°F

K-type thermocouple range & accuracy not included

### DCµA (BM079 & BM076 only)

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

### AmpTip™ clamp-on ACA

RANGE	Accuracy <sup>1) 2) 3) 4)</sup>
DC, 50Hz ~ 60Hz	
60.00A	1.5% + 5d

<sup>1)</sup>Induced error from adjacent current-carrying conductor: < 0.01A/A

<sup>2)</sup>Specified with Relative Zero  $\Delta$  mode applied to offset the non-zero residual readings, if any

<sup>3)</sup>Add 10d to the specified accuracy @ < 4A

<sup>4)</sup>For BM076, BM073 & BM072, unspecified @ < 0.2A

### AmpTip™ clamp-on DCA (BM079, BM078 & BM077 only)

RANGE	Accuracy <sup>1) 2) 3)</sup>
60.00A	2.0% + 5d

<sup>1)</sup>Induced error from adjacent current-carrying conductor: < 0.01A/A

<sup>2)</sup>Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

<sup>3)</sup>Add 10d to the specified accuracy @ < 4A

### AmpTip™ clamp-on DC+ACA (BM079 & BM078 only)

RANGE	Accuracy <sup>1) 2) 3)</sup>
DC, 50Hz ~ 60Hz	
60.00A	2.0% + 7d

<sup>1)</sup>Induced error from adjacent current-carrying conductor: < 0.01A/A

<sup>2)</sup>Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

<sup>3)</sup>Add 10d to the specified accuracy @ < 4A

### Regular Clamp-on ACA

RANGE	Accuracy <sup>1) 2) 3)</sup>
50Hz ~ 100Hz	
60.00A <sup>4) 5)</sup> , 600.0A	1.8% + 5d
100Hz ~ 400Hz	
60.00A <sup>4) 5)</sup> , 600.0A	2.0% + 5d

<sup>1)</sup>Induced error from adjacent current-carrying conductor: < 0.01A/A

<sup>2)</sup>For Models 079, 078 & 077, Maximum Crest Factor < 2 : 1 at full scale & < 4 : 1 at half scale

<sup>3)</sup>For Models 076, 073 & 072, 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

<sup>4)</sup>For Models 079, 078 & 077, add 10d to the specified accuracy @ < 9A

<sup>5)</sup>For Models 076, 073 & 072, add 10d to specified accuracy @ < 6A, and unspecified @ < 0.2A

### Regular Clamp-on DCA (BM079, BM078 & BM077 only)

RANGE	Accuracy <sup>1) 2)</sup>
60.00A <sup>3)</sup> , 600.0A	2.0% + 5d

<sup>1)</sup>Induced error from adjacent current-carrying conductor: < 0.01A/A

<sup>2)</sup>Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

<sup>3)</sup>Add 10d to the specified accuracy @ < 9A

### Regular Clamp-on DC+ACA (BM079 & BM078 only)

RANGE	Accuracy <sup>1) 2)</sup>
DC, 50Hz ~ 100Hz	
60.00A <sup>3)</sup> , 600.0A	2.2% + 7d
100Hz ~ 400Hz	
60.00A <sup>3)</sup> , 600.0A	2.7% + 7d

<sup>1)</sup>Induced error from adjacent current-carrying conductor: < 0.01A/A

<sup>2)</sup>Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

<sup>3)</sup>Add 10d to the specified accuracy @ < 9A

### Hz Line Level Frequency

Function	Sensitivity <sup>1)</sup> (Sine RMS)	Range
600V	50V	5.00Hz ~ 999.9Hz
60A (AmpTip™)	40A	50.00Hz ~ 400.0Hz
60A, 600A	40A	50.00Hz ~ 400.0Hz

Accuracy: 1%+5d

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

### Non-Contact EF-Detection

Typical Voltage	Bar-Graph Indication
20V (tolerance: 10V ~ 36V)	-
55V (tolerance: 23V ~ 83V)	--
110V (tolerance: 59V ~ 165V)	---
220V (tolerance: 124V ~ 330V)	----
440V (tolerance: 250V ~ 600V)	-----

Indication: Bar-graph segments & audible beep tones proportional to the field strength  
 Detection Frequency: 50/60Hz  
 Detection Antenna: Inside the 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 one single probe to test via terminal COM for direct contact EF-Detection with best sensitivity.