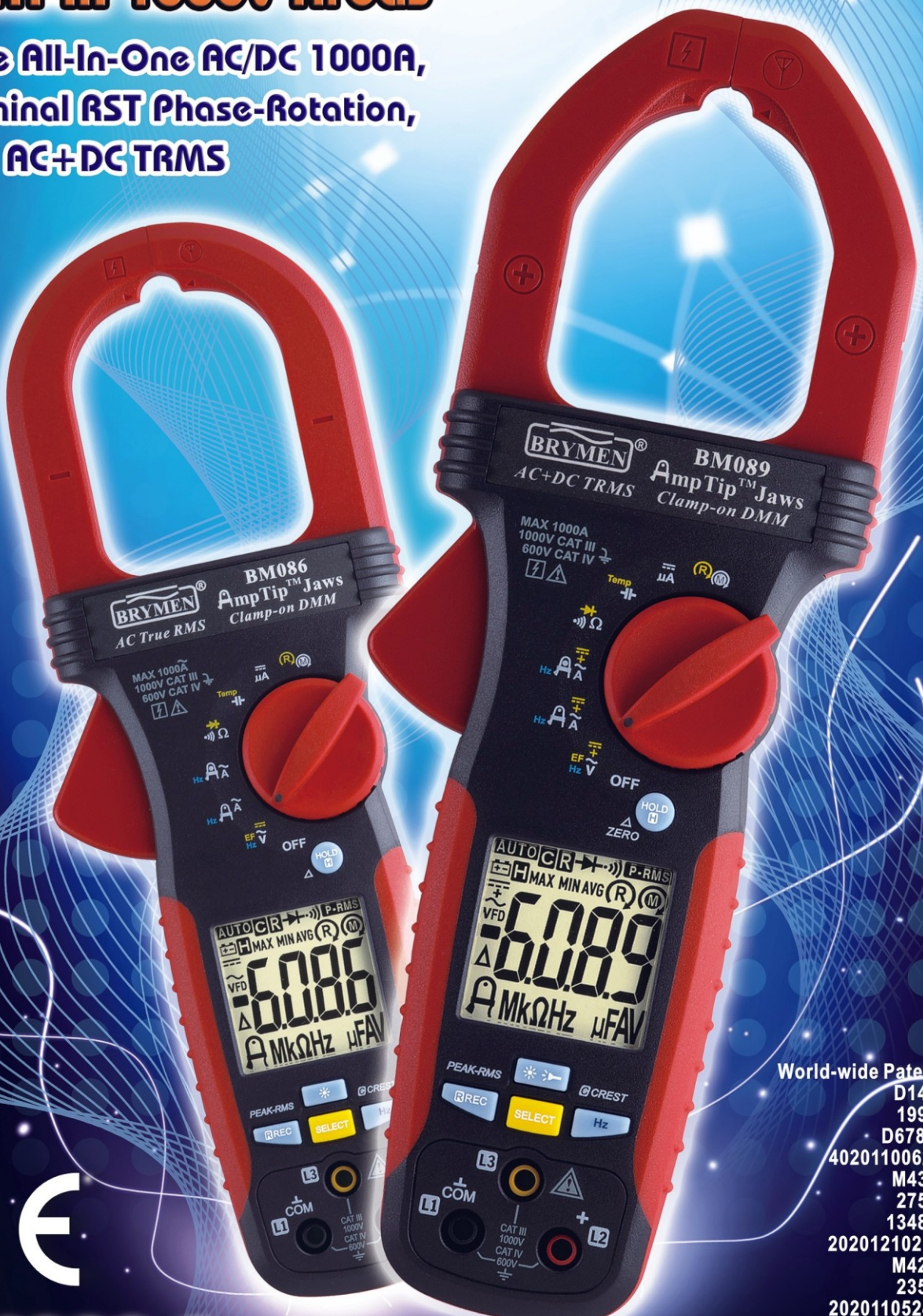
Innovative AmpTip™ Jaws For Slim-Conductors In CAT-III 1000V Areas

Deluxe All-In-One AC/DC 1000A, 3-Terminal RST Phase-Rotation, HVAC, AC+DC TRMS



CE

World-wide Patented:
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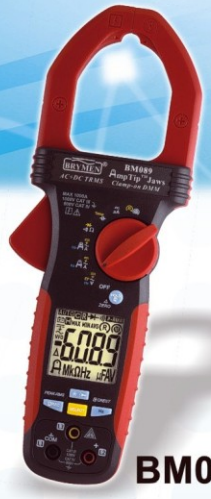
BM080 Series

AmpTip™ Jaws Clamp-on DMMs

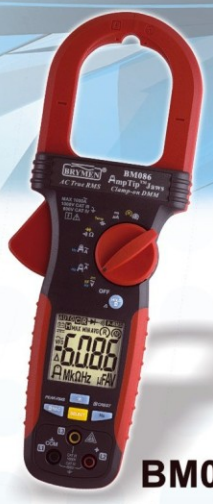
BRYMEN®

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

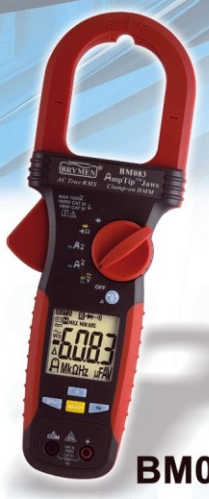


BM089

BM088



BM086



BM083

089	088	086	083	FUNCTIONS & FEATURES
●	●	●	●	VFD-V & Hz for fundamental V/Hz of most Variable-Frequency-Drives
●	●	●	●	Fast measurement updates 3/sec
●	●	●	●	3-5/6 digits 6,000 counts display large LCD
●	●			51mm conductor size Hall-effect 1000A DC/AC jaws
		●	●	51mm conductor size Ultra-slim 1000A AC jaws
●	●	●	●	AmpTip™ Low-current-range calibrated at Jaw-tip for slim-conductors
●	●	AC	AC	AC+DC, AC True RMS voltage and current functions
●	●	●	●	1000VAC/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
●	●	●		5ms CREST mode to capture instantaneous +Peak & -Peak
●	●	●	●	Back-lighted easy-to-read LCD display
●	●			Flashlight for easy operation in dim areas
●	●	●	●	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 -40.0ºC to 400ºC or -40.0ºF to 752ºF selectable
●		●		DCμA ranges 200.0μA to 2000μA (via leads) for HVAC flame sensors
●	●			DC+ACA ranges 60.00A to 1000A + AmpTip™ DC+ACA 60.00A range
●	●			DCA ranges 60.00A to 1000A + AmpTip™ DCA 60.00A range
●	●	●	●	ACA ranges 60.00A to 1000A + AmpTip™ ACA 60.00A range
●	●			DC+ACV ranges 600.0V to 1000V
●	●	●	●	DCV ranges 600.0V to 1000V
●	●	●	●	ACV ranges 600.0V to 1000V
●	●	●	●	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 8kV 1.2/50μs lightning surge
●	●	●	●	LVD EN61010-1/61010-2-032/61010-2-033 to CAT III 1000V & Cat IV 600V
●	●	●	●	EMC EN61326-1 (EN55022, EN61000-3-2/-3 & EN61000-4-2/-3/-4/-5/-6/-8/-11)

Patented AmpTip™ Jaws & Phase Rotation! DC+AC 1000A! CAT III 1kV!

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

TYPE-K TEMPERATURE (BM089 & 086 ONLY)
Selectable °C And °F Readings; Comes With Bkp60 Bead Probe

FLASHLIGHT (BM089 & 088 ONLY)
Built-in Convenient Work Light For Easy Viewing In The Dark

LARGE 51mm AmpTip™ CLAMP JAWS
For Large & Small Conductors With AC Or DC+AC TRMS 1000A Capability

AC+DC TRUE RMS MEASUREMENTS (BM089 & 088 ONLY)
For Non-sinusoidal & Complex Waveforms Of Voltages & Currents

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

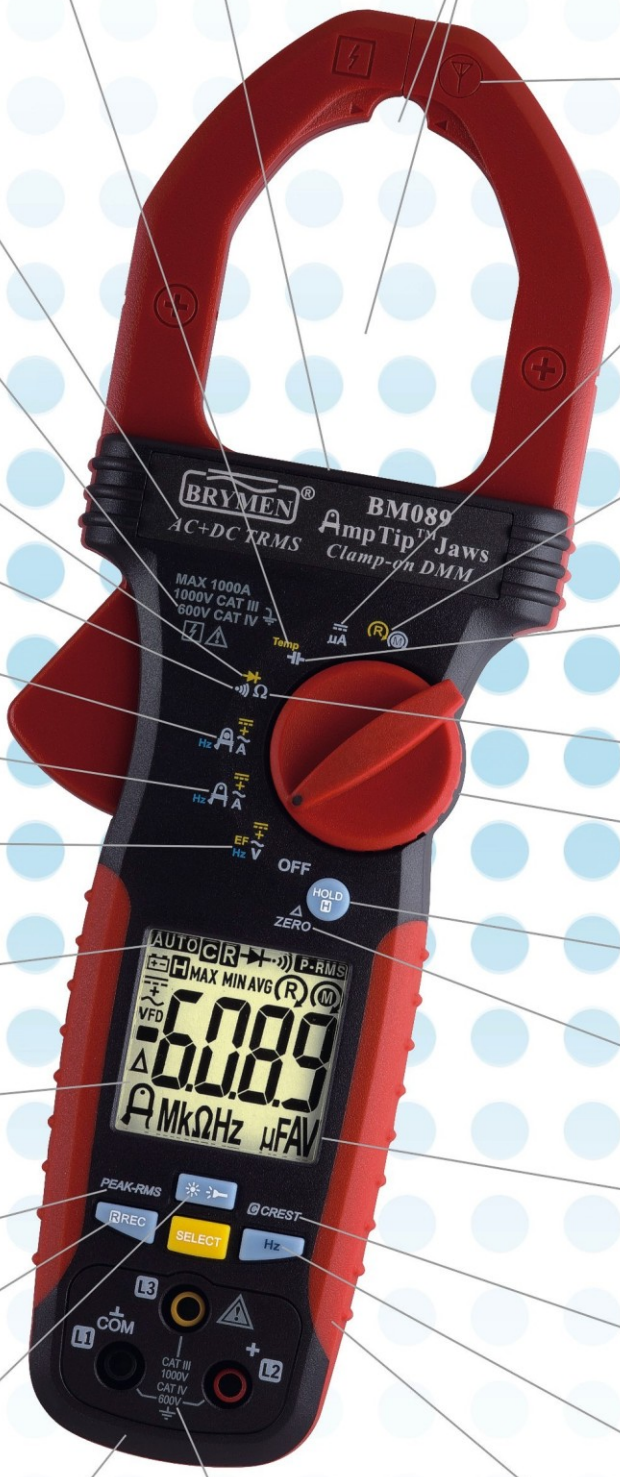
LVD CAT III 1KV & CAT IV 600V
Certified EN61010-2-032, EN61010-2-033, EN61010-1 & Relevant UL Standards On CAT III 1000V & CAT IV 600V

DCμA (BM089 & 086 ONY)
For HVAC Flame Sensors Testing Via Test Probes

DIODE TEST
For Testing Diodes & Rectifiers

PHASE ROTATION (BM089 & 086 ONY)
Dual Sensitivity Modes For Both Motors And Supply Systems

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



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

REGULAR CURRENT & Hz
Measures At Jaw Center For Regular Conductors Up To 1000 Amps

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

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

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

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

DATA HOLD
Freezes The Displaying Reading For Later View

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

RELATIVE ZERO & DC_ZERO
For Convenient Readings Comparison As Well As DC Jaws Hysteresis Offset

AUTO-POWER-OFF
Extends Battery Life

0.8% DCV BASIC ACCURACY
DCV 2 Auto-ranges To 1000V; ACV 2 Auto-ranges To 1000V

IN-RUSH PEAK-RMS (BM089, 088, 086 ONLY)
Captures In-rush Peak RMS Readings At Durations As Short As 80ms

5ms CREST-MAX
Captures In-rush Peak Signals Of ACA Or ACV As Short As 5ms In Duration

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

CONVENIENT Hz BUTTON
Toggles Between Amps & Hz Via Jaws, Or Volts & Hz Via Test Probes

BACKLIGHTED LCD DISPLAY
For Easy Viewing In The Dark

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

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

TRANSIENT PROTECTION
Up To 8kV 1.2/50μs Lightning Surge; More Confidence For Serious Users

GENERAL SPECIFICATIONS

Display: 3-5/6 digits 6000 counts.
Polarity: Automatic
Update Rate: 5 per second nominal;
Operating Temperature: -10°C to 50°C
Relative Humidity: Non condensing (≦10°C)
≦ 90% RH (at 10~30°C)
≦ 75% RH (at 30~40°C)
≦ 45% RH (at 40~50°C)
Pollution degree: 2
Storage Temperature: -20°C to 60°C, < 80% R.H. (with battery removed)
Altitude: Operating below 2000m; Storage below 12000m
Temperature Coefficient: nominal 0.10 x (specified accuracy)/ °C @(-10°C -- 18°C or 28°C -- 50°C), or otherwise specified
Sensing: True RMS
Safety: Double insulation per UL/IEC/EN61010-1 Ed. 3.0, IEC/EN61010-2-033 Ed. 1.0, CAN/CSA C22.2 No. 61010-1 Ed. 3.0, IEC/EN61010-2-032 Ed. 3.0 & IEC/EN61010-031 Ed. 1.1 to CAT III 1000V and CAT IV 600V AC & DC
Transient Protection: 8.0kV (1.2/50μs surge)
Overload Protections:
Current & Hz functions via jaws: 1000ADC/AAC rms at <400Hz
Voltage & 3-Phase Rotation functions via terminals: 1100VDC/VAC rms
Other functions via terminals: 1000VDC/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):
ACA, DCA & DC+ACA Functions, in an RF field of 1V/m:
Total Accuracy = Specified Accuracy + 60 digits at around 200MHz~350MHz
Ohm and DCμA Functions, in an RF field of 1V/m:
Total Accuracy = Specified Accuracy + 80 digits
Other Functions, in an RF field of 3V/m:
Total Accuracy = Specified Accuracy + 20 digits
Power Supply: 1.5V AA Size battery X 2
Power Consumption: Typical 13mA for Current functions of BM089 & BM088; 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: L258mm X W94mm X H44mm
Weight: 392gm for BM088 & BM089; 312gm for BM083 & BM086
Jaw opening & Conductor diameter: 51mm max
Accessories: Test lead set, User's manual, Soft carrying pouch, Bkp60 banana plug K-type thermocouple (BM089 & BM086 only), Alligator clip set (BM089 & BM086 only)
Optional purchase accessories: BKB32 banana plug to type-K socket plug adaptor (BM089 & BM086 only)
Special Features: AmpTip™ low-current range; MAX/MIN/AVG Recording mode; Display Hold; EF-Detection (NCV); Backlighted LCD; Flashlight (BM089 & BM088 only); 80ms Peak-RMS mode for inrush current (BM089, BM088 & BM086 only); 5ms Crest (Instantaneous Peak-Hold) mode (BM089, BM088 & BM086 only); Relative-Zero, 3-Phase Rotation detection (BM089 & BM086 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, 1000V	0.8% + 5d

Input Impedance: 10MΩ, 100 pF nominal

AC Voltage (with Digital Low-Pass Filter)

RANGE	Accuracy
50Hz ~ 60Hz	
600.0V, 1000V	0.8% + 5d
20Hz ~ 200Hz	
600.0V, 1000V	1.5% + 5d
200Hz ~ 400Hz	
600.0V, 1000V	10% + 5d

Input Impedance: 10MΩ, 100 pF nominal

DC+AC Voltage (with Digital Low-Pass Filter) (BM089 & BM088 Only)

RANGE	Accuracy
50Hz ~ 60Hz	
600.0V, 1000V	1.0% + 7d
DC, 40Hz ~ 200Hz	
600.0V, 1000V	1.8% + 7d
200Hz ~ 400Hz	
600.0V, 1000V	12% + 7d

Input Impedance: 10MΩ, 100 pF nominal

PEAK-rms (ACV & ACA of Models 089, 088 & 086 only)

Response: 80ms to > 90%

CREST (Peak-Hold)

Accuracy: Add 250 digits to specified accuracy for changes > 5ms

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

RANGE	Accuracy [1]
200.0μF, 2500μF	2.0% + 4d

[1] 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

DCμA (BM089 & BM086 only)

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

Temperature (BM089 & BM086 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

AmpTip™ clamp-on ACA

RANGE	Accuracy [1] [2] [3]
40Hz ~ 100Hz	
60.00A	1.5% + 5d
100Hz ~ 400Hz	
60.00A	2.0% + 5d

[1] Induced error from adjacent current-carrying conductor: <0.02A/A
[2] Specified with Relative Zero Δ mode applied to offset the non-zero residual readings, if any
[3] Add 10d to the specified accuracy @ < 4A

AmpTip™ clamp-on DCA (BM089 & BM088 only)

RANGE	Accuracy [1] [2] [3]
60.00A	1.5% + 5d

[1] Induced error from adjacent current-carrying conductor: <0.02A/A
[2] Specified with DC-Zero mode applied to offset the non-zero residual readings, if any
[3] Add 10d to the specified accuracy @ < 4A

AmpTip™ clamp-on DC+ACA (BM089 & BM088 only)

RANGE	Accuracy [1] [2] [3]
DC, 40Hz ~ 100Hz	
60.00A	2.0% + 7d
100Hz ~ 400Hz	
60.00A	2.2% + 7d

[1] Induced error from adjacent current-carrying conductor: <0.08A/A
[2] Specified with DC-Zero mode applied to offset the non-zero residual readings, if any
[3] Add 10d to the specified accuracy @ < 4A

Regular Clamp-on ACA

RANGE	Accuracy [1] [2]
40Hz ~ 100Hz	
60.00A [3] [4], 600.0A, 1000A [5]	1.8% + 5d
100Hz ~ 400Hz	
60.00A [3] [4], 600.0A, 1000A [5]	2.2% + 5d

[1] Induced error from adjacent current-carrying conductor:
< 0.02A/A for Models 089 & 088
< 0.05A/A for Models 086 & 083
[2] For Models 086 & 083, 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
[3] For Models 086 & 083, add 10d to specified accuracy @ < 6A
[4] For Models 089 & 088, add 10d to the specified accuracy @ < 9A
[5] Maximum Crest Factor < 1.4 : 1 at full scale & < 2.8 : 1 at half scale

Regular Clamp-on DCA (BM089 & BM088 only)

RANGE	Accuracy [1] [2]
60.00A [3], 600.0A, 1000A	1.8% + 5d

[1] Induced error from adjacent current-carrying conductor: <0.02A/A
[2] Specified with DC-Zero mode applied to offset the non-zero residual readings, if any
[3] Add 10d to the specified accuracy @ < 9A

Regular Clamp-on DC+ACA (BM089 & BM088 only)

RANGE	Accuracy [1] [2]
DC, 40Hz ~ 100Hz	
60.00A [3], 600.0A, 1000A [4]	2.2% + 7d
100Hz ~ 400Hz	
60.00A [3], 600.0A, 1000A [4]	2.5% + 7d

[1] Induced error from adjacent current-carrying conductor: < 0.08A/A
[2] Specified with DC-Zero mode applied to offset the non-zero residual readings, if any
[3] Add 10d to the specified accuracy @ < 9A
[4] Maximum Crest Factor < 1.4 : 1 at full scale & < 2.8 : 1 at half scale

Hz Line Level Frequency

Function	Sensitivity [1] (Sine RMS)	Range
600V, 1000V	50V	5.00Hz ~ 999.9Hz
60A (AmpTip™)	40A	40.00Hz ~ 400.0Hz
60A, 600A, 1000A	40A	40.00Hz ~ 400.0Hz

Accuracy: 1%+5d
[1] 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 ~ 1000V)	-----

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.

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BRYMEN TECHNOLOGY CORPORATION
http://www.brymen.com
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FAX: +886 2 2225 0025
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