Individual Harmonics THD%, DF%, and Volts/Amps Readings! Dual-display Convenience!

Added DC Component Hdc Harmonics in AC+DC Mode!

3-Phase Power both Balanced and Unbalanced Loads!

BM099

AC+DC TRMS

Harmonic PowerClamp™





BRYMEN R
Bright People's Choice



FUNCTIONS & FEATURES

- 3-5/6 digits 6000 counts / 4 digits 9999 counts + 999 counts Dual Display
- LARGE 51mm AmpTip® jaws for both large and slim conductors
- 1000A AC/DC Power Quality Clamp-on with Multimeter functions
- CAT III 1kV and CAT IV 600V AC/DC for utility applications
- AC and AC+DC True RMS on Voltage, Current, Harmonics, and Power functions
- Power readings of W (real power), VA (apparent power), and VAR (reactive power)
- Dual Display Volt/Amp+THD%, Volt/Amp+DF%, ~VA/W/VAR+PF, and AC+DC_VA+DCA
- Unbalanced-Load 3-Phase Power Readings; Selectable 3-wire and 4-wire calculations
- Direct Single-Phase Power, 3-Phase Balanced-Load Power, and AC+DC Apparent Power
- H02 to H25 Individual Harmonics Volt/Amp, THD%, and DF% Readings in V/A AC mode
- Added Hdc DC component to Harmonics Readings in V/A AC+DC mode
- THD% (Total Harmonic Distortion) of V/A functions from 2% to 600%
- DF% (Total Distortion Factor) of V/A functions from 2% to 100.0%
- ACV (with Low Pass Filter) and DCV; @ 60.00V and 999.9V ranges
- AC+DCV; @ 999.9V range; Bandwidth up to 3kHz
- Regular ACA, AC+DCA, and DCA; @ 999.9A range
- AmpTip® Low-Current ACA, AC+DCA, and DCA; @ 40.00A range
- Clamp-jaw ACA-Hz and Test-lead Line Level ACV-Hz from 40.00Hz to 70.00Hz
- Fast BeepLit[™] Continuity; Beep sound with backlight effect for noisy environments
- Type-K temperature from -40.0 °C to 400.0 °C or -40.0 °F to 752.0 °F selectable
- Cx from 10.0µF to 999.9µF for start & run motor capacitors
- Diode test
- Non-Contact EF-Detection (NCV)
- Probe-Contact EF-Detection for more precise indication of live
- Ohms; @ 600.0Ω and $6.000k\Omega$ ranges
- Auto-Power-Off (APO)
- Relative-Zero mode and DC-Zero mode
- HOLD feature freezes the display reading for later viewing.
- REC MAX/MIN to compare and record extreme display readings
- Backlighted LCD display plus Working Flashlight
- Soft carrying pouch
- UL, UKCA, and CE compliance
- Transient protection 8kV 1.2/50µs lightning surge
- 1kV AC/DC general input protection on all functions
- Rugged fire retarded housing with battery access door

AmpTip[®] Jaws PowerClamp™ + 25th Harmonics! 1000A with AC+DC TRMS for CAT-III 1kV!

BeepLit[™] Continuity, °C/°F, Cx, EF-Detection NCV, Clamp-on Hz, MinMax Record, Hold, and Relative Features!



Power analysis Applications for CAT III 1kV & CAT IV 600V Areas

Accuracy is \pm (% reading digits + number of digits) or otherwise specified, at 23° C \pm 5°C & less than 75% relative humidity. Maximum crest factor < 1.56 : 1 at full scale & < 3.12 : 1 at half scale, and with frequency spectrum not exceeding the specified frequency bandwidth for non-sinusoidal waveforms.

DCV

| RANGE | Accuracy |
|----------------|----------|
| 60.00V, 999.9V | 0.5%+5d |
| | |

Input Impedance: 2MΩ, 50pF nominal

ACV (with Low-Pass Filter)

| RANGE | | Accuracy | |
|-------------------|---------------|----------------|----------------------|
| 60.00V 1), 999.9V | @ 50Hz / 60Hz | @ 10Hz ~ 200Hz | @ 200Hz ~ 400Hz |
| | 0.5%+5d | 4.0%+5d | 14%+5d ²⁾ |

Input Impedance: 2MΩ, 50pF nominal ¹Specified accuracy adds 40d @ <20Vac ²Accuracy linearly decreases from 4%+5d @ 200Hz to 14%+5d @ 400Hz

| RANGE | Accuracy | | |
|--------|-------------------|----------------|----------------|
| 999.9V | @ DC, 50Hz / 60Hz | @ 45Hz ~ 400Hz | @ 500Hz ~ 3kHz |
| 999.97 | 0.5%+5d | 2.5%+5d | 3.5%+5d |

Input Impedance: 2MΩ, 50pF nominal

Regular Clamp-on DCA

| RANGE | Accuracy 1) 2) |
|--------|----------------|
| 999.9A | 2.0%+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

npTip® Clamp-on DCA Aı

| RANGE | Accuracy 1) 2) 3) |
|--------|-------------------|
| 40.00A | 2.0%+5d |
| | |

¹⁾Induced error from the 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 15d to the specified accuracy @ <10A

Hz Line Level Frequency

| Function | Sensitivity (Sine RMS) | Range |
|----------|------------------------|-------------------|
| 999.9V | 20V | 40.00Hz ~ 70.00Hz |
| 999.9A | 2A | 40.00Hz ~ 70.00Hz |

Accuracy: 0.5%+5d

Audible Continuity Tester Audible Threshold: Between 10Ω and 300Ω Response time: 32ms approx.

GENERAL SPECIFICATIONS

Display: 6000 counts / 9999 counts + 999 counts dual

Update Rate: 2 per second nominal Operating Temperature: -10°C to 50°C

Relative Humidity: Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50%

relative humidity at 50°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 @ (-10°C -- 18°C or 28°C -- 50°C), or otherwise specified

Sensing: AC & AC+DC True RMS Safety: Double insulation per IEC/UL/EN/BSEN 61010-1 Ed. 3.1, IEC/UL/EN/BSEN 61010-2-032

Ed. 4.0, IEC/UL/EN/BSEN 61010-031 Ed. 2.0 and the corresponding CAN/CSA-C22.2 regulations to Measurement Categories III 1000V AC & DC and

Category IV 600V AC & DC Transient Protection: 8.0kV (1.2/50us surge)

Overload Protection:

Current via Clamp-on Jaws: 1000A rms at <400Hz Voltage via terminals: 1100V rms

Other functions via terminals: 1000V rms

E.M.C.: Meets EN61326-1

Power Supply: 1.5V AA Size (IEC LR6) battery X 2
Power Consumption: Typical 33mA for Current &
Power functions, and 22mA for others

Low Battery: Below approx. 2.5V APO Timing: Idle for 30 minutes APO Consumption: 25uA typical Dimension: L258mm X W94mm X H44mm

Weight: 394 am

Jaw opening & Conductor diameter: 51mm max Accessories: Test lead set, User's manual, Soft carrying pouch, Bkp60 banana plug K-type

Optional purchase accessories: BKB32 banana plug to type-K socket plug adaptor



BRYMEN TECHNOLOGY CORPORATION



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TEL: +886 2 2226 3396 (rep) FAX: +886 2 2225 0025 Copyright © MMXXIII B.T.C. All rights reserved Specifications subject to change without notice Patented & Patents pending. Printed in Taiwan Total Harmonic Distortion-THD% 1) of Regular Clamp-on ACA or AC+DCA RANGE

| 2.0% ~ 600.0% | 1.0%+5d |
|--------------------------------------|---------|
| | |
| 1)Total Harmonia Distortion THD9/ is | |

Fundamental RMS) x 100%

²⁾Fundamental frequency range: 45Hz ~ 70Hz ³⁾Accuracy specified @ Total RMS ≥ 10A

Total Distortion Factor-DF% 1) of Regular Clamp-on ACA or AC+DCA

| RANGE | Accuracy 2) 3) |
|---------------|----------------|
| 2.0% ~ 100.0% | 1.0%+5d |

Total Distortion Factor-DF% is defined as (Total Harmonic RMS / Total

RMS) x 100%

²Fundamental frequency range: 45Hz ~ 70Hz
³Accuracy specified @ Total RMS ≥ 10A

| Jillio | |
|-----------------|----------|
| RANGE | Accuracy |
| 600.0Ω, 6.000kΩ | 1.0%+5d |
| | |

Open Circuit Voltage: 1.2VDC typical

| Capacitance | |
|------------------|-------------|
| RANGE | Accuracy 1) |
| 10 0uF ~ 999 9uF | 3.0%+6d |

Accuracies with film capacitor or better

| ** | |
|--------|----------|
| RANGE | Accuracy |
| 1.000V | 1.0%+3d |

Test Current: 0.3mA typically Open Circuit Voltage: < 1.2VDC typically

nic Distortion-THD% of ACV 5 or AC+DCV

| Total Harmonic Distortion | RANGE | Accu | ıracy |
|------------------------------|-------------------|----------------|---------|
| | | @ 50Hz / 60Hz | 0.5%+5d |
| ACV, AC+DCV | 60.00V 1), 999.9V | @ 45Hz ~ 500Hz | 2.5%+5d |
| | @ 500Hz ~ 3kHz | 3.5%+5d | |
| THD% 2) 3) 4) | 2.0% ~ 600.0% | 1.0%+5d | |

Input Impedance: 2MΩ, 50pF nominal

¹NRange available to ACV only. Specified accuracy adds 40d @ <20Vac

²Total Harmonic Distortion-THD% is defined as (Total Harmonic RMS /
Fundamental RMS) x 100%

³Fundamental Requency range: 45Hz ~ 70Hz

*Accuracy specified @ Total RMS ≥ 70V

³When the Harmonics-related feature is activated, the Low Pass Filter of

ACV tures of automatically for maximum measuring bandwidth.

ACV turns off automatically for maximum measuring bandwidth

Total Distortion Factor-DF% of ACV 5) or AC+DCV

| Total Pictor activity of the Control of the Port | | | |
|--|------------------------------|----------------|---------|
| Total Distortion Factor | RANGE | Accu | ıracy |
| | | @ 50Hz / 60Hz | 0.5%+5d |
| ACV, AC+DCV | CV, AC+DCV 60.00V 1), 999.9V | @ 45Hz ~ 500Hz | 2.5%+5d |
| | | @ 500Hz ~ 3kHz | 3.5%+5d |
| DF% 2) 3) 4) | 2 0% ~ 100 0% | 1.0% | 6+5d |

Input Impedance: 2M/Q, 50pF nominal

Range available to ACV only. Specified accuracy adds 40d @ <20Vac

Total Distortion Factor-DF% is defined as (Total Harmonic RMS / Total PARS), 1000

4 lotal Distortion Factor-DF% is defined as (lotal Harmonic RMS RMS) x 100%
3 Fundamental frequency range: 45Hz ~ 70Hz
⁴Accuracy specified @ Total RMS ≥ 70V
When the Harmonics-related feature is activated, the Low Pass Filter of ACV turns off automatically for maximum measuring bandwidth

| Amp Tip" Clamp-on ACA | |
|-----------------------|----------------|
| RANGE | Accuracy 1) 2) |
| 50Hz | / 60Hz |
| 40.00A | 1.5%+5d |
| 45Hz- | -400Hz |
| 40.004 | 2.0%+5d |

 ij Induced error from the adjacent current-carrying conductor: <0.02A/A 2i Add 30d to the specified accuracy @ <10A

| Regu | iai Ciailip-oli ACA | |
|--------------|---------------------|-------------|
| | RANGE | Accuracy 1) |
| | 5 | 0Hz / 60Hz |
| | 999.9A | 2.0%+5d |
| 45Hz ~ 400Hz | | |
| | 999.9A | 2.5%+5d |

1)Induced error from the adjacent current-carrying conductor: <0.02A/A Single-Phase & 3-Phase Balanced-Load Power

| A office Downer (MA) | | | | |
|---|--------------------------|-------------|-------------|----------------------|
| Active Power (W) | | | | |
| RANGE | | | racy 1) | |
| | @ PF | ≥0.5; ≤1.0 | ≥0.31; <0.5 | ≥0.2; <0.31 |
| 0040 14/ 0000 14/ | @ACA≥20A | 2%+2d | | |
| 0010 W ~ 9999 W 10.00 kW ~ 99.99 kW 100.0 kW ~ 999.9 kW | @ACA<20A; ≥3A | 4%+5d | 5%+5d | 8%+5d |
| | @ACA < 3A; ≥1A 20%+8d | | | |
| Apparent Power (VA) | | | | |
| RANGE | | Accuracy 1) | | |
| 0010 VA ~ 9999 VA 10.00 kVA ~ 99.99 kVA 100.0 kVA ~ 999.9 kVA | @ACA≥20A | | | |
| | @ACA < 20A; ≥3A | ; 4%+5d | | |
| | @ACA<3A; ≥1A | | 20%+8d | |
| | Reactive P | ower (Var) | | |
| RANGE | Accuracy 1) | | | |
| | @ IPFI | ≤0.8; ≥0.0 | ≤0.9; >0.8 | ≤0.98; >0.9 |
| | @ACA≥10A | | 3%+5d | 8%+5d |
| 0010 Var ~ 9999 Var 10.00 kVar ~ 99.99 kVar 100.0 kVar ~ 999.9 kVar | @ACA < 10A; ≥6A | 2%+2d | 7%+5d | 10%+5d ²⁾ |
| | @ACA<6A; ≥3A | 7%+5d | 7%+50 | 10%+50-7 |
| | @ACA<3A; ≥1A | 20%+8d | N/A | N/A |
| Power Factor (PF) | | | | |
| RANGE | Accuracy 3) | | | |

3%+4d

10%+4d

0.51 ~ 1.00 0.21 ~ 0.50

"Accuracy specified from Fundamental_ACA ≥ 1A and Fundamental_ACV ≥ 66V; Fundamental frequency @ 50/60Hz
"Specified from @PF ≤0.95; >0.9 @ACA < 6A; ≥ 3A
"Accuracy specified from Fundamental_ACA ≥ 3A and Fundamental_ACV ≥ 66V; Fundamental @ 50/60Hz

| Allip rip Clallip-oli AC+DCA | | |
|------------------------------|-------------------|--|
| RANGE | Accuracy 1) 2) 3) | |
| | OC . | |
| 40.00A | 2.0%+5d | |
| 50Hz | / 60Hz | |
| 40.00A | 1.5%+5d | |
| 45Hz ~ 400Hz | | |
| 40.00A | 2.0%+5d | |
| • | | |

Induced error from the adjacent current-carrying conductor: <0.02A/A 2Specified with DC-Zero mode applied to offset the non-zero residual readings, if any 3Add 30d to the specified accuracy @ <10A

| regular oldrip on Ao-BoA | | |
|--------------------------|----------------|--|
| RANGE | Accuracy 1) 2) | |
| D | C | |
| 999.9A | 2.0%+5d | |
| 50Hz / 60Hz | | |
| 999.9A | 2.0%+5d | |
| 45Hz ~ 400Hz | | |
| 999.9A | 2.5%+5d | |
| | | |

Induced error from the adjacent current-carrying conductor: <0.02A/A 2Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

| Parameter | RANGE | Accuracy 1) 2) 3) |
|---|---------------|-----------------------|
| Individual Harmonic order: Hdc, H01 ~ H10 | | |
| Vrms | 999.9V | 2.0%+5d ⁴⁾ |
| THD% 5) | 0.0% ~ 600.0% | 15d |
| DF% 6) | 0.0% ~ 100.0% | 15d |
| Individual Harmonic order: H11 ~ H25 | | |
| Vrms | 999.9V | 3.0%+5d ⁴⁾ |
| THD% 5) | 0.0% ~ 600.0% | 20d |
| DF% 6) | 0.0% ~ 100.0% | 20d |

"Fundamental frequency range: 45Hz ~ 70Hz
"Accuracy specified @ Total RMS ≥ 70V
"Unspecified @ Harmonic Order Voltage < 2V
"Specified accuracy adds 3% @ DF% < 10%
"Individual Harmonic-THO% is defined as (Harmonic order RMS / Fundamental RMS) x 100%
"Individual Distortion Factor-DF% is defined as (Harmonic order RMS / Total RMS) x 100%
"Official RMS) x 100%

onics-related feature is activated, the Low Pass Filter of When the Harmonics-related feature is activated, the Low Pass ACV turns off automatically for maximum measuring bandwidth

dividual Harmonic orders of Regular Clamp-on ACA or AC+DCA

| marriada i iamono oracio or riogana oracip or rior con rio 2011 | | |
|---|---------------|-------------------------|
| Parameter | RANGE | Accuracy 1) 2) 3) 4) 5) |
| Individual Harmonic order: Hdc, H01 ~ H10 | | |
| Current RMS | 999.9A | 2.0%+5d ⁶⁾ |
| THD% 7) | 0.0% ~ 600.0% | +/- 15d |
| DF% 8) | 0.0% ~ 100.0% | +/- 15d |
| Individual Harmonic order: H11 ~ H25 | | |
| Current RMS | 999.9A | 5.0%+5d ⁶⁾ |
| THD% 7) | 0.0% ~ 600.0% | +/- 20d |
| DF% 8) | 0.0% ~ 100.0% | +/- 20d |

Pinduced error from the adjacent current-carrying conductor: <0.02A/A PSpecified with DC-Zero mode applied to offset the non-zero residual

*Specified with DC-Zero mode applied to offset the non-zero residual readings, if any serudings, if any serudings, if any septiment of the properties of

AC+DC Power (VA)

| Power (VA) | | |
|-----------------------|-------------------|--|
| RANGE | Accuracy a) b) c) | |
| 0010 VA ~ 9999 VA | | |
| 10.00 kVA ~ 99.99 kVA | 2.0%+2d 1-9) | |
| 100.0 kVA ~ 999.9 kVA | | |
| DC Current | | |
| RANGE | Accuracy | |
| 9.99A | 2.0%+40d | |
| 99.9A | 2.0%+5d | |
| 999A | 2.0%+5d | |

^aAC accuracy specified from Fundamental_ACA ≥ 3A and Fundamental_ACV ≥ 3V for AC signals with no DC component; Fundamental @ 50/60 Hz:

^aBest 2%+2d @ ACA ≥ 20A and ACV ≥ 15V

^a6%+4d instead @ either 12A ≤ ACA < 20A or 9V ≤ ACV < 15V

^a12%+5d instead @ either 5A ≤ ACA < 12A or 5V ≤ ACV < 9V

^a20%+5d instead @ either 3A ≤ ACA < 12A or 3V ≤ ACV < 5V

^aDC accuracy specified from DCA ≥ 1A and DCV ≥ 3V for DC signals with no AC component

°DC accuracy specified from DCA ≥ 1A and DCV ≥ 3V for DC signals with no AC component:

°Best 2%+2d @ DCA ≥ 6A and DCV ≥ 20V

°6%+4d instead @ either 3A ≤ DCA < 6A or 5V ≤ DCV < 20V

°10%+5d instead @ either 1A ≤ DCA < 3A or 3V ≤ DCV < 5V

°AC+DC accuracy specified from Fundamental $AC+DCA \ge 12A$ and Fundamental $AC+DCC \ge 9$ for AC+DC composite signals;

Fundamental $AC+DCV \ge 9$ for AC+DC composite signals;

Fundamental @ 50/60Hz:

°Best 2%+8d @ ACA ≥ 12A & DCA ≥ 20A and ACV ≥ 9V & DCV ≥ 15V

°6%+8d instead @ either ACA ≥ 12A & 1A ≤ DCA ≤ 20A or ACV ≥ 9V & 3V ≤ DCV < 15V

| iomperature | | |
|---------------------|----------------|--|
| RANGE | Accuracy 1) 2) | |
| -40.0 °C ~ 400.0 °C | 1.0%+2 °C | |
| -40.0 °F ~ 752.0 °F | 1.0%+3 °F | |

"Accuracies assume meter interior has the same temperature (isothermal stage) of the ambient for a correct junction voltage compensation. Allow the meter and the type-K probe set to reach the isothermal stage for a significant change of ambient temperature. It can take up to an hour for changes > 5°C.

changes > 5°C.

Type-K thermocouple range & accuracy not included

| Non-Contact EF-Detection | |
|-----------------------------|------------------------|
| Typical Voltage (Tolerance) | Bar-segment Indication |
| 70V (10V ~ 150V) | - |
| 140V (50V ~ 250V) | |
| 200V (100V ~ 350V) | |
| 250V (150V ~ 450V) | |
| 350V (200V ~ 1000V) | |

Indication: Display bar-segments & audible beep tones in proportion to the field strength
Detection Frequency: 50/60Hz
Detection Antenna: Top side of the stationary jaw
Probe-Contact EF-Detection: For more precise indications of live wires, such as distinguishing between live and ground connections, used great contact testing with one single test probe via the input terminal COM or V. The COM terminal (Black) has the best sensitivity.