kWHr Recording & 3~ Unbalanced-Load Power Made Handy!

Lower Cost Of Ownership And Better Portability Thru Only One Pair Of Jaws!

Easy Display-Guide On Both 3-Wire and 4-Wire Unbalanced-Load Measurements!

CE

BM157
PowerClamp™ Series

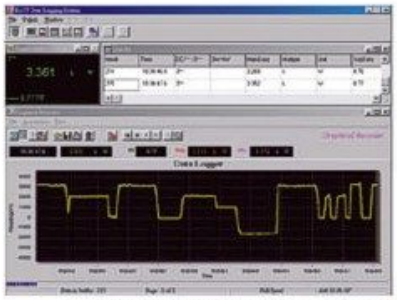
BRYMEN®

BRIGHT PEOPLE'S CHOICE

http://www.brymen.com

See How BM157 Complements His Brothers Perfectly!

BM157 BM155 BM152 BM151



BR1XX PC Interface Kit
(Optional Purchase)

157	155	152	151	FUNCTIONS & FEATURES
●	●	●	●	Light Weight & Stylish; 45mm Large jaws opening
●	●	●	●	1000A AC Clamp-on + Multimeter ranges
●	●	●	●	600VAC/DC input protection on all functions
●	●	●	●	AC True RMS voltage and current functions
●	●	●	●	Balanced-Load 3-phase /1-phase Power W, VA & VAR measurements
●	●	●	●	+ Dual display Power Factor (PF) & A-Lags-V Phase-Shift indication
●				Unbalanced-Load 3-phase 3-wire/4-wire Power W (with memory recall)
●				kWHr Kilo-Watt-Hour Recording function (with memory recall)
●	●			ACV or ACA + Dual display Total Harmonic Distortion-Fundamental THD%-F
	●	●		K-Type Temperature -50°C to 300°C (-58°F to 572°F)
●	●	●		Back lighted LCD display
●	●	●	●	Automatic selection of DCV, ACV & ACA measurements (Auto V.A)
●	●	●	●	Fast PEAK-rms Hold (65ms to 90%) for In-rush ACA & ACV readings
●	●	●	●	PC-Comm (Optical isolated PC interface capability)
●	●	●	●	Software kit for Win 95/98/ME/2000/XP (Optional purchase)
●	●	●	●	Data HOLD
●	●	●	●	5Hz ~ 500Hz line Frequency measurements
●	●	●	●	DCV & ACV 0.1V to 600.0V
●	●	●	●	ACA 0.01A to 1000A non-invasive current measurements
●	●	●	●	Ohm 0.1Ω to 999.9Ω
●	●	●	●	Fast Audible Continuity
●	●	●	●	Battery cover with Probe holders
●	●	●	●	Rugged Fire-retarded casing; Soft carrying pouch
●	●	●	●	Transient protection 6kV 1.2/50μs lightning surge
●	●	●	●	LVD EN61010-2-032 CAT III 600V
●	●	●	●	EMC EN61326(1997/1998A1)/EN61000-4-2(1995/2000A2)/EN61000-4-3(2002)

BM157 Includes kWHr Recording & 3~ Unbalanced-Load Power!

We Keep Product Improvements Thru Superior ASIC Technology !

AC 1000 AMPS LARGE U-SHAPE CLAMP JAWS
MEASURE ACA OF LARGE SINGLE CONDUCTOR
OR DIFFERENTIAL ACA 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

PC-COMM INTERFACE CABABILITIES
BUILT-IN OPTICAL ISOLATED DATA
OUTPUT PORT. OPTIONAL PURCHASE
INTERFACE KIT FOR PC CONNECTION

TRUE RMS MEASUREMENTS
FOR NON-SINUSOIDAL WAVEFORMS
OF AC VOLTAGES & AC CURRENTS

0.5% DCV & ACV BASIC ACCURACY
UP TO 600 VOLTS, 0.1V RESOLUTION

DISPLAY BACKLIGHT
FOR EASY VIEWING IN THE DARK

AutoVA™ FEATURE
SOPHISTICATED MCU CONTROLLED
AUTO-SELECTION OF ACA, ACV OR DCV
SHORTENS THE TIME TO MEASURE
AND INCREASES THE EASE OF USE

FULL POWER PARAMETERS
DUAL DISPLAY MEASUREMENTS OF
"W + PF", "VA + PF", OR "VAR + PF" ON
3~ BALANCED-LOAD & 1~ POWER

TOTAL POWER FACTOR
PF = W / VA IS USED FOR NOWADAYS
POWER-SYSTEMS WITH HARMONICS

3~ UNBALANCED-LOAD POWER W
MEASURES UNBALANCED-LOAD POWER
THRU DISCRETE MEASUREMENTS BY ONLY
ONE SINGLE PAIR OF JAWS FOR LOWER COST
OF OWNERSHIP & BETTER PORTABILITY

EMC
MEETS EN61326(1997, 1998/A1),
EN61000-4-2(1995, 2000/A2), & EN61000-4-3(2002)

TRANSIENT PROTECTION
UP TO 6kV 1.2/50μs LIGHTNING SURGE;
MORE CONFIDENCE FOR SERIOUS USERS

RESISTANCE
UP TO 999.9 OHMS, 0.1 OHM
RESOLUTION WITH 600V PROTECTION

250μs FAST AUDIBLE CONTINUITY
FOR QUICK OPEN-SHORT TESTS
ON SWITCHES, FUSES, AND WIRES

HIGH VOLTAGE Hz
MEASURES NOISY HIGH VOLTAGE
ACV FREQUENCY VIA TEST LEADS

HIGH CURRENT Hz
MEASURES NON-INVASIVE
ACA FREQUENCY VIA CLAMP JAWS

A-lags-V INDICATION
UNAMBIGUOUS INDICATIONS OF CURRENT
LAGS VOLTAGE IN INDUCTIVE CIRCUITS

kWHr RECORDING
RECORDS BOTH 3~ BALANCED-LOAD
& 1~ KILO-WATT-HOUR READINGS
WITH LAST MEMORY RECALL

THD%-F
TOTAL HARMONIC DISTORTION-FUNDAMENTAL.
DUAL DISPLAY MEASUREMENTS OF
"ACV + THD%-F" OR "ACA + THD%-F"

PROBE HOLDERS
BUILT-IN PROBE STORAGE HOLDERS

BATTERY COMPARTMENT
WITH ACCESS DOOR FOR
EASY BATTERY REPLACEMENT

DATA HOLD
FREEZES THE DISPLAYING
READING FOR LATER VIEW

65ms PEAK-RMS HOLD
CAPTURES IN-RUSH RMS VALUES
OF ACA OR ACV AS SHORT AS
65ms IN DURATION

LIGHT WEIGHT & STYLISH
ALSO COMES WITH A SOFT POUCH
FOR EASY CARRYING & PROTECTION

GENERAL SPECIFICATION

Display :
Voltage functions: 6000 counts LCD display
Power, Ohm & Hz functions: 9999 counts LCD display
ACA clamp-on function: 4000 counts LCD display
Update Rate :
Power function: 2 per second nominal
Voltage, ACA clamp-on & Ohm functions: 2 per second nominal
Hz function: 1 per second nominal
Polarity : Automatic
Low Battery : Below approx. 2.4V
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
Altitude : Operating below 2000m
Storage Temperature : -20°C to 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 : True RMS sensing
Safety : Meets IEC61010-2-032(2002), EN61010-2-032(2002), UL61010B-2-032(2003)
Measurement Category : III 600 Volts ac & dc
Transient protection : 6.5kV (1.2/50μs surge)
Pollution degree : 2
E.M.C. : Meets EN61326(1997, 1998/A1), EN61000-4-2(1995, 2000/A2), and EN61000-4-3(2002)
In an RF field of 3V/m:
Total Accuracy = Specified Accuracy + 50 digits
Performance above 3V/m is not specified
Overload Protections :
ACA Clamp-on jaws : AC 1000A rms continuous
+ & COM terminals (all functions) : 600VDC/VAC rms
Power Supply : standard 1.5V AAA Size (NEDA 24A or IEC LR03) battery X 2

Power Consumption :
Voltage, ACA, Hz & Power functions: 11mA typical
Ohm function: 5.5mA typical
APO Timing : Idle for 30 minutes
APO Consumption : 4μA typical
Dimension : L224mm X W78mm X H40mm
Weight : 224 gm approx
Jaw opening & Conductor diameter : 45mm max
Special features : Backlighted display; AutoVA™ (Auto Selection on ACV, DCV or ACA functions); selectable Power parameters of W, VAR & VA with Total Power Factor in dual-display; Total harmonic distortion THD%-F in dual-display; kWHr Recording; Display Hold; PEAK-rms HOLD; PC-Comm computer interface capabilities
Accessories : Test leads (pair), batteries installed, user's manual & soft carrying pouch
Optional accessories : BR157 PC interface kit (including BA-1XX optical adapter back, BC-100R cable & Bs157 software CD)

ELECTRICAL SPECIFICATION

Accuracy is ± (% reading digits + number of digits) or otherwise specified, at 23 °C ± 5 °C & less than 75% R.H.

True RMS ACV & ACA clamp-on accuracies are specified from 0% 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 for non-sinusoidal waveforms. Fundamentals are specified at 50Hz and 60Hz.

AC Voltage

RANGE	Accuracy
50Hz / 60Hz	
600.0V	0.5% + 5d
45Hz ~ 500Hz	
600.0V	1.5% + 5d
500Hz ~ 3.1kHz	
600.0V	2.5% + 5d

CMRR : >80dB @ DC to 60Hz, Rs=1kΩ
Input Impedance: 2MΩ, 30pF nominal
Crest Factor: < 2.3 : 1 at full scale & < 4.6 : 1 at half scale
ACV AutoVA™ Threshold: 30VAC (40Hz ~ 500Hz only) nominal

ACA Current (Clamp-on)

RANGE	Accuracy [1] [2]
50Hz / 60Hz	
40.00A, 400.0A, 1000A	1.0% + 5d
45Hz ~500Hz	
40.00A, 400.0A	2.0% + 5d
1000A	2.5% + 5d
500Hz ~ 3.1kHz	
40.00A, 400.0A	2.5% + 5d
1000A	3.0% + 5d

ACA AutoVA™ Threshold: 1A AC (40Hz ~ 500Hz only) nominal
Crest Factor:
< 2.5 : 1 at full scale & < 5.0 : 1 at half scale for 40.00A & 400.0A ranges
< 1.4 : 1 at full scale & < 2.8 : 1 at half scale for 1000A range
[1] Induced error from adjacent current-carrying conductor: < 0.06A/A
[2] Specified accuracy is from 1% to 100% of range and for measurements made at the jaw center. When the conductor is not positioned at the jaw center, position errors introduced are:
Add 1% to specified accuracy for measurements made WITHIN jaw marking lines (away from jaw opening)
Add 4% to specified accuracy for measurements made BEYOND jaw marking lines (toward jaws opening)

THD%-F

RANGE	Harmonic order	Accuracy [1]
0.0% ~50.0%	Fundamental	1.5% + 6d
	2nd ~ 3rd	7% + 6d
	4th ~ 21st	2.5% + 6d [2] [3]
	22nd ~ 51st	10% + 10d [4]
50.0% ~100%	2nd ~ 3rd	Unspecified
	4th ~ 21st	2.5% + 6d [5] [6]
	22nd ~ 51st	10% + 10d [4]
100% ~450% [7]	2nd ~ 3rd	Unspecified
	4th ~ 21st	7% + 6d [2] [4]
	22nd ~ 51st	Unspecified

THD%-F is defined as: (Total Harmonic RMS / Fundamental RMS) x 100%
[1] Accuracy specified @ fundamental ≥ 70V & Total RMS ≤ 600V for ACV THD%-F, fundamental ≥ 6A & Total RMS ≤ 1000A for ACA THD%-F, and Crest Factors @ :
< 2.5 for 600V Range
< 2.5 for 40A Range
< 3.0 for 400A Range
< 1.6 for 1000A Range
[2] Add 4d to specified accuracy @ 40A Range
[3] Add 4.5% to specified accuracy @ 1000A range
[4] Unspecified @ 1000A range
[5] Add 1% + 4d to specified accuracy @ 40A Range
[6] Add 4.5% to specified accuracy @ 400A ~ 750A; unspecified @ > 750A
[7] ~150% for 600V Range

PEAK-rms HOLD (ACA & ACV only)

Response: 65ms to >90%

Frequency

RANGE	Accuracy
5Hz ~ 500Hz	0.5%+4d

Sensitivity (Sine RMS)
40A range: > 4A
400A range: > 40A
1000A range: > 400A
600V range: > 30V

DC Voltage

RANGE	Accuracy
600.0V	0.5% + 5d

NMRR : >50dB @ 50/60Hz
CMRR : >120dB @ DC, 50/60Hz, Rs=1kΩ
Input Impedance: 2MΩ, 30pF nominal
DCV AutoVA™ Threshold: 2.4VDC nominal

Ohms

RANGE	Accuracy
999.9Ω	1.0% + 6d

Open Circuit Voltage : 0.4VDC typical

Audible Continuity Tester

Audible threshold: between 10Ω and 300Ω.
Response time: 250μs

Single-Phase & 3-Phase Balanced-Load Power

RANGE	Accuracy [1] [2] [3]		
0 ~ 600.0kVA	F ~ 10th	11th ~ 45th	46th ~ 51st
@ PF = 0.99 ~ 0.1	2.0%+6d	3.5%+6d	5.5%+6d

RANGE	Accuracy [1] [2] [4]			
0 ~ 600.0kW / kVAR	F ~ 10th	11th ~ 25th	26th ~ 45th	46th ~ 51st
@ PF = 0.98 ~ 0.70	2.0%+6d	3.5%+6d	4.5%+6d	10%+6d
@ PF = 0.70 ~ 0.50	3.0%+6d			
@ PF = 0.50 ~ 0.30	4.5%+6d			
@ PF = 0.30 ~ 0.20	10%+6d			15%+6d

[1] Specified accuracy is for ACA clamp measurement at the center of jaws. When the conductor is not positioned at the jaw center, position errors introduced are:
Add 1% to specified accuracy for ACA measurements made WITHIN jaw marking lines (away from jaw opening)
Accuracy is not specified for ACA measurement made BEYOND jaw marking lines (toward jaws opening)
[2] Add 4d to specified accuracy for 3-Phase Balanced-Load Power measurements.
[3] Add 1% to specified accuracy @ ACA fundamental < 6A or ACV fundamental < 90V. Accuracy is not specified @ ACA fundamental < 1A or ACV fundamental < 30V
[4] Add 1% to specified accuracy @ ACA fundamental < 6A or ACV fundamental < 90V. Accuracy is not specified @ ACA fundamental < 2A or ACV fundamental < 50V

Total Power Factor (PF)

RANGE	Accuracy [1]	
0.10 ~ 0.99	F ~ 21st	22nd ~ 51st
	3d	5d

[1] Specified accuracy @ ACA fundamental > 2A ; ACV fundamental > 50V

A-lags-V Indication:

LCD annunciator A-lags-V turns on to indicate an inductive circuit, or Current A lags Voltage V (i.e., phase-shift angle θ is +).
A-lags-V Indication is specified at 50/60Hz fundamental without the presence of harmonics, and at ACV > 90V, ACA > 9A and PF < 0.95

kWHr (kilo-Watt-Hour Energy)

Time base accuracy: < 30ppm
Non-volatile memory: Separately stores one 3-Phase-Balanced-Load and one Single-Phase result

3-Phase Unbalanced-Load Power

This 3-Phase Unbalanced-Load Power measurement is achieved thru the calculation of discrete single-phase measurements that are taken one at a time manually. Since it is not real-time on all 3 phases simultaneously, it is intended only for stable power conditions without significant power fluctuations over the time of measurements. Result accuracy is hence the accumulated accuracy of the discrete single-phase measurements plus the associated fluctuations.

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