500,000 Counts High Performance! Innovative Features! User-Oriented!

5-4/5d DCV At 1µV Best Resolution, DC & AC in Dual Display, 100kHz DC+AC TRMS, Cat IV 1kV Safety...
USB PC-Comm, Paper-White Backlit, Bar-graph, BeepJack™, Crest (Peak), Rec (Min Max Avg), Relative...
Measures VFD V & Hz, X-Speed Large Cx, nS Conductance, 4-20mA, T1-T2, Line Level Hz, Duty %, dBm...
Ergonomic, Large LCD, Battery Access Cover, Magnetic Hanger, Holster, Probe Holders, Tilt stand Hanger...

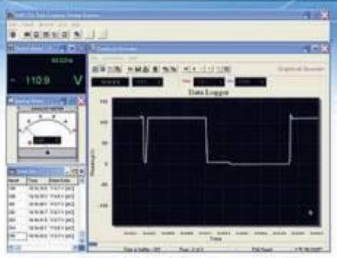
CE

BM860 Series
Professional Multimeter

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

BM869

BM867



BU-86X interface kit
(optional purchase)

869	867	FUNCTIONS & FEATURES
●	●	5-4/5 Digits 500,000 Counts Large Easy To Read LCD Display
●	●	Fast Measurements, 5/Sec; Fully Auto-Ranging
●	●	Dual Digital Display
●	●	41 Segment Analog Bar-graph Updates 60/Sec
●	●	Optional Purchase USB Cable & Software For Win98/2k/xp/Vista
●	●	Intelligent Auto Power Off (I-APO) Resets On Significant Operation & Readings
●	●	Data Hold
●	●	Relative Zero Mode
●	●	Audible & Visible BeepJack™ Input Warning Against Improper Plug In
●	●	AC, AC+DC True RMS Conversion;
●		100kHz AC, AC+DC Voltage Bandwidth
●	0.03%	0.02% High Basic DCV Accuracy
●		VFD-V & VFD-Hz Measures Fundamental V & Hz Of Most Variable Frequency Drives
●		T1-T2 Dual Type-K Temperature –50°C To 1000°C; Selectable °F Readings
●	●	Record Max/Min Readings; Calculates Average Reading over time; Auto-Ranging
●	●	Crest (Instantaneous Peak Hold) Max/Min Readings, Auto-Ranging
●	●	Paper-White Back-Lighted Large Easy To Read LCD Display
●	●	dBm Readings, 20 Selectable Impedance Values
●	●	DCV 0.001mV To 1000V
●	●	ACV 0.01mV To 1000V
●	●	AC+DCV 0.01mV To 1000V
●	15A	DCA 0.01μA To 10A; 20A For 30 Seconds Per 5 Minutes Cooling
●	15A	ACA 0.01μA To 10A; 20A For 30 Seconds Per 5 Minutes Cooling
●	15A	AC+DCA 0.01μA To 10A; 20A For 30 Seconds Per 5 Minutes Cooling
●	●	Ohms 0.01Ω To 50MΩ
●	●	Conductance 0.01nS To 99.99nS
●	●	X-Speed Capacitance 50.00nF To 25mF
●	●	Line Level Frequency 10Hz To 200kHz
●	●	Logic Level Frequency 5Hz To 1MHz
●	●	Logic Level Duty Cycle Readings 0.1% To 99.99%
●	●	Diode Tester
●	●	Rugged Fire Retarded Casing With Battery Access Door
●	●	Replaceable Protective Holster With Probe-Holders & Tilt-Stand
●	●	Optional Purchase Magnetic Hanger
●	600V	1000V General (Ohm, Capacitance . . . etc.) Input Protection
●	600V	1000V High Breaking Capacity Fuses Protected On Current Inputs
●	●	Transient Protection Up To 12kV 1.2/50μs Lightning Surge
●	●	LVD Meets EN61010-1 CAT IV 1kV
●	●	EMC EN61326-1:2006 (EN55022, EN61000-3-2/-3 & EN61000-4-2/-3/-4/-5/-6/-8/-11)

The Ultimate Choice Of Resolution, Performance, Safety & Features!

Unbeatable 5-4/5d DCV Resolution, 100kHz DC+AC Performance, Cat IV 1kV Safety & New VFD Features!

HIGH ACCURACY
0.02% BASIC DCV ACCURACY;
1μVDC BEST RESOLUTION

ANALOG BAR-GRAPH
FAST UPDATE RATE 60/SEC

LARGE 500,000 COUNTS LCD DISPLAY
5/SEC FAST NOMINAL UPDATE RATE

ASIC TECHNOLOGY
MORE FUNCTIONS & FEATURES
AT AFFORDABLE PRICES

AUTO & MANUAL-RANGING
AUTO-RANGING WITH
MANUAL-RANGING OVERRIDE

DUAL DIGITAL DISPLAY
SIMULTANEOUSLY VIEW RELEVANT
PARAMETERS IN COMPLEMENTARY DISPLAY

PAPER-WHITE DISPLAY BACKLIGHT
FOR EASY VIEWING IN THE DARK

T1-T2 TYPE-K TEMPERATURE
2 CHANNEL MEASUREMENTS,
SELECTABLE °C & °F READINGS

FUNCTION SELECTION
TOGGLE CONVENIENTLY BETWEEN
PRIMARY & SECONDARY FUNCTIONS

DIODE TEST
FOR CHECKING DIODES
AND RECTIFIERS

CREST (PEAK HOLD)
CAPTURES INSTANTANEOUS
+PEAK & -PEAK, AUTO-RANGING

DATA HOLD
FREEZES THE DISPLAYING
READING FOR LATER VIEW

LOGIC LEVEL DUTY%
MEASURES DIGITAL LOGIC LEVEL
DUTY CYCLE % READINGS

MAX MIN AVG RECORD
RECORD MAX, MIN & AVG
READINGS; AUTO-RANGING

LOGIC LEVEL Hz
MEASURES DIGITAL LOGIC LEVEL
FREQUENCIES UP TO 1MHz

nS CONDUCTANCE
nS=1/GΩ VIRTUALLY EXTENDS
RESISTANCE MEASUREMENT TO
THE ORDER OF GΩ. IT IS USEFUL
FOR LEAKAGE MEASUREMENTS

HIGH IMPEDANCE VOLTAGE
1000VAC/DC MEASURING CAPABILITIES;
HIGH INPUT IMPEDANCE FOR
LOAD SENSITIVE CIRCUITS

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

Hz OF LINE LEVEL VOLTAGE
MEASURES NOISY HIGH VOLTAGE
ACV FREQUENCIES UP TO 200kHz
IN DUAL DISPLAY

%4-20mA LOOP CURRENT
FOR PROCESS CONTROL

X-SPEED CAPACITANCE
X-SPEED MEASURES UP TO 25mF
ONLY IN A FEW SECONDS; 1kV PROTECTION

dBm FUNCTION
WITH 20 SELECTABLE
REFERENCE IMPEDANCE VALUES

CURRENT & Hz
MEASURES CURRENT & FREQUENCIES,
AC & DC IN DUAL DISPLAY

VFD V & Hz FEATURE
MEASURES FUNDAMENTAL
VOLTAGE & FREQUENCY OF MOST
VARIABLE FREQUENCY DRIVES

ERGONOMIC STREAMLINE DESIGN
FITS COMFORTABLY IN ONE'S HAND

PC INTERFACE CAPABILITY
OPTIONAL PURCHASE USB CABLE
WITH DATA RECORDING PC SOFTWARE
FOR WIN98/NT4/2K/XP/VISTA

TRANSIENT PROTECTION
UP TO 12kV 1.2/50μs LIGHTNING SURGE;
SUPERB PROTECTION FOR SERIOUS USERS

BEEP-JACK™ AUDIBLE & VISIBLE WARNING
GUARDS AGAINST IMPROPER A-TERMINAL
PLUG IN. DECREASES RISKS OF DAMAGE

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

INTELLIGENT AUTO-POWER-OFF
TO EXTEND BATTERY LIFE. I-APO RESETS ON
SIGNIFICANT OPERATION & MEASUREMENTS

AC, AC+DC 100kHz TRUE RMS
FOR NON-SINUSOIDAL WAVEFORMS
OF COMPLEX VOLTAGE OR CURRENT SIGNALS

PROTECTIVE HOLSTER
WITH HOLDERS FOR PROBE STORAGE
AND "THIRD HAND" FEATURE,
REPLACEABLE & WASHABLE

LVD SAFETY
MEETS EN61010-1
2ND EDITION CAT IV 1kV

BM869 & BM867 GENERAL SPECIFICATION

Display: 4-4/5 digits 50,000 counts fast mode. Selectable stable mode 5-4/5 digits 500,000 counts for DC Voltage, & 5 digits 99,999 counts for Hz
Polarity: Automatic
Update Rate:
4-4/5 digits fast mode: 5 per second nominal;
5-4/5 digits stable mode: 1.25 per second nominal;
41 Segments Bar graph: 60 per second max
Operating Temperature: 0°C to 45°C
Relative Humidity: Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 45°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 ~ 45°C), or otherwise specified
Sensing: AC, AC+DC True RMS
Safety: Double insulation per IEC61010-1 2nd Ed., EN61010-1 2nd Ed., UL61010-1 2nd Ed. & CAN/CSA C22.2 No. 61010.1-0.92 to Category IV 1000V AC & DC
BM867 Terminals (to COM) Measurement Category:
V : Category IV 1000 Vac & Vdc
A / mAμA : Category IV 600 Vac and 300 Vdc
BM869 Terminals (to COM) Measurement Category:
V / A / mAμA : Category IV 1000 Vac & Vdc
Overload Protections:
BM867:
μA & mA: 1A/600V, IR 10kA or better, F fuse
A: 10A/600V, IR 100kA or better, F fuse
V: 1050Vrms, 1450Vpeak
mV, Ω & Others: 600 Vdc & Vac rms
BM869
μA & mA: 0.44A/1000V, IR 10kA or better, F fuse
A: 11A/1000V, IR 20kA or better, F fuse
V, mV, Ω & Others: 1050Vrms, 1450Vpeak
Transient protection: 12kV (1.2/50μs surge)
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)
In an RF field of 3V/m:
Capacitance function is not specified
Other function ranges:
Total Accuracy = Specified Accuracy + 100 digits
Performance above 3V/m is not specified
Power Supply: Single Alkaline 9V battery; NEDA1604A, JIS6AM6 or IEC6LF22
Power Consumption: 6.5mA typical; 8mA for VFD ranges (BM869 only)
Low Battery: Below approx. 7V
APO Timing: Idle for 17 minutes
APO Consumption: 70μA typical .
Dimension: L208mm X W103mm X H64.5mm with holster
Weight: 635 gm with holster
Accessories: Test leads (pair), holster, battery installed, user's manual, Bkp60 banana plug K-type thermocouple x 1 (BM869 only)
Optional Accessories: BU-86X PC interface kit, Bkb32 banana pins to K-type socket plug adapter (BM869 only)
Special Features: Record MAX, MIN & AVG readings; Crest (Instantaneous Peak hold) MAX & MIN readings; Relative zero mode; 500,000 counts stable DCV mode; Paper-White Backlit display; dBm readings; %4-20mA loop current readings; Data Hold; BeepJack™ Audible & visible input warning; T1-T2 differential temperature readings (BM869 only); VFD V & Hz readings (BM869 only)

ELECTRICAL SPECIFICATIONS

Accuracy is ±(% reading digits + number of digits) or otherwise specified, at 23°C ± 5°C & less than 75% relative humidity.
True RMS voltage & current accuracies are specified from 5 % to 100 % of range or otherwise specified. Maximum Crest Factor < 3:1 at full scale & < 6:1 at half scale, and with frequency components within the specified frequency bandwidth for non-sinusoidal waveforms.

DC Voltage

RANGE	BM869	BM867
	Accuracy	
500.00 mV, 5.0000V,	0.02% + 2d	0.03% + 2d
50.000V	0.03% + 2d	0.04% + 2d
500.00V	0.04% + 2d	0.05% + 2d
1000.0V	0.15% + 2d	0.15% + 2d

NMRR: >60dB @ 50/60Hz
CMRR: >120dB @ DC, 50/60Hz, Rs=1kΩ
Input Impedance: 10MΩ, 60pF nominal (80pF nominal for 500mV range)

AC, DC AC & AC+DC AC Voltage

RANGE	BM869	BM867
	Accuracy *	
	20Hz ~ 45Hz	
500.00mV, 5.0000V, 50.000V	1.5% + 40d	Unspec'd
500.00V, 1000.0V	Unspec'd	
	DC, 45Hz ~ 300Hz	
500.00mV	0.35% + 20d	0.8%+60d
5.0000V, 50.000V	0.8% + 30d	
500.00V, 1000.0V	0.5% + 40d	
	300Hz ~ 5kHz	300Hz ~ 1kHz
500.00mV	0.35% + 20d	0.8%+40d
5.0000V, 50.000V, 500.00V	0.5% + 40d	2.0%+60d
1000.0V	0.8% + 40d (300Hz ~ 1kHz)	1.0%+40d
	5kHz ~ 20kHz	1kHz ~ 20kHz
500.00mV	0.5%+30d	1dB**
5.0000V, 50.000V	0.8%+40d	2dB**
500.00V	0.5%+40d	3dB**
1000.0V	Unspec'd	Unspec'd
	20kHz ~ 100kHz	
500.00mV	2.5%+40d	Unspec'd
5.0000V, 50.000V	4.0%+40d**	
500.00V	Unspec'd	
1000.0V		

*From 5% to 10% of range: Specified accuracy + 80d
**From 5% to 10% of range: Specified accuracy + 180d
From 10% to 15% of range: Specified accuracy + 100d
CMRR: >75dB @ DC to 60Hz, Rs=1kΩ
Input Impedance: 10MΩ, 60pF nominal
(80pF nominal for 500mV range)
Residual reading less than 50 digits with test leads shorted.

VFD AC Voltage (BM869 only)

RANGE	Accuracy*
5Hz ~ 20Hz	
5.0000V, 50.000V, 500.00V, 1000.0V	3% + 80d
20Hz ~ 200Hz	
5.0000V, 50.000V, 500.00V, 1000.0V	2% + 50d
200Hz ~ 440Hz	
5.0000V, 50.000V, 500.00V, 1000.0V	6% + 80d**

*Not specified for fundamental frequency > 440Hz
**Accuracy linearly decreases from 2% + 50d @ 200Hz to 6% + 80d @ 440Hz

dBm

Range and accuracy are subjected to ACmV, ACV, and reference impedance selected. Typical 600Ω reference impedance ranges:
At ACmV : -29.83dBm to 03.80dBm
At ACV : -01.09dBm to 62.22dBm
Input Impedance: 10MΩ, 60pF nominal
Selectable reference impedance of 4, 8, 16, 32, 50, 75, 93, 110, 125, 135, 150, 200, 250, 300, 500, 600, 800, 900, 1000 & 1200Ω

Ohms

RANGE	BM869	BM867
	Accuracy	
500.00Ω	0.07%+10d	0.1%+10d
5.0000kΩ	0.07%+2d	0.1%+6d
50.000kΩ	0.1%+2d	0.1%+6d
500.00kΩ	0.1%+2d	0.1%+6d
5.0000MΩ	0.3%+6d	0.4%+6d
50.000MΩ	2.0%+6d	2.0%+6d
99.99nS*	2.0%+10d	2.0%+10d

Open Circuit Voltage: < 1.3VDC (< 3VDC for 500Ω range)
*From 0% to 10% of range: Specified accuracy + 30d

Audible Continuity Tester

Audible threshold: between 20Ω and 200Ω
Response time < 100μs

Diode Tester

Range	Accuracy	Test Current (Typical)	Open Circuit Voltage
2.0000V	1%+1d	0.4mA	< 3.5 VDC

Capacitance

RANGE	Accuracy*
50.00nF	0.8% + 3d
500.0nF	0.8% + 3d
5.000μF	1.5% + 3d
50.00μF	2.5% + 3d
500.0μF**	3.5% + 5d
5.000mF**	5.0% + 5d
25.00mF**	6.5% + 5d

*Accuracies with film capacitor or better
**In manual-ranging mode, measurements not specified below 45.0μF/0.450mF/4.50mF (450 counts) for 500.0μF/5.000mF/25.00mF ranges respectively

DC Loop Current %4~20mA

4mA = 0% (zero); 20mA = 100% (span)
Resolution: 0.01% Accuracy: ± 25d

Crest mode (Instantaneous Peak Hold)

Accuracy: Specified accuracy ± 100 digits for changes > 0.8ms in duration

DC Current

RANGE	Accuracy	Burden Voltage
500.00μA	0.15%+20d	0.15mV/μA
5000.0μA	0.1%+20d	0.15mV/μA
50.000mA	0.15%+20d	3.3mV/mA
500.00mA	0.15%+30d	3.3mV/mA
5.0000A	0.5%+20d	45mV/A
10.000A*	0.5%+20d	45mV/A

*10A continuous, >10A to 20A (to 15A for BM867) for 30 second max with 5 minutes cool down interval

T1-T2 Dual Type-K Temperature (BM869 only)

RANGE	Accuracy
-50.0°C to 1000.0°C	0.3%+1.5°C
-58.0°F to 1832.0°F	0.3%+3.0°F

Type-K thermocouple range & accuracy not included

AC, DC AC & AC+DC AC Current

RANGE	BM869	BM867	Burden Voltage
	Accuracy		
DC, 50Hz ~ 60Hz			
500.00μA	0.5%+50d	1.0%+40d	0.15mV/μA
5000.0μA			0.15mV/μA
50.000mA			3.3mV/mA
500.00mA			3.3mV/mA
5.0000A			45mV/A
10.000A*			45mV/A
40Hz ~ 1kHz			
500.00μA	0.7%+50d	1.0%+40d	0.15mV/μA
5000.0μA			0.15mV/μA
50.000mA			3.3mV/mA
500.00mA			3.3mV/mA
5.0000A			45mV/A
10.000A*			45mV/A
1kHz ~ 10kHz			
500.00μA	2.0%+50d	Unspec'd	0.15mV/μA
5000.0μA			0.15mV/μA
50.000mA			3.3mV/mA
500.00mA			3.3mV/mA
5.0000A 10.000A*	Unspec'd	Unspec'd	45mV/A

*10A continuous, >10A to 20A (to 15A for BM867) for 30 second max with 5 minutes cool down interval

~ Hz Line Level Frequency

AC Function RANGE	Sensitivity (Sine RMS)	Range
500mV	100mV	10Hz ~ 200kHz
5V	0.5V	10Hz ~ 200kHz
50V	5V	10Hz ~ 100kHz
500V	50V	10Hz ~ 100kHz
1000V	500V	10Hz ~ 10kHz
VFD 5V	0.5V ~ 2V*	10Hz ~ 440Hz
VFD 50V	5V ~ 20V*	10Hz ~ 440Hz
VFD 500V	50V ~ 200V*	10Hz ~ 440Hz
500μA	50μA	10Hz ~ 10kHz
5000μA	500μA	10Hz ~ 10kHz
50mA	5mA	10Hz ~ 10kHz
500mA	50mA	10Hz ~ 10kHz
5A	1A	10Hz ~ 3kHz
10A	10A	10Hz ~ 3kHz

Accuracy: 0.02%+4d
*VFD sensitivty linearly decreases from 200Hz to 440Hz

Hz Logic Level Frequency

RANGE	Accuracy
5.000Hz ~ 1.0000MHz	0.002%+4d

Sensitivity: 2.5Vp square wave

%Duty Cycle

RANGE	Accuracy
0.1% ~ 99.99%	3d/kHz+2d

Input Frequency: 5Hz -- 500 kHz, 5V Logic Family

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