

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 / mA_{µA}: Category IV 600 Vac and 300 Vdc

BM869 Terminals (to COM) Measurement Category:

V / A / mA_{µA}: 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

APC Timing: Idle for 17 minutes

APC 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, Bk32 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		
500.00mV, 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, R_s=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, 5.0000V, 50.000V	0.35% + 20d	
500.00V, 1000.0V	0.8% + 30d	0.8%+60d
500.00V, 1000.0V	0.5% + 40d	
500.00mV, 5.0000V, 50.000V	0.5% + 40d	2.0%+60d
1000.0V	0.8% + 40d (300Hz ~ 1kHz)	1.0%+40d
5kHz ~ 20kHz		
500.00mV, 5.0000V, 50.000V	0.5%+30d	1dB**
500.00V, 1000.0V	0.8%+40d	2dB**
500.00V, 1000.0V	0.5%+40d	3dB**
1000.0V	Unspec'd	Unspec'd
20kHz ~ 100kHz		
500.00mV, 5.0000V, 50.000V	2.5%+40d	
500.00V, 1000.0V	4.0%+40d**	Unspec'd
500.00V, 1000.0V	Unspec'd	

*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, R_s=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 &

12000Ω

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			45mV/A
10.000A*			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 sensitivity 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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