

## BM22, BM25 & BM27 GENERAL SPECIFICATIONS

### Display:

BM22: 3-3/4 digits 4000 counts  
BM25 & BM27: 3-5/6 digits 6000 counts

### Update Rate:

BM22: 3 per second nominal  
BM25 & BM27: 5 per second nominal

### Polarity:

Automatic

### Operating Temperature:

0°C ~ 40°C  
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 ~ 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:

Average sensing on all models

### Pollution Degree:

2

**Safety:** Meets IEC61010-1 (First Edition with Amendment 1 & 2), UL61010B-1 (First Edition), CAN/CSA-C22.2 No. 1010.1-92

### Measurement Category:

BM22 & BM27: CAT II 600V, CAT III 300V  
BM25: CAT II 450V, CAT III 300V

### Transient Protection:

4kV lightning surge (1.2/50µs)

### E.M.C.:

Meets EN61326 (1997, 1998/A1), EN61000-4-2 (1995), & EN61000-4-3 (1996)

### In an RF Field of 3V/m:

Capacitance function is not specified

### Other function ranges:

Total accuracy = Specified accuracy + 45d  
Performance above 3V/m is not specified

### Overload Protection:

600VDC & VAC rms for BM22 & BM27  
450VDC & VAC rms for BM25

### Low Battery:

Below approx. 2.4V

**Power Supply:** 3V standard button battery x 1 (IEC-CR2032; ANSI-NEDA-5004LC)

### Power Consumption (typical):

BM22 & BM25: 2mA  
BM27: 6mA for Voltage functions on Auto-V $\Omega$  position; 2mA for other functions

### APO Consumption:

1µA typical

### APO Timing:

BM22: Idle for 30 minutes

BM25 & BM27: Idle for 3 minutes

### Dimension:

L113mm x W53mm x H10.2mm

### Weight:

approx. 78 gm

### Special Features:

BM22: Data Hold; 30ms MAX Hold  
BM25 & BM27: AutoCheck™ (Automatic V &  $\Omega$  Selection); EF-Detection

### Accessories:

battery installed, user's manual

### Optional Accessories:

protective holster, soft carrying pouch

## BM22, BM25 & BM27 ELECTRICAL SPECIFICATIONS

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

### DC Voltage (BM22)

RANGE	Accuracy
400.0mV	1.0%+2d
4.000V, 40.00V, 400.0V	2.0%+2d
600V	2.5%+4d

NMR: > 50dB @ 50Hz/60Hz  
CMRR: > 120dB @ DC, 50Hz/60Hz; Rs=1k $\Omega$   
Input Impedance: 10 M $\Omega$ , 30pF nominal;  
(1000M $\Omega$  for 400.0mV range)

### DC Voltage (BM25 & BM27)

RANGE	Accuracy
6.000V	0.5%+3d
60.00V	1.0%+5d
450.0V <sup>1)</sup>	1.2%+5d
600.0V <sup>2)</sup>	2.0%+5d
600.0V <sup>3)</sup>	1.5%+5d

NMR: > 30dB @ 50Hz/60Hz  
CMRR: > 100dB @ DC, 50Hz/60Hz; Rs=1k $\Omega$

### BM25 Input Impedance:

AutoCheck™ Lo-Z DCV:  
160k $\Omega$ , 160pF nominal

### BM27 Input Impedance:

AutoCheck™ Lo-Z DCV:  
833k $\Omega$  (4.2k $\Omega$  when displaying Auto),  
90pF nominal

### Hi-Z DCV:

5M $\Omega$ , 90pF nominal  
DCV AutoCheck™ Threshold:  
> +1.2VDC or < -0.6VDC nominal

<sup>1)</sup>BM25 AutoCheck™ DCV only

<sup>2)</sup>BM27 AutoCheck™ DCV only

<sup>3)</sup>BM27 Hi-Z DCV only

### Ohms (BM22)

RANGE	Accuracy
400.0 $\Omega$	1.5%+6d
4.000k $\Omega$ , 40.00k $\Omega$ , 400.0k $\Omega$	1.0%+4d
4.000M $\Omega$	1.5%+4d
40.00M $\Omega$	2.5%+4d

Open Circuit Voltage: 0.4VDC typical

### Ohms (BM25 & BM27)

RANGE <sup>1)</sup>	Accuracy
600.0 $\Omega$	2.0%+6d <sup>2)</sup>
6.000k $\Omega$	1.2%+6d <sup>2)</sup>
60.00k $\Omega$ , 600.0k $\Omega$	1.0%+4d
6.000M $\Omega$	2.0%+4d

Open Circuit Voltage: 0.4VDC typical

<sup>1)</sup>AutoCheck™ is for 6.000k $\Omega$  ~ 6.000M $\Omega$  ranges;  
600.0 $\Omega$  is an independent range for BM27 only

<sup>2)</sup>Specified accuracy plus 40d while reading is below 20% of range

### Diode Tester (BM22 & BM27 only)

Test Current (Typical)	Open Circuit Voltage
0.25mA for BM22	< 1.6VDC
0.48mA for BM27	

### AC Voltage (BM22)

RANGE	Accuracy
50Hz -- 60Hz	
4.000V, 40.00V, 400.0V	2.0%+5d
60Hz -- 500Hz	
4.000V, 40.00V, 400.0V	3.0%+5d
50Hz -- 500Hz	
600V	3.5%+5d

Input Impedance: 10 M $\Omega$ , 30pF nominal  
CMRR: > 60dB @ DC to 60Hz, Rs=1k $\Omega$

### AC Voltage (BM25 & BM27)

RANGE	Accuracy
50Hz -- 60Hz	
6.000V, 60.00V, 450.0V <sup>1)</sup> , 600.0V <sup>2)</sup>	1.5%+5d

CMRR: > 60dB @ DC to 60Hz, Rs=1k $\Omega$

### BM25 Input Impedance:

AutoCheck™ Lo-Z ACV:  
160k $\Omega$ , 160pF nominal

### BM27 Input Impedance:

AutoCheck™ Lo-Z ACV:  
833k $\Omega$  (4.2k $\Omega$  when displaying Auto),  
90pF nominal

### Hi-Z ACV:

5M $\Omega$ , 90pF nominal  
ACV AutoCheck™ Threshold:

> 1.5VAC (50/60Hz) nominal

<sup>1)</sup>Range for BM25 only

<sup>2)</sup>Range for BM27 only

### Capacitance (BM22)

RANGE <sup>1)</sup>	Accuracy <sup>2)</sup>
500.0nF, 5.000µF, 50.00µF, 500.0µF, 3000µF	3.5%+6d <sup>3)</sup>

<sup>1)</sup>Additional 50.00nF range accuracy is not specified.

<sup>2)</sup>Accuracies with film capacitor or better.

<sup>3)</sup>Specified with battery voltage above 2.8V (half full battery). Accuracy decreases gradually to 12% at low battery warning voltage of approx 2.4V

### Capacitance (BM25 & BM27)

RANGE <sup>1)</sup>	Accuracy <sup>2)</sup>
100.0nF, 1000nF, 10.00µF, 100.0µF, 2000µF <sup>3)</sup>	3.5%+6d <sup>4)</sup>

<sup>1)</sup>Accuracy below 50nF is not specified

<sup>2)</sup>Accuracies with film capacitor or better.

<sup>3)</sup>BM27 only

<sup>4)</sup>Specified with battery voltage above 2.8V (half full battery). Accuracy decreases gradually to 12% at low battery warning voltage of approx 2.4V

### DC $\mu$ A Current (BM27 only)

RANGE	Accuracy	Burden Voltage
400.0µA	1.5%+3d	3mV/µA
2000µA	1.2%+3d	3mV/µA

### AC $\mu$ A Current (BM27 only)

RANGE	Accuracy	Burden Voltage
50Hz -- 60Hz		
400.0µA	2.0%+3d	3mV/µA
2000µA	1.5%+3d	3mV/µA

### Audible Continuity Tester

Open Circuit Voltage: 0.4VDC typical

### BM22:

Audible Threshold: between 10 $\Omega$  and 120 $\Omega$

### BM25 & BM27:

Audible Threshold: between 50 $\Omega$  and 150 $\Omega$

### Hz Frequency (BM22)

RANGE	Accuracy
5.000Hz -- 1.000MHz	0.5%+4d

Operating Input Voltage: < 20VAC rms

Input Signal: Sine Wave, or square wave with duty cycle > 40% & < 70%

### Sensitivity:

5Hz -- 100kHz : > 1.3Vp

100kHz -- 500kHz : > 2.2Vp

500kHz -- 1MHz : > 4.2Vp

### Hz Frequency (BM25 & BM27<sup>1)</sup>)

RANGE	Accuracy
10.00Hz -- 30.00kHz	0.5%+4d

Sensitivity (Sine RMS):

Hz (Auto-V $\Omega$  position): > 3V

<sup>1)</sup>6.000VAC range (V position): > 4V

<sup>1)</sup>60.00VAC range (V position): > 30V

<sup>1)</sup>600.0VAC range (V position): > 60V

### Electric Field EF-Detection (BM25 & BM27)

Typical Voltage	Bar Graph Indication
15V to 55V	-
30V to 85V	--
55V to 145V	---
85V to 190V	----
above 120V	-----

Indication: Bar graph segments & audible beeper tone proportional to the field strength

Detection Frequency: 50/60Hz

Detection Antenna: Top left corner of the meter

(Measurement can also be made through single test lead (+) for live line detection)



### BRYMEN TECHNOLOGY CORPORATION

http://www.brymen.com

TEL: +886 2 2226 3396 (rep)

FAX: +886 2 2225 0025

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