

# CAT III Card-Sized Meter That Fits Your Pockets

Plus Powerful AutoCheck™ & EF-Detection Features!

## BM20 SERIES

AutoCheck™  
DMM



**BRYMEN**®  
Bright People's Choice

[www.brymen.com](http://www.brymen.com)

CE

UK  
CA

UL<sup>®</sup> US



**BM27s**



**BM25a**

| 27s | 25a      | FUNCTIONS & FEATURES  |
|-----|----------|---|
| •   |          | Standard Hi-Z DCV & ACV Measurements (V Position)           |
| •   |          | Ohms 600Ω Range   |
| •   |          | Diode Test  |
| •   |          | Micro-Amps AC/DC 400.0µA To 2000µA For Flame Sensors        |
| •   |          | Line-Voltage FREQUENCY With 3 Trigger Levels (V Position)   |
| •   | To 100µF | Capacitance 100nF To 2000µF                                 |
| •   | •        | 6000 Counts Large Easy To Read LCD Display                  |
| •   | •        | 5/Sec Fast Data Measurement                                 |
| •   | •        | Fully Auto-Ranging  |
| •   | •        | AutoCheck™ Feature (Automatic DCV, ACV & Ohms Selection)    |
| •   | •        | Electric Field EF-Detection (Non-Contact Voltage Detection) |
| •   | •        | Intelligent Auto Power Off – Operation & Measurement Reset  |
| •   | •        | AutoCheck™ Lo-Z DCV & ACV Measurements (Auto-VΩ Position)   |
| •   | •        | AutoCheck™ Ohms 6kΩ To 6MΩ, 4 Ranges (Auto-VΩ Position)     |
| •   | •        | Audible Continuity  |
| •   | •        | FREQUENCY 10Hz TO 30kHz (Auto-VΩ Position)                  |
| •   | •        | Fire-Retarded Material Thick Wall Housing                   |
| •   | •        | Optional Purchase Protective Silicone Holster & Pouch       |
| •   | •        | Transient Protection Up To 4kV 1.2/50µS Lightning Surge     |
| •   | •        | LVD: EN61010-1/61010-2-033 CAT III 300V                     |
| •   | •        | EMC: EN61326-1  |

# A Really Smart & Handy Tool

Having Patented Functions & Features To Meet Your Daily Application Need

## Intelligent

Auto Power Off

## Electric Field

EF-Detection  
(Non-Contact Voltage)

## Fully Auto-Ranging

## 6,000 Counts

Large Easy To Read  
LCD Display

## 5/Sec Fast

Data Measurement

## AutoCheck™ Feature

(Automatic DCV, ACV  
& Ohms Selection)

## AutoCheck™

Lo-Z DCV & ACV  
6V To 300V, 3 Ranges

## FREQUENCY

10Hz To 30kHz  
(Auto-V $\Omega$  Position)

## Capacitance

100nF To 2000 $\mu$ F,  
5 Ranges

## AutoCheck™ Ohms

6k $\Omega$  To 6M $\Omega$ ,  
4 Ranges

## Fire-Retarded Material

Thick Wall Housing

## Reliable Rotary

Function Selector

## Power ON/OFF &

Secondary Function Selection



## Line-Voltage Hz

With 3 Trigger Levels  
(V Position)

## Standard

Hi-Z DCV & ACV  
6V To 300V, 3 Ranges

## Diode Test

## Ohms 600 $\Omega$ Range

## Audible Continuity

## Micro-Amps AC/DC

400.0 $\mu$ A To 2000 $\mu$ A  
For Flame Sensors

## EMC Meets

EN61326-1

## Transient Protection

Up To 4kV 1.2/50 $\mu$ s  
Lightning Surge

## LVD Meets

EN61010-1/61010-2-033  
CAT III 300V

## GENERAL SPECIFICATIONS

### Display & Update Rate:

3-5/6 digits 6000 counts; Updates 5 per second nominal

**Operating Temperature:** 0°C ~ 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 ~ 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

**Pollution Degree:** 2

**Safety:** Certified per IEC/UL/EN/BSEN 61010-1

Ed. 3.1, IEC/UL/EN/BSEN 61010-2-033 Ed. 2.0,

IEC/UL/EN/BSEN 61010-031 Ed. 2.0 and the

corresponding CAN/CSA-C22.2 regulations to

Measurement Categories CAT III 300V AC & DC

**Transient Protection:** 4kV lightning surge (1.2/50µs)

**E.M.C.:** Meets EN61326-1

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:** ≥570V AC rms & ≥330V DC

**Low Battery:** Below approx. 2.4V

**Power Supply:** 3V standard button battery x 1 (

IEC-CR2032; ANSI-NEDA-5004LC)

**Power Consumption (typical):**

Model 25a: 2mA

Model 27s: 6mA for Voltage functions on Auto-VΩ

position, and 2mA for other functions

**APO Consumption (typical):** 2.2µA

**APO Timing:**

Idle for 3 minutes

**Dimension / Weight:** L113mm x W53mm x H10.2mm /

Approx. 78 gm

**Special Features:**

AutoCheck™ (Automatic V & Ω Selection), and EF-

Detection

**Accessories:** User's manual

**Optional Accessories:** BH-20R protective holster;

BSC-20 soft carrying pouch

## ELECTRICAL SPECIFICATIONS

Accuracy is given as ± (% of reading digits + number of digits) or otherwise specified @ 23°C ± 5°C and less than 75% R.H.

### DC Voltage (Models 25a & 27s)

| RANGE                | Accuracy |
|----------------------|----------|
| 6.000V               | 0.5%+3d  |
| 60.00V               | 1.0%+5d  |
| 300.0V <sup>1)</sup> | 1.2%+5d  |
| 300.0V <sup>2)</sup> | 2.0%+5d  |
| 300.0V <sup>3)</sup> | 1.5%+5d  |

Model 25a Input Impedance:

AutoCheck™ Lo-Z DCV: 160kΩ, 160pF nominal

Model 27s Input Impedance:

AutoCheck™ Lo-Z DCV: 833kΩ (4.2kΩ when

displaying "Auto"), 90pF nominal

Hi-Z DCV: 5MΩ, 90pF nominal

DCV AutoCheck™ Threshold:

> +1.2VDC or < -0.6VDC nominal

<sup>1)</sup>Model 25a AutoCheck™ DCV only

<sup>2)</sup>Model 27s AutoCheck™ DCV only

<sup>3)</sup>Model 27s Hi-Z DCV only

### AC Voltage (Models 25a & 27s)

| RANGE                  | Accuracy |
|------------------------|----------|
| 50Hz -- 60Hz           |          |
| 6.000V, 60.00V, 300.0V | 1.5%+5d  |

Model 25a Input Impedance:

AutoCheck™ Lo-Z ACV: 160kΩ, 160pF nominal

Model 27s Input Impedance:

AutoCheck™ Lo-Z ACV: 833kΩ (4.2kΩ when

displaying "Auto"), 90pF nominal

Hi-Z ACV: 5MΩ, 90pF nominal

ACV AutoCheck™ Threshold:

> 1.5VAC (50/60Hz) nominal

### Capacitance (Models 25a & 27s)

| RANGE <sup>1)</sup>  | Accuracy <sup>2)</sup> |
|--|------------------------|
| 100.0nF, 1000nF, 10.00µF, 100.0µF <sup>3)</sup> , 2000µF <sup>4)</sup> | 3.5%+6d <sup>5)</sup>  |

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

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

<sup>3)</sup>Model 25a top range. Updates > 1 minute on large values

<sup>4)</sup>Model 27a only. Updates > 1 minute on large values

<sup>5)</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

### Ohms (Models 25a & 27s)

| RANGE <sup>1)</sup> | Accuracy              |
|---------------------|-----------------------|
| 600.0Ω              | 2.0%+6d <sup>2)</sup> |
| 6.000kΩ             | 1.2%+6d <sup>2)</sup> |
| 60.00KΩ, 600.0KΩ    | 1.0%+4d               |
| 6.000MΩ             | 2.0%+4d               |

Open Circuit Voltage: 0.4VDC typical

<sup>1)</sup>AutoCheck™ is for 6.000kΩ ~ 6.000MΩ ranges;

600.0Ω is an independent range for Model 27s only

<sup>2)</sup>Add 40d to specified accuracy while reading is below 20% of range

### Hz Frequency (Models 25a<sup>1)</sup> & 27s<sup>1)2)</sup>

| RANGE                              | Accuracy | Specified at    |
|------------------------------------|----------|-----------------|
| 10.00Hz – 30.00kHz <sup>1)2)</sup> | 0.5%+4d  | < 20V Sine-rms  |
| 10.00Hz – 999.9Hz <sup>2)</sup>    |          | < 300V Sine-rms |

Sensitivity (Sine-rms):

1)Hz in Auto-VΩ position: > 3V

2)Line-level Hz in V position (Model 27s only):

@ 6.000VAC range: > 3V

@ 60.00VAC range: > 6V

@ 300.0VAC range: > 60V

### Diode Tester (Model 27s only)

| Test Current (Typical) | Open Circuit Voltage |
|------------------------|----------------------|
| 0.48mA                 | < 1.6VDC             |

### DC µA Current (Model 27s only)

| RANGE   | Accuracy | Burden Voltage |
|---------|----------|----------------|
| 400.0µA | 1.5%+3d  | 6mV/µA         |
| 2000µA  | 1.2%+3d  | 6mV/µA         |

### AC µA Current (Model 27s only)

| RANGE        | Accuracy | Burden Voltage |
|--------------|----------|----------------|
| 50Hz -- 60Hz |          |                |
| 400.0µA      | 2.0%+3d  | 6mV/µA         |
| 2000µA       | 1.5%+3d  | 6mV/µA         |

### Audible Continuity Tester

Open Circuit Voltage: 0.4VDC typical

Audible Threshold:

Models 25a & 27s: between 50Ω and 300Ω

### Non-Contact EF-Detection (Models 25a & 27s)

| Threshold Voltage Between |             | Bar-Graph Indication |
|---------------------------|-------------|----------------------|
| Model 25a                 | Model 27s   |                      |
| 15V ~ 55V                 | 20V ~ 80V   | -                    |
| 30V ~ 85V                 | 45V ~ 125V  | --                   |
| 45V ~ 145V                | 70V ~ 215V  | ---                  |
| 75V ~ 190V                | 120V ~ 285V | ----                 |
| >105V                     | >170V       | -----                |

Indication: Bar graph segments & audible beep tones proportional to the field strength

Detection Frequency: 50/60Hz

Detection Antenna: Top left corner of the meter

Probe-Contact EF-Detection: For more precise

indication of live wires, use the Red (+) probe for direct contact measurements



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