

BM2000VA/2000VB OPERATOR'S MANUAL

I. Introduction

Welcome to use this product.

It adopts high-performance MCU processor, it is Great Value as has high reliability security, automatically setting range function, hand-held clamp meter etc.. the product has a large digital display, full range overload protection, data-hold function, under voltage indication, auto shut off function, it has TRUE RMS measurement function which can accurately measure frequency voltage, Suitable for measuring large motor and compressor starting current. It can measure AC/DC current, AC/DC voltage, resistance, capacitance, continuity test, diode forward voltage drop, LED operating voltage, and other parameters. The instrument is compact, easy to operate and easy to carry, making it an ideal tool for electrical measurements. Especially suitable for measuring large currents and starting currents.

II. Safety standard

1. When measuring voltage, AC or DC voltage should not be more than the peak voltage (DC / AC2000V) of the meter.
2. Voltage of less than 36V is safety voltage. When the voltage is more than DC 51V or AC36V, the leads should be checked. The test lead should be connected correctly and their insulating property should be under excellent status against electric shock.
3. When change of functional measuring range, the test lead should be away from test point.
4. It is suggested that for safety the functions and range should be selected correctly although protective function for the full measuring range exists.
5. When measurement of current, the input current shouldn't be more than the maximum current labeled on input end.
6. Safety symbols:



Warning!



risk of high voltage and electric shock!



Double insulated.

III. Features

3.1 General

- 3.1.1 Display mode: Display by LCD.
- 3.1.2 Maximum display: 1999
- 3.1.3 Maximum span of jaw: 55mm.
- 3.1.4 Auto negative polarity indication: Displaying “-”.
- 3.1.5 Lack of battery power: Displaying “ ”.
- 3.1.6 Auto power OFF

After turning on the instrument will automatically enter into sleep mode after 10 minutes, to save battery power. when it is in the sleep mode you can press the POWER key to wake up the instrument.

- 3.1.6 Work environment: 0°C-40°C, 75%RH.
- 3.1.7 Storage environment: -10°C-50°C, 85%RH.
- 3.1.8 Battery : 9V×1 (IEC6F22, NEDA1604 or JIS006P)
- 3.1.9 External dimensions: 270 (L) × 100 (W) × 46 (H) mm
- 3.1.10 Weight: About 460g (including battery's weight)

3.2 Technical specifications

Accuracy: ±(% reading + digit); calibration term is one year.

Ambient temperature: 23°C±5°C; Ambient humidity: ≤70%RH

3.2.1 DCV

Range	Accuracy	Resolution	Input impedance
2V	± (0.5%+5)	1mV	About 11MΩ
20V		10mV	About 10MΩ
200V		100mV	About 10MΩ
2000V	± (2%+5)	1V	About 10MΩ

Overload protection : 2000V

3.2.2 ACV

Range	Accuracy	Resolution	Input impedance
2V	± (0.8%+5)	1mV	About 11MΩ
20V		10mV	About 10MΩ
200V		100mV	About 10MΩ
2000V	± (2%+5)	1V	About 10MΩ

Frequency: 10Hz~1kHz (2000V: 10Hz to 400Hz), display: TRUE RMS (sinusoidal waveform RMS calibration).

Overload protection: 2000V

3.2.3 DCA

Range	Accuracy	Resolution
20A	± (1.9%+10)	10mA
200A		100mA
2000A		1A

3.2.4 ACA

Range	Accuracy	Resolution
20A	± (1.9%+10)	10mA
200A		100mA
2000A		1A

AC Conversion Type: TRUE RMS responding, calibrated readings consistent with sinusoidal waveform RMS. Frequency Range: 50~60Hz.

3.2.5 Resistance Ω

Range	Accuracy	Resolution
20Ω	±(1%+5)	0.1Ω
2kΩ	±(0.8%+5)	1Ω
20kΩ		10Ω
200kΩ		100Ω
2MΩ	±(1.5%+5)	1kΩ
20MΩ		10kΩ

Overload protection: effective value 220V

3.2.6 Capacitance

Range	Accuracy	Resolution
20nF	± (3%+10)	0.001nF
200nF		0.01nF
2uF		0.1nF
20uF		1nF
200uF	± (5%+10)	10nF
2000uF		100nF

Overload protection: effective value 250V

3.2.7 Forward voltage drop of diode

Displaying approximate forward voltage values of diode. Measuring condition: forward direct current is 1.5mA; opposite DC voltage is about 3.2V.

3.2.8 Continuity Test

In the case that the resistance between two tested points is less than about 50Ω, the buzzer will bring up sound. Test condition: Open-circuit voltage is about 0.5V.

IV. Operation

4.1 Instruction for control panel

(1) POWER button: Press and hold for 2 seconds to turn on the power button. After power on, press the POWER button to cycle through the DC voltage, DC /AC current, inrush current, AC voltage measurement function.

(2) SELECT button ()): Push this button sequentially selects resistors, Continuity, diodes, and capacitance. It is a zero return key at DC current function.

(3) RANGE key: In the voltage, current, and resistance files, push to switch to manual range. In the manual range mode, push each step to jump up one step, continue to the highest level and continue to press this button to jump to the lowest level, and then cycle. If you press this

button for more than 2 seconds, switch back to the auto range state.

In the buzzer, this button is used as a buzzer indicator switch. Press this button when the beep is not ringing to turn the backlight **Continuity**, and press this button to turn on the backlight when the beep sounds.

(4) HOLD reading hold: When this button is touched, the display value is locked and remains unchanged. There is “DH” on the display; when this button is pressed again, the lock status is released and the normal measurement state is entered.

LIGHT backlight and clamp head light: Press HOLD/LIGHT for more than 2 seconds to turn on the backlight and the clamp head light control signal. When the light is on, press the key for more than 2 seconds to turn off the light control signal. When the light is turned on, if you do not press HOLD/LIGHT, the backlight will automatically turn off after 10 seconds.

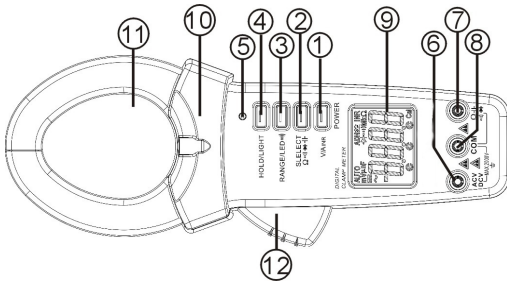
(5) RST button: This button is the reset button. It does not need to be used under normal conditions. After the instrument is shocked and shut down, if you can't turn it on by pressing POWER, press this button to turn it on.

(6) ACV/DCV“input jack

(7) COM input jack

(8) Ω \rightarrow \rightarrow \rightarrow input jack

(9) LCD screen: The jack prompt at the bottom of the display screen, the black dot in the circle is the jack used by the current function.



4.2 Measurement of AC/DC voltage

Then plug black lead in “COM” socket, and plug red lead in “ACV/DCV” jack. When measuring the AC voltage, connect the test leads to the circuit under test to read the display readings. When measuring the DC voltage, touch POWER to switch to the DC voltage function, and then connect the test leads to the circuit under test to read the display readings.

NOTE: 1. DC voltage above DC50V or AC voltage above AC36V may cause electric shock hazard and should be handled with care.

2.This instrument is not allowed to input voltages exceeding 2000V.

Be careful not to insert the test leads before measuring the voltage.

“Ω \rightarrow \rightarrow \rightarrow ” input jack

4.3 DC current measurement

After powering on, touch the POWER button to switch to the DC current function. If the display number is not zero, press the SELECT button “DCA-ZERO” to reset the display to zero. Press the trigger, open the jaws, clamp a wire (should place the wire in the center of the closed jaw as much as possible) and read the reading directly.

Note: The DC20A range is affected by the earth's magnetic pole. If it is not measured, the display will not return to zero. Before the measurement, adjust the direction of the meter to the same as the measurement, and then press the ZERO button to return to zero, then the geomagnetic effect can be eliminated.

4.3 AC current measurement

After turning on, touch the POWER button twice to switch to the AC current function, press the trigger, open the jaws, and clamp a separate wire (put the wire in the center of the closed jaw as much as possible, the jaws should be completely closed), Read the reading directly.

If you need to measure the inrush current, you can touch the POWER button again. The inrush current measurement can only be

used in the manual range mode. If you do not know the magnitude of the measured current, before entering the inrush current function, please press the RANGE button to adjust to 2000A. The range and then press the POWER button to enter the surge measurement.

Note: If you clamp more than two wires, the measurement may not be meaningful. When measuring more than 1000A, do not measure continuously for more than 5 minutes.

Warning! Make sure the test leads are not connected to the meter before measuring the current.

4.4 Measurement of resistance,continuity and forward Voltage drop of diode

Warning! When measurement of resistance or continuity, make sure that no voltage is with the circuit and components.

(1) Push the SELECT button after powering on to enter the resistance measurement function. Insert the black test lead into the “COM” jack and the red test lead into the “Ω \rightarrow \rightarrow \rightarrow ” jack. Connect the test leads to both ends of the test circuit or component and read the resistance value. When the test leads are open or the input is overloaded, the display will show “OL”.

(2) When measuring the continuity, touch the SELECT button once again and connect the test leads to both ends of the circuit under test. If the resistance between the two points is less than about 60 Ω, the buzzer will sound. When you need to beep and have an indicator light, touch the LIGHT button and use the backlight and the clamp head light to beep. If you want to save power, you can turn it off again when the light is off.

Note: The circuit under test must check the continuity when the power is off, because any load signal may cause the buzzer to sound, resulting in incorrect judgment.

(3) When measuring the forward voltage drop of the diode, touch the SELECT button once again to connect the test leads to both ends of the diode under test and read the forward voltage drop volts. When the diode is reversed or the input is open, the display will show “OL”. This function also measures the operating voltage of the LED .

(8) When measuring the capacitance, touch the SELECT button again, and connect the test leads to both ends of the measured capacitor (the red test lead is connected to the positive pole of the capacitor) to directly read the capacitance value.

Note: There is no manual range function in the capacitor file. When the capacitance value is large, the measurement time will be longer. Do not connect an external voltage or a charged capacitor (especially a large capacitor) to the test terminal. When the large capacitor is severely leaked or has broken down, the general measurement value will be unstable. ect voltage testing.

V. Maintenance of meter

Warning! Switch off the power, remove the test lead and any of input signals to prevent electric shock before opening the cover of meter or the cover of battery.

5.1 When the meter displays the symbol of “ \rightarrow \rightarrow \rightarrow ”, the battery should be changed. Open the battery cover, and then change the used battery with new battery to ensure the normal operation of the meter.

5.2 Keep the meter and the pens clean, dry and non-destructive. Clean cloth or detergent may be used for cleaning the cover of the meter. No grinding agent or organic solvent can be used for the same cleaning purpose.

5.3 The meter should be protected against damage, vibration and impact. It shouldn't be placed where high temperature or intense magnetic field exists.

5.4 Calibrating of the meter is done on a yearly basis.

VI. Accessories

6.1 Test lead: 1 set

6.2 Users manual: 1 piece

6.3 Cloth bag: 1piece