

Instruction Manual of BM920

I Overview

The complete machine circuit design of BM920 series takes large-scale integrated circuit and A/D converter as the core, provided with global function overloading protection to measure direct current voltage and current, A.C. voltage and current, resistor and current, resistor, capacitor, frequency temperature, diode forward voltage drop, transistor hFE parameters and circuit on and off, Infrared remote control signal detection and Identification of live wire etc.

II Safety rules and attentions

- The instrument of model BM920 is in line with IEC1010-1 CAT II 1000V standard. Before use, please read the instruction manual carefully.
- It is not allowed to use with the rear cover not ready; otherwise, it may cause danger.
- Before use, check insulation layer of the pen-shape meter shall be perfect and free of damage and broke wires.
- The range switch shall be set at the correct range position.
- The input signal can not be beyond the specified limits to avoid electric shock and damaging the instrument.
- Shift of the range switch can not be changed during measuring.
- Measure potential difference of the public terminal COM and the ground "⏏" can not exceed 600V to avoid electric shock.
- For testing voltage higher than DC50V and AC36Vrms, be careful to avoid electric shock.
- When the LCD displays "⚡", electric quantity of the battery is not sufficient, and the battery shall be replaced to ensure normal operation of the instrument.
- Replacement of fuse in the instrument shall employ the same specifications.
- The instrument shall be calibrated once a year at least.

III Performance

1. Insufficient electric quantity indication: "⚡".
2. Maximum display: 1999 (3 1/2 bit).
3. Automatic switching off: automatically cut off power supply after switching on the machine about 15 minutes.
4. 10A jack: without fuse.
5. mA jack fuse: 0.2A/250V Self-recovery fuse.
6. Battery: 9V NEDA or 6F22 or equivalence.
7. Environmental conditions:
 - 1) Working temperature: 0°C~40°C RH<75%

- 2) Storage temperature: -10°C~50°C RH<85 %

IV Technical indexes

Precision±(a % reading + figures) Warranty period: 1 year

Guaranteed temperature precision: 23°C±5°C RH<70 %

1. Direct current voltage

Range	Resolution	Measurement Accuracy
200mV	0.1mV	±(0.5%+5d)
2V	1mV	
20V	10mV	
200V	100mV	
1000V	1V	±(0.8%+5d)

Input impedance: 200mV and 2V shift is 1MΩ, and others are 10MΩ.

Overloading protection: 200mV and 2V range is 250V, and others are direct current or A.C. 600V.

2. A.C. voltage

Range	Resolution	Measurement Accuracy	
		BM9205	BM9208
200mV	0.1mV	±(1.2%+5d)	—
2V	1mV	±(0.8%+5d)	—
20V	10mV		±(0.8%+5d)
200V	100mV		—
700V	1V	±(1.2%+7d)	

Input impedance: 200mV and 2V range is 1MΩ, and others are 10MΩ.

Frequency scope: 40Hz~400Hz (200V and 700V ranges are 40Hz~100Hz).

Overloading protection: 200mV and 2V ranges are 250V, and others are direct current or alternative current peak value1000V.

Display: average value (sine wave valid value calibration).

3. Direct current

Range	Resolution	Measurement Accuracy
20uA	0.01uA	±(1.2%+5d)
20mA	10uA	±(0.8%+5d)
200mA	100uA	±(1.2%+5d)
10A	10mA	±(2%+5d)

Overloading protection: 0.2A/250V fuse and 10A range without fuse.

⚠ Maximum input current: 10A (input time no more than 10 seconds).

Measuring voltage drop: the full range is DC200mV.

4. Alternative current

Range	Resolution	Measurement Accuracy	
		BM9205	BM9208
20mA	10μA	± (1.2%+5d)	—
200mA	100μA	± (1.8%+5d)	
10A	10mA	± (3%+7d)	

Overloading protection: 0.2A/250V with fuse, and 10A range without fuse

Maximum input current: 10A (input time no more than 10 seconds)

Measuring voltage drop: the full range is 200mV.

Frequency scope: 40Hz~400Hz.

Display: average value (sine wave valid value calibration)

5. Resistance

Range	Resolution	Measurement Accuracy
200Ω	0.1Ω	± (0.8%+5d)
2KΩ	1Ω	
20KΩ	10Ω	
200KΩ	100Ω	
2MΩ	1KΩ	± (1%+5d)
20MΩ	10KΩ	
200MΩ	100KΩ	± (5%+10d) -10d

Overloading protection: 220V valid value

Open circuit voltage: < 1V (200MΩ range is 2.8V)

About 10 displayed in case of short circuit for 200MΩ range: actual measurement value = display value -10

For example: the measured standard resistance is 100MΩ, the instrument display is 101.0 and the real value is 101.0 - 10 = 100.0

6. Capacitance Cx

Range	Resolution	Measurement Accuracy
20nF	10pF	± (2.5%+20d)
200nF	100pF	
2μF	1nF	
200μF	100nF	± (5%+10d)

Overloading protection: 36V DC or peak value

7. Frequency

Range	Resolution	Measurement Accuracy	
		BM9208	
2KHz	1Hz	± (1.5%+5d)	
20KHz	10Hz		

Notes: valid value of the tested frequency signal: 300mV~50V

Overloading protection: 220V valid value

8. Temperature °C



Range	Resolution	Measurement Accuracy
-20~400 °C	1 °C	± (0.75%+4d)
401 °C~1000 °C	1 °C	± (1.5%+15d)

Notes: model K thermal coupler is used (temperature probe).



9. Crystal triode hFE testing

Range	Notes	Testing conditions
hFE	Displayed scope 0~1000β	I _{bo} ≈10μA, V _{ce} ≈2.8V

10. Diode and buz.zing continuous conductance testing


Range	Notes	Testing conditions
	Display forward conductance round value of diode	Forward direct current about 1mA Backward direct current voltage about 2.8V
	When the conductance resistance is < about 50Ω, buzzer in the machine works, and round value of the resistance is displayed.	Open circuit voltage about 2.8V

Overloading protection: 220V valid value

11. Infrared remote control signal detection () and Identification of live wire ()

See instructions

V Operation instructions

Before use, pay attention to the symbol beside the jacket of the testing pen “” which reminds you the tested voltage or current not beyond this value. In addition, before use, the range switch shall be set at the switch which you want to set.

1. D.C. voltage measurement

- 1) The black lead is inserted into COM jacket, and the red lead is inserted into V/Ω jacket.