



## Axiomet AX-585B

### 1. Safety Notices

The instrument meets IEC 1010 clauses (the safety standards promulgated by International Electrotechnical Commission) in terms of design, and shall be used after reading the safety notices.

- Do not input values over the maximum range of each measurement to avoid damages of the Meter.
- The voltage of below 36V is safe. When the voltage measured is higher than DC36V or AC25V, users shall check when the multimeter probe is reliably contacted, correctly connected, and well insulated, in order to avoid electric shock;
- Be sure to keep the test leads off the testing points when switching function or range.
- Select correct function and range to avoid fault operation.
- Please do not measuring before battery isn't installed and back cap isn't firm.
- Do not input any voltage when measure resistance.
- Always remove the test leads before replacing the battery or fuses.
- The following safety symbols may appear in this manual or on the instrument:
- ⚠ Attention! Exists high voltage, ⚡ GND, ⚡ Dual insulation, ⚠ Must refer to manual, 🔋 Low battery

### 2. Specification

#### 2.1. General feature

- Display mode: Liquid crystal display;
- Max display: 19999 (4 ½) digits automatic polarity display.
- Measuring method: Dual-integral A/D conversion;
- Sampling rate: Around 3 times/ second;
- Ultra-range display: Highest position displayed as "OL";
- Low voltage display: Appearance of the sign 🔋;
- Working environment: (0~40)°C, relative humidity <80%;
- Power supply: 9V battery
- Volume (dimensions): 190 x 88,5 x 27,5mm (L×W×H)
- Weight: Around 350g (including battery);





- Accessories: 20A test leads, user manual, temperature probe, holster, gift box, and 9V battery.

## 2.2. Technical characteristics

### 2.2.1. Accuracy

$\pm$  (a% of the reading + least significant bit); guaranteed accurate ambient temperature:  $(23 \pm 5)^{\circ}\text{C}$ ; relative humidity:  $<75\%$ ; guaranteed calibration period: one year since the date of delivery.

### 2.2.2. DC voltage measurement

Range / Accuracy / Resolution

200mV /  $\pm(0.1\%+5)$  / 0.01mV

2V /  $\pm(0.1\%+5)$  / 0.1mV

20V /  $\pm(0.1\%+5)$  / 1mV

200V /  $\pm(0.1\%+5)$  / 10mV

1000V /  $\pm(0.2\%+5)$  / 100mV

Input impedance: 200mV:1M $\Omega$ , other range is 10M $\Omega$ ;

Over load protection: 250V DC or AC peak value for range 200mV; 1000V DC or AC peak value for other ranges.

### 2.2.3. AC Voltage Measurement

Range / Accuracy / Resolution

200mV /  $\pm(0.8\%+25)$  / 0.01mV

2V /  $\pm(0.8\%+25)$  / 0.1mV

20V /  $\pm(0.8\%+25)$  / 1mV

200V /  $\pm(0.8\%+25)$  / 10mV

750V /  $\pm(1.0\%+25)$  / 100mV

Input impedance: 200mV range: 1M $\Omega$  and the other is 10 M $\Omega$ ;

Overload protection: DC1000V or AC750V peak value;

Frequency response: The frequency scope for all ranges is 40Hz – 1kHz (applicable to standard sine wave and triangle wave).

Display: Sine wave RMS (Average value response)

### 2.2.4. DC current measurement

Range / Accuracy / Resolution

200uA /  $\pm(0.8\%+5)$  / 0.01uA

2mA /  $\pm(0.8\%+5)$  / 0.1uA

20mA /  $\pm(0.8\%+5)$  / 1uA

200mA /  $\pm(0.8\%+5)$  / 10uA

20A /  $\pm(2.0\%+15)$  / 1mA





Maximum voltage drop measured: Full range mA: 200mV

Maximum input current: 10A (not more than 10s);

Overload protection: 0.2A/250V fuse; 20A/250V fuse.

#### 2.2.5. AC current measurement

Range / Accuracy / Resolution

2mA /  $\pm(0.8\%+5)$  / 0.1uA

20mA /  $\pm(0.8\%+5)$  / 1uA

200mA /  $\pm(0.8\%+5)$  / 10uA

20A /  $\pm(2.0\%+15)$  / 1mA

Maximum voltage drop measured: 200mV;

Maximum input current: 20A (not more than 15s);

Overload protection: 0.2A/250V fuse; 20A/250V fuse.

Frequency response: The frequency scope for all grades of current is 40Hz-1kHz; (applicable to standard sine wave and triangle wave; and that for other waveforms: more than 200Hz, only for reference).

Display: Sine wave RMS (Average value response)

#### 2.2.6. Resistance

Range / Accuracy / Resolution

200 $\Omega$  /  $\pm(0.5\%+10)$  / 0.01 $\Omega$

2k $\Omega$  /  $\pm(0.5\%+8)$  / 0.1 $\Omega$

20k $\Omega$  /  $\pm(0.5\%+8)$  / 1 $\Omega$

200k $\Omega$  /  $\pm(0.5\%+8)$  / 10 $\Omega$

2M $\Omega$  /  $\pm(0.5\%+8)$  / 100 $\Omega$

20M $\Omega$  /  $\pm(0.5\%+8)$  / 1K $\Omega$

200M $\Omega$  /  $\pm(5.0\%+10)$  / 10K $\Omega$

Over load protection: 250V DC or AC peak value

At range 200 $\Omega$ , short-circuit the test leads to measure the wire resistance, then subtracts it from the real measurement.

#### 2.2.7. Capacitance

Range / Accuracy / Resolution

20nF /  $\pm(4.0\%+10)$  / 1pF

200nF /  $\pm(5.0\%+20)$  / 100pF

2uF /  $\pm(5.0\%+20)$  / 100pF

20uF /  $\pm(5.0\%+20)$  / 1nF

200uF /  $\pm(5.0\%+20)$  / 10nF

2000uF /  $\pm(5.0\%+20)$  / 100nF

Overload protection: 36V DC or AC peak value





### 2.2.8. Frequency measurement

Range / Accuracy / Resolution

10 Hz /  $\pm(0.1\%+5)$  / 0.001 Hz

100 Hz /  $\pm(0.1\%+5)$  / 0.01 Hz

1 kHz /  $\pm(0.1\%+5)$  / 0.1 Hz

10 kHz /  $\pm(0.1\%+5)$  / 1 Hz

100 kHz /  $\pm(0.1\%+5)$  / 10 Hz

1 MHz /  $\pm(0.1\%+5)$  / 100 Hz

Input sensitivity: 1,5VRMS

Over load protection: 250V DC or AC peak value (within 10 seconds)

### 2.2.9. Diode and on-off test



Value displayed: Forward voltage drop of diode

Testing condition: Forward DCA is approx. 1mA, the backward voltage is approx. 3V



Value displayed: Buzzer sounds, the resistance is less than  $(50 \pm 20) \Omega$

Testing condition: Open voltage is approx. 3V

Overload protection: DC or AC 250V peak value.

Warning: It's forbidden to input voltage value in this range for the sake of safety!

### 2.2.10. Temperature

Range / Accuracy / Resolution

$(-20 \text{ } 1000) ^\circ\text{C}$  /  $<400^\circ\text{C}$  1.  $0\%+5$  / 1  $^\circ\text{C}$

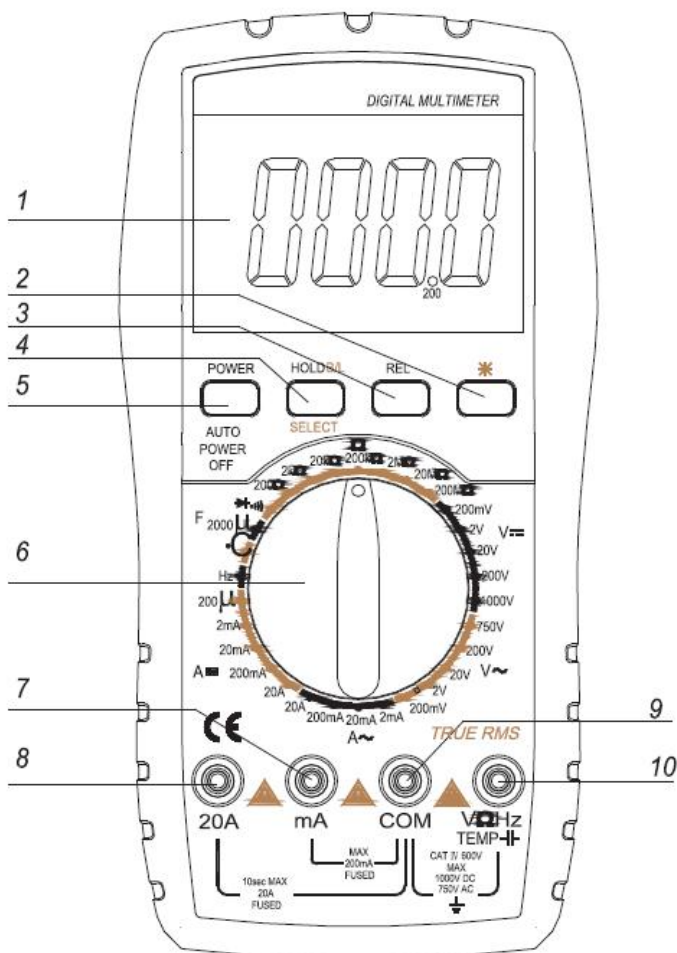
$\geq 400^\circ\text{C}$   $\pm(1.5\%+15)$

CAUTION: do not input voltage at this range!

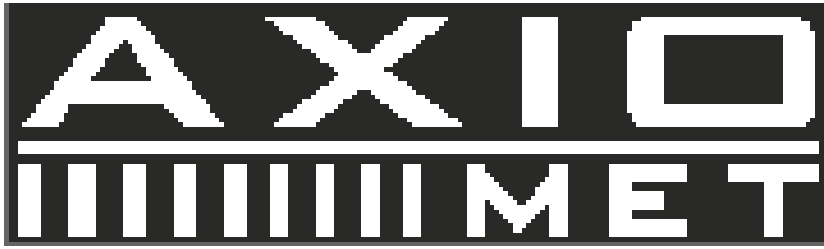


## 3. Application Method

### 3.1. Description of operating panel



- 1. LCD unit: It displays the numerical value measured with the instrument and its unit;
- 2. Buzzer indicator lamp
- 3. REL key
- 4. HOLD, B/L



- 5. Power ON/OFF
- 6. Knob switch: Used to change the measuring function and range;
- 7. Current test jack 0,2 A
- 8. 20A current test jack
- 9. COM input jack "-"
- 10. COM input jack "+"

### 3.2. DC voltage measurement

- Insert the black multimeter probe into "COM" end, and the red multimeter probe into "VΩHz" end;
- Select the knob to a proper DCV range, and connect the test leads crossly to the electric circuit under test, LCD displays polarity and voltage under test connected by the red test lead.

#### Notes

- Firstly users should select the knob to the highest range, if users had no idea about the range of voltage under test, and then select the proper range based on displaying value. If LCD displays "OL" it means meter is over the max. Value of this range, thus should select the knob to a higher range.
- Do not input to DC Voltage above 1000V or AC above 750V RMS.
- Never contact the high-voltage circuit measured.

### 3.3. AC Voltage Measurement

- Insert the black multimeter probe into "COM" end, and the red multimeter probe into "VΩHz" end;
- Select the knob to a proper ACV range, and then connect the test leads crossly to the electric circuit under test.

#### Notes

- Firstly users should select the knob to the highest range, if users had no idea about the range of voltage under test, and then select the proper range based on displaying value. If LCD displays "OL" it means meter is over the max. Value of this range, thus should select the knob to a higher range.
- Do not input to DC Voltage above 1000V or AC above 750V RMS.
- Never contact the high-voltage circuit measured.

### 3.4. DC current measurement

- Insert the black multimeter probe into "COM" hole, and the red multimeter probe into "mA" or "20A" hole (maximum 200mA or 20A);
- Select the knob to a proper DCA range, and connect the test leads crossly to the electric circuit under test; LCD displays polarity and current under test connected by red test lead.

#### Notes





- If having no idea about the scope of current measured, users shall rotate the range switch to the highest level, and then rotate it to corresponding level according to the value displayed;
- If LCD shows “OL”, it indicates going beyond the range, and the range switch shall be rotated to a higher level.
- The maximum input current is 200mA or 20A (depending on the inserting location of red probe). In case of exceeding rated current, the fuse will be melted or even the instrument will be damaged.

### 3.5. AC current measurement

- Insert the black multimeter probe into “COM” hole, and the red multimeter probe into “mA” or “20A” hole (maximum 200mA or 20A);
- Select the knob to a proper ACA range, and connect the test leads crossly to the electric circuit under test.

#### Notes

- If having no idea about the scope of current measured, users shall rotate the range switch to the highest level, and then rotate it to corresponding level according to the value displayed;
- If LCD shows “OL”, it indicates going beyond the range, and the range switch shall be rotated to a higher level.
- The maximum input current is 200mA or 20A (depending on the inserting location of red probe). In case of exceeding rated current, the fuse will be melted or even the instrument will be damaged.

### 3.6. Resistance measurement

- Insert the black multimeter probe into “COM” end, and the red multimeter probe into “VΩHz” end;
- Select the knob to a proper resistance range, and connect the test leads crossly with the resistor under test.

#### Notes

- Under the mode of manual range measurement, if having no idea about the scope of resistance measured, users shall adjust the switch to the highest level;
- If LCD shows “OL”, it indicates going beyond the range, and users shall adjust the range to a higher level. If the resistance measured is more than 1M, it will take several seconds for the reading to become stable, and this is normal for measurement of high resistance;
- If the input end is open-circuited, the overload sign “OL” will be displayed;
- The online resistance measurement may be started after it's confirmed that, all power sources of tested circuit are cut off, and all capacitors are completely discharged;
- Never input voltage at resistance level.





### 3.7. Capacitance measurement

- Insert the black multimeter probe into “COM” end, and the red multimeter probe into “V $\Omega$ Hz” end;
- Select the knob to proper capacitance range,

#### Notes

- If the capacitance under tested is over the max. Value of selected range, LCD displays “OL”, thus should select the knob to a higher range.
- When measuring at large capacitance range, if capacitor is crept badly or broken, LCD displays a value and it's unstable.
- Tested capacitor shall be completely discharged, for fear of damaging the instrument;
- Unit: 1uF=1000nF 1nF=1000pF


### 3.8. Frequency measurement

- Insert test leads or shielded cable into “COM” and “V/ $\Omega$ /Hz” terminal.
- Select the knob to the frequency range, insert the test leads or shielded cable to the signal source or the load which is tested.


#### Notes

- The meter can still work if the input value is higher than 10Vrms, but the accuracy is not guaranteed.
- In noise environment, you'd better use shiel cable to measure a low signal.
- Don't input voltage higher than 250V DC or AC peak value, or it may damage the meter.
- Never contact the high-voltage circuit measured.

### 3.9. Diode and on-off test

- Insert the black multimeter probe into “COM” hole and red multimeter probe into “VHz” hole (the polarity of red multimeter pole is “+”;
- Rotate the functional switch to “DIODE” or “BUZZ” level; 
- Measurement in forward direction: Connect the red/black multimeter probe to the positive/ negative pole of the tested diode, and the display unit will display the approximate value of the voltage drop in forward direction of the diode;
- The buzzer sounds if the resistance of a circuit under test is less than (50 $\pm$ 20) $\Omega$ .

#### Notes

- Don't input voltage at  level.

### 3.10. Temperature measurement

- Select the knob to the „°C” range, insert the cathode (black pin) of cold end (free end) of thermocouple into “COM” jack, anode (red pin) into “V $\Omega$ ” jack, put the working end (temperature measurement port)







of thermocouple on the surface or inside the object to be tested. Then you can read temperature from the screen, and the data is in Centigrade.

### 3.11. Data holding, B/L


Press the “Hold B/L” switch, the presently measured value is held on LCD, press it again, the function is cancelled. Press “Hold B/L” key to turn on the backlight

### 3.12. Automatic power off

- The meter will be into sleeping mode when it works for (15±10) minutes. Press “POWER” key twice to restart the power.

## 4. Maintenance of the Instrument

This instrument is precise, and users shall never change its circuit at random.

- Protect the instrument from water, dust and hurl-down.
- Never store or use the instrument in high-temperature, high-humidity, flammable, explosive and strong-magnetic-field environment;
- Please clean the outer surface of the instrument with wet fabric and gentle detergent, instead of grinding additives and strong solvents like alcohol, etc.;
- If the instrument is left unused for long term, the battery shall be taken out in order to avoid that the instrument is eroded by battery weeping;
- When  symbol displays, should replace the battery.
- For replacement of fuse, please use fuse of the same specification and model.

#### Notes

- Don't connect the voltage higher than DC1000V or AC750V peak value;
- Don't use this instrument is the batteries are not installed or the back cover is not fastened;
- Please move the testing probes from tested points and shut down the machine before replacement of batteries or fuse.

## 5. Troubleshooting

If your instrument does not work normally, the following methods may help you solve common problems. If the troubles can not still be eliminated, please contact our maintenance center or dealer.





Fault phenomena - Position to be inspected and method

No display - The power supply is not connected; Holding switch; Replace the batteries.

Appearance of the sign "⚡" - Replace the batteries.

No input of current - Replace the fuse.

Big error in display - Replace the batteries.

The specifications are subject to change without notice.

The content of this manual is regarded as correct error or omits Pls. contact with factory.

We hereby will not be responsible for the accident and damage caused by improper operation.

The function stated for this User Manual cannot be the Reason of special usage.

