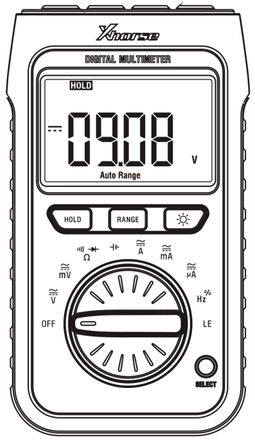
DIGITAL MULTIMETER

User Manual



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1. Overview

This device is a comprehensive intelligent digital multimeter that can be used tomeasure AC/DC voltage, AC/DC current, resistance, capacitance, frequency, duty cycle, diode, and continuity. It has functions such as automatic range, data retention, backlighting, and automatic shutdown. In addition to the traditional multimeter function, the leakage detection function is added (suitable for static leakage detection of electronic products, especially low-power products such as remotes), no need for external power supply, providing a DC 3V power supply, and quickly detecting the static leakage current value.

Warning: Before using the device, please carefully read the relevant contents of :"safety" and "! Attention" in this manual and strictly abide by them.

2. Device Features

- Leakage detection, without the need for external power supply, quickly detects the static leakage current value of the remote.
- Check the battery level, automatically detect the power supply and battery level upon startup, and display a "▭" sign on the screen interface when the battery level is low.
- Mistest protection, capable of withstanding a maximum impulse of 600V (30kVA), and equipped with overvoltage and overcurrent alarm prompts.
- 6000-word large screen LCD backlight display. The reading is clearer and it is more convenient to use in low light environments.
- Provide μA gear, suitable for small current measurement, with readings accurate to 0.1 μA.
- The overall power consumption is less than 3mA, equipped with automatic power saving function, and has a long battery life.

3. Details of unpacking inspection

After opening the packaging box, please carefully check whether the following accessories are missing or damaged:

Multimeter	1
Probe	1
User Manual	1
Warranty Certificate	1

4. Safety precautions

Before using the device, please read the safety precautions and follow the operating instructions. Failure to follow the relevant operating instructions may weaken or lose the protective ability provided by the device to you.

(1) Before use, the multimeter and probe should be checked to prevent any damage or abnormal phenomena. If it is found that the insulation of the probe and housing has been significantly damaged, and the LCD display is not displaying, or if you believe that the device is no longer functioning properly, do not continue to use it.

(2) It is strictly prohibited to use the device until the back cover and battery cover are properly covered to prevent the risk of electric shock and endangering one's own safety.

(3) When conducting measurements, the fingers holding the pen should not exceed the position where the pen stops, and should not touch exposed wires, connectors, unused input terminals, or the circuit being measured to prevent electric shock.

(4) Before measurement, the function switch must be placed in the correct position, and shifting gears during measurement is strictly prohibited to prevent damage to the device.

(5) Do not apply an AC/DC voltage greater than 600V between the device terminal and ground to prevent electric shock and damage to the device.

(6) When the measured DC voltage is higher than 60V or AC voltage is higher than 30Vrms, the device should be used with caution to prevent electric shock.

(7) Do not measure voltage or current above the maximum allowable input value. Before measuring the online resistance, diode, or circuit on/off, it is necessary to cut off all power sources in the circuit and start the measurement after all capacitors have been discharged, otherwise the measurement results may be inaccurate.

(8) When the LCD display shows the "▭" sign, the battery should be replaced in a timely manner to ensure measurement accuracy. When the device is not in use for a long time, the battery should be removed.

(9) Please do not change the internal wiring of the device at will to avoid damaging the device and endangering safety.

(10) Do not store or use this device in environments with high temperature, humidity, flammability, explosiveness, and strong electromagnetic fields.

(11) For maintenance, please use a soft cloth and neutral detergent to clean the device casing. Do not use abrasives or solvents to prevent the casing from being corroded, damaging the device, and endangering safety.

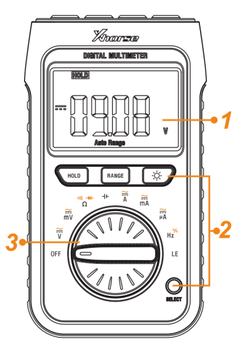
5. Electrical symbol description

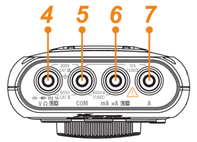
⏚	Grounding	~	AC voltage or current
⚠	Warning prompt	⎓	DC voltage or current
ϟ	High voltage warning	LE+	Leakage test power supply positive terminal
▭	Low battery warning	LE-	Leakage test power supply negative terminal

6. Comprehensive characteristics

LCD display --- **Maximum display up to 6099**
Polarity display --- **Automatic positive and negative polarity display**
Overload display --- **Displayed as "OL" or "-OL"**
Impact resistance strength --- **can withstand a landing impact at a height of 1 meter**
Power supply --- **2 AA 1.5V batteries**
Dimensions --- **160 x 90 x 45.6 mm**
Weight --- **About 400g (excluding batteries)**
Operating temperature and humidity --- **0 ℃ –30 ℃ (not greater than 80% RH), 30 ℃ –40 ℃ (not greaterthan 75% RH), 40 ℃ –50 ℃ (not greater than 45% RH)**
Storage temperature and humidity --- **20 ℃~+60 ℃ (not greater than 80% RH)**
Electromagnetic compatibility --- **In a 1V/m RF field, the total accuracy=specified accuracy+5% of the range. RF fields exceeding 1V/m do not have specified indicators.**

7. Appearance structure and button description





1. LCD display area, displaying measurement data and functional symbols.
2. Function buttons, please refer to the button instructions for details.
3. Function knob for measuring gear selection.
4. Measure the signal input port for voltage "**V**", resistance "**Ω**", capacitance "**-|(-**", diode "**-▶|-**", frequency "**HZ**", and duty cycle "**%**".
5. Measure the input common terminal (**COM**).
6. Measure the signal input port for the current "**mA**、**uA**、**LE-**" (<0.6A).
7. Current"**A**" (0.6~10A) measurement signal input port.

Button Denscriptio

Button	Function	Operating Instructions
HOLD	Data hold	Press the **HOLD** button once to keep the test value displayed; Press the **HOLD** button again to release hold mode
RANGE	Range switching	Press **RANGE** to enter the manual range switching mode. Press and hold the **RANGE** button for 2 seconds to exit the manual range and enter the automatic range mode.
☼	Screen backlight switch	Press ☼ button once to turn on the screen backlight, and then press ☼ button again to turn off the screen backlight.
SELECT	Function switching	When the function knob is switched to a multifunctional gear,pressing the **SELECT** button can select different measurement functions on the gear.

8. Measurement operation instructions

(1) Leakage function test
① Insert the red lead into the "**LE+**" socket and the black lead into the "**LE-**" socket;
② Turn the function knob to the leakage test gear "**LE**", connect the red lead to the 3V power input of the machine to be tested (such as the remote), and connect the black lead to the GND of the machine to be tested (such as the remote);
③ Read the result from the display screen. If OL is displayed, it indicates that the current exceeds the range (6mA) and the standby current of the machine (remote) is too high.
! Attention:
• The multimeter can provide a 3V DC voltage supply, please ensure that there is no other power supply before measuring a machine.

(2) AC/DC voltage measurement
① Insert the red lead into the "**VΩ**" socket and the black lead into the "**COM**" socket.
②Turn the function knob to " ⎓ " (please select this gear if the voltage to be tested ≥ 600mV or it's not clear) or " ~ " (voltage to be tested<600mV), and connect the probe to the power or load to be tested.
③This gear defaults to DC voltage measurement, and the screen displays "⎓". If measuring AC voltage, you can use the "**SELECT**" button to switch. When measuring AC voltage, the interface displays " ~ ".
④Read the results from the display screen.
! Attention:
• Select " ⎓ " or " ~ "based on the measured voltage value.
• When measuring high voltage, special attention should be paid to avoid electric shock.
• When the measured voltage is ≥ 30V, the LCD of this multimeter displays a high voltage warning prompt " ϟ ".When the measured voltage is ≥ 610V, the multimeter will automatically sound an alarm and displa"OL".

The warranty period of the digital multimeter is one year, based on the date on the transaction voucher; If there is no transaction voucher or the transaction voucher is lost, the factory date recorded by the manufacturer shall prevail.

※ Free warranty is not available in the following cases:

- Damage caused by not following the use instructions
- Damage caused by repairing or retrofitting in private
- Damage caused by fall, crash or inappropriate voltage
- Damage caused by inevitable force
- Damage caused by long-term use in harsh environments or on vehicles or ships
- Contamination and wear of the host casing caused by using

For product after-sales maintenance and technical support, please contact the dealer or scan the QR code on the back of the manual, download the official Xhorse app, and consult online customer service.

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Warranty card

User name:	Purchasing date:	
Contact address/Phone number:		
Repair date	Faults and causes	Maintenance personne
Dealer:	Telephone:	

(3)Resistance measurement
① Insert the red lead into the "**VΩ**" socket and the black lead into the "**COM**" socket.
② Switch the function knob to the "Ω" measurement position and connect the probes in parallel to both ends of the measured resistance.
③ Read the test results from the display screen.

! Attention:
• If the measured resistance is open-circuited or the resistance value exceeds the maximum range of the multimeter, the display will display "OL".
• When measuring online resistance, all power sources in the tested circuit must be turned off first, and the measurement can only begin after all capacitors have discharged residual charges to ensure the accuracy of the measurement.
• If the resistance value of the probe during a short circuit is not less than 0.5 Ω, check whether the probe is loose or for other problems.
• Do not input voltage above 30V DC or AC to avoid personal injury.

(4)Diode measurement
① Insert the red lead into the "**VΩ**" socket and the black lead into the "**COM**" socket.
② Switch the function knob to the "-▶|-" measurement position, and then use the "**SELECT**" button to select the on/off measurement function. At this time, the screen displays "◀◀".
③ Connect the probes in parallel to the measured resistance or both terminals of the circuit. When the resistance value is less than 50 Ω, the circuit is conductive and the built-in buzzer sounds; When the measured resistance exceeds 610 Ω, the screen displays "OL".
! Attention:
• When checking the continuity of online circuits, all power sources in the tested circuit must be turned off and all capacitors must be discharged with residual charges before measurement.
• Do not input voltage higher than 30V DC or AC to avoid personal injury.

(5)Diode measurement
①Insert the red lead into the "**VΩ**" socket and the black lead into the "**COM**" socket.
② Switch the function knob to the "-▶|-" measurement position, and then use the "**SELECT**" button to select the diode measurement function. At this time, the screen displays "▶|-".
③ Contact the red and black probes reliably with the positive and negative terminals (or P and N poles) of the diode being tested. Directly read the approximate forward PN junction voltage of the measured diode on the display. For silicon PN junctions, the normal value is generally around 500–800mV.
! Attention:
• If the diode being tested is open-circuited or the polarity is reversed, it will display "OL".
• When measuring online diodes, all power sources in the circuit being tested must be turned off and all capacitors must be discharged with residual charges before the measurement.
• Do not input voltage higher than 30V DC or AC to avoid personal injury.

(6) Capacitance measurement
① Insert the red lead into the "**VΩ**" socket and the black lead into the "**COM**" socket.
② Switch the function knob to the "-|(-" measurement position, connect the leads in parallel to the two terminals of the measured capacitor, and read the test results from the display.

! Attention:
•If the measured capacitance is short circuited or exceeds the maximum range of the multimeter, the display will display "OL".

• To measure capacitance above 400μF, a certain reading stabilization time is required to facilitate correct reading.
• To ensure measurement accuracy, it is necessary to discharge all residual charges from the capacitor before testing, which is more important for capacitors with high voltage to avoid damage to the multimeter and personal safety.

(7) AC/DC current measurement
① Insert the red lead into the "**A**" socket (current to be measured>0.6A, please use this socket if current is unclear) or the "**mA/μA**" socket (current to be measured<0.6A), and the black lead into the "**COM**" socket.
② Switch the function knob to "A" (current to be measured>0.6A, please use this gear if the current is not clear), "mA" (6mA<current to be measured<0.6A), or "μA" (current to be measured<6mA).
③ This gear defaults to DC current measurement, and the interface displays "⎓". If measuring AC current, use the "**SELECT**" button to switch. And the interface displays "~".
④ Connect the test probes in series to the tested circuit and ensure reliable contact. The screen will display the current value of the tested circuit.
! Attention:
• Before connecting the multimeter in series to the circuit to be tested, the power source in the circuit must be turned off first, and the input terminals and their range switch positions must be carefully checked for correctness. Only after confirming that there are no errors can the power be turned on for measurement.
• If the "**mA/μA**" and "**A**" input sockets are overloaded or misoperated, the built-in fuse may blow, and the fuse must be replaced according to specifications.
• When testing the current range, do not connect the probes in parallel to any voltage circuit to avoid damaging the multimeter and endangering personal safety.
• When the measured current is close to 10A, each measurement time should be less than 10 seconds, and the time interval should be over 15 minutes.
• When the measured current is ≥ 10A, the buzzer will sound an alarm.

(8)Frequency/duty cycle measurement
①Insert the red lead into the "**VΩ**" socket and the black lead into the "**COM**" socket.
② Switch the function knob to the "Hz%" measurement position.
③ Connect the red and black probes in parallel to the signal source to be tested, and the screen will display "**Hz**" to directly read the signal frequency; Use the select button to select the duty cycle measurement function, and the screen displays "**%**" to read the signal duty cycle.

(9)Other functions
① Automatic shutdown: During the measurement process, if the range switch is not moved or the function button is not pressed for about 15 minutes, the multimeter will "automatically shut down" to save energy. In the automatic shutdown state, pressing any Button or turning the function knob can restart the Multimeter.
② Press and hold the **SELECT** button in the shutdown state , and then power on, the automatic shutdown function will be cancelled. After shutting down and restarting, the automatic shutdown function will be restored.
③ Buzzer: When any button is pressed, if the function button is effective, the buzzer will sound "Beep" (approximately 0.25 seconds). When measuring voltage or current, the buzzer will also sound "Beep" intermittently to indicate an over-range warning.
④ Low voltage detection: When power is supplied, the battery voltage is detected. When it is below approximately 2.4V, the LCD displays a "▭".

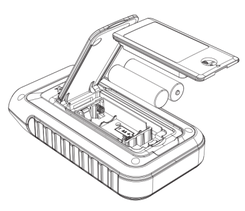
9. Technical indicators

Accuracy: ± (a% of reading+b number of words), calibration period is one year.
Test conditions: 23 ℃± 5 ℃, humidity less than 80% RH.

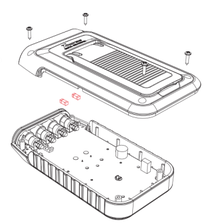
Function	Measurement Range	Maximum Resolution	Accuracy
Leakage detection	600uA/6000uA	0.1uA	1uA
DC voltage	600mV	0.1mV	±(0.5%+3)
	6V/60V/600V	0.001V	±(0.5%+3)
AC voltage	600mV	0.1mV	±(0.8%+3)
	6V/60V/600V	0.001V	±(0.8%+3)
DC current	600uA/6000uA	0.1uA	±(0.8%+3)
	60mA/600mA	0.01mA	±(0.8%+3)
	10A	0.001A	±(0.6%+3)
AC current	600uA/6000uA	0.1uA	±(1%+3)
	60mA/600mA	0.01mA	±(1%+3)
	10A	0.001A	±(1%+3)
Resistance	600Ω/6kΩ/60kΩ/600kΩ/6MΩ/60MΩ	0.1Ω	±(0.8%+3)
On/off detection	Sound production below 50Ω	0.1Ω	±(1%+3)
	Display OL above 610Ω		
Capacitance	6nF/60nF/600nF/6uF	0.001nF	±(5%+5)
	60uF/600uF	0.01uF	±(10%+5)
Frequency	9.999Hz/99.9Hz/999.9Hz/9.999kHz /99.99kHz/999.9kHz/9.999M	0.001Hz	±(0.5%+3)
Duty cycle	1%~99%	0.1%	±(1%)
Diode	0V~3.3V	0.001V	–
	Display OL above 3.3V		

10. Maintenance and upkeep

(1) When the multimeter is not in use, it should be turned off as much as possible to avoid continuous battery energy consumption.
(2) General maintenance
a. The maintenance and service of this multimeter must be completed by qualified professional maintenance personnel or designated maintenance departments.
b. Regularly use a dry cloth to clean the casing. Do not use cleaning agents containing abrasive or solvent components.
(3) Battery replacement or fuse replacement
The power supply of this product is 2 AA1.5V batteries. Please install or replace the batteries in the following order (as shown in the schematic diagram):
a. Turn off the multimeter.
b. Turn the back of this product upwards, open the flip cover, and turn the battery box knob to facing downwards, pull out the battery cover, remove the battery, and install a new battery according to the polarity instructions.
c. After installing the new battery, install the battery cover and turn the battery case knob to facing downwards.
d. If the fuse needs to be replaced, it is necessary to unscrew the bottom shell screws, open the back panel, and replace the same specification of fuse according to the damaged part: as shown in the figure, the left side is a 12A/250V surge resistant 2410 fuse, and the right side is a 0.8A/250V fast melting 2410 fuse.



Battery Replacement



Fuse Replacement