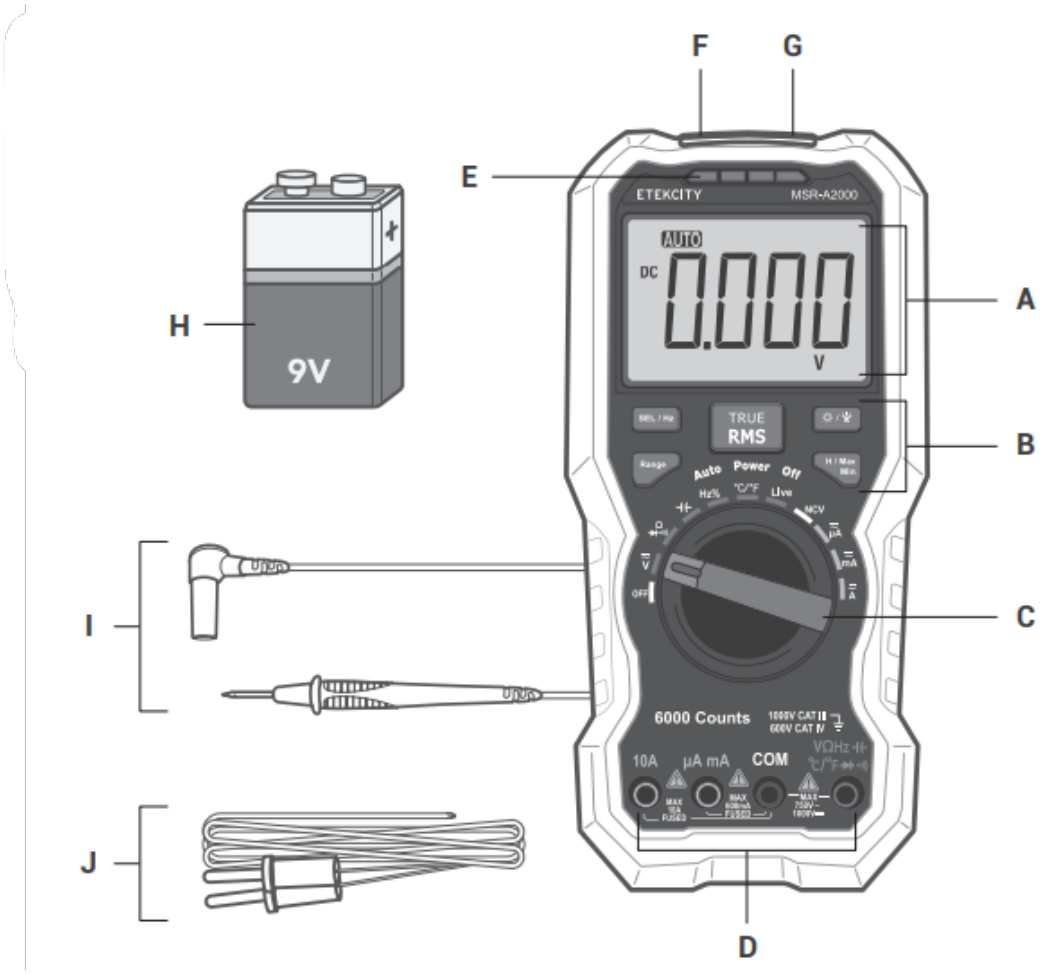
USER MANUAL Digital Multimeter

Multimeter Features



A. Display Screen (see page 12)

B. Keypad (see page 11)

C. Rotary Switch (see page 10)

D. Input Terminals (see page 15)

E. LED Indicator

F. Non-Contact Voltage Detector (NCV) (see page 24)

G. Flashlight (see page 19)

Accessories

H. 9V 6F22 Battery (Pre-Installed)

I. Test Leads

J. K-Type Thermocouple

Rotary Switch

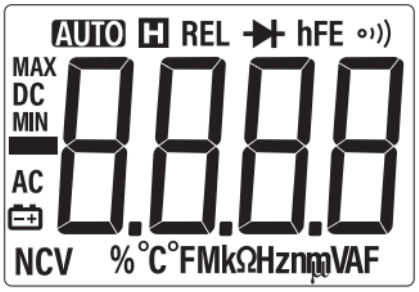
Position	Description	Details
OFF	Power off	Page 18
⎓ V	DC or AC voltage measurement	Page 20
Ω ⊣●)))	Resistance measurement	Page 21
	Continuity test	Page 21
	Diode test	Page 22
⊣⊢	Capacitance measurement	Page 22
Hz%	Frequency / duty cycle measurement	Page 23
°C/°F	Temperature measurement	Page 23

Position	Description	Details
Live	Single test lead living wire detection	Page 24
NCV	Non-contact voltage detection	Page 24
⎓ μA	DC or AC current measurement, Up to 6000 microamperes	Page 26
⎓ mA	DC or AC current measurement, Up to 600 milliamperes	Page 26
⎓ A	DC or AC current measurement	Page 26

Keypad

Key	Description	Details
SEL / Hz	Select DC or AC. In ACV or ACA function, long press to display Hz	––
	Switch frequency / duty cycle when measuring frequency	––
	Switch °C/°F when measuring temperature	––
	Select Resistance/Continuity/Diode	––
Range	Auto/Manual range	Page 19
☼ / ☼	Select Backlight or Flashlight	Page 19
H / Max Min	Short press to hold the reading	Page 28
	Long press to switch Max./Min. value	Page 28

Display Screen



Symbol	Description	Details
AUTO	Auto range	Page 33
H	Data hold enabled	Page 28
REL	Relative enabled	––
	Diode test selected	Page 22
hFE	Transistor measurement	––

Position	Description	Details
	Continuity test selected	Page 21
MAX	Maximum reading	Page 28
DC	DC	Page 31
MIN	Minimum reading	Page 28
AC	AC	Page 32

Position	Description	Details
	Battery is low	Page 34
-8.8.8.8	Measurement display ("OL" is short for overload. Indicates the reading exceeds the display range)	––
NCV	Non-contact voltage detected	Page 24
%°C°FMkΩHznmμVAF	Measuring units	Page 31

Measurement Units

Sign	Description
M	Mega 1E+06 (1000000)
k	kilo 1E+03 (1000)
m	milli 1E−03 (0.001)
µ	micro 1E−06 (0.000001)
n	nano 1E−09 (0.000000001)

Sign	Description	Measurement Type
°C	Degree Celsius	Temperature
°F	Degree Fahrenheit	
V	Voltage	Voltage
A	Ampere	Current
Ω	Ohm	Resistance
Hz	Hertz	Frequency
%	Percent	Duty cycle
F	Farad	Capacitance

Input Terminals

Rotary switch position	Input terminals	Overload protection
⎓ V ≂ (mV)	V Ω Hz ⊣⊢ °C/°F ⧫ •)) COM	750V AC/1000V DC
Ω ⧫ •))	V Ω Hz ⊣⊢ °C/°F ⧫ •)) COM	250V AC/300V DC
⊣⊢		
Hz%		
°C/°F		
≂ µA ≂ mA	µA mA COM	1A/1000V, fast-acting fuse
≂ A	10A COM	10A/1000V, fast-acting fuse

Operation

Getting Started

Before first using your multimeter, follow these steps to check the instrument:

1. Check for any damage caused by transportation.

If the packaging carton or the foamed plastic protection cushion have suffered serious damage, do not throw them away until you finish testing the multimeter and its accessories to make sure they are working correctly.

2. Check the Accessories

Check the Package Contents (see page 3) and the Diagram (see page 9) to make sure all accessories are correctly included. If any accessory is lost or damaged, please contact Customer Support (see page 38)

3. Check the Multimeter

If you find damage to the appearance of the multimeter, the multimeter does not work normally, or the multimeter fails in the performance test, please contact Customer Support (see page 38).

Install the Batteries

Follow the steps below to install the battery.

1. Ensure that the rotary switch is at the position. Remove test leads and any connectors from the input terminals.
2. Lift the tilt stand and loosen the screws with a suitable Phillips-head screwdriver and remove the battery cover.
3. Observe the battery polarity markings indicated inside the battery compartment. Insert the battery according to the polarity markings.
4. Place the battery cover back in its original position and tighten the screws.

Adjust the Tilt Stand

Pull the tilt stand outward to its maximum reach (about 85° to the meter body). [Figure 1.1]	 Figure 1.1

Power On

1. To power ON the multimeter, turn the rotary switch to any other position except *OFF*.
2. To power OFF the multimeter, turn the rotary switch to the **OFF** position.

Sleep Mode

The multimeter automatically enters sleep mode if the rotary switch is not moved or a key is not pressed for 30 minutes.

Pressing SEL / Hz or turn the rotary switch will turn the multimeter back to operation mode from the sleep mode.

One minute before Auto Power-Off, the buzzer will beep five times to warn the user that the multimeter is about to shut off. Before shutoff, the buzzer will emit a long beep, and then the multimeter will shut off.

***Note**: In sleep mode, the multimeter will still use a little power. If the multimeter is not going to be used for a long period of time, the rotary switch should be turned to the **OFF** position.*

LCD Backlight and Flashlight

When the ☼ / 🔦 key is pressed briefly, the LCD backlight will be turned on. This is useful for testing at night or in low-light conditions. After the backlight is turned on, it will automatically turn off after about one minute. To turn the backlight off manually, press the ☼ / 🔦 key.

When the ☼ / 🔦 key is pressed and held for about 2 seconds, the flashlight will turn on. This is also useful for testing at night or in low light conditions. To manually turn the flashlight off, press and hold the ☼ / 🔦 key for 2 seconds.

Selecting the Range

• Auto-ranging mode is set as the default mode when the meter is powered on. AUTO will be displayed.

• When auto-ranging mode is enabled, press Range to enter the manual-range mode.

• In manual range mode, each additional press of Range sets the multimeter to the next higher range, unless it is already in the highest range, at which point the range switches to the lowest range.

• When manual range mode is enabled, press Range for more than 2 seconds to enter the auto-ranging mode.

Taking Measurements

Measuring AC or DC Voltage

This multimeter displays DC voltage values as well as their polarity. Negative DC voltages will display a negative sign on the left of the display.

1. Rotate the rotary switch to . Default is DC measurement mode, and **DC** will be displayed. Press to switch into AC measurement mode, and **AC** will be displayed.
2. Connect the black test lead to the **COM** terminal and the red test lead to the terminal.
3. Probe the test points and read the display. Press Range to enable and cycle through the manual ranges.

Measuring Resistance

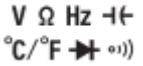
1. Rotate the rotary switch to
2. Connect the black test lead to the **COM** terminal and the red test lead to the terminal.
3. Probe the test points and read the display. Press Range to enable and cycle through the manual ranges.

Testing for Continuity

1. Rotate the rotary switch to . Press SEL / Hz once to enter continuity testing mode, and will be displayed.
2. Connect the black test lead to the **COM** terminal and the red test lead to the terminal.
3. Probe the test points to measure the resistance in the circuit and read the display. If the reading is below 50Ω, the multimeter will beep continuously, and the green indicator light will stay on.

Testing Diodes

1. Rotate the rotary switch to  . Press 

twice to enter diode testing mode, and  will be displayed.
2. Connect the black test lead to the **COM** terminal and the red test lead to the 

terminal.
3. Connect the red test lead to the positive terminal (anode) of the diode and the black test lead to the negative terminal (cathode). The cathode of a diode is indicated with a band.
4. Read the diode forward bias. If the test lead connection is reversed, the multimeter will display “OL”.

Multimeter Features

Data Hold Mode

1. Press 

to freeze the display during measurement, and  will be shown on the display.
2. Press 

again to exit this mode.

Capturing Max. and Min. Values

1. Long press the 

key to enter the maximum measurement mode, and will appear on the display. Long press the 

key again to enter the minimum measurement mode, and 

will display on the display.
2. Long press the 

key again to exit the mode. In this mode, the manual range mode will be activated automatically.

Buzzer Feature

• Press the function key, and the buzzer will emit a short beep.

• One minute before Auto Power-off, the buzzer will beep five times to warn the user that the multimeter is about to shut off. Before shutoff, the buzzer will emit a long beep, and then the multimeter will shut off.

• The buzzer beeps continuously to warn the user once the measured DC voltage exceeds 1000V, or the measured AC voltage exceeds 750V.

• The buzzer emits a long beep when the short circuit resistance is less than about 50Ω during the continuity test.

Test Lead Insertion Detection Function

• In the non-current function, when a test lead is inserted into 10A or μA mA input terminal, the multimeter will sound an alarm and display “LEAD” on the display.

• In the ≂ A current function, when the test lead is inserted into the μA mA input terminal, the multimeter will sound an alarm and display “LEAD” on the display.

• In the ≂ μA or ≂ mA current function, when the test lead is inserted into the 10A input terminal, the multimeter will sound an alarm and display “LEAD” on the display.

Care & Maintenance

Cleaning

To clean the multimeter exterior, follow these steps:

Wipe the dust from the multimeter surface with a soft cloth. Avoid scuffing the screen when cleaning the LCD. Clean the multimeter with a wet soft cloth that is not dripping water. Scrub with soft detergent or fresh water. To avoid damage to the multimeter, do not use any corrosive chemical cleaning agent.

Dirt or moisture in the terminals can distort readings. Follow the steps below to clean the multimeter terminals.

1. Turn the multimeter off and remove the test leads.
2. Turn the multimeter over and shake out the dirt in the terminals.
3. Wipe the contacts in each terminal with a clean swab dipped in alcohol.

Technical Specifications

All these specifications apply to the multimeter unless otherwise explained.

Standard conditions: The environment temperature is 18°C to 28°C, and the relative humidity is less than 80%.

***Note**: When measuring AC voltage/current or capacitance, accuracy guarantee range is 5% to 100% of the range.*

Function		Measurement Range	Resolution	Function
DC Voltage (V)	V	600.0mV/6.000V/60.00V/600.0V	0.1mV	±(0.5%+2dig)
		1000V	1V	±(0.8%+2dig)
AC Voltage (V)	V	600.0mV	0.1mV	±(2%+5dig)
		6.000V/60.00V/600.0V	0.001V	±(0.8%+2dig)
		750V	1V	±(1%+3dig)
DC Current (A)	μA	600.0μA/6000μA	0.1μA	±(0.8%+2dig)
	mA	60.00mA/600.0mA	0.01mA	±(0.8%+2dig)
	A	6.000A	0.001A	±(1.2%+3dig)
	A	10.00A[1]	0.01A	±(1.2%+3dig)

Function		Measurement Range	Resolution	Function
AC Current (A)	μA	600.0μA/6000μA	0.1μA	±(1%+3dig)
	mA	60.00mA/600.0mA	0.01mA	±(1%+3dig)
	A	6.000A	0.001A	±(1.5%+3dig)
	A	10.00A[1]	0.01A	±(1.5%+3dig)
Resistance (Ω)		600.0Ω/6.000kΩ/60.00kΩ/600.0kΩ/6.000MΩ	0.1Ω	±(0.8%+2dig)
		60.00MΩ	0.01 MΩ	±(2%+3dig)
Capacitance (F)		60.00nF/600.0nF/6.000μF/60.00μF	0.01nF	±(3%+3dig)
		600.0μF/6.000mF/60.00mF[2]	0.1μF	±(3%+5dig)
Frequency [3] (Hz)		9.999Hz/99.99Hz/999.9Hz/9.999kHz/99.99kHz/999.9kHz/9.999MHz	0.001Hz	±(0.8%+2dig)
Duty Cycle [4] (%)		0.1% - 99.9% (Typical: Vrms=1V, f=1kHz)	0.1%	±(1.2%+3dig)
		0.1% - 99.9%(≥1kHz)		±(2.5%+3dig)
Temperature (°C/°F)		-50°C to 1000°C	1	±(2.5%+3dig)
		-58°F to 1000°F	1	±(4.5%+5dig)

[1] When measuring current, for 8A to 10A, the measuring duration should not be over 2 minutes within a 10-minute time period, and in this 10-minute time period, no other current should flow through except within the measuring duration.

[2] When measuring capacitance, for the 60.00mF range, the measuring duration should be over 30 seconds.

[3] When measuring frequency, the typical waveform is Square or Sine. The signal meets the following conditions.

Frequency	Amplitude (rms)
1Hz – 5mHz	≥ 700mV

[4] When measuring duty cycle, the typical waveform is Square.

***Note**: When measuring resistance and capacitance, the influence of the resistance reactance of the pen itself on the measured value should be considered.*

Characteristics	Information
Display	5999
Frequency Response (Hz)	(40 - 1000) Hz
Sample Rate for Digital Data	3 times/second
Auto Ranging	√
True RMS	√
Diodes Test	√
Sleep Mode	√
Continuity Test	√
NCV Function	√

Characteristics	Information
Flashlight	√
Low Battery Indication	√ (The  is displayed when the battery is under the proper operation range.)
Data Hold	√
MAX/MIN	√
LCD Backlight	√
Input Protection	√
Live Wire Detection	√
Test Lead Insertion Detection	√
Input Impedance	≥ 10MΩ

Characteristics	Information
Battery	9V battery (6F22)
LCD Size	58.5 mm * 41 mm
Weight (without package)	0.32 kg
Dimension	190 mm * 90 mm * 56 mm
Working Temperature	0°C to 40°C
Storage Temperature	-10°C to 60°C
Relative Humidity	≤ 80%
Altitude	Operating: 3,000 meters / Non-operating: 15,000 meters

Interval Period of Adjustment: One year is recommended for the calibration interval period.

Warning

This content is compiled from multiple sources and is provided for reference purposes only. It may not be complete or fully applicable to all situations. If you are unable to resolve your issue, please contact the product manufacturer or an authorized service provider for official support.