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ALIENTEK

ALIENTEK DM40 3-in-1 Touchable Multimeter



Product Usage Instructions

- Before using the DM40, check for cracks or defects on the shell and ensure all ports and accessories are normal.
- Avoid measuring while charging to maintain measurement stability.
- Select the correct measurement port, range, and scale to prevent damage or injury.
- Hold the probe at the protected position during measurement.
- Avoid disassembling the case or measuring with an open case.
- Avoid usage in flammable/explosive environments or damp conditions.
- For DC or high voltage measurements above 36V, use AUTO+ mode to skip the mV range and start from V range.
- The DM40 digital multimeter is a high-performance 3-in-1 multimeter by Guangzhou Xingyi Electronic Technology Co., Ltd.
- It offers various features such as a rechargeable battery, firmware upgrade capabilities, custom boot logo options, data recording, shockproof mode, slide to shutdown function, and mode memory.
- Describe the physical appearance of the multimeter, highlighting buttons, display screen, and ports.
- Explain how to select measurement modes, ranges, and interpret readings on the interface.
- Provide guidance on utilizing the oscilloscope and signal generator functionalities of the multimeter.
- Detail additional functions like resistor mode settings, countdown shutdown, and quick

mode switch of the resistor.

- Information on customer services provided for the product.

Revision History

Version	Date	Modify Contents
V1.0	2024/12/07	First release
V1.1	2024/12/11	Added firmware upgrade, custom boot logo, and quick screens hot instructions
V1.2	2024/12/13	Added multimeter measurement settings instructions, added A UTO+ mode
V1.3	2024/12/25	Added data record, resistor mode settings, shockproof mode, slide to shutdown
V1.4	2025/01/18	Added mode memory, quick mode switch of the resistor, and countdown shutdown

Thank you for purchasing this product. To fully understand its features and operation, we recommend reading this manual carefully before use.

Safety Instructions

Safety Instructions (Must Read)

1. Before using DM40, please check carefully if the shell has cracks or defects, and ensure the measurement ports and accessories are normal.
2. DM40 integrates a rechargeable battery. For safety and measurement stability, please do not measure while charging. Low battery reminders may affect accuracy. Please charge promptly.
3. Please select the correct measurement port, range, and scale to avoid damaging the instrument or causing personal injury
4. Hold the probe at the protected position. Do not hold the metal part for measurement

5. Do not disassemble the case at will or measure while the case is open.
6. Do not use in environments with flammable or explosive gases/materials or in damp conditions.
7. For voltage measurement, when used for DCDC or high voltage above 36V measurement, it is recommended to use AUTO+ mode to skip the mV range (to avoid mismeasurement, sparking, and protection) and start measurement from the V range.

Product Introduction

The DM40 digital multimeter is the first high-performance 3-in-1 multimeter launched by Guangzhou Xingyi Electronic Technology Co., Ltd. Its main features are as follows:

1. Integrated multimeter, oscilloscope, and signal generator, featuring comprehensive functions and convenient measurement.
2. Equipped with a 3.5-inch 480*320 IPS capacitive touchscreen, providing a delicate display and convenient interaction.
3. 4-5/6 multimeter with a count of up to 60000 (C version), TRMS true RMS measurement, precise and reliable.
4. Automatic mV/V range and innovative uA/mA/A range design for quick and efficient measurement.
5. AC+DC mixed measurement (B/C versions), no signal escapes detection.
6. Super diode measurement with multi-segment beep design, quick response, and support for resistance (<1K Ω) measurement.
7. Supports resistance, capacitance, continuity, frequency, temperature, and other measurements.
8. Supports manual (V/A/ Ω)/automatic range, RLE relative measurement, extreme value measurement, and data hold.
9. Supports trend chart display for efficient data analysis with 3 adjustable time bases.
10. Oscilloscope with 50MSa/s sampling rate, 10MHz bandwidth, and 10-bit vertical resolution.
11. Oscilloscope supports multiple trigger modes and types, as well as FFT and ABS operations.
12. The signal generator supports sine wave, sawtooth wave, triangle wave, and square wave up to 10MHz.

Basic Parameters

DM40 Basic Parameters

Basic Information	
Model	DM40A DM40B DM40C
Screen	3.5'(480*320) IPS Touchscreen
Battery Life	≈12H(Multimeter) ≈10H(Oscilloscope)
Dimensions	140 * 83 * 25mm
Weight	≈260g
Interface	USB Type-C/MCX Socket/Banana Jack Socket
Conditions	Temperature 0~40°C Humidity <75%

Table 1.0 DM40 Basic information

DM40 Multimeter Technical Parameters:

Multimeter Technical Parameters				
Model	DM40A	DM40B	DM40C	
Function	Range			Accuracy

DC Voltage	400mV/4V /40V /400V/1000V	500mV/5V/50V /500V/1000V	600mV/6V/60V /600V/1000V	$\pm(0.03\%+5d)$
AC Voltage	400mV/4V /40V /400V/750V	500mV/5V/50V /500V/750V	600mV/6V/60V /600V/750V	$\pm(0.3\%+15d)$
DC Current	400uA/4000uA /40mA/400mA	500uA/5000uA /50mA/500mA	600uA/6000uA /60mA/600mA	$\pm(0.15\%+5d)$
	4A/10A	5A/10A	6A/10A	$\pm(0.2\%+5d)$
AC Current	400uA/4000uA /40mA/400mA	500uA/5000uA /50mA/500mA	600uA/6000uA /60mA/600mA	$\pm(0.5\%+15d)$
	4A/10A	5A/10A	6A/10A	$\pm(0.75\%+15d)$

Resistor	400Ω/4KΩ /40KΩ /400KΩ/4 MΩ	500Ω/5KΩ/50KΩ /500KΩ/5MΩ	600Ω/6K Ω/60K Ω/ 600KΩ/6 MΩ	±(0.1% +5d)
	40MΩ	50MΩ	60MΩ	±(0.2% +10d)
Capacitance	4nF/40nF/ 400nF /4uF/40uF	5nF/50nF/500nF /5uF/50uF	6nF/60nF /600nF /6uF/60u F	±(2.5% +30d)
	400uF/4m F/40mF	500uF/5mF/50mF	600uF/6 mF/60mF	±(3.5% +30d)
Frequency	10Hz~40 MHz	10Hz~50MHz	10Hz~60 MHz	±(0.01 %+5d)
Temperature	-40°C~1000°C(Standard probe range -20°C~300°C) -40°F~1832°F			±(1.0% +5°C) ±(1.5% +5°F)
Continuity	0Ω~1KΩ			±(0.2% +5d)
Diode	0V~3.0V, 0Ω~1KΩ			±(1%+5 d)
AC Response	10KHz			

DM40 Oscilloscope Technical Parameters

Oscilloscope Technical Parameters			
Sample Rate	50MSa/S	Input impedance	1MΩ
Bandwidth	10Mhz	Timebase Mode	YT/ROLL
Memory Depth	64Kpts	Sweep Mode	Auto/Normal/Single
Time Scale	100ns~50s	Trigger Type	Rising/Falling
Vertical Scale	10mV~10V /div(X1)	Persistence	OFF /Min/1S/∞
Resolution	10bit	Math	FFT/ABS
Coupling	AC DC	Measurement items	20 types

Table 1.2 Oscilloscope Technical Parameters

DM40 Signal Generator Technical Parameters

Signal Generator Technical Parameters				
Wave out	Sine Wave	Sawtooth Wave	Triangle Wave	Square Wave
Frequency	1Hz~50KHz			100KHz~10M Hz
Amplitude	0.5V~3.0Vpp			3.0Vpp
Duty	Not Adjustable		0~100%	Not Adjustable

Table 1.3 Signal Generator Technical Parameters

DM40 Adjustable MCX Probe Parameters

Adjustable MCX Probe Parameters				
Attenuation Ratio	Bandwidth	Input Impedance	Input Capacitance	Maximum Voltage
X1	20MHz	1MΩ±2%	50pF±20pF	40VRMS CATII
X10	140MHz	10MΩ±2%	15pF±5pF	400VRMS CATII

Table 1.4 Adjustable MCX Probe Parameters

Quick Start

Appearance Description



图 2.1.1 DM40 外观和接口

Description

- 1. Power Button (Long press to turn on/off, double-click to lock/unlock touch)
- 2. Type-C Port (For charging and USB communication, input voltage <5.2V)
- 3. Charging Indicator (Blue light when charging, off when fully charged)
- 4. MCX Signal Generator Port
- 5. MCX Oscilloscope Port

6. 3.5" (480*320) IPS Touchscreen
7. Voltage, Resistance, Capacitance, Continuity, Diode, Frequency, Temperature
Measurement Ports (Black COM is common)
8. Current Measurement Port (Black COM is common)
9. Multi-function Touch Buttons (MENU, RUN, AUTO, MF)

Multimeter Measurement Interface

The multimeter interface displays rich content: top status bar; left 4 multi-function touch buttons; middle for various measurement displays; bottom 6 touch buttons to switch 8 measurement functions, as shown in Figure 2.2.1.

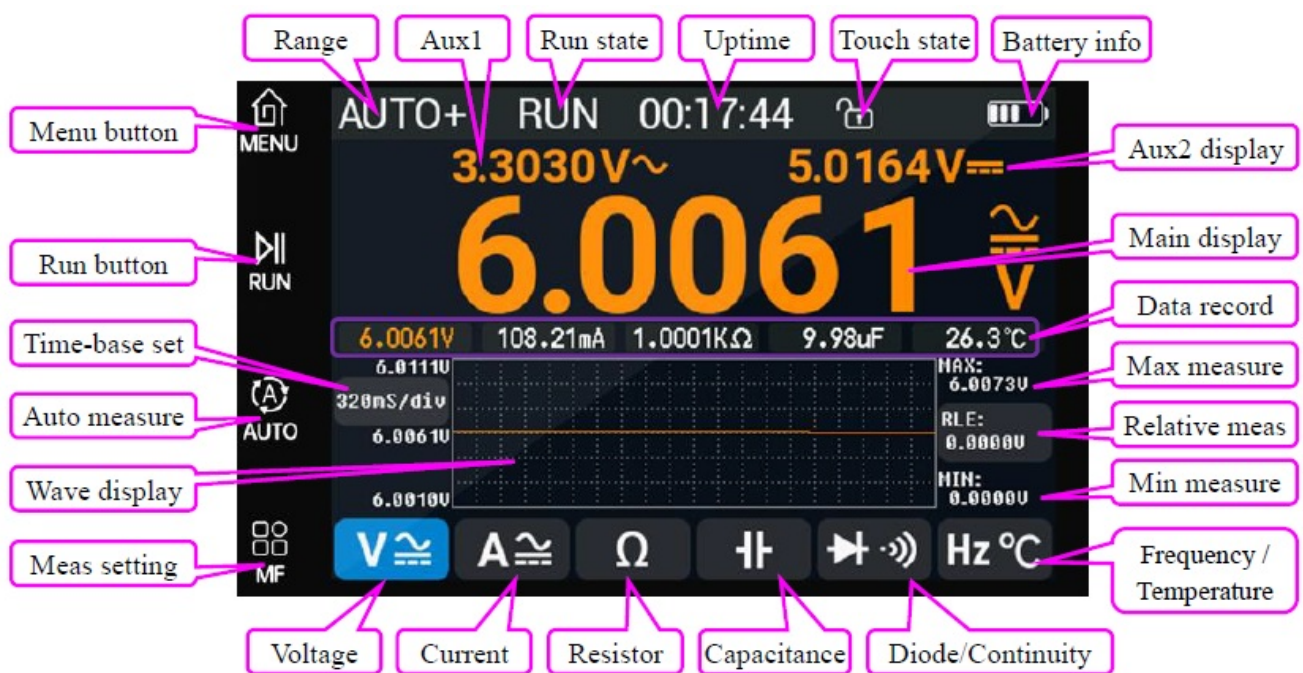


图 2.2.1 万用表测量界面

Status Bar Description

- Range Indication: AUTO range and manual range (only for voltage, current, and resistance).
- Running Status: RUN for running status, HOLD for data hold.
- Touch Lock/Unlock: Double-click the power button to lock/unlock touch function. After locking, touch is invalid. Single-click the power button can still switch measurement modes within the current mode.
- Uptime: Records uptime (in hours/minutes/seconds).
- Battery Info: Displays battery level when not charging, charging progress when charging (Do not measure while charging to avoid mismeasurement).

Left Touch Buttons

- MENU: Click to return to the function interface or measurement interface.
- RUN: Click to toggle RUN/HOLD mode. HOLD stops the interface from refreshing (except for Uptime).
- AUTO: Click to restore automatic range and turn off RLE function.
- MF: Enter/exit measurement settings (only for V/A/Ω). For voltage/current, select the range first and then the AC/DC measurement. For resistance, select the range and return to the measurement interface.

Value of measurement

- Aux1: AC mode displays frequency, AC+DC mode displays AC component, and temperature mode displays machine temperature.
- Aux2: AC mode and frequency mode display duty, AC+DC mode displays DC component, diode mode displays equivalent resistance, temperature mode displays Fahrenheit.
- Main display: Displays measurement value and units.
- RLE function: In non-OL and data hold states, click the RLE button to enable the RLE function and enter the manual range. Records the main display value to RLE. The main display subtracts the RLE value. Click once to update. Click the AUTO button/switch to measure mode/long-press the RLE button to turn off this function and restore automatic range.
- MAX/MIN: Records the maximum and minimum measured values. Clears after changing measurement modes
- Waveform Display: Synchronously displays the main display value. The waveform auto-scales, with horizontal*vertical=20*6 grids. Time base options are 160mS/320mS/640mS. Default is 320mS/div

Mode Setting Buttons

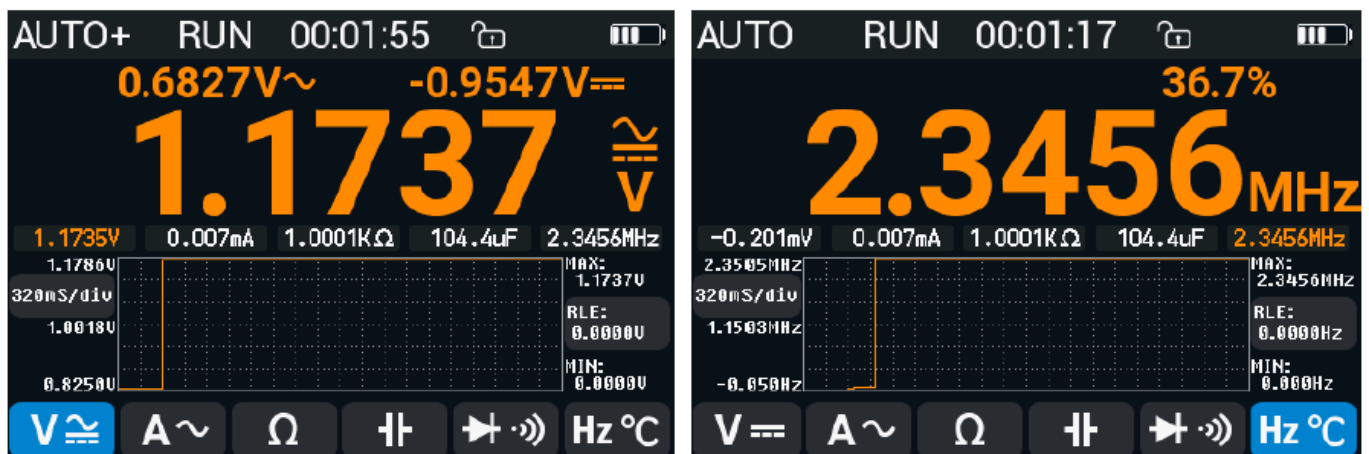
- Voltage Measurement: Cycle through DCV mode, ACV mode, and AC+DC mode (only

DM40B/C). Current Measurement: Cycle through DCA mode, ACA mode, AC+DC mode (only DM40B/C). Resistance Measurement: Click to cycle through offline and online resistance measurement. Online measurement is indicated by Ω with a subscript ON.

- Capacitance Measurement: Set to capacitance measurement mode.
- Diode/Continuity Measurement: Cycle through the diode and continuity measurement.
- Frequency/Temperature Measurement: Cycle through frequency and temperature measurement. Note: Switching measurement modes restores AUTO/AUTO+ range and turns off RLE function.

Data Recording

- DM40 supports screen data recording. In non-OL state, short-press the main display number area to record and update data once. A short beep indicates recording. The most recently updated data is orange, and others are white. Supports up to 5 sets of data. Older data is overwritten. Long-press the main display area for 1s to clear all records. A long beep indicates clearing.



Measurement Mode Description











Measurement Mode Description		
Mode Category	Item Category	Unit+Symbol
Voltage Measurement	DCV (DC Voltage Measurement)	mV/V 
	ACV (AC Voltage Measurement)	mV/V 
	AC+DC Mixed Measurement (DM40B/C)	mV/V 
Current Measurement	DCA (DC Current Measurement)	uA/mA/A 
	ACA (AC Current Measurement)	uA/mA/A 
	AC+DC Mixed Measurement (DM40B/C)	uA/mA/A 
Resistance Measurement	Resistance Measurement	Ω /K Ω /M Ω 
Capacitance Measurement	Capacitance Measurement	nF/uF/mF 
Diode Measurement	Diode Voltage Drop Measurement	V 
	Resistance Measurement	Ω
Continuity Measurement	Continuity Measurement	Ω 
	Resistance Measurement	
Frequency Measurement	Frequency Measurement	Hz/KHz/MHz Hz
	Duty Measurement	%
Temperature Measurement	Temperature Measurement	$^{\circ}\text{C}/^{\circ}\text{F}$ $^{\circ}\text{C}$

Table 2.3.1 Measurement Mode Description

Measurement Port Description

	$V \Omega \cdot \rightarrow$ $\rightarrow \text{Hz} ^\circ\text{C}$ (Red Terminal)	1. AC/DC voltage measurement 2. Resistance measurement 3. Continuity measurement 4. Diode measurement 5. Capacitance measurement 6. Frequency measurement 7. Temperature measurement.
COM (Black Terminal)	Common port for all measurements	
A mA uA (Red Terminal)	Dedicated port for current measurement, 10A(Max) Built-in 10A ceramic fuse. Replace with the same model if burned	

Figure 2.4.1 Measurement Port Description

Measurement Methods

Voltage Measurement

1. Click the voltage button $V \cong$ to enter voltage measurement mode Default is DC measurement. Cycle through DCV/ACV/AC+DC measurement by clicking (only DM40B/C).
2. Connect the black probe to the black COM port and the red probe to the red V Ω Hz port.
3. Connect the probes to the circuit under test and observe the measured value on the screen. OL indicates out of range.

Note: Do not exceed the maximum measure value. Use auto range if unsure of the voltage range.

Current Measurement

1. Click the current button $A \cong$ to enter current measurement mode. Default is DC measurement. Cycle through DCA/ACA/AC+DC measurement by clicking (only DM40B/C).

2. Connect the black probe to the black COM port and the red probe to the red A mA uA port.
3. Connect the probes to the circuit under test and observe the measured value on the screen. OL indicates out of range.


Note: Do not exceed the maximum measure value (10A). Use auto range if unsure of the current range.

Resistance Measurement

1. Click the resistance button Ω to enter resistance measurement mode.
2. Connect the black probe to the black COM port and the red probe to the red V Ω Hz port.
3. Connect the probes to the resistor under test and observe the measured value on the screen. OL indicates out of range.


Note: It is recommended to switch to online measure mode for online measurement.

Capacitance Measurement

1. Click the capacitance button  to enter capacitance measurement mode.
Capacitance measurement only supports automatic range.
2. Connect the black probe to the black COM port and the red probe to the red V Ω Hz port.
3. Discharge the capacitor in advance, then connect the probes to the capacitor under test and observe the measured value on the screen. OL indicates out of range.
Testing large mF capacitors takes longer, which is normal.

Note: Do not perform voltage measurement in this mode to avoid damaging the instrument.

Diode/Continuity Measurement

1. Click the diode/buzzer button  to enter diode measurement mode. Click again to switch to continuity measurement.

2. Connect the black probe to the black COM port and the red probe to the red V Ω Hz port.
3. Connect the probes to the component under test. Diode measurement supports 4 segment beeps (<0.02V long beep, <0.45V two short beeps, <0.75V one short beep, <1.5V urgent three short beeps). The maximum voltage drop displayed is around 3.1V. OL is displayed if exceeded. Also supports resistance measurement within 1K Ω . OL, displayed if exceeded. Approximately within 30 Ω , the buzzer beeps continuously.

Note: Do not perform voltage measurement in this mode to avoid damaging the instrument.

Frequency/Temperature Measurement

1. Click the frequency/temperature button **Hz°C** to enter frequency measurement mode. Click again to switch to temperature measurement mode.
2. For frequency measurement, the recommended input signal amplitude is within 20Vrms, with a limit of 250Vrms. Connect the black probe to the black COM port and the red probe to the red V Ω Hz port. Connect the probes to the signal under test and observe the measured value on the screen. OL indicates out of range. Aux 2 shows the signal duty cycle.
3. For temperature measurement, connect the thermocouple negative terminal to the black COM port and the positive terminal to the red V Ω Hz port. Contact the probe with the surface of the object under test and observe the measured value in Celsius. OL indicates out of range. Aux 1 shows machine temperature. Aux 2 shows the measured value of the thermocouple in Fahrenheit.

Note: Do not perform a voltage measurement in temperature mode to avoid damaging the instrument.

Measurement Settings

Voltage and Current Measurement Settings

Taking DM40C voltage measurement setting as an example:

Click the voltage V measurement button to enter voltage measurement mode, then Click the MF button to enter the settings interface (similar for current measurement settings).



Explanation

- DM40C includes 5 manual ranges (600mV/6V/60V/600V/1000V) and two automatic ranges (AUTO and AUTO+). The difference is that AUTO is a fully automatic range, switching between mV and V ranges automatically, while AUTO+ is a V range automatic range, only switching within V ranges. AUTO+ mode avoids relay flickering and speeds up measurement, suitable for frequent high-voltage or DCDC measurements.
- Voltage measurement modes include AC, DC, and AC+DC (DM40B/C). Select any one to return to the measurement interface. Clicking MF also returns to the measurement interface. After returning to the main interface, the range mode is indicated in the top left corner.
- The side AUTO button implements the AUTO or AUTO+ function according to the settings.

Resistance Measurement Settings

- Taking DM40C resistance measurement setting as an example: Click the resistance Ω measurement button to enter resistance measurement mode, then click the MF button to enter the settings interface.



Explanation

- DM40C resistance measurement ranges include 6 manual ranges (600 Ω /6K Ω /60K Ω /600K Ω /6M Ω /60M Ω) and one automatic range (AUTO). Select any one or click MF to return to the measurement interface. After returning to the main interface, the range mode is indicated in the top left corner.
- Resistance measurement includes offline and online measurements. Offline mode is measuring the resistor separately after removing it, featuring high measurement voltage, fast speed, and high accuracy. Online mode is directly measured on the circuit board, featuring lower voltage, moderate speed, but small deviation. Select one or click MF to return to the measurement interface.
- Click the resistance measurement button to quickly cycle through offline and online modes.
- Online mode is indicated by Ω with subscript ON

Oscilloscope & Signal Generator Usage Instructions

- Please refer to the document: DM40 Oscilloscope & Signal Generator Manual.pdf

Other Functions

System Settings

- Access system settings by clicking Settings on the main interface.

Item	Content	Description
1. Language	Simplified Traditional English	Currently supports 3 languages
2. Power	Screen Dim Time :5min 10min 30min Never Shutdown Time :10min 30min 1h Never	Screen dims to minimum brightness Auto-shutdown at shutdown time
3. Startup page	Multimeter, Oscilloscope, Signal Generator, Main Interface	Quickly enter the set startup interface
4. Volume and Backlight	Backlight:10%~100% Volume:0%~100%	Minimum brightness:10%, 0% turns off the buzzer
5. Other Settings	USB Connection Factory Reset, Shock proof Mode Mode Remember	Firmware update and image upload restore default settings Avoid error measurement DMM measure mode remember

6. Device info	Manufacturer, Website, Model, Serial Number, Software and Hardware Version	
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Table 4.1 System settings

Firmware Update Instructions

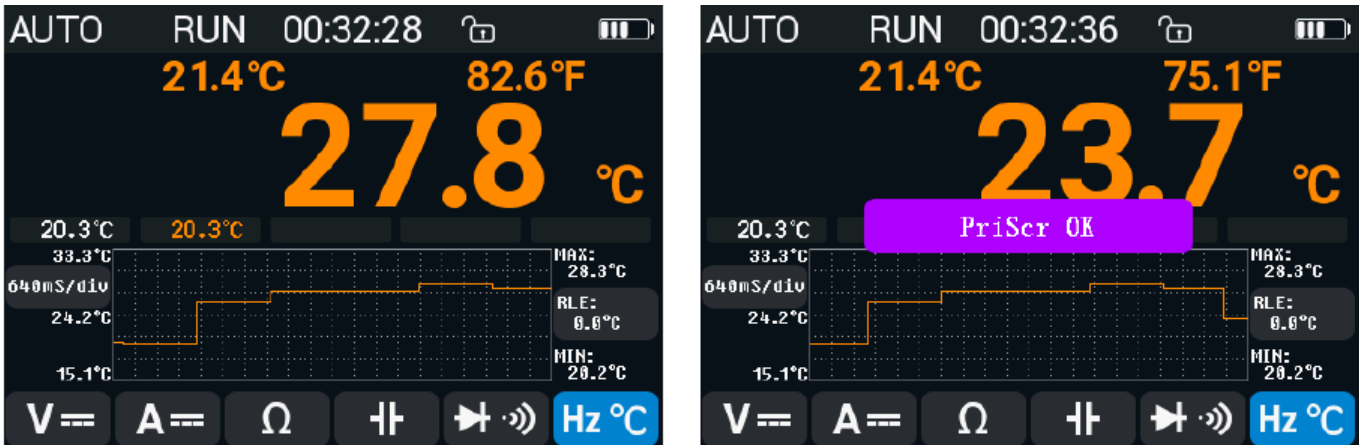
System settings➡ , Others, select USB connection, connect DM40 to a computer via a USB cable. The computer will pop up a U disk . Open the U disk , place the latest firmware (dm40xxx.bin), eject the U disk after transfer is complete. Then long long-press the power button to restart and update the firmware automatically.

Custom Boot Logo

Create a boot logo with requirements: 480 320 resolution, 1-bit BMP image, named logo.bmp. Connect the device to a computer, open the U-disk, replace the existing logo.bmp file, and restart to apply. To remove the boot logo, delete the file directly.

Quick screenshot instructions

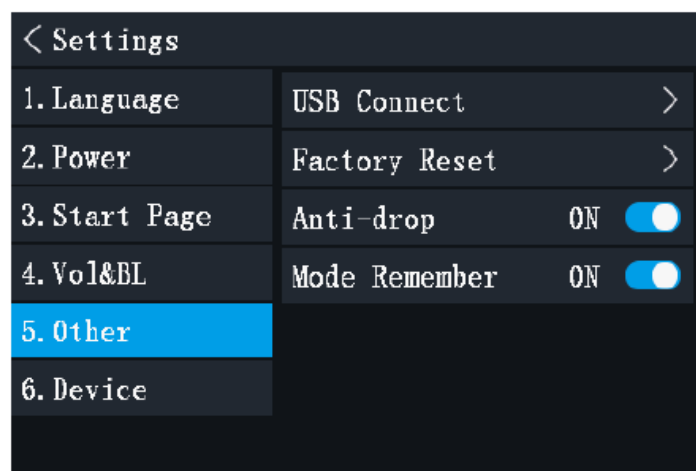
Swipe down with 3 points and hear a beep~ prompt to start taking screenshots. The multimeter interface has an aliasing effect and saves for a long time (4~5s). After completing the screenshot, it will prompt that the screenshot is successful (the saved image can be copied and viewed by connecting to a computer via USB).



Shockproof Mode Instructions

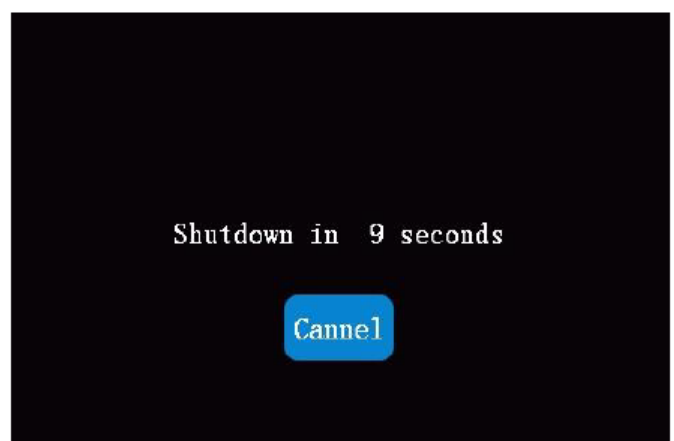
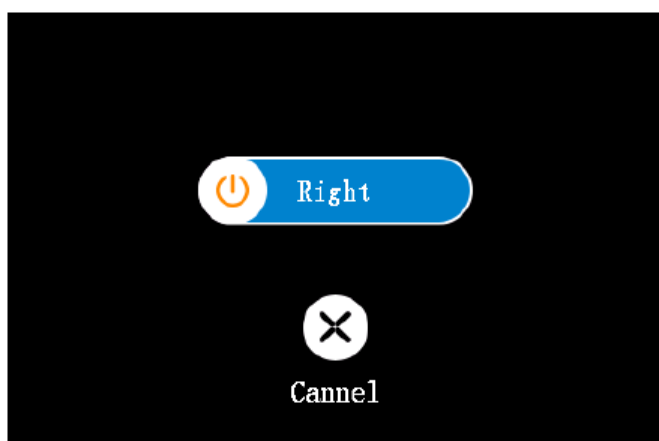
mV voltage measurement, resistance measurement, diode and continuity measurement, etc., require magnetic latching relays. Advantages of magnetic latching relays include low power consumption. The disadvantages are high cost, lack of drop resistance, and strong shaking that may cause erroneous measurements, especially for diode and on-off measurements.

Enabling shockproof mode keeps the relay engaged continuously, effectively avoiding false measurements caused by ordinary collisions. However, it increases power consumption, reducing endurance by about 1 hour. If the device is used in a fixed position without movement, it is recommended to disable shockproof mode for an average endurance of around 12 hours.



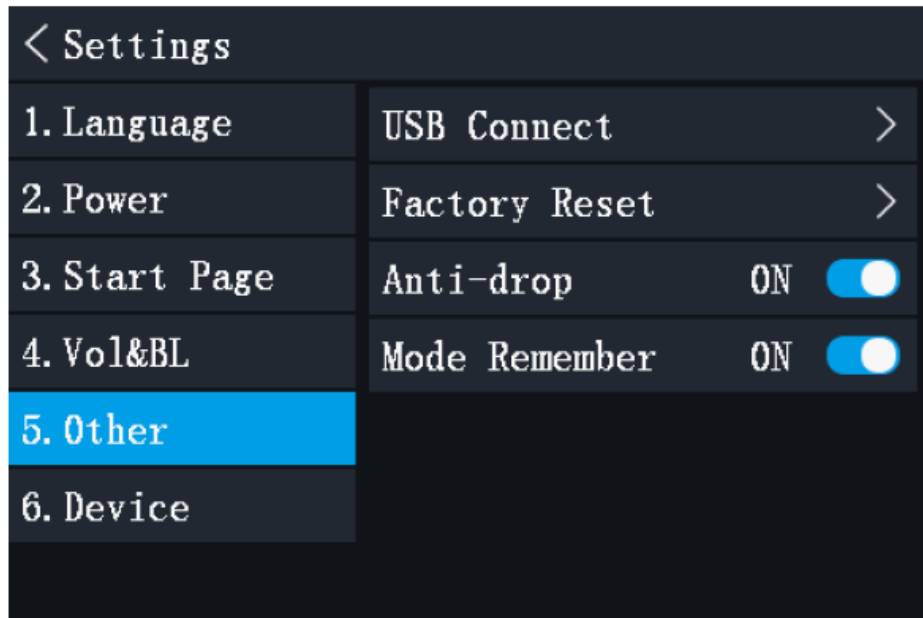
Slide to Shutdown and Auto Shutdown Instructions

- Slide two fingers down to prompt the slide to shut down. Cancel or slide to the right to shut down.
- If no touch operations are performed within the auto shutdown time, a 10 s countdown with buzzer prompt will start. No operation will result in an auto shutdown.



Mode Memory Instructions

- System setting → Others enable mode memory function will remember the last measurement mode and automatically switch to it after restarting. Users can choose whether to enable this function based on actual needs.



Services

After-sales Service

- We warrant that the product will be free from defects in materials and workmanship for a period of 1 year from the date of purchase of the product by the original purchaser from our company.
- This warranty only applies to the original purchaser and is not transferable to a third party.
- If the product proves defective during the warranty period, we will either repair the defective product without charge for parts and labour, or provide a replacement in exchange for the defective product.
- This warranty shall not apply to any defect, failure, or damage caused by improper use or improper or inadequate maintenance and care.

Website

- Download: www.alientek.com/download

- Company: www.alientek.com
- Aliexpress: www.aliexpress.com/store/1102909571

Contact US


- Email: fae-smt@alientek.com



FAQ

- **Q: Can I measure high voltages with this multimeter?**
 - **A:** Yes, you can measure high voltages above 36V using the AUTO+ mode to skip the mV range and start from the V range.
- **Q: Is it safe to use the multimeter while charging?**
 - **A:** It is recommended not to measure while charging to ensure safety and measurement stability.

Documents / Resources

	<p>ALIENTEK DM40 3-in-1 Touchable Multimeter [pdf] User Manual</p> <p>DM40, DM40 3-in-1 Touchable Multimeter, 3-in-1 Touchable Multimeter, Touchable Multimeter, Multimeter</p>
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References

- [User Manual](#)

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3-in-1 Touchable Multimeter, ALIENTEK, DM40, DM40 3-in-1 Touchable Multimeter, Multimeter, Touchable Multimeter

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