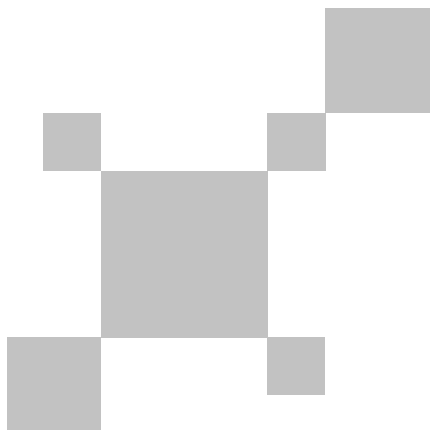


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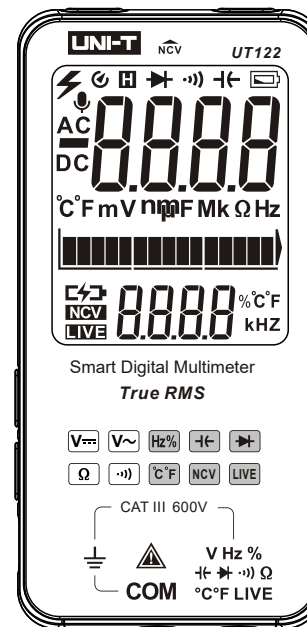


UNI-T

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UNI-T



UT122 Smart Digital Multimeter

Contents

I. Overview	3
II. Features	3
III. Accessories	3
IV. Safety Information	4
V. Electrical Symbols	5
VI. General Specifications	5
VII. External Structure	6
VIII. Button Descriptions	7
IX. Operating Instructions	8
X. Technical Specifications	13
XI. Maintenance	17

I. Overview

UT122 is a smart digital multimeter with color screen, it can identify functions and ranges automatically according to the input signal, reducing operating difficulty effectively and improve work efficiency. The EBTN display screen allows user to obtain clear readings at maximum angle. This multimeter conforms to safety standards and is set with all-featured overload protection, ensuring users to perform safe operation in CA T III 600V locations. Designed with unique exterior and function configurations, UT122 is a suitable measurement tool for entry-level and residential users.

II. Features

1. The curved edge, glossy surface, and large color screen. Designed with buttons on the side.
2. Entering automatic signal recognition interface when powered on, i.e., resistance, AC/DC voltage, continuity and other functions.
3. Displaying ambient temperature in auxiliary display screen when turned on.
4. The ability to perform NCV detection of electromagnetic field strength and circuit continuity through smart analog bar graph (3 segments: blue, yellow, red) and the number shown in main display.
5. Recognizing live wire fast with indication sound and frequency display under LIVE mode.
6. Protection against false detection, withstanding 600V (3.6kVA) impact at most, set with overvoltage indication.
7. Large capacitance (100mF) measurement function.
8. 10MHZ frequency and temperature measurement functions.
9. Power frequency voltage 1KHZ and duty cycle measurement function.
10. Designed with large high-definition EBTN LCD and smart ADC (3 times/s).

III. Accessories

If any item in the package is missing or damaged, please contact your supplier immediately.

User manual -----	1 pc
Test lead -----	1 pair
Type-K temperature probe -----	1 pc
Carrying bag -----	1 pc
USB charging cable (type-C) -----	1 pcs







IV. Safety Information

Note the "Warning labels and sentences". A Warning identifies conditions and procedures that are dangerous to the user and that can cause damage to the Product or the equipment under test.

The product is designed in accordance with EN61010-1/61010-2-030/61010-2-033, Electromagnetic Radiation EN61326-1 Standard, and conforms to Double Insulation, Overvoltage CAT III 600V and Pollution Class 2. Failure to follow operating instructions can impair the protection provided by the product.

1. Check the product and test leads before use. Pay attention to any damage or abnormal situation. Please stop use if test lead and casing insulation are damaged, or the LCD displays nothing, or the product cannot work normally.
2. It is forbidden to use without rear cover or battery cover set in place. Otherwise it may cause electric shock.
3. Keep fingers behind the finger guard and never make contact with exposed wire, connector, input terminal not in use, or circuit being measured during measurement.
4. Set the functional switch to correct position before measurement. It is forbidden to switch over during measurement to avoid product damage.
5. Do not exert AC/DC voltage over 600V between terminal and grounding to prevent electric shock and product damage.
6. Use caution when working with voltages over 60V DC or 30Vrms AC.
7. Do not measure voltage or current over allowed value. Before measuring on-line resistance, diode or continuity, please disconnect all powers in the measured circuit, and discharge all capacitors completely, otherwise it can cause inaccurate measurement result.
8. When the symbol "⚠" appears on the LCD, please replace the battery in time to ensure measurement accuracy. Remove the battery if the product is not used for a long time.
9. Do not alter the internal wiring to avoid product damage and safety hazard.
10. Do not keep or use the product in environments with high temperature, high humidity, strong electromagnetic field, or inflammable and explosive environments.
11. Please wipe the casing with wet cloth and cleaning agent, do not use abrasives or solvents, so as to avoid casing corrosion, product damage, and safety hazard.

V. Electrical Symbols

Symbol	Description	Symbol	Description
	High voltage		Alternating voltage or current
	Grounding		Direct voltage or current
	Double insulation		Warning

VI. General Specifications

Display count: 6199 (9999 for capacitance measurement)

Polarity indication: Auto

Overload indication: "OL" or "-OL"

Low battery indication: The symbol "" appears to indicate low voltage and charging in time.

Power supply: 3.7V/700mAH lithium battery

Auto power off: The product powers off automatically after 15 minutes of inactivity.

Disable this function if needed.

Dimensions: 144mm*71mm*15.5mm

Weight: About 157g (including battery)

Altitude: 2000m

Operating temperature and humidity: 0°C~30°C (≤80%RH); 30°C~40°C (≤75%RH);

40°C~50°C (≤45%RH)

Storage temperature and humidity: -20°C~+60°C (≤80%RH)

EMC: Under radio frequency field of 1V/m, overall accuracy = Specified accuracy + 5% of range. Under radio frequency field over 1V/m, there is no specified specification.

VII. External Structure (Figure 1)

1. LCD display screen (Display measurement data and function symbols)
2. POWER and flashlight switches
3. Hold recent data and switch backlight brightness
4. Switch between capacitance, continuity, resistance and diode.
5. Switch between voltage/NCV/Live/frequency and duty cycle/temperature/Auto
6. "VΩ" terminal
7. "COM" terminal
8. Type C charging port

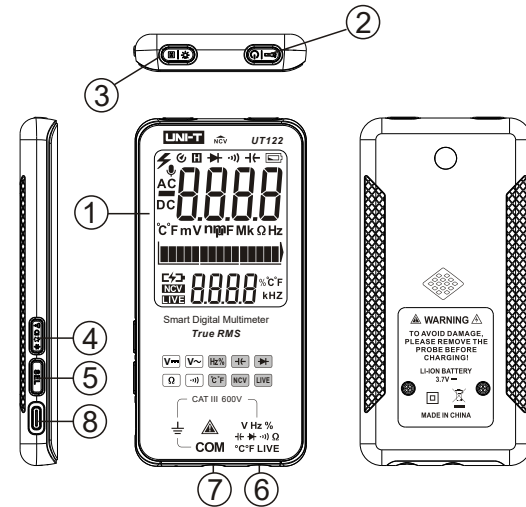



Figure 1

VIII. Button Descriptions

1. POWER button “”

- Long press this button for about ≥ 2 seconds to turn on/off the product.
- In power on state, short press this button to turn on/off the flashlight. The flashlight turns off automatically after it is ON for 3 minutes.

2. HOLD/BACKLIGHT button “”

- When HOLD button is short pressed, the recent testing data is held and the symbol “” is displayed.
- In power on state, long press this button for ≥ 2 seconds to switch backlight brightness. When the product is powered on, the backlight brightness is set at strong level by default, it switches to weak level if no button is pressed in 30 seconds, and switches to strong level for 30 seconds if pressed. Long press this button to switch to and lock level-2 brightness.

3. CAP button “”

- Short press this button to fast enter capacitance measurement mode.
- Long press for about ≥ 2 seconds to return to automatic mode.
- Short press this button to switch to other measurement modes (capacitance/continuity/resistance/diode).

4. SEL button “”



- When powered on, “Auto” appears on the LCD, and the product enters automatic measurement state in which it can identify resistance and voltage signals automatically.
- Short press this button to enter manual selection mode. The mode cyclically switches between DC voltage, AC voltage, NCV, LIVE, frequency and duty cycle, temperature, and Auto. Click continuously or long press (not in temperature measurement mode) to return to automatic measurement mode.
- Long press this button in temperature testing state for ≥ 2 seconds to switch between °F and °C.
- Press CAP button to directly enter capacitance measurement function.

IX. Operating Instructions

1. AC/DC Voltage Measurement

- Connect red test lead with “VΩ” terminal, and black with “COM”.
- Set the functional switch to AC/DC voltage range or Auto range, and connect the test leads with power supply or load to be measured in parallel.
- Read the testing result from main display. The auxiliary display shows ambient temperature in DC voltage range and frequency in AC voltage range.

Warning:

- Do not input voltage over AC 600V. It is possible to measure higher voltage, but it may cause product damage.
- Pay special attention to avoid electric shock when measuring high voltage.
- If the measured voltage is $\geq 30V$, the LCD shows warning symbol “”. If the measured voltage is $\geq 600V$ AC, the meter will automatically sound an alarm and the LCD will display the high-voltage alarm symbol “”.


2. Resistance Measurement

- Connect red test lead with “VΩ” terminal, and black with “COM”.
- Press CAP button to switch to “Ω” range or Auto range, and connect the test leads with the resistor to be measured in parallel.
- Read the test result from the LCD, the auxiliary display shows ambient temperature.

Warning:

- If the measured resistor is open or the resistance exceed the maximum range, “OL” appears on the LCD.
- Before measuring on-line resistance, switch off all powers in the measured circuit and discharge all capacitors completely, so as to ensure accurate measurement.
- Do not input voltage over DC/AC 30V to avoid personal injury.

3. Continuity Detection

- Connect red test lead with “VΩ” terminal, and black with “COM” terminal.
- User can set the product to Auto smart identification state. To enter manual mode, press CAP button to switch to “” range and connect the test leads with both ends of the load of measured circuit. If the resistance between both measured ends is less than 30Ω , the circuit is conductive and the buzzer makes sound continuously; the buzzer keeps silent if the resistance is $\geq 50\Omega$.

⚠ Warning:

- Before detecting on-line continuity, switch off all powers in the measured circuit and discharge all capacitors completely, so as to ensure accurate measurement.
- Do not input voltage over DC/AC 30V to avoid personal injury.

4. Diode Measurement

- 1) Connect red test lead with "VΩ" terminal, and black with "COM". The polarity of red test lead is "+", and black is "-".
- 2) Press CAP button to switch to "▶" range, read from the LCD the appropriate forward voltage of PN junction of measured diode. The normal voltage of silicon PN junction is about 500~800mV generally. The auxiliary display shows ambient temperature.
- 3) Read the test result from the LCD.

⚠ Warning:

- If the measured diode is open or the polarity is reversed, "OL" appears on the LCD.
- Before measuring on-line diode, switch off all powers in the measured circuit and discharge all capacitors completely, so as to ensure accurate measurement.
- Do not input voltage over DC/AC 30V to avoid personal injury.

5. Capacitance Measurement

- 1) Connect red test lead with "VΩ" terminal, and black with "COM".
- 2) Press CAP button to switch to "▶" range, and connect the test leads with both ends of measured capacitor in parallel, then read the test result from the LCD. The auxiliary display shows ambient temperature.

⚠ Warning:

- If the measured capacitor is shorted or the capacitance exceeds the maximum range, "OL" appears on the LCD.
- It takes some time to stabilize the reading for measurement of capacitance over 400μF.
- To ensure measurement accuracy, please discharge the capacitor completely before measurement, especially for capacitor with high voltage.

6. Frequency and Duty Cycle Measurements

- 1) Connect red test lead with "VΩ" terminal, and black with "COM".
- 2) Press SEL button to switch to "HZ" range, and connect the test leads with both ends of measured object in parallel, then read the test result from the LCD (frequency shown in main display; duty cycle in auxiliary display).

⚠ Warning:

- Do not input voltage over DC 60V or AC 30V to avoid product damage and personal injury.

7. Temperature Measurement

- 1) Detecting ambient temperature automatically
The product is designed with automatic detection of ambient temperature (shown in auxiliary display). The accuracy is for reference only (please restart the product and refresh the recent temperature when performing measurement in different environments).
- 2) Detecting HVAC temperature
"----" appears under open circuit, the auxiliary display shows ambient temperature. Connect type-K temperature sensor to perform temperature (°C/°F) measurement (°F = °C*1.8 + 32). Connect positive end of thermocouple with "VΩ" terminal, and negative of that with "COM".

⚠ Warning:

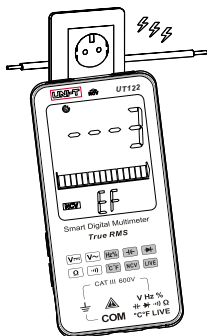
- The equipped type-K (NiCr-NiSi) thermocouple is only applicable to measurement of temperature below 230°C/446°F.

8. Non-Contact AC Voltage Detection (NCV) (Figure 2)

- 1) Hold the product by hand, then press SEL button to switch to "NCV" range, without test leads connected.
- 2) Electric field detection: When the NCV sensing end of the product gets close to the measured conductor or receptacle, the main display shows "---1", "---2" or "---3" as the detected strength changes, the buzzer makes sound, and "EF" flashes on the auxiliary display, at the same time, the analog bar graph (3 segments: blue, yellow, red) appears accordingly.
- 3) If there is no electric field detected, the main display shows "EF" and the auxiliary shows room temperature.

⚠ Warning:

- Please make sure that the NCV sensing end gets close to the measured electric field, otherwise the measurement sensitivity can be affected.
- If the voltage of measured electric field is $\geq 100V$ AC, please observe if the conductor of measured electric field is insulated.



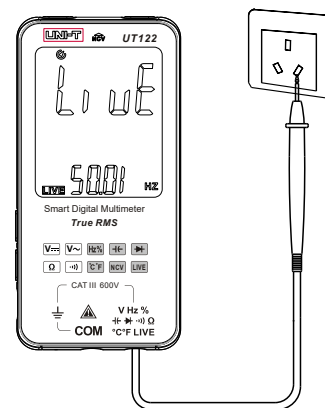
9. LIVE Detection (Figure 3)

Hold the product by hand, and press SEL button to switch to “LIVE” range: Connect the red test lead with “V” terminal, then makes contact with MAINS outlet or bare wire to identify live or neutral wire.


- 1) The main display shows “----” if there is no live wire detected.
- 2) The main display shows “----” if neutral wire is detected.
- 3) If MAINS “live wire” is detected, the main display shows “LIVE”, and the sound changes depending upon the detected strength to indicate the strength of the voltage of live wire.
- 4) Room temperature (Celsius) changes to “50Hz or 60Hz” in auxiliary display.





⚠ Warning:

- To avoid “COM” terminal from interfering electric field, please remove the black test lead from “COM” terminal.
- For concentrated high voltage electricity, the accuracy of identifying “live wire” may be unstable, thus, please judge based on the display and the sound frequency.



10. Other Functions

Auto power off: The product powers off automatically after 15 minutes of inactivity. In auto power off state, long press “” to restart the product.

- To disable auto power off function, please hold down “” and “” at the same time in OFF state and then power on the product. To enable the function, please turn off and restart the product.
- Buzzer: If any enabled button is pressed, the buzzer makes beep sound once (about 0.25s). When measuring voltage, continuity, diode, NCV, and LIVE, the buzzer also makes beep sound to indicate high voltage, overrange, conductive, identification, electric field, etc.
- Low voltage detection: Battery voltage is detected when the product works, the low battery symbol “” appears on the LCD if the voltage is less than about 3.4V.
- Charging indication: Please charge in time if the low battery symbol appears, the symbol “” flashes in charge state and stays list after fully charged.

X. Technical Specifications

Accuracy: $\pm (a\% \text{ of reading} + b \text{ digits})$, one-year calibration period

Ambient temperature and humidity: $23^{\circ}\text{C}\pm 5^{\circ}\text{C}$; $\leq 80\% \text{RH}$

Temperature coefficient: The range to ensure accuracy is $18^{\circ}\text{C}\sim 28^{\circ}\text{C}$, the fluctuation range of ambient temperature keeps within $\pm 1^{\circ}\text{C}$. If the temperature is $< 18^{\circ}\text{C}$ or $> 28^{\circ}\text{C}$, the additional error of temperature coefficient is $0.1 \times (\text{Specified accuracy})/^{\circ}\text{C}$.

(1) DC Voltage

Range	Resolution	Accuracy	Overload Protection
6.000V	0.001V	$\pm (0.5\%+3)$	600Vrms
60.00V	0.01V		
600.0V	0.1V		

- Input impedance: $\geq 10\text{M}\Omega$
- Minimum identifiable voltage: $> 0.6\text{V}$
- Range to ensure accuracy: 5%~100% of range (in manual mode)

(2) AC Voltage

Range	Resolution	Accuracy	Overload Protection
6.000V	0.001V	$\pm (1.0\%+3)$	600Vrms
60.00V	0.01V		
600.0V	0.1V		

- Input impedance: $\geq 10\text{M}\Omega$
- Minimum identifiable voltage: 0.6V
- Frequency response: 45~1000Hz
- Range to ensure accuracy: 5%~100% of range (in manual mode)
- Add error for AC crest factor of non-sinusoidal wave:
 - Add 3% if crest factor is 1~2
 - Add 5% if crest factor is 2~2.5
 - Add 7% if crest factor is 2.5~3

(3) Resistance

Range	Resolution	Accuracy	Overload Protection
600.0 Ω	0.1 Ω	$\pm (1.0\%+5)$	600Vrms
6.000k Ω	0.001k Ω	$\pm (1.0\%+3)$	
60.00k Ω	0.01k Ω		
600.0k Ω	0.1k Ω	$\pm (2.0\%+5)$	
6.000M Ω	0.001M Ω		
60.00M Ω	0.01M Ω		

- Range to ensure accuracy: 5%~100% of range
- 600.0 Ω : Measured value = Displayed value – Value of shorted test lead
- Open circuit voltage: About 0.5V

(4) Continuity

Range	Resolution	Accuracy	Overload Protection
600.0 Ω	0.1 Ω	$\leq 30\Omega$: Buzzer sounds (continuity) $\geq 50\Omega$: Buzzer keeps silent (discontinuity)	600Vrms

(5) Frequency

Range	Resolution	Accuracy	Remark
10Hz ~ 10MHz	0.01Hz ~ 0.01MHz	$\pm (0.1\%+3)$	$\leq 100\text{kHz}$: 400mVrms \leq Input amplitude $\leq 30\text{Vrms}$ $> 100\text{kHz}\sim 1\text{MHz}$: 600mVrms \leq Input amplitude $\leq 30\text{Vrms}$ $> 1\text{MHz}\sim 10\text{MHz}$: 2Vrms \leq Input amplitude $\leq 30\text{Vrms}$
Duty cycle: 10.0% ~95.0%	0.1%	$\pm (3\%+5)$	Duty cycle is only applicable to measurement of square wave at a frequency of $\leq 10\text{kHz}$. The duty cycle is 10.0%~95.0% when the amplitude is 1Vp-p and the frequency is $\leq 1\text{kHz}$.

(6) Temperature

Range	Resolution	Accuracy	Overload Protection
-40°C 40°C	1°C	±3	600Vrms
41°C 500°C		±(1.0%+3)	
501°C 1000°C		±(2.0%+3)	
-40°F 104°F	1°F	±6	
105°F 932°F		±(2.0%+4)	
933°F 1832°F		±(2.5%+4)	

(7) Diode

Range	Resolution	Accuracy	Overload Protection
3.000V	0.001V	Open circuit voltage is about 2.9V, forward voltage drop of PN junction can be measured. The normal voltage of silicone PN junction is about 0.1V~0.8V or 1.2V around.	600Vrms

(8) Capacitance

Range	Resolution	Accuracy	Overload Protection
99.99nF	0.01nF	±(5.0%+5)	600Vrms
999.9nF	0.1nF	±(4.0%+5)	
9.999μF	0.001μF		
99.99μF	0.01μF		
999.9μF	0.1μF		
9.999mF	0.001mF	For reference	
99.99mF	0.01mF		

Range to ensure accuracy: 5%~100% of range

Note: Under open circuit state, the least significant digit may be ≤ 10 , which shall be subtracted from the reading.

(9) NCV

Range	Accuracy
NCV	<p>1) If there is no electric field detected, the main display shows "EF" and the auxiliary display shows ambient temperature.</p> <p>2) When detecting conductor with voltage over 48V, the main display shows "---1", "---2" or "---3" as the detected strength changes, the buzzer makes sound, and "EF" flashes on the auxiliary display, at the same time, the analog bar graph (3 segments: blue, yellow, red) appears accordingly.</p> <p>Note: The testing result may be affected by different types of outlet design or different insulation thickness of MAINS electric wire.</p>

(10) LIVE Function

Range	Live wire detection	Accuracy
LIVE	Trigger voltage of outlet or bare wire: $\geq 70\text{Vac}$ (50Hz/60Hz)	<p>1) The main display shows "----" if there is no live wire detected.</p> <p>2) The main display shows "----" if neutral wire is detected.</p> <p>3) If MAINS "live wire" is detected, the main display shows "LIVE" and the buzzer makes sound.</p> <p>4) Room temperature (Celsius) changes to "50Hz or 60Hz" in auxiliary display.</p>

XI. Maintenance (Figure 4)

Warning: Do not disassemble the product or open its cover (there is built-in battery inside).

1. When the product is not in use, please power it off to save energy.
2. General maintenance
 - a. The product must be maintained or serviced by qualified professional repair personnel or designated repair department.
 - b. Clean the casing with dry cloth periodically, do not use cleaning agent containing abrasive or solvent.

3. Charge the Lithium battery (Figure 4)

The product is powered by 3.7V/700mA lithium battery, please charge the battery according to the steps below:

- a. Remove the protective sheath, connect the Type-C end of the data cable with the Type-C port on the side of the product, and connect the other end of the data cable with DC5V adapter.
- b. Connect the adapter with power outlet, and then switch on the power.
- c. The charging symbol appears and flashes in charge state, and stays lit after fully charged. The product turns on automatically if it is charged in power-off state, the NCV and LIVE functions are disabled in charging state).
- d. In order to ensure the service life of the battery, please charge it for 4 hours before using the product for the first time;
- e. It is not recommended to use this product while charging. If you need to use this product while charging, you need to select the corresponding function manually.

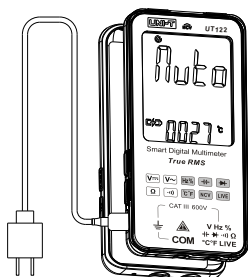


Figure 4