

UT118C

Pen type meter

User Manual



Preface

Thank you for purchasing this brand new product. In order to use this product safely and correctly, please read this manual thoroughly, especially the Safety Instructions part.

After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

Limited Warranty and Liability

Uni-Trend guarantees that the product is free from any defect in material and workmanship within one year from the purchase data. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination or improper handling. The dealer shall not be entitled to give any other warranty on behalf of Uni-Trend. If you need warranty service within the warranty period, please contact your seller directly.

Uni-Trend will not be responsible for any special, incidental or subsequent damage or loss caused by using the device.

1. Overview

UT118C is a 6000-Count True-RMS multimeter with high reliability and safety. It can be used in narrow and dark environments and concentrated circuits by virtue of its compact shape, flashlight and ultra-sharp probe tip. UT118C is designed with full-scale overload protection and unique appearance, making it a new-generation measurement meter with more practical performances. The multimeter can be applied to measure AC/DC voltage, resistance, diode, continuity, capacitance, frequency, and duty cycle, detect non-contact voltage (NCV), and identify live wire, etc. UT118C has multiple functions including data hold, low voltage indication, backlight, flashlight, auto-off, automatic identification of continuity, resistance and diode, and more.

2. Features

- 1) Lightweight; easy to carry.
- 2) Compact design to allow for use in confined spaces.
- 3) Flashlight to enable measurement in dark environments.
- 4) Ultra-sharp gilded probe for testing concentrated circuits at circuit boards.
- 5) Designed with a probe holder and a lead slot to hold the test lead.
- 6) Comprehensive protection against misoperation; Capable of withstanding impact of 600V; Designed with overvoltage alarm.
- 7) The ability to identify continuity, resistance and diode measurements automatically.
- 8) Large capacitance measurement (600nF~60mF).
- 9) The circuit is designed with automatic power-saving function; the power consumption in sleep state is $\leq 80\mu\text{A}$.
- 10) Adjustable probe tip length.
- 11) Designed with large-area red backlight as indicator.

Please carefully read the related contents about “Safety” and “Warning” in the User Manual, and strictly adhere to the precautions of all warnings.

 **Warning:** Please read the “Safety Information” carefully before using the Meter.

3. Accessories


Please contact your supplier immediately if any accessory is found missing or damaged.

User manual	1 pc
Test lead	1 pc
1.5V AAA battery	1 pc

4. Safety Information

Please note the “Warning Labels and Sentences”. A Warning identifies conditions or actions that pose hazard to the user, and that may damage the Meter or the equipment under test.

The Meter complies with IEC/EN61010-1, 61010-2-033, 61010-031, Electromagnetic Radiation EN61326-1 Safety Standard, Basic Insulation, Overvoltage CAT III 600 V and CAT IV 300 V, Pollution Degree 2, and Indoor Use. Failure to follow the operating instructions may compromise or lose the protection provided by the Meter.

- 1) Please check the Meter and the test leads before use to avoid any damage or other problems. If any problem is found, such as bare test lead, damaged casing, abnormal display, etc., please stop use immediately.
- 2) It is forbidden to use without the cover closed well, otherwise it can pose a risk of electric shock.
- 3) If insulation on probe is damaged, replace a new one which should meet EN 61010-031 standard, rated follow parameters of the product or better.
- 4) When the Meter is performing measurement, please do not make contact with the bare wire, connector, unused input terminal or circuit under testing.
- 5) Use caution when working with voltage over AC 30V RMS or 42.4V peak or DC 60V, please grip the test lead behind the finger guard to avoid electric shock.
- 6) Set the Meter at maximum range if the measured range is unknown.
- 7) Do not apply overrated voltage or current between terminals, or between any terminal and earth ground.
- 8) Set the rotary switch to correct range. Disconnect test lead with measured circuit before switching the rotary switch. It is forbidden to switch over during measurement, so as to avoid damage to the Meter.
- 9) Before measuring in-circuit resistance, diode or continuity, please switch off all powers of measured devices and discharge all capacitors completely.
- 10) Never use the meter on a circuit with voltages that exceed the category based rating of this meter.
- 11) To avoid electric shock, make sure the test probes are disconnected from the measured circuit before opening the battery cover or rear cover.
- 12) Please grip the Meter behind the finger protector when using the probe.
- 13) Do not keep or use the Meter in environments with high temperature, high humidity, inflammable and explosive substance, and strong electromagnetic fields.
- 14) Do not alter the internal wiring without authorization to avoid damage to the Meter or safety hazard.
- 15) If the symbol “” appears on the LCD, please replace the battery in time to ensure measurement accuracy.
- 16) Turn off the power in time after measurement is completed. Remove the battery if the Meter is not used for a long time.
- 17) Please measure the known intrinsic voltage of the Meter before use to ensure the Meter functions normally.
- 18) Please use the Meter according to the user manual, otherwise the provided protection will be impaired.
- 19) Clean the meter casing with a damp cloth and mild detergent. Do not use abrasives or solvents.

5. Electrical Symbols

	Low battery		Battery
	Alternating current		Direct current
	Both direct and alternating current		Warning
	Caution, possibility of electric shock		Grounding
CAT II	It is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation.		
CAT III	It is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.		
CAT IV	It is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.		
	Do not place equipment and its accessories in the trash. Please dispose properly according to the local regulation.		
	Conform to European Union standards		
	Conform to UL STD 61010-1, 61010-2-033, 61010-031. Certified to CSA STD C22.2, NO.61010-1, 61010-2-033, 61010-031.		

6. General Characteristics

- 1) Maximum voltage between signal terminal and COM terminal: Please see the instructions for the input voltage of each range.
- 2) Display count: 6000
- 3) Range: Auto
- 4) Polarity display: Auto
- 5) Overrange indication: "OL"
- 6) Drop proof: 1m
- 7) Low battery indication: $\leq 1.2V$ approximately
- 8) Power supply: 1×AAA 1.5V battery
- 9) Operating temperature: $0^{\circ}C \sim 50^{\circ}C$ ($32^{\circ}F \sim 122^{\circ}F$)
- 10) Storage temperature: $-10^{\circ}C \sim 60^{\circ}C$ ($14^{\circ}F \sim 140^{\circ}F$)
- 11) Relative humidity: $\leq 80\%RH$ ($0^{\circ}C \sim 30^{\circ}C$ below); $75\%RH$ ($30^{\circ}C \sim 40^{\circ}C$); $\leq 45\%RH$ ($40^{\circ}C \sim 50^{\circ}C$)
- 12) Operating altitude: $\leq 2000m$
- 13) EMC: Per EN61326-1:2021 and EN61326-2-2:2021 standards
- 14) External dimensions: 182.5mm x 38.0mm x 38.5mm
- 15) Weight: About 120 g
- 16) Safety standard: IEC 61010-1: CAT III 600V / CAT IV 300V
- 17) Pollution degree: 2
- 18) Usage environment: Indoor use

7. External Structure

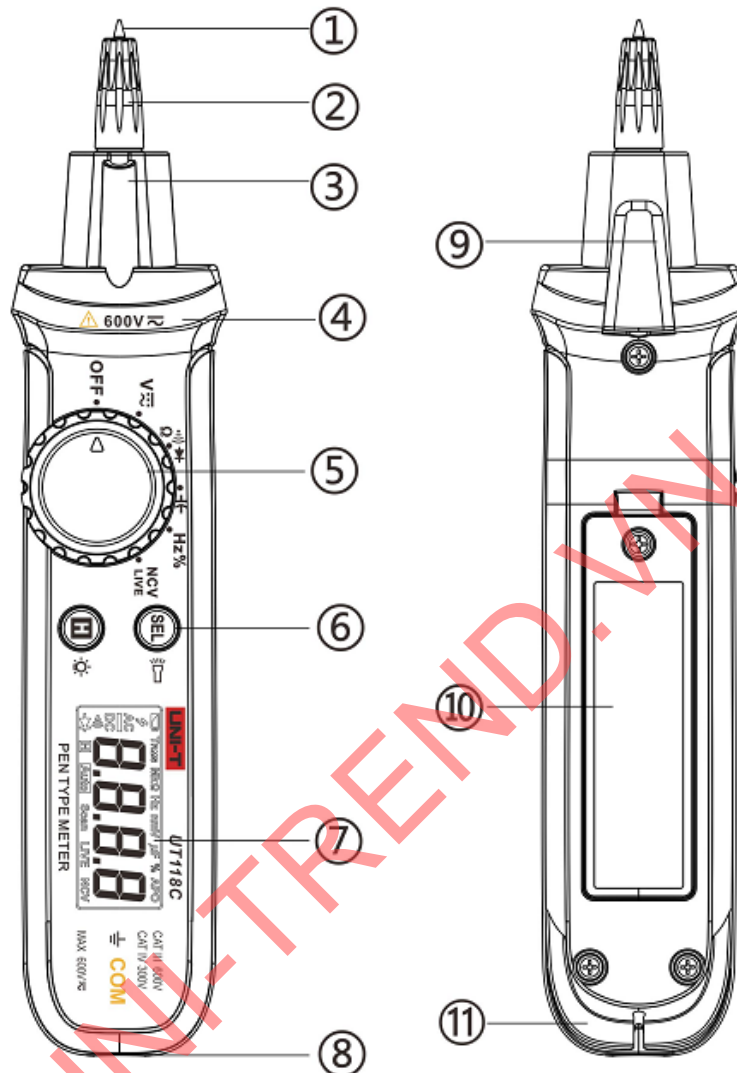


Figure 1

- 1) V-end probe
- 2) Probe cap
- 3) Flashlight
- 4) Finger guard
- 5) Rotary switch
- 6) Functional buttons
- 7) LCD display
- 8) COM terminal
- 9) Test probe holder
- 10) Battery cover
- 11) Test lead slot

8. LCD Display



Symbol	Description
TRMS	True RMS
	Low battery
	Hazardous voltage
AC	Alternating-current measurement
—	Negative reading
DC	Direct-current measurement
	Continuity measurement
	Diode measurement
	Data hold
AUTO	Auto range
Scan	Automatic identification of scanning
LIVE	LIVE wire identification
NCV	Non-contact voltage detection
APO	Auto power-off
Ω、kΩ、MΩ	Resistance unit: ohm, kilohm, megaohm
Hz、kHz、MHz	Frequency unit: hertz, kilohertz, megahertz
V	Voltage unit: volt
nF、μF、mF	Capacitance unit: nanofarad, microfarad, millifarad
%	Duty cycle unit: percent

9. Rotary Switch


Position	Description
OFF •	Power off
V	DC/AC voltage measurement
	Continuity/Resistance/Diode measurement
	Capacitance measurement
Hz %	Frequency/Duty cycle measurement
NCV LIVE	Non-contact voltage detection/LIVE wire identification

10. Button Descriptions


Short press: Press the button for $<2s$

Long press: Press the button for $\geq 2s$



1. :

- 1) DCV/ACV position: Short press to cycle through DCV and ACV.
- 2) Continuity/Resistance/Diode: Short press to cycle through continuity, resistance and diode.
- 3) Frequency/Duty cycle: Short press to cycle through frequency and duty cycle.
- 4) NCV/LVE: Short press to cycle through NCV and LIVE.
- 5) Long press to turn on/off the flashlight. The flashlight will turn off automatically after it is on for about 5 minutes.
- 6) When holding down the button " in power-off state, the buzzer makes five beeps, and the symbol "APO" disappears, then the Meter enters a mode in which it cannot sleep.
- 7) The SEL button is disabled in HOLD function.

2. :

- 1) Short press to enter/exit data hold. The symbol " appears on the LCD in HOLD function.
- 2) Long press to turn on/off the backlight. The backlight will turn off automatically after it is on for 5 minutes.
- 3) The HOLD button is disabled in NCV/LIVE position.

11. Operating Instructions

Please check the built-in battery (1 × AAA 1.5V) before use. If the battery power is low after the Meter is turned on, the symbol " will be displayed on the LCD. To ensure measurement accuracy, please replace the battery in time. The warning symbol " at the terminal indicates the measured voltage cannot exceed the specified value.

Before measurement, please press down the probe cap and rotate it inward counterclockwise so as to expose the V-end probe, as shown in Figure 2. (Rating 1: CAT III 600 V; Rating 2: CAT II 600 V)
After measurement, please rotate the probe cap outward clockwise until the probe is fully covered by the cap.

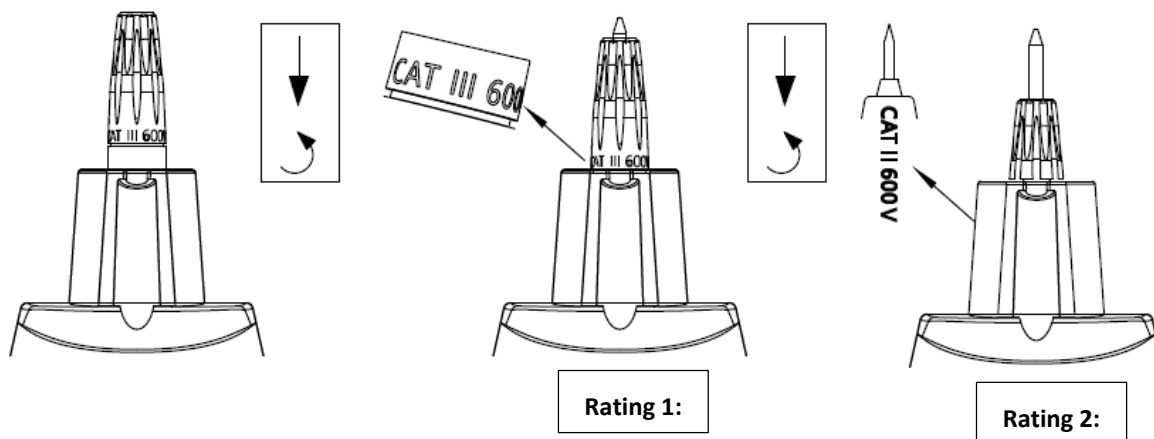


Figure 2

11.1 Measure DC/AC Voltage (Figure 3)

- 1) Set the rotary switch to the DC/AC voltage measurement position.
- 2) The measurement position is DC voltage position by default. To measure AC voltage, please short press the “SEL” button to switch to AC voltage position.
- 3) Connect the black test lead to COM terminal, and make the test lead contact with both ends of the measured voltage respectively (connected to the load in parallel).
- 4) Read the measured voltage from the LCD.

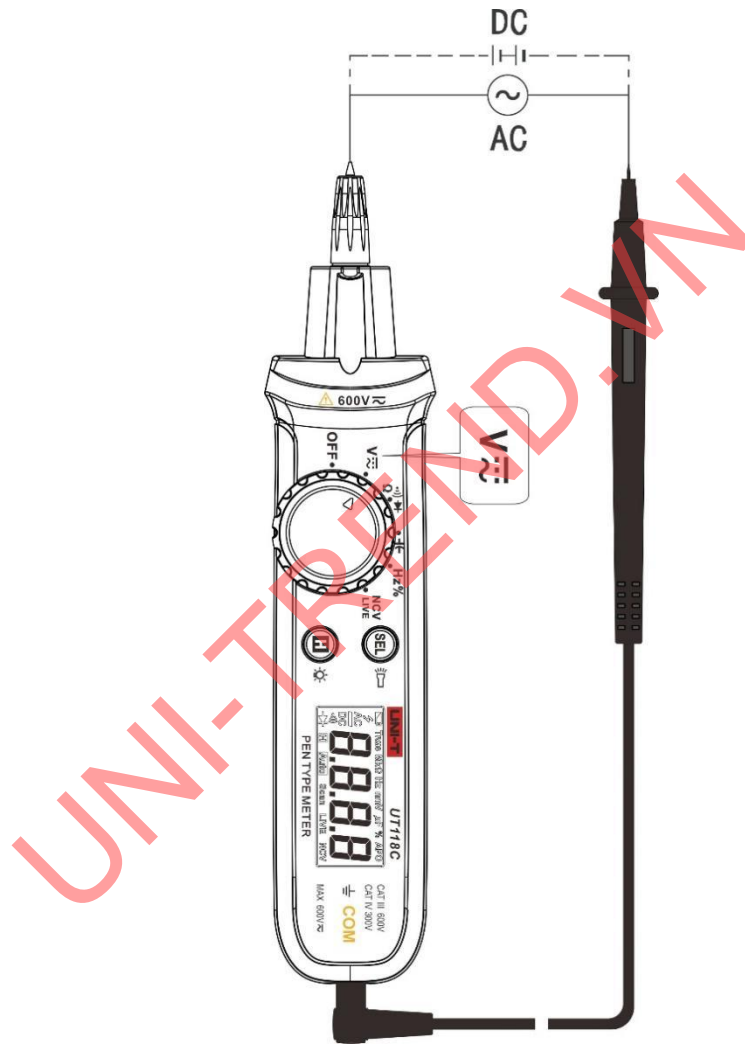


Figure 3

⚠ Warning:

- * To avoid electric shock, please pay particular attention to safety for high voltage measurement.
- * Do not measure overrange input voltage, otherwise it can damage the Meter or cause personal injury.
- * Before measuring possible hazardous voltage, please measure a known voltage to ensure the Meter functions normally.
- * If the measured voltage (DC/AC) is $\geq 30V$, the high-voltage alarm symbol will appear on the LCD. If the measured voltage (DC/AC) is $\geq 600V$, the backlight will be lit up red.
- * Please disconnect the test lead with the measured circuit after all measurement operations are completed.

11.2 Measure Continuity, Resistance and Diode (Figure 4)

- 1) Set the rotary switch to the continuity/resistance/diode measurement position.
- 2) By default, the measurement position is the automatic identification mode (in which the Meter can automatically identify the continuity, resistance and diode measurements). By short pressing the “SEL” button, the Meter will enter the continuity, resistance and diode measurement positions in order.
- 3) Connect the black test lead to COM terminal, and make the test lead contact with both ends of the measured object respectively (connected to the measured object in parallel).
- 4) Read from the LCD the measured resistance or the approximate forward voltage of PN junction of measured diode. The normal voltage of silicon PN junction is about 0.5~0.8V.

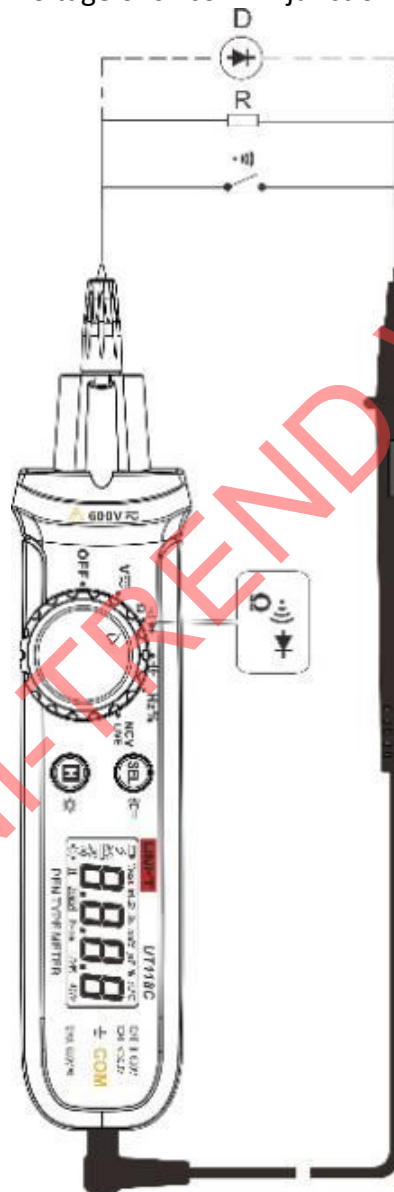


Figure 4

⚠ Warning:

- * Before measuring in-circuit continuity, resistance or diode, please switch off all powers of measured circuit and discharge all capacitors completely, to avoid damage to the Meter or cause personal injury.
- * In automatic identification mode, the Meter can automatically identify continuity, resistance and diode, and enter corresponding measurement function.
- * If the resistance of shorted test lead is $\geq 0.5\Omega$, please check if test lead is loose or other problems occur.

- * The buzzer will make a long beep if the resistance between both ends of the measured object is $\leq 10\Omega$.
- * "OL" will appear on the LCD if the measured resistor is open or the measured resistance exceeds the maximum range.
- * For low resistance measurement, an error of $0.1\Omega \sim 0.2\Omega$ will be produced by the test lead. To obtain an accurate result, please subtract the resistance of shorted test lead from the displayed resistance.
- * It is normal to take several seconds to stabilize the reading for high resistance measurement.
- * For diode measurement, please connect the red test lead to the positive pole of the measured diode, and black to negative. "OL" will be displayed on the LCD if the measured diode is open or the polarity is reversed.
- * Do not input voltage over 30V (DC/AC) to avoid personal injury.
- * Disconnect the test lead with the measured circuit after all measurement operations are completed.

11.3 Measure Capacitance (Figure 5)

- 1) Set the rotary switch to the capacitance measurement position.
- 2) Connect the black test lead to COM terminal, and make the test lead contact with both ends of the measured capacitor respectively (connected to the measured object in parallel).
- 3) Read the measured capacitance from the LCD.

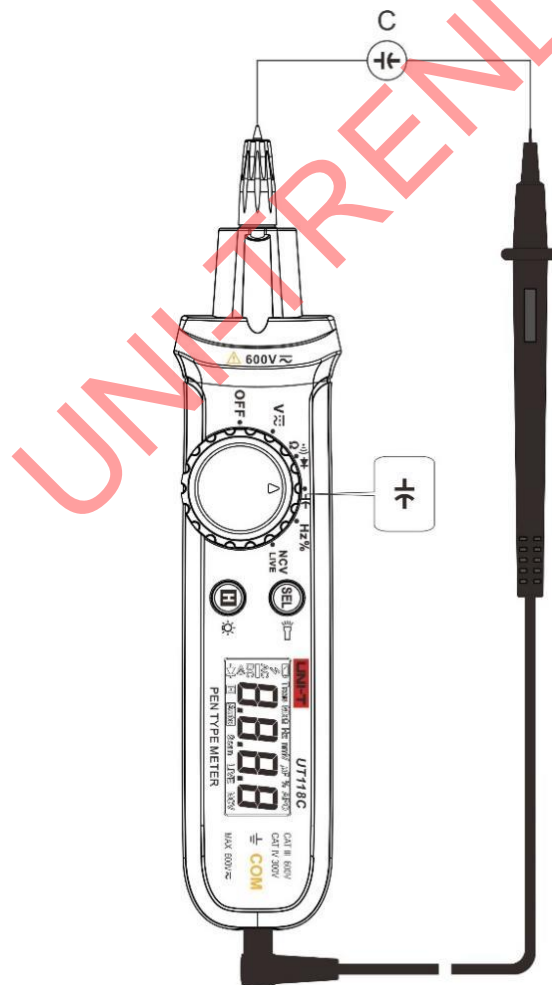


Figure 5

⚠ Warning:

- * Please discharge the capacitor completely before measurement (especially for capacitor with high voltage) to avoid product damage or personal injury.
- * When there is no input, the Meter may display a fixed reading, which is the intrinsic compensation capacitance of the Meter. For small capacitance measurement, please subtract the intrinsic capacitance from the measured value to ensure measurement accuracy.
- * It is normal to take several seconds to stabilize the reading for large capacitance measurement.
- * "OL" will appear on the LCD if the measured capacitor is shorted or the measured capacitance exceeds the maximum range.
- * Disconnect the test lead with the measured circuit after all measurement operations are completed.

11.4 Measure Frequency/Duty Cycle (Figure 6)

- 1) Set the rotary switch to the frequency/duty cycle measurement position.
- 2) The measurement position is frequency position by default. To measure duty cycle, please short press the "SEL" button to switch to duty cycle position.
- 3) Connect the black test lead to COM terminal, and make the test lead contact with both ends of the measured object respectively (connected to the measured object in parallel).
- 4) Read the measured frequency or duty cycle from the LCD.

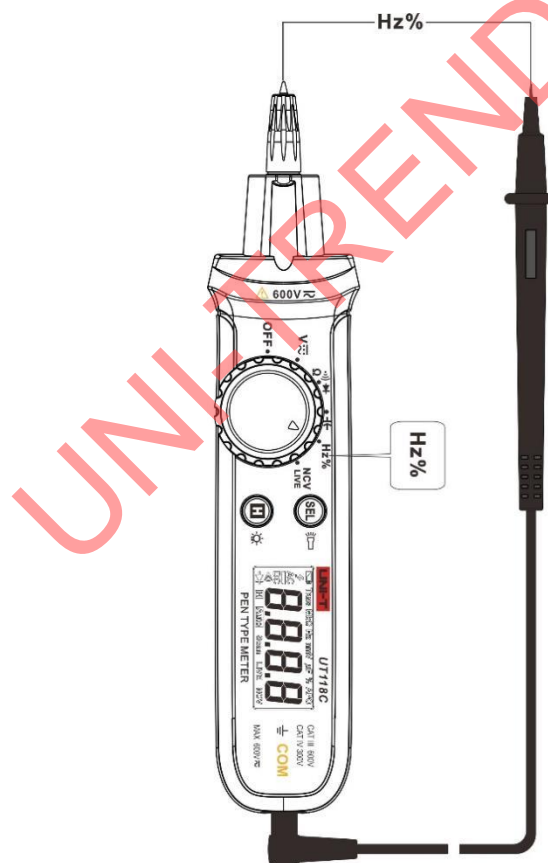


Figure 6

⚠ Warning:

- * Do not measure overrange input voltage, otherwise correct reading cannot be obtained and it may cause product damage or personal injury.
- * Do not input voltage over 600V, otherwise, the protection provided by the Meter may be impaired.
- * Before measuring possible hazardous voltage, please measure a known voltage to ensure the Meter functions normally.

* Disconnect the test lead with the measured circuit after all measurement operations are completed.

11.5 Non-Contact AC Voltage Detection (NCV)/LIVE Wire Identification

Operating steps for non-contact AC voltage detection (**Figure 7**):

- 1) Set the rotary switch to the NCV/LIVE position.
- 2) The measurement position is NCV position by default. When the Meter enters the NCV position, "EF" appears on the LCD and the red backlight will flash twice to test the normality of the backlight.
- 3) Make the red test probe (V end) approach the measured conductor or outlet. If AC voltage is detected, "EF" will appear on the LCD, the red backlight will flash, and the buzzer sounds at the same time.

Operating steps for live wire identification (**Figure 8**):

- 1) Set the rotary switch to the NCV/LIVE position.
- 2) The measurement position is NCV position by default. Press the "SEL" button to switch to LIVE position. When the Meter enters the LIVE position, "----" appears on the LCD and the backlight will flash twice to test the normality of the backlight.
- 3) Make the red test probe (V end) contact the measured conductor or outlet. If live wire is contacted by the probe, "LIVE" will appear on the LCD, the red backlight will flash, and the buzzer sounds at the same time.

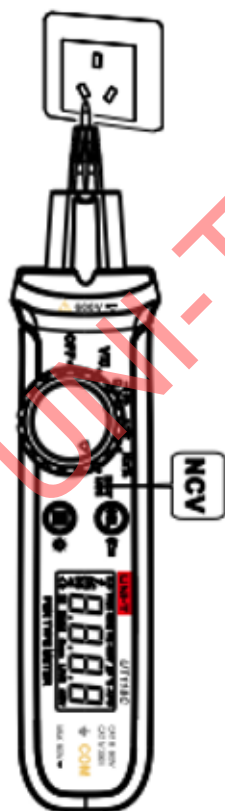


Figure 7

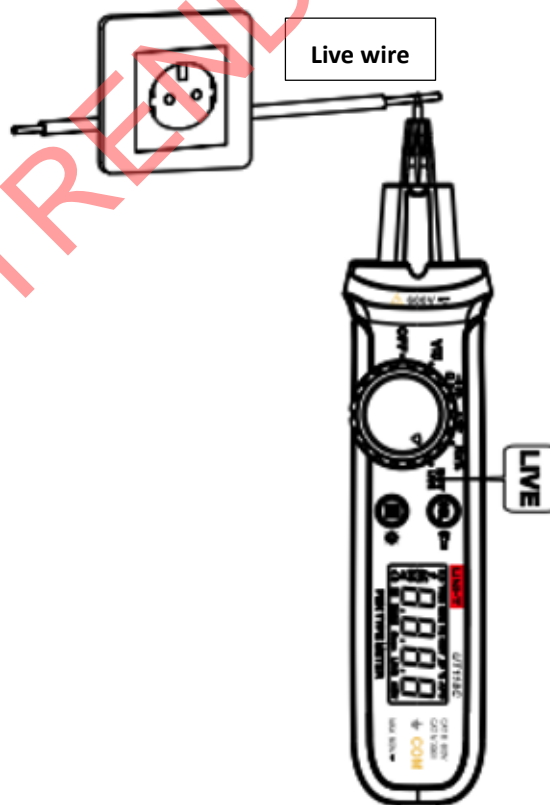


Figure 8

⚠ Warning:

* For NCV detection, the Meter determines if voltage is present at the measured conductor only by spatial electromagnetic field, thus the detected voltage is for reference only. Even though the displayed detection result is that no voltage is present, it does not mean that there is no voltage present certainly. The design and insulation thickness/type of the measured conductor or outlet are different, which may affect the detection result, so please do not determine if

voltage is present at the insulated/shield conductor only by the detection result.

- * Please hold the Meter case by hand when performing NCV detection.
- * If the measured voltage is $\geq 100\text{V AC}$, please observe if the measured conductor is insulated to avoid personal injury.
- * To avoid the COM terminal from interfering the electric field to identify live wire, please remove the black test lead from the COM terminal for live wire identification.
- * Under circumstance of intensive high voltage, the accuracy of identifying live wire may be unstable.

12. Other Functions

1) Auto-off

In power-on state, if the rotary switch is not turned or any functional button is not pressed within about 15 minutes, the Meter will power off automatically to save power. In Auto-off state, short press any functional button to awaken the Meter automatically, or turn the rotary switch to OFF position and then restart the Meter. To disable the Auto-off function, please hold down the SEL button to power on the Meter (the symbol "APO" on the LCD will disappear with the buzzer making 5 beeps). To enable the Auto-off function, please restart the Meter.

2) High-voltage alarm

In DCV/ACV position, if the measured voltage (DC/AC) is $\geq 30\text{V}$, the high-voltage alarm symbol will appear on the LCD; if $\geq 600\text{V}$, the backlight will be lit up red.

3) Low-voltage detection

If the battery voltage is lower than about 1.2V, the low battery symbol "🔋" will be displayed on the LCD.

4) Forced shutdown

If the battery voltage is lower than about 0.9V, the Meter will perform forced shutdown.

5) Buzzer

When pressing any functional button or turning the rotary switch, the buzzer will briefly beep once to indicate the operation is enabled; or twice to indicate disabled.

13. Technical Specifications

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

Ambient temperature: $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ($73.4^{\circ}\text{F} \pm 9^{\circ}\text{F}$)

Relative humidity: $\leq 75\text{RH}$

⚠ Warning:

- The temperature condition of 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 $0.1 \times (\text{specified accuracy})/^{\circ}\text{C}$.

13.1 DC Voltage

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

* Input impedance: About $10\text{M}\Omega$

- * Range to ensure accuracy: 5%~100% of range
- * Residual reading under short-circuit condition: ≤ 2 counts
- * "OL" is displayed if the measurement value is $\geq 620.0V$.
- * Overload protection: 600Vrms (DC/AC)

13.2 AC Voltage

Range	Resolution	Accuracy
6.000V	0.001V	$\pm(1.0\%+4)$
60.00V	0.01V	
600.0V	0.1V	

- * Display: TRMS
- * Input impedance: About 10M Ω
- * Frequency response: 45Hz~400Hz
- * Range to ensure accuracy: 10%~100% of range
- * Residual reading under short-circuit condition: ≤ 5 counts
- * "OL" is displayed if the measurement value is $\geq 620.0V$.
- * Overload protection: 600Vrms (DC/AC)
- * The AC crest factor reaches 2.5 at 4000 counts and linearly decreases to about 1.8 at 6000 counts.

For non-sinusoidal wave: Add 3% for crest factor of 1~2; add 5% for crest factor of 2~2.5

13.3 Continuity

Range	Resolution	Accuracy
600.0 Ω	0.1 Ω	The buzzer keeps silent if the measured circuit is $\geq 50\Omega$. The buzzer beeps continuously if the measured circuit is $\leq 10\Omega$.

- * "OL" is displayed if the measurement value is $\geq 62.0\Omega$.
- * Overload protection: 600Vrms (DC/AC)

13.4 Resistance

Range	Resolution	Accuracy
600.0 Ω	0.1 Ω	$\pm(1.0\%+3)$
6.000k Ω	0.001k Ω	
60.00k Ω	0.01k Ω	
600.0k Ω	0.1k Ω	
6.000M Ω	0.001M Ω	$\pm(1.5\%+5)$
60.00M Ω	0.01M Ω	$\pm(2.5\%+5)$

- * Range: Measured value = Displayed value - Value of shorted test lead
- * Range to ensure accuracy: 5%~100% of range
- * In automatic identification mode: The ranges include 600.0 Ω , 6.000k Ω , 60.00k Ω , 600.0k Ω and 6.000M Ω .
- * In manual selection mode: The ranges include 600.0 Ω , 6.000k Ω , 60.00k Ω , 600.0k Ω , 6.000M Ω and 60.00M Ω .

* Overload protection: 600Vrms (DC/AC)

13.5 Diode

Range	Resolution	Accuracy
6.000V	0.001V	$\pm(0.5\%+10)$

* Open-circuit voltage: About 3V

* "OL" is displayed if the measurement value is >3.000V.

* Overload protection: 600Vrms (DC/AC)

13.6 Capacitance

Range	Resolution	Accuracy
600.0nF	0.1nF	$\pm(3.5\%+8)$
6.000uF	0.001uF	
60.00uF	0.01uF	
600.0uF	0.1uF	
6.000mF	0.001mF	$\pm(5.0\%+9)$
60.00mF	0.01mF	$\pm(10.0\%+9)$

* Measured value = Displayed value – Residual reading. (Residual reading under open-circuit condition: ≤ 5 counts)

* "OL" is displayed if the measurement value is $\geq 62.00\text{mF}$.

* Range to ensure accuracy: 10%~100% of range

* Overload protection: 600Vrms (DC/AC)

13.7 Frequency

Range	Resolution	Accuracy
99.99 Hz	0.01 Hz	$\pm(0.1\%+5)$
999.9 kHz	0.1 Hz	
9.999 kHz	0.001 KHz	
99.99 kHz	0.01 KHz	
999.9 KHz	0.1 KHz	

* Measurement range: 10 Hz~1M Hz

* Zero-cross waveform

* $\leq 100\text{kHz}$: $250\text{mVrms} \leq \text{Input amplitude} \leq 20\text{Vrms}$

$> 100\text{kHz} \sim 1\text{MHz}$: $600\text{mVrms} \leq \text{Input amplitude} \leq 20\text{Vrms}$

$> 1\text{MHz}$: Accuracy is not ensured

* Overload protection: 600Vrms (DC/AC)

13.8 Duty Cycle

Range	Resolution	Accuracy
0.1%~99.9%	0.1%	± 15 digits

- * Range to ensure accuracy: 10%~90% of range
- * Frequency range: 10Hz~10kHz
- * Input amplitude: $250\text{mVrms} \leq \text{Input amplitude} \leq 20\text{Vrms}$
- * Zero-cross waveform
- * Overload protection: 600Vrms (DC/AC)

13.9 NCV/LIVE

Range	
NCV	45~600V
LIVE	>100 V (mains voltage)

- * Frequency range: 50Hz~60Hz
- * Overload protection: 600Vrms (DC/AC)

14. Maintenance

⚠ Warning: Before opening the rear cover or the battery cover, please switch off the power and remove the test lead from the input terminal and the measured circuit.

1. General maintenance

- Please wipe the Meter case with damp cloth and mild detergent. Do not use abrasives or solvents.
- If any problem with the Meter is found, please stop use and send it for maintenance.
- The calibration and maintenance must be performed by qualified repair personnel or designated repair department.

2. Battery installation or replacement (Figure 9)

Battery specification: 1.5V/AAA battery

When the low battery symbol appears on the LCD, please replace the battery immediately, otherwise the measurement accuracy will be affected.

Install or replace battery according to the steps below:

- a. Power off the Meter and remove the test lead from the input terminal.
- b. Keep the front side of the Meter facing down, loosen the screw at the battery cover, remove the battery cover, take out the battery, and install new battery according to the correct polarity.
- c. Reinstall the battery cover and tighten the screw.

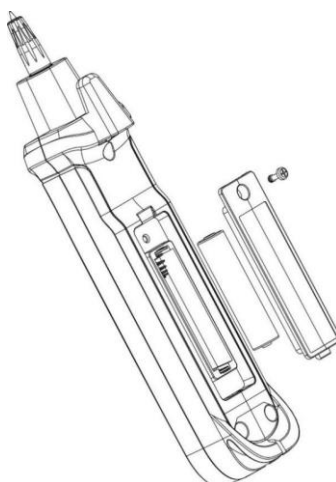


Figure 9

The contents in the User Manual are subject to change without further notice.

UNI-T[®]

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