UT60EU/UT60BT
Digital Multimeter User Manual

I. Overview
UT60EU/UT60BT is a 9999-count true RMS digital multimeter with high resolution, auto range and new intelligent ADC chip. Designed according to CAT II 1000V/CAT III 600V, the meter comes with overvoltage and overcurrent alarms, and a false detection protector for 6KV electric shock and high voltages.

II. Features
- Unique appearance, ergonomic design, compact structure.
- 9999-count display, true RMS measurement, and fast ADC (3 times/s).
- Full-featured false detection protection for up to 1000V surge, and overvoltage/ overcurrent alarm.
- Extended measuring range, especially for capacitance (compared with similar products), the ⩽9.999mF response time is within 6s.
- Optimized NCV function: EFHi mode to distinguish neutral and live wires, EFLo mode for low electric fields, and audio/visual alarm.
- Recoverable and anti-burning protector is built into the current input terminal.
- Measurement of flame sensor of heating device can be performed at uA position.
- Current (AC/DC) mode memory function.
- Connect Bluetooth via mobile APP (UT60BT).
- Low power consumption (general: about 2mA; sleep state: < 30μA) to effectively extend the battery life to 500 hours.

III. Accessories
Open the package box and take out the meter. Please double check whether the following items are missing or damaged.
1. User manual---------- 1 pc
2. Test leads---------- 1 pair
3. Temperature probe---------- 1 pc

If any of the above is missing or damaged, please contact your supplier immediately.

⚠ **Read the "Safety Instruction" carefully before use.**

IV. Safety Instruction
1. Safety Standards
1) The meter is designed according to BS EN61010-1:2010+A1:2019; BS EN 61010-2-030:2010 ; BS EN 61010-2-033:2012 and BS EN 61326-1:2013; EN 61326-2-2:2013.
2) The meter conforms to CAT II, CAT II 1000V, double insulation, CAT II 1000V/ CAT III 600V overvoltage standard, and pollution degree 2.

2. Safety Information
1) Do not use the meter if the rear cover is not completely covered up, or it may pose a shock hazard.
2) Check and make sure the insulation of the meter and test leads is in good condition without any damage before use. If the insulation of the meter casing is found to be significantly damaged, or if the meter is considered to be malfunctioning, please do not continue to use the meter.
3) Keep fingers behind the finger guards of the test leads when using the meter.
4) Do not apply more than 1000V between any terminal and earth ground to prevent electric shock and damage to the meter.
5) Use caution when working with voltages above AC 30Vrms or DC 60V. Such voltages pose a shock hazard.
6) The measured signal is not allowed to exceed the specified limit to prevent electric shock and damage to the meter.
7) Place the function dial in the correct position before measurement.
8) Never turn the function dial during measurement to avoid damage to the meter.
9) Do not change the internal circuit of the meter to avoid damage to the meter or user.
10) Damaged fuses must be replaced with fast-acting ones of same specifications.
11) When "🔋" is displayed, please replace the batteries in time to ensure measurement accuracy.
12) Do not use or store the meter in high temperature, high humidity, flammable, explosive, or strong magnetic field environments.
13) Clean the meter casing with a damp cloth and mild detergent. Do not use abrasives or solvents.
14) Use of test probe

For CAT III /CAT IV test, please ensure probe cover is installed in place to avoid electric shock.



For CAT II test, remove the probe cover to test recessed sockets such as wall socket, and do not lose the probe cover.



V. Electrical Symbols

⚠	Caution	~	Alternating current
⏚	Grounding	⎓	Direct Current
⧈	Double insulated	⚠	Warning
CE	Conform to EU directive		
ETL Intertek 4007682	Conform to UL STD 61010-1, 61010-2-030, 61010-2-033, certified by CSA STD C22.2 No. 61010-1, 61010-2-030, 61010-2-033		
CAT III	Measurement category III is applicable to test and measure circuits connected to the distribution part of the building's low-voltage MAINS installation.		
CAT II	Measurement category II is applicable to test and measure circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation.		
UKCA	United Kingdom conformity Assessment.		

VI. General Specifications
1. The maximum voltage between input terminal and earth ground is 1000Vrms.
2. 10A terminal is equipped with 10A 1000V quick-acting fuse, Φ6.35×32mm
3. 9999-count display, show "OL" when overrange, update 3 times per second.
4. Range: Auto
5. Backlight: manually turn on and auto turn off after 30 seconds.
6. Polarity: Display symbol "—" for negative polarity input.
7. Data hold: "H" display on top right of LCD.
8. Low battery indication: "🔋" display on bottom left of LCD.
9. Battery: AAA battery 1.5V×3
10. Working temperature: 0℃ ~ 40℃ (32℉ ~ 104℉)
    Storage temperature: -10℃ ~ 50℃ (14℉ ~ 122℉)
    Relative humidity: 0℃ ~ 30℃ ⩽75%, 30℃ ~ 40℃ ⩽50%
    Working altitude: 0 ~ 2000m
    Instruction for use: Indoor use
11. Dimension: 187*88*56mm
12. Weight: about 400g (including batteries)
13. EMC: For RF-field at 1V/m, overall accuracy = specified accuracy + 5% of the range. There is no specified indicator for RF-field at >1V/m.

VII. External Structure (Figure 1)
1. LCD Display
2. Function buttons
3. Dial switch
4. mA /10A input terminal
5. uA input terminal
6. COM input terminal
7. Other terminals
8. Hook
9. Probe holder
10. Bracket

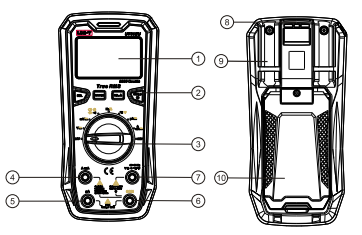


Figure 1

VIII. Function buttons
- SELECT Button: Press this button to switch between DCV, continuity/resistance /diode/capacitance, frequency/duty cycle, ℃/℉ and AC/DC current. Each time you press it, the corresponding measuring range will be switched alternately.
- RANGE Button: When the dial switch is in position of V, mV, resistance, mA or A, short press this button to switch to manual range and long press to enter AUTO mode.
- REL Button: When the dial switch is in position of V, mV, capacitance, μA, mA or A, short press this button to enter relative value measurement mode.
- HOLD/☼ Button: Press this button to perform/cancel data hold; press this button for ⩾2s to turn on/off the backlight.
- **SEL**✱(For UT60BT only): Long press this button to enter wireless mode, ✱ shows on bottom left of LCD, long press again to exit this mode.

IX. Operating Instructions
1. AC/DC Voltage Measurement (Figure 2)
1) Turn the function dial to the AC/DC voltage position.
2) Insert the red test lead into the "**VΩ**" terminal, black test lead into the "**COM**" terminal, and make the probes in contact with both ends of the measured voltage (parallel connection to the load.
3) Read the test result from LCD.

⚠ **Warning**
- Do not input a voltage over 1000V, or it may damage the meter and hurt the user.
- If the range of the measured voltage is unknown, select the maximum range and then accordingly reduce (if the LCD displays "OL", it indicates that the voltage is over range).
- The input impedance of the meter is 10M Ω. This load effect may cause measurement errors in high-impedance circuits. If the impedance of the circuit is ⩽10kΩ, the error can be ignored (⩽0.1%).
- Be cautious to avoid electric shock when measuring high voltages.
- Before each use, verify meter operation by measuring a known voltage.

2. Continuity Test (Figure 2)
1) Turn the function dial to the continuity test position.
2) Insert the red test lead into the "**VΩ**" terminal, black test lead into the "**COM**" terminal, and make the probes in contact with the two test points.
3) When measured resistance>420Ω, the circuit is broken, LCD shows "OL" and the buzzer makes no sound.
   When measured resistance is at 30Ω ~ 420Ω, the circuit conductance value is relatively large, the buzzer makes no sound along with a red LED indication. When measured resistance ≤30Ω, the circuit is in good conduction status and the buzzer beeps continuously along with a green LED indication.

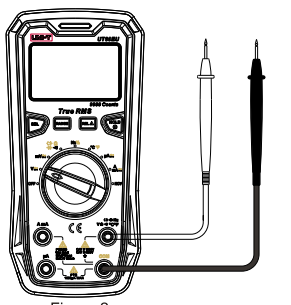


Figure 2

⚠**Warning**
- Switch off the power supply of the circuit and discharge all capacitors before test.

3. Resistance Measurement (Figure 2)
1) Turn the function dial to the resistance measurement position.
2) Insert the red test lead into the "**VΩ**" terminal, black test lead into the "**COM**" terminal, and make the probes in contact with both ends of the measured resistance (parallel connection to the resistance).
3) Read the test result from LCD.

⚠**Warning**
- Before measuring resistance, Switch off the power supply of the circuit and discharge all capacitors before measuring resistance.
- If the resistance is not less than 0.5Ω when the test leads are shorted, please check if the test leads are loose or abnormal.
- If the measured resistor is open or the resistance exceeds the maximum range, the LCD will display "OL".
- When measuring low resistance, the test leads will produce 0.1Ω~0.2Ω measurement error. To obtain the final accurate value, the resistance of shorted test leads should be subtracted from the measured resistance value.
- When measuring high resistance, it is normal to take a few seconds to stabilize the reading.
- Do not input voltages over 60 VDC or 30 VAC.

4. Diode Test (Figure 2)
1) Turn the function dial to the diode test position.
2) Insert the red test lead into the "**VΩ⏛**" terminal, black test lead into the "**COM**" terminal, and make the probes in contact with the two endpoints of the PN junction.
3) If the diode is open or its polarity is reversed, the LCD will display "OL". For silicon PN junction, the normal value is generally about 500mV~800mV (0.5V~0.8 V).

⚠**Warning:**
- Switch off the power supply of the circuit and discharge all capacitors before terminal, and make the probes in contact with the two endpoints of the capacitance. testing the PN junction.
- The test voltage is about 4.0V/1.5mA.

5. Capacitance Measurement (Figure 2)
1) Turn the function dial to the capacitance measurement position.
2) Insert the red test lead into the "**VΩ**" terminal, black test lead into the "**COM**"
3) When there is no input, the meter displays a fixed value (intrinsic capacitance). For small capacitance measurement, this fixed value must be subtracted from the measured value to ensure measurement accuracy. So, please use the relative value measurement (REL) mode to automatically subtract the fixed value.

⚠ **Warning**
- If the measured capacitor is shorted or the capacitance exceeds the maximum range, the LCD will display "OL".
- When measuring high capacitance, it is normal to take a few seconds to stabilize the reading.
- Before measuring, discharge all capacitors (especially high-voltage capacitors) to avoid damage to the meter and user.

6. Frequency Measurement (Figure 2)
1) Turn the function dial to the "Hz/%" position.
2) Insert the red test lead into the "VΩHz" terminal, black test lead into the "COM" terminal, and connect the test leads to both ends of the signal source in parallel (measuring range: 10Hz~2MHz).
3) Read the test result from LCD.

⚠ **Warning**
- The output signal of the measurement should be <30V, otherwise the measurement accuracy will be affected.

7. Duty Cycle Measurement (Figure 2)
1) Turn the function dial to Hz/% position, short press SELECT to enter duty cycle measurement interface.
2) Insert the red test lead into the "**VΩHz**" terminal, black test lead into the "**COM**" terminal, and connect the test leads to both ends of the signal source in parallel (measuring range is ≤10Hz).
3) Read the test result from LCD.

⚠**Warning**
- The output signal of the measurement should be ＞1Vp-p, otherwise the measurement accuracy will be affected.

8. AC/DC Current Measurement (Figure 3)

A. Circuit detection of flame sensor of heating device at μA position (Figure 3a)
1) Turn the range switch to μA position, find out the connecting line between the gas furnace controller and flame detector.
2) Connect the meter between the flame sensor probe and control module.
3) Turn on the heating device to perform uA measurement.

B. Perform regular current test at A/mA position (Figure 3b)
1) Insert red test lead into "**mA/A**", and black test lead into "**COM**" terminal.
2) Press select button to switch between DC and AC.
3) Connect the test lead to the power supply or the circuit under test in series.
4) Read the test result from LCD.

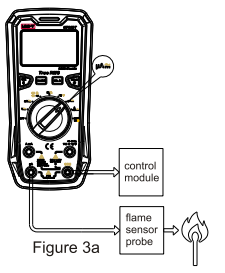


Figure 3a

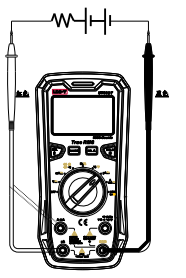


Figure 3b

⚠Warning
- Switch off the power supply of the circuit, make sure the input terminals and dial position are correct, and then connect the meter to the circuit in series.
- If the range of the measured current is unknown, select the maximum range and then accordingly reduce.
- If the "**mA/A**" terminal is overloaded, the built-in fuse will be blown and must be replaced.
- Do not connect the test leads to any circuit in parallel during current measurement to avoid damage to the meter and user.
- When the measured current is close to 10A, each measurement time should be <10s and the test interval should be >15 minutes.

9. Temperature Measurement (Figure 4)

1) Turn the function dial to the temperature measurement position.
2) Insert the K-type thermocouple into the "**VΩ**" and "**COM**" terminals, and fix the temperature sensing end of the thermocouple on the object under test, read the temperature from LCD after the value stabilizes.

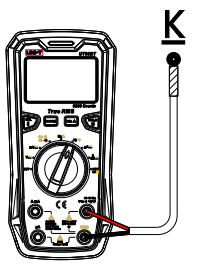


Figure 4

⚠Warning

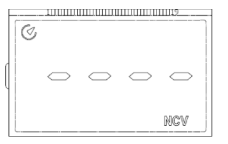
The LCD displays "**OL**" when the meter is turned on.
Only K-type thermocouple is applicable, and the measured temperature should be less than 250°C/482°F (°F = °C × 1.8 + 32).

10. Non-Contact Voltage (NCV) Sensing (Figure 5)

1).To sense whether there is AC voltage or electric field in the space, please turn the function dial to the "**NCV**" position. The meter defaults to "**EFLo**", short press SELECT to switch to EFHi.
2). In EFLo mode, bring the front end of the meter close to a socket or insulated wire (≥24V±6V). When an electric field is sensed, the buzzer will beep, the LED will flash and display the segment "-", as the intensity of the measured electric field increases, more segments (up to "----") will be displayed and the frequency for buzzer beeping will be higher.
3). In HFHi mode, bring the front end of the meter close to a socket or insulated wire (≥74V±12V). When an electric field is sensed, the buzzer will beep, the LED will flash and display the segment "-", as the intensity of the measured electric field increases, more segments (up to "----") will be displayed and the frequency for buzzer beeping will be higher.
4).The diagram of the segment indicating the intensity of the electric field sensing is shown below.



Figure 5



11. Bluetooth Connection Only UT60BT (Figure 6)

The meter sends or receives the measurement values are sent to or received from UNI-T Connect APP (Smart phone or tablet) via low-power 802.15.4 wireless technology.
1) Turn on the meter (wireless function is off when power on at first time).
2) Long press to start wireless function.
3) When wireless function is on, LCD goes on and displays Bluetooth symbol .
4) The Bluetooth symbol flashes when recognition and connection is completed on APP, the flash frequency is 2Hz.
5) View data or control the meter via APP.

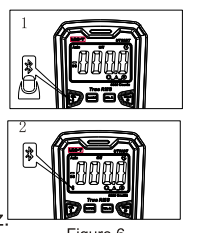


Figure 6

⚠ iDMM2.0 APP can be downloaded from Google Play or Apple APP Store.

12. Others

- The meter cannot enter the normal measurement state until its full display for about 2s after the starting up.
- During measurement, if there is no operation of the function dial for 15 minutes, the meter will automatically shut down to save power. Users can wake it up by pressing any button or turning the function dial, and the buzzer will beep once. To disable the auto-off function, turn the dial to OFF, press and hold SELECT for more than 2 seconds at the same time that the meter is turned on.
- The buzzer beeps once (about 0.25s) at any valid press of buttons or turning of the function dial.
- Buzzer alarm
  The buzzer beeps continuously when the input voltage ⩾990.0V or input current >9.900A, indicating that it is at the range limit.
- The buzzer makes five consecutive beeps about 1 minute before auto power off, and makes one long beep when the meter shuts down.
- Low battery detection:

a. When battery voltage is less than about 3.7V4.2V:" ▭ " is displayed, the indicator lights up yellow for 2 seconds and then lights off, the meter still works.
b. When battery voltage is less than about (3.6±0.3)V: After the meter is turned on, the indicator lights up red for 2 seconds and the meter shuts down.

X. Technical Specifications

Accuracy: ± (a% of reading + b digits), 1 year warranty
Ambient temperature: 23℃±5℃ (73.4℉±9℉)
Relative humidity: ≤75%

⚠Warning
- To ensure measurement accuracy, the operating temperature should be within 18°C~28°C and the fluctuation range should be within ±1°C.
- Temperature coefficient: 0.1 x (specified accuracy)/°C (<18°C or >28°C)

1. DC Voltage

Range	Resolution	Accuracy
9.999mV	0.001mV	±(0.7%+8) [10%~100% of the Range]
99.99mV	0.01mV	
999.9mV	0.1mV	±(0.5%+3)
9.999V	0.001V	
99.99V	0.01V	
999.9V	0.1V	

- Input impedance: About 10MΩ for DCV, about 3GΩ for DCmV. Unstable digits display when the circuit is open in mV range, the digits stabilize (⩽±5 digits) after connecting to the load.
- Max input voltage: ±1000V, the alarm sounds at 990.0V, "OL" is displayed at >1000V.
- Overload protection: 1000Vrms (DC/AC)

2. AC Voltage

Range	Resolution	Accuracy
9.999mV	0.001mV	±(1%+3)
99.99mV	0.01mV	
999.9mV	0.1mV	±(0.8%+3)
9.999V	0.001V	
99.99V	0.01V	
999.9V	0.1V	

- Input impedance: About 10MΩ.
- Frequency response: 40Hz~400Hz, sine wave RMS (mean response).
- Max input voltage: AC 1000V, the alarm sounds at 990.0V, "OL" is displayed at >1000V.
- Overload protection: 1000Vrms (DC/AC).

3.Resistance

Range	Resolution	Accuracy
999.9Ω	0.1Ω	±(0.8%+2)
9.999kΩ	0.001kΩ	
99.99KΩ	0.01KΩ	
999.9KΩ	0.1KΩ	
9.999MΩ	0.001MΩ	±(1.5%+3)
99.99MΩ	0.01MΩ	±(2.0%+5)

- Measurement result = displayed value – resistance of shorted test leads.
- Overload protection: 1000V

4. Continuity and Diode

Range	Resolution	Remarks
•))	0.1Ω	Broken circuit: Resistance ＞30Ω, no beep. Well-connected circuit: Resistance ⩽30Ω, consecutive beeps.
▶|	0.001V	Open circuit voltage: About 3.3V (test current is about 1.5mA). For silicon PN junction, the normal value is about 0.5V~0.8V

- Overload protection: 1000Vrms (DC/AC)

5. Capacitance

Range	Resolution	Accuracy
9.999nF	0.001nF	±(4%+10)
99.99nF	0.01nF	±(4%+5)
999.9nF	0.1nF	
9.999μF	0.001μF	
99.99μF	0.01μF	
999.9μF	0.1μF	
9.999mF	0.001mF	±10%

- For capacitance ⩽100nF, it is recommended to use REL mode to ensure measurement accuracy.
- Overload protection: 1000Vrms (DC/AC)

6. Temperature

Range			Resolution	Accuracy
℃	- 40 ~ 1000℃	-40 ~ 0℃	1℃	±4℃
		> 0 ~ 100℃		±(1.0%+5)
		> 100 ~ 1000℃		±(2.0%+5)
℉	- 40 ~ 1832℉	-40 ~ 32℉	1℉	±5℉
		> 32 ~ 212℉		±(1.5%+5)
		> 212 ~ 1832℉		±(2.5%+5)

- K-type thermocouple is only applicable to the measurement of temperature below 250°C/482°F.
- Overload protection: 1000Vrms (DC/AC)

7. DC Current

Range	Resolution	Accuracy
999.9μA	0. 1μA	±(0.8%+3)
999.9mA	0.1mA	±(1.0%+3)
9.999A	0.001A	

- The alarm sounds at ⩾9.900A. "OL" is displayed at>10.00A.
- Overload protection: 1000Vrms

8. AC Current

Range	Resolution	Accuracy
999.9μA	0. 1μA	±(1.0%+3)
999.9mA	0.1mA	±(1.2%+3)
9.999A	0.001A	

- Frequency response: 40Hz~400Hz
- Display: RMS
- Accuracy: 10~100% of the range, zeroing at short circuit.
- The alarm sounds at ⩾9.900A, "OL" is displayed at >10.00A
- Overload protection: 1000Vrms

9. Frequency

Range	Resolution	Accuracy
99.99Hz~9.999MHz	0.01Hz~0.001MHz	±(0.1%+5)

- Input amplitude:
  ⩽100kHz: 200mVrms ⩽input amplitude ⩽30Vrms
  >100kHz~1MHz: 500mVrms ⩽input amplitude ⩽30Vrms
  >1MHz: 900mVrms ⩽input amplitude ⩽30Vrms
- Overload protection: 1000Vrms (DC/AC)

10. Duty cycle

Range	Resolution	Accuracy
0.1~99.9%	0.1%	±(3%+5)

- Input amplitude:
  Duty cycle is only applicable to the measurement of square wave at ⩽10kHz.
  ⩽1kHz: the duty cycle is 10.0%-95.0%
  >1kHz: the duty cycle is 30.0%-70.0%
- Overload protection: 1000Vrms (DC/AC)

XI. Maintenance

⚠ Warning: Switch off the power supply and remove the test leads before opening the rear cover.

1. General Maintenance
1) Clean the meter casing with a damp cloth and mild detergent. Do not use abrasives or solvents.
2) If there is any malfunction, stop using the meter and send it for maintenance.
3) The maintenance and service must be implemented by qualified professionals or designated departments.

2. Battery /Fuse Replacement
1) Battery Replacement
a. Turn the function dial to the "OFF" position, remove the test leads from the input terminals, and remove the protective cover.
b. Unscrew and remove the battery cover.
c. Replace with 3×1.5V AAA batteries, observing correct polarity.
d. Secure the battery cover and tighten the screw.
2) Fuse Replacement
a. Turn the function dial to the "OFF" position, remove the test leads from the input terminals, and remove the protective cover.
b. Unscrew and remove the rear cover.
c. Replace the blown fuse (specifications: Fuse 10A/1000V Φ6.35×32mm ceramic tube).
d. Secure the rear cover and tighten the two screws.

UNI-T
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No.6, Gong Ye Bei 1st Road,
Songshan Lake National High-Tech Industrial
Development Zone, Dongguan City,
Guangdong Province, China

说明书菲林做货要求：

序号	项目	内容
1	尺寸	展开420*240mm　折后120*140mm
2	材质	60g书纸
3	颜色	单色
4	外观要求	完整清晰、版面整洁，无斑墨、残损、毛边、刀线错位等缺陷。
5	装订方式	无
6	表面处理	无
7	其它	无
版本		1

DWH 设 计	宣浩	MODEL 机型: UT60EU	Part NO. 物料编号: P/N:110401110402X
CHK 审核			
APPRO. 批准		UNI-T 优利德科技（中国）有限公司 UNI-TREND TECHNOLOGY (CHINA) LIMITED	