

Ψηφιακό πολύμετρο UNI-T UT60BT Bluetooth

UNI-T · EAN 6935750560259

Machine translation from Polski. In case of doubt the manufacturer's original document prevails.

VIII. Function Buttons

- **SELECT Button:** Press this button to switch between measuring direct current voltage (DCV), continuity/resistance/diode/capacitance testing, frequency/duty cycle, °C/°F, and AC/DC current. Each press cycles through the appropriate measurement range. UT60EU / UT60BT is a 9999-count, True RMS digital multimeter with high resolution, automatic range selection, and a new intelligent ADC circuit. Designed according to CAT III 600V standard, the meter is equipped with overvoltage and overcurrent alarms and protection against incorrect detection, safeguarding against electric shock with voltages up to 6 kV and high voltages.
- **RANGE Button:** When the rotary switch is in the V, mV, Resistance, mA, or A position, a short press of this button switches to manual range, while a long press switches to AUTO mode.
- **REL Button:** When the rotary switch is in the V, mV, capacitance, A, mA, or A position, a short press of this button switches to relative measurement mode. Press and hold this button for 2 seconds to turn the backlight on/off.
- Unique appearance, ergonomic design, compact construction.
- (only UT60BT): A long press of this button switches to wireless mode. - Display with 9999 digits, true RMS measurement, and fast analog-to-digital converter (3 times/s). It appears in the lower left corner of the LCD display. To exit this mode, press and hold again.
- Full protection against false detections for overvoltages up to 1000 V and excessive voltage/current alarm.

IX. Operating Instructions

1. Measuring AC/DC Voltage (Figure 2)

- 1) Set the Function Selector Dial to the AC/DC voltage measurement position.
- 2) Insert the red test lead into the " " socket and the black test lead into the "COM" socket. Apply the test leads to both ends of the measured voltage (parallel connection to the load).
- 3) Read the measurement result from the LCD display.

Warning:

- The flame sensor measurement of heating devices can be performed in the uA position.

- Do not apply voltage above 1000 V, as this may cause damage to the meter and user injury.
- AC/DC current mode memory function.
- Bluetooth connection via mobile app (UT60BT).
- Low power consumption (generally: about 2 mA; sleep mode: < 30 μ A) to effectively extend battery life up to 500 hours.
- If the measured voltage range is unknown, select the maximum range and then decrease accordingly (if the LCD displays "OL", it means the voltage has exceeded the range).

III. Accessories

Open the package and remove the multimeter. Check carefully for any missing items and ensure they are not damaged.

1. User Manual----- 1 pc.
2. Test Leads----- 1 pair
3. Temperature Sensor----- 1 pc.

If any of the above items are missing or damaged, please contact the supplier immediately. Before use, carefully read the "Safety Instructions."

2. Continuity Test (Figure 2)

- 1) Set the function dial to continuity test position.
- 2) Connect the red test lead to the " " terminal, the black test lead to the "COM" terminal, and touch the probes to the two points.

Safety Instructions Measurement Points. 1. Safety Standards 3) When the measured resistance is greater than 420 Ω , the circuit is

1) The meter has been designed in accordance with the standards IEC 61010-1, IEC 61010-2-033, IEC 61326-1, interrupted, the LCD displays the message "OL", and the IEC 61326-2-2. buzzer does not sound. 2) The meter complies with the double insulation standard, the overvoltage category CAT III 600 V, and pollution degree 2. Circuit conductivity is relatively high when the measured resistance is between 30 Ω and 420 Ω , the buzzer does not sound, and the red LED lights up. When the measured resistance is $\leq 300 \Omega$, the circuit is in good conductive condition, and the buzzer emits a continuous sound, and the green LED lights up. Warning

- 1) Do not use the meter if the rear cover is not completely closed, as this may pose a risk of electric shock. 2) Before use, check and ensure that the insulation of the meter and the test leads is in good condition and not damaged. If the probe insulation is damaged, it should be replaced with a new one that meets the IEC61010-031 standard and the product's rated

parameters or better. Before starting the test, power off the circuit and discharge all capacitors. 3) When using the meter, keep fingers behind the covers of the test leads. 3. Resistance Measurement (Figure 2)

4) Do not apply a voltage greater than 1000 V between any terminal and ground to prevent electric shock and damage to the meter. 1) Set the function dial to the resistance measurement position. 2) Connect the red test lead to the “ ” terminal, the black test lead to the “COM” terminal,

and touch the probes to both ends of the measured resistance (parallel connection with resistance). 3) Read the measurement result from the LCD display. 6) The measured voltage must not exceed the specified limit to prevent Warning

electric shock and damage to the meter. - Before measuring resistance, power off the circuit and discharge all capacitors. 7) Set the function dial to the correct position before

measuring. - If the resistance is not less than $0.5\ \Omega$ when the test leads are shorted, check if

8) Never turn the function dial during measurement to avoid damaging the meter. the test

leads are not loose or damaged. 9) Do not modify the internal circuit of the meter to avoid

damaging the meter or - If the measured resistor is open or the resistance exceeds the

maximum range, the user. LCD will display the message “OL”. 10) Damaged fuses must be replaced with fast fuses of the same

parameters. - When measuring low resistance, the test leads cause a measurement error of $0.1\ \Omega \sim 0.2\ \Omega$. 11) When the message “ ” appears, replace the batteries in a timely manner

to To obtain the final accurate value, subtract the resistance of the shorted test lead from

ensure measurement accuracy. the measured resistance value. 12) Do not use or store the

meter in an environment with high temperature, high - During high resistance measurement,

stabilizing the reading may take a few seconds. humidity, flammable, explosive, or strong

magnetic fields. - Do not apply voltages above 30 Vrms AC, 42.4 V peak, or 60 V DC. 13)

The meter casing should be cleaned with a damp cloth and mild detergent. Do not use

abrasive cleaners or solvents. 14) Using the test probe 4. Diode Test (Figure 2)

For CAT III / CAT IV testing, ensure that the probe cover is properly 1) Turn the function dial

to the diode test position. installed to avoid electric shock. 2) Insert the red test lead into the

“ ” terminal, the black test lead into the “COM” terminal,

and touch the probes to both ends of the PN junction.

3) If the diode is open or has reversed polarity, the LCD will display the message "OL". For a

silicon PN junction, the normal value is usually around 500 mV~800 mV (0.5 V~0.8 V). For

CAT II testing, the probe cover must be removed to test recessed sockets, such as wall

sockets, and do not lose the probe cover. - Before connecting the terminals, disconnect the circuit power and discharge all capacitors, then touch the probes to both ends of the capacitor. Testing the PN junction. 15) If the equipment is used in a manner inconsistent with the manufacturer's recommendations, it may - The test voltage is approximately 4.0 V/1.5 mA. weaken its protective properties. 5. Capacitance measurement (figure 2) V. Electrical symbols 1) Turn the function dial to the capacitance measurement position. Warning 2) Insert the red test lead into the " " terminal and the black test lead into the "COM" terminal. AC Voltage Grounding DC Voltage 3) When there is no input signal, the meter displays a constant value (self-capacitance). For measuring small capacitance, the constant value must be subtracted from the measured value to ensure measurement accuracy. For this purpose, the relative measurement mode (REL) should be used, which automatically subtracts the constant value. Compliance with EU directive Warning Compliance with UL STD 61010-1, 61010-2-033, certified by CSA STD C22.2 No. 61010-1, 61010-2-033 - If the measured capacitor is shorted or its capacitance exceeds the maximum range, the LCD will display the message "OL". - During high capacitance measurement, the stabilization of the reading may take a few seconds. - Before measurement, all capacitors (especially high-voltage capacitors) must be discharged to avoid damaging the meter and user injury. Measurement category III applies to test and measurement circuits connected to the distribution part of the low-voltage installation of the building. 6. Frequency measurement (figure 2) 1) Set the function dial to the "Hz/%" position. Measurement category II applies to test and measurement circuits connected directly to points of use (electrical outlets and similar points) of the low-voltage network installation. 2) Connect the red test lead to the " " terminal and the black test lead to the "COM" terminal, then connect the test leads in parallel to both ends of the signal source (measurement range: 10 Hz~2 MHz). 3) Read the measurement result from the LCD display. Compliance assessment in the UK. Warning The measurement output signal should be <30 V; otherwise, the measurement accuracy will be disrupted. VI. General specifications 1. The maximum voltage between the input terminal and ground is 1000 Vrms. 7. Duty cycle measurement (figure 2) 1) Turn the function dial to the HZ/% position and briefly press the SELECT button to enter the duty cycle measurement interface. 2) Insert the red test lead into the " " terminal, the black test lead into the "COM" terminal, and connect the test leads in parallel to both ends of the signal source (measurement range is 10 Hz). 3) Read the measurement result from the LCD display. 7. Data hold: displays " " in the upper right corner of the LCD display. Warning 8. Low battery indicator: displays " " in the lower left corner of the LCD screen. - The measurement output signal should be >1 Vp-p; otherwise, the measurement accuracy will be disrupted. 9.

Battery: AAA 1.5 V x 3 10.

Operating temperature: 0°C ~ 40°C (32°F ~ 104°F)

Storage temperature: -10°C ~ 50°C (14°F ~ 122°F)

Relative humidity: 0°C ~ 30°C 75%RH, 30°C ~ 40°C 50% RH

Working height: 0 ~ 2000 m

User manual: Indoor use

11. Dimensions: 187*88*56 mm

12. Weight: approximately 400 g (including batteries)

13. EMC: For an RF field strength of 1 V/m, overall accuracy = specified accuracy + 5% of range. No specified indicator for RF field strength >1 V/m. VII. External structure (Figure 1)

1. LCD display

2. Function buttons

3. Range switch

4. mA / 10A input socket

5. A input socket

6. COM input socket

7. Other sockets

8. Hook

9. Probe holder

10. Bracket

· Input impedance: Approximately 10M . 8. AC/DC current measurement (Figure 3) Maximum input voltage: 1000 V AC, audible alarm at 990.0 V, display "OL" at >1000 V. A. Flame sensor circuit detection of heating device in position · Overload protection: 1000 Vrms (DC/AC). μ A (Figure 3a)

1) Set the range switch to μ A and locate the connecting wire from the gas furnace controller to the flame detector. 2) Connect the meter between the flame sensor probe and the control module. 3) Turn on the heating device to perform the μ A measurement. B. Perform standard current measurement in A/mA position (Figure 3b)

1) Insert the red test lead into the "mA/A" socket, and the black test lead into the "COM" socket. 2) Press the selection button to switch between direct current (DC) and alternating current (AC). 3) Connect the test leads in series to the power supply or the circuit being tested. · Measurement result = displayed value - resistance of shorted test leads. 4) Read the measurement result from the LCD display. · Overload protection: 1000 V

Note

- Turn off the circuit power, ensure that the input terminals and the position of the rotary switch are correct, and then connect the Meter in series to the circuit. If the range of the measured current is unknown, select the maximum range and then reduce it accordingly. Open circuit: resistance >30 , no audible signal. Circuit well connected: resistance ≤ 30 , subsequent audible signals. In case of overload at the "mA / A" terminal, the built-in fuse will blow and will need to be replaced. Open circuit voltage: approximately 3.3 V (test current is approximately 1.5

- During current measurement, do not connect the test leads in parallel to the circuit to avoid damaging the meter and exposing the user. · When the measured current approaches 10 A, the duration of a single measurement should be less than 10 s, and the interval between measurements should be longer than 15 minutes. 9. Temperature measurement (Figure 4):

- 1) Set the function selection knob to the temperature measurement position.

- 2) Insert the type K thermocouple into the " " and " COM " sockets, and place the measuring tip of the thermocouple on the object being tested. Read the temperature value from the LCD display after it stabilizes. Note

Upon turning on the meter, the LCD display shows the message "OL". Only type K thermocouples can be used. The measured temperature should be below 250°C / 482°F ($^{\circ}\text{F} = ^{\circ}\text{C} \times 1.8 + 32$). · For a capacitance of 100nF, it is recommended to use the REL mode to ensure measurement accuracy. 10. Non-contact voltage detection (NCV) (Figure 5) ·

Overload protection: 1000 Vrms (DC / AC)

- 1). To detect the presence of alternating current (AC) voltage or electric field, set the function selection knob to "NCV". The meter defaults to start in "EFLO" mode. A short press of the SELECT button switches to "EFHi" mode. 2). In EFLO mode, bring the front of the meter close to the electrical socket or insulated wire ($\geq 24\text{V} \pm 6\text{V}$). Upon detecting the electric field, the buzzer will emit a sound, the LED will start flashing, and a segment "-" will appear on the display. As the intensity of the measured electric field increases, more segments will be displayed (up to " ---- "), and the frequency of the buzzer's sound will increase. 3). In HFHi mode, bring the front of the meter close to the electrical socket or insulated wire ($\geq 74\text{V} + 12\text{V}$).

- Type K thermocouple can only be used for temperature measurement below $250^{\circ}\text{C}/482^{\circ}\text{F}$. Upon detecting an electric field, the buzzer emits a sound signal,

- Overload protection: 1000 Vrms (DC/AC)

The LED flashes, and the display shows the segment " - ". As the intensity of the measured electric field increases, more segments are displayed (up to " ---"), and the frequency of the

buzzer signals increases. 4). Below is a diagram of the segments indicating the intensity of the detected electric field. 11. Bluetooth connection (only UT60BT) (Figure 6):

The meter sends and receives measurement values to/from the UNI-T app

- The alarm activates at a value of 9.900 A. At a value >10.00 A, the message "OL" is displayed. Connect (smartphone or tablet) via energy-saving

- Overload protection: 1000 Vrms

wireless technology 802.15.4. 1) Turn on the meter (the wireless function is off by default).

2) Press and hold to turn on the wireless function. 3) Once the wireless function is turned on, the LCD display lights up and

displays the Bluetooth symbol. 4) The Bluetooth symbol flashes at a frequency of 2 Hz after recognition and connection in the app. 5) Display data or control the meter using the app. ·

Frequency range: 40 Hz ~ 400 Hz

- Display: RMS

Accuracy: 10 ~ 100 % of the range, zeroing at short circuit. The AiDMM2.0 app can be downloaded from Google Play or Apple App Store. The sound alarm activates at 9.900 A, and "OL" appears on the display when the value exceeds

12. Other > 10.00 A. · The meter will return to normal measurement mode only after displaying the full screen for about 2 seconds

from turning on. · If no operation is performed on the function selection knob for 15 minutes during measurement, the meter will automatically turn off to save energy. To wake it up, press any

button or turn the function selection knob. The buzzer will then emit a single sound signal.

To disable the auto-off function, set the knob to the OFF position, and then, at the moment

- Input signal amplitude:

of turning on the meter, press and hold the SELECT button for more than 2 seconds. 100

kHz: 200 mVrms input signal amplitude 30 Vrms

- The buzzer emits a short sound signal (about 0.25 s) for each correct button press or > 100 kHz ~ 1 MHz: 500 mVrms input signal amplitude 30 Vrms

rotation of the function selection knob. > 1 MHz: 900 mVrms input signal amplitude 30 Vrms

- Buzzer alarm · Overload protection: 1000 Vrms (DC / AC)

The buzzer emits a continuous sound signal when the input voltage reaches 990.0 V or

the input current exceeds 9.900 A, indicating an overload condition. · The buzzer emits five short sound signals about a minute before automatic power off. Then, during the meter's shutdown, one long sound signal is emitted. · Low battery voltage detection:

a. When the battery voltage drops below approximately 3.7 V - 4.2 V: the indicator will light

up · Input signal amplitude:

yellow for 2 seconds and then turn off. The meter will continue to operate. The duty cycle measurement applies only to rectangular signals with a frequency of 10 kHz. b. When the battery voltage drops below approximately (3.6 ± 0.3) V: After turning on the meter, the indicator will light up red for 1 kHz: duty cycle is 10.0 % - 95.0 %

2 seconds, after which the meter will turn off. 1 kHz: duty cycle is 30.0 % - 70.0 %

X. Technical specifications · Overload protection: 1000 Vrms (DC / AC)

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

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

Relative humidity: $\leq 75\%$ Warning: Before opening, turn off the power and disconnect the test leads. Note 1.

General Maintenance

· To ensure measurement accuracy, the operating temperature should be between 18°C and 28°C , and the fluctuation range should not exceed $\pm 1^\circ\text{C}$.

1) Clean the meter's casing with a damp cloth moistened with a mild detergent. Do not use abrasive materials or solvents.

· Temperature coefficient: $0.1 \times (\text{specified accuracy}) / ^\circ\text{C}$ (below 18°C or above 28°C)

2) In case of any malfunction, stop using the meter and return it for service.

3) Maintenance and repairs must be carried out by qualified personnel or at an authorized service center.

2. Battery / Fuse Replacement

1) Battery Replacement

a. Set the function selection dial to the "OFF" position, disconnect the test leads from the input jacks, and remove the cover.

b. Unscrew and remove the battery cover.

c. Replace the batteries with 3 x 1.5 V AAA, paying attention to correct polarity.

d. Reattach the battery cover and tighten the screw.

2) Fuse Replacement

a. Set the function selection dial to the "OFF" position, disconnect the test leads from the input jacks, and remove the cover.

b. Unscrew and remove the rear cover.

· Input impedance: approximately $10\text{ M}\Omega$ for DCV, approximately $3\text{ G}\Omega$ for DCmV. In the mV range,

c. Replace the blown fuse (specification: fuse 10A/1000V, breaking capacity: 10 kA, 6.35 x 32 mm, ceramic). Unstable readings may occur with an open circuit. Stabilization of readings (5 digits) occurs after connecting a load.

d. Secure the rear cover and tighten the two screws.

- Maximum input voltage: ± 1000 V; alarm activates at 990.0 V; "OL" message is displayed at > 1000 V.

- Overload protection: 1000 Vrms (DC / AC)

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