

UNI-T UT161B

UNI-T UT161B Digital Smart Multimeter Instruction Manual

Model: **UT161B**

1. INTRODUCTION

The UNI-T UT161B is a reliable True RMS digital multimeter designed for professional use. It features a 6000-count display and is capable of measuring up to 1000V AC/DC. This device is equipped with audible and visual alarms, providing critical warnings during high voltage, current, or temperature measurements. The UT161 series, including the UT161B, is CE, UKCA, and cETLus certified, ensuring compliance with international safety standards.

Key features include:

- True RMS measurement for accurate readings on non-sinusoidal waveforms.
- Data hold and backlight for convenience in various lighting conditions.
- MAX/MIN/Relative modes for advanced analysis.
- USB communication for data logging and PC connectivity.
- Comprehensive input protection.
- Diode and continuity testing.
- Non-Contact Voltage (NCV) detection with audible/visual alarm.

2. SAFETY INFORMATION

Always adhere to safety precautions when using the multimeter to prevent electric shock or personal injury. Read all safety information carefully before operation.

- **Do not** apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
- **Do not** use the meter if it appears damaged or if the case is open.
- Exercise extreme caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. These voltages pose a shock hazard.

- Always ensure the test leads are in good condition, without any damage to the insulation.
- Disconnect the test leads from the circuit before changing functions or ranges.
- Replace the battery immediately when the low battery indicator appears to ensure accurate readings.
- Use the correct input terminals, function, and range for all measurements.

3. PRODUCT OVERVIEW

The UNI-T UT161B multimeter is designed for ease of use and durability. It features a clear LCD display, a rotary switch for function selection, and various buttons for additional features.



Figure 1: Front view of the UNI-T UT161B Digital Smart Multimeter, showing the display, rotary switch, and function buttons.



Figure 2: Back view of the UNI-T UT161B Digital Smart Multimeter, showing the battery compartment and kickstand.

What's in the Box:

- UNI-T UT161B Digital Smart Multimeter
- Test Leads (Gold plated for quick and accurate measurements)
- USB Cable
- Batteries (1 Lithium Metal battery required, included)
- English Manual
- Cloth Bag



Figure 3: The complete package contents for the UNI-T UT161B Multimeter, including the device, test leads, USB cable, and manual.

4. SETUP

Battery Installation

1. Ensure the multimeter is powered off and test leads are disconnected.
2. Locate the battery compartment on the back of the meter.
3. Unscrew the battery cover and remove it.
4. Insert four 1.5V (R03) batteries, observing correct polarity.
5. Replace the battery cover and secure it with the screw.

Connecting Test Leads

Connect the red test lead to the V Ω mA input jack and the black test lead to the COM input jack for most measurements. For high current measurements (up to 10A), connect the red test lead to the 10A input jack.

5. OPERATING INSTRUCTIONS

The UT161B offers various measurement functions accessible via the rotary switch and function buttons.

General Measurement Steps:

1. Turn the rotary switch to the desired measurement function.
2. Connect the test leads to the appropriate input jacks and to the circuit under test.
3. Read the measurement value on the LCD display.
4. Use function buttons (e.g., RANGE, HOLD, REL, MAX/MIN) for additional control or data capture.

Specific Functions:

- **Voltage Measurement (AC/DC):** Select V~ for AC voltage or V- for DC voltage. The meter can measure up to 1000V.
- **Current Measurement (AC/DC):** Select A~ for AC current or A- for DC current. Ensure test leads are connected to the correct current input jacks (mA/μA or 10A).
- **Resistance Measurement (Ω):** Select the Ω function.
- **Capacitance Measurement (F):** Select the F function.
- **Frequency Measurement (Hz):** Select the Hz function.
- **Diode/Continuity Test:** Select the diode/continuity function. A buzzer will sound for continuity.
- **Non-Contact Voltage (NCV):** Use the NCV function to detect AC voltage without direct contact. The meter will provide audible and visual indications.



Figure 4: The multimeter in use, demonstrating frequency measurement on an active circuit.

USB Communication

The UT161B supports USB communication for connecting to a PC. This allows for real-time data monitoring, logging, and analysis using compatible software.

Your browser does not support the video tag.

Video 1: This video demonstrates various functions of the UNI-T UT161 series multimeters, including voltage and frequency measurement, current measurement, continuity testing with audio/visual indication, NCV function, and USB communication for data logging to a PC. It highlights the device's over-molding protection and the high resolution of the UT161E model.

6. MAINTENANCE

Cleaning

Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Keep the terminals free from dirt and moisture.

Battery Replacement

When the low battery indicator appears on the display, replace the batteries as described in the Setup section. Always use the specified battery type (four 1.5V R03 batteries).

Fuse Replacement

If the current measurement function fails, the fuse may need replacement. Refer to the detailed fuse replacement instructions in the complete user manual for your specific model. Ensure to use a fuse with the correct rating to maintain safety and performance.

7. TROUBLESHOOTING

- **No Display/Power On:** Check battery installation and ensure batteries are not depleted. Replace if necessary.
- **Incorrect Readings:** Verify correct function and range selection. Ensure test leads are properly connected and not damaged. Check for low battery.
- **Continuity Test Not Working:** Ensure the circuit is de-energized. Check test leads for continuity.
- **Current Measurement Failure:** Check if the fuse is blown. Replace with the correct type and rating if needed.
- **NCV Not Detecting:** Ensure the NCV sensor is close to the AC voltage source.

For more complex issues, consult the full user manual or contact UNI-T customer support.

8. SPECIFICATIONS

Below are the general specifications for the UNI-T UT161B Digital Smart Multimeter. For detailed accuracy and specific ranges, please refer to the complete product manual.

UT161E+

Specifications	Range	UT61B+/UT161B	UT61D+/UT161D	UT61E+/UT161E
Certificates (UT161 series only)	CE, UKCA, cETLus			
AC voltage (V)	1000V	±(1%+3)	±(1%+3)	±(0.8%+10)
DC voltage (V)	1000V	±(0.5%+3)	±(0.5%+3)	±(0.05%+5)
AC current (A)	10A 20A	±(1.2%+5)	±(1.2%+5)	±(0.8%+10)
DC current (A)	10A 20A	±(1%+2)	±(1%+2)	±(0.5%+10)
Resistance (Ω)	60MΩ 220MΩ	±(1%+2)	±(1%+2)	±(0.5%+10)
Capacitance (F)	60mF 220mF	±(3%+5)	±(3%+5)	±(3%+5)
Frequency (Hz)	10MHz 220MHz	±(0.1%+4)	±(0.1%+4)	±(0.01%+5)
Duty cycle (%)	0.1%~99.9%	±(2%+5)	±(2%+5)	±(2%+5)
Temperature (°C/°F)	-40°C~1000°C -40°F~1832°F		±(1%+3) ±(1%+6)	
Display count		6000	6000	22000
Bandwidth (Hz)		40Hz~500Hz	40Hz~1kHz	40~10kHz
IPF ACV				√
LoZ ACV			√	
ACV+DCV				√
Transistor hFE				√
Peak hold			√	√
Analog bar		31	31	46
Category ratings	CAT III 1000V, CAT IV 600V			

Characteristics	
Standard accessories	Battery, gold plated test leads, USB cable, temperature probe (D+/D), multi-purpose socket (E+/E), English manual
Optional accessories	Bluetooth/APP
Power	1.5V battery (R03) x 4
Product size	190 x 90 x 50mm
Product net weight	350g
Standard individual packing	Gift box, cloth bag
Standard quantity per carton	20pcs
Standard carton measurement	UT61+ series: 480 x 370 x 365mm; UT161 series: 480 x 370 x 325mm
Standard carton gross weight	UT61+ series: 15.2kg; UT161 series: 17.8kg

Figure 5: A comprehensive table outlining the specifications for the UT161B, UT161D, and UT161E models, including measurement ranges, display counts, and certifications.

Feature	Specification (UT161B)
Display Count	6000
AC Voltage (V)	1000V
DC Voltage (V)	1000V
AC Current (A)	10A
DC Current (A)	10A
Resistance (Ω)	60MΩ
Capacitance (F)	60mF
Frequency (Hz)	10MHz
Duty Cycle (%)	0.1%~99.9%
Power	1.5V battery (R03) x 4
Product Net Weight	350g
Product Size	190mm x 90mm x 50mm
Certifications	CE, UKCA, cETLus

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please refer to the official UNI-T website or the contact information provided in your product packaging. Keep your purchase receipt as proof of purchase for warranty claims.