

## **Preface**

Thank you for purchasing this brand new multi-meter. 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 meter, 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 date. 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, indirect, incidental or subsequent damage or loss caused by using this meter.

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## 1. Overview

UT15B PRO/UT17B PRO is highly reliable true RMS multimeter with auto backlight function. Equipped with its built-in VFC anti-interference start mode, it can filter the carrier frequency interference from sine wave, various distorted voltage signals, and stabilize the output voltage of measuring frequency converter.

UT17B PRO is equipped with frequency and duty ratio mode in DC/AC function and temperature measurement function (resolution: 0.1°C).

This product comes with CE, cETLus certification according to CATIII 1000V/CATIV600V safety level obtained. In addition, this series of products also give full function error detecting protection of up to 30kVA energy, to ensure safer operation.

## 2. Standard Accessories

Open the package and check the below items, if any is missing or damaged, please contact your supplier immediately:

- User manual ----- 1 pc
- Test leads ----- 1 pair
- Point K-type (Ni-Cr ~ Ni-Si) thermocouple ----- 1 pc
- Thermocouple Adapter ----- 1 pc
- Battery ----- 1 pair

### 3. Safety Instruction


#### 3.1 Safety Certifications

- CE, cETLus certification:  
EN 61326-1: 2013; EN 61326-2-2: 2013  
EN 61010-1: 2010; EN 61010-2-030: 2010; EN 61010-2-033: 2012
- CAT III 1000V  
CAT IV 600V
- Pollution degree 2
- Safety standards: double insulation

#### 3.2 Safety Instruction

##### Warning

To ensure safe operation and service of the tester, follow these instructions. Failure to observe these warnings can result in severe injury.

- 1) Do not use the meter without having rear cover in place otherwise electric shock may occur.
- 2) Check the test leads before use to see if they appear to be damaged.
- 3) When the "" icon shows on LCD, please replace the battery in time to ensure accuracy.
- 4) The function selection knob should be adjusted to right function and range.
- 5) The measured signal is not allowed to exceed the specified range to avoid damage or electric shock.
- 6) It is forbidden to switch scale during measurement or damage may occur.
- 7) After measuring operation, disconnect test leads and the circuit; after the current measurement, especially for strong current, it is necessary to power off before disconnecting test leads and circuit.
- 8) Use caution when working with voltages above AC 30Vrms or DC 60V. Such voltages pose a shock hazard.

- 9) Do not use the multimeter in extremely high-temperature or high-humidity environment, particularly in the damp environment in where the product performance may be severely degraded.
- 10) Do not change the internal circuit of the meter to avoid damage to the meter and user!
- 11) Clean the meter casing with damp cloth and mild detergent. Do not use abrasives or solvents!
- 12) Use of test leads:

#### TESTING IN CAT III/IV MEASUREMENT LOCATIONS

Ensure the test lead shield pressed firmly in place. Failure to use the CAT III/IV shield increases arc-flash risk.











#### TESTING IN CAT II MEASUREMENT LOCATIONS




CAT III shields may be removed for CAT II locations. This will allow testing on recessed conductors such as standard wall outlets. Take care not to lose the shields.



#### 4. Electric Symbols

	Direct current
	Alternating current
	Earth (ground) TERMINAL
	Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION
	Caution, possibility of electric shock
	Warning or Caution
	Comply with European Union standards
	Conforms to UL STD 61010-1, 61010-2-030, 61010-2-033, Certified to CSA STD C22.2 No. 61010-1, 61010-2-030, 61010-2-033
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.

#### 5. Comprehensive Specification

- Maximum voltage between the input terminal and grounding: see the instruction about each input terminal protection voltage.
-  A terminal: FF 11A H 1000V fast-acting fuse
-  mA/μA terminals: FF 440mA H 1000V fast-acting fuse
- Maximum display: 6200
- Range: automatic/manual  
Polarity: automatic  
Refreshes 3 times per second; displaying OL icon in case of over range  
Display: HTN screen  
Operating temperature: 0°C~40°C (32°F~104°F)  
Storage temperature: -10°C ~50°C (14°F ~122°F)  
Relative humidity: 0°C~less than 30°C≤75%, 30°C~40°C≤50%
- Operation ASL: 0~2000m
- Internal battery: AA R6P 1.5v ×2pcs
- Low battery: LCD displays " " symbol
- Overall size: about 195mm×95mm×58mm
- Weight: 484.5g (including batteries)
- Electromagnetic compatibility:  
In 1V/m radio-frequency (RF) field: total accuracy = specified accuracy + 5% of range. No specified index for radio-frequency field over 1V/m.
- IP Level: IP40

## 6. External Structure (see Figure 1)

- 1) Automatic backlight sensing window
- 2) LCD display
- 3) Function buttons
- 4) Function selection knob
- 5) Measurement input terminal
- 6) Hanging hook
- 7) Flashlight window
- 8) Multi-function test leads locating stand
- 9) Battery cabinet fixing screw
- 10) Battery cover
- 11) Kickstand

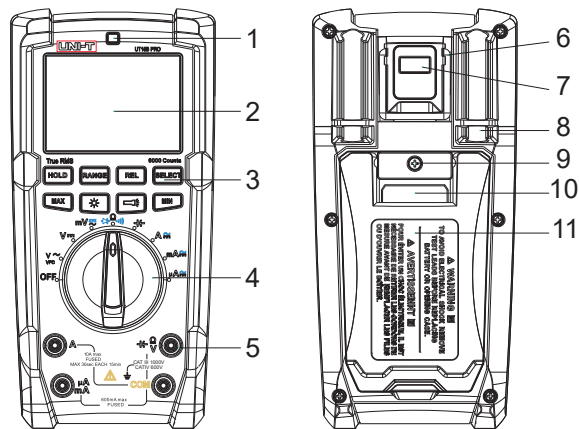


Figure 1

## 7. LCD Display (see Figure 2)

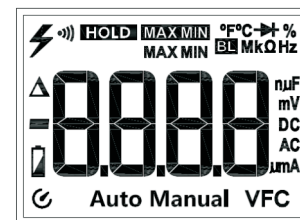


Figure 2

Symbol	Instruction	Symbol	Instruction
⚡	AC voltage exceeds 30V	Ω kΩ MΩ	Resistance measurement unit: Ω, kΩ, MΩ
HOLD	Data hold	Hz kHz MHz	Frequency measurement unit: Hz, kHz, MHz
—	Negative reading	%	Duty ratio measurement unit
AC/DC	AC/DC measurement	mV V	Voltage measurement unit: mV, V
MAX MIN	Maximum and minimum function	μA mA A	Current measurement unit: μA, mA, A
MAX/MIN	Maximum/minimum measurement	nF μF	Capacitance measurement unit: nF, μF
🔋	Low battery	°C	Centigrade temperature measurement
Auto	Auto range	°F	Fahrenheit temperature measurement
Manual	Manual range	VFC	Low-pass filtering
➤	Diode measurement	BL	Auto backlight
••)	Circuit continuity measurement	⌚	Auto power off
Δ	Relative measurement		

## 8. Function Selection Knob and Buttons



Functions	Description
$V\sim$ 、 $V\overline{=}$ 、 $mV\overline{=}$	AC/DC voltage measurement
$\Omega$	Resistance measurement
$\rightarrow $	Diode PN junction voltage measurement
$\bullet  $	Circuit continuity measurement
$\overline{  }$	Capacitance measurement
Hz	Frequency measurement
%	Duty ratio measurement
$\downarrow$	Temperature measurement
$\mu A\overline{=}$ 、 $mA\overline{=}$ 、 $A\overline{=}$	AC/DC current measurement
VFC	Frequency conversion voltage measurement (low-pass)
OFF	Power off

### Buttons Operation:

- RANGE button: press to switch between automatic/manual ranges, once every press will switch to a higher gear, and it will jump to the minimum range when pressing at the maximum range. To quit the manual range mode, users can press this button for over 2s or switch the function selection knob. (Only suitable for  $V\sim$ 、 $V\overline{=}$ 、 $A\overline{=}$ 、 $\Omega$ )
- MAX/MIN button (UT17B PRO): press to enter manual range mode and display the maximum value, then press it again to display the minimum value. To exit the MAX/MIN measurement mode, press this button for over 2 seconds or switch the knob. (Only suitable for  $V\sim$ 、 $V\overline{=}$ 、 $mV\overline{=}$ 、 $\Omega$ )

- MAX button (UT15B PRO): press to enter manual range mode and display the maximum value. To exit MAX/MIN measurement mode, press this button for over 2 seconds or switch the knob. (Only suitable for  $V\sim$ 、 $V\overline{=}$ 、 $mV\overline{=}$ 、 $\Omega$ )
- MIN button (UT15B PRO): press to enter manual range mode and display the minimum value. To exit MAX/MIN measurement mode, press this button for over 2 seconds or switch the knob. (Only suitable for  $V\sim$ 、 $V\overline{=}$ 、 $mV\overline{=}$ 、 $\Omega$ )
- REL button: press to save the first measured value as reference, then input again, the displayed value is the different value between current measured value and the reference value, press it again to exit relative measurement mode. (Only suitable for  $V\sim$ 、 $V\overline{=}$ 、 $mV\overline{=}$ 、 $I\overline{=}$ 、 $\Omega$ 、 $\overline{||}$ )
- Hz/% button (UT17B PRO): under voltage and current measurement mode, press this button to switch to frequency or duty ratio measurement mode.
- SELECT button: press to select functions (only suitable for multi-range). Under AC voltage mode, press this button will display VFC and enter low-pass filter measurement mode, which can measure variable frequency voltage stably, press this button again to exit VFC measurement mode.
- HOLD button (suitable for full range):  
Press to lock hold the displayed value, and LCD will display  $\boxed{H}$  symbol, press it again to relieve and enter the normal measurement mode.
- BL button ( $\odot$ ): press to turn on/off the background light sensing function.
- LIGHT button ( $\rightarrow|$ ): turn on or off the flashlight lighting function

## 9. Measurement Operation Instruction

Check the built-in AA 1.5Vx2 batteries, the  symbol will be displayed if the battery is low and needs to be replaced in time, which. With the symbol of  displaying, please notice that the measuring voltage or current shall not exceed the specified value in order to ensure safety!

### 9.1 AC Voltage Measurement (See Figure 3)

- 1) Turn the function selection knob to the AC voltage scale.
- 2) Insert the red test lead to V port and the black one to the COM port, and connect the tips of two test leads to both ends of measuring voltage separately (with the load in parallel) to measure.
- 3) When the input impedance of the meter is about  $10M\Omega$ , the load may cause measurement error in circuit with high impedance. In most cases, if the circuit impedance is under  $10k\Omega$ , error can be ignored (0.1% or lower).
- 4) Press SELECT button in ACV mode to enter the VFC low-pass filter mode, then the high frequency interference signal will be filtered out through internal specific filter circuit to ensure the accuracy. It can be applied in VFC frequency conversion voltage.
- 5) The AC measurement value is true RMS value.

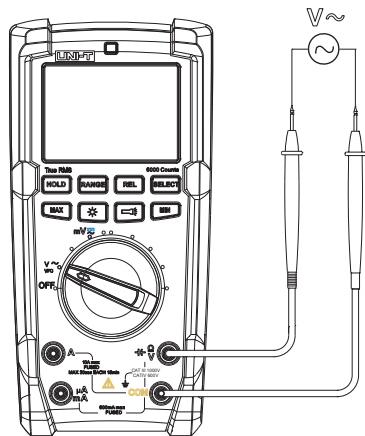


Figure 3

### 9.2 DC Voltage Measurement (See Figure 4)

- 1) Turn the function selection knob to the DC voltage scale.
- 2) Insert the red test lead to V port and the black one to the COM port, and connect the tips of two test leads to both ends of measuring voltage separately (with the load in parallel) to measure.
- 3) The input resistance of DC voltage is infinity ( $\geq 3G\Omega$ ). No attenuation when measuring weak signal with high precision. Some digits will show in open circuit, which is normal without measurement affecting.

#### Note:

- It is forbidden to input voltage higher than 1000Vrms. Damage may occur though it is possible to measure higher voltage.
- Use caution to avoid electric shock when working with high voltages.
- Before each use, verify tester operation by measuring a known voltage.

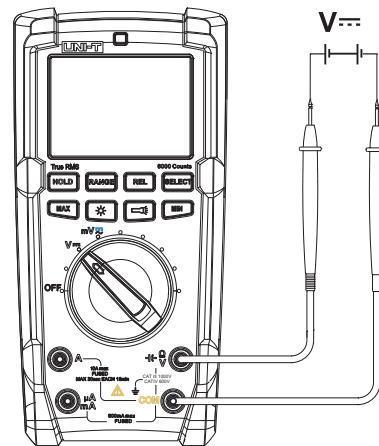


Figure 4

### 9.3 Resistance and Circuit Continuity Measurement (See Figure 5a)

- 1) Turn the function selection knob to the resistance scale.
- 4) Insert the red test leads to the  $\Omega$  port and the black one to the COM port, and connect the tips of two test leads to both ends of measuring resistance separately (with the load in parallel) to measure.

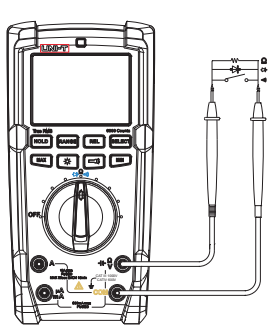


Figure 5a

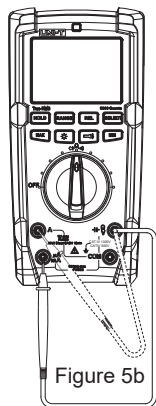


Figure 5b

A		
$\leq 0.5\Omega$		OK
OL		⊗

$\mu\text{AmA}$		
*1M		OK
OL		⊗

#### ⚠ Note:

- OL symbol will be displayed when the measured resistance is open-circuit or the resistance exceeds the maximum range of meter.
- Before online resistance measuring operation, please switch off all powers in circuit and fully discharge all capacitors to avoid inaccuracy.
- Error of  $0.1\Omega\sim 0.2\Omega$  will be resulted by test leads in low resistance measurement. In order to acquire an accurate reading, users should short circuit the test leads and choose REL relative measurement mode.

- Check the test leads for any loosening or other reasons in case there is a resistance no less than  $0.5\Omega$  when test leads are short-circuited.
- Several seconds may be required for the reading stability, which is normal in high resistance measurement like  $60M\Omega$ .
- In circuit continuity measurement, the circuit is off when the resistance of both measured ends is  $\geq 50\Omega$  without buzzer beeps. The circuit is on when the resistance of both measured ends is  $\leq 10\Omega$  with buzzer beeps continuously.
- The resistance measurement function can be applied to make self-inspection of built-in fuse (See Figure 5b).
- Before online circuit continuity measurement, please switch off all powers in circuit and fully discharge all capacitors.
- Do not input voltage higher than DC 60V or AC 30V to avoid danger.

### 9.4 Diode Measurement (See Figure 5a)

- 1) Turn the function selection knob to the diode measurement scale.
- 2) Insert the red test leads to the  $\Omega$  port and the black one to the COM port, and connect the tips of two test leads to both ends of measuring diode separately (with the load in parallel) to measure.
- 3) OL symbol will be displayed if the diode is open circuit or polarity reversing. Generally, about  $500\sim 800\text{mV}$  is confirmed to be normal for silicon PN junction.

#### ⚠ Note:

- Before online diode measuring operation, please switch off all powers in circuit and fully discharge all capacitors.
- The voltage range of diode measurement is about 3.0V.
- Do not input voltages above AC 30V or DC 60V to avoid injury.



## 9.5 Capacitance Measurement (See Figure 6)

- 1) Turn the function selection knob to the capacitance measurement scale.
- 2) Insert the red test leads to the  $\text{+}$  port and the black one to the COM port, and connect the tips of two test leads to both ends of measuring capacitance separately (with the load in parallel) to measure.
- 3) An internal specific capacitance value will be displayed if there is no input. The above value shall be subtracted from the measured value to ensure the accuracy in small range measurement. In this case, REL relative measurement can be applied to make auto subtraction.

### ⚠ Note:

- OL symbol will be displayed when the measured capacitance is short-circuited or the capacitance exceeds the maximum range of meter.
- Generally, several seconds is needed in high-capacity capacitor measurement.
- Before capacitance measurement, please switch off all powers in circuit and fully discharge all capacitors to avoid damage or injury, especially for capacitors with high voltage.

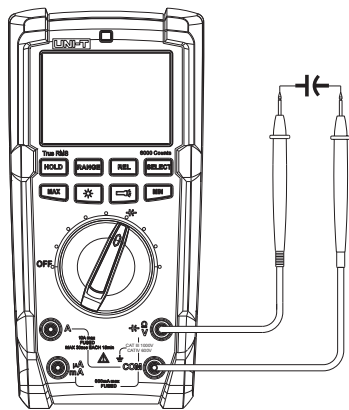


Figure 6

## 9.6 AC/DC Current Measurement (See Figure 7)

- 1) Turn the function selection knob to the  $\text{A}$  /  $\text{mA}$  /  $\mu\text{A}$  scale.
- 2) When the scale is  $\text{A}$ , insert the red test lead to the  $\text{A}$  port. When the scale is  $\text{mA}$  /  $\mu\text{A}$ , insert the red test lead to the  $\text{mA}$  /  $\mu\text{A}$  port. Insert the black test lead to the COM port.
- 3) The meter should be in series with the load, the AC measurement reading is true RMS value.

### ⚠ Note:

- Turn off the power in circuit before the meter being in series with the circuit.
- Proper input port and scale should be selected in measurement. High range should be selected if the measured current is unknown.
- Fuses are provided inside the input jacks of  $\text{A}$  /  $\text{mA}$  /  $\mu\text{A}$ . Do not connect the test leads in parallel with any circuit, which may cause damage and injury.

## 9.7 Frequency and Duty Ratio Measurement (Only UT17B PRO)

The Product can measure frequency or duty cycle while making either AC voltage or current measurement. Press the Hz% button to enter the frequency or duty cycle measurement mode

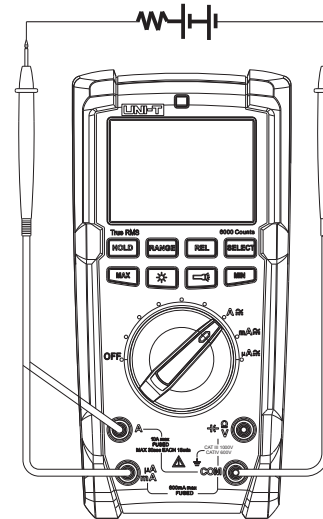


Figure 7


## 9.8 Temperature Measurement (Only UT17B PRO) (See Figure 8)

- 1) Turn the function selection knob to °C/°F scale, and the LCD displays OL.
- 2) Insert the thermocouple anode to the C port, and the cathode to the COM port, fix the test probe on the measured object to measure the temperature.

### ⚠ Note:

The temperature sensor is only suitable for K-type (Ni-Cr ~ Ni-Si) thermocouple, the configured point thermocouple is only for the temperature measurement below 230°C/446°F ( $^{\circ}\text{F}=1.8^{\circ}\text{C}+32$ )

## 9.9 Others

- After powering on and its full-screen display, the meter is in the normal measurement status. ErrE will be displayed when the internal EEPROM makes an error. Restart the meter to return to normal.
- The meter will automatically power off to save power if there is no operation for 15 min. Then users can wake it up by pressing any button or rotating knob in suspend mode with buzzer beeps. Press and hold the SELECT button in power off state and meanwhile power on the meter, auto-off function will be cancelled, and the  symbol on LCD will disappear with a long beep. Restart the meter can turn the auto-off function on again.

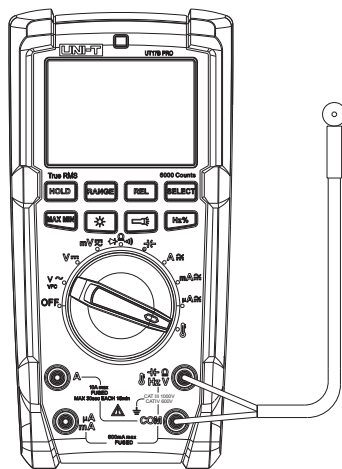



Figure 8

- Buzzer:
  - a. The buzzer will beep continuously when the input voltage is or over 1000V (AC/DC), which warns the range is at the limit.
  - b. The buzzer will beep continuously when the current is or over 10A (AC/DC), which warns the range is at the limit.
- Low voltage detection: internal VDD can be detected when power is supplied, when it is less than 2.5V, Low battery symbol  will be displayed.

## 10. Specification

Accuracy:  $\pm(a\% \text{ reading} + b \text{ number})$ ; 1 year warranty period

Environment temperature: 23°C $\pm$ 5°C (73.4°F $\pm$ 9°F); Relative temperature:  $\leq 75\%$

### ⚠ Note:

If the operation temperature is 18°C-28°C, the fluctuation range of ambient temperature will be stable within  $\pm 1^{\circ}\text{C}$ . If the operation temperature is less than 18°C or exceeds 28°C, the additional temperature coefficient error is 0.1x (specified accuracy)/°C.

### 10.1 DC Voltage Measurement

Range	Resolution	Accuracy
600.0mV	0.1mV	$\pm 0.5 \quad 3$
6.000V	0.001V	
60.00V	0.01V	
600.0V	0.1V	
1000V	1V	

- Input impedance of mV range is  $\geq 3G\Omega$ , while others range are about  $10M\Omega$ . There will be unstable digital display in case of mV range open-circuit; after connecting with the load, it can be controlled  $\leq \pm 3$  digits.
- Maximum input voltage:  $\pm 1000V$ ; if the input voltage is  $\geq 1000V$ , the meter alarms; if it is  $>1100V$ , OL symbol will be displayed on LCD.

## 10.2 AC Voltage Measurement

Range	Resolution	Accuracy
600.0mV	0.1mV	$\pm 1 \quad 3$
6.000V	0.001V	
60.00V	0.01V	
600.0V	0.1V	
1000V	1V	
VFC: 600.0V	0.1V	$\pm (4\%+10)$ frequency response: 40~400Hz



- Input impedance: about  $10M\Omega$
- Display true RMS values. Frequency response: 40~500Hz
- Accuracy guaranteed range: 1~100% range, less than 2 digits of residual reading is allowed for short-circuit.
- AC peak factor can reach 3.0 at full value (with except for 600V range, which is 1.5 at full value)  
Non-sine waveform: Peak factor is 1.0~2.0, accuracy should be added 3.0%  
Peak factor is 2.0~2.5, accuracy should be added 5.0%  
Peak factor is 2.5~3.0, accuracy should be added 7.0%\*
- Maximum input voltage: 1000Vrms, if the input voltage is  $\geq 1000V$ , the meter alarms; if it is  $>1100V$ , OL symbol will be displayed on LCD.

## 10.3 Resistance Measurement

Range	Resolution	Accuracy
600.0 $\Omega$	0.1 $\Omega$	$\pm (0.5 \quad +2)$
6.000k $\Omega$	0.001k $\Omega$	
60.00k $\Omega$	0.01k $\Omega$	
600.0k $\Omega$	0.1k $\Omega$	
6.000M $\Omega$	0.001M $\Omega$	$\pm 2.0\%+5)$
60.00M $\Omega$	0.01M $\Omega$	

- Overload protection: 1000V-PTC
- Range: measured value= displayed value – short-circuit value of test leads
- Open-circuit voltage: 0.5V (test current: about 0.4mA)

## 10.4 Continuity Test Diode Measurement

Range	Resolution	Remark
	0.1 $\Omega$	Circuit breakage resistance value is set as $> 50\Omega$ without buzzer beeps Good conductivity resistance value is set to be $\leq 10\Omega$ with buzzer beeps continuously
	0.001V	Open circuit voltage: 3.0V (test current: about 1.2mA) normal voltage of silicon PN junction is about 0.5~0.8V

- Overload protection: 1000V-PTC

### 10.5 Capacitance Measurement

Range	Resolution	Accuracy
6.000nF	0.001nF	Under REL mode: $\pm(4.0\%+8)$
60.00nF	0.01nF	$\pm(2.0\%+5)$
600.0nF	0.1nF	
6.000 $\mu$ F	0.001 $\mu$ F	
60.00 $\mu$ F	0.01 $\mu$ F	
600.0 $\mu$ F	0.1 $\mu$ F	
6000 $\mu$ F	1 $\mu$ F ( $\leq 1000\mu$ F)	$\pm(5.0\%+5)$
	1 $\mu$ F (1000 $\mu$ F)	$\pm 10\%$

- Overload protection: 1000V-PTC
- When the measured capacitance is  $\leq 600$ nF, REL mode is recommended to ensure the accuracy.

### 10.6 Frequency/Duty ratio Measurement (Only UT17B PRO)

Range	Resolution	Accuracy
10Hz 100KHz	0.01Hz 0.1KHz	$\pm(0.1\%+3)$
1% 99.9%	0.1%	$\pm(1.0\%+4)$

- Overload protection: 1000V-PTC
- For voltage mV scale, the input range is about 100mVrms-30Vrms, duty ratio is 1.0%-99.0%, which is only suitable for  $\leq 1$ kHz square wave measurement.
- For voltage V scale:  
When the input frequency band is  $\leq 50$ kHz, the input amplitude is  $>5$ Vrms;  
When the input frequency band is  $>50$ kHz~100kHz, the input amplitude is  $>10$ Vrms;  
The input range of 1000V scale needs to be  $\geq 100$ V; Duty ratio is 10.0%-90.0% which is only suitable for 50Hz or 60Hz;
- For current measurement scale, the input range of frequency/duty ratio measurement is 60% of the full range.

### 10.7 Temperature Measurement (Only UT17B PRO)

Range		Resolution		Accuracy
°C	-55 500°C	-55.0 0	0.1°C	$\pm(6.0\%+2)$
		0 50.0		$\pm 2$
		50.0 500.0		$\pm(2.0\%+1)$
°F	-67 932°F	-67°F 32°F	1°F	$\pm(10\%+2)$
		32 122°F		$\pm 4$
		122 932°F		$\pm(4.0\%+4)$

- Overload protection: 1000V-PTC  
Remark: configured point K-type (Ni-Cr ~ Ni-Si) thermocouple, which is only applicable for temperature below 230°C/446°F

### 10.8 DC Current Measurement

	Range	Resolution	Accuracy	
μA	600.0μA	0.1μA	± (0.8%+3)	
	6000μA	1μA		
mA	60.00mA	0.01mA		
	600.0mA	0.1mA		
A	6.000A	0.001A		± (1.2%+5)
	10.00A	0.01A		

- Overload protection: 1000Vrms
- The meter will alarm when over 10A current is input, OL symbol will be displayed on LCD when input over 11.00A current.

### 10.9 AC Current Measurement

	Range	Resolution	Accuracy	
μA	600.0μA	0.1μA	± (1.0+3)	
	6000μA	1μA		
mA	60.00mA	0.01mA		
	600.0mA	0.1mA		
A	6.000A	0.001A		± (1.5%+3)
	10.00A	0.01A		

- Frequency response: 40~500Hz  
Display: true RMS value
- Accuracy guaranteed range: 1~100%, less than 2 digits residual reading is allowed for short-circuit.
- AC peak factor can reach 3.0 at full value  
Non-sine waveform: Peak factor is 1.0~2.0, accuracy should be added 3.0%  
Peak factor is 2.0~2.5, accuracy should be added 5.0%  
Peak factor is 2.5~3.0, accuracy should be added 7.0%\*
- Overload protection: as same as in DC current measurement


## 11. Maintenance and Repair

**⚠ WARNING:** before opening the rear cover, make sure the power supply has been turned off and the test leads have been removed from the input ports and the measured circuit.

### 11.1 General Maintenance and Repair

- Clean the meter casing with a soft cloth and mild detergent. Do not use abrasives or solvents!
- If any abnormality is found with the meter, stop using it and send it for repairing.
- If the meter needs to be checked or repaired, please ask for qualified maintenance personnel or authorized maintenance department.

### 11.2 Batteries and Fuse Replacement

1) **Batteries replacement:** If LCD displays low battery symbol , batteries should be replaced in time to ensure measurement accuracy. Internal battery specification: AA 1.5v ×2pcs

#### Operation Steps:

- Switch off the power and remove the test leads from the input ports.
- Remove the fixing screw with a screw driver, and open the battery cover to replace the batteries. Pay attention to the polarity especially.

#### ⚠ WARNING:

Do not mix old and new batteries. Do not mix alkaline, standard (carbon-zinc), or rechargeable batteries.

**Fuse replacement:** The meter is unable to operate normally when the fuse is broken by voltage misdetection or overcurrent, so the fuse should be replaced in time.

The step of replacing fuse is:

Switch off the power and remove the test leads from the input ports.

Remove the 6 fixing screw with a screw driver, and open rear cover with screwdriver to replace the broken fuse.

The fuse specifications: F1 Fuse 440mA/1000V Φ10 x 38mm CE

F2 Fuse 11A/1000V Φ10 x 38mm CE

**Test leads replacement:** If insulation on test leads is damaged, please replace it in time.

**WARNING:** Probe assemblies to be used for MAINS measurements should meet EN 61010-031 standard, rated CAT III 1000V, 10A or better.

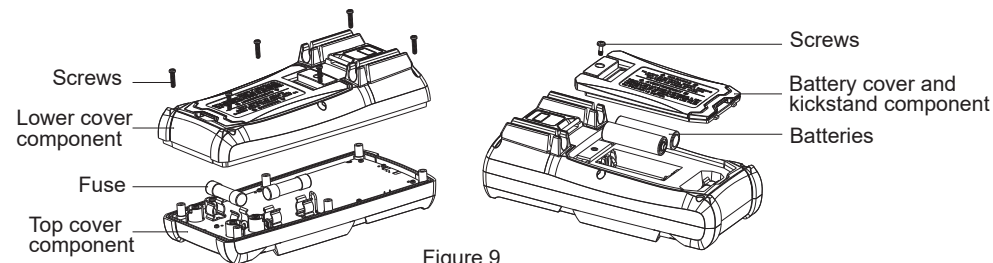


Figure 9

This manual is subject to change without prior notice.

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