

# UNI-T®

## UT15B / UT17B / UT18B (PRO)



### Operating Manual



### Digital Multimeter



P/N:110401110725X

## **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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## I. Overview

UT15B PRO/UT17B PRO/UT18B 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/UT18B PRO is equipped with frequency and duty ratio mode in DC/AC function and temperature measurement function (resolution: 0.1°C). For UT18B PRO, the LED measurement voltage is up to 12V and it can automatically identify positive and negative pole. This series of products also give full function error detecting protection of up to 30kVA energy, to ensure safer operation. UT15B PRO/UT17B PRO comes with CE, cETLus certification according to CAT III 1000V/CAT IV 600V and UT18B PRO comes with CE, cETLus certification according to CAT II 1000V/CAT III 600V.

## II. Features

- True RMS AC voltage and current, accurate measurement of nonlinear signal.
- Large-size LCD, 6000-count analog-digital display, fast ADC/analog-digital convertor.
- Built with VFC LPF to accurately measure distorted voltage and variable-frequency voltage.
- Smart measurement of capacitance. In REL mode, the meter will automatically exit REL mode at >6.2μF.
- MAX/MIN variation can be captured for voltage, current and resistance measurement.
- Full function protection for false detection, withstanding maximum overvoltage of 1000V, designed with over-range alarm function.
- Auto backlight function.
- Flashlight function.
- UT18B PRO has 12V LED measurement function (automatically identify positive and negative pole).

### III. Accessories

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

1. User manual ----- 1pc
2. Test leads ----- 1 pair
3. Point K-type (Ni-Cr ~ Ni-Si) thermocouple ----- 1pc (UT17B PRO/UT18B PRO)
4. Thermocouple adapter ----- 1pc (UT17B PRO/UT18B PRO)
5. Battery ----- 1 pair

### IV. Safety Instruction

#### 1. Safety Certifications

1) CE, cETLus certification:

EN 61326-1:2013; EN 61326-2-2:2013

EN 61010-1:2010+A1:2019; EN 61010-2-030:2010; EN 61010-2-033:2012

2) For UT15B PRO/ UT17B PRO:

CAT III 1000V

CAT IV 600V

For UT18B PRO:

CAT II 1000V

CAT III 600V


3) Pollution degree: 2

4) Safety standards: double insulation

### 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 or 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 scale.
- 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) Before use verify tester operation by measuring a known voltage that is within the rating of this unit.
- 13) If use the meter without following up the operating instructions, the protection provided by the meter may be impaired or lost.
- 14) Use of test leads:  
Probe assemblies to be used for MAINS measurements shall be RATED as appropriate for MEASUREMENT CATEGORY II or III or IV according to IEC 61010-031 and shall have a voltage RATING of at least the voltage of the circuit to be measured.

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



## V. 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.

## VI. General Specifications

- 1) Maximum voltage between the input terminal and grounding: see the instruction about each input terminal protection voltage.
- 2) A terminal: FF 11A H 1000V fast-acting fuse , Interrupting Rating 20KA
- 3) mA/ $\mu$ A terminals: FF 440mA H 1000V fast-acting fuse, Interrupting Rating 10KA
- 4) Maximum display: 6200
- 5) 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:  $\leq 75\%$  (0°C~30°C);  $\leq 50\%$  (30°C~40°C)
- 6) Operation ASL: 0~2000m
- 7) Internal battery: AA R6P 1.5v x2pcs
- 8) Low battery: LCD displays "  " symbol
- 9) Overall size: about 195mm×95mm×58mm
- 10) Weight (including batteries): 484.5g
- 11) 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.
- 12). IP rating  
UT15B PRO/UT17B PRO IP40; UT18B PRO (N/A)
- 13). Recommended use environment:Indoor use

## VII. External Structure (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
12. LED test terminal

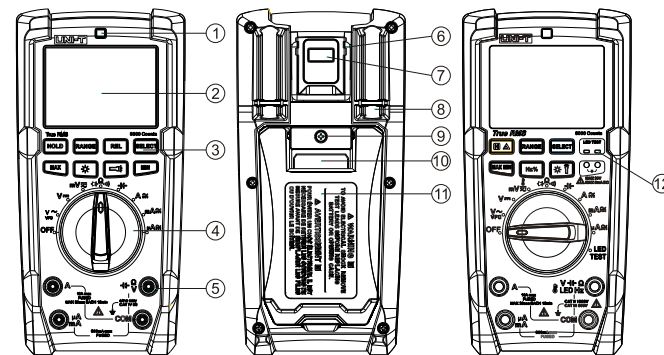


Figure 1

## VIII. LCD display (Figure 2)

HTN screen

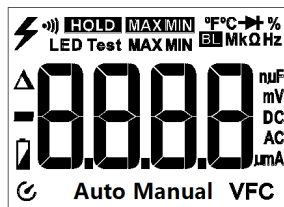


Figure 2

Symbol	Instruction	Symbol	Instruction
	AC voltage exceeds 30V	<b>Ω kΩ MΩ</b>	Resistance measurement unit: Ω, kΩ, MΩ
<b>HOLD</b>	Data hold	<b>Hz kHz MHz</b>	Frequency measurement unit: Hz, kHz, MHz
<b>-</b>	Negative reading	<b>%</b>	Duty ratio measurement unit
<b>AC/DC</b>	AC/DC measurement	<b>mV V</b>	Voltage measurement unit: mV, V
<b>MAX MIN</b>	Maximum and minimum function	<b>μA mA A</b>	Current measurement unit: μA, mA, A
<b>MAX/MIN</b>	Maximum/minimum measurement	<b>nF μF</b>	Capacitance measurement unit: nF, μF
	Low battery	<b>°C</b>	Centigrade temperature measurement
<b>Auto</b>	Auto range	<b>°F</b>	Fahrenheit temperature measurement
<b>Manual</b>	Manual range	<b>VFC</b>	Variable Frequency Filter
	Diode measurement	<b>BL</b>	Auto backlight
	Circuit continuity measurement		Auto power off
	Relative measurement	<b>LED Test</b>	LED function test

## X. Function Selection Knob and Buttons

Functions	Description
<b>V~、V=、mV=</b>	AC/DC voltage measurement
<b>Ω</b>	Resistance measurement
	Diode PN junction voltage measurement
	Circuit continuity measurement
	Capacitance measurement
<b>Hz</b>	Frequency measurement
<b>%</b>	Duty ratio measurement
	Temperature measurement
<b>μA= mA= A=</b>	AC/DC current measurement
<b>VFC</b>	Frequency conversion voltage measurement (Variable Frequency Filter)
<b>LED TEST</b>	LED test scale
<b>OFF</b>	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~, V=, A=, Ω)
- MAX/MIN button (UT17B PRO/UT18B 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~, V=, mV=, Ω)

- 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  $V_{\sim}$ ,  $V_{\overline{\sim}}$ ,  $mV_{\overline{\sim}}$ ,  $\Omega$ )
- 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  $V_{\sim}$ ,  $V_{\overline{\sim}}$ ,  $mV_{\overline{\sim}}$ ,  $\Omega$ )
- 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  $V_{\sim}$ ,  $V_{\overline{\sim}}$ ,  $mV_{\overline{\sim}}$ ,  $I_{\overline{\sim}}$ ,  $\Omega$ ,  $\overline{\sim}$ ). Long press to enter or exit this function for UT18B PRO.
- Hz/% button (UT17B PRO/UT18B 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 Variable Frequency 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  $\square$  symbol, press it again to relieve and enter the normal measurement mode.
- BL button (  $\star$  ): press to turn on/off the background light sensing function.
- LIGHT button (  $\text{---}$  ): turn on or off the flashlight lighting function.

## XI. Measurement Operation Instruction

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

### 1. AC Voltage Measurement (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 Variable Frequency 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.

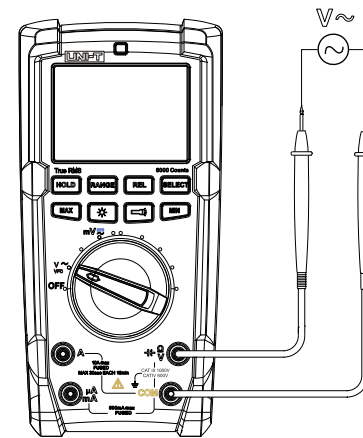


Figure 3



## 2. DC Voltage Measurement (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.
- 4) Operation of frequency measurement in voltage scale (UT17B PRO): press the Hz% button to enter the frequency measurement mode, with the range of 10Hz~100kHz.

### ⚠ Warning:

- 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.

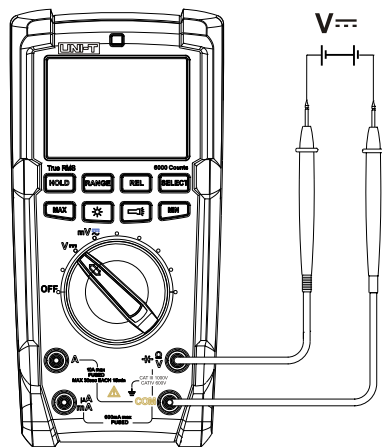
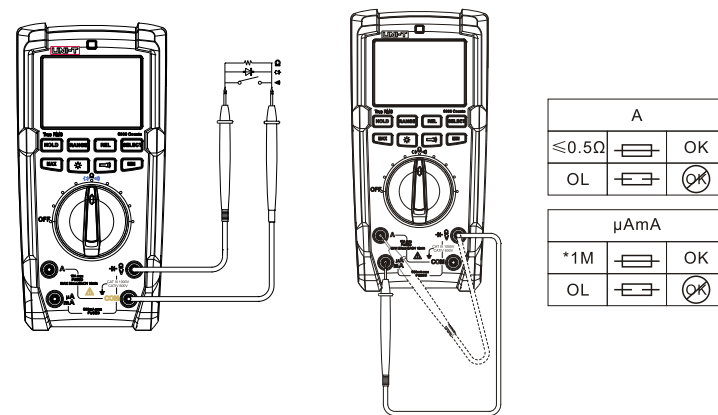


Figure 4

## 3. Resistance and Circuit Continuity Measurement (Figure 5a)

- 1) Turn the function selection knob to the resistance 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 resistance separately (with the load in parallel) to measure.



### ⚠ Warning:

- 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 loosing 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 (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.

#### 4. Diode Measurement (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  $500\sim 800mV$  is confirmed to be normal for silicon PN junction.

#### ⚠ Warning:

- 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.

#### 5. Capacitance Measurement (Figure 6)

- 1) Turn the function selection knob to the capacitance measurement scale.
- 2) Insert the red test leads to the  $\nabla$  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.

#### ⚠ Warning:

- 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.

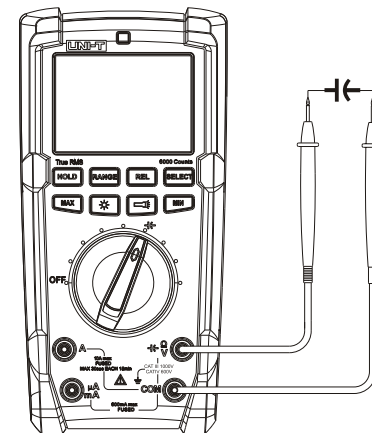


Figure 6

## 6. AC/DC Current Measurement (Figure 7)

- 1) Turn the function selection knob to the  $A_{\sim}/mA_{\sim}/\mu A_{\sim}$  scale.
- 2) When the scale is  $A_{\sim}$ , insert the red test lead to the  $A_{\sim}$  port. When the scale is  $mA_{\sim}/\mu A_{\sim}$ , insert the red test lead to the  $mA_{\sim}/\mu A_{\sim}$  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.
- 4) Operation of frequency measurement in current scale (UT17B PRO): press Hz/% button to enter frequency measurement mode with the range of 10Hz~100kHz.

### ⚠ Warning:

- 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  $A_{\sim}/mA_{\sim}/\mu A_{\sim}$ . Do not connect the test leads in parallel with any circuit, which may cause damage and injury.

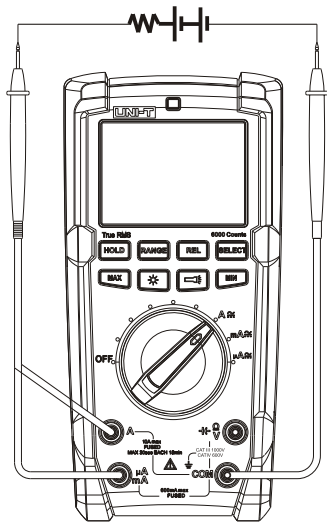


Figure 7

## 7. Frequency and Duty Cycle Measurement (UT17B PRO/UT18B PRO)

When measuring AC voltage or current, press Hz/% to enter frequency measurement mode, press again to enter duty cycle measurement mode.

## 8. Temperature Measurement (UT17B PRO/UT18B PRO) (Figure 8)

- 1) Turn the function selection knob to  $^{\circ}C/^{\circ}F$  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.

### ⚠ Warning:

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  $230^{\circ}C/446^{\circ}F$  ( $^{\circ}F=1.8^{\circ}C+32$ )

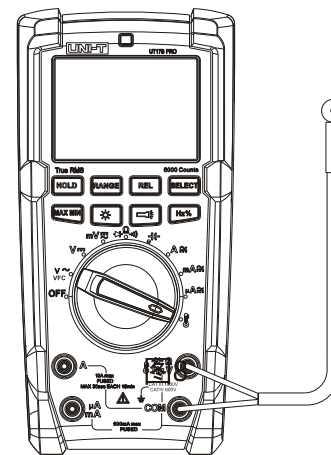
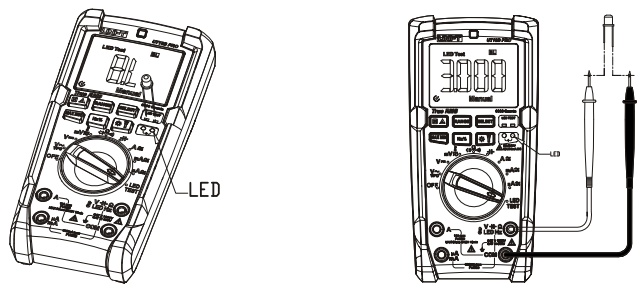


Figure 8

## 9. LED Measurement (UT18B PRO) (Figure 9)



- 1) For UT18B PRO, the LED displays OV when turning the function selection knob to the LED TEST scale.
- 2) Panel jack test: The LED light turns on immediately when it is inserted, green light represents positive pole.
- 3) Test of input terminal of test lead: Connect red test lead to "LED" terminal; and black test lead to "COM" terminal. Contact the two pins of LED through the test probes respectively, the LCD will display the voltage value at which the LED is lit. If LCD does not display "—", the pin contacted by red test lead is positive, while contacted by black one is negative, or vice versa.



### ⚠ Warning:

- 1) The maximum continuous output voltage is 12V for LED test end, the maximum peak voltage is 30V.
- 2) The LED lights on continuously if the working voltage is less than 9V. The LED emits flashing light when the working voltage is between 9V and 12V.
- 3) If LED is shorted, the measured LED will not be lit, the two positive indicator will be on.

## 10. Other functions

- 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.
- 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.

## XII. Technical Specifications

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

Environment temperature:  $23^{\circ}\text{C}\pm 5^{\circ}\text{C}$  ( $73.4^{\circ}\text{F}\pm 9^{\circ}\text{F}$ ); Relative temperature:  $\leq 75\%$

### ⚠ Warning:

If the operation temperature is  $18^{\circ}\text{C}$ - $28^{\circ}\text{C}$ , the fluctuation range of ambient temperature will be stable within  $\pm 1^{\circ}\text{C}$ .

If the operation temperature is less than  $18^{\circ}\text{C}$  or exceeds  $28^{\circ}\text{C}$ , the additional temperature coefficient error is  $0.1x$  (specified accuracy)/ $^{\circ}\text{C}$ .

### 1. DC Voltage Measurement

Range	Resolution	Accuracy
600.0mV	0.1mV	$\pm (0.5\% + 3)$
6.000V	0.001V	
60.00V	0.01V	
600.0V	0.1V	
1000V	1V	

- Input impedance of mV range is  $\geq 3\text{G}\Omega$ , while others range are about  $10\text{M}\Omega$ . 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:  $\pm 1000\text{V}$ ; if the input voltage is  $\geq 1000\text{V}$ , the meter alarms; if it is  $> 1100\text{V}$ , OL symbol will be displayed on LCD.

## 2. AC Voltage Measurement

Range	Resolution	Accuracy
600.0mV	0.1mV	$\pm (1\% + 3)$
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  $10\text{M}\Omega$
- Display true RMS values. Frequency response: 40~500Hz
- Accuracy guaranteed range: 1~100% of the range, short circuit allows least significant digit  $< 2$ .
- 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:  $1000\text{V}_{\text{rms}}$ , if the input voltage is  $\geq 1000\text{V}$ , the meter alarms; if it is  $> 1100\text{V}$ , OL symbol will be displayed on LCD.

### 3. Resistance Measurement

Range	Resolution	Accuracy
600.0Ω	0.1Ω	± (0.5%+2)
6.000kΩ	0.001kΩ	
60.00kΩ	0.01kΩ	
600.0kΩ	0.1kΩ	
6.000MΩ	0.001MΩ	
40.00 MΩ	0.01 MΩ	± (1.5%+3)
60.00MΩ	0.01MΩ	± (2.0%+5)

- 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)

### 4. Continuity Test Diode Measurement

Range	Resolution	Accuracy
	0.1Ω	Circuit breakage resistance value is set as > 50Ω without buzzer beeps. Good conductivity resistance value is set to be ≤10Ω 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

### 5. Capacitance Measurement

Range	Resolution	Accuracy
6.000nF	0.001nF	Under REL mode: ±(4.0%+8)
60.00nF	0.01nF	± (2.0%+5)
600.0nF	0.1nF	
6.000μF	0.001μF	
60.00μF	0.01μF	
600.0μF	0.1μF	± (5.0%+5)
6000μF	≤ 1000μF	
	> 1000μF	1μF

- Overload protection: 1000V-PTC
- When the measured capacitance is ≤600nF, REL mode is recommended to ensure the accuracy.
- Under REL measurement mode, the meter will automatically exit REL function when the input capacitance is >6.2μF.

## 6. Frequency/Duty Cycle Measurement (UT17B PRO/UT18B PRO)

Range	Resolution	Accuracy
10Hz~1MHz	0.01Hz~0.001MHz	$\pm (0.1\%+3)$
1%~99.9%	0.1%	$\pm (1.0\%+4)$

- Overload protection: 1000V-PTC
- For voltage mV scale, the input range is about 200mVrms~30Vrms, duty ratio is 5.0%-95.0%, which is only suitable for  $\leq 1$ kHz square wave measurement.
- For voltage V scale, the input range is  $>10$ Vrms. For 1000V scale, the input range is  $\geq 100$ 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.

## 7. Temperature Measurement (UT17B PRO/UT18B PRO)

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

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

## 8. DC Current Measurement

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

- Overload protection: 1000Vrms
- The meter will alarm if the input current is  $\geq 10$ A, the LCD will display OL if the input current is over 11.00A.

## 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		

Overload protection: 1000Vrms

Frequency response: 40~500Hz

Display: True RMS value

Accuracy guarantee: 1~100% of the range, short circuit allows least significant digit < 2.

AC peak factor can reach to 3.0 at full value

Non-sine waveform:

- Add 3.0% when crest factor is 1.0~2.0
- Add 5.0% when crest factor is 2.0~2.5
- Add 7.0% when crest factor is 2.5~3.0

## 10. LED Measurement (UT18B PRO)

LED test	LED panel jack	Positive indicator light (green)
	Test lead terminal	Display positive/negative voltage value

- Overload protection: 1000V-PTC
- OL will be display when the input voltage of test lead terminal is  $\geq 6.2V$ .

## XIII. Maintenance


**⚠ 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.

### 1. General Maintenance

- 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.



## 2. Battery/Fuse Replacement (Figure 10)

1) Battery replacement: If LCD displays low battery symbol , batteries should be replaced in time to ensure measurement accuracy. Internal battery specification: AA 1.5v x2pcs

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.

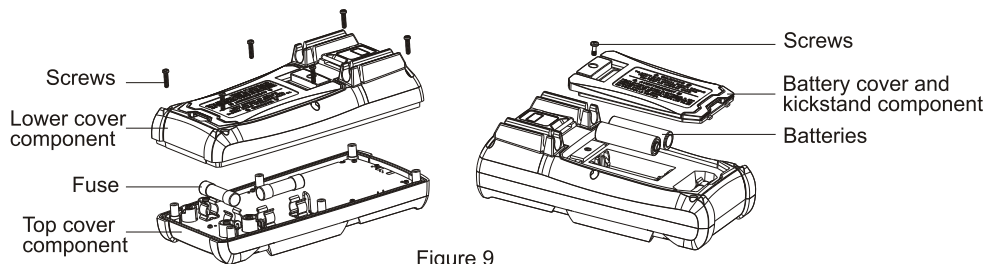


Figure 9

2) 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.

- 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

3) 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.

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