



UNI-T UT18A Voltage and Continuity Tester User Manual

[Home](#) » [UNI-T](#) » UNI-T UT18A Voltage and Continuity Tester User Manual

Contents [[hide](#)]

- 1 [UNI-T UT18A Voltage and Continuity Tester](#)
- 2 [Symbols referred to in the manual](#)
- 3 [Operation instruction and use scope of the tester](#)
- 4 [Voltage measurement](#)
- 5 [Detection without battery](#)
- 6 [Continuity test](#)
- 7 [Rotation test \(three-phase AC phase indication\)](#)
- 8 [RCD test](#)
- 9 [Silent mode selection](#)
- 10 [Application of flashlight function](#)
- 11 [Application of backlight \(only applicable for UT18D\)](#)
- 12 [Application of HOLD function \(UT18C/D/E\)](#)
- 13 [Battery replacement](#)
- 14 [Equipment maintenance](#)
- 15 [Equipment cleaning](#)
- 16 [Technical indicator](#)
- 17 [Function and parameter description](#)
- 18 [UNI-TREND TECHNOLOGY \(CHINA\) CC.1 LTD.](#)
- 19 [Documents / Resources](#)
- 20 [Related Posts](#)








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UNI-T UT18A Voltage and Continuity Tester

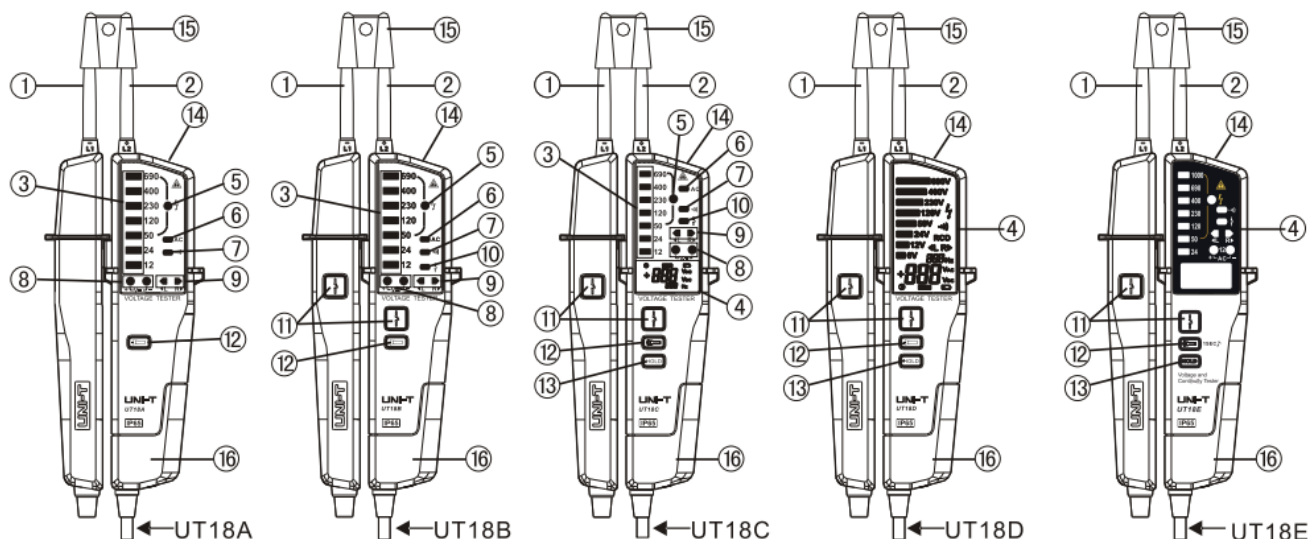


Symbols referred to in the manual

The manual includes necessary information regarding safe usage and equipment maintenance and, before use, read through each section of the manual. Failure to read the manual or comprehend the equipment use method specified in the manual would lead to physical injury and equipment damage.

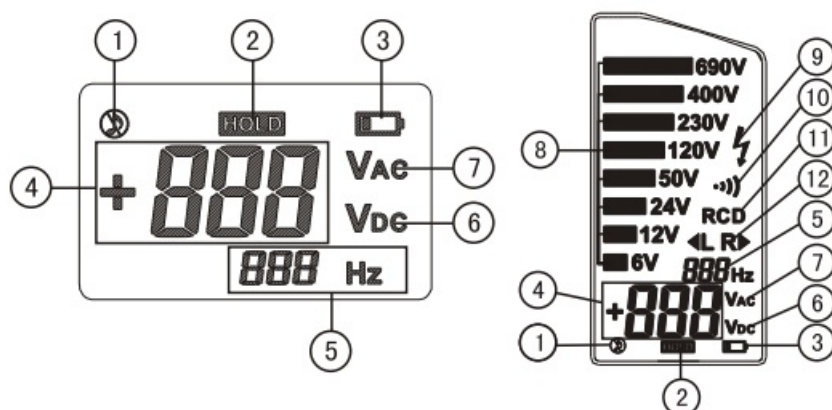
	Dangerous Voltage
	Important Information. Please refer to instruction sheets.
	Double Insulation
	Suitable for living and working
	Do not discard the product as unclassified municipal waste. Put them in the designated battery recycle bin for further disposal.
	EU Certification
	Conforms to UL STD 61010-1, 61010-2-030, 61010-2-033, 61010-031, Certified to CSA STD C22.2 No. 61010-1, 61010-2-030, 61010-2-033, 61010-031.
CAT III	Measurement category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.
CAT IV	Measurement category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.

The symbol on tester panel and its description (Figure 1)



1	Test pen L1;	7	Continuity indication;	13	HOLD mode/backlight button;
2	Test pen L2;	8	Polar indication;	14	Flashlight
3	Voltage indication (LED);	9	Rotary phase indication;	15	Test pen cap;
4	LCD display;	10	RCD indication (LED);	16	Battery cover
5	High-voltage indication;	11	RCD test button;		
6	AC indication;	12	Flashlight/self-inspection button;		

Figure 2 provides a detailed description of the LCD panel



1. Silent mode indication;
2. HOLD mode indication;
3. Low-voltage battery indication;
4. Voltage measurement;
5. Frequency measurement;
6. DC voltage measurement
7. AC voltage measurement;
8. Voltage indication(LCD segment code);
9. High-voltage indication;
10. Continuity indication;

11. RCD indication;
12. Rotary phase indication

Operation instruction and use scope of the tester

Voltage and continuity tester includes four models: UT18A, UT18B, UT18C, UT18D, and UT18E, has such functions] as AC/DC (including three-phase alternating current) voltage measurement, three-phase AC phase indication, frequency measurement, RCD test, continuity test, the simple test in case of no battery power supply, self-inspection, silent mode choice, overvoltage indication, and low-voltage battery indication. In addition, the flashlight attached to the test pen provides convenient application in a dark environment. To protect the tester and, more particularly, the tester user, the tester is equipped with protecting jacket. The tester should be put on a protective jacket after use and, preferably, placed inside the tool kit so as to protect it against any damage. Never place the tester into your pocket. The tester is applicable to various occasions such as the household, factory, electric power department, etc. It has the following characteristics:

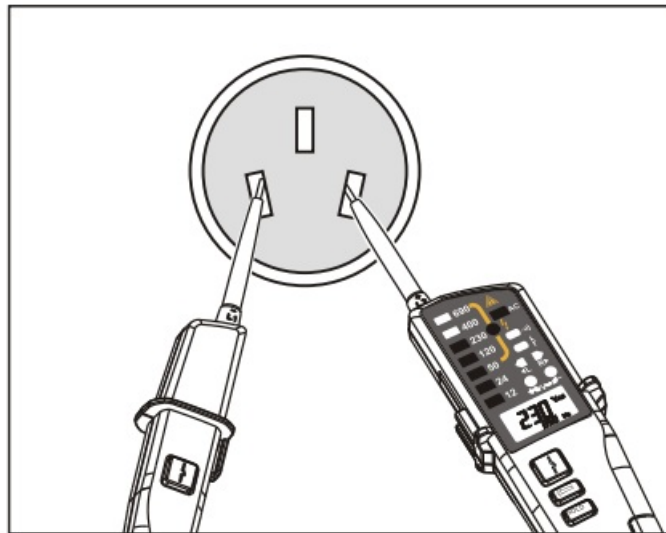
1. To protect against physical injury, it is designed with protecting jacket;
2. LED indication (UT18A/B/C/E);
3. LCD voltage and frequency display (UT18C/D/E);
4. AC/DC measured up to 690V, UT1 BE can reach 1 000V;
5. Continuity measurement;
6. Indicate the phase relationships among three-phase AC;
7. Both the buzzing and silent mode is optional;
8. Detection without battery (UT18A/B/C/E);
9. Flashlight function;
10. Self-inspection function;
11. Low-battery voltage indication and measured voltage over range indication (When the UT1 BE is low-battery voltage, it cannot be measured and needs to replace the battery);
12. RCD test (UT18B/C/D/E);
13. Automatic standby.

Voltage measurement

Observe safety test regulations specified in item 3.

The voltage gear of the tester is composed of a line of LED or LCD segment codes, including 6V (UT1 BD), 12V, 24V, 50V, 120V, 230V, 400V, 690V, and 1000V (UT18E only). LED (or LCD segment code) would be lighted one after another along with increased voltage, and so will the polarity LED (or LCD segment code) indication, AC LED (or LCD segment code) indication, on-off LED (or LCD segment code) indication, RCD LED (or LCD segment code) indication, rotary phase LED (or LCD segment code) indication and high-voltage LED (or LCD segment code) indication.

1. Complete self-check of tester before the test. After pressing flashlight key 5s, the tester would perform AC/DC full range detection, accompanied by flashing LED (with the exception of RCD light) and blinking displayed LCD. I need to exit self-check, just touch the flashlight key. Connect two test pens to the conductor to be measured, select a known voltage for measurement, such as a 220V socket, and ensure the measurement accuracy (See Figure 3). The tester cannot measure AC and DC voltage less than 5V and provides no accurate indication while the measured voltage is 5Vac/dc. Illuminating continuity light or AC light or high-voltage symbol (UT18D) and beeping buzzer are normal.



2. The tester would provide LED indication (UT18A/B), LED+LCD indication (UT18C/E), and LCD indication (UT18D) while measuring AC or DC voltage. High-voltage LED would be illuminated and the buzzer beeps when the measured voltage is an extra low voltage (ELV) threshold. If the measured voltage continues to increase and exceed the input protection voltage (UT1 BA/B/C/D: 750Vac/dc, UT1BE:1015Vac/dc) of the tester, the Corresponding LED would keep flashing(UT18A/B/C/E), LCD displays “OL” (UT18C/D/E) and buzzer keep beeping.
3. For measuring DC voltage, if L2 and L 1 is connected respectively to the positive and negative pole of the object to be measured, LED would indicate the corresponding voltage, LCD displays the voltage, meanwhile, the LED indicating the positive pole would be illuminated, LCD displays “+” “VDC” and, on the contrary, the LED indicating negative pole would be illuminated, LCD displays “-” VDC”. If need to judge the positive and negative pole of the object to be measured, connect two test pens to the object to be measured randomly, the illuminating positive pole LED or LCD “+” on tester means the terminal connecting to L2 is the positive and the other connecting to L 1 is negative.
4. For measuring AC voltage, two test pens may be randomly connected to two ends of the object to be measured, AC LED would be illuminated(“+”,“-” LED illuminate indicate AC at the same time, only for UT1 BE)LCD displays “VAC” while LED indicates the corresponding voltage value and LCD displays corresponding voltage value.

Note: For measuring AC voltage, Land R phase inversion indication LED (UT18A/B/C/E) or Land R symbol (UT18D) would be illuminated, it means phase indication is unstable, L light (L symbol) or R light (R symbol) is illuminated, and even L and R light (L and R symbol) would be illuminated alternatively; L and R light (L and R symbol) would not provide correct and stable indication unless measuring three phase power system.

Detection without battery

The tester may perform simple detection while the battery runs out or no battery is provided. Connect two test pens to the object to be measured, when the object has a voltage higher than or equivalent to 50V AC/120V DC, a high -a voltage LED would be illuminated, indicating dangerous voltage and the LED would gradually brighten along with increased voltage to be measured. The function is applicable only to UT18A/B/C/E.

Continuity test

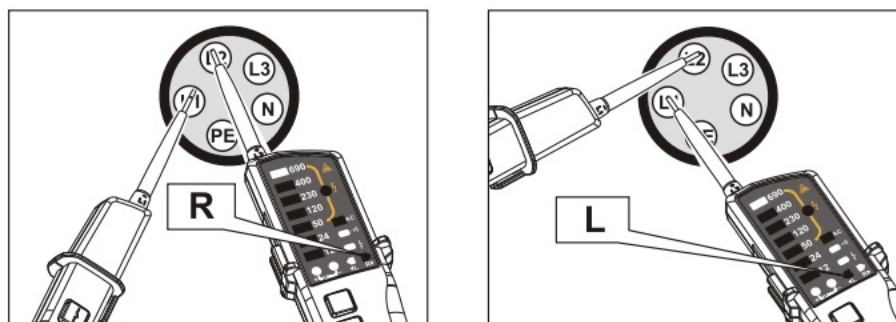
To confirm if the conductor to be measured is electrified, voltage measurement method may be adopted to measure] the voltage at both ends of the conductor by using two test pens. Connect two test pens to both ends of the] object to be measured, if the resistance falls within 0-1 00kΩ, continuity LED(UT1 BA/B/C)or continuity

symbol)" (UT1 BD) would be illuminated, accompanied by continuous beeping buzzer; and if resistance falls within 100k Ω -150k Ω , continuity LED(UT18A/B/C)or continuity symbol)" (UT18D)may or may not be illuminated and buzzer may or may not beep; if the resistance falls within 0-60k Ω , continuity LED(UT1 BE)or continuity symbol)" (UT18E)or continuity symbol)" may or may not be illuminated and buzzer may or may not beep; if resistance is >150k Ω , continuity LED(UT1 BA/B/C/E) or continuity symbol)" (UT1 BD) may not be illuminated and buzzer would not beep . Before any test, be sure the object to be measured red is not electrified.

Rotation test (three-phase AC phase indication)

- The measurement must be conducted in accordance with the safety test regulations specified in item 3.
 - In the case of strong electric field interference or strong radiation test phase sequence, the test results may be unstable.
 - R, L LED or L and R symbol indication is applicable for rotation test and the test is only applicable for three-phase AC system.
1. Three-phase voltage test range: 57V-400V (50Hz-60Hz) (100V-400V only for UT18E).
 2. Hold the main body of the tester (with finger holding handle), as shown in the following figure, and connect test pen L2 to any phase and L 1 to any of the remaining two phases.
 3. R or L LED would be illuminated, and after connecting a test pen to another phase, another LED (Lor R) would be illuminated.
 4. Lor R LED would be illuminated accordingly when the position of two test pens is exchanged.
 5. LED would indicate the corresponding voltage or LCD displays corresponding voltage value, the indicated or displayed voltage should be phase voltage against earth but three-phase voltage.

Diagram of three-phase electric system testing (Figure 4)



Note: For measuring a three-phase AC system, connect three measuring terminals to the corresponding terminal of the three-phase system and, since the tester has only two test pen terminals, it is required to form the reference terminal by holding the tester handle with a finger (through the ground), therefore it would not accurately indicate the phase sequence of the three-phase system if not holding the handle or wearing insulating gloves. In addition, it is necessary to ensure the earth terminal (earth wire or shell) of the three-phase system is in contact with the human body while measuring the three-phase power system lower than 1 OOV.

RCD test

To reduce disturbance voltage during voltage measurement, a circuit with impedance lower than the tester under normal measurement mode may be provided between two test pens, namely the RCD circuit system. For the RCD trip test, connect two test pens to the L and PE terminal of the 230Vac system under nominal voltage measurement mode and press the RCD key Ton two test pens, the RCD system would trip and the LED indicating

RCD(UT1BB/C/E) or RCD symbol (UT1 BD) would be illuminated if the circuit then generates an AC current higher than 30mA. Particularly, if RCD cannot measure for a long time and, at 230V, the testing time should be <1 Os, cannot conduct continuous measurement and, after one test, wait until the 60s before the next measurement.

Note: In case of no measurement or test, it is nominal to have a continuously illuminated LED and continuous beeping buzzer after simultaneously pressing RCD keys on two test pens. To avoid functional disorder, do not press two RCD keys under non-RCD testing mode.

Silent mode selection

It is allowed to enter the silent mode while the tester is under standby mode or nominally used. After pressing the flashlight key about 1s, the tester would bleep and LCD displays the silence symbol “1» (UT1 BC/D/E), and the tester enters silent mode, under which mode, all functions are similar to those under the nominal mode, with the exception to the silent buzzer. I need to resume nominal mode (buzzing mode), press the flashlight key about 1s and, after “bleeps”, the silence symbol “1» on LCD would disappear.

Application of flashlight function

The flashlight function may be selected if need to use the tester at night or in a dark environment; after light touch on the flashlight button on the tester panel, the headlamp on the top of the tester would be turned on to facilitate your operation, and, after the operation, turn off the light with a light touch on the button.

Application of backlight (only applicable for UT18D)

LCD displayed data may be hard to read at night or in a dark environment, allowing the display clearly visible by turning on backlight on the tester. The backlight would be turned on after pressing HOLD about 1s and, after the operation, turn off the light after pressing HOLD about 1s. If the tester enters standby mode while the backlight is on, the light would remain illuminated when the tester is awakened. The backlight cannot be turned off unless pressing HOLD about 1s again.

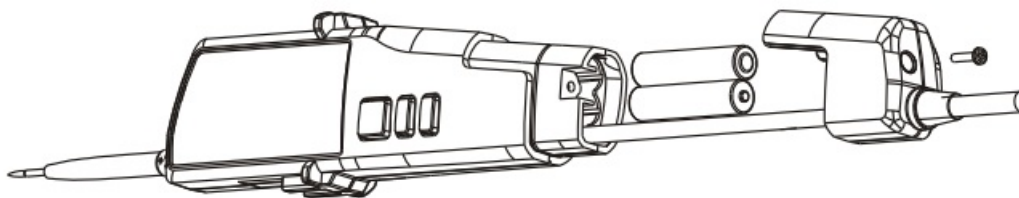
Application of HOLD function (UT18C/D/E)

To facilitate reading and recording, hold the measured data (voltage and frequency value) by a light touch on HOLD on the tester while using the tester; after another light touch, the hold status is relieved and restored to nominal testing status.

Battery replacement

Before using the voltage detector, Touch and hold the two probe tips together. If shows and you hear the beeper or are in the silent mode, QI is on. This makes sure that the battery source is not exhausted. otherwise, the battery source is exhausted. Continuously flashing negative LED (UT1BA/B) or low-voltage symbol on LCD (UT1BC/D/E) during use of tester indicates low-battery voltage and the necessity of battery replacement. Replace the battery according to the following procedures (as shown in Figure 5):

1. Stop measurement and disconnect two test pens from the object measured;
2. Screw out screws securing battery cover with a screwdriver;
3. Remove battery cover;
4. Take out the battery to be replaced;
5. Install new battery according to the battery symbol and direction indicated on the panel.
6. Insert battery cover and secure it with screws.



Warning: To avoid electric shock, make sure the probes are disconnected from the measured circuit before removing the rear cover. Make sure the rear cover is tightly screwed before using the instrument.

Note: For environmental protection, batteries may be collected and recycled at a fixed collection point while disposing of the disposable battery or accumulator containing hazardous waste. Please follow the local valid recycling regulations and dispose of the batteries replaced as per disposal rules for old batteries and accumulators.

Equipment maintenance

No special maintenance requirement is provided unless the UT1 BA/B/C/D/E tester should be used as per manual instruction and, in case of any functional abnormality during nominal operation, stop using immediately and contact the nearest authorized service center.

Equipment cleaning

Before cleaning, disconnect the tester from the circuit being tested. If the instrument gets dirty during normal use, wipe it with a wet cloth or a small quantity of gentle household cleaner instead of an acid cleaner or solvent. Do not use the tester within 5h after cleaning.

Technical indicator

Function	Range	UT18A	UT18B	UT18C	UT18D	UT18E
LCD segment (AC/DC) LED (AC/DC) Voltage indication (V)	6V			5V±1V	5V±1V	5V±1V
	12V	8V±2V	8V±2V	8V±1V	8V±1V	8V±1V
	24V	18V±2V	18V±2V	18V±2V	18V±2V	18V±2V
	50V	38V±4V	38V±4V	38V±4V	38V±4V	38V±4V
	120V	94V±8V	94V±8V	94V±8V	94V±8V	94V±8V
	230V	180V±14V	180V±14V	180V±14V	180V±14V	180V±14V
	400V	325V±15V	325V±15V	325V±15V	325V±15V	325V±15V
	690V	562V±24V	562V±24V	562V±24V	562V±24V	562V±24V
	1000V					820V±30V
Phase rotation test (three-phase voltage)	Voltage range: 57V~400V Frequency: 50Hz~60Hz	✓	✓	✓	✓	✓ (100V~400V only for UT18E)
Continuity test	Resistance range: 0~100KΩ Buzzing and LED illumination	✓	✓	✓	✓	✓ (0~60KΩ, only for UT18E)
RCD test	Voltage range: 230V Frequency: 50Hz~400Hz		✓	✓	✓	✓
Polarity measurement	Positive and negative pole	✓	✓	✓	✓	✓
Self-check	All LED illuminated or LCD full-display	✓	✓	✓	✓	✓
Detection without battery	Range: 50VAC~690VAC 120VDC~690VDC	✓	✓	✓		✓ (1000V only for UT18E)

Special functions

Waterproof	Ip65	✓	✓	✓	✓	✓
Auto range	Full range	✓	✓	✓	✓	✓
Flashlight	Full range	✓	✓	✓	✓	✓
Low-battery voltage indication	About 2.4V	✓	✓	✓	✓	✓
Over voltage protection	About 750V	✓	✓	✓	✓	✓ (1015V only for UT18E)
Auto standby	Standby current <10uA	✓	✓	✓	✓	✓
Silent mode	Full range	✓	✓	✓	✓	✓
Backlight	Full range				✓	
LCD display (voltage)	6V~690V			±(1.5%+1)	±(1.5%+1)	±(1.5%+1) (1000V only for UT18E)
LCD display (frequency)	40Hz~400Hz			±(3%+5)	±(3%+5)	±(3%+5)

LCD display accuracy indicator

Range (AC/DC)	6V	12V/24V	50V	120V	230V/400V/690V	1000V
UT18C	±(1.5%+1)	±(1.5%+2)	±(1.5%+3)	±(1.5%+4)	±(1.5%+5)	
UT18D	±(1.5%+1)	±(1.5%+2)	±(1.5%+3)	±(1.5%+4)	±(1.5%+5)	
UT18E	±(1.5%+1)	±(1.5%+2)	±(1.5%+3)	±(1.5%+4)	±(1.5%+5)	±(1.5%+5)

Function and parameter description

- **LED voltage range:** 12V-690VAC/DC,1000VAC/DC (only for UT1BE)
- **LED voltage indication point:** 12V, 24V, 50V, 120V, 230V, 400V, 690V, 1000V (only for UT1BE)
- **LCD voltage range:** 6V~690VAC/DC(UT1BC/D), 1000VAC/DC (only for UT1BE); resolution: 1V, voltage accuracy: ±(1.5%+1-5 Digits);
- **Frequency measurement range:** 40Hz-400Hz, resolution: 1 Hz, accuracy: ±(3%+5Digits)
- **Voltage measurement:** Auto Buzzing and silent mode is optional;
- **Polarity indication:** Auto
- **Range selection:** Auto
- **Response time:** LED<0.1s/LCD<1s
- **Peak current of test circuit:** Is<3.5mA (ac/dc)
- **Test time:** 30s
- **Recovery time:** 240s
- **RCD test:** Range: 230V (50Hz-400Hz); Current: AC30mA-40mA; Test time <10s, recovery time: 60s;
- **Over voltage protection:** 750VAC/DC (1015VAC/DC only for UT1BE)
- **On-off test:** 0 kΩ ... 1 MΩ (OK0 60kΩ only for UT1 BE); Accuracy: Rn+50%;
- **Rotation test (three-phase AC) Voltage range:** 57V-400V; Frequency range: 50 Hz-60Hz (100V-400V only for

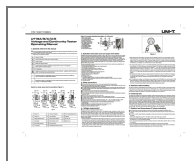
UT1BE);

- **Simple test (without battery) Voltage range:** 50VAC ~ 690VAC, 120VDC- 690VDC (UT1BA/B/C, 1000Vonly for UT1BE);
- **Working temperature range:** -15°C-+45°C
- **Storage temperature range:** -20°C-+60°C
- **Working humidity range:** SB5% RH
- **Over voltage protection class:** CAT 111690V,CAT IV 600V,(UT1 BE: CAT 111 1 OOOV,CAT IV 600V)
- **Class of pollution:** 2
- **Safety rules:** IP65, EN61010-1, EN61243-3:2010
- **Weight:** 23Bg (UT1BA),272g(UT1BB/C),295g(UT1BD),277g(UT1BE) (inclusive of battery);
- **Dimensions:** 272xB5x31mm
- **Battery:** IEC LR03 (AAA) x2

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Documents / Resources



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