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UNI-T UT211A/B 60A Mini Clamp Meters User Guide

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UT211A/B 60A Mini Clamp Meters
Operation Manual

Contents

Overview

Ut2 I I mini digital damp meter features high related and safety. automatic measurement and small size, and can exactly measure small signal current with a resolution up to 0.1 mA. The product chip is sot with WC soon mode and Mil filer out a high-frequency interfering signal by specific filler circuit so as to obtain an accurate measurement. It can be apt: Jed in occasion with VFC conversion voltage or current and the combination of lull-range overload Protection function and Particular appearance design has made it a new prenatal electrical measuring instrument with more remarked° performance.

Unpacking Inspection

Unpack the Instrument and check it carefully for any absence or damage. If any. please contact your supplier immediately.

Operation Manual—……………… 1

AAA Battery X1.5 V ………………. 2

Safety Notice

The product design meets IECJEN61010-1 and EN81010-2-30. Please read the operation manual before use and comply with all safety inspections.

1. Please use the damp meter according to the Operation manual. or else its safety function may not able to ensure your safety.

2. Please comply with national safety regulations to wear personal protective equipment to avoid damage caused by the arc *scheme in case the live conductor is exposed.

3. Please do not hold it by any Part except for the protection plate of current damp.

4. Please check the current clamp meter, the outer shell, or insulation wire for any crack or damage before each use, and then check all parts for loose Joint especially foe the Insulation part around the dm lock.

5. Please take off the clamp meter from all alive circuits and disconnect the leading wire before removing the battery cover.

6. Please do not use the damp meter in the circuit with 600V or above voltage or 400Hz or above frequency.

7. Over-voltage level: CATII 600VICATI11300V, pollution class 2; category Ill device is used to protect contribute panel. teed Ine, shunted circuit and lightning protection facilities In targe-scale building cc other bine equipment from damp caused by transect

8. Working at the exposed conductor must bo did with extreme caution since 4 may lead to deceit shock by contacting with the

9. Please pay speed attention to 60V DC, 30VAC, or 42VAC (peak valuator above voltage since they have nsk of electric shock.

10. This product has a maximum measurement voltage of 600 V. and the safety standard complies with CEIETL certification (EN61010-1, EN61010-2-30, and EN61010-2-32).

ELECTRICAL SYMBOLS

🔋	Low battery	⚠	Warming	
V≃	AC (alternating current)! DC (direct current)	▣	Double insulation	
mA≃	AC (alternating current)! DC (direct current)	▶ǂ	Diode	
•)))	Buzzer on/off	⏚	Earthing	
⚡	Danger-high voltage			
CE	Conform to European Union directive			

V.Comprehensive Standards

1. The protection voltage for maloperaten between the input terminal and ground is 600 V at most.
2. Maximum overload protection for current damp tunnel is 100A (CE).
3. Maximum display: 6,000 Counts. 2-3 updates every second. "01." displays for over-range.

   full-scale value for capacity is 6200. and frequency is 9999.

   Diode: about 3.2 V.

   Range: automatic

   Polar automatic

   Waking temperature: Or 40t

   Relative humidity: above t; 75% for Ot – 30t. C50% for 33t 40t'. Storage humidity: .10T – 50t
4. Electromagnetic compatibility

   Under 1V/m RF field: overall accuracy=speciIied accuracy.5% range.

   There is no specified indicator for the 1VIrn RF field.
5. Waking altitude: 0 – 2000m
6. Built-in battery: AAA 1.5Vk2
7. Low battery: ' 🔋 ' symbol displays on LCD
8. Overall dimension. about (175x60x33.5) nvn, magnum opening for clamp e 17mm.
9. Weight: about 170g (including batteries)
10. Safety standard: IECIEN 61010-1. EN61010-2-30; EN61010-2-32: CAT II 3001/CA711600V; pollution class 2
11. Identification: CE

V.Product Panel Graphics(Figure 1)

1. Clamp head
2. Clamp bigger (press the trigger to open the clamp)
3. NCV indicator (it will send alarming sound and flashing light when the inductive AC filed = 100V).
4. Function select button (to shift ACV/DCVIHZ, resistance Ordiode/ current ACAMCA. NCV, OFF).

5. HOLD,* Backlight key (lo measure read lock/long-press it for 2 seconds to start backlight).

6. ZERO key to return DCA to zero, measure the relative value of capacity/voltage).

7. SELECT key (function select mode. such as ACV/OCV/Hz. resistance Mode/capacity.ACAMCA).

8. LCD display (measuring function, symbol, value, and another display interface).

9. Poste input pick Olsen the red probe In the jack uten testing voltage /frequency and resistance/capacity/thole).

10. COM input jack (insert the black probe in the tack when testing voltage/frequency and resistance/capacity diode).
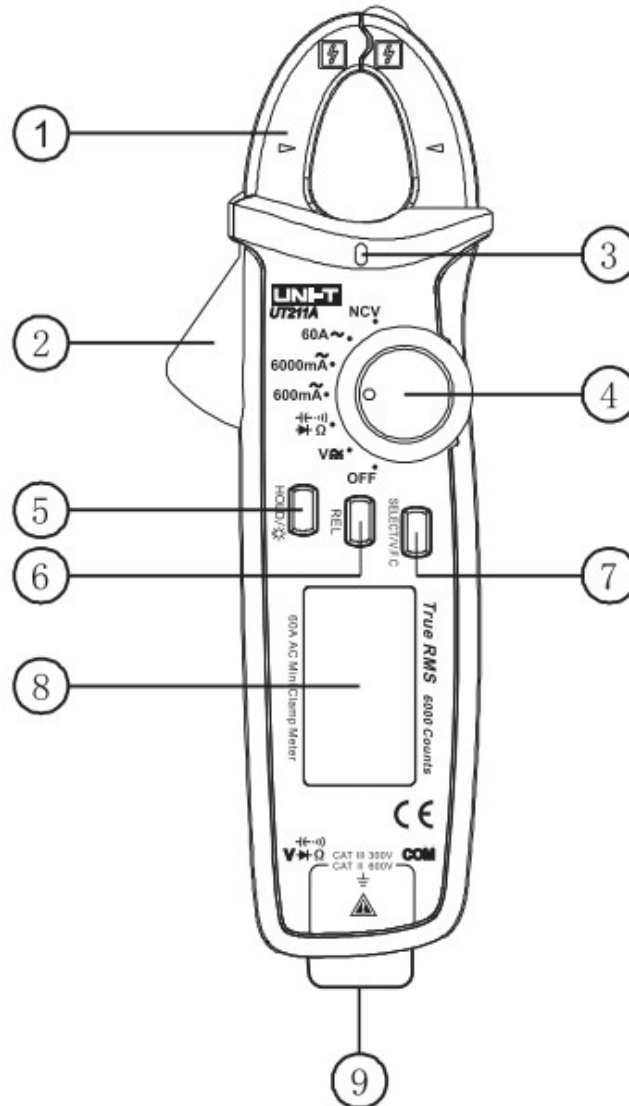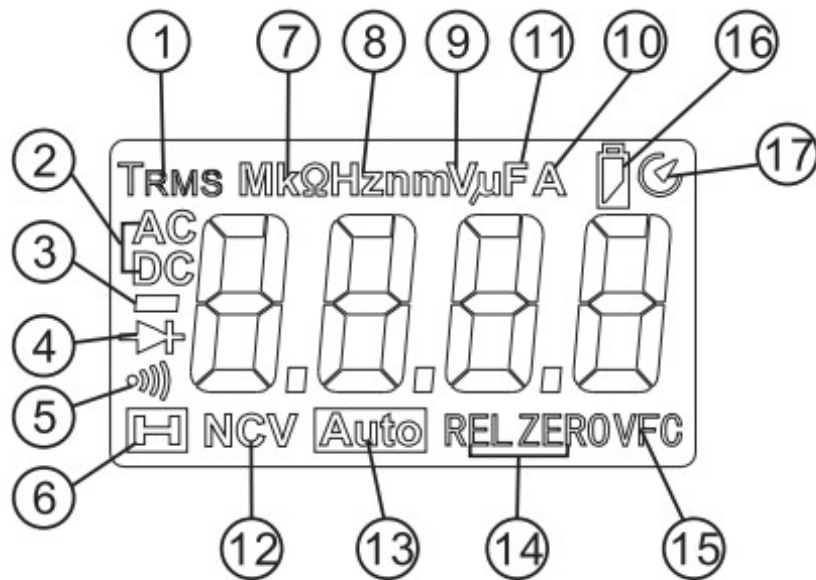

Figure 1

VII. Panorama View of LCD(Figure 2)

Figure 2

NO.	Symbol	Description
1	**TRMS**	Prompt for true RMS measurement
2	**AC/DC**	Prompt for AC/DC voltage measurement
3	**▬**	Negative reading
4	**▶┤**	Diode measurement prompt
5	**•))**	Circuit on/off detection prompt
6	**H**	Data hold prompt
7	**Ω kΩ MΩ**	Unit of resistance: ohm, kil0-ohm. megaohm
8	**Hz kHz MHz**	Unit of frequency: Hz,kHz, MHz
9	**m V, V**	Unit of voltage: millivolt. volt
10	**mA, A**	Unit of current microampere, milliampere, ampere
11	**nF µF mF**	Unit of capacity: nanofarad, microfarad, millifarad
12	**(EF)NCV**	Sensor prompt for non-contact AC voltage
13	**Auto**	Prompt for auto range
14	**ZERO/REL**	Base number zero/relative measurement prompt
15	**VFC**	Conversion voltage/current measurement prompt
16	**▭**	Built-in battery under-voltage prompt
17	**ᗣ**	Auto•off prompt

Operation Instructions

1. AC/DC voltage/HZ measurement

- Select AC voltage and Hz or DC voltage.
- Insert the red probe in the red jack (positive terminal) and the black probe in the blackjack (COM terminal).
- Touch the tested component, such as the power socket, with a red and black probe (Figure 3).
- read the measured value on LCD.

⚠ When measuring the voltage, the maximum input voltage allows a maximum of 600V (AC/DC). If the limit value is exceeded, there will be risk of electric shock or damage to the instrument.

Figure 3
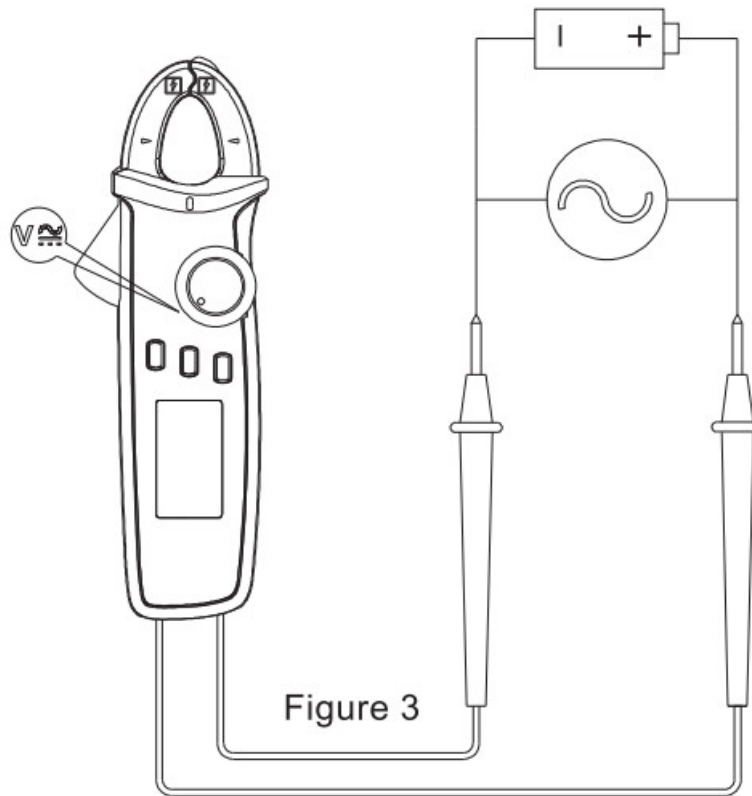
2. Resistance/diode/circuit on/off/capacity measurement

- Insert the red probe in the red jack (positive terminal) and black probe in the black jack (COM terminal).
- Connect the probe in parallel with the tested component to measure.
- Read the measured value on LCD

⚠ SWhen measuring the voltage/capacity/diode range, voltage input above DC 60 V or AC 30V is not allowed to avoid personal injury.

Figure 4

3. AC/DC current measurement (Figure5, Figure6)

   1) AC current

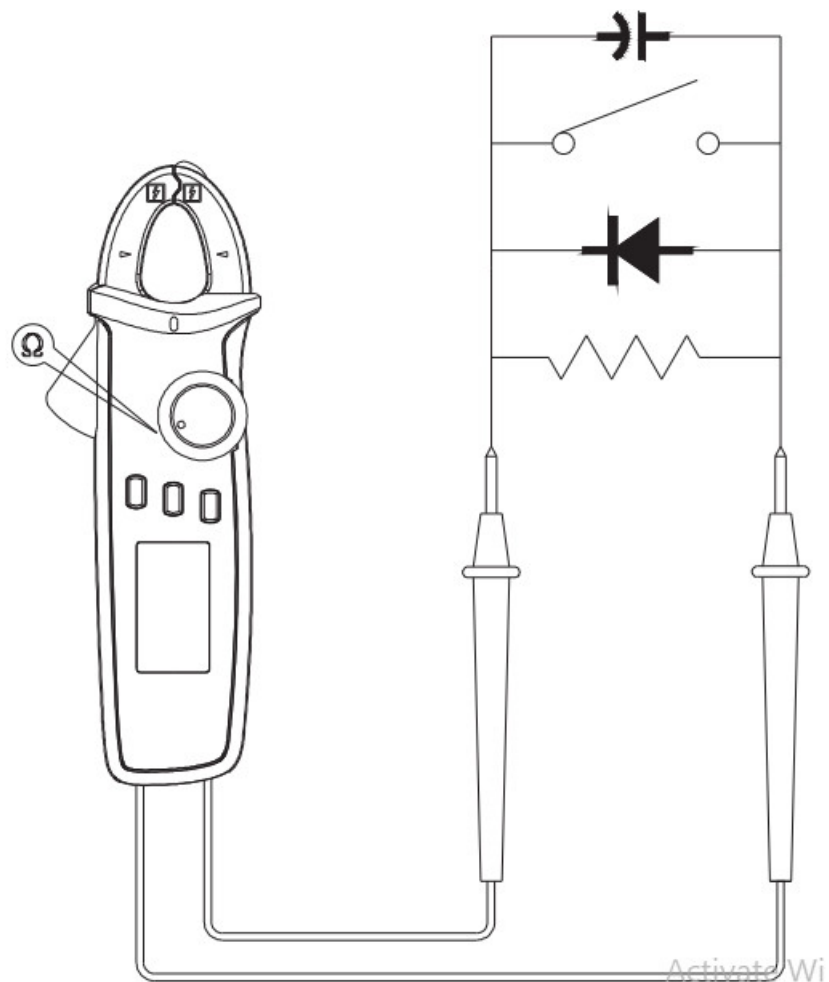- Select range for AC current (600mA – , 6,000mA , 60A –).
- Open the clamp head and attach the wire on the hook (single wire). Ensure that the hooks are totally closed and no gap existing between them.
- Read the measured value on LCD.

2) DC current

- Press SELECT key to enter in the DC current range (6,000mA , 60A)
- Press ZERO key to return the reading to zero. Press several times to zero it if one press fails to achieve it.
  Note: In consideration of the product's high sensitivity, the clamp hook should be in the same direction of the measured object in process of zeroing so as to obtain accurate reading.
- Open the clamp head and attach the wire on the hook (single wire). Ensure that the hooks are totally closed and no gap existing between them.
- Read the measured value on LCD.
  When measuring the current, please pull out the testing probe to avoid electric shock.
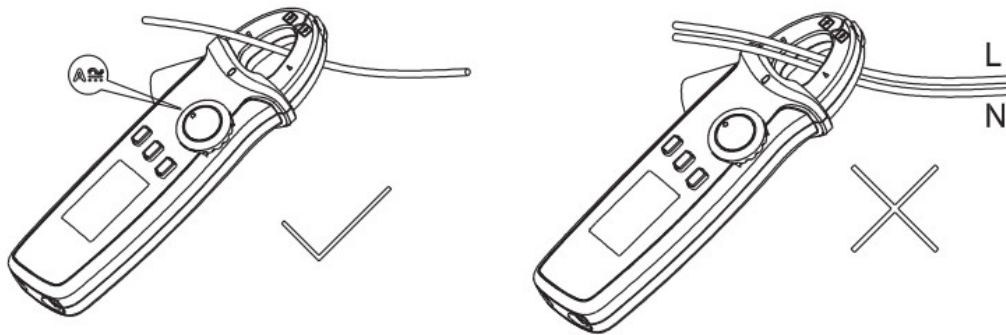
Figure 5
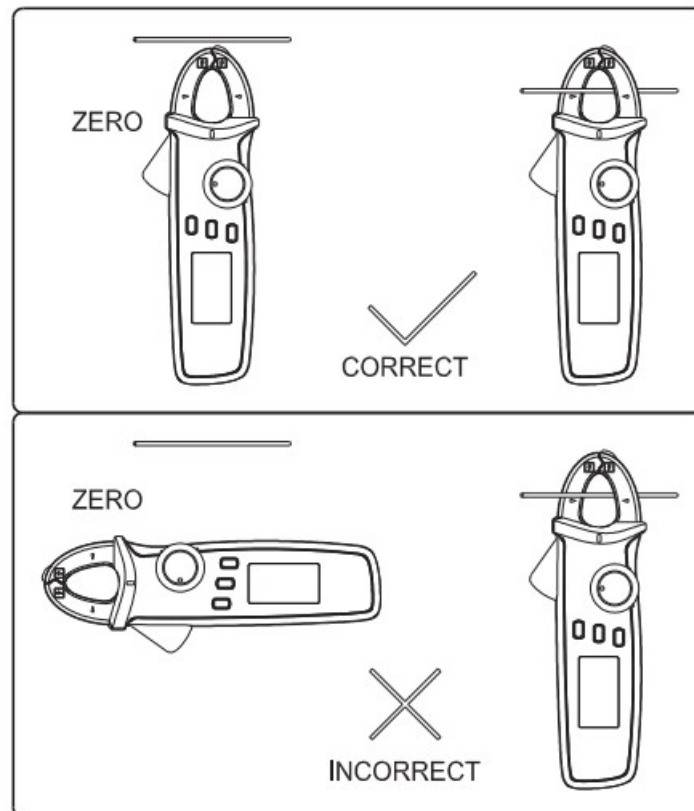
Figure 6

4. NCV non-contact field measurement (Figure 7)

In order to detect AC voltage or magnetic filed in some space, close the clamp head to the tested object by the front end to detect the motion. The analog quantity is about: "EF" when it c critical voltage; display as "-" when it is >critical voltage

Section voltage is set as "—", and different motivating buzzing is associated to distinguish the intensity of detected field.

⚠ When it is shifted to NCV measurement, please pull out the testing probe to avoid electric shock.

Figure 7

5. Other functions

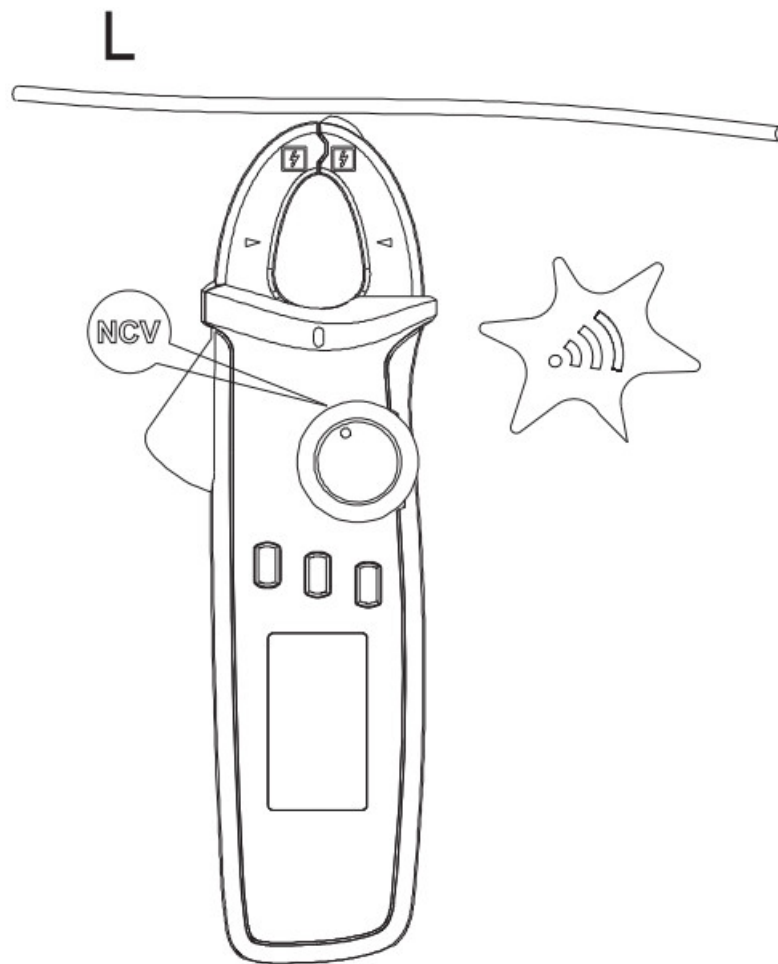- Long press HOLD key for about 2 seconds to start LCD backlight
  Auto off: if the knob button gets no move for about 15 minutes in process of measurement, the instrument will enter in "AUTO OFF" mode to save power. Press any key under auto off mode to make the instrument "auto up", or shift the knob button to OFF to restart the instrument.
  Press SELELCT key in shutdown mode to power it on again, the buzzer will make 5 sounds to prompt the cancellation of auto off Turn it off and then restart, the auto off function will be recovered.

- The buzzer will send 5 continuous alarming sounds, and then 1 long alarming sound before the product automatically shut down. When the auto off function is canceled, it will send 5 alarming sounds every 15 minutes.

- Buzzer: When pressing any function key or turning any function switch that is workable, the buzzer will send a "Beep" sound (lasts for about 0.25 second). When measuring the voltage or current, the buzzer will also send a continuous "beer intermittent sound to warm the outrange. The functions are as follows:
  a) AC/DC voltage>about 600V
  b) mA AC/DC current >620mA(or 6200mA)
  c) A AC/DC large current >62A

- Low voltage test: Test the internal VDD in process of power supply, when the voltage is lower than 2.5 V, it will display a low voltage symbol "⬛" and display normally; When it is lower than 2.2V, it will display low voltage

symbol only after startup, and unable to work normally.

- When the power voltage for the battery **is** lowered to be 2.6V, LCD backlight will be weak or not workable while the measuring function works normally.

Technical Index

Accuracy: ± (a% reading +b digit), guarantee period is 1 year. Environmental temperature: 23 ⁻C ±5'C **t** 73.4T ±gT relative temperature 75%

1. **DC Voltage Measurement**

Range		Resolution	Accuracy
UT211A	UT21113		
600.0mV	600.0mV	10pV	± (0.7%4-5)
6.000V	6.000V	lmV	± (0.7% +3)
60.00V	60.00V	10mV	
600.0V	600.0V	0.1V	
600V	600V	1V	

 Input impedance:

600mV range -4GO; for other ranges, the average of input impedance is 10W/ (600mV range open circuit may have instable digital display, and get to stable value 1 after being loaded.)

Maximum input voltage: t600V

2. **AC Voltage Measurement**

Range		Resolution	Accuracy
UT211A	UT21113		
6.000V	6.000V	lmV	± (0.8% l 3)
60.00V	60.00V	10mV	
600.0V	600.0V	0.1V	
600V	600V	1V	± (1.0% ± 3)
V.F.0 200V~600V		0.1V	± (4.0% + 3)

⚠ Input impedance: input impedance is about 10 MO.

⚠ Maximum input voltage: 600Vrms

• Display True RMS. Frequency response: 45-400Hz.

• Accuracy guarantee scale: 5~400% of measuring range, <20 digit residual reading is allowed for short circuit.

• AC crest factor may reach 3.0 at 4,000 counts; for non-sinusoidal waveform, the error of crest factor increases with the following formula.

a) Add 3% when the crest factor is 1-2

b) Add 5% when the crest factor is 2-2.5

c) Add 7% when the crest factor is 2-2

3. **Impedance Measurement**

Range		Resolution	Accuracy
UT211A	UT211B		
600.0Ω*	600.0Ω*	0.1Ω	± (1.0% i 2)
6.000kΩ	6.000kΩ	1Ω	± (0.8% + 2)
60.00kΩ	60.00kΩ	10Ω	
600.0kΩ	600.0kΩ	100Ω	
6.000MΩ	6.00omΩ	1kΩ	± (1.2% + 3)
60.00MΩ	60.00MΩ	10kΩ	± (1.5%+5)

Range: measured value=display measurement value- probe short-circuit value

Open circuit voltage is about 1 V

Overload protection: 600V-PTC

4. •))) **Circuit on/off,** ▶|◀ **diode measurement**

Range	Resolution	Remarks
•)))	o.1Ω	Circuit off impedance value is set >150Ω, the beeper keeps silent. Circuit on impedance value is set's ≤ 10Ω, the beeper beeps continuously.
▶|◀	lmV	Open circuit voltage is about 3.2 V; the normal voltage value is between 0.5 – 0.8V.

⚠ Ove load protection: 600V-PTC

5. **Capacity Measurement**

Range	Resolution	Accuracy
6. 200nF	1 pF	In REL mode: ±(4%+10)
62. 00nF —620. 0 P F	10pF – O. 1 p F	± (4%+5)
6. 200mF — 62. 00mF	112F- 10pF	-± 10%

⚠ Overload protection: 600V-PTC

6. **ACV Frequency Measurement (Suitable for the industrial frequency)**

Range	Resolution	Accuracy
10Hz , 60Kliz	0.001Hz – 0.01kHz	±(0.1%+4)

⚠ Overload protection: 600V-PTC

Input amplitude: 310V (DC level is 0)When a frequency of 65 KHZ or are for reference only

7. DC Current Measurement (UT211B only)

Range	Resolution	Accuracy
6000mA	1 mA	± (2.0%+5)
60.00A	0.01A	±(2.0%+3)

 Overload protection 100A

8. AC Current Measurement

Range		Resolution	Accuracy	
UT211A	UT211B		50Hz/60Hz	?100HZ
600.0mA	600.OmA	0.1mA	± (I. 5%+10)	⊣⊢ (2.060+10)
6000mA	6000mA	1mA	± (2. 5%+5)	± (3. 0%+5)
60.00A	60.00A	0.01A	± (2. 0^{1}3+5)	± (2. 5%+5)
V.F.0 600.0mA- 60A		0.1mA/ 0.01A	± (4.0$^°$/ +10)	

 Overload protection 100A

Accuracy guarantee scale: 5 -100% of measuring range, <20 digit residual reading is allowed for 600mA open circuit.

AC crest factor may reach 3.0 at 4,000 counts; for non-sinusoidal waveform, the error of crest factor increases with the following

a) Add 3% when the crest factor is 1-2

b) Add 5% when the crest factor is 2-2.5

c) Add 7% when the crest factor is 2.5-3

 Overload protection: 600V-PTC

Maintenance and Repair

 Warning: Ensure that the power is off and the probe is got off the terminal and tested circuit before opening the back cover of the instrument.

1. Regular maintenance and repair

• Please clean the outer shell of instrument with wet cloth and mild detergent without abrasive compound or solvent content.

• In case of any abnormality, the instrument must be stopped and sent for repair.

• If the instrument needs any verification or repair, it must be conducted by competent professional personnel or designated maintenance department.

2. **Replace the battery (See Figure 8)**

⚠ When the LCD gives low battery prompt " 🔋 ", it indicates the built-in battery must be replaced immediately, or else the measuring accuracy cannot be guaranteed.
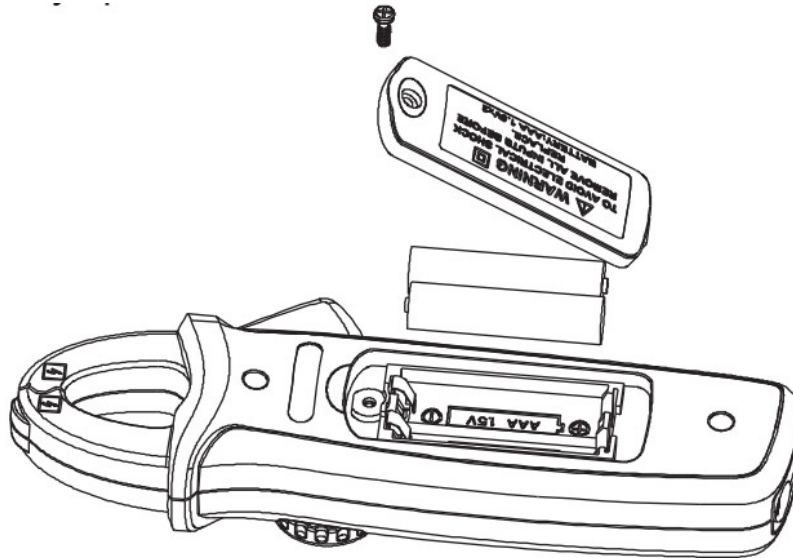
Battery specification: AA 1.5 V x 2

Figure 8

3. Operation Steps:

1. Shift the power switch to "OFF" and pull the probe out of input jack.

2. Twist off the fixing screw on the battery cover with a screw driver and remove the cover to take off the old battery as shown.

3. Install two new batteries (AAA 1.5V). The specification is subject to change without prior notice.

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Documents / Resources
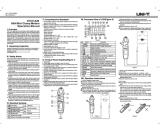
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UT211A 60A Mini Clamp Meters, UT211B 60A Mini Clamp Meters