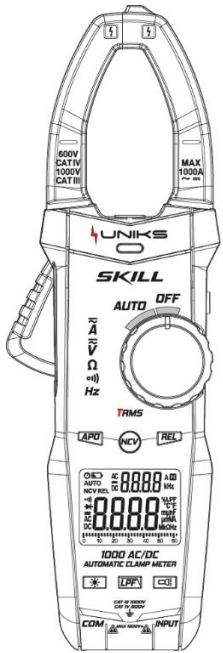

SKILL

Intelligent Digital AC/DC Clamp Meter

User Manual

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1. Safety Information

⚠ WARNING

Special attention shall be paid when using the meter, improper use might cause an electric shock or damage the meter. General safety procedures shall be followed during the use and safety measures regulated by the instruction manual shall be completely respected.

To fully make use of the functions of the meter and ensure safe operation, please carefully read and follow the use method of this manual.

Instrument complies with safety requirements on electronic measuring instrument of EN-61010-1, EN-61010-2-030 and EN-61010-2-032, level II pollution, and over-voltage standard is CAT IV 600V.

Please observe safety operation guide, and guarantee to use instrument in a safe manner.

1.1 Preparations

1.1.1 When use the meter, users must comply with the standard safety rules:
- General protection against electric shock
- Prevent misuse of the meter

1.1.2 After received the meter, check if it has been damaged during the delivery.

1.1.3 After been kept and delivered in shoddy conditions, check and confirm if the meter is damaged or not.

1.1.4 The pen-shape meter must be in good condition. Before use, check the pen-shape meter see if any damage to the insulation, if the metal wire of the cable is bare

1.2 Symbol

⚠ Note (important security information, see the Instruction Manual)

Able to be used on dangerous electrified conductors.

Dual- insulation protection (Category II).

CAT IV follows the over-voltage (Setup) level IV of IEC-61010-1 standard and pollution degree 2 means the impulse withstand voltage level of protection provided.

CE In line with the European Union (EU) Standard

⏚ Grounded

1.3 Maintenance

1.3.1 Please do not attempt to open the bottom case to adjust or repair the meter, such operation could only be performed by technicians fully aware of the meter and the risk of electric shock

1.3.2 Before opening the meter case or battery cover at the end, the pen-shape meter

should be removed from the circuit being measured.

1.3.3 o avoid electric shock that might be caused by erroneous readings, when the meter displays "  " symbol, the battery should be replaced immediately.

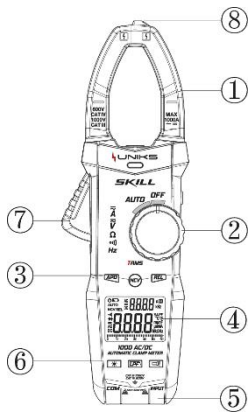
1.3.4 Use a damp cloth and mild detergent to clean the meter, do not use abrasive cleaning agents or solvents

1.3.5 Power supply of the meter should be turned off when not in use, range switch to the OFF position.

1.3.6 If the meter is not used for a long time, batteries should be removed to prevent damage to the meter.

2. Description

2.1 Part Name



1. Current clamp head: used for measuring current
2. Rotary switch
3. Function button
4. Display screen
5. Input socket
6. Function button
7. Trigger

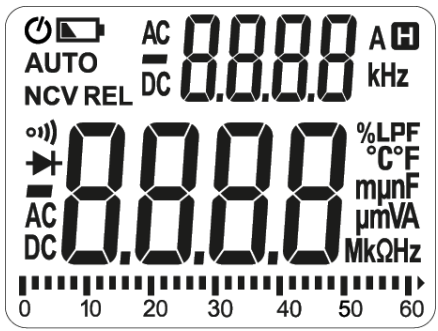
8 Non-contact voltage detecting & inducing area

2.2 Instructions to rotary switch

OFF Meter OFF position

AUTO Automatic range measurement mode

2.3 LCD display



	Automatic shutdown indicate
	Battery low voltage indication
AUTO	Auto range
REL	Relative measurement mode
NCV	Non-contact voltage detection
	Connected disconnect indicate

⊣◁	Diode measurement mode
−	data negative sign
DC、AC	DC、AC
H	Readings hold status
%	Duty cycle symbol
Hz、kHz	Hertz, Kilohertz
LPF	low pass filter indicator
mA、A	Current value unit：mA、A
mV、V	Voltage value unit：mV、V
Ω、kΩ、MΩ	Ohm,Kilohm, Megohm (resistance)

3. Specification

The meter should specify one year as a cycle to re-calibrate in the conditions of 18℃ ~ 28℃ and relative humidity less than 75%

3.1 Overview

– Automatically select measurement function and range

– Overload protection for the whole measurement range.。

– Maximum allowable voltage between the measuring terminal and the ground：600V DC or 600V AC.

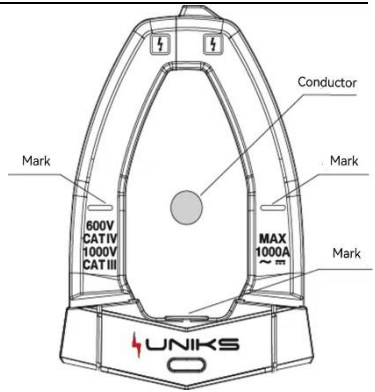
– Work height: maximum 2000m

– Display: LCD

– Maximum display value: 6000 digits.
– Polar indication: automatically indicate, '-' means negative polarity
– Over range Indication: '0L' or '-0L'
– Sampling time: about 3 times/s，analog strip 10 times/s.
– Unit display: with function and quantity of electricity unit display
– Automatic Power off time: 10 minutes
– Power supply: 1.5V AAA battery ×3
– Battery low voltage indication：LCD display  symbol
– Temperature coefficient: < 0.1×accuracy degree/℃
– Working temperature: 18℃ ~ 28℃
– Storage temperature: -10℃ ~ 50℃

3.2 Technical Index

When measuring current, place the conductor to be measured in the center of the clamp head. If not, it can increase ± 1.5% position deviation to the maximum.



3.2.1 **AC Current TRMS**

Range	Resolution	Accuracy
60A	0.01A	± (2.5% reading +8 digits)
600A	0.1A	
1000A	1A	

- Minimum input value of AC current: 0.5A (RMS)
- Maximum input value of AC current: 1000A (RMS)
- Frequency range: 45Hz～65Hz

3.2.2 **DC current**

Range	Resolution	Accuracy
60A	0.01A	± (3.0% reading+10 digits)
600A	0.1A	
1000A	1A	

- Minimum input value of DC current: 0.5A
- Maximum input value of DC current: 1000A

3.2.3 **AC Voltage TRMS**

Range	Resolution	Accuracy
6V	0.001V	± (0.8% reading +5 digits)
60V	0.01V	
600V	0.1V	

- Minimum input value of AC voltage: 1.0V (RMS)
- Maximum input value of AC voltage: 600V (RMS)
- Frequency range: 45Hz～65Hz

3.2.4 **DC Voltage**

Range	Resolution	Accuracy
6V	0.001V	± (0.5% reading +5 digits)
60V	0.01V	
600V	0.1V	

- Minimum input value of DC voltage: 0.5V
- Maximum input value of DC voltage: 600V

3.2.5 **Frequency**

3.2.5.1 **Clamp head frequency measurement (Via gear A)**:

Range	Resolution	Accuracy
60Hz	0.1Hz	± (1.0% reading +5 digits)
1000Hz	1Hz	

- Frequency input rang: 40Hz ~ 1000Hz
- Input signal range: ≥ 2A AC current (RMS)

3.2.5.2 **Pass V position:**

Range	Resolution	Accuracy
60Hz	0.1Hz	± (1.0% reading +5 digits)
1000Hz	1Hz	

- Frequency input range: 40Hz ~ 1000Hz
- Input signal range: ≥ 1.0V AC voltage (RMS)

3.2.6 **Resistance**

Range	Resolution	Accuracy
6kΩ	0.001kΩ	±(0.8% reading +3 digits)
60kΩ	0.01kΩ	
600kΩ	0.1kΩ	
6MΩ	0.001MΩ	
10MΩ	0.01MΩ	

- Overload protection: 600V DC or AC (RMS)

3.2.7 **Line on-off test**

Range	Resolution	Functions
•))	1Ω	If the resistance of circuit being measured is less than 50Ω, then the beeper in the meter may sound

- Overload protection: 600V DC or AC (RMS)

4. Operation Guide

4.1 Readings Hold

During the measuring process, if the readings are required to hold, slightly press "H" button ,the display value will be locked, slight press "H" button again to cancel readings hold.

4.2 Backlight / Light

In the process of measurement, if the ambient light is too dim, causing reading difficulties, press " ☀ " button to open backlight and it will automatically turn off after about 1 minute.

Press " ⊏≡ " button to turn on or off the lighting, it will turn off automatically after 1 minute.

4.3 Relative Measurement

Press "REL" button to cancel or turn on the relative measurement function, which is unavailable in the dual measurement display mode.

4.4 Auto Power Off

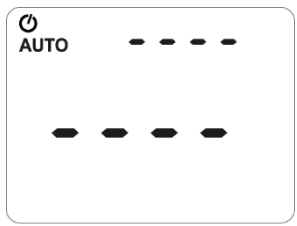
1) If after 10 minutes when the meter is on without any operation, it will go into hibernation and automatically shut down to save power. In the 2 minutes before power-off, the buzzer buzzes once every 1 minute.
2) After the auto power-off, the meter must be restarted to enter working state.

3) Press "APO " button to cancel or turn on the auto power-off function.

4.5 Measurement Preparations

1) Turn the transfer switch, turn on the power. If the battery voltage is low (about ≤ 3.5V), the LCD will show "🪫" , then the battery shall be replaced

2) When the meter has not entered into measurement, it will automatically enter the status of automatic scan, the meter displays as the following diagram shows.

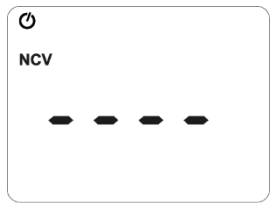


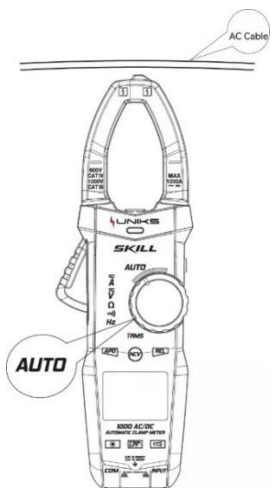
4.6 Enable low-pass filter (AC current only)

Press "LPF " button to enable or disable the low-pass filter function. When the low-pass filter function is enabled, the low-pass filter of the measured signal is attenuated by -3dB at approximately 1 kHz.

4.7 Non-contact Voltage Detection (NCV)

Press and hold "NCV" key for more than 2 seconds, NCV function is enabled and the meter LCD will display.





When the NCV sensing area of the meter is close to the measured cable, the charged cable can be judged by the buzzer sound and the LED indicator on the panel.

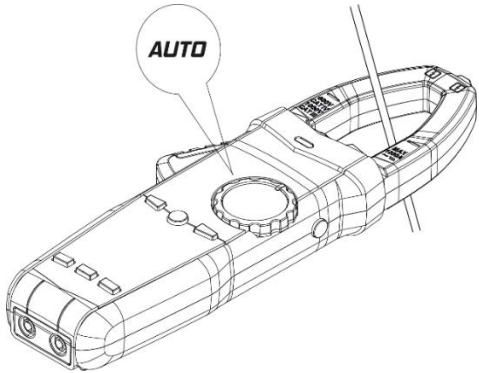
In NCV detection mode, the meter does not measure voltage, resistance, or current at the same time.

Note: Even there is no alarm indication, the voltage might still exist. Do not judge if there exist voltage or not in the cable relying on non-contact voltage detector. The detection operation might be affected by various factors such as the socket design and insulation thickness types are different and so on.

4.8 AC/DC current measurement

Turn rotary switch to "***AUTO*** " position, hold the trigger, open the clamp head, and clamp one cable of the measured circuit, and the meter will display the current value measured.

1) When the measured signal is AC current and the current value is ≥0.5A RMS, the main display of the meter shows the measured current value and the secondary display shows the frequency value of the current
2) When the measured signal is DC current and the current value is ≥0.5A, the main display of the meter shows the measured current value.



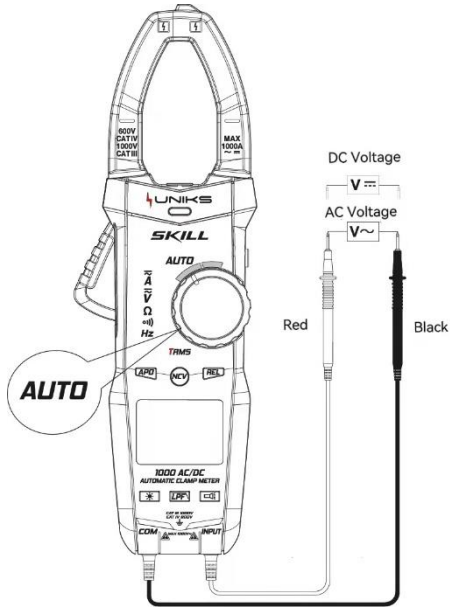
4.9 AC/DC voltage measurement

Turn rotary switch to "***AUTO***", then connect the meter probe to the measured voltage signal.

1）When the measured signal is DC voltage and the voltage value is ≥ 0.5V, the meter will display the current measured DC voltage value. When the measured signal is <0.5V, the meter will default to the resistance value and display the internal resistance value of the measured signal.

2）When the measured signal is AC voltage and the voltage RMS value is ≥ 1.0V, the main display of the meter will show the current measured AC voltage value and the secondary display will show the frequency value of the voltage. When the measured signal is <1.0V the meter will default to the

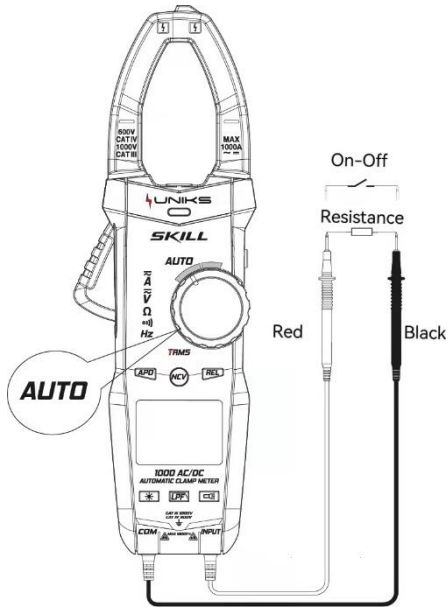
resistance value and display the internal resistance value of the measured signal.



4.10 Resistance / Continuity Measurement

Turn rotary switch to "***AUTO***" level and connect the meter probe to the measured resistor. When the measured resistance is <50Ω, the meter buzzer will buzz; when the measured resistance is >10MΩ , the meter will display "---

-".



4.11 Dual measurement display

The meter can also measure and display the voltage or resistance value while measuring and displaying the current value by turn rotary switch to "***AUTO***".

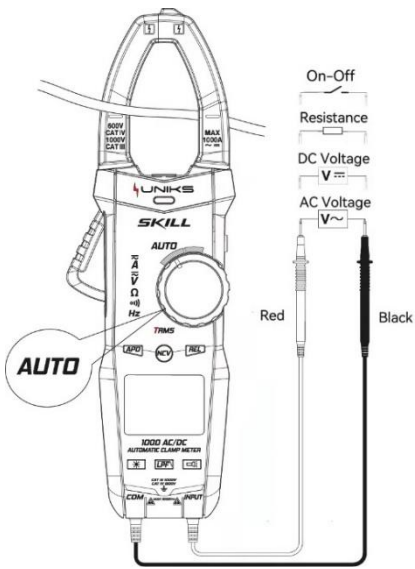
1) Hold the trigger, open the clamp head, and clamp one. Cable of the measured circuit,

when the measured signal is > 0.5A (0.5A RMS for AC current and 0.5A for DC current), the meter secondary display shows the measured current value.

2) Connect the meter probe to the measured signal, when the measured AC signal RMS value is ≥ 1.0V, the main display of the meter will show the current measured AC voltage value. When the RMS of the measured AC signal is <1.0V, the meter will default to the resistance value and display the internal resistance value of the measured signal.

3) Connect the meter probe to the measured signal, when the measured DC signal is ≥ 0.5V, the main display of the meter will show the current measured DC voltage value. When the measured DC signal is <0.5V, the meter will default to the resistance value and display the internal resistance value of the measured signal.

4) When the measured resistance is <50Ω, the meter buzzer will buzz; when the measured resistance is >10MΩ , the meter will display "----".



5. Maintenance

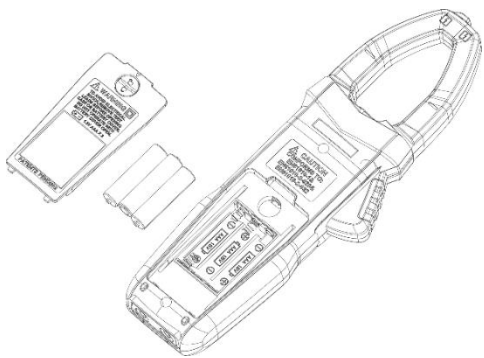
5.1 Replace Battery

⚠ WARNING

Before opening the battery cover of the meter, the pen-shape meter shall be moved from the measuring circuit first to prevent the risk of electric shock

1) If "🔋" symbol appears, it means the battery shall be replaced
2) Screw the fastening screws of the meter battery cover and move away.
3) Replace the old battery.
4) Install the battery cover as previous.

Note: Do not violate the battery polarity.



5.2 Replace Pens

> ⚠ **WARNING**
>
> **When replacing the pens, the new ones shall be of the same or in equal level. The pens must be in good condition, and level of the pens is: 1000V 10A.**

Note:

If the insulation layer of the pens is damaged, such as the metal wire of the cable is exposed, then it must be replaced.

6. Accessories

1)	Pens	Level: 1000V 10A	1
2)	Use Manual		1
3)	Battery	1.5V AAA battery	3
4)	Cloth bag		1

7. ASSISTANCE

7.1 WARRANTY CONDITIONS

This instrument is warranted against defects in materials and workmanship, in accordance with the general terms and conditions. During the warranty period, defective parts can be replaced, but the manufacturer reserves the right to repair or replace the product. If the instrument is to be returned to the after - sales service or to a dealer transportation is borne by the customer. The shipment must, however, be agreed. Attached to dispatch an explanatory note about the reasons of the instrument must always be inserted. For shipping only use the original packaging. Any damage caused by the use of non-original packing shall be charged to the customer. The manufacturer accepts no responsibility for damage caused to people or objects.

The warranty does not apply in the following cases:

- Repair and / or replacement of accessories and battery (not covered by warranty).
- Repairs made necessary because of a misuse of the instrument or of its use with no compatible devices.

- Repairs made necessary due to improper packaging.
- Repairs made necessary due to work carried out by unauthorized personnel.
- Modification of the instrument without the explicit permission of the manufacturer.
- Use not provided for in the specifications of the instrument or in the instruction manual.

Our products are patented and their trademarks. The manufacturer reserves the right to change specifications and prices if this is due to technological improvements.

7.2 ASSISTANCE

If the instrument does not operate properly, before contacting the Customer Service, check the status of the battery and wear of the cables and replace them if necessary. If the instrument continues to manifest malfunctions check if the procedure of use

of the same is in accordance with what is indicated in this manual. If the instrument is to be returned to the after - sales service or to a dealer transportation is borne by the customer. The shipment must, however, be agreed. Attached to dispatch an explanatory note about the reasons of the instrument must always be inserted. For shipping only use the original packaging; any damage caused by the use of non-original packing shall be charged to the customer.

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