

UT281 Series True RMS Flex Clamp

Thank you for purchasing this brand new UNI-T product. In order to safely and correctly use this device, please read this manual carefully, especially the Safety Instructions. Please keep the manual accessible near the device for future reference.

I. Instruction

UT281A/C/E is a stable, safe and reliable 3000A AC true RMS Rogowski flexible current clamp. It is an indispensable tool for electricians for its superior performance, overload protection, and unique appearance. The Rogowski coil length of UT281A, C, and E are 10", 18" and 18" respectively.

II. Open Box Inspection

Open the package box and take out the device. Please check whether the following accessories are deficient or damaged and contact your supplier immediately if they are.
 User manual -----1 pc
 Test leads-----1 pair (only for UT281E)

III. Safety Instructions

In this manual, a Warning identifies conditions and actions that pose hazard(s) to the user or the test device.

This device strictly follows CE standards: IEC61010-1; IEC61010-2-032; IEC61010-2-033 as well as CAT IV 600V, RoHS, pollution grade II, and double insulation standards.

CAT IV: It is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.

If the clamp is used in a manner that is not specified in this manual, the protection provided by the device might be impaired.

- 1) Before each use, inspect the clamp and its measuring head for any damage. Pay particular attention to the insulation surrounding, the flexible measuring head, or the clamp housing. Do not use the device if it is not working properly.
 - 2) Do not use the device if the rear cover or the battery cover is opened.
 - 3) When measuring, keep fingers behind the finger guard on the measuring head. Do not touch bare cables, connectors, unoccupied input terminals or circuit being measured.
 - 4) Before measuring, the switch should be on correct position. Do not switch positions during measurement.
 - 5) Do not use the clamp on any conductor with voltages higher than AC 600V.
 - 6) Use caution when working with voltages above 33V AC rms. Such voltages pose shock hazard.
 - 7) Do not use the clamp to measure current higher than specified range. If current value being measured is unknown, select highest position and reduce accordingly.
 - 8) To avoid false reading, replace the battery if power indicator flashes. Remove the battery if the clamp is left unused for a long time.
 - 9) Accuracy might be affected by electromagnetic field interference.
 - 10) Do not change the internal circuit of the clamp.
 - 11) Do not store or use the clamp in high temperature, high humidity, and explosive or strong magnetic field environments.
 - 12) Use soft cloth to clean the case, do not use abrasives or solvents.
 - 13) If insulation on probe is damaged, replace it.
- ⚠ WARNING:** Use meet EN 61010-031 standard, rated CAT IV 600V, 10A or better probe.

IV. Symbols

	Equipment protected throughout by double insulation or Reinforced insulation		Both direct and alternating current
	Grounding		Caution, possibility of electric shock
	Caution		Comply with European Union standards
	Alternating Current		Direct Current
	Conforms to UL STD. 61010-1, 61010-2-032, 61010-2-033, Certified to CSA STD. C22.2 No. 61010-1, 61010-2-032, 61010-2-033.		

V. Structure

- 1) Flexible clamp
- 2) Flexible clamp lock
Rotate the knob according to the arrow mark on the case to lock or unlock
- 3) LCD display
- 4) HOLD
Short press to turn ON/OFF data hold function;
Long press to turn ON/OFF the device (Only for UT281E)
- 5) Backlight and INRUSH
Short press to turn ON/OFF backlight; long press to turn ON/OFF inrush measurement
- 6) RANGE/Hz switch button
UT281E: Short press "RANGE" to cycle switch from AUTO to manual mode (other different range) on A, V position (Except Ω position), Long press go back to Frequency (only AUTO mode) measurement function.
UT281A/C: short press to cycle switch between 30.00A/300.0A/3000A (default 3000A)
- 7) Function switch (only for UT281E)
A-----AC current and frequency measurement
V-----AC voltage and frequency measurement
Ω-----resistance measurement
Power switch (UT281A/C): long press to turn ON/OFF the device
- 8) Voltage and resistance input terminals (only for UT281E)
Maximum voltage: 600V AC, maximum resistance: 6MΩ

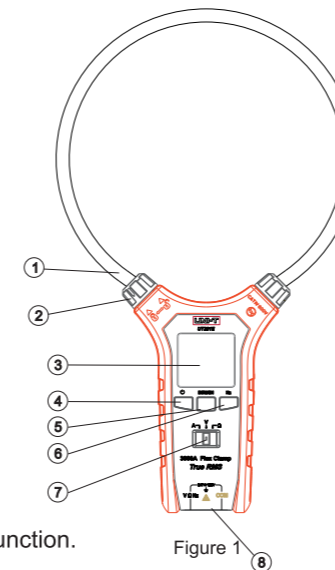
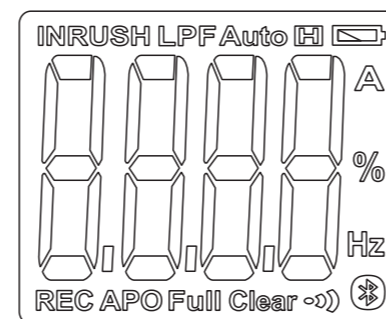


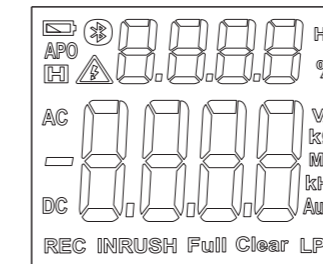
Figure 1

VI. Display



← UT281A/C

	80 mS inrush measurement		Current unit
	Buzzer		Auto power off
	Low power		Data hold



← UT281E

	80 mS inrush measurement		A, Hz, V, Ω, kΩ, MΩ,
	Buzzer		Auto power off
	Low power		Data hold

VII. Operations

- ⚠ Warning:** Before measuring, switch off the conductor to be measured. Do not turn on the conductor before the clamp is locked around the conductor to be measured.
- ⚠ Caution:** Keep your hands away from the Rogowski ring and conductor to be measured.
1. Turn off the device as well as the conductor being measured.
 2. Unlock the clamp according to figure 3
 3. Use the measuring head to wrap and lock around the conductor to be measured. (Only one wire can be tested at one time) (See figure 4)

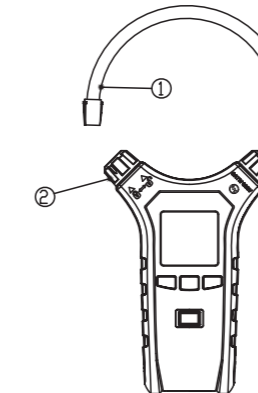


Figure 3

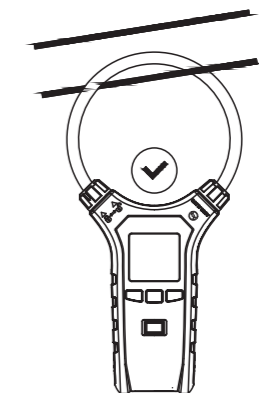


Figure 4

4. Turn on the clamp, then turn on the conductor.
5. Read the value displayed on the LCD. If the current to be measured is over the range, OL appears on the LCD. Please select appropriate range. (30.00A/300.0A/3000A)
6. Improper operation examples (see figure 5a, 5b)

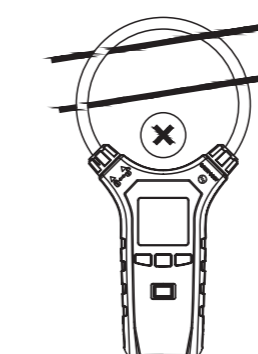


Figure 5a

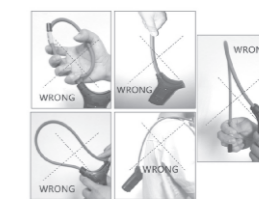
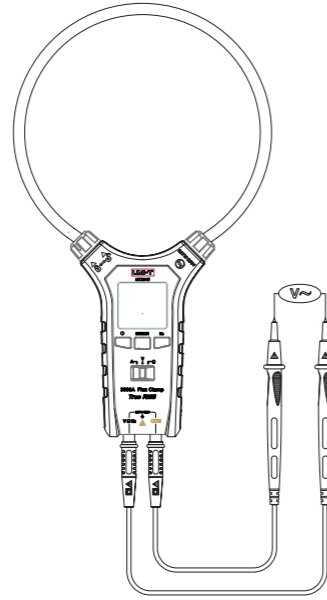


Figure 5b

AC voltage and frequency measurement (only for UT281E)

1. Insert black test lead to COM jack, red test lead to V jack
2. Switch the functional switch to V position
3. Long press RANGE to turn on frequency measurement
4. Connect test leads to the voltage, the meter will automatically select the range. Main display will show the AC voltage RMS, auxiliary display will show frequency value.

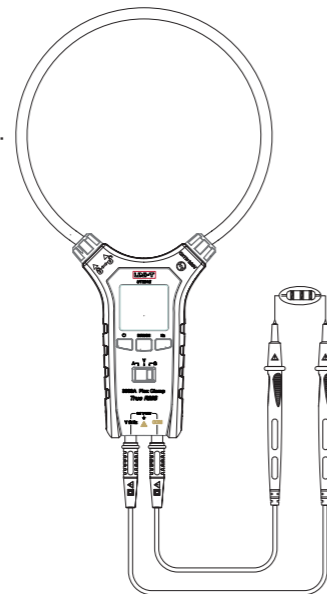


⚠Warning: Do not input over AC 600V.

Resistance measurement (only for UT281E)

1. Insert black test lead to COM jack, red test lead to V jack
2. Switch the functional switch to Ω position
3. Connect test leads to the resistance, the meter will automatically select the range. Main display will show the resistance value.

⚠Warning: Before measuring, please disconnect the power supply and fully discharge all capacitors. The result will be more accurate if the resistor is departed from the whole circuit.



Auto power off

During measurement, if there is no operation within 10 minutes, the meter will power off automatically to save energy. Long press HOLD to turn on the UT281E, or press POWER button to turn on the UT281A/C. Press backlight and range button at the same time to turn on or off APO function. Default: APO is ON.

Buzzer

The buzzer will go off at effective range.

VIII. Technical specifications

A. General specifications

Max Display	Maximum 3000
Overload indication	OL
Low power indication	
Sampling rate	3 times/s
Sensor	Rogowski coil
Drop test	1m
Clamp head length	UT281C/E: 18 inches(45.7cm) UT281A: 10 inches (25.4cm)
Maximum conductor diameter	UT281C/E: 14cm UT281A: 9cm
Battery	3*AAA-1.5V
Auto power off	10 mins

B. Operating environment

Operating environment	Indoor
Maximum altitude	2000m
Safety standard	IEC61010-1; IEC61010-2-032; IEC61010-2-033; CAT IV 600V
Pollution grade	2
Operating temperature	0°C~30°C @ ≤80%RH
	30°C~40°C @ ≤75%RH 40°C~50°C @ ≤45%RH
Storage temperature	-20°C~+60°C @ ≤80%RH

C. Electric specifications

Accuracy	±(%of reading+ numerical number of least significant digit) 1 year warranty
Environment temperature	23 °C ± 5 °C
Environment humidity	≤80%RH
Temperature coefficient	0.1×(specified accuracy)/ °C

(1) UT281A AC current measurement

Range	Resolution	Accuracy (at central position)	Remark
30.00A	0.01A	±(3%+5)	Specification at the center.
300.0A	0.1A		
3000A	1A		
Inrush current	Range: 0.50A~3000A	Only for reference	
Frequency response	45Hz~500Hz		

Main display: Current true RMS

Additional accuracy range when measuring outside of optimum location (Assume no external electric or magnetic field)	Central optimum measurement location	Accuracy	Zone	
15mm(0.6") away from center		±(3%+5)	Zone A	
25mm(1.0") away from center		Additional 2.0%	Zone B	
35mm(1.4") away from center		additional 2.5%	Zone C	

(2) UT281C/E AC current measurement

Range	Resolution	Accuracy (at central position)	Remark
30.00A	0.01A	±(3%+5)	Specification at the center.
300.0A	0.1A		
3000A	1A		
Inrush current	Range: 0.50A~3000A	Only for reference	
Frequency response	45Hz~500Hz		

Main display: Current true RMS

Auxiliary display: AC voltage frequency

Additional accuracy range when measuring outside of optimum location (Assume no external electric or magnetic field)	Central optimum measurement location	Accuracy	Zone	
35mm(1.4") away from center		±(3%+5)	Zone A	
50mm(2.0") away from center		Additional 1.0%	Zone B	
60mm(2.4") away from center		additional 1.5%	Zone C	

(3) AC voltage measurement (UT281E)

Range	Resolution	Accuracy (at central position)	Overload protection
6.000V	0.001V	±(1.2%+3)	600V AC
60.00V	0.01V		
600.0V	0.1V		
Frequency response	45Hz~500Hz		

Main display: Current true RMS

Auxiliary display: AC voltage frequency

Input impedance: ≥10MΩ

(4) Resistance measurement (UT281E)

Range	Resolution	Accuracy	Overload protection
600.0Ω	0.1Ω	±(1.2%+3)	600V AC
6.000kΩ	0.001 kΩ		
60.00kΩ	0.01 kΩ		
600.0 kΩ	0.1kΩ		
6.000 MΩ	1kΩ		
60.00MΩ	10 kΩ		

Main display: resistance value

(5) Frequency measurement (UT281E)

Range	Resolution	Sensitivity	Accuracy	Overload protection
20Hz~30kHz	0.1Hz	20~1kHz (2V) 1k~20kHz(10V) 20k~30kHz(30V)	±(1%+2)	600V AC

Main display: frequency value

IX. Maintenance

A. General maintenance

⚠Warning: remove the test probes before open the rear cover or it may pose a shock hazard.

- a. The maintenance and service must be implemented by qualified professionals or designated maintenance departments.
- b. Clean the case with a dry cloth. Do not use abrasives or solvents


B. Battery installation & replacement

The clamp uses 3pcs AAA 1.5V alkaline batteries for operation.

To install or replace the battery:

- a. Switch off the meter and remove the test probes from the terminal input.
- b. Unscrew the battery cover, remove the cover and install new batteries ensuring that the correct polarity is observed.
- c. Use batteries of the same type
- d. Replace the battery cover and screw up.

说明书菲林做货要求:

序号	项目	内容	
1	尺寸	展开尺寸420×280±1MM	折后尺寸(140x140mm)
2	材质	60g书纸	
3	颜色	单色双面印刷	
4	外观要求	完整清晰、版面整洁, 无斑墨、残损、毛边、刀线错位等缺陷。	
5	装订方式	无	
6	表面处理	无	
7	其它	无	
版本		REV.1 修改成股份有限公司	
DWH 设计	黄荣伟2018.06.25	MODEL 机型: Ut281	Part NO. 物料编号: P/N:110401106780X
CHK 审核		 优利德科技(中国)股份有限公司 <small>UNI-TREND TECHNOLOGY (CHINA) CO., LTD.</small>	
APPRO. 批准			