P/N:110401109668X

UT-CS09A/D
Flex Clamp Current Sensor

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 section.
Please keep the manual accessible near the device for future reference.

1. Instruction

UT-CS09A/UT-CS09D is a stable, safe and reliable 3000A AC Rogowski flex Clamp Current Sensor (hereinafter called current sensor). The core of the design is the Rogowski coil.

⚠Warning:

To avoid electric shock or injury, please read Safety Instructions and Warnings before operating this product.

2. Open Box Inspection

Open the package box and take out the device. Please check whether the following items are deficient or damaged and contact your supplier immediately if they are.

User manual ---------- 1 pc
BNC adapter---------- 1 pc
Battery: 1.5V AAA---------- 3 pc

3. 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; IEC61010-031; IEC61010-2-032 as well as CAT IV 600V, RoHS, pollution grade II, and double insulation standards.
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) Do not use the device if the rear cover or the battery cover is not covered up.
2) 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.
3) Before measuring, the switch should be on correct position. Do not switch positions during measurement.
4) Do not use the clamp on any conductor with voltages higher than DC 1000V or AC 750V.
5) Use caution when working with voltages above 33V AC rms. Such voltages pose shock hazard.
6) Do not use the device to measure current higher than specified range. If current value being measured is unknown, select 3000A position and reduce accordingly.
7) To avoid false reading, replace the battery if “POWER” indicator flashes. Remove the battery if the sensor is left unused for a long time.
8) Do not change the internal circuit of the device.
9) Do not store or use the sensor in high temperature, high humidity, explosive, or strong magnetic field environments.
10) Use soft cloth to clean the case, do not use abradants or solvents.
11) Do not use when the jaw or "jaw end" is worn.

4. Symbols

⧈	Double insulation
⏚	Grounding
⚠	Warning
~	AC (Alternating Current)
⎓	Battery
⚡	High voltage hazard
CE	Comply with European Union standards
ETL	Conforms to UL STD. 61010-1, 61010-2-032, 61010-031, Certified to CSA STD. C22.2 No. 61010-1, 61010-2-032, 61010-031.
CAT IV	It is applicable to test and measuring circuits connected at the source of the building’s low-voltage MAINS installation.

5.Structure

1. Flexible Rogowski coil
2. Flexible clamp lock
   Rotate the knob according to the arrow mark on the case to lock or unlock
3. Fixed piece
4. Power indicator
   Normal status: constant red light
   Low power (<3.3V): flash once for every 1s period. Please replace the batteries.
5. Switch
   A. 30A
      For measuring 1.5A~30A
   B. 300A
      For measuring 30A~300A
   C. 3000A
      For measuring 300A~3000A
   D. OFF
      Switch off the sensor
6. Corresponding output voltage
   A. 30A range: 1A -> 100mV
   B. 300A range: 1A -> 10mV
   C. 3000A range: 1A -> 1mV
7. Voltage signal output terminal
   The corresponding voltage output of AC current measured through flexible current sensor.

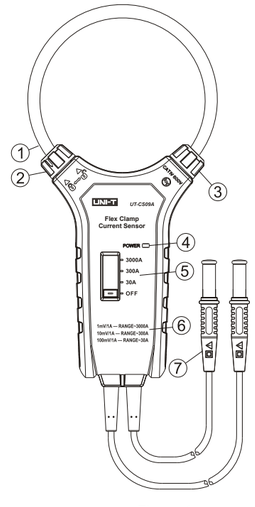


Figure 1

6.Operations

BNC terminal can be used to connect flexible current sensor to read out on oscilloscope

⚠Warnings：
To avoid false reading, do not use low input impedance settings when using oscilloscopes as readouts.

AC measurement

⚠Warning:
Before measuring, switch off the conductor to be measured. Do not turn on the conductor before the sensor is locked around the conductor to be measured.

⚠Caution:
Keep your hands away from the Rogowski ring and conductor to be measured.
1.Connect the sensor with alternating voltage measure device e.g. multimeter. (see figure 2)

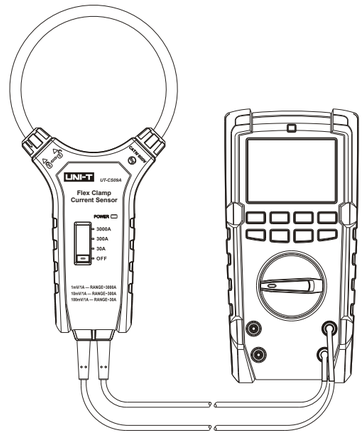


Figure 2

2. Unlock the Rogowski coil according to Section 5.2 (see figure 3).

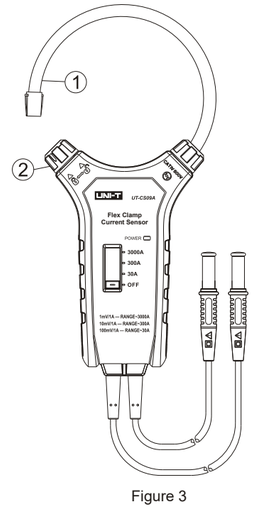


Figure 3

3. Use the Rogowski coil to wrap and lock around the conductor to be measured. (see figure 4)

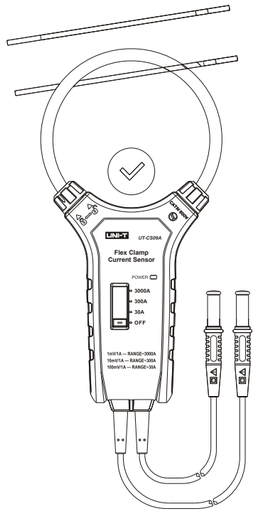


Figure 4

4. Turn on the sensor, then power on the conductor.
5. Read the value displayed on the multimeter. (Max Value=3.0V). If the current to be measured is over the range, please select appropriate range (30A/300A/3000A)
6. Improper operation example (see figure 5a, 5b).

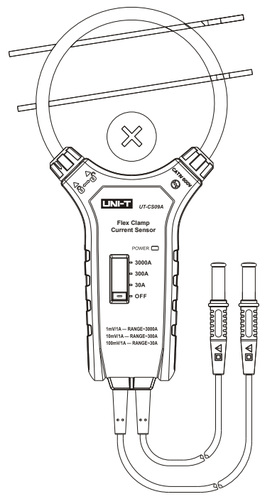


Figure 5a

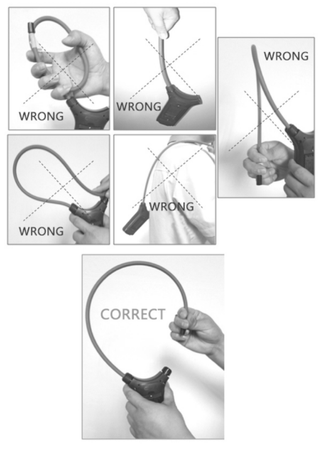


Figure 5b

Shut down
After measurement, switch to OFF position to shut down the device.
Buzzer
The buzzer will go off at effective range.

7. Technical specifications

A. General specifications

Max output voltage:---------- 3.00V (AC)
Over range indication:---------- reading> 3.00V (AC)
Low power indication:---------- "POWER" indicator flashes, battery voltage<3.3V, please replace the battery
Sensor type:---------- Rogowski clamp sensor
Position error: ---------- At central position: ±3.0% of reading
outside central area: additional error according to zone ABC. (see Electric specification)
Drop test: ---------- 1 meter
Measuring head size:---------- UT-CS09A Length=25.4cm (10")
UT-CS09D Length= 45.7cm (18")
Conductor trace line:---------- Max diameter: 14cm
Electromagnetic field interference:--------- unstable performance or incorrect reading
Battery:---------- AAA 1.5V (3pcs)

B. Operating environment

Max altitude:---------- 2000m
Safety standard:---------- IEC61010-1; IEC61010-031
IEC61010-2-032; CAT IV 600V
Pollution grade:---------- 2
Information of usage:---------- Indoor
Operating temperature:---------- 0˚C~50˚C
Operating humidity:----------≤80%RH
Storage:---------- -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:---------- 0.2×(specified accuracy)/ ˚C (<18 ˚C or >28 ˚C)

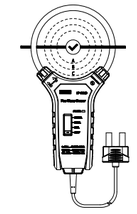
(1) UT-CS09A AC current measurement:

Range	Resolution	Corresponding voltage	Accuracy (at central position)	Frequency Response
30A	0.1A	~100mV/1A	±(3%+5)	45Hz~500Hz
300A	1A	~10mV/1A		
3000A	10A	~1mV/1A		

Additional accuracy range when measuring outside of optimum location (Assume no external electric or magnetic field)	Central optimum measurement location	±(3%+5)	√	
	15mm(0.6") away from center	Additional2.0%	Zone A	
	25mm(1.0") away from center	additional 2.5%	Zone B	
	35mm(1.4") away from center	additional 3.0%	Zone C	

(2) UT-CS09D AC current measurement:

Range	Resolution	Corresponding voltage	Accuracy (at central position)	Frequency Response
30A	0.1A	~100mV/1A	±(3%+5)	45Hz~500Hz
300A	1A	~10mV/1A		
3000A	10A	~1mV/1A		

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

8. 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 departments.
b. Clean the case with a dry cloth. Do not use abradants or solvents

B. Battery installation & replacement

The sensor uses three AAA 1.5V alkaline batteries for operation.
To install or replace the battery:
a. Switch off the sensor 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.

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