

Low Frequency AC/DC Current Probe

CPL2000A (2000A/10kHz)

CPL4000A (4000A/ 5kHz)



Shenzhen Zhiyong Electronics Co., Ltd

Preface

First of all, thank you for purchasing our products, this instruction manual is the description about the function, usage, operation attention points, etc. Before use, please read the instructions carefully and use correctly.

Manual annotation will use the following symbols to distinguish.



This symbol means it is harmful to the machine and human body; you must strictly follow the instruction manual to operate.

Warning

In the case of wrong operation, the user risk injury. The content under this mark records the relevant matters needing attention to avoid such dangers.

Notice

The user may suffer minor injuries and material damage with the wrong operation. To avoid such situation, the matters under this mark need attention.

Note

This symbolizes important note about how to use the machine.



Warning

- To prevent shortage and accident, the circuit under test should be below 600VAC.
- Do not measure bare conductors.
- Do not touch the conductor under test and the sensor head during testing.
- When the oscilloscope is connected to other test terminals, please pay attention to the following points:
 - ✧ Please use basic insulation equipment that meets the over-voltage category and pollution level between the testing terminals of this machine and other testing terminals
 - ✧ If the basic insulation of the test terminal cannot be met, please do not input a voltage that exceeds the safety voltage.
 - ✧ Please refer to the safety precautions related to electric shock when connecting electrical devices for use.
- Electric shock accidents could occur if the machine or the user's hand is wet during measurement.

**Notice**

- The sensor head is assembled of precision components including magnetic core, Hall component. The rapid change of temperature or the external impact could damage the sensor, so please avoid vibration or strike when using.
- CPL series product is neither waterproof nor dust-proof. Please do not use it in dusty or wet environment.
- The upper and lower contact surfaces of the sensor head are made through precise grinding technology. Please make sure the sensor is protected during use, as any damage may affect its function.

Note

- The current probe is equipped with four AA batteries. CPL series is highly power-consuming so please use a durable alkaline battery.
- Comparatively significant measurement errors may occur when the power supply is low. When the battery voltage is lower than 4.3V, the machine will notify the users by a low voltage alarm. Please replace the batteries in time to ensure the accuracy of measurement .

1. Summary

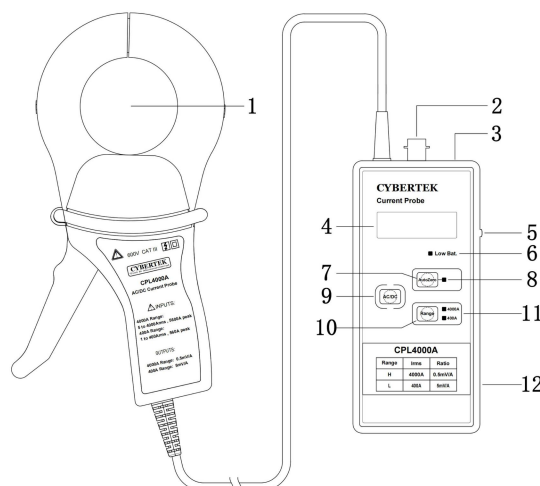
CPL2000A/4000A is a unique instrument that combines an current probe for oscilloscope with a clamp ammeter 。 **CPL2000A/4000A** is able to directly display the RMS current value without connecting any devices, and also able to measure the waveform by connecting to an oscilloscope. Its unique sensor design achieves twice the current measurement capability (4000ARMS) compared to similar products in the field, while ensuring excellent in accuracy. The display accuracy of the clamp ammeter function is up to 4 digit and the instrument contains our unique battery and USB dual power supply in the field.

The maximum measurable current of **CPL2000A** is 2000ARMS, and the peak current is 3000Apk, bandwidth is 10kHz(-3dB); The maximum measurable current of **CPL4000A** is 4000Arms, peak current is 5600Apk, and bandwidth is 5kHz(-3dB). **CPL** series has different features to improve users' experience, including:

- Dual-Range , users can choose according to current value.
- Convenient auto zero function.
- Power supply and battery low voltage alarm indicator and overload alarm sound.
- Double power supply methods including batteries or external power supply.
- Standard BNC output connector that can either easily connected to equipment like oscilloscope, or connected to a multi-meter with BNC to dual banana plug.
- LCD display screen that can display RMS value of DC up to 400Hz.
- **CPL** series is always used in fields of power frequency measurement, electric motor and power supply.

2. Probe Parts Description

● Probe



- 1) **Clamp:** Current clamp that can measure cable of maximum diameter up to 54mm
- 2) **Signal output cable:** BNC standard connector, able to adapt oscilloscope of any brand through standard BNC cable.
- 3) **USB 5V power supply connector:** standard USB (Type B) connector for standard USB power supply cable.
- 4) **LCD display screen:** display the RMS value of DC current up to 400Hz.
- 5) **Power switch**
- 6) **Low power indicator light:** When the voltage of the battery is below 4.3V, the indicator will lighted red, please replace the battery soon.
- 7) **Auto zero button:** To measure accurately, zero set the probe to prevent the environmental factors such as earth magnetic field or temperature drift from affecting the result.
- 8) **Zero set indicator light:** lighted green during the zero set and off after the process.
- 9) **AC/DC measurement selection button**
- 10) **Range selection button**
- 11) **Range Indicator light:** Indicating the current range selection.
- 12) **Battery box:** requires four AA alkaline batteries; Please unplug the current probe from conductor under test and oscilloscope and switch off if users want to change the batteries.

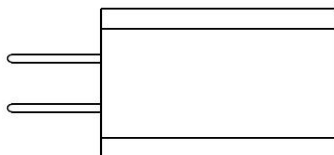
● **Accessories**



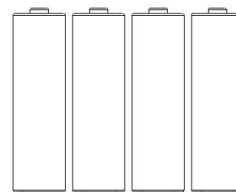
Coaxial Output Cable (CK-310: 1m)



USB cable (AM-BM, 1.5m)



Power supply adaptor
(USB output: DC5V/2000mA)



AA batteries (alkaline batteries, 4×AA 1.5V)
The battery life is about 72 hours

3. Electronics Characteristics

Test Condition: 23°C, 60RH, no nearby current, cable under test through the center during testing, load impedance 1MΩ.

Model	CPL2000A		CPL4000A	
Range	200A	2000A	400A	4000A
Maximum measurable current	200Arms	2000Arms	400Arms	4000Arms
Peak value current	300Apk	3000Apk	560Apk	5600Apk
BNC output range Sensitivity	10mV/A	1mV/A	5mV/A	0.5mV/A
LCD display value	DC~400Hz RMS value			
Typical precision（DC，45Hz~66Hz）	±2%rdg.±5mV	±2%rdg.±1mV	±3%rdg.±5mV	±3%rdg.±1mV
BNC output bandwidth（-3dB）	DC~10kHz		DC~5kHz	
Typical battery type and battery life	4 AA alkaline batteries/ 72 hours		4 AA alkaline batteries/ 72 hours	
Operating Voltage	CATII 600V			
Low Power Indication Function	Lighted red when battery voltage is lower than 4.3 V			
Overload Indication Function	Buzzer will be activated when current under test surpass the range			

4. Operating Methods

- ✧ Set the Coupling mode of the oscilloscope to DC, oscilloscope input impedance to 1MΩ.
- ✧ Set the correct attenuation ratio in oscilloscope。for example, for probe set 2000A (1mV/A), oscilloscope should be 1000X, for probe set 200A (10mV/A), oscilloscope should be 100X.
- ✧ Turn on the power switch, the indicator should be lighted green.
- ✧ Press the button to select the proper range according to the value of the current under test.
- ✧ Press the auto-zero set button and the probe will zero set on its own. The buzzer will buzz shortly for twice if auto zero set successfully, or it will buzz for once, meaning auto zero set fails. One thing need attention is that, the external magnetic field could have slight effect on the AC zero position of the probe, so user better not move the probe after zero set complete.
- ✧ Open the clamp of the current probe and fix the conductor under test

Attention: there's direction indication on the clamp, the same current direction will generate positive output, and otherwise it will generate negative output.
- ✧ The LCD will display the RMS value of the DC~400Hz. For instance, if the LCD displays “40.5,” then the RMS value of the current under test is 40.5A. To measure AC/DC current, please select corresponding gear by pressing AC/DC button, or the displayed value on LCD is not accurate (BNC output does not distinguish between AC and DC). If it displays “-OL.-” it means over load, and if it displays “-UL.-” it means under load.

5. Mechanical Specification

Size of current clamp	216*115*45mm
Size of output box	150*70*27mm
Operating altitude	0~2000m
Max size of conductor under test	diameter 54mm
Length of the cable between clamp and box	1m
Length of BNC cable	1m
Weight	690g (Battery Excluded)

6. Environmental Specification

Operating temperature	0°C~+50°C
Storing temperature	-20°C~+80°C
Operating relative humidity	0°C~+40°C , Humidity 95%RH; +40°C~+50°C , Humidity 45%RH

7. Maintenance

- ✧ Clamp: the clamp should be clean and dry. If there's a need of cleaning up, please use soft cloth together with small amounts of alcohol to erase the dirt. Do not put the clamp in wet environment.
- ✧ Handle: Please clean up the handle using clean cloth or sponge. Do not use water to clean the equipment, use alcohol instead and dry it afterward.
- ✧ To guarantee the performance, user can proceed check or calibration once a year.

8. Packing List

PACKING LIST	
Name	Number
Current probe	1
5V/2A adaptor (CK-605)	1
AA alkaline dry battery	4
USB power supply cable (AM-BM, 1.5m)	1
BNC output cable(CK-310)	1
Instruction manual	1
Warranty card	1
Test report	1

CYBERTEK

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