Low Frequency AC/DC Current Probe

CPL2000 2000A/10kHz
CPL2000H 2000A/300kHz
CPL4000 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.

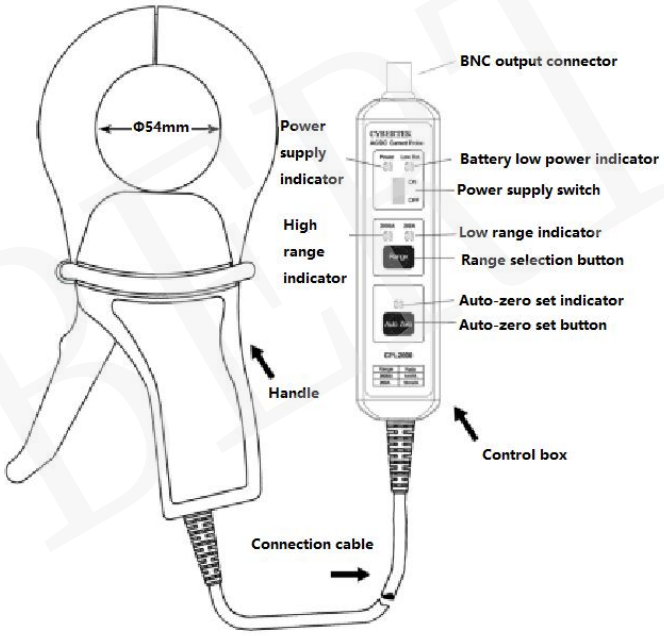
Index

1. Summary

CPL series product is a type of current probe that can measure AC and DC simultaneously.It has two ranges optional, and the users can choose proper range according to the current value. It is also integrated with auto-zero set function, making CPL series easy to use. CPL series product also contains power supply and battery low voltage alarm indicator and overload alarm buzzer. CPL series can be powered by battery or external power supply, and its standard BNC output connector allows it to connect with oscilloscope and other devices, and with BNC to dual banana plugs it can be connected to voltage meter for AC and DC measurement. CPL series product is usually used in fields including motor drive and power supply measurement.

2. Probe Parts Description

- **Probe**



✧ **Power Supply Switch**

✧ **Power Supply Indicator:** Lighted green when power supply switch is ON.

✧ **Low Power Indicator**: Lighted red when battery voltage is lower than 6.5V, please change battery ASAP.

✧ **Range Selection Button**

✧ **Range Indicator**: Indicating the current range selection.

✧ **Auto-zero Set 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.

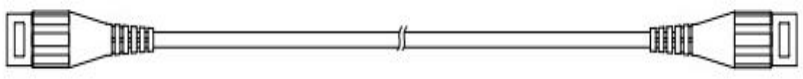
✧ **Auto-zero Set Indicator: lighted during zero setting.**

✧**Clamp**: the current testing clamp, diameter around 54mm.

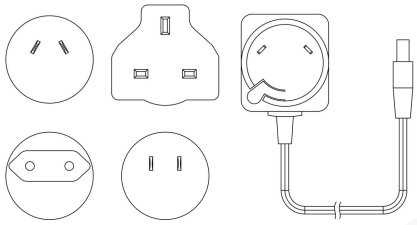
✧**External Power Supply Connector**: external DC power supply.

✧**Battery Box**: 9V alkaline battery within. Please disconnect from the conductor and oscilloscope, turn off the probe when user changes the battery.

- **Accessories**



Coaxial Output Cable (CK-310): 1m



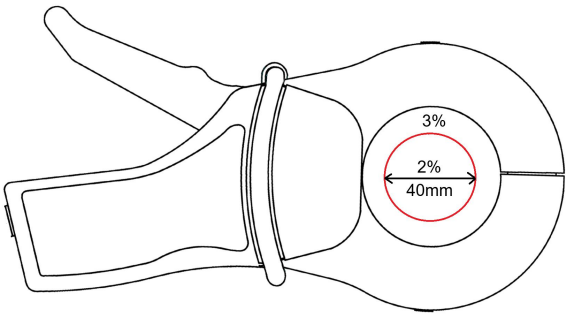
Power Supply Adapter (CK-612B)

3. Electronics Characteristics

Test Condition: 23℃, 60RH, no nearby current, cable（Φ30mm）under test through the center during testing, load impedance 1MΩ

Model	CPL2000		CPL2000A		CPL4000	
Range	**200A**	**2000A**	**200A**	**2000A**	**400A**	**4000A**
Maximum Measurable Current	200Arms	2000Arms	200Arms	2000Arms	400Arms	4000Arms
Peak Value Current	300Apk	3000Apk	300Apk	3000Apk	560Apk	5600Apk
Range Sensitivity	10mV/A	1mV/A	10mV/A	1mV/A	5mV/A	0.5mV/A
Typical Precision (DC,45Hz~66Hz)	±2%rdg. ±5mV	±2%rdg. ±1mV	±2%rdg. ±5mV	2%rdg. ±1mV	±2%rdg. ±5mV	2%rdg. ±1mV
Specification Precision (DC,45Hz~66Hz)			±3%rdg. ±5mV	±3%rdg. ±1mV	±3%rdg. ±5mV	±3%rdg. ±1mV
Bandwidth（-3dB）	DC～10kHz		DC～300kHz		DC～5kHz	
Typical Battery type and life	9V alkaline cascade battery/ 15 hours		9V alkaline cascade battery/ 11 hours			
Operating Voltage	CATII 600V					
Low Power Indication Function	Lighted red when battery voltage is lower than 6.5 V					
Overload Indication Function	Buzzer will be activated when current under test surpass the range					

P.S. As shown below, the accuracy is 2% when CPL2000H or CPL4000 is used to measure the wire placed within 40mm diameter of the center . The guaranteed accuracy is 3% in the entire clamp.



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.
  Attention: Different range corresponds to different attenuation ratio
- 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 place 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.

5. Mechanical Specification

Size of current clamp	216*115*45mm
Size of output box	137*33*35mm
Operating altitude	0~2000m
Max size of conductor under test	diameter 54mm
Length of the connecting cable between clamp and box	1m
Length of BNC cable	1m
Weight	620g (Battery Excluded)

6. Environmental Specification

Operating temperature	0℃～+50℃
Storing temperature	-20℃～+80℃
Operating relative humidity	0℃~+40℃，Humidity 95%RH； +40℃~+50℃，Humidity 45%RH
Pollution level	Level 2

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
9V battery	1
DC12V/1A adapter（CK-612B)	1
BNC output cable (CK-310)	1
Instruction manual	1
Warranty card	1
Test report	1

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