

# Rogowski Coil High Frequency Current Probe

## CPHX9000A/B Series



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.**

To the safely use the device, you must abide by the following safety precautions strictly. The violation against the manual is likely to damage the protective function of the machine. In addition, the company is not responsible for any safety problem caused by violating matters needing attention in operation.



- ✧ **Make sure the BNC terminal is well grounded when BNC output cables connect to oscilloscope or other devices**
- ✧ **Make sure the circuit under test is turned off before it is accessed by the probe.**
- ✧ **Please check the probe skin before use. If there is any breakage, stop using it right away**
- ✧ **The sharp edge of the circuit could damage the probe coil, please check carefully before access it.**
- ✧ **The operating voltage requirement has been marked on the coil; please make sure the probe is operating within safety range.**
- ✧ **Select the standard adapter power supply of our product.**

## 1. Summary

CPHX9000A/B series Rogowski coil high-frequency current probe is a high-frequency current probe that designed to measure AC current signals, with characteristics including high bandwidth (up to 220MHz), high voltage withstand value (up to 1kVpk) and high accuracy (typical value of 2%).

With its standard BNC output connector, CPHX9000A/B can adapt oscilloscopes and data collectors of any brand, and observe current waveforms; powered by 4 AA batteries or external USB DC5V power supply brings more flexibility and convenience to use; The length of the probe coil and connecting wire can be customized according to customer's need to meet special measuring requirements.

## 2. Application

- IGBT and MOSFET current measurement
- Current of semiconductor switches
- Capacitor discharge test, ripple measurement
- Monitor harmonics, power, and power quality

## 3. Electronic Specification

Measuring condition: 23°C; 60%RH; the cable under test pass through the center of the Rogowski coil

### 3.1 CPHX9000A Series

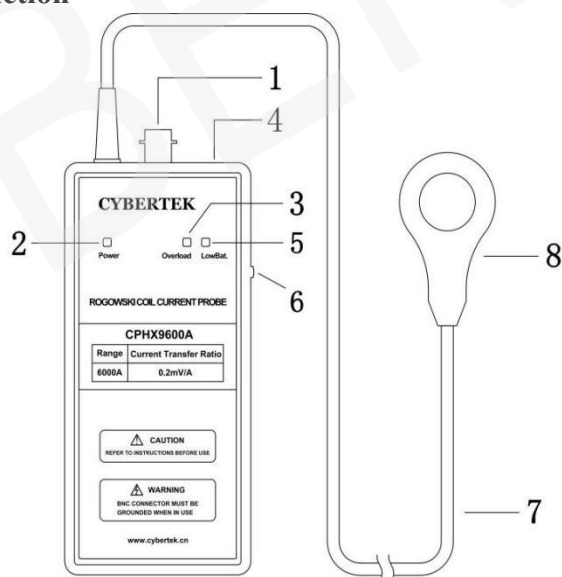
Model	CPHX9012A	CPHX9030A	CPHX9060A	CPHX9120A	CPHX9300A	CPHX9600A
Current range	120Apk	300Apk	600Apk	1200Apk	3000Apk	6000Apk
Range sensitivity	10mV/A	5mV/A	2mV/A	1mV/A	0.5mV/A	0.2mV/A
Typical precision	±2%					
High frequency bandwidth (-3dB)	100MHz					
Rise time	≤ 3.5ns					
Low frequency cutoff(Hz)	65	32	15	7.2	3.5	1.5
di/dt (kA/us)	30	85	150	300	850	1500
Output noise	1.8mVrms					
Output impedance	50Ω					
Output connector	BNC					
Maximum output voltage	±1.2Vpk	±1.5Vpk	±1.2Vpk	±1.2Vpk	±1.5Vpk	±1.2Vpk
Power supply	USB 5V/2A (Standard adaptor)					

### 3.2 CPHX9000B Series

Model	CPHX9012B	CPHX9030B	CPHX9060B	CPHX9120B	CPHX9300B	CPHX9600B
Current range	120Apk	300Apk	600Apk	1200Apk	3000Apk	6000Apk
Range sensitivity	10mV/A	5mV/A	2mV/A	1mV/A	0.5mV/A	0.2mV/A
Typical precision	±2%					
High frequency bandwidth (-3dB)	220MHz					
Rise time	≤ 1.59ns					
Low frequency cutoff(Hz)	65	32	15	7.2	3.5	1.5
di/dt (kA/us)	65	185	328	650	1850	3280
Output noise	1.8mVrms					
Output impedance	50Ω					
Output connector	BNC					
Maximum output voltage	±1.2Vpk	±1.5Vpk	±1.2Vpk	±1.2Vpk	±1.5Vpk	±1.2Vpk
Power supply	USB 5V/2A (Standard adaptor)					

## 4. Product and Accessories

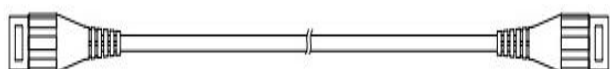
### 4.1 Product instruction



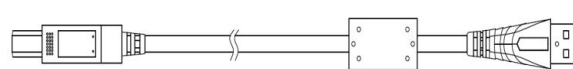
1. Signal output connector: standard BNC connector, able to adapt oscilloscope of any brand with standard NC cable.
2. Power supply indicator light: lighted green when the probe is powered.
3. Overload indicator light: lighted red along with buzzer going off when the current under test overloaded.

4. USB 5V power supply connector: standard Type B USB connector with standard USB power supply connecting cable.
5. Low power alarm indicator light: lighted red when the battery voltage goes low, please exchange batteries.
6. Power supply switch.
7. Connecting cable: standard version 1.5m long, can be customized.
8. Rogowski coil: realizing current measurement by putting wire under test through Rogowski coil.

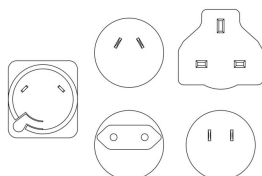
## 4.2 Accessories Instruction



Coaxial current output cable (CK-310:1m)



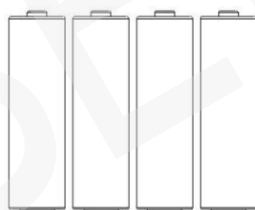
USB cable (AM-BM, 1.5m)



Power supply adaptor (USB output: DC5V/1A)



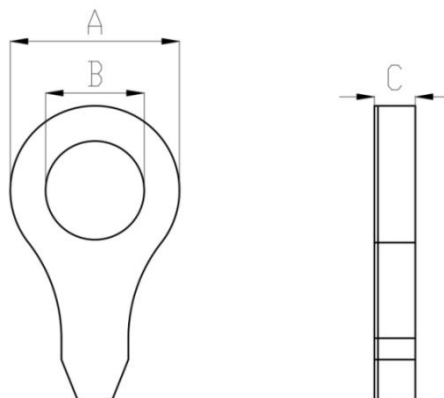
Thorough type 50Ω load (CK-50)



AA batteries (alkaline dry battery, 4 x AA 1.5V)

The battery life is about 12 hours

## 5. Mechanical Specification



Model	CPHX9000A	CPHX9000B
Rogowski coil outer diameter A	24mm	17.4mm
Rogowski coil inner diameter B	14mm	6mm
Rogowski coil thickness C	5.8mm	8.2mm
Rogowski coil cable length	1.5m	1.5m
BNC cable length	1m	1m
Integrator box size	Around 150*70*26mm	Around 150*70*26mm
USB cable (AM-BM)	Around 1.5m	Around 1.5m
Power supply adapter	59mm*30mm*20mm	59mm*30mm*20mm
Probe weight	185g	200g

## 6. Environmental Specifications

Working temperature	Rogowski coil	-10°C~70°C
	Integrator box	0°C~40°C
Storage temperature	-10°C~60°C	
Working humidity	≤85%RH	
Storage humidity	≤90%RH	

## 7. Measurement Procedure

- When the probe is connected with the oscilloscope or other measurement devices, the input impedance should be set to 50Ω and the attenuation ratio of the oscilloscope should be set according to the probe sensitivity index. For instance, the sensitivity of CPHX9012A is 10mV/A, thus the ratio on oscilloscope need to be 100X; the sensitivity of CPHX9060A is 2mV/A, thus the ratio on oscilloscope need to be 500X.
- The green power supply indicator light will be lighted when the probe is powered on.
- The cable under test need to pass through the center of the Rogowski coil.
- Power on the circuit under test.
- After the measurement, power off the circuit first, and remove the Rogowski coil later.

## 8. Attentions

### Note

- ✧ To ensure the precision, the cable under test should always pass through the center of the Rogowski coil during measurement.
- ✧ To ensure high accuracy, please stay far away from strong magnetic interference source (e.g. inductor/transformer).
- ✧ To ensure high accuracy, please stay away from high voltage signal interference sources with high

dV/dt (e.g. signals over 100V/us) .

- ✧ To determine if there's strong interference source nearby: put the Rogowski coil near the cable under test instead of on it, and measure the magnitude of the interference signal nearby.

## 9.Care and Maintenance

- ✧ Keep the probe clean and dry.
- ✧ Please clean the probe with soft and dry cloth instead of chemical agents.
- ✧ When not using probe, please put it in the standard case and put in a cool, clean, and dry place.
- ✧ Please put the probe in our standard case during transportation for shockproof protection.
- ✧ Do not forcefully push the input and output cable or excessive twisting, bending, or knotting it.

## 10.Warranty

Please refer to the warranty instruction.

## 11.Packing List

Packing List	
Current probe	1
USB output adapter(CK-605A)	1
USB power supply cable (CK-315B)	1
BNC output cable (CK-310)	1
AA alkaline dry battery	4
50 $\Omega$ through load (CK-50)	1
Instruction manual	1
Warranty card	1
Test report	1

# CYBERTEK

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