OC4000 Series Current Probes
User Manual

- **OC4022**
- **OC4052**
- **OC4024**
- **OC4054**

For product support, visit:www.owon.com.hk/download

※：The illustrations, interface, icons and characters in the user manual may be slightly different from the actual product. Please refer to the actual product.

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General Warranty

We warrant that the product will be free from defects in materials and workmanship for a period of 1 years from the date of purchase of the product by the original purchaser from our company. This warranty only applies to the original purchaser and is not transferable to a third party.

If the product proves defective during the warranty period, we will either repair the defective product without charge for parts and labour, or will provide a replacement in exchange for the defective product. Parts, modules, and replacement products used by our company for warranty work may be new or reconditioned like new. All replaced parts, modules and products become the property of our company.

In order to obtain service under this warranty, the customer must notify our company of the defect before the expiration of the warranty period. Customer shall be responsible for packaging and shipping the defective product to the designated service centre, a copy of the customers proof of purchase is also required.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care.

We shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than our company representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of not our supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

Please contact the nearest Sales and Service Offices for services.

Excepting the after-sales services provided in this summary or the applicable warranty statements, we will not offer any guarantee for maintenance declared or hinted, including but not limited to the implied guarantee for marketability and special-purpose acceptability. We should not take any responsibilities for any indirect, special, or consequent damages.

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1.Product Introduction

The OC4000 series current probe utilizes an advanced magnetoelectric inductor to precisely measure current signals by detecting the magnetic field signals generated by the current. It is primarily designed for measurement and analysis of conductor currents.

The measurement range of this series of current probes is 20A/40A (DC + peak AC). Its frequency bandwidth for measuring current signals can reach up to 50MHz.

This series of current probes can be used in conjunction with our OD5000 series differential probes to conduct a comprehensive analysis of voltage, current, and power in circuits. The delay error between any two probes is less than 1ns.

This series of current probes boasts an exquisite appearance and a sturdy structure, while also offering high stability and precision.

Usually, it may be used at the following locations:

- Non-contact current measurement
- Power analysis measurement
- New energy application design
- LED power supply design
- Switching power supply design
- Power convert design, etc
- Inverter power supply, UPS power supply
- Welding and electroplating power supplies
- Variable frequency drive, variable frequency household appliance
- Motor detection and maintenance
- Low voltage electrical testing
- Electrical and electronic experiment
- Electricity and power transmission experiments, etc

2. Technical Specifications

Main Technical Specifications

Electrical Performance				
Model	OC4022	OC4052	OC4024	OC4054
Bandwidth (-3dB)	25MHz	50MHz	25MHz	50MHz
Rise time	14ns	7ns	14ns	7ns
Maximum measured current	20A(DC + peak AC)		40A(DC + peak AC)	
Current conversion ratio	100mV/A		50mV/A	
Accuracy	± 3%			
Maximum measured pulse current	30A(Tp ≤10μs)		60A(Tp ≤10μs)	
Maximum measured voltage to ground	400V(DC + peak AC)			
Noise	≤ 1mVrms			
Linearity	±1%			
Delay time	20ns±1ns			
Power adapter output voltage	DC12V，1A			
Power adapter input power supply	AC100~240V，50~60Hz			

Supplementary Characteristics

Mechanical Specifications	
Maximum measured wire diameter	Approximately 4.5mm
Output cable length	Approximately 130cm
Probe body size	Approximately 188×40×24mm
Weight	Approximately 150g
Environmental Specifications	
Working temperature	0~40℃

Storing temperature	-10~45℃
Working humidity	85%RH
Storing humidity	90%RH
Working altitude	3000m
Storing altitude	12000m

3. Quick Start

This chapter will briefly introduce the appearance of the OC4000 series current probe, allowing you to quickly understand the OC4000 series current probe. At the same time, we will inform you of the basic checks that need to be done after receiving this product to ensure its normal operation.

Schematic diagram of current probe

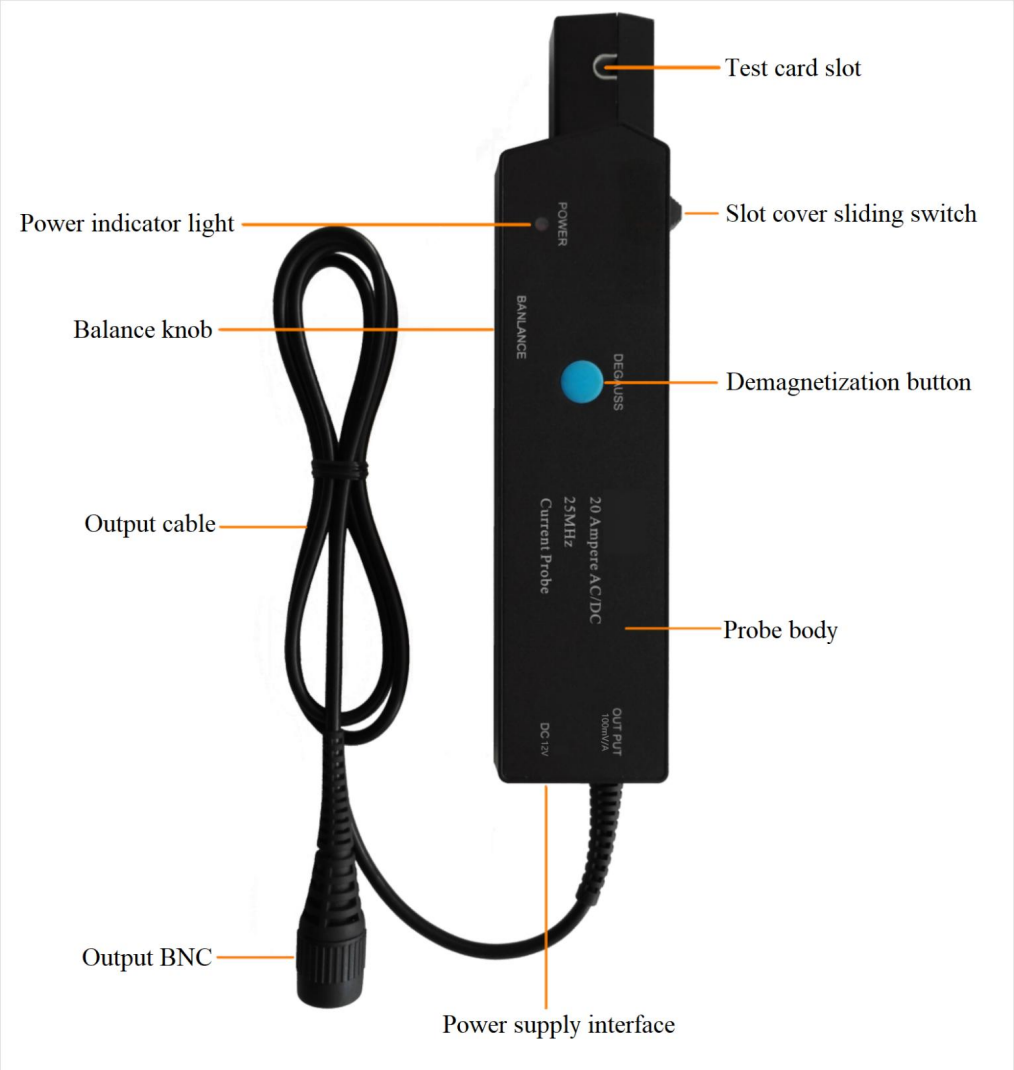


Figure 3-1 OC4000 Series Current Probe

Preliminary inspection

1. Inspection of goods

Each of our products has undergone strict inspection before leaving the factory. When you receive the product, please first check if the packaging box is intact. If the packaging box is damaged, you must immediately open it for inspection to prevent the product from being damaged or accessories from being lost during transportation. If any product damage or missing accessories are found, please contact the carrier and distributor immediately.

Packing list:

- One manual
- One current probe
- One power adapter

2. Pre use inspection

Before plugging the power adapter into the power outlet, please confirm that the power voltage used is normal. The power supply voltage should be as shown in the table below. If it is not normal, it may cause damage to this product.

Adapter input voltage range	Frequency range
AC100V~240V	50~60Hz

Warning: To prevent damage, please use the original power adapter of this product!

4. Operating Instructions

The use of the OC4000 series current probe is very simple, but users who are not familiar with this product should read this manual completely before starting to operate it.

Operation Steps

1） Before use, it is necessary to confirm that the input power voltage of the power adapter is normal.

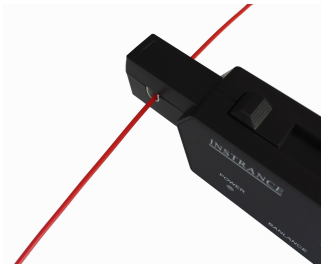
2） In order to obtain accurate measurement results in different testing scenarios, demagnetization and DC balance adjustment should be performed before testing. The specific steps are as follows:

- Power on the oscilloscope and allow it to warm up for about 20 minutes. Set the oscilloscope channel used for connecting the probe to the highest sensitivity level and adjust it to zero;
- Connect the BNC output of the current probe to the channel input terminal of the oscilloscope after zero adjustment;
- The test card slot of the current probe should be empty. Toggle the sliding switch on the upper cover of the card slot to ensure that the upper cover of the card slot is properly closed;
- Press the demagnetization button;
- Adjust the balance knob to make the displayed signal zero.

3） Slide the upper cover of the card slot backwards, open the upper cover of the test card slot, insert the test conductor into the test card slot, and push the sliding switch to close the upper cover of the card slot. During this process, the test conductor should remain unpowered.

4） Energize the conductor, adjust the oscilloscope settings as needed, and read the measurement results. A positive measurement result indicates

that the current flowing through the conductor is consistent with the direction of the arrow marked on the cover of the test card slot, as shown in below figure.



5） After the test is completed, disconnect the power supply of the conductor first, and then remove the conductor from the card slot.

Example of usage techniques

1） When measuring the differential current waveform of two conductors, the two conductors can be simultaneously inserted into the test card slot in opposite current directions for measurement. When measuring the superimposed current waveform of two conductors, the two conductors can be inserted into the test card slot in parallel in the same current direction for measurement.

2） When the test current is relatively low and the test sensitivity needs to be improved, the wire can be wound several times and passed through the slot. The required result can be obtained by dividing the measured reading by the number of wires passed through the slot. As shown in below figure.



Simple fault phenomena and troubleshooting methods

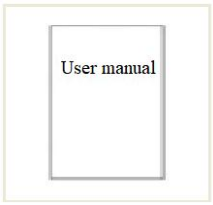
The power indicator	Check the connection between the power adapter

light is not on or flashing.	plug and the power socket, or the connection between the output and the probe. Check if the power adapter is working properly.
The measured waveform cannot be displayed stably or has significant errors.	Check if the probe test card slot is tightly closed. Check the connection between the probe output and the oscilloscope. Replace the probe or measuring instrument for troubleshooting.

5. Appendix

Appendix A: Accessories

(The accessories subject to final delivery.)
Standard Accessories:



User Manual



Power Adapter

Appendix B: Safety Operating Specifications

- Use the correct power adapter: Only use the original power adapter provided with this product to avoid damaging the probe.
- Master and adopt the correct connection and disconnection methods: Before connecting or disconnecting the test object, it must be ensured that the test object is in a non-charged state.
- Master and adopt the correct connection and disconnection methods: When connecting, first connect the probe output end to the test instrument and then connect the probe input; when disconnecting, first disconnect the test input and then disconnect the probe output end.
- Grounding: This product is connected to the earth ground of the oscilloscope through the BNC output terminal. During use, it is essential to ensure reliable grounding.
- Please note that this product is only allowed to measure objects with a live voltage range below 600VAC. Do not use it beyond its designated range. It is prohibited to measure bare conductors.
- Please do not use this product with its casing opened. Non-professionals are advised not to open the casing of this product.

- Please do not use this product in flammable or explosive environments.
- Please do not use this product in an excessively humid environment. Keep this product dry and clean. Electric shock accidents may occur if the machine is wet or measured with wet hands.