

High Frequency AC/DC Current Probe

MCP3002 (200A/ 30MHz)

MCP3010 (1000A/ 12MHz)

MCP3020 (2000A/ 12MHz)

MCP3050 (5000A/ 12MHz)

MCP3050D (5000A/1.5MHz)

MCP3100 (10000A/1.5MHz)

MCP3200 (20000A/1.5MHz)



产品说明书

Product User Manual

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.

Notice

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.

Warning

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

- **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

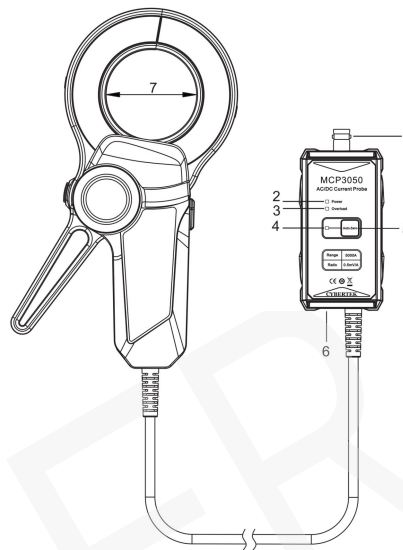
- The sensor head is composed of precision components. The rapid change of temperature or the external impact could damage the sensor, so please avoid vibration or strike when using.
- MCP3000 series product is neither waterproof nor dust-proof. Please do not use it in dusty or wet environment.
- The sensor head is a precision component. Please make sure the sensor is protected during use, as any damage may affect its function.

1. Summary

MCP3000 series product is a type of current probe that is able to measure AC and DC at the same time. The maximum measurable current of it is 20000A (rms), with typical accuracy of 2% and maximum bandwidth of 30MHz. It has low insertion loss and is able to measure high frequency current. MCP3000 contains auto zero set function and overload alarm function. With standard BNC output connector and external power supply, it can easily connect with oscilloscope of any brand.

2. Probe Parts Description

- Take MCP3050 as example



- ❖ **BNC Output Connector**

- ❖ **Power supply indicator light**

- ❖ **Overload Indicator LED**

If / when the current under measurement exceeds the limit current, the red LED will light up and the buzzer will sound an alarm.

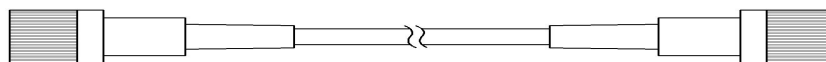
- ❖ **Auto-zero Set button:** To measure accurately, zero set the probe to prevent the environmental factors such as earth magnetic field or temperature drift from affecting the result.

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

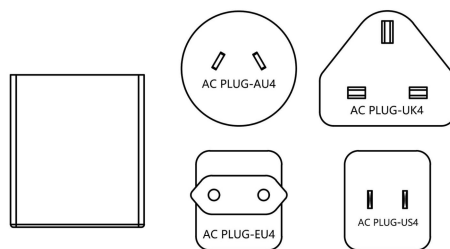
- ❖ **External Power Supply Connector:** 5V-Type C.

- ❖ **Clamp:** the current testing clamp. The maximum conductor diameter of the MCP3002 is 12mm. The maximum conductor diameter of the MCP3010/MCP3020/MCP3050 is 54mm. The maximum conductor diameter of the MCP3050D/MCP3100/MCP3200 is 85mm, or the copper bar of 150mm width.

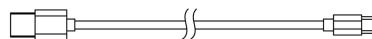
- Accessories



Coaxial Output Cable (CK-310): 1m



Power Supply Adapter (CK-605A)



USB cable

3. Electronics Characteristics

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

◆ Small Pliers

Model	MCP3002	MCP3010	MCP3020	MCP3050
Maximum Measurable Current	200Arms	1000Arms	2000Arms	5000Arms
Peak Value Current	280Apk	1500Apk	3000Apk	7000Apk
Range Sensitivity	10mV/A	2mV/A	1mV/A	0.5mV/A
Typical Precision (DC,45Hz~66Hz)	±2%rdg. ±2mV	±2%rdg. ±2mV	±2%rdg. ±1mV	±2%rdg. ±1mV
Bandwidth (-3dB)	30MHz	12MHz		
Power supply	DC 5V/2A （Standard Adaptor）			
Clamp diameter	12mm	54mm		
Terminal load	≥100kΩ			

◆ Large Pliers

Model	MCP3050D	MCP3100	MCP3200
Maximum Measurable Current	5000Arms	10000Arms	20000Arms
Peak Value Current	7000Apk	14000Apk	28000Apk
Range Sensitivity	0. 5mV/A	0. 2mV/A	0. 1mV/A
Typical Precision (DC,45Hz~66Hz)	±2%rdg. ±1mV	±2%rdg. ±1mV	±2%rdg. ±1mV
Bandwidth (-3dB)	1. 5MHz		
Power supply	DC 5V/2A (Standard Adaptor)		
Clamp diameter	long (max) : 150mm wide (mas) : 85mm		
Terminal load	≥100k Ω		

4. Operating Methods

- ✧ Set the Coupling mode of the oscilloscope to DC, oscilloscope input impedance to $1M\Omega$.
- ✧ Set the correct attenuation ratio in oscilloscope。for example, the probe MCP3010 (2mV/A), oscilloscope should be 500X.
- ✧ Turn on the power , the indicator should be lighted green.
- ✧ 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 zero position of the probe, so user better not move the probe after zero set complete.
- ✧ When measuring high frequency large current about 1kHz, the position of the conductor will cause the increase of error and distortion of waveform. Please set the conductor in the central position. For those conductors not under test with high frequency large current about 500A or 1kHz, please set them away from the jaw, or the measurement error and waveform distortion is likely to occur.

5. Mechanical Specification

	MCP3002	MCP3010/MCP3020/ MCP3050	MCP3050D/MCP3100/ MCP3200
Size of current clamp	156*32*16mm	215*105*42mm	334*137*48mm
Size of output box	97*50*25mm		
Operating altitude	0~2000m		
Max size of conductor under test	Diameter 12mm	Diameter 54mm	Diameter 85mm, or copper bar of 150mm width.
Length of the connecting cable between clamp and box	1m		
Length of BNC cable	1m		

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
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
DC5V/2A adapter (CK-605A)	1
BNC output cable (CK-310)	1
USB cable	1
Instruction manual	1
Warranty card	1
Test report	1

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Published in China, May. 1, 2026