

High Voltage Differential Probe P1000 Series

P1300 1300V_{pk}/50MHz

P1500A 1500V_{pk}/100MHz



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.

To the safely use the machine, 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 the violation of matters needing attention in operation.



- Please be careful to get an electric shock, pay attention to the highest input voltage.
- Do not operate in wet/damp or combustible conditions.
- Make sure to close the circuit under test before access to the probe.
- Turn off the circuit after the measurement, and then remove the probe.
- While BNC lines connect to the oscilloscope or other devices, ensure the BNC terminal grounding.
- Please check the probe skin if there is any breakage, stop using it if happen.
- Select the product standard adapter power supply.

P1000 Series Briefing

Type	Max input differential voltage	Bandwidth	Attenuation ratio
P1300	1300V	50MHz	50X / 500X
P1500A	1500V	100MHz	50X/500X

1. Introduction

P1000 Series High Voltage Differential Probes are designed for the measurement of high voltage differential signal, to meet the demand for floating measurement.

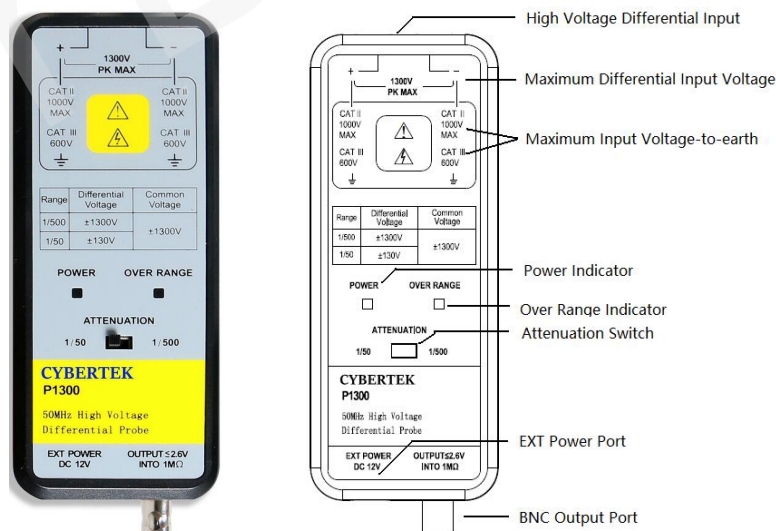
- The probe has a standard BNC port which can be connect to the oscilloscope of any brand.
- The probes have great CMRR which is very important in many power electronics applications.
- The probe can provide sound alarming function when the overload occurs.

2. Application

- Floating voltage measurement
- Inverter
- Switch Power Supply
- Welding, plating power supply
- Induction heating, electromagnetic oven
- Motor driver design
- Electronic ballast design
- CRT display design
- Inverting, UPS power supply
- Inverter appliance
- Power conversion and related design
- Experiment of electrical engineering
- Low voltage test
- Power electronics and power transmission experiment, etc.

3. Products and accessories

- Main part of the probe
Take P1300 as example:

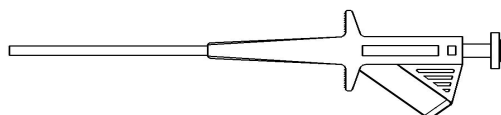


Detailed Instruction

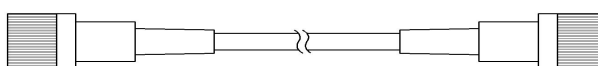
- ✧ Input port: The red line is positive and black line is negative. When the connection is reversed, the output will be inversed.

- ✧ Attenuation: Different attenuations symbolize different measurement range. 500X means the max measuring voltage is 1300V and 50X means 130V. The attenuation ratio setting of the Oscilloscope should be compatible with the attenuation of the probe.
- ✧ Over Range Indicator: The Indicator will be lighted red when the measurement is out of range.
- ✧ Output port: The standard BNC output port can fit any kind of oscilloscope. But the Input Impedance of the oscilloscope should be 1M Ω , otherwise it can cause the attenuation of the output. For instance if the Impedance is 50 Ω , the output will be 50% of the actual value.
- ✧ Power port: DC 12V port, able to be powered by standard DC adapter.

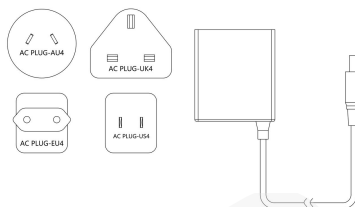
■ Accessories



Pincer Clip (CK-281 One Pair of Red and Black)



BNC Output Line (CK-310)



Power Adapter (CK-612B)

Product standard accessories description:

Model	P1300/P1500A
Pincer Clip(CK-281)	CATIII 1000V
Output Line(CK-310)	Double BNC Output Line: 1m
Power Adaptor(CK-612B)	DC 12V/1A

4. Electronic specification

Model		P1300		P1500A	
Bandwidth(-3dB)		50MHz		100MHz	
Rise time		≤7ns		≤3.5ns	
Accuracy		±2%			
Attenuation		50X/500X		50X/500X	
Max differential measuring voltage (DC + Peak AC)		50X	±130V	50X	±150V
		500X	±1300V	500X	±1500V
Common mode voltage (DC + Peak AC)		±1300V		±1500V	
Max differential voltage versus frequency curve		Reference Figure 1		Reference Figure 2	
Maximum input voltage-to-earth (Vrms)		600V CATIII 1000V CATII			
Input impedance	Single-ended to ground	5MΩ			
	Between inputs	10MΩ			
Input capacitor	Single-ended to ground	<4pF			
	Between inputs	<2pF			
CMRR	DC	> 80dB			

	100kHz	> 60dB			
	1MHz	> 50dB			
Noise (Vrms)		50X	< 50mV	50X	< 60mV
		500X	< 300mV	500X	< 300mV
Differential overvoltage detection level		50X	≥ 140V	50X	≥ 150V
		500X	≥ 1400V	500X	≥ 1500V
Delay time	Probe	about 10ns			
	BNC Line(1m)	about 5ns			
Overload indicator (red light)		Yes			
Terminate load		≥ 100kΩ			
Power adaptor		DC 12V/1A			

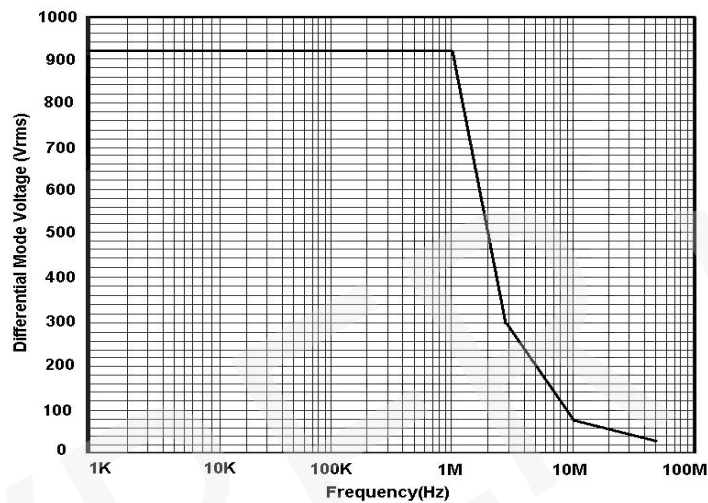


Figure 1: Maximum differential mode voltage of P1300 vs. Frequency

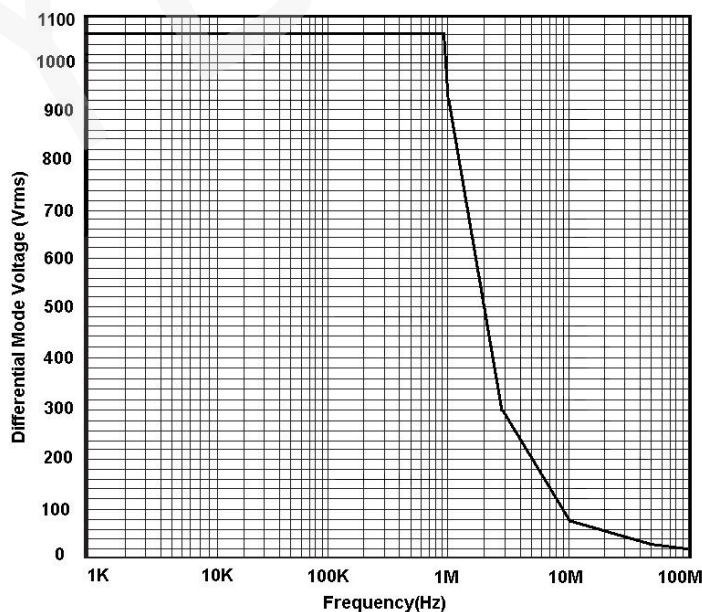


Figure 2: Maximum differential mode voltage of P1500A vs. Frequency

5. Machine specification

Model	P1300/P1500A
Differential input line	28cm
Output line(CK-310)	1m
Clip CK-261	85*40*17mm
Size(Length*Width*Height)	150*58*24mm
Weight	192g

6. Environment characteristics

Working Temperature	0°C~50°C
Storing Temperature	-30°C~70°C
Working Humidity	≤85%RH
Storing Humidity	≤90%RH
Working Altitude	3000m
Storing Altitude	12000m

7. Operating steps

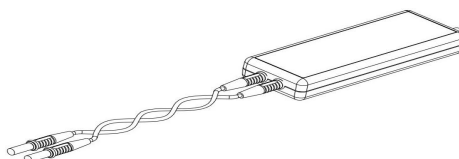
- ✧ You should estimate the tested voltage amplitude before testing, please do not use if exceeds the voltage range, because probably the probe will be damaged.
- ✧ Connect the input lead and output lead to the probe; and then connect the probe to oscilloscope or other instruments.
- ✧ Connect the power adapter to voltage probe, the power indicator light turns on green. Please select proper range based on the tested voltage; when the tested voltage exceeds range, the overload indicator light is on.
- ✧ Please set proper attenuation rate for the oscilloscope or other instruments according to the probe range; and adjust the oscilloscope sensitivity based on the tested voltage.
- ✧ Connect the probe clips based on needs, start after connecting to the circuits to be tested. When testing, the probe body should keep away from high voltage pulse circuits to reduce interference to the probe.
- ✧ Turn off the probe power after the testing is completed, first disconnect the two inputs from the tested points, and then unplug the BNC plug from the oscilloscope.

8. Safety notices:

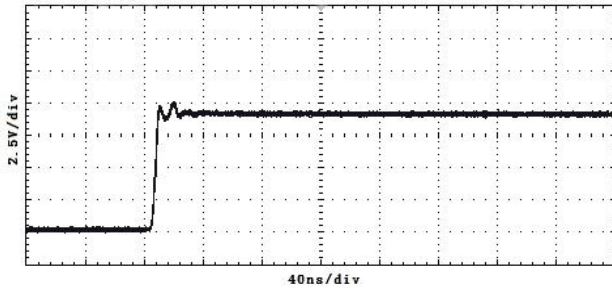
Note

1) Please try to wind the input leads when testing, which is better for eliminating lead-in inductance and external noise, to improve the ability of high frequency response and anti-interference.

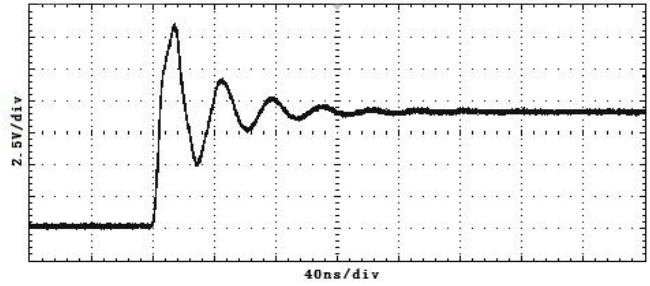
The winding method is shown below:



2) It is better not to extend input lead when testing; Otherwise it may introduce more noise. If extra extension lead is necessary, please ensure the extension leads are at same length, and the input frequency is under 5MHz, errors may exist if exceeds 5MHz output.



Without extender leads



With extender leads

9. Care and maintenance

- ✧ Keep the probe clean and dry.
- ✧ Please wipe with soft dry cloth when clean needed, must not use chemicals to clean.
- ✧ Please put the probe in the package provided, and put it in cool, clean and dry places.
- ✧ Please put the probe in the package provided to prevent shock.
- ✧ Do not forcefully pull the input and output lead to prevent bending, twisted and folding.

10. Warranty

Please follow the instruction of the Warranty Card

11. Packing list

Packing List			
Differential voltage probe	1	Instruction book	1
Adaptor(CK-612B)	1	Warranty card	1
Insulation pincer clip(CK-281)	1	Certificate of calibration	1
Output line(CK-310)	1		

CYBERTEK

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