差分探头
Differential Probe

- N2008Apro
- N2015Apro
- N2040Apro
- N2060Apro

INSTRUCTION MANUAL
使 用 说 明 书

目录

前言

感谢您购买示波器差分探头，为此我们将给您最好的服务：

■请认真阅读本用户手册，注意安全措施。

符号的意义

 警告！请使用仪器前参阅用户手册。

在本用户手册，未能遵守指示标志或在阅读此用户手册之前操作，可能导致人身伤害或损坏设备和装置

- ■ 小心注意触电危险，注意最高输入电压。
- ■ 请勿在潮湿的环境下或者易爆的风险下使用。
- ■ 接入探头前，确保被测电路关闭。
- ■ 测量结束后，先关闭被测电路，再关掉探头开关。
- ■ 使用前，确认差分探头是否有破损，若有请停止使用。

请选择该产品标配的适配器。

一、简述

差分探头提供一个安全的仪器给所有的示波器使用，它可以转换由高输入的差动电压进入一个低电压(<7V)，并且显示波形在示波器上，使用频宽高达 200MHz，非常适合大电力测试、研发、维修使用。

差分探头输出标示是设计在操作示波器 1MΩ的输入阻抗的相对衰减量，当使用 50Ω匹配器进衰减量刚好为 2 倍量。

可广泛用于开关电源、变频器、电子镇流器、变频家电和其它 电气功率装置等的研发、调试或检修工作中。

二、规格

型号		N2008Apro	N2015Apro	N2040Apro	N2060Apro
频宽(-3DdB)		DC-200MHz			
衰减比例		1:1000/100			
上升时间		1.75ns			
精度		±1%			
输入电压 Vp-p	X100	100V	200V	400V	600V
	X1000	1000V	2000V	4000V	6000V
输入电压		500V DC	1000V DC	2000V DC	3000V DC
输入电压		350V rms	700V rms	1400V rms	2100V rms
带宽限制(5MHz)		可切换：Full/5MHz			
输入阻抗		12MΩ/0.5pF 6MΩ/1F			
输出电压		<7V	<7V	<7V	<7V
示波器输入阻抗		1MΩ	1MΩ	1MΩ	1MΩ
共模互斥比		60Hz>80dB，100KHz>50dB			
电源		6V DC	6V DC	6V DC	6V DC

电源/变比按键：

按一下表示开机；长按按键直至电源灯关表示关机；

短按电源按键，变比转换，对应变比灯亮。

限频/归零按键：

短按限频，限频指示灯亮绿色；如果超载，过载指示灯亮红色；长按直至指示灯闪烁即归零，闪烁停止即归零完成。

注：

充电电压或电池不足，电源指示灯会慢闪烁。

可用电池或 6V 适配器供电，标配适配器。

机械规格

名称	规格
差分测试线	30cm/60cm
BNC 输出线缆	90cm
探头探钩 BP-368N	122*38*14.5mm
探头尺寸	187*83*41mm
探头重量	412g

三、操作环境及状况

	一般状态	使用操作中	储存
温度	+20℃…+30℃	0℃….+50℃	-30℃….+70℃
湿度	≤70%RH	20%…75%RH	10%…90%RH

双绝缘
安装类目III
污染程度 2
相关电压或最大接地：5000V RMS Max.
可用电池或 6V 适配器供电，标配适配器

四、操作程序

差分探头的输出端 BNC 接口与示波器连接。
如有需要先调整示波器上的垂直开关。
将示波器上的衰减率及垂直开关调整到一致的位置。

- 测试前应估计下被测电压值，若超过电压量程，可能会损坏探头。
- 电源适配器接入探头，探头开机，最好将探头档位调到最大；短按电源开关，当测试电压超过量程时，超压灯亮红色。

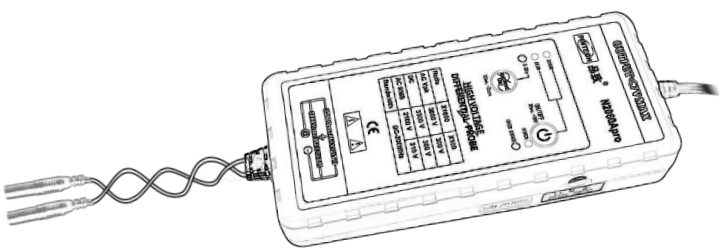
- 根据探头选择的变比，设置好示波器的衰减比例。
- 探头探钩连接被测物开始测量。
- 测试完毕后，先关掉被测电路，再关闭探头开关，将探钩与被测物断开，将 BNC 接口从示波器上拔出。

（注意）

- 电源必须打开。
- 实际的垂直偏向是等于衰减乘上示波器上所选择的垂直偏向，是使用负载 50Ω 的两倍。
- 差分探头 BNC 输出线连接示波器或者其它设备时，确保 BNC 端子可靠接地。

五、使用注意事项

在测量时应尽量使输入线缠绕，这样可以更好的消除引线电感和外界噪声，提高高频响应和抗干扰的能力。缠绕方式如下图所示：



尽量不要延长输入线，否则会引入更多的噪声。

六、配件

6V 适配器
W&T-AD1806A060030K
(6V/0.3A)

探头探钩
BP-368N
(1000V/3A)

七、维修

■ 维护

保养此产品时请使用原厂指定的工具，原厂将不负任何责任由其他不被认可的维修人员所做的维修。

■ 清洁

此产品不需要任何特定的清洁，如有需要，请用轻软干净的布沾上微量的清洁液轻轻的在产品外观擦拭。

■ 保固

除了在人为上的特意损坏，本产品是受保固并可以维修的，并不包含在安全规范的责任。

保固是以不超出发票上的金额，零件的更换及运送的费用。

保固是仅在正常操作下而造成的损坏，并不包含任何刻意的损坏，操作上的错误，机械上的操作不当，保养不当，负载或过压。原厂的保固是卖出后的 36 个月内，如有任意的非原厂的维修或更换零件，原厂保固将自然取消。

■ 维修

有任何的维修，保养或更换零件是在保固以外，请将产品退回原厂维修。

Contents

GENERAL

Thank you for purchasing PINTECH oscilloscope differential probe, we will serve you wholeheartedly!

■Please read this user manual carefully before use and pay attention to safety measures.

Symbol

⚠ Pl ease read this user manual carefully before use.
If haven't follow the signs or haven't read the user manual before use,may result in personal injury or damage to the equipment and device.

⚠

Pay attention to the risk of electric shock and pay attention to the highest input voltage.

Do not use in a humid environment or where there is a risk of explosiveness.

Before connecting the probe, make sure the circuit under test is turned off.

At the end of the measurement, turn off the circuit under test and then turn off the probe switch.

Before use,if the differential probe is damaged, please stop using it.

Please use PINTECH supply adaptor.

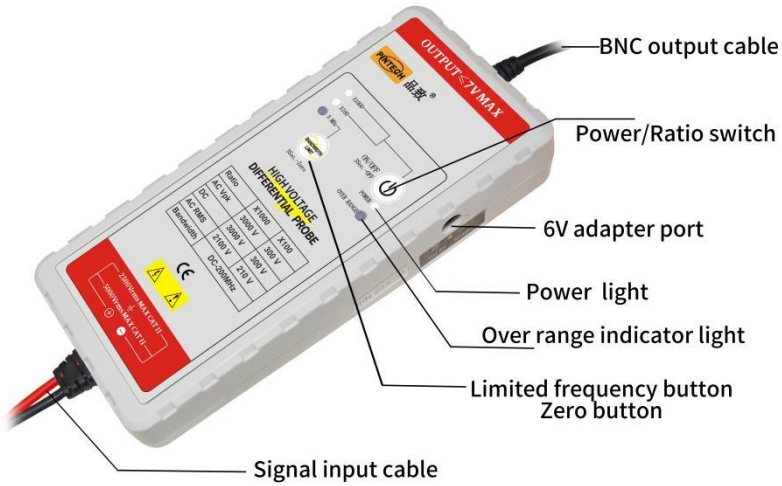
1. Introduction

Differential probe provides a safety means for measuring differential voltage to all models of oscilloscopes.It can convert the high differential voltage into a low voltage(<7V)and display on the oscilloscope.Its bandwidth is up to 200MHz,which is ideal for big power testing,development and maintain.

The Differential probe is designed to operate with the 1MΩ impedance oscilloscopes. When combine with the 50Ω load , the attenuation will be 2 times.

It can be widely used in the research and development, debugging or maintenance of switching power supplies, frequency converters, electronic ballasts, frequency conversion appliances and other electrical power devices.

Model		N2008Apro	N2015Apro	N2040Apro	N2060Apro
Bandwidth		200MHz	200MHz	200MHz	200MHz
Attenuation ratio		1:1000/100			
Rise Time		1.75ns	1.75ns	1.75ns	1.75ns
Accuracy		±1%			
Input voltage Vp-p	X100	100V@1/100	200V@1/100	400V@1/100	600V@1/100
	X1000	1000V@1/1000	2000V@1/1000	4000V@1/1000	6000V@1/1000
Input voltage		500V DC	1000V DC	2000V DC	3000V DC
Input voltage		350V rms	700V rms	1400V rms	2100V rms
Bandwidth Limited （5MHz）		Switchable: Full/5MHz			
Input resistance		Between inputs: 12MΩ/0.5pF			
		Each input to ground:6MΩ/1pF			
Output voltage		<7V	<7V	<7V	<7V
Oscilloscope input impedance		1MΩ	1MΩ	1MΩ	1MΩ
CMRR(typical)		60Hz>80dB, 100KHz>50dB			
Power		6V DC			



Power/ratio switch:

Press to start up; Hold down three seconds to indicate shutdown;Press the power button briefly, and the power light lighting, continue to Press the power button, the switching ratio transition.

Limited frequency / zero button:

Short press Limited frequency button, 5MHz light on green; If overl -oad, over range indicator light on red; Press and hold until the light blinks.

Note:

If the charging voltage or battery is insufficient, the power indicator light will blink slowly.

Can be powered by batteries or a 6V adapter, adapter is standard.

Mechanical Specifications:

Item	Specifications
Test cable length	30cm/60cm
BNC output cable	90cm
Probe hook BP-368N	122*38*14.5mm
Dimension	187*83*41mm
Weight	412g

3. Operating environment and conditions

	Reference	Use	Storage
Temperature	+20℃…+30℃	0℃…. +50℃	-30℃…. +70℃
Humidity	≤70%RH	20%…75%RH	10%…90%RH

Dual insulation
Installation category III
Degree of Pollution 2
Related voltage or max line-earth：5000V RMS Max.

4. Operating instruction

Connect the output BNC interface of the differential probe to the oscilloscope. Adjust the vertical switch on the oscilloscope if necess ary. Adjust the attenuation rate and vertical switch on the oscilloscope to a consistent position. The measured voltage value should be estimated before the test, if the voltage range is exceede -d, the probe may be damaged. Set the attenuation ratio of the oscill-

oscope according to the ratio selected by the probe. The probe hook is connected to the object to be measured and start measuring.After the test is completed, turn off the circuit under test first, then turn off the probe switch, disconnect the probe hook from the tested circuit, and unplug the BNC interface from the oscilloscope.

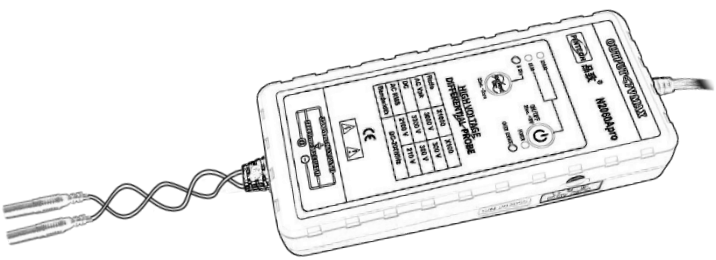
（Attention)

The power must be turned on.The actual vertical bias is equal to the attenuation multiplied by the vertical bias selected on the oscilloscope, which is twice as high as the 50Ω load used.

When connecting the differential probe BNC output cable to an oscilloscope or other device, ensure that the BNC terminal is securely grounded.

5.Using precautions

The input cable should be wound as much as possible during the measurement, which can better eliminate the lead inductance and external noise, and improve the high-frequency response and anti-interference ability.Like this:



Better don’t lengthen the input cable, otherwise will get more noise.

6. Accessories

6V Adapter
W&T-AD1806A060030K
(6V/0.3A)

Probe Hook
BP-368N
(1000V/3A)

7. Service

Maintenance

For maintenance,only use specified spare parts.The manufacturer can not be held responsible for any accident arising following a repair made other than its after sales service or approved repairs.

Cleaning

This probe does not require any particular cleaning.If necessary,clean the case with a cloth slightly moistened with the soapy water.

Warranty

Unless notified,our instruments are guaranteed against any manufacturing defect or material defect. They do not bear the specification known as the safety specification.

Our guarantee,which may not under any circumstances exceed the amount of the invoiced price,goes on further than the repair of our faulty equipment,carriage paid to our workshops.

Repair

Maintenance,repairs under or out of guarantee.Please return the product to the manufacturer.

N 系列有源差分探头选购指南 BUYING GUIDE

型号 Model	频宽 Bandwidth	输入阻抗（Input Impedance）	衰减比例 Attenuation Ratio	精度 Accuracy	输入电压 (ACp-p)
N1000A	50MHz	8MΩ//0.59pF	1:1000/100	±1%	1500V@1/1000 150V@1/100
N1015B*	100MHz	8MΩ//1pF	1:500/1:50	±1%	1500V@1/500 150V@1/50
N1008A	50MHz	4MΩ//1.25pF	1:100/10	±1%	800V@1/100 80V@1/10
N1008B	100MHz	4MΩ//1.25pF	1:100/10	±1%	800V@1/100 80V@1/10
N1015A	100MHz	8MΩ//0.59pF	1:1000/100	±1%	1500V@1/1000 150V@1/100
N1030A	50MHz	8MΩ//0.59pF	1:1000/100	±1%	3000V@1/1000 300V@1/100
N1030B	100MHz	8MΩ//0.59pF	1:1000/100	±1%	3000V@1/1000 300V@1/100
N1070A*	50MHz	20MΩ//0.5pF	1:1000/100	±1%	7000V@1/1000 700V@1/100
N1070APro*	50MHz	36MΩ//1pF	1:1000/100	±0.5%（DC-50Hz~1kHz）	7000V@1/1000 700V@1/100
N1070B*	100MHz	20MΩ//0.5pF	1:1000/100	±1%	7000V@1/1000 700V@1/100
N1100A*	100MHz	20MΩ//0.5pF	1:1000/100	±1%	10KV@1/1000 1KV@1/100
N1140A*	100MHz	20MΩ//0.5pF	1:1000/100	±1%	14KV@1/1000 1.4KV@1/100
N1140Apro*	100MHz	36MΩ//1pF	1:1000/100	±0.5%(50Hz~1kHz)	14KV@1/1000 1.4KV@1/100
N2008Apro*	200MHz	12MΩ//0.5pF	1:1000/100	±1%	1000V@1/1000 100V@1/100
N2015Apro*	200MHz	12MΩ//0.5pF	1:1000/100	±1%	2000V@1/1000 200V@1/100
N2040Apro*	200MHz	12MΩ//0.5pF	1:1000/100	±1%	4000V@1/1000 400V@1/100
N2060Apro*	200MHz	12MΩ//0.5pF	1:1000/100	±1%	6000V@1/1000 600V@1/100

注：带*的型号有两种供电模式（电池供电/适配器供电）* MODELS ARE BATTERY & ADAPTOR POWER SUPPLY VERSION.