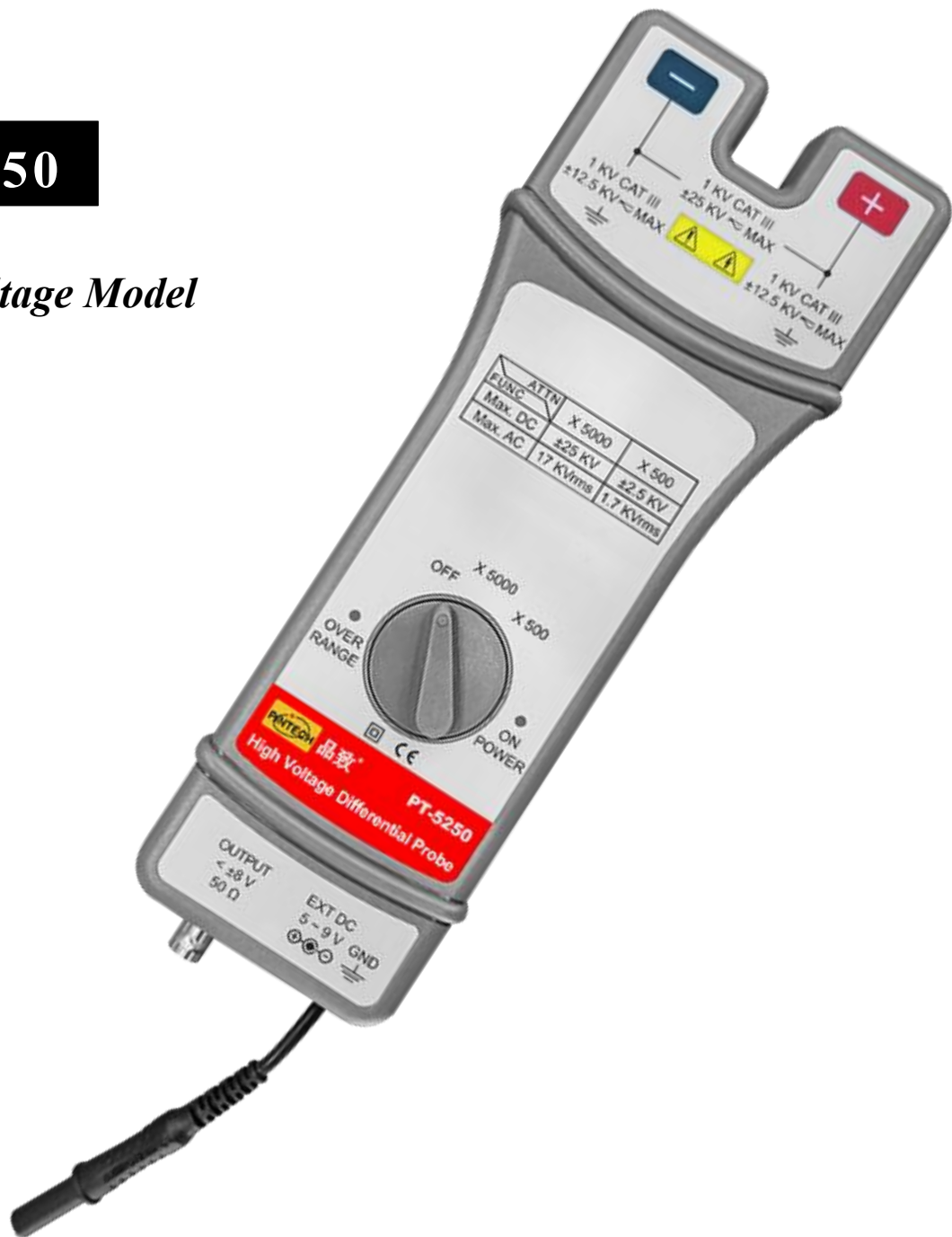


HIGH VOLTAGE DIFFERENTIAL PROBE

高压差分探头

PT-5250

High Voltage Model



INSTRUCTION MANUAL

使用说明书

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PT-5250

HIGH VOLTAGE DIFFERENTIAL PROBE

Differential Voltage Probe

Read the instructions before using the instrument:

1. Must acquire a differential voltage probe & get the best service from instrument.
2. Read carefully the USER MANUAL.
3. Respect the safety precautions.

SAFETY PRECAUTIONS

Warning, Risk of Electric Shock.

Respect the max input voltages.

1. Max differential voltage: ± 50 KV (DC+AC peak) or 14 KV RMS
2. Max voltage between each input terminal and ground:
12.5 KV (DC+AC peak) or 8.8 KV RMS



Do not use the probe in damp environment or where there is risk of explosion.

Do not use the probe with its case open.

Disconnect the inputs and outputs of the probe before opening the case.



When measuring ± 10 KV (DC+AC peak) or over 5 KV RMS high voltage, it is mandatory to check ground cable is connected properly and doing measurements.

It is to protect oscilloscope without any damages.

TO ORDER Differential Voltage Probe and

Accessories:

An Insulated BNC/BNC lead and two $\Phi 4$ mm, length 100 cm (BP-250)
Supplied an Adapter preset 9 V DC [115V(SP-115H) or 230V(SP-230H)]
2 x High voltage IC clips (BP-266N)
2 x Banana to Banana high voltage plug 30 KV DC/ 60 CM (BP-367).
2 x Alligator plug, 1 KV CAT III (BP-276N)
2 x High voltage extension cable, length is 1 meter / 30 KV DC (ETL-3100)
1 x Ground extension cable, length is 1 meter / 6 KV DC (ETG-6100)
Instruction Manual.

FEATURES:

PT-5250 is a differential voltage probe to provide an insulation instrument for all oscilloscopes using.

It converts the high differential voltage (≤ 50 KV peak) into a low voltage ($\leq \pm 5.0$ V) with reference to the earth for display on the oscilloscopes. Its frequency is up to 60MHz, it is designed especially for high voltage using.

The BNC output is designed to operate on an input with an impedance of 1 M Ω . It is 2 times of the 50 Ω .

PT-5250 can observe more exact measured testing voltage from DMM.(Oscilloscope accuracy is 3%, and DMM is 10 times.



When measuring ± 10 KV DC or over 5 KV RMS high voltage, it is mandatory to check ground cable is connected properly and doing measurements.

SPECIFICATIONS:

(1) Bandwidth:

DC - to 60MHz (-3 dB) for X500

DC - to 20 MHz (for attenuation X5000)

(2) Attenuation: x 500, or X5000**(3) Accuracy:** $\pm 2\%$ **(4) Voltage Input Ranges (DC+AC peak to peak):**

$\leq \pm 50$ KV DC for X5000, (i.e about 17 KV RMS or 25 KV DC) $\leq \pm 5$

KV DC for X500, (i.e about 1.7 KV RMS or 2.5 KV DC)

(5) Permitted Max Input Voltage

Max differential voltage: 50 KV DC (DC+AC peak to peak)

Max voltage between each input terminal and ground: 8.8 KV RMS

(6) Input Impedance:

Differential: 140 M Ω // 3 pF

Between terminals and ground: 280 M Ω // 1.5 pF

(7) Output: $\leq \pm 5$ V**(8) Output Impedance:** 50 Ω **(9) Rise Time:** 4.7 ns for X500; 17.5 ns for X5000**(10) Rejection Rate on Common Mode:**

60 Hz: >80 dB, 100 Hz: >60 dB, 1 MHz: >50 dB

(11) Power Supply: External 9 V DC power supply.**(12) Consumption:** 120 mA max (1.1 WATT)

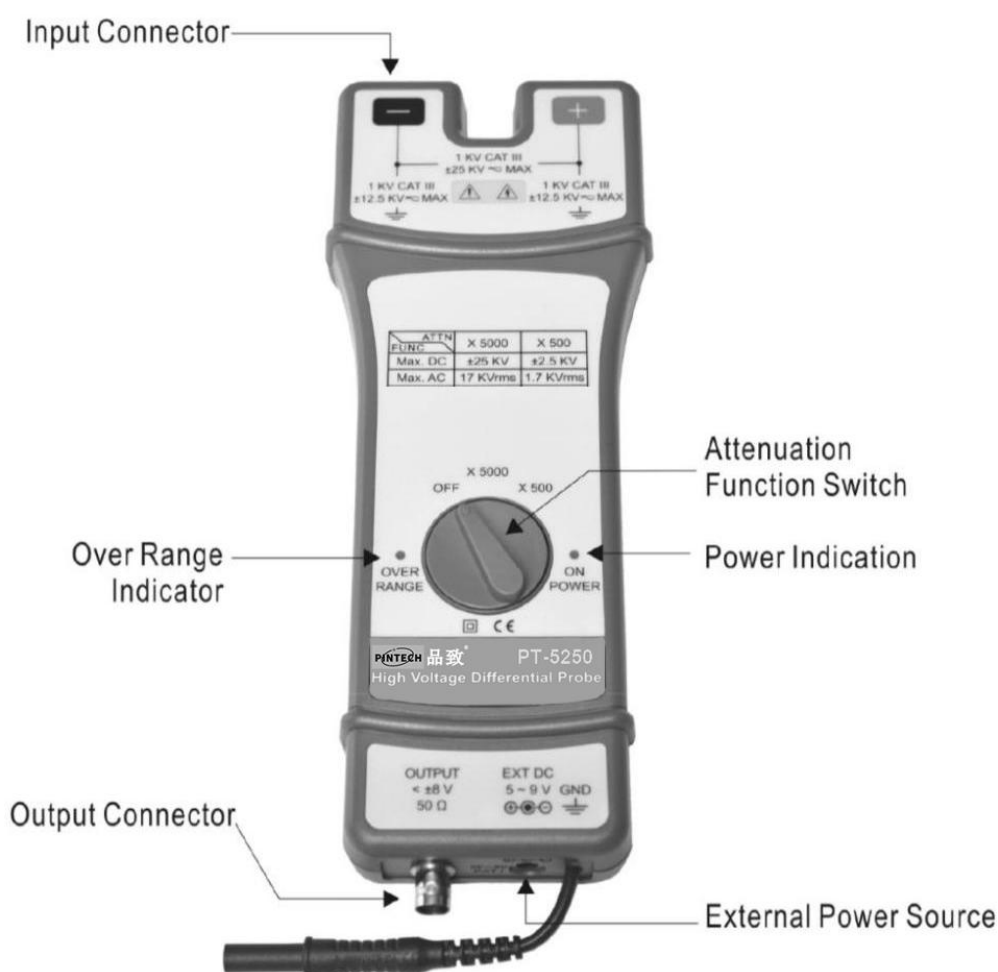
CAUTION!

(1) Please DO NOT hold the probe itself when measuring the high voltage is over 1 KV. Please put the probe itself on the working table.

(2) Please DO NOT measuring home electricity (including two-phase electricity and three-phase electricity). DO NOT measure over 10 KV RMS.

(3) Please let the probe has 30 minutes rest after having a 5 minutes normal measurement for over DC 10 KV or AC 7 KV RMS. It is able to give time for internal high voltage resistors to cool down.

PANEL DESCRIPTION:



OPERATING ENVIRONMENTAL CONDITIONS:

	Reference	Use	Storage
Temperature	+20°C ...+30°C	0°C ...+50°C	-30°C ...+70°C
Relative Humidity	≤ 70 % RH	10 % ... 85 % RH	10 % ...90 % RH

(1) Dimensions and Weight:

275 x 147 x 34 mm; 488 g

(2) Electrical Safety to IEC 1010-1:

Dual Insulation

Installation Category III Degree of

Pollution 2

Rated Voltage or Max Live-Earth: 10 KV RMS

(3) CE Mark:

Conforms to EN 50081-1 and 50082-1 standards

OPERATING PROCEDURE:

Connect to leads to the input and place the wire-grip on the circuit to be tested.

Connect the probe to the oscilloscope with the insulated BNC/BNC lead.

Adjust the vertical zero adjustment of the oscilloscope if necessary.

Select the attenuation ratio* and the vertical deviation of the oscilloscope in accordance with the conversion table below.



When measuring ± 10 KV DC or over 5 KV RMS high voltage, it is mandatory to check ground cable is connected properly and doing measurements.

The conversion table gives the real vertical deviation.

Attenuation	X5000	X500
MAX Voltage Input Range (DC+AC Peak)	50 KV p-p	5 KV p-p
DC MAX INPUT	± 25 KV	± 2.5 KV
AC RMS MAX INPUT	17 KV RMS	1.7 KV RMS

Vertical Deviation on the Oscilloscope in V/div	Real Deviation In V/div	
	X5000 Range	X500 Range
1	5 KV	500 V
0.5	2.5 KV	250 V
0.2	1 KV	100 V
0.1	500 V	50 V
50 m	250 V	25 V
20 m	100 V	10 V
10 m	50 V	5 V
5 m	25 V	2.5 V
2 m	10 V	1 V

[NOTE]

The real vertical deviation in V/div is equal to the attenuation factor multiplied by the range of vertical deviation selected on the oscilloscope. It will be doubled in the case of use of a 50 Ω load.

Example:

With the probe on factor x 500, the oscilloscope on 1 V/div, the real vertical deviation is $500 \times 1 \text{ V/div} = 500 \text{ V/div}$.

With a 50 Ω load on the input of the oscilloscope the deviation becomes: $500\text{V/div} \times 2 = 1\text{KV/div}$.

EXT. POWER SOURCE:

Power consumption of the probe are 120 mA, thus it not suits for battery, please use the accessory adapter only.

If there are any damage on the adaptor, please contact us and use the adaptor supply by us only. If the input power over 12 V DC will caused to the probe hard damage.

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 repairers.

CLEANING:

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

WARRANTY:

Unless notified to the misusing, 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 no further than the repair of our faulty equipment, carriage paid to our workshops.

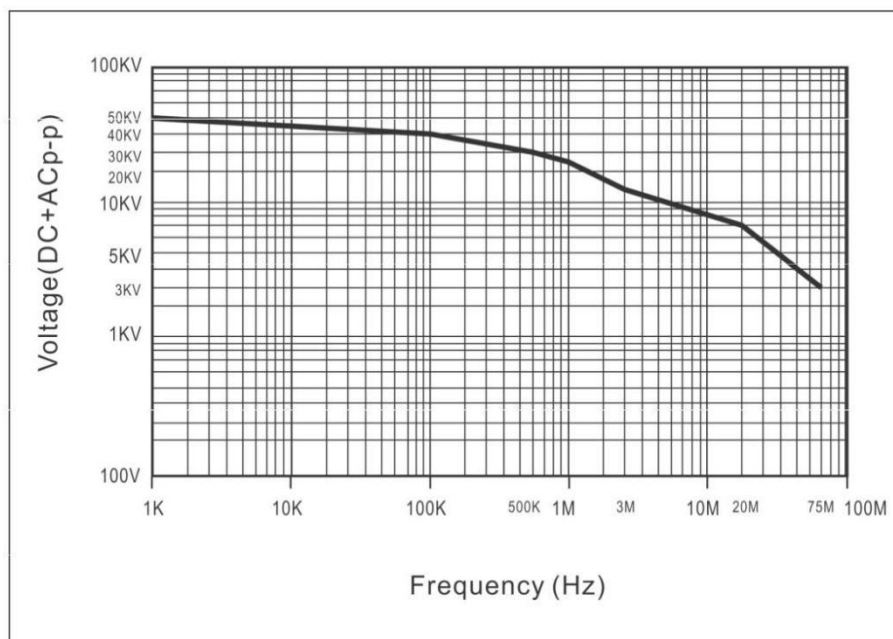
REPAIR:

Maintenance, repairs under or out of guarantee. Please return to product to your distributor.

DERATING CURVE:

The derating curve of the absolute maximum input voltage in common mode is show as follows:

1 KHz / 50 KV_{p-p}, 100 KHz / 40 KV_{p-p}, 500 KHz / 30 KV_{p-p}, 1 MHz / 25 KV_{p-p}, 3 MHz / 15 KV_{p-p}, 20 MHz / 7 KV_{p-p}, 60MHz / 3 KV_{p-p}



※ *Specification is subject to change as required by our company. Our website information shall be updated immediately if any change is done.*

Instruction booklet can be downloaded on our website. (Attached is the Ver. 01 of the instruction booklet).

PT-5250

高压差分探头

使用前请仔细阅读使用说明：

1. 请先获得一支差分探头。
2. 从使用说明取得最佳维修及服务。
3. 请详读使用者操作手册， 并注意安全注意事项。

安全注意事项：

请小心注意触电！

请注意最高输入电压！

最高差动电压: 50 KV(DC+AC peak) 或 14 KV RMS

输入端及接地端间的最大电压: ± 12.5 KV(DC+AC peak) 或 8.8 KV RMS

请勿使用此产品在潮湿的环境下或有易爆的风险下操作！

请勿使用此产品当此产品的盒盖被打开！

当打开此产品的盒盖时请将输出及输入端切断！



测量 ± 10 KV(DC+A peak), 或 5 KV RMS 以上的高电压, 必须强制检查接地引线是否已接妥再进行测量, 以避免示波器遭受损坏。

订购差分探头时内含：

双端 BNC 接头的测试缆线,长度 100 公分(BP-250)

一个 9 V DC 转换器[需指定规格 115 V(SP-115H)或 230V(SP-230H)]

一对高电压专用的 IC 夹(BP-266N)

一对指定规格的双端香蕉插头高电压传输线, 30KV DC/60 公分(BP-367)

一对高电压专用的鳄鱼夹, 1KV CAT III(BP-276N)

一对高电压延长线, 长度 1 公尺/30 KV DC(ETL-3100)

一条接地延长线, 长度 1 公尺/6KV DC(ETG-6100)

使用说明书

简述:

PT-5250 差分探头提供一个安全的绝缘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($\leq 50 \text{ KV peak}$) 进入一个低电压($\leq \pm 5.0\text{V}$), 并且显示波形在示波器上, 使用频率高达 60MHz, 是高电压专用型。

差分探头输出标示是设计在操作示波器 $1 \text{ M}\Omega$ 的输入阻抗的相对衰减量, 当使用 50Ω 匹配器时衰减量刚好为 2 倍量。

PT-5250 差分探头, 也建议在数字电表上观测更精确的实际测试电压值(示波器精确度为 3%, 数字电表约精准 10 倍)。



测量 $\pm 10 \text{ KV(DC+Apeak)}$, 或 5 KV RMS 以上的高电压, 接地引线 必须强制接妥。

规格:

(1) 频宽:

DC - 60 MHz (-3dB) for X500 档

DC - 20 MHz (-3dB) for X5000 档

(2) 衰减: X500, 或 X5000

(3) 精确度: $\pm 2\%$

(4) 输入电压范围 (**DC+AC peak to peak**)

$\leq 50 \text{ KV DC}$ for X5000, (约 17 KV RMS 或 25 KV DC)

$\leq 5 \text{ KV DC}$ for X500, (约 1.7 KV RMS 或 2.5 KV DC)

(5) 允许最高输入电压:

最高差动电压: $50 \text{ KV DC (DC+AC peak to peak)}$

输入端及接地端间最高电压: 8.8 KV RMS

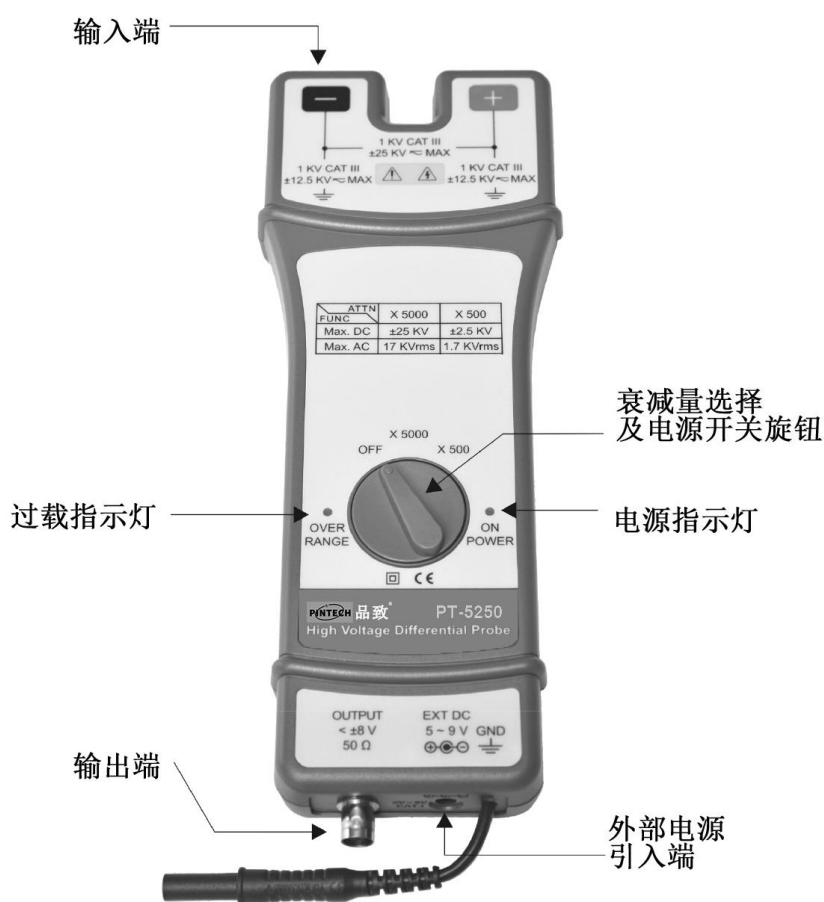
(6) 输入阻抗:

差动: $140 \text{ M}\Omega // 3 \text{ pF}$

单端到接地端间的输入阻抗: $280 \text{ M}\Omega // 1.5 \text{ Pf}$

- (7) 输出电压: $\leq \pm 5V$
- (8) 输出阻抗: 50Ω
- (9) 上升时间: 4.7ns for X500档, 17.5ns for X5000档
- (10) 杂讯抑制率:
60Hz: $> 80dB$; 100Hz: $> 60dB$; 1MHz: $> 50dB$
- (11) 电源: 指定外接9V DC电源 (必须使用本公司指定品)

测试棒面板说明:



操作环境及状况:

	一般状态	使用操作中	储存
温度	+20°C ...+30°C	0°C ...+50°C	-30°C ...+70°C
湿度	$\leq 70 \% RH$	10 % ... 85 % RH	10 % ... 90 % RH

(1) 尺寸及重量::

275 x 147 x 34 mm; 488 g

(2) 电子安全规范 IEC 1010-1:

双绝缘

安装类目 III 污染程度 2

相关电压或最大接地: 8.8KV RMS

CE: EN50081-1 及 50082-1

操作环境及状况:

- . 将附件 BP-367 与 BP-266N (或 BP-276N) 接起来后插入 PT-5250 的输入端, 并将 BP-266N (或 BP-276N) 与测量物接触。
- . 将 BP-250 与 PT-5250 的输出端连接, 并与示波器连结。
- . 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, 如下表。

⚠ 注意:

测量 10 KV(DC+A peak), 或 5 KV RMS 以上的高电压, 接地引线必须强制接受。

衰 减	X5000	X500
最大输入电压 (DC+AC Peak)	50 KV p-p	5 KV p-p
DC 最大输入	± 25 KV	± 2.5 KV
AC RMS 最大输入	17 KV RMS	1.7 KV RMS

示波器上的 垂直偏向(V/DIV)	换算实际偏向(V/DIV)	
	X5000 档	X500 档
1	5 KV	500 V
0.5	2.5 KV	250 V
0.2	1 KV	100 V
0.1	500 V	50 V
50 m	250 V	25 V
20 m	100 V	10 V
10 m	50 V	5 V
5 m	25 V	2.5 V
2 m	10 V	1 V

[注意]

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。如果另外使用 50 Ω 负载端子时，实际电压值刚好是 2 倍量。

例如：

测试棒是 $\times 500$ ，示波器的垂直偏向在 1 V/div，其实际的垂直偏向为：

$$500 \times 1 \text{ V/div} = 500 \text{ V/div}$$

示波器输入的负载是 50 Ω，偏向就为：

$$500 \text{ V/div} \times 2 = 1 \text{ KV/div}$$

外接电源：

本产品因耗电量高达 120mA,因此指定使用电源转接器 115 V 专用(SP-115H)或 230V 专用(SP-230H)。

请勿使用非本公司指定品，若因此造成任何损毁，本公司概不负责。

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。

原厂的保固仅包含有限的单纯更换损坏的零件 使用者将不可归据直接或间接的责任在原厂。

原厂的保固是卖出后的 12 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。

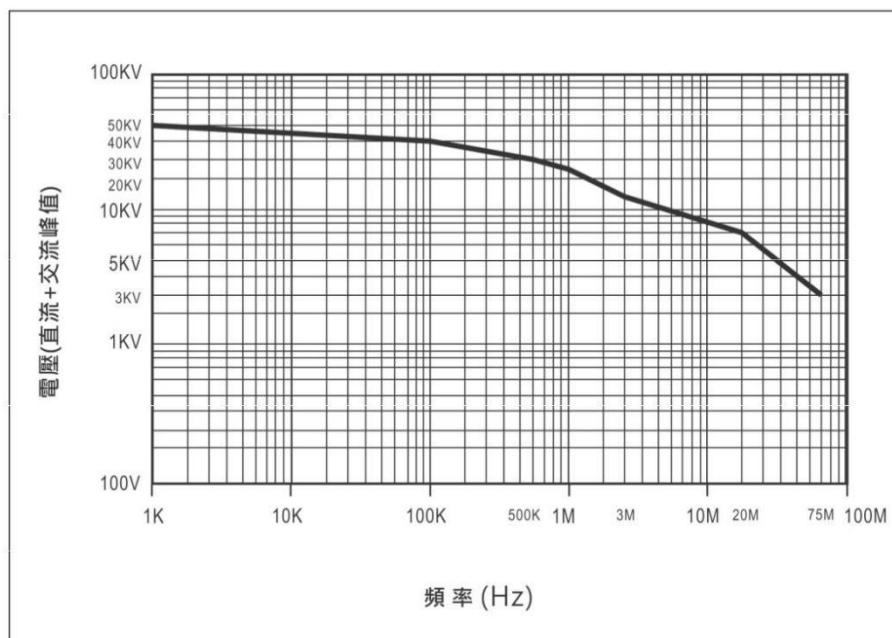
维修：

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。

高频耐电压曲线参考图:

(在共同模式下最大输出电压与频率的相对应曲线参考图)

1 KHz / 50 KVp-p, 100 KHz / 40 KVp-p, 500 KHz / 30 KVp-p, 1 MHz / 25 KVp-p, 3 MHz / 15 KVp-p,
20 MHz / 7 KVp-p, 60MHz / 3 KVp-p



[注] 本公司保留变更规格的权利, 若有规格版别之更动将直接更新网站资料; 欢迎上网下载说明书!(随机 Ver.00 版)