

DIFFERENTIAL PROBE

差動測試棒

DP-22Kpro

Super High Voltage Input
Super High Range Gain
30mVp-p~22KVp-p
DC~120MHz



INSTRUCTION MANUAL

使用說明書

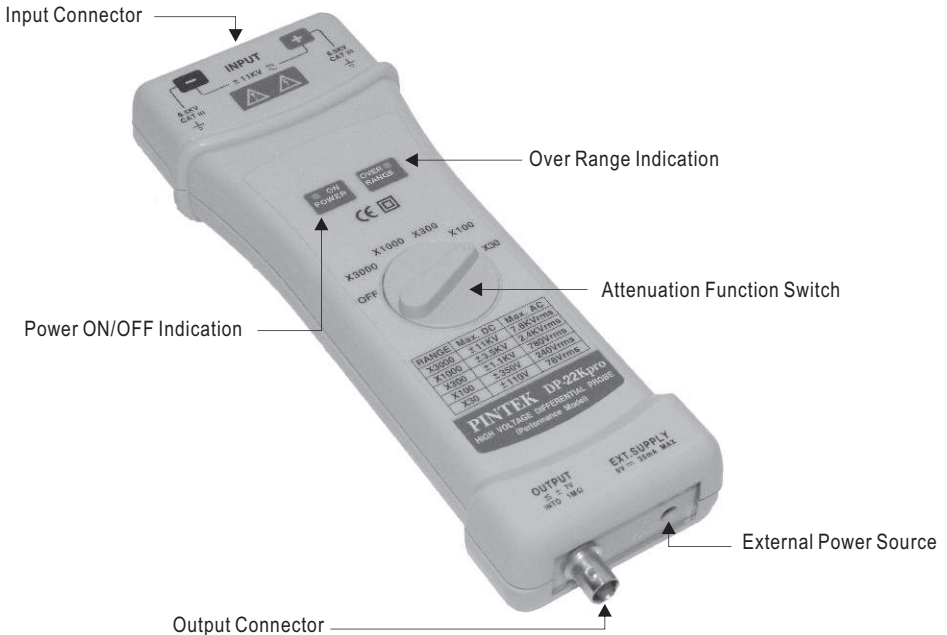
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- (6) Input Impedance:
 - Differential: $100M\Omega // 1.0\text{ pF}$
 - Between terminals and ground: $50M\Omega // 2.0\text{ pF}$
- (7) Output: $\leq \pm 5\text{ V}$
- (8) Output Impedance: $50\ \Omega$
- (9) Rise Time: 4.4ns for x30, and 3.0ns for x100, x300, x1000, x3000
- (10) Rejection Rate on Common Mode:
 - 60 Hz: $> 80\text{ dB}$; 100 Hz: $> 60\text{ dB}$; 1 MHz: $> 50\text{ dB}$
- (11) EXT. Power Supply:
 - External 9 V DC power supply.
- (12) Consumption: 150 mA max (1.4 WATT)

3. PANEL DESCRIPTION



• 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: 22KV (DC + AC peak) or 7.8KV RMS
2. Max voltage between each input terminal and ground: 6.5KV 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.

• TO ORDER Differential Voltage Probe and Accessories:

- An Insulated BNC/BNC lead and two ϕ 4 mm, length 3 inches.(BP-250)
- Supplied a Adapter preset 9 V DC (115 V or 230 V)
- 2 x high voltage IC clips.(BP-266)
- 2 x Banana to Banana high voltage plug.(BP-366)
- 2 x Alligator plug.(BP-276N)
- 2 x Test Lead.(BP-286)
- Instruction Manual.
- Carry Box.(PX-502)

DP-22Kpro

Differential Probe
(Super High Voltage Performance Model)

DP-22Kpro DIFFERENTIAL PROBE

1. FEATURES

- The DP-22Kpro differential voltage probe provides a safety means of measuring floating potentials for all models of oscilloscopes incomplete safety.
- It converts the high differential voltage ($\leq 22\text{KV}$ peak) into a low voltage ($\leq \pm 5\text{V}$) with reference to the earth for display on the oscilloscopes.
- The BNC output is designed to operate on an input with an impedance of $1\text{ M}\Omega$. It is 2 times of the $50\ \Omega$.
- Recommend to use PINTEK PL-10 with DP-22Kpro, and expand the measuring ranges. From DMM can observe more exact measured testing voltage. (Oscilloscope accuracy is 3%, and DMM is 10 times).

2. SPECIFICATIONS

(1) Bandwidth:

DC - to 120 MHz (-3 dB) for x100, x300, x1000, x3000

DC - to 80 MHz (for attenuation x30)

(2) Attenuation: x30, x100, x300, x1000, x3000, 5 range

(3) Accuracy: $\pm 2\%$

(4) Voltage Input Ranges

RANGE	MAX. DC	MAX. AC RMS	MAX. AC p-p
x3000	$\pm 11\text{KV}$	7.8KV	22KV
x1000	$\pm 3.5\text{KV}$	2.4KV	7KV
x300	$\pm 1.1\text{KV}$	780V	2.2KV
x100	$\pm 350\text{V}$	240V	700V
x30	$\pm 110\text{V}$	78V	220V

(5) Permitted Max Input Differential Voltage

Max differential voltage: 22KV (DC + AC peak to peak)

Max voltage between each input terminal and ground: 7.8KV RMS.

NOTE: The Max. operation voltage between terminal and ground of each range are the same as the Max. AC RMS input.

4. 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:

245 x 76 x 32 mm; 350g

(2) Electrical Safety to IEC 1010-1

- Dual Insulation
- Installation Category III
- Degree of Pollution 2
- Rated Voltage or Max Live-Earth: 7.8KV RMS

(3) CE Mark

Conforms to EN 50081-1 and 50082-1 standards

5. OPERATING PROCEDURE

- Connect the leads to the input and place the wire-grip on the circuit to be tested.
- Connect the probe to the oscilloscope with the accessory 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.
- NOTE: The POWER light must be “ON”, and note the Max. input voltage of each range.

The conversion table gives the real vertical deviation.

Attenuation	x 3000	x 1000	x 300	x 100	x 30
Max. Input: DC	±11KV	±3.5KV	±1.1KV	±350V	±110V
Max. Input: AC p-p	22KV	7KV	2.2KV	700V	220V
Max. Input: AC RMS	7.8KV	2.4KV	780V	240V	78V

Vertical Deviation on the Oscilloscope in V/div	Real Deviation In V/div				
	x3000	x1000	x300	x100	x30
1V	3KV	1KV	300V	100V	30V
0.5V	1.5KV	500V	150V	50V	15V
0.2V	600V	200V	60V	20V	6V
0.1V	300V	100V	30V	10V	3V
50 mV	150V	50V	15V	5V	1.5V
20 mV	60V	20V	6V	2V	0.6V
10 mV	30V	10V	3V	1V	0.3V
5 mV	15V	5V	1.5V	0.5V	150mV

[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 a 50Ω load.

Example:

With the differential probe on factor x 10, the oscilloscope on 0.5 V/div, the real vertical deviation is 10 x 0.5 = 5 V/div.

With a 50Ω load on the input of the oscilloscope the deviation becomes 10 V/div.

6. EXT. POWER SOURCE

- Power consumption of the probe are 150mA(1.4W), thus it not suit 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 12V DC or the opposite polarity will caused to the probe hard damage.

7. 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.

8. CLEANING

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

9. WARRANTY

Unless notified to the contrary, 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.

It is applicable for normal use of our instruments, and does not apply to damage or destruction caused, notably by error in mounting, mechanical accident, faulty maintenance, defective use, overload or exceed voltage.

Our responsibility being strictly limited to the pure and simple replacement of the faculty parts of our equipment, the buyer expressly renounces any attempt to find us responsible for damages or losses caused directly or indirectly.

Our guarantee is applicable for twelve (12) months after the date at which the equipment is made available. The repair, modification or replacement of a part during the guarantee period will not result in this guarantee being extended.

10. REPAIR

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

PINTEK Differential Probe Selection Guide

2010/June/03

MODEL	DP-25	DP-30	DP-40	DP-50	DP-65pro	DP-100	DP-14K	DP-20K	DP-150pro	DP-200pro	DP-22Kpro	
FEATURE	Economic Model (1300V)	Super High Sensitivity	650V Mid-Low Voltage	Economic Model (6500V)	1600V Performance Model	7KV High Frequency	High Voltage Input 14KV	Super High Voltage Input 20KV	SuperRange Gain Performance	Super High Frequency	SuperRange Gain, Super High Voltage Input	
Band Width	25MHz	30MHz	40MHz	50MHz	65MHz	100MHz	75MHz	20MHz	150MHz	200MHz	120MHz	
Max Input Range	20mV ~1300V	1mV ~65V	10mV ~650V	100mV ~6.5KV	20mV ~1600V	100mV ~7KV	200mV ~14KV	300mV ~20KV	10mV ~8KV	20mV ~1600V	30mV ~22KV	
AC p-p												
Attenuator Selection Range	3/x20, x50,x200	3/x1,x2 x10	3/x10 x20,x100	4/x100, x200,x500 x1000	3/ x20,x50 x200,x500 x200	4/x100, x200,x500, x1000	4/x200, x400,x1000 x2000	4/x300, x600,1500 x3000	5/x10,x30, x100,x300, x1000	4/x20,x50 x100,x200	5/x30,x100, X300,x1000, X3000	
Max Input AC RMS	~460 V	~23 V	~230 V	~2.3 KV	~560 V	~3.5 KV	~5 KV	~7 KV	~2.8 KV	~560 V	~7.8 KV	
Input Impedance	4 MΩ	2 MΩ	4 MΩ	54 MΩ	18 MΩ	100 MΩ	100 MΩ	100 MΩ	100 MΩ	18 MΩ	100 MΩ	
Differential R/C	1.7PF	1.7PF	1.7PF	1.3PF	1.7PF	1.3PF	1.3PF	1.3PF	1.3PF	1.7PF	1.3PF	
Each Input R/C	2 MΩ	1 MΩ	2 MΩ	27 MΩ	9 MΩ	50 MΩ	50 MΩ	50 MΩ	50 MΩ	9 MΩ	50 MΩ	
Over Range	3.4PF	3.4PF	3.4PF	2.5PF	3.4PF	2.5PF	2.5PF	2.5PF	2.5PF	3.4PF	2.5PF	
Adapter	○	○	○	○	○	○	○	○	○	○	○	
CARRY BOX	○	○	○	○	○	○	○	○	○	○	○	
ACCESSORIES	BP-250 BP-256N BP-356N	BP-250 BP-256N BP-276N BP-286 BP-356N	BP-250 BP-256N BP-276N BP-286 BP-356N	BP-250 BP-266 BP-366	BP-250 BP-256N BP-276N BP-286 BP-356N	BP-250 BP-266 BP-276N BP-286 BP-366	BP-250 BP-266 BP-276N BP-286 BP-366	BP-250 BP-266 BP-276N BP-286 BP-366	BP-250 BP-266 BP-276N BP-286 BP-366	BP-250 BP-266 BP-276N BP-286 BP-366	BP-250 BP-256N BP-276N BP-286 BP-356N	BP-250 BP-266 BP-276N BP-286 BP-356N

※ Specifications and appearance design subject to change without notice.

差動測試棒,使用前注意事項:

● 使用前請詳細閱讀使用說明

1. 請先獲得一支差動測試棒
2. 從使用說明取得最佳維修及服務
3. 請詳讀使用者操作手冊
4. 請注意安全注意事項

● 安全注意事項:

請小心注意觸電!

請注意最高輸入電壓!

最高差動電壓: 22KV (DC + AC peak) 或 7.8KV RMS

輸入端及接地端間的最大差動電壓: 6.5KV RMS

請勿使用此產品在潮濕的環境下或有易爆的風險下操作!

請勿使用此產品當此產品的盒蓋被打開!

當打開此產品的盒蓋時請將輸出及輸入端切斷!

● 訂購差動測試棒時內含

- 雙端BNC接頭的測試纜線,長度3英尺(BP-250)
- 一個9 V DC 轉換器(客戶必需指定115 V或230 V)
- 一對高電壓專用的IC夾(BP-266)
- 一對指定規格的雙端香蕉插頭高電壓傳輸線(BP-366)
- 一對高電壓專用的鱷魚夾(BP-276N)
- 一對高壓專用的探針頭(BP-286)
- 使用說明書
- 攜帶盒(PX-502)

DP-22Kpro

差動測試棒
(超高電壓輸入專業型)

DP-22Kpro 差動測試棒

1. 簡述:

- DP-22Kpro差動測試棒提供一個安全的絕緣儀器給所有的示波器使用，它可以轉換由高輸入的差動電壓($\leq 22KV$ PEAK) 進入一個低電壓($\leq \pm 5V$), 並且顯示波形在示波器上，使用頻率高達 120 MHz.非常適合大電力測試、研發使用。
- 差動測試棒輸出標示是設計在操作示波器 $1M\Omega$ 的輸入阻抗的相對衰減量，當使用 50Ω 匹配器時衰減量剛好為2倍量。
- DP-22Kpro差動測試棒，也建議選購本公司生產的PL-10阻抗轉換器，可以延伸差動測試棒的應用範圍-可以在數字電表上觀測更精確的實際測試電壓值(示波器精確度為3%，數字電表約精準10倍)。

2. 規格:

(1) 頻寬:

DC - 120MHz (-3dB) for x100, x300, x1000, x3000 檔
DC - 80MHz (-3dB) for x30 檔

(2) 衰減開關: x30, x100, x300, x1000, x3000 共5檔

(3) 精確度: $\pm 2\%$

(4) 輸入電壓範圍

檔位	MAX. DC	MAX. AC RMS	MAX. AC p-p
x3000	$\pm 11KV$	7.8KV	22KV
x1000	$\pm 3.5KV$	2.4KV	7KV
x300	$\pm 1.1KV$	780V	2.2KV
x100	$\pm 350V$	240V	700V
x30	$\pm 110V$	78V	220V

(5) 允許最高輸入差動電壓:

最高差動電壓: 22KV (DC + AC PEAK TO PEAK)

輸入端及接地端間最高電壓: 7.8KV RMS(各檔對地端最大電壓與Max.AC RMS值約略相同, 例如X30檔對地端僅78Vrms值)

(6) 輸入阻抗:

差動: $100M\Omega // 1.0 pF$

單端到接地端間的輸入阻抗: $50M\Omega // 2.0 pF$

- (7) 輸出電壓: $\leq \pm 5\text{ V}$
- (8) 輸出阻抗: $50\ \Omega$
- (9) 上升時間:
 3.0 ns for x100, x300, x1000, x3000
 4.4 ns for x30
- (10) 雜訊抑制率:
 60 Hz: $> 80\text{ dB}$; 100 Hz: $> 60\text{ dB}$; 1 MHz: $> 50\text{ dB}$
- (11) 電源:
 指定外接9V DC 電源(必須使用本公司指定品)
- (12) 耗電: 最大耗電量150 mA (1.4瓦特)

3. 測試棒面板說明



4. 操作環境及狀況

	一般狀態	使用操作中	儲存
溫度	+20°C ... +30°C	0°C ... +50°C	-30°C ... +70°C
溼度	≤70 % RH	10 % ... 85 % RH	10 % ... 90 % RH

(1) 尺寸及重量: 245 x 76 x 32 mm; 350g

(2) 電子安全規範 IEC 1010-1

- 雙絕緣
- 安裝類目 III
- 污染程度 2
- 相關電壓或最大接地: 7.8KV RMS
- CE: EN50081-1 及 50082-1

5. 操作程序

- 將附件BP-266(IC夾)或BP-276N(鱷魚夾)與BP-366(高壓用連接線)接起來後插入DP-22Kpro的輸入端,並將BP-266(或BP-276N)與測量物接觸。
- 將BP-250(雙端BNC纜線)與DP-22Kpro的輸出端連接,並與示波器連結。
- 如有需要先調整示波器上的垂直開關。
- 將示波器上的衰減率及垂直開關調整到一致的位置,如下表。
- 注意: 電源必須打開,並注意各檔允許的最大操作電壓值。

衰減檔	x 3000	x 1000	x 300	x 100	x 30
最大輸入: DC	±11KV	±3.5KV	±1.1KV	±350V	±110V
最大輸入: AC p-p	22KV	7KV	2.2KV	700V	220V
最大輸入: AC RMS	7.8KV	2.4KV	780V	240V	78V

示波器上的 垂直偏向(V/DIV)	換算實際偏向(V/DIV)				
	x3000檔	x1000檔	x300檔	x100檔	x30檔
1V	3KV	1KV	300V	100V	30V
0.5V	1.5KV	500V	150V	50V	15V
0.2V	600V	200V	60V	20V	6V
0.1V	300V	100V	30V	10V	3V
50 mV	150V	50V	15V	5V	1.5V
20 mV	60V	20V	6V	2V	0.6V
10 mV	30V	10V	3V	1V	0.3V
5 mV	15V	5V	1.5V	0.5V	150mV

(注意)

實際的垂直偏向是等於衰減乘上示波器上所選擇的垂直偏向。如果另外使用50Ω負載端子時，電壓衰減量剛好是2倍量。

例如：

差動測試棒是 x10，示波器的垂直偏向在 0.5，其實際的垂直偏向為：
 $10 \times 0.5 = 5 \text{ V/div}$

示波器輸入端加裝50Ω負載器時，偏向就為10 V/div

6. 外接電源

- 本產品因耗電量高達150mA，因此指定使用電源轉接器115V專用(ADP-110)或230V專用(ADP-220)。
- 請勿使用非本公司指定品，若因此造成任何損毀，本公司概不負責。
- 注意！電壓超過12V DC或極性相反將會對本機造成致命的損壞，請特別注意電源轉換器正負極性，本公司指定使用“內負外正”極性，請勿使用不相同極性之電源轉換器。

7. 維護：

保養此產品時請使用原廠指定的工具, 若由非合格維修人員以及使用非原廠指定工具所做的維修而造成機器損壞, 本公司將不負任何責任。

8. 清潔：

此產品不需要任何特定的清潔. 如有需要, 請用輕軟乾淨的布沾上微量的清潔液輕輕的在產品外觀擦拭。

9. 保固：

- 除了在人爲上的特意損壞, 本產品是受保固並可以維修的, 並不包含在安全規範的責任。
- 保固是以不超出發票上的金額, 零件的更換及運送的費用。
- 保固是僅在正常操作下而造成的損壞, 並不包含任何刻意的損壞, 操作上的錯誤, 機械上的操作不當, 保養不當, 過負載或過壓。
- 原廠的保固僅包含有限的單純更換損壞的零件. 使用者將不可歸據直接或間接的責任在原廠。
- 原廠的保固是賣出後的12個月內. 如有任意的非原廠的維修或更換零件, 原廠保固將自然取消。

10. 維修：

有任何的維修, 保養或更換零件是在保固以外, 請將產品退回原廠維修。

PINTERK 差動探針選購指南

2010/June/03

MODEL	DP-25	DP-30	DP-40	DP-50	DP-65pro	DP-100	DP-14K	DP-20K	DP-150pro	DP-200pro	DP-22Kpro
主要特點	經濟型 1.3KV 一般用途	超高靈敏 度型,低電 壓專用	高靈敏度型 650V 中低電壓用	經濟型, 6.5KV 高電壓用	1.6KV 專業型	7KV 高壓,高頻用	14KV 高電壓用	20KV 超高電壓用	高壓,高頻 100 倍增 益專業型	1.6KV 200MHz 專業型	超高電壓,高頻 100 倍增益 專業型
頻 寬	25MHz	30MHz	40MHz	50MHz	65MHz	100MHz	75MHz	20MHz	150MHz	200MHz	120MHz
量測範圍 (AC-p-p)	20mV ~1300V	1mV ~65V	10mV ~650V	100mV ~6.5KV	20mV ~1600V	50mV ~7KV	200mV ~14KV	300mV ~20KV	10mV ~8KV	20mV ~1600V	30mV ~22KV
最大量測 AC RMS	~460V	~23V	~230V	~2.3KV	~560V	~3.5KV	~5KV	~7KV	~2.8KV	~560V	~7.8KV
衰減選擇檔	3 / x20, x50, x200	3 / x1, x2 x10	3 / x10 x20, x100	4 / x100, x200, x500, x1000	3 / x20, x50 x200	4 / x100, x200, x500, x1000	4 / x200, x400, x1000 x2000	4 / x300, x600, 1500 x3000	5 / x10, x30, x100, x300, x1000	4 / x20, x50 x100, x200	5 / x30, x100, X300, x1000, X3000
輸入阻抗 (差動輸入)	4 MΩ 1.7 PF	2 MΩ 1.7 PF	4 MΩ 1.7 PF	54 MΩ 1.3 PF	18 MΩ 1.7 PF	100 MΩ 1.3 PF	100 MΩ 1.3 PF	100 MΩ 1.3 PF	100 MΩ 1.3 PF	18 MΩ 1.7 PF	100 MΩ 1.3 PF
輸入電阻 (單端對地)	2 MΩ 3.4PF	1 MΩ 3.4PF	2 MΩ 3.4PF	27 MΩ 2.5PF	9 MΩ 3.4PF	50 MΩ 2.5PF	50 MΩ 2.5PF	50 MΩ 2.5PF	50 MΩ 2.5PF	9 MΩ 3.4PF	50 MΩ 2.5PF
過載顯示	----	----	----	○	○	○	○	○	○	○	○
電源轉接器	○	○	○	○	○	○	○	○	○	○	○
攜帶箱	----	○	○	----	○	○	○	○	○	○	○
其他附件	BP-250 BP-256N BP-356N	BP-250 BP-256N BP-276N	BP-250 BP-256N BP-276N	BP-250 BP-266 BP-366	BP-250 BP-256N BP-276N	BP-250 BP-266 BP-276N	BP-250 BP-266 BP-276N	BP-250 BP-266 BP-276N	BP-250 BP-266 BP-276N	BP-250 BP-266 BP-276N	BP-250 BP-266 BP-276N
		BP-286 BP-356N	BP-286 BP-356N		BP-286 BP-356N	BP-286 BP-366	BP-286 BP-366	BP-286 BP-366	BP-286 BP-366	BP-286 BP-366	BP-286 BP-366

※ 本公司有權利更改內容，恕不另行通知。

● **ACCESSORIES / 附件圖:**

BP-266

(HV IC Clip, 7KVrms)



BP-366

(HV Banana Plug to Banana Plug, 20KVDC/10A, 60cm)



BP-250

(BNC Plug to BNC Plug, 50Ω cable 100cm, 1GHz, 3A)



BP-276N

(Alligator Clip, 1KVrms, 10A)



BP-286

(Test Leader, 1KVrms, 10A)



PX-501/PX-502

(Carry Box)



Adapter

ADP-110/ADP-220
DC 9V/300mA

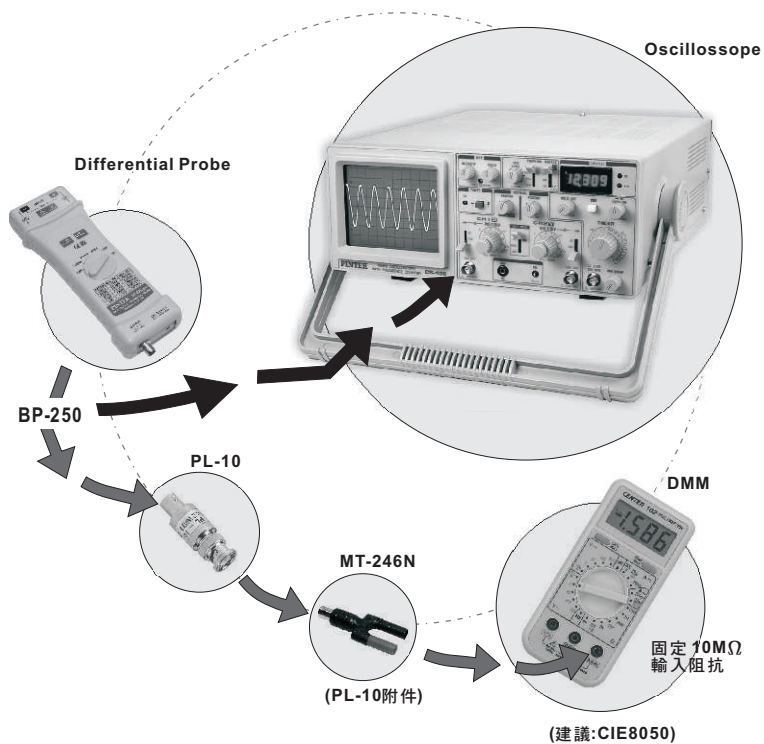


Option PL-10 to Connect With Digital DMM

(可選購PL-10以連接於數字電錶使用)



PL-10



TINSE0072S4 Ver.01

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