



DIFFERENTIAL PROBE

差動測試棒

CE

DP-30HS

65Vp-p/30MHz

High Sensitivity Model

DP-40LV

650Vp-p/40MHz

Low Voltage Model



INSTRUCTION MANUAL

使用說明書

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• 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

DP-30HS:

1. Max differential voltage: 65V (DC + AC peak) or 23 V RMS
2. Max voltage between each input terminal and ground: 600 V RMS

DP-40LV:

1. Max differential voltage: 650V (DC + AC peak) or 230 V RMS
2. Max voltage between each input terminal and ground: 600 V 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.
- Supplied a Adapter preset 9 V DC (115 V or 230 V)
- 2 x high voltage IC clips
- 2 x Banana to Banana high voltage plug
- 2 x Alligator plug

DP-30HS

Differential Probe
(High Sensitivity Model)

DP-30^{HS} HIGH SENSITIVITY DIFFERENTIAL PROBE

1. FEATURES

- The DP-30 differential voltage probe provides a safety means of measuring floating potentials for all models of oscilloscopes incomplete safety.
- It converts the high differential voltage ($\leq 65\text{V}$ peak) into a low voltage ($\leq 7.0\text{V}$) 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-30, 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 30 MHz (-3 dB) for x 2, x 10

DC - to 15 MHz (for attenuation x 1)

(2) Attenuation: x 1, x 2, or x 10

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

(4) Voltage Input Ranges (DC + AC peak to peak)

$\leq \pm 6.5\text{ V}$ for x 1, (i.e about 2.3 V RMS or DC)

$\leq \pm 13\text{ V}$ for x 2, (i.e about 4.6 V RMS or DC)

$\leq \pm 65\text{ V}$ for x 10, (i.e about 23 V RMS or DC)

(5) Permitted Max Input Voltage

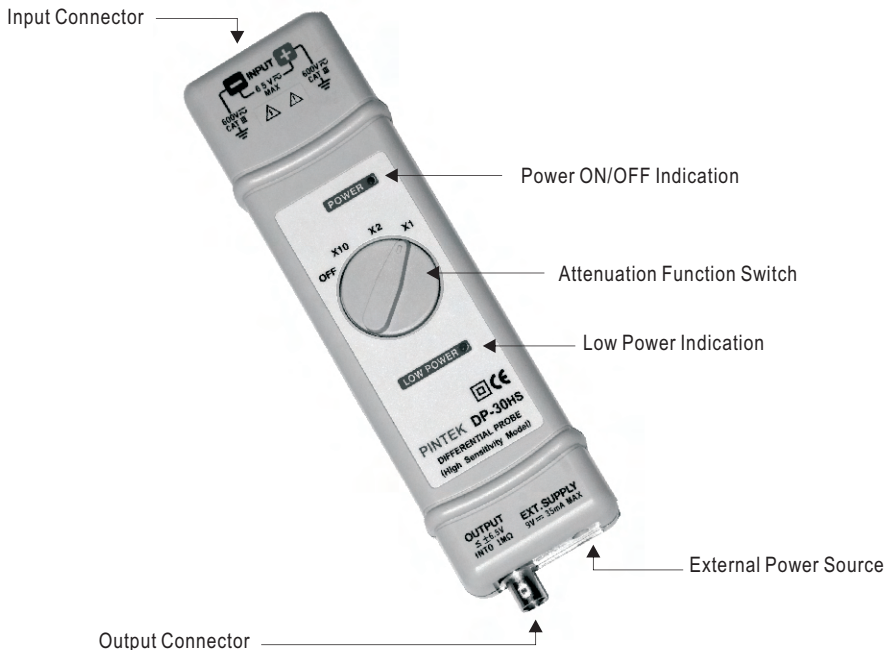
Max differential voltage: 65 V (DC + AC peak to peak)

Max voltage between each input terminal and ground:

600 V RMS

- (6) Input Impedance:
 Differential: $2\text{ M}\Omega / 1.7\text{ pF}$
 Between terminals and ground: $1\text{ M}\Omega / 3.4\text{ pF}$
- (7) Output: $\leq \pm 7.0\text{ V}$
- (8) Output Impedance: $50\ \Omega$
- (9) Rise Time: 12 ns for x 2, and x 10; 24 ns for x 1
- (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: 35 mA max (0.4 WATT)

3. PANEL DESCRIPTION



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:

195 x 55 x 30 mm; 250g

(2) Electrical Safety to IEC 1010-1

- Dual Insulation
- Installation Category III
- Degree of Pollution 2
- Rated Voltage or Max Live-Earth: 600 V RMS

(3) CE Mark

Conforms to EN 50081-1 and 50082-1 standards

5. 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.
- NB: The POWER light must come on.

The conversion table gives the real vertical deviation.

Attenuation	X 10	X 2	X 1
Voltage Input Range (DC+AC Peak)	± 65V	± 13V	± 6.5V

Vertical Deviation on the Oscilloscope in V/div	Real Deviation In V/div		
	X 10	X 2	X 1
1V	10V	2V	1V
0.5V	5V	1V	0.5V
0.2V	2V	0.4V	0.2V
0.1V	1V	0.2V	0.1V
50 mV	0.5V	100mV	50mV
20 mV	0.2V	40mV	20mV
10 mV	0.1V	20mV	10mV
5 mV	50mV	10mV	5mV

[N.B]

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

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

6. EXT. POWER SOURCE

- Power consumption of the probe are 35mA, 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 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.

DP-40LV

Differential Probe
(Low Voltage Model)

DP-40_{LV} LOW VOLTAGE DIFFERENTIAL PROBE

1. FEATURES

- The DP-40 differential voltage probe provides a safety means of measuring floating potentials for all models of oscilloscopes incomplete safety.
- It converts the high differential voltage ($\leq 650\text{V}$ peak) into a low voltage ($\leq 7.0\text{V}$) 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-40, 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 40 MHz (-3 dB) for x 20, x 100

DC - to 20 MHz (for attenuation x 10)

(2) Attenuation: x 10, x 20, or x 100

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

(4) Voltage Input Ranges (DC + AC peak to peak)

$\leq \pm 65\text{ V}$ for x 10, (i.e about 23 V RMS or DC)

$\leq \pm 130\text{ V}$ for x 20, (i.e about 46 V RMS or DC)

$\leq \pm 650\text{ V}$ for x 100, (i.e about 230 V RMS or DC)

(5) Permitted Max Input Voltage

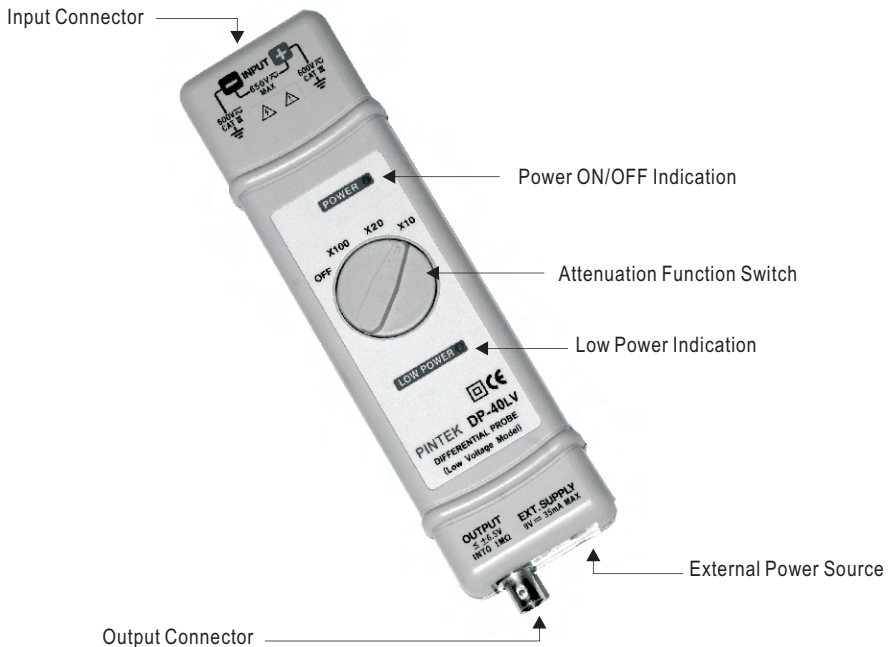
Max differential voltage: 650 V (DC + AC peak to peak)

Max voltage between each input terminal and ground:

600 V RMS

- (6) Input Impedance:
 Differential: $2\text{ M}\Omega / 1.7\text{ pF}$
 Between terminals and ground: $1\text{ M}\Omega / 3.4\text{ pF}$
- (7) Output: $\leq \pm 7.0\text{ V}$
- (8) Output Impedance: $50\ \Omega$
- (9) Rise Time: 9 ns for x 20, and x 100; 18 ns for x 10
- (10) Rejection Rate on Common Mode:
 60 Hz: $> 82\text{ dB}$; 100 Hz: $> 62\text{ dB}$; 1 MHz: $> 52\text{ dB}$
- (11) EXT. Power Supply:
 External 9 V DC power supply.
- (12) Consumption: 35 mA max (0.4 WATT)

3. PANEL DESCRIPTION



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:

195 x 55 x 30 mm; 250g

(2) Electrical Safety to IEC 1010-1

- Dual Insulation
- Installation Category III
- Degree of Pollution 2
- Rated Voltage or Max Live-Earth: 600 V RMS

(3) CE Mark

Conforms to EN 50081-1 and 50082-1 standards

5. 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.
- NB: The POWER light must come on.

The conversion table gives the real vertical deviation.

Attenuation	X 100	X 20	X 10
Voltage Input Range (DC+AC Peak)	± 650V	± 130V	± 65V

Vertical Deviation on the Oscilloscope in V/div	Real Deviation In V/div		
	X 100	X 20	X 10
1V	100V	20V	10V
0.5V	50V	10V	5V
0.2V	20V	4V	2V
0.1V	10V	2V	1V
50 mV	5V	1V	0.5V
20 mV	2V	0.4V	0.2V
10 mV	1V	0.2V	0.1V
5 mV	0.5V	100mV	50mV

[N.B]

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 differential probe on factor x 100, the oscilloscope on 0.5 V/div, the real vertical deviation is $100 \times 0.5 = 50$ V/div.

With a 50 Ω load on the input of the oscilloscope the deviation becomes 100 V/div.

6. EXT. POWER SOURCE

- Power consumption of the probe are 35mA, 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 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.

差動測試棒，

● 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！

DP-30HS:

最高差動電壓: 65 V (DC + AC peak) 或 23 V RMS

輸入端及接地端間的最大差動電壓: 600V RMS

DP-40LV:

最高差動電壓: 650 V (DC + AC peak) 或 230 V RMS

輸入端及接地端間的最大差動電壓: 600 V 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
- 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
- 一對指定規格的雙端香蕉插頭高電壓傳輸線
- 一對高電壓專用的鱷魚夾

DP-30HS

差動測試棒
(超高靈敏度機種)

DP-30HS高靈敏度差動測試棒

1. 簡述:

- DP-30差動測試棒提供一個安全的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(≤ 65 PEAK) 進入一個低電壓 ($\leq 7.0V$), 並且顯示波形在示波器上, 使用頻率高達30 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-30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 - 30 MHz (-3dB) for x 2, x 10

DC - 15 MHz (不衰減 x 1檔)

(2) 不衰減: x 1, 衰減: x 2, x 10

(3) 精確度: $\pm 2\%$

(4) 輸入電壓範圍 (DC + AC PEAK TO PEAK)

$\leq \pm 6.5$ V for x 1, (約2.3V RMS 或DC)

$\leq \pm 13$ V for x 2, (約4.6 V RMS 或DC)

$\leq \pm 65$ V for x 10, (約23V RMS 或DC)

(5) 允許最高輸入電壓:

最高差動電壓: 65 V (DC + AC PEAK TO PEAK)

輸入端及接地端間最高電壓: 600 V RMS

(6) 輸入阻抗:

差動: $2M\Omega / 1.7$ pF

單端到接地端間的輸入阻抗: $1M\Omega / 3.4$ pF

(7) 輸出電壓: $\leq \pm 7.0$ V

(8) 輸出阻抗: 50 Ω

(9) 上升時間:

12 ns for x 2 及 x 10

24 ns for x 1

(10) 雜訊抑制率:

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

(11) 電源:

指定外接9V DC 電源。

(12) 耗電: 最大耗電量35 mA (0.4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: 195 x 55 x 30 mm; 250g

(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: 600 V RMS
- CE: EN50081-1 及 50082-1

5. 操作程序

- 將附件BP-356 與 BP-256N (或BP-276) 接起來後插入DP-30 的輸入端, 並將BP-256N (或BP-276) 與測量物接觸。
- 將BP-250與DP-30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。

衰減	X 10	X 2	X 1
輸入電壓 (DC+AC Peak)	± 65V	± 13V	± 6.5V

示波器上的 垂直偏向	實 際 偏 向		
	X 10	X 2	X 1
1V	10V	2V	1V
0.5V	5V	1V	0.5V
0.2V	2V	0.4V	0.2V
0.1V	1V	0.2V	0.1V
50 mV	0.5V	100mV	50mV
20 mV	0.2V	40mV	20mV
10 mV	0.1V	20mV	10mV
5 mV	50mV	10mV	5mV

〔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。例如是使用負載 50Ω 的兩倍。

例如：

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

示波器輸入的負載是 50Ω ，偏向就為 10 V/div (剛好是2倍量)

6. 外接電源

- 本機耗電量高達35mA，不適合使用電池，僅能使用本公司附送的電源外接盒。
- 若有任何的損壞，請向本公司洽購，不要使用非本公司指定的電源外接盒。(注意! 電壓超過12V DC將會對本機造成致命的損壞)

7. 維護：

保養此產品時請使用原廠指定的工具。原廠將不負任何責任由其他不被認可的維修人員所做的維修。

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，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。

DP-40LV

差 動 測 試 棒
(低電壓専用機種)

DP-40LV低電壓差動測試棒

1. 簡述:

- DP-40差動測試棒提供一個安全的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(≤ 650 PEAK) 進入一個低電壓 ($\leq 7.0V$), 並且顯示波形在示波器上, 使用頻率高達25 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-40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 - 40 MHz (-3dB) for x 20, x 100

DC - 20 MHz (不衰減 x 10檔)

(2) 不衰減: x 10, 衰減: x 20, x 100

(3) 精確度: $\pm 2\%$

(4) 輸入電壓範圍 (DC + AC PEAK TO PEAK)

$\leq \pm 6.5 V$ for x 1, (約2.3V RMS 或DC)

$\leq \pm 13V$ for x 2, (約4.6 V RMS 或DC)

$\leq \pm 65 V$ for x 10, (約23V RMS 或DC)

(5) 允許最高輸入電壓:

最高差動電壓: 650 V (DC + AC PEAK TO PEAK)

輸入端及接地端間最高電壓: 600 V RMS

(6) 輸入阻抗:

差動: $2 M\Omega / 1.7 pF$

單端到接地端間的輸入阻抗: $1 M\Omega / 3.4 pF$

(7) 輸出電壓: $\leq \pm 7.0 V$

(8) 輸出阻抗: $50\ \Omega$

(9) 上升時間:

9 ns for x 20 及 x 100

18 ns for x 20

(10) 雜訊抑制率:

60 Hz: > 82 dB ; 100 Hz: > 62 dB ; 1 MHz: > 52 dB

(11) 電源:

指定外接9 V DC 電源。

(12) 耗電: 最大耗電量35 mA (0.4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: 195 x 55 x 30 mm; 250g

(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: 600 V RMS
- CE: EN50081-1 及 50082-1

5. 操作程序

- 將附件BP-356 與 BP-256N (或BP-276) 接起來後插入DP-40 的輸入端, 並將BP-256N (或BP-276) 與測量物接觸。
- 將BP-250與DP-40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。

衰減	X 100	X 20	X 10
輸入電壓 (DC+AC Peak)	± 650V	± 130V	± 65V

示波器上的 垂直偏向	實 際 偏 向		
	X 100	X 20	X 10
1V	100V	20V	10V
0.5V	50V	10V	5V
0.2V	20V	4V	2V
0.1V	10V	2V	1V
50 mV	5V	1V	0.5V
20 mV	2V	0.4V	0.2V
10 mV	1V	0.2V	0.1V
5 mV	0.5V	100mV	50mV

〔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。例如是使用負載 50Ω 的兩倍。

例如：

差動測試棒是 $\times 100$ ，示波器的垂直偏向在 0.5，其實際的垂直偏向為： $100 \times 0.5 = 50 \text{ V/div}$

示波器輸入的負載是 50Ω ，偏向就為 100 V/div (剛好是2倍量)

6. 外接電源

- 本機耗電量高達35mA，不適合使用電池，僅能使用本公司附送的電源外接盒。
- 若有任何的損壞，請向本公司洽購，不要使用非本公司指定的電源外接盒。(注意! 電壓超過12V DC將會對本機造成致命的損壞)

7. 維護：

保養此產品時請使用原廠指定的工具，原廠將不負任何責任由其他不被認可的維修人員所做的維修。

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，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。

TINSE0059S4 Ver.01

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