

# DIFFERENTIAL PROBE



## **DP-200pro**

*Super High Frequency Model*  
*20mVp-p~1.6KVp-p*  
*DC~200MHz*

## **DP-150pro**

*Super High Range Model*  
*10mVp-p~8KVp-p*  
*DC~150MHz*



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# INSTRUCTION MANUAL

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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-150pro:**

1. Max differential voltage: 8KV (DC + AC peak) or 2.8KV RMS
2. Max voltage between each input terminal and ground: 3.5KV RMS

##### **DP-200pro:**

1. Max differential voltage: 1.6KV (DC + AC peak) or 560V RMS
2. Max voltage between each input terminal and ground: 600V 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  $\phi$  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-256N/BP-266)
- 2 x Banana to Banana high voltage plug. (BP-356N/BP-366)
- 2 x Alligator plug. (BP-276N)
- 2 x Test Lead. (BP-286)
- Instruction Manual.
- Carry Box. (PX-501/for DP-200pro; PX-502/for DP-150pro)

# ***DP-150pro***

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***Differential Probe***  
***(Super High Range Model)***

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# DP-150pro DIFFERENTIAL PROBE

## 1. FEATURES

- The DP-150 differential voltage probe provides a safety means of measuring floating potentials for all models of oscilloscopes incomplete safety.
- It converts the high differential voltage ( $\leq 8\text{KV}$  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 Powertek PL-10 with DP-150, 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 150 MHz (-3 dB) for x30, x100, x300, x1000

DC - to 100 MHz (for attenuation x10)

(2) Attenuation: x10, x30, x100, x300, x1000, 5 range

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

(4) Voltage Input Ranges

RANGE	MAX. DC	MAX. AC RMS	MAX. AC p-p
x1000	$\pm 4\text{KV}$	2.8KV	8KV
x300	$\pm 1.2\text{KV}$	840V	2.4KV
x100	$\pm 400\text{V}$	280V	800V
x30	$\pm 120\text{V}$	84V	240V
x10	$\pm 40\text{V}$	28V	80V

(5) Permitted Max Input Differential Voltage

Max differential voltage: 8KV (DC + AC peak to peak)

Max voltage between each input terminal and ground: 2.8KV RMS.

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

(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: 3.5 ns for x10, and 2.4 ns for x30, x100, x300, x1000

(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



## 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: 2.8KV 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 1000	x 300	x 100	x 30	x 10
Max. Input: DC	±4KV	±1.2KV	±400V	±120V	±40V
Max. Input: AC p-p	8KV	2.4KV	800V	240V	80V
Max. Input: AC RMS	2.8KV	840V	280V	84V	28V

Vertical Deviation on the Oscilloscope in V/div	Real Deviation In V/div				
	x 1000	x 300	x 100	x 30	x 10
1V	1KV	300V	100V	30V	10V
0.5V	500V	150V	50V	15V	5V
0.2V	200V	60V	20V	6V	2V
0.1V	100V	30V	10V	3V	1V
50 mV	50V	15V	5V	1.5V	0.5V
20 mV	20V	6V	2V	0.6V	0.2V
10 mV	10V	3V	1V	0.3V	0.1V
5 mV	5V	1.5V	0.5V	150mV	50mV

**[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.

# ***DP-200pro***

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***Differential Probe***  
***(Super High Frequency Model)***

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# DP-200pro DIFFERENTIAL PROBE

## 1. FEATURES

- The DP-200 differential voltage probe provides a safety means of measuring floating potentials for all models of oscilloscopes incomplete safety.
- It converts the high differential voltage ( $\leq 1.6\text{KV}$  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 Powertek PL-10 with DP-200, 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 200MHz (-3 dB) for x50, x100, x200

DC - to 100MHz (for attenuation x 20)

(2) Attenuation: x20, x50, x100, x200

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

(4) Voltage Input Ranges

RANGE	MAX. DC	MAX. AC RMS	MAX. AC p-p
x200	$\pm 800\text{V}$	560V	1600V
x100	$\pm 400\text{V}$	280V	800V
x50	$\pm 200\text{V}$	140V	400V
x20	$\pm 80\text{V}$	56V	160V

(5) Permitted Max Input Differential Voltage

Max differential voltage: 1.6KV (DC + AC peak to peak)

Max voltage between each input terminal and ground: 560 V RMS.

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

(6) Input Impedance:

Differential:  $18M\Omega // 1.7\text{ pF}$

Between terminals and ground:  $9M\Omega // 3.4\text{ pF}$

(7) Output:  $\leq \pm 5\text{ V}$

(8) Output Impedance:  $50\Omega$

(9) Rise Time: 3.5 ns for x20, and 1.7 ns for x50, x100, x200

(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



## 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: 560V 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 200	x 100	x 50	x 20
Max. Input: DC	±800V	±400V	±200V	±80V
Max. Input: AC p-p	1600V	800V	400V	160V
Max. Input: AC RMS	560V	280V	140V	56V

Vertical Deviation on the Oscilloscope in V/div	Real Deviation In V/div			
	x 200	x 100	x 50	x 20
1V	200V	100V	50V	20V
0.5V	100V	50V	25V	10V
0.2V	40V	20V	10V	4V
0.1V	20V	10V	5V	2V
50 mV	10V	5V	2.5V	1V
20 mV	4V	2V	1V	0.4V
10 mV	2V	1V	0.5V	0.2V
5 mV	1V	0.5V	0.25V	0.1V

**[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 a 50Ω load.

**Example:**

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

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

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## **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**

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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 COMPARISON CHART

2010/5/28

MODEL	PINTEK DP-25	PINTEK DP-30	PINTEK DP-40	PINTEK DP-50	PINTEK DP-65pro	PINTEK DP-100	PINTEK DP-14K	PINTEK DP-20K	PINTEK DP-150pro	PINTEK DP-200pro	PINTEK 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	Super High Frequency	SuperRange Gain, Super High Voltage Input	
Band Width	25MHz	30MHz	40MHz	50MHz	65MHz	100MHz	75MHz	20MHz	150MHz	200MHz	120MHz	
Max Input	20mV	1mV	10mV	100mV	20mV	100mV	200mV	300mV	10mV	20mV	30mV	
Range ACp-p	~1300V	~65V	~650V	~6.5KV	~1600V	~7KV	~14KV	~20KV	~8KV	~1600V	~22KV	
Attenuator Selection Range	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	4/x300, x600,1500 x3000	5/x10,x30, x100,x300, x1000	4/x20,x50 x100,x200	5/x30,x100, X300,x1000, X3000	
Input Impedance	4M $\Omega$	2M $\Omega$	4M $\Omega$	54M $\Omega$	4M $\Omega$	100M $\Omega$	100M $\Omega$	100M $\Omega$	100M $\Omega$	100M $\Omega$	100M $\Omega$	
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	2M $\Omega$	1M $\Omega$	2M $\Omega$	27M $\Omega$	2M $\Omega$	50M $\Omega$	50M $\Omega$	50M $\Omega$	50M $\Omega$	9M $\Omega$	50M $\Omega$	
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.

# ● ACCESSORIES

## BP-256N

(IC Clip, 1000Vrms/5A)



## BP-356N

(Banana Plug to Banana Plug, 6KVDC/10A, 60cm)



## BP-250

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



## BP-266

(HV IC Clip, 7KVrms)



## BP-366

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



## PX-501/PX-502

(Carry Box)



## BP-276N

(Alligator Clip, 1KVrms, 10A)



## BP-286

(Test Leader, 1KVrms, 10A)



## Adapter

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



DP-200pro: BP-256N, BP-356N, BP-250, BP-276N, BP-286, PX-501, ADP-110 ADP-220.

DP-150pro: BP-266, BP-366, BP-250, BP-276N, BP-286, PX-502, ADP-110 ADP-220.

## Option PL-10 to Connect With Digital DMM

