

## PPH-Series Specifications

The specifications apply under the following conditions: The PPH-1503/1503D/1506D/1510D is powered on for at least 30 minutes, within +18°C~+28°C.

Brand	GWinstek	GWinstek		GWinstek		GWinstek	
Model	PPH-1503	PPH-1503D		PPH-1506D		PPH-1510D	
<b>OUTPUT RATING</b>							
Number of output channel	1	2		2		2	
Channel No.	Ch1	Ch1	Ch2	Ch1	Ch2	Ch1	Ch2
Power	45W	45W	18W	45W	36W	45W	36W
Voltage	0 ~ 15V or 0 ~ 9V	0 ~ 15V or 0 ~ 9V	0 ~ 12V	0 ~ 15V or 0 ~ 9V	0 ~ 12V	0 ~ 15V or 0 ~ 9V	0 ~ 12V
Current	0 ~ 3A or 0 ~ 5A	0 ~ 3A or 0 ~ 5A	0 ~ 1.5A	0 ~ 3A or 0 ~ 5A	0 ~ 3.0A	0 ~ 3A or 0 ~ 5A; Rear: 0~10A(under 0~4.5V)	0 ~ 3.0A
Output Voltage Rising Time	0.15ms (10% ~ 90%)	0.20ms (10% ~ 90%)		0.20ms (10% ~ 90%)		0.20ms (10% ~ 90%)	
Output Voltage Falling Time	0.65ms (90% ~ 10%)	0.30ms (90% ~ 10%)		0.30ms (90% ~ 10%)		0.30ms (90% ~ 10%)	
<b>STABILITY</b>							
Voltage	0.01%+0.5mV	0.01%+3.0mV		0.01%+3.0mV		0.01%+3.0mV	
Current	0.01%+50uA	NA		NA		NA	
<b>REGULATION (CV)</b>							
Load	0.01%+2mV	0.01%+2mV		0.01%+2mV		0.01%+2mV	
Line	0.5mV	0.5mV		0.5mV		0.5mV	
<b>REGULATION (CC)</b>							
Load	0.01%+1mA	0.01%+1mA		0.01%+1mA		0.01%+1mA	
Line	0.5mA	0.5mA		0.5mA		0.5mA	
<b>RIPPLE &amp; NOISE (20Hz ~ 20MHz)</b>							
CV p-p	8mV	≤ 5A: 8mVp-p(20Hz ~ 20MHz)		≤ 5A: 8mVp-p(20Hz ~ 20MHz)		≤ 5A: 8mVp-p(20Hz ~ 20MHz) > 5A: 12mVp-p(20Hz ~ 20MHz)	
CV rms	1mV	3mV(0~1MHz)		3mV(0~1MHz)		3mV(0~1MHz)	
CC rms	NA	NA	NA	NA	NA	NA	NA
<b>PROGRAMMING ACCURACY</b>							
Voltage	0.05%+10mV	0.05%+10mV		0.05%+10mV		0.05%+10mV	
Current (CH1: 5A, 10A/CH2: 1.5A, 3A)	0.16%+5mA	0.16%+5mA(5A/1.5A)		0.16%+5mA(5A/3A)		0.16%+5mA(5A/3A)	
Current (500mA)	NA	0.16%+0.5mA	NA	0.16%+0.5mA	NA	0.16%+0.5mA	NA
Current (5mA)		0.16%+5uA		0.16%+5uA		0.16%+5uA	
<b>READBACK ACCURACY</b>							
Voltage	0.05%+3mV	0.05%+3mV		0.05%+3mV		0.05%+3mV	
Current (CH1: 5A, 10A/CH2: 1.5A, 3A)	0.2%+400uA(5A)	0.2%+400uA(5A range)	0.2%+400uA	0.2%+400uA(5A range)	0.2%+400uA	0.2%+400uA(5A range)	0.2%+400uA
Current (500mA)	NA	0.2%+100uA(500mA range)	NA	0.2%+100uA(500mA range)	NA	0.2%+100uA(500mA range)	NA
Current (5mA)	0.2%+1uA	0.2%+1uA(5mA range)	0.2%+1uA	0.2%+1uA(5mA range)	0.2%+1uA	0.2%+1uA(5mA range)	0.2%+1uA
<b>RESPONSE TIME</b>							
Transient Response Time (Response to 1000% Load)	< 40uS within 100mV < 80uS within 20mV	< 40uS (within 100mV, Rear) < 50uS (within 100mV, Front)		< 40uS (within 100mV, Rear) < 50uS (within 100mV, Front)		< 40uS (within 100mV, Rear) < 50uS (within 100mV, Front)	

Chang		< 80uS (within 20mV)		< 80uS (within 20mV)		< 80uS (within 20mV)	
<b>PROGRAMMING RESOLUTION</b>							
Voltage	2.5mV	2.5mV		2.5mV		2.5mV	
Current	1.25mA	1.25mA( 5A range)	1.25mA	1.25mA( 5A range)	1.25mA	1.25mA( 5A range)	1.25mA
Current	NA	0.125mA(500mA range)	NA	0.125mA(500mA range)	NA	0.125mA(500mA range)	NA
Current		1.25uA(5mA range)		1.25uA(5mA range)		1.25uA(5mA range)	
<b>READBACK RESOLUTION</b>							
Voltage	1mV	1mV		1mV		1mV	
Current	0.1mA( 5A Range)	0.1mA( 5A Range)	0.1mA(1.5A Range)	0.1mA( 5A Range)	0.1mA( 3A Range)	0.1mA( 5A Range)	0.1mA( 3ARange)
Current	NA	0.01mA ( 500mA Range)	NA	0.01mA ( 500mA Range)	NA	0.01mA ( 500mA Range)	NA
Current	0.1uA( 5mA Range)	0.1uA( 5mA Range)	0.1uA( 5mA Range)	0.1uA( 5mA Range)	0.1uA( 5mA Range)	0.1uA( 5mA Range)	0.1uA( 5mA Range)
<b>PROTECTION FUNCTION</b>							
OVP Accuracy	50mV	CH1: 0.8V	CH2:50mV	CH1: 0.8V	CH2:50mV	CH1: 0.8V	CH2:50mV
OVP Resolution	10mV	10mV	10mV	10mV	10mV	10mV	10mV
<b>DVM</b>							
DC Readback Accuracy ( 23°C± 5°C)	0.05%+3mV	NA	0.05%+3mV	NA	0.05%+3mV	NA	0.05%+3mV
Readbck Resolution	1mV		1mV		1mV		1mV
Input Voltage range	0 – 20VDC		0 – 20VDC		0 – 20VDC		0 – 20VDC
Maximum Input Voltage	NA		-3V, +22V		-3V, +22V		-3V, +22V
Input Resistance and Capacitance	100000MΩ		20MΩ		20MΩ		20MΩ
<b>Programmable output resistance</b>							
Range	NA	0.001Ω to 1.000 Ω	NA	0.001Ω to 1.000 Ω	NA	0.001Ω to 1.000 Ω	NA
Programming accuracy		0.5% + 10 mΩ		0.5% + 10 mΩ		0.5% + 10 mΩ	
Resolution		1mΩ		1mΩ		1mΩ	
<b>PULSE CURRENT MEASUREMENT</b>							
TRIGGER LEVEL	5mA – 5A, 5mA/step	5mA – 5A, 5mA/step	5mA – 1.5A, 5mA/step	5mA – 5A, 5mA/step	5mA – 3A, 5mA/step	5mA – 5A, 5mA/step	5mA – 3A, 5mA/step
HIGH TIME/LOW TIME/AVERAGE TIME	33.3us to 833ms, 33.3us/step	33.3us to 833ms, 33.3us/step		33.3us to 833ms, 33.3us/step		33.3us to 833ms, 33.3us/step	
TRIGGER DELAY	0 – 100ms,10us/steps	0 – 100ms,10us/steps		0 – 100ms,10us/steps		0 – 100ms,10us/steps	
AVERAGE READINGS	1 – 100	1 – 100		1 – 100		1 – 100	
LONG INTEGRATION PULSE TIMEOUT	1S – 63S	1S – 63S		1S – 63S		1S – 63S	
LONG INTEGRATION MEASUREMENT TIME	850ms(60Hz)/840ms(50Hz) – 60s, or AUTO time 16.7ms/steps(60Hz), 20ms/steps(50Hz)	850ms(60Hz)/840ms(50Hz) – 60s, or AUTO time 16.7ms/steps(60Hz), 20ms/steps(50Hz)		850ms(60Hz)/840ms(50Hz) – 60s, or AUTO time 16.7ms/steps(60Hz), 20ms/steps(50Hz)		850ms(60Hz)/840ms(50Hz) – 60s, or AUTO time 16.7ms/steps(60Hz), 20ms/steps(50Hz)	
LONG INTEGRATION TRIGGER MODE	Rising, Falling, Neither	Rising, Falling, Neither		Rising, Falling, Neither		Rising, Falling, Neither	
<b>OTHERS</b>							
Output Terminal	Front / Rear Panel	Front / Rear Panel	Rear Panel	Front / Rear Panel	Rear Panel	Front / Rear Panel	Rear Panel
DVM Input	Front / Rear Panel	NA	Front Panel	NA	Front Panel	NA	Front Panel
RELAY CONTROL CONNECTOR	150mA/15V · 5Voutput, 100mA	150mA/15V · 5Voutput, 100mA		150mA/15V · 5Voutput, 100mA		150mA/15V · 5Voutput, 100mA	
Operation temperature	0 – 40°C	0 – 40°C		0 – 40°C		0 – 40°C	
Operation Humidity	≤ 80%	≤ 80%		≤ 80%		≤ 80%	

Storage Temperature	-20° C ~ 70° C	-20° C ~ 70° C	-20° C ~ 70° C	-20° C ~ 70° C			
Storage Humidity	< 80%	< 80%	< 80%	< 80%			
PC REMOTE INTERFACES							
(Standard)	GPIB / USB / LAN	GPIB / USB / LAN	GPIB / USB / LAN	GPIB / USB / LAN			
CURRENT SINK CAPACITY							
Sink Current Rating	$2A(V_{out} \leq 5V); 2A-0.1*(V_{out}-5)(V_{out}>5V)$	CH1 : 0~4V: 3.5A 4~15V: $3.5A-(0.25A/V)*(V_{set}-4V)$	CH2: 0~ 5V: 2A 5~12V: $2A-(0.1A/V)*(V_{set}-5V)$	CH1 : 0~4V: 3.5A 4~15V: $3.5A-(0.25A/V)*(V_{set}-4V)$	CH2: 0~ 5V: 3A 5~12V: $3A-(0.25A/V)*(V_{set}-5V)$	CH1 : 0~4V: 3.5A 4~15V: $3.5A-(0.25A/V)*(V_{set}-4V)$	CH2: 0~ 5V: 3A 5~12V: $3A-(0.25A/V)*(V_{set}-5V)$
Memory							
Save / Recall	5 Sets	5 Sets	5 Sets	5 Sets			
Power							
Input Power	90-264VAC ; 50/60Hz	90-264VAC ; 50/60Hz	90-264VAC ; 50/60Hz	90-264VAC ; 50/60Hz			
POWER CONSUMPTION	150VA	160W	160W	160W			
DIMENSIONS & WEIGHT							
Dimensions	222(W) x 86(H) x 363(D) mm	222(W) x 86(H) x 363(D) mm	222(W) x 86(H) x 363(D) mm	222(W) x 86(H) x 363(D) mm			
Weight	Approx 4.2Kg	Approx 4.5Kg	Approx 4.5Kg	Approx 4.5Kg			

Product specifications are subject to change without notice.

1 PLC=PowerLineCycle, 1PLC = 16.7ms for 60Hz operation, 20ms for 50Hz operation;

2 Display OFF, Speed includes measurement and binary data transfer out of GPIB;

3 PLC=1;

4 STABILITY: Following 15 minute warm-up, the change in output over 8 hours under ambient temperature, constant load, and line operating conditions;

5 The ground ring of the probe is pressed directly against the output ground of the power supply and the tip is in contact with the output voltage pin.

6 Auto detected at power-up;