



PSW-Series

Multi-Range DC Power Supply

FEATURES

- Voltage Rating : 30 V/40 V/80 V/160 V/250 V/800 V, Output Power Rating : 360 W to 1080 W
- Multi-range Voltage & Current Combinations in One Power Supply
- C.V/C.C Priority ; Particularly Suitable for the Battery and LED Industry
- Adjustable Slew Rate
- Series Operation (2 units in Series) for (30 V/40 V/80 V/160 V), Parallel Operation (3 units in Parallel) for (30 V/40 V/80 V/160 V/250 V/800 V)
- High Efficiency and High Power Density
- 1/2, 1/3, 1/6 Rack Mount Size Design (EIA/JIS Standard) for 360 W, 720 W, 1080 W
- Standard Interface : LAN, USB, Analog Control Interface
- Optional Interface : GPIB-USB Adaptor, RS232-USB Cable
- LabVIEW Driver

GW INSTEK
Simply Reliable

Powerful Stretch with Multi-range Technology

The PSW-Series is a single-output multi-range programmable switching DC Power Supply covering a power range up to 1080 W. This series of products include eighteen models with the combination of 30 V, 40 V, 80 V, 160 V, 250 V and 800 V rated voltages and 360 W, 720 W and 1080 W maximum output powers. The multi-range feature allows the flexible and efficient configuration of voltage and current within the rated power range. As the PSW-Series can be connected in series for maximum 2 units or in parallel for maximum 3 units, the capability of connecting multiple PSW-Series units for higher voltage or higher current output provides a broad coverage of applications. With the flexibility of multi-range power utilization and series/parallel connection, the PSW-Series significantly reduces the users' cost for various power supply products to accommodate the projects with different power requirements.

The C.V/C.C priority selection of the PSW-Series is a very useful feature for DUT protection. The conventional power supply normally operates under C.V mode when the power output is turned on. This could bring a high inrush current to the capacitive load or current-intensive load at the power output-on stage. Taking the I-V curve verification of LED as an example, it becomes a very challenging task to perform this measurement using a conventional power supply. With LED connected to a power supply under C.V mode as the initial setting, when the power output is turned on and the voltage rises to the LED forward voltage, the current will suddenly peak up and exceed the preset value of current limit. Upon detecting this high current, the power supply starts the transition from C.V mode to C.C mode. Though the current becomes stable after the C.C mode being activated, the current spike occurred at the C.V and C.C crossover point may possibly damage the DUT. At the power output-on stage, the PSW-Series is able to operate under C.C priority to limit the current spike occurred at the threshold voltage and therefore protects DUT from the inrush current damage.

The adjustable slew rate of the PSW-Series allows users to set for either output voltage or output current, a specific rise time from low to high level transition, and a specific fall time from high to low level transition. This facilitates the characteristic verification of a DUT during voltage or current level changes with controllable slew rates. Most manufacturing tests of lighting device or large capacitor during power output-on are associated with the occurrence of high surge current, which can greatly reduce the life time of the DUT. To prevent inrush current from damaging current-intensive devices, a smooth and slow voltage transition during power On-Off can significantly reduce the spike current and protect the device from high current damage.

The OVP and OCP are provided with the PSW-Series. Both OVP and OCP levels can be selected, with default level set at 110 %, of the rated voltage/current of the power supply. When any of the protection levels is tripped, the power output will be switched off to protect the DUT. The PSW-Series provides USB Host/Device and LAN interfaces as standard, GPIB-USB adapter and RS232-USB cable as optional. The LabView driver and the Data Logging PC software are supported on all the available interfaces. An analog control/monitoring connector is also available on the rear panel for external control of power On/Off and external monitoring of power output Voltage and Current.

PANEL INTRODUCTION



1. Voltage Knob
2. Current Knob
3. Output Key
4. Function Keys
5. USB A Port
6. Display
7. Cover Panel
8. Power Switch
9. Analog Control Connector
10. USB B Port
11. Output Terminal (+)
12. Sense Terminal(+/-)
13. Output Terminal (-)
14. Fan
15. AC Input
16. LAN Port

PSW-Series (HV) Rear Panel



PSW-Series (LV) Rear Panel



PARALLEL OPERATION (3 UNITS)

MODEL	SINGLE UNIT	2 UNITS	3 UNITS
PSW 30-36	30 V/36 A	30 V/72 A	30 V/108 A
PSW 30-72	30 V/72 A	30 V/144 A	30 V/216 A
PSW 30-108	30 V/108 A	30 V/216 A	30 V/324 A
PSW 40-27	40 V/27 A	40 V/54 A	40 V/81 A
PSW 40-54	40 V/54 A	40 V/108 A	40 V/162 A
PSW 40-81	40 V/81 A	40 V/162 A	40 V/243 A
PSW 80-13.5	80 V/13.5 A	80 V/27 A	80 V/40.5 A
PSW 80-27	80 V/27 A	80 V/54 A	80 V/81 A
PSW 80-40.5	80 V/40.5 A	80 V/81 A	80 V/121.5 A
PSW 160-7.2	160 V/7.2 A	160 V/14.4 A	160 V/21.6 A
PSW 160-14.4	160 V/14.4 A	160 V/28.8 A	160 V/43.2 A
PSW 160-21.6	160 V/21.6 A	160 V/43.2 A	160 V/64.8 A
PSW 250-4.5	250 V/4.5 A	250 V/9 A	250 V/13.5 A
PSW 250-9	250 V/9 A	250 V/18 A	250 V/27 A
PSW 250-13.5	250 V/13.5 A	250 V/27 A	250 V/40.5 A
PSW 800-1.44	800 V/1.44 A	800 V/2.88 A	800 V/4.32 A
PSW 800-2.88	800 V/2.88 A	800 V/5.76 A	800 V/8.64 A
PSW 800-4.32	800 V/4.32 A	800 V/8.64 A	800 V/12.96 A

SERIES OPERATION (2 UNITS)

MODEL	SINGLE UNIT	2 UNITS
PSW 30-36	30 V/36 A	60 V/36 A
PSW 30-72	30 V/72 A	60 V/72 A
PSW 30-108	30 V/108 A	60 V/108 A
PSW 40-27	40 V/27 A	80 V/27 A
PSW 40-54	40 V/54 A	80 V/54 A
PSW 40-81	40 V/81 A	80 V/81 A
PSW 80-13.5	80 V/13.5 A	160 V/13.5 A
PSW 80-27	80 V/27 A	160 V/27 A
PSW 80-40.5	80 V/40.5 A	160 V/40.5 A
PSW 160-7.2	160 V/7.2 A	320 V/7.2 A
PSW 160-14.4	160 V/14.4 A	320 V/14.4 A
PSW 160-21.6	160 V/21.6 A	320 V/21.6 A
PSW 250-4.5	N/A	N/A
PSW 250-9	N/A	N/A
PSW 250-13.5	N/A	N/A
PSW 800-1.44	N/A	N/A
PSW 800-2.88	N/A	N/A
PSW 800-4.32	N/A	N/A



PSW 80-40.5 (0 to 80V, 0 to 40.5 A, 1080 W)

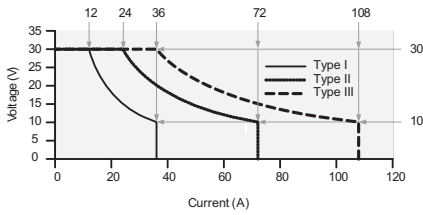


PSW 80-27 (0 to 80 V, 0 to 27 A, 720 W)

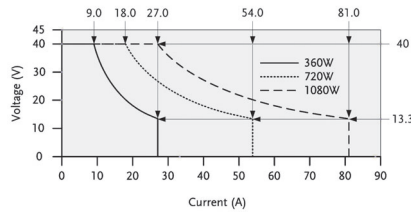


PSW 80-13.5 (0 to 80 V, 0 to 13.5 A, 360 W)

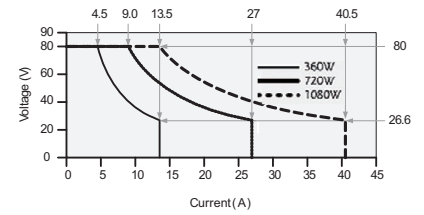
A. MULTI-RANGE OPERATION



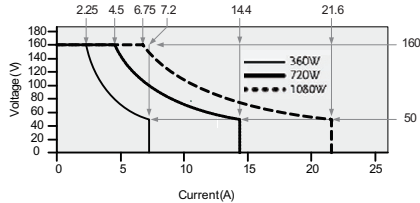
PSW 30 V Series Operating Area



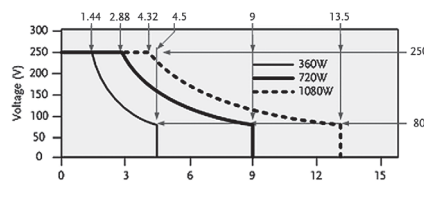
PSW 40 V Series Operating Area



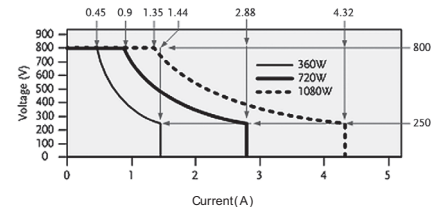
PSW 80 V Series Operating Area



PSW 160 V Series Operating Area



PSW 250 V Series Operating Area

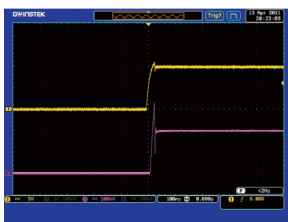


PSW 800 V Series Operating Area

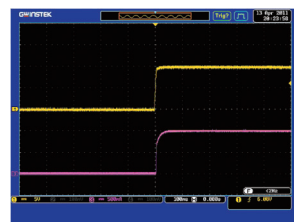
When the power supply is configured that the total output (Current x Voltage output) is less than the rated power output, it functions as a typical Constant Current (C.C) and Constant Voltage (C.V) power supply.

However, when the power supply is configured such that the total output power (Current x Voltage Output) exceeds the rated power output, the effective output is actually limited to the operation area of the unit.

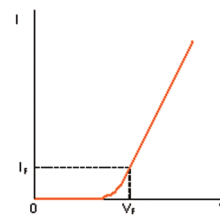
B. C.V / C.C PRIORITY SELECTION



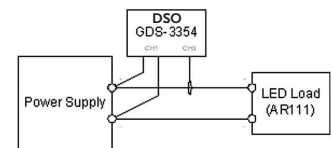
The Inrush Current and Surge Voltage occur at LED Forward Voltage (V_f) Under C.V Priority



The CC Priority Feature Effectively Limits the Occurrence of Inrush Current and Surge Voltage when the Supplied Voltage Rises to the LED Forward Voltage



V-I Characteristic of Diode

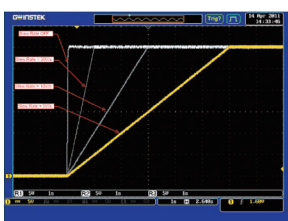


Using GDS-3354 DSO to Test LED Operation Under C.V Priority and C.C Priority Respectively

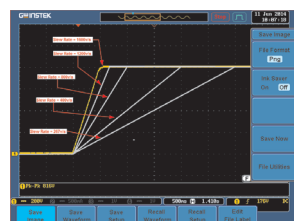
The PSW-Series provides C.C Mode and C.V Mode to fit various applications in the general purpose market. To get into critical application niches, however, the power supply needs to provide

advanced features to meet the specific requirements. The C.C and C.V Priority Selection enable the power supply to run under C.C priority, rather than normal CV priority, at the output-on stage.

C. ADJUSTABLE SLEW RATE



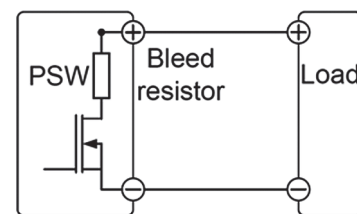
The Adjustable Rise Time of the PSW 30 V



The Adjustable Rise Time of the PSW 800 V

The PSW-Series has adjustable slew rates for the level transition of both Current and Voltage. This gives the PSW-Series power supply the ability to set specific rise time and fall time of the Voltage and Current drawn from the power supply to verify DUT performance during the Voltage / Current level transition. The feature also provides the benefit to slow down the voltage transition at the power output-on to protect DUT from inrush current damage. This is especially useful for the test of heavy-current-drawn devices like capacitors.

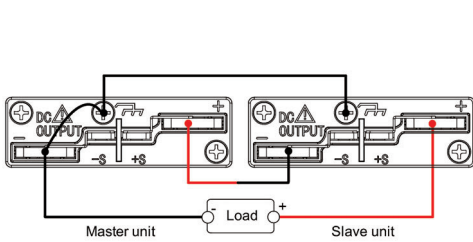
D. BLEEDER CONTROL



PSW-Series Built-in Bleed Resistor

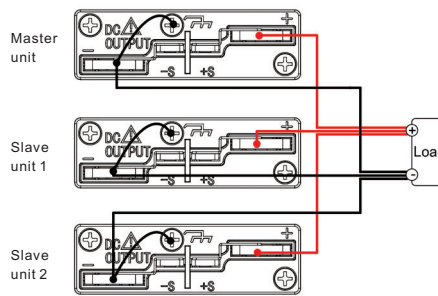
The PSW-Series employs a bleed resistor in parallel with the output terminal. Bleed resistor is designed to dissipate the power from the power supply filter capacitors when power is turned off and the load is disconnected. Without a bleed resistor, power terminal may remain charged on the filter capacitors for some time and be potentially hazardous. In addition, bleed resistor also allows for smoother voltage regulation of the power supply as the bleed resistor acts as a minimum voltage load. The bleed resistance can be turned on or off using the configuration setting.

E. SERIES AND PARALLEL CONNECTIONS

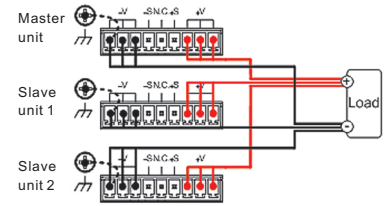


Series Connection

To increase power output capacity, the PSW-Series could be connected in Series mode to perform double voltage rating or in parallel mode to perform triple current rating for each model. With Multi-Range feature



Parallel Connection

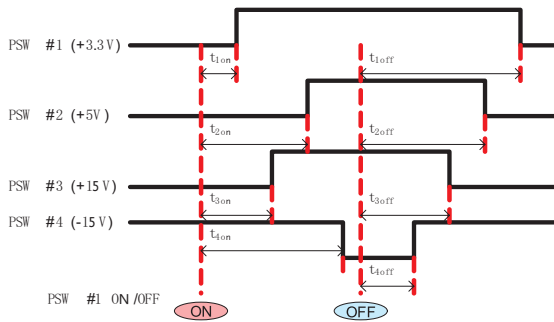


Parallel Connection

PSW 250 V/800 V only support parallel connections and maximum units in parallel is three.

and Series/Parallel connection capability, the PSW-Series is a high power density and cost-effective equipment for the tests of DC power modules, batteries and components in a broad power range.

F. OUTPUT ON /OFF DELAY



The Example of Output On/Off Delay Control Among Multiple Outputs of the PSW Units

The output On/Off delay feature enables the setting of a specific time delay for output on after the power supply output is turned on, and a specific time delay for output off after the power supply output is turned off. When multiple PSW units are used, the On/Off delay time of each unit can be set respectively referring to fix time points. This multiple-output control can be done through the Analog Control terminal at the rear panel or through the PC programming with standard commands.

G. USING THE RACK MOUNT KIT



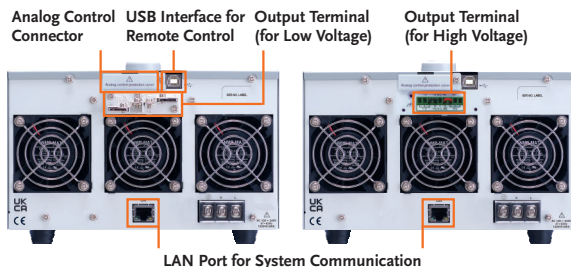
Rack Mount Kit GRA-410-J (JIS)



Rack Mount Kit GRA-410-E (EIA)

The Rack Mount Kit of the PSW-Series supports both EIA and JIS standards. A standard rack can accommodate 6 units of type I (360W Output Power) models, or 3 units of type II (720 W Output Power) models, or 2 units of type III (1080W Output Power) models. The Rack Mount Kits for EIA standard (P/N: GRA-410-E) and for JIS standard (P/N: GRA-410-J) are provided as optional accessories for the PSW-Series.

H. VARIOUS INTERFACES SUPPORT & EXTENDED TERMINAL BOX



Rear Panel for PSW-Series

The PSW-Series provides USB Host port in the front panel for easy access of stored data, such as test script program. In the rear panel, a USB Device port is available for remote control or I & V data logging of power output through a PC controller. The LAN interface, which meets DHCP standard, is provided as a standard feature of the PSW-Series for system communications and ATE applications.



GUG-001
GPIB to USB
Adapter

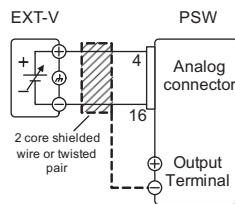
GET-001
Extended Terminal
(for PSW 30 V/40 V/80 V/160 V)

GET-002
Extended Terminal
(for PSW 250 V/800 V)

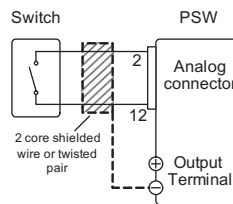
GET-005
Extended European Terminal
(for PSW 30 V/40 V/80 V/160 V)

An Extender Terminal box (P/N: GET-001/GET-002/GET-005) is provided as optional accessory to extend the power output form the rear panel to the front side. This extender terminal gives R&D or QC engineers convenience to do the jobs without frequently reaching the output terminal at the rear side of the PSW-Series.

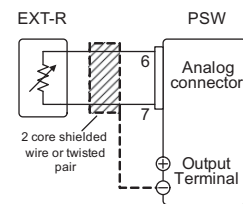
I. EXTERNAL ANALOG REMOTE CONTROL



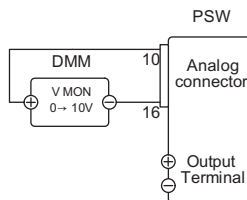
External Voltage Control of the Voltage Output



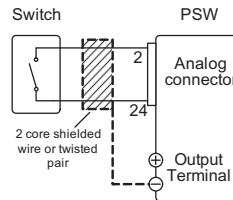
External Switch Control of the Main Power Shut-down



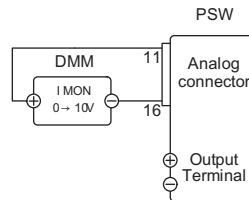
External Resistance control of the Voltage Output



External DMM Monitoring of the Output Voltage



External Switch Control of the Output On/Off



External DMM Monitoring of the Output Current

On the rear panel of the PSW-Series power supply, a 26-pin Analog Control connector is available to perform lots of remote control and monitoring functions. The output voltage and current can be set using external voltage or resistance.

The power supply output on/off and main power shut-down can also be controlled using external switches. This Analog Control Connector is complied with the Mil 26 pin connector (OMRON XG4 IDC plug) standard.

OPTIONAL ASSESSORIES

PSW-001



PSW-002



PSW-003



PSW-004



PSW-005



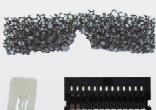
PSW-006



PSW-007



PSW-008



PSW-009



PSW-010



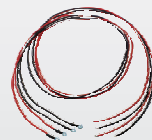
PSW-011



PSW-012



GTL-130



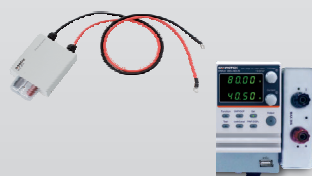
GUR-001A



GUG-001



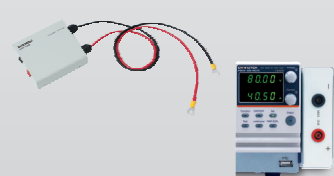
GET-001



GET-002



GET-005



SPECIFICATIONS									
	PSW 30-36	PSW 30-72	PSW 30-108	PSW 40-27	PSW 40-54	PSW 40-81	PSW 80-13.5	PSW 80-27	PSW 80-40.5
OUTPUT RATING									
Voltage	0 to 30 V	0 to 30 V	0 to 30 V	0 to 40 V	0 to 40 V	0 to 40 V	0 to 80 V	0 to 80 V	0 to 80 V
Current	0 to 36 A	0 to 72 A	0 to 108 A	0 to 27 A	0 to 54 A	0 to 81 A	0 to 13.5 A	0 to 27 A	0 to 40.5 A
Power	360 W	720 W	1080 W	360 W	720 W	1080 W	360 W	720 W	1080 W
REGULATION(CV)									
Load	20 mV	20 mV	20 mV	25 mV	25 mV	20 mV	45 mV	45 mV	45 mV
Line	18 mV	18 mV	18 mV	23 mV	23 mV	23 mV	43 mV	43 mV	43 mV
REGULATION(CC)									
Load	41 mA	77 mA	113 mA	32 mA	59 mA	86 mA	18.5 mA	32 mA	45.5 mA
Line	41 mA	77 mA	113 mA	32 mA	59 mA	86 mA	18.5 mA	32 mA	45.5 mA
RIPPLE & NOISE (Noise Bandwidth 20 MHz; Ripple Bandwidth=1 MHz)									
CV p-p	60 mV	80 mV	100 mV	60 mV	80 mV	100 mV	60 mV	80 mV	100 mV
CV rms	7 mV	11 mV	14 mV	7 mV	11 mV	14 mV	7 mV	11mV	14 mV
CC rms	72 mA	144 mA	216 mA	54 mA	108 mA	162 mA	27 mA	54 mA	81 mA
PROGRAMMING ACCURACY									
Voltage	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV
Current	0.1 % + 30 mA	0.1 % + 60 mA	0.1 % + 100 mA	0.1 % + 20 mA	0.1 % + 50 mA	0.1 % + 80 mA	0.1 % + 10 mA	0.1% + 30 mA	0.1 % + 40 mA
MEASUREMENT ACCURACY									
Voltage	0.1 % +10 mV	0.1 % +10 mV	0.1% +10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1% + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV
Current	0.1 % +30 mA	0.1 % +60 mA	0.1% +100 mA	0.1 % + 20 mA	0.1 % + 50 mA	0.1% + 80 mA	0.1 % + 10 mA	0.1 % + 30 mA	0.1 % + 40 mA
RESPONSE TIME									
Raise Time	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms
Fall Time(Full Load)	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms
Fall Time(No Load)	500 ms	500 ms	500 ms	500 ms	500 ms	500 ms	500 ms	500 ms	500 ms
Load Transient Recover Time (Load change from 50to100 %)	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms
PROGRAMMING RESOLUTION (By PC Remote Control Mode)									
Voltage	1 mV	1 mV	1 mV	1 mV	1 mV	1 mV	2 mV	2 mV	2 mV
Current	1 mA	2 mA	3 mA	1 mA	2 mA	3 mA	1 mA	2 mA	3 mA
MEASUREMENT RESOLUTION (By PC Remote Control Mode)									
Voltage	1 mV	1 mV	1 mV	1 mV	1 mV	1 mV	2 mV	2 mV	2 mV
Current	1 mA	2 mA	3 mA	1 mA	2 mA	3 mA	1 mA	2 mA	3 mA
SERIES AND PARALLEL CAPABILITY									
Parallel Operation	Up to 3 units including the master unit								
Series Operation	Up to 2 units including the master unit								
PROTECTION FUNCTION									
OVP	3 to 33 V	3 to 33 V	3 to 33 V	4 to 44 V	4 to 44 V	4 to 44 V	8 to 88 V	8 to 88 V	8 to 88 V
OCP	3.6 to 39.6 A	5 to 79.2 A	5 to 118.8 A	2.7 to 29.7 A	5 to 59.4 A	5 to 89.1 A	1.35 to 14.85 A	2.7 to 29.7 A	4.05 to 44.55 A
OHP	Activated by elevated internal temperatures								
FRONT PANEL DISPLAY ACCURACY, 4 digits									
Voltage	0.1 %±20 mV	0.1 %±20 mV	0.1 %±20 mV	0.1 %±20 mV	0.1 %±20 mV	0.1 %±20 mV	0.1 %±20 mV	0.1 %±20 mV	0.1 %±20 mV
Current	0.1 %±40 mA	0.1 %±70 mA	0.1 %±100 mA	0.1 %±30 mA	0.1 %±60 mA	0.1 %±80 mA	0.1 %±20 mA	0.1 %±40 mA	0.1 %±50 mA
ENVIRONMENT CONDITION									
Operation Temp	0 °C to 50 °C								
Storage Temp	-25 °C to 70 °C								
Operating Humidity	20 % to 85 % RH; No condensation								
Storage Humidity	90 % RH or Less; No condensation								
READ BACK TEMP COEFFICIENT									
Voltage	100 ppm/°C of rated output voltage : after a 30 minute warm-up								
Current	200 ppm/°C of rated output current : after a 30 minute warm-up								
OTHER									
Analog Control Interface	Yes								
Fan	USB/LAN/GPIB-USB(Option)/RS232-USB(Option)								
POWER SOURCE	With thermal sensing control								
	85 VAC to 265VAC, 47 to 63 Hz, single phase								
DIMENSIONS & WEIGHT	71(W)x124(H) x350(D) mm ; Approx. 3 kg	142(W)x124(H) x350(D)mm ; Approx. 5.3 kg	214(W)x124(H) x350(D) mm ; Approx. 7.5 kg	71(W)x124(H) x350(D) mm ; Approx. 3 kg	142(W)x124(H) x350(D)mm ; Approx. 5.3 kg	214(W)x124(H) x350(D) mm ; Approx. 7.5 kg	71(W)x124(H) x350(D) mm ; Approx. 3 kg	142(W)x124(H) x350(D) mm ; Approx. 5.3 kg	214(W)x124(H) x350(D) mm ; Approx. 7.5 kg

ORDERING INFORMATION		ACCESSORIES	
PSW 30-36	(0 to 30 V/0 to 36 A/360 W) Multi-Range DC Power Supply	GTL-123 Test Lead x 1 (for PSW 30 V/40 V/80 V/160 V), Power Cord x 1 (Region dependent), GTL-240 USB Cable " L " Type x 1, PSW-004 Basic Accessories Kit x 1 (for PSW 30 V/40 V/80 V/160 V), Includes : M4 Terminal screws and washers x 2, Air Filter x 1, Analog control protection dummy x 1, Analog control lock lever x 1, M8 terminal bolts, nuts and washers x 2	
PSW 30-72	(0 to 30 V/0 to 72 A/720 W) Multi-Range DC Power Supply	PSW-004 Basic Accessories Kit x1 (30 V/40V/80 V/160 V low voltage module)	PSW-011 Output Terminal Cover for 250 V/800 V models
PSW 30-108	(0 to 30 V/0 to 108 A/1080 W) Multi-Range DC Power Supply	PSW-008 Basic Accessories Kit for PSW 250 V/800 V models	PSW-012 High Voltage Output Terminal for 250 V/800 V model
PSW 40-27	(0 to 40 V/0 to 27 A/360 W) Multi-Range DC Power Supply	PSW-009 Output Terminal Cover for 30 V/40 V/80 V/160 V models	
PSW 40-54	(0 to 40 V/0 to 54 A/720 W) Multi-Range DC Power Supply	OPTIONAL ACCESSORIES	
PSW 40-81	(0 to 40 V/0 to 81 A/1080 W) Multi-Range DC Power Supply	PSW-001 Accessory Kit	GTL-248 GPIB Cable, Double Shielded, 2000mm
PSW 80-13.5	(0 to 80 V/0 to 13.5 A/360 W) Multi-Range DC Power Supply	PSW-002 Simple IDC Tool	GRA-410-J Rack Mount Kit (JIS)
PSW 80-27	(0 to 80 V/0 to 27 A/720 W) Multi-Range DC Power Supply	PSW-003 Contact Removal Tool	GRA-410-E Rack Mount Kit (EIA)
PSW 80-40.5	(0 to 80 V/0 to 40.5 A/1080 W) Multi-Range DC Power Supply	PSW-005 Cable for 2 Units of PSW-Series in Series Mode Connection (for PSW 30V/40V/80V/160V)	PSW-010 Large filter (Type II/III)
PSW 160-7.2	(0 to 160 V/0 to 7.2 A/360 W) Multi-Range DC Power Supply	PSW-006 Cable for 2 Units of PSW-Series in Parallel Mode Connection	GUG-001 GPIB to USB Adaptor
PSW 160-14.4	(0 to 160 V/0 to 14.4 A/720 W) Multi-Range DC Power Supply	PSW-007 Cable for 3 Units of PSW-Series in Parallel Mode Connection	GUR-001A 300mm(H3)
PSW 160-21.6	(0 to 160 V/0 to 21.6 A/1080 W) Multi-Range DC Power Supply	GET-001 Extended Terminal with max. 30A(for PSW 30V/40V/80V/160V)	GUR-001B RS-232 to USB Adapter with #4-40 UNC Rivet Nut
PSW 250-4.5	(0 to 250 V/0 to 4.5 A/360 W) Multi-Range DC Power Supply	GET-002 Extended Terminal with max. 10A(for PSW 250V/800V)	
PSW 250-9	(0 to 250 V/0 to 9 A/720 W) Multi-Range DC Power Supply	GET-005 Extended European Terminal with max. 20A (for PSW 30V/40V/80V/160V)	
PSW 250-13.5	(0 to 250 V/0 to 13.5 A/1080 W) Multi-Range DC Power Supply	GTL-130 Test lead : 2 x red, 2 x black(for PSW 250V/800V)	
PSW 800-1.44	(0 to 800 V/0 to 1.44 A/360 W) Multi-Range DC Power Supply		
PSW 800-2.88	(0 to 800 V/0 to 2.88 A/720 W) Multi-Range DC Power Supply		
PSW 800-4.32	(0 to 800 V/0 to 4.32 A/1080 W) Multi-Range DC Power Supply		

SPECIFICATIONS									
	PSW 160-7.2	PSW 160-14.4	PSW 160-21.6	PSW 250-4.5	PSW 250-9	PSW 250-13.5	PSW 800-1.44	PSW 800-2.88	PSW 800-4.32
OUTPUT RATING									
Voltage	0 to 160 V	0 to 160 V	0 to 160 V	0 to 250 V	0 to 250 V	0 to 250 V	0 to 800 V	0 to 800 V	0 to 800 V
Current	0 to 7.2 A	0 to 14.4 A	0 to 21.6 A	0 to 4.5 A	0 to 9 A	0 to 13.5 A	0 to 1.44 A	0 to 2.88 A	0 to 4.32 A
Power	360 W	720 W	1080 W	360 W	720 W	1080 W	360 W	720 W	1080 W
REGULATION(CV)									
Load	85 mV	85 mV	85 mV	130 mV	130 mV	130 mV	405 mV	405 mV	405 mV
Line	83 mV	83 mV	83 mV	128 mV	128 mV	128 mV	403 mV	403 mV	403 mV
REGULATION(CC)									
Load	12.2 mA	19.4 mA	26.6 mA	9.5 mA	14 mA	18.5 mA	6.44 mA	7.88 mA	9.32 mA
Line	12.2 mA	19.4 mA	26.6 mA	9.5 mA	14 mA	18.5 mA	6.44 mA	7.88 mA	9.32 mA
RIPPLE & NOISE (Noise Bandwidth 20 MHz; Ripple Bandwidth=1 MHz)									
CV p-p	60 mV	80 mV	100 mV	80 mV	100 mV	120 mV	150 mV	200 mV	200 mV
CV rms	12 mV	15 mV	20 mV	15 mV	15 mV	15 mV	30 mV	30 mV	30 mV
CC rms	15 mA	30 mA	45 mA	10 mA	20 mA	30 mA	5 mA	10 mA	15 mA
PROGRAMMING ACCURACY									
Voltage	0.1 %+100 mV	0.1 %+100 mV	0.1 %+100 mV	0.1 %+200 mV	0.1 %+200 mV	0.1 %+200 mV	0.1 %+400 mV	0.1 %+400 mV	0.1 %+400 mV
Current	0.1 %+5 mA	0.1 %+15 mA	0.1 %+20 mA	0.1 %+5 mA	0.1 %+10 mA	0.1 %+15 mA	0.1 %+2 mA	0.1 %+4 mA	0.1 %+6 mA
MEASUREMENT ACCURACY									
Voltage	0.1 %+100 mV	0.1 %+100 mV	0.1 %+100 mV	0.1 %+200 mV	0.1 %+200 mV	0.1 %+200 mV	0.1 %+400 mV	0.1 %+400 mV	0.1 %+400 mV
Current	0.1 %+5 mA	0.1 %+15 mA	0.1 %+20 mA	0.1 %+ 5mA	0.1 %+10 mA	0.1 %+15 mA	0.1 %+2 mA	0.1 %+4 mA	0.1 %+6 mA
RESPONSE TIME									
Raise Time	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	150 ms	150 ms	150 ms
Fall Time(Full Load)	100 ms	100 ms	100 ms	150 ms	150 ms	150 ms	300 ms	300 ms	300 ms
Fall Time(No Load)	1000 ms	1000 ms	1000 ms	1200 ms	1200 ms	1200 ms	2000 ms	2000 ms	2000 ms
Load Transient Recover Time (Load change from 50to100 %)	2 ms	2 ms	2 ms	2 ms	2 ms	2 ms	2 ms	2 ms	2 ms
PROGRAMMING RESOLUTION (By PC Remote Control Mode)									
Voltage	3 mV	3 mV	3 mV	5 mV	5 mV	5 mV	14 mV	14 mV	14 mV
Current	1 mA	2 mA	3 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
MEASUREMENT RESOLUTION (By PC Remote Control Mode)									
Voltage	3 mV	3 mV	3 mV	5 mV	5 mV	5 mV	14 mV	14 mV	14 mV
Current	1 mA	2 mA	3 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
SERIES AND PARALLEL CAPABILITY									
Parallel Operation	Up to 3 units including the master unit			3	3	3	3	3	3
Series Operation	Up to 2 units including the master unit			N/A	N/A	N/A	N/A	N/A	N/A
PROTECTION FUNCTION									
OVP	16 to 176 V	16 to 176 V	16 to 176 V	20 to 275 V	20 to 275 V	20 to 275 V	20 to 880 V	20 to 880 V	20 to 880 V
OCP	0.72 to 7.92 A	1.44 to 15.84 A	2.16 to 23.76 A	0.45 to 4.95 A	0.9 to 9.9 A	1.35 to 14.85 A	0.144 to 1.584 A	0.288 to 3.168 A	0.432 to 4.752 A
OHP	Activated by elevated internal temperatures								
FRONT PANEL DISPLAY ACCURACY, 4 digits									
Voltage	0.1 %±100 mV	0.1 %±100 mV	0.1 %±100 mV	0.1 %±200 mV	0.1 %±200 mV	0.1 %±200 mV	0.1 %±400 mV	0.1 %±400 mV	0.1 %±400 mV
Current	0.1 %±5 mA	0.1 %±30 mA	0.1 %±30 mA	0.1 %±5 mA	0.1 %±10 mA	0.1 %±20 mA	0.1 %±2 mA	0.1 %±4 mA	0.1 %±6 mA
ENVIRONMENT CONDITION									
Operation Temp	0 ℃ to 50 ℃								
Storage Temp	-25 ℃ to 70 ℃								
Operating Humidity	20 % to 85 % RH; No condensation								
Storage Humidity	90 % RH or Less; No condensation								
READ BACK TEMP COEFFICIENT									
Voltage	100 ppm/℃ of rated output voltage : after a 30 minute warm-up								
Current	200 ppm/℃ of rated output current : after a 30 minute warm-up								
OTHER									
Analog Control Interface	Yes								
Fan	USB/LAN/GPIB-USB(Optional)/RS232-USB(Optional)								
POWER SOURCE	With thermal sensing control								
	85 VAC to 265 VAC, 47 to 63 Hz, single phase								
DIMENSIONS & WEIGHT	71(W)x124(H) x350(D) mm ; Approx. 3 kg	142(W)x124(H) x350(D) mm ; Approx. 5.3 kg	214(W)x124(H) x350(D) mm ; Approx. 7.5 kg	71(W)x124(H) x350(D) mm ; Approx. 3 kg	142(W)x124(H) x350(D) mm ; Approx. 5.3 kg	214(W)x124(H) x350(D) mm ; Approx. 7.5 kg	71(W)x124(H) x350(D) mm ; Approx. 3 kg	142(W)x124(H) x350(D) mm ; Approx. 5.3 kg	214(W)x124(H) x350(D) mm ; Approx. 7.5 kg

Specifications subject to change without notice. SW-0000GD6BH

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