



# PSW-Multi Series

Dual-channel/Triple-channel Programmable Switching DC Power Supply

## FEATURES

- Multi-channel: Maximum 720W for Dual-channel Module and Maximum 1080W for Triple-channel Models; The PSW-Multi Series Also Features a New Built-in Function That Allows Individual Synchronized Output Control of Each Voltage Module Output Latency Between Channels with the Same Voltage Module is Less Than 0.1ms
- Multiple Voltage Combinations: Low Voltage Combinations Can be Selected From 30V/40V/80V/160V; High Voltage Combinations Can be Selected From 250V/800V
- Advanced Web Server: Executes SCPI Commands; Web Controls Through Server; Data Log; Edit Sequence
- CC/CV Priority Mode Selection is Ideal for Battery and LED Industries
- Adjustable Rising and Falling Slew Rate
- 720W/1080W Adopt 1/3, 1/2 Rack Mount Frame Designs (Standard EIA/JIS)
- Standard Communications Interfaces: LAN, USB, External Analog Remote Control Terminal
- Optional Communications Interfaces: GPIB-USB Adapter, RS232-USB Cable
- Support LabVIEW Driver

**GW INSTEK**  
Simply Reliable

# Second to None, Dominating Mid/Low Power Ranges

PSW-Multi Series is a dual-channel or triple-channel wide range output programmable switching DC power supply. The maximum output power can reach 1080W. There are 13 dual-channel models with a rated power of 720W, and 24 triple-channel models with a rated power of 1080W. The rated voltages of low voltage modules are 30V, 40V, 80V, 160V. The rated voltages of high voltage modules are 250V and 800V.

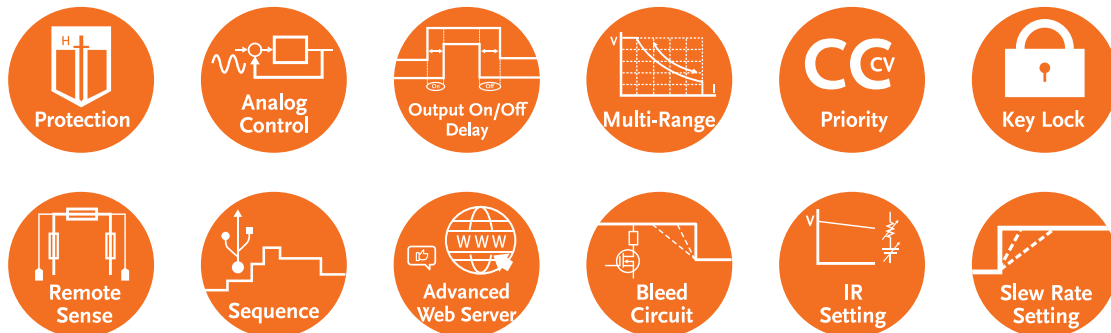
The CV/CC priority selection of the PSW-Multi Series is a very useful feature for DUT protection. The conventional power supply normally operates under CV mode when the power output is turned on. This could bring a high inrush current to the capacitive load or current-intensive load at the power output-on 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 CV 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 CV mode to CC mode. Though the current becomes stable after the CC mode being activated, the current spike occurred at the CV and CC crossover point may possibly damage the DUT. At the power output-on stage, the PSW-Multi Series is able to operate under CC 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-Multi 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 pike current and protect the device from high current damage.

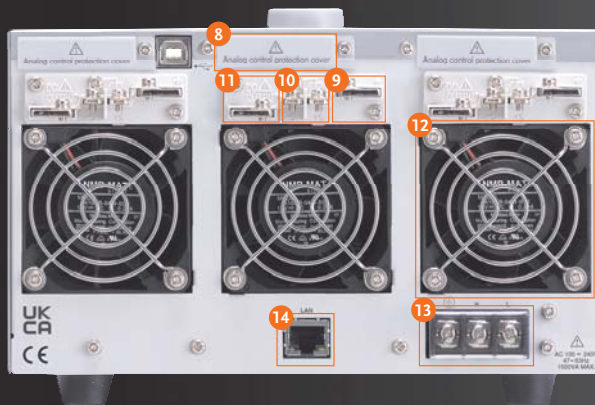
The OVP and OCP are provided with the PSW-Multi Series. Both OVP and OCP levels can be selected, with default level set at 110%, of the rated voltage/current of the power supply. When any of the protection levels is tripped, the power output will be switched off to protect the DUT. The PSW-Multi Series 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.

## THE SPECIAL FUNCTIONS ARE AS FOLLOWS



The advanced web server, a unique function of the PSW-Multi Series, can directly execute SCPI commands through the browser and control the PSW-Multi Series power supply. The data log has an interval of 1 second. It can edit output sequence. Wide-range output: Provides a wide range of voltage/current outputs under the same rated power. One power supply has the total capability of multiple power supplies. Bleed Circuit: Accelerates the voltage fall time. Sequence: Saves the output sequence in a USB flash drive to directly control the power supply to execute the automatic test sequence. The CV/CC priority mode of PSW-Multi Series is a very useful feature for protecting the DUT. Conventional power supplies usually operate in CV mode when outputting. During power output, capacitive loads or current-intensive loads can cause inrush currents. Taking the I-V verification curve of an LED as an example, it would be challenging to measure it using a conventional power supply. In the initial state, a conventional power supply operates in CV mode. When the output voltage exceeds the forward voltage of the LED, the current will instantaneously flow, surpassing the default current limit value. Even when the current becomes stable after switching to CC mode, the crossover point between CV and CC can still potentially damage the DUT. However, the PSW-Multi Series is capable of operating in CC mode during power output to suppress inrush currents and prevent damage to the DUT when the voltage instantaneously conducts. Adjustable slew rate allows users to set the rise and fall times of voltage or current. By controlling the slew rate settings, it becomes convenient to verify the DUT under varying voltage or current conditions. In manufacturing tests for lighting devices or large capacitors, power output often generates significant inrush currents, which can greatly reduce the lifespan of the DUT. To prevent damage caused by inrush currents, a slow voltage output significantly reduces the harm caused by inrush currents, thereby achieving device protection. The OVP and OCP functions provided by the PSW-Multi Series can be self-defined and the default value is 110% of the rated value. When the protection setting is triggered, the output will be turned off to protect the DUT. USB and LAN are standard communications interfaces of PSW-Multi Series, while GPIB-USB and RS232-USB are optional accessories. All interfaces support LabVIEW driver and Data Logging PC software.

## PANEL INTRODUCTION



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

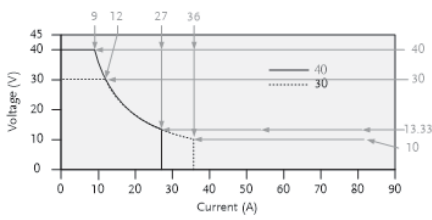
### DUAL-CHANNEL MODELS ARE AS FOLLOWS

| MODEL      | CH1    | CH2    | SIZE        |
|------------|--------|--------|-------------|
| PSW-720L11 | 30.00V | 30.00V | 1/3 Rack 3U |
| PSW-720L12 | 30.00V | 40.00V | 1/3 Rack 3U |
| PSW-720L14 | 30.00V | 80.00V | 1/3 Rack 3U |
| PSW-720L15 | 30.00V | 160.0V | 1/3 Rack 3U |
| PSW-720L22 | 40.00V | 40.00V | 1/3 Rack 3U |
| PSW-720L24 | 40.00V | 80.00V | 1/3 Rack 3U |
| PSW-720L25 | 40.00V | 160.0V | 1/3 Rack 3U |
| PSW-720L44 | 80.00V | 80.00V | 1/3 Rack 3U |
| PSW-720L45 | 80.00V | 160.0V | 1/3 Rack 3U |
| PSW-720L55 | 160.0V | 160.0V | 1/3 Rack 3U |
| PSW-720H66 | 250.0V | 250.0V | 1/3 Rack 3U |
| PSW-720H68 | 250.0V | 800.0V | 1/3 Rack 3U |
| PSW-720H88 | 800.0V | 800.0V | 1/3 Rack 3U |

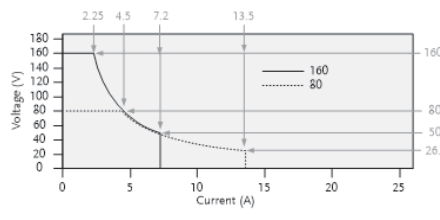
### TRIPLE-CHANNEL MODELS ARE AS FOLLOWS

| MODEL        | CH1    | CH2    | CH3    | SIZE        |
|--------------|--------|--------|--------|-------------|
| PSW-1080L111 | 30.00V | 30.00V | 30.00V | 1/2 Rack 3U |
| PSW-1080L112 | 30.00V | 30.00V | 40.00V | 1/2 Rack 3U |
| PSW-1080L114 | 30.00V | 30.00V | 80.00V | 1/2 Rack 3U |
| PSW-1080L115 | 30.00V | 30.00V | 160.0V | 1/2 Rack 3U |
| PSW-1080L122 | 30.00V | 40.00V | 40.00V | 1/2 Rack 3U |
| PSW-1080L124 | 30.00V | 40.00V | 80.00V | 1/2 Rack 3U |
| PSW-1080L125 | 30.00V | 40.00V | 160.0V | 1/2 Rack 3U |
| PSW-1080L144 | 30.00V | 80.00V | 80.00V | 1/2 Rack 3U |
| PSW-1080L145 | 30.00V | 80.00V | 160.0V | 1/2 Rack 3U |
| PSW-1080L155 | 30.00V | 160.0V | 160.0V | 1/2 Rack 3U |
| PSW-1080L222 | 40.00V | 40.00V | 40.00V | 1/2 Rack 3U |
| PSW-1080L224 | 40.00V | 40.00V | 80.00V | 1/2 Rack 3U |
| PSW-1080L225 | 40.00V | 40.00V | 160.0V | 1/2 Rack 3U |
| PSW-1080L244 | 40.00V | 80.00V | 80.00V | 1/2 Rack 3U |
| PSW-1080L245 | 40.00V | 80.00V | 160.0V | 1/2 Rack 3U |
| PSW-1080L255 | 40.00V | 160.0V | 160.0V | 1/2 Rack 3U |
| PSW-1080L444 | 80.00V | 80.00V | 80.0V  | 1/2 Rack 3U |
| PSW-1080L445 | 80.00V | 80.00V | 160.0V | 1/2 Rack 3U |
| PSW-1080L455 | 80.00V | 160.0V | 160.0V | 1/2 Rack 3U |
| PSW-1080L555 | 160.0V | 160.0V | 160.0V | 1/2 Rack 3U |
| PSW-1080H666 | 250.0V | 250.0V | 250.0V | 1/2 Rack 3U |
| PSW-1080H668 | 250.0V | 250.0V | 800.0V | 1/2 Rack 3U |
| PSW-1080H688 | 250.0V | 800.0V | 800.0V | 1/2 Rack 3U |
| PSW-1080H888 | 800.0V | 800.0V | 800.0V | 1/2 Rack 3U |

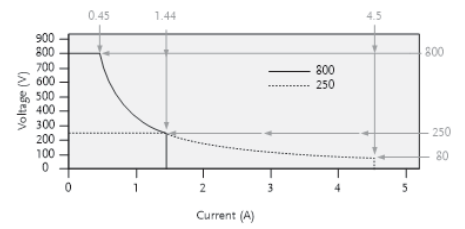
## A. MULTI-RANGE OPERATION



PSW 30V/40V Series Operating Area



PSW 80V/160V Series Operating Area



PSW 250V/800V 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 (CC) and Constant Voltage (CV) 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. MULTI-CHANNEL

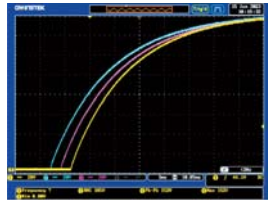


Figure 1

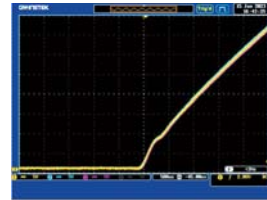


Figure 2

Multi-Channel, Dual-channel or triple-channel; the output latency between channels for same voltage module is less than 0.1ms.

When using a single-channel power supply for parallel multiple voltage output testing, there are different delays and slew rate settings, resulting in longer voltage output delay times and lack of control. The PSW-Multi Series features a built-in synchronous output control function (F130) that allow Dual-channel or triple-channel; the output latency between channels for same voltage module is less than 0.1ms.

When using a single-channel power supply with three units connected in parallel through the backplane for synchronized output, each unit will experience a voltage output latency of approximately 5 to 10 ms. (Figure 1)

The waveform of PSW-Multi Series in triple-channel synchronized output mode exhibits voltage output latency times less than 0.1 ms for each channel (with the same voltage model) (Figure 2)

It can fulfill diverse testing applications, for example: multi-channel digital device testing, electronic circuit verification, battery charging and discharging testing, and more.

## C. ADVANCED WEB SERVER



Figure 1



Figure 2



Figure 3



Figure 4

SCPI commands can be issued directly on the browser, examples are as follows: Direct control of PSW-Multi series power supplies on the browser. (Figure 1)

Sequences can be edited on the browser. (Figure 3)

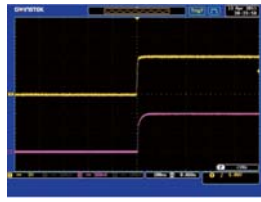
Data Log can be performed on the browser. For standard web server, the fastest data log time interval is 1 second. PSW-Multi series also provide paid version (active by option license key), the fastest data log time interval is 0.1 seconds and the data save to USB drive directly. (Figure 2)

The above advanced web server functions are new functions of PSW-Multi. Currently, there is no plan to update the advanced web server in the existing PSW-Series (Single Channel). (Figure 4)

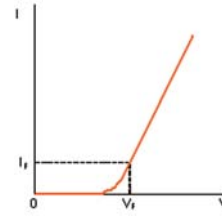
## D. CV / CC PRIORITY SELECTION



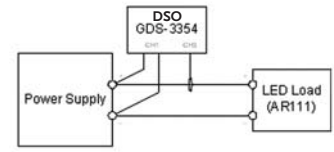
The Inrush Current and Surge Voltage occur at LED Forward Voltage ( $V_f$ ) Under C.V Priority



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

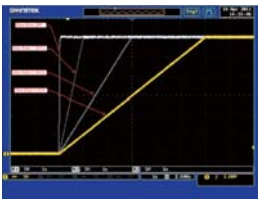


Using GDS-3354 DSO to Test LED Operation Under CV Priority and CC Priority Respectively

The PSW-Multi Series provides CC Mode and CV 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 CC and CV Priority Selection enable the power supply to run under CC priority, rather than normal CV priority, at the output-on stage.

## E. ADJUSTABLE SLEW RATE



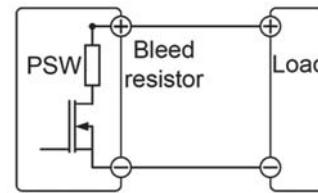
The Adjustable Rise Time of the PSW 30V Module



The Adjustable Rise Time of the PSW 800V Module

The PSW-Multi Series has adjustable slew rates for the level transition of both Current and Voltage. This gives the PSW-Multi 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.

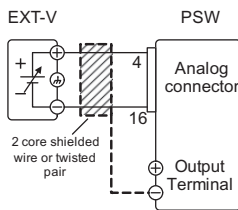
## F. BLEEDER CONTROL



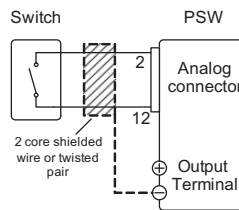
PSW-Multi Series Built-in Bleed Resistor

The PSW-Multi 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.

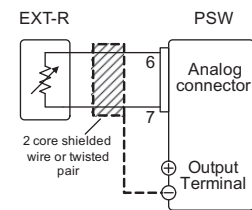
## G. EXTERNAL ANALOG REMOTE CONTROL



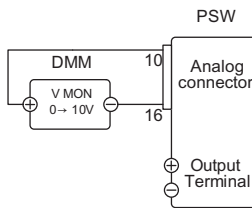
External Voltage Control of the Voltage Output



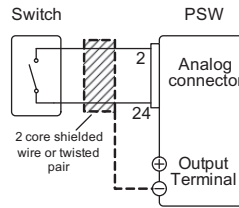
External Switch Control of the Main Power Shut-down



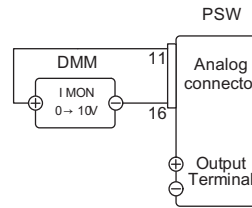
External Resistance control of the Voltage Output



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-Multi 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.

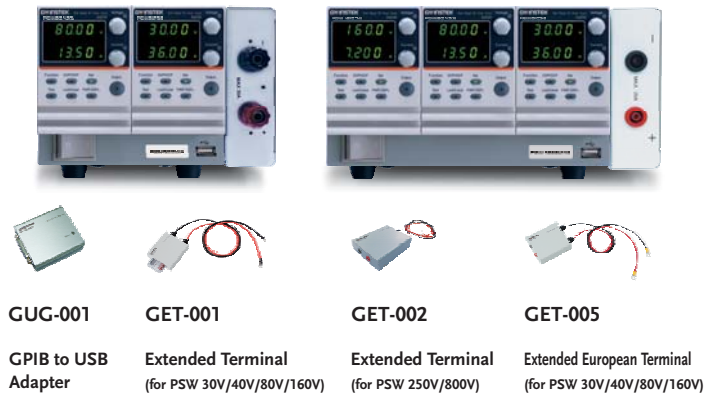
The power supply output on/off and main power shut-down can also be controlled using external switches. This Analog Control Connector is complied with the Mil 26 pin connector (OMRON XG4 IDC plug) standard.

## H. VARIOUS INTERFACES SUPPORT & EXTENDED TERMINAL BOX



Rear Panel for PSW-Multi Series

The PSW-Multi 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-Multi Series for system communications and ATE applications.



An Extender Terminal box (P/N: GET-001/GET-002/GET-005) is provided as optional accessory to extend the power output from 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-Multi Series.

## I. USING THE RACK MOUNT KIT



Rack Mount Kit GRA-410-J (JIS)

The PSW-Multi Series has an optional Rack Mount Kit (GW Instek part number: [JIS] GRA-410-J, [EIA] GRA-410-E[EIA]) that can be used to hold



Rack Mount Kit GRA-410-E (EIA)

6x PSW models, 3x PSW-720 models, 2x PSW-1080 models or a combination of all models (1x PSW, 1x PSW-720 and 1x PSW-1080).

## OPTIONAL ASSESSORIES



## SPECIFICATIONS

| Module Type   |  |  | 1  | 2  | 4               | 5              | 6                     | 8               |    |
|---|--|--|--|--|-----------------|----------------|-----------------------|-----------------|----|
| <b>H/L Voltage Classification</b>                   |  |  | L  | L  | L               | L              | H                     | H               |    |
| Rated output voltage                                |  |  | V  | 30   | 40              | 80             | 160                   | 250             |    |
| Rated output current                                |  |  | A  | 36   | 27              | 13.5           | 7.2                   | 4.5             |    |
| Rated output power                                  |  |  | W  | 360  | 360             | 360            | 360                   | 360             |    |
| Power ratio   |  |  | —  | 3  | 3               | 3              | 3.2                   | 3.125           |    |
| <b>Constant Voltage Mode</b>                        |  |  |  | <b>30-36</b>   | <b>40-27</b>    | <b>80-13.5</b> | <b>160-7.2</b>        | <b>250-4.5</b>  |    |
| Line regulation (°1)                                |  |  | mV   | 18   | 23              | 43             | 83                    | 128             |    |
| Load regulation (°2)                                |  |  | mV   | 20   | 25              | 45             | 85                    | 130             |    |
| Ripple and noise (°3)                               |  |  | p-p (°4)   | mV   | 60              | 60             | 60                    | 80              |    |
|   |  |  | r.m.s. (°5)  | mV   | 7               | 7              | 7                     | 12              | 15 |
| Temperature coefficient                             |  |  | ppm/°C   | 100ppm/°C of rated output voltage, after a 30 minute warm-up   |                 |                |                       |                 |    |
| Remote sense compensation voltage (single wire)     |  |  | V  | 0.6  | 0.6             | 0.6            | 0.6                   | 1               |    |
| Rise time (°6)                                      |  |  | Rated load   | ms   | 50              | 50             | 50                    | 100             |    |
|   |  |  | No load  | ms   | 50              | 50             | 50                    | 100             |    |
| Fall time (°7)                                      |  |  | Rated load   | ms   | 50              | 50             | 50                    | 100             |    |
|   |  |  | No load  | ms   | 500             | 500            | 500                   | 1000            |    |
| Transient response time (°8)                        |  |  | ms   | 1  | 1               | 1              | 2                     | 2               |    |
| <b>Constant Current Mode</b>                        |  |  |  | <b>30-36</b>   | <b>40-27</b>    | <b>80-13.5</b> | <b>160-7.2</b>        | <b>250-4.5</b>  |    |
| Line regulation (°1)                                |  |  | mA   | 41   | 32              | 18.5           | 12.2                  | 9.5             |    |
| Load regulation (°9)                                |  |  | mA   | 41   | 32              | 18.5           | 12.2                  | 9.5             |    |
| Ripple and noise                                    |  |  | r.m.s.   | mA   | 72              | 54             | 27                    | 15              |    |
| Temperature coefficient                             |  |  | ppm/°C   | 200ppm/°C of rated output current, after a 30 minute warm-up   |                 |                |                       |                 |    |
| <b>Protection Function</b>                          |  |  |  | <b>30-36</b>   | <b>40-27</b>    | <b>80-13.5</b> | <b>160-7.2</b>        | <b>250-4.5</b>  |    |
| Over voltage protection (OVP)                       |  |  | Setting range  | V  | 3-33            | 4-44           | 8-88                  | 16-176          |    |
|   |  |  | Setting accuracy   | ± (2% of rated output voltage)   |                 |                |                       |                 |    |
| Over current protection (OCP)                       |  |  | Setting range  | A  | 3.6-39.6        | 2.7-29.7       | 1.35-14.85            | 0.72-7.92       |    |
|   |  |  | Setting accuracy   | ± (2% of rated output current)   |                 |                |                       |                 |    |
| Over temperature protection (OTP)                   |  |  | Operation  | Turn the output off  |                 |                |                       |                 |    |
| Low AC input protection (AC-FAIL)                   |  |  | Operation  | Turn the output off  |                 |                |                       |                 |    |
| Power limit (POWER LIMIT)                           |  |  | Operation  | Over power limit.  |                 |                |                       |                 |    |
|   |  |  | Value (fixed)  | Approx. 105% of rated output power   |                 |                |                       |                 |    |
| <b>Analog Programming and Monitoring</b>            |  |  |  | <b>30-36</b>   | <b>40-27</b>    | <b>80-13.5</b> | <b>160-7.2</b>        | <b>250-4.5</b>  |    |
| External voltage control output voltage             |  |  | at 23 °C ± 5 °C  | Accuracy and linearity: ±0.5% of rated output voltage.   |                 |                |                       |                 |    |
| External voltage control output current             |  |  | at 23 °C ± 5 °C  | Accuracy and linearity: ±1% of rated output current.   |                 |                |                       |                 |    |
| External resistor control output voltage            |  |  | at 23 °C ± 5 °C  | Accuracy and linearity: ±1.5% of rated output voltage.   |                 |                |                       |                 |    |
| External resistor control output current            |  |  | at 23 °C ± 5 °C  | Accuracy and linearity: ±1.5% of rated output current.   |                 |                |                       |                 |    |
| Output voltage monitor                              |  |  | at 23 °C ± 5 °C  | Accuracy: ±1%  |                 |                |                       | Accuracy: ±2%   |    |
| Output current monitor                              |  |  | at 23 °C ± 5 °C  | Accuracy: ±1%  |                 |                |                       | Accuracy: ±2%   |    |
| Shutdown control                                    |  |  | Turns the output off with a LOW (0V to 0.5V) or short-circuit  |  |                 |                |                       |                 |    |
| Output on/off control                               |  |  | Possible logic selections: Turn the output on using a LOW (0V to 0.5V) or short-circuit, turn the output off using a HIGH (4.5V to 5V) or open-circuit. Turn the output on using a HIGH (4.5V to 5V) or open-circuit, turn the output off using a LOW (0V to 0.5V) or short-circuit. |  |                 |                |                       |                 |    |
| CV/CC/ALM/PWR ON/OUT ON indicator                   |  |  | Photocoupler open collector output; Maximum voltage 30V, maximum sink current 8mA.   |  |                 |                |                       |                 |    |
| Front Panel   |  |  |  | <b>30-36</b>   | <b>40-27</b>    | <b>80-13.5</b> | <b>160-7.2</b>        | <b>250-4.5</b>  |    |
| Display, 4 digits                                   |  |  | Voltage accuracy   | at 23 °C ± 5 °C; ± (0.1% +   | mV              | 20             | 20                    | 20              |    |
|   |  |  | Current accuracy   | at 23 °C ± 5 °C; ± (0.1% +   | mA              | 40             | 30                    | 20              |    |
| Indications   |  |  | GREEN LED's: CV, CC, VSR, ISR, DLY, RMT, 20, 40, 60, 80, 100, %W, W, V, A  |  |                 |                |                       |                 |    |
| Buttons   |  |  | RED LED's: ALM   |  |                 |                |                       |                 |    |
| Knobs   |  |  | Function, OVP/OCP, Set, Test, Lock/Local, PWR DSPL, Output   |  |                 |                |                       |                 |    |
| USB port  |  |  | Voltage, Current   |  |                 |                |                       |                 |    |
| USB port  |  |  | Type A USB connector   |  |                 |                |                       |                 |    |
| <b>Programming and Measurement (USB, LAN, GPIB)</b> |  |  |  | <b>30-36</b>   | <b>40-27</b>    | <b>80-13.5</b> | <b>160-7.2</b>        | <b>250-4.5</b>  |    |
| Output voltage programming accuracy                 |  |  | at 23 °C ± 5 °C; ± (0.1% +   | mV   | 10              | 10             | 10                    | 100             |    |
| Output current programming accuracy                 |  |  | at 23 °C ± 5 °C; ± (0.1% +   | mA   | 30              | 20             | 10                    | 5               |    |
| Output voltage programming resolution               |  |  |  | mV   | 1               | 1              | 2                     | 3               |    |
| Output current programming resolution               |  |  |  | mA   | 1               | 1              | 1                     | 1               |    |
| Output voltage measurement accuracy                 |  |  | at 23 °C ± 5 °C; ± (0.1% +   | mV   | 10              | 10             | 10                    | 100             |    |
| Output current measurement accuracy                 |  |  | at 23 °C ± 5 °C; ± (0.1% +   | mA   | 30              | 20             | 10                    | 5               |    |
| Output voltage measurement resolution               |  |  |  | mV   | 1               | 1              | 2                     | 3               |    |
| Output current measurement resolution               |  |  |  | mA   | 1               | 1              | 1                     | 1               |    |
| <b>Input Characteristics</b>                        |  |  |  | <b>30-36</b>   | <b>40-27</b>    | <b>80-13.5</b> | <b>160-7.2</b>        | <b>250-4.5</b>  |    |
| Efficiency  |  |  | 100Vac   | %  | 77              | 78             | 78                    | 79              |    |
|   |  |  | 200Vac   | %  | 79              | 80             | 80                    | 81              |    |
| <b>Input Characteristics</b>                        |  |  |  | <b>Dual Channel</b>  |                 |                | <b>Triple Channel</b> |                 |    |
| Nominal input rating                                |  |  | 100Vac to 240Vac, 50Hz to 60Hz, single phase   |  |                 |                |                       |                 |    |
| Input voltage range                                 |  |  | 85Vac ~ 265Vac   |  |                 |                |                       |                 |    |
| Input frequency range                               |  |  | 47Hz ~ 63Hz  |  |                 |                |                       |                 |    |
| Maximum input current                               |  |  | 100Vac   | A  | 10              |                |                       | 15              |    |
|   |  |  | 200Vac   | A  | 5               |                |                       | 7.5             |    |
| Inrush current                                      |  |  | Less than 50A  |  |                 |                | Less than 75A         |                 |    |
| Maximum input power                                 |  |  | VA   | 1000   |                 |                | 1500                  |                 |    |
| Power factor  |  |  | 100Vac   | 0.99   |                 |                |                       |                 |    |
|   |  |  | 200Vac   | 0.97   |                 |                |                       |                 |    |
| Hold-up time  |  |  | 20ms or greater  |  |                 |                |                       |                 |    |
| <b>Interface Capabilities</b>                       |  |  |  | <b>Dual Channel</b>  |                 |                | <b>Triple Channel</b> |                 |    |
| USB   |  |  | TypeA: Host, TypeB: Slave, Speed: 1.1/2.0, USB Class: CDC(Communications Device Class)   |  |                 |                |                       |                 |    |
| LAN   |  |  | MAC Address, DNS IP Address, User Password, Gateway IP Address, Instrument IP Address, Subnet Mask   |  |                 |                |                       |                 |    |
| GPIB  |  |  | Optional: GUG-001 (GPIB to USB Adapter)  |  |                 |                |                       |                 |    |
| <b>Environmental Conditions</b>                     |  |  |  | <b>Dual Channel</b>  |                 |                | <b>Triple Channel</b> |                 |    |
| Operating temperature                               |  |  | 0 °C to 50 °C  |  |                 |                |                       |                 |    |
| Storage temperature                                 |  |  | -25 °C to 70 °C  |  |                 |                |                       |                 |    |
| Operating humidity                                  |  |  | 20% to 85% RH; No condensation   |  |                 |                |                       |                 |    |
| Storage humidity                                    |  |  | 90% RH or less; No condensation  |  |                 |                |                       |                 |    |
| Altitude  |  |  | Maximum 2000m  |  |                 |                |                       |                 |    |
| <b>General Specifications</b>                       |  |  |  | <b>Dual Channel</b>  |                 |                | <b>Triple Channel</b> |                 |    |
| Weight  |  |  | main unit only   | kg   | Approx. 5.4kg   |                |                       | Approx. 7.7kg   |    |
| Dimensions  |  |  | (WxHxD)  | mm   | 142 x 124 x 350 |                |                       | 214 x 124 x 350 |    |
| Cooling   |  |  | Forced air cooling by internal fan   |  |                 |                |                       |                 |    |
| EMC   |  |  | Complies with the European EMC directive for Class A test and measurement products   |  |                 |                |                       |                 |    |
| Safety  |  |  | Complies with the European Low Voltage Directive and carries the CE-marking  |  |                 |                |                       |                 |    |
| Withstand voltage                                   |  |  | Between input and chassis  | No abnormalities at 1500 Vac for 1 minute  |                 |                |                       |                 |    |
|   |  |  | Between input and output   | No abnormalities at 3000 Vac for 1 minute  |                 |                |                       |                 |    |
|   |  |  | Between output and chassis   | No abnormalities at 500 Vdc for 1 minute for 30V, 40V, 80V, 160V models<br>No abnormalities at 1500 Vdc for 1 minute for 250V, 800V models |                 |                |                       |                 |    |
| Insulation resistance                               |  |  | Between input and chassis  | 500 Vdc, 100 MΩ or more  |                 |                |                       |                 |    |
|   |  |  | Between input and output   | 500 Vdc, 100 MΩ or more  |                 |                |                       |                 |    |
|   |  |  | Between output and chassis   | 500 Vdc, 100 MΩ or more for 30V, 40V, 80V, 160V and 250V models<br>1000 Vdc, 100 MΩ or more for 800V models                                |                 |                |                       |                 |    |

Notes : \*1: At 85 ~ 132Vac or 170 ~ 265Vac, constant load.  
 \*2: From No-load to Full-load, constant input voltage. Measured at the sensing point in Remote Sense.  
 \*3: Measure with JEITA RC-9131B (1:1) probe  
 \*4: Measurement frequency bandwidth is 10Hz to 20MHz.  
 \*5: Measurement frequency bandwidth is 5Hz to 1MHz.

\*6: From 10% to 90% of rated output voltage, with rated resistive load.  
 \*7: From 90% to 10% of rated output voltage, with rated resistive load.  
 \*8: Time for output voltage to recover within 0.1% + 10mV of its rated output for a load change from 50 to 100% of its rated output current.  
 \*9: For load voltage change, equal to the unit voltage rating, constant input voltage.

## ORDERING INFORMATION

### Dual Channel Model

|            |                          |                                    |
|------------|--------------------------|------------------------------------|
| PSW-720L11 | 30V/36A*2                | 720W Multi-Range D.C. Power Supply |
| PSW-720L12 | 30V/36A*1 40V/27A*1      | 720W Multi-Range D.C. Power Supply |
| PSW-720L14 | 30V/36A*1 80V/13.5A*1    | 720W Multi-Range D.C. Power Supply |
| PSW-720L15 | 30V/36A*1 160V/7.2A*1    | 720W Multi-Range D.C. Power Supply |
| PSW-720L22 | 40V/27A*2                | 720W Multi-Range D.C. Power Supply |
| PSW-720L24 | 40V/27A*1 80V/13.5A*1    | 720W Multi-Range D.C. Power Supply |
| PSW-720L25 | 40V/27A*1 160V/7.2A*1    | 720W Multi-Range D.C. Power Supply |
| PSW-720L44 | 80V/13.5A*2              | 720W Multi-Range D.C. Power Supply |
| PSW-720L45 | 80V/13.5A*1 160V/7.2A*1  | 720W Multi-Range D.C. Power Supply |
| PSW-720L55 | 160V/7.2A*2              | 720W Multi-Range D.C. Power Supply |
| PSW-720H66 | 250V/4.5A*2              | 720W Multi-Range D.C. Power Supply |
| PSW-720H68 | 250V/4.5A*1 800V/1.44A*1 | 720W Multi-Range D.C. Power Supply |
| PSW-720H88 | 800V/1.44A*2             | 720W Multi-Range D.C. Power Supply |

### Triple Channel Model

|              |                                   |                                     |
|--------------|-----------------------------------|-------------------------------------|
| PSW-1080L111 | 30V/36A*3                         | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L112 | 30V/36A*2 40V/27A*1               | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L114 | 30V/36A*2 80V/13.5A*1             | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L115 | 30V/36A*2 160V/7.2A*1             | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L122 | 30V/36A*1 40V/27A*2               | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L124 | 30V/36A*1 40V/27A*1 80V/13.5A*1   | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L125 | 30V/36A*1 40V/27A*1 160V/7.2A     | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L144 | 30V/36A*1 80V/13.5A*2             | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L145 | 30V/36A*1 80V/13.5A*1 160V/7.2A*1 | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L155 | 30V/36A*1 160V/7.2A*2             | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L222 | 40V/27A*3                         | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L224 | 40V/27A*2 80V/13.5A*1             | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L225 | 40V/27A*2 160V/7.2A*1             | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L244 | 40V/27A*1 80V/13.5A*2             | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L245 | 40V/27A*1 80V/13.5A*1 160V/7.2A*1 | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L255 | 40V/27A*1 160V/7.2A*2             | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L444 | 80V/13.5A*3                       | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L445 | 80V/13.5A*2 160V/7.2A*1           | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L455 | 80V/13.5A*1 160V/7.2A*2           | 1080W Multi-Range D.C. Power Supply |
| PSW-1080L555 | 160V/7.2A*3                       | 1080W Multi-Range D.C. Power Supply |
| PSW-1080H666 | 250V/4.5A*3                       | 1080W Multi-Range D.C. Power Supply |
| PSW-1080H668 | 250V/4.5A*2 800V/1.44A*1          | 1080W Multi-Range D.C. Power Supply |
| PSW-1080H688 | 250V/4.5A*1 800V/1.44A*2          | 1080W Multi-Range D.C. Power Supply |
| PSW-1080H888 | 800V/1.44A*3                      | 1080W Multi-Range D.C. Power Supply |

Apart from the differences in output type, each unit differs at output channels and voltage.  
 The PSW-720 is dual channel output and PSW-1080 is triple channel output.

## ACCESSORIES

|               |   |
|---------------|---|
| Power Cord x1 | (Region dependent)  |
| GTL-123       | Test Lead x 1 (30V/40V/80V/160V low voltage module per channel) |
| GTL-240       | USB Cable "L" Type  |
| PSW-004       | Basic Accessories Kit (30V/40V/80V/160V low voltage module)     |
| PSW-008       | Basic Accessories Kit (250V/800V high voltage module)           |
| PSW-009       | Output terminal cover (30V/40V/80V/160V low voltage module)     |
| PSW-011       | Output terminal cover (250V/800V high voltage module)           |
| PSW-012       | High voltage output terminal (250V/800V high voltage module)    |

## OPTIONAL ACCESSORIES

|           |  |
|-----------|--|
| PSW-001   | Accessory Kit  |
| PSW-002   | Simple IDC Tool  |
| PSW-003   | Contact Removal Tool   |
| GUG-001   | GPIB to USB Adaptor  |
| GRA-410-J | Rack Mount Kit (JIS)   |
| GRA-410-E | Rack Mount Kit (KIA)   |
| GET-001   | Extended Terminal with max. 30A (30V/40V/80V/160V low voltage module)          |
| GET-002   | Extended Terminal with max. 10A (250V/800V high voltage module)                |
| GET-005   | Extended European Terminal with max. 20A (30V/40V/80V/160V low voltage module) |
| GTL-130   | Test Lead: 2x red, 2x black (250V/800V high voltage module)                    |
| GTL-248   | GPIB Cable, 2000mm   |
| GTL-250   | GPIB Cable, 600mm  |
| GUR-001A  | USB to RS-232 Cable (M3), 3000mm   |
| GUR-001B  | USB to RS-232 Cable (#4-40 UNC), 3000mm  |



Two-channel Models Rear Panel



Two-channel Models Front Panel



Three-channel Models Rear Panel



Three-channel Models Front Panel

## PRIMARY APPLICATIONS

Multi-channel Power Supplies are Widely Used in Various Fields:

- \* Electronics Product Development and Testing
- \* Automated Production Lines
- \* Laboratory Equipment Driving
- \* Industrial Control Systems
- \* Automotive Electronic Testing



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