Programmable Switching D.C. Power Supply (Multi-range D.C. Power Supply)

PSB-2400L2

PSB-2400L/PSB-2400H/
PSB-2800L/PSB-2800H

PSB-2800LS

CE USB RS-232 GPIB
Analog Control | Local Bus | Front/Rear Output | LabVIEW Driver

Note : PSB-2400H/PSB-2800H are not CE approved

FEATURES

* Output Voltage Rating : 80V/800V, Output Power Rating : 400W ~ 800W
* Constant Power Output for Multi-Range (V & I) Operation
* Series and Parallel Operation (2 Units in Series or 4 Units in Parallel Maximum)
* 90 Degree Angle Rotatable Control Panel
* Sequence Function Edited by PC will be Controlled Through Power Supply Optional Interfaces
* Standard Interface : RS-232C/USB/Analog Control Interface
* Optional Interface : GPIB
* Preset Function (3 Points)
* LabVIEW Driver

The PSB-2000 Series is a high power density, programmable and multi-range output DC power supply. There are six models in the series including one power booster unit. The PSB-2000 Series has the output voltage of 0~80V and 0~800V, and the output power ranges of 0~400W and 0~800W. The multi-range output functionality facilitates flexible collocations of higher voltage and larger current under the rated power range. Both series and parallel connections can be applied to the PSB-2000 Series to fulfill the requirements of higher

The PSB-2000 Series provides three sets of preset function keys to memorize regularly used settings of voltage, current and power that users can recall rapidly. The sequence function, via RS232C, USB interface or optional GPIB interface, can connect with the computer to produce output power defined by sequence of a series of set voltage and current steps that are defined by the computer. This function is often used to establish a standard test procedure for the verification of the influence on DUTs done by the swiftly changing operating

The PSB-2000 Series protects over voltage and over current. The power supply output function will be shut down to protect DUTs while the protection mechanism is triggered to function. When conducting battery charging operation, the Hi-Ω mode of the PSB-2000 Series will prevent reverse current from damaging power supply.

The PSB-2000 Series provides analog control interfaces on the rear panel to control PSB-2000 Series output via the external voltage or to externally monitor voltage and current output status of power supply. The PSB-2000 Series panel can be rotated 90 degree angle suitable for vertical or horizontal position to accommodate the ideal space utilization.

SERIES OPERATION

MODEL NUMBER	SINGLE UNIT	TWO UNITS
PSB-2400L	80V/40A	160V/40A
PSB-2800L	80V/80A	160V/80A
PSB-2800LS (Booster Unit for PSB-2800L Only)	N/A	N/A
PSB-2400L2	N/A	N/A
PSB-2400H	N/A	N/A
PSB-2800H	N/A	N/A

PARALLEL OPERATION

MODEL NUMBER	SINGLE UNIT	TWO UNITS	THREE UNITS	FOUR UNITS
PSB-2400L	80V/40A	80V/80A	80V/120A	80V/160A
PSB-2800L	80V/80A	80V/160A	80V/240A	80V/320A
PSB-2800LS	N/A	80V/160A (PSB-2800L x 1+ PSB-2800LS x 1)	80V/240A (PSB-2800L x 1+ PSB-2800LS x 2)	N/A
PSB-2400L2	N/A	N/A	N/A	N/A
PSB-2400H	800V/3A	800V/6A	N/A	N/A
PSB-2800H	800V/6A	800V/12A	N/A	N/A

SPECIFICATIONS

	PSB-2400L	PSB-2800L	PSB-2400L2	PSB-2400H	PSB-2800H	PSB-2800LS
OUTPUT RATING						
Voltage	0 ~ 80V	0 ~ 80V	0 ~ 80V x 2CH	0 ~ 800V	0 ~ 800V	80V
Current	0 ~ 40A	0 ~ 80A	0 ~ 40A x 2CH	0 ~ 3A	0 ~ 6A	80A
Power	400W	800W	800W	400W	800W	800W
REGULATION (CV)						
Load	0.01% ± 3mV of rated voltage			0.01% ± 30mV of rated voltage		N/A
Line	0.01% ± 2mV of rated voltage			0.01% ± 20mV of rated voltage		
REGULATION (CC)						
Load	0.02% ± 3mA of rated current			0.05% ± 15mA of rated current		N/A
Line	0.01% ± 2mA of rated current			0.05% ± 10mA of rated current		
RIPPLE & NOISE (Noise Bandwidth 20MHz ; Ripple Bandwidth=1MHz)						
CV p-p	90mV	150mV	90mV	250mV(only output voltage measures more than 1% of the rated voltage)	300mV(only output voltage measures more than 1% of the rated voltage)	N/A
CV rms	4mV	6mV	4mV	20mV(when current measures<2A) 35mV(when current measures>2A)	25mV(when current measures<2A) 40mV(when current measures>2A)	
CC rms	30mA	60mA	30mA	15mA	20mA	
PROGRAMMING ACCURACY						
Voltage	0.1% setting±2digits			0.1% setting±2digits		N/A
Current	0.2%setting±2digits			0.2% setting±2digits		
Power	± 10W			±10W (only output voltage measures more than 1% of rated voltage)		
READ BACK ACCURACY						
Voltage	0.2% reading±2digits			0.2% reading±2digits		N/A
Current	0.3% reading±2digits			0.3% reading±2digits		
Power	0.5% reading±5digits			0.5% reading±Vout x 40mA		
RESPONSE TIME						
Raise Time(Full load/No load)	50ms			200ms		N/A
Fall Time(Full load)	100ms			500ms		
Fall Time(No load)	500ms			1000ms		
Load Transient Recover Time (Load change from 50~100%)	1ms			7ms		
PROGRAMMING RESOLUTION						
Voltage	10mV			100mV		N/A
Current	10mA			10mA		
Power	10W			10W		
MEASUREMENT RESOLUTION						
Voltage	10mV			100mV		N/A
Current	10mA			10mA		
Power	10W			10W		
SERIES AND PARALLEL CAPABILITY						
Channel Number	1	1	2	1	1	For PSB-2800L Only
Series Operation	Up to 2 Units	Up to 2 Units	N/A	N/A	N/A	
Parallel Operation	Up to 4 Units	Up to 4 Units	N/A	Up to 2 Units	Up to 2 Units	
Parallel with booster PSB-2800LS	N/A	Up to 3 Units	N/A	N/A	N/A	
PPROTECTION FUNCTION						
OVP (Fixed)	Output off when 110% of rated voltage			Output off when output voltage exceeds 110% of rated voltage		N/A
OVP (Variable)	Output off when operating; Setting range:1V~84V with front panel			Presettable in range from 10V ~ 840V om front panel		
OCP (Fixed)	Output off when 110% of rated current			Output off when output voltage exceed 110% of rated current		
OCP (Variable)	Output off when operating;Setting range:1A~42A(84A for model number)			Presettable in range from 0.1A ~ 6.30A om front panel		
OHP	Output off above heat sink setting temperature			Output off at the intemal heat sink temperature over setting value		
ENVIRONMENT CONDITION						
Operation Temp	0°C ~ 40°C					N/A
Storage Temp	-20°C ~ 70°C					
Operating Humidity	30% ~ 80% RH (no dew condensation)					
Storage Humidity	30% ~ 80% RH (no dew condensation)					
OTHER						
Inrush Current	35A Max	70A Max	70A Mmax	35A Max	70A Max	70A Max
Power Consumption/Factor	560VA/0.99	1120VA/0.99	1120VA/0.99	560VA/0.99	1120VA/0.99	1120VA/0.99
Cooling Method	Forced air-cooling with fan motor					
Power Source	100VAC ~ 240VAC, 50/60Hz, Single phase					
Interface (Standard)	RS-232C/USB					
Interface (Optional)	GPIB					
Analog Control	Yes					
DIMENSIONS & WEIGHT						
	210(W) x 124(H) x 290(D)mm					
	Approx.5kg	Approx.7kg	Approx.7kg	Approx. 5kg	Approx. 6kg	Approx. 7kg

Simply Reliable | Good Will Instrument Co., Ltd.
POWER SUPPLIES PSB-2000 Series

Programmable Switching D.C. Power Supply (Multi-range D.C. Power Supply)

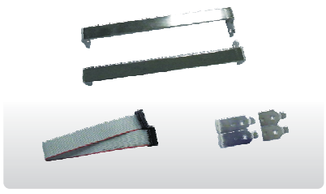
PSB-2400L2

PSB-2400L/PSB-2400H/
PSB-2800L/PSB-2800H

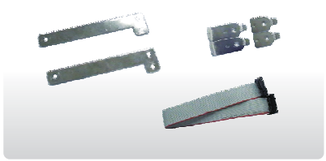
PSB-2800LS

Rear Panel

PSB-003 Parallel Connection Kit for Horizontal Installation



PSB-004 Parallel Connection Kit for Vertical Installation



ORDERING INFORMATION

PSB-2400L	0~80V/0~40A/400W Multi-Range DC Power Supply
PSB-2800L	0~80V/0~80A/800W Multi-Range DC Power Supply
PSB-2400L2	0~80V x 2/0~40A x 2/800W Multi-Range DC Power Supply
PSB-2400H	0~800V/0~3A/400W Multi-Range DC Power Supply
PSB-2800H	0~800V/0~6A/800W Multi-Range DC Power Supply
PSB-2800LS	800W Slave (Booster) Unit For Current Extension Only

ACCESSORIES :

User Manual (CD) x 1, AC Power Cord x 1, External Control Connector (26pin), Screws for output terminals on rear panel, Protection covers for output terminals on rear panel, Protection caps for output terminals on the front panel, GND Cable, USB Cable (For Model Number : PSB-2400L; PSB-2800L; PSB-2400L2; PSB-2400H; PSB-2800H) Local Bus (For Model Number : PSB-2400L; PSB-2800L; PSB-2400L2; PSB-2400H; PSB-2800H)

OPTIONAL ACCESSORIES

PSB-001	GPIB Card	**GTL-232**	RS-232C Cable
PSB-003	Parallel Connection Kit for Horizontal Installation. Kit Includes : (PSB-007 Joint Kit, Horizontal bus bar x 2 , PSB-005 x1)	**GTL-246**	USB Cable
		GTL-248	GPIB Cable
PSB-004	Parallel Connection Kit for Vertical Installation. Kit Includes : (PSB-007 Joint Kit, Verical bus bar x 2, PSB-005 x 1)	**GTL-251**	GPIB USB Cable (high speed)
PSB-005	Parallel Connection Signal Cable	**GRJ-1101**	Local Bus
PSB-006	Series Connection Signal Cable	**GRA-424**	Rack Adapter Kit, 19", 2U Size
PSB-007	Joint Kit : Includes 4 Joining Plates, (M3x6) screws x 4 ; (M3x8) screw x 2		
PSB-008	RS232C Cable (PSB-2000 Only)		

FREE DOWNLOAD

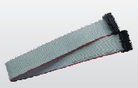
Driver Labview Driver

PSB-001 GPIB Control Board

GRJ-1101 Local Bus

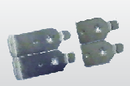
PSB-008 RS-232C Cable (PSB-2000 Only)

PSB-005 Parallel Connection Signal Cable

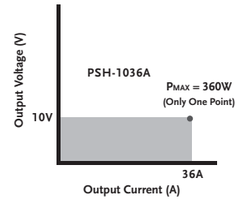


PSB-006 Series Connection Signal Cable

PSB-007 Joint Kit

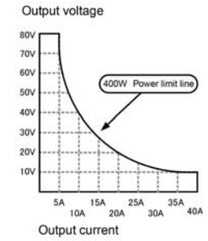


A. MULTI-RANGE OUTPUT OPERATION



The operation area of a Conventional Power Supply

Compared with the maximum power output of the conventional power supply that is calculated by the maximum output voltage multiplies by the maximum output current, the PSB-2000 series, defying the formula, has a unique characteristic of multi-range output (voltage and current). This distinguishing feature, under the same maximum power output range, can output a higher voltage with a smaller current and vice versa. For instance, for a conventional power supply with a maximum power output of 360W, the maximum voltage and current outputs are likely to be



The operation area of a Multi-Range Power Supply for PSB-2000 Series

10V and 36A respectively. Comparatively, PSB-2400L, with the maximum power output of 400W, provides voltage and current output ranges of 0~80V and 0~40A. The maximum current of 5A will be provided when the voltage reaches 80V and the maximum voltage of 10V for the maximum current of 40A. PSB-2400L, breaking the limitation of Pmax=Vmax x Imax,, broadens voltage and current application ranges. The following diagrams illustrate the voltage and current comparison between the multi-range output power supply and the conventional power supply.

B. PRODUCTS IN THE SERIES

There are six models in the PSB-2000 Series. Model type, output voltage, output current and output power are as follows :

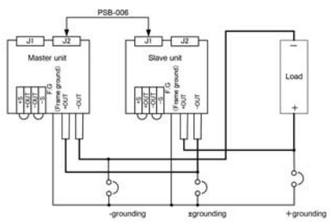
MODEL	PSB-2400L	PSB-2800L	PSB-2400L2	PSB-2400H	PSB-2800H	PSB-2800LS*
Channel Number	1	1	2	1	1	NA
Voltage Rating**	0 ~ 80V	0 ~ 80V	0 ~ 80V x 2CH	0 ~ 800V	0 ~ 800V	80V
Current Rating***	0 ~ 40A	0 ~ 80A	0 ~ 40A x 2CH	0 ~ 3A	0 ~ 6A	80A
Output Power (Max.)	400W	800W	800W	400W	800W	800W

* PSB-2800LS, a booster unit acting as slave to extend current, can not operate alone. It must operate with PSB-2800L master.

** The maximum current under the highest output voltage is power/voltage. For instance, when PSB-2400L outputs 80V the maximum current is 400W/80V = 5A .

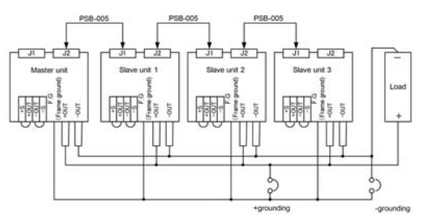
*** Same as above. When PSB2400L outputs 40A the highest voltage is 400W/40A = 10V .

C. SERIES AND PARALLEL CONNECTIONS



Series Connection

Hence, the PSB-2000 Series, with its multi-range output function and the power extension capability of series and parallel connections, is the high power density and high performance to cost ratio DC power supply, which provides



Parallel Connection

a wider range of power applications for any limited equipment space. The PSB-2000 Series is an ideal selection for testing DC power supply module, automobile lithium and lithium iron battery and electronic parts.

POWER SUPPLIES PSB-2000 Series

D. PRESET FUNCTION

The PSB-2000 Series provides three sets of parameter preset function keys on the front panel and each parameter preset memory includes output voltage, output current and output power.

Users can speedily recall frequently used settings through operating the front panel preset keys to store everyday settings.

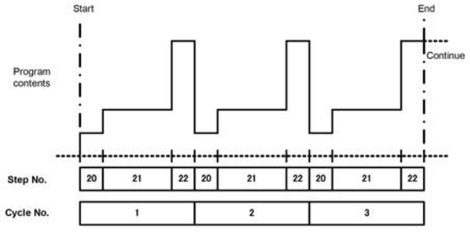
E. OVP AND OCP FUNCTIONS

MODEL NUMBER	OVP SETTING RANGE
PSB-2400L	1.0V to 84.0V
PSB-2800L	
PSB-2400L2	
PSB-2800LS	
PSB-2400H	10.0V to 840.0V
PSB-2800H	

MODEL NUMBER	OVP SETTING RANGE
PSB-2400L	1.0A to 42.0A
PSB-2400L2	
PSB-2800L	1.0A to 84.0A
PSB-2400H	0.1A to 3.15A
PSB-2800H	0.1A to 6.30A

When the voltage and current outputs exceed the preset conditions, the PSB-2000 Series will shut down the output function to prevent DUTs from damaging. The OVP and OCP protection level can be set to 10%～110% of the rated voltage or current and the preset condition is 110% of the rated voltage and current.

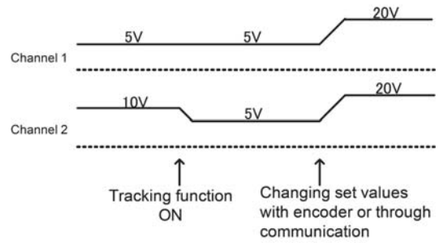
F. SEQUENCE FUNCTION



Example for the sequence operation

When applying sequence function, the computer must first edit a series of steps defined by different voltage, current and duration, which, in CSV format, will be sent to PSB-2000 memory via RS-232C, USB interface or GPIB interface (optional) to periodically produce a series of steps defined by different voltage, current and duration. The minimum time for each sequence is set to one second and the maximum number of step is 100. This function is to test the impact of DUTs done by the rapidly changing power supply. The reliability test of electronics products toward changing power supply is one of the very important verification items.

G. TRACKING FUNCTION

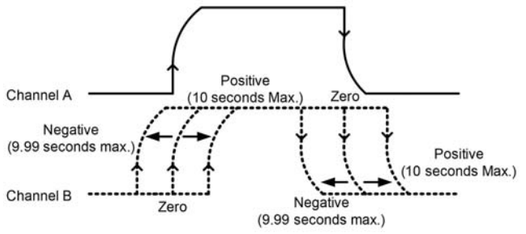


The tracking function is available on the dual output model (PSB-2400L2) only. It allows the setting of both channels to be changed at the same time. When the value of the one channel is changed, and the other channel will automatically change its value accordingly if the tracking function is active (ON).

H. 90 DEGREE ANGLE ROTATABLE CONTROL PANEL

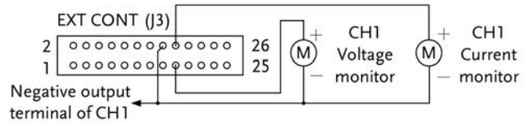
Taking working space utilization into consideration, PSB-2000 can be placed vertically or horizontally by its unique design of 90 degree angle rotatable control panel for users' ease-of-use.

I. DELAY FUNCTION

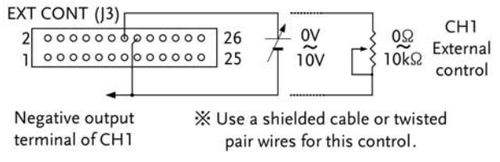


The delay function is available on the dual channel model (PSB-2400L2) only. It adds a rise and fall delay time to the output of channel 2 for a specified amount of time (in seconds) from a reference point (output of channel 1). The rise delay time refers to the delay time for turning the output on. The fall delay time refers to the delay time for turning the output off.

J. EXTERNAL CONTROL AND ANALOG MONITORING FUNCTION



External Voltage Monitor of the Output



External Voltage Control of the output

The rear panel of the PSB-2000 Series provides 26-Pin analog control connector and users can control output voltage and current value via external voltage or resistance. Furthermore, power supply's output on and off or AC input shut down can also be executed through the external control connector. The designated pin of the port can be measured to monitor output voltage and current. The following diagrams illustrate several typical external control application connections. Please refer to product user manual for more or detailed connection methods.