

## SP-1U/2U Series High Performance Programmable DC Power Supply



- High Efficiency
- High Precision
- High Stability

# SP-1U/2U Series High Performance Programmable DC Power Supply



| Output        |               |             | Model          | Size | Ripple            |                   | Response                         |                                    | Certificates    |
|---------------|---------------|-------------|----------------|------|-------------------|-------------------|----------------------------------|------------------------------------|-----------------|
| Rated Voltage | Rated Current | Rated Power |                |      | Voltage           | Current           | Voltage increase                 | Voltage Drop                       |                 |
| 20V           | 60A           | 600W        | SP20VDC600W    | 1U ① | 40mVp-p/6mVrms    | 20mA (TYP Value)  | ≤10ms(No load), ≤10ms(Full load) | ≤150ms(No load), ≤20ms(Full load)  | CE/RoHs         |
|               |               | 1000W       | SP20VDC1000W   |      |                   |                   |                                  | ≤150ms(No load), ≤15ms(Full load)  | CE/RoHs         |
|               |               | 1200W       | SP20VDC1200W   |      |                   |                   |                                  | ≤150ms(No load), ≤12ms(Full load)  | CE/RoHs         |
| 32V           | 50A           | 600W        | SP32VDC600W    | 1U ① | 40mVp-p/6mVrms    | 20mA (TYP Value)  | ≤12ms(No load), ≤12ms(Full load) | ≤150ms(No load), ≤20ms(Full load)  | CE/RoHs         |
|               |               | 1000W       | SP32VDC1000W   |      |                   |                   |                                  | ≤150ms(No load), ≤15ms(Full load)  | CE/RoHs/CSA/FCC |
|               |               | 1200W       | SP32VDC1200W   |      |                   |                   |                                  | ≤150ms(No load), ≤12ms(Full load)  | CE/RoHs/CSA/FCC |
|               |               | 1600W       | SP32VDC1600W   |      |                   |                   |                                  | ≤150ms(No load), ≤10ms(Full load)  | CE/RoHs/CSA/FCC |
|               | 200A          | 1000W       | SPS32VDC1000W  | 2U ⑤ | 60mVp-p/10mVrms   | 200mA (TYP Value) | ≤20ms(No load), ≤40ms(Full load) | ≤500ms(No load), ≤45ms(Full load)  | CE              |
|               |               | 2000W       | SP32VDC2000W   |      |                   |                   |                                  | ≤20ms(No load), ≤30ms(Full load)   | CE              |
|               |               | 3000W       | SP32VDC3000W   |      |                   |                   |                                  | ≤20ms(No load), ≤25ms(Full load)   | CE/RoHs         |
| 40V           | 40A           | 600W        | SP40VDC600W    | 1U ① | 40mVp-p/6mVrms    | 20mA (TYP Value)  | ≤10ms(No load), ≤10ms(Full load) | ≤150ms(No load), ≤20ms(Full load)  | CE/RoHs         |
|               |               | 1000W       | SP40VDC1000W   |      |                   |                   |                                  | ≤150ms(No load), ≤15ms(Full load)  | CE/RoHs/CSA/FCC |
|               |               | 1200W       | SP40VDC1200W   |      |                   |                   |                                  | ≤150ms(No load), ≤12ms(Full load)  | CE/RoHs/CSA/FCC |
|               |               | 1600W       | SP40VDC1600W   |      |                   |                   |                                  | ≤150ms(No load), ≤10ms(Full load)  | CE/RoHs/CSA/FCC |
|               | 120A          | 1000W       | SPS40VDC1000W  | 2U ⑤ | 40mVp-p/6mVrms    | 20mA (TYP Value)  | ≤10ms(No load), ≤10ms(Full load) | ≤350ms(No load), ≤10ms(Full load)  | CE/RoHs         |
|               |               | 2000W       | SP40VDC2000W   |      |                   |                   |                                  | CE/RoHs                            |                 |
|               |               | 3000W       | SP40VDC3000W   |      |                   |                   |                                  | CE/RoHs                            |                 |
| 75V           | 25A           | 600W        | SP75VDC600W    | 1U ② | 40mVp-p/6mVrms    | 10mA (TYP Value)  | ≤10ms(No load), ≤10ms(Full load) | ≤160ms(No load), ≤20ms(Full load)  | CE/RoHs/CSA     |
|               |               | 1000W       | SP75VDC1000W   |      |                   |                   |                                  | ≤160ms(No load), ≤15ms(Full load)  | CE/RoHs/CSA/FCC |
|               |               | 1200W       | SP75VDC1200W   |      |                   |                   |                                  | ≤160ms(No load), ≤12ms(Full load)  | CE/RoHs/CSA/FCC |
|               |               | 1500W       | SP75VDC1500W   |      |                   |                   |                                  | ≤160ms(No load), ≤10ms(Full load)  | CE/RoHs/CSA/FCC |
|               | 60A           | 4000W       | SP75VDC4000W   | 2U ④ | 40mVp-p/8mVrms    | 10mA (TYP Value)  | ≤15ms(No load), ≤15ms(Full load) | ≤450ms(No load), ≤20ms(Full load)  | CE/RoHs/CSA/FCC |
| 80V           | 60A           | 1000W       | SP80VDC1000W   | 2U ④ | 40mVp-p/6mVrms    | 10mA (TYP Value)  | ≤15ms(No load), ≤15ms(Full load) | ≤450ms(No load), ≤30ms(Full load)  | CE              |
|               |               | 2000W       | SP80VDC2000W   |      |                   |                   |                                  | CE/RoHs                            |                 |
|               |               | 3000W       | SP80VDC3000W   |      |                   |                   |                                  | CE/RoHs                            |                 |
| 120V          | 40A           | 1000W       | SPS120VDC1000W | 2U ④ | 80mVp-p/15mVrms   | 10mA (TYP Value)  | ≤20ms(No load), ≤20ms(Full load) | ≤350ms(No load), ≤21ms(Full load)  | CE/RoHs         |
|               |               | 2000W       | SP120VDC2000W  |      |                   |                   |                                  | CE/RoHs/CSA/FCC                    |                 |
|               |               | 3000W       | SP120VDC3000W  |      |                   |                   |                                  | CE/RoHs/CSA/FCC                    |                 |
|               |               | 4000W       | SP120VDC4000W  |      |                   |                   |                                  | CE/RoHs                            |                 |
| 150V          | 10A           | 600W        | SP150VDC600W   | 1U ③ | 120mVp-p/40mVrms  | 10mA (TYP Value)  | ≤25ms(No load), ≤25ms(Full load) | ≤400ms(No load), ≤32ms(Full load)  | CE/RoHs         |
|               |               | 1000W       | SP150VDC1000W  |      |                   |                   |                                  | CE/RoHs                            |                 |
|               |               | 1200W       | SP150VDC1200W  |      |                   |                   |                                  | CE/RoHs                            |                 |
|               |               | 1500W       | SP150VDC1500W  |      |                   |                   |                                  | CE/RoHs                            |                 |
|               | 30A           | 1000W       | SPS150VDC1000W | 2U ④ | 80mVp-p/15mVrms   | 10mA (TYP Value)  | ≤25ms(No load), ≤25ms(Full load) | ≤500ms(No load), ≤25ms(Full load)  | CE/RoHs         |
|               |               | 2000W       | SP150VDC2000W  |      |                   |                   |                                  | CE/RoHs/CSA/FCC                    |                 |
|               |               | 3000W       | SP150VDC3000W  |      |                   |                   |                                  | CE/RoHs/CSA/FCC                    |                 |
| 200V          | 8A            | 600W        | SP200VDC600W   | 1U ③ | 120mVp-p/40mVrms  | 10mA (TYP Value)  | ≤30ms(No load), ≤30ms(Full load) | ≤600ms(No load), ≤50ms(Full load)  | CE/RoHs         |
|               |               | 1000W       | SP200VDC1000W  |      |                   |                   |                                  | ≤600ms(No load), ≤40ms(Full load)  | CE/RoHs         |
|               |               | 1200W       | SP200VDC1200W  |      |                   |                   |                                  | ≤600ms(No load), ≤36ms(Full load)  | CE/RoHs         |
|               |               | 1500W       | SP200VDC1500W  |      |                   |                   |                                  | ≤600ms(No load), ≤30ms(Full load)  | CE/RoHs         |
|               | 24A           | 1000W       | SPS200VDC1000W | 2U ④ | 150mVp-p/30mVrms  | 20mA (TYP Value)  | ≤30ms(No load), ≤30ms(Full load) | ≤500ms(No load), ≤20ms(Full load)  | CE/RoHs         |
|               |               | 2000W       | SP200VDC2000W  |      |                   |                   |                                  | CE/RoHs                            |                 |
|               |               | 3000W       | SP200VDC3000W  |      |                   |                   |                                  | CE/RoHs                            |                 |
|               |               | 4000W       | SP200VDC4000W  |      |                   |                   |                                  | CE/RoHs                            |                 |
| 600V          | 10A           | 1000W       | SPS600VDC1000W | 2U ⑤ | 350mVp-p/40mVrms  | 10mA (TYP Value)  | ≤60ms(No load), ≤60ms(Full load) | ≤800ms(No load), ≤110ms(Full load) | CE/RoHs         |
|               |               | 2000W       | SP600VDC2000W  |      |                   |                   |                                  | ≤800ms(No load), ≤90ms(Full load)  | CE/RoHs         |
|               |               | 3000W       | SP600VDC3000W  |      |                   |                   |                                  | ≤800ms(No load), ≤75ms(Full load)  | CE/RoHs         |
|               |               | 4000W       | SP600VDC4000W  |      |                   |                   |                                  | ≤800ms(No load), ≤60ms(Full load)  | CE/RoHs         |
| 800V          | 7.5A          | 1000W       | SPS800VDC1000W | 2U ⑤ | 800mVp-p/200mVrms | 10mA (TYP Value)  | ≤60ms(No load), ≤60ms(Full load) | ≤800ms(No load), ≤60ms(Full load)  | CE/RoHs         |
|               |               | 2000W       | SP800VDC2000W  |      |                   |                   |                                  | CE/RoHs                            |                 |
|               |               | 3000W       | SP800VDC3000W  |      |                   |                   |                                  | CE/RoHs                            |                 |
|               |               | 4000W       | SP800VDC4000W  |      |                   |                   |                                  | CE/RoHs                            |                 |

## Dimensions & Weight



① 423.0x44.0x447.0 mm & 9.2kg



② 423.0x44.0x447.0 mm & 8.9kg



③ 423.0x44.0x447.0 mm & 9.3kg



④ 423.0x87.0x469.0 mm & 13.2kg



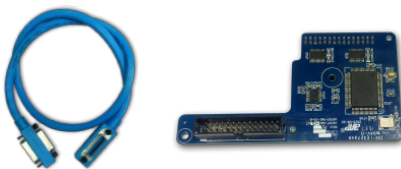
⑤ 423.0x87.0x514.0 mm & 14.7kg

## Features

- Low ripple and noise
- High accuracy and high resolution
- CC and CV working mode switch freely
- Support LIST/SEQUENCE file editing
- OVP/OCP/OPP/OTP/SCP
- Remote compensation
- With external analog control input interface
- Standard USB/RS485/RS232 communication interface
- Master/Slave parallel and series operation mode for up to 10 units

## Optional Information

GPIB communication card & cables



LAN communication card & cables



Three-core input cable (Input voltage range 176-265V, only supported on 1U height units)



# SP-1U/2U Series High Performance Programmable DC Power Supply

## Front Panel Introduction

1U Power Supply Front Panel



2U Power Supply Front Panel

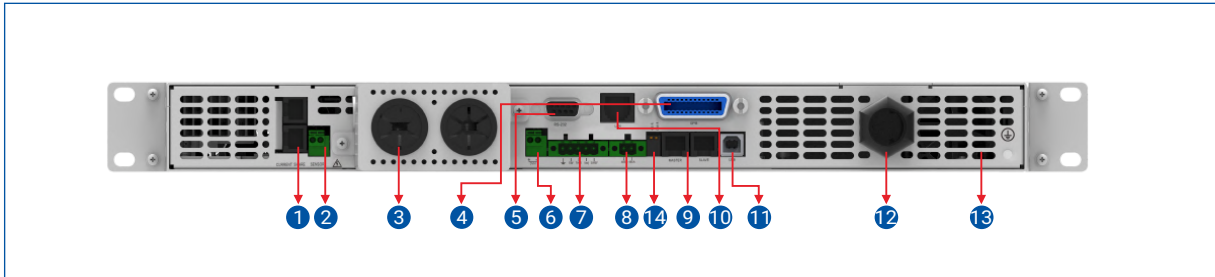


| Key       | Introduction   |
|-----------|--|
| 0~9       | Numeric Key  |
| .         | Decimal Point  |
| ESC       | Escape   |
| ▲         | UP, used for choose menu or increase set value in menu operation   |
| ▼         | DOWN, used for choose menu or decrease set value in menu operation |
| Enter     | Enter  |
| V-set     | Set power supply's output voltage value                            |
| I-set     | Set power supply's output current-limiting value                   |
| Display   | Press it to back to the main interface quickly                     |
| On/Off    | Control ON/OFF of power supply                                     |
| Menu      | Menu   |
| Shift     | Work with functional keys to realize multifunction                 |
| LOCAL     | Panel operation  |
| RECALL    | Recall stored setting value of power supply from internal storage  |
| STORE     | Store current settings of power supply to storage location         |
| DVM/POWER | Display DVM value and power value                                  |

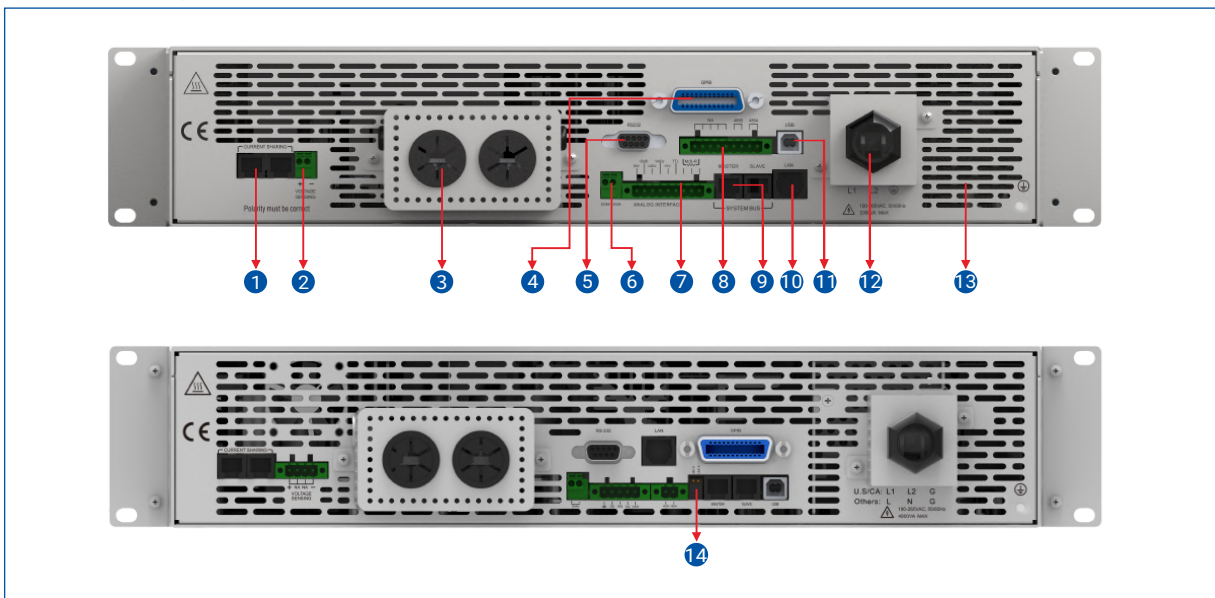


## SP Series Back Panel Introduction

### 1U Power Supply Back Panel



### 2U Power Supply Back Panel



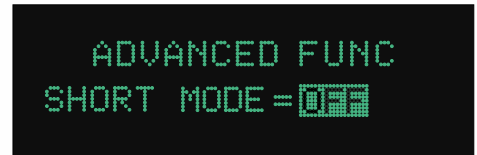
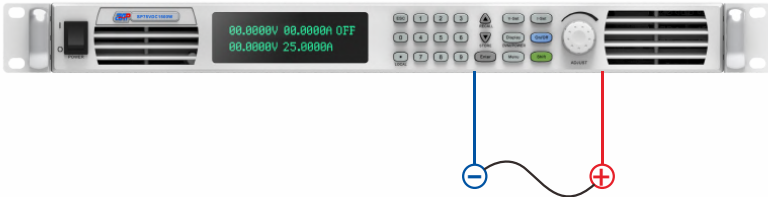
- ① AVG1/AVG2 Connector, used for connecting between units to enable current sharing.
- ② Voltage Remote Supporting Connector (VOLTAGE SENSING): Used to support wire voltage drops.
- ③ DC output terminal: Left (-), Right (+).
- ④ GPIB Communication connector.
- ⑤ RS-232 Communication connector.
- ⑥ DVM Connector.
- ⑦ ANALOG INTERFACE signal connection terminal.
- ⑧ RS-485 Communication connector.
- ⑨ SYSTEM BUS control, used for transmission of master and slaves.
- ⑩ LAN Communication Interface.
- ⑪ USB Communication Interface.
- ⑫ AC Power Connection terminal.
- ⑬ The fan duct outlet.
- ⑭ Termination resistor for RS485 and CAN Communication.

**Note:** There is a slight difference between these two kinds of rear panels of 2U units.

# SP-1U/2U Series High Performance Programmable DC Power Supply

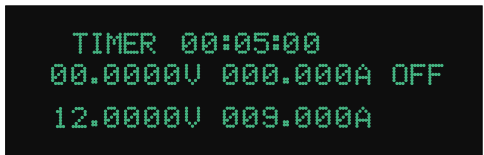
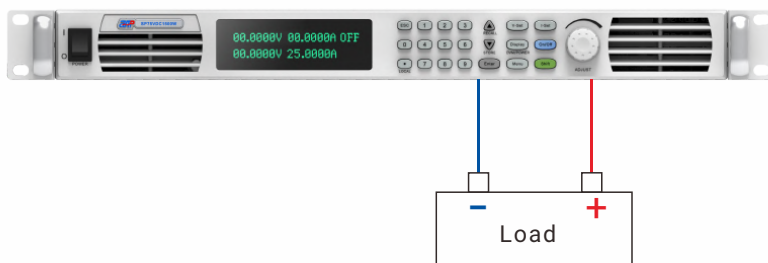
## Short Mode

This function is applicable to cable/fuse current carrying capacity test, when activated, the power supply will shutdown the short circuit protection function and maintain ultra-low voltage to output rated current.



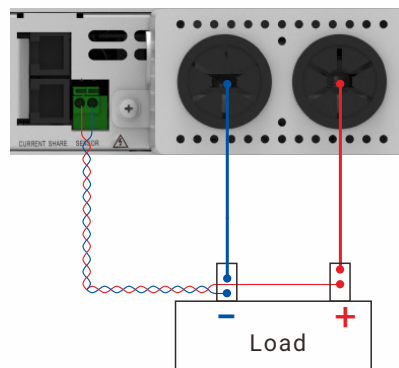
## Timer Control Function

This function is applicable to unattended occasions, activate the timer and the output, the screen will show the countdown of the timer. Once it reaches down to zero, the supply will turn off the output automatically. And the full protection of the power supply will make sure the safe usage of this function.



## Remote Compensation Function

This function is applicable to compensate the voltage drop on the load line in order to improve the accuracy of test. In practical applications, even if the voltage drop is negligible, it is best to connect the remote compensation cable to the output terminal. When using the remote compensation functionality, please disconnect the S+, S- from the power supply's output terminal, and connect them to both ends of the DUT. Maximum compensation voltage is up to 5V. The output power need be lower than 1.05% of the rated power after compensation.



## External Control Function

This series power supply can offer external voltage/ potentiometers control output, can be controlled by external voltage(0~5V) or external potentiometers(5~10K) in order to remotely adjust the power supply voltage and current regulation settings and the output status of the power supply.

### External Voltage Control



### External Potentiometer Control

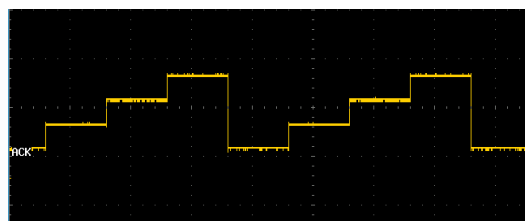
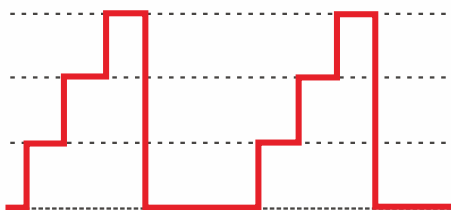


## LIST Waveform Editing Function

This series power supply supports 3 kinds of LIST file editing format in order to meet the output elements of different test requirements. The minimum resolution of time setting is 1ms.

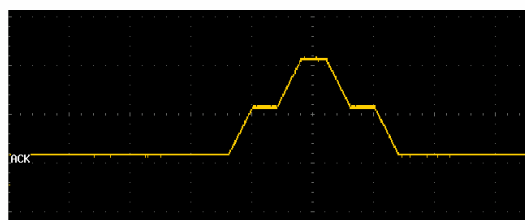
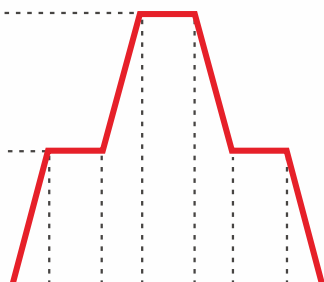
### Impulse File Format

Sets the trend of the output voltage over time and its duration. Set the mode of the output waveform execution as required, LOOP , CONT, STEP.



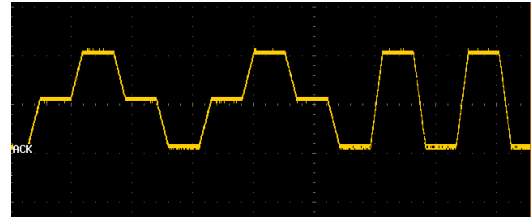
### Slope File Format

Support to set the slope of output voltage, achieve to slowly increase and drop of the output voltage. Set the mode of the output waveform execution as required, LOOP, CONT, STEP.



## SEQUENCE Waveform Editing function

This function is an upgrade version of the LIST file editing. Its every step is a complete LIST file. It can combine several LIST file and output, meanwhile, it can set the number of repetitions per LIST file and number of executions of the entire SEQUENCE file.



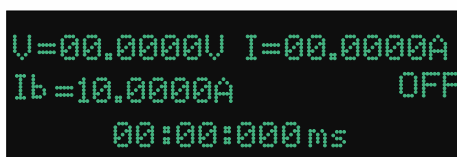
## Measure Average Function

Under this mode, if the DUT has a sharp change in voltage and current, the averaging times can be adjusted to be FAST, MEDIUM or SLOW to make the displayed value more stable.



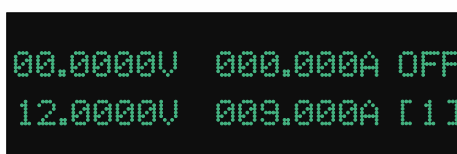
## Current Counting Function

This function offers testing of the cutoff time of a breaker or a fuse. Starts timing when the current reaches the circuit breaker or fuse's fusing current  $I_b$ , stops timing when disconnected, the timing resolution is up to 200ms.



## Quick Recall Function

Support to recall the stored parameters directly by the numeric keys on the front panel. Firstly, user stores the frequently used data in the power supply's memory, press the numeric key directly after entering the quick recall mode, can quick recall the datas which are stored in **[1]** ~ **[9]**.

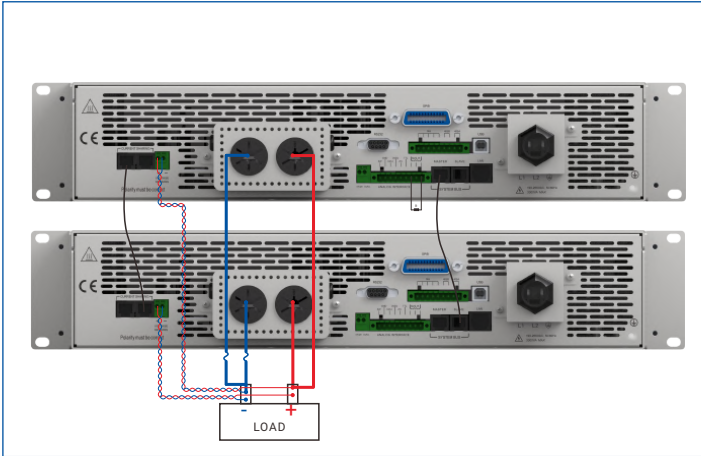




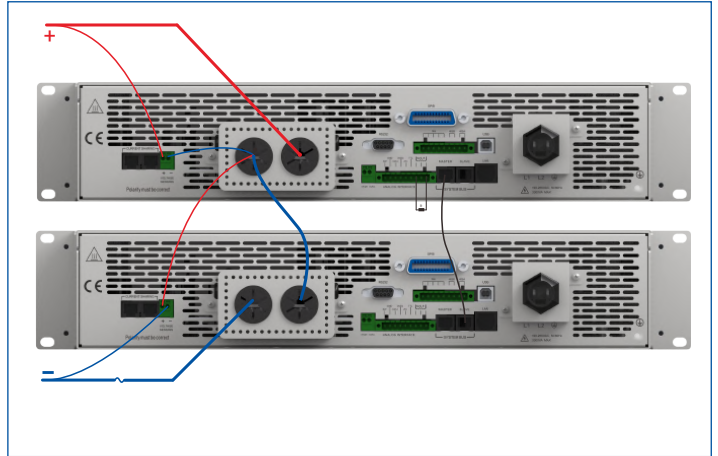
## Master/Slave Mode

This series power supply support Master/Slave parallel and series operation mode for up to 10 units, extended power up to 40kW. The current sharing function in parallel mode realizes the equalization of the power supplies in the system, thereby ensuring the extended power without affecting the performance index of the power supply. CAN parallel mode realizes the same dynamic response of the system as single unit, realizing high-speed and non-delayed synchronous response of master and slave.

### Parallel Connection

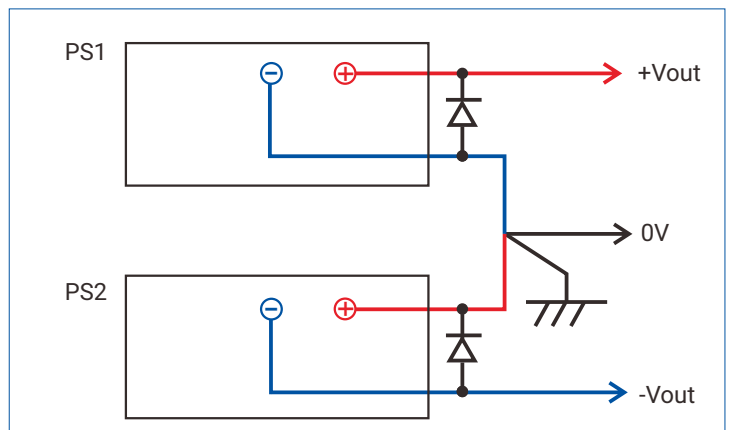
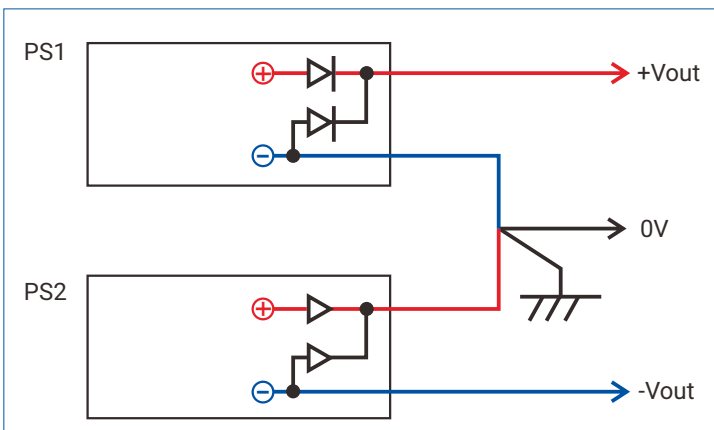
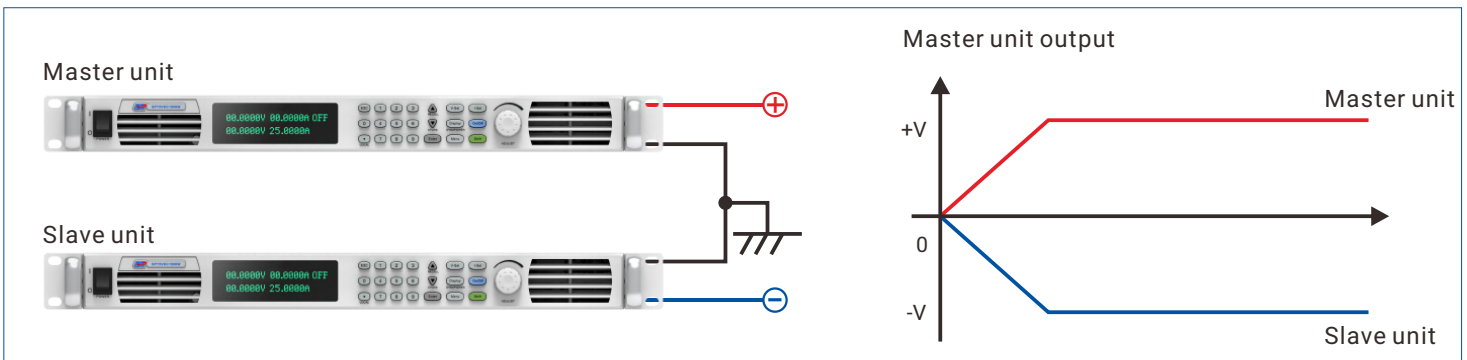


### Series Connection



## Positive / Negative Voltage Output Mode

This mode which enables both positive and negative outputs simultaneously in master slave operation.



The power supply below 200A has been connected with anti reverse diode, so the external diode isn't needed in the actual connection, and the 200A power supply needs to connect the diode.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## Built-in Standard Automobile Electric Test Waveform

It can be used to simulate the transient interference of power supply which may often be encountered in the process of automobile startup and operation. In accordance with industry standards, this series power supply has built-in voltage curves under the DIN40839 and ISO 16750-2 standards for 12V and 24V test grades. User can call the voltage curve directly for testing or edit as desired.

The built-in standard waveform cutline and file names are as below:

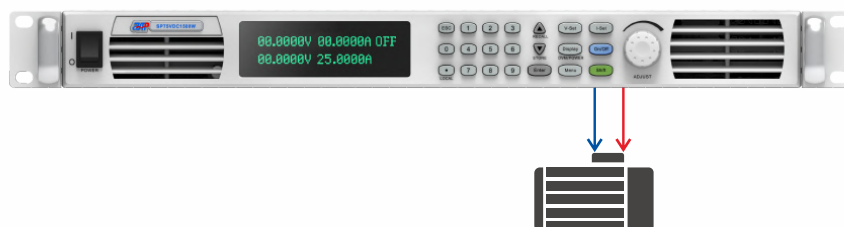
| No. | Standard   | Test item name                                  | Waveform | List/Sequence File Name(Built-in)   |
|-----|------------|---|----------|---|
| 1   | ISO16750-2 | Automobile Start Transient Voltage Drop         |          | List 3-2 (12V Voltage Grade)<br>List 3-7 (24V Voltage Grade)  |
| 2   | ISO16750-2 | Automobile Electronic Restoration Function Test |          | Sequence1 (includes List 3-3 and List 3-4, for 12V system)<br>Sequence 2 (includes List 3-8 and List 3-9, for 24V system) |
| 3   | ISO16750-2 | Automobile Electronic Engine Start Test         |          | List 3-5  |
| 4   | DIN40839   | Automobile Electronic Engine Start Test         |          | List 3-1  |

## Anti reverse irrigation/Power Sink Function

This series power supply has protection against reverse irrigation, so as to cut off the current of DUT in a certain test condition to the direction of power supply, and prevent the damage to the power supply hardware circuit from DUT.



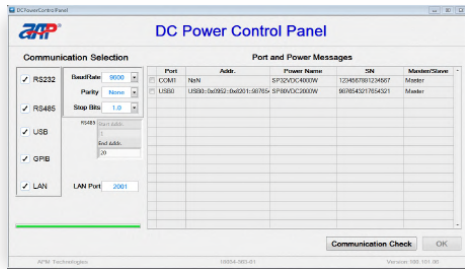
Meanwhile, this series power supply comes standard with short circuit copper sheet, When the test requires the power supply to absorb the spike generated by DUT to ensure the safety of the operation, the short-circuit copper piece can be connected, and the energy is absorbed by the output capacitor inside the power supply and other circuits.



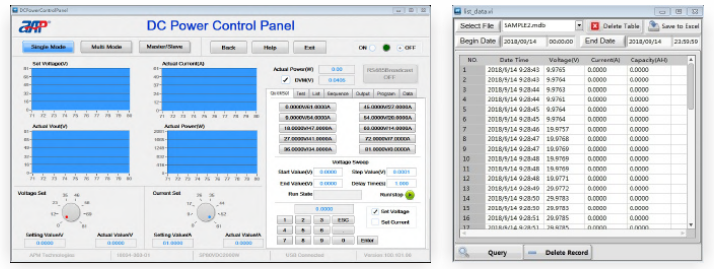
**Note:** Please consult your sales representative to get detailed information about anti reverse irrigation protection for power supply models above 200A.

## Monitoring Software

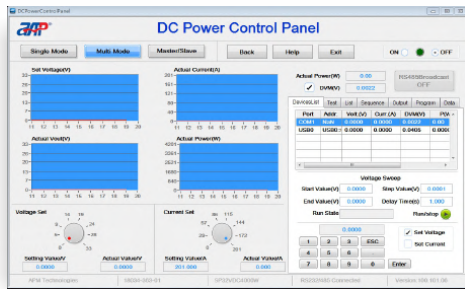
All power supplies come standard with graphical monitoring software, which supports all communication interfaces and covers almost all functions of the power supply front panel operation. In the communication selection interface, users can select the communication interface and search for the connected power supply according to the actual connection.



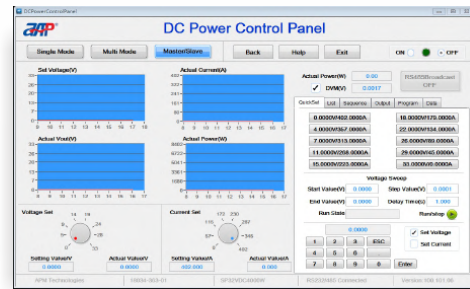
When the communication port has only one power supply connection, it enters the Single Mode interface. Includes the basic settings of voltage and current and measurement function, and List waveform editing/ saved test data function.



When the communication port has more than one power supply connection, it enters the Multi Mode interface. Supports switching control or display current power supply's settings.



When the communication port connects the power supply that is the Master unit, it enters Master/Slave interface. The Master/Slave interface only maintains communication with the Master unit, and the parameters are synchronously written to the slaves.



## WebServer Function

Use can control the power supply on a computer using a web browser. No need to install the monitoring software, just open web browser and input IP address to control the unit, which can meet basic setting and monitoring requirements.



# SP-1U/2U Series High Performance Programmable DC Power Supply

## 600W in 1U

| Model  | SP20VDC600W   | SP32VDC600W                           | SP40VDC600W                           | SP75VDC600W                           | SP150VDC600W                          | SP200VDC600W                          |
|--|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |                                       |                                       |                                       |                                       |                                       |
| Input Voltage                                  | 90~265VAC   |                                       |                                       |                                       |                                       |                                       |
| Input Frequency                                | 47~63Hz   |                                       |                                       |                                       |                                       |                                       |
| Power Factor                                   | >0.98   |                                       |                                       |                                       |                                       |                                       |
| Input Power                                    | 750VA(MAX)  |                                       |                                       |                                       |                                       |                                       |
| <b>Output</b>                                  |   |                                       |                                       |                                       |                                       |                                       |
| Output Voltage Range                           | 0~20V   | 0~32V                                 | 0~40V                                 | 0~75V                                 | 0~150V                                | 0~200V                                |
| Output Current Range                           | 0~60A   | 0~50A                                 | 0~40A                                 | 0~25A                                 | 0~10A                                 | 0~8A                                  |
| Output Power Range                             | 0~600W  |                                       |                                       |                                       |                                       |                                       |
| Voltage Load Regulation                        | 10mV  | 10mV                                  | 10mV                                  | 10mV                                  | 15mV                                  | 15mV                                  |
| Current Load Regulation                        | 60mA  | 50mA                                  | 40mA                                  | 25mA                                  | 10mA                                  | 8mA                                   |
| Voltage Display Resolution                     | 0.1mV   | 0.1mV                                 | 0.1mV                                 | 0.1mV                                 | 1mV                                   | 1mV                                   |
| Current Display Resolution                     | 0.2mA   | 0.2mA                                 | 0.2mA                                 | 0.2mA                                 | 0.2mA                                 | 0.1mA                                 |
| Voltage Programmable Resolution                | 1.5mV   | 1.5mV                                 | 1.5mV                                 | 1.5mV                                 | 3mV                                   | 3mV                                   |
| Current Programmable Resolution                | 2mA   | 2mA                                   | 2mA                                   | 1mA                                   | 1mA                                   | 1mA                                   |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Setting Accuracy                       | 0.1%+60mA   | 0.1%+50mA                             | 0.1%+40mA                             | 0.1%+25mA                             | 0.1%+10mA                             | 0.1%+8mA                              |
| Voltage Measurement Accuracy <sup>[2]</sup>    | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Measurement Accuracy                   | 0.1%+60mA   | 0.1%+50mA                             | 0.1%+40mA                             | 0.1%+25mA                             | 0.1%+10mA                             | 0.1%+8mA                              |
| Voltage Ripple <sup>[2]</sup>                  | 40mVp-p<br>6mVrms   | 40mVp-p<br>6mVrms                     | 40mVp-p<br>6mVrms                     | 40mVp-p<br>6mVrms                     | 120mVp-p<br>40mVrms                   | 120mVp-p<br>40mVrms                   |
| Current Ripple <sup>[3]</sup>                  | 60mA (Full Range)<br>20mA (TYP Value)   | 50mA (Full Range)<br>20mA (TYP Value) | 40mA (Full Range)<br>20mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) | 40mA (Full Range)<br>10mA (TYP Value) | 40mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.005%+1mV  | 0.005%+1mV                            | 0.005%+1mV                            | 0.005%+1mV                            | 0.02%+8mV                             | 0.02%+8mV                             |
| Line Regulation(Current)                       | 4mA   | 4mA                                   | 4mA                                   | 4mA                                   | 10mA                                  | 30mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |                                       |                                       |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |                                       |                                       |                                       |                                       |
| DVM Resolution                                 | 0.1mV   | 0.1mV                                 | 0.1mV                                 | 0.1mV                                 | 4mV                                   | 1mV                                   |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+30mV                             | 0.1%+15mV                             |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |                                       |                                       |                                       |                                       |
| Remote Compensation                            | 4V MAX  |                                       |                                       |                                       |                                       |                                       |
| Master-slave Control                           | Yes   |                                       |                                       |                                       |                                       |                                       |
| Response (Voltage Increase)                    | ≤10ms   | ≤12ms                                 | ≤10ms                                 | ≤10ms                                 | ≤25ms                                 | ≤30ms                                 |
| Response (Voltage Drop)                        | ≤150ms (no load)<br>≤20ms (full load)   | ≤150ms (no load)<br>≤20ms (full load) | ≤150ms (no load)<br>≤20ms (full load) | ≤160ms (no load)<br>≤20ms (full load) | ≤400ms (no load)<br>≤32ms (full load) | ≤600ms (no load)<br>≤30ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  | ≤2ms                                  | ≤2ms                                  | ≤2ms                                  | ≤3ms                                  | ≤3ms                                  |
| Command Response Time                          | 50ms  |                                       |                                       |                                       |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  | Up to 10 units                        | Up to 10 units                        | Up to 10 units                        | Up to 8 units                         | Up to 6 units                         |
| Parallel Capability                            | Up to 10 units  |                                       |                                       |                                       |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 9V  | 9V                                    | 12V                                   | 20V                                   | 40V                                   | 50V                                   |
| Efficiency (full load)                         | 85%   | 86%                                   | 87%                                   | 88%                                   | 88%                                   | 87%                                   |
| <b>Other</b>                                   |   |                                       |                                       |                                       |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |                                       |                                       |                                       |                                       |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |                                       |                                       |                                       |                                       |
| Input Fuse                                     | 20A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 10A, 125VAC/250VAC, fast-acting type  | 10A, 125VAC/250VAC, fast-acting type  |
| Unit Weight/Shipping Weight                    | 9.2kg/12kg  | 9.2kg/12kg                            | 9.2kg/12kg                            | 8.9kg/11.7kg                          | 9.3kg/12.7kg                          | 9.3kg/12.7kg                          |
| Dimensions(WxHxD)                              | 423.0x44.0x447.0 mm   |                                       |                                       |                                       |                                       |                                       |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |                                       |                                       |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |                                       |                                       |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |                                       |                                       |                                       |                                       |
| Altitude                                       | 2000m   |                                       |                                       |                                       |                                       |                                       |
| Insulation                                     | AC input ↔ DC output, 4242VDC, AC input ↔ PE, 2121VDC   |                                       |                                       |                                       |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $I_{\text{error}} = (I_{\text{AV}} \times 2.5\% + 5\% \text{ F.S}) \times A$ , F.S is the full scale of the current.  $I_{\text{AV}} = I_{\text{sum}}/n$ , where  $I_{\text{AV}}$  is average current,  $I_{\text{sum}}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 1000W in 1U

| Model  | SP20VDC1000W  | SP32VDC1000W                          | SP40VDC1000W                          | SP75VDC1000W                          | SP150VDC1000W                         | SP200VDC1000W                         |
|--|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |                                       |                                       |                                       |                                       |                                       |
| Input Voltage                                  | 90~265VAC   |                                       |                                       |                                       |                                       |                                       |
| Input Frequency                                | 47~63Hz   |                                       |                                       |                                       |                                       |                                       |
| Power Factor                                   | >0.98   |                                       |                                       |                                       |                                       |                                       |
| Input Power                                    | 1300VA(MAX)   |                                       |                                       |                                       |                                       |                                       |
| <b>Output</b>                                  |   |                                       |                                       |                                       |                                       |                                       |
| Output Voltage Range                           | 0~20V   | 0~32V                                 | 0~40V                                 | 0~75V                                 | 0~150V                                | 0~200V                                |
| Output Current Range                           | 0~60A   | 0~50A                                 | 0~40A                                 | 0~25A                                 | 0~10A                                 | 0~8A                                  |
| Output Power Range                             | 0~1000W   |                                       |                                       |                                       |                                       |                                       |
| Voltage Load Regulation                        | 10mV  | 10mV                                  | 10mV                                  | 10mV                                  | 15mV                                  | 15mV                                  |
| Current Load Regulation                        | 60mA  | 50mA                                  | 40mA                                  | 25mA                                  | 10mA                                  | 8mA                                   |
| Voltage Display Resolution                     | 0.1mV   | 0.1mV                                 | 0.1mV                                 | 0.1mV                                 | 1mV                                   | 1mV                                   |
| Current Display Resolution                     | 0.2mA   | 0.2mA                                 | 0.2mA                                 | 0.2mA                                 | 0.2mA                                 | 0.1mA                                 |
| Voltage Programmable Resolution                | 1.5mV   | 1.5mV                                 | 1.5mV                                 | 1.5mV                                 | 3mV                                   | 3mV                                   |
| Current Programmable Resolution                | 2mA   | 2mA                                   | 2mA                                   | 1mA                                   | 1mA                                   | 1mA                                   |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Setting Accuracy                       | 0.1%+60mA   | 0.1%+50mA                             | 0.1%+40mA                             | 0.1%+25mA                             | 0.1%+10mA                             | 0.1%+8mA                              |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Measurement Accuracy                   | 0.1%+60mA   | 0.1%+50mA                             | 0.1%+40mA                             | 0.1%+25mA                             | 0.1%+10mA                             | 0.1%+8mA                              |
| Voltage Ripple <sup>[2]</sup>                  | 40mVp-p<br>6mVrms   | 40mVp-p<br>6mVrms                     | 40mVp-p<br>6mVrms                     | 40mVp-p<br>6mVrms                     | 120mVp-p<br>40mVrms                   | 120mVp-p<br>40mVrms                   |
| Current Ripple <sup>[3]</sup>                  | 60mA (Full Range)<br>20mA (TYP Value)   | 50mA (Full Range)<br>20mA (TYP Value) | 40mA (Full Range)<br>20mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) | 40mA (Full Range)<br>10mA (TYP Value) | 40mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.005%+1mV  | 0.005%+1mV                            | 0.005%+1mV                            | 0.005%+1mV                            | 0.02%+8mV                             | 0.02%+8mV                             |
| Line Regulation(Current)                       | 4mA   | 4mA                                   | 4mA                                   | 4mA                                   | 10mA                                  | 30mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |                                       |                                       |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |                                       |                                       |                                       |                                       |
| DVM Resolution                                 | 0.1mV   | 0.1mV                                 | 0.1mV                                 | 0.1mV                                 | 4mV                                   | 1mV                                   |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+30mV                             | 0.1%+15mV                             |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |                                       |                                       |                                       |                                       |
| Remote Compensation                            | 4V MAX  |                                       |                                       |                                       |                                       |                                       |
| Master-slave Control                           | Yes   |                                       |                                       |                                       |                                       |                                       |
| Response (Voltage Increase)                    | ≤10ms   | ≤12ms                                 | ≤10ms                                 | ≤10ms                                 | ≤25ms                                 | ≤30ms                                 |
| Response (Voltage Drop)                        | ≤150ms (no load)<br>≤20ms (full load)   | ≤150ms (no load)<br>≤15ms (full load) | ≤150ms (no load)<br>≤15ms (full load) | ≤160ms (no load)<br>≤15ms (full load) | ≤400ms (no load)<br>≤25ms (full load) | ≤600ms (no load)<br>≤40ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  | ≤2ms                                  | ≤2ms                                  | ≤2ms                                  | ≤3ms                                  | ≤3ms                                  |
| Command Response Time                          | 50ms  |                                       |                                       |                                       |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  | Up to 10 units                        | Up to 10 units                        | Up to 10 units                        | Up to 8 units                         | Up to 6 units                         |
| Parallel Capability                            | Up to 10 units  |                                       |                                       |                                       |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 9V  | 9V                                    | 12V                                   | 20V                                   | 40V                                   | 50V                                   |
| Efficiency (full load)                         | 85%   | 89%                                   | 89%                                   | 89%                                   | 89%                                   | 87%                                   |
| <b>Other</b>                                   |   |                                       |                                       |                                       |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |                                       |                                       |                                       |                                       |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |                                       |                                       |                                       |                                       |
| Input Fuse                                     | 20A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  |
| Unit Weight/Shipping Weight                    | 9.2kg/12kg  | 9.2kg/12kg                            | 9.2kg/12kg                            | 8.9kg/11.7kg                          | 9.3kg/12.7kg                          | 9.3kg/12.7kg                          |
| Dimensions(WxHxD)                              | 423.0x44.0x447.0 mm   |                                       |                                       |                                       |                                       |                                       |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |                                       |                                       |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |                                       |                                       |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |                                       |                                       |                                       |                                       |
| Altitude                                       | 2000m   |                                       |                                       |                                       |                                       |                                       |
| Insulation                                     | AC input <->DC output, 4242VDC, AC input <-> PE, 2121VDC  |                                       |                                       |                                       |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $le<(lav*2.5\% + 5\% F.S) A$ , F.S is the full scale of the current.  $lav=Isum/n$ , where  $lav$  is average current,  $Isum$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.



# SP-1U/2U Series High Performance Programmable DC Power Supply

## 1200W in 1U

| Model  | SP20VDC1200W  | SP32VDC1200W                          | SP40VDC1200W                          | SP75VDC1200W                          | SP150VDC1200W                         | SP200VDC1200W                         |
|--|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |                                       |                                       |                                       |                                       |                                       |
| Input Voltage                                  | 90~265VAC   |                                       |                                       |                                       |                                       |                                       |
| Input Frequency                                | 47~63Hz   |                                       |                                       |                                       |                                       |                                       |
| Power Factor                                   | >0.98   |                                       |                                       |                                       |                                       |                                       |
| Input Power                                    | 1500VA(MAX)   |                                       |                                       |                                       |                                       |                                       |
| <b>Output</b>                                  |   |                                       |                                       |                                       |                                       |                                       |
| Output Voltage Range                           | 0~20V   | 0~32V                                 | 0~40V                                 | 0~75V                                 | 0~150V                                | 0~200V                                |
| Output Current Range                           | 0~60A   | 0~50A                                 | 0~40A                                 | 0~25A                                 | 0~10A                                 | 0~8A                                  |
| Output Power Range                             | 0~1200W   |                                       |                                       |                                       |                                       |                                       |
| Voltage Load Regulation                        | 10mV  | 10mV                                  | 10mV                                  | 10mV                                  | 15mV                                  | 15mV                                  |
| Current Load Regulation                        | 60mA  | 50mA                                  | 40mA                                  | 25mA                                  | 10mA                                  | 8mA                                   |
| Voltage Display Resolution                     | 0.1mV   | 0.1mV                                 | 0.1mV                                 | 0.1mV                                 | 1mV                                   | 1mV                                   |
| Current Display Resolution                     | 0.2mA   | 0.2mA                                 | 0.2mA                                 | 0.2mA                                 | 0.2mA                                 | 0.1mA                                 |
| Voltage Programmable Resolution                | 1.5mV   | 1.5mV                                 | 1.5mV                                 | 1.5mV                                 | 3mV                                   | 3mV                                   |
| Current Programmable Resolution                | 2mA   | 2mA                                   | 2mA                                   | 1mA                                   | 1mA                                   | 1mA                                   |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Setting Accuracy                       | 0.1%+60mA   | 0.1%+50mA                             | 0.1%+40mA                             | 0.1%+25mA                             | 0.1%+10mA                             | 0.1%+8mA                              |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Measurement Accuracy                   | 0.1%+60mA   | 0.1%+50mA                             | 0.1%+40mA                             | 0.1%+25mA                             | 0.1%+10mA                             | 0.1%+8mA                              |
| Voltage Ripple <sup>[2]</sup>                  | 40mVp-p<br>6mVrms   | 40mVp-p<br>6mVrms                     | 40mVp-p<br>6mVrms                     | 40mVp-p<br>6mVrms                     | 120mVp-p<br>40mVrms                   | 120mVp-p<br>40mVrms                   |
| Current Ripple <sup>[3]</sup>                  | 60mA (Full Range)<br>20mA (TYP Value)   | 50mA (Full Range)<br>20mA (TYP Value) | 40mA (Full Range)<br>20mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) | 40mA (Full Range)<br>10mA (TYP Value) | 40mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.005%+1mV  | 0.005%+1mV                            | 0.005%+1mV                            | 0.005%+1mV                            | 0.02%+8mV                             | 0.02%+8mV                             |
| Line Regulation(Current)                       | 4mA   | 4mA                                   | 4mA                                   | 4mA                                   | 10mA                                  | 30mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |                                       |                                       |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |                                       |                                       |                                       |                                       |
| DVM Resolution                                 | 0.1mV   | 0.1mV                                 | 0.1mV                                 | 0.1mV                                 | 4mV                                   | 1mV                                   |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            | 0.05%+15mV                            | 0.1%+30mV                             | 0.1%+15mV                             |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |                                       |                                       |                                       |                                       |
| Remote Compensation                            | 4V MAX  |                                       |                                       |                                       |                                       |                                       |
| Master-slave Control                           | Yes   |                                       |                                       |                                       |                                       |                                       |
| Response (Voltage Increase)                    | ≤10ms   | ≤10ms                                 | ≤10ms                                 | ≤10ms                                 | ≤25ms                                 | ≤30ms                                 |
| Response (Voltage Drop)                        | ≤150ms (no load)<br>≤12ms (full load)   | ≤150ms (no load)<br>≤12ms (full load) | ≤150ms (no load)<br>≤12ms (full load) | ≤160ms (no load)<br>≤12ms (full load) | ≤400ms (no load)<br>≤21ms (full load) | ≤600ms (no load)<br>≤36ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  | ≤2ms                                  | ≤2ms                                  | ≤2ms                                  | ≤3ms                                  | ≤3ms                                  |
| Command Response Time                          | 50ms  |                                       |                                       |                                       |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  | Up to 10 units                        | Up to 10 units                        | Up to 10 units                        | Up to 8 units                         | Up to 6 units                         |
| Parallel Capability                            | Up to 10 units  |                                       |                                       |                                       |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 9V  | 9V                                    | 12V                                   | 20V                                   | 40V                                   | 50V                                   |
| Efficiency (full load)                         | 84%   | 84%                                   | 89%                                   | 90%                                   | 89%                                   | 90%                                   |
| <b>Other</b>                                   |   |                                       |                                       |                                       |                                       |                                       |
| Protection Function                            | OVP/OC/OTP/OPP/SCP/FOLDBACK   |                                       |                                       |                                       |                                       |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |                                       |                                       |                                       |                                       |
| Input Fuse                                     | 20A, 125VAC/250VAC, fast-acting type  | 20A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  |
| Unit Weight/Shipping Weight                    | 9.2kg/12kg  | 9.2kg/12kg                            | 9.2kg/12kg                            | 8.9kg/11.7kg                          | 9.3kg/12.7kg                          | 9.3kg/12.7kg                          |
| Dimensions(WxHxD)                              | 423.0x44.0x447.0 mm   |                                       |                                       |                                       |                                       |                                       |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |                                       |                                       |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |                                       |                                       |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |                                       |                                       |                                       |                                       |
| Altitude                                       | 2000m   |                                       |                                       |                                       |                                       |                                       |
| Insulation                                     | AC input ↔ DC output, 4242VDC, AC input ↔ PE, 2121VDC   |                                       |                                       |                                       |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $l_{\text{es}}(I_{\text{av}} \times 2.5\% + 5\% \text{ F.S})$  A, F.S is the full scale of the current.  $I_{\text{av}} = I_{\text{sum}}/n$ , where  $I_{\text{av}}$  is average current,  $I_{\text{sum}}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 1500W in 1U

| Model  | SP75VDC1500W  | SP150VDC1500W                         | SP200VDC1500W                         |
|--|---|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |                                       |                                       |
| Input Voltage                                  | 90~265VAC   |                                       |                                       |
| Input Frequency                                | 47~63Hz   |                                       |                                       |
| Power Factor                                   | >0.98   |                                       |                                       |
| Input Power                                    | 1900VA(MAX)   |                                       |                                       |
| <b>Output</b>                                  |   |                                       |                                       |
| Output Voltage Range                           | 0~75V   | 0~150V                                | 0~200V                                |
| Output Current Range                           | 0~25A   | 0~10A                                 | 0~8A                                  |
| Output Power Range                             | 0~1500W   |                                       |                                       |
| Voltage Load Regulation                        | 10mV  | 15mV                                  | 15mV                                  |
| Current Load Regulation                        | 25mA  | 10mA                                  | 8mA                                   |
| Voltage Display Resolution                     | 0.1mV   | 1mV                                   | 1mV                                   |
| Current Display Resolution                     | 0.2mA   | 0.2mA                                 | 0.1mA                                 |
| Voltage Programmable Resolution                | 1.5mV   | 3mV                                   | 3mV                                   |
| Current Programmable Resolution                | 1mA   | 1mA                                   | 1mA                                   |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  | 0.05%+15mV                            | 0.05%+15mV                            |
| Current Setting Accuracy                       | 0.1%+25mA   | 0.1%+10mA                             | 0.1%+8mA                              |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.05%+15mV  | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Measurement Accuracy                   | 0.1%+25mA   | 0.1%+10mA                             | 0.1%+8mA                              |
| Voltage Ripple <sup>[2]</sup>                  | 40mVp-p<br>6mVrms   | 120mVp-p<br>40mVrms                   | 120mVp-p<br>40mVrms                   |
| Current Ripple <sup>[3]</sup>                  | 25mA (Full Range)<br>10mA (TYP Value)   | 40mA (Full Range)<br>10mA (TYP Value) | 40mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.005%+2mV  | 0.02%+8mV                             | 0.02%+8mV                             |
| Line Regulation(Current)                       | 4mA   | 10mA                                  | 30mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |                                       |
| DVM Resolution                                 | 0.1mV   | 4mV                                   | 1mV                                   |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  | 0.1%+30mV                             | 0.1%+15mV                             |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |                                       |
| Remote Compensation                            | 4V MAX  |                                       |                                       |
| Master-slave Control                           | Yes   |                                       |                                       |
| Response (Voltage Increase)                    | ≤10ms   | ≤25ms                                 | ≤30ms                                 |
| Response (Voltage Drop)                        | ≤160ms (no load)<br>≤10ms (full load)   | ≤400ms (no load)<br>≤18ms (full load) | ≤600ms (no load)<br>≤30ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  | ≤3ms                                  | ≤3ms                                  |
| Command Response Time                          | 50ms  |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  | Up to 8 units                         | Up to 6 units                         |
| Parallel Capability                            | Up to 10 units  |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 20V   | 40V                                   | 50V                                   |
| Efficiency (full load)                         | 91%   | 90%                                   | 91%                                   |
| <b>Other</b>                                   |   |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |                                       |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |                                       |
| Input Fuse                                     | 30A, 125VAC/250VAC, fast-acting type  |                                       |                                       |
| Unit Weight/Shipping Weight                    | 8.9kg/11.7kg  | 9.3kg/12.7kg                          | 9.3kg/12.7kg                          |
| Dimensions(WxHxD)                              | 423.0x44.0x447.0 mm   |                                       |                                       |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |                                       |
| Altitude                                       | 2000m   |                                       |                                       |
| Insulation                                     | AC input <->DC output, 4242VDC, AC input <-> PE, 2121VDC  |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $I_{\text{error}} \leq (I_{\text{avg}} \times 2.5\% + 5\% \text{ F.S}) \times A$ , F.S is the full scale of the current.  $I_{\text{avg}} = I_{\text{sum}}/n$ , where  $I_{\text{avg}}$  is average current,  $I_{\text{sum}}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 1600W in 1U

| Model  | SP32VDC1600W  | SP40VDC1600W                          |
|--|---|---------------------------------------|
| <b>Input</b>                                   |   |                                       |
| Input Voltage                                  | 90~265VAC   |                                       |
| Input Frequency                                | 47~63Hz   |                                       |
| Power Factor                                   | >0.98   |                                       |
| Input Power                                    | 2000VA(MAX)   |                                       |
| <b>Output</b>                                  |   |                                       |
| Output Voltage Range                           | 0~32V   | 0~40V                                 |
| Output Current Range                           | 0~50A   | 0~40A                                 |
| Output Power Range                             | 0~1600W   |                                       |
| Voltage Load Regulation                        | 10mV  |                                       |
| Current Load Regulation                        | 50mA  | 40mA                                  |
| Voltage Display Resolution                     | 0.1mV   |                                       |
| Current Display Resolution                     | 0.2mA   |                                       |
| Voltage Programmable Resolution                | 1.5mV   |                                       |
| Current Programmable Resolution                | 2mA   |                                       |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  |                                       |
| Current Setting Accuracy                       | 0.1%+50mA   | 0.1%+40mA                             |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.05%+15mV  |                                       |
| Current Measurement Accuracy                   | 0.1%+50mA   | 0.1%+40mA                             |
| Voltage Ripple <sup>[2]</sup>                  | 40mVp-p<br>6mVrms   |                                       |
| Current Ripple <sup>[3]</sup>                  | 50mA (Full Range)<br>20mA (TYP Value)   | 40mA (Full Range)<br>20mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.005%+1mV  |                                       |
| Line Regulation(Current)                       | 4mA   |                                       |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |
| DVM Resolution                                 | 0.1mV   |                                       |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  |                                       |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |
| Remote Compensation                            | 4V MAX  |                                       |
| Master-slave Control                           | Yes   |                                       |
| Response (Voltage Increase)                    | ≤12ms   | ≤10ms                                 |
| Response (Voltage Drop)                        | ≤150ms (no load)<br>≤10ms (full load)   |                                       |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  |                                       |
| Command Response Time                          | 50ms  |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  |                                       |
| Parallel Capability                            | Up to 10 units  |                                       |
| Current Sharing <sup>[7]</sup>                 | 9V  | 12V                                   |
| Efficiency (full load)                         | 89%   | 90%                                   |
| <b>Other</b>                                   |   |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |
| Input Fuse                                     | 30A, 125VAC/250VAC, fast-acting type  |                                       |
| Unit Weight/Shipping Weight                    | 9.2kg/12kg  |                                       |
| Dimensions(WxHxD)                              | 423.0x44.0x447.0 mm   |                                       |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |
| Altitude                                       | 2000m   |                                       |
| Insulation                                     | AC input ↔ DC output, 4242VDC, AC input ↔ PE, 2121VDC   |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $I_{\text{error}} = (I_{\text{avg}} * 2.5\% + 5\% \text{ F.S}) / n$ , A, F.S is the full scale of the current.  $I_{\text{avg}} = I_{\text{sum}} / n$ , where  $I_{\text{avg}}$  is average current,  $I_{\text{sum}}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 1000W in 2U(1)

| Model  | SPS32VDC1000W   | SPS40VDC1000W                          | SPS80VDC1000W                         | SPS120VDC1000W                        |
|--|---|--|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |  |                                       |                                       |
| Input Voltage                                  | 90~265VAC   |  |                                       |                                       |
| Input Frequency                                | 47~63Hz   |  |                                       |                                       |
| Power Factor                                   | >0.98   | >0.98                                  | >0.97                                 | >0.98                                 |
| Input Power                                    | 1500VA(MAX)   | 1300VA(MAX)                            | 1200VA(MAX)                           | 1300VA(MAX)                           |
| <b>Output</b>                                  |   |  |                                       |                                       |
| Output Voltage Range                           | 0~32V   | 0~40V                                  | 0~80V                                 | 0~120V                                |
| Output Current Range                           | 0~200A  | 0~120A                                 | 0~60A                                 | 0~40A                                 |
| Output Power Range                             | 0~1000W   |  |                                       |                                       |
| Voltage Load Regulation                        | 30mV  | 15mV                                   | 15mV                                  | 15mV                                  |
| Current Load Regulation                        | 200mA   | 120mA                                  | 60mA                                  | 40mA                                  |
| Voltage Display Resolution                     | 0.1mV   | 0.1mV                                  | 0.1mV                                 | 1mV                                   |
| Current Display Resolution                     | 1mA   | 1mA                                    | 0.2mA                                 | 0.1mA                                 |
| Voltage Programmable Resolution                | 1mV   | 1mV                                    | 1.5mV                                 | 3mV                                   |
| Current Programmable Resolution                | 6mA   | 3mA                                    | 2mA                                   | 1mA                                   |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Current Setting Accuracy                       | 0.1%+200mA  | 0.1%+120mA                             | 0.1%+60mA                             | 0.1%+40mA                             |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Current Measurement Accuracy                   | 0.1%+200mA  | 0.1%+120mA                             | 0.1%+60mA                             | 0.1%+40mA                             |
| Voltage Ripple <sup>[2]</sup>                  | 60mVp-p<br>10mVrms  | 40mVp-p<br>6mVrms                      | 40mVp-p<br>6mVrms                     | 80mVp-p<br>15mVrms                    |
| Current Ripple <sup>[3]</sup>                  | 400mA (Full Range)<br>200mA (TYP Value)   | 150mA (Full Range)<br>20mA (TYP Value) | 50mA (Full Range)<br>10mA (TYP Value) | 60mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.01%+8mV   | 0.02%+8mV                              | 0.01%+8mV                             | 0.02%+8mV                             |
| Line Regulation(Current)                       | 200mA   | 30mA                                   | 30mA                                  | 40mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |  |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |  |                                       |                                       |
| DVM Resolution                                 | 0.1mV   | 0.1mV                                  | 0.1mV                                 | 1mV                                   |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |  |                                       |                                       |
| Remote Compensation                            | 4V MAX  | 4V MAX                                 | 4V MAX                                | 5V MAX                                |
| Master-slave Control                           | Yes   |  |                                       |                                       |
| Response (Voltage Increase)                    | ≤20ms (no load)<br>≤40ms (full load)  | ≤10ms                                  | ≤15ms                                 | ≤20ms                                 |
| Response (Voltage Drop)                        | ≤500ms (no load)<br>≤45ms (full load)   | ≤350ms (no load)<br>≤10ms (full load)  | ≤450ms (no load)<br>≤30ms (full load) | ≤350ms (no load)<br>≤21ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  |  |                                       |                                       |
| Command Response Time                          | 50ms  |  |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  |  |                                       |                                       |
| Parallel Capability                            | Up to 10 units  |  |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 12V   | 12V                                    | 20V                                   | 30V                                   |
| Efficiency (full load)                         | 85%   | 87%                                    | 89%                                   | 88%                                   |
| <b>Other</b>                                   |   |  |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |  |                                       |                                       |
| Anti Reverse Irrigation Protection             | No(customers can purchase other accessories to achieve this function, please consult the salesrepresentative for details) | Yes                                    | Yes                                   | Yes                                   |
| Input Fuse                                     | 20A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type   | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  |
| Unit Weight/Shipping Weight                    | 14.7kg/18.7kg   | 14.7kg/18.7kg                          | 13.2kg/16.8kg                         | 13.2kg/16.8kg                         |
| Dimensions(WxHxD)                              | 423.0x87.0x514.0 mm   | 423.0x87.0x514.0 mm                    | 423.0x87.0x469.0 mm                   | 423.0x87.0x469.0 mm                   |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |  |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |  |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |  |                                       |                                       |
| Altitude                                       | 2000m   |  |                                       |                                       |
| Insulation                                     | AC input <->DC output, 4242VDC, AC input <-> PE, 2121VDC  |  |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $l_{e} < (l_{av} * 2.5\% + 5\% F.S) A$ , F.S is the full scale of the current.  $l_{av} = l_{sum} / n$ , where  $l_{av}$  is average current,  $l_{sum}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 1000W in 2U(2)

| Model  | SPS150VDC1000W  | SPS200VDC1000W                        | SPS600VDC1000W                         | SPS800VDC1000W                        |
|--|---|---------------------------------------|--|---------------------------------------|
| <b>Input</b>                                   |   |                                       |  |                                       |
| Input Voltage                                  | 90~265VAC   |                                       |  |                                       |
| Input Frequency                                | 47~63Hz   |                                       |  |                                       |
| Power Factor                                   | >0.98   |                                       |  |                                       |
| Input Power                                    | 1300VA(MAX)   |                                       |  |                                       |
| <b>Output</b>                                  |   |                                       |  |                                       |
| Output Voltage Range                           | 0~150V  | 0~200V                                | 0~600V                                 | 0~800V                                |
| Output Current Range                           | 0~30A   | 0~24A                                 | 0~10A                                  | 0~7.5A                                |
| Output Power Range                             | 0~1000W   |                                       |  |                                       |
| Voltage Load Regulation                        | 15mV  | 15mV                                  | 30mV                                   | 200mV                                 |
| Current Load Regulation                        | 30mA  | 24mA                                  | 10mA                                   | 20mA                                  |
| Voltage Display Resolution                     | 1mV   |                                       |  |                                       |
| Current Display Resolution                     | 0.1mA   |                                       |  |                                       |
| Voltage Programmable Resolution                | 3mV   | 4mV                                   | 12mV                                   | 24mV                                  |
| Current Programmable Resolution                | 1mA   |                                       |  |                                       |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                            | 0.05%+200mV                           |
| Current Setting Accuracy                       | 0.1%+30mA   | 0.1%+24mA                             | 0.1%+10mA                              | 0.1%+7.5mA                            |
| Voltage Measurement Accuracy <sup>[3]</sup>    | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                            | 0.05%+200mV                           |
| Current Measurement Accuracy                   | 0.1%+30mA   | 0.1%+24mA                             | 0.1%+10mA                              | 0.1%+7.5mA                            |
| Voltage Ripple <sup>[2]</sup>                  | 80mVp-p<br>15mVrms  | 150mVp-p<br>30mVrms                   | 350mVp-p<br>40mVrms                    | 800mVp-p<br>200mVrms                  |
| Current Ripple <sup>[3]</sup>                  | 60mA (Full Range)<br>10mA (TYP Value)   | 50mA (Full Range)<br>20mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value)  | 25mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.02%+8mV   | 0.02%+8mV                             | 0.01%+30mV                             | 0.01%+40mV                            |
| Line Regulation(Current)                       | 30mA  | 30mA                                  | 15mA                                   | 15mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |  |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |  |                                       |
| DVM Resolution                                 | 1mV   | 1mV                                   | 12mV                                   | 12mV                                  |
| DVM Precision <sup>[5]</sup>                   | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                            | 0.05%+200mV                           |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |  |                                       |
| Remote Compensation                            | 5V MAX  |                                       |  |                                       |
| Master-slave Control                           | Yes   |                                       |  |                                       |
| Response (Voltage Increase)                    | ≤25ms   | ≤30ms                                 | ≤60ms                                  | ≤60ms                                 |
| Response (Voltage Drop)                        | ≤500ms (no load)<br>≤25ms (full load)   | ≤500ms (no load)<br>≤35ms (full load) | ≤800ms (no load)<br>≤110ms (full load) | ≤800ms (no load)<br>≤60ms (full load) |
| Load Transient Recovery Time <sup>[6]</sup>    | ≤2ms  | ≤2ms                                  | ≤3ms                                   | ≤3ms                                  |
| Command Response Time                          | 50ms  |                                       |  |                                       |
| Series Capability <sup>[6]</sup>               | Up to 8 units   | Up to 6 units                         | Up to 2 units                          | Not Recommended                       |
| Parallel Capability                            | Up to 10 units  |                                       |  |                                       |
| Current Sharing <sup>[7]</sup>                 | 40V   | 50V                                   | 200V                                   | 250V                                  |
| Efficiency (full load)                         | 88%   | 88%                                   | 86%                                    | 85%                                   |
| <b>Other</b>                                   |   |                                       |  |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |                                       |  |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |  |                                       |
| Input Fuse                                     | 30A, 125VAC/250VAC, fast-acting type  |                                       |  |                                       |
| Unit Weight/Shipping Weight                    | 13.2kg/16.8kg   | 14.7kg/18.7kg                         | 13.2kg/16.8kg                          | 13.2kg/16.8kg                         |
| Dimensions(WxHxD)                              | 423.0x87.0x469.0 mm   | 423.0x87.0x469.0 mm                   | 423.0x87.0x514.0 mm                    | 423.0x87.0x514.0 mm                   |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |  |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |  |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |  |                                       |
| Altitude                                       | 2000m   |                                       |  |                                       |
| Insulation                                     | AC input <->DC output, 4242VDC, AC input <-> PE, 2121VDC  |                                       |  |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $I_{\text{error}} = (I_{\text{AV}} * 2.5\% + 5\% \text{ F.S.}) A$ , F.S is the full scale of the current.  $I_{\text{AV}} = I_{\text{sum}}/n$ , where  $I_{\text{AV}}$  is average current,  $I_{\text{sum}}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.



# SP-1U/2U Series High Performance Programmable DC Power Supply

## 2000W in 2U(1)

| Model  | SP32VDC2000W  | SP40VDC2000W                           | SP80VDC2000W                          | SP120VDC2000W                         |
|--|---|--|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |  |                                       |                                       |
| Input Voltage                                  | 190~265VAC  |  |                                       |                                       |
| Input Frequency                                | 47~63Hz   |  |                                       |                                       |
| Power Factor                                   | >0.98   |  |                                       |                                       |
| Input Power                                    | 2600VA(MAX)   | 2400VA(MAX)                            | 2400VA(MAX)                           | 2400VA(MAX)                           |
| <b>Output</b>                                  |   |  |                                       |                                       |
| Output Voltage Range                           | 0~32V   | 0~40V                                  | 0~80V                                 | 0~120V                                |
| Output Current Range                           | 0~200A  | 0~120A                                 | 0~60A                                 | 0~40A                                 |
| Output Power Range                             | 0~2000W   |  |                                       |                                       |
| Voltage Load Regulation                        | 30mV  | 15mV                                   | 15mV                                  | 15mV                                  |
| Current Load Regulation                        | 200mA   | 120mA                                  | 60mA                                  | 40mA                                  |
| Voltage Display Resolution                     | 0.1mV   | 0.1mV                                  | 0.1mV                                 | 1mV                                   |
| Current Display Resolution                     | 1mA   | 1mA                                    | 0.2mA                                 | 0.1mA                                 |
| Voltage Programmable Resolution                | 1mV   | 1mV                                    | 1.5mV                                 | 3mV                                   |
| Current Programmable Resolution                | 6mA   | 3mA                                    | 2mA                                   | 1mA                                   |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Current Setting Accuracy                       | 0.1%+200mA  | 0.1%+120mA                             | 0.1%+60mA                             | 0.1%+40mA                             |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Current Measurement Accuracy                   | 0.1%+200mA  | 0.1%+120mA                             | 0.1%+60mA                             | 0.1%+40mA                             |
| Voltage Ripple <sup>[2]</sup>                  | 60mVp-p<br>10mVrms  | 40mVp-p<br>6mVrms                      | 40mVp-p<br>6mVrms                     | 80mVp-p<br>15mVrms                    |
| Current Ripple <sup>[3]</sup>                  | 400mA (Full Range)<br>200mA (TYP Value)   | 150mA (Full Range)<br>20mA (TYP Value) | 50mA (Full Range)<br>10mA (TYP Value) | 60mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.01%+8mV   | 0.01%+8mV                              | 0.01%+8mV                             | 0.02%+8mV                             |
| Line Regulation(Current)                       | 200mA   | 30mA                                   | 30mA                                  | 30mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |  |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |  |                                       |                                       |
| DVM Resolution                                 | 0.1mV   | 0.1mV                                  | 0.1mV                                 | 1mV                                   |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |  |                                       |                                       |
| Remote Compensation                            | 4V MAX  | 4V MAX                                 | 4V MAX                                | 5V MAX                                |
| Master-slave Control                           | Yes   |  |                                       |                                       |
| Response (Voltage Increase)                    | ≤20ms (no load)<br>≤30ms (full load)  | ≤10ms                                  | ≤15ms                                 | ≤20ms                                 |
| Response (Voltage Drop)                        | ≤500ms (no load)<br>≤30ms (full load)   | ≤350ms (no load)<br>≤10ms (full load)  | ≤450ms (no load)<br>≤30ms (full load) | ≤350ms (no load)<br>≤21ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  | ≤2ms                                   | ≤2ms                                  | ≤3ms                                  |
| Command Response Time                          | 50ms  |  |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  | Up to 10 units                         | Up to 10 units                        | Up to 8 units                         |
| Parallel Capability                            | Up to 10 units  |  |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 12V   | 12V                                    | 20V                                   | 30V                                   |
| Efficiency (full load)                         | 91%   | 88%                                    | 89%                                   | 89%                                   |
| <b>Other</b>                                   |   |  |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |  |                                       |                                       |
| Anti Reverse Irrigation Protection             | No(customers can purchase other accessories to achieve this function, please consult the salesrepresentative for details) | Yes                                    | Yes                                   | Yes                                   |
| Input Fuse                                     | 20A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type   | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  |
| Unit Weight/Shipping Weight                    | 14.7kg/18.7kg   | 14.7kg/18.7kg                          | 13.2kg/16.8kg                         | 13.2kg/16.8kg                         |
| Dimensions(WxHxD)                              | 423.0x87.0x514.0 mm   | 423.0x87.0x514.0 mm                    | 423.0x87.0x469.0 mm                   | 423.0x87.0x469.0 mm                   |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |  |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |  |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |  |                                       |                                       |
| Altitude                                       | 2000m   |  |                                       |                                       |
| Insulation                                     | AC input <->DC output, 4242VDC, AC input <-> PE, 2121VDC  |  |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $le < (lav * 2.5\% + 5\% F.S) A$ , F.S is the full scale of the current.  $lav = Isum/n$ , where  $lav$  is average current,  $Isum$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 2000W in 2U(2)

| Model  | SP150VDC2000W   | SP200VDC2000W                         | SP600VDC2000W                         | SP800VDC2000W                         |
|--|---|---------------------------------------|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |                                       |                                       |                                       |
| Input Voltage                                  | 190~265VAC  |                                       |                                       |                                       |
| Input Frequency                                | 47~63Hz   |                                       |                                       |                                       |
| Power Factor                                   | >0.98   |                                       |                                       |                                       |
| Input Power                                    | 2400VA(MAX)   |                                       |                                       |                                       |
| <b>Output</b>                                  |   |                                       |                                       |                                       |
| Output Voltage Range                           | 0~150V  | 0~200V                                | 0~600V                                | 0~800V                                |
| Output Current Range                           | 0~30A   | 0~24A                                 | 0~10A                                 | 0~7.5A                                |
| Output Power Range                             | 0~2000W   |                                       |                                       |                                       |
| Voltage Load Regulation                        | 15mV  | 15mV                                  | 30mV                                  | 200mV                                 |
| Current Load Regulation                        | 30mA  | 24mA                                  | 10mA                                  | 20mA                                  |
| Voltage Display Resolution                     | 1mV   |                                       |                                       |                                       |
| Current Display Resolution                     | 0.1mA   |                                       |                                       |                                       |
| Voltage Programmable Resolution                | 3mV   | 4mV                                   | 12mV                                  | 24mV                                  |
| Current Programmable Resolution                | 1mA   |                                       |                                       |                                       |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Current Setting Accuracy                       | 0.1%+30mA   | 0.1%+24mA                             | 0.1%+10mA                             | 0.1%+7.5mA                            |
| Voltage Measurement Accuracy <sup>[3]</sup>    | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Current Measurement Accuracy                   | 0.1%+30mA   | 0.1%+24mA                             | 0.1%+10mA                             | 0.1%+7.5mA                            |
| Voltage Ripple <sup>[2]</sup>                  | 40mVp-p<br>6mVrms   | 150mVp-p<br>30mVrms                   | 350mVp-p<br>40mVrms                   | 800mVp-p<br>200mVrms                  |
| Current Ripple <sup>[3]</sup>                  | 60mA (Full Range)<br>10mA (TYP Value)   | 50mA (Full Range)<br>20mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.02%+8mV   | 0.02%+8mV                             | 0.01%+30mV                            | 0.01%+40mV                            |
| Line Regulation(Current)                       | 30mA  | 30mA                                  | 15mA                                  | 20mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |                                       |                                       |
| DVM Resolution                                 | 1mV   | 1mV                                   | 12mV                                  | 12mV                                  |
| DVM Precision <sup>[1]</sup>                   | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |                                       |                                       |
| Remote Compensation                            | 5V MAX  |                                       |                                       |                                       |
| Master-slave Control                           | Yes   |                                       |                                       |                                       |
| Response (Voltage Increase)                    | ≤25ms   | ≤30ms                                 | ≤60ms                                 | ≤60ms                                 |
| Response (Voltage Drop)                        | ≤500ms (no load)<br>≤25ms (full load)   | ≤500ms (no load)<br>≤20ms (full load) | ≤800ms (no load)<br>≤90ms (full load) | ≤800ms (no load)<br>≤60ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤3ms  |                                       |                                       |                                       |
| Command Response Time                          | 50ms  |                                       |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 8 units   | Up to 6 units                         | Up to 2 units                         | Not Recommended                       |
| Parallel Capability                            | Up to 10 units  |                                       |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 40V   | 50V                                   | 200V                                  | 250V                                  |
| Efficiency (full load)                         | 90%   | 90%                                   | 90%                                   | 91%                                   |
| <b>Other</b>                                   |   |                                       |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |                                       |                                       |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |                                       |                                       |
| Input Fuse                                     | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 20A, 125VAC/250VAC, fast-acting type  | 20A, 125VAC/250VAC, fast-acting type  |
| Unit Weight/Shipping Weight                    | 13.2kg/16.8kg   | 13.2kg/16.8kg                         | 14.7kg/18.7kg                         | 14.7kg/18.7kg                         |
| Dimensions(WxHxD)                              | 423.0x87.0x469.0 mm   | 423.0x87.0x469.0 mm                   | 423.0x87.0x514.0 mm                   | 423.0x87.0x514.0 mm                   |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |                                       |                                       |
| Altitude                                       | 2000m   |                                       |                                       |                                       |
| Insulation                                     | AC input ↔ DC output, 4242VDC, AC input ↔ PE, 2121VDC   |                                       |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $I_{\text{error}} = (I_{\text{AV}} * 2.5\% + 5\% \text{ F.S}) A$ , F.S is the full scale of the current.  $I_{\text{AV}} = I_{\text{sum}}/n$ , where  $I_{\text{AV}}$  is average current,  $I_{\text{sum}}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 3000W in 2U(1)

| Model  | SP32VDC3000W  | SP40VDC3000W                           | SP80VDC3000W                          | SP120VDC3000W                         |
|--|---|--|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |  |                                       |                                       |
| Input Voltage                                  | 190~265VAC  |  |                                       |                                       |
| Input Frequency                                | 47~63Hz   |  |                                       |                                       |
| Power Factor                                   | >0.98   |  |                                       |                                       |
| Input Power                                    | 3700VA(MAX)   | 3400VA(MAX)                            | 3400VA(MAX)                           | 3400VA(MAX)                           |
| <b>Output</b>                                  |   |  |                                       |                                       |
| Output Voltage Range                           | 0~32V   | 0~40V                                  | 0~80V                                 | 0~120V                                |
| Output Current Range                           | 0~200A  | 0~120A                                 | 0~60A                                 | 0~40A                                 |
| Output Power Range                             | 0~3000W   |  |                                       |                                       |
| Voltage Load Regulation                        | 30mV  | 15mV                                   | 15mV                                  | 15mV                                  |
| Current Load Regulation                        | 200mA   | 120mA                                  | 60mA                                  | 40mA                                  |
| Voltage Display Resolution                     | 0.1mV   | 0.1mV                                  | 0.1mV                                 | 1mV                                   |
| Current Display Resolution                     | 1mA   | 1mA                                    | 0.2mA                                 | 0.1mA                                 |
| Voltage Programmable Resolution                | 1mV   | 1mV                                    | 1.5mV                                 | 3mV                                   |
| Current Programmable Resolution                | 6mA   | 2mA                                    | 2mA                                   | 1mA                                   |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Current Setting Accuracy                       | 0.1%+200mA  | 0.1%+120mA                             | 0.1%+60mA                             | 0.1%+40mA                             |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Current Measurement Accuracy                   | 0.1%+200mA  | 0.1%+120mA                             | 0.1%+60mA                             | 0.1%+40mA                             |
| Voltage Ripple <sup>[2]</sup>                  | 60mVp-p<br>10mVrms  | 40mVp-p<br>6mVrms                      | 40mVp-p<br>6mVrms                     | 80mVp-p<br>15mVrms                    |
| Current Ripple <sup>[3]</sup>                  | 400mA (Full Range)<br>200mA (TYP Value)   | 150mA (Full Range)<br>20mA (TYP Value) | 50mA (Full Range)<br>10mA (TYP Value) | 60mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.01%+8mV   | 0.01%+8mV                              | 0.01%+8mV                             | 0.02%+8mV                             |
| Line Regulation(Current)                       | 200mA   | 30mA                                   | 30mA                                  | 30mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |  |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |  |                                       |                                       |
| DVM Resolution                                 | 0.1mV   | 0.1mV                                  | 0.1mV                                 | 1mV                                   |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |  |                                       |                                       |
| Remote Compensation                            | 4V MAX  | 4V MAX                                 | 4V MAX                                | 5V MAX                                |
| Master-slave Control                           | Yes   |  |                                       |                                       |
| Response (Voltage Increase)                    | ≤20ms (no load)<br>≤20ms (full load)  | ≤10ms                                  | ≤15ms                                 | ≤20ms                                 |
| Response (Voltage Drop)                        | ≤500ms (no load)<br>≤25ms (full load)   | ≤350ms (no load)<br>≤10ms (full load)  | ≤450ms (no load)<br>≤30ms (full load) | ≤350ms (no load)<br>≤21ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  |  |                                       |                                       |
| Command Response Time                          | 50ms  |  |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  |  |                                       |                                       |
| Parallel Capability                            | Up to 10 units  |  |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 12V   | 12V                                    | 20V                                   | 30V                                   |
| Efficiency (full load)                         | 91%   | 88%                                    | 91%                                   | 91%                                   |
| <b>Other</b>                                   |   |  |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |  |                                       |                                       |
| Anti Reverse Irrigation Protection             | No(customers can purchase other accessories to achieve this function, please consult the salesrepresentative for details) | Yes                                    | Yes                                   | Yes                                   |
| Input Fuse                                     | 30A, 125VAC/250VAC, fast-acting type  | 40A, 125VAC/250VAC, fast-acting type   | 40A, 125VAC/250VAC, fast-acting type  | 40A, 125VAC/250VAC, fast-acting type  |
| Unit Weight/Shipping Weight                    | 14.7kg/18.7kg   | 14.7kg/18.7kg                          | 13.2kg/16.8kg                         | 13.2kg/16.8kg                         |
| Dimensions(WxHxD)                              | 423.0x87.0x514.0 mm   | 423.0x87.0x514.0 mm                    | 423.0x87.0x469.0 mm                   | 423.0x87.0x469.0 mm                   |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |  |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |  |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |  |                                       |                                       |
| Altitude                                       | 2000m   |  |                                       |                                       |
| Insulation                                     | AC input ↔DC output, 4242VDC, AC input ↔ PE, 2121VDC  |  |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $le<(I_{av} * 2.5\% + 5\% F.S) A$ , F.S is the full scale of the current.  $I_{av} = I_{sum}/n$ , where  $I_{av}$  is average current,  $I_{sum}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 3000W in 2U(2)

| Model  | SP150VDC3000W   | SP200VDC3000W                         | SP600VDC3000W                         | SP800VDC3000W                         |
|--|---|---------------------------------------|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |                                       |                                       |                                       |
| Input Voltage                                  | 190~265VAC  |                                       |                                       |                                       |
| Input Frequency                                | 47~63Hz   |                                       |                                       |                                       |
| Power Factor                                   | >0.98   |                                       |                                       |                                       |
| Input Power                                    | 3400VA(MAX)   |                                       |                                       |                                       |
| <b>Output</b>                                  |   |                                       |                                       |                                       |
| Output Voltage Range                           | 0~150V  | 0~200V                                | 0~600V                                | 0~800V                                |
| Output Current Range                           | 0~30A   | 0~24A                                 | 0~10A                                 | 0~7.5A                                |
| Output Power Range                             | 0~3000W   |                                       |                                       |                                       |
| Voltage Load Regulation                        | 15mV  | 15mV                                  | 30mV                                  | 200mV                                 |
| Current Load Regulation                        | 30mA  | 24mA                                  | 10mA                                  | 20mA                                  |
| Voltage Display Resolution                     | 1mV   |                                       |                                       |                                       |
| Current Display Resolution                     | 0.1mA   |                                       |                                       |                                       |
| Voltage Programmable Resolution                | 3mV   | 4mV                                   | 12mV                                  | 24mV                                  |
| Current Programmable Resolution                | 1mA   |                                       |                                       |                                       |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Current Setting Accuracy                       | 0.1%+30mA   | 0.1%+24mA                             | 0.1%+10mA                             | 0.1%+7.5mA                            |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Current Measurement Accuracy                   | 0.1%+30mA   | 0.1%+24mA                             | 0.1%+10mA                             | 0.1%+7.5mA                            |
| Voltage Ripple <sup>[2]</sup>                  | 80mVp-p<br>15mVrms  | 150mVp-p<br>30mVrms                   | 350mVp-p<br>40mVrms                   | 800mVp-p<br>200mVrms                  |
| Current Ripple <sup>[3]</sup>                  | 60mA (Full Range)<br>10mA (TYP Value)   | 50mA (Full Range)<br>20mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.02%+8mV   | 0.02%+8mV                             | 0.01%+30mV                            | 0.01%+40mV                            |
| Line Regulation(Current)                       | 30mA  | 30mA                                  | 15mA                                  | 20mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |                                       |                                       |
| DVM Resolution                                 | 1mV   | 1mV                                   | 12mV                                  | 12mV                                  |
| DVM Precision <sup>[1]</sup>                   | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |                                       |                                       |
| Remote Compensation                            | 5V MAX  |                                       |                                       |                                       |
| Master-slave Control                           | Yes   |                                       |                                       |                                       |
| Response (Voltage Increase)                    | ≤25ms   | ≤30ms                                 | ≤60ms                                 | ≤60ms                                 |
| Response (Voltage Drop)                        | ≤500ms (no load)<br>≤25ms (full load)   | ≤500ms (no load)<br>≤20ms (full load) | ≤800ms (no load)<br>≤75ms (full load) | ≤800ms (no load)<br>≤60ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2.5ms  | ≤3ms                                  | ≤3ms                                  | ≤3ms                                  |
| Command Response Time                          | 50ms  |                                       |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 8 units   | Up to 6 units                         | Up to 2 units                         | Not Recommended                       |
| Parallel Capability                            | Up to 10 units  |                                       |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 40V   | 50V                                   | 200V                                  | 250V                                  |
| Efficiency (full load)                         | 92%   | 91%                                   | 91%                                   | 91%                                   |
| <b>Other</b>                                   |   |                                       |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |                                       |                                       |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |                                       |                                       |
| Input Fuse                                     | 40A, 125VAC/250VAC, fast-acting type  | 40A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  | 30A, 125VAC/250VAC, fast-acting type  |
| Unit Weight/Shipping Weight                    | 13.2kg/16.8kg   | 13.2kg/16.8kg                         | 14.7kg/18.7kg                         | 14.7kg/18.7kg                         |
| Dimensions(WxHxD)                              | 423.0x87.0x469.0 mm   | 423.0x87.0x469.0 mm                   | 423.0x87.0x514.0 mm                   | 423.0x87.0x514.0 mm                   |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |                                       |                                       |
| Altitude                                       | 2000m   |                                       |                                       |                                       |
| Insulation                                     | AC input ↔ DC output, 4242VDC, AC input ↔ PE, 2121VDC   |                                       |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $I_{\text{error}} < (I_{\text{AV}} * 2.5\% + 5\% \text{ F.S}) A$ , F.S is the full scale of the current.  $I_{\text{AV}} = I_{\text{sum}} / n$ , where  $I_{\text{AV}}$  is average current,  $I_{\text{sum}}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.

# SP-1U/2U Series High Performance Programmable DC Power Supply

## 4000W in 2U(1)

| Model  | SP32VDC4000W  | SP40VDC4000W                           | SP75VDC4000W                          | SP120VDC4000W                         |
|--|---|--|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |  |                                       |                                       |
| Input Voltage                                  | 190~265VAC  |  |                                       |                                       |
| Input Frequency                                | 47~63Hz   |  |                                       |                                       |
| Power Factor                                   | >0.98   |  |                                       |                                       |
| Input Power                                    | 4800VA(MAX)   | 4500VA(MAX)                            | 4500VA(MAX)                           | 4500VA(MAX)                           |
| <b>Output</b>                                  |   |  |                                       |                                       |
| Output Voltage Range                           | 0~32V   | 0~40V                                  | 0~75V                                 | 0~120V                                |
| Output Current Range                           | 0~200A  | 0~120A                                 | 0~60A                                 | 0~40A                                 |
| Output Power Range                             | 0~4000W   |  |                                       |                                       |
| Voltage Load Regulation                        | 30mV  | 15mV                                   | 15mV                                  | 15mV                                  |
| Current Load Regulation                        | 200mA   | 120mA                                  | 60mA                                  | 40mA                                  |
| Voltage Display Resolution                     | 0.1mV   | 0.1mV                                  | 0.1mV                                 | 1mV                                   |
| Current Display Resolution                     | 1mA   | 1mA                                    | 0.1mA                                 | 0.1mA                                 |
| Voltage Programmable Resolution                | 1mV   | 1mV                                    | 2mV                                   | 3mV                                   |
| Current Programmable Resolution                | 6mA   | 3mA                                    | 2mA                                   | 1mA                                   |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.05%+15mV  | 0.05%+15mV                             | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Setting Accuracy                       | 0.1%+200mA  | 0.1%+120mA                             | 0.1%+60mA                             | 0.1%+40mA                             |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.05%+15mV  | 0.05%+15mV                             | 0.1%+15mV                             | 0.1%+15mV                             |
| Current Measurement Accuracy                   | 0.1%+200mA  | 0.1%+120mA                             | 0.1%+60mA                             | 0.1%+40mA                             |
| Voltage Ripple <sup>[2]</sup>                  | 60mVp-p<br>10mVrms  | 40mVp-p<br>6mVrms                      | 40mVp-p<br>8mVrms                     | 80mVp-p<br>15mVrms                    |
| Current Ripple <sup>[3]</sup>                  | 400mA (Full Range)<br>200mA (TYP Value)   | 150mA (Full Range)<br>20mA (TYP Value) | 60mA (Full Range)<br>10mA (TYP Value) | 60mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.01%+8mV   | 0.01%+8mV                              | 0.01%+8mV                             | 0.02%+8mV                             |
| Line Regulation(Current)                       | 200mA   | 30mA                                   | 30mA                                  | 30mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |  |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |  |                                       |                                       |
| DVM Resolution                                 | 0.1mV   | 0.1mV                                  | 0.1mV                                 | 1mV                                   |
| DVM Precision <sup>[1]</sup>                   | 0.05%+15mV  | 0.05%+15mV                             | 0.05%+15mV                            | 0.1%+15mV                             |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |  |                                       |                                       |
| Remote Compensation                            | 4V MAX  | 4V MAX                                 | 5V MAX                                | 5V MAX                                |
| Master-slave Control                           | Yes   |  |                                       |                                       |
| Response (Voltage Increase)                    | ≤20ms (no load)<br>≤20ms (full load)  | ≤10ms                                  | ≤15ms                                 | ≤20ms                                 |
| Response (Voltage Drop)                        | ≤500ms (no load)<br>≤20ms (full load)   | ≤350ms (no load)<br>≤10ms (full load)  | ≤450ms (no load)<br>≤20ms (full load) | ≤350ms (no load)<br>≤21ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2ms  |  |                                       |                                       |
| Command Response Time                          | 50ms  |  |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 10 units  |  |                                       |                                       |
| Parallel Capability                            | Up to 10 units  |  |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 12V   | 12V                                    | 20V                                   | 30V                                   |
| Efficiency (full load)                         | 91%   | 91%                                    | 91%                                   | 92%                                   |
| <b>Other</b>                                   |   |  |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |  |                                       |                                       |
| Anti Reverse Irrigation Protection             | No(customers can purchase other accessories to achieve this function, please consult the salesrepresentative for details) | Yes                                    | Yes                                   | Yes                                   |
| Input Fuse                                     | 40A, 125VAC/250VAC, fast-acting type  |  |                                       |                                       |
| Unit Weight/Shipping Weight                    | 14.7kg/18.7kg   | 14.7kg/18.7kg                          | 13.2kg/16.8kg                         | 13.2kg/16.8kg                         |
| Dimensions(WxHxD)                              | 423.0x87.0x514.0 mm   | 423.0x87.0x514.0 mm                    | 423.0x87.0x469.0 mm                   | 423.0x87.0x469.0 mm                   |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |  |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |  |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |  |                                       |                                       |
| Altitude                                       | 2000m   |  |                                       |                                       |
| Insulation                                     | AC input <->DC output, 4242VDC, AC input <-> PE, 2121VDC  |  |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $le<(lav*2.5\% + 5\% F.S) A$ , F.S is the full scale of the current.  $lav=Isum/n$ , where  $lav$  is average current,  $Isum$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.



# SP-1U/2U Series High Performance Programmable DC Power Supply

## 4000W in 2U(2)

| Model  | SP150VDC4000W   | SP200VDC4000W                         | SP600VDC4000W                         | SP800VDC4000W                         |
|--|---|---------------------------------------|---------------------------------------|---------------------------------------|
| <b>Input</b>                                   |   |                                       |                                       |                                       |
| Input Voltage                                  | 190~265VAC  |                                       |                                       |                                       |
| Input Frequency                                | 47~63Hz   |                                       |                                       |                                       |
| Power Factor                                   | >0.98   |                                       |                                       |                                       |
| Input Power                                    | 4500VA(MAX)   |                                       |                                       |                                       |
| <b>Output</b>                                  |   |                                       |                                       |                                       |
| Output Voltage Range                           | 0~150V  | 0~200V                                | 0~600V                                | 0~800V                                |
| Output Current Range                           | 0~30A   | 0~24A                                 | 0~10A                                 | 0~7.5A                                |
| Output Power Range                             | 0~4000W   |                                       |                                       |                                       |
| Voltage Load Regulation                        | 15mV  | 25mV                                  | 30mV                                  | 200mV                                 |
| Current Load Regulation                        | 30mA  | 24mA                                  | 10mA                                  | 20mA                                  |
| Voltage Display Resolution                     | 1mV   |                                       |                                       |                                       |
| Current Display Resolution                     | 0.1mA   |                                       |                                       |                                       |
| Voltage Programmable Resolution                | 3mV   | 4mV                                   | 12mV                                  | 24mV                                  |
| Current Programmable Resolution                | 1mA   |                                       |                                       |                                       |
| Voltage Setting Accuracy <sup>[1]</sup>        | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Current Setting Accuracy                       | 0.1%+30mA   | 0.1%+24mA                             | 0.1%+10mA                             | 0.1%+7.5mA                            |
| Voltage Measurement Accuracy <sup>[1]</sup>    | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Current Measurement Accuracy                   | 0.1%+30mA   | 0.1%+24mA                             | 0.1%+10mA                             | 0.1%+7.5mA                            |
| Voltage Ripple <sup>[2]</sup>                  | 80mVp-p<br>15mVrms  | 150mVp-p<br>30mVrms                   | 350mVp-p<br>40mVrms                   | 800mVp-p<br>200mVrms                  |
| Current Ripple <sup>[3]</sup>                  | 60mA (Full Range)<br>10mA (TYP Value)   | 50mA (Full Range)<br>20mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) | 25mA (Full Range)<br>10mA (TYP Value) |
| Line Regulation(Voltage)                       | 0.02%+8mV   | 0.02%+8mV                             | 0.01%+30mV                            | 0.01%+40mV                            |
| Line Regulation(Current)                       | 30mA  | 30mA                                  | 15mA                                  | 20mA                                  |
| Voltage Temperature Coefficient <sup>[4]</sup> | 100ppm/°C   |                                       |                                       |                                       |
| Current Temperature Coefficient <sup>[4]</sup> | 150ppm/°C   |                                       |                                       |                                       |
| DVM Resolution                                 | 1mV   | 1mV                                   | 12mV                                  | 12mV                                  |
| DVM Precision <sup>[1]</sup>                   | 0.1%+15mV   | 0.1%+15mV                             | 0.05%+150mV                           | 0.05%+200mV                           |
| Operating Mode                                 | Constant voltage (CV) / Constant current (CC)   |                                       |                                       |                                       |
| Remote Compensation                            | 5V MAX  |                                       |                                       |                                       |
| Master-slave Control                           | Yes   |                                       |                                       |                                       |
| Response (Voltage Increase)                    | ≤25ms   | ≤30ms                                 | ≤60ms                                 | ≤60ms                                 |
| Response (Voltage Drop)                        | ≤500ms (no load)<br>≤25ms (full load)   | ≤500ms (no load)<br>≤20ms (full load) | ≤800ms (no load)<br>≤60ms (full load) | ≤800ms (no load)<br>≤60ms (full load) |
| Load Transient Recovery Time <sup>[5]</sup>    | ≤2.5ms  | ≤3ms                                  | ≤3ms                                  | ≤3ms                                  |
| Command Response Time                          | 50ms  |                                       |                                       |                                       |
| Series Capability <sup>[6]</sup>               | Up to 8 units   | Up to 6 units                         | Up to 2 units                         | Not Recommended                       |
| Parallel Capability                            | Up to 10 units  |                                       |                                       |                                       |
| Current Sharing <sup>[7]</sup>                 | 40V   | 50V                                   | 200V                                  | 250V                                  |
| Efficiency (full load)                         | 93%   | 92%                                   | 92%                                   | 92%                                   |
| <b>Other</b>                                   |   |                                       |                                       |                                       |
| Protection Function                            | OVP/OCP/OTP/OPP/SCP/FOLDBACK  |                                       |                                       |                                       |
| Anti Reverse Irrigation Protection             | Yes   |                                       |                                       |                                       |
| Input Fuse                                     | 40A, 125VAC/250VAC, fast-acting type  |                                       |                                       |                                       |
| Unit Weight/Shipping Weight                    | 13.2kg/16.8kg   | 13.2kg/16.8kg                         | 14.7kg/18.7kg                         | 14.7kg/18.7kg                         |
| Dimensions(WxHxD)                              | 423.0x87.0x469.0 mm   | 423.0x87.0x469.0 mm                   | 423.0x87.0x514.0 mm                   | 423.0x87.0x514.0 mm                   |
| Interface                                      | USB, RS485, RS232(Standard); LAN, GPIB(Optional)  |                                       |                                       |                                       |
| Operating Environment                          | Temperature 0~40°C, Relative Humidity 10%~90%(no condensation); Pollution degree 2, Installation category II, Indoor use. |                                       |                                       |                                       |
| Cooling Mode                                   | Forced air-cooling  |                                       |                                       |                                       |
| Altitude                                       | 2000m   |                                       |                                       |                                       |
| Insulation                                     | AC input <-> DC output, 4242VDC, AC input <-> PE, 2121VDC   |                                       |                                       |                                       |

[1] %output+offset, when output voltage less than 5V, offset voltage is 30mV.

[2] Vp-p@20MHz, Vrms@1.25MHz.

The 20V/32V/40V/75V models voltage ripple is 50mVp-p/6mVrms @ 1V. For the 600V and 800V models, the voltage ripple from 0~5V is out of the range show above.

[3] Arms@1.25MHz, the TYP Value is measured at the rated output voltage with 100% resistive load, and the measured value at full range of output voltage with 100% resistive load is less than the Full Range value.

[4] 0~40°C.

[5] Time for output voltage to recover within 0.5%(0.75% @800V models) of its rated output for a load change from 10% to 90% of its rated output current. Voltage set point from 10% to 90% of rated output.

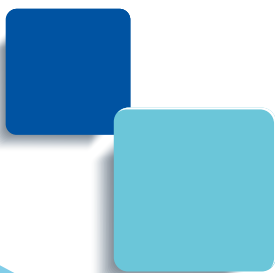
[6] The communication must insulated users from output when using remote control and the output voltage exceeds 800VDC.

[7] Current Share error  $I_{\text{error}} = (I_{\text{AV}} * 2.5\% + 5\% \text{ F.S}) A$ , F.S is the full scale of the current.  $I_{\text{AV}} = I_{\text{sum}}/n$ , where  $I_{\text{AV}}$  is average current,  $I_{\text{sum}}$  is total current and  $n$  is number of parallel units.

Note: Output voltage must be higher than 30% of maximum output voltage when Current Share function properly.

All specifications are subject to change without notice.





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