

## *Middle Power DC Power Supply*

» Product specification sheet



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# Middle Power DC Power Supply

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## Contents

SP20VDC600W -----	01	SP32VDC2000W -----	08
SP32VDC600W -----	01	SP40VDC2000W -----	08
SP40VDC600W -----	01	SP80VDC2000W -----	08
SP75VDC600W -----	01	SP120VDC2000W -----	08
SP150VDC600W -----	01		
SP200VDC600W -----	01	SP150VDC2000W -----	09
		SP200VDC2000W -----	09
SP20VDC1000W -----	02	SP600VDC2000W -----	09
SP32VDC1000W -----	02	SP800VDC2000W -----	09
SP40VDC1000W -----	02		
SP75VDC1000W -----	02	SP32VDC3000W -----	10
SP150VDC1000W -----	02	SP40VDC3000W -----	10
SP200VDC1000W -----	02	SP80VDC3000W -----	10
		SP120VDC3000W -----	10
SP20VDC1200W -----	03		
SP32VDC1200W -----	03	SP150VDC3000W -----	11
SP40VDC1200W -----	03	SP200VDC3000W -----	11
SP75VDC1200W -----	03	SP600VDC3000W -----	11
SP150VDC1200W -----	03	SP800VDC3000W -----	11
SP200VDC1200W -----	03		
		SP32VDC4000W -----	12
SP75VDC1500W -----	04	SP40VDC4000W -----	12
SP150VDC1500W -----	04	SP75VDC4000W -----	12
SP200VDC1500W -----	04	SP120VDC4000W -----	12
SP32VDC1600W -----	05	SP150VDC4000W -----	13
SP40VDC1600W -----	05	SP200VDC4000W -----	13
		SP600VDC4000W -----	13
SPS32VDC1000W -----	06	SP800VDC4000W -----	13
SPS40VDC1000W -----	06		
SPS80VDC1000W -----	06		
SPS120VDC1000W -----	06		
SPS150VDC1000W -----	07		
SPS200VDC1000W -----	07		
SPS600VDC1000W -----	07		
SPS800VDC1000W -----	07		

# Middle Power DC Power Supply

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## Selection List:

Model	Voltage	Current	Power	Corresponding page
SP20VDC600W	20V	60A	600W	P01
SP32VDC600W	32V	50A	600W	P01
SP40VDC600W	40V	40A	600W	P01
SP75VDC600W	75V	25A	600W	P01
SP150VDC600W	150V	10A	600W	P01
SP200VDC600W	200V	8A	600W	P01
SP20VDC1000W	20V	60A	1000W	P02
SP32VDC1000W	32V	50A	1000W	P02
SP40VDC1000W	40V	40A	1000W	P02
SP75VDC1000W	75V	25A	1000W	P02
SP150VDC1000W	150V	10A	1000W	P02
SP200VDC1000W	200V	8A	1000W	P02
SP20VDC1200W	20V	60A	1200W	P03
SP32VDC1200W	32V	50A	1200W	P03
SP40VDC1200W	40V	40A	1200W	P03
SP75VDC1200W	75V	25A	1200W	P03
SP150VDC1200W	150V	10A	1200W	P03
SP200VDC1200W	200V	8A	1200W	P03
SP75VDC1500W	75V	25A	1500W	P04
SP150VDC1500W	150V	10A	1500W	P04
SP200VDC1500W	200V	8A	1500W	P04
SP32VDC1600W	32V	50A	1600W	P05
SP40VDC1600W	40V	40A	1600W	P05
SPS32VDC1000W	32V	200A	1000W	P06
SPS40VDC1000W	40V	120A	1000W	P06
SPS80VDC1000W	80V	60A	1000W	P06
SPS120VDC1000W	120V	40A	1000W	P06
SPS150VDC1000W	150V	30A	1000W	P07
SPS200VDC1000W	200V	24A	1000W	P07
SPS600VDC1000W	600V	10A	1000W	P07
SPS800VDC1000W	800V	7.5A	1000W	P07
SP32VDC2000W	32V	200A	2000W	P08
SP40VDC2000W	40V	120A	2000W	P08
SP80VDC2000W	80V	60A	2000W	P08
SP120VDC2000W	120V	40A	2000W	P08
SP150VDC2000W	150V	30A	2000W	P09
SP200VDC2000W	200V	24A	2000W	P09
SP600VDC2000W	600V	10A	2000W	P09
SP800VDC2000W	800V	7.5A	2000W	P09
SP32VDC3000W	32V	200A	3000W	P10
SP40VDC3000W	40V	120A	3000W	P10
SP80VDC3000W	80V	60A	3000W	P10
SP120VDC3000W	120V	40A	3000W	P10
SP150VDC3000W	150V	30A	3000W	P11
SP200VDC3000W	200V	24A	3000W	P11
SP600VDC3000W	600V	10A	3000W	P11
SP800VDC3000W	800V	7.5A	3000W	P11
SP32VDC4000W	32V	200A	4000W	P12
SP40VDC4000W	40V	120A	4000W	P12
SP75VDC4000W	75V	60A	4000W	P12
SP120VDC4000W	120V	40A	4000W	P12
SP150VDC4000W	150V	30A	4000W	P13
SP200VDC4000W	200V	24A	4000W	P13
SP600VDC4000W	600V	10A	4000W	P13
SP800VDC4000W	800V	7.5A	4000W	P13

# Middle Power 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>[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 6mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	120mVp-p 40mVrms	120mVp-p 40mVrms
Current Ripple <sup>[3]</sup>	60mA (Full Range) 20mA (TYP Value)	50mA (Full Range) 20mA (TYP Value)	40mA (Full Range) 20mA (TYP Value)	25mA (Full Range) 10mA (TYP Value)	40mA (Full Range) 10mA (TYP Value)	40mA (Full Range) 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) ≤20ms (full load)	≤150ms (no load) ≤20ms (full load)	≤150ms (no load) ≤20ms (full load)	≤160ms (no load) ≤20ms (full load)	≤400ms (no load) ≤32ms (full load)	≤600ms (no load) ≤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					
Fold Back Function	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
Net Weight	9.2kg	9.2kg	9.2kg	8.9kg	9.3kg	9.3kg
Accessories Weight	1.0kg					
Dimensions(WxHxD)	483.0x44.0x531.0 mm					
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB					
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					

[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  $I_{e} < (I_{av} \cdot 2.5\% + 5\% \cdot F.S) A$ , **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.



## 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 6mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	120mVp-p 40mVrms	120mVp-p 40mVrms
Current Ripple <sup>[3]</sup>	60mA (Full Range) 20mA (TYP Value)	50mA (Full Range) 20mA (TYP Value)	40mA (Full Range) 20mA (TYP Value)	25mA (Full Range) 10mA (TYP Value)	40mA (Full Range) 10mA (TYP Value)	40mA (Full Range) 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) ≤20ms (full load)	≤150ms (no load) ≤15ms (full load)	≤150ms (no load) ≤15ms (full load)	≤160ms (no load) ≤15ms (full load)	≤400ms (no load) ≤25ms (full load)	≤600ms (no load) ≤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					
Fold Back Function	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
Net Weight	9.2kg	9.2kg	9.2kg	8.9kg	9.3kg	9.3kg
Accessories Weight	1.0kg					
Dimensions(WxHxD)	483.0x44.0x531.0 mm					
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB					
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					

[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  $le<(\text{Iav}^2.5\% + 5\% \text{ F.S}) \text{ A}$ , F.S is the full scale of the current.  $\text{Iav}=\text{Isum}/n$ , where Iav 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.

# Middle Power 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 6mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	120mVp-p 40mVrms	120mVp-p 40mVrms
Current Ripple <sup>[3]</sup>	60mA (Full Range) 20mA (TYP Value)	50mA (Full Range) 20mA (TYP Value)	40mA (Full Range) 20mA (TYP Value)	25mA (Full Range) 10mA (TYP Value)	40mA (Full Range) 10mA (TYP Value)	40mA (Full Range) 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) ≤12ms (full load)	≤150ms (no load) ≤12ms (full load)	≤150ms (no load) ≤12ms (full load)	≤160ms (no load) ≤12ms (full load)	≤400ms (no load) ≤21ms (full load)	≤600ms (no load) ≤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/OCP/OTP/OPP/SCP					
Fold Back Function	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
Net Weight	9.2kg	9.2kg	9.2kg	8.9kg	9.3kg	9.3kg
Accessories Weight	1.0kg					
Dimensions(WxHxD)	483.0x44.0x531.0 mm					
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB					
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					

[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  $le<(\text{Iav}^2 \cdot 2.5\% + 5\% \cdot \text{F.S}) \cdot \text{A}$ , F.S is the full scale of the current.  $\text{Iav} = \text{Isum}/n$ , where Iav 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.



Efficiency, Stability, Reliable, Precision

## 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 6mVrms	120mVp-p 40mVrms	120mVp-p 40mVrms
Current Ripple <sup>[3]</sup>	25mA (Full Range) 10mA (TYP Value)	40mA (Full Range) 10mA (TYP Value)	40mA (Full Range) 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) ≤10ms (full load)	≤400ms (no load) ≤18ms (full load)	≤600ms (no load) ≤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		
Fold Back Function	Yes		
Input Fuse	30A, 125VAC/250VAC, fast-acting type		
Net Weight	8.9kg	9.3kg	9.3kg
Accessories Weight	1.0kg		
Dimensions(WxHxD)	483.0x44.0x531.0 mm		
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB		
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		

[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  $I_{e} < (I_{av} \cdot 2.5\% + 5\% \cdot F.S) A$ , **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.

# Middle Power 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 6mVrms	
Current Ripple <sup>[3]</sup>	50mA (Full Range) 20mA (TYP Value)	40mA (Full Range) 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) ≤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	
Fold Back Function	Yes	
Input Fuse	30A, 125VAC/250VAC, fast-acting type	
Net Weight	9.2kg	
Accessories Weight	1.0kg	
Dimensions(WxHxD)	483.0x44.0x531.0 mm	
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB	
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	

[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  $le < (I_{av} \cdot 2.5\% + 5\% \cdot F.S) A$ , **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.



## 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 10mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	80mVp-p 15mVrms
Current Ripple <sup>[3]</sup>	400mA (Full Range) 200mA (TYP Value)	150mA (Full Range) 20mA (TYP Value)	50mA (Full Range) 10mA (TYP Value)	60mA (Full Range) 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) ≤40ms (full load)	≤10ms	≤15ms	≤20ms
Response (Voltage Drop)	≤500ms (no load) ≤45ms (full load)	≤350ms (no load) ≤10ms (full load)	≤450ms (no load) ≤30ms (full load)	≤350ms (no load) ≤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			
Fold Back Function	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
Net Weight	14.7kg	14.7kg	13.2kg	13.2kg
Accessories Weight	1.0kg			
Dimensions(WxHxD)	483.0x87.0x626.0 mm	483.0x87.0x626.0 mm	483.0x87.0x581.0 mm	483.0x87.0x581.0 mm
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB			
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			

[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  $le<(\text{Iav} \cdot 2.5\% + 5\% \text{ F.S}) \text{ A}$ , **F.S** is the full scale of the current.  $\text{Iav}=\text{Isum}/n$ , where Iav 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.

# Middle Power 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>[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 15mVrms	150mVp-p 30mVrms	350mVp-p 40mVrms	800mVp-p 200mVrms
Current Ripple <sup>[3]</sup>	60mA (Full Range) 10mA (TYP Value)	50mA (Full Range) 20mA (TYP Value)	25mA (Full Range) 10mA (TYP Value)	25mA (Full Range) 10mA (TYP Value)
Line Regulation(Voltage)	0.02%+8mV	0.02%+8mV	0.01%+308mV	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>[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) ≤25ms (full load)	≤500ms (no load) ≤35ms (full load)	≤800ms (no load) ≤110ms (full load)	≤800ms (no load) ≤60ms (full load)
Load Transient Recovery Time <sup>[5]</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			
Fold Back Function	Yes			
Input Fuse	30A, 125VAC/250VAC, fast-acting type			
Net Weight	13.2kg	14.7kg	13.2kg	13.2kg
Accessories Weight	1.0kg			
Dimensions(WxHxD)	483.0x87.0x581.0 mm	483.0x87.0x581.0 mm	483.0x87.0x626.0 mm	483.0x87.0x626.0 mm
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB			
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			

[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  $le<(\text{Iav} \cdot 2.5\% + 5\% \text{ F.S}) \text{ A}$ , F.S is the full scale of the current.  $\text{Iav}=\text{Isum}/n$ , where Iav 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.

## 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		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 10mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	80mVp-p 15mVrms
Current Ripple <sup>[3]</sup>	400mA (Full Range) 200mA (TYP Value)	150mA (Full Range) 20mA (TYP Value)	50mA (Full Range) 10mA (TYP Value)	60mA (Full Range) 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) ≤30ms (full load)	≤10ms	≤15ms	≤20ms
Response (Voltage Drop)	≤500ms (no load) ≤30ms (full load)	≤350ms (no load) ≤10ms (full load)	≤450ms (no load) ≤30ms (full load)	≤350ms (no load) ≤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			
Fold Back Function	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
Net Weight	14.7kg	14.7kg	13.2kg	13.2kg
Accessories Weight	1.0kg			
Dimensions(WxHxD)	483.0x87.0x626.0 mm	483.0x87.0x626.0 mm	483.0x87.0x581.0 mm	483.0x87.0x581.0 mm
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB			
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			

[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  $le<(\text{Iav} \cdot 2.5\% + 5\% \text{ F.S}) \text{ A}$ , **F.S** is the full scale of the current.  $\text{Iav}=\text{Isum}/n$ , where Iav 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.

# Middle Power 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>[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>	40mVp-p 6mVrms	150mVp-p 30mVrms	350mVp-p 40mVrms	800mVp-p 200mVrms
Current Ripple <sup>[3]</sup>	60mA (Full Range) 10mA (TYP Value)	50mA (Full Range) 20mA (TYP Value)	25mA (Full Range) 10mA (TYP Value)	25mA (Full Range) 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) ≤25ms (full load)	≤500ms (no load) ≤20ms (full load)	≤800ms (no load) ≤90ms (full load)	≤800ms (no load) ≤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			
Fold Back Function	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
Net Weight	13.2kg	13.2kg	14.7kg	14.7kg
Accessories Weight	1.0kg			
Dimensions(WxHxD)	483.0x87.0x581.0 mm	483.0x87.0x581.0 mm	483.0x87.0x626.0 mm	483.0x87.0x626.0 mm
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB			
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			

[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  $I_{e} < (I_{av} \cdot 2.5\% + 5\% \cdot F.S) A$ , **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.



Efficiency, Stability, Reliable, Precision

## 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 10mVrms	40mVp-p 6mVrms	40mVp-p 6mVrms	80mVp-p 15mVrms
Current Ripple <sup>[3]</sup>	400mA (Full Range) 200mA (TYP Value)	150mA (Full Range) 20mA (TYP Value)	50mA (Full Range) 10mA (TYP Value)	60mA (Full Range) 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) ≤20ms (full load)	≤10ms	≤15ms	≤20ms
Response (Voltage Drop)	≤500ms (no load) ≤25ms (full load)	≤350ms (no load) ≤10ms (full load)	≤450ms (no load) ≤30ms (full load)	≤350ms (no load) ≤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			
Fold Back Function	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
Net Weight	14.7kg	14.7kg	13.2kg	13.2kg
Accessories Weight	1.0kg			
Dimensions(WxHxD)	483.0x87.0x626.0 mm	483.0x87.0x626.0 mm	483.0x87.0x581.0 mm	483.0x87.0x581.0 mm
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB			
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			

[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  $le<(\text{Iav} \cdot 2.5\% + 5\% \text{ F.S}) \text{ A}$ , **F.S** is the full scale of the current.  $\text{Iav}=\text{Isum}/n$ , where Iav 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.



# Middle Power 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 15mVrms	150mVp-p 30mVrms	350mVp-p 40mVrms	800mVp-p 200mVrms
Current Ripple <sup>[3]</sup>	60mA (Full Range) 10mA (TYP Value)	50mA (Full Range) 20mA (TYP Value)	25mA (Full Range) 10mA (TYP Value)	25mA (Full Range) 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) ≤25ms (full load)	≤500ms (no load) ≤20ms (full load)	≤800ms (no load) ≤75ms (full load)	≤800ms (no load) ≤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			
Fold Back Function	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
Net Weight	13.2kg	13.2kg	14.7kg	14.7kg
Accessories Weight	1.0kg			
Dimensions(WxHxD)	483.0x87.0x581.0 mm	483.0x87.0x581.0 mm	483.0x87.0x626.0 mm	483.0x87.0x626.0 mm
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB			
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			

[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  $le<(\text{Iav} \cdot 2.5\% + 5\% \text{ F.S}) \text{ A}$ , F.S is the full scale of the current.  $\text{Iav} = \text{Isum}/n$ , where Iav 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.

## 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 10mVrms	40mVp-p 6mVrms	40mVp-p 8mVrms	80mVp-p 15mVrms
Current Ripple <sup>[3]</sup>	400mA (Full Range) 200mA (TYP Value)	150mA (Full Range) 20mA (TYP Value)	60mA (Full Range) 10mA (TYP Value)	60mA (Full Range) 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) ≤20ms (full load)	≤10ms	≤15ms	≤20ms
Response (Voltage Drop)	≤500ms (no load) ≤20ms (full load)	≤350ms (no load) ≤10ms (full load)	≤450ms (no load) ≤20ms (full load)	≤350ms (no load) ≤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			
Fold Back Function	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			
Net Weight	14.7kg	14.7kg	13.2kg	13.2kg
Accessories Weight	1.0kg			
Dimensions(WxHxD)	483.0x87.0x626.0 mm	483.0x87.0x626.0 mm	483.0x87.0x581.0 mm	483.0x87.0x581.0 mm
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB			
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			

[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  $le<(\text{Iav} \cdot 2.5\% + 5\% \text{ F.S}) \text{ A}$ , **F.S** is the full scale of the current.  $\text{Iav} = \text{Isum}/n$ , where Iav 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.

# Middle Power 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 15mVrms	150mVp-p 30mVrms	350mVp-p 40mVrms	800mVp-p 200mVrms
Current Ripple <sup>[3]</sup>	60mA (Full Range) 10mA (TYP Value)	50mA (Full Range) 20mA (TYP Value)	25mA (Full Range) 10mA (TYP Value)	25mA (Full Range) 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) ≤25ms (full load)	≤500ms (no load) ≤20ms (full load)	≤800ms (no load) ≤60ms (full load)	≤800ms (no load) ≤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			
Fold Back Function	Yes			
Input Fuse	40A, 125VAC/250VAC, fast-acting type			
Net Weight	13.2kg	13.2kg	14.7kg	14.7kg
Accessories Weight	1.0kg			
Dimensions(WxHxD)	483.0x87.0x581.0 mm	483.0x87.0x581.0 mm	483.0x87.0x626.0 mm	483.0x87.0x626.0 mm
Communication Modes	1. RS232/RS485/USB/LAN; 2. RS232/RS485/USB/LAN/GPIB			
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			

[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  $I_e < (I_{av} \cdot 2.5\% + 5\% \cdot F.S) A$ , **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.

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