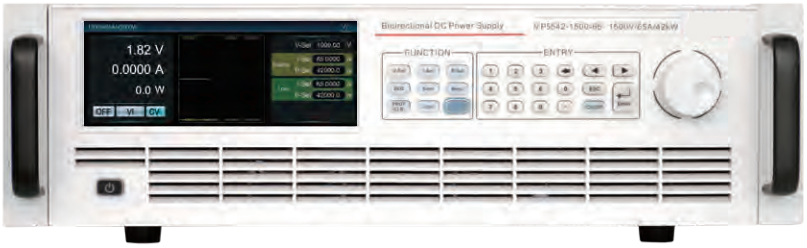
VP35500 Series High Performance High Power Bidirectional Programmable DC Power Supply



Product Introduction

The VP35500 series is a high power bidirectional programmable DC power supply with dual quadrant, integrating bidirectional power supply and regenerative load to supply and absorb current. With the design of wide range and high power density, voltage range 0~2250V, output power up to 42kW in 3U chassis, it covers a wide range of DUT test applications. VP35500 series are equipped with fast dynamic response, high accuracy output and measurement functions, and can also be configured with photovoltaic simulation, battery simulation and other software to help users realize accurate and efficient testing in multiple scenarios.

Application Fields

- Laboratory, production line ATE automatic test system
- Photovoltaic inverter, hydrogen fuel cell, solar cell matrix and other new energy fields
- Energy storage converter, UPS, photovoltaic storage machine and other energy storage fields
- BOBC, DC-DC, motor drive, charging pile and other automotive fields
- Charge/discharge test for power batteries, lead batteries, supercapacitors, etc.
- Test for aerospace electronics, high-power communications equipment, drones, etc.

Main Features

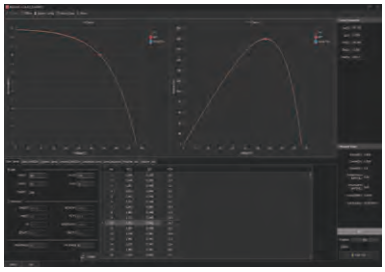
- High power density, up to 42kW output in 3U chassis
- Wide output range, one can be used as multiple
- High-speed dynamic response, voltage rise and fall time ≤ 5ms
- Voltage accuracy: 0.02%+0.02%F.S.; Current accuracy: 0.1%+0.1%F.S.
- CC&CV Priority suitable for all types of test item
- Master/Master perallel up to MW level
- Load mode support CC/CV/CP/CR function
- Battery simulation, charge/discharge test, sequence test, waveform function etc.
- PV array I-V curve simulation function (optional)
- 6.8 inch LCD screen for clear test information
- Standard with LAN/RS232/RS485/CAN communication
- Modbus-RTU, SCPI, CANopen protocol supportable

Seamless switch between source and load to regenerate energy

With the integration of power supply and regenerative load, VP35500 series bidirectional power supply can be converted continuously seamlessly between the output and absorbed current, effectively avoiding voltage or current overshoot. VP35500 series can not only provide external power, but also absorb power, and return electric energy to the grid cleanly, the regenerative efficiency up to 93%. It is widely used in lithium battery, UPS, BOBC and other equipment testing.

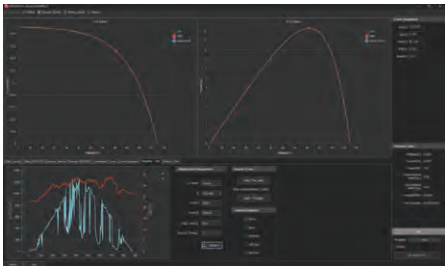
PV Cell Simulation (Optional)

With the characteristics of accurate measurement, high stability, fast response speed, VP35500 series DC power supply with NS91000 can accurately simulate the I-V, P-V curve of the solar cell matrix. After setting Vmp, Pmp and other parameters, it can generate reports in compliance with regulations, which is used to test the static and dynamic maximum power tracking efficiency of PV inverters, and also can provide support for system simulation and core equipment testing of microgrids, distributed photovoltaic and other power systems.



▲ Static Sandia

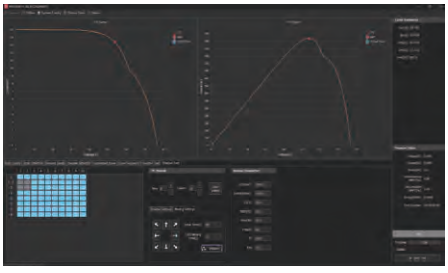
▲ Static EN50530



▲ Weather Test

▲ Dynamic Sandia

▲ Dynamic EN50530

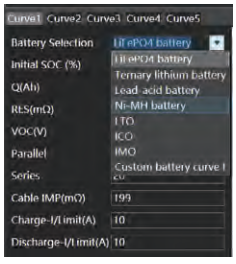


▲ Shadow Test

Battery Simulation

VP35500 series with NS81000 battery simulator software to meet the user's needs for different types of battery simulation, and improve the test efficiency. NS81000 has 7 standard battery model libraries, users only need to select the corresponding battery type, configure the basic capacity and protection parameters, the software can quickly generate the corresponding type of battery characteristic curve; And there are 2 types of custom battery characteristic curve, engineers can be based on the actual measurement of the battery curve data, import the data into the software and carry out simulation.

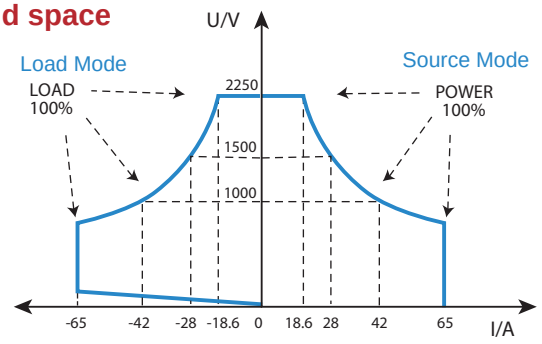
▲ Master Computer Interface



▲ Battery Type

Wide range, high power density for saving cost and space

VP35500 series DC power supply adopts systematic heat dissipation design, optimised device selection, main circuit topology, system heat dissipation, to achieve 42kW power output in 3U chassis, and adopts wide range output design, voltage up to 2250V, current up to 65A. With wide range and high power density design, VP35500 series satisfy engineers' test application scenarios for products of various voltage/ current levels, and greatly reducing purchase cost and space occupancy in laboratory or automated test systems.

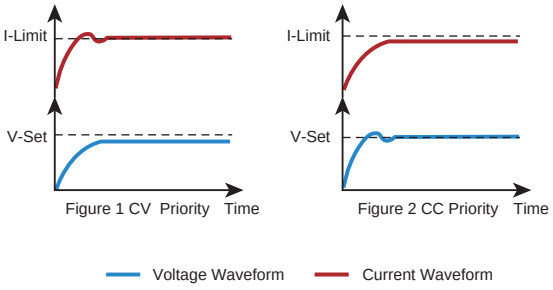


CC&CV priority function

VP35500 series has the function of setting voltage-control priority or current-control loop priority, it can adopt the optimal working mode for testing according to the characteristics of DUT, so as to better protect DUT.

As shown in Figure 1, when it needs to reduce voltage overshoot during testing, such as powering a DC-DC power module, the voltage priority mode should be used to obtain a fast and smooth rising voltage.

As shown in Figure 2, when it needs to reduce current overshoot during testing or the component to be measured is low impedance such as in the battery charging scenario, the current priority mode should be used to obtain a fast and smooth rising current.



Quick Selection

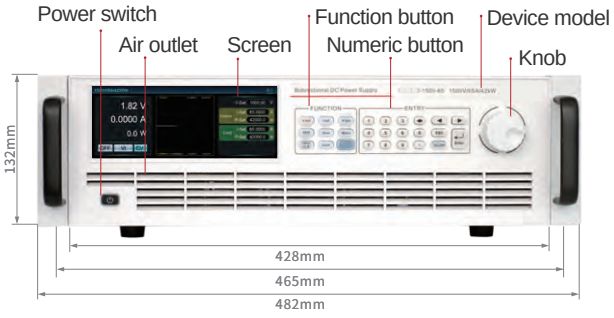
500V Model	Specification	Size
VP35514-500-65	500V/65A/14kW	19inch/3U
VP35522-500-130	500V/130A/22kW	19inch/3U
VP35532-500-180	500V/180A/32kW	19inch/3U
VP35542-500-195	500V/195A/42kW	19inch/3U
VP35564-500-360	500V/360A/64kW	19inch/6U
VP35584-500-390	500V/390A/84kW	19inch/6U
VP355126-500-585	500V/585A/126kW	19inch/9U
VP355168-500-780	500V/780A/168kW	19inch/12U
VP355210-500-975	500V/975A/210kW	19inch/15U
VP355252-500-1170	500V/1170A/252kW	19inch/18U

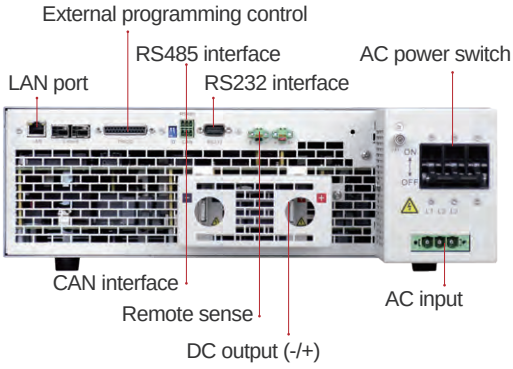
1000V Model	Specification	Size
VP35528-1000-65	1000V/65A/28kW	19inch/3U
VP35556-1000-130	1000V/130A/56kW	19inch/6U
VP35584-1000-195	1000V/195A/84kW	19inch/9U
VP355112-1000-260	1000V/260A/112kW	19inch/12U
VP355140-1000-325	1000V/325A/140kW	19inch/15U
VP355168-1000-390	1000V/390A/168kW	19inch/18U
VP355196-1000-455	1000V/455A/196kW	19inch/21U
VP355224-1000-520	1000V/520A/224kW	19inch/24U
VP355252-1000-585	1000V/585A/252kW	19inch/27U
VP355280-1000-650	1000V/650A/280kW	19inch/30U

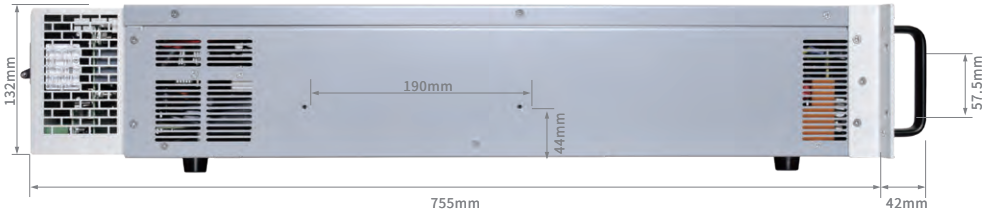
1500V Model	Specification	Size
VP35522-1500-60	1500V/60A/22kW	19inch/3U
VP35532-1500-60	1500V/60A/32kW	19inch/3U
VP35542-1500-65	1500V/65A/42kW	19inch/3U
VP35564-1500-120	1500V/120A/64kW	19inch/6U
VP35584-1500-130	1500V/130A/84kW	19inch/6U
VP355126-1500-195	1500V/195A/126kW	19inch/9U
VP355168-1500-260	1500V/260A/168kW	19inch/12U
VP355210-1500-325	1500V/325A/210kW	19inch/15U
VP355252-1500-390	1500V/390A/252kW	19inch/18U
VP355294-1500-455	1500V/455A/294kW	19inch/21U
VP355336-1500-520	1500V/520A/336kW	19inch/24U
VP355378-1500-585	1500V/585A/378kW	19inch/27U
VP355420-1500-650	1500V/650A/420kW	19inch/30U

2250V Model	Specification	Size
VP35522-2250-60	2250V/60A/22kW	19inch/3U
VP35532-2250-60	2250V/60A/32kW	19inch/3U
VP35542-2250-65	2250V/65A/42kW	19inch/3U
VP35564-2250-120	2250V/120A/64kW	19inch/6U
VP35584-2250-130	2250V/130A/84kW	19inch/6U
VP355126-2250-195	2250V/195A/126kW	19inch/9U
VP355168-2250-260	2250V/260A/168kW	19inch/12U
VP355210-2250-325	2250V/325A/210kW	19inch/15U
VP355252-2250-390	2250V/390A/252kW	19inch/18U
VP355294-2250-455	2250V/455A/294kW	19inch/21U
VP355336-2250-520	2250V/520A/336kW	19inch/24U
VP355378-2250-585	2250V/585A/378kW	19inch/27U
VP355420-2250-650	2250V/650A/420kW	19inch/30U

Product Dimension







Technical Data Sheet(1)

Model		VP35514-500-65	VP35522-500-130	VP35532-500-180	VP35542-500-195
Rated	Voltage	0~500V			
	Current	-65A~+65A	-130A~130A	-180A~180A	-195A~+195A
	Power	-14kW~+14kW	-22kW~22kW	-32kW~32kW	-42kW~+42kW
CV Mode					
Range		0~500V			
Setting Resolution		1mV			
Setting Accuracy(23±5°C)		≤0.02%+0.02%F.S.			
Voltage Ripple(20Hz-20MHz)		≤3Vp-p			
		≤0.4Vrms			
CC Mode					
Range		-65A~+65A	-130A~130A	-180A~180A	-195A~+195A
Setting Resolution		0.1mA	1mA		
Setting Accuracy(23±5°C)		≤0.1%+0.1%F.S.			
Current Ripple(20Hz-20MHz)		≤1.4Ap-p	≤2Ap-p		
		≤200mArms			
CP Mode					
Range		-14kW~+14kW	-22kW~22kW	-32kW~32kW	-42kW~+42kW
Setting Resolution		0.1W			
Setting Accuracy(23±5°C)		≤0.1%+0.1%F.S.			
Voltage Measurement					
Range		0~500V			
Readback Resolution		1mV			
Readback Accuracy(23±5°C)		≤0.02%+0.02%F.S.			
Temperature Coefficient		≤15ppm/°C			
Current Measurement					
Range		-65A~+65A	-130A~130A	-180A~180A	-195A~+195A
Readback Resolution		0.1mA	1mA		
Readback Accuracy(23±5°C)		≤0.1%+0.1%F.S.			
Temperature Coefficient		≤30ppm/°C			
Dynamic Characteristics					
Voltage Rise Time (no load 10%~90%)		≤5ms			
Voltage Rise Time (full load 10%~90%)		≤5ms			
Voltage Fall Time (no load 90%~10%) [1]		≤10ms			
Voltage Fall Time (full load 90%~10%)		≤5ms			
Transient Response Time		The recovery time of load varying from 10% to 60% and output voltage recovering within 0.75% of rated voltage is less than 1ms.			
Line Regulation					
Voltage		<0.01%F.S.			
Current		<0.02%F.S.			
Load Regulation					
Voltage		<0.01%F.S.			
Current		<0.05%F.S.			
Others					
Isolation (Output to ground)		1000V DC			
Max. Efficiency		93%			
Power Factor		0.99			
Protection		OVP/OCP/OPP/UVP/UCP			
Interface		LAN/RS232/RS485/CAN			
Communication Response Time		5ms			
AC Input		Three phase 340VAC~480VAC,47Hz~63Hz,≤25A	Three phase 340VAC~480VAC,47Hz~63Hz,≤40A	Three phase 340VAC~480VAC,47Hz~63Hz,≤55A	Three phase 340VAC~480VAC,47Hz~63Hz,≤70A
Temperature		Operating temperature: 0°C~50°C (>35°C derating output); Storage temperature: -10°C~70°C			
Operating Environment		Altitude <2000m; relative humidity:5%~90%RH(non-condensing); atmospheric pressure: 80~110kPa			
Dimension		132.0mm(H)*482.0mm(W)*755.0mm(D)(with shield)			
Net Weight		Approx. 34kg	Approx. 42kg		

Note 1: Voltage fall time in ON state.
Note 2: For other specifications, please contact us.
Note 3: All specifications are subject to change without notice.

Technical Data Sheet(2)

Model		VP35528-1000-65
Rated	Voltage	0~1000V
	Current	-65A~+65A
	Power	-28kW~+28kW
CV Mode		
Range		0~1000V
Setting Resolution		10mV
Setting Accuracy(23±5°C)		≤0.02%+0.02%F.S.
Voltage Ripple(20Hz-20MHz)		≤3Vp-p
		≤0.4Vrms
CC Mode		
Range		-65A~+65A
Setting Resolution		0.1mA
Setting Accuracy(23±5°C)		≤0.1%+0.1%F.S.
Current Ripple(20Hz-20MHz)		≤1.4Ap-p
		≤200mArms
CP Mode		
Range		-28kW~+28kW
Setting Resolution		0.1W
Setting Accuracy(23±5°C)		≤0.1%+0.1%F.S.
Voltage Measurement		
Range		0~1000V
Readback Resolution		10mV
Readback Accuracy(23±5°C)		≤0.02%+0.02%F.S.
Temperature Coefficient		≤15ppm/°C
Current Measurement		
Range		-65A~+65A
Readback Resolution		0.1mA
Readback Accuracy(23±5°C)		≤0.1%+0.1%F.S.
Temperature Coefficient		≤30ppm/°C
Dynamic Characteristics		
Voltage Rise Time (no load 10%~90%)		≤5ms
Voltage Rise Time (full load 10%~90%)		≤5ms
Voltage Fall Time (no load 90%~10%) [1]		≤10ms
Voltage Fall Time (full load 90%~10%)		≤5ms
Transient Response Time		The recovery time of load varying from 10% to 60% and output voltage recovering within 0.75% of rated voltage is less than 1ms.
Line Regulation		
Voltage		<0.01%F.S.
Current		<0.02%F.S.
Load Regulation		
Voltage		<0.01%F.S.
Current		<0.05%F.S.
Others		
Isolation (Output to ground)		1500V DC
Max. Efficiency		93%
Power Factor		0.99
Protection		OVP/OCP/OPP/UVP/UCP
Interface		LAN/RS232/RS485/CAN
Communication Response Time		5ms
AC Input		Three phase 340VAC~480VAC,47Hz~63Hz,≤50A
Temperature		Operating temperature: 0°C~50°C(>35°C derating output); Storage temperature: -10°C~70°C
Operating Environment		Altitude <2000m; relative humidity: 5%~90%RH(non-condensing); atmospheric pressure: 80~110kPa
Dimension		132.0mm(H)*482.0mm(W)*755.0mm(D)(with shield)
Net Weight		Approx. 38kg

Note 1: Voltage fall time in ON state.
Note 2: For other specifications, please contact us.
Note 3: All specifications are subject to change without notice.

Technical Data Sheet(3)

Model		VP35522-1500-60	VP35532-1500-60	VP35542-1500-65
Rated	Voltage	0~1500V		
	Current	-60A~+60A		-65A~+65A
	Power	-22kW~+22kW	-32kW~+32kW	-42kW~+42kW
CV Mode				
Range		0~1500V		
Setting Resolution		10mV		
Setting Accuracy(23±5°C)		≤0.02%+0.02%F.S.		
Voltage Ripple(20Hz-20MHz)		≤3Vp-p		
		≤0.4Vrms		
CC Mode				
Range		-60A~+60A		-65A~+65A
Setting Resolution		0.1mA		
Setting Accuracy(23±5°C)		≤0.1%+0.1%F.S.		
Current Ripple(20Hz-20MHz)		≤1.4Ap-p		
		≤200mArms		
CP Mode				
Range		-22kW~+22kW	-32kW~+32kW	-42kW~+42kW
Setting Resolution		0.1W		
Setting Accuracy(23±5°C)		≤0.1%+0.1%F.S.		
Voltage Measurement				
Range		0~1500V		
Readback Resolution		10mV		
Readback Accuracy(23±5°C)		≤0.02%+0.02%F.S.		
Temperature Coefficient		≤15ppm/°C		
Current Measurement				
Range		-60A~+60A		-65A~+65A
Readback Resolution		0.1mA		
Readback Accuracy(23±5°C)		≤0.1%+0.1%F.S.		
Temperature Coefficient		≤30ppm/°C		
Dynamic Characteristics				
Voltage Rise Time (no load 10%~90%)		≤5ms		
Voltage Rise Time (full load 10%~90%)		≤5ms		
Voltage Fall Time (no load 90%~10%) [1]		≤10ms		
Voltage Fall Time (full load 90%~10%)		≤5ms		
Transient Response Time		The recovery time of load varying from 10% to 60% and output voltage recovering within 0.75% of rated voltage is less than 500μs.		
Line Regulation				
Voltage		<0.01%F.S.		
Current		<0.02%F.S.		
Load Regulation				
Voltage		<0.01%F.S.		
Current		<0.05%F.S.		
Others				
Isolation (Output to ground)		2250V DC		
Max. Efficiency		93%		
Power Factor		0.99		
Protection		OVP/OCP/OPP/UVP/UCP		
Interface		LAN/RS232/RS485/CAN		
Communication Response Time		5ms		
AC Input		Three phase 340VAC~480VAC,47Hz~63Hz,≤40A	Three phase 340VAC~480VAC,47Hz~63Hz,≤55A	Three phase 340VAC~480VAC,47Hz~63Hz,≤70A
Temperature		Operating temperature: 0°C~50°C(>35°C derating output); Storage temperature:-10°C~70°C		
Operating Environment		Altitude <2000m; relative humidity: 5%~90%RH(non-condensing); atmospheric pressure: 80~110kPa		
Dimension		132.0mm(H)*482.0mm(W)*755.0mm(D)(with shield)		
Net Weight		Approx. 42kg		

Note 1: Voltage fall time in ON state.
Note 2: For other specifications, please contact us.
Note 3: All specifications are subject to change without notice.

Technical Data Sheet(4)

Model		VP35522-2250-60	VP35532-2250-60	VP35542-2250-65
Rated	Voltage	0~2250V		
	Current	-60A~+60A		-65A~+65A
	Power	-22kW~+22kW	-32kW~+32kW	-42kW~+42kW
CV Mode				
Range		0~2250V		
Setting Resolution		10mV		
Setting Accuracy(23±5°C)		≤0.02%+0.02%F.S.		
Voltage Ripple(20Hz-20MHz)		≤3Vp-p		
		≤0.4Vrms		
CC Mode				
Range		-60A~+60A		-65A~+65A
Setting Resolution		0.1mA		
Setting Accuracy(23±5°C)		≤0.1%+0.1%F.S.		
Current Ripple(20Hz-20MHz)		≤1.4Ap-p		
		≤200mArms		
CP Mode				
Range		-22kW~+22kW	-32kW~+32kW	-42kW~+42kW
Setting Resolution		0.1W		
Setting Accuracy(23±5°C)		≤0.1%+0.1%F.S.		
Voltage Measurement				
Range		0~2250V		
Readback Resolution		10mV		
Readback Accuracy(23±5°C)		≤0.02%+0.02%F.S.		
Temperature Coefficient		≤15ppm/°C		
Current Measurement				
Range		-60A~+60A		-65A~+65A
Readback Resolution		0.1mA		
Readback Accuracy(23±5°C)		≤0.1%+0.1%F.S.		
Temperature Coefficient		≤30ppm/°C		
Dynamic Characteristics				
Voltage Rise Time (no load 10%~90%)		≤5ms		
Voltage Rise Time (full load 10%~90%)		≤5ms		
Voltage Fall Time (no load 90%~10%) [1]		≤10ms		
Voltage Fall Time (full load 90%~10%)		≤5ms		
Transient Response Time		The recovery time of load varying from 10% to 60% and output voltage recovering within 0.75% of rated voltage is less than 500μs.		
Line Regulation				
Voltage		<0.01%F.S.		
Current		<0.02%F.S.		
Load Regulation				
Voltage		<0.01%F.S.		
Current		<0.05%F.S.		
Others				
Isolation (Output to ground)		2250V DC		
Max. Efficiency		93%		
Power Factor		0.99		
Protection		OVP/OCP/OPP/UVP/UCP		
Interface		LAN/RS232/RS485/CAN		
Communication Response Time		5ms		
AC Input		Three phase 340VAC~480VAC,47Hz~63Hz,≤40A	Three phase 340VAC~480VAC,47Hz~63Hz,≤55A	Three phase 340VAC~480VAC,47Hz~63Hz,≤70A
Temperature		Operating temperature: 0°C~50°C(>35°C derating output); Storage temperature:-10°C~70°C		
Operating Environment		Altitude <2000m; relative humidity: 5%~90%RH(non-condensing); atmospheric pressure: 80~110kPa		
Dimension		132.0mm(H)*482.0mm(W)*755.0mm(D)(with shield)		
Net Weight		Approx. 42kg		

Note 1: Voltage fall time in ON state.
Note 2: For other specifications, please contact us.
Note 3: All specifications are subject to change without notice.