MPB Series

Bidirectional Programmable DC Power Supply

Product Features

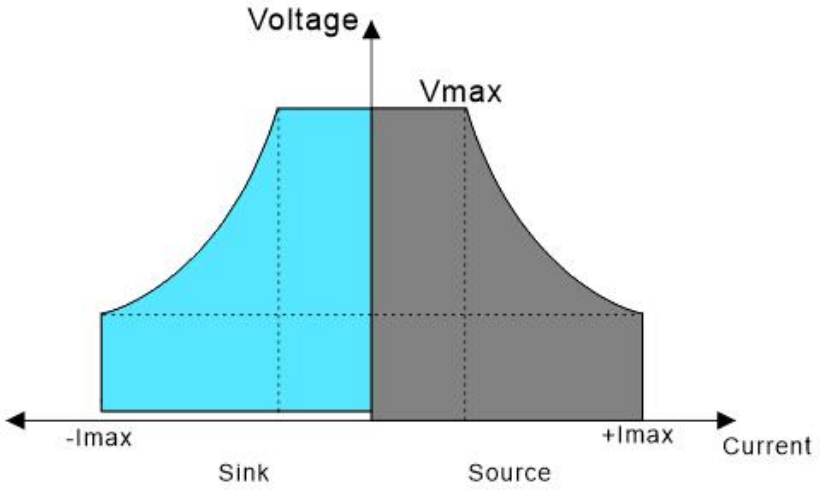
- Adopts 3rd generation SIC technology with dual Source and Sink capabilities.
- High power density in a single 3U unit, delivering up to 18kW.
- Supports multiple operating modes with adjustable rise/fall times for voltage, current, and power.
- Bidirectional energy transfer with adjustable seamless quadrant transition speed.
- Energy regeneration efficiency up to 95%.
- Supports master-slave parallel operation with active current sharing for up to 36 units.
- Protections include OVP, ±OCP, ±OPP, OTP, power failure, and islanding prevention.
- Equipped with sense terminals for lead voltage drop compensation under high-current operation.
- Built-in function generator supporting arbitrary waveform generation.
- Maximum output voltage up to 2250V.
- Integrated discharge circuit (Uout <10V within 1s).
- Multiple built-in interfaces including RS232/RS485/LAN communication options.
- Built-in remote analog control interface.
- Supports SCPI command set.
- High-brightness color LCD display with elegant design and intuitive operation.

Outline

The MPB series is a microprocessor-controlled bidirectional wide-range constant-power DC power supply that integrates bipolar power supply and regenerative load functions. It can be used independently as a DC power supply and also has the capability to feed back the consumed energy to the power grid, achieving energy-saving purposes.

Bidirectional energy, seamless transfer

Unlike traditional power supplies and loads, which exhibit brief jumps and discontinuities when switching between positive and negative currents, the MPB Series Bidirectional Programmable DC Power Supply enables high-speed conversion between source and sink current modes. This allows for fast, continuous, and seamless switching between output and absorption currents, effectively preventing voltage or current overshoots. It is widely suitable for testing energy storage devices such as batteries, battery packs, and battery protection boards.



Renewable energy recycling

This series of power supplies is bidirectional, capable of both sourcing (supplying current) and sinking (absorbing current), with up to 95% efficiency in feeding back the current to the local power grid. The built-in electronic load function features energy recyclability, which reduces electricity costs. Moreover, its integrated design of power supply and load helps save space in the test system, making it a green and environmentally friendly testing solution.

Remote compensation function

To avoid voltage drop caused by excessively long wires connecting the load, remote testing allows direct measurement of the output voltage at the terminals of the device under test (DUT), thereby improving measurement accuracy. S+ and S- are remote compensation terminals. When performing remote compensation testing, simply connect S+ and S- to the positive and negative terminals of the DUT respectively.

Discharge Circuit

All power supplies in this series are equipped with an internal discharge circuit. When under no-load or light-load conditions, it ensures that dangerous voltages drop to below 10VDC within 1 second after the DC output is turned off, thus guaranteeing human safety.

Analog control interface

There is an isolated analog interface terminal on the rear panel of the product. By connecting a 0~10V or 0~5V voltage to the analog input pins, you can set 0~100% of the output voltage,

current, and power. The analog output pins output a 0~10V or 0~5V voltage corresponding to 0~100% of the output voltage and current, enabling the monitoring function of output voltage and current. In addition, there are several input and output pins that can be used to control and monitor the product status.

Protection Function

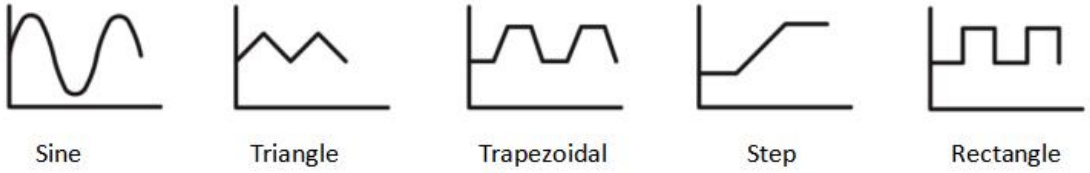
To protect customers' connected equipment, the product can be set with over-voltage protection (OVP) limit, as well as over-current (OCP) and over-power (OPP) protection limits. If any of these three limits is exceeded due to any reason, the DC output will be cut off immediately, and a status signal will be sent through the display and interface. This product is also equipped with over-temperature protection (OTP); in case of overheating, it will shut down the DC output to ensure the safety of the device under test and the power supply itself.

Wide Range Output

Compared with ordinary power supplies, constant-power power supplies feature a wider range of output voltage and current. A single model can meet the testing needs of customers' products with multiple specifications. The output of voltage and current of the power supply is limited by the maximum power. Reducing the output current allows for a higher voltage, or reducing the output voltage enables a larger output current. Therefore, it is more flexible than traditional "matrix" power supplies.

Function Generator

All models in this series are equipped with a real function generator capable of creating the following typical functions, which can be applied to either the output voltage or current. The generator can be configured via the front panel or remotely through a digital interface. Preset functions provide users with all necessary parameters, such as Y offset values, time, frequency, amplitude, and a complete set of configuration parameters.



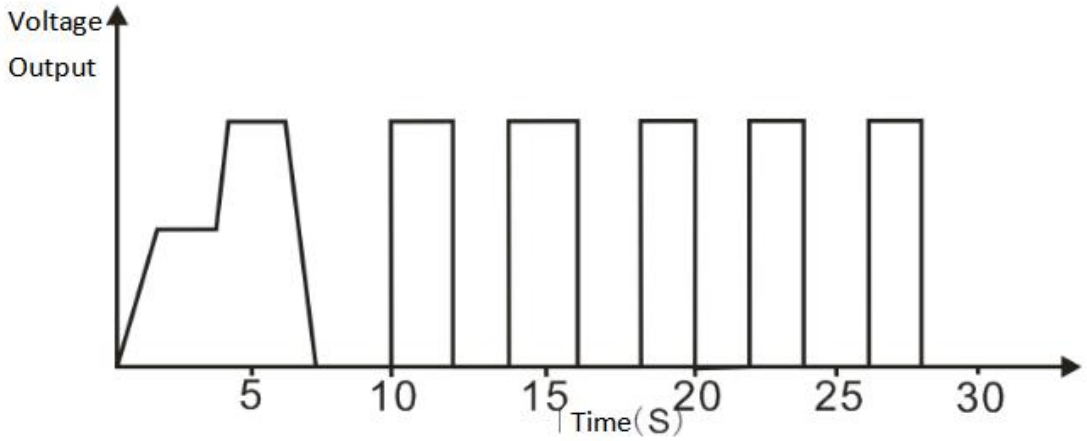
Sequence Test

In addition to the standard functions generated by the function generator, it can also form some complex functions. The sequence test function includes a total of 50 sequences stored in non-volatile memory, with each group containing 20 test steps. Users can edit the function of each step according to actual needs, enabling the power supply to output in constant voltage, constant current, or constant power mode in a sequential manner, thus meeting specific testing requirements.

Example of Sequence Test

A typical aging test process is as follows: first, input voltage to the device under test at a certain slope and maintain it for a period of time, then suddenly increase it to another voltage and keep it for a period of time, then raise the voltage again and maintain it for a

period of time... Finally, reduce the voltage to zero in a sloped manner. In some cases, a voltage switch cycle test sequence is also required. The following figure shows a voltage waveform for an aging test.



Model Selection Table

Model	Voltage	Current	Power
MPB-5000S-100-170	0~100V	-170A ~170A	-5kW ~5kW
MPB-10000S-100-340		-340A ~340A	-10kW ~10kW
MPB-15000S-100-510		-510A ~510A	-15kW ~15kW
MPB-6000S-300-75	0~300V	-75A~75A	-6kW ~6kW
MPB-12000S-300-150		-150A~150A	-12kW ~12kW
MPB-18000S-300-225		-225A~225A	-18kW ~18kW
MPB-6000S-500-40	0~500V	-40A~40A	-6kW ~6kW
MPB-12000S-500-80		-80A~80A	-12kW ~12kW
MPB-18000S-500-120		-120A~120A	-18kW ~18kW
MPB-6000S-800-25	0~800V	-25A~25A	-6kW ~6kW
MPB-12000S-800-50		-50A~50A	-12kW ~12kW
MPB-18000S-800-75		-75A~75A	-18kW ~18kW
MPB-6000S-1000-15	0~1000V	-15A~15A	-6kW ~6kW
MPB-12000S-1000-30		-30A~30A	-12kW ~12kW
MPB-18000S-1000-45		-45A~45A	-18kW ~18kW
MPB-12000S-1500-25	0~1500V	-25A~25A	-12kW ~12kW
MPB-18000S-1500-40		-40A~40A	-18kW ~18kW
MPB-18000S-2250-25	0~2250V	-25A~25A	-18kW ~18kW

Model		MPB-5000S-100-170	MPB-10000S-100-340	MPB-15000S-100-510
AC input	Number of phases	three-phase three-wire + grounding		
	Voltage	342VAC~528 VAC		
	Frequency	45~66Hz		
	Power Factor	≥0.99		
DC output	Voltage	0~100V		
	Current	-170A ~170A	-340A ~340A	-510A ~510A
	Power	-5kW ~5kW	-10kW ~10kW	-15kW ~15kW
	Efficiency	≤93%		
Programming Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Readback Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Ripple and noise	RMS (20Hz-300kHz)	15mVrms		
	P-P (20Hz-20MHz)	200mVpp		
Source Effect	Voltage	≤0.02%FS (±10%ΔU_{AC}input)		
	Current	≤0.05%FS (±10%ΔU_{AC}input)		
Load Effect	Voltage	≤0.05%FS (0-100% load adjustability)		
	Current	≤0.15%FS (Load Adjustment Ratio of 0-100%ΔUDC)		
Analog Interface	specification	Built-in 15-pin D-Sub female plug, galvanic isolation		
	Signal Range	0~5V or 0~10V (switchable)		
	U / I / P accuracy	0~10V: ≤0.2%FS 0~5V: ≤0.4%FS		
Dynamic Response Time	Load adjustment time required	2ms		
	Output Voltage Rise Time	20ms (10~90% full scale)		
	Forward/reverse switching speed	2ms (+90%~-90%)		
protective function		OTP ,OVP ,OCP ,OPP ,PF		
communication interface		RS232/RS485/CAN/LAN communication interfaces		
parallel operation		Realizable, up to 36 products can be connected (via shared bus) via true master-slave operation.		
working environment		Working temperature: 0~50℃, humidity: <80%, no condensation, storage temperature: -20~70℃, altitude: <2000m		
Isolated Withstand Voltage		1000VDC (Output to earth)		
volumetricW×D×H(mm)		482mm×670mm×132mm		
Weight		25kg	35kg	45kg

Model		MPB-6000S-300-75	MPB-12000S-300-150	MPB-18000S-300-225
AC input	Number of phases	three-phase three-wire + grounding		
	Voltage	342VAC~528 VAC		
	Frequency	45~66Hz		
	Power Factor	≥0.99		
DC output	Voltage	0~300V		
	Current	-75A~75A	-150A~150A	-225A~225A
	Power	-6kW ~6kW	-12kW ~12kW	-18kW ~18kW
	Efficiency	≤95%		
Programming Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Readback Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Ripple and noise	RMS (20Hz-300kHz)	40mVrms		
	P-P (20Hz-20MHz)	200mVpp		
Source Effect	Voltage	≤0.02%FS (±10%ΔU_{AC}input)		
	Current	≤0.05%FS (±10%ΔU_{AC}input)		
Load Effect	Voltage	≤0.05%FS (0-100% load adjustability)		
	Current	≤0.15%FS (Load Adjustment Ratio of 0-100%ΔUDC)		
Analog Interface	specification	Built-in 15-pin D-Sub female plug, galvanic isolation		
	Signal Range	0~5V or 0~10V (switchable)		
	U / I / P accuracy	0~10V: ≤0.2%FS 0~5V: ≤0.4%FS		
Dynamic Response Time	Load adjustment time required	2ms		
	Output Voltage Rise Time	20ms (10~90% full scale)		
	Forward/reverse switching speed	2ms (+90%~-90%)		
protective function		OTP ,OVP ,OCP ,OPP ,PF		
communication interface		RS232/RS485/CAN/LAN communication interfaces		
parallel operation		Realizable, up to 36 products can be connected (via shared bus) via true master-slave operation.		
working environment		Working temperature: 0~50℃, humidity: <80%, no condensation, storage temperature: -20~70℃, altitude: <2000m		
Isolated Withstand Voltage		1000VDC (Output to earth)		
volumetricW×D×H(mm)		482mm×670mm×132mm		
Weight		25kg	35kg	45kg

Model		MPB-6000S-500-40	MPB-12000S-500-80	MPB-18000S-500-120
AC input	Number of phases	three-phase three-wire + grounding		
	Voltage	342VAC~528 VAC		
	Frequency	45~66Hz		
	Power Factor	≥0.99		
DC output	Voltage	0~500V		
	Current	-40A~40A	-80A~80A	-120A~120A
	Power	-6kW ~6kW	-12kW ~12kW	-18kW ~18kW
	Efficiency	≤95%		
Programming Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Readback Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Ripple and noise	RMS (20Hz-300kHz)	50mVrms		
	P-P (20Hz-20MHz)	350mVpp		
Source Effect	Voltage	≤0.02%FS (±10%ΔU_{AC}input)		
	Current	≤0.05%FS (±10%ΔU_{AC}input)		
Load Effect	Voltage	≤0.05%FS (0-100% load adjustability)		
	Current	≤0.15%FS (Load Adjustment Ratio of 0-100%ΔUDC)		
Analog Interface	specification	Built-in 15-pin D-Sub female plug, galvanic isolation		
	Signal Range	0~5V or 0~10V (switchable)		
	U / I / P accuracy	0~10V: ≤0.2%FS 0~5V: ≤0.4%FS		
Dynamic Response Time	Load adjustment time required	2ms		
	Output Voltage Rise Time	20ms (10~90% full scale)		
	Forward/reverse switching speed	2ms (+90%~-90%)		
protective function		OTP ,OVP ,OCP ,OPP ,PF		
communication interface		RS232/RS485/CAN/LAN communication interfaces		
parallel operation		Realizable, up to 36 products can be connected (via shared bus) via true master-slave operation.		
working environment		Working temperature: 0~50℃, humidity: <80%, no condensation, storage temperature: -20~70℃, altitude: <2000m		
Isolated Withstand Voltage		1000VDC (Output to earth)		
volumetricW×D×H(mm)		482mm×670mm×132mm		
Weight		25kg	35kg	45kg

Model		MPB-6000S-800-25	MPB-12000S-800-50	MPB-18000S-800-75
AC input	Number of phases	three-phase three-wire + grounding		
	Voltage	342VAC~528 VAC		
	Frequency	45~66Hz		
	Power Factor	≥0.99		
DC output	Voltage	0~800V		
	Current	-25A~25A	-50A~50A	-75A~75A
	Power	-6kW ~6kW	-12kW ~12kW	-18kW ~18kW
	Efficiency	≤95%		
Programming Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Readback Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Ripple and noise	RMS (20Hz-300kHz)	75mVrms		
	P-P (20Hz-20MHz)	550mVpp		
Source Effect	Voltage	≤0.02%FS (±10%ΔU_{AC}input)		
	Current	≤0.05%FS (±10%ΔU_{AC}input)		
Load Effect	Voltage	≤0.05%FS (0-100% load adjustability)		
	Current	≤0.15%FS (Load Adjustment Ratio of 0-100%ΔUDC)		
Analog Interface	specification	Built-in 15-pin D-Sub female plug, galvanic isolation		
	Signal Range	0~5V or 0~10V (switchable)		
	U / I / P accuracy	0~10V: ≤0.2%FS 0~5V: ≤0.4%FS		
Dynamic Response Time	Load adjustment time required	2ms		
	Output Voltage Rise Time	50ms (10~90% full scale)		
	Forward/reverse switching speed	2ms (+90%~-90%)		
protective function		OTP ,OVP ,OCP ,OPP ,PF		
communication interface		RS232/RS485/CAN/LAN communication interfaces		
parallel operation		Realizable, up to 36 products can be connected (via shared bus) via true master-slave operation.		
working environment		Working temperature: 0~50℃, humidity: <80%, no condensation, storage temperature: -20~70℃, altitude: <2000m		
Isolated Withstand Voltage		1000VDC (Output to earth)		
volumetricW×D×H(mm)		482mm×670mm×132mm		
Weight		25kg	35kg	45kg

Model		MPB-6000S-1000-15	MPB-12000S-1000-30	MPB-18000S-1000-45
AC input	Number of phases	three-phase three-wire + grounding		
	Voltage	342VAC~528 VAC		
	Frequency	45~66Hz		
	Power Factor	≥0.99		
DC output	Voltage	0~1000V		
	Current	-15A~15A	-30A~30A	-45A~45A
	Power	-6kW ~6kW	-12kW ~12kW	-18kW ~18kW
	Efficiency	≤95%		
Programming Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Readback Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Ripple and noise	RMS (20Hz-300kHz)	100mVrms		
	P-P (20Hz-20MHz)	850mVpp		
Source Effect	Voltage	≤0.02%FS (±10%ΔU_{AC}input)		
	Current	≤0.05%FS (±10%ΔU_{AC}input)		
Load Effect	Voltage	≤0.05%FS (0-100% load adjustability)		
	Current	≤0.15%FS (Load Adjustment Ratio of 0-100%ΔUDC)		
Analog Interface	specification	Built-in 15-pin D-Sub female plug, galvanic isolation		
	Signal Range	0~5V or 0~10V (switchable)		
	U / I / P accuracy	0~10V: ≤0.2%FS 0~5V: ≤0.4%FS		
Dynamic Response Time	Load adjustment time required	2ms		
	Output Voltage Rise Time	20ms (10~90% full scale)		
	Forward/reverse switching speed	2ms (+90%~-90%)		
protective function		OTP ,OVP ,OCP ,OPP ,PF		
communication interface		RS232/RS485/CAN/LAN communication interfaces		
parallel operation		Realizable, up to 36 products can be connected (via shared bus) via true master-slave operation.		
working environment		Working temperature: 0~50℃, humidity: <80%, no condensation, storage temperature: -20~70℃, altitude: <2000m		
Isolated Withstand Voltage		1000VDC (Output to earth)		
volumetricW×D×H(mm)		482mm×670mm×132mm		
Weight		25kg	35kg	45kg

Model		MPB-12000S-1500-25	MPB-18000S-1500-40	MPB-18000S-2250-25
AC input	Number of phases	three-phase three-wire + grounding		
	Voltage	342VAC~528 VAC		
	Frequency	45~66Hz		
	Power Factor	≥0.99		
DC output	Voltage	0~1500V	0~1500V	0~2250V
	Current	-25A~25A	-40A~40A	-25A~25A
	Power	-12kW ~12kW	-18kW ~18kW	-18kW ~18kW
	Efficiency	≤95%		
Programming Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Readback Accuracy	Voltage	≤±(0.05%+0.04%FS)		
	Current	≤±(0.1%+0.1%FS)		
	Power	≤±0.8%FS		
Ripple and noise	RMS (20Hz-300kHz)	150mVrms		225mVrms
	P-P (20Hz-20MHz)	1100mVrms		1650mVrms
Source Effect	Voltage	≤0.02%FS (±10%ΔU_{AC}input)		
	Current	≤0.05%FS (±10%ΔU_{AC}input)		
Load Effect	Voltage	≤0.05%FS (0-100% load adjustability)		
	Current	≤0.15%FS (Load Adjustment Ratio of 0-100%ΔUDC)		
Analog Interface	specification	Built-in 15-pin D-Sub female plug, galvanic isolation		
	Signal Range	0~5V or 0~10V (switchable)		
	U / I / P accuracy	0~10V: ≤0.2%FS 0~5V: ≤0.4%FS		
Dynamic Response Time	Load adjustment time required	2ms		
	Output Voltage Rise Time	20ms (10~90% full scale)		
	Forward/reverse switching speed	2ms (+90%~-90%)		
protective function		OTP ,OVP ,OCP ,OPP ,PF		
communication interface		RS232/RS485/CAN/LAN communication interfaces		
parallel operation		Realizable, up to 36 products can be connected (via shared bus) via true master-slave operation.		
working environment		Working temperature: 0~50℃, humidity: <80%, no condensation, storage temperature: -20~70℃, altitude: <2000m		
Isolated Withstand Voltage		1000VDC (Output to earth)		
Volumetric W×D×H(mm)		482mm×670mm×132mm		
Weight		35kg	45kg	45kg