

## Overview

The programmable bidirectional DC power supply is specifically developed for motor controllers, drive motors, and vehicle testing in the new energy electric vehicle industry. Developed using core technologies such as four-quadrant PWM rectification, bidirectional BUCK conversion, and pure digital control, it features bidirectional energy flow, 100% energy feedback, high accuracy, rapid transient response, high conversion efficiency, low grid pollution, rich communication interfaces, and powerful protection functions. It is suitable for early-stage research and development, later-stage type testing, reliability testing, and factory testing of products in fields such as electric vehicle motors and their controllers, and electric vehicle powertrain systems. It is particularly suitable for dynamometer applications.

The bidirectional AC/DC power supply is a high-power factor, high-precision programmable IGBT-based DC power supply. It employs full digital control, offering high control accuracy, fast response speed, and a wide output adjustment range. It is widely applicable in fields such as new energy vehicle motor and electronic control testing, power battery pack charging and discharging testing, and power electronics testing. The system adopts a two-stage architecture of AC-DC and DC-DC bidirectional conversion, effectively stabilizing bus voltage fluctuations during sudden load changes, thereby improving the dynamic response time of the entire system. The AC-DC bidirectional conversion uses four-quadrant SVPWM technology, enabling bidirectional energy flow, a power factor of over 0.9, and low grid harmonic pollution. The DC-DC bidirectional conversion uses multiple interleaved high-frequency circuits, resulting in a fast output response and a wide output voltage range.



## Technical Features

1. Adopts two-stage conversion, IGBT semiconductor circuit design, and pure digital control, resulting in high reliability and leading technology;
2. Features both power supply and load characteristics, four-quadrant operation, and bidirectional energy flow;
3. The circuit structure uses a three-phase PWM rectifier/inverter + DC/DC bidirectional conversion two-stage circuit, enabling wide-range DC voltage output, high control accuracy, and fast dynamic response;
4. Front-end AC/DC vector control technology, power factor  $\geq 0.99$ , THD  $< 3\%$ ;
5. Supports multiple output modes such as constant voltage, constant current, and constant power;
6. High-efficiency power frequency isolation transformer, providing isolation between the DC side and the AC power grid;
7. Features more than ten types of hardware and software protection;
8. 7-inch LCD touchscreen display and control;
9. Includes operation history memory function;
10. Optional RS485 communication for upper computer monitoring, enabling remote data acquisition and monitoring.

Model	LDB-*KS-** (e.g., 100065 refers to 1000V 65A)							
Rated Capacity (KW)	5	10	15	30	50	75	100	200
Maximum Capacity (KW)	5.5	11	16	33	55	82	110	220
DC Rated Current Range	0-1000A							
Number of DC Channels	Line 1							
DC Voltage Range	24-1000V							
Maximum DC Current	1.1 times rated							
Current Harmonic Distortion (THD)	<3% (of rated power)							
Power Factor	>0.99							

Maximum Efficiency	94%
Allowable Grid Voltage Range	304~456VAC
Allowable Grid Frequency Range	45~65Hz
Dynamic Response Time	<5ms
Protection Functions	Reverse polarity, short circuit, overheating, overload, etc.
Display Method	Touch screen
Wind Turbine Power Curve	Configurable
Communication Interface	RS485
Operating Temperature	-10℃~+50℃
Relative Humidity	0~95%, non-condensing
Poster height	6000 meters (derating required above 2000 meters)
Cooling method	Forced air cooling
Noise level	<65dB
Protection rating	IP22

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