BKPOWER
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VARIABLE FREQUENCY DRIVE
BK-ZHB SERIES VFD INVERTER
0.75KW-630KW

Single Phase/Three Phase AC/DC-AC

TO BE GLOBAL LEADER IN POWER SOLUTIONS

SHENZHEN BKPOWER CO., LTD

Product Overview

The BKPOWER Heavy-Duty Variable Frequency Drive(VFD) is a high-performance current vector frequency converter series designed for heavy-duty industrial applications requiring single-phase and three-phase power supplies. They are ideal for driving general-purpose single-phase and three-phase AC asynchronous motors, especially suitable for equipment with high starting shocks, continuous heavy loads, and demanding operating requirements.

This series of heavy-duty frequency converters supports two advanced control modes: voltage-frequency ratio control (V/F control) and sensorless vector control (SVC). It features an overload capacity of 1.5 times the rated current, excellent low-frequency high-torque output performance, and comprehensive fault protection mechanisms.

Applications

- Heavy Industry & Metallurgy
- Mining & Construction Materials
- Port & Logistics Handling
- Chemical & Petroleum Industry
- Water Treatment & Environmental Protection
- New Energy & Power Systems
- Agriculture & Food Processing

Technical Advantages

Contactless Design

Uses solid-state IGBTs instead of mechanical contacts, eliminating wear, arcing, and contact failure. Enhances reliability, cuts maintenance, and extends service life.

Intelligent Control & Display

Microcontroller-based control with LCD interface enables real-time monitoring of frequency, voltage, current, power, and faults. User-friendly menus support quick setup and diagnostics.

Wide Input Voltage Range

Operates stably under ±15% (or customizable) input voltage fluctuations. Advanced control ensures consistent motor speed and torque despite grid instability.

High Customization & Integration

Tailored for diverse industrial needs—supports custom voltages, enclosures, and communication protocols . Easily integrates with PLCs and existing automation systems.

Product Features

Diversified & Precise Control

Supports V/F and SVC open-loop vector control, switchable per application. Delivers 150% rated torque at 0.25Hz with ≤±0.2% speed accuracy—ideal for high-demand heavy-duty starts and precise speed regulation.

Intelligent Integration

Built-in PID and preset frequency enable direct closed-loop control of pressure/flow. Standard RS485 + Modbus-RTU supports seamless PLC/SCADA integration and remote monitoring, simplifying automation upgrades.

Reliable Thermal & Environmental Protection

Fully sealed duct isolates dust/moisture; intelligent air cooling ensures stable operation from –10℃to 40℃. IP20 rating meets industrial installation standards.

Comprehensive Safety Protection

9-in-1 protection: overcurrent, overload, phase loss, short circuit, over/undervoltage, overheating, braking faults, etc.—ensuring reliability under harsh conditions and extending motor/inverter life.

Flexible Installation & Adaptability

Wall-mounted or cabinet options suit diverse spaces. Adjustable carrier frequency balances noise and performance for crushers, cranes, pumps, and other heavy loads.

Specifications-BK-ZHB560 Series(1 Phase AC-AC/DC-AC)

Power Capacity (KW/HP)		0.75KW/1HP,1.5KW/2HP,2.2KW/3HP,3KW/4HP,4KW/5.5HP,5.5KW/7.5HP, 7.5 KW/10HP,11 KW/15HP
Phase		Single-phase
Input	Voltage Range	220~240VAC/150VDC~400VDC
	Rated Frequency	50/60Hz
	Power Factor	⩾0.95 (when input reactor is optional)
Output	Rated Voltage Range	0~240VAC
	Frequency Range	0~600Hz
	Overload Capacity	150% rated current/60s, 180% rated current/3s
	Torque Characteristic	150% rated torque at 3.0Hz (V/F control); 150% rated torque at 0.25Hz (SVC mode)
	Frequency Resolution	Digital setting 0.01Hz; Analog input maximum frequency × 0.025%
	Waveform	Pure sine wave
	Harmonic Distortion	THD＜2% for linear load; THD＜7% for non-linear load
Control	Control Mode	V/F control (linear, multi-point, N-th power curve), Sensorless Vector Control (SVC)
	V/F Curve Options	1.2nd power, 1.4th power, 1.6th power, 1.8th power, 2nd power, supporting VF full separation/half separation mode
	Torque Boost	Automatic boost; Manual setting 0.0%~30.0%
	Acceleration/Deceleration Time	0.0s~6500.0s continuously adjustable, supporting S-type and linear mode
	Carrier Frequency	0.5kHz~16.0kHz continuously adjustable, supporting automatic adjustment
	Speed Control Precision	Steady-state precision ≤±0.2% rated synchronous speed; Speed fluctuation ≤±0.5% rated synchronous speed
	Torque Response Time	≤20ms (Sensorless Vector Control)
	Motor Parameter Self-detection	Supports static and dynamic parameter automatic detection
Protection		Overcurrent, Overvoltage/Undervoltage, Overheating, Overload, Phase Loss, Other Protections
Communication & Interface	Communication Interface	RS485 (485+, 485- terminals)
	Communication Protocol	Modbus-RTU protocol
	Baud Rate	1200BPS~115200BPS adjustable
	Data Format	No parity (8-N-2/8-N-1), Even parity (8-E-1), Odd parity (8-O-1)
	Analog Input	AI1 (0~10V/0~20mA), AI2 (0~10V); Input impedance 100KΩ (voltage)/500Ω (current)
	Analog Output	AO1, AO2 (0~10V/0~20mA), supporting display of 16 physical quantities
	Digital Input	7-channel multi-function terminals (X1~X7), 0~24V level signal, active low
	Digital Output	1-channel open-collector output, 1-channel high-speed pulse output, 2-channel programmable relay outputs

Specifications-BK-ZHB530 Series(1Phase→1Phase 220V AC-AC)

Power Capacity (KW/HP)		0.75KW/1HP,1.5KW/2HP,2.2KW/3HP,3KW/4HP,4KW/5.5HP,5.5KW/7.5HP, 7.5 KW/10HP,11 KW/15HP
Phase		Input: 1PH; Output: 1PH
Input	Voltage Range	220VAC
	Rated Frequency	47Hz~63Hz
	Power Factor	⩾0.95 (when input reactor is optional)
Output	Rated Voltage Range	220VAC
	Frequency Range	0~600Hz
	Overload Capacity	150% rated current/60s, 180% rated current/3s
	Torque Characteristic	150% rated torque at 3.0Hz (V/F control); 150% rated torque at 0.25Hz (SVC mode)
	Frequency Resolution	Digital setting 0.01Hz; Analog input maximum frequency × 0.025%
	Waveform	Pure sine wave
	Harmonic Distortion	THD＜2% for linear load; THD＜7% for non-linear load
Control	Control Mode	V/F control (linear, multi-point, N-th power curve), Sensorless Vector Control (SVC)
	V/F Curve Options	1.2nd power, 1.4th power, 1.6th power, 1.8th power, 2nd power, supporting VF full separation/half separation mode
	Torque Boost	Automatic boost; Manual setting 0.0%~30.0%
	Acceleration/Deceleration Time	0.0s~6500.0s continuously adjustable, supporting S-type and linear mode
	Carrier Frequency	0.5kHz~16.0kHz continuously adjustable, supporting automatic adjustment
	Speed Control Precision	Steady-state precision ≤±0.2% rated synchronous speed; Speed fluctuation ≤±0.5% rated synchronous speed
	Torque Response Time	≤20ms (Sensorless Vector Control)
	Motor Parameter Self-detection	Supports static and dynamic parameter automatic detection
Protection		Overcurrent, Overvoltage/Undervoltage, Overheating, Overload, Phase Loss, Other Protections
Communication & Interface	Communication Interface	RS485 (485+, 485- terminals)
	Communication Protocol	Modbus-RTU protocol
	Baud Rate	1200BPS~115200BPS adjustable
	Data Format	No parity (8-N-2/8-N-1), Even parity (8-E-1), Odd parity (8-O-1)
	Analog Input	AI1 (0~10V/0~20mA), AI2 (0~10V); Input impedance 100KΩ (voltage)/500Ω (current)
	Analog Output	AO1, AO2 (0~10V/0~20mA), supporting display of 16 physical quantities
	Digital Input	7-channel multi-function terminals (X1~X7), 0~24V level signal, active low
	Digital Output	1-channel open-collector output, 1-channel high-speed pulse output, 2-channel programmable relay outputs

Specifications-BK-ZHB560 Series(3 Phase)

Power Capacity (KW/HP)		0.75KW/1HP,1.5KW/2HP,2.2KW/3HP,3KW/4HP,4KW/5.5HP,5.5KW/7.5HP, 7.5 KW/10HP,11KW/15HP, 15KW/20HP, 18.5 KW/25HP, 22KW/30HP
Phase		Three-phase
Input	Voltage Range	380~440VAC/500~800VDC
	Rated Frequency	47Hz~63Hz
	Power Factor	⩾0.95 (when input reactor is optional)
Output	Rated Voltage Range	0~440VAC
	Frequency Range	0~600Hz
	Overload Capacity	150% rated current/60s, 180% rated current/3s
	Torque Characteristic	150% rated torque at 3.0Hz (V/F control); 150% rated torque at 0.25Hz (SVC mode)
	Frequency Resolution	Digital setting 0.01Hz; Analog input maximum frequency × 0.025%
	Waveform	Pure sine wave
	Harmonic Distortion	THD＜2% for linear load; THD＜7% for non-linear load
Control	Control Mode	V/F control (linear, multi-point, N-th power curve), Sensorless Vector Control (SVC)
	V/F Curve Options	1.2nd power, 1.4th power, 1.6th power, 1.8th power, 2nd power, supporting VF full separation/half separation mode
	Torque Boost	Automatic boost; Manual setting 0.0%~30.0%
	Acceleration/Deceleration Time	0.0s~6500.0s continuously adjustable, supporting S-type and linear mode
	Carrier Frequency	0.5kHz~16.0kHz continuously adjustable, supporting automatic adjustment
	Speed Control Precision	Steady-state precision ≤±0.2% rated synchronous speed; Speed fluctuation ≤±0.5% rated synchronous speed
	Torque Response Time	≤20ms (Sensorless Vector Control)
	Motor Parameter Self-detection	Supports static and dynamic parameter automatic detection
Protection		Overcurrent, Overvoltage/Undervoltage, Overheating, Overload, Phase Loss, Other Protections
Communication & Interface	Communication Interface	RS485 (485+, 485- terminals)
	Communication Protocol	Modbus-RTU protocol
	Baud Rate	1200BPS~115200BPS adjustable
	Data Format	No parity (8-N-2/8-N-1), Even parity (8-E-1), Odd parity (8-O-1)
	Analog Input	AI1 (0~10V/0~20mA), AI2 (0~10V); Input impedance 100KΩ (voltage)/500Ω (current)
	Analog Output	AO1, AO2 (0~10V/0~20mA), supporting display of 16 physical quantities
	Digital Input	7-channel multi-function terminals (X1~X7), 0~24V level signal, active low
	Digital Output	1-channel open-collector output, 1-channel high-speed pulse output, 2-channel programmable relay outputs

Specifications-BK-ZHB570 Series(3 Phase AC-AC)

Power Capacity (KW/HP)		30KW/40HP,37KW/50HP,45KW/60HP,55KW/75HP,75KW/100HP,90KW/120HP, 110KW/150HP,132KW/176HP,160KW/215HP,180KW/240HP,200KW/270HP, 220KW/295HP,250KW/350HP,285KW/380HP,315KW/420HP,355KW/475HP, 400KW/550HP,450KW/600HP,500KW/670HP,560KW/750HP,630KW/840HP
Input	Voltage Range	47Hz~63Hz
	Rated Frequency	380~440VAC (OR Customization DC Input)
	Power Factor	⩾0.95 (when input reactor is optional)
Output	Rated Voltage Range	0~440VAC
	Frequency Range	0~600Hz
	Overload Capacity	150% rated current/60s, 180% rated current/3s
	Torque Characteristic	150% rated torque at 3.0Hz (V/F control); 150% rated torque at 0.25Hz (SVC mode)
	Frequency Resolution	Digital setting 0.01Hz; Analog input maximum frequency × 0.025%
	Waveform	Pure sine wave
	Harmonic Distortion	THD＜2% for linear load; THD＜7% for non-linear load
Control	Control Mode	V/F control (linear, multi-point, N-th power curve), Sensorless Vector Control (SVC)
	V/F Curve Options	1.2nd power, 1.4th power, 1.6th power, 1.8th power, 2nd power, supporting VF full separation/half separation mode
	Torque Boost	Automatic boost; Manual setting 0.0%~30.0%
	Acceleration/Deceleration Time	0.0s~6500.0s continuously adjustable, supporting S-type and linear mode
	Carrier Frequency	0.5kHz~16.0kHz continuously adjustable, supporting automatic adjustment
	Speed Control Precision	Steady-state precision ≤±0.2% rated synchronous speed; Speed fluctuation ≤±0.5% rated synchronous speed
	Torque Response Time	≤20ms (Sensorless Vector Control)
	Motor Parameter Self-detection	Supports static and dynamic parameter automatic detection
Protection		Overcurrent, Overvoltage/Undervoltage, Overheating, Overload, Phase Loss, Other Protections
Communication & Interface	Communication Interface	RS485 (485+, 485- terminals)
	Communication Protocol	Modbus-RTU protocol
	Baud Rate	1200BPS~115200BPS adjustable
	Data Format	No parity (8-N-2/8-N-1), Even parity (8-E-1), Odd parity (8-O-1)
	Analog Input	AI1 (0~10V/0~20mA), AI2 (0~10V); Input impedance 100KΩ (voltage)/500Ω (current)
	Analog Output	AO1, AO2 (0~10V/0~20mA), supporting display of 16 physical quantities
	Digital Input	7-channel multi-function terminals (X1~X7), 0~24V level signal, active low
	Digital Output	1-channel open-collector output, 1-channel high-speed pulse output, 2-channel programmable relay outputs

Specifications-BK-ZHB600 Series(1Phase→3Phase 220V AC-AC)

Power Capacity (KW/HP)		0.75KW/1HP,1.5KW/2HP,2.2KW/3HP,3KW/4HP,4KW/5.5HP,5.5KW/7.5HP, 7.5 KW/10HP
Phase		1 Phase Input/3 Phase Output
Input	Voltage Range	AC 1PH 220V
	Rated Frequency	47Hz~63Hz
	Power Factor	⩾0.95 (when input reactor is optional)
Output	Rated Voltage Range	AC 3PH 220V
	Frequency Range	0~600Hz
	Overload Capacity	150% rated current/60s, 180% rated current/3s
	Torque Characteristic	150% rated torque at 3.0Hz (V/F control); 150% rated torque at 0.25Hz (SVC mode)
	Frequency Resolution	Digital setting 0.01Hz; Analog input maximum frequency × 0.025%
	Waveform	Pure sine wave
	Harmonic Distortion	THD＜2% for linear load; THD＜7% for non-linear load
Control	Control Mode	V/F control (linear, multi-point, N-th power curve), Sensorless Vector Control (SVC)
	V/F Curve Options	1.2nd power, 1.4th power, 1.6th power, 1.8th power, 2nd power, supporting VF full separation/half separation mode
	Torque Boost	Automatic boost; Manual setting 0.0%~30.0%
	Acceleration/Deceleration Time	0.0s~6500.0s continuously adjustable, supporting S-type and linear mode
	Carrier Frequency	0.5kHz~16.0kHz continuously adjustable, supporting automatic adjustment
	Speed Control Precision	Steady-state precision ≤±0.2% rated synchronous speed; Speed fluctuation ≤±0.5% rated synchronous speed
	Torque Response Time	≤20ms (Sensorless Vector Control)
	Motor Parameter Self-detection	Supports static and dynamic parameter automatic detection
Protection		Overcurrent, Overvoltage/Undervoltage, Overheating, Overload, Phase Loss, Other Protections
Communication & Interface	Communication Interface	RS485 (485+, 485- terminals)
	Communication Protocol	Modbus-RTU protocol
	Baud Rate	1200BPS~115200BPS adjustable
	Data Format	No parity (8-N-2/8-N-1), Even parity (8-E-1), Odd parity (8-O-1)
	Analog Input	AI1 (0~10V/0~20mA), AI2 (0~10V); Input impedance 100KΩ (voltage)/500Ω (current)
	Analog Output	AO1, AO2 (0~10V/0~20mA), supporting display of 16 physical quantities
	Digital Input	7-channel multi-function terminals (X1~X7), 0~24V level signal, active low
	Digital Output	1-channel open-collector output, 1-channel high-speed pulse output, 2-channel programmable relay outputs

Specifications-BK-ZHB600 Series(1Phase→3Phase 380V AC-AC)

Power Capacity (KW/HP)		0.75KW/1HP,1.5KW/2HP,2.2KW/3HP,3KW/4HP,4KW/5.5HP
Phase		1 Phase Input/3 Phase Output
Input	Voltage Range	AC 1PH 220V
	Rated Frequency	47Hz~63Hz
	Power Factor	⩾0.95 (when input reactor is optional)
Output	Rated Voltage Range	AC 3PH 380V
	Frequency Range	0~600Hz
	Overload Capacity	150% rated current/60s, 180% rated current/3s
	Torque Characteristic	150% rated torque at 3.0Hz (V/F control); 150% rated torque at 0.25Hz (SVC mode)
	Frequency Resolution	Digital setting 0.01Hz; Analog input maximum frequency × 0.025%
	Waveform	Pure sine wave
	Harmonic Distortion	THD＜2% for linear load; THD＜7% for non-linear load
Control	Control Mode	V/F control (linear, multi-point, N-th power curve), Sensorless Vector Control (SVC)
	V/F Curve Options	1.2nd power, 1.4th power, 1.6th power, 1.8th power, 2nd power, supporting VF full separation/half separation mode
	Torque Boost	Automatic boost; Manual setting 0.0%~30.0%
	Acceleration/Deceleration Time	0.0s~6500.0s continuously adjustable, supporting S-type and linear mode
	Carrier Frequency	0.5kHz~16.0kHz continuously adjustable, supporting automatic adjustment
	Speed Control Precision	Steady-state precision ≤±0.2% rated synchronous speed; Speed fluctuation ≤±0.5% rated synchronous speed
	Torque Response Time	≤20ms (Sensorless Vector Control)
	Motor Parameter Self-detection	Supports static and dynamic parameter automatic detection
Protection		Overcurrent, Overvoltage/Undervoltage, Overheating, Overload, Phase Loss, Other Protections
Communication & Interface	Communication Interface	RS485 (485+, 485- terminals)
	Communication Protocol	Modbus-RTU protocol
	Baud Rate	1200BPS~115200BPS adjustable
	Data Format	No parity (8-N-2/8-N-1), Even parity (8-E-1), Odd parity (8-O-1)
	Analog Input	AI1 (0~10V/0~20mA), AI2 (0~10V); Input impedance 100KΩ (voltage)/500Ω (current)
	Analog Output	AO1, AO2 (0~10V/0~20mA), supporting display of 16 physical quantities
	Digital Input	7-channel multi-function terminals (X1~X7), 0~24V level signal, active low
	Digital Output	1-channel open-collector output, 1-channel high-speed pulse output, 2-channel programmable relay outputs

Specifications-BK-ZHB600 Series(3Phase→3Phase 220V AC-AC)

Power Capacity (KW/HP)		0.75KW/1HP,1.5KW/2HP,2.2KW/3HP,3KW/4HP,4KW/5.5HP,5.5KW/7.5HP,7.5 KW/10HP
Phase		Input: 3PH; Output: 3PH
Input	Voltage Range	AC 3PH 220V
	Rated Frequency	47Hz~63Hz
	Power Factor	⩾0.95 (when input reactor is optional)
Output	Rated Voltage Range	AC 3PH 220V
	Frequency Range	0~600Hz
	Overload Capacity	150% rated current/60s, 180% rated current/3s
	Torque Characteristic	150% rated torque at 3.0Hz (V/F control); 150% rated torque at 0.25Hz (SVC mode)
	Frequency Resolution	Digital setting 0.01Hz; Analog input maximum frequency × 0.025%
	Waveform	Pure sine wave
	Harmonic Distortion	THD＜2% for linear load; THD＜7% for non-linear load
Control	Control Mode	V/F control (linear, multi-point, N-th power curve), Sensorless Vector Control (SVC)
	V/F Curve Options	1.2nd power, 1.4th power, 1.6th power, 1.8th power, 2nd power, supporting VF full separation/half separation mode
	Torque Boost	Automatic boost; Manual setting 0.0%~30.0%
	Acceleration/Deceleration Time	0.0s~6500.0s continuously adjustable, supporting S-type and linear mode
	Carrier Frequency	0.5kHz~16.0kHz continuously adjustable, supporting automatic adjustment
	Speed Control Precision	Steady-state precision ≤±0.2% rated synchronous speed; Speed fluctuation ≤±0.5% rated synchronous speed
	Torque Response Time	≤20ms (Sensorless Vector Control)
	Motor Parameter Self-detection	Supports static and dynamic parameter automatic detection
Protection		Overcurrent, Overvoltage/Undervoltage, Overheating, Overload, Phase Loss, Other Protections
Communication & Interface	Communication Interface	RS485 (485+, 485- terminals)
	Communication Protocol	Modbus-RTU protocol
	Baud Rate	1200BPS~115200BPS adjustable
	Data Format	No parity (8-N-2/8-N-1), Even parity (8-E-1), Odd parity (8-O-1)
	Analog Input	AI1 (0~10V/0~20mA), AI2 (0~10V); Input impedance 100KΩ (voltage)/500Ω (current)
	Analog Output	AO1, AO2 (0~10V/0~20mA), supporting display of 16 physical quantities
	Digital Input	7-channel multi-function terminals (X1~X7), 0~24V level signal, active low
	Digital Output	1-channel open-collector output, 1-channel high-speed pulse output, 2-channel programmable relay outputs

PRODUCT CATALOG

UPS System
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TO BE GLOBAL LEADER IN POWER SOLUTIONS

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