Hopewind

Catalog VFD-HD8000 Medium Voltage Engineering VFD System

Stock Code: 603063

About Hopewind

Shenzhen Hopewind Electric Co., Ltd. (Stock Code: 603063) focuses on the research, manufacture, sales and service of renewable energy & electric drive products, with main products of MW level wind power VFD, Engineering VFD, Common VFD, PV VFD, APF active filter, SVG, Shore power and PCS. Through innovation in technology and service, Hopewind continuously creates value for customers, and has become one of the most competitive enterprises in renewable energy field.In the field of industrial drive, Hopewind independently developed HD2000 series low voltage engineering type VFD, HD8000 series medium voltage multi-level VFD and HV500 series high performance VFD base on powerful customized engineering wind power converter platform. In addition, Hopewind also have HV300 series common VFD, Oilfield dedicated HEC series VFD. The industrial drive products of Hopewind contain multiple power sections and different control modes, suitable for various industrial scenarios.

【Honors】

National Science and Technology Progress Award

Laboratory Qualification Approved by CNAS

National High-tech Enterprises

【Quality System】

ISO9001: 2015

ISO14001: 2015

ISO45001: 2018

Headquarter and R&D Base: Shenzhen

Manufactures & factories: Shenzhen, Suzhou, Dongguan, Yancheng

Services Partner: Russia, Vietnam, Brazil, Korea, Turkey, Ukraine, Pakistan, Malaysia

Sales & Service Center: Beijing, Shanghai, Russia

Medium Voltage Engineering VFD System-HD8000

Introduction

HD8000 series VFD is a high-power drive system independently developed by Hopewind. It includes AC-DC-AC comverter and DC-AC common DC bus multi-axis motor drive unit. The maximum power can reach 30MVA for single machine and 60MVA for parallel operation. Its modular hardware and engineering software design concept enables it to operate for various complex conditions.

HD8000 series VFD adopts presspack IGCTand Diode as well as liquid cooling method, the whole machine meets the protection level IP54 and it has super environmental adaptability, high reliability, excellent heat dissipation performance and small volume, there are two-quadrant and four-quadrant rectification solutions.

- **Characteristics:** single/multiple axis drive, IP54 protection, two-quadrant/four-quadrant
- **Design:** modular design
- **Rectification:** multi-pulse basic rectification, smart rectification and PWM rectification
- **Voltage rate:** 1900V3000V (3300V), 6000V, (6600V), 10000V
- **Maximum power:** 30MVA (single) 60MVA (parallel)
- **Compitable motor:** asynchronous induction motor, permanent magnet synchronous motor, Electrically excited synchronous motor
- **Control method:** V/F, close-loop vector control with sensor, open-loop vector control without sensor
- **Cooling:** water cooling

Description

HD8000 - 3 3 10 P -2 D

Name:
HD8000: hopeDrive medium voltage

Rated voltage of grid side
2: 1900V 3: 3300V 6: 6600V A: 10kV

Rated voltage of motor side:
3: 3300V 6: 6600V A: 10kV

Power:
10: 10MVA

Rectification method:
P: PWM D: Diode basic rectification

Common bus rectification method:
Blank: single rectification 2: double rectification

Common bus inverter method:
Blank: single D: double inverter T: triple inverter

Note: HD8000 supports other non-standard voltage rate, please contact with hopewind for further information.

HD8000 Specifications

HD8000 Technical Parameters

HD8000-		3306	3308	3310	3312	2624	AA30	6640	AA60
Basical Rectification	Input voltage	3300V				1900V	10kV	6600V	10kV
	Input frquency	45Hz~66Hz							
	Overload	110%@rated current, 120%@rated current 60s							
	Efficiency	≥99%							
	Power factor	≥0.95 (Rated current, equipped with 2% AC input reactor)							
	Protection	overload protection, overheat protection, short circuit protection, fault pre-judgment, etc							
PWM Rectification	Input frquency	45Hz~66Hz							
	Overload	110%@rated current, 120%@rated current 60s							
	Efficiency	≥98.5%							
	Power factor	adjustable (default 1)							
	Protection	overload protection, overheat protection, short circuit protection, fault pre-judgment, etc							
Inverter	Output voltage	3300V				6600V	10kV	6600V	10kV
	Max output frequency	110Hz							
	Speed stable accuracy	OLVC: 0.01%, CLVC: 0.01%						OLVC: 0.01%, CLVC: 0.01%	
	Speed pulse	OLVC: 0.2%, CLVC: 0.1%						OLVC: 0.4%, CLVC: 0.2%	
	Start torque	OLVC: 150%, CLVC: 200%						OLVC: 130%, CLVC: 150%	
	Torque control	V/F: Yes, OLVC: Yes, CLVC: Yes						V/F: Yes, OLVC: Yes, CLVC: Yes	
	Torque accuracy	OLVC: 5%, CLVC: 2%						OLVC: 5%, CLVC: 2%	
	Torque response time	OLVC: 5ms, CLVC: 5ms						OLVC: 5ms, CLVC: 5ms	
	Rotating response time	OLVC: 100ms, CLVC: 100ms						OLVC: 150ms, CLVC: 150ms	
	Dynamic drop equivalent	OLVC: 0.5%*s, CLVC: 0.25%*s						OLVC: 1%*s, CLVC: 0.5%*s	
	Overload	110%@rated current, 120%@rated current 60s							
Environment	Temperature	inlet temperature ≤40							
	Altitude	≤4000m (2000m~4000m de-rating)							
Mechanical Data	IP protection	IP54							
	Cooling	Water cooling							
	Anti corrosion	C4-M							

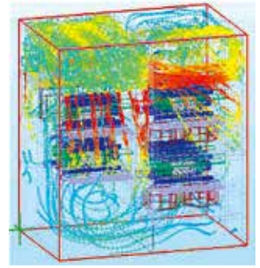
HD8000 Series Selection Table

Module	Grid Voltage	Motor Voltage	Power	Rated I	Max f	Size (W*D*H) (mm)	Note
HD8000-3306	3300V	3300V	6MVA	1050A	110Hz	4600*1300*2200	Contains water cool cabinet
HD8000-3308			8MVA	1400A			
HD8000-3310			10MVA	1750A			
HD8000-3312			12MVA	2100A			
HD8000-2624	1900V	6600V	24MVA	2100A		7800*1300*2200	
HD8000-AA30	10kV	10kV	30MVA	1750A		10600*1300*2200	
HD8000-6640	6600V	6600V	40MVA	3500A		15600*1300*2200	
HD8000-AA60	10kV	10kV	60MVA	3500A		21200*1600*2200	

Characteristics of HD8000

Engineering design concept

Characteristics



· IP54 protection so that the system has super strong environmental adaptability

· Redundant design of key components to reduce the probability of system downtime

· Advanced IGCT and thyristor which makes the power system ultra-high reliability

· Adopting double presspack , excellent heat dissipation performance which makes the system with ultra-high power density

· First-class protection fault system

· Powerful monitoring system to provide complete data for customers

· Plentiful optional accessories

Protection

· IGCT pre-judgment + bridge circuit arm through protection technology

· Real-time detection of the instantaneous value of the AC terminal current prohibiting high current shutdown action

Excellent control

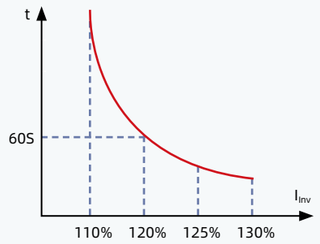
· Double four-quadrant operation to meet electric and braking energy feedback

· Fast torque dynamic response to meet the system's requirments for suppressing mechanical resonance

· The motor is synchronously modulated in sections to meet the high-performance requirements of steel rolling, hoists, etc.

· adapted to various motors (induction motors, permanent magnet synchronous motors, electrically excited synchronous motors, etc.)

Overload Curve



· 110%@rated current, 120%@rated current 60s

Characteristics of HD8000

Engineering Design

Modular design

· Intelligent fault diagnosis system, fast positioning

· Modular design of key components, high consistency and high reliability

· Convenient maintenance

Intensive seismic design

· IEC60721 3M5 mechanical conditions-stable operation

· Precise mechanical design ensures intensive earthquake resistance

Customizable communication protocol

· it supports the established communication protocol,which can realize seamless connection with the inherent PLC and it is more convenient for replacement and maintenance

· Supports field-bus: Profibus, Profinet, CANopen, DeviceNet, ControlNet, Modbus RTU, Industry Ethercat, Profinet IO, EtherNet/IP, Modbus TCP

Reliability Guarantee of HD8000

Standardized production and factory testing

· The testing process is automatically controlled and the whole process is traceable

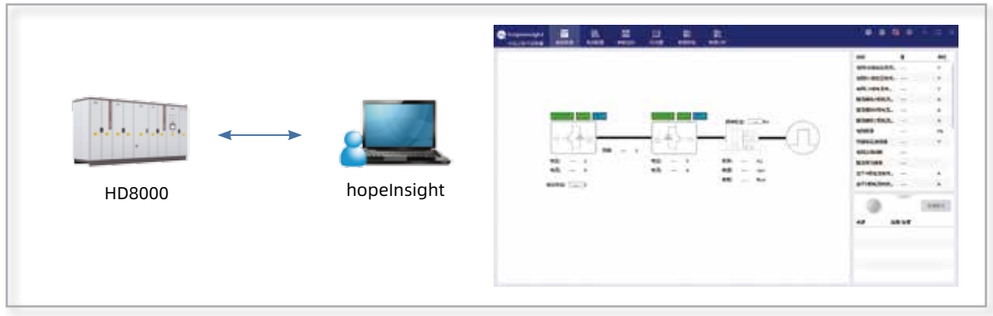
· All products endure the 100%V and 100%Pn aging test before shipment

· Perfect MES management system to ensure production efficiency

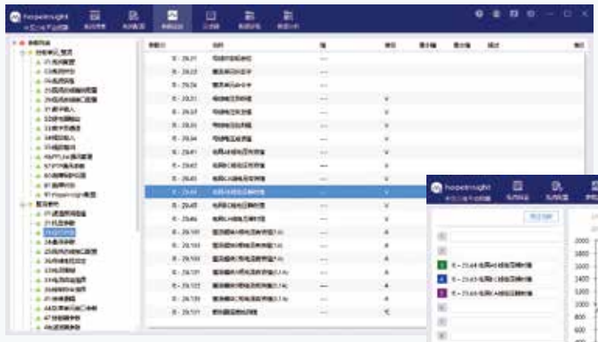
· The industry-leading test platform and it can to ensure product quality because it can meet the different voltage levels and different rectifier mode of the drive full load test

Quick Debugging Software - hopeInsight (Optional English Russian Portuguese)

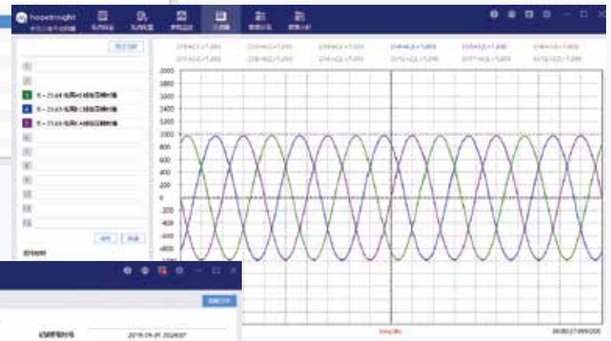
hopeInsight is a quick debugging tool provided by Hopewind, which is connected to the PC via optical fiber. The software has a large number of professional debugging functions, such as batch parameter setting, fault data download and waveform analysis, high-speed oscilloscope, and a large number of editing functions. The software supports serial or Ethernet communication, so the software can maintain the VFD through serial communication, or Maintain the VFD in the central control room via Ethernet. The schematic diagram of its work is as follows:



batch parameter setting



multiple channels high-speed software oscilloscope, a weapon for debuggers



fault recording function and detailed event recording

Water cooling system of VFD system

Description

The water cooling system of HD8000 adopts deionized water cooling method, and the logic control of the water cooling system is carried out through a dedicated PLC. The cooling medium of constant pressure and flow rate undergoes heat exchange through the plate exchange, and it enters the cooling system to take away the heat after the heat exchange. When the heat load changes, the PLC controls the water flow entering the board according to the water supply, so as to achieve the requirements for precise temperature control.

- The water-cooling system adopts dual-pump redundancy (one use and one standby) design, and the two-pump switching operation is performed through the settable switching time to ensure the reliability of the water-cooling system
- The water cooling system is designed with a voltage stabilization system, and the PLC automatically starts the air pump according to the pressure transmitter to maintain the pressure of the cooling medium. At the same time, there is an automatic electric heater control, which can automatically heat to prevent the water supply temperature from being too low when the machine starts at low temperature in winter

① Main circulation pump 1
② Main circulation pump 2
③ Deionization tank
④ Expansion tank
⑤ Water cooling indicator
⑥ Water-cooled touch screen

HMI

- 15.6-inch industrial-grade touch LCD screen, touch sensitive and accurate, long screen life, low power consumption design, support 24 hours of continuous operation
- Seamless flat display panel, aluminum alloy shell, protection level up to IP65, dustproof Waterproof and shockproof, suitable for various harsh working environments
- Built-in 12-channel high-speed software oscilloscope and a large number of professional debugging function modules, with batch parameter settings, fault recording, etc., to ensure the long-term stable operation of the equipment

Application Areas&Cases of HD8000

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Metallurgical Engineering

Oil and Gas Transportation

Testing Platform

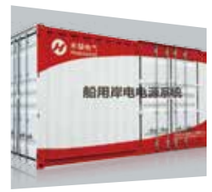
Renewable Energy

Rail Transportation

Mining&Lifting

Marine Equipment

LNG



Power Source

Energy Storage

Cases

Case 1: 1780mm high-precision cold tandem main rolling mill for automotive plate

Location: Hebei, China-replacement

The project adopted the technical solution of Hopewind's HD8000 series-10MW medium voltage inverter. The main rolling mill of Hebei Handan Iron and Steel Group's 1780mm cold tandem rolling production line originally used a certain brand of medium-voltage AC inverter. With the increase of service life, the product failure rate increased year by year, the maintenance time of the power module was long and the cost was high. So far, the HD8000 series has excellent performance and stable operation, which is highly praised by customers.

Application Areas&Cases of HD8000

Case 2: Finishing mill

Location: Hebei, China-Replacement

Based on the original LCI system, Hopewind put forward a targeted replacement plan using HD8000 series AC-DC-AC medium voltage voltage source inverter (2*8MVA) to upgrade the main drive performance of the rolling mill as a whole. Since the project was put into production, the system has been operating stably and has been highly affirmed by customers.


Case 3: Finishing mill

Location: Tianjing China-Replacment

After the original imported inverter of the project failed, it caused millions of losses in production every day. In order to resume production in an emergency, Hopewind completes the replacement of the original frequency conversion system and put it into production within 11 days from the signing of the contract. The project team members worked overtime and shifts for 11 consecutive days to complete the inverter prototype assembly, engineering construction, control plan and logic plan formulation, original system signal sorting and debugging.


Case 4: 720mm main rolling mill for seamless steel pipe

Location: Tianjing China-Replacment

The original system used a certain imported brand of medium-voltage AC inverter. After nearly 10 years of operation, the system failure rate has increased year by year. Hopewind provide HD8000 medium-voltage three-level 12MVA high-power inverter to replace the international famous brand. Since it was put into operation, the system has been operating stably and the overall performance is excellent, which has been highly praised by customers.


Case 5: Offshore wind power generation

Location: Fujian Offshore Wind Farm, China

This project is the first application of Chinese medium-voltage inverters in offshore wind farms. Since the start of complacency and grid connection, it has continued to generate electricity without stopping until now, without any abnormalities. It has demonstrated extremely high reliability in the salt-fog environment. It proves the full-power operating days are 50% higher than that of traditional inverters, and the power generation efficiency is 2% to 3% higher than that of old one. This effectively improves power generation revenue and brings great benefits to customers.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If there is any change in product size and parameters, they shall be subject to the latest actual product

Hopewind Website