

HV500 Serie

High Performance Variable Frequency Drive

Product Overview

Based on the superior control performance of the HD2000 engineering VFD, the HV500 is a high-performance VFD with product concepts of “universal”, “easy to use” and “durable” for medium/high-end industrial and single-drive applications. HV500 is widely used in metallurgy, lifting equipment, papermaking, chemical, mining, textile, shore power and energy storage industries.



Metallurgy



Textile



Lifting



Chemical



Papar Making

Description

HV500 - A0 4 T 00075 B +STO

VFD Name:

HV500: hopeVert Serie High Performance VFD

Circuit topology and cooling:

A0: Two-Quadrant Air-Cooling W0: Two-Quadrant Water-Cooling
A1: Four-Quadrant Air-Cooling W1: Four-Quadrant Water-Cooling

Voltage:

2: 220V 4: 380V 6: 690V

Phase:

D: 1P/3P T: 3P

Power Rate:

00075: 7.5kW 00150: 15kW

Brake Unit:

B: With In-built Brake Unit
Blank: Without In-built Brake Unit

STO:

STO: With STO function
Blank: Without STO function

Technical Specification

General Specification

Input/output Power	Input U_{in}	200V (-15%)~240V (+10%) 3Phase, 380V (-15%)~480V (+10%) 3Phase, 500V (-15%)~690V (+10%) 3Phase
	Input Frequency	50Hz/60Hz±5%
	Unbalance Degree of U_{in}	≤3%
	Output U_{out}	0V~Input U_{in}
	Output Frequency	0Hz~500Hz
Control Performance	Motor Type	Asynchronous / Synchronous
	Control Method	V/F, OLVC (Open-Loop Vector Control), CLVC (Close-Loop Vector Control)
	Range of Speed Regulation	1:10 V/F, 1:100 OLVC, 1:1000 CLVC
	Start Torque	VF: 100% (0.5Hz), OLVC: 150% (0.5Hz), CLVC: 180% (0Hz)
	Torque Precision	≤5%, Vector Control
	Torque Pulsation	≤5%, Vector Control
	Speed Regulation Precision	OLVC 0.2%, CLVC 0.01%
	Torque Response	< 5ms, Vector Control
	Dynamic Speed Reduction	OLVC < 0.5%*s, CLVC < 0.3%*s
	Acceleration and Deceleration Time	0.0s~3200.0s, 0.0min~3200.0min
	Torque Lifting	0.0%~30.0%
	Overload	Heavy Load Application 150% 1min/5min, Light Load Application 110% 1min/5min
	V/F Curve	Multiple ways: linear V/F curve, 5 kinds of torque reduction characteristic curve mode (2.0 power, 1.8 power, 1.6 power, 1.4 power, 1.2 power), user-defined VF curve
	Input Frequency Accuracy	Digital: 0.01Hz, Analog: 0.01Hz
	Acceleration and Deceleration Curve	Straight, S Curve
Control Performance	Multiple Speed-Steps Operation	16-Speed Steps Operation through control terminals
	Automatic Voltage Adjustment (AVR)	Keeping the output voltage constant automatically when the grid voltage changes within a certain range
	Fixed Length	Setted and Fixed Length Control
	In-build PID	It Can Easily Constructed Closed loop control system
	Enhancement Function	Free Function Block
Input/output Power	Set Frequency	Keyboaed, UP/DOWN Terminals, Multiple Speed-Steps Operation, Terminals Pulsation, Com
	Analog Input Terminals	AI1: 0V~10V/-10V~10V, AI2: 0V~10V/0(4) mA~20mA
	Digital Input Terminals	DI1-DI6, 6 programmable digital input terminals, optocoupler isolation, compatible with drain/source input
	Digital Input/Output Terminals	DIO1: Fast pulse output, normal input/output; DIO2: fast pulse input, normal input/output
	Analog Output Terminals	2 Strings 0V~10V/0 (4) mA~20mA
	Relay Output	2Strings Contact Type FormC
	Motor Temperature Detection	Support PT100/PT1000/KTY84
Com	STO Interface	SIL3/PLC Safe torque shutdown function
	Com Protocol	Modbus RTU (Standard), Proibus, CANopen, pro inet, Devicenet, Ethercat
Environment	Altitude	Without Derating Operation Within 2000m Altitude; 2000m~4000m, Each 100m lifting, Derating 1% (Current)
	Operation Temperature	-25°C~+40°C (40°C~55°C Derating)
	Humidity	15%~95%, Without Condensation
	Vibration	3M3, IEC60721-3-3
	Storage Temperature	-40°C~+70°C
Accessory	Operation Place	Indoor, Without direct sunlight, no flammable, corrosive gases, liquids and conductive particles
	Accessory	Encoding card, communication expansion card, voltage detection card
	Protection Function	Short circuit, over current, overload, over voltage, under voltage, phase loss, over temperature, external fault, etc.,
	Efficiency	5.5kW~22kW: ≥93%; Above 30kW: ≥95%
	Installation Method	Cabinet
	Protection Degree	IP20
	Cooling	Forced Air Cooling

■ Specification

Module	Heavy Load		Light Load		Size
	Power (kW)	Output Current (A)	Power (kW)	Output Current (A)	
Rated Voltage: 3Phase 220Vac					
HV500-A02T00022B	2.2	13	4	17	F3
HV500-A02T00040B	4	17	5.5	25	
HV500-A02T00055B	5.5	25	7.5	32	
HV500-A02T00075B	7.5	38	11	46	F4
HV500-A02T00110B	11	46	15	60	
HV500-A02T00150	15	60	18.5	75	F5
HV500-A02T00185	18.5	75	22	91	
HV500-A02T00220	22	91	30	125	F6
HV500-A02T00300	30	125	37	156	
HV500-A02T00370	37	156	45	180	
HV500-A02T00450	45	136	55	166	F7
HV500-A02T00550	55	166	75	226	
HV500-A02T00750	75	226	90	271	
Rated Voltage: 3Phase 380Vac					
HV500-A04T00055B	5.5	13	7.5	17	F3
HV500-A04T00075B	7.5	17	11	25	
HV500-A04T00110B	11	25	15	32	
HV500-A04T00150B	15	32	18.5	38	F4
HV500-A04T00185B	18.5	38	22	46	
HV500-A04T00220B	22	46	30	60	
HV500-A04T00300	30	60	37	75	F5
HV500-A04T00370	37	75	45	91	
HV500-A04T00450	45	91	55	125	F6
HV500-A04T00550	55	125	75	156	
HV500-A04T00750	75	156	90	180	
HV500-A04T00900	90	180	110	210	F7
HV500-A04T01100	110	210	132	256	
HV500-A04T01320	132	256	160	310	
HV500-A04T01600	160	310	200	387	GU
HV500-A04T02000	200	387	250	471	
HV500-A04T02500	250	471	315	610	HU
HV500-A04T03150	315	610	400	750	
HV500-A04T04000	400	750	450	815	
Rated Voltage: 3Phase 690Vac					
HV500-A06T00450	45	54	55	63	F6
HV500-A06T00550	55	63	75	86	
HV500-A06T00750	75	86	90	100	
HV500-A06T00900	90	100	110	131	F7
HV500-A06T01100	110	131	132	150	
HV500-A06T01320	132	150	160	175	
HV500-A06T01600	160	175	200	231	GU
HV500-A06T02000	200	231	250	274	
HV500-A06T02500	250	274	315	328	
HV500-A06T03150	315	328	400	426	HU
HV500-A06T04000	400	426	450	482	
HV500-A06T04500	450	482	560	558	

Note:

1. Size F3 and F4 are equipped with built-in brake unit. For other size, if you need a brake unit, you need to add "B" at the end of the model to purchase.

2. Size F5, F6, F7 VFDs are equipped with DC reactors. F3 and F4 VFDs are not equipped with DC reactors. Users can use DC reactors according to actual conditions. GU and HU do not have DC reactors. The user need to equiped an external input reactor.

3. 150% periodic overload under heavy load rated conditions; 110% periodic overload under light load rated conditions. Overload period is defined as 1min overload every 5min Operation.

■ HV500 Size Specification

Code	Structure Size (mm)					Installation Size (mm)							Weight (kg)
	W	H	D	H1	D1	H2	M1	M2	M3	M4	M5	Φ	
F3	132	393	258	348	256	373	85	85	-	-	-	7	5.6
F4	132	441	298	394	296	421	85	85	-	-	-	7	7.7
F5	240	501	334	447	331	480	180	180	-	-	-	7	26.7
F6	295	593	386	534	383	570	200	200	-	-	-	9.5	50
F7	340	724	405	664	402	700	250	250	-	-	-	9.5	75
GU	325	1530	543	1482	-	1506	125	125	-	-	-	9	168
HU	502	1487	545	1400	-	1341	200	125	200	250	-	9	289

Features of HV500 VFD

■ Durability

-Satisfy 3M3 mechanical vibration during the load operation, and improve the durability of the product in the harsh situation of vibration such as the car, metallurgy, etc.

-Independent air duct design, seperated from sensitive components, and improve the adaptability to harsh environment.

-Built-in dynamic junction temperature model,unique short circuit and other protection technology, enhance the safety of the products

-Three anti-paint and automatic spraying, single board and complete machine are fully automatic measurement 100% aging testing, comprehensive protection of product quality.



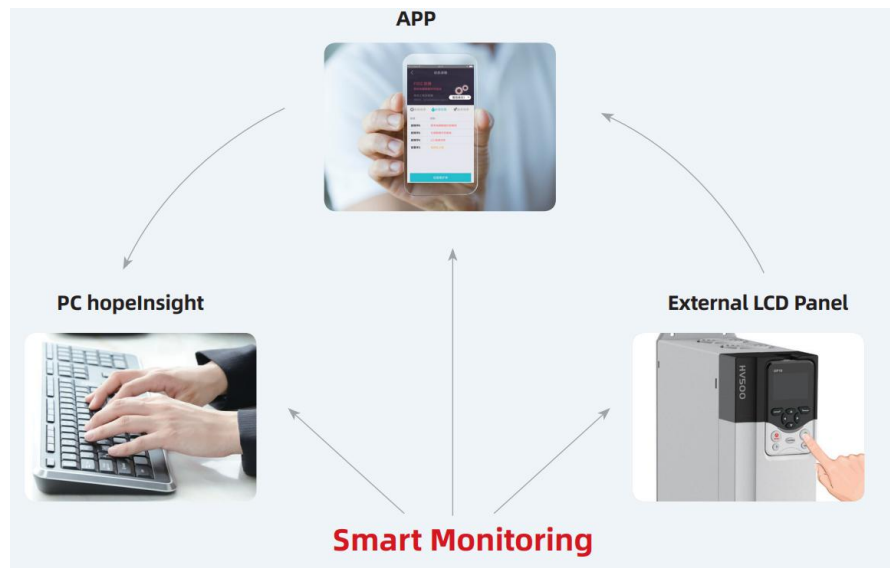
■ Versatility

-CE、cULus、STO International Certification Standard, Conform with RoHS.

- Support Open Loop V/F, Open loop vector control (OLVC), Close loop vector control (CLVC).
- Support asynchronous motor, permanent magnet synchronization motor, electric excitation synchronization motor and other motor drive control.
- Wide range of input voltage, Support 220V (200~240V), 380V (380~480V) and 690V (500~690V).
- Support Profibus, CANopen, Ethercat, Profinet IO and Modbus.

■ Feasibility

- Support external 24V DC input power, safe and fast debugging and application.
- Built-in brake units for easy wiring and saving installation space.
- "Book" type design, seamless side-by-side installation, saving installation space.
- LCD Display Panel, Support APP and hopeInsight software, Smart interconnection and monitoring, On - Line Commissioning and Debugging.



■ Excellent Master-Slave Control

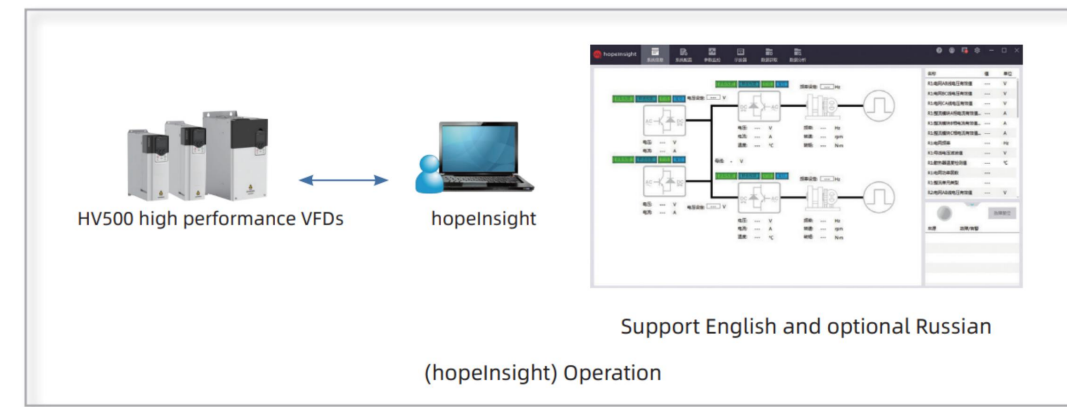
The master-slave control function is primarily designed for multi-machine applications and it supports rigid and flexible connections of the drive actuator. In the rigid connection, the master control the speed and the slave control the torque. In the flexible connection, the master and the slave both can control the speed. In master-slave control mode, the

external control signal is only connected to the master, which controls the slave via a serial communication link.

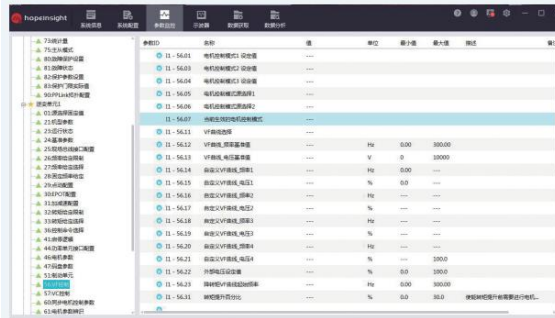


■ Quick debugging software hopeInsight

hopeInsight is a debug tool for the drive system, the VFDs are connected to the PC via optical fiber. The software has a large number of professional debugging functions, such as batch parameter settings, 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 inverter through serial communication, but also through the central control room through Ethernet maintenance of the inverter. The schematic sits as follows:



batch parameter settings



12-channel high-speed software oscilloscope



Powerful fault recording function, detailed event recording, greatly facilitate troubleshooting

序号	时间	日期	时间	故障类型	故障描述	故障状态	故障原因
1	2017-11-16	09:50:55	故障类型	1127	故障描述	故障	211
2	2017-11-16	09:51:56	故障类型	2220	故障描述	故障	200
3	2017-11-16	09:55:56	故障类型	1127	故障描述	故障	211
4	2017-11-16	09:54:58	故障类型	2402	故障描述	故障	208
5	2017-11-16	09:54:42	故障类型	2401	故障描述	故障	207
6	2017-11-16	09:54:42	故障类型	2402	故障描述	故障	206
7	2017-11-16	09:54:35	故障类型	2401	故障描述	故障	205
8	2017-11-16	09:54:35	故障类型	2402	故障描述	故障	204
9	2017-11-16	09:54:28	故障类型	2401	故障描述	故障	203
10	2017-11-16	09:54:16	故障类型	2402	故障描述	故障	202
11	2017-11-16	09:54:00	故障类型	2401	故障描述	故障	201
12	2017-11-16	09:53:16	故障类型	2402	故障描述	故障	200
13	2017-11-16	09:53:07	故障类型	2401	故障描述	故障	199
14	2017-11-16	09:52:55	故障类型	2402	故障描述	故障	198
15	2017-11-16	09:52:47	故障类型	2401	故障描述	故障	197
16	2017-11-16	09:52:41	故障类型	2402	故障描述	故障	196

