

HV350 Series

General Purpose Inverter

Product Overview

The HV350 Series inverter is a newly developed general-purpose vector inverter. It adopts advanced open-loop control technology, supporting asynchronous motor drive control. On the design principles of abundant software functions, better performance and higher reliability, this inverter features smaller volume with improved expandability, more communication functions and easier operation.

Description

HV350 - 4 T 0.75G/1.5P B

Inverter Series Name:
HV350: hopeVert Series General-purpose Inverter

Voltage Level:
4: 380V

Number of Phases:
T: Three-phase

Power Rating:
0.75G: 0.75kW (Heavy Load)
1.5P: 1.5kW (Light Load)

Braking Unit Information:
B: Built-in Braking Unit
Empty: No Built-in Braking Unit

Typical Application

HV350 Series inverters are widely used in chemical industry, textile, papermaking, object hoisting, plastics, metal products, printing and packaging, building materials, engineering machines and automatic production equipment.



papermaking



hoisting



chemical industry



textile



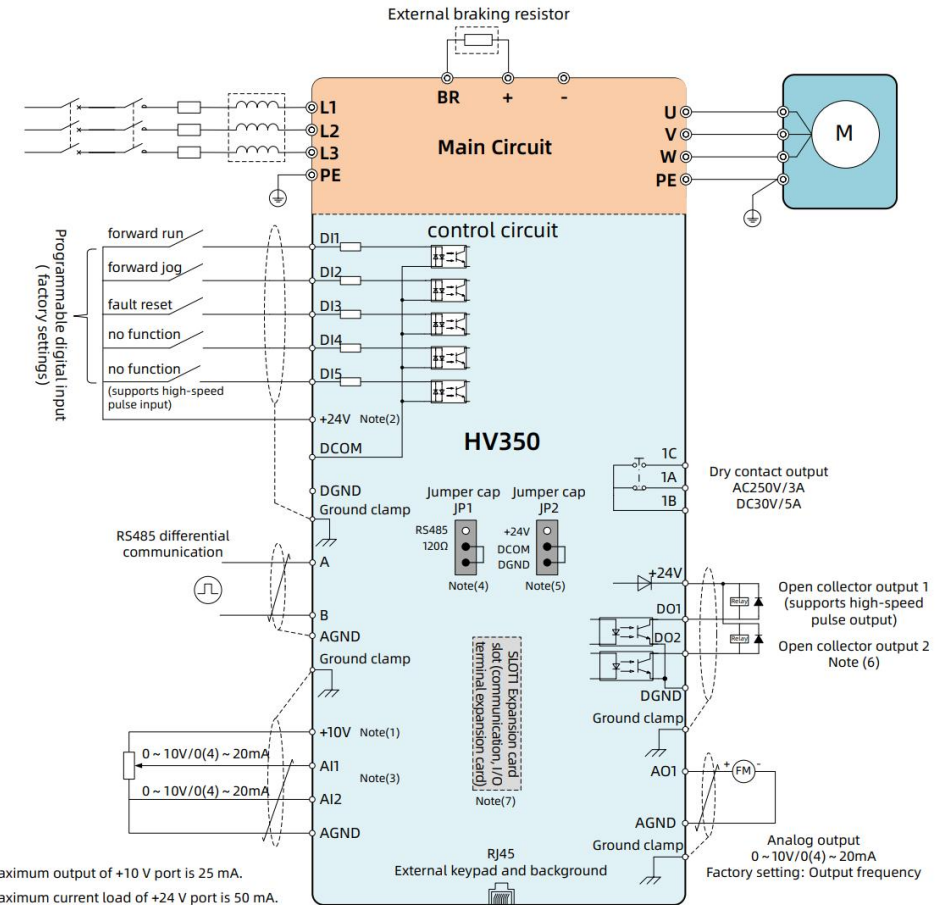
packaging



Technical Data

Projects		Specification Description and Technical Data
Power input/ output	Input voltage	Input voltage: 380V (-15%) to 480V (+10%) Phase: Three-phase
	Input power frequency	50Hz/60Hz ±5%
	Input voltage imbalance	≤3%
	Output voltage	0V~Input voltage
	Output frequency	0 ~ 600Hz
Master control performance	Motor type	Asynchronous motor
	Control mode	V/F, OLVC(Open-loop Vector Control)
	Speed range	1:100 V/F; 1:200 OLVC
	Starting torque	OLVC: 150%(0.25Hz)
	Torque precision	±5% (OLVC, above 5Hz)
	Torque ripple	≤±5%, in Vector control mode
	Speed stability	OLVC, 0.2%
	Torque response	≤5ms, in Vector control mode
	Acceleration/deceleration time	0.0s~3200.0s; 0.0min~3200.0min
	Torque boost	0.0%~30.0%
	Overload capacity	G type: 150% 1min/5min; 180% 10s/5min; P type: 110% 1min/5min; 150% 10s/5min
	V/F curve	Straight-line type, multi-point type, V/F Half separation mode, V/F complete separation mode
	Input frequency resolution	Digital setting: 0.01Hz, Analog setting: maximum frequency ×0.025%
Main functions	Acceleration/deceleration curve	Straight line and S-curve
	Simple PLC, Multi-speed control	16 speed segments supported through control terminals
	Automatic voltage regulation (AVR)	Automatically keeps the output voltage constant when grid voltage varies within a certain range
	Fixed length control	Control with given length
	Built-in PID	Easily forms a closed-loop control system
	Multi-motor switching	Switchover between two groups of motor parameters to control the two motors
	Virtual I/O	8 groups of virtual VDI/VDO, 3 groups of AI as DI, enabling simple logic control
	Overvoltage/Overcurrent stall control	Automatic current and voltage limitation during operation preventing the inverter from tripping due to frequent overcurrent or overvoltage
	Restart after power failure	After power failure and restoration, the inverter waits for a set time before automatically running
	Quick current limiting	Avoids frequent overcurrent faults in the inverter
Power input/ output	Frequency setting method	Keypad; terminal UP/DOWN; multi-reference; pulse reference; communication
	Analog input terminals	AI1; AI2: 0V~10V/ 0 (4)mA~20mA
	Digital input terminals	DI1~DI5, 5 programmable digital input terminals with opto-isolation, compatible with both sinking/sourcing inputs. DI5 supports high-speed pulse input with a maximum input frequency of 100kHz.
	Digital output terminals	Open-collector output; output voltage range: 0V~24V; current load capacity: 50mA. DO1 supports high-speed pulse output with a maximum output frequency of 100kHz.
	Analog output terminals	1-channel 0V ~ 10V/0(4)mA ~ 20mA
	Relay output	1-channel Form C contact, NO+NC
Communication	Communication protocols	Modbus RTU (standard configuration); Profibus-DP; Profinet IO; CANopen; Modbus TCP/IP; Ethercat; EtherNet/IP (optional configuration)
Ambient requirements	Altitude	≤1000m: no need for derating 1000~3000m: current derating by 1% per 100m increased
	Ambient temperature	-25°C ~ +40°C (Running with derating allowed between 40~55)
	Humidity	15% ~ 95%, No condensation
	Vibration	3M3, IEC60721-3-3
	Storage temperature	-40°C~+70°C
	Installation place	Indoor, without direct sunlight, free from flammable, corrosive gases, liquids, and conductive particles.
Optional accessories		Communication expansion card, I/O terminal expansion cards
Protections		Protection against short circuit, overcurrent, overload, overvoltage, undervoltage, phase loss, overtemperature, external faults, etc.
Installation method		Installed in a cabinet
Protection rating		IP20
Cooling method		Air cooling

Standard Wiring Diagram



Note (1): The maximum output of +10 V port is 25 mA.

Note (2): The maximum current load of +24 V port is 50 mA.

Note (3): Internal resistance of AI1 and AI2 ports (in current mode): 500 Ω

Note (4): The activation ports for RS485 terminal resistance (120 Ω).

Note (5): For terminals DI1~DI5, NPN or PNP transistor signals can be selected as inputs, and the bias voltage can be selected from the inverter's internal power supply (+24 V terminal) or external power supply (DGND terminal).

Note (6): When the digital output terminals drive the relay, a freewheel diode needs to be added with correct polarity at both ends of the relay coil, otherwise, the internal circuit may be damaged. The driving capacity is not more than 50 mA.

Note (7): The optional I/O terminal expansion card and the communication expansion card share the same expansion card slot, and cannot be installed and used at the same time.

Features of HV350

■ High Reliability

➤ Innovative Independent Air Duct

- The innovative design separates the sensitive devices from the air duct, greatly improving the inverter's adaptability to different environments.
- The air duct can protect the inverter from dusts and sundries to avoid electrical short circuit, component damage, etc.

➤ Advanced Thermal Design Concept and Professional Thermal Simulation Analysis

- Applying efficient and precise thermal simulation software to ensure the thermal reliability of the inverter.
- Adopting advanced thermal testing, validation technology and equipment to verify the theoretical results of the thermal design.

➤ Rigorous Temperature Rise Testing

- Rigorous full-load and overload testing procedure and strict acceptance criteria for temperature rise of key components supporting long-time reliable operation of the inverter under extreme load condition.
- All products passing high-temperature load aging test before ex-work to ensure that all components of the product can work normally.

➤ Three-proof Paint Automatic Spraying Process

- Different spraying strategies can be adopted according to the circuit boards, effectively ensuring the uniformity of the circuit board spraying and the consistency of the same batch of the product.

■ High Adaptability

➤ Wide Voltage Range

- Rated voltage: Three-phase 380V ~ 480V
- Input power frequency: (50Hz/60Hz) $\pm 5\%$
- Allowable voltage fluctuation range: $-15\%V_{ac} \sim +10\%V_{ac}$

➤ Low External Interference

- Built-in C3 filter can effectively suppress the high-frequency harmonics generated during the operation of the inverter, meeting the requirements of the EU EN61800-3 standard.
- Simple and user-friendly EMC grounding design effectively reduces ground leakage current.

➤ Structural Design

- Book-shaped design with the volume 40% less than traditional models.
- Supporting side-by-side installation of multiple inverters.

■ Outstanding Performance

➤ Comprehensive Motor Drive Technology

- Supporting the drive control of three-phase asynchronous motors
- Supporting V/F control, open-loop vector control
- Supporting speed and torque control
- Supporting speed tracking with less impact current

➤ Accurate Motor Auto-tuning Function

- Supporting accurate auto tuning on motor parameters for convenient operation and debugging, higher control precision and faster response speed.
- Comprehensive motor auto-tuning functions, including dynamic, static and static+dynamic auto-tuning.

Motor Auto-tuning	
Dynamic Auto-tuning	Applicable to load-disconnected scenarios requiring high control precision
Static Auto-tuning	Applicable to load-connected scenarios where dynamic auto-tuning is not recommended

➤ Comprehensive Motor Control Modes

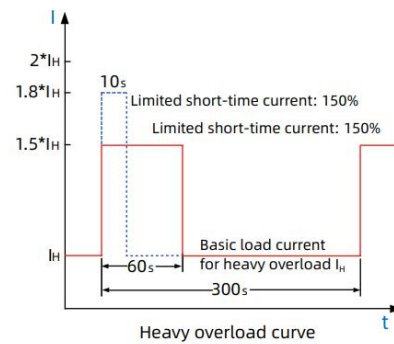
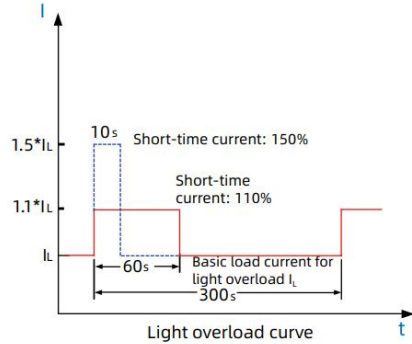
- V/F Control Mode
- Open-loop Vector Control Mode(OLVC)

➤ Large Starting Torque

- Open-loop vector control (OLVC): 150% at 0.5Hz

➤ High Overload Capacity

- Light overload capacity: 110% of I_L for 60s or 150% of I_L for 10s in a duty cycle.
- Heavy overload capacity: 150% of I_H for 60s or 180% of I_H for 10s in a duty cycl.



■ Product Dimensions

Frame	Width (mm)	Height (mm)	Depth (mm)	Mounting Hole Horizontal Spacing M1 (mm)	Mounting Hole Horizontal Spacing M2 (mm)	Mounting Hole Vertical Spacing H2 (mm)	Mounting Hole DiameterΦ (mm)	Net Weight (kg)
FA	76	232	175.5	55	55	221	5	1.7
FB	95	232	175.5	70	70	221	5	1.8
FC	121.5	272	187	90	90	262	6	3.3
FD	140	377	237	105	105	357	6.5	5.5
FE	240	500	225	160	160	485	7	16
FF	270	615	240	200	200	594	9	24
FG	335	712	255	230	230	688	9	38
F8	300	880	450	160	160	825	9	105
F9	300	980	545	160	160	925	9	122
F10	300	1100	545	160	160	1050	9	156
F11	330	1220	590	110	220	1150	9	209

Note: If there are any changes in product dimensions and parameters, the latest physical product shall prevail.

Product Selection

■ HV350 Product Selection

Model	Heavy Load		Light Load		Frame Type
	Rated Power (kW)	Rated Output Current	Rated Power (kW)	Rated Output Current (A)	
HV350-4T0.75G/1.5PB	0.75	2.5	1.5	4.2	FA
HV350-4T1.5G/2.2PB	1.5	4.2	2.2	5.8	
HV350-4T2.2G/4PB	2.2	5.8	4	9.5	
HV350-4T4G/5.5PB	4	9.5	5.5	13	FB
HV350-4T5.5G/7.5PB	5.5	13	7.5	17	
HV350-4T7.5G/11PB	7.5	17	11	25	
HV350-4T11G/15PB	11	25	15	32	FC
HV350-4T15G/18PB	15	32	18.5	38	
HV350-4T18G/22PB	18.5	38	22	46	
HV350-4T22GB	22	46	/	/	FD
HV350-4T30G/37P(B)	30	60	37	75	
HV350-4T37G/45P(B)	37	75	45	91	
HV350-4T45G/55P(B)	45	91	55	125	FE
HV350-4T55G/75P(B)	55	125	75	150	
HV350-4T75G/90P(B)	75	150	90	180	
HV350-4T90G/110P(B)	90	180	110	210	FG
HV350-4T110G/132P(B)	110	210	132	250	
HV350-4T132G/160P(B)	132	250	160	310	
HV350-4T160G/200P(B)	160	312	200	380	F8
HV350-4T200G/220P(B)	200	380	220	415	
HV350-4T220G/250P(B)	220	415	250	471	
HV350-4T250G/280P(B)	250	471	280	510	F9
HV350-4T280G/315P(B)	280	510	315	610	
HV350-4T315G/355P(B)	315	610	355	670	
HV350-4T355G/400P(B)	355	670	400	745	F10
HV350-4T400G/450P(B)	400	745	450	820	
HV350-4T450G/500P(B)	450	820	500	860	
HV350-4T500G/560P(B)	500	860	560	990	F11
HV350-4T560G/630P(B)	560	990	630	1100	

Notes: 1. For frames of FA~FD, built-in braking units are configured; for frames of FE and above, braking units can be purchased by adding "B" at the end of the model.

2. Only 132kW-400kW products are equipped with built-in DC reactors as standard. For other power segment products, DC reactors are not supported and users can install AC input reactors by themselves as needed. 450kW-560kW inverters must be installed with AC reactors.

3. A periodic overload of 150% of the baseload is allowed under heavy load rated working conditions (140% for the HV350-4T560G/630P) and 110% under light load rated working conditions. The overload cycle is 1 min every 5 min.