

HOPEWIND



HV350 Series General Purpose Inverter Selection Manual (0.75kW~132kW)

Corporate Profile

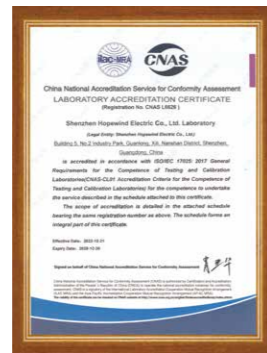
Shenzhen Hopewind Electric Co., Ltd. (Stock Code: 603063) focuses on the R&D, manufacturing, sales and services of renewable energy & electric drive products, including products for wind power generation, photovoltaic generation, energy storage, hydrogen production power supply, power quality and electric drive. Furthermore, Hopewind owns integrated independent R&D and testing platforms of high-power power electrical equipment and monitoring systems. Through innovation in technology and service, Hopewind continuously creates value for customers, and has become one of China's most competitive enterprises in the renewable energy field.

In the field of industrial drive, Hopewind provides a wide range of inverters with various voltage and power classes, mainly including HV350 series low-voltage general purpose inverter, HV510 series low-voltage high-performance inverter, HV500 series low-voltage engineering single transmission inverter, HD2000 series low-voltage engineering inverter, HD8000 series medium-voltage engineering inverter, etc., and also provides solutions for 0.75kW~22400kW low-voltage inverter and 8MVA~136MVA medium-voltage inverter. These products can be widely used in metallurgy, petroleum and petrochemical, mining machinery, port lifting, distributed energy generation, large-scale testing platforms, marine equipment, textiles, chemicals, cement, municipal and various other industrial applications.

【Honors】



National Science and Technology Progress Award



Laboratory Qualification Approved by CNAS



National High-tech Enterprise

【Quality System】



Quality Management System



Environmental Management System



Occupational Health and Safety Management System

Headquarter-Shenzhen

4 major R&D and manufacturing bases: Shenzhen, Suzhou, Xi'an, Heyuan

30 service bases: Deployed worldwide and providing comprehensive services for global customers



HV350 Series General Purpose Inverter

Product Overview

The HV350 Series inverter is a newly developed general-purpose vector inverter by Hopewind Electric. It adopts advanced open-loop and closed-loop vector 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.



Typical Applications

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



papermaking



hoisting



chemical industry



textile



packaging

Naming Rules

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

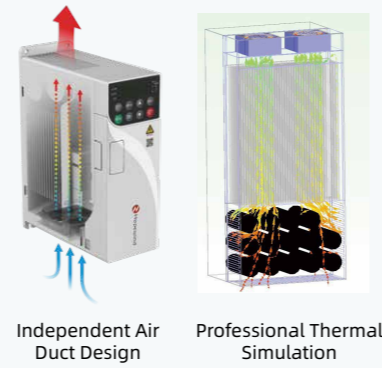
Power Rating:
0.75G: 0.75kW (Heavy Load)
1.5P: 1.5kW (Light Load)

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

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

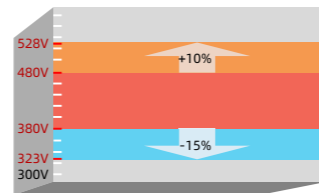
◎ Three-proof Paint Automatic Spraying Process

- 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) ±5%
- Allowable voltage fluctuation range: -15%Vac ~ +10%Vac



◎ Low External Interference

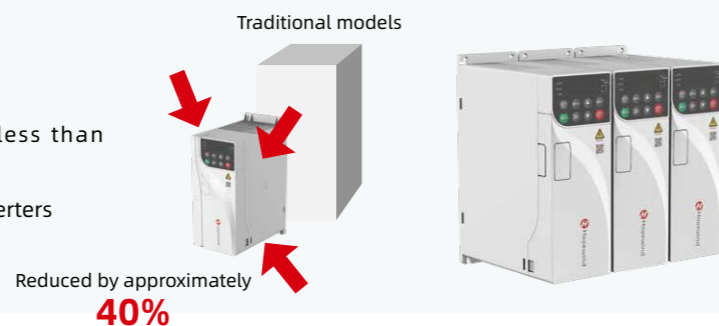
- Built-in C3 filter can effectively suppress the high-frequency harmonics generated during the operation of the inverter, meeting the requirements of the EU EN61800-3 standard.
- Simple and user-friendly EMC grounding design effectively reduces ground leakage current.

◎ System Certification

- European Union CE certification

◎ 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, and closed-loop vector control
- Supporting speed and torque control
- Supporting speed tracking function, reducing 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	Load-disconnected auto-tuning applicable to scenarios requiring high control precision
Static Auto-tuning	Applicable to scenarios where the motor is connected to loads to ensure dynamic auto-tuning after equipment installation

◎ Comprehensive Motor Control Modes

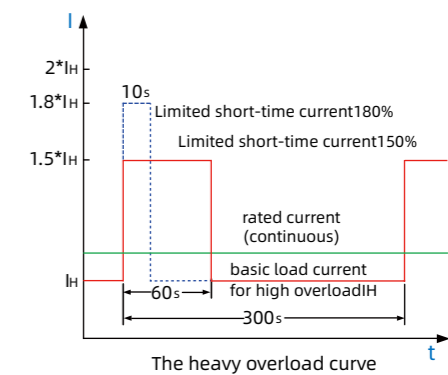
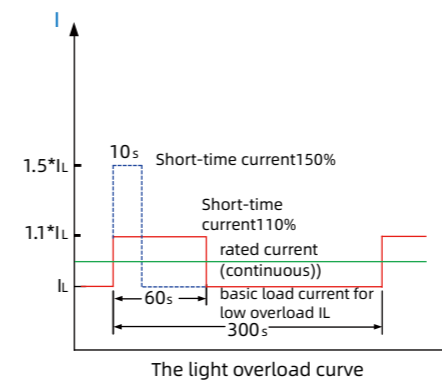
- V/F Control Mode
- Open-loop Vector Control Mode(OLVC)
- Closed-loop Vector Control Mode(CLVC)

◎ Large Starting Torque

- Open-loop vector control (OLVC): 150% at 0.5Hz
- Closed-loop vector control (CLVC): 200% at 0Hz

◎ High Overload Capacity

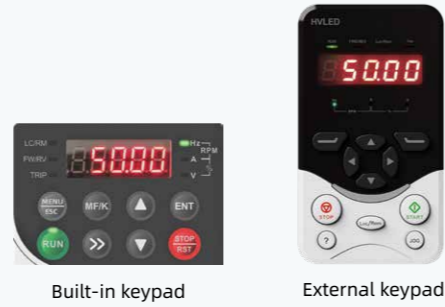
- Light overload capacity: 110% of rated light load current for 60 seconds, 150% of rated light load current for 10 seconds
- Heavy overload capacity: 150% of rated heavy load current for 60 seconds, 180% of rated heavy load current for 10 seconds



Diversified Functions

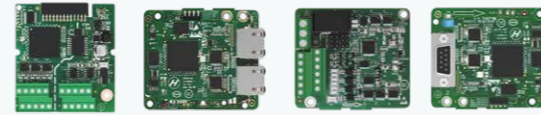
Keypad

- For standard inverters, internal LED keypads are available and external keypads are not supported.
- External LED keyboard can be optionally added.
- Both standard and optional keypads support parameter debugging, operation state monitoring, start/stop control, parameter copying, etc.



Various Expansion Functions

- Optional expansion communication cards support Profibus-DP, Profinet IO, CANopen, Modbus TCP/IP, Ethercat, EtherNet/IP, and other bus communications (SLOT1 expansion card slot).
- Optional encoder expansion cards (SLOT2 expansion card slot)
- Optional I/O terminal expansion cards (SLOT1 expansion card slot, please refer to "Optional Accessories" for details)



Note: As the optional I/O terminal expansion card and communication expansion card share the same card slot, they cannot be installed and used at the same time.

Supporting Various Functions

- Supporting V/F Supporting V/F half separation and complete separation modes
- Supporting process PID control which can be applied in constant temperature control, constant pressure control and tension control
- Supporting position lock to achieve motor zero-speed position locking in CLVC mode
- Supporting wobble function which can be applied in fiber and textile industries
- Supporting random PWM depth to reduce motor noise
- Supporting encoder redundancy operation mode to drive the system to automatically switch to OLVC operation when the encoder is faulty

Supporting Background Software for Quick Debugging

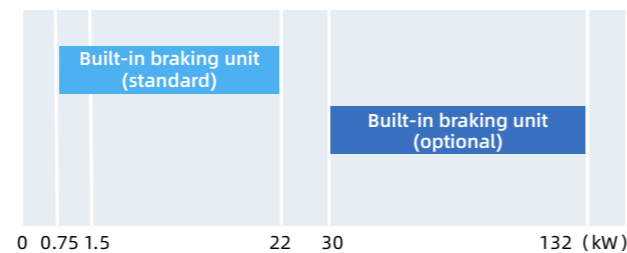
- Supporting such functions as monitoring and parameter editing
- Supporting event logs and fault record

Abundant I/O Interfaces

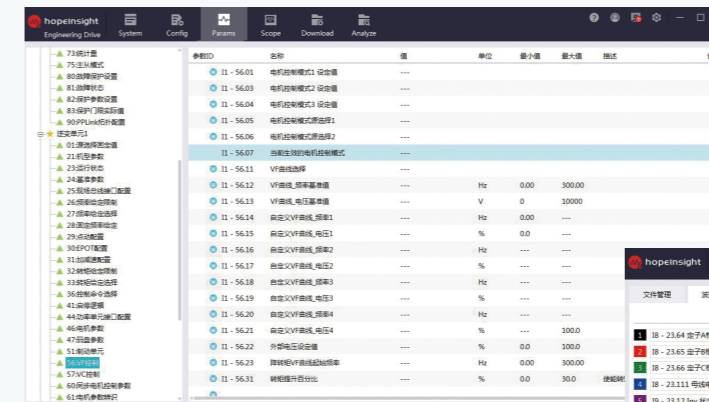
Terminal types	Quantity	Features
Digital input	5	Input impedance: 2kΩ, supporting both sourcing and sinking inputs DI5 supports high-speed pulse input with a maximum input frequency of 100kHz.
Analog input	2	0 ~ 10V, 0 ~ 20mA.
Digital output	2	Open collector output; Output voltage range: 0V~24V; Current load capacity: 50mA DO1 supports high-speed pulse output with a maximum output frequency of 100kHz.
Analog output	1	0 ~ 10V, 0 ~ 20mA.
Relay output	1	3A, 250VAC, 30VDC; NO+NC
Power output	2	+10V±2%; +24V±10%.
Communication interface	1	RS485, Modbus RTU protocol

Reliable Braking Function

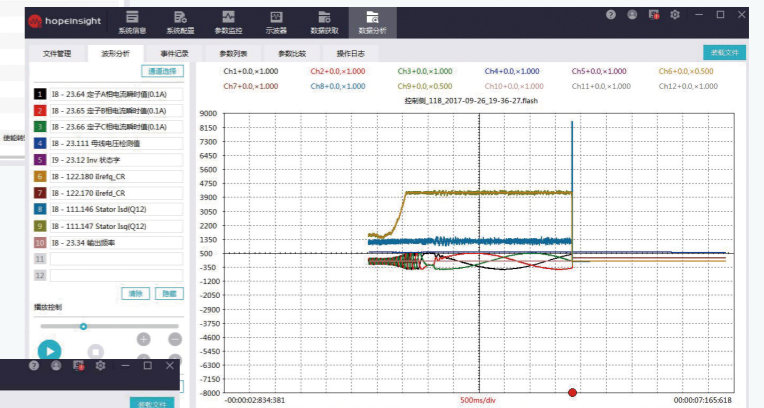
- The inverter supports DC braking.
- Models of 22kw and below are equipped with a standard built-in braking unit while models of 30kw to 132kw with an optional one.
- Adding a braking resistor enhances braking performance while saving electrical installation space and reducing user electrical costs.



Parameter interface



Fault record



Event logs

序号	类别	日期	时间	来源	事件代码	事件名称	事件状态	DSP索引
1	A_Alarm	2017-11-16	09:55:56	整流单元1	1177	电网电压欠压	清除	211
2	S_Event	2017-11-16	09:55:56	整流单元1	2220	整流状态切换至变频器运行态	清除	210
3	A_Alarm	2017-11-16	09:55:56	整流单元1	1177	电网电压欠压	清除	209
4	S_Event	2017-11-16	09:54:58	整流单元1	2402	逆变器启动	清除	208
5	S_Event	2017-11-16	09:54:42	整流单元1	2401	逆变器运行	清除	207
6	S_Event	2017-11-16	09:54:42	整流单元1	2402	逆变器启动	清除	206
7	S_Event	2017-11-16	09:54:35	整流单元1	2401	逆变器运行	清除	205
8	S_Event	2017-11-16	09:54:35	整流单元1	2402	逆变器启动	清除	204
9	S_Event	2017-11-16	09:54:28	整流单元1	2401	逆变器运行	清除	203
10	S_Event	2017-11-16	09:54:16	整流单元1	2402	逆变器启动	清除	202
11	S_Event	2017-11-16	09:54:00	整流单元1	2401	逆变器运行	清除	201
12	S_Event	2017-11-16	09:53:16	整流单元1	2402	逆变器启动	清除	200
13	S_Event	2017-11-16	09:53:07	整流单元1	2401	逆变器运行	清除	199
14	S_Event	2017-11-16	09:52:55	整流单元1	2402	逆变器启动	清除	198
15	S_Event	2017-11-16	09:52:47	整流单元1	2401	逆变器运行	清除	197
16	S_Event	2017-11-16	09:52:41	整流单元1	2402	逆变器启动	清除	196

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), CLVC(Closed-loop Vector Control)
	Speed range	1:10 V/F; 1:100 OLVC; 1:1000 CLVC
	Starting torque	OLVC: 150%(0.5Hz), CLVC: 200%(0Hz)
	Torque precision	≤±5%, in Vector control mode
	Torque ripple	≤±5%, in Vector control mode
	Speed stability	OLVC: 0.2%; CLVC: 0.1%
	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 model: 150% 1min/5min; 180%10s/5min; P model: 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: 0.01Hz
	Main functions	Acceleration/deceleration 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		Fixed length control
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		Eight groups of virtual DI/DOenabling 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: 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	Encoder card, 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

Product Selection

HV350 Product Selection

■ **Rated voltage: three-phase 380Vac (suitable for operating voltage range of 323V~528V)**

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	
HV350-4T2.2GB	2.2	5.8	-	-	
HV350-4T4G/5.5PB	4	9.5	5.5	13	FB
HV350-4T5.5GB	5.5	13	-	-	FC
HV350-4T7.5G/11PB	7.5	17	11	25	
HV350-4T11GB	11	25	-	-	
HV350-4T15G/18PB	15	32	18.5	38	FD
HV350-4T18G/22PB	18.5	38	22	46	
HV350-4T22GB	22	46	-	-	
HV350-4T30G/37P(B)	30	60	37	75	FE
HV350-4T37G/45P(B)	37	75	45	91	
HV350-4T45G/55P(B)	45	91	55	125	
HV350-4T55G/75P(B)	55	125	75	150	FF
HV350-4T75G/90P(B)	75	150	90	180	
HV350-4T90G/110P(B)	90	180	110	210	
HV350-4T110G/132P(B)	110	210	132	250	FG

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.

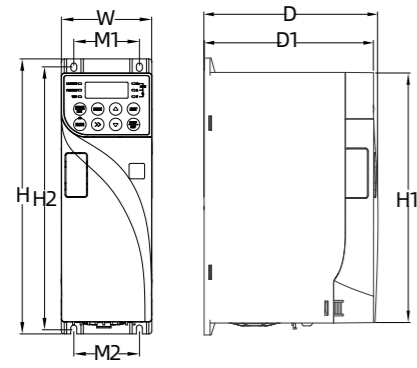
2. All models cannot be connected to DC reactors. Please install AC input reactors if needed.

3. 150% of rated current is allowed under heavy load condition while 110% of that is allowed under light load condition. The overload period is 1 minute every 5 minutes.

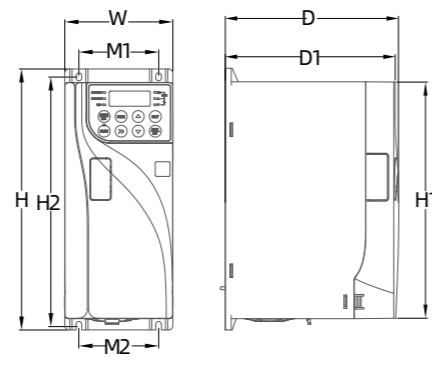
Recommended AC Input Reactor Selection

Model	AC Input Reactor		AC Output Reactor	
	Inductance (mH)	Current (A)	Inductance (mH)	Current (A)
HV350-4T0.75G/1.5PB	8	5	2	5
HV350-4T1.5G/2.2PB	4	7	1.6	6
HV350-4T2.2GB	3	12	1.2	10
HV350-4T4G/5.5PB	1.5	16	0.7	14
HV350-4T5.5GB	1.2	20	0.5	18
HV350-4T7.5G/11PB	0.8	32	0.4	26
HV350-4T11GB	0.6	45	0.25	32
HV350-4T15G/18PB	0.4	55	0.2	40
HV350-4T18G/22PB	0.35	65	0.18	48
HV350-4T22GB	0.3	80	0.15	60
HV350-4T30G/37P(B)	0.2	100	0.11	75
HV350-4T37G/45P(B)	0.18	120	0.09	95
HV350-4T45G/55P(B)	0.15	145	0.07	130
HV350-4T55G/75P(B)	0.11	200	0.055	160
HV350-4T75G/90P(B)	0.09	220	0.04	190
HV350-4T90G/110P(B)	0.07	275	0.035	220
HV350-4T110G/132P(B)	0.06	330	0.03	260

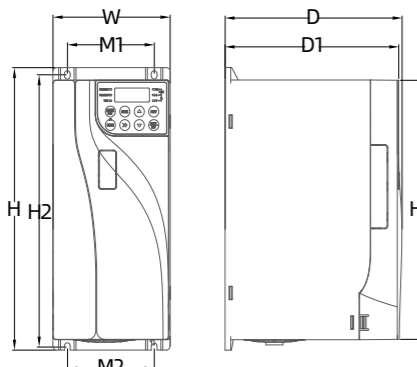
Product Dimensions



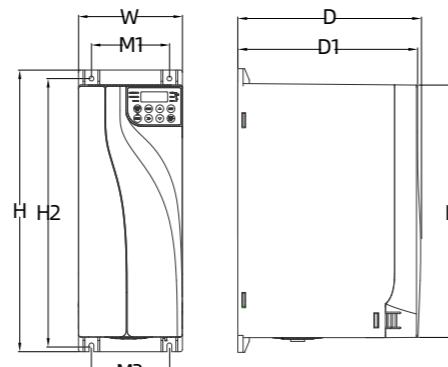
FA structure and installation dimensions



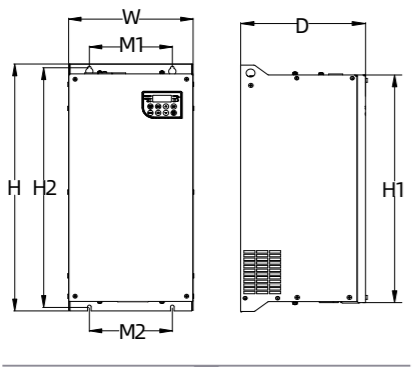
FB structure and installation dimensions



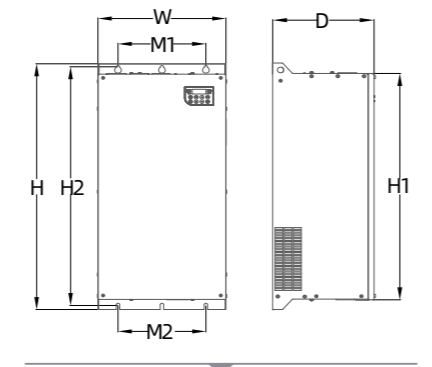
FC structure and installation dimensions



FD structure and installation dimensions



FE structure and installation dimensions

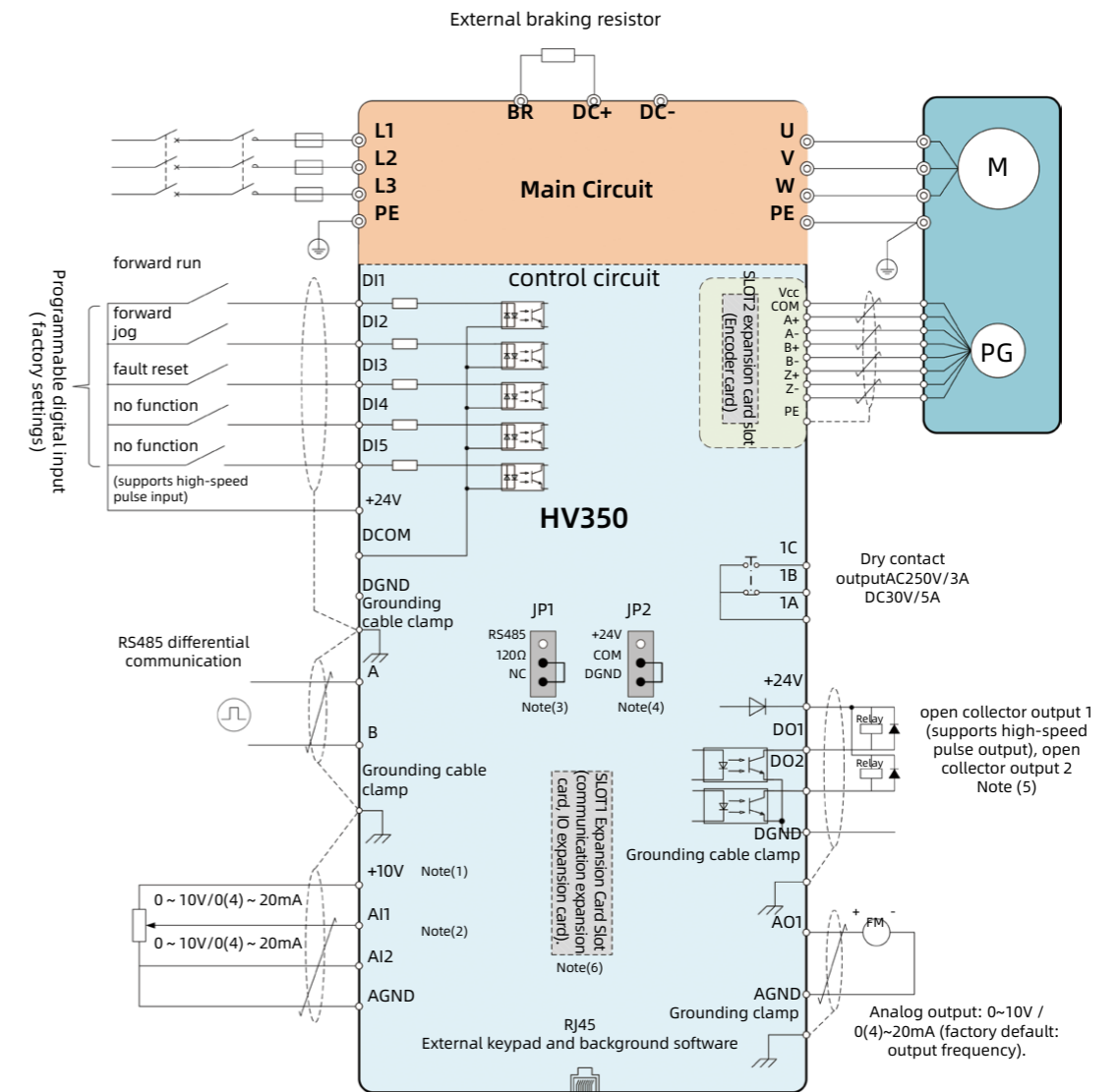


FG structure and installation dimensions

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

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

Standard Wiring Diagram



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

Note (2): Internal resistance of AI1 and AI2 (in current mode): 500Ω.

Note (3): RS485 terminal resistors 120Ω activation.

Note (4): Terminals DI1~DI5 support NPN or PNP signal input, and both internal power supply of the inverter (+24V terminal) or external power supply (DHND terminal) can be selected for offset voltage.

Note (5): When the digital output terminal drives a relay, a freewheeling diode must be installed in correct polarity at both ends of the relay coil, otherwise the internal circuit may be damaged. The driving capacity is not greater than 50 mA.

Note(6): As the optional I/O terminal expansion card and communication expansion card share the same card slot, they cannot be installed and used at the same time.

Optional Accessories

Model	Accessory Name	Function and Use
HVLED	LED external keypad	Supporting parameter setting, viewing and replication functions. Contains the keyboard mounting base.
HVCOM-USB	Communication Adapter	High-speed communication between the background quick-commissioning software Hopsight and the computer can be achieved with this adapter.
HVIO-01	I/O Terminal Expansion Card	Provide 3 digital input interfaces, 1 digital output interface, 1 analog input interface (-10V~10V), 2 analog output interfaces (0~10V/0~20mA), 1 temperature sampling interface (PT100, PT1000, KTY84) and 1 relay output interface
HVPG-ABZ-01	Incremental Encoder Expansion Card	Supporting ABZ incremental encoder wiring
HVPG-ROT	Resolver encoder expansion card	Supporting the wiring of the resolver encoder
HVCOM-DP-H	Profibus-DP Communication Card	Supporting Profibus-DP bus communication
HVCOM-PN-H	Profinet Communication Card	Supporting Profinet IO bus communication
HVCOM-CA	CANopen Communication Card	Supporting CANopen bus communication
HVCOM-TP-H	Modbus TCP/IP Communication Card	Supporting Modbus TCP/IP bus communication
HVCOM-EC-H	EtherCAT Communication Card	Supporting EtherCAT bus communication
HVCOM-EN-H	EtherNet/IP Communication Card	Supporting EtherNet/IP bus communication

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