XINJE

VH6 Series General Frequency Conveyor

User's Manual

WUXI XINJE ELECTRIC CO., LTD.

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XINJE

VH6 Series General Frequency Conveyor Fast Manual

Basic Description

- Thank you for purchasing the XINJE VH6 series inverter. Please carefully read this product manual before performing any operations.
- This manual primarily provides users with comprehensive guidance and instructions for the proper use and maintenance of VFD. The content covers various aspects of VFD performance. How to use, installation, maintenance, etc.
- The content described in this manual applies exclusively to XINJE Company's VFD products.

User Notice

This manual is intended for the following individuals:

- The installer of the VFD
- Engineering and technical personnel (electrical engineers, electrical operators, etc.)
- planner

Before operating or debugging the VFD, please carefully read the Safety Precautions section of this manual.

Responsibility Statement

- Although the content of the manual has been carefully verified, errors are inevitable, and we cannot guarantee complete consistency.
- We regularly review the content of the manual and make corrections in subsequent versions. Your valuable feedback is welcome.
- If any changes are made to the content described in the manual, no separate notice will be given.

Contact Way

If you have any questions about using this product, please contact the agent or office that purchased it, or directly contact XINJE Company.

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Catalogue

Attention

Safety Precautions

1) Definition of Safety Information

	Pay Attention to	The steps taken to ensure proper operation.
	Danger	Failure to comply with the relevant requirements can result in severe personal injury or even death.
	Warn	Failure to comply with the relevant requirements may result in personal injury or equipment damage.

2) Safety Precautions

■ During the unpacking and acceptance inspection

 Pay Attention to
1. Before opening the package, please inspect the product's outer packaging for any damage, moisture, deformation, or other abnormalities. 2. Before opening the box, please verify that the model identification on the exterior packaging matches the ordered model. 3. Upon opening the box, inspect the product and its accessories for any damage, corrosion, or scratches. 4. After opening the box, verify that the product nameplate label matches the external model identification. 5. After opening the box, check whether all internal components are present, including the instruction manual, control panel, and expansion card slots. Note: If any of the above five issues are observed during unpacking and inspection, please contact your local XINJE office or a XINJE distributor immediately. We will resolve the issue promptly.

■ During installation

Pay Attention to
1. During handling, support the base of the device. If you only hold the panel, the main structure may collapse and strike your feet, causing injury. 2. Install on non-flammable materials such as metal. When installed on flammable materials, there is a risk of fire. 3. When installing two or more VFDs in the same control cabinet, install cooling fans and maintain the air temperature at the intake port below 40°C. Overheating can cause fires and other accidents.

■ Wiring

Pay Attention to
1. Please confirm that the mains power supply voltage of the AC main circuit matches the rated voltage of the VFD. There is a risk of injury and fire. 2. Do not perform voltage withstand tests on VFD. This can cause damage to semiconductor components and similar devices. 3. Connect the brake resistor or brake unit according to the wiring diagram. There is a risk of fire. 4. Use a screwdriver with the specified torque to tighten the terminal. There is a risk of fire. 5. Do not connect the input power cable to the output U, V, and W terminals. Applying voltage to the output terminals can cause internal damage to the VFD. 6. Do not connect the phase-shifting capacitor and LC/RC noise filter to the output circuit. This will cause internal damage to the VFD. 7. Do not connect electromagnetic switches or electromagnetic contactors to the output circuit. When an inverter operates under load, the surge currents generated by the operation of electromagnetic switches and contactors can trigger the activation of the inverter's over-current protection circuit. 8. Do not remove the front panel cover. May cause internal damage to the VFD.
Danger
1. Before wiring, ensure the power supply is turned off. There is a risk of electric shock and fire. 2. Have electrical engineering professionals perform the wiring work. There is a risk of electric shock and fire. 3. The grounding terminal must be reliably grounded. There is a risk of electric shock and fire. 4. After connecting the emergency shutdown terminal, ensure its operation is effective.

There is a risk of injury. (The user bears the responsibility for connection.)

5. Do not touch the output terminals directly. The output terminals of the VFD must not be connected to the casing, and short circuits between output terminals are strictly prohibited. There is a risk of electric shock or short circuits.
6. Before the indicator light on the AC motor driver's digital controller turns off after disconnecting the AC power supply, it indicates that high voltage remains inside the motor drive—this is extremely hazardous. Do not touch any internal circuits or components.

■ Maintenance and Inspection

Pay Attention to

1. CMOS integrated circuits are installed on the keyboard board, control circuit board, and drive circuit board. Please pay special attention during use. Directly touching the circuit board with your fingers may cause electrostatic induction, which could damage the integrated chips on the board.
2. Do not change the wiring or disconnect terminal connections while powered on. Do not check signal during operation, as this may damage the equipment.

Danger

1. Do not touch the wiring terminals of the VFD; they carry high voltage.
   There is a risk of electric shock.
2. Before powering on, ensure the terminal cover is properly installed. When removing the cover, always disconnect the power supply.
   There is a risk of electric shock.
3. Non-professional technicians should not perform maintenance or inspection tasks.
   There is a risk of electric shock.

Usage Precautions

■ Constant torque low-speed operation

When a VFD drives a conventional motor at low speeds for extended periods, the reduced heat dissipation efficiency can shorten the motor's service life. For applications requiring sustained low-speed operation with constant torque, specialized variable-frequency motors must be employed.

■ Confirmation of motor insulation

When using VH6 series VFD with motors, first verify the insulation of the motor to prevent equipment damage. Additionally, in harsh operating environments, regularly inspect the motor's insulation to ensure safe system operation.

■ Negative torque load

In applications such as load lifting, negative torque often occurs, causing the VFD to trip due to over

current or over voltage faults. In such cases, the installation of a braking resistor should be considered.

- The mechanical resonance point of the load device

Within a specific output frequency range, an inverter may encounter the mechanical resonance point of the load device; this must be avoided by setting a jump frequency.

- Capacitors or voltage-sensitive devices for improving the power factor

Since the inverter's output voltage is a pulse waveform, installing capacitors to improve the power factor or varistors for lightning protection on the output side may cause inverter malfunctions, tripping, or component damage. These components must be removed. Additionally, it is recommended not to install circuit breakers or contactors on the output side.

- Under rated load operation during fundamental frequency setting

When the fundamental frequency is set below the rated frequency, use the motor below its rated capacity to prevent overheating and damage.

- Operate at frequencies above 50 Hz

When operating at frequencies above 50 Hz, in addition to considering increased motor vibration and noise, it is essential to verify the permissible operating speed range for the motor bearings and mechanical components in advance.

- The electronic thermal protection value for the motor

When selecting an appropriate motor, the VFD can provide thermal protection for the motor. If the motor's rated capacity does not match that of the VFD, the protection settings must be adjusted or alternative protective measures implemented to ensure the motor operates safely.

- Altitude and Reduced Rating Usage

In areas above 1,000 meters in altitude, the thin air reduces the heat dissipation efficiency of VFDs, necessitating their operation at reduced ratings.

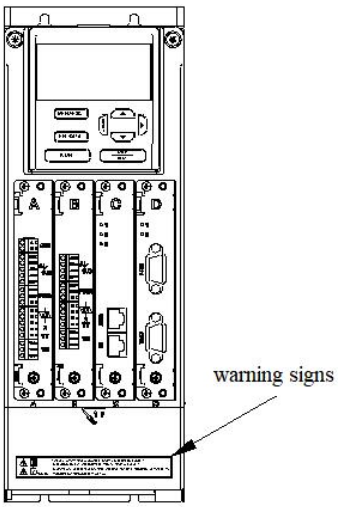
- On Protection Levels

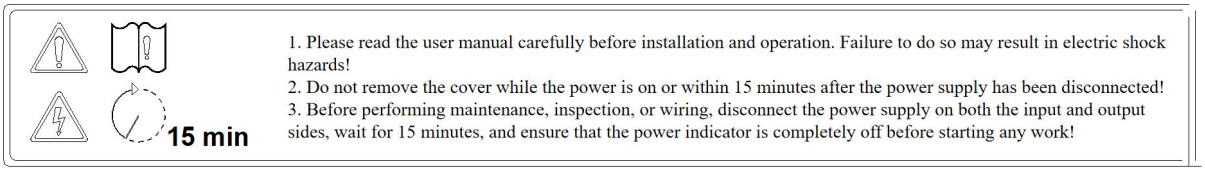
The IP20 protection rating of VH6 series VFD is achieved when a status display unit or keyboard is selected.

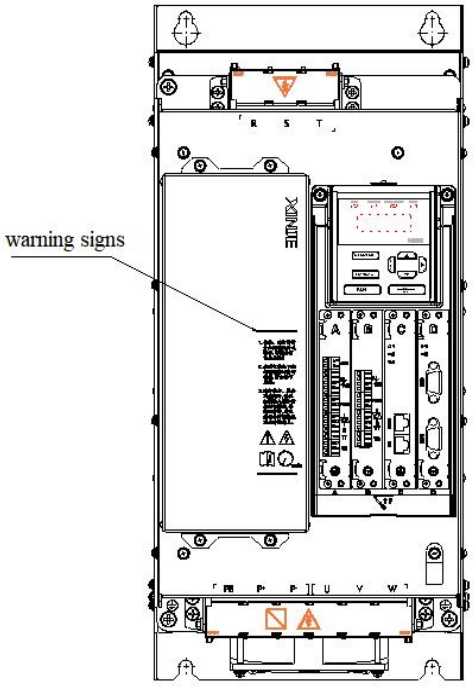
- Content and location of the warning mark

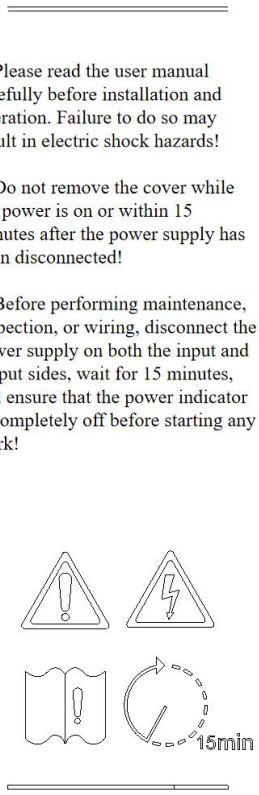
This VFD bears warning labels at the following locations. Please strictly adhere to the warning instructions during use.

- Please read the user manual before installation and operation; otherwise, there is a risk of electric shock!
- Do not remove the cover plate while the device is powered on or within 15 minutes after power is disconnected.
- When performing maintenance, inspection, or wiring, first disconnect the power supply on both the input and output sides, then wait for 15 minutes until the power indicator lights completely turn off before proceeding.









Scrap disposal Notes

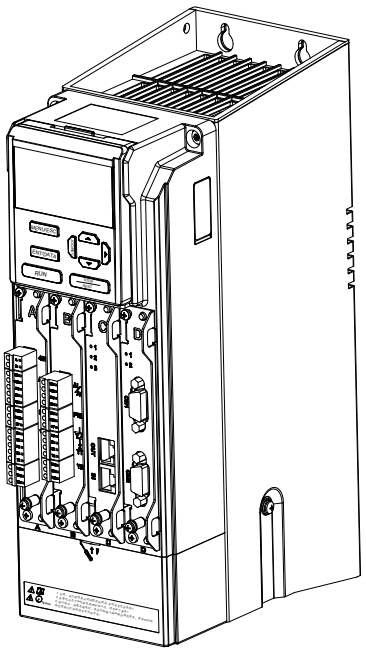
When disposing of an inverter, please note:

The electrolytic capacitors in the main circuit and those on the printed circuit board may explode during incineration. The incineration of plastic components releases toxic gases. These materials should be disposed of as industrial waste.

1. Product Introduction

1.1 Product Overview

1.1.1 Naming Rules



The VH6 series is a fully functional closed-loop vector VFD developed by XJ Company. Utilizing vector control technology, the product enables both open-loop and closed-loop vector control for asynchronous and synchronous motors, while also enhancing its reliability and environmental adaptability.

The VH6 series VFD offer a wide range of expansion cards for customers to choose from, meeting their diverse needs.

VH 6 – 4 5P5 - B
① ② ③ ④ ⑤

Field identification	Field Detailed Explanation	
①	Product identification	VH: Universal Inverter
②	Product line	6: Full-function closed-loop vector VFD (for asynchronous motors)
③	Input voltage level	4: AC 380V
④	Power level	5P5: 5.5kW 011: 11kW Use P for the decimal point
⑤	Braking Unit	B: Contains a braking unit Empty: None

1.2 Product Technical Specifications

1.2.1 Technical Specifications

Model VH6-4_ _ _-B	3P7	5P5	7P5	011	015	018	022	030	037	045	055	075	090	110
Adaptive motor (kW)	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110
Enter the rated current (A)	11	14.6	20.5	26	35	38.5	46.5	62	69	89	106	139	164	196
Power Capacity (kVA)	5.9	8.9	11.	17	21	24	30	40	63	81	97	127	150	179
Output rated current (A)	9	13	17	25	32	37	45	60	75	90	110	152	176	210

Model VH6-4_ _ _	132	160	185	200	220	250	280	315	355	400	450
Adaptive motor (kW)	132	160	185	200	220	250	280	315	355	400	450
Enter the rated current (A)	240	287	343	365	410	441	495	565	617	687	782
Power Capacity (kVA)	220	263	293	334	375	404	453	517	565	629	716
Output rated current (A)	253	304	360	377	426	465	520	585	650	725	820

1.2.2 General Specifications

Project		Specifications		
Import	Rated voltage, frequency	380V class: Three-phase 380V,50Hz/60Hz		
	Allowable voltage fluctuation range	-15% to +15% Voltage imbalance rate: <3%		
Output	Voltage	0–Input voltage		
	Frequency	0 ~ 600Hz		
Control function	Control motor type	Asynchronous motor, permanent magnet synchronous motor, variable frequency motor		
	Control performance	Vector Control with Speed Sensor (FVC)	Vector Control without Speed Sensor (SVC)	Constant Pressure and Frequency Ratio Control (VF)
	Speed accuracy	±0.2%	±0.5%	±1%
	Velocity perturbation	±0.2%	±0.3%	±0.5%
	Speed range	1: 2000	1: 100	1: 50
	Starting torque	0Hz: 180%	0.5Hz: 150%	1.0Hz: 150%
	Torque accuracy	±5% rated torque	±10% rated torque	//

Project		Specifications		
	Torque response	≤10ms	≤20ms	//
	Overload capacity	150% rated current for 60s; 180% rated current for 3s;		
	Frequency accuracy	Low-frequency operating mode: 0.01 Hz; High-frequency operating mode: 0.1 Hz		
	Frequency resolution	Low-frequency operating mode: Digital setting – 0.01 Hz; Analog setting – maximum frequency × 0.1% High-frequency operating mode: Digital setting – 0.1 Hz; Analog setting – maximum frequency × 0.1%		
Control terminal input	Digital input channel	Supports up to 7 digital switch inputs (X). The A card comes standard with 4 channels (X1-X4), while the B card supports up to 3 additional channels (X5-X7). The X4 terminal supports high-speed pulse inputs up to 50 kHz.		
	Analog input channel	Supports up to 3 analog input AI channels. The A card comes standard with two channels (AI1 and AI2), while the B card supports an additional channel (AI3). AI1 and AI2 support 0–10 V or 0–20 mA inputs AI3 supports an input voltage range of-10V to 10V and can be used as a PT100 input.		
Control terminal output	Digital output channel	Supports up to 4 analog output channels (Y), with Card A standardly providing 1 channel (Y1) and 1 channel (TA1/TB1/TC1), while Card B can be expanded to include an additional channel (Y2) and another channel (TA2/TB2/TC2). The Y2 terminal supports high-speed pulse outputs up to 50 kHz.		
	Analog output channel	Supports up to 2 analog output channels (AO), with Card A providing the standard channel (AO1) and Card B adding an optional channel (AO2). Both AO1 and AO2 support outputs ranging from 0–10 V or 0–20 mA.		
Product function	Start command given method	Communication parameters (Modbus, CANopen, EtherCAT, PROFINET, EtherNet IP), control panel parameters, and terminal parameters.		
	Frequency determination method	Communication parameters (Modbus, CANopen, EtherCAT, PROFINET, EtherNet IP), control panel parameters, terminal parameters, analog AI parameters, multi-stage speed parameters, simplified PLC parameters, PID parameters, and primary/auxiliary parameters.		
	Typical function	Frequency master-slave operation, reverse rotation prohibition, torque enhancement, nine V/F curve settings, five-stage AI curve settings, acceleration/de acceleration curve settings, terminal delay and filtering, multi-functional terminal input/output, DC braking, energy consumption braking, jog operation, 16-speed range, built-in dual PID controllers, speed tracking and restart, carrier modulation, fault logging, fault self-reset, pre-excitation startup, 30 user-defined parameter sets		

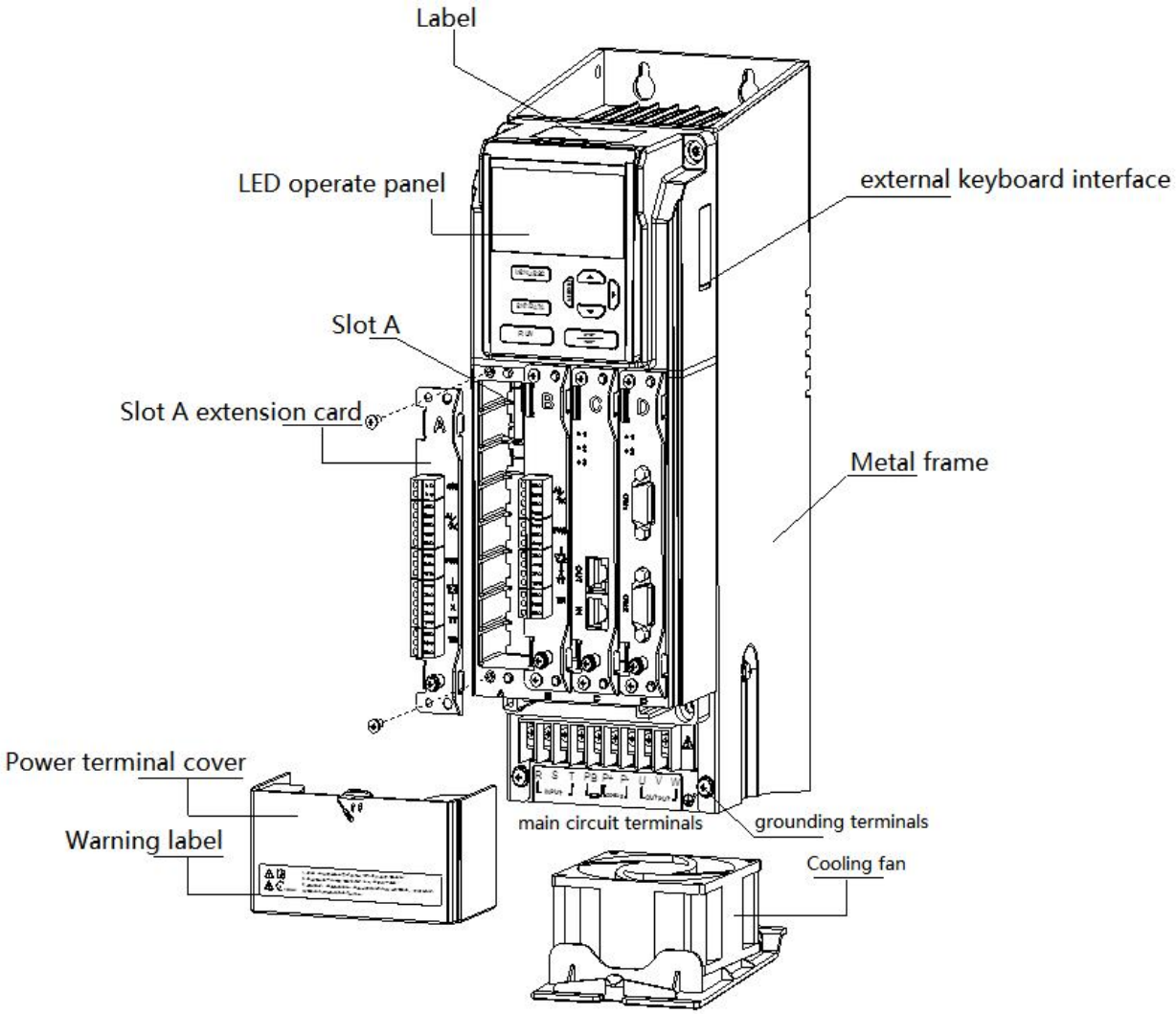
Project		Specifications
	Key features	Carrier modulation, torque control, motor self-calibration, current limiting control, over-voltage control, under-voltage control, speed tracking, droop control, oscillation suppression, over-voltage/over-current speed reduction control, automatic voltage regulation (AVR), automatic energy-saving operation, external pulse position control, spindle stop function, etc.
	Defensive function	Shanghai Electric Motor short-circuit detection, input/output phase loss protection, over-current protection, over-voltage protection, under-voltage protection, overheat protection, overload protection, under-load protection, over-current/over-voltage stall protection, relay tripping protection, terminal protection, and instantaneous power loss continuity protection.
	Energy consumption braking	380V voltage-level driver: Braking unit operating voltage: 650–750 V. The 3.7 kW to 110 kW power ratings come standard with an integrated braking unit, requiring only the P+ and PB indirect braking resistors; the 132 kW to 450 kW power ratings require an external braking unit.
	DC reactor	For capacities of 18.5 kW and above, built-in DC reactors are used.
	Common DC busbar	During speed reduction, the VFD shares regenerative energy, enhancing braking performance to achieve energy savings while eliminating additional space and costs required for resistors. Except for models in the 75–110 kW range that require an external pre-charging circuit, all other power ratings can utilize a shared DC bus.
	Asynchronous and synchronous integrated model	3.7 kW–110 kW: Models with version 3742 or higher are integrated synchronous-asynchronous units; switching between synchronous and asynchronous motors can be done via parameter P1-00. 132 kW–450 kW: Split-type models with separate synchronous and asynchronous motors; only asynchronous motors can be used; updating firmware is required to enable synchronous motor operation.
Characteristic function	Multi-bus support	Modbus, extensible EtherCAT, CANopen, PROFINET, EtherNet IP Note: PROFINET and EtherNet/IP communication requires the inverter firmware version 3746 or later for support.
	Multi-encoder support	Simple incremental encoder, multi-functional incremental encoder, Tama River protocol communication encoder
	LCD face-plate	LCD display, parameter settings, status monitoring, parameter copying, fault analysis and localization, program download, high-capacity storage parameters

Project		Specifications
	Stop briefly, but don't stop completely.	During instantaneous power outages, the inverter maintains short-term operation by compensating for voltage drops through load energy feedback.
	Timing control	Time control function: Set time range from 0.1s to 6500.0 h
	Multi-motor switching	The parameters of the two motor sets enable switching control between the two motors.
	Motor overheat protection	AI3 supports PT100 sensor functionality
	The terminal functions are flexible and diverse.	The multi-functional terminals offer 66,47, and 19 distinct logical function options for X, Y, and AO respectively, meeting the standard control requirements of general-purpose VFDs.
	Communicatio n Custom parameter	Facilitates continuous reading and writing of inverter parameters for users
	Upper-level computer software	Advanced backend monitoring capabilities facilitate on-site data collection and debugging.
Show with fingerboard	Keyboard display	It can display various parameters such as set frequency, output frequency, output voltage, output current, and input/output status.
	Button lock	Lock part or all buttons to prevent accidental triggering
	Parameter Copy	Standard features a single LED digital keyboard; optional LCD keyboard with Chinese and English display (parameters available for download).
	Optional Accessories	LCD keyboard, knob panel, mainstream protocol communication cards (EtherCAT, CANopen, PROFINET, EtherNet IP), and encoder PG cards (incremental pulse encoders, Tama River protocol communication encoders).
Environment	Place of Use	Inside, protected from direct sunlight, free from dust, corrosive gases, flammable gases, oil mist, water vapor, dripping water, or salts.
	Height	Below 1000 m. (For altitudes above 1000 m, the rated current must be reduced; for every additional 1000 m of elevation, the output current decreases by approximately 10% of the rated current.)
	Ambient temperature	-10°C to +40°C (when ambient temperature ranges from 40°C to 50°C, use at reduced power rating or enhance cooling; for every 10°C increase in temperature, the output current decreases by approximately 10% of the rated current)
	Peripheral humidity	Less than 95% relative humidity (RH), with no condensation droplets present
	Vibrate	Less than 5.9 m/s² (0.6G)
	Storage Temperature	-40°C ~ +70°C
	Levels of	IP20

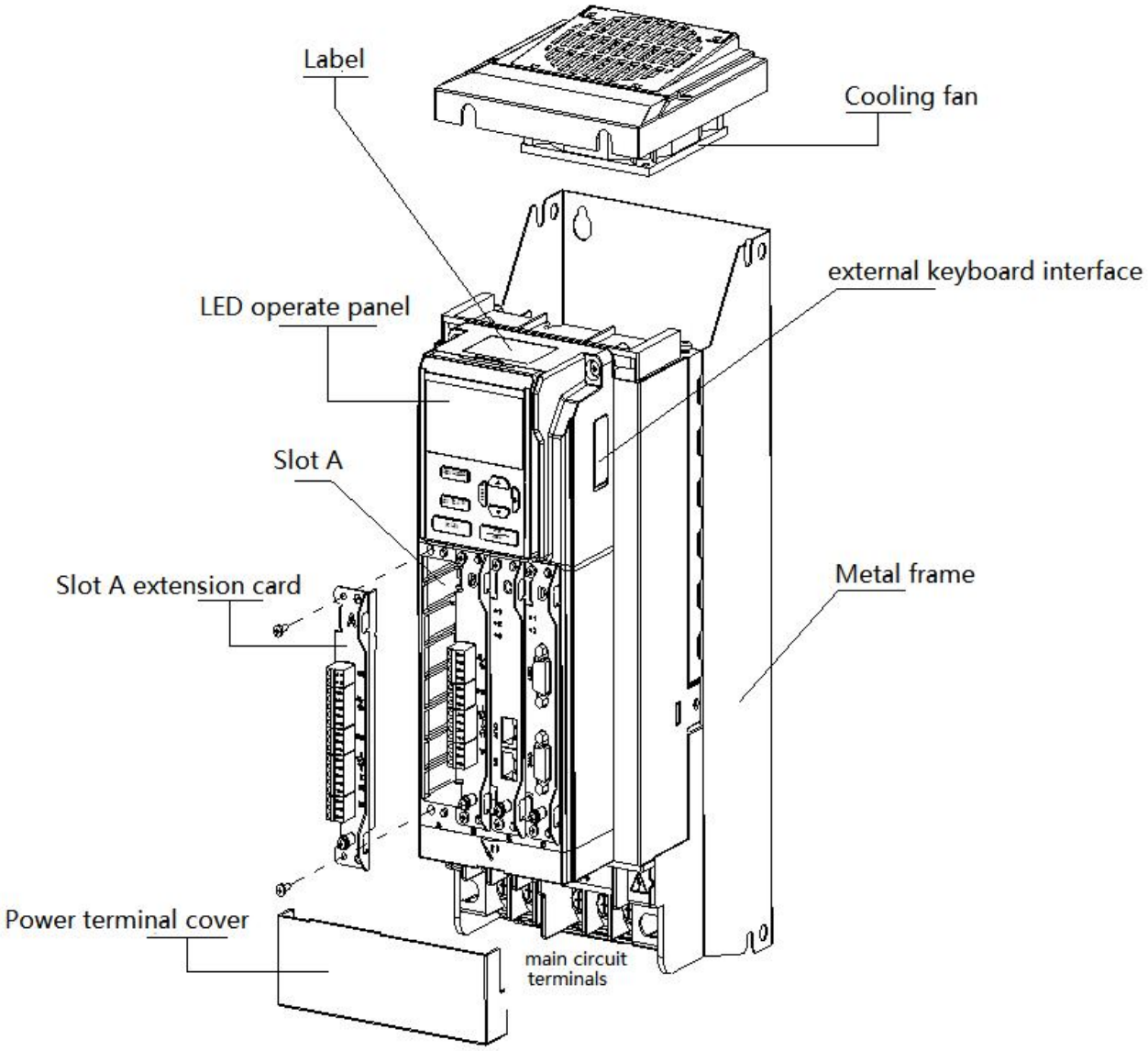
Project		Specifications
	protection	
	Cooling-down method	air blast cooling
Install		Wall-mounted and embedded

1.3 Description of Each Section

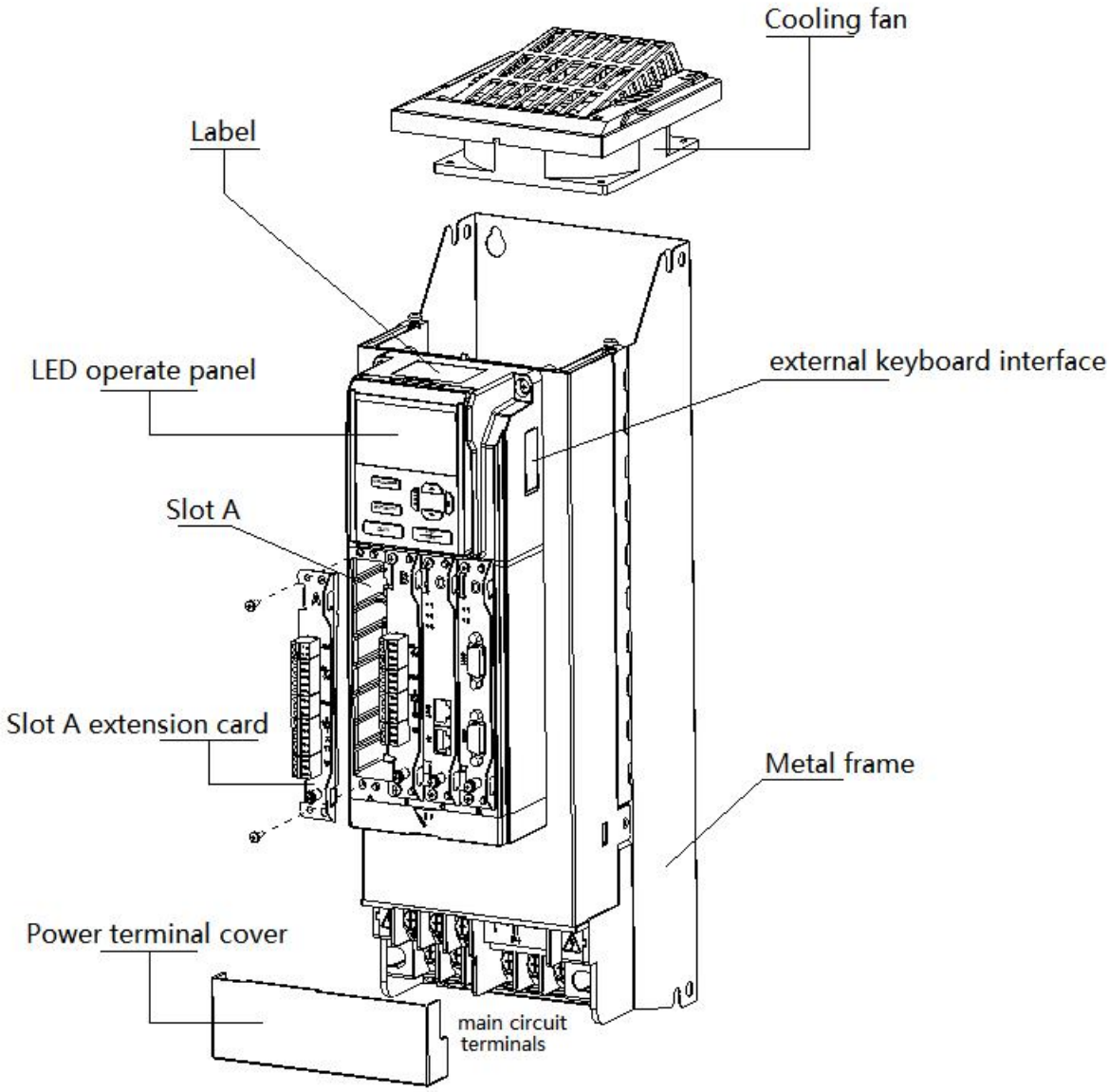
- VH6-43P7-B/VH6-45P5-B/VH6-47P5-B



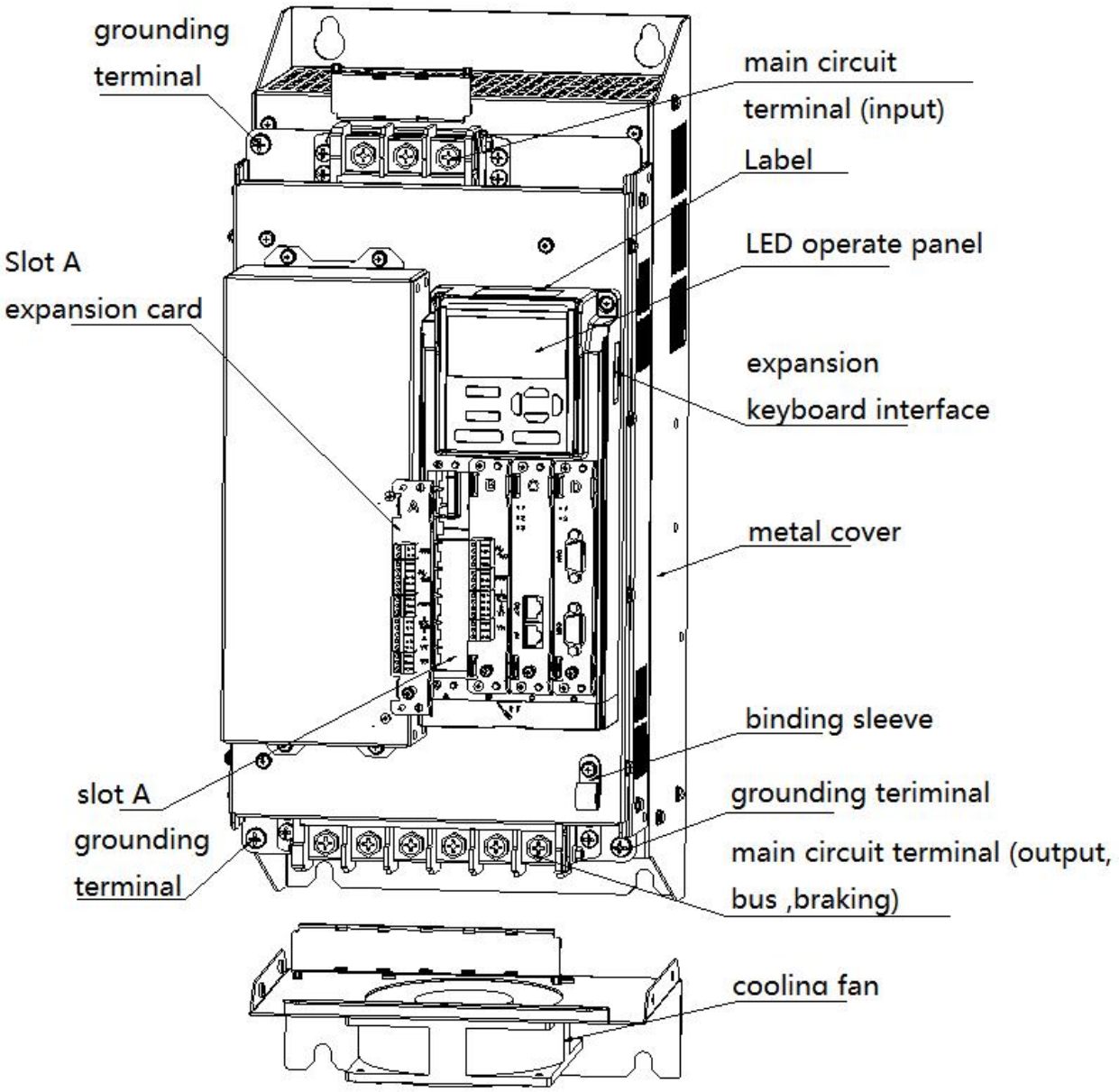
■ VH6-4011-B/VH6-4015-B



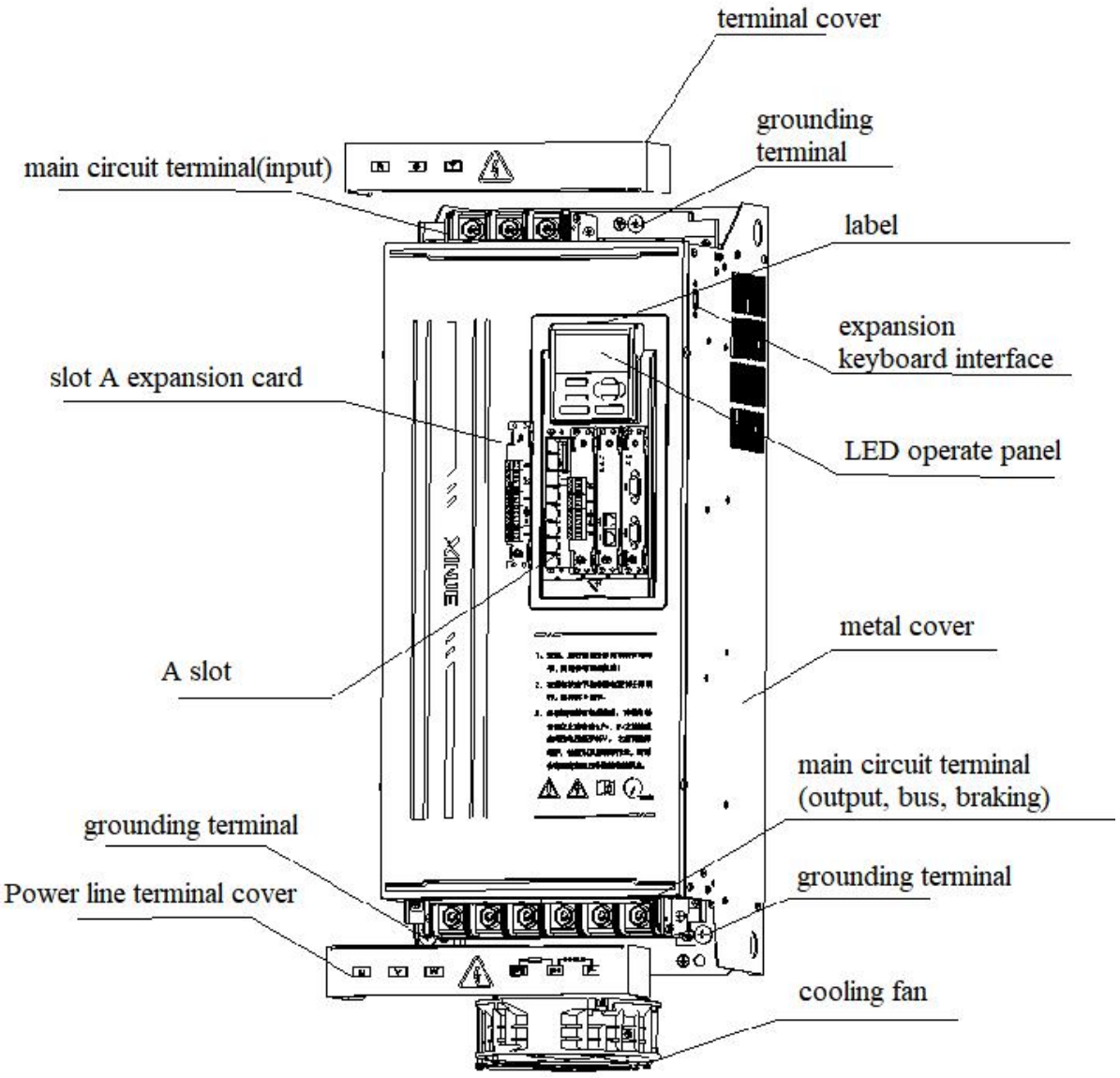
■ VH6-4018-B/VH6-4022-B/VH6-4030-B



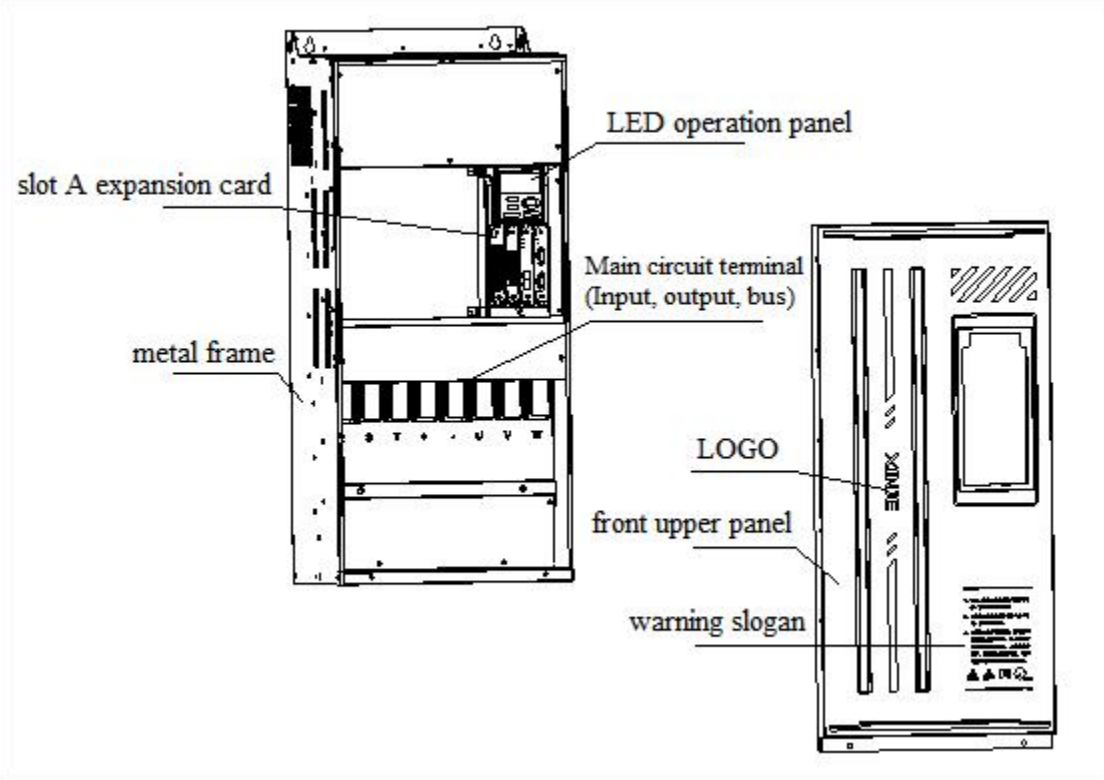
■ VH6-4037-B/VH6-4045-B/VH6-4055-B



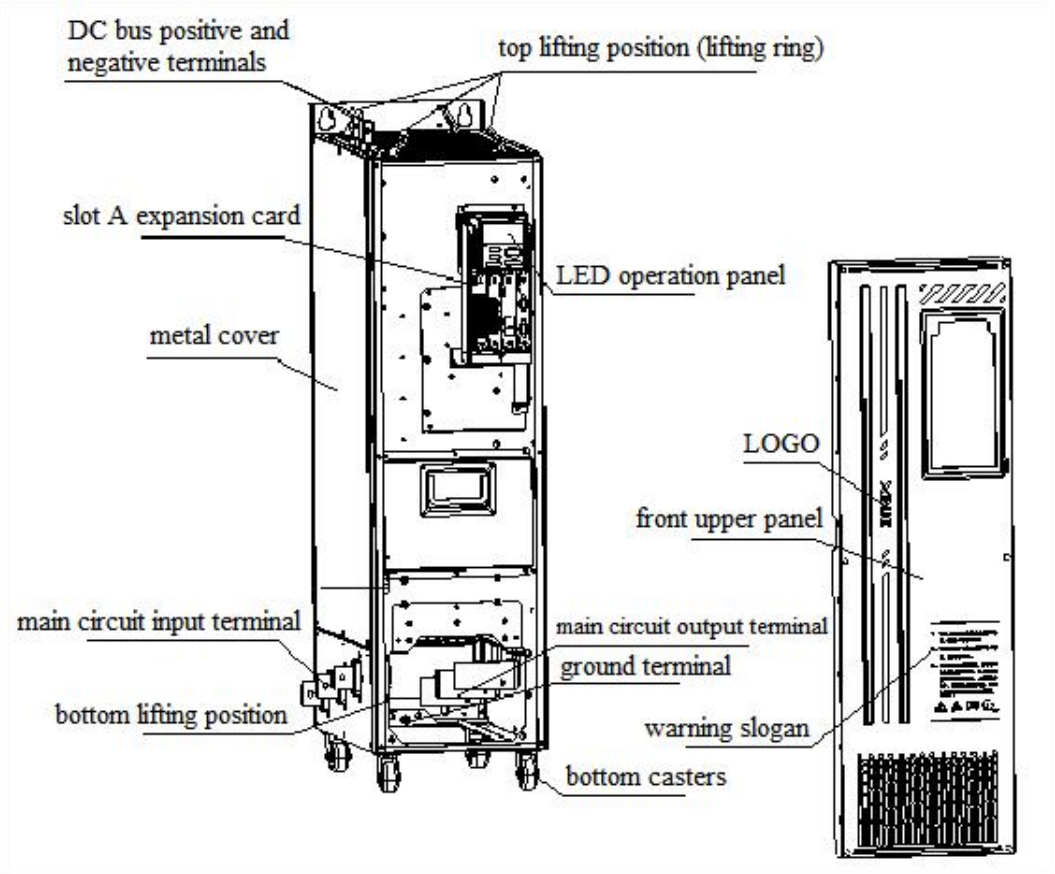
■ VH6-4075-B/VH6-4090-B/VH6-4110-B



- VH6-4132/VH6-4160



- VH6-4185/VH6-4200/VH6-4220/VH6-4250/VH6-4280/VH6-4315/VH6-4355/VH6-4400/ VH6-4450



2. Installation and Cabling

2.1 Installation Environment

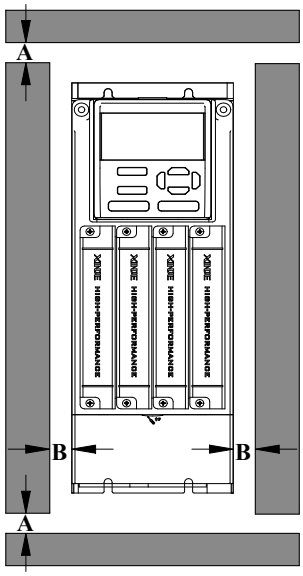
2.1.1 Environmental Requirements

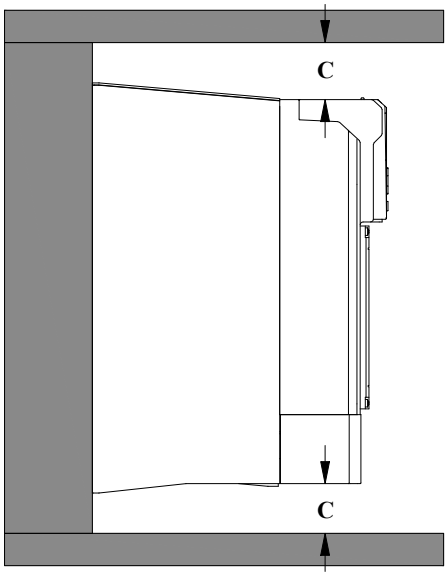
- Install in a well-ventilated indoor area with an ambient temperature ranging from-10ºC to 40ºC. If the temperature exceeds 40ºC, external forced cooling or reduced power rating must be applied.
- Avoid installation in areas with direct sunlight, high dust levels, or presence of floating fibers and metal powders.
- Installation in areas with corrosive or explosive gases is strictly prohibited.
- The humidity requirement is below 95% RH, with no condensation of water droplets.
- Install in locations with planar fixed vibration below 5.9 m/s² (0.6 G).
- Keep away from sources of electromagnetic interference and other electronic instruments and equipment that are sensitive to electromagnetic interference.

2.1.2 Installation Direction and Space

- It should generally be installed vertically.
- Minimum installation spacing and distance requirements.
- When multiple VFDs are installed vertically, a flow guide partition is used between them.

2.1.3 Single-unit installation

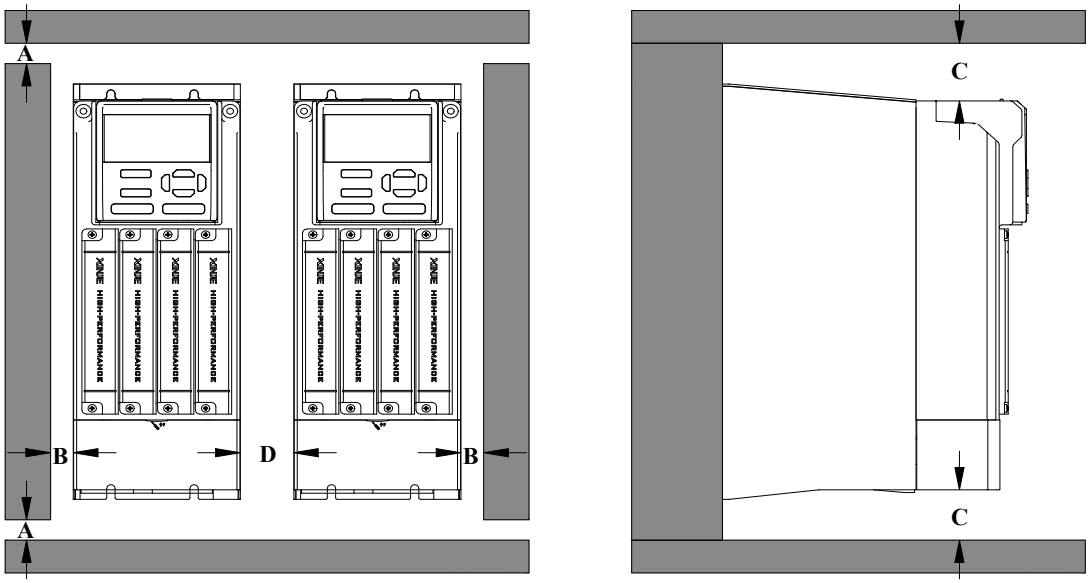




Depending on the power rating of the inverter, appropriate installation space must be reserved.

Power Level	Installation space requirements		
0.7kW～15kW	A≥50mm	B≥10mm	C≥100mm
18.5kW～30kW	A≥50mm	B≥10mm	C≥200mm
37kW～110kW	A≥50mm	B≥10mm	C≥300mm
132kW～160kW	A≥50mm	B≥50mm	C≥300mm
185kW～450kW	A≥100mm	B≥100mm	C≥300mm

2.1.4 Multiple installations

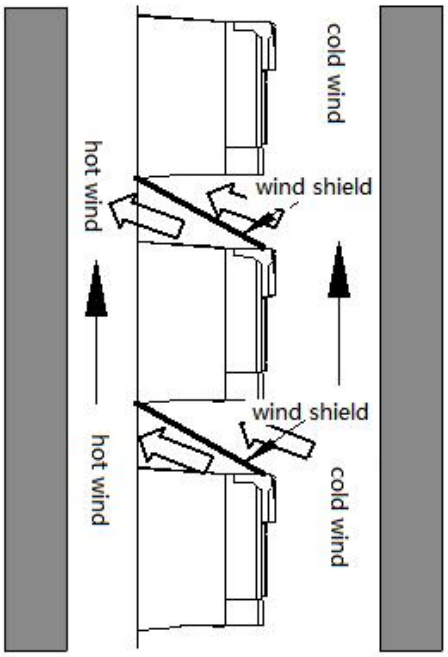


The installation dimensions for multiple VFDs A, B, and C are identical to those for a single unit. The installation spacing D between multiple VFDs is specified in the table below:

Power Level	Installation space requirements
3.7kW～18.5kW	D≥10mm
22kW～160kW	D≥50mm

Inverters with power ratings ranging from 185 kW to 450 kW are designed for single-unit installation within the cabinet only; parallel or vertical installation configurations are not supported.

2.1.5 Vertical installation



During vertical installation, a wind deflector must be added; otherwise, multiple inverters may interfere with each other, leading to poor heat dissipation.

2.1.6 External extension of the control panel

Model of the external panel mounting bracket and related accessories: VH6-DPANEL; dimensions of the panel mounting bracket are specified in Chapter 6-2.

Panel extension cable model: JC-RD-30 (3 meters) – available only in 3-meter lengths. For other lengths, use a standard network cable instead.

2.2 Precautions for wiring

pay attention to

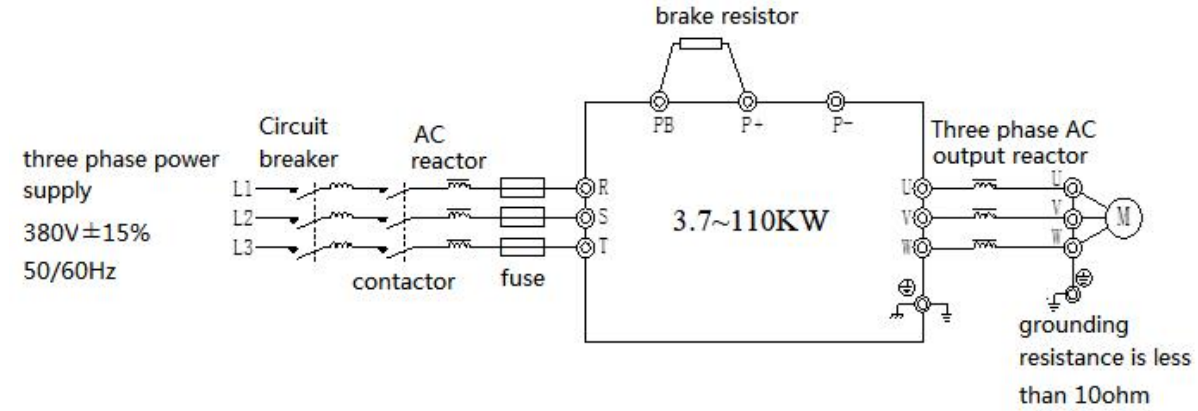
- Before wiring, ensure the power supply is completely cut off for at least 15 minutes; otherwise, there is a risk of electric shock.
- It is strictly prohibited to connect the power cord to the U, V, and W output terminals of the VFD.
- The VFD itself contains leakage current. For safety purposes, both the VFD and the motor must be properly grounded. The grounding wire should typically be copper wire with a cross-sectional area of at least 3.5 mm^2, and the grounding resistance must be less than 10 Ω.
- The VFD has already passed the voltage withstand test before leaving the factory; users must not conduct additional voltage withstand tests on it.
- No electromagnetic contactors, absorption capacitors, or other resistance-capacitance absorption devices may be installed between the VFD and the motor.
- To facilitate over-current protection on the input side and power outage maintenance, the inverter should be connected to the power supply via a circuit breaker.
- For the wiring of control terminal input and output circuits, use stranded or shielded cables with a cross-sectional area of at least 0.75 mm^2. One end of the shielding layer should be left free, while the other end connects to the inverter's PE grounding terminal, with the total wiring length not exceeding 50 meters.

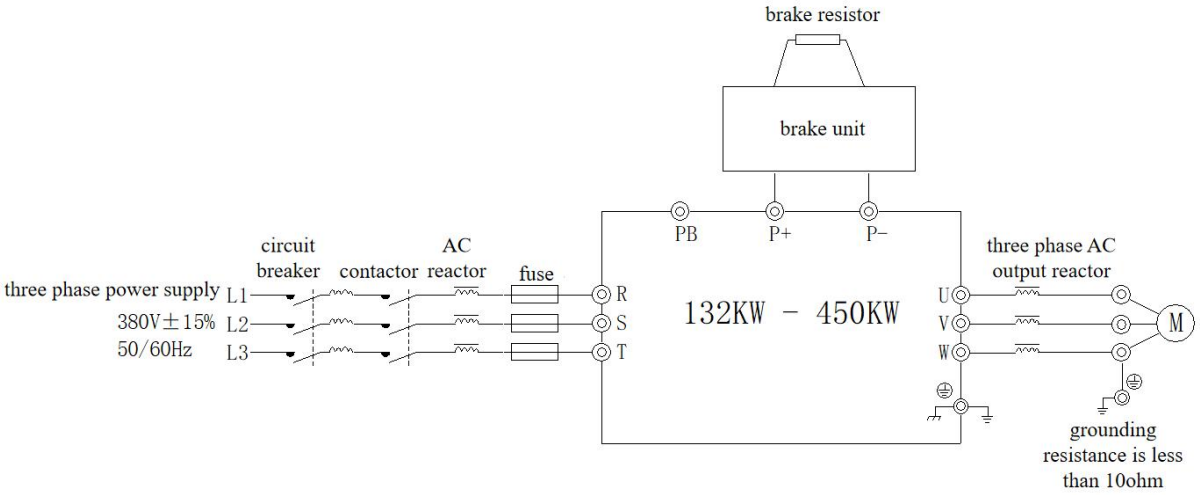
danger

- Ensure the inverter's power supply is completely disconnected, all LED indicators on the keyboard are extinguished, and wait for at least 15 minutes before proceeding with the wiring operation.
- Internal wiring work may commence only after the DC voltage between the P^+ and P^- electrodes of the inverter's internal electrolytic capacitors drops below DC 36V.
- Wiring operations must be performed only by trained and authorized qualified professionals.
- Before powering on, verify that the inverter's voltage rating matches the supply voltage; otherwise, it may cause personnel injuries or equipment damage.

2.3 Wiring of main circuit terminals

2.3.1 Wiring Diagram

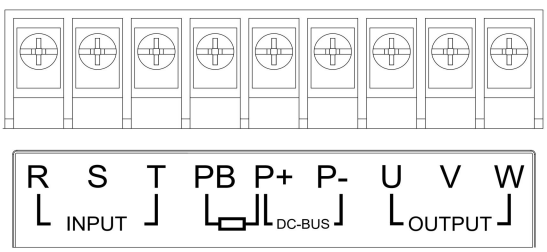




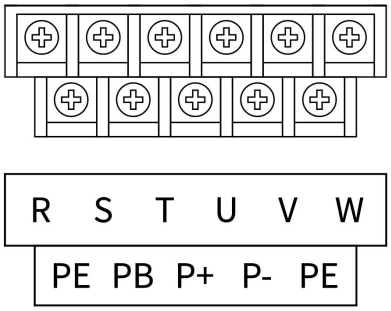
The circuit breaker, contactor, AC reactor, fuse, braking resistor, and output reactor are all optional components; for details, refer to Chapter 6 on Selection and Dimensions.

2.3.2 Main Circuit Terminal Arrangement and Description

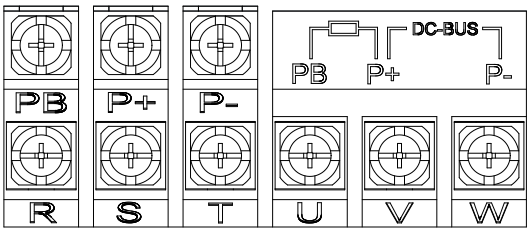
- VH6-43P7/45P5-B (version below 1.2)/VH6-47P5-B (version below 1.3) Main circuit terminal



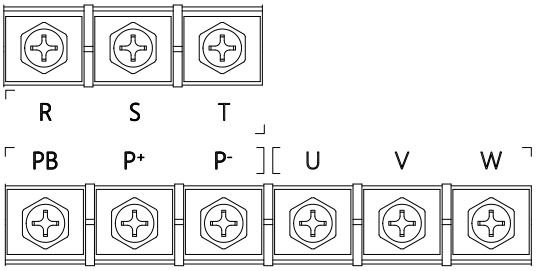
- VH6-43P7/45P5-B (Version 1.2 and above)/VH6-47P5-B (Version 1.3 and above) Main Circuit Terminal



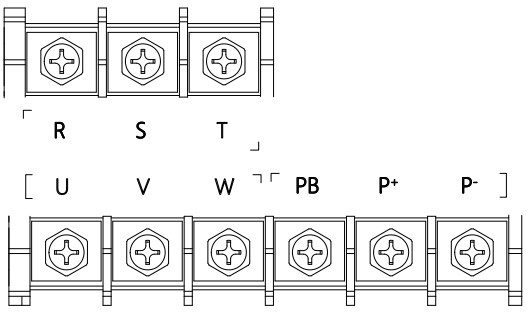
- VH6-4011-B/VH6-4015-B, VH6-4018-B/VH6-4022-B/VH6-4030-B main circuit terminals



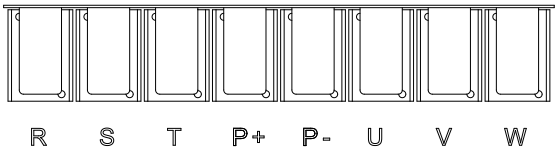
- VH6-4037-B/VH6-4045-B/VH6-4055-B Main Circuit Terminal



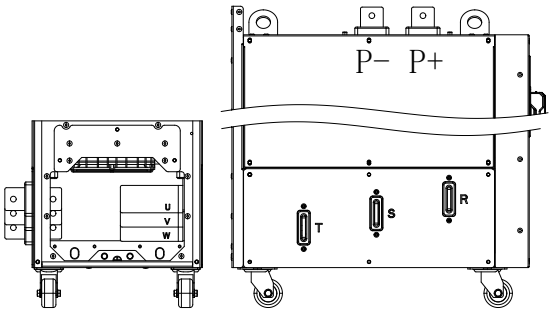
- VH6-4075-B/VH6-4090-B/VH6-4110-B Main Circuit Terminal



- VH6-4132/VH6-4160/Main circuit terminal



■ VH6-4185/VH6-4200/VH6-4220/VH6-4250/VH6-4280/VH6-4315/VH6-4355/VH6-4400/ VH6-4450 Main Circuit Terminal



■ Main Circuit Terminal Description

Terminal Label	Terminal name	function declaration
R、S、T	Three-phase 380V power supply input terminals	AC three-phase 380V power input connection point
U、V、W	Inverter output terminals	Connecting a three-phase AC motor
PE	earth terminal	protective ground
P+、PB	Braking resistor connection terminal	Braking resistor connection point
P+、P-	Positive and negative terminals of the DC busbar	Common DC bus input point; connection point for external braking units of 132 kW and above

1) Input power sources R, S, T

- The input-side wiring of the VFD has no specific phase sequence requirements; the positions of terminals R, S, and T are detailed in Sections 1.3.
- The circuit breaker, contactor, AC reactor, fuse, braking resistor, and output reactor are all optional components; for details, refer to Chapter 6 on Selection and Dimensions.

2）P+、P-

- After the power outage, residual voltage remains between P+ and P-. All LED indicators on the control keyboard must turn off, and a minimum of 15 minutes must pass before proceeding with wiring operations.
- The braking resistor must not be directly connected to the busbar, as this could damage the VFD or even cause a fire.
- Inverters rated at 132 kW and above lack built-in braking units; P+ and P-serve as connection points for external braking units, with the braking resistor connected to these units.

3）P+、PB

- The recommended reference value for braking resistor selection applies when the wiring distance is less than 5 meters; otherwise, it may damage the VFD.

4) Output-side U, V, W

- For output side cables, refer to Chapter 6: Selection and Dimensions.
- Capacitors or surge absorbers must not be connected to the inverter's output side, as this may damage the inverter.
- When the length of the motor cable exceeds 100 meters, electrical resonance may occur due to distributed capacitance effects; therefore, an AC output reactor must be installed near the VFD.

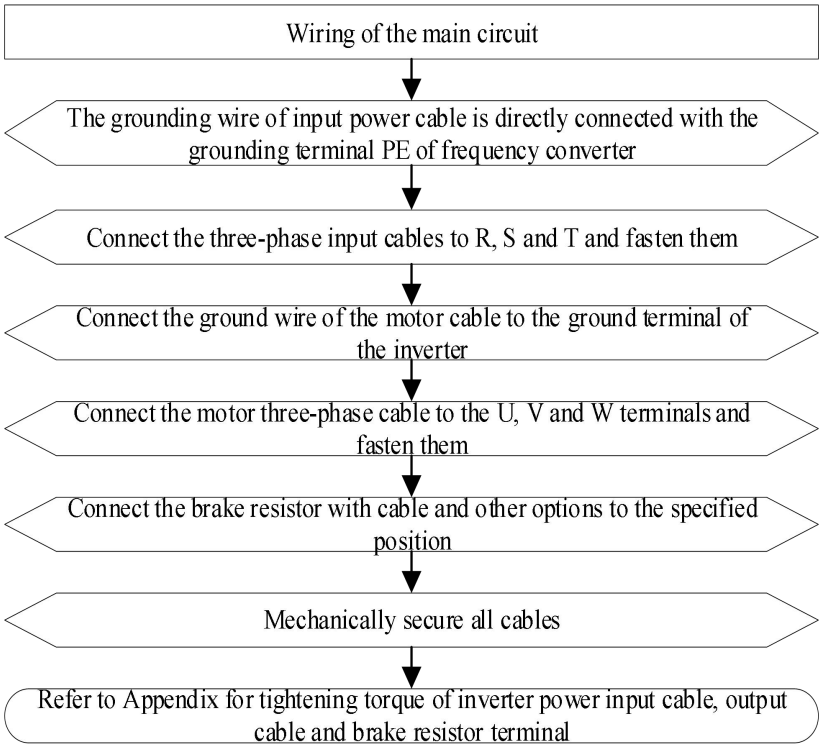
5) Grounding terminal PE

- The terminals must be reliably grounded, and the resistance of the grounding wire must be less than 10 Ω; otherwise, it may cause abnormal equipment operation or even damage.
- The grounding terminal PE and the power neutral terminal N must not be shared.
- The impedance of the protective grounding conductor must meet the requirement to withstand potential large short-circuit currents during faults.
- The dimensions of the protective grounding conductor shall be selected according to the table below.

The cross-sectional area (S) of a single phase line	The minimum cross-sectional area (Sp) of the protective conductor
S≤16mm2	S
16mm2 < S≤35mm2	16mm2
35mm2 < S	S/2

- The protective grounding must use yellow-green cable.

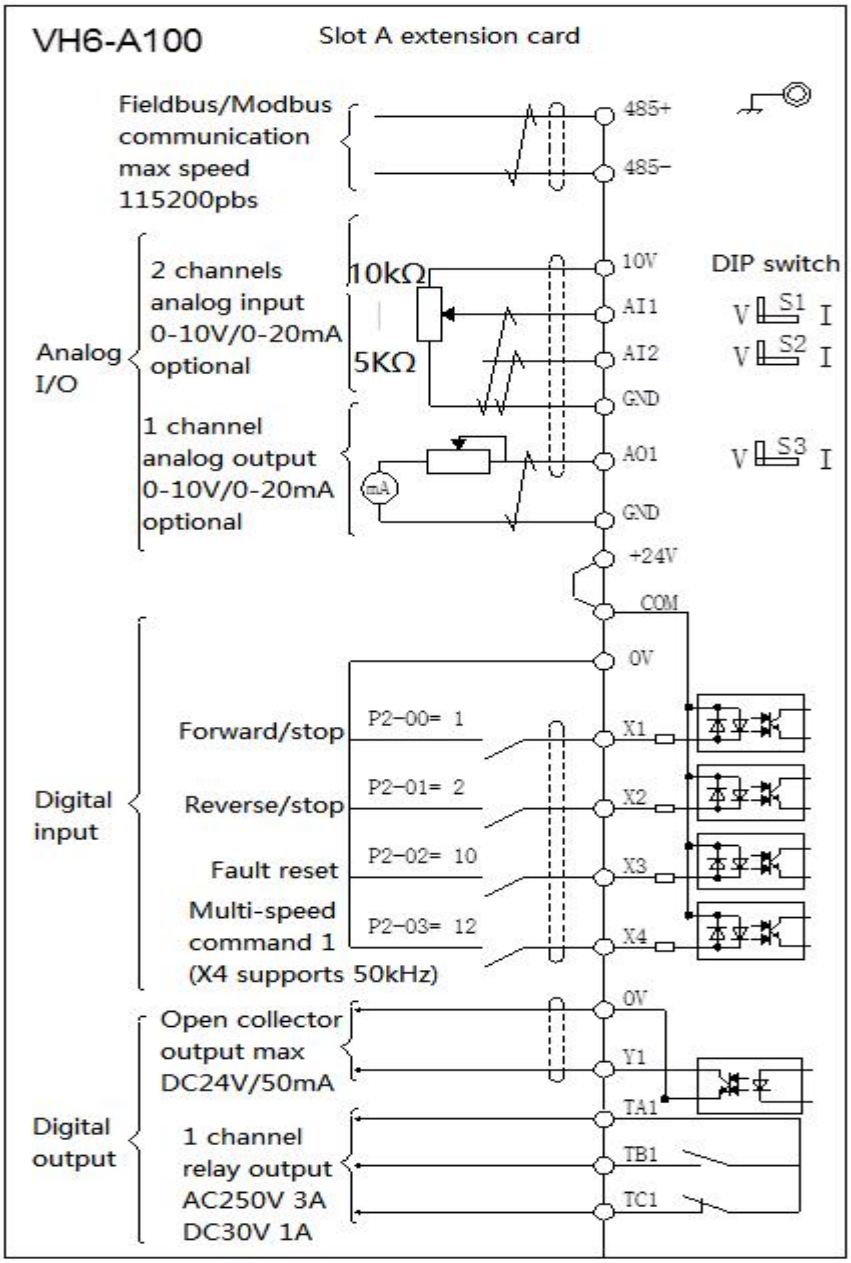
2.3.3 Main circuit terminal wiring process



2.4 Control Loop Configuration and Cabling

2.4.1 Control Circuit Terminal Specifications and Function Description

1) Wiring method for the A-slot expansion card control circuit



The VH6 series VFD feature four card slots (A, B, C, and D). The A slot comes with a standard I/O expansion card upon factory delivery, while the B and C/D slots require customer-provided expansion cards.

2) Control Circuit Terminal Description

Class	Terminal	Name	Terminal Function Description
Communication	485+ 485-	RS485 communication interface	Standard RS485 communication interface, using twisted pair or shielded cable
Source	10V-GND	+10V power supply	Provide an external +10V power supply with a maximum output current of 20 mA It is generally used for speed control via an external potentiometer
	24V-0V	DC 24V power supply	Provide +24V power to the terminal; no external load is permitted It is generally used as the operating power supply for digital input/output terminals No external load is allowed
	COM	Power input terminal	When driving the X terminal with an internal power supply The COM pin is shorted to 24V to form an NPN input; The COM and 0V are shorted to form a PNP input When driving the X terminal with an external power supply For the NPN-type input configuration, connect COM to the 24V+ power supply and disconnect it from the 24V terminal of the VFD unit For the PNP-type input connection, connect COM to the power supply's 0V terminal and disconnect it from the inverter unit's 0V terminal
Read analogue input	AI1-GND	Analog input AI1	Select voltage/current input via the digital code switch; Input voltage range: 0~10 V (input impedance: 22 kΩ); Input current range: 0~20 mA (input impedance: 500 Ω);
	AI2-GND	Analog Input AI2	
Analog output	AO1-GND	Analog Output AO1	Select voltage/current output via the digital code switch; Output voltage range: 0–10 V; external load: 2 kΩ–1 MΩ Output current range: 0–20 mA; external load less than 500 Ω
Digital input terminal	X1	Input Terminal 1	Optocoupler isolated input Input impedance: R = 3.3 kΩ Input voltage range: 9–30 V The maximum input pulse frequency is 3 kHz Compatible with bipolar input
	X2	Input Terminal 2	
	X3	Input terminal 3	
	X4	Input terminal 4	In addition to its features specified for X1-X3, it can also serve as a high-speed pulse input channel

			Maximum frequency: 50 kHz
Digital output terminal	Y1	Digital output terminal 1	Open-collector output Output voltage range: 0~24 V Output current range: 0~50 mA
Relay output terminal	TA1 TB1 TC1	Output Relay 1	The programmable device is defined as having multiple electrical output terminals TA-TB： normally open TA-TC： normal close Contact capacity: AC250V/2A (COSΦ=1) AC250V/1A (COSΦ=0.4) DC24V/1A

Before putting the VFD into operation, proper terminal wiring and installation of all jumper switches on the control panel must be completed.

3）Dial Switch Description

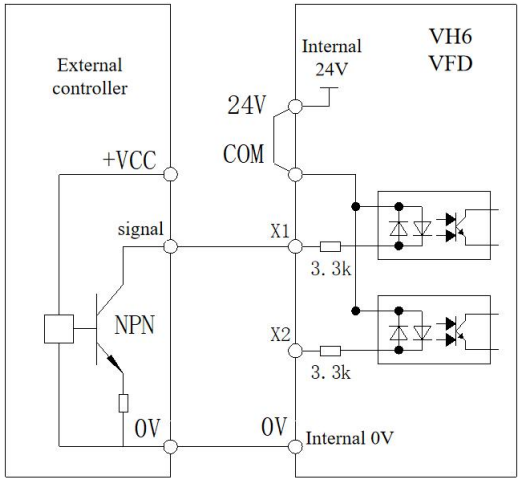
Classification	DIP switch	Name	Terminal Function Description
Resistance value	A1	AI1 Terminal Resistance Value	When the A1 dial is set to 500R, AI1 receives an analog signal ranging from 0–10 V or 0–20 mA. When the A1 dial is set to 250R, AI1 receives an analog signal ranging from 0–5 V or 0–10 mA.
	A2	AI2 Terminal Resistance Value	When the A2 dial is set to 500R, AI2 receives an analog signal ranging from 0–10 V or 0–20 mA. When the A2 dial is set to 250R, AI2 receives an analog signal ranging from 0–5 V or 0–10 mA.
Analogue input	AI1	AI1 Voltage/Current	When AI1's dial code is set on the V side, it receives an analog voltage signal; when set on the I side, it receives an analog current signal.
	AI2	AI2 Voltage/Current	On the V-side of AI2, AI2 receives an analog voltage signal. When AI2 is connected to side I, it receives an analog current signal.
Analog output	AO1	AO1 Voltage/Current	When AO1 is set to the V position, AO1 outputs an analog voltage signal. When AO1 is set to I, AO1 outputs an analog current signal.

2.4.2 Digital input/output terminal wiring

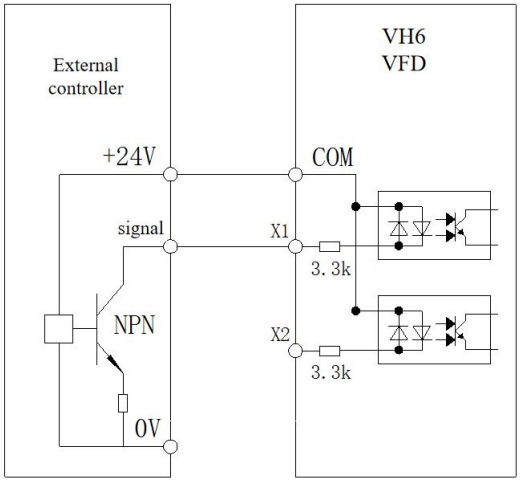
1) Digital input terminal

Generally, shielded cables should be used, and the wiring distance should be kept as short as possible, not exceeding 20 meters. When using an active drive method, necessary filtering measures must be implemented to mitigate power crosstalk. The contact control method is recommended; the detailed wiring diagram is shown below:

- Single-frequency variable-frequency leakage-type wiring method



Sink-type wiring using the 24V power supply from the expansion card

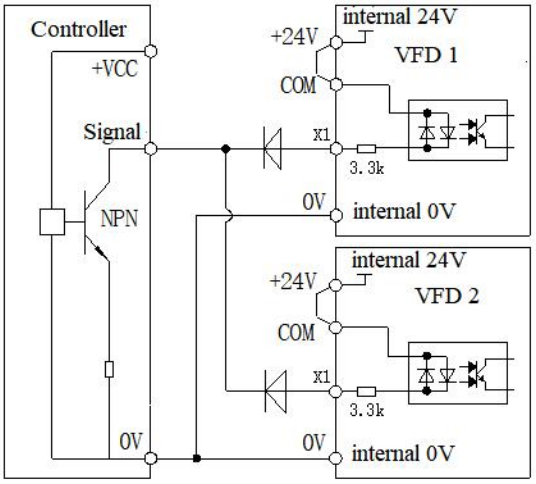


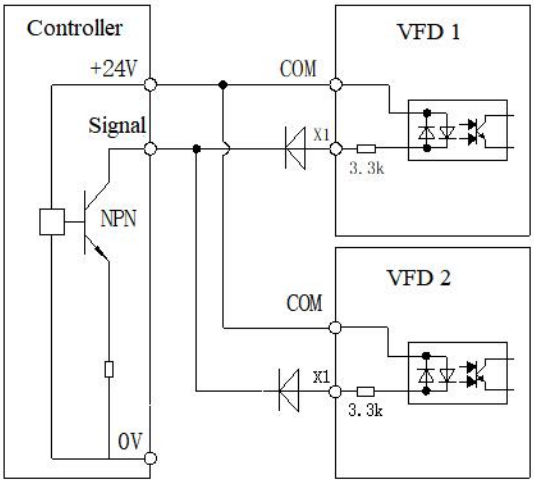
Sink-type wiring with an external 24V power supply

Using the inverter's internal 24V power supply is the most common wiring method. Short-circuit the inverter's COM terminal to the 24V supply, connect its 0V terminal to the external controller's 0V terminal, and link the X terminal to the controller's signal terminal. The inverter is controlled by switching the circuit's conduction state.

When using an external 24V power supply, connect the inverter's COM terminal to the external 24V source, and route the external power's 0V terminal through the external controller's control contacts to the corresponding X terminal.

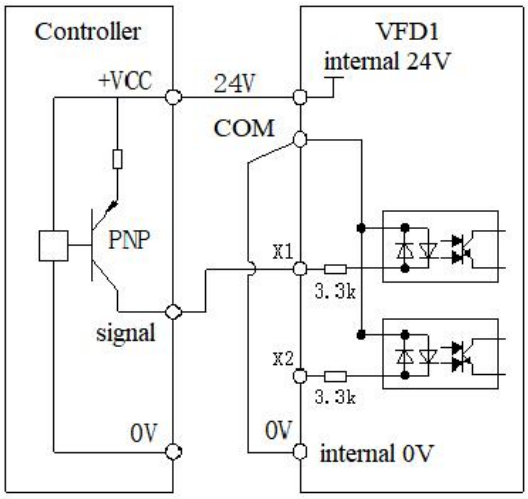
- Multiple variable-frequency leakage-type wiring methods



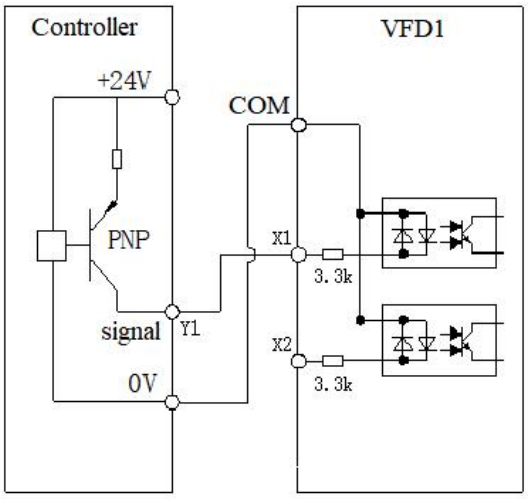


Under this wiring configuration, the X terminals of the VFD must not be connected in parallel, as this may cause unintended operation of the X terminals. If parallel connection between different VFD is required, a diode must be connected in series at the X terminal (with its anode connected to X), provided that the diode meets the following specifications: IF> 40 mA and VR> 40 V.

- Single-frequency variable-source wiring method



Source-type wiring using expansion card 24V power supply

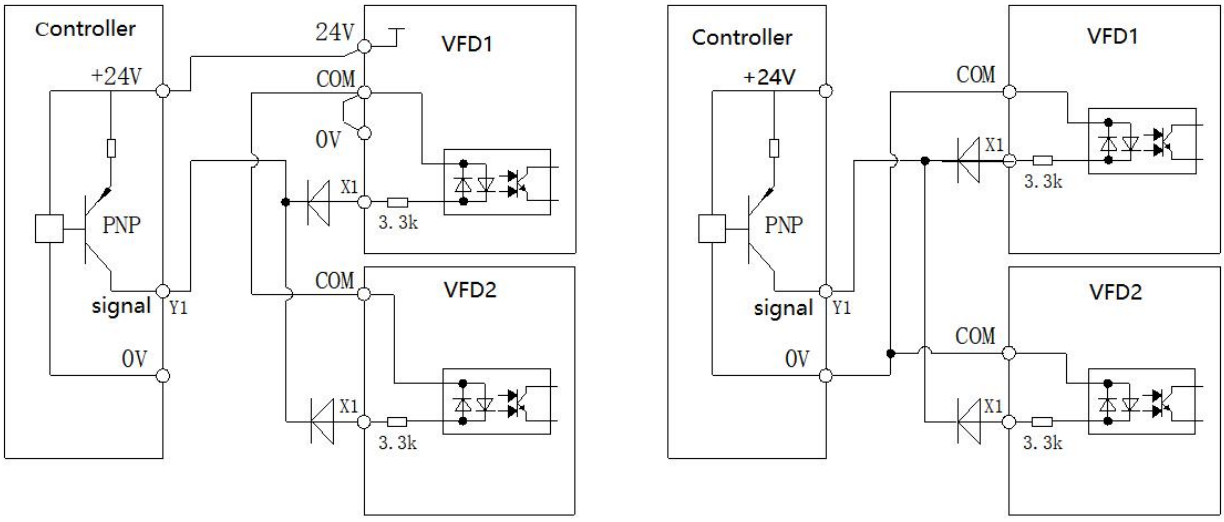


Source-type wiring with an external 24V power supply

When using the inverter's internal 24V power supply, short-circuit the inverter's 0V terminal to COM, connect terminal X to the signal terminal of the external controller, and link the inverter's 24V supply to the common terminal of the external controller.

When using an external 24V power supply, connect the inverter's COM terminal to the external 0V source, and route the 24V power through the external controller's control contacts to the corresponding X terminals.

- Multiple variable-frequency power source wiring configurations

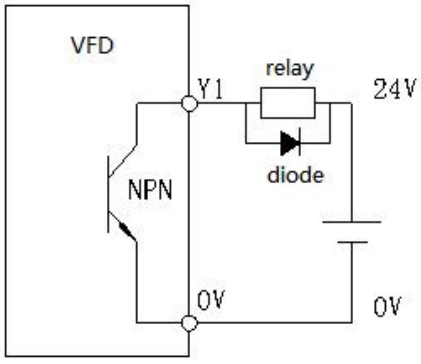


Under this wiring configuration, the X terminals of the VFD must not be connected in parallel, as this may cause unintended operation of the X terminals. If parallel connection between different VFD is required, a diode must be connected in series at the X terminal (with its anode connected to X), provided that the diode meets the following specifications: IF> 40 mA and VR> 40 V.

2) Digital output terminal

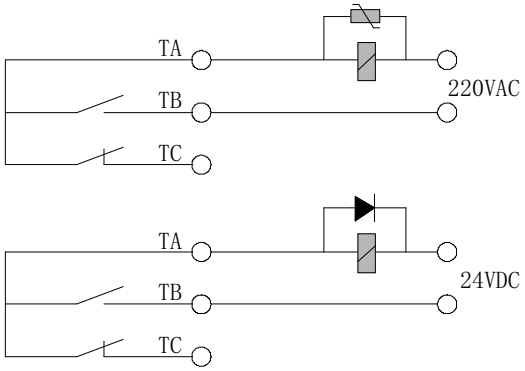
When the digital output terminal needs to drive a relay, a freewheeling diode should be installed across the relay coil; otherwise, the 24V DC power supply may be damaged. The driving current should not exceed 50 mA.

The polarity of the freewheeling diode must be installed correctly, as shown in the figure below. Otherwise, when output is present at the digital output terminals, the 24V DC power supply will be immediately damaged.



3) Relay output terminal

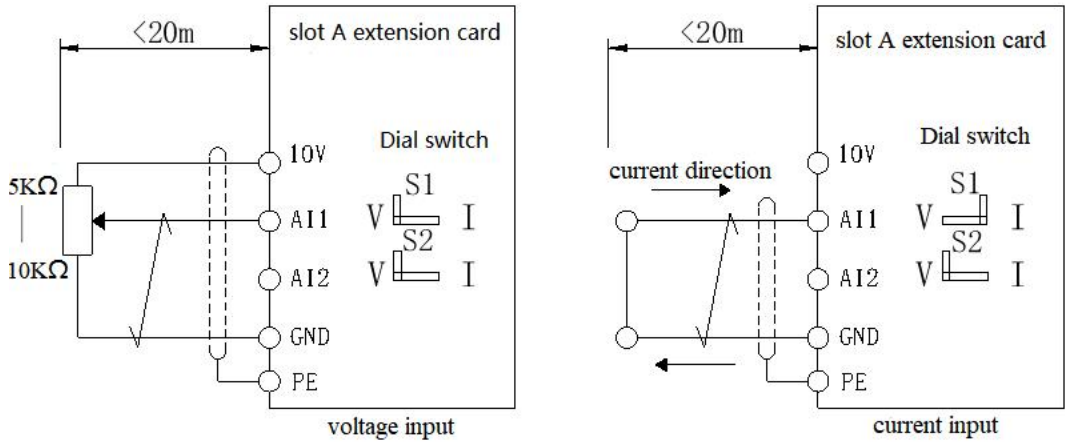
Inductive loads (relays, motors, indicator lights) generate voltage spikes when current is interrupted. To mitigate this, varistors are employed at relay contacts for protection, and absorption circuits—such as varistors, RC absorption circuits, or diodes—are installed on the inductive loads to minimize disturbance currents during shutdown.



2.4.3 Simulation of Input/Output Terminal Wiring

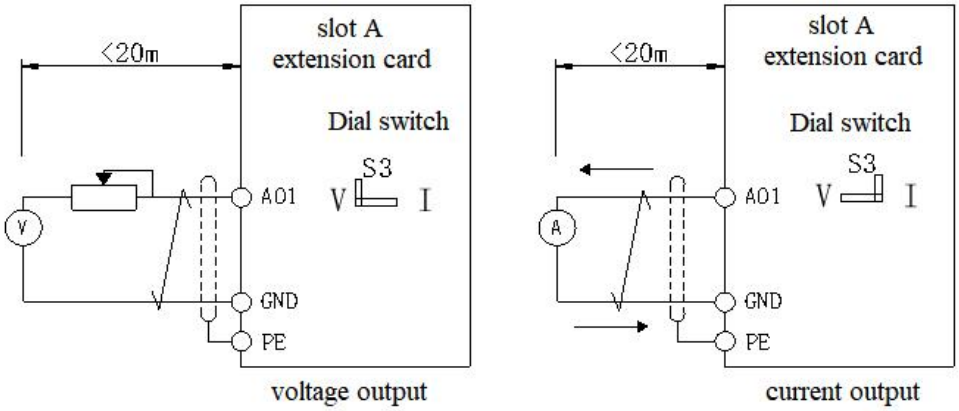
1) Wiring for the analog input terminal AI

The AI1/AI2 terminals accept analog signal inputs, with the AI1/AI2 rotary selector controlling input voltage (0~10 V) or current (0~20 mA). The specific wiring is shown in the figure below:



2) Wiring for the analog output terminal AO

The AO1 external analog instrument can display various physical quantities. The AO1 digital selector allows selection between output voltage (0–10 V, external load: 2 kΩ~1 MΩ) or current (0~20 mA, external load: less than 500 Ω). The terminal wiring configuration is shown in the figure below.



- When using analog inputs, install a filter capacitor or a common-mode inductor between the AI and GND.
- The resistance value of the potentiometer connected between the control terminal 10V and GND ranges from 5 to 10 kΩ.
- Analog input and output signals are susceptible to external interference; therefore, shielded cables must be used during wiring with proper grounding. The wiring length should be kept as short as possible, not exceeding 20 meters.
- DIP switch description:

Taking the VH6-A100 as an example, the A-slot expansion card uses three digital code positions to determine the type of analog input and output signals.

S1: AI1 OFF = 0–10 V, ON = 0–20 mA, Default OFF

S2: AI2 OFF = 0–10 V, ON = 0–20 mA; default: OFF

S3: AO1 OFF = 0–10 V, ON = 0–20 mA; default: OFF

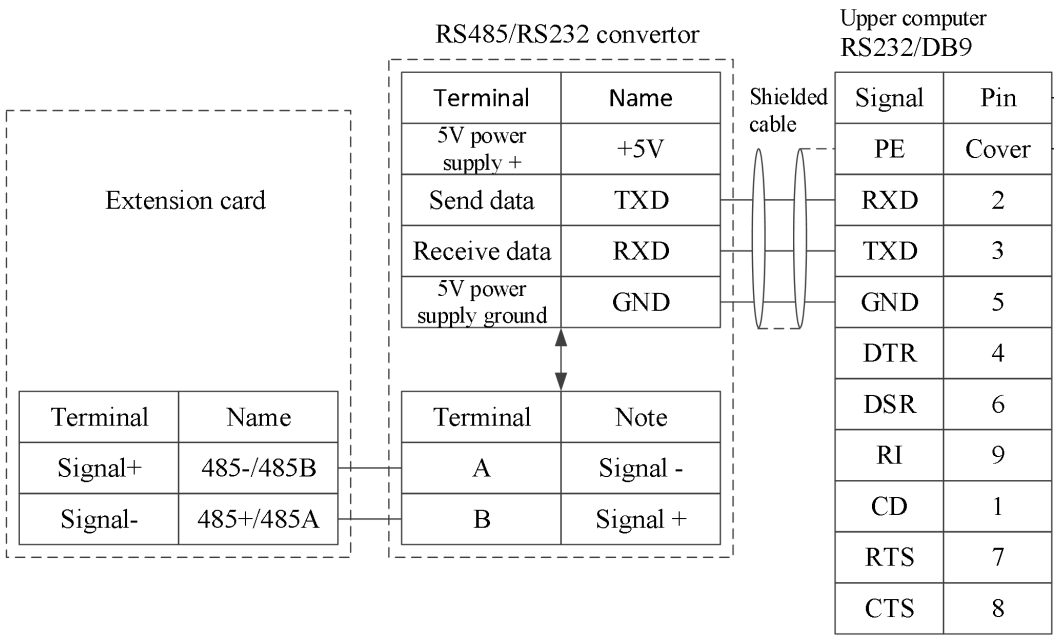
- The dip switch is located behind the expansion card. Before removing the expansion card for adjustment, ensure the inverter is completely powered off. Hot-plugging of the expansion card is prohibited.

2.4.4 Wiring of Communication Terminals

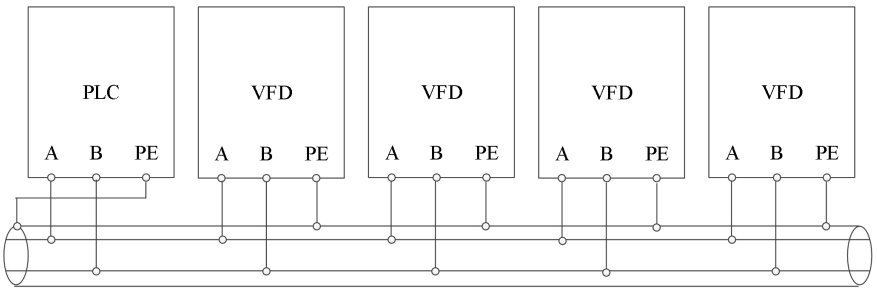
The inverter provides users with a standard RS485 communication interface.

The following wiring methods can form control systems with a single master and single slave or a single master with multiple slaves. Using software on the host computer (PC or PLC controller), real-time monitoring of VFDs in industrial control systems can be achieved, enabling complex operational control functions such as remote operation and high automation.

1) Connection between the inverter's RS485 interface and the host computer



2) Multiple VFDs can be interconnected via RS485, with the PLC (or host computer) serving as the central controller, as shown in the figure. As the number of connected units increases, the communication system becomes more susceptible to interference. It is recommended to follow the wiring specifications below:

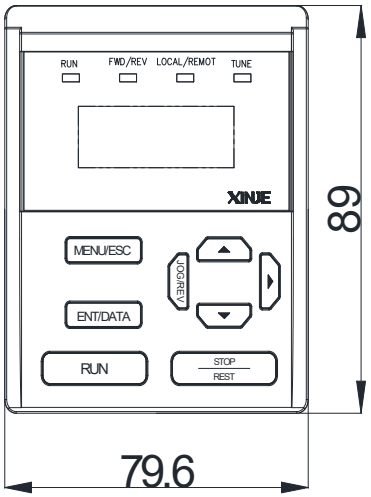


3. Operating Instructions and Application Examples

3.1 Keyboard Operation and Usage

3.1.1 Keyboard Layout

The operation panel and control terminals of the VFD enable control over motor startup, speed regulation, shutdown, braking, operational parameter settings, and peripheral devices. The appearance of the operation panel is shown below (dimension units: mm):



3.1.2 Keyboard Function Description

The VFD’s operation keyboard features eight buttons, with their functions defined as follows:

Key	Name	Function Declaration
MENU/ESC	Programming/Exit Key	Enter or exit programming mode
ENT/DATA	Storage/Switch Key	In programming mode, it is used to enter the next menu level or store parameter data.
RUN	Forward operation key	In keyboard command mode, pressing this key runs the command forward.
STOP / REST	Stop/Reset Key	Shut-down/Fault Reset
JOG/REV	Multifunctional Button	Set via P8-00
▲	Add Key	The frequency of data and parameter increments or runtime pauses

Key	Name	Function Declaration
	Key Reduction	The frequency of data and parameter decrementation or runtime pauses
	Shift/Monitoring Key	In edit mode, you can select the modification bits for the data; in other modes, you can switch between display modes and monitor parameters.

3.1.3. Description of Digital Tube LED and Indicator Lights

The inverter's control panel features a five-digit 7-segment LED display and four status indicator lights.

Four status indicators are located above the LED display, arranged from left to right as follows: RUN, FWD/REV, LOCAL/REMOT, and TUNE. The table below provides descriptions of these indicators.

Pilot Lamp	Meaning	Function Declaration
RUN	Operation indicator light	Light on: Operating status; The light is off: The machine is stopped.
FWD/REV	Forward/Reverse Indicator Light	Light on: Reverse operating mode; The light is off: in forward rotation mode; Flash: Switch state.
LOCAL/REMOT	Command Source Indicator Light	Extinguish: Panel start/stop; Always on: Terminal start/stop; Flash: Start/stop communication.
TUNE	Tuning indicator light	Slow lamp flash: Tuning mode; Flash light: Fault status; The light remains on: Torque state.

3.1.4 Operation Panel Usage Instructions

The operation panel allows various operations on the VFD, such as the following:

1) Switching of status parameter display

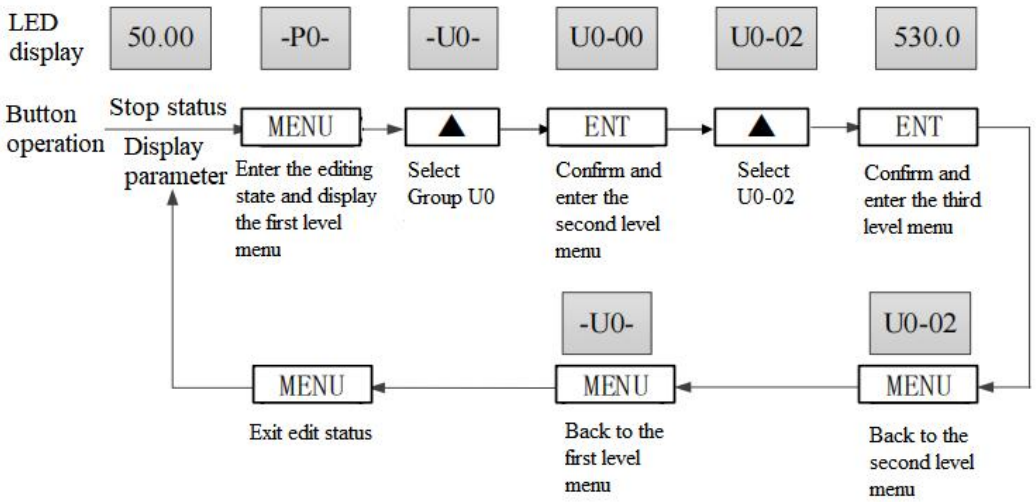
Method 1:

After pressing the button  , switch the LED display parameters: activate the display parameter settings P8-07 and P8-08, and deactivate the display parameter setting P8-09.

When querying status monitoring parameters, press the ENT/DATA key to directly switch back to the default display mode. For the shutdown state, the default monitoring parameter is the set frequency; for the operating state, it is the output frequency.

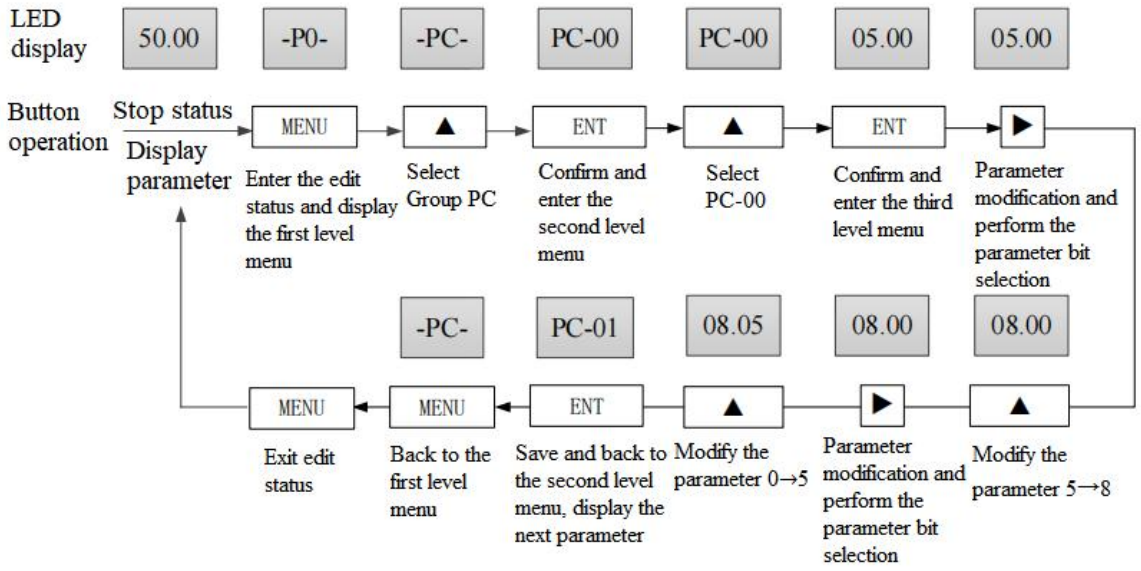
Method 2:

View the U0 group parameters; assume you are viewing U0-02.



2) Parameter Settings

(1) For illustration, consider the case where the parameter PC-00 (pointing frequency) is adjusted from 5.00 Hz to 8.05 Hz.

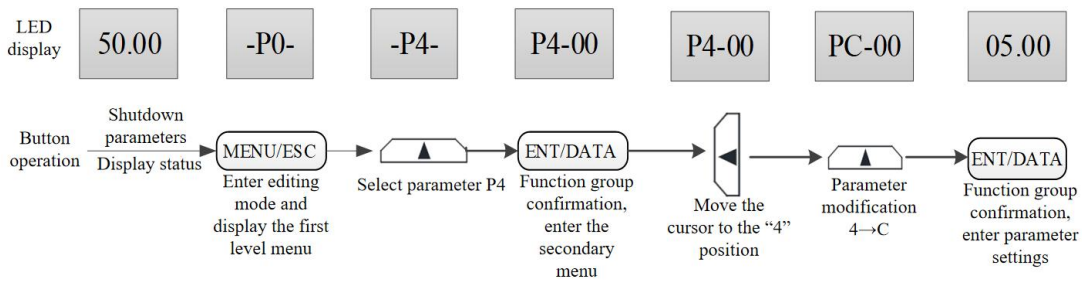


In the third-level menu state, if a parameter does not have a flashing indicator, it means the parameter cannot be modified. Possible reasons include:

- This parameter is read-only, such as actual detection status parameters or operation log parameters.
- This parameter cannot be modified during operation; it must be changed after the system is shut down.

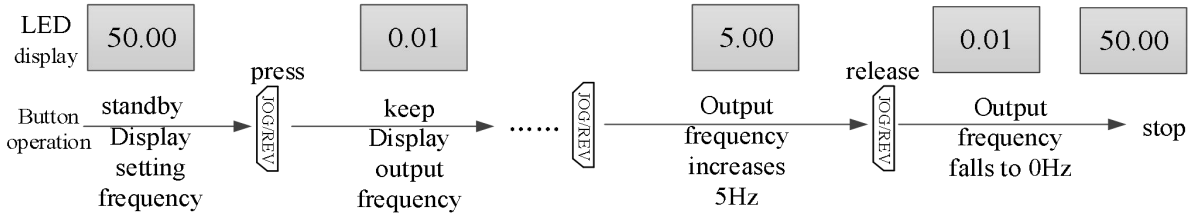
(2) The secondary menu enables the modification of function code group numbers within the primary menu.

For example, to adjust the value of PC-00 on the P4-00 interface, click the left button to move the cursor to the “4” position for adjustment, as shown in the figure below:



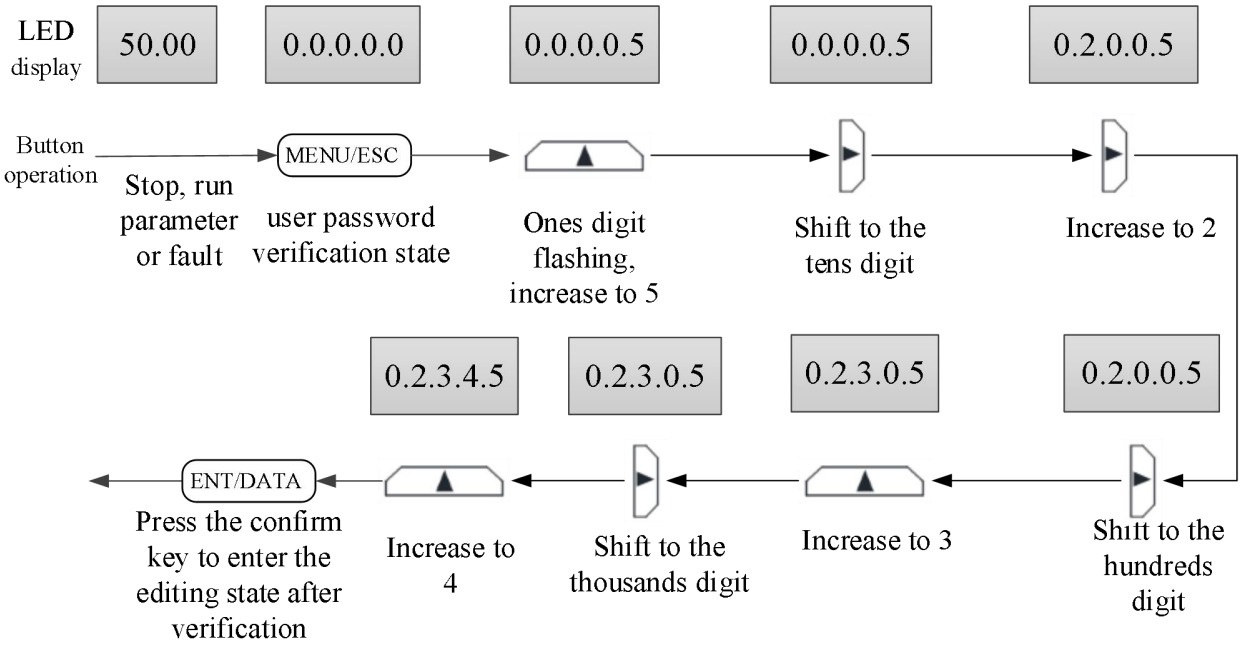
3) Pulse operation

Assuming the current command channel is the operation panel and in shutdown mode, press the JOG/REV function key to select forward jogging (P8-00=2) with a jogging frequency of 5 Hz. Example:



4) Set user password verification and unlocking operation

Assume the "user password" P8-03/P8-31 is set to "02345". In the figure below, the bold numbers indicate the flash bits.



5) Fault status query – Fault parameters

The method for querying fault status is the same as that for monitoring parameters in Group U0.

explain:

(1) When the fault code is displayed  , users can query the P7 group parameters by pressing the corresponding key.

(2) When querying fault parameters, users can press the MENU/ESC keys to directly return to the fault code display mode.

6) Set frequency keyboard; assign key operations

Assuming the current status is the shutdown parameter display state with P0-03=0, the operation procedure is as follows:

(1) Frequency regulation is digitally set;

(2) When the key is held down, the LED units digit increments first. When it advances to the tens digit, the tens digit increments; when it reaches the hundreds digit, the hundreds digit increments, and so on. If the key is released and then pressed again, the increment starts over from the LED units digit.

(3) When the key is held down, the LED units digit begins counting down. When it reaches the tens digit and needs to borrow from the next digit, the tens digit starts counting down. When the tens digit reaches the hundreds digit and needs to borrow from the next digit, the hundreds digit begins counting down, and so on. If the key is released and then pressed again, the counting down starts anew from the LED units digit.

3.1.5 Definition and Operation of Multifunctional Buttons

The functions of the JOG/REV buttons can be defined using the P8-00 function code, enabling menu switching, reversing the inverter's rotation direction, or performing a stop-and-go operation. For detailed configuration instructions, refer to the P8-00 function code documentation.

3.1.6 Quick Parameter Look-Up

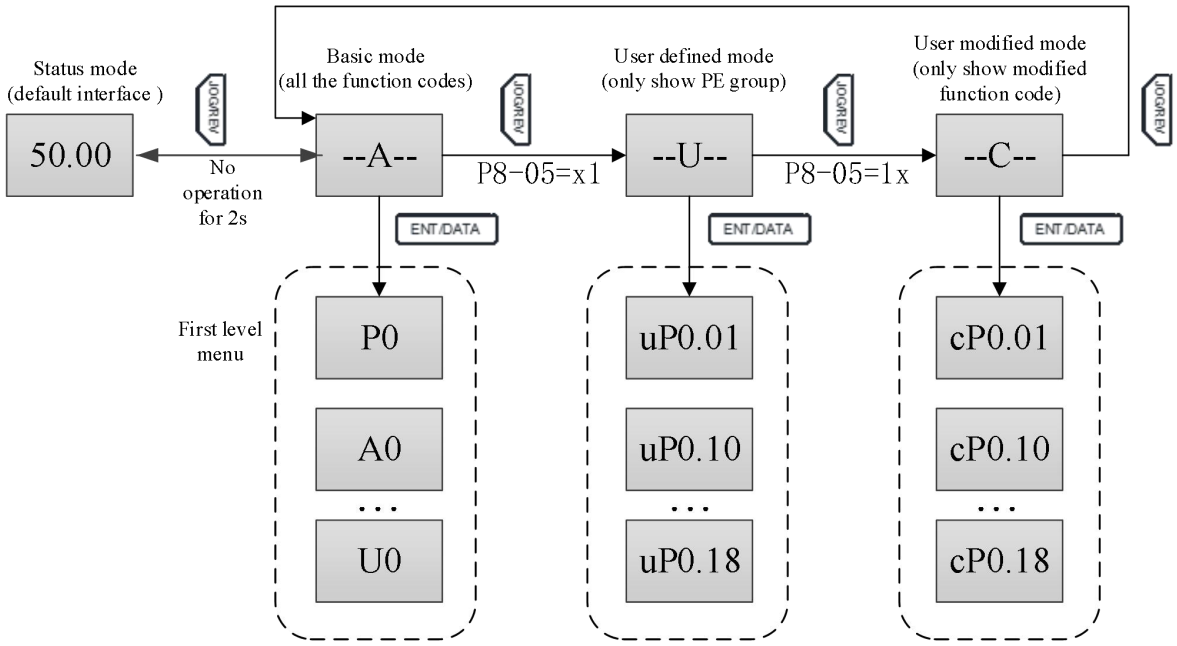
The VH6 series features a large number of function codes. To facilitate quick user retrieval, the inverter provides two additional methods for rapidly locating these function codes:

(1) Users can select and customize commonly used function codes, with a maximum of 32 codes to form a user-defined function code set. The required functional parameters are determined through the PE group.

(2) The inverter automatically arranges function codes that differ from the factory default values for users to select quickly. Three viewing modes for function codes are provided, with each parameter display format showing the corresponding code:

Parameter Display Method	Show
Functional Parameter Method	--A--
User Custom Parameter Method	--U--
How users modify parameters	--C--

The three functional code display modes can be switched using the multi-function buttons on the panel. The procedures for viewing or modifying each group's functional codes follow the same steps as those for keyboard operations described earlier.



The P8-05 function code controls whether the user-defined group or user-modified parameter group is displayed.

	Factory Value: 00		
P8-05	set value	Ten	the unit
	function	--C--Group Display Selection	--U--Group Display Selection
	Setting	0: Do not display; 1: Display	0: Do not display; 1: Display

1) Basic Function Code Group

The basic function code group contains all the functions of the VFD. Upon entering this section, you will be directed to the Level I menu, where you can perform queries or modifications using the operation methods described earlier.

2) User Custom Feature Code Group

The purpose of the user-customizable menu is primarily to enable users to quickly view and modify frequently used functional parameters. Parameters displayed in the menu, such as "uP0.01," represent the functional parameter P0.01. Modifying these parameters via the customizable menu yields the same results as doing so under standard programming conditions.

The functional parameters for the user-customized menu are derived from the PE group, which selects these parameters. Setting them to P0.00 indicates no selection—a total of 32 parameters can be configured. If the menu displays “NULL” upon entry, it signifies that the user-customized menu is empty.

Users can customize and edit the settings according to their specific needs.

3) The user has changed the composition of the function code.

The user has modified the function code group, listing only those codes whose current settings differ from the factory defaults. This list is automatically generated by the inverter, enabling users to quickly access the modified function codes.

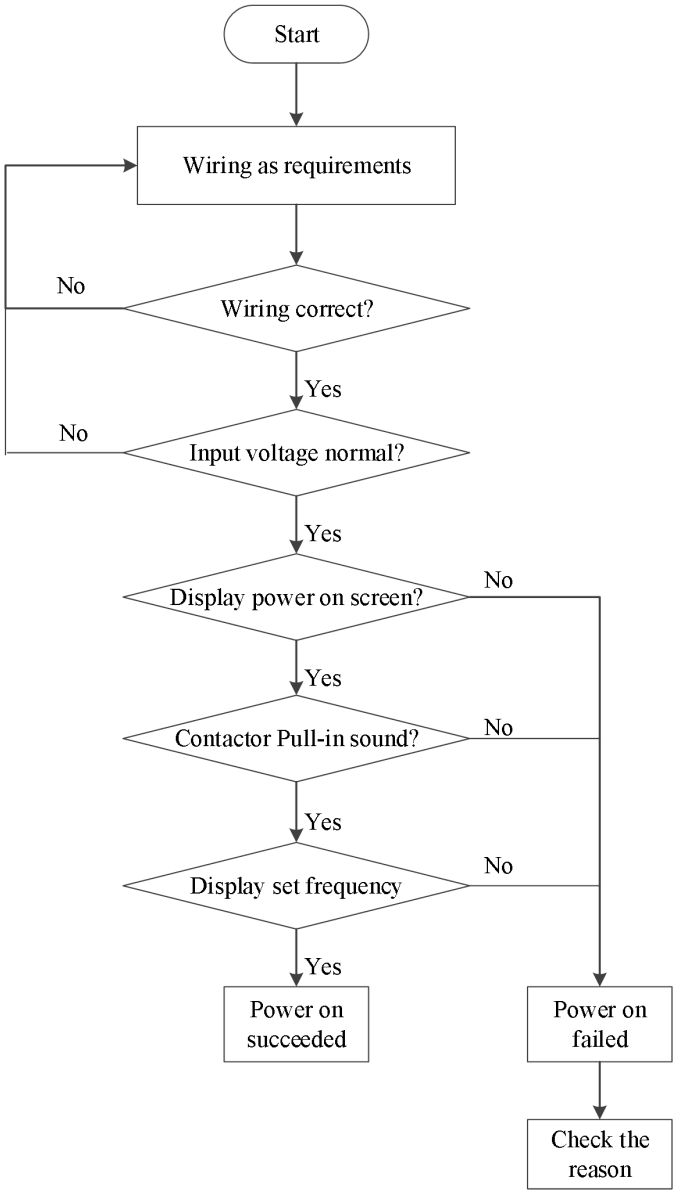
3.2 Powering the Inverter

3.2.1 Post-power-on inspection

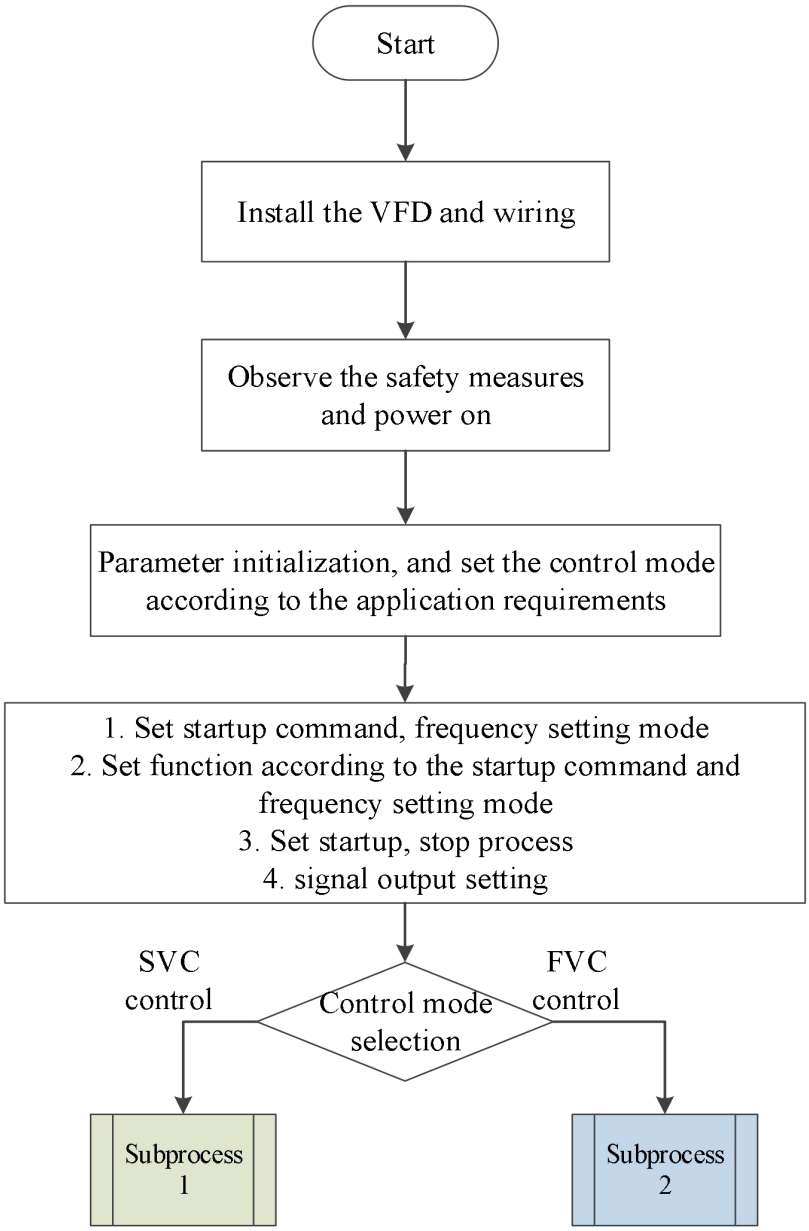
Follow the wiring instructions provided in the “EMC (Electromagnetic Compatibility)” section of this manual.

3.2.2 First Power-On Procedure

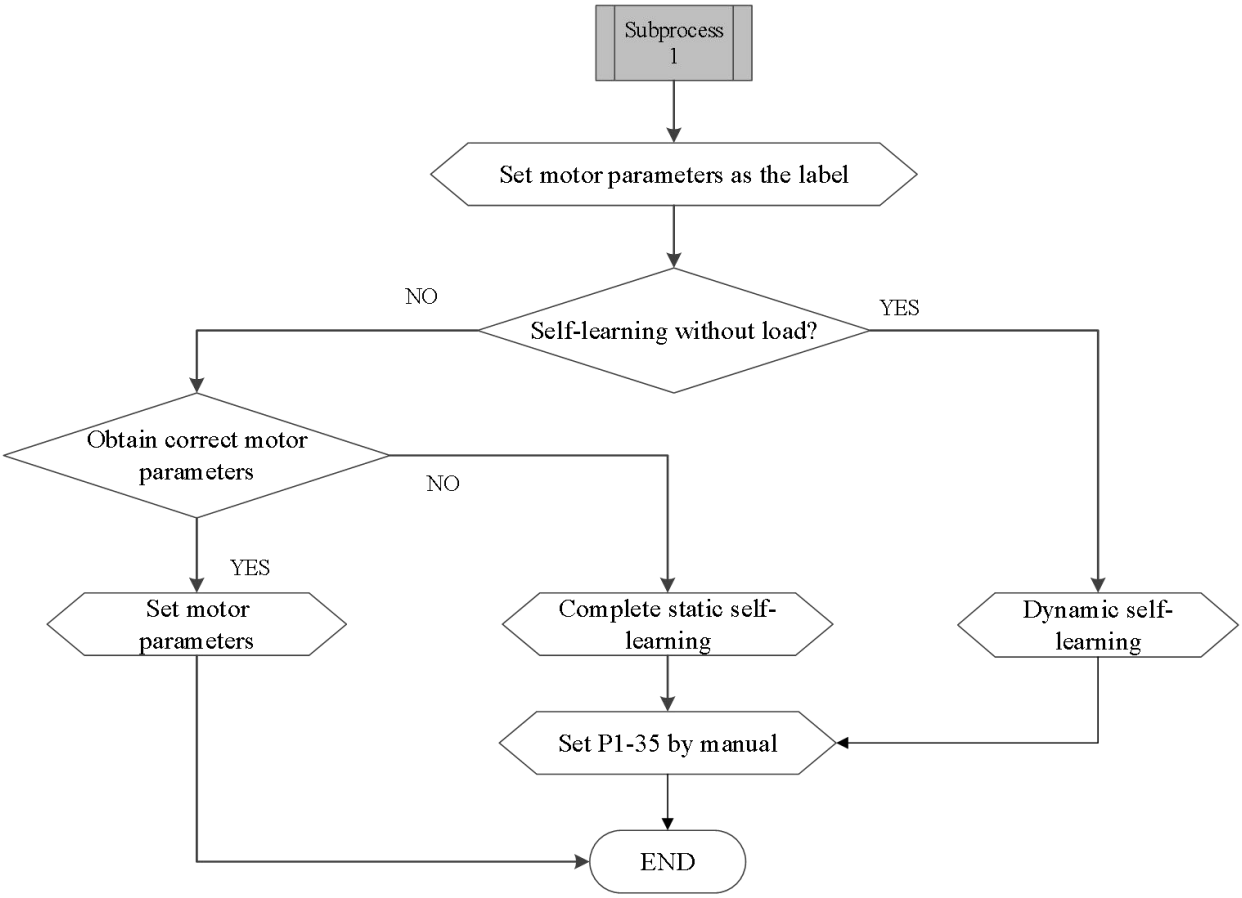
After verifying that the wiring and power supply are correct, close the AC power switch on the inverter's input side to power it on. The inverter's operation keyboard LED displays the startup animation, and the contactor engages normally. When the digital display shows the set frequency, the inverter has completed initialization. The initial power-on procedure is illustrated below:

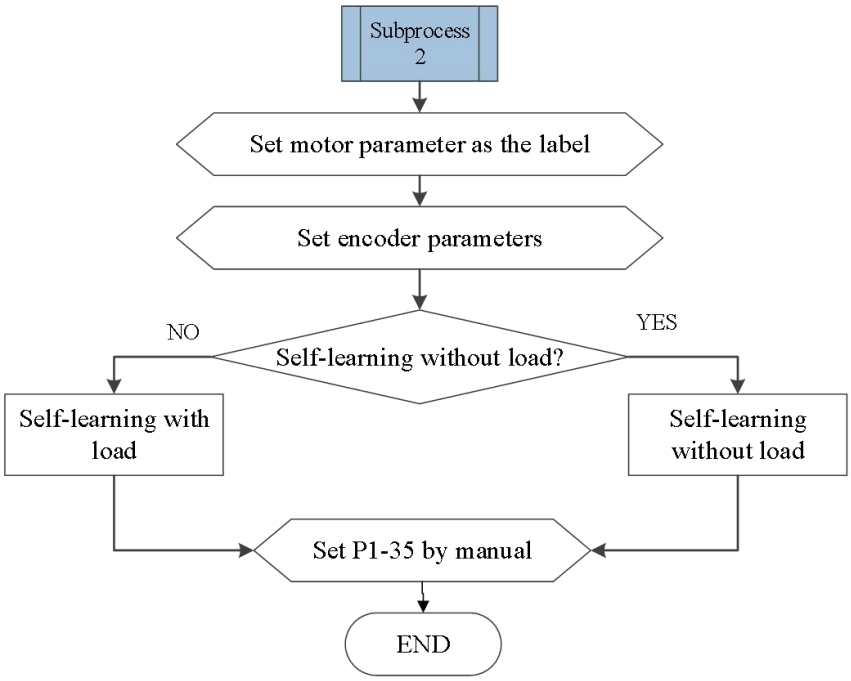


3.2.3 Start Debugging



3.2.4 Debugging Process





3.3 Motor Parameters and Tuning

Motor Parameter Settings

When operating in vector control mode (P0-01=1 or 2), the VFD requires correct motor parameters, which differ from those required in VF mode (P0-01=0). The mandatory motor parameters (default: parameter 1) are as follows:

Motor Parameter 1	Description	Explain
P1-01～P1-05	Motor's rated power/voltage/current/frequency/rotational speed	Model Parameters, Manual Input
P1-06～P1-10	The equivalent phase resistance, inductive reactance, and rotor inductance of the stator within the motor	Tuning parameters and tuning results
P1-25～P1-33	Encoder Parameters, Closed-Loop Vector Mode Settings	Encoder Parameters

For a multi-motor system, Motor Parameter 2:

Motor Parameters 2	Description	Explain
A2-01～A2-05	Motor's rated power/voltage/current/frequency/rotational speed	Model Parameters, Manual Input
A2-06～A2-10	The equivalent phase resistance, inductive reactance, and rotor inductance of the stator within the motor	Tuning parameters and tuning results
A2-25～A2-33	Encoder Parameters, Closed-Loop Vector Mode Settings	Encoder Parameters

3.1.1. Motor Tuning

Methods for enabling the VFD to obtain the internal electrical parameters of the controlled motor include dynamic tuning, static tuning, and manual input of motor parameters.

Tuning Method	Description	Tuning Effect
No-load dynamic tuning	Suitable for applications where the motor and system can be easily separated.	Optimal
Dynamic Tuning Under Load	Suitable for applications where the motor and system are difficult to disassemble.	Average
Static Tuning 1	These motors are suitable for applications where the motor and load cannot be easily separated and dynamic tuning is not permitted: asynchronous motors P1-09 and P1-10; synchronous motors P1-19.	Above Average
Static Tuning 2	This mode is exclusively suitable for asynchronous motors where separation between the motor and load is challenging and dynamic	Good

Tuning Method	Description	Tuning Effect
	tuning operation is not permitted. Compared to static tuning 1, the tuning time is relatively longer but yields superior results; therefore, this mode is recommended for static tuning applications.	
Manual Parameter Entry	This solution is suitable for applications where motors are inseparable from the system. It involves copying and inputting the parameters of motors of the same model that have been successfully tuned with the previous VFD into the corresponding function codes: Asynchronous motors – P1-00 to P1-10; Synchronous motors – P1-00 to P1-05 and P1-15 to P1-19.	Average

The automatic parameter tuning procedure for the motor is as follows (using Motor 1 as an example; select Group 2 of motor parameters via P0-25): Step 1: If the motor needs to be completely isolated from the load, disconnect it mechanically from the load when power is off, allowing the motor to rotate freely under no-load conditions.

Step 2: After power-on, select the first motor control mode (P0-01) as open-loop vector control, and set the VFD command source (P0-02) to the operation panel command channel.

Step 3: Enter the motor's nameplate parameters accurately (e.g., P1-00 to P1-05). Enter the following parameters based on the actual motor specifications (select according to your current motor):

Motor Selection	Parameter
Motor 1	P1-00: Motor Type Selection P1-01: Motor Rated Power P1-02: Motor Rated Voltage P1-03: Motor Rated Current P1-04: Motor Rated Frequency P1-05: Motor Rated Speed
Motor 2	A2-00～A2-05：Same as the above definition

Step 4：

Parameter	Name	Bit	Set Value	Explain
P1-35	Self-learning of Motor Parameters	Ones place	0	no-ops
			1	Static Tuning 1 (Some Parameters)
			2	dynamic tuning
			3	Static Tuning 2 (for asynchronous motors only)
		Tens place	0	asynchronous machine
			1	synchronous machine

- If the motor type is an asynchronous motor

For P1-35 (Motor 2 corresponds to A2-35), select option 2 (“Asynchronous Motor Dynamic Tuning”) and confirm by pressing the ENT/DATA key; the keyboard will display “TUNE”. Then press the “RUN” button on the panel: the inverter will control the motor’s acceleration, deceleration, and forward/reverse operation, with the running indicator light illuminating. The tuning process lasts approximately 2 minutes. When the displayed information disappears, the system returns to normal parameter display mode, indicating successful tuning.

After this dynamic tuning, the VFD automatically calculates the following motor parameters:

Motor Selection	Parameter
Motor 1	P1-06: Stator phase resistance of asynchronous motor P1-07: Rotor phase resistance of asynchronous motor. P1-08: Leakage inductance of asynchronous motor P1-09: Mutual inductance of asynchronous motor. P1-10: No-load current of asynchronous motor.
Motor 2	A2-06～A2-10: Definition as above

If the motor cannot be completely decoupled from the load, select 1 (static tuning for asynchronous motors) on P1-35 (Motor 2 corresponds to A2-35), then press the RUN button on the keyboard panel to begin motor parameter adjustment.

- If the motor type is a synchronous motor

For P1-35 (Motor 2 corresponds to A2-35), select option 12 ("Dynamic Tuning of the Synchronous Motor") and confirm by pressing the ENT/DATA key; the keyboard will then display "TUNE". Press the "RUN" button on the panel to activate the VFD, which will drive the motor for acceleration, deceleration, and forward/reverse operation. The operation indicator light will illuminate. The tuning process lasts approximately 2 minutes. When all displayed information disappears and normal parameter values appear, the tuning is complete.

After this dynamic tuning, the VFD automatically calculates the following motor parameters:

Motor Selection	Parameter
Motor 1	P1-15: Synchronous machine stator phase resistance P1-16: Synchronous machine D-axis inductance P1-17: Synchronous machine Q-axis inductance P1-19: Synchronous machine back EMF
Motor 2	A2-15～A2-20：Definition as above

If the motor cannot be completely decoupled from the load, select 11 (static tuning for synchronous motors) on P1-35 (Motor 2 corresponds to A2-35), then press the RUN button on the keyboard panel to begin motor parameter adjustment.

- For closed-loop vector mode tuning, you must set the encoder parameters correctly and configure the motor control mode (P0-01) to 2.

- When performing static tuning in FVC mode on a synchronized motor, this mode does not recognize the encoder phase sequence. After completion of tuning, monitor the encoder count direction and promptly adjust the phase sequence of the P1-28 encoder.

3.4 Start/Stop Control of the Inverter

3.4.1 Selection of the Start/Stop Signal Source

The VFD has three start/stop signal sources: panel-based, terminal-based, and communication-based, selected via the functional parameter P0-02.

3.4.1.1 Panel Start/Stop Control

Command control is performed via the buttons on the panel. Press the RUN key on the keyboard to start the inverter's operation; while the inverter is running, press the STOP key to halt its operation.

Parameter	Name	Set Value	Explain
P0-02	Speed Mode Operation Command Channel Selection	0	Panel Command

3.4.1.2 Terminal Start/Stop Control

The VH6 VFD offers multiple terminal control methods: Function code P2-10 determines the switching signal mode, while function codes P2-00 to P2-09 specify the input ports for start/stop control signals.

Example 1: In a two-wire control system, the forward rotation signal is connected to X1, and the reverse rotation signal is connected to X2.

Parameter	Name	Set Value	Explain
P0-02	Speed Mode Operation Command Channel Selection	1	Terminal Command
P2-10	XI Terminal Command Method	0	Two-line 1
P2-00	X1 Function Selection	1	Forward operation
P2-01	X2 Function Selection	2	Reverse Operation

Example 2: In a three-wire control system, the forward rotation signal is connected to X1, the reverse rotation signal to X2, and the stop signal to X3.

Parameter	Name	Set Value	Explain
P0-02	Speed Mode Operation Command Channel Selection	1	Terminal Command
P2-10	XI Terminal Command Method	2	Three-line 1
P2-00	X1 Function Selection	1	Forward operation
P2-01	X2 Function Selection	2	Reverse Operation
P2-02	X3 Function Selection	3	Three-line operation control

3.4.1.3 Communication Start/Stop Control

The VH6 supports Modbus-RTU/Modbus-ASCII communication with the host computer. The inverter's communication port incorporates the Modbus-RTU/Modbus-ASCII slave protocol; the host

computer must use the Modbus-RTU/Modbus-ASCII master protocol to communicate with it. For communication addresses, refer to Appendix B-3-3, which contains the communication protocol parameter addresses and the 4-1 Function Code Table.

Example of communication parameter settings:

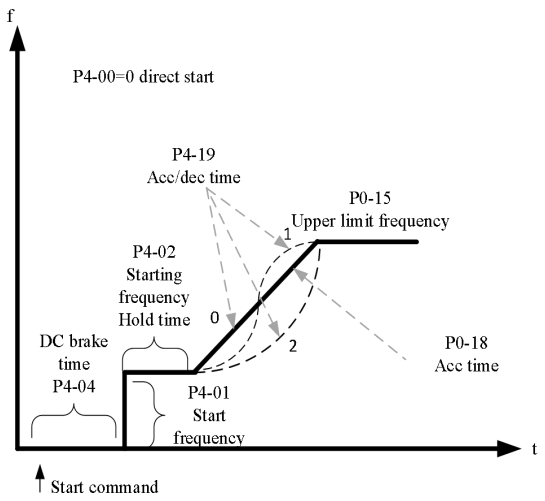
Parameter	Name	Set Value	Explain
P0-02	Speed Mode Operation Command Channel Selection	2	Communication Command
P9-00	Communication Protocol Selection	0	Modbus-RTU
P9-01	Local address	1	Station Number 1
P9-02	Baud rate	6	19200BPS
P9-03	data format	1	8-E-1

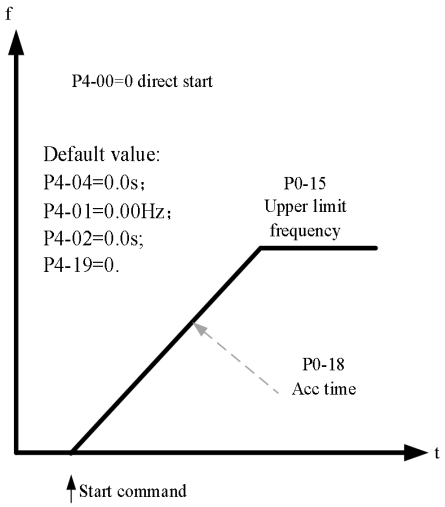
3.4.2 Startup Mode

The inverter offers three startup modes: direct start, speed-tracking restart, and asynchronous machine pre-excitation start, selected via the functional parameter P4-00.

3.4.2.1 Direct Start

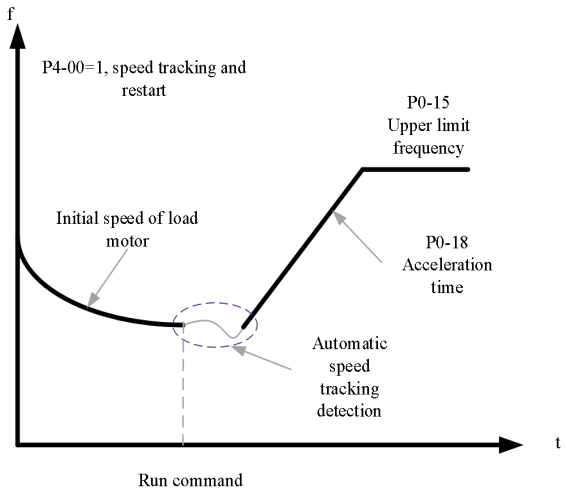
Parameter	Name	Set Value	Explain
P4-00	starting mode	0	The direct start-up method is suitable for most light inertial loads, with the frequency curve during the startup process shown in the figure below. The "DC braking" function prior to startup is applicable to elevators and drives handling heavy loads, while the "startup frequency" feature is designed for equipment requiring torque impulse startup, such as cement mixer drives.

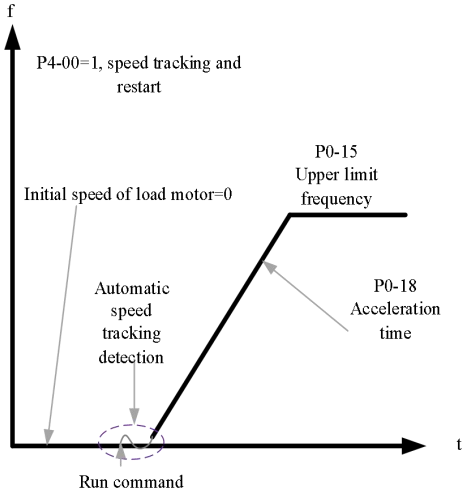




3.4.2.2 Speed Tracking Re-start

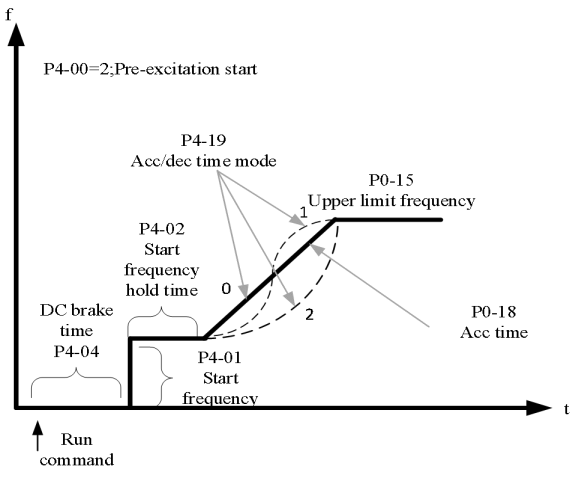
Parameter	Name	Set Value	Explain
P4-00	starting mode	1	The speed tracking restart method is suitable for driving asynchronous motors with high-inertia mechanical loads. The frequency curve during the startup process is shown in the figure below. When the VFD starts operating while the load motor continues to run due to inertia, employing speed tracking restart prevents over-current during startup.

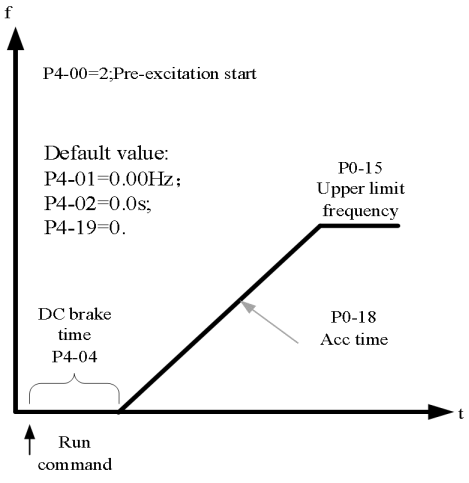




3.4.2.3 Encouraged Magnetic Start

Parameter	Name	Set value	Explain
P4-00	starting mode	2	The pre-excitation starting method is suitable only for asynchronous motor loads. Pre-excitation before startup enhances the rapid response characteristics of the asynchronous motor, meeting the requirements for applications with short acceleration times.

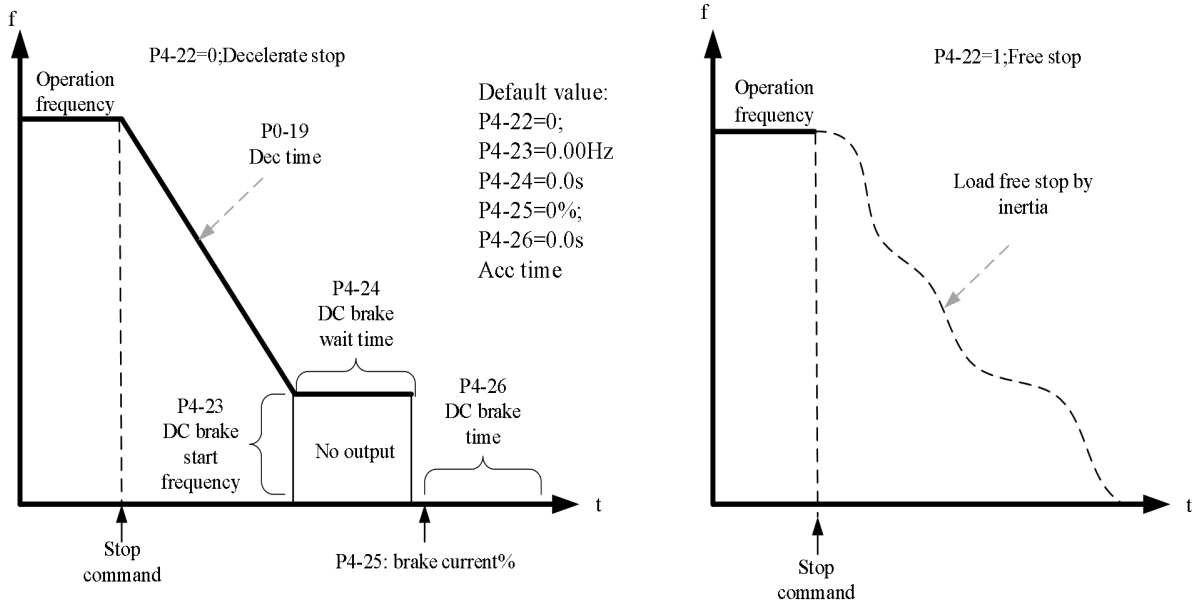




3.4.3 Standby Mode

The inverter has two shutdown modes: deceleration shutdown and free shutdown, selected by function code P4-22.

Parameter	Name	Set Value	Explain
P4-22	Downtime Method	0	Slow shutdown: In this method, the inverter stops operation based on the deceleration time.
		1	The system stops automatically; the VFD immediately ceases output, and the motor stops freely due to inertia.



Under V/F control mode, if the actual motor acceleration time is significantly longer than the expected acceleration time, the following measures can be taken:

Frequency Settings	Measure
The target frequency is less than twice the rated frequency.	Increase the P5-19 overload speed control current by 10% per adjustment. Setting the P5-19 value above 170% may trigger the ERR10 alarm (overload fault) in the inverter.
The target frequency is three or four times the rated frequency or higher.	During rapid acceleration, motor stall may occur. This can be mitigated by adjusting the P5-22 over-current stall action current compensation coefficient to a setting value of 100%.

Under V/F control mode, if the actual motor deceleration time is significantly longer than the expected deceleration time, the following measures can be taken:

Braking Unit/Feedback Unit	Measure
None	You can increase the P5-16 over-excitation gain set value by ±20 each time. If motor oscillation or over-voltage faults occur after increasing the over-excitation gain, reduce the set value of the voltage stall suppression gain P5-26.

Braking Unit/Feedback Unit	Measure
have (The input voltage of the VFD is 323–437 V)	Set the P7-53 brake starting voltage to 690V, and set P5-16 (over-excitation gain) to 0.
	For shutdown DC braking, the recommended settings are: P4-23 – startup frequency of DC braking at 0.5 Hz during shutdown; P4-25 – DC braking current percentage at 50%; P4-26 – DC braking duration of 1 s.

When using the braking resistor: Set P5-16 (over-excitation gain) to 0; otherwise, excessive operating current may occur. Set P5-24 (over-voltage stall enable) to 0; otherwise, the deceleration time may become excessively long.

3.5 Inverter Operating Frequency Control

The VFD features two frequency setting channels, designated as Main Frequency Source A and Auxiliary Frequency Source B. Each channel can operate independently or be switched between at any time, and their signals can even be combined using customizable calculation methods to meet diverse control requirements in practical applications.

Set using function code P0-05.

Parameter	Range	Set value	Explain
P0-05	Ones place（0~2）	0	Main Frequency Source A
		1	Results of main and secondary frequency calculations
		2	Switching between the main frequency source A and the auxiliary frequency source B
	Tens place（0~3）	0	A+B
		1	A-B
		2	Maximum value of A and B
		3	Minimum values of A and B
		4	A*B / P0-13 (Supported in versions 3750 and above)

3.6 Frequency Adjustment Function

The frequency oscillation function refers to the inverter’s output frequency fluctuating around a set frequency. In textile and chemical fiber processing equipment, this function enhances the uniformity and density of yarn winding. The relevant parameters are listed in the table below:

Parameter	Name	Setting
A0-05	Frequency oscillation setting method	0: Relative to the center frequency; 1: Relative to the maximum output frequency
A0-06	Amplitude of frequency oscillation	0.0% ~ 100.0%
A0-07	Sudden jump frequency amplitude	0.0% ~ 50.0%
A0-08	Amplitude oscillation period	0.1s ~ 3600.0s
A0-09	The rise time of the triangular wave in frequency modulation	0.1% ~ 100.0%

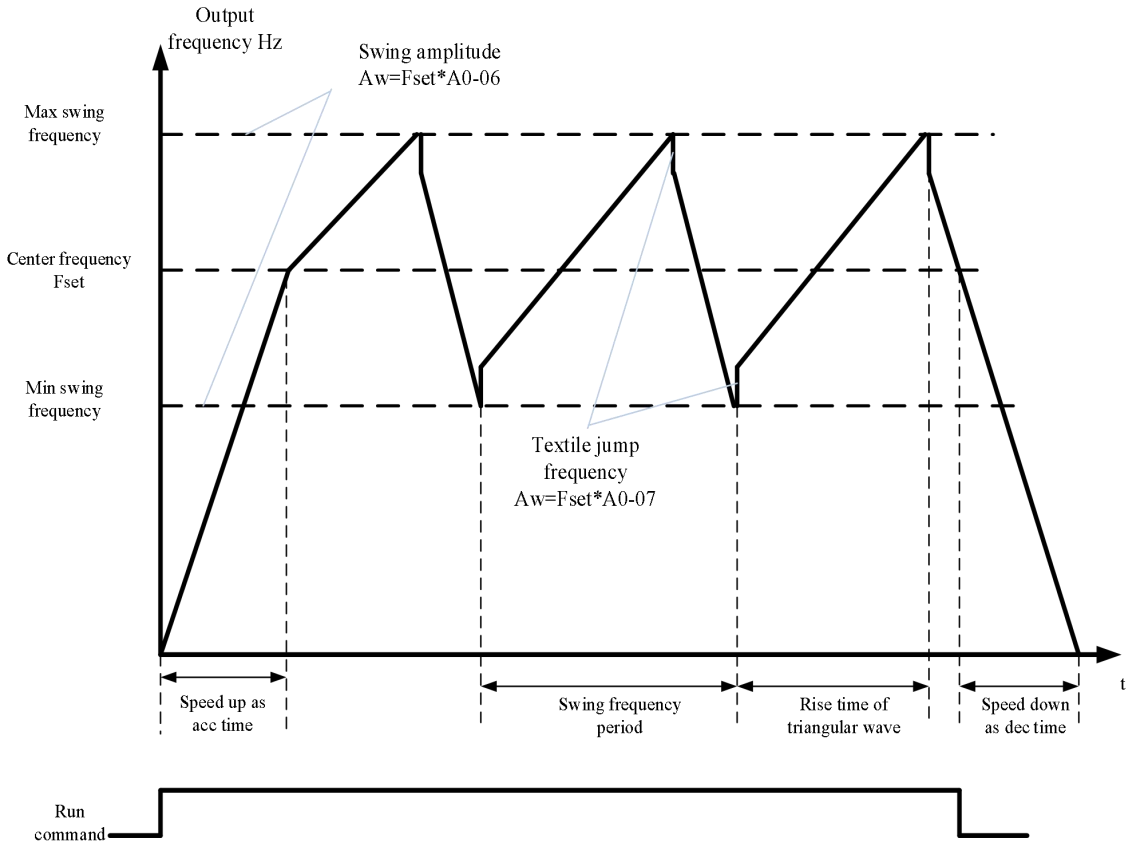
The reference value for the swing amplitude is determined by parameter A0-05.

0: Relative center frequency (P0-05 frequency source), a variable amplitude system where the amplitude varies with the center frequency (set frequency).

1: Relative maximum output frequency (P0-13), applicable to a system with fixed amplitude where the oscillation amplitude is constant.

The trajectory on the time axis when operating at the oscillation frequency relative to the center

frequency (A0-05=0) is shown below:



A0-06 Pendulum frequency amplitude AW:

When the swing amplitude is set relative to the center frequency (A0-05=0), the swing amplitude AW = frequency source P0-05 × swing amplitude A0-06; when set relative to the maximum frequency (A0-05=1), the swing amplitude AW = maximum output frequency P0-13 × swing amplitude A0-06.

A0-08 Pendulum Period: The duration of one complete pendulum cycle.

A0-07: Jump frequency and amplitude:

The sudden jump frequency amplitude refers to the percentage of the sudden jump frequency relative to the swing amplitude during oscillatory operation, calculated as: Sudden Jump Frequency = Swing Amplitude (AW) × Sudden Jump Frequency Amplitude (A0) – 0.07.

When the swing amplitude is set relative to the center frequency (A0-05=0), the jump frequency varies. When the swing amplitude is set relative to the maximum output frequency (A0-05=1), the jump frequency remains constant. The operating frequency of the pendulum is constrained by both the upper and lower frequency limits.

A0-09 Triangle wave rise time coefficient: This is the percentage of the triangle wave's rise time relative to the oscillation period A0-08.

The rise time (s) of the triangular wave = (A0-08 × period of oscillation frequency) / (A0-09 × triangular wave rise time coefficient).

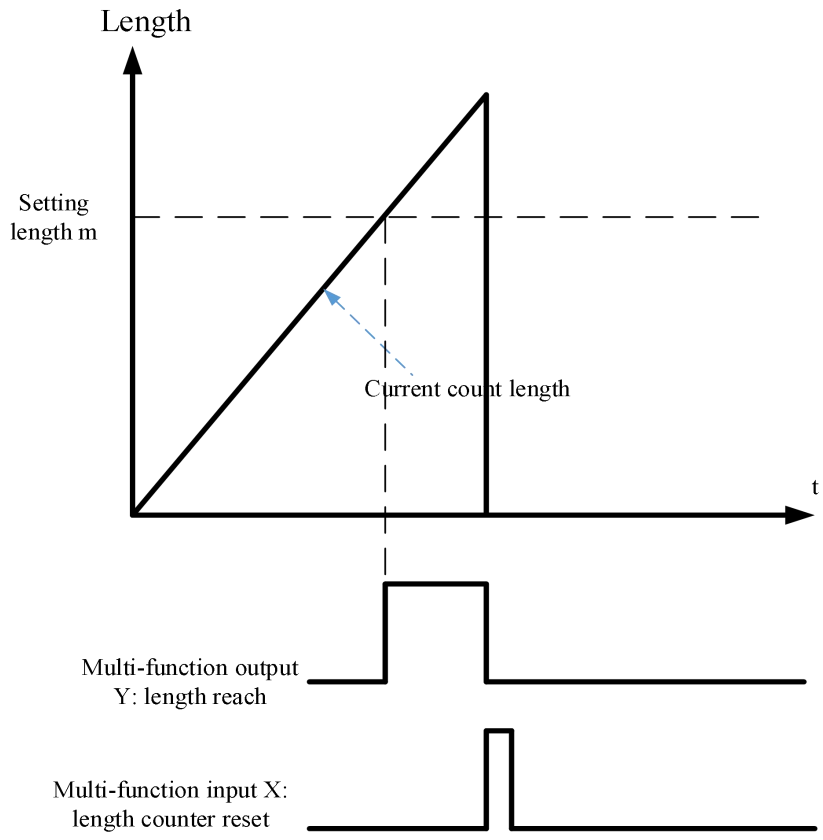
The falling time (s) of the triangular wave = (A0-08 × (1-the rising time coefficient A0-09)) × the oscillation period.

3.7 Fixed-length Control

Parameter	Name	Setting
A0-00	Set length	0m ~ 65535m
A0-01	Actual length (increment value)	0m ~ 65535m
A0-02	Pulse count per meter	0.1 ~ 6553.5

The above parameters are used for fixed-length control.

In the application, the corresponding input terminal function must be set to "Length Count Input" (Function 22). When the pulse frequency is high, the X4 port must be used. The actual length A0-01 can be calculated by dividing the number of pulses sampled by the terminal by the pulse count per meter A0-02. If the actual length exceeds the set length A0-00, the multi-functional digital output "Length Received" signal turns on. During fixed-length control, the length reset operation (Function 23) can be performed via the multi-functional X terminal; the function timing diagram is shown below:

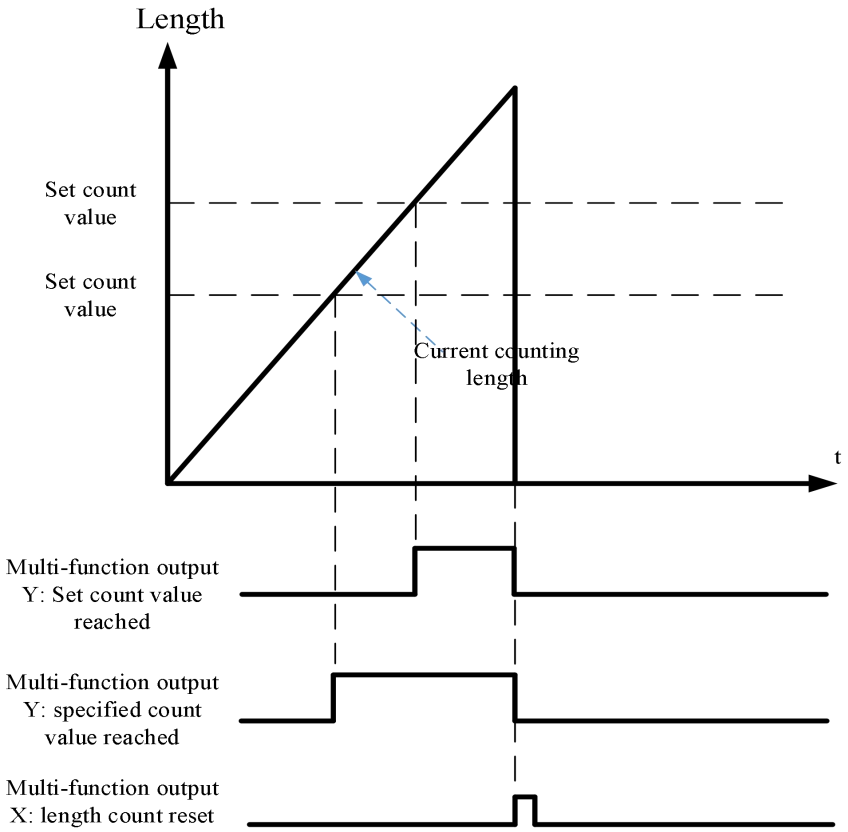


3.8 Inverter Counting Function

Parameter	Name	Setting
A0-03	Set a numerical value	1 ~ 65535
A0-04	specified count value	1 ~ 65535

In the application, the corresponding input terminal function must be set to "Counter Input" (Function 20). When the pulse frequency is high, the X4 port must be used.

When the counter value reaches the specified value A0-04, the multi-functional digital Y output sends an "Specified Value Reached" ON signal, after which the counter continues counting. When the counter value reaches the set value A0-03, the multi-functional output Y sends an "Set Value Reached" ON signal. The counter value can be reset via the multi-functional X terminal (Function 21). The functional timing diagram is shown below:



3.9 External Pulse Position Control (supported in version 3750 and above)

The position control mode of a VFD is a closed-loop control function designed for precise positioning. It enables users to command the motor shaft to move accurately to a specified angle or linear position and maintain that position.

.

- Currently, only the VH6-DM100 incremental encoder expansion card supports external pulse position control;
- Inverter firmware versions 3750 and above support the external pulse control mode.。

The relevant parameters are shown in the table below

Parameter	Explain	Chapters
P0-01 First Motor Control Method Selection	2: Vector control with speed sensors (FVC)	3.9.1
P1-00~P1-32: First set of motor parameter settings P1-35: Self-learning of motor parameters	Set motor parameters and tune them	3.3
P2-00~P2-06 Input Terminals X1~X7 Function Selection	52: Encoder count value reset 69: Switch between external pulse position mode and speed mode 70: External pulse enable terminal 72: External pulse-based cumulative counting increment 73: External pulse-based cumulative counting decrement 95: External pulse instruction count reset	3.9.2.1 3.9.3.2 3.9.8 3.9.10.4 3.9.10.5
P3-01～P3-04 Y/Relay Output Function Selection	49: External pulse positioning completed 50: External pulse position – pulse overlapping in progress	3.9.8 3.9.9
A5-00 Control Mode Selection	1：External Pulse Position Pattern	3.9.2
A5-01 Position Mode Switching and Operation Commands	Ones place: Switch between position mode and speed mode 0: Terminal switching 1: Parameter switching tens place: Selection of operation command channel for position mode 0: Operation panel command channel 1: Terminal operation command channel	3.9.3
A5-02 Electronic gear ratio numerator A5-03 Electronic gear ratio denominator	Number of command pulses required for the motor to complete one full rotation	3.9.4
A5-12: Forward speed filtering for position commands A5-13: Reverse speed filtering for position commands A5-17: External pulse acceleration time A5-18: External pulse deceleration time A5-27: Pulse input filtering	Acceleration and deceleration times, as well as filtering for external pulse inputs	3.9.6

Parameter	Explain	Chapters
A5-22 External pulse positioning threshold U1-45: Positioning commands and feedback deviation	Threshold for completing external pulse function localization	3.9.9
A5-23 Pulse superposition value A5-24 Pulse superposition acceleration rate	Number of pulses and pulse rate in the pulse superposition function	3.9.8
A5-25 Pulse Input Mode	Ones place：Pulse Shape 0：CW/CCW 1：AB phase 2：Pulse +Direction tens place：Pulse Input Direction 0：Forward 1：Reverse hundreds：Pulse input sampling edge 0：trailing edge 1：rising edge	3.9.7
PC-70 Encoder Position Count Display Mode	0：hex 1：decimal	3.9.10.1
PC-71 Reset the encoder position count to zero	Ones place 0：nonfunction 1：Encoder feedback count reset, valid for single use tens place 0：nonfunction 1：Clear external pulse instructions	3.9.10.4 3.9.10.5
U0-53～U0-56 Encoder multi-turn position counting（Bit 0～Bit 63） U1-01～U1-02 Encoder count the number of turns over multiple cycles U1-03～U1-04 Encoder single-turn position counting	Monitoring the position of the motor encoder for both multiple turns and a single turn	3.9.10.1
U1-06 Pulse Input Count	Monitor pulse input count	3.9.10.2
U1-46～U1-49 Position Instruction Count	Monitoring Location Command Pulse Count	3.9.10.3

3.9.1 Selection of Motor Control Method

Parameter	Name	Set value	Explain
P0-01	First Motor Control Method Selection	2	Vector Control with Speed Sensor (FVC)

For VFDs employing external pulse control with closed-loop position feedback monitoring, the FVC control mode must be selected. An encoder must be installed at the motor end, and the converter must be paired with a VH6-DM100 expansion card.

During vector control operation, each VFD can drive only one motor. Accurate parameters of the controlled motor must be obtained for self-tuning; detailed tuning procedures are provided on page

P1-35.

3.9.2 Position Control Mode Selection

3.9.2.1 Terminal Switching

Parameter	Name	Set value	Explain
P2-00～P2-06	Digital Input X Terminal Function Selection	69	Switching between external pulse position mode and speed mode

When this terminal is active, the current control mode is the external pulse position mode; when it is inactive, the current control mode is the speed mode.

3.9.2.2 Parameter Switch

Parameter	Name	Set value	Explain
A5-00	Control Mode Selection	0	Speed Mode
		1	External Pulse Position Mode

External pulse control involves the host computer controller sending pulses to the VFD, which continuously follows these pulse signals for position synchronization, ensuring that the transmitted pulses match the feedback pulses precisely.

3.9.3 Position Mode Operation Command Channel Selection

3.9.3.1 Panel Control: Start/Stop

Parameter	Bit	Name	Set value	Explain
A5-01	Tens place	Position Mode Operation Command Channel Selection	0	Operation Panel Running Channel

Use the "RUN" button on the panel to operate the VFD, and the "STOP" button to shut it down.

3.9.3.2 Terminal controls for starting and stopping

Parameter	Name	Explain
P2-00～P2-06	Digital Input X Terminal Function Selection	70： External Pulse Enable Terminal
A5-01	Position Mode Switching and Operation Commands	Tens place： Position Mode Operation Command Channel Selection 1: Terminal Operation Command Channel

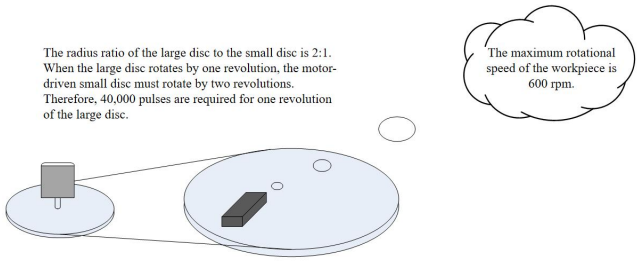
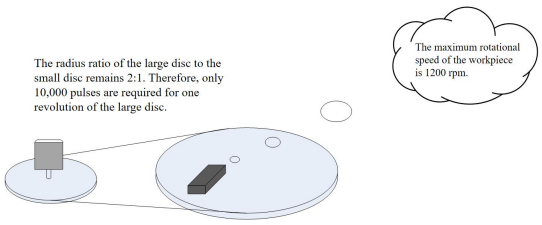
Set function selection 70 for digital input terminals P2-00 to P2-06 to "External Pulse Enable": The VFD operates when the corresponding terminal is active; it stops running when the terminal is inactive.

3.9.4 Electronic Gear Ratio

3.9.4.1 Summary

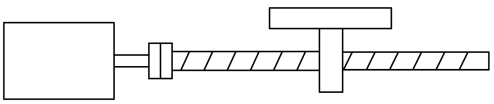
The so-called "electronic gear" function primarily has two main applications.

1) Determine the number of command pulses required for the motor to complete one full rotation, ensuring it reaches the desired speed.
The following example uses a motor with an encoder accuracy of 10,000; the PLC has set the pulse frequency to 200 kHz.

Set the number of pulses per revolution to 20,000; set the gear ratio to 10,000:20,000 (1:2).	Set the number of pulses per revolution to 5000; set the electronic gear ratio to 10000:5000 (2:1).
	

（2）For precise positioning, set the physical unit length corresponding to the 1 instruction pulse to facilitate calculation.

As shown in the figure below, if a specified unit pulse corresponds to a workpiece movement of 1 μm, then the number of command pulses required for one full rotation of the load axis is 6 mm / 1 μm = 6000. At a reduction ratio of 1:1, the electronic gear ratio can be set as 10000 / 6000, resulting in A5-02 = 5 and A5-03 = 3. Consequently, the upper computer sends 6000 pulses to move the workpiece by 6 mm (for detailed calculation methods, refer to steps 1–6).



Encoder accuracy: 10,000; Screw pitch: 6 mm

Do not change the electronic gear ratio.	Change the electronic gear ratio
Without modification, the electronic gear ratio motor rotates one full cycle and generates 10,000 pulses. To rotate the motor one full revolution and move the workpiece by 6 mm, 10,000 pulses are required. For a movement of 10 mm, the required number of pulses is 10 / 6 × 10,000 = 16,666.66667. Actual pulse counts	By setting the electronic gear ratio to 5:3, the motor requires 6,000 pulses per full rotation. To rotate the workpiece by 6 mm per full rotation of the motor, 6000 pulses are required; to move it by 10 mm, 10/6 × 6000 = 10000 pulses are needed. Since actual pulse delivery does not involve decimals, no error occurs.

may round down decimal values, resulting in measurement errors.	

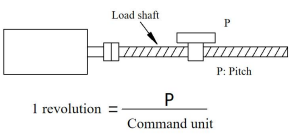
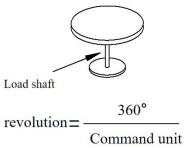
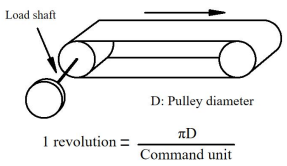
- Relevant parameter

Parameter	Name	Explain
A5-02	Electronic Gear Ratio Molecular Structure	0～10000
A5-03	Electronic Gear Ratio Denominator	0～10000

3.9.4.2 Calculation of Electronic Gear Ratios

Step	Content	Explain
1	Confirm Mechanical Specifications	Confirm the reduction ratio n:m (number of revolutions of the load shaft per m rotation of the motor), ball screw pitch, pulley diameter, etc.
2	Confirm encoder pulse count	Confirm the encoder resolution of the motor used
3	Decision Instruction Unit	Each pulse sent to the command decision controller corresponds to the actual distance or angle traveled during operation.
4	Number of instructions required to rotate the load shaft one full revolution	Based on the decision instruction unit, calculate the number of instructions N required for the load axis to complete one full rotation.
5	Calculate the number of pulses M required for one revolution of the computer shaft.	The number of command pulses required for the motor shaft to rotate one full revolution is M = N/(m/n).
6	Set the electronic gear ratio (A5-02/A5-03)	$\frac{A5-02}{A5-03}=\frac{\text{Encoder resolution}}{\text{M}}=\frac{\text{Encoder resolution}\times\text{m}}{\text{N}\times\text{n}}$

3.9.4.3 Example of Electronic Gear Ratio Setting

Step	Name	Ball screw	Circular truncated cone	Belt pulley
				
1	Confirm Mechanical Specifications	Ball screw pitch: 6 mm; Mechanical reduction ratio: 1:1	1 revolution angle, 360 degrees reduction ratio, 1:3	Pulley diameter: 100 mm; Reduction ratio: 1:2

2	Confirm encoder pulse count	Encoder Resolution	Encoder Resolution	Encoder Resolution
3	Decision Instruction Unit	1 Instruction Unit: 0.001 mm	1 Instruction Unit: 0.1 degree	1 Instruction Unit: 0.02 mm
4	Number of instructions required to rotate the load shaft one full revolution	6mm/0.001mm=6000	360/0.1=3600	314mm/0.02mm=15700
5	Calculate the number of pulses M required for one revolution of the computer shaft.	M =6000/(1/1)=6000	M=3600/(3/1)=1200	M=15700/(2/1)=7850
6	Set the electronic gear ratio (A5-02/A5-03)	A5-02=10000 A5-03=6000 After simplification A5-02=5 A5-03=3	A5-02=10000 A5-03=1200 After simplification A5-02=25 A5-03=3	A5-02=10000 A5-03=7850 After simplification A5-02=200 A5-03=157

3.9.5 Frequency Calculation Method

In external pulse mode, the operating frequency of the inverter depends on the pulse frequency corresponding to the motor’s rated speed.

For example: A conventional asynchronous motor has a rated frequency of 50 Hz, a rated speed of 1500 rpm, and a motor encoder with 2500 turns. The encoder operates at a counting rate four times the frequency, yielding an accuracy of 10,000. With an electronic gear ratio set to 1:1, the VFD receives 10,000 pulses per full rotation of the motor.

Step 1: Calculate the speed per second (N) corresponding to the motor's rated speed

N = Motor rated speed (rpm) / 60

N = 1500 rpm / 60 = 25 rps

Step 2: Calculate the pulse frequency Fp corresponding to the motor's rated speed.

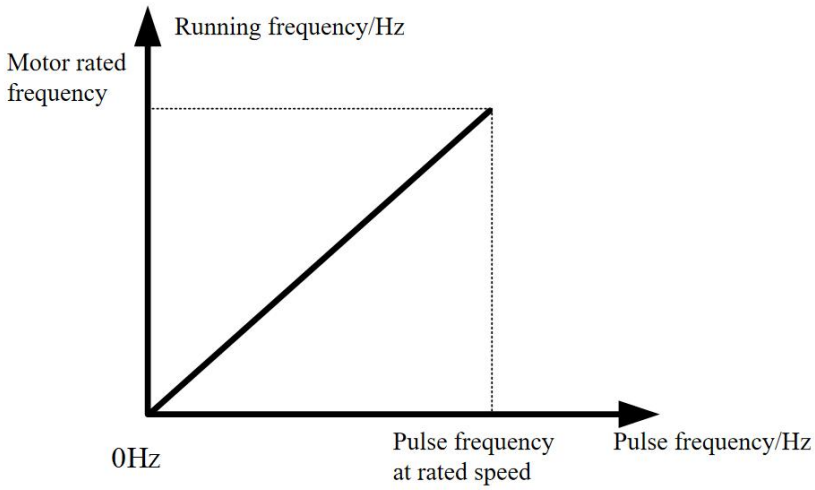
Fp = n × Motor encoder resolution / Electronic gear ratio

Fp = 25*10000 / 1 = 250kHz

Step 3: Calculate the corresponding frequency F of the inverter based on the received pulse frequency

F = (Received pulse frequency / Fp) × Motor rated frequency

The motor's rated frequency and pulse frequency are directly proportional to each other, as shown in the figure below.



Taking the above example, a pulse frequency of 0–250 kHz corresponds to an operating frequency of 0–50 Hz. When the inverter receives a pulse frequency of 25 kHz, it operates at 5 Hz (25 kHz ÷ 250 kHz) × 50 Hz = 5 Hz.

3.9.6 Pulse Acceleration/Deceleration Time and Filtering

3.9.6.1 Frequency acceleration/deceleration time in pulse mode

Parameter	Name	Set Range
A5-17	External pulse acceleration time	0.0s～6500.0s
A5-18	External pulse deceleration time	0.0s～6500.0s

Set the acceleration/deceleration time for the operating frequency in the external pulse position mode of the VFD; the reference is determined by PC-10 parameter settings.

3.9.6.2 Position Command Speed Filtering Time

Parameter	Name	Set Range
A5-12	Position instruction: Forward speed filtering	0.00Hz～655.35Hz
A5-13	Position instruction reverse speed filtering	0.00Hz～655.35Hz

Position command speed filtering smooths commands and, when combined with a limiter mechanism, makes the frequency rise more stable, though it may affect responsiveness. Disabled by default to 0

3.9.6.3 Pulse instruction filtering time

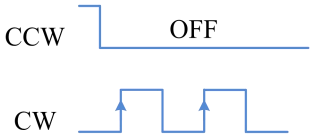
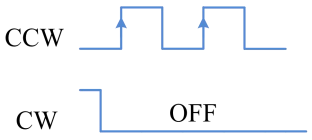
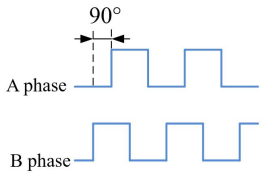
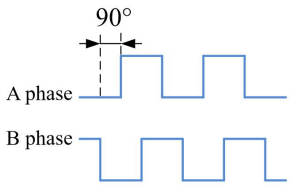
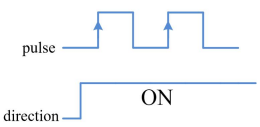
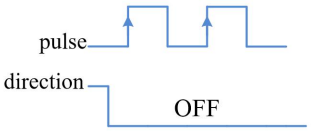
Parameter	Name	Set Range
A5-27	Pulse Input Filtering	0～255

When the VH6-DM100 expansion card receives a pulse, if the pulse signal remains unchanged within 27 clock cycles, it is considered a normal pulse rather than an interference signal.

3.9.7 Pulse Input Mode

Parameter	Name	Bit	Meaning	Set value	Explain
A5-25	Pulse Input Mode	Ones Place	Pulse Shape Selection	0	CW/CCW
				1	AB phase
				2	Pulse+ Direction
		Tens Place	Pulse Input Direction	0	Forward
				1	Reverse
		Hundreds Place	Pulse input sampling edge	0	Rising Edge
				1	Falling Edge

When the tens digit of A5-25 is set to 0 for forward pulse input:

A5-25 Tens Place	Forward	Reverse
0：CW/CCW		
1：AB		
2：P+D		

When using different pulse configurations, pay attention to the wiring sequence: Terminal RA corresponds to CW/A phase/P pulse, while terminal RB corresponds to CCW/B phase/D direction.

3.9.8 Pulse Overlap Function

Parameter	Name	Set Range
P2-00～P2-06	Function Selection for Input Terminals X1–X7	72：External pulse superposition for increased counting 73：External pulse superposition subtraction counting
P3-01～P3-04	Y/Relay Output Function Selection	50：External pulse position during pulse superposition
A5-23	Pulse Sum Value	0 Pulse～65535 Pulse
A5-24	Pulse stack acceleration rate	0.0～6553.5（pulse / ms）

When P2-00 to P2-06 is set to the 72 external pulse superposition increment function, A5-24 increments and superimposes one A5-23 pulse upon the rising edge of the corresponding terminal

trigger signal;

When set to the 73 external pulse superposition decrement function, A5-24 decrements and superimposes one A5-23 pulse upon the same rising edge.

3.9.9 Positioning Completion Signal

Parameter	Name	Set Range
P3-01～P3-04	Y/Relay Output Function Selection	49：External pulse positioning completed
A5-22	External Pulse Localization Threshold	0 Pulse～3000 Pulse
U1-45	Position Command and Feedback Deviation	-32768～32767 Pulse

When the P3-01 to P3-04 units have completed the 49 external pulse positioning function, and when the U1-45 position command and position feedback deviation are less than or equal to A5-22, a signal is output from the corresponding terminal.

3.9.10 Location Monitoring and Clearing

3.9.10.1 Encoder Position Monitoring

Parameter	Name	Set Range
PC-70	Encoder Position Count Display Mode	0：Hex 1：Decimal
U0-53～U0-56	Encoder multi-turn position counting	0x0000 0000 0000 0000～0xFFFF FFFF FFFF FFFF

When PC-70 is set to 0, U0-53–U0-56 display hexadecimal values; when set to 1, they display decimal values.

Hexadecimal representation: U0-53 to U0-56 constitute a 64-bit integer, with U0-53 as the high bit and U0-56 as the low bit. For example, if the encoder position is 0x00FF 1A2B 3C4D 5E6F, U0-53 displays as H.00FF, U0-54 as H.1A2B, U0-55 as H.3C4D, and U0-56 as H.5E6F.

Decimal number display: U0-53 to U0-56 constitute a decimal value, with U0-53 as the most significant bit and U0-56 as the least significant bit. The highest digit (leftmost bit) of each 5-digit display unit serves as the sign bit; integers are not displayed, while negative numbers show "-". For example, when displaying-1122,3344,5566, or 7788, U0-53 shows-1122, U0-54 shows-3344, U0-55 shows-5566, and U0-56 shows-7788.

Parameter	Name	Set Range
U1-01～U1-02	Encoder count the number of turns over multiple cycles	0~65535
U1-03～U1-04	Encoder single-turn position counting	0~65535

U1-01 displays the high 16 bits of the cumulative lap count information for multiple laps; U1-02 displays the low 16 bits of the same information.

U1-03 displays the high 16 bits of the encoder's single-turn position; U1-04 displays the low 16 bits of

the encoder's single-turn position.

The current position of the VH6-DC200 encoder is calculated as: (U1-01 + U1-02) × encoder resolution + U1-03 × 65536 + U1-04.

The current position of the VH6-DM100 encoder is calculated as U1-02 * P1-26 + U1-04 = U0-53 to U0-56.

For version 3746, encoder position parameters range from U0-84 to U0-87; for versions 3750 and above, they range from U1-01 to U1-04.

3.9.10.2 Pulse Input Count

Parameter	Name	Set Range
U1-06	Pulse Input Count	0～65535

3.9.10.3 Position Instruction Count

Parameter	Name	Set Range
U1-46～U1-49	Position Instruction	Pulse

Decimal number display: U1-46 to U1-49 constitute the data, with U1-46 as the most significant bit and U1-49 as the least significant bit. The highest digit (leftmost bit) of each 5-digit display is reserved for symbols; integers are not displayed, while negative numbers are represented by "-". For example, when displaying-1122,3344,5566, or 7788, U1-46 shows-1122, U1-47 shows-3344, U1-48 shows-5566, and U1-49 shows-7788.

3.9.10.4 Reset the encoder's position count for multiple turns to zero

Method 1: Clear Parameters

Parameter	Name	Bit	Set value	Explain
PC-71	Encoder position count reset to 0	Ones place	0	nonfunction
			1	Encoder feedback count reset to zero

Method 2: Reset the Terminal

Parameter	Name	Set value	Explain
P2-00～P2-06	Function Selection for Input Terminals X1–X7	52	Encoder count value reset to zero

When the function selection for digital input terminals P2-00 to P2-06 is set to 52, the encoder count value is reset to zero; when a signal is received at the corresponding terminal, the multi-turn count values of the encoder in inverters U0-53 to U0-56 are also reset to zero.

3.9.10.5 Method 2: Reset the Terminal

Method 1: Clear Parameters

Parameter	Name	Bit	Set value	Explain
PC-71	Encoder position count reset to 0	Tens place	0	nonfunction
			1	Clear external pulse instructions

PC-71: This function code is set to 10 (valid only once, i.e., valid on the rising edge); all values in U1-46 to U1-49 are cleared to zero.

Method 2: Reset the Terminal

Parameter	Name	Set value	Explain
P2-00～P2-06	Function Selection for Input Terminals X1–X7	95	Reset the count of external pulse instructions

When the function selection for digital input terminals P2-00 to P2-06 is set to 95, the external pulse instruction counter is reset; when a signal is received at the corresponding terminal, the counters U1-46 through U1-49 are also reset.

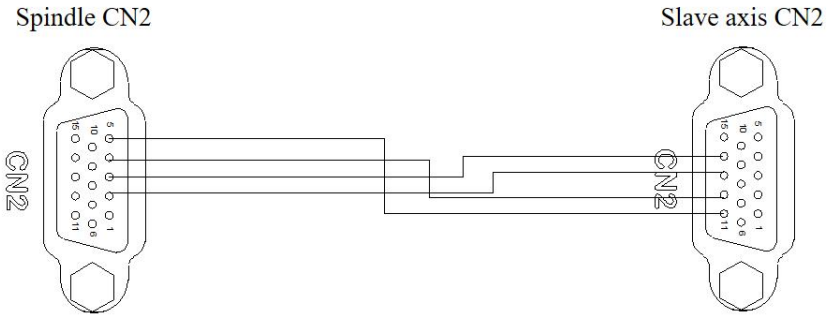
3.9.11 Example Illustrating the Position of External Pulses

Function Implementation: By using two VH6 series VFDs and two VH6-DM100 expansion cards, each connected to an asynchronous motor equipped with an ABZ encoder, the system enables synchronized operation of both motors.

The spindle motor encoder has 2000 lines and a resolution of 8000; the slave shaft encoder has 2500 lines and a resolution of 10000.

3.9.11.1 Wiring

According to Section A.5.1, confirm the pin configuration of the VH6-DM100 expansion card. For synchronous operation of two inverters, connect the frequency division output from the main shaft inverter to the pulse input of the slave shaft inverter to achieve synchronization; accordingly, the wiring connections for the expansion cards on both inverters should follow the diagram below.



The pin connections for the main shaft CN2 and the auxiliary shaft CN2 are shown in the table below.

Spindle CN2		Slave Axis CN2	
Pin 2	Frequency-Divided Output OB-	Pin 13	5V/24V pulse input RB-
Pin 3	Frequency-Divided Output OB+	Pin 14	5V pulse input RB+
Pin 4	Frequency-Divided Output OA-	Pin 12	5V/24V pulse input RA-
Pin 5	Frequency-Divided Output OA+	Pin 11	5V pulse input RA+

3.9.11.2 Parameter setting

Step	Content	Main Spindle Parameter Settings	Axis Parameter Settings
First Steps	Set Motor and Encoder Parameters	P1-00 = 0: Asynchronous motor P1-01 = Spindle motor rated power P1-02 = Spindle motor rated voltage P1-03 = Spindle motor rated current P1-04 = Spindle motor rated frequency	P1-00 = 0: Asynchronous motor P1-01 = Rated power of the driven shaft motor P1-02 = Rated voltage of the driven shaft motor P1-03 = Rated current of the driven shaft motor P1-04 = Rated frequency of the driven shaft motor

Step	Content	Main Spindle Parameter Settings	Axis Parameter Settings
		P1-05 = Spindle motor rated speed P1-25 = 10 (uses VH6-DM100 expansion card) P1-26 = 2000 (encoder lead count)	P1-05 = Rated speed of the driven shaft motor P1-25 = 10 (uses VH6-DM100 expansion card) P1-26 = 2500 (number of encoder lines)
		When P1-25 is set to 10, Err17 will be triggered—a normal occurrence; simply restart the power supply.	
The second step	Dynamic tuning	P0-01 = 2 (FVC control mode) P0-02 = 0 (panel-based start/stop control) P1-35 = 2 (asynchronous dynamic tuning)	P0-01 = 2 (FVC control mode) P0-02 = 0 (panel-based start/stop control) P1-35 = 2 (asynchronous dynamic tuning)
The third step	Set Parameter Values	A5-30 = 5; A5-31 = 4 (frequency division ratio: 5:4; generates 10,000 pulses per motor revolution)	A5-00 = 1 (External pulse position mode) A5-01 = 00 (Panel-based start/stop control) A5-02 = 1 A5-03 = 1 (Electronic gear ratio 1:1) A5-25 = 101 (AB-phase pulse configuration)

The spindle motor encoder has a resolution of 8000. With a frequency division output ratio set to 5:4, each full rotation of the spindle motor generates 10,000 pulses at the output. The slave shaft encoder has a resolution of 10,000 and an electronic gear ratio of 1:1; thus, the slave shaft receives 10,000 pulses per full rotation of the motor, achieving synchronous operation between the master and slave shafts.

3.10 Main Spindle Stop Function (supported in versions 3750 and above)

The spindle precision-stop function of a VFD refers to its ability to control the spindle motor via pulse signals received from a PLC or other control systems, enabling the spindle to halt precisely at specified positions to meet particular process requirements. This functionality requires integration with an external encoder-based position detection device for high-precision spindle positioning control.

The relevant parameters are shown in the table below

Parameter	Explain	Chapter
P0-01: Selection of the First Motor Control Method	2: Vector control with speed sensors (FVC)	3.10.1
P1-00~P1-32: First set of motor parameter settings P1-35: Self-learning of motor parameters	Set motor parameters and tune them	3.3
P2-00~P2-06: Function Selection for Input Terminals X1~X7	64: Spindle precise stop reference point 65: Enable spindle positioning function 66: Spindle precise stop positioning position terminal 1 67: Spindle precise stop positioning position terminal 2 68: Spindle precise stop positioning position terminal 3	3.10.2 3.10.4 3.10.5.4
P3-01~P3-04: Select the Y relay output function (A6-19); Complete width for spindle stop positioning	48: Spindle stop positioning completed	3.10.6
A6-00 Spindle Stop Function	0: Not effective 1: Effective	3.10.2
A6-01 Selection of reference point for spindle precise stop A6-02 Method for calibrating the reference point for spindle positioning	Reference point for spindle stop positioning	3.10.4
A6-03 Spindle stop positioning direction	0: Set Direction 1: Orient to the shortest distance	3.10.5.1
A6-05 Main Shaft Transmission Ratio	0.000～30.000	3.10.3
A6-06 Spindle stop positioning speed	0.00Hz～30.00Hz	3.10.5.2
A6-09 Spindle Stop Unit	0：Encoder Pulse 1：Angle	3.10.5.3
A6-10 Position setting for approximate stop A6-11 Main spindle approximate stop position A6-12 Spindle stop position 1 A6-13 Spindle stop position 2 A6-14 Spindle stop position 3 A6-15 Spindle stop position 4 A6-16 Spindle stop position 5 A6-17 Spindle stop position 6 A6-18 Spindle stop position 7	Set the position for spindle stop	3.10.5.4
Action after the A6-20 spindle stop signal is	0: Reduce speed and stop	3.10.7

Parameter	Explain	Chapter
canceled	1: Execute the previous command 2: Reduce speed, stop, and trigger an alarm	
A6-21: Main spindle stop and shutdown positioning completed; output selection	0: Stop without output 1: Stop with output	3.10.6
A6-22: Output filtering time for spindle stop positioning completion	0.0s～10.0s	3.10.6
PC-70 Encoder Position Count Display Mode	0：Hex 1：Decimal	3.9.10.1
PC-71 Encoder Position Count Reset	Ones Place 0：nonfunction 1：Encoder feedback count reset Tens Place 0：nonfunction 1：Clear external pulse instructions	3.9.10.4 3.9.10.5
U0-53~U0-56 Encoder multi-turn position count (Bit 0–Bit 63); U1-01~U1-02 Encoder multi-turn count; U1-03~U1-04 Encoder single-turn position count	Monitoring the position count of the encoder	3.9.10.1
U1-20 Spindle Stop Position	Monitor the current position count of the spindle during precise stop	3.10.6
Position instruction count for U1-46 to U1-49	Monitoring Location Instruction Count	3.9.10.3

3.10.1 Selection of Motor Control Method

Parameter	Name	Set value	Explain
P0-01	First Motor Control Method Selection	2	Vector Control with Speed Sensor (FVC)

When using the spindle stop function, closed-loop position feedback control must be monitored; the FVC control mode should be selected, and an encoder must be installed on the motor side. Currently, the inverter only supports ABZ incremental encoders, requiring the installation of an expansion card (VH6-DM100 or VH6-DM200).

During vector control operation, each VFD can drive only one motor. Accurate parameters of the controlled motor must be obtained for self-tuning; detailed tuning procedures are provided on page P1-35.

3.10.2 Main Spindle Stop Function Enabled

Parameter	Name	Set value	Explain
A6-00	Main spindle stop function	0	Invalid
		1	Valid

When A6-00=1, the spindle precision-stop function of the VFD is activated.

Parameter	Name	Set value	Explain
P2-00～P2-06	Function Selection for Input Terminals X1–X7	65	Main spindle positioning function enabled

When the function selection for digital input terminals P2-00 to P2-06 is set to 65: spindle positioning function enabled. When a signal is received at the corresponding X terminal, the spindle positioning function of the VFD is activated; when no signal is received, it remains disabled.

3.10.3 Main Shaft Stop Transmission Ratio

Parameter	Name	Set Range
A6-05	Main shaft transmission ratio	0.000～30.000

The reduction ratio between the spindle and the motor encoder mounting shaft.

For example: The spindle is connected to the motor encoder shaft via a 2:1 belt drive. For every two rotations of the motor encoder, the spindle rotates one full turn. Set the transmission ratio to 2 to achieve precise positioning.

3.10.4 Main Spindle Stop Reference Point

The reference point for the spindle stop function is an angular/positional reference during spindle rotation, and there are two methods available as reference points.

3.10.4.1 Encoder Z-phase

Parameter	Name	Set value	Explain
A6-01	Main Shaft Stop Reference Point Selection	0	Encoder Z-phase

Use the encoder's Z-axis signal as the primary reference point for axis positioning. Each time the encoder's Z-axis signal is triggered, increment the encoder revolution count by 1 (U1-01/U1-02)

.

Parameter	Name	Set value	Explain
A6-02	Main spindle positioning reference point calibration method	0	First Calibration
		1	real-time correction

When the reference point for spindle stop is set to the encoder's Z-phase (i.e., A6-01 = 0), A6-02 specifies the correction method for this reference point.

0: During the initial calibration when the motor first passes through the encoder's Z-phase, reset the current position of U1-20 to zero.

1: Real-time calibration – Each time the motor passes through the encoder's Z-phase, the current position of U1-20 is reset to zero.

The spindle positioning reference point selection only takes effect during real-time calibration when the electronic gear ratio is 1:1.

Parameter	Name	Set value	Explain
A6-01	Main Shaft Stop Reference Point Selection	1	X input terminal
P2-00～P2-06	Function Selection for Input Terminals X1–X7	64	Main spindle stop reference point

3.10.4.2 X Input Terminal

When P2-00 to P2-06 are configured for the 64-spindle quasi-stop reference point function, the rising edge of the signal is used to reset the current encoder count value to zero as the reference point.

3.10.5 Main Spindle Stop Positioning Position Setting

3.10.5.1 Main spindle stop positioning direction

Parameter	Name	Set value	Explain
A6-03	Main spindle stop positioning direction	0	Set Direction
		1	Direct to the shortest distance

0: Set direction

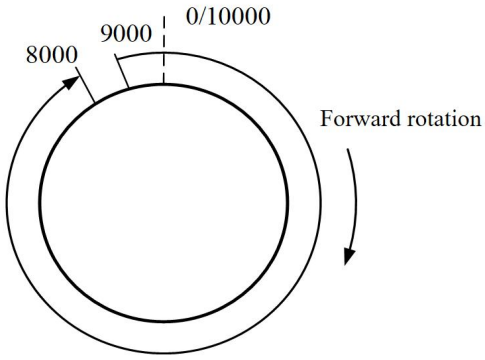
① When the directional terminal is enabled and operating in speed mode, the current steering direction will be set;

② When directional control is initiated directly from the stop state, positioning will follow the direction specified by the speed command;

③ When switching to directional control from a position locked state, the previous directional setting will be maintained.

For example: the motor encoder has a resolution of 10,000; its current position is 9,000, and it needs to be stopped at position 8,000.

If the motor rotates in the forward direction, it will continue rotating in that direction without changing its initial orientation, passing through the zero point and reaching position 8000 after completing 9,000 encoder pulses. If the motor is rotating in reverse, it will continue rotating in the opposite direction from position 9,000 to position 8000, covering 1,000 encoder pulses.



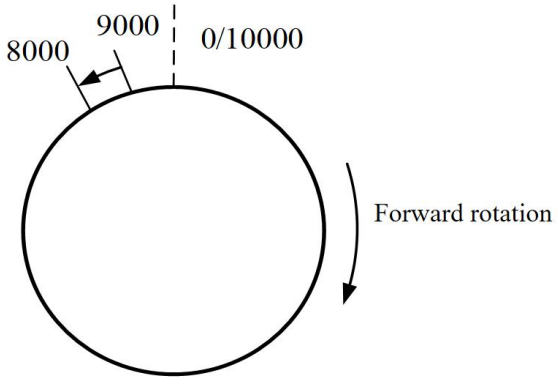
1: Orientation by shortest distance

① When the orientation terminal is enabled and operating in speed mode, orientation is performed according to the current direction;

② For the first direct orientation from a stopped state, follow the speed instruction direction to locate a reference point for orientation; for subsequent direct orientations from a stopped state, use the shortest-distance orientation;

③ When switching orientation positions during position locking, employ the shortest-distance orientation.

For example: The motor encoder has a resolution of 10,000; the current position is 9,000. To stop at position 8,000, the motor requires 9,000 encoder pulses when rotating in the forward direction and only 1,000 pulses when rotating in the reverse direction. Therefore, the motor should rotate in reverse to reach position 8,000, covering the shortest distance required for the desired movement.



3.10.5.2 Main spindle stop positioning speed

Parameter	Name	Set Range
A6-06	Main spindle stop positioning speed	0.00Hz～30.00Hz

3.10.5.3 Main spindle stop positioning unit

Parameter	Name	Set value	Explain
A6-09	Main spindle precise stop unit	0	Encoder Pulse
		1	Angle（0°～360°）

3.10.5.4 Main spindle precise stop positioning position

The positioning location for the spindle's precise stop is determined by a reference point and a set offset angle.

Parameter	Name	Set Range
P2-00～P2-06	Function Selection for Input Terminals X1–X7	66: Main shaft stop positioning terminal 167: Main shaft stop positioning terminal 268: Main shaft stop positioning terminal 3
A6-11	Main spindle stop position 0	A6-09 = 0：0～65535 Pluse A6-09 = 1：0.00～360.00°
A6-12	Main spindle stop position 1	
A6-13	Main spindle stop position 2	
A6-14	Main spindle stop position 3	
A6-15	Main spindle stop position 4	
A6-16	Main spindle stop position 5	
A6-17	Main spindle stop position 6	
A6-18	Main spindle stop position 7	

The spindle positioning has a total of 8 positions, selected from 3 multi-functional X-terminal input combinations as shown in the table below: OFF indicates active X-terminal status, while ON indicates inactive X-terminal status.

Terminal 3	Terminal 2	Terminal 1	Instruction Setting	Parameters
OFF	OFF	OFF	Main spindle stop position 0	A6-11
OFF	OFF	ON	Main spindle stop position 1	A6-12
OFF	ON	OFF	Main spindle stop position 2	A6-13
OFF	ON	ON	Main spindle stop position 3	A6-14
ON	OFF	OFF	Main spindle stop position 4	A6-15
ON	OFF	ON	Main spindle stop position 5	A6-16
ON	ON	OFF	Main spindle stop position 6	A6-17
ON	ON	ON	Main spindle stop position 7	A6-18

3.10.5.5 Main spindle stop position setting

Parameter	Name	Set value	Explain
A6-10	Active Stop Position Setting	1	Set the current location to A6-11
		2	Set the current location to A6-12
		3	Set the current location to A6-13
		4	Set the current location to A6-14

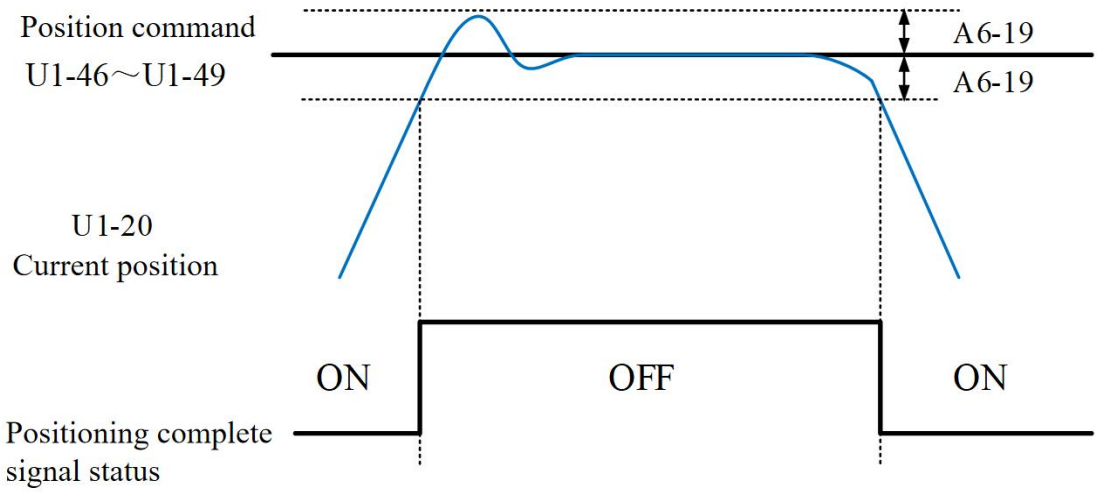
Parameter	Name	Set value	Explain
		5	Set the current location to A6-15
		6	Set the current location to A6-16
		7	Set the current location to A6-17
		8	Set the current location to A6-18

In spindle stop mode, when A6-10 writes any value from 1 to 8, the current spindle position recorded in U1-20 is automatically written to the corresponding spindle stop positions specified by A6-11 through A6-18.

3.10.6 Positioning completion signal

Parameter	Name	Set Range
P3-01～P3-04	Y/Relay Output Function Selection	48： Main spindle has completed stop positioning
A6-19	Main spindle stop positioning width completed	0～3000
A6-21	Main spindle has completed stop positioning and output selection.	0：Stop operation without output 1：Power-off Output
A6-22	Main spindle stop positioning completion output filtering time	0.0s～10.0s
U1-20	Main spindle stop position	A6-09=0： 0～65535 Pluse A6-09=1： 0.00～360.00°

When the P3-01 to P3-04 Y relays' output terminals are set to the "48-spindle precise stop positioning completion" function, the VFD outputs a precise stop positioning completion signal within the width range specified by the position command.



3.10.7 State after the Spindle Stop Signal Becomes Invalid

Parameter	Name	Set value	Explain
A6-20	Action after the spindle stop signal is canceled	0	Stop and shut down
		1	Run the last command
		2	Stop operation due to slowdown and trigger an alarm

0: Slow-down and stop – After exiting the spindle's quasi-stop function, the inverter switches to speed mode and slows down the rotation for a stop according to the current command.

1: After exiting the spindle stop function, the inverter continues to execute the previous command.

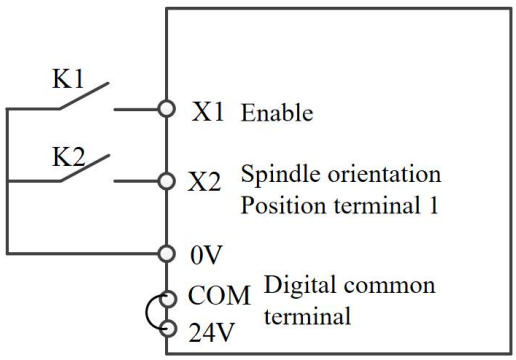
2: Reduce speed, stop operation, and trigger an alarm. After exiting the spindle's quasi-stop function, the inverter switches to speed mode and issues an Err63 alarm upon reducing speed based on the current command.

3.10.8 Main Spindle Stop Instance

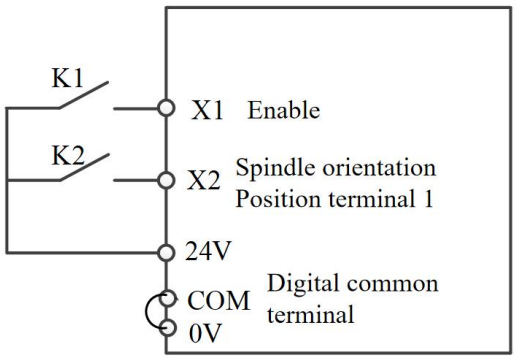
Function Implementation: The FVC speed mode operates at 30 Hz. When the reference point is reached, a signal is detected at terminal X1, triggering activation of the spindle stop function; the motor then runs at 20 Hz until reaching the encoder position 5000. Upon receiving a signal at terminal X2, the motor stops at encoder position 2500. This corresponds to encoder position 2500 with a resolution of 10,000.

3.10.8.1Wiring

This case requires two X input terminals: X1 serves as the spindle stop enable terminal, and X2 serves as the spindle stop positioning terminal.



NPN-type wiring



PNP-type wiring

3.10.8.2 Parameter setting

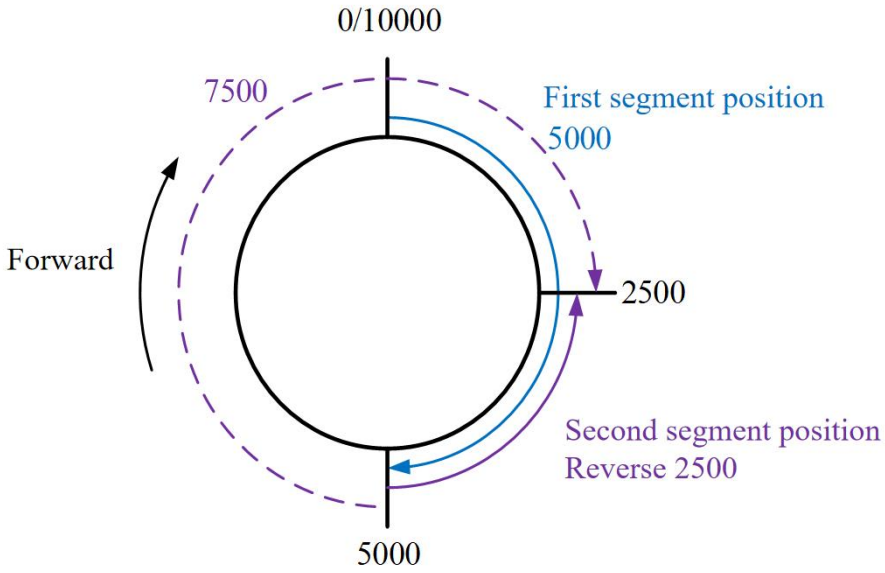
Step	Content	Parameter Setting

Step	Content	Parameter Setting
First step	Set motor and encoder parameters	P1-00 = 0: Asynchronous motor P1-01 = Spindle motor rated power P1-02 = Spindle motor rated voltage P1-03 = Spindle motor rated current P1-04 = Spindle motor rated frequency P1-05 = Spindle motor rated speed P1-25 = 10 (uses VH6-DM100 expansion card) P1-26 = 2500 (number of encoder wires)
The second step	Dynamic tuning	P0-01 = 2 (FVC control mode) P0-02 = 0 (panel-based start/stop control) P1-35 = 2 (asynchronous dynamic tuning)
The third step	Set Parameter Values	P0-03 = 1 (Frequency set digitally in FVC speed mode) P0-10 = 30 (Frequency set to 30 Hz in FVC speed mode) P2-00 = 65 (Terminal X1 enables spindle positioning function) P2-01 = 66 (Terminal X2 serves as Positioning Terminal 1 for spindle stop) A6-00 = 1 (Spindle stop function activated) A6-03 = 1 (Spindle stop positioning direction set to shortest distance) A6-06 = 20.00 (Spindle stop positioning speed: 20.00 Hz) A6-09 = 0 (The spindle stop unit is determined by encoder pulses) A6-11 = 5000 (First half-turn operation) A6-12 = 2500 (Second quarter-turn reverse operation)

When the VFD operates at 30 Hz (set from P0 to 10) in FVC speed mode and reaches the reference point, any signal input at terminal X1 triggers the spindle's quasi-stop function, initiating positioning to the first segment position (A6-11) corresponding to the 5000 encoder reading—equivalent to half a full rotation of the motor in forward direction.

Upon completion of motor positioning, a signal is detected at terminal X2; the motor must then operate to the second position (A6-12) corresponding to the 2500th encoder pulse. For forward rotation, 7500 encoder pulses are required; for reverse rotation, only 2500 pulses are needed due to the shorter travel distance. Consequently, the motor reverses to the 2500th encoder pulse, completing one-quarter revolution in reverse direction.

X2	X1	Explain
OFF	OFF	Under FVC control mode, operating at 30 Hz
OFF	ON	Enter the spindle stop function and operate to the first position, i.e., A6-11.
ON	OFF	Under FVC control mode, operating at 30 Hz
ON	ON	Enter the spindle stop function and proceed to the second position, namely A6-12.



3.11 Usage Method of Inverter Port X

The standard input/output expansion card supports up to 4 X ports; refer to the 2-4-3 input/output wiring method for details.

In the factory default state, P2-16 = 0000 and P2-17 = 0000. When the X port is short-circuited, the signal is valid (logical 1); when the X port is open, the signal is invalid (logical 0).

Users can also modify the valid mode of the X port: when the X port is short-circuited, the signal is invalid (logical 0); when the X port is open, the signal is valid (logical 1). In this case, simply set the corresponding bits P2-16 and P2-17 to 1.

The inverter also sets a software filtering time (P2-12) for the input signal on port X, enhancing its interference resistance.

For the X1-X3 input ports, a dedicated port signal delay function is provided to facilitate applications requiring delayed processing.

The functions of the aforementioned four X ports can be defined in the P2-00 to P2-03 function codes, with each X port selectable from among 51 available functions based on requirements. For detailed specifications, refer to the corresponding P2-00 to P2-03 function codes.

Regarding hardware specifications, only the X4 supports high-frequency pulse signals. For applications requiring high-speed pulse counting, please use the X4 port.

3.12 Usage Method of Inverter Port Y

The standard input/output expansion card features two output channels: Y1 and TA1/TB1/TC1. Y1 is a transistor output that drives the 24VDC low-voltage signal circuit, while TA1/TB1/TC1 are relay outputs capable of driving the 220VAC control circuit.

By setting the values of functional parameters P3-01 to P3-05, the output functions for each channel can be defined to indicate various operating states and alarms of the VFD. Approximately 40 functional settings are available, enabling users to meet specific automatic control requirements. For detailed configuration values, refer to the documentation for the P3 group function code parameters.

3.13 Usage Method of the Inverter AI Port

The standard input/output expansion card supports two AI resources.

Port	Input Signal Characteristics
AI1-GND	Accepts voltage signals ranging from 0 to 10 V; Accepts 0–20 mA current signals
AI2-GND	Accepts voltage signals ranging from 0 to 10 V; Accepts 0–20 mA current signals

AI can function as an inverter, utilizing external voltage and current signals as the frequency source for various applications—including set frequency, set torque, voltage setpoint during VF separation, PID control, or feedback. The relationship between voltage/current values and their corresponding physical parameters is configured via P2-18 to P2-45.

The sampled values from the AI port can be read from the U-group function code; their converted calculation values are used for subsequent internal computations and cannot be directly accessed by users.

3.14 Usage Method of the AO Port on the Inverter

The analog expansion card supports one AO output channel.

Port	Input Signal Characteristics
AO1-GND	Can output a 0–10 V voltage signal Can output a 0–20 mA current signal

AO1 can be used to display internal operating parameters in analog form. The indicated parameter values can be adjusted before output using the operating parameters specified by function codes P3-13 and P3-14. The adjustment follows the characteristic curve Y = kX + b, where X represents the operating parameter to be output, and the values of k and b for AO1 are set via function codes P3-15 and P3-16.

4. Functional Parameters

4.1 Function Code Table

"○": Parameters can be modified during execution and take effect immediately.
"×": The parameter cannot be modified during execution and takes effect immediately.
"●": Parameters can be modified during operation and take effect upon power restoration.
"△": Parameters cannot be modified during operation and take effect upon power restoration.
"—": Read-only parameter; users cannot modify it.

Group P0: Basic operating parameters

Group P0: Basic operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P0-01	First Motor Control Method Selection	0: VF control method 1: Speed sensor-free vector control (SVC) 2: Vector Control with Speed Sensor (FVC)	0001H	0	×
P0-02	Speed Mode Operation Command Channel Selection	0: Operation Panel Run Channel 1: Terminal Command Channel 2: Communication Operation Command Channel	0002H	0	○
P0-03	Main frequency source A input channel selection	0: Digital setting (no memory retention after power loss) 1: Digital settings (power-off memory) 2：AI1 3：AI2 4：AI3 5: Terminal Pulse X4 Given 6: Communication Given 7: Multi-stage instruction given 8: PID set point 9: Simple PLC Operation 10: Special mode for wire drawing and winding (supported in version 3720 and above) 11: Set the knob on the rotary LED panel	0003H	Version below 3750:00 3750 and above: 01	×

Group P0: Basic operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		(supported in versions 3730 and above)			
P0-04	Auxiliary frequency source B input channel selection	0: Digital setting (no memory retention after power loss) 1: Digital settings (power-off memory) 2：AI1 3：AI2 4：AI3 5: Terminal Pulse X4 Given 6: Communication Given 7: Multi-stage instruction given 8: PID setpoint 9: Simple PLC Operation 10: Special mode for wire drawing and winding (supported in version 3740 and above) 11: Set the knob on the rotary LED panel (supported in versions 3740 and above)	0004H	00	×
P0-05	Frequency Source Superposition Selection	Unit digit: Frequency source selection 0: Main frequency source A 1: Operation result of the primary and secondary frequency sources 2: Switching between the main frequency source A and the auxiliary frequency source B Tenth position: Operational relationship between the primary and auxiliary frequency sources 0：A+B 1：A-B 2：max(A,B) 3：min(A,B) 4: A*B/P0-13 (-supported in versions 3750 and above)	0005H	00	○

Group P0: Basic operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P0-06	Auxiliary Frequency Source B Range Selection	0: Relative to the maximum output frequency 1: Relative to the main frequency source A	0006H	0	○
P0-07	Auxiliary frequency source B range	0% ~ 150%	0007H	100%	○
P0-09	Digital setting for auxiliary frequency source bias during superposition	0.00 Hz to maximum output frequency P0-13	0009H	0.00Hz	○
P0-10	Pre-set frequency	0.00 Hz to maximum output frequency P0-13	000AH	50.00Hz	○
P0-11	Frequency instruction decimal point (Supports version 3740 and above)	1:1 decimal point 2: 2 decimal places	000BH	2	×
P0-12	Digital setting frequency, shutdown memory selection	0: No memory 1: Memory	000CH	1	○
P0-13	Maximum output frequency	50.00Hz ~ 600.00Hz	000DH	50.00Hz	×
P0-14	Upper Limit Frequency Source	0: Set by P0-15 1: AI1 Setting 2: AI2 Settings 3: AI3 Settings 4: Pulse Setting 5: Communication Settings	000EH	0	×
P0-15	upper limiting frequency	Lower limit frequency P0-17 to maximum output frequency P0-13	000FH	50.00Hz	○
P0-16	Upper limit frequency offset	0.00 Hz to maximum output frequency (P0-13)	0010H	0.00Hz	○
P0-17	Lower limit frequency	0.00 Hz to upper frequency P0-15	0011H	0.00Hz	○
P0-18	Acceleration Time 1	0 ~ 65000s (PC-09=0) 0.0 ~ 6500.0s (PC-09=1)	0012H	Model Settings	○

Group P0: Basic operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		0.00 ~ 650.00s（PC-09=2）			
P0-19	Reduction Time 1	0 ~ 65000s（PC-09=0） 0.0 ~ 6500.0s（PC-09=1） 0.00 ~ 650.00s（PC-09=2）	0013H	Model Settings	○
P0-20	Operation Direction	Unit digit: Operation direction 0: Run in default direction 1: Run in the opposite direction of the default 10th: One-click reverse prohibition 0: Invalid 1: All reverse operation is prohibited	0014H	00	○
P0-21	Reverse frequency prohibition	0: Invalid 1: valid	0015H	0	○
P0-22	Positive and negative dead time	0.0s ~ 3600.0s	0016H	0.0s	○
P0-23	Run-time frequency command UP/DOWN reference	0: Operating frequency 1: Set frequency	0017H	0	×
P0-25	Selection of Motor Parameter Set	0: Motor Parameter Set 1 1: Motor Parameter Set 2	0019H	0	×

Group P1: First motor parameters

Group P1: First motor parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P1-00	Motor Type Selection	0: Ordinary asynchronous motor 1: Synchronous motor	0100H	0	×
P1-01	Motor rated power	0.1kW ~ 650.0kW	0101H	Model Settings	×
P1-02	Motor rated voltage	1V ~ 1200V	0102H	Model Settings	×
P1-03	Motor rated current	0.01A to 655.35A (inverter power ≤55 kW) 0.1A to 6553.5A (inverter power>55	0103H	Model Settings	×

		kW)			
P1-04	Motor rated frequency	0.01 Hz to maximum output frequency	0104H	Model Settings	×
P1-05	Motor rated speed	1rpm ~ 65535rpm	0105H	Model Settings	×
P1-06	Asynchronous machine stator phase resistance	0.001Ω to 65.535Ω (for inverters with power ≤55 kW) 0.0001Ω to 6.5535Ω (for inverters with power>55 kW)	0106H	Tuning parameter	×
P1-07	Asynchronous motor rotor phase resistance	0.001Ω to 65.535Ω (for inverters with power ≤55 kW) 0.0001Ω to 6.5535Ω (for inverters with power>55 kW)	0107H	Tuning parameter	×
P1-08	Asynchronous machine leakage inductance reactance	0.01 mH to 655.35 mH (inverter power ≤55 kW) 0.001 mH to 65.535 mH (inverter power>55 kW)	0108H	Tuning parameter	×
P1-09	Asynchronous machine mutual inductance	0.01 mH to 655.35 mH (inverter power ≤55 kW) 0.001 mH to 65.535 mH (inverter power>55 kW)	0109H	Tuning parameter	×
P1-10	Asynchronous motor no-load current	0.01A ~ P1-03 (Inverter power ≤55 kW) 0.1A to P1-03 (Inverter power>55 kW)	010AH	Tuning parameter	×
P1-15	Synchro machine stator phase resistance	0.001Ω to 65.535Ω (for inverters with power ≤55 kW) 0.0001Ω to 6.5535Ω (for inverters with power>55 kW)	010FH	Tuning parameter	×
P1-16	Synchronous machine D-axis inductor	0.01 mH to 655.35 mH (inverter power ≤55 kW) 0.001 mH to 65.535 mH (inverter power>55 kW)	0110H	Tuning parameter	×
P1-17	Synchronous machine Q-axis inductor	0.01 mH to 655.35 mH (inverter power ≤55 kW) 0.001 mH to 65.535 mH (inverter power>55 kW)	0111H	Tuning parameter	×
P1-19	Counter electromotive force of the synchronous machine	0~6000.0V	0113H	Tuning parameter	×
P1-24	Synchronizer Tuning Failure Alarm Selection (Supported in Version 3750 and above)	0: Enable the out-of-tune synchronization alarm 1:Disabling the out-of-tune synchronization alarm	0118H	0	○
P1-25	Encoder Type	0: VH6-DM200 encoder expansion card 5: VH6-DC200 encoder expansion card (supported in versions 3746 and above)	0119H	00	△

		10: VH6-DM100 encoder expansion card (supported in versions 3750 and above)			
P1-26	Number of encoder pulse lines	1 ~ 65535	011AH	1024	×
P1-27	Encoder installation angle	0.0 ~ 359.9°	011BH	0.0°	×
P1-28	ABZ Incremental Encoder Phase Sequence	0: Forward 1: Reverse	011CH	0	×
P1-32	Rotating Polar Logarithm	1 ~ 65535	0120H	1	×
P1-33	VH6-DM200 Wire Break Detection Time (-supported in versions 3742 and above)	0.0s to 10.0s (0.0s: Speed feedback line loss detection is invalid)	0121H	0.0s	×
P1-35	Self-learning of motor parameters	the unit ： 0: No action 1: Static Tuning 1 (some parameters) 2: Dynamic Tuning 3: Static Tuning 2 (Applicable only to asynchronous motors) 10th place: 0: Asynchronous motor 1: Synchronous motor	0123H	00	×
P1-36	Alarm Threshold for VH6-DM100/DC200 Encoder Communication Check Error (Supported in V3750 and above versions)	0.0～5000.0	0124H	5.0	○
P1-37	VH6-DM100/DC200 Encoder Wire Break Alarm Threshold (Supported in V3750 and above versions)	0～65535 times	0125H	5 times	○
P1-38	Tamagawa Protocol Battery Fault Switch (Supported in V3750 and above versions)	0: Disable Tamagawa Protocol Battery Fault 1: Enable Tamagawa Protocol Battery Fault	0C5FH	0	○
P1-39	Tamagawa Protocol Battery Warning Switch (Supported in V3750 and above versions)	0: Disable Tamagawa Protocol Battery Warning 1: Enable Tamagawa Protocol Battery Warning	0C60H	0	○

P1-40	Tamagawa Protocol Reset Function (Supported in V3750 and above versions)	Ones place：Multi-turn Reset Function 0: Multi-turn No Reset 1: Multi-turn Reset Tens place：Single-turn Reset Function 0: No Single-turn Reset 1: Single-turn Reset Hundreds place：Fault Reset Function 0: No Fault Reset 1: Fault Reset	0C61H	000	×
P1-41	Tamagawa Protocol Encoder Precision (Supported in V3750 and above versions)	0：17bit 1：19bit 2：23bit	0C62H	0	×

Group P2: Input terminal functional parameters

Group P2: Input Terminal Function Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P2-00	X1 input terminal function selection	0: No function 1: Forward Run (FWD) or Run Command 2: Reverse Run (REV) or Forward/Reverse Direction Selection (Note: When set to 1 or 2, coordinate with P2-10; see parameter description for details) 3: 3-Wire Run Control 4: Forward Jog (FJOG) 5: Reverse Jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Clear UP/DOWN Setting 9: Free Stop 10: Fault Reset 11: Frequency Source Switch 12: Multi-step Command Terminal 1 13: Multi-step Command Terminal 2 14: Multi-step Command Terminal 3 15: Multi-step Command Terminal 4 16: Acc/Dec Time Selection Terminal 1 17: Acc/Dec Time Selection Terminal 2 18: Acceleration/Deceleration Inhibit 19: Pulse Input 20: Counter Input 21: Counter Reset 22: Length Counter Input 23: Length Counter Reset	0200H	01	×
P2-01	X2 input terminal function selection		0201H	02	×
P2-02	X3 input terminal function selection		0202H	10	×
P2-03	X4 input terminal function selection		0203H	00	×
P2-04	X5 input terminal function selection		0204H	00	×
P2-05	X6 input terminal function selection		0205H	00	×
P2-06	X7 input terminal function selection		0206H	00	×

Group P2: Input Terminal Function Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		24: Swing Frequency Pause 25: Run Pause 26: PLC Status Reset 27: Switch Run Command to Keypad 28: Switch Run Command to Communication 29: Torque Control Inhibit 30: Speed/Torque Control Switch 32: PID Pause 33: Reverse PID Action Direction 34: PID Integral Pause 35: PID Parameter Switch 36: External Fault Normally Open Input 37: External Fault Normally Closed Input 38: User-defined Fault 1 39: User-defined Fault 2 40: Motor Parameter Selection 41: Switch Main Frequency A and Preset Frequency 42: Switch Auxiliary Frequency B and Preset Frequency 43: Frequency Setting Enable Terminal 44: DC Braking 45: Deceleration DC Braking 46: Emergency Stop 47: External Stop Terminal (Valid for Keypad Control Only) 48: External Terminal Stop (Follow Acc/Dec Time 4) 49: Reverse Frequency Inhibit 50: Clear Current Operation Runtime 51: 2-Wire/3-Wire Switch 52: Clear Encoder Count Value 54: Reverse Rotation Inhibit (Supported in V3750 and above versions) 55: Sensor Signal Detection Function (Supported in V3750 and above versions) 64: Spindle Orientation Reference Point (Supported in V3750 and above versions) 65: Spindle Positioning Function Enable (Supported in V3750 and above versions) 66: Spindle Orientation Position Terminal 1 (Supported in V3750 and			

Group P2: Input Terminal Function Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		above versions) 67: Spindle Orientation Position Terminal 2 (Supported in V3750 and above versions) 68: Spindle Orientation Position Terminal 3 (Supported in V3750 and above versions) 69: Switch External Pulse Position Mode / Speed Mode (Supported in V3750 and above versions) 70: External Pulse Enable Terminal (Supported in V3750 and above versions) 71: External Pulse Inhibit (Supported in V3750 and above versions) 72: External Pulse Superimposition Up Count (Supported in V3750 and above versions) 73: External Pulse Superimposition Down Count (Supported in V3750 and above versions) 95: Clear External Pulse Command Count Value (Supported in V3750 and above versions)			
P2-10	X1 terminal command mode	0: Two-wire control mode 1 1: Two-wire control mode 2 2: Three-wire control mode 1 3: Three-wire control mode 2 4: Three-wire control mode 3 (Supported in version 3750 and above)	020AH	0	×
P2-11	X1 terminal UP/DOWN change rate	0.001Hz/s～50.000Hz/s	020BH	1.000Hz/s	○
P2-12	X1 terminal filter time	0.000s～1.000s	020CH	0.010s	○
P2-13	X1 delay time	0.0s～3600.0s	020DH	0.0s	×
P2-14	X2 delay time	0.0s～3600.0s	020EH	0.0s	×
P2-15	X3 delay time	0.0s～3600.0s	020FH	0.0s	×
P2-16	X1 terminal active state selection 1	0: Normally open signal 1: Normally close signal Ones place: X1 Tens place: X2 Hundreds place: X3 Thousands place: X4 Ten-thousands place: X5	0210H	00000	×
P2-17	X1 terminal active state	0: Normally open signal	0211H	00000	×

Group P2: Input Terminal Function Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	selection 2	1: Normally close signal Ones place: X6 Tens place: X7			
P2-18	AI curve 1 minimum setting	0.00V～P2-20	0212H	0.00V	○
P2-19	Frequency percentage corresponding to AI Curve 1 minimum setting	-100.0%～+100.0%	0213H	0.0%	○
P2-20	AI curve 1 maximum setting	P2-18～+10.00V	0214H	10.00V	○
P2-21	Frequency percentage corresponding to AI Curve 1 maximum setting	-100.0%～+100.0%	0215H	100.0 %	○
P2-22	AI curve 2 minimum setting	0.00V～P2-24	0216H	0.00V	○
P2-23	Frequency percentage corresponding to AI Curve 2 minimum setting	-100.0%～+100.0%	0217H	0.0%	○
P2-24	AI curve 2 maximum setting	P2-22～+10.00V	0218H	10.00V	○
P2-25	Frequency percentage corresponding to AI Curve 2 maximum setting	-100.0%～+100.0%	0219H	100.0 %	○
P2-26	AI curve 3 minimum setting	0.00V～P2-28	021AH	-10.00 V	○
P2-27	Frequency percentage corresponding to AI Curve 3 minimum setting	-100.0%～+100.0%	021BH	-100.0 %	○
P2-28	AI curve 3 maximum setting	P2-26～+10.00V	021CH	10.00V	○
P2-29	Frequency percentage corresponding to AI Curve 3 maximum setting	-100.0%～+100.0%	021DH	100.0 %	○
P2-30	AI curve 4 minimum setting	0.00V～P2-32	021EH	0.00V	○
P2-31	Frequency percentage corresponding to AI Curve 4 minimum setting	-100.0%～+100.0%	021FH	0.0%	○
P2-32	AI Curve 4 inflection point 1 setting	P2-30～P2-34	0220H	3.00V	○
P2-33	Frequency percentage corresponding to AI Curve	-100.0%～+100.0%	0221H	30.0%	○

Group P2: Input Terminal Function Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	4 inflection point 1 setting				
P2-34	AI Curve 4 inflection point 2 setting	P2-32～P2-36	0222H	6.00V	○
P2-35	Frequency percentage corresponding to AI Curve 4 inflection point 2 setting	-100.0%～+100.0%	0223H	60.0%	○
P2-36	AI curve 4 maximum setting	P2-34～+10.00V	0224H	10.00V	○
P2-37	Frequency percentage corresponding to AI Curve 4 maximum setting	-100.0%～+100.0%	0225H	100.0 %	○
P2-38	AI curve 5 minimum setting	-10.00V～P2-40	0226H	-10.00 V	○
P2-39	Frequency percentage corresponding to AI Curve 5 minimum setting	-100.0%～+100.0%	0227H	-100.0 %	○
P2-40	AI Curve 5 inflection point 1 setting	P2-38～P2-42	0228H	-3.00V	○
P2-41	Frequency percentage corresponding to AI Curve 5 inflection point 1 setting	-100.0%～+100.0%	0229H	-30.0%	○
P2-42	AI Curve 5 inflection point 2 setting	P2-40～P2-44	022AH	3.00V	○
P2-43	Frequency percentage corresponding to AI Curve 5 inflection point 2 setting	-100.0%～+100.0%	022BH	30.0%	○
P2-44	AI curve 5 maximum setting	P2-42～+10.00V	022CH	10.00V	○
P2-45	Frequency percentage corresponding to AI Curve 5 maximum setting	-100.0%～+100.0%	022DH	100.0 %	○
P2-54	AI curve selection	Ones place: AI1curve selection 1: curve 1 (2 points, see P2-18～P2-21) 2: curve 2 (2 points, see P2-22～P2-25) 3: curve 3 (2 points, see P2-26～P2-29) 4：curve 4 (4 points, see P2-30～P2-37) 5：curve 5 (4 points, see P2-38～P2-45)	0236H	321	○

Group P2: Input Terminal Function Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		Tens place: AI2 curve selection, same as above Hundreds place: AI3 curve selection, same as above			
P2-55	AI input below minimum setting selection	Ones place: AI1 input below minimum setting selection 0: Corresponding minimum input setting 1: 0.0% Tens place: AI2 input below minimum setting selection, same as above Hundreds place: AI3 input below minimum setting selection, same as above	0237H	000	○
P2-56	AI1 filter time constant	0.00s～10.00s	0238H	0.10s	○
P2-57	AI2 filter time constant	0.00s～10.00s	0239H	0.10s	○
P2-58	AI3 filter time constant	0.00s～10.00s	023AH	0.10s	○
P2-60	AI1 setting jump point	-100.0%～+100.0%	023CH	0.0%	○
P2-61	AI1 setting jump amplitude	0.0%～100.0%	023DH	0.5%	○
P2-62	AI2 setting jump point	-100.0%～+100.0%	023EH	0.0%	○
P2-63	AI2 setting jump amplitude	0.0%～100.0%	023FH	0.5%	○
P2-64	AI3 setting jump point	-100.0%～+100.0%	0240H	0.0%	○
P2-65	AI3 setting jump amplitude	0.0%～100.0%	0241H	0.5%	○
P2-66	PULSE minimum setting	0.00kHz～P2-68	0242H	0.00kHz	○
P2-67	Frequency percentage corresponding to PULSE minimum setting	-100.0%～+100.0%	0243H	0.0%	○
P2-68	PULSE maximum setting	P2-66～50.00kHz	0244H	50.00kHz	○
P2-69	Frequency percentage corresponding to PULSE maximum setting	-100.0%～+100.0%	0245H	100.0%	○
P2-70	PULSE filter time constant	0.00s～10.00s	0246H	0.10s	○
P2-71	X1 terminal active delay (Supported in version 3748 and above)	0.0s～3600.0s	0247H	0.0s	◯
P2-72	X1 terminal inactive delay	0.0s～3600.0s	0248H	0.0s	◯

Group P2: Input Terminal Function Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	(Supported in version 3748 and above)				
P2-73	X2 terminal active delay (Supported in version 3748 and above)	0.0s～3600.0s	0249H	0.0s	○
P2-74	X2 terminal inactive delay (Supported in version 3748 and above)	0.0s～3600.0s	024AH	0.0s	○
P2-75	X3 terminal active delay (Supported in version 3748 and above)	0.0s～3600.0s	024BH	0.0s	○
P2-76	X3 terminal inactive delay (Supported in version 3748 and above)	0.0s～3600.0s	024CH	0.0s	○
P2-77	X4 terminal active delay (Supported in version 3748 and above)	0.0s～3600.0s	024DH	0.0s	○
P2-78	X4 terminal inactive delay (Supported in version 3748 and above)	0.0s～3600.0s	024EH	0.0s	○
P2-79	X5 terminal active delay (Supported in version 3748 and above)	0.0s～3600.0s	024FH	0.0s	○
P2-80	X5 terminal inactive delay (Supported in version 3748 and above)	0.0s～3600.0s	0250H	0.0s	○
P2-81	X6 terminal active delay (Supported in version 3748 and above)	0.0s～3600.0s	0251H	0.0s	○
P2-82	X6 terminal inactive delay (Supported in version 3748 and above)	0.0s～3600.0s	0252H	0.0s	○
P2-83	X7 terminal active delay (Supported in version 3748 and above)	0.0s～3600.0s	0253H	0.0s	○
P2-84	X7 terminal inactive delay (Supported in version 3748 and above)	0.0s～3600.0s	0254H	0.0s	○
P2-85	Software STO switch (Supported in version 3750 and above)	0: Disable software STO 1: Enable software STO	0255H	0	×
P2-86	STO synchronization	0.0～1000.0 ms	0256H	10.0	○

Group P2: Input Terminal Function Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	check filter (Supported in version 3750 and above)			ms	
P2-87	STO input detection filter (Supported in version 3750 and above)	1.0～5.0 ms	0257H	1.2 ms	○

Group P3: Output terminal functional parameters

Group P3: Output terminal functional parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P3-00	Y2 output format	0: High-speed pulse output 1: Standard terminal output	0300H	0	○
P3-01	Y1 Output Function Selection	0: No output 1: Inverter operation 2: Fault output (for faults that cause voluntary shutdown) 3: Frequency level detection of FDT1 output 4: Frequency Level Detection FDT2 Output 5: Frequency arrival 6: Operating at zero speed (no output when stopped) 7: Operating at zero speed (output also during shutdown) 8: Upper frequency reached 9: Lower limit frequency reached (related to operation) 10: Motor overload pre-alarm 11: Inverter overload pre-alarm 12: Communication Settings 13: Torque limit in effect 15: Frequency 1 reaches the output 16: Frequency 2 reaches the output 17: Current 1 reaches the output 18: Current 2 reaches the output 19: Set the record value to reach 20: The specified record value has been reached 21: Operation ready 22： AI1 > AI2 23: AI1 input exceeds limit	0301H	01	○
P3-02	Y2 (standard terminal) output function selection		0302H	00	○
P3-04	Relay 1 Output Function Selection		0304H	02	○
P3-05	Relay 2 Output Function Selection		0305H	00	○

Group P3: Output terminal functional parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		24: Low-voltage state output 25: Cumulative power-on time reached 26: Timed arrival output 27: Length reached 28: Simple PLC cycle completed 29: Cumulative operating time reached 32: Lower limit frequency reached (output even during shutdown) 33: Fault output (for freely shutdown faults; no under-voltage output) 34: Module temperature reached 35: Warning output (all faults) 37: Running in reverse 39: Output current exceeds the limit 40: Zero-current state 41: The run time has arrived 42: The bus voltage has reached 43: Instant stop and continuous operation function output (Supported in version 3750 and above) 45: STO EDM output (Supported in version 3750 and above) 48: Spindle orientation positioning complete (Supported in version 3750 and above) 49: External pulse positioning complete (Supported in version 3750 and above) 50: External pulse position pulse superposition in progress (Supported in version 3750 and above)			
P3-06	Y1 output delay time	0.0s ~ 3600.0s	0306H	0.0s	○
P3-07	Y2 (standard terminal) output delay time	0.0s ~ 3600.0s	0307H	0.0s	○
P3-09	Relay 1 output delay time	0.0s ~ 3600.0s	0309H	0.0s	○
P3-10	Relay 2 output delay time	0.0s ~ 3600.0s	030AH	0.0s	○
P3-11	Y-terminal effective state selection	0: Always-on signal 1: Always-off signal Unit digit: Y1 10th: Y2 Thousands: Relay 1 Ten-thousand place: Relay 2	030BH	00000	○

Group P3: Output terminal functional parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P3-12	Y2 (High-Speed Pulse) Output Selection	0: Operating frequency 1: Set frequency 2: Output current 3:Motor output torque (absolute value, percentage relative to the motor) 4: Output Power 5: Output voltage 6：AI1 7：AI2 8：AI3 9: Pulse input (100.0% corresponds to 100.0 kHz) 10: Output speed 11: Communication control output 12: Number value 13: Length	030CH	00	○
P3-13	AO1 Output Selection		030DH	00	○
P3-14	AO2 Output Selection		030EH	01	○
P3-15	AO1 Zero-Offset Coefficient	-100.0% ~ +100.0%	030FH	0.0%	○
P3-16	AO1 Gain	-10.00 ~ +10.00	0310H	1.00	○
P3-17	AO2 Zero-Offset Coefficient	-100.0% ~ +100.0%	0311H	0.0%	○
P3-18	AO2 Gain	-10.00 ~ +10.00	0312H	1.00	○
P3-23	Y2 (high-speed pulse): maximum input pulse frequency	0.01kHz ~ 50.0kHz	0317H	50.0kHz	○
P3-24	Y1 output valid delay time (supported in versions 3748 and above)	0.0s～3600.0s	0318H	0.0s	○
P3-25	Invalid delay time for Y1 output (supported in versions 3748 and above)	0.0s～3600.0s	0319H	0.0s	○
P3-26	Effective delay time for Y2 output (supported in versions 3748 and above)	0.0s～3600.0s	031AH	0.0s	○
P3-27	Invalid delay time	0.0s～3600.0s	031BH	0.0s	○

Group P3: Output terminal functional parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	for Y2 output (supported in versions 3748 and above)				
P3-30	Relay 1 output valid delay time (supported in versions 3748 and above)	0.0s～3600.0s	031EH	0.0s	○
P3-31	Relay 1 output invalid delay time (supported in versions 3748 and above)	0.0s～3600.0s	031FH	0.0s	○
P3-32	Relay 2 output valid delay time (supported in versions 3748 and above)	0.0s～3600.0s	0320H	0.0s	○
P3-33	Relay 2 Output Invalid Delay Time (-supported in versions 3748 and above)	0.0s～3600.0s	0321H	0.0s	○

Group P4: Start-stop mode

Group P4: Start-stop mode					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P4-00	starting mode	0: Direct start 1: Speed tracking restart (AC asynchronous motor) 2: Pre-excitation startup (AC asynchronous motor)	0400H	0	○
P4-01	Activation Frequency	Versions below 3750:0.00 Hz to 10.00 Hz Versions 3750 and above: 0.00 Hz to 50.00 Hz	0401H	0.00Hz	○
P4-02	Activation frequency duration	0.0s ~ 100.0s	0402H	0.0s	×
P4-03	Percentage of DC braking current/pre-excitation current	0% ~ 100%	0403H	0%	×

Group P4: Start-stop mode					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P4-04	DC braking time/pre-excitation time at start-up	0.0s ~ 100.0s	0404H	0.0s	×
P4-05	Start Protection Option	0: Not protected 1: Protection	0405H	0	×
P4-06	Speed Tracking Method (Supports version 3740 and above)	0: Start from the downtime frequency 1: Start from power frequency 2: Start from the maximum output frequency	0406H	0	×
P4-07	Speed tracking speed	1 ~ 100	0407H	20	○
P4-10	Speed tracking closed loop current	30%~200%	040AH	Model Selection	×
P4-19	Acceleration and deceleration method	0: Linear acceleration and deceleration 1: Continuous S-curve acceleration and deceleration 2: Intermittent S-curve acceleration and deceleration	0413H	0	×
P4-20	Proportion of the S-curve starting segment	0.0%~（100.0% - P4-21）	0414H	30.0%	×
P4-21	Proportion of the S-curve end segment	0.0%~（100.0% - P4-20）	0415H	30.0%	×
P4-22	Downtime Method	0: Slow down and stop 1: Free shutdown	0416H	0	○
P4-23	Starting frequency of DC braking during shutdown	0.00 Hz to maximum output frequency P0-13	0417H	0.00Hz	○
P4-24	DC braking wait time during shutdown	0.0s ~ 100.0s	0418H	0.0s	○
P4-25	Percentage of DC braking current during shutdown	Versions below 3750:0%–100% Versions and above 3750:0%–150%	0419H	0%	○
P4-26	DC braking time during shutdown	0.0s ~ 100.0s	041AH	0.0s	○
P4-27	P4-27 Point-type DC Brake Switch (-supported in versions 3750 and above)	0: Disengage spot DC braking 1: Engage spot DC braking	041BH	1	○

Group P5: VF parameters

Group P5: VF parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P5-00	VF curve setting	0: Linear VF 1: Multi-point VF 2: Square VF 3: 1.2 raised to the power of 2 VF 4: 1.4 raised to the power of 1 6: 1.6 raised to the power of 6 8: 1.8 raised to the power of 1 10: VF complete separation mode 11: VF semi-separation mode	0500H	00	×
P5-01	Multi-point VF frequency point F1	0.00Hz ~ P5-03	0501H	0.00Hz	×
P5-02	Multi-point VF voltage point V1	0.0 ~ 100.0% (Motor rated voltage)	0502H	0.0%	×
P5-03	Multi-point VF frequency point F2	P5-01 ~ P5-05	0503H	0.00Hz	×
P5-04	Multi-point VF voltage point V2	0.0 ~ 100.0%(Motor rated voltage)	0504H	0.0%	×
P5-05	Multi-point VF frequency point F3	P5-05 to P1-04 (motor rated frequency)	0505H	0.00Hz	×
P5-06	Multi-point VF voltage point V3	0.0 ~ 100.0%(Motor rated voltage)	0506H	0.0%	×
P5-07	Torque increase	0.0% (Automatic torque increase) 0.1% ~ 30.0%	0507H	Model Settings	○
P5-08	Torque increase cut off frequency	0.00 Hz to maximum output frequency P0-13	0508H	50.00Hz	×
P5-09	VF-segregated voltage source	0: Digital setting 1: AI1 2: AI2	0509H	0	○

Group P5: VF parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		3：AI3 4: PULSE pulse setting (X4) 5: Communication Given 6: Multi-stage speed instruction 7: PID setpoint 8: Simple PLC Operation			
P5-10	Digital setting of the voltage source for VF separation	0~ Motor rated voltage	050AH	0V	○
P5-11	Voltage acceleration time for VF separation	0.0s~1000.0s	050BH	0.0s	○
P5-12	The voltage deceleration time for VF separation	0.0s~1000.0s	050CH	0.0s	○
P5-13	Selection of VF Separation shutdown method	0: Frequency and voltage reduced independently to 0 1: After the voltage drops to 0, the frequency begins to decrease again.	050DH	0	○
P5-14	VF Slippage Compensation Gain	0.0%～200.0%	050EH	0.0%	○
P5-15	Slip compensation time constant	0.1~10.0s	050FH	0.1s	○
P5-16	VF Overexcitation Gain	0～200	0510H	64	○
P5-17	VF Oscillation Suppression Gain	0～100	0511H	Model Settings	○
P5-18	VF Oscillation Suppression Mode Selection	0: Oscillation suppression off 1: Phase-modulated oscillation suppression 1 2: Phase-modulated oscillation suppression 2 3: Frequency modulation oscillation suppression 1 4: Frequency modulation oscillation suppression 2	0512H	3	×
P5-19	VF vs. Flow Rate Action Current	50~200%	0513H	150%	×
P5-20	VF: Loss Rate Suppression Enablement	0: Invalid 1: valid	0514H	1	×
P5-21	VF: Loss Rate Suppression Gain	0~100	0515H	5	○
P5-22	VF: Compensation coefficient for the current associated with	50%~200%	0516H	50	×

Group P5: VF parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	the high-rate current loss				
P5-23	over-voltage stall action voltage	200.0V~2000.0V	0517H	Model Settings	×
P5-24	over-voltage stall enable	0: Invalid 1： valid	0518H	1	×
P5-25	over-voltage stall suppression frequency gain	Versions below 3750: 0-100 Versions and above 3750: 0-200	0519H	30	○
P5-26	over-voltage stall suppression voltage gain	0~100	051AH	30	○
P5-27	Maximum rise frequency limit for over-voltage stall	Versions below 3750: 0-50Hz Versions and above 3750: 0-420Hz	051BH	5Hz	×
P5-43	Carrier switch frequency (supported in versions 3750 and above)	0.00Hz～600.00Hz	052BH	0.00Hz	×

Group P6 : Vector control parameters

Group P6 : Vector control parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P6-00	Speed loop proportional gain 1	1 ~ 100	0600H	Version below 3742:30 Version 3742 and above: 20	○
P6-01	Speed loop integral time 1	0.01s ~ 10.00s	0601H	0.50s	○
P6-02	Speed Range Proportional Gain 2	1 ~ 100	0602H	Version below 3742:20 Version 3742 and above: 6	○
P6-03	Speed loop integral time 2	0.01s ~ 10.00s	0603H	1.00s	○

Group P6 : Vector control parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P6-04	Switch frequency 1	0.00 ~ P6-05	0604H	5.00Hz	○
P6-05	Switch Frequency 2	P6-04~Maximum output frequency P0-13	0605H	10.00Hz	○
P6-06	Speed Loop Integral Attribute	Unit digit: Point separation 0: Invalid 1： valid	0606H	0	○
P6-07	Vector Slippage Compensation Gain	50%~200%	0607H	Versions below 3742:100 Version 3742 and above: 110	○
P6-08	SVC speed feedback filtering time	0.000s ~ 0.100s	0608H	0.015s	○
P6-10	Speed control (drive) torque upper limit source	0: Parameter P6-11 setting 1：AI1 2：AI2 3：AI3 4: PULSE pulse setting 5: Communication Given 6：min(AI1,AI2) 7：max(AI1,AI2)	060AH	0	○
P6-11	Digital setting of the upper limit for speed control (drive) torque	0.0% ~ 200.0%	060BH	150.0%	○
P6-14	Excitation regulation proportional gain	0 ~ 60000	060EH	2400	○
P6-15	Excitation regulation integral gain	0 ~ 60000	060FH	400	○
P6-16	Torque regulation ratio gain	0 ~ 60000	0610H	2400	○
P6-17	Torque regulation integral gain	0 ~ 60000	0611H	400	○
P6-23	Minimum frequency for the asynchronous machine SVC	0.00～0.50	0617H	0.30	×

Group P6 : Vector control parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P6-26	Enable initial position detection for the synchronizer	0: Perform initial position detection every startup 1: Do not perform initial position detection upon startup 2: Perform initial position detection only during the first startup after power-on	061AH	0	○
P6-37	Limitation of the initial excitation current for synchronous machines using SVC (Switched Capacitor Voltage Contactor)	0～80	0625H	30	○
P6-38	Minimum carrier frequency for the synchronous machine SVC	0.8～4.0	0626H	1.5	○

Group P7 : Fault recording parameters

Group P7 : Fault recording parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P7-00	Third (most recent) fault type	0: No fault 1: Accelerated over-current 2: Speed reduction over-current 3: Constant-speed over-current 4: Acceleration over-voltage 5: Deceleration over-voltage 6: Constant-speed over-voltage 7: Buffer resistor overload fault 8: Low-voltage fault 9: Inverter overload 10: Motor overload 11: Phase input missing 12: Output phase loss 13: Radiator overheating 14: Contactor failure 15: Current detection failure 16: Motor tuning failure 17: Disk drive failure 18: Motor ground short-circuit fault 19: unload 20: Wave-based current limiting	0700H	-	-
P7-01	Second type of failure		0701H	-	-
P7-02	First fault type		0702H	-	-

Group P7 : Fault recording parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		failure 21: Magnetic pole position detection failed 22: UVW signal feedback error 23: Short circuit in the brake resistor 24: Brake pipe overload 25: Brake pipe straight-through 26: SVC stall fault 35: The synchronous machine is operating in tuned fault mode. 37: Low-voltage fault in the encoder battery 43: External Fault 44: Communication failure 45: EEPROM read/write failure 46: Run time reached 47: The power-on time has arrived. 48: User-defined Fault 1 49: User-defined Fault 2 50: PID feedback loss during operation 51: Operate the switching motor 52: Excessive speed feedback deviation 53: Motor overspeed 54: Motor overheating fault 55: Peer-to-peer slave failure 56: Power-on lock time has arrived 57: The power-on lock time has reached 2 58：The power-on lock time has reached 3. 63： The spindle stop signal has been disconnected. 70：PID breakage 71：STO out of sync			
P7-03	Frequency during the third (most recent) failure	-	0703H	-	-
P7-04	Current during the third (most recent) failure	-	0704H	-	-
P7-05	The bus voltage during the third (most recent) failure	-	0705H	-	-
P7-06	Input terminal status during the	-	0706H	-	-

Group P7 : Fault recording parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	third (most recent) failure				
P7-07	Status of the output terminals during the third (most recent) failure	-	0707H	-	-
P7-08	Inverter status during the third (most recent) failure	-	0708H	-	-
P7-09	Power-on time during the third (most recent) failure	Unit: minutes	0709H	-	-
P7-10	Running time during the third (most recent) failure	Unit: minutes	070AH	-	-
P7-11	Location information during the third (most recent) failure (Supports version 3720 and above)	-	070BH	-	-
P7-13	Frequency during the second failure	-	070DH	-	-
P7-14	Current during the second failure	-	070EH	-	-
P7-15	The bus voltage during the second failure	-	070FH	-	-
P7-16	Input terminal status during the second failure	-	0710H	-	-
P7-17	Output terminal status during the second failure	-	0711H	-	-
P7-18	Inverter status during the second fault	-	0712H	-	-
P7-19	Power-on time during the second failure	Unit: minutes	0713H	-	-
P7-20	Running time during the second failure	Unit: minutes	0714H	-	-
P7-21	Location information during the second failure (Supports version 3720 and above)	-	0715H	-	-
P7-23	Frequency during the first fault	-	0717H	-	-
P7-24	Current during the first fault	-	0718H	-	-
P7-25	The bus voltage during the first fault	-	0719H	-	-
P7-26	Input terminal status during the first fault	-	071AH	-	-
P7-27	Output terminal status during the first fault	-	071BH	-	-
P7-28	Inverter status during the first fault	-	071CH	-	-
P7-29	Power-on time during the first	Unit: minutes	071DH	-	-

Group P7 : Fault recording parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	failure				
P7-30	Running time during the first failure	Unit: minutes	071EH	-	-
P7-31	Location information during the first failure (Supports version 3720 and above)	-	071FH	-	-
P7-33	Selection of Motor Overload Protection Method	0: Prohibited 1: Allow	0721H	1	○
P7-34	Motor overload protection gain	Versions below 3750:0.20~10.00 Versions 3750 and above: 0.01~10.00	0722H	1.00	○
P7-35	Motor Overload Warning Coefficient	50% ~ 100%	0723H	80%	○
P7-36	Type of motor temperature sensor	0: No temperature sensor 1：PT100	0724H	0	○
P7-37	Motor overheating protection threshold	0℃~200℃	0725H	110	○
P7-38	Motor overheating pre-alarm threshold	0℃~100℃	0726H	90	○
P7-39	Enter the phase loss/contactor engagement protection selection	Unit digit: Select phase protection input 10th position: Contactor engagement protection selection 0: Prohibited 1: Allow	0727H	11	○
P7-40	Output Phase Loss Protection Selection	0: Prohibited 1: Allow	0728H	1	○
P7-41	Power supply-to-ground short-circuit protection function	0: Invalid 1： valid	0729H	1	○
P7-42	Selection of fault relay action during automatic fault reset	0: No action 1: Action	072AH	0	○
P7-43	Automatic fault reset interval	0.1s ~ 60.0s	072BH	1.0s	○
P7-44	Number of automatic fault resets	0 ~ 20	072CH	0	○
P7-45	Select Protection Action 1 for fault	Unit digit: Motor overload (Err10) 0: Free Parking 1: Stop according to the shutdown method	072DH	00000	○

Group P7 : Fault recording parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		10th position: Phase input error (Err11) 0: Free Parking 1: Stop according to the shutdown method Hundreds place: Output phase deficiency (Err12) 0: Free Parking 1: Stop according to the shutdown method Thousands: Output overload (Err19) 0: Free Parking 1: Stop according to the shutdown method Ten-thousand position: Magnetic pole position detection failed (Err21) 0: Free Parking 1: Stop according to the shutdown method			
P7-46	Protection action selection 2 during failure	Unit digit: External Fault 1 (Err43) 0: Free Parking 1: Stop according to the shutdown method 10th: Communication failure (Err44) 0: Free Parking 1: Stop according to the shutdown method Hundreds digit: EEPROM read/write failure (Err45) 0: Free Parking 1: Stop according to the shutdown method Thousands: Run time reached (Err46) 0: Free Parking 1: Stop according to the shutdown method Ten-thousand position: Power-on	072EH	00000	○

Group P7 : Fault recording parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		time reached (Err47) 0: Free Parking 1: Stop according to the shutdown method			
P7-47	Protection action selection 3 during failure	Unit digit: User-defined fault 1 (Err48) 0: Free Parking 1: Stop according to the shutdown method 10th: User-defined Fault 2 (Err49) 0: Free Parking 1: Stop according to the shutdown method Hundreds digit: PID feedback loss during operation (Err50) 0: Free Parking 1: Stop according to the shutdown method Thousands digit: Excessive speed deviation (Err52) 0: Free Parking 1: Stop according to the shutdown method Ten-thousand position: Motor overspeed (Err53) 0: Free Parking 1: Stop according to the shutdown method	072FH	00000	○
P7-48	Protection action selection 4 during failure	Unit digit: Motor overheating (Err54) 0: Free Parking 1: Stop according to the shutdown method	0730H	0	○
P7-52	Braking starting voltage	200.0V ~ 2000.0V	0734H	690V	○
P7-53	Utilization rate of the braking resistor	0 ~ 100%	0735H	100%	○
P7-55	Vector over-voltage stall gain	0 ~ 100	0737H	30	○
P7-56	Vector over-voltage stall protection voltage	650V ~ 800V	0738H	760.0V	×
P7-61	Drop detection level	0.0%~100.0%	073DH	10.0%	○
P7-62	Drop detection time	0.0~60.0s	073EH	1.0s	○

Group P7 : Fault recording parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P7-63	Maximum speed detection value	0.0% to 50.0% (unit: maximum output frequency P0-13)	073FH	20.0%	○
P7-64	Time for speed detection	0.0s ~ 60.0s	0740H	0.010s	○
P7-65	Excessive speed variation detection value	0.0% to 50.0% (unit: maximum output frequency P0-13)	0741H	20.0%	○
P7-66	Time required to detect excessive speed variation	0.0s ~ 60.0s	0742H	5.0s	○
P7-67	Stop-and-Go Function Selection	0: Instant power outage is invalid 1: Reduce speed during instantaneous power outage 2: Slow down and shut down during a temporary power outage（asynchronous machine）	0743H	0	×
P7-68	voltage for determining pause during a temporary stop action	80% ~ 100%	0744H	85%	×
P7-69	Time required to determine when the voltage recovers after a brief interruption	0.0s ~ 30.0s	0745H	0.5s	×
P7-70	Judging the voltage based on whether the movement stops temporarily but continues	60% to 100% (standard bus voltage)	0746H	80%	○
P7-71	Proportional gain for temporary stoppage without complete halt	0 ~ 100	0747H	40	○
P7-72	The integral coefficient for a brief pause without stopping	0 ~ 100	0748H	30	○
P7-73	Time for deceleration during a brief pause without stopping	0 ~ 300.0s	0749H	20.0	×
P7-79	VH6-DM100/DC200 encoder communication CRC error alarm threshold (Supported in version 3746 only)	0.0～5000.0	074FH	5.0	○
	Instant stop non-stall timeout period (supported in versions 3750 and above)	0.0s～5000.0s		5.0s	○
P7-80	VH6-DM100/DC200 encoder communication disconnection detection alarm threshold (Supported in version 3746 only)	0～65535	0750H	5	○
	Historical maximum DC bus voltage (Supported in version 3750 and	-		-	-

Group P7 : Fault recording parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	above)				
P7-81	Historical record of the largest bus voltage at the moment of output current (supported in versions 3750 and above)	-	0751H	-	-
P7-82	Cumulative power-on time when the historical maximum DC bus voltage was recorded (Supported in version 3750 and above)	-	0752H	-	-
P7-83	Historical maximum inverter temperature (Supported in version 3750 and above)	-	0753H	-	-
P7-84	Output current at the time when the historical maximum inverter temperature was recorded (Supported in version 3750 and above)	-	0754H	-	-
P7-85	Cumulative power-on time when the historical maximum inverter temperature was recorded (Supported in version 3750 and above)	-	0755H	-	-
P7-86	Historical maximum output current (Supported in version 3750 and above)	-	0756H	-	-
P7-87	Cumulative power-on time when the historical maximum output current was recorded (Supported in version 3750 and above)	-	0757H	-	-

Group P8 : Keyboard and Display

Group P8 : Keyboard and Display					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P8-00	JOG/REV key function selection	0: Menu Switch 1: Forward/Reverse Switch	0800H	0	×

Group P8 : Keyboard and Display					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		2: Forward incremental movement 3: Reverse Dot Motion			
P8-01	STOP/REST key function selection	0: The STOP/REST key function is only active in keyboard operation mode. 1: The STOP/REST key function remains effective under all operating modes.	0801H	1	○
P8-02	Parameter initialization	0: No action 1: Restore factory settings, excluding motor parameters 1: Restore factory parameters, excluding motor parameters and the values of P0-13 and P0-15 (supported in version 3730 and above) 2: Clear record information 3: Restore factory parameters (including motor parameters) 4: Back up current user parameters (supported only on LCD panels) 5: Restore user backup parameters (supported only on LCD panels)	0802H	0	×
P8-03	User Password	0 ~ 65535	-	00000	○
P8-05	Personalized Parameter Mode Selection	the unit ： 0: Do not display 1: Display user-selected parameters 10th place: 0: Do not display 1: Display user-modified parameters	-	00	×
P8-06	Parameter Modification Attribute	0: Modifiable 1: Not modifiable	-	0	○
P8-07	LED Operation Display Parameter 1 (Low 16 bits)	The meaning of "position" Bit00: Operating frequency Bit01: Set frequency	0807H	001F	○
P8-08	LED Operation Display Parameters 2 (16-digit number)	Bit02: Bus voltage Bit03: Output current Bit04: Output voltage Bit05: Output Torque Bit06: Output power Bit07: X input status Bit08: Y output status Bit09: AI1 Voltage Bit10: AI2 Voltage Bit11: AI3 Voltage Bit12: Pulse input pulse frequency, unit	0808H	0000	○

Group P8 : Keyboard and Display					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		0.01 kHz Bit13: Pulse input pulse frequency, unit: Hz Bit14: PID setting Bit15： PID feedback Bit16: Load speed display Bit17: Feedback speed, unit 0.1 Hz Bit18: Actual feedback speed Bit19: Linear speed Bit20: PLC Phase Bit21: Count value Bit22: Length value Bit23: Main frequency A display Bit24: Auxiliary Frequency B Display Bit25: Communication setting value Bit26: Pre-AI1 correction voltage Bit27: Pre-AI2 correction voltage Bit28: Pre-AI3 correction voltage Bit29: Remaining runtime Bit30: Current power-on time Bit31: Current runtime			
P8-09	LED shutdown display parameters	The meaning of "position" Bit0: Set frequency Bit1: Bus voltage Bit2: X input status Bit3: Y output status Bit4: AI1 Voltage Bit5: AI2 Voltage Bit6: AI3 Voltage Bit7: Pulse Input Pulse Frequency Bit8: PID Setting Bit9: Load speed display Bit10： PLCStep Bit11: Count value Bit12: Length value	0809H	0033	○
P8-10	Total runtime	0h ~ 65535h	080AH	-	-
P8-11	Total power-on time	0h ~ 65535h	080BH	-	-
P8-12	Total electricity	0–65535 degrees	080CH	-	-

Group P8 : Keyboard and Display					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	consumption				
P8-13	Inverter Type Display	1: G-type (Constant-Torque Load Model) 2: P-type (for fan and pump loads)	080DH	-	-
P8-14	Product Number	-	080EH	-	-
P8-15	Software version number	-	080FH	-	-
P8-16	Function Version Number	-	0810H	-	-
P8-19	Inverter module radiator temperature	0℃ ~ 100℃	0813H	-	-
P8-20	Output power coefficient	0.00% ~ 200.0%	0814H	100.0	○
P8-21	Load speed velocity coefficient	0.0001~6.5000	0815H	1.0000	○
P8-22	Load speed shows the decimal point position	Unit digit: Number of decimal places in U0-16 0:0 decimal places 1:1 decimal place 2: 2 decimal places 10th position: U0-17, U0-18 decimal places 1:1 decimal place 2: 2 decimal places	0816H	11	○
P8-25	The number of digits indicating the starting frequency value for the up/down button (Supports version 3746 and above)	1: Frequency adjustment starts from the lowest position on the panel 2: Frequency adjustment starts from the second-to-last position on the panel 3: Frequency adjustment starts from the second-to-last position on the panel 4: Frequency adjustment starts from the fourth-to-last position on the panel (supported in versions 3750 and above)	0819H	2	○
P8-31	User password (supported by version 3750 and above)	0～65535	-	00000	○

Group P9 : Communication parameters

Group P9 : Communication parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P9-00	Serial Communication	0: Modbus-RTU protocol	0900H	0	×

Group P9 : Communication parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	Protocol Selection	1: Communication expansion card (EtherCAT, CANopen, PROFINET, EtherNet IP) PROFINET and EtherNet/IP communication requires the inverter firmware version to be 3746 or later. 2: ASCII mode (supported in version 3742 and above) 3:Radio Communication Mode (-supported in version 3750 and above)			
P9-01	Local address	0: Broadcast address 1 ~ 247 (Modbus valid)	0901H	1	○
P9-02	Communication baud rate	Unit digit: MODBUS 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600 BPS (supported in versions 3740 and above) 9: 115200 BPS (supported in versions 3740 and above) Unit digit: EtherNet/IP (supported in version 3746 and above) 0：300BPS 1：600BPS 2：1200BPS 3：2400BPS 4：4800BPS 5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS 10th: EtherCAT, PROFINET (supported from version 3746 and above) 0：115200 1：208300 2：256000	0902H	06	○
P9-03	MODBUS data format	0: No verification (8-N-2) (RTU)	0903H	1	○

Group P9 : Communication parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		1: Parity check (8-E-1) (RTU) 2:Odd parity (8-O-1) (RTU) 3: No verification (8-N-1) (RTU) 4: Parity Check (7-E-1) (ASCII)			
P9-04	MODBUS Communication Timeout Time	0.0: Invalid 0.1 ~ 60.0s	0904H	0.0	○
P9-05	MODBUS response delay	0 ~ 20ms	0905H	2	○
P9-06	C-Slot expansion card communication interruption detection	0.0 ~ 60.0s	0906H	0.0s	○
P9-07	Replace the VB3/VB5/V5 communication control word (supported in versions 3740 and above)	Ten 0: Not enabled 1: Enable	0907H	00	○
P9-10	EC Bus Communication Disconnection IO Output Function (-supported in versions 3750 and above)	0: EC bus communication disconnected; IO output turned off 1: EC bus communication disconnected; IO output maintained	090AH	0	○
P9-18	IP Usage (Supported in version 3746 and above)	0: Use default IP address 1: Set IP address manually	0912H	1	●
P9-19	First byte of IP address (supported in version 3746 and later)	0～255	0913H	192	●
P9-20	Second byte of IP address (supported in versions 3746 and above)	0～255	0914H	168	●
P9-21	Third byte of IP address (supported in versions 3746 and above)	0～255	0915H	6	●
P9-22	Lowest byte of IP address (supported in version 3746 and above)	0～255	0916H	8	●

Group P9 : Communication parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
P9-23	Highest byte of subnet mask (supported in version 3746 and later)	0～255	0917H	255	●
P9-24	Second byte of subnet mask (supported in versions 3746 and above)	0～255	0918H	255	●
P9-25	Third byte of subnet mask (supported in versions 3746 and above)	0～255	0919H	255	●
P9-26	Lowest byte of subnet mask (supported in versions 3746 and above)	0～255	091AH	0	●
P9-27	Maximum gateway byte (supported in versions 3746 and above)	0～255	091BH	192	●
P9-28	Second-lowest byte of the gateway (supported in versions 3746 and above)	0～255	091CH	168	●
P9-29	Gateway Third Byte (supported in versions 3746 and above)	0～255	091DH	6	●
P9-30	Minimum gateway byte (supported in version 3746 and above)	0～255	091EH	1	●
P9-31	Number of broadcast addresses (supported in version 3750 and above)	0～5	091FH	2	×
P9-32	Variable address 1 (supported in versions 3750 and above)	H.0000～H.FFFF	0920H	H.1220	○
P9-33	Variable address 2 (supported in versions 3750 and above)	H.0000～H.FFFF	0921H	H.1221	○
P9-37	Send to target parameter address 1	H.0000～H.FFFF	0925H	H.1000	○

Group P9 : Communication parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	(supported in version 3750 and above)				
P9-38	Send to target parameter address 2 (supported in version 3750 and above)	H.0000～H.FFFF	0926H	H.1100	○

Group PA : Process Control Closed-Loop Parameters

Group PA : Process Control Closed-Loop Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PA-01	Given channel selection	0: PA-05 setting 1：AI1 2：AI2 3：AI3 4: PULSE pulse setting (X4) 5: Communication Given 6: Multi-stage instruction set given	0A01H	0	○
PA-02	Feedback Channel Selection	0：AI1 1：AI2 2：AI3 3：AI1-AI2 4：AI1+AI2 5: PULSE pulse setting (X4) 6: Communication Given	0A02H	0	○
PA-03	PID feedback filtering time	0.00s ~ 30.00s	0A03H	0.00s	○
PA-04	PID output filter time	0.00s ~ 30.00s	0A04H	0.00s	○
PA-05	The PID value is specified.	0.0% ~ 100.0%	0A05H	50.0%	○
PA-06	Given PID change time	0.00s ~ 300.00s	0A06H	0.00s	○

Group PA : Process Control Closed-Loop Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PA-07	PID Inversion Reverse Frequency	0.00 Hz to maximum output frequency	0A07H	0.00Hz	○
PA-08	PID Error Limit	0.0% ~ 100.0%	0A08H	0.0%	○
PA-09	PID Differential Limiting	0.00% ~ 100.00%	0A09H	0.10%	○
PA-10	proportional gain P	0.0 ~ 100.0	0A0AH	20.0	○
PA-11	integration time I	0.01s ~ 10.00s	0A0BH	2.00s	○
PA-12	Differential Time D	0.000s ~ 10.000s	0A0CH	0.000s	○
PA-13	PID parameter adjustment conditions	0: Do not switch 1: Switch via X terminal 2: Auto-switch based on deviation 3: Auto-switch based on operating frequency	0A0DH	0	○
PA-14	PID parameter adjustment deviation 1	0.0% ~ PA-15	0A0EH	20.0%	○
PA-15	PID parameter adjustment deviation 2	PA-14 ~ 100.0%	0A0FH	80.0%	○
PA-16	PID proportional gain P2	0.0 ~ 100.0	0A10H	20.0	○
PA-17	PID integration time I2	0.01s ~ 10.00s	0A11H	2.00s	○
PA-18	PID differential time D2	0.000s ~ 10.000s	0A12H	0.000s	○
PA-19	PID application direction	0: Positive effect 1: Reaction	0A13H	0	○
PA-20	PID setpoint feedback range	0 ~ 65535	0A14H	1000	○
PA-21	The maximum deviation between the two PID output values	0.00% ~ 100.00%	0A15H	1.00%	○
PA-22	The minimum deviation between the two PID output values	0.00% ~ 100.00%	0A16H	1.00%	○
PA-23	PID initial value	0.0% ~ 100.0%	0A17H	0.0%	○
PA-24	PID initial value holding time	0.00s ~ 600.00s	0A18H	0.00s	○
PA-25	PID operation mode (whether to	0: Stop without calculation	0A19H	0	○

Group PA : Process Control Closed-Loop Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	operate during shutdown)	1: Computing during shutdown			
PA-26	PID Property	Unit digit: Point separation 0: Invalid 1： valid 10th: Stop integration after reaching the output limit 0: Continue accumulating points 1: Stop points	0A1AH	00	○
PA-27	PID feedback loss detection value	0.0%: No feedback loss detected 0.1%～100.0%	0A1BH	0.0%	○
PA-28	PID feedback loss detection time	0.0s～30.0s	0A1CH	0.0s	○
PA-29	PID Threshold 1 (supported in versions 3750 and above)	0.0%～PA-30	0A1DH	0.0%	○
PA-30	PID Threshold 2 (supported in versions 3750 and above)	PA-29～100.0%	0A1EH	100.0%	○
PA-31	PID filtering time (supported in versions 3750 and above)	0.00s～5.00s	0A1FH	1.00s	○
PA-32	PID Line Break Detection Threshold 1 (-supported in versions 3750 and above)	0.0%～PA-33	0A20H	100.0%	○
PA-33	PID Line Break Detection Threshold 2 (supported in versions 3750 and above)	PA-32～100.0%	0A21H	0.0%	○
PA-34	PID Line Break Detection Filtering Time (-supported in versions 3750 and above)	0.00s～5.00s	0A22H	1.00s	○
PA-35	Alarm when PID connection is lost (supported in versions 3750 and above)	0: Do not report to the police 1: PID connection loss warning; continue operation 2: PID connection loss alarm	0A23H	0	×

Group PB : Multi-stage speed and simplified PLC operating parameters

Group PB : Multi-stage speed and simplified PLC operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PB-00	Multi-stage frequency 0	-100.0%～+100.0%（P0-13）	0B00H	0.0%	○

Group PB : Multi-stage speed and simplified PLC operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PB-01	Multi-stage Frequency 1	-100.0%～+100.0%（P0-13）	0B01H	0.0%	○
PB-02	Multi-stage Frequency 2	-100.0%～+100.0%（P0-13）	0B02H	0.0%	○
PB-03	Multi-stage Frequency 3	-100.0%～+100.0%（P0-13）	0B03H	0.0%	○
PB-04	Multi-stage Frequency 4	-100.0%～+100.0%（P0-13）	0B04H	0.0%	○
PB-05	Multi-stage Frequency 5	-100.0%～+100.0%（P0-13）	0B05H	0.0%	○
PB-06	Multi-stage Frequency 6	-100.0%～+100.0%（P0-13）	0B06H	0.0%	○
PB-07	Multi-stage Frequency 7	-100.0%～+100.0%（P0-13）	0B07H	0.0%	○
PB-08	Multi-stage frequency 8	-100.0%～+100.0%（P0-13）	0B08H	0.0%	○
PB-09	Multi-stage Frequency 9	-100.0%～+100.0%（P0-13）	0B09H	0.0%	○
PB-10	Multi-stage frequency 10	-100.0%～+100.0%（P0-13）	0B0AH	0.0%	○
PB-11	Multi-stage frequency 11	-100.0%～+100.0%（P0-13）	0B0BH	0.0%	○
PB-12	Multi-stage frequency 12	-100.0%～+100.0%（P0-13）	0B0CH	0.0%	○
PB-13	Multi-stage frequency 13	-100.0%～+100.0%（P0-13）	0B0DH	0.0%	○
PB-14	Multi-stage frequency 14	-100.0%～+100.0%（P0-13）	0B0EH	0.0%	○
PB-15	Multi-stage frequency 15	-100.0%～+100.0%（P0-13）	0B0FH	0.0%	○
PB-16	Multi-stage instruction 0: Given method	0: PB-00 Given 1：AI1 2：AI2 3：AI3 4：PULSE 5: PID setpoint 6: Pre-set frequency P0-10	0B10H	0	○

Group PB : Multi-stage speed and simplified PLC operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PB-17	Running time of Simple PLC Section 0	0.0 ~ 6500.0s(h)	0B11H	0.0s(h)	○
PB-18	Simple PLC Segment 0: Selection of Acceleration and Deceleration Times	0 ~ 3	0B12H	0	○
PB-19	Operation time for the first section of the simplified PLC	0.0 ~ 6500.0s(h)	0B13H	0.0s(h)	○
PB-20	Simple PLC: Selection of acceleration/deceleration time for Section 1	0 ~ 3	0B14H	0	○
PB-21	Operation time for the second section of the simplified PLC	0.0 ~ 6500.0s(h)	0B15H	0.0s(h)	○
PB-22	Simple PLC: Selection of acceleration/deceleration time for Section 2	0 ~ 3	0B16H	0	○
PB-23	Operation time for the third section of the simplified PLC	0.0 ~ 6500.0s(h)	0B17H	0.0s(h)	○
PB-24	Simple PLC Section 3: Selection of Acceleration and Deceleration Times	0 ~ 3	0B18H	0	○
PB-25	Operation time for the Simple PLC Section 4	0.0 ~ 6500.0s(h)	0B19H	0.0s(h)	○
PB-26	Simple PLC Section 4: Selection of Acceleration and Deceleration Times	0 ~ 3	0B1AH	0	○
PB-27	Operation time for the Simple PLC Section 5	0.0 ~ 6500.0s(h)	0B1BH	0.0s(h)	○
PB-28	Simple PLC Section 5: Selection of Acceleration and Deceleration Times	0 ~ 3	0B1CH	0	○
PB-29	Operation time for Segment 6 of the Simple PLC	0.0 ~ 6500.0s(h)	0B1DH	0.0s(h)	○
PB-30	Simple PLC Section 6: Selection of Acceleration and Deceleration Times	0 ~ 3	0B1EH	0	○
PB-31	Operation time for the Simple PLC Section 7	0.0 ~ 6500.0s(h)	0B1FH	0.0s(h)	○
PB-32	Simple PLC Section 7: Selection of Acceleration and Deceleration Times	0 ~ 3	0B20H	0	○
PB-33	Operation time for the Simple PLC Section 8	0.0 ~ 6500.0s(h)	0B21H	0.0s(h)	○

Group PB : Multi-stage speed and simplified PLC operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PB-34	Simple PLC Section 8: Selection of Acceleration and Deceleration Times	0 ~ 3	0B22H	0	○
PB-35	Operation time for the Simple PLC, Paragraph 9	0.0 ~ 6500.0s(h)	0B23H	0.0s(h)	○
PB-36	Simple PLC Section 9: Selection of Acceleration and Deceleration Times	0 ~ 3	0B24H	0	○
PB-37	Operation time for the Simple PLC, Paragraph 10	0.0 ~ 6500.0s(h)	0B25H	0.0s(h)	○
PB-38	Simple PLC: Selection of acceleration/deceleration time for Paragraph 10	0 ~ 3	0B26H	0	○
PB-39	Operation time for the Simple PLC Section 11	0.0 ~ 6500.0s(h)	0B27H	0.0s(h)	○
PB-40	Simple PLC: Selection of acceleration/deceleration time for Section 11	0 ~ 3	0B28H	0	○
PB-41	Operation time for the Simple PLC Section 12	0.0 ~ 6500.0s(h)	0B29H	0.0s(h)	○
PB-42	Simple PLC: Selection of acceleration/deceleration time for Section 12	0 ~ 3	0B2AH	0	○
PB-43	Operation time for the Simple PLC, Paragraph 13	0.0 ~ 6500.0s(h)	0B2BH	0.0s(h)	○
PB-44	Simple PLC: Section 13 – Selection of Acceleration and Deceleration Times	0 ~ 3	0B2CH	0	○
PB-45	Operation time for the Simple PLC, Paragraph 14	0.0 ~ 6500.0s(h)	0B2DH	0.0s(h)	○
PB-46	Simple PLC: Section 14 – Selection of Acceleration and Deceleration Times	0 ~ 3	0B2EH	0	○
PB-47	Operation time for the Simple PLC, Paragraph 15	0.0 ~ 6500.0s(h)	0B2FH	0.0s(h)	○
PB-48	Simple PLC: Selection of acceleration/deceleration time for Paragraph 15	0 ~ 3	0B30H	0	○
PB-49	Simple PLC Operating Mode	0: Stop after a single run 1: Maintain the final value after a single run 2: Continuous cycle	0B31H	0	○

Group PB : Multi-stage speed and simplified PLC operating parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PB-50	Unit of operation time for a simple PLC	0:s (seconds) 1: h (hours)	0B32H	0	○
PB-51	Simple PLC power-off memory selection	Unit digit: Power-off memory selection 0: No power loss memory 1: Power-off memory 10th: Halt Memory Selection 0: No shutdown memory 1: Halt Memory	0B33H	00	○

Group PC : Auxiliary Operating Parameters

Group PC : Auxiliary Operating Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PC-00	Dot movement operating frequency	0.00Hz to maximum output P0-13	0C00H	2.00Hz	○
PC-01	Click acceleration time	0.0s ~ 6500.0s	0C01H	20.0s	○
PC-02	Click-based speed reduction time	0.0s ~ 6500.0s	0C02H	20.0s	○
PC-03	Acceleration Time 2	0.1s ~ 6500.0s	0C03H	Model Settings	○
PC-04	Reduction Time 2	0.1s ~ 6500.0s	0C04H	Model Settings	○
PC-05	Acceleration Time 3	0.1s ~ 6500.0s	0C05H	Model Settings	○
PC-06	Reduction Time 3	0.1s ~ 6500.0s	0C06H	Model Settings	○
PC-07	Acceleration Time 4	0.1s ~ 6500.0s	0C07H	Model Settings	○
PC-08	Reduction Time 4	0.1s ~ 6500.0s	0C08H	Model Settings	○
PC-09	Acceleration and deceleration time unit	0：1s 1：0.1s 2：0.01s	0C09H	1	×
PC-10	Reference frequency for acceleration and deceleration	0: Maximum output frequency 1: Set frequency	0C0AH	0	×

Group PC : Auxiliary Operating Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	times	2：100Hz			
PC-11	Half-time acceleration time switching frequency point	0.00 Hz to maximum output frequency	0C0BH	0.00Hz	○
PC-12	Reduction time: 1/2 switching frequency point	0.00 Hz to maximum output frequency	0C0CH	0.00Hz	○
PC-13	Jump frequency 1	0.00 Hz to maximum output frequency	0C0DH	0.00Hz	○
PC-14	Jump frequency 2	0.00 Hz to maximum output frequency	0C0EH	0.00Hz	○
PC-15	Jump frequency amplitude	0.00 Hz to maximum output frequency	0C0FH	0.00Hz	○
PC-16	Is the jump frequency effective during acceleration and deceleration?	0: Invalid 1： valid	0C10H	0	○
PC-17	Frequency arrival detection amplitude	0.0% ~ 100.0%	0C11H	0.0%	○
PC-18	Frequency detection value (FDT1 level)	0.00 Hz to maximum output frequency	0C12H	50.00Hz	○
PC-19	Frequency detection lag value (FDT1 level)	0.0% to 100.0% (maximum output frequency)	0C13H	5.0%	○
PC-20	Frequency detection value (FDT2 level)	0.00 Hz to maximum output frequency	0C14H	50.00Hz	○
PC-21	Frequency detection lag value (FDT2 level)	0.0% ~ 100.0%	0C15H	5.0%	○
PC-22	Arbitrary arrival frequency detection value 1	0.00 Hz to maximum output frequency	0C16H	50.00Hz	○
PC-23	Arbitrary arrival frequency detection width 1	0.0% to 100.0% (maximum output frequency)	0C17H	0.0%	○
PC-24	Arbitrary arrival frequency detection value 2	0.00 Hz to maximum output frequency	0C18H	50.00Hz	○
PC-25	Arbitrary arrival frequency detection width 2	0.0% to 100.0% (maximum output frequency)	0C19H	0.0%	○
PC-26	Timing Function Option	0: Invalid 1： valid	0C1AH	0	×
PC-28	Set run time	0.0Min ~ 6500.0Min	0C1CH	0.0Min	×
PC-29	Current arrival time	0.0Min ~ 6500.0Min	0C1DH	0.0Min	×
PC-30	Set the power-on arrival time	0 ~ 65000h	0C1EH	0	×
PC-32	Set the run arrival time	0 ~ 65000h	0C20H	0	×

Group PC : Auxiliary Operating Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PC-34	Arbitrary arrival current 1	0.0% to 300.0% (motor rated current)	0C22H	100.0%	○
PC-35	Arbitrary arrival current 1 width	0.0% to 300.0% (motor rated current)	0C23H	0.0%	○
PC-36	Arbitrary arrival current 2	0.0% to 300.0% (motor rated current)	0C24H	100.0%	○
PC-37	Arbitrary arrival current 2 width	0.0% to 300.0% (motor rated current)	0C25H	0.0%	○
PC-38	Zero-current detection level	0.0% to 300.0% (motor rated current)	0C26H	5.0%	○
PC-39	Zero-current detection delay time	0.01s ~ 600.00s	0C27H	0.10s	○
PC-40	Software over-current Point	0: 0.0% (not detected) 1: 0.1% to 300.0% (motor rated current)	0C28H	200.0%	○
PC-41	Software over-current detection delay time	0.00s ~ 600.00s	0C29H	0.00s	○
PC-42	Lower limit of the AI1 input voltage protection value	0.00V ~ PC-43	0C2AH	3.10V	○
PC-43	Upper limit of AI1 input voltage protection value	PC-42 ~ 10.50V	0C2BH	6.80V	○
PC-44	over-voltage point setting	540 ~ 810V	0C2CH	810V	×
PC-45	Under-voltage point setting	200 ~ 537V	0C2DH	350V	×
PC-46	Operation at a frequency below the lower limit frequency	0: Operate at the lower frequency limit 1: Shutdown 2: Zero-speed operation	0C2EH	0	○
PC-47	Module temperature reached	0℃ ~ 100℃	0C2FH	75	○
PC-48	Heating Fan Control	0: Fan running during operation 1: The fan is running continuously	0C30H	0	○
PC-49	Sagging Control	0.00Hz ~ 10.00Hz	0C31H	0.00Hz	○
PC-50	Terminal point movement priority (Supports version 3742 and above)	0: Invalid 1： valid	0C32H	0	○
PC-51	SVC Optimization Selection	1: Optimization Mode 1 2: Optimization Mode 2	0C33H	2	○
PC-52	Selection of Dead Zone	0: No compensation	0C34H	1	○

Group PC : Auxiliary Operating Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	Compensation Mode	1: Compensation Mode 1			
PC-54	modulation mode	0: Asynchronous Modulation 1: Synchronous Modulation	0C36H	0	○
PC-55	DPWM maximum switching frequency	5.00 Hz to maximum output frequency	0C37H	8.00Hz	○
PC-56	Random PWM depth	0: Random PWM is invalid 1–10: Random depth of PWM carrier frequency	0C38H	0	○
PC-57	Wake frequency	Hibernation frequency: PC-59 to maximum output frequency: P0-13	0C39H	0.00Hz	○
PC-58	Wake-up delay time	0.0s ~ 6500.0s	0C3AH	0.0s	○
PC-59	Hibernation frequency	0.00Hz to Wakeup Frequency PC-57	0C3BH	0.00Hz	○
PC-60	Sleep delay time	0.0s ~ 6500.0s	0C3CH	0.0s	○
PC-61	Wave-based current limiting enabled	0: Disabled Enable	0C3DH	1	○
PC-62	Over-modulation coefficient	100 ~ 110	0C3EH	105	○
PC-65	Busbar voltage target value	200.0~2000.0 V	0C41H	500.0	○
PC-66	The busbar voltage has reached the hysteresis loop value.	0.0~500.0 V	0C42H	50.0	○
PC-67	carrier frequency	0.5K ~ 16.0K	0C43H	Model Settings	○
PC-68	The carrier frequency is adjusted according to temperature.	0: Invalid 1: Valid	0C44H	1	○
PC-69	Inverter temperature protection alarm threshold (Supports version 3720 and above)	0~100℃	0C45H	< 37kw：95 ≥37kw：85	-
PC-70	Encoder position counting display mode (supported in version 3720 and above)	0: Hexadecimal 1: Dezimal	0C46H	1	○
PC-71	Reset the encoder position count to zero	Ones place 0：nonfunction 1：Encoder feedback count reset, valid for single use Tens place（Supports versions 3750 and above） 0：nonfunction 1：Clear external pulse instructions	0C47H	0	○
PC-72	External linear velocity	0: No external linear speed used	0C48H	0	○

Group PC : Auxiliary Operating Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	source (Supports version 3720 and above)	1：AI1 2：AI2 3：AI3 4: Terminal Pulse X4 Given 5: Communication Given			
PC-73	Maximum allowable update deviation for the main frequency (supported in versions 3720 and above)	0.00% ~ 10.00%	0C49H	0.10%	○
PC-74	Allowable update interval for the main frequency (supported in versions 3720 and above)	0.00s ~ 200.00s	0C4AH	3.00s	○
PC-75	Differential time for external linear velocity change (supported in version 3720 and above)	0.00s ~ 50.00s	0C4BH	1.00s	○
PC-76	Change in the external linear speed (Supports version 3720 and above)	0.00Hz ~ 50.00Hz	0C4CH	1.00Hz	○
PC-77	VH1-PE100 panel combo advance speed (Supports version 3746 and above)	0~963	0C4DH	Versions below 3750:3333; Versions 750 and above: 963	○
PC-78	Line speed display speed selection (supported in versions 3750 and above)	0: FM adjustment without switching to the frequency interface 1: FM adjustment with switching to the frequency interface	0C4EH	0	○
PC-87	Non-woven fabric dedicated mode (supported by version 3750 and above)	0: General Purpose 1: Non-woven fabric dedicated machine mode	0C57H	0	×
PC-88	Frequency for waiting for sensor signals (supported in versions 3750 and above)	0.30～5.00Hz	0C58H	1.00Hz	×
PC-89	Wait for the sensor shutdown signal (supported in versions 3750 and above)	5.0～20.0s	0C59H	10.0s	×
PC-92	Frequency Output Reference Selection (-supported in versions 3750 and above)	Ones place： Frequency Level Detection of FDT1 Output 0: Feedback frequency 1: Given frequencyTens place：Frequency Level Detection of FDT2 Output Same as Units plac	0C5CH	00	○
PC-93	FDT1 Output Current Detection (-supported in versions 3750 and above)	0.00A～655.35A	0C5DH	0.00A	○

Group PC : Auxiliary Operating Parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PC-94	FDT2 Output Current Detection (-supported in versions 3750 and above)	0.00A～655.35A	0C5EH	0.00A	○
PC-99	Timing function unit (supported in versions 3750 and above)	0：s 1：min 2：h	0C63H	2	○

Group PE : User-selected parameters

Group PE : User-selected parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PE-00	Customer-selected parameter 0	P0.00 ~ PF.xx A0.00 ~ A2.xx A9.00 ~ Ad.xx U0.00 ~ U0.xx U4.00 ~ U5.xx	0E00H	Version below 3750: P0.003750; Version 3750 and above: P9.14	○
PE-01	Customer-selected parameter 1	Same as PE-00	0E01H	U4.01	○
PE-02	Customer-selected Parameter 2	Same as PE-00	0E02H	U4.08	○
PE-03	Customer-selected parameter 3	Same as PE-00	0E03H	U4.09	○
PE-04	Customer-selected parameter 4	Same as PE-00	0E04H	U4.10	○
PE-05	Customer-selected parameter 5	Same as PE-00	0E05H	U4.03	○
PE-06	Customer-selected parameter 6	Same as PE-00	0E06H	U4.06	○
PE-07	Customer-selected parameter 7	Same as PE-00	0E07H	P0.00	○
PE-08	Customer-selected parameter 8	Same as PE-00	0E08H	P0.00	○
PE-09	Customer-selected parameter 9	Same as PE-00	0E09H	P0.00	○
PE-10	Customer-selected parameter 10	Same as PE-00	0E0AH	P0.00	○

Group PE : User-selected parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PE-11	Customer-selected parameter 11	Same as PE-00	0E0BH	P0.00	○
PE-12	Customer-selected parameter 12	Same as PE-00	0E0CH	P0.00	○
PE-13	Customer-selected parameter 13	Same as PE-00	0E0DH	P0.00	○
PE-14	Customer-selected parameter 14	Same as PE-00	0E0EH	P0.00	○
PE-15	Customer-selected parameter 15	Same as PE-00	0E0FH	P0.00	○
PE-16	Customer-selected parameter 16	Same as PE-00	0E10H	P0.00	○
PE-17	Customer-selected parameter 17	Same as PE-00	0E11H	P0.00	○
PE-18	Customer-selected parameter 18	Same as PE-00	0E12H	P0.00	○
PE-19	Customer-selected parameter 19	Same as PE-00	0E13H	P0.00	○
PE-20	Customer-selected parameter 20	Same as PE-00	0E14H	U0-67	○
PE-21	Customer-selected parameter 21	Same as PE-00	0E15H	U0-68	○
PE-22	Customer-selected parameter 22	Same as PE-00	0E16H	U0-69	○
PE-23	Customer-selected parameter 23	Same as PE-00	0E17H	U0-70	○
PE-24	Customer-selected parameter 24	Same as PE-00	0E18H	U0-74	○
PE-25	Customer-selected parameter 25	Same as PE-00	0E19H	U0-00	○
PE-26	Customer-selected parameter 26	Same as PE-00	0E1AH	U0-55	○
PE-27	Customer-selected parameter 27	Same as PE-00	0E1BH	U0-56	○
PE-28	Customer-selected parameter 28	Same as PE-00	0E1CH	P0.00	○
PE-29	Customer-selected parameter 29	Same as PE-00	0E1DH	P0.00	○
PE-30	Customer-selected parameter 30	Same as PE-00	0E1EH	P0.00	○
PE-31	Customer-selected parameter 31	Same as PE-00	0E1FH	P0.00	○

Group PF : Torque Control

Group PF : Torque Control					
Parameter	Name	Setting	Modbus address	Factory output value	Change
PF-00	torque control	0: Speed Control 1: Torque Control	0F00H	0	×
PF-01	Upper limit source for driving torque	0: Digital setting 1：AI1 2：AI2 3：AI3 4: PULSE pulse 5: Communication Given 6：min(AI1,AI2) 7：max(AI1,AI2) The full range of options 1–7 corresponds to the PF-02 digital setting.	0F01H	0	×
PF-02	Maximum driving torque	-200.0% ~ 200.0%	0F02H	150.0%	○
PF-03	Torque control forward maximum frequency source	0: Digital setting 1：AI1 2：AI2 3：AI3 4: PULSE pulse 5: Communication Given 6：min(AI1、AI2) 7：max(AI1、AI2) (The full range of options 0–7 corresponds to the maximum output frequency P0–13.)	0F03H	0	○
PF-04	Maximum forward frequency for torque control	0.00 Hz to maximum output frequency	0F04H	50.00Hz	○
PF-05	Torque Control Reverse Maximum Frequency Source	0: Digital setting 1：AI1 2：AI2 3：AI3 4: PULSE pulse 5: Communication Given 6：min(AI1、AI2) 7：max(AI1、AI2) (The full range of options 0–7 corresponds to the maximum output frequency P0–13.)	0F05H	0	○
PF-06	Torque control reverse maximum frequency	0.00 Hz to maximum output frequency	0F06H	50.00Hz	○
PF-07	Torque acceleration time	0.00s ~ 650.00s	0F07H	0.00s	○
PF-08	Torque reduction time	0.00s ~ 650.00s	0F08H	0.00s	○

Group A0: Textiles

Group A0: Textiles					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A0-00	Set length	0m ~ 65535m	A000H	1000m	○
A0-01	physical length	0m ~ 65535m	A001H	0m	○
A0-02	Pulse count per meter	0.1 ~ 6553.5	A002H	100.0	○
A0-03	Set a numerical value	1 ~ 65535	A003H	1000	○
A0-04	specified count value	1 ~ 65535	A004H	1000	○
A0-05	Frequency oscillation setting method	0: Relative to the center frequency 1: Relative to the maximum output frequency	A005H	0	○
A0-06	Amplitude of frequency oscillation	0.0% ~ 100.0%	A006H	0.0%	○
A0-07	Sudden jump frequency amplitude	0.0% ~ 50.0%	A007H	0.0%	○
A0-08	Amplitude oscillation period	0.1s ~ 3600.0s	A008H	10.0s	○
A0-09	The rise time of the triangular wave in frequency modulation	0.1% ~ 100.0%	A009H	50.0%	○

Group A1: Virtual IO

Group A1: Virtual IO					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A1-00	Virtual X1 Terminal Function Selection	0–95: See Group P2 for physical X input selection	A100H	00	×
A1-01	Virtual X2 terminal function selection		A101H	00	×
A1-02	Virtual X3 Terminal Function Selection		A102H	00	×
A1-03	Virtual X4 terminal function selection		A103H	00	×
A1-04	Virtual X5 Terminal Function Selection		A104H	00	×
A1-05	Source of the effective state	Unit digit: Virtual X1	A105H	00000	×

Group A1: Virtual IO					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	of the virtual X terminal	0: Determined by the state of virtual Y1 whether virtual X1 is valid 1: Use function code A1-06 to configure whether the virtual X1 is valid 10th: Virtual X2 Hundreds place: Virtual X3 Thousands: Virtual X4 Ten Thousand Position: Virtual X5			
A1-06	Virtual X-terminal status setting	0: Invalid 1： valid Unit digit: Virtual X1 10th: Virtual X2 Hundreds place: Virtual X3 Thousands: Virtual X4 Ten Thousand Position: Virtual X5	A106H	00000	×
A1-07	When converting an AI1 terminal into an X terminal, select the appropriate function option.	0～95	A107H	00	×
A1-08	Function selection when converting an AI2 terminal into an X terminal	0～95	A108H	00	×
A1-10	Effective Level Selection for AI in X-Terminals	Unit digit: AI1 0: Low level is valid 1: High level is valid 10th place: AI2	A10AH	000	×
A1-11	Virtual Y1 Output Function Selection	0: Internal short circuit with physical X1 1~50: See P3 group for physical Y output selection	A10BH	00	
A1-12	Virtual Y2 Output Function Selection	0: Internal short circuit with physical X2 1~50: See P3 group for physical Y output selection	A10CH	00	○
A1-13	Virtual Y3 Output Function Selection	0: Internal short circuit in Physical X3 1~50: See P3 group for physical Y output selection	A10DH	00	○
A1-14	Virtual Y4 Output Function Selection	0: Internal short circuit with physical X4 1~50: See P3 group for physical Y output selection	A10EH	00	○
A1-15	Virtual Y5 Output Function Selection	0: Internal short circuit with the Physical X5 1–42: See P3 group for physical Y output	A10FH	00	○

Group A1: Virtual IO					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		selection			
A1-16	Virtual Y1 output delay time	0.0s ~ 3600.0s	A110H	0.0s	○
A1-17	Virtual Y2 output delay time	0.0s ~ 3600.0s	A111H	0.0s	○
A1-18	Virtual Y3 output delay time	0.0s ~ 3600.0s	A112H	0.0s	○
A1-19	Virtual Y4 output delay time	0.0s ~ 3600.0s	A113H	0.0s	○
A1-20	Virtual Y5 output delay time	0.0s ~ 3600.0s	A114H	0.0s	○
A1-21	Selection of the valid state for the virtual Y-terminal	Unit digit: Virtual Y1 0: Positive Logic 1: Anti-Logic 10th: Virtual Y2 Hundreds place: Virtual Y3 Thousands: Virtual Y4 Ten-thousand place: Virtual Y5	A115H	00000	○
A1-22	Effective delay time for virtual Y1 output (supported in versions 3748 and above)	0.0s～3600.0s	A116H	0.0s	○
A1-23	Virtual Y1 output invalid delay time (supported in versions 3748 and above)	0.0s～3600.0s	A117H	0.0s	○
A1-24	Effective delay time for virtual Y2 output (supported in versions 3748 and above)	0.0s～3600.0s	A118H	0.0s	○
A1-25	Virtual Y2 output invalid delay time (supported in versions 3748 and above)	0.0s～3600.0s	A119H	0.0s	○
A1-26	Effective delay time for virtual Y3 output (supported in versions 3748 and above)	0.0s～3600.0s	A11AH	0.0s	○
A1-27	Virtual Y3 output invalid delay time (supported in versions 3748 and above)	0.0s～3600.0s	A11BH	0.0s	○
A1-28	Effective delay time for virtual Y4 output (supported in versions 3748 and above)	0.0s～3600.0s	A11CH	0.0s	○
A1-29	Virtual Y4 output invalid delay time (supported in versions 3748 and above)	0.0s～3600.0s	A11DH	0.0s	○

Group A1: Virtual IO					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A1-30	Effective delay time for Virtual Y5 output (supported in versions 3748 and above)	0.0s～3600.0s	A11EH	0.0s	○
A1-31	Invalid delay time for Virtual Y5 output (supported in versions 3748 and above)）	0.0s～3600.0s	A11FH	0.0s	○

Group A2: Second motor parameters

Group A2: Second motor parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A2-00	Motor Type Selection	0: Ordinary asynchronous motor 1: Synchronous motor	A200H	0	×
A2-01	Motor rated power	0.1kW ~ 650.0kW	A201H	Model Settings	×
A2-02	Motor rated voltage	1V ~ 1200V	A202H	Model Settings	×
A2-03	Motor rated current	0.01A to 655.35A (inverter power ≤55 kW) 0.1A to 6553.5A (Inverter power>55 kW)	A203H	Model Settings	×
A2-04	Motor rated frequency	0.01 Hz to maximum output frequency	A204H	Model Settings	×
A2-05	motor rated speed	1rpm ~ 65535rpm	A205H	Model Settings	×
A2-06	Asynchronous machine stator resistance	0.001Ω to 65.535Ω (for inverters with power ≤55 kW) 0.0001Ω to 6.5535Ω (for inverters with power>55 kW)	A206H	Tuning parameter	×
A2-07	Asynchronous motor rotor resistance	0.001Ω to 65.535Ω (for inverters with power ≤55 kW) 0.0001Ω to 6.5535Ω (for inverters with power>55 kW)	A207H	Tuning parameter	×
A2-08	Asynchronous machine leakage inductance reactance	0.01 mH to 655.35 mH (inverter power ≤55 kW) 0.001 mH to 65.535 mH (inverter power>55 kW)	A208H	Tuning parameter	×
A2-09	Asynchronous machine mutual inductance	0.01 mH to 655.35 mH (inverter power ≤55 kW) 0.001 mH to 65.535 mH (inverter power>55 kW)	A209H	Tuning parameter	×

Group A2: Second motor parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A2-10	Asynchronous motor no-load current	0.01A to A2-03 (Inverter power ≤55 kW) 0.1A to A2-03 (Inverter power>55 kW)	A20AH	Tuning parameter	×
A2-15	Synchronous machine stator resistance	0.001Ω to 65.535Ω (for inverters with power ≤55 kW) 0.0001Ω to 6.5535Ω (for inverters with power>55 kW)	A20FH	Tuning parameter	×
A2-16	Synchronous machine D-axis inductor	0.01 mH to 655.35 mH (inverter power ≤55 kW) 0.001 mH to 65.535 mH (inverter power>55 kW)	A210H	Tuning parameter	×
A2-17	Synchronous machine Q-axis inductor	0.01 mH to 655.35 mH (inverter power ≤55 kW) 0.001 mH to 65.535 mH (inverter power>55 kW)	A211H	Tuning parameter	×
A2-19	Counter electromotive force of the synchronous machine	0 ~ 6000.0V	A213H	Tuning parameter	×
A2-24	Sync machine for tuning alarm function selection (supported in versions 3750 and above)	0: Enable the out-of-tune synchronization alarm 1: Disabling the out-of-tune synchronization alarm	A218H	0	○
A2-25	Encoder type	0: ABZ incremental encoder	A219H	0	×
A2-26	Number of encoder pulse lines	1 ~ 65535	A21AH	1024	×
A2-27	Encoder installation angle	0.0 ~ 359.9°	A21BH	0.0	×
A2-28	Encoder phase sequence/main direction; only ABZ incremental encoder	0: Forward 1: Reverse	A21CH	0	×
A2-32	Rotating Polar Logarithm	1 ~ 65535	A220H	1	×
A2-33	Speed feedback PG line break detection time	0.0–10.0 (0.0: Invalid speed feedback line break detection)	A221H	0.0	×
A2-35	Self-learning of Motor Parameter 2	the unit ： 0: No action 1: Static Tuning 1 2: Dynamic Tuning 3: Static Tuning 2 (Applicable	A223H	00	×

Group A2: Second motor parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
		only to asynchronous motors) Ten digits (supported in versions 3720 and above): 0: Asynchronous motor 1: Synchronous motor			
A2-36	Motor 2 Control Method	0: VF Control 1: Speed sensor-free vector control (SVC) 2: Vector Control with Speed Sensor (FVC)	A224H	0	×
A2-37	Selection of acceleration and deceleration times for Motor 2	0: Same as Motor 1 1: Acceleration and deceleration time 1 2: Acceleration and deceleration time 2 3: Acceleration and deceleration time 3 4: Acceleration and deceleration time 4	A225H	0	○
A2-38	Motor 2 torque increase	0.0%: Automatic torque increase 0.1% ~ 30.0%	A226H	Model Settings	○
A2-40	Motor 2 Oscillation Suppression Gain	0 ~ 100	A228H	Model Settings	○
A2-41	Speed loop proportional gain 1	1 ~ 100	A229H	30	○
A2-42	Speed loop integral time 1	0.01s ~ 10.00s	A22AH	0.50	○
A2-43	Speed Range Proportional Gain 2	1 ~ 100	A22BH	20	○
A2-44	Speed loop integral time 2	0.01s ~ 10.00s	A22CH	1.00	○
A2-45	Switch frequency 1	0.00 ~ A2-46	A22DH	5.00	○
A2-46	Switch Frequency 2	A2-45 ~ Maximum output frequency (P0-13)	A22EH	10.00	○
A2-47	Speed Loop Integral Attribute	Unit digit: Point separation 0: Invalid 1： valid	A22FH	0	○
A2-48	Vector-controlled slip gain	50% ~ 200%	A230H	100%	○

Group A2: Second motor parameters					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A2-49	SVC speed feedback filtering time	0.000s ~ 0.100s	A231H	0.015	○
A2-51	Torque Upper Limit Source under Speed Control Mode	0: Parameter Settings (A2-52) 1：AI1 2：AI2 3：AI3 4: PULSE pulse setting 5: Communication Given 6：min(AI1,AI2) 7：max(AI1,AI2) The full range of options 1–7 corresponds to the digital setting A2–53.	A233H	0	○
A2-52	Digital setting of the torque upper limit under speed control mode	0.0% ~ 200.0%	A234H	150.0%	○
A2-55	Excitation regulation proportional gain	0 ~ 60000	A237H	Tuning Parameter	○
A2-56	Excitation regulation integral gain	0 ~ 60000	A238H	Tuning Parameter	○
A2-57	Torque regulation ratio gain	0 ~ 60000	A239H	Tuning Parameter	○
A2-58	Torque regulation integral gain	0 ~ 60000	A23AH	Tuning Parameter	○

Group A4: Password countdown lock (supported in version 3720 and above)

Group A4: Password countdown lock					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A4-00	Parameter Group Access Verification	0 ~ 65000	-	0	○
A4-01	Parameter group lock password	0 ~ 65000	-	0	○
A4-02	Lock total power-on time	0 ~ 7200	-	0h	○
A4-03	Remaining time for power-on lock	0 ~ 7200	-	0h	○
A4-04	First timed lock period setting	1～65535	-	1	○

Group A4: Password countdown lock					
Parameter	Name	Setting	Modbus address	Factory output value	Change
	(supported in versions 3750 and above)				
A4-05	First password for timed lock (supported in versions 3750 and above)	0～65535	-	0	○
A4-06	First-stage timed unlock (supported in versions 3750 and above)	0～65535	-	0	○
A4-07	Second interval lock time setting (supported in versions 3750 and above)	0～65535	-	1	○
A4-08	Second section: Timed lock password settings (supported in versions 3750 and above)	0～65535	-	0	○
A4-09	Second timed unlock (supported in versions 3750 and above)	0～65535	-	0	○
A4-10	Third section: Timed lock time setting (supported in versions 3750 and above)	0～65535	-	1	○
A4-11	Third section: Timed lock password settings (supported in versions 3750 and above)	0～65535	-	0	○
A4-12	Third-stage timed unlock (supported in versions 3750 and above)	0～65535	-	0	○
A4-13	Time Record L (supported in versions 3750 and above)	0～65535s	-	0	-
A4-14	Time Record H (supported in version 3750 and above)	0～65535s	-	0	-
A4-15	Multi-stage lock time unit (supported in versions 3750 and above)	0：min 1：h	-	0	○

Group A5: Position Control (-supported in versions 3750 and above)

Group A5: Encoder Configuration (-supported in versions 3750 and above)					
Parameter	Name	Setting	Modbus address	Factory value	Change
A5-00	Control Mode Selection	0: Speed Mode 1: External Pulse Position Mode	A500H	0	○
A5-01	Position Mode Switching and Operation Commands	Ones place：Switching between Position Mode and Speed Mode 0: Terminal Switching 1: Parameter Switching tens place：Position Mode Operation Command Channel	A501H	10	×

Group A5: Encoder Configuration (-supported in versions 3750 and above)					
Parameter	Name	Setting	Modbus address	Factory value	Change
		Selection 0: Operation Panel Execution Channel 1: Terminal Execution Command Channel			
A5-02	Electronic Gear Ratio Molecular Structure	0～10000	A502H	1	○
A5-03	Electronic Gear Ratio Denominator	0～10000	A503H	1	×
A5-04	Position Front-End Feedforward Gain	0.00～100.00	A504H	80.00	×
A5-05	Condition for switching the positional ratio gain	0: Position loop gain fixed at A5-06 1: Position loop gain switches by frequency 2: Position loop gain switches by position deviation	A505H	0	×
A5-06	Position Loop Gain 1	0.00～100.00	A506H	1.80	×
A5-07	Position Ring Gain 2	0.00～100.00	A507H	0.20	×
A5-08	Position loop gain switching frequency: 1	0.00Hz～A5-09	A508H	5.00Hz	×
A5-09	Position loop gain switching frequency: 2	A5-08～500.00Hz	A509H	20.00Hz	×
A5-10	Position Loop Gain Switching Deviation 1	0 Pulse～A5-11	A50AH	20 Pulse	×
A5-11	Position Loop Gain Switching Deviation 2	A5-10～600.00 Pulse	A50BH	100 Pulse	×
A5-12	Position instruction: Forward speed filtering	0.00Hz～655.35Hz	A50CH	0.00Hz	×
A5-13	Position instruction reverse speed filtering	0.00Hz～655.35Hz	A50DH	0.00Hz	×
A5-14	Sliding average filter filtering time	0.000s～2.000s	A50EH	0.000s	×
A5-15	Speed Feedforward Source Selection	0：Command Difference	A50FH	0	×
A5-16	Feedforward filtering coefficient	0.000～1.000	A510H	1.000	×
A5-17	External pulse acceleration time	0.0s～6500.0s	A511H	0.0s	×
A5-18	External pulse deceleration time	0.0s～6500.0s	A512H	0.0s	×
A5-22	External Pulse Localization Threshold	0 Pulse～3000 Pulse	A516H	50 Pulse	×
A5-23	Pulse Sum Value	0 Pulse～65535 Pulse	A517H	0 Pulse	×
A5-24	Pulse stack acceleration rate	0.0 ～6553.5 Pulse/ms	A518H	8.0 Pulse/ms	×

Group A5: Encoder Configuration (-supported in versions 3750 and above)					
Parameter	Name	Setting	Modbus address	Factory value	Change
A5-25	Pulse Input Mode	unit place：Pulse Shape 0: CW/CCW 1: AB phase 2: Pulse + direction Tens place ： Pulse Input Direction 0: Forward 1: Reverse Hundreds place ： Pulse input sampling edge 0: Descending edge 1: Rising edge	A519H	002	△
A5-27	Pulse Input Filtering	0～255	A51BH	0	△
A5-29	Frequency Division Output Direction	0: Same direction as encoder input 1: Opposite direction to encoder input	A51DH	0	△
A5-30	Frequency Division Output Ratio (numerator)	1～65535	A51EH	1	△
A5-31	Fractional Division Output Ratio	1～65535	A51FH	1	△

Group A6: Spindle stop function (supported in versions 3750 and above)

Group A6: Spindle stop function (supported in versions 3750 and above)					
Parameter	Name	Setting	Modbus address	Factory value	Change
A6-00	Main spindle stop function	0: Not effective 1: Effective	A600H	0	×
A6-01	Main Shaft Stop Reference Point Selection	0: Encoder Phase Z 1: X Input Terminal	A601H	0	×
A6-02	Main spindle positioning reference point calibration method	0: First calibration 1: Real-time calibration	A602H	0	×
A6-03	Main shaft stop positioning direction	0: Set Direction 1: Orient to shortest distance	A603H	0	×
A6-05	Main shaft transmission ratio	0.000～30.000	A605H	1.000	×
A6-06	Main spindle stop positioning speed	0.00Hz～30.00Hz	A606H	2.00Hz	×
A6-09	Main spindle stop unit	0: Encoder pulse 1: Angle	A609H	0	×
A6-10	Active Stop Position Setting	1～8	A60AH	0	×
A6-11	Main spindle stop position 0	0～65535	A60BH	0	×
A6-12	Main spindle stop position 1	0～65535	A60CH	0	×
A6-13	Main spindle stop position 2	0～65535	A60DH	0	×
A6-14	Main spindle stop position 3	0～65535	A60EH	0	×
A6-15	Main spindle stop position 4	0～65535	A60FH	0	×

Group A6: Spindle stop function (supported in versions 3750 and above)					
Parameter	Name	Setting	Modbus address	Factory value	Change
A6-16	Main spindle stop position 5	0～65535	A610H	0	×
A6-17	Main spindle stop position 6	0～65535	A611H	0	×
A6-18	Main spindle stop position 7	0～65535	A612H	0	×
A6-19	Main spindle stop positioning width completed	0～3000	A613H	50	×
A6-20	Action after the spindle stop signal is canceled	0: Reduce speed and stop 1: Execute the previous command 2: Reduce speed, stop, and trigger an alarm	A614H	0	×
A6-21	Main spindle has completed positioning after a precise stop; output selection is now available.	0: No output when stopped 1: Output when stopped	A615H	0	×
A6-22	Time required for output filtering after completion of spindle stop positioning	0.0s～10.0s	A616H	1.5s	×

Group A9: Communication address mapping (supported in version 3720 and above)

Group A9: Communication Address Mapping					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A9-00	Address Mapping Selection	0: Do not enable mapping 1: Enable mapping	A900H	0	○
A9-01	Address Mapping Original Image 1	0x0000~0xFFFF	A901H	0x0000	○
A9-02	Address Mapping Original Image 2	0x0000~0xFFFF	A902H	0x0000	○
A9-03	Address Mapping Original Image 3	0x0000~0xFFFF	A903H	0x0000	○
A9-04	Address Mapping Original Image 4	0x0000~0xFFFF	A904H	0x0000	○
A9-05	Address Mapping Original Image 5	0x0000~0xFFFF	A905H	0x0000	○
A9-06	Address Mapping Original Image 6	0x0000~0xFFFF	A906H	0x0000	○
A9-07	Address Mapping Original Image 7	0x0000~0xFFFF	A907H	0x0000	○
A9-08	Address Mapping Original Image 8	0x0000~0xFFFF	A908H	0x0000	○
A9-09	Address Mapping Original Image 9	0x0000~0xFFFF	A909H	0x0000	○
A9-10	Address Mapping Original Image 10	0x0000~0xFFFF	A90AH	0x0000	○
A9-11	Address Mapping Original Image 11	0x0000~0xFFFF	A90BH	0x0000	○
A9-12	Address Mapping Original Image 12	0x0000~0xFFFF	A90CH	0x0000	○
A9-13	Address Mapping Original Image 13	0x0000~0xFFFF	A90DH	0x0000	○
A9-14	Address Mapping Original Image 14	0x0000~0xFFFF	A90EH	0x0000	○
A9-15	Address Mapping Image 1	0x0000~0xFFFF	A90FH	0x0000	○
A9-16	Address Mapping Image 2	0x0000~0xFFFF	A910H	0x0000	○
A9-17	Address Mapping Image 3	0x0000~0xFFFF	A911H	0x0000	○
A9-18	Address Mapping Image 4	0x0000~0xFFFF	A912H	0x0000	○
A9-19	Address Mapping Image 5	0x0000~0xFFFF	A913H	0x0000	○
A9-20	Address Mapping Image 6	0x0000~0xFFFF	A914H	0x0000	○
A9-21	Address Mapping Image 7	0x0000~0xFFFF	A915H	0x0000	○
A9-22	Address Mapping Image 8	0x0000~0xFFFF	A916H	0x0000	○
A9-23	Address Mapping Image 9	0x0000~0xFFFF	A917H	0x0000	○
A9-24	Address Mapping Image 10	0x0000~0xFFFF	A918H	0x0000	○
A9-25	Address Mapping Image 11	0x0000~0xFFFF	A919H	0x0000	○
A9-26	Address Mapping Image 12	0x0000~0xFFFF	A91AH	0x0000	○

Group A9: Communication Address Mapping					
Parameter	Name	Setting	Modbus address	Factory output value	Change
A9-27	Address Mapping Image 13	0x0000~0xFFFF	A91BH	0x0000	○
A9-28	Address Mapping Image 14	0x0000~0xFFFF	A91CH	0x0000	○

Group AD : AIAO correction

Group AD : AIAO correction					
Parameter	Name	Setting	Modbus address	Factory output value	Change
AD-00	AI1's actual measured voltage: 1	0.500V ~ 4.000V	AD00H	Factory Calibration	○
AD-01	AI1 displays voltage 1	0.500V ~ 4.000V	AD01H	Factory Calibration	○
AD-02	AI1 Actual measured voltage: 2	6.000V ~ 9.999V	AD02H	Factory Calibration	○
AD-03	AI1 displays voltage 2	6.000V ~ 9.999V	AD03H	Factory Calibration	○
AD-04	AI2's actual measured voltage: 1	0.500V ~ 4.000V	AD04H	Factory Calibration	○
AD-05	AI2 display voltage 1	0.500V ~ 4.000V	AD05H	Factory Calibration	○
AD-06	AI2's actual measured voltage: 2	6.000V ~ 9.999V	AD06H	Factory Calibration	○
AD-07	AI2 display voltage 2	6.000V ~ 9.999V	AD07H	Factory Calibration	○
AD-08	The actual voltage measured by AI3 is 1 (only AI3 supports negative voltage)	-9.999V ~ 9.999V	AD08H	Factory Calibration	○
AD-09	AI3 display voltage 1 (only AI3 supports negative voltage)	-9.999V ~ 9.999V	AD09H	Factory Calibration	○
AD-10	The actual voltage measured by AI3 is 2 (only AI3 supports negative voltage)	-9.999V ~ 9.999V	AD0AH	Factory Calibration	○
AD-11	AI3 display voltage 2 (only AI3 supports negative voltage)	-9.999V ~ 9.999V	AD0BH	Factory Calibration	○
AD-12	AO1 Target Voltage 1	0.500V ~ 4.000V	AD0CH	Factory Calibration	○
AD-13	AO1 measured voltage 1	0.500V ~ 4.000V	AD0DH	Factory Calibration	○
AD-14	AO1 Target Voltage 2	6.000V ~ 9.999V	AD0EH	Factory Calibration	○
AD-15	AO1 Actual measured voltage 2	6.000V ~ 9.999V	AD0FH	Factory Calibration	○

AD-16	AO2 target voltage 1	0.500V ~ 4.000V	AD10H	Factory Calibration	○
AD-17	Actual measured voltage of AO2: 1	0.500V ~ 4.000V	AD11H	Factory Calibration	○
AD-18	AO2 Target Voltage 2	6.000V ~ 9.999V	AD12H	Factory Calibration	○
AD-19	Actual measured voltage of AO2: 2	6.000V ~ 9.999V	AD13H	Factory Calibration	○

Group U0: Monitoring parameters

Group U0: Monitoring parameters				
Parameter	Name	Minimum unit	Modbus address	Monitoring scope
U0-00	running frequency （Hz）	0.01Hz	7000H	0.00 ~ 600.00Hz
U0-01	Set frequency (Hz)	0.01Hz	7001H	0.00 ~ 600.00Hz
U0-02	busbar voltage （V）	0.1V	7002H	0.0 ~ 1024.0
U0-03	output （A）	0.01A	7003H	0.0 ~ 655.35A
U0-04	output voltage （V）	1V	7004H	0V ~ 1140V
U0-05	Output torque (%): Percentage of the motor's rated torque	0.1%	7005H	-200.0% ~ 200.0%
U0-06	output power （kW）	0.1kW	7006H	0 ~ 32767
U0-07	X input mode	1	7007H	H.0000 ~ H.7FFF
U0-08	Y output state	1	7008H	H.0000 ~ H.03FF
U0-09	AI1 Voltage (V)/Current (mA)	0.01V/0.01mA	7009H	0.00V ~ 10.57V/ 0.00mA ~ 20.00mA
U0-10	AI2 Voltage (V)/Current (mA)	0.01V/0.01mA	700AH	0.00V ~ 10.57V/ 0.00mA ~ 20.00mA
U0-11	AI3 Voltage (V)	0.01V	700BH	-10.00V ~ 10.00V
U0-12	Pulse input pulse frequency (Hz)	0.01kHz	700CH	0.00kHz ~ 50.00kHz

Group U0: Monitoring parameters				
Parameter	Name	Minimum unit	Modbus address	Monitoring scope
U0-13	Pulse input pulse frequency (Hz)	1Hz	700DH	0 ~ 65535Hz
U0-14	PID setting	1	700EH	0 ~ 65535
U0-15	PID feedback	1	700FH	0 ~ 65535
U0-16	Load speed display	Determinated by P8-22	7010H	0 ~ 65535
U0-17	Feedback speed (Hz)	Determinated by P8-22	7011H	-600.00 ~ 600.00
U0-18	Encoder feedback speed (Hz)	Determinated by P8-22	7012H	-600.00 ~ 600.00
U0-19	linear velocity	1m/Min	7013H	0 ~ 65535
U0-20	PLC stage	1	7014H	0 ~ 15
U0-21	count value	1	7015H	0 ~ 65535
U0-22	Length value	1	7016H	0 ~ 65535
U0-23	Main frequency A displayed	0.01Hz	7017H	0.01～P0-13
U0-24	Secondary frequency B displayed	0.01Hz	7018H	0.01～P0-13
U0-25	Communication setting value	0.01%	7019H	-100.00% ~ 100.00%
U0-26	AI1 pre-correction voltage (V)/current (mA)	0.001V/0.001mA	701AH	0.000V~10.570V/ 0.000mA~20.000mA
U0-27	AI2 pre-correction voltage (V)/current (mA)	0.001V/0.001mA	701BH	0.000V~10.570V/ 0.000mA~20.000mA
U0-28	AI3 voltage before correction (V)	0.001V	701CH	-10.000V~10.000V
U0-29	Remaining runtime	0.1Min	701DH	0.0 ~ 6500.0min
U0-30	Current power-on time	1Min	701EH	0 ~ 65000min
U0-31	Current runtime	0.1Min	701FH	0.0 ~ 6500.0min
U0-33	Current Fault	1	7021H	1 ~ 71
U0-34	fault message	1	7022H	-
U0-35	Target Torque (%)	0.1%	7023H	-200.0% ~ 200.0%
U0-36	Torque upper limit	0.01%	7024H	-200.0% ~ 200.0%

Group U0: Monitoring parameters				
Parameter	Name	Minimum unit	Modbus address	Monitoring scope
U0-37	Synchronous machine rotor position	0.1°	7025H	0.1 ~ 360.0°
U0-38	Rotating position	1	7026H	0 ~ 4095
U0-39	ABZ position	1	7027H	0 ~ 65535
U0-40	Motor temperature	1 degree Celsius	7028H	-
U0-41	Power factor angle	0.1°	7029H	-
U0-42	Set frequency (%)	0.01%	702AH	-100.00% ~ 100.00% （P0-13）
U0-43	running frequency （%）	0.01%	702BH	-100.00% ~ 100.00% （P0-13）
U0-44	VF separation target voltage	1V	702CH	0V to the motor's rated voltage
U0-45	VF separation output voltage	1V	702DH	0V to the motor's rated voltage
U0-46	Z event counter	1	702EH	0 ~ 65535
U0-47	Motor serial number	0: Motor 1 1: Motor 2	702FH	-
U0-48	View any memory address value	1	7030H	-
U0-53	Encoder multi-turn position count HH (Bit 48 to Bit 63)	0	7035H	0x0000～0xFFFF
U0-54	Encoder multi-turn position count HL (Bit 32–Bit 47)	0	7036H	0x0000～0xFFFF
U0-55	Encoder multi-turn position count LH (Bit 16 to Bit 31)	0	7037H	0x0000～0xFFFF
U0-56	Encoder multi-turn position count LL (Bit 0 to Bit 15)	0	7038H	0x0000～0xFFFF
U0-61	Multi-stage Lock 1 Remaining Time (-supported in versions 3750 and above)	1	703DH	0～65535
U0-62	Multi-stage Lock 2 Remaining Time (-supported in versions 3750 and above)	1	703EH	0～65535
U0-63	Multi-stage Lock 3 Remaining Time (-supported in versions 3750 and above)	1	703FH	0～65535
U0-65	Cumulative operating time of the VFD (supported by version 3720 and above)	1s	7041H	0 ~ 3600s
U0-66	Motor speed (supported in version 3720 and above)	1RPM	7042H	0– Motor rated speed
U0-67	Communication expansion card	-	7043H	-

Group U0: Monitoring parameters					
Parameter	Name	Minimum unit		Modbus address	Monitoring scope
	model				
U0-68	Communication Extension Version Number	-		7044H	-
U0-69	Communication expansion card provides feedback on the inverter status	Unit of Display	Parameter Declaration	7045H	0x0000 ~ 0xFFFF
		Bit0	Running State		
		Bit1	Operation Direction		
		Bit2	Is it a fault?		
		Bit3	Frequency arrival		
		Bit8~Bit15	Fault code		
U0-70	Communication feedback motor speed 1	0.1Hz		7046H	-
U0-71	Communication feedback motor speed 2	1RPM		7047H	0– Motor rated speed
U0-72	Current display dedicated to the communication card	0.01A		7048H	-
U0-73	Card error status	-		7049H	-
U0-74	output torque	0.01%		704AH	-200.00% ~ 200.00%
U0-75	Inverter fault code	-		704BH	1 ~ 71
U0-76	Inverter Operating Status Word	Unit of display	parameter declaration	704CH	H.0000～H.FFFF
		Bit0	0: Shutdown 1: Run		
		Bit1	Regular Operation (Non-digital, tunable)		
		Bit2	Click-to-run		
		Bit3	Tuned Operation		
		Bit4	Damping during operation		
		Bit5~Bit6	0: Constant speed 1: Accelerate 2: Slow down		
		Bit7	PLC move		
		Bit8	PID move		
		Bit9	torque control		
		Bit10	Set frequency direction		
		Bit11	Current frequency operating direction		
		Bit12	Reverse marker in progress 0: Positive		

Group U0: Monitoring parameters					
Parameter	Name	Minimum unit		Modbus address	Monitoring scope
			direction 1: Opposite direction		
		Bit13	Final frequency setting direction 0: Positive direction 1: Opposite direction		
		Bit14 (Supports version 3746 and above)	Alarm status display 0: The VFD has no alarm 1: Inverter alarm		
U0-83	Cumulative number of encoding communication check errors (supported only in version 3746)	1		7053H	0~65535
U0-84	High-bit value of encoder winding count (supported only in version 3746)	number of turns		7054H	0~65535
U0-85	Low-bit value of encoder winding count (supported only in version 3746)	number of turns		7055H	0~65535
U0-86	High Byte of Single-turn Encoder Position Count (Supported only in Version 3746)	impulse		7056H	0～65535
U0-87	Low-bit position count per encoder revolution (supported only in version 3746)	impulse		7057H	0~65535

Group U1: Position control monitoring parameters (supported in version 3750 and above)

Group U1: Encoder Monitoring Parameters				
Parameter	Name	Minimum unit	Modbus address	Monitoring scope
U1-00	Cumulative number of encoding communication verification errors	1	7100H	0～65535
U1-01	High-bit count of encoder's multi-turn number	number of turns	7101H	0～65535
U1-02	Low-bit count of encoder's multi-turns	number of turns	7102H	0～65535
U1-03	High-bit value of position count for one encoder revolution	pulse	7103H	0～65535
U1-04	Low-bit value of encoder's single-turn position count	pulse	7104H	0～65535
U1-05	Frequency-Divided Output Count	pulse	7105H	0～65535
U1-06	Pulse Input Count	pulse	7106H	0～65535
U1-07	Encoder Line Error Count	number of times	7107H	0～65535
U1-08	Encoder response frame format error count	number of times	7108H	0～65535

U1-09	Encoder response frame timeout error	number of times	7109H	0～65535
U1-20	Main spindle stop position	A6-09=0：1pulse A6-09=1：0.01°	7114H	A6-09=0：0~65535 Pluse A6-09=1：0.00～360.00°
U1-45	Position Command and Feedback Deviation	pulse	712DH	-32768～32767
U1-46	Position Flag HH (Bit 48–Bit 63)	pulse	712EH	0～9999
U1-47	Position Instruction HL (Bit 32–Bit 47)	pulse	712FH	0～9999
U1-48	Position Instruction LH (Bit 16–Bit 31)	pulse	7130H	0～9999
U1-49	Position Instruction LL (Bit 0–Bit 15)	pulse	7131H	0～9999
U1-52	Cumulative value of position loop pulse commands	pulse	7134H	0～65535
U1-53	Actual Position Ring Calculation Instruction	pulse	7135H	0～65535
U1-54	Actual Position Loop Calculation Feedback	pulse	7136H	0～65535
U1-55	Position Loop Original Instruction Low Bit	pulse	7137H	0～65535
U1-56	Position Loop Original Instruction High Bit	pulse	7138H	0～65535
U1-57	位 Set the low bit of the primitive filtering instruction	pulse	7139H	0～65535
U1-58	High bit of the original filtering instruction for position loop	pulse	713AH	0～65535
U1-59	Position Loop Original Filter Feedback Bit Position	pulse	713BH	0～65535
U1-60	Position loop original filtering feedback level	pulse	713CH	0～65535

Group U4: Communication monitoring parameters (supported in version 3720 and above)

Group U4: Communication monitoring parameters			
Parameter	Name	Minimum unit	
U4-00	Speed instruction (communication frequency setting value)	0.01%	
U4-01	Communication Control Command Word	Unit of display	parameter declaration
		Bit0~Bit7	The decimal-to-command conversion function works as follows: 1: Forward rotation command 2: Reverse Command 3: Pointing forward rotation command 4: Point Reverse Command 5: Reduce speed and stop the machine; halt according to the function code specified for the shutdown method. 6: Free shutdown 7: Fault Reset
		Bit8~Bit15	The expansion card fault code sent is incorrect.
U4-02	Communication Control DO	-	
U4-03	Communication Control FMP	-	
U4-04	Communication Control AO1	-	

Group U4: Communication monitoring parameters		
Parameter	Name	Minimum unit
U4-05	Communication Control AO2	-
U4-06	Torque command (communication torque setpoint)	0.01%
U4-07	Speed instruction (communication frequency setting value)	1RMP
U4-08	expansion card model	-
U4-09	expansion card version number	-
U4-10	expansion card error status	-

5. EMC (Electromagnetic Compatibility)

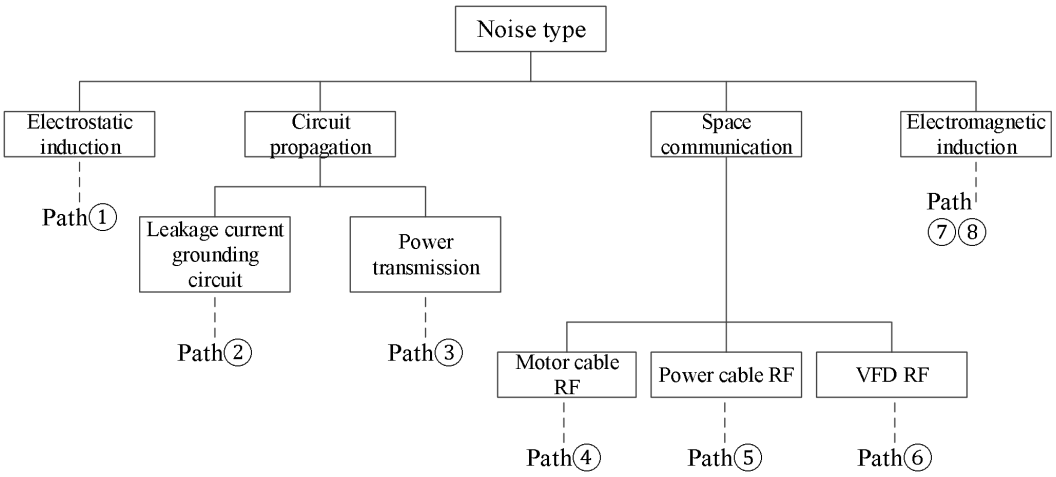
5.1 Installation guidelines compliant with EMC requirements

The inverter outputs a PWM wave, which generates electromagnetic noise during operation. To minimize the inverter's interference with the environment, this section outlines EMC installation methods covering noise suppression, field wiring, grounding, leakage current management, and power filter application.

5.1.1 Noise Suppression

1) Types of Noise

The noise generated by the operation of a VFD may affect nearby instruments and equipment. The extent of this impact depends on various factors, including the VFD's control system, the noise immunity of the equipment, the wiring environment, the required safety distance, and the grounding method. Types of noise include electrostatic induction, circuit propagation, spatial propagation, and electromagnetic induction.



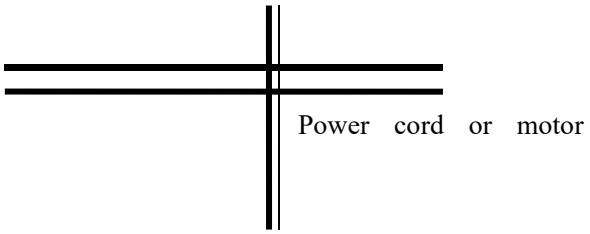
2) Basic Strategies for Noise Suppression

Noise propagation path	Countermeasures to Mitigate the Impact
②	When the grounding wire of the peripheral equipment forms a closed-loop circuit with the inverter's wiring, leakage current from the inverter's grounding wire may cause the equipment to malfunction. In such cases, failing to ground the equipment can reduce the likelihood of malfunctions.
③	When the power supply for peripheral devices and that for the VFD share the same system, the noise generated by the VFD propagates along the power lines, causing interference to other devices within the system. The following mitigation measures

Noise propagation path	Countermeasures to Mitigate the Impact
	can be implemented: install an electromagnetic noise filter at the VFD's input; isolate other devices using isolation transformers or power filters.
④⑤⑥	(1) Equipment and signal cables that are susceptible to interference should be installed as far away from the VFD as possible. Signal cables must use shielded cables with single-ended grounding of the shielding layer, and should be kept as far away from the VFD and its input/output cables as possible. If signal cables must cross power cables, the two should maintain an orthogonal relationship. (2) Installing high-frequency noise filters (ferrite common-mode chokes) at the input and output sides of the VFD can effectively suppress RF interference on the power lines. (3) Motor cables should be housed within a sufficiently thick barrier, such as a pipe with a thickness exceeding 2 mm or embedded in a concrete trough. The power cables shall be routed through metal conduits and grounded using shielded wires (the motor cables shall be four-core cables, with one core grounded at the VFD side and the other connected to the motor housing).
①⑦⑧	Avoid running high-voltage and low-voltage wires parallel or bundling them together; they should be installed as far away as possible from the VFD equipment, with their wiring kept separate from the VFD's input and output lines. Signal and power lines must use shielded cables. Equipment generating strong electric or magnetic fields should be positioned relative to the VFD, maintaining adequate distance and orthogonal alignment.

5.1.2 On-site Cabling and Grounding

- The cables from the VFD to the motor (U, V, and W terminal leads) should avoid being run parallel to the power supply cables (R, S, T or L, N terminal input lines). A distance of at least 30 cm must be maintained between them.
- The three motor wires (U, V, and W terminals) of the VFD should be housed within metal conduits or cable trays whenever possible.
- The control signal line should use a shielded cable, with its shielding layer connected to the inverter's PE terminal and grounded at the inverter-side single terminal.
- The grounding cable at the PE terminal of the VFD must not use the grounding wire of other equipment; it must be directly connected to the grounding plate.
- Control signal lines must not be routed in close proximity to high-voltage cables (R, S, T or L, N vs. U, V, W), nor bundled together; a distance of 20–60 cm (depending on the current magnitude of the high-voltage lines) must be maintained. If crossing is necessary, the lines shall cross perpendicularly to each other, as illustrated below.



- Control signals and sensor grounding wires for low-voltage systems must be independently grounded separately from high-voltage grounding wires.
- It is prohibited to connect any other devices to the input terminals (R, S, T or L, N) of the VFD.

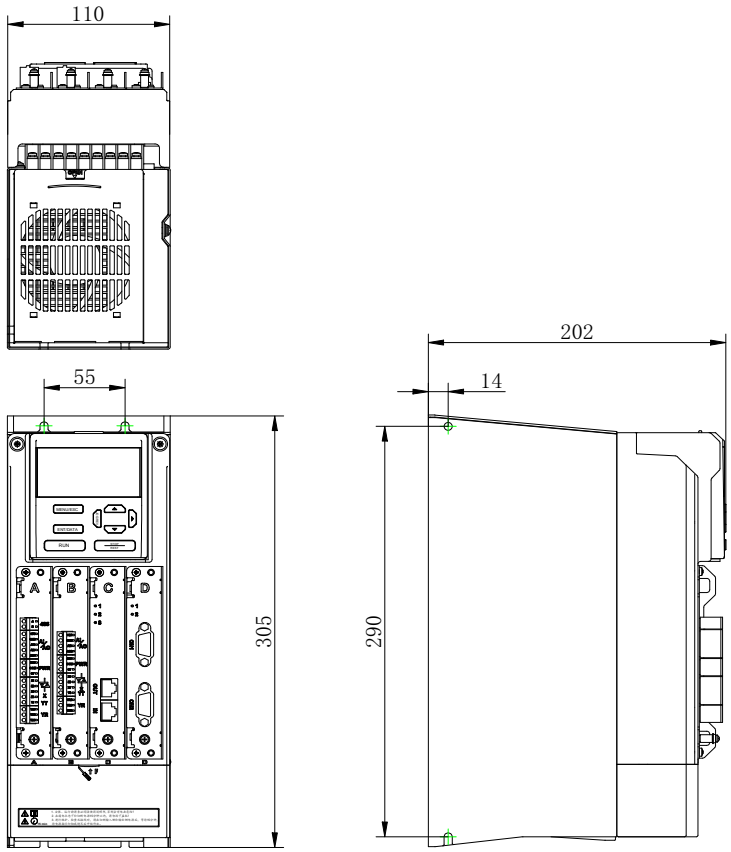
6. Model Selection and Dimensions

6.1 Electrical Specifications of VH6 Series Inverter

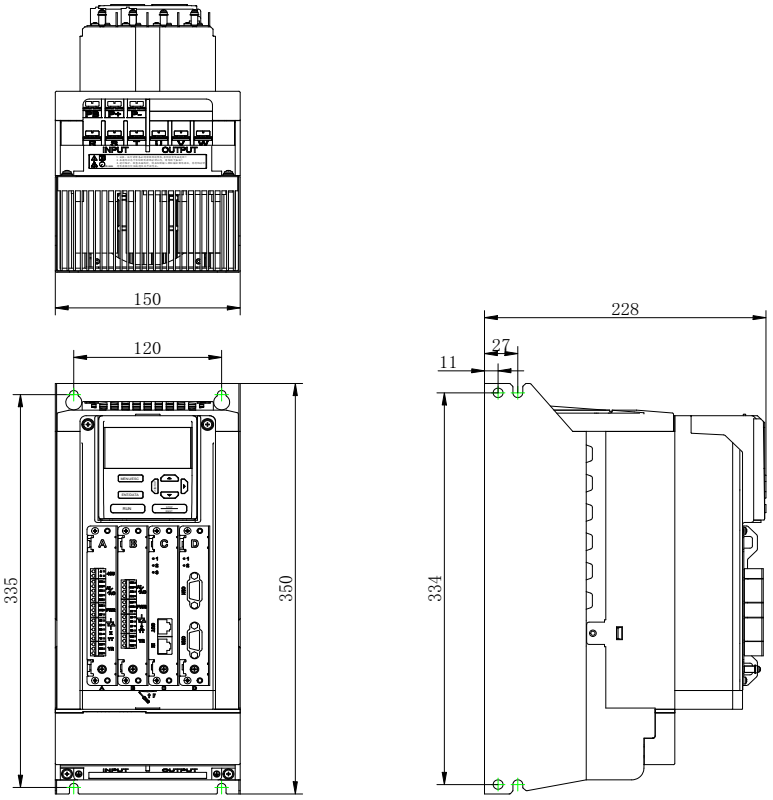
The classification of voltage	Body code name	Inverter model	Input power capacity	Input current	Output (A)	Adaptive motor
Three-phase 380V 50Hz/60Hz	X1	VH6-43P7-B	5.9	11	9	3.7
		VH6-45P5-B	8.9	14.6	13.0	5.5
		VH6-47P5-B	11.0	20.5	17.0	7.5
	X2	VH6-4011-B	17.0	26.0	25.0	11.0
		VH6-4015-B	21.0	35.0	32.0	15.0
	X3	VH6-4018-B	24.0	38.5	37.0	18.5
		VH6-4022-B	30.0	46.5	45.0	22.0
		VH6-4030-B	40.0	62.0	60.0	30.0
	X4	VH6-4037-B	63.0	69.0	75.0	37.0
		VH6-4045-B	81.0	89.0	90.0	45.0
		VH6-4055-B	97.0	106.0	110.0	55.0
	X5	VH6-4075-B	127	139	152	75
		VH6-4090-B	150	164	176	90
		VH6-4110-B	179	196	210	110
	X6	VH6-4132	220	240	253	132
		VH6-4160	263	287	304	160
	X7	VH6-4185	293	343	360	185
		VH6-4200	334	365	377	200
		VH6-4220	375	410	426	220
	X8	VH6-4250	404	441	465	250
		VH6-4280	453	495	520	280
	X9	VH6-4315	517	565	585	315
		VH6-4355	565	617	650	355
		VH6-4400	629	687	725	400
		VH6-4450	716	782	820	450

6.2 Appearance and Dimensions of VH6 Series Inverter

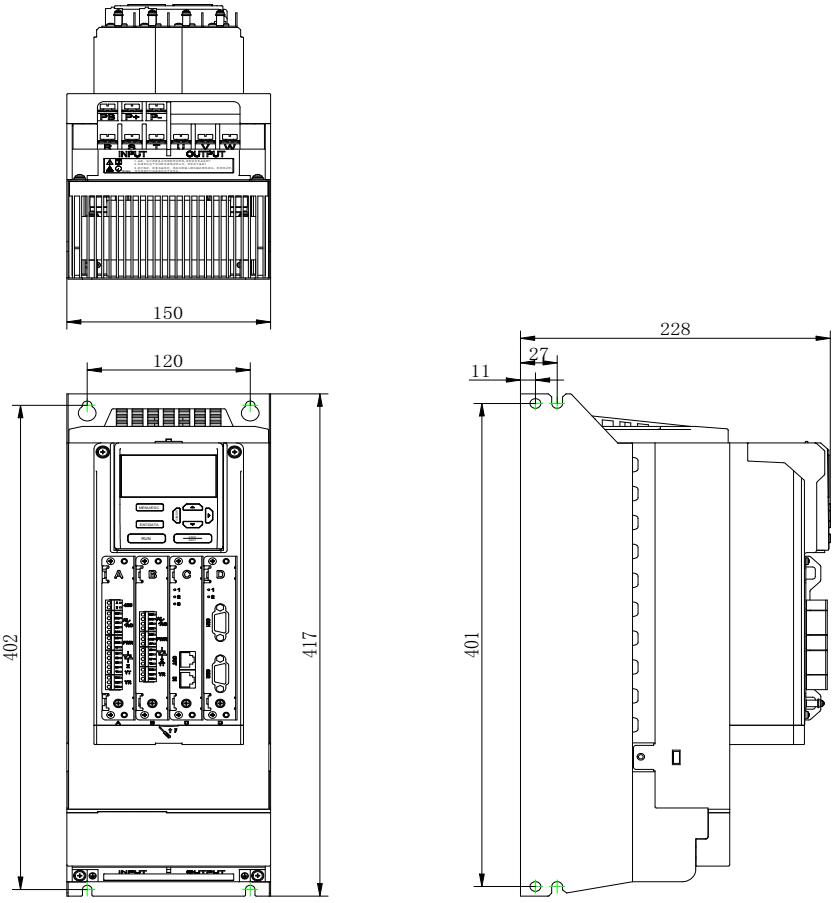
■ VH6-43P7-B//VH6-45P5-B/VH6-47P5-B Unit: mm



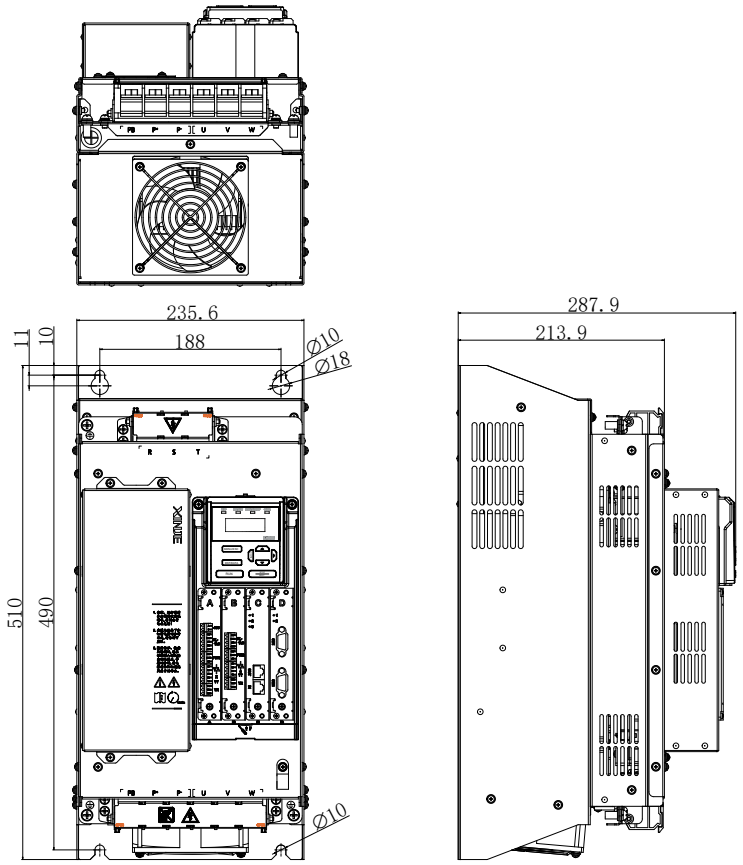
■ VH6-4011-B/VH6-4015-B Unit: mm



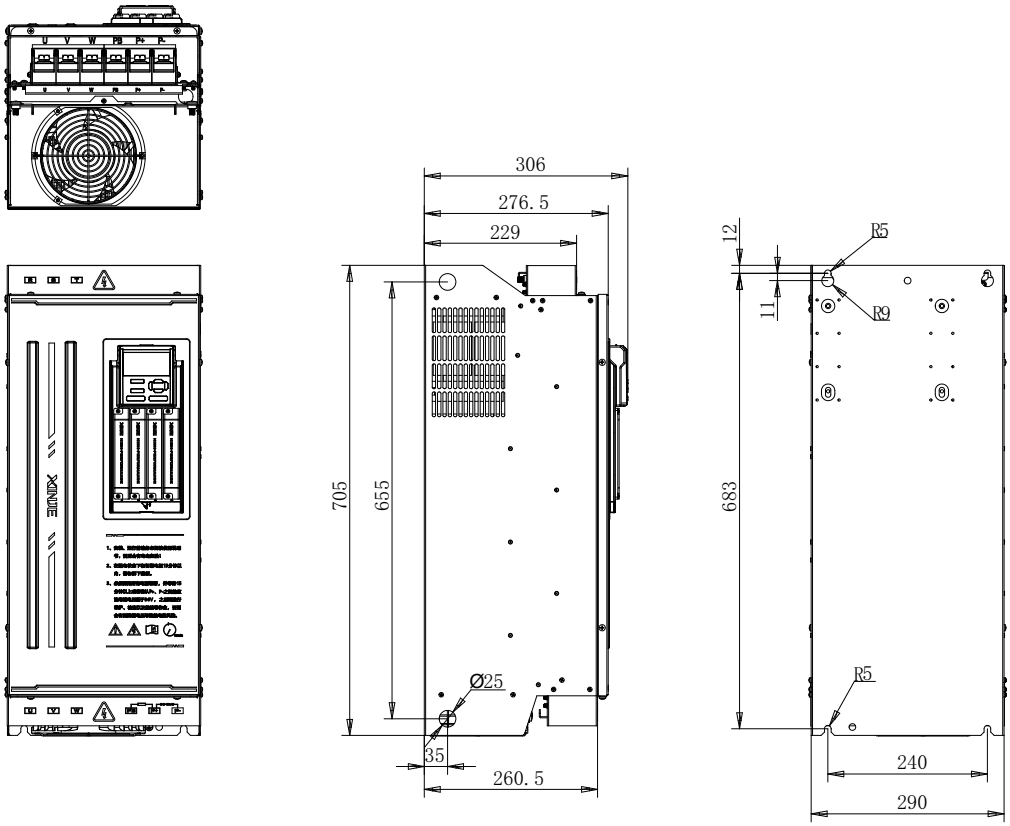
■ VH6-4018-B/VH6-4022-B/VH6-4030-B Unit: mm



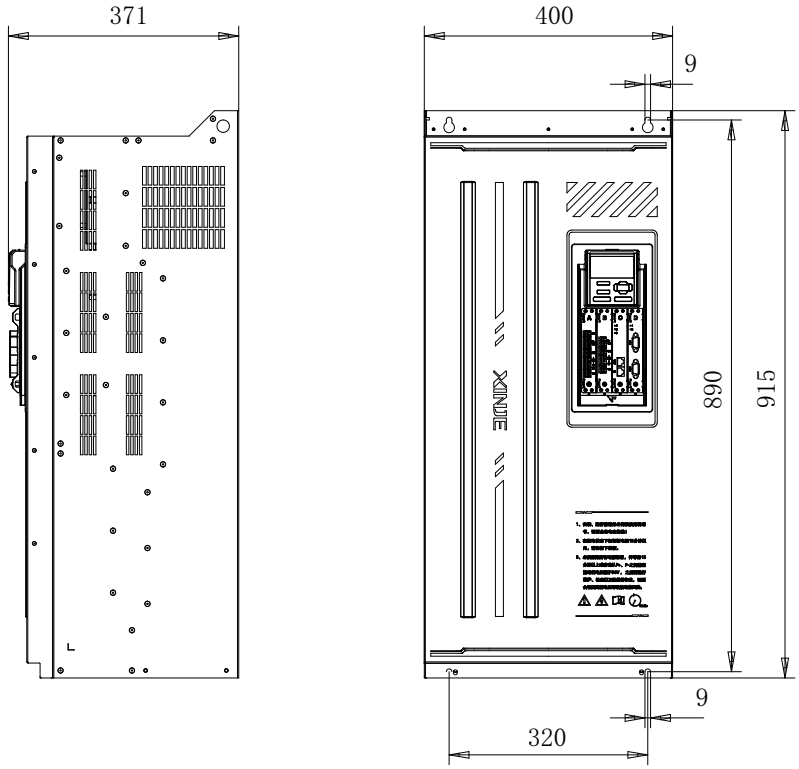
■ VH6-4037-B/VH6-4045-B/VH6-4055-B Unit: mm



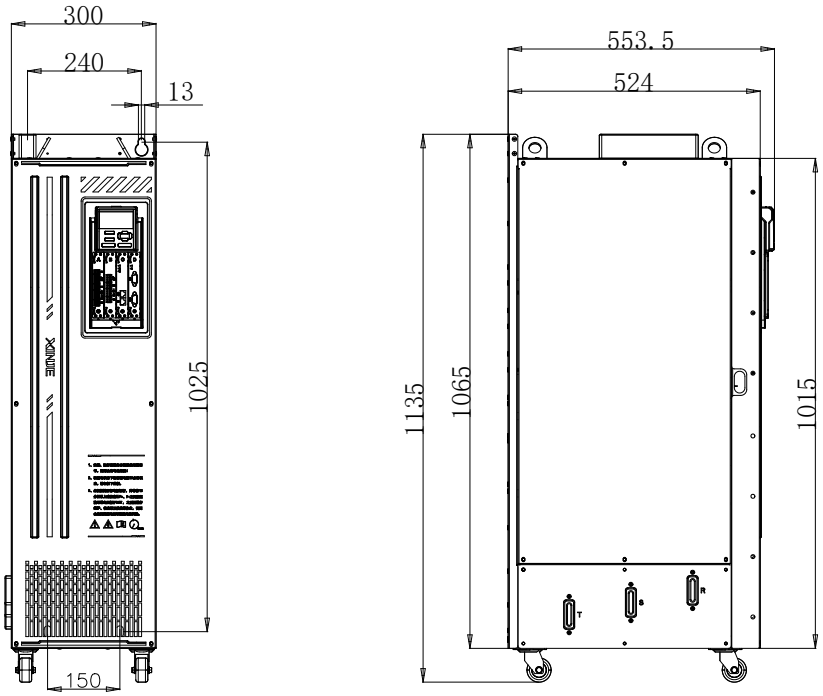
■ VH6-4075-B/VH6-4090-B/VH6-4110-B Unit: mm



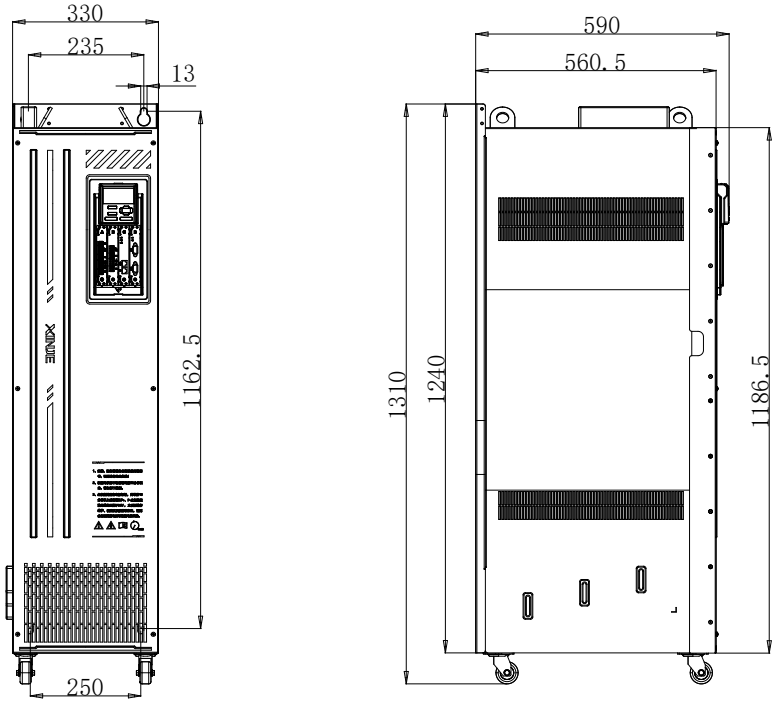
■ VH6-4132/VH6-4160 Unit: mm



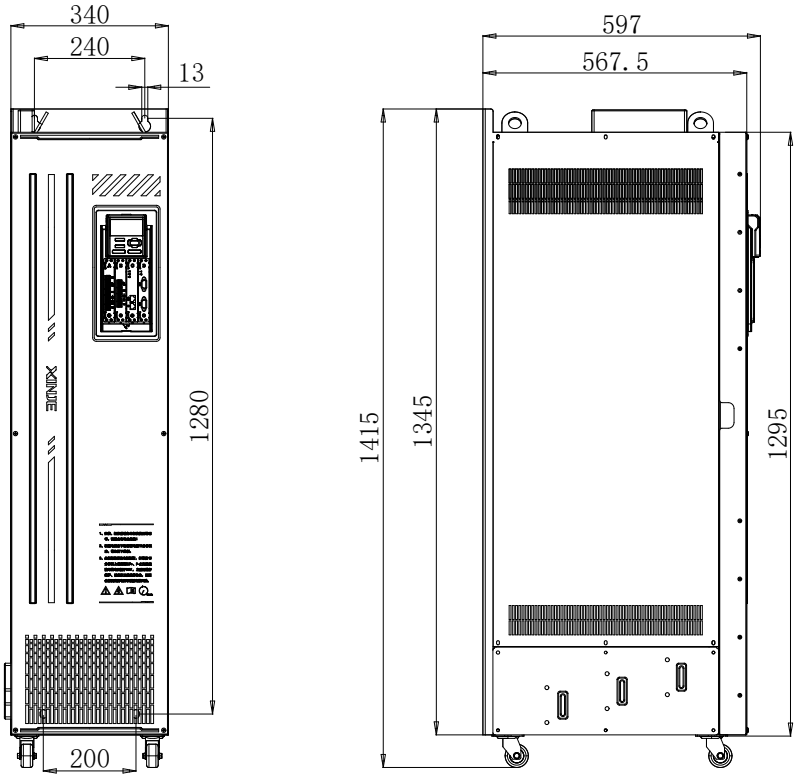
■ VH6-4185/VH6-4200/VH6-4220 Unit: mm



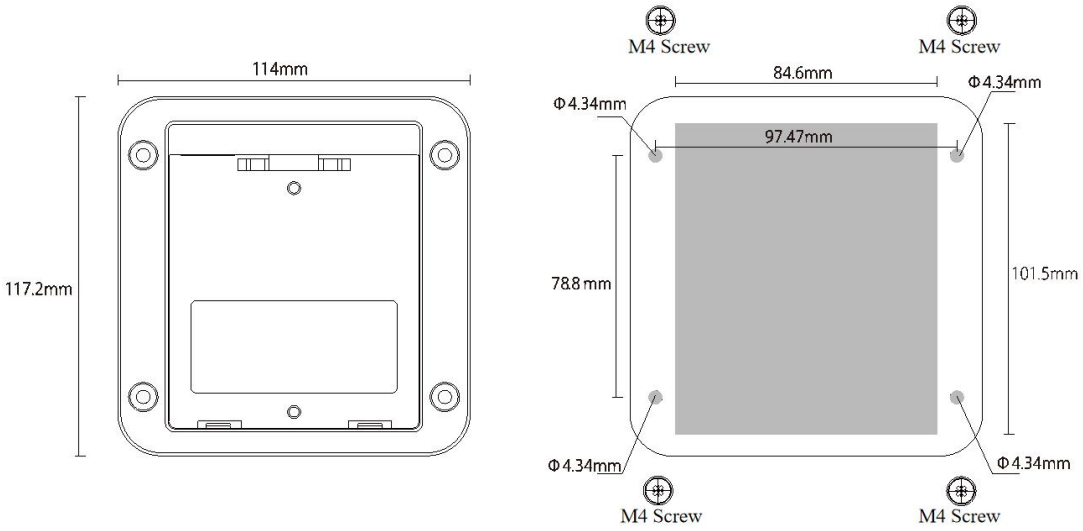
■ VH6-4250/VH6-4280 Unit: mm



■ VH6-4315/VH6-4355/VH6-4400/VH6-4450 Unit: mm



■ Dimension diagram of the control panel mounting bracket



The gray area represents the hollowed-out sections: the central hollowed-out area measures 84.6×101.5 mm, while the four corner hollowed-out areas are circular with a diameter of 4.34 mm. M4 screws and nuts are used to secure the bracket to the door panel.

6.3 Guidance for Selecting Peripheral Accessories

6.3.1 Description of Peripheral Accessories Functions

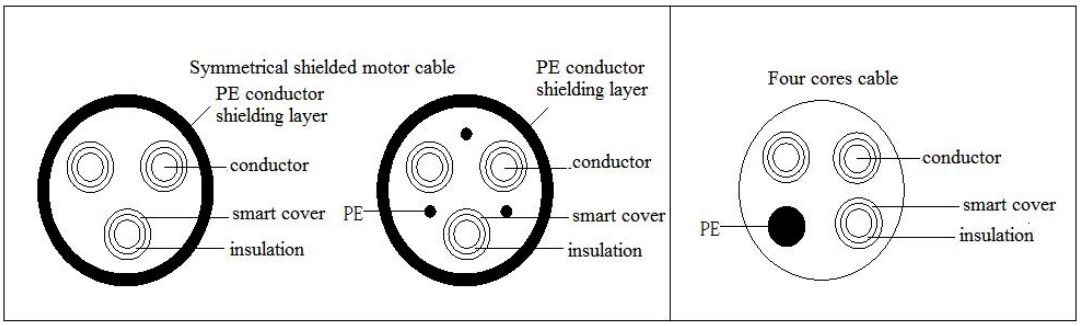
Name	Explain
cable	Device for transmitting electrical signals
circuit breaker	Prevent electric shock accidents and protect against ground short circuits that may cause leakage current fires (use leakage circuit breakers designed for VFD applications with high-order harmonic suppression capability; the breaker's rated sensitive current should exceed 30 mA per VFD.)
AC contactor	To effectively cut off the input power supply of the VFD during system failures, an electromagnetic contactor is installed on the input side to control the switching of the main circuit power, ensuring safety.
Input reactor	It is suitable for improving the power factor on the input side of the VFD and suppressing higher-order harmonic currents.
DC reactor	
input filter	The VFD suppresses electromagnetic interference transmitted from the input power line to the public grid. During installation, position it as close as possible to the input terminals of the VFD.
fuse	Its primary function is overload protection. When the input current of the VFD abnormally rises to a certain level and temperature, the fuse melts to interrupt the current, ensuring safe operation of the VFD.
braking resistor	The resistor or resistance unit consumes the motor's regenerative energy to shorten the deceleration time and prevent the inverter from triggering an over-voltage alarm.
output filter	Inhibit interference generated at the wiring point on the inverter output side. Install the device as close as possible to the inverter output terminals.
Output reactor	It extends the effective transmission distance of the VFD and effectively suppresses the instantaneous high voltage generated during switching of the IGBT module.

6.3.2 Cable Selection Guidelines

1) Power cable

- The dimensions of the input power cable and motor cable must comply with local regulations.
- The input power cable and motor cable must be capable of withstanding the corresponding load current.
- The maximum rated temperature margin for motor cables under continuous operating conditions should not be lower than 70°C.
- The conductivity of the PE grounding conductor is identical to that of the phase conductor (using the same cross-sectional area).
- For EMC requirements, refer to the "EMC (Electromagnetic Compatibility)" section.
- To meet CE's EMC requirements, symmetrical shielded motor cables must be used.
- For input cables, four-core cables can be used; however, shielded symmetrical cables are still recommended. Compared to four-core cables, the use of symmetrical shielded cables not only reduces

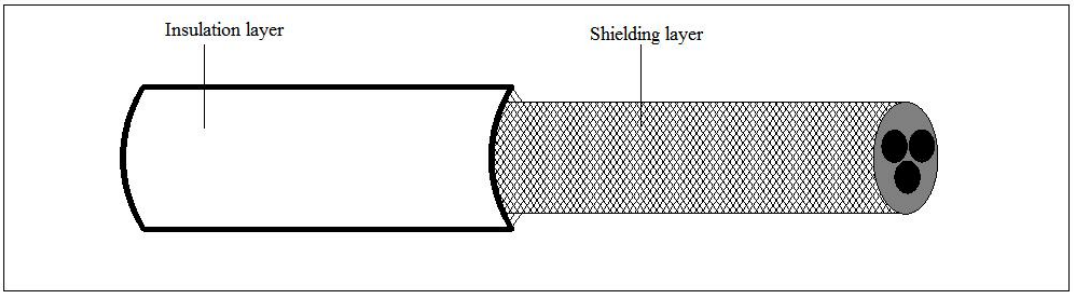
current flow and losses in motor cables but also minimizes electromagnetic radiation.



If the conductivity of the motor cable's shielding layer fails to meet the requirements, a separate PE conductor must be used.

To fulfill its protective and conductor functions, when the shield wire and phase conductor are made of the same material, the cross-sectional area of the shield wire must match that of the phase conductor. This ensures reduced ground resistance and improved impedance continuity.

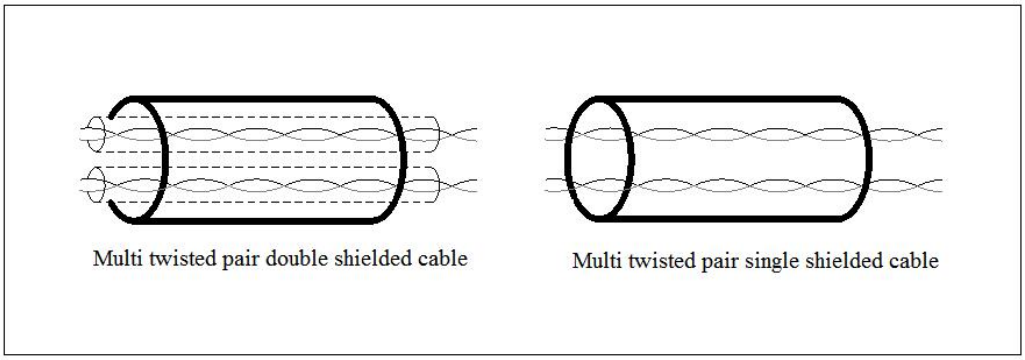
To effectively suppress the emission and propagation of radio frequency interference, the conductivity of the shielding wire must be at least one-tenth that of the phase conductor. This requirement is readily met for copper or aluminum shielding layers. The minimum specifications for inverter motor cables are illustrated below. The cable incorporates a spiral copper tape layer. A tighter shielding layer is preferable, as it more effectively suppresses electromagnetic interference radiation.



2) Control cable

All analog control cables and cables for frequency input must be shielded cables. Analog signal cables should use twisted pair shielded cables, with each signal utilizing a separate pair of shielded twisted wires. Different analog signals must not share the same ground wire.

For low-voltage digital signals, dual-layer shielded cables are recommended; alternatively, single-layer shielded or unshielded twisted-pair cables may be used. However, for frequency signals, shielded cables must be employed.



Relay cables must use cables with a metal braided shielding layer.

The keyboard requires a network cable for connection. In environments with complex electromagnetic conditions, it is recommended to use a shielded network cable.

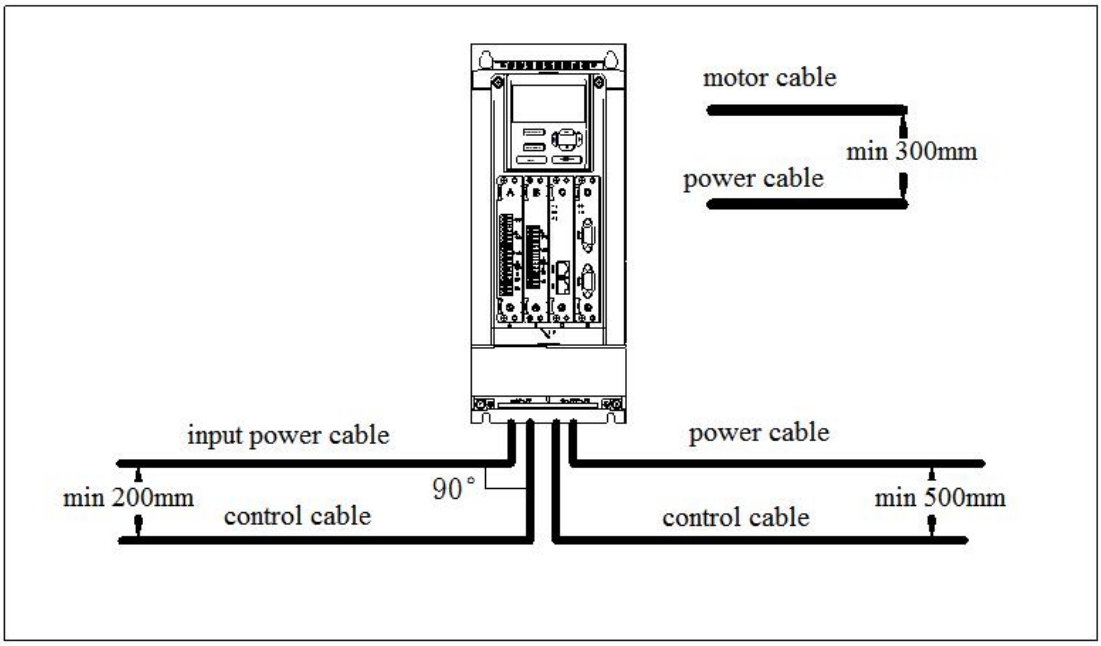
- Analog signals and digital signals are routed separately using different cables.
- Before connecting the input power cable to the VFD, inspect the cable's insulation in accordance with local regulations.

Inverter model	Recommended cable size (mm²)				Terminal screw specifications	tightening torque (N.M)
	RST/UVW	earth wire	braking resistor	Control Loop		
VH6-43P7-B	3*1.5	1.5	1.5	0.75	M4	1.2
VH6-45P5-B	3*4	2.5	2.5	0.75	M4	1.2
VH6-47P5-B	3*6	2.5	4	0.75	M4	1.2
VH6-4011-B	3*6	4	4	0.75	M5	2.3
VH6-4015-B	3*6	4	4	0.75	M5	2.3
VH6-4018-B	3*10	10	10	1.0	M6	2.5
VH6-4022-B	3*16	10	10	1.0	M6	2.5
VH6-4030-B	3*25	16	25	1.0	M6	2.5
VH6-4045-B	3*35	16	16	2.0	M8	8
VH6-4055-B	3*50	25	25	2.0	M8	8
VH6-4075-B	3*50	25	50	2.0	M10	20
VH6-4090-B	3*70	35	70	2.0	M10	20
VH6-4110-B	3*100	50	100	2.0	M10	20
VH6-4132	3*100	50	100	2.0	M10	20
VH6-4160	3*100	50	100	2.0	M10	20
VH6-4185	3*150	50	100	2.0	M12	36
VH6-4200	3*150	50	100	2.0	M12	36
VH6-4220	3*150	50	100	2.0	M12	36
VH6-4250	3*185	70	150	2.0	M16	90
VH6-4280	3*185	70	150	2.0	M16	90
VH6-4315	3*200	100	150	2.0	M16	90
VH6-4355	3*250	100	200	2.0	M16	90
VH6-4400	3*300	100	250	2.0	M16	90
VH6-4450	3*300	100	250	2.0	M16	90

- The recommended data and models in the table are for reference only.
- Prerequisites for cable selection: Use under steady-state conditions with an ambient temperature of 40°C, wiring distances below 100 m, and rated current values.

3) Cable wiring

Motor cables must be routed separately from other cables. Motor cables for multiple VFDs may be run side by side. It is recommended to distribute motor cables, input power cables, and control cables in separate cable trays. The reason for avoiding side-by-side routing of motor cables with other cables is that the du/dt output from VFD can cause electromagnetic interference to other cables.
If the control cable and power cable must cross, the angle between them must be 90 degrees.
The connections between cable trays must be secure and properly grounded. Aluminum trays enable local equipotential bonding.



4) Insulation Inspection

Before operation, check the insulation of the motor and its cable:

- Ensure the motor cable is connected to the motor, then remove the motor from the inverter's output terminals UVW.
- Use a 500 VDC megohmmeter to measure the insulation resistance between each phase conductor and the protective grounding conductor. For the motor's insulation resistance, refer to the manufacturer's specifications.
- If the motor interior is damp, the insulation resistance will decrease. If moisture is suspected, dry the motor and measure again.

6.3.3 Selection Guidelines for Circuit Breakers, Contactors, and Fuses

- To prevent overload damage to the VFD, a fuse must be installed at the power input terminal.

- A manually operated power circuit breaker (MCCB) must be installed between the AC power supply and the VFD. This circuit breaker device must be capable of locking in the open position to facilitate installation and maintenance. The circuit breaker's capacity should generally range from 1.5 to 2 times the rated current of the VFD.
- To effectively cut off the input power supply to the VFD during system failures, an AC contactor can be installed on the input side to control the switching of the main circuit power, ensuring safety.

Inverter model	Inverter rated input current (A)	Circuit breaker (A)	Contactor rated current (A)	Fuse (A)
VH6-43P7-B	11	16	18	20
VH6-45P5-B	14.6	20	18	2.5
VH6-47P5-B	20.5	32	25	4.0
VH6-4011-B	26	40	32	4.0
VH6-4015-B	35	50	38	6.0
VH6-4018-B	38.5	50	40	10
VH6-4022-B	46.5	63	50	10
VH6-4030-B	62	100	65	16
VH6-4037-B	69	100	80	125
VH6-4045-B	89	160	95	150
VH6-4055-B	106	160	115	200
VH6-4075-B	139	250	250	250
VH6-4090-B	164	250	330	275
VH6-4110-B	196	350	330	350
VH6-4132	240	300	400	400
VH6-4160	287	350	400	400
VH6-4185	343	400	500	500
VH6-4200	365	500	630	630
VH6-4220	410	500	630	630
VH6-4250	441	630	800	800
VH6-4280	495	630	800	800
VH6-4315	565	800	1000	1000
VH6-4355	617	800	1000	1000
VH6-4400	687	1000	1200	1200
VH6-4450	782	1000	1200	1200

The parameters of each accessory listed in the table are ideal values. When selecting accessories, adjustments can be made based on actual conditions, but they should not fall below the specified parameter values in the table.

6.3.4 Reactor Selection Guidelines

- To prevent instantaneous high currents from entering the input power circuit during high-voltage grid operation and damaging rectifier components, an AC reactor must be installed on the input side,

which also improves the power factor at the input.

- When the distance between the VFD and the motor exceeds 50 meters, the parasitic capacitance effect of the long cable to ground causes excessive leakage current, making the VFD prone to over-current protection. To prevent motor insulation damage, an output reactor must be installed for compensation. When a single VFD powers multiple motors, the total cable length should be calculated by summing the lengths of each motor's cables. If the total length exceeds 50 meters, an output reactor must be added at the VFD's output side.
- The VH6 series VFDs, with power ratings of 18.5 kW and above, are equipped with built-in DC reactors. These reactors improve the power factor, prevent excessive input current in the VFD caused by connecting large-capacity transformers—which could damage the rectifier bridge—and protect the rectifier circuit from harm by harmonics generated by grid voltage fluctuations or phase-controlled loads.

Inverter model	Inverter rated current (A)	Input reactor	Output reactor
VH6-43P7-B	11	ACLSG-15A/4.4V	OCLSG-15A/4.4V
VH6-45P5-B	20	ACLSG-15A/4.4V	OCLSG-15A/4.4V
VH6-47P5-B	32	ACLSG-20A/4.4V	OCLSG-20A/4.4V
VH6-4011-B	40	ACLSG-30A/4.4V	OCLSG-30A/4.4V
VH6-4015-B	50	ACLSG-40A/4.4V	OCLSG-40A/4.4V
VH6-4018-B	50	ACLSG-45A/4.4V	OCLSG-45A/4.4V
VH6-4022-B	63	ACLSG-60A/4.4V	OCLSG-60A/4.4V
VH6-4030-B	100	ACLSG-75A/4.4V	OCLSG-75A/4.4V
VH6-4037-B	69	ACLSG-90A/4.4V	OCLSG-90A/2.2V
VH6-4045-B	89	ACLSG-110A/4.4V	OCLSG-110A/2.2V
VH6-4055-B	106	ACLSG-150A/4.4V	OCLSG-150A/2.2V
VH6-4075-B	150	ACLSG-180A/4.4V	OCLSG-180A/2.2V
VH6-4090-B	176	ACLSG-215A/4.4V	OCLSG-215A/2.2V
VH6-4110-B	210	ACLSG-250A/4.4V	OCLSG-250A/2.2V
VH6-4132	253	ACLSG-300A/4.4V	OCLSG-300A/2.2V
VH6-4160	304	ACLSG-350A/4.4V	OCLSG-350A/2.2V
VH6-4185	360	ACLSG-400A/4.4V	OCLSG-400A/2.2V
VH6-4200	377	ACLSG-500A/4.4V	OCLSG-500A/2.2V
VH6-4220	426	ACLSG-500A/4.4V	OCLSG-500A/2.2V
VH6-4250	465	ACLSG-550A/4.4V	OCLSG-550A/2.2V
VH6-4280	520	ACLSG-600A/4.4V	OCLSG-600A/2.2V
VH6-4315	585	ACLSG-650A/4.4V	OCLSG-650A/2.2V
VH6-4355	650	ACLSG-700A/4.4V	OCLSG-700A/2.2V
VH6-4400	725	ACLSG-800A/4.4V	OCLSG-800A/2.2V
VH6-4450	820	ACLSG-950A/4.4V	OCLSG-950A/2.2V

The aforementioned optional accessories are under the Chint Electric brand, and users can purchase them based on their specific model.

6.3.5 Guidance for Braking resistor selection

When the VFD decelerates under heavy-inertia loads or requires rapid deceleration, the motor enters generator mode, transferring load energy to the DC side of the VFD via the inverter bridge, which elevates the converter bus voltage. Exceeding a specified threshold triggers an over-voltage alarm. To

	1、The design, installation, commissioning, and operation of the equipment must be carried out by trained and qualified professionals. 2、During the work process, all provisions outlined in the "Warning" must be strictly adhered to; failure to do so may result in severe personal injury or significant property damage. 3、Non-professional construction personnel must not perform wiring, as this may damage the circuits of the VFD or braking accessories. 4、Before connecting the brake resistor accessory to the VFD, carefully read the user manual for the brake resistor/brake unit. 5、Do not connect the brake resistor to terminals other than PB and P+, nor connect the brake unit to terminals other than P+ and P-. Otherwise, it may damage the brake circuit and the inverter, and cause a fire.
	1. Connect the brake resistor accessory to the inverter as shown in the wiring diagram. Incorrect wiring may damage the inverter or other equipment.

urrence, a braking system must be installed.

1) Selection of braking resistor resistance value

During braking, nearly all of the motor's regenerative energy is dissipated in the braking resistor. This can be determined using the following formula:

$$U \times U / R = Pb$$

U---System stable braking voltage (the U value varies by system; the VH6 series inverter defaults to 690V, adjustable via P7-52).

Pb – Braking power.

2) Selection of braking resistor power

Theoretically, the power of the braking resistor equals the braking power, but it is reduced to A. This can be determined using the formula:

$$A \times Pr = Pb \times D$$

A---The general value is around 50%;

Pr — Power of the resistor;

D---Braking frequency, i.e., the proportion of the regeneration process to the total operating process.

The A-value represents the derating factor for the braking resistor. A lower A-value prevents the resistor from overheating. When braking performance is satisfactory, users may appropriately increase the A-value, but it should not exceed 50% to avoid the risk of resistor overheating and potential fire.

3) Recommended typical braking frequency value

Common Application Scenarios	lift	Open the book and retrieve the test paper	centrifuge	Accidental braking load	General occasions
Braking frequency value	20% ~30%	20 ~30%	50%~60%	5%	10%

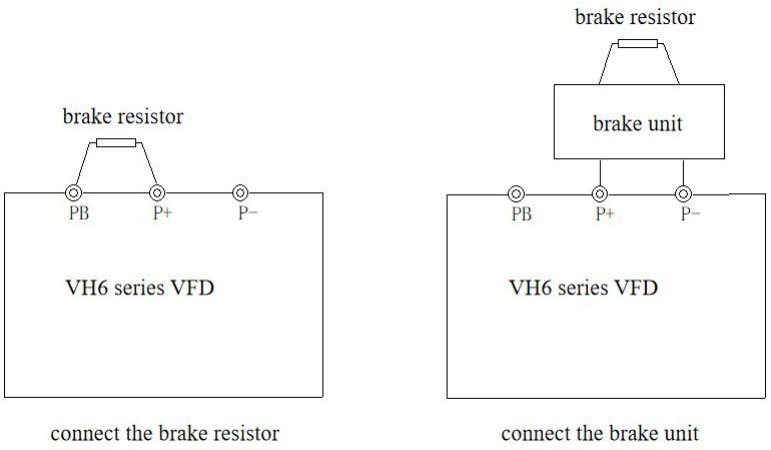
4) Selection of Braking resistor

The recommended brake resistor specifications in the table are based on a 10% braking frequency; confirm the applicable application standards.

Inverter model	Braking Unit	Recommended braking resistor specifications		
		Braking resistance value (Ω)	Braking resistor power (W)	Number of braking resistors
VH6-43P7-B	Standard built-in	≥150	740	1
VH6-45P5-B	Standard built-in	≥100	1100	1
VH6-47P5-B	Standard built-in	≥75	1500	1
VH6-4011-B	Standard built-in	≥50	2200	1
VH6-4015-B	Standard built-in	≥38	3000	1
VH6-4018-B	Standard built-in	≥38	4000	1
VH6-4022-B	Standard built-in	≥32	4500	1
VH6-4030-B	Standard built-in	≥27	6000	1
VH6-4037-B	Standard built-in	≥20	7000	1
VH6-4045-B	Standard built-in	≥16	9000	1
VH6-4055-B	Standard built-in	≥10.5	11000	1
VH6-4075-B	Standard built-in	≥7.7	15000	1
VH6-4090-B	Standard	≥12.8	9000	1

Inverter model	Braking Unit	Recommended braking resistor specifications		
		Braking resistance value (Ω)	Braking resistor power (W)	Number of braking resistors
	built-in			
VH6-4110-B	Standard built-in	≥10.5	11000	1
VH6-4132	External	≥6.8	13000	1
VH6-4160	External	≥2.8	16000	1
VH6-4185	External	≥5	18000	1
VH6-4200	External	≥4.1	21000	1
VH6-4220	External	≥3.2	27000	1
VH6-4250	External	≥4.3	20000	1
VH6-4280	External	≥3.8	23000	1
VH6-4315	External	≥3.4	26000	1
VH6-4355	External	≥3	29000	2
VH6-4400	External	≥3	29000	2
VH6-4450	External	≥2.8	32000	2

- The values in the table serve as reference data; users may select different resistance values and power ratings based on actual conditions (though the resistance value must not fall below the recommended values in the table, and the power rating may be higher). The selection of the braking resistor should be determined by the motor's power output in the actual application system, taking into account factors such as system inertia, deceleration time, and the energy of potential energy loads. Customers must make their choices according to specific operational requirements. Generally, the higher the system inertia, the shorter the required deceleration time, and the more frequent the braking operations, the greater the required power rating and the lower the resistance value of the braking resistor.
- The braking resistor cable should be a shielded cable.
- All resistors must be installed in a well-ventilated area.
- It is recommended that the material of the braking resistor accessory be flame-retardant, as the surface temperature of the resistor is extremely high. Even the temperature of the air flowing away from the resistor can reach several hundred degrees Celsius; therefore, it is essential to prevent contact between the material and the resistor.
- Choosing a high resistance value and low power rating results in severe heating; therefore, the default discharge threshold should be lowered to reduce accumulated heat.
- The braking resistor must be connected to the PB and P+ terminals, while the braking unit must be connected to the P+ and P-terminals, as shown in the figure below.



connect the brake resistor connect the brake unit

6.3.6 Guidance for Braking Unit Selection

The VH6 series inverters with a capacity of 132 kW and above do not include a built-in braking unit. Therefore, when connecting the braking resistor, an external braking unit must be installed first, followed by connecting the resistor to that unit.

1) Power selection for the braking unit

Select the appropriate braking unit based on the required braking power for the VFD.

The principle for selecting the power of the braking unit is that its power must exceed the required braking power. When the exact braking power is unknown, it can be estimated using the following method:

$$Pb = P \times Td \times K$$

Pb---Braking power;
P – Motor power;
K — Mechanical energy conversion efficiency, typically K = 0.7;
Td — The ratio of braking torque to the motor's rated torque varies across different systems, as shown in the table below.

Common Application Scenarios	Open the book and retrieve the test paper	Accidental braking load (during rapid start-stop operations)	lift	General occasions
Td short-cut process	120 %	120%	100%	80%

2) Braking Unit Selection

Inverter model	Braking Unit	Recommended brake unit specifications	
		Adapt the driver input voltage (V)	Rated continuous braking power (KW)
VH6-4132	External	380	75
VH6-4160	External	380	90

Inverter model	Braking Unit	Recommended brake unit specifications	
		Adapt the driver input voltage (V)	Rated continuous braking power (KW)
VH6-4185	External	380	105
VH6-4200	External	380	115
VH6-4220	External	380	125
VH6-4250	External	380	145
VH6-4280	External	380	160
VH6-4315	External	380	180
VH6-4355	External	380	200
VH6-4400	External	380	225
VH6-4450	External	380	255

7. Fault Diagnosis and Abnormality Handling

7.1 Fault Phenomenon and Countermeasures

When an abnormality occurs in the VFD, the LED display will show the corresponding fault function code and its description. The fault relay activates, halting the converter's output. If the motor is rotating during the fault, it will stop automatically until complete cessation of rotation. The potential fault types for the VFD are listed in the table below. Upon detecting a fault, users should first follow the troubleshooting steps outlined in the table and meticulously document the fault symptoms. For technical assistance, please contact our after-sales service and technical support department or our regional agents.

Fault code	Name	Failure cause	Fault handling measures
Err00	not have		
Err01	Accelerated over-current	1. The inverter output circuit has a ground fault or short circuit. 2. The control method is vector-based and no parameter tuning has been performed. 3. The acceleration time is too short 4. Manual torque increase or inappropriate VF curve 5. Low voltage 6. Start the rotating motor 7. Sudden load during acceleration 8. The selected VFD is too small in size.	1. Eliminate peripheral faults 2. Tuning motor parameters 3. Increase acceleration time 4. Adjust the manual lifting torque or VF curve 5. Set the voltage to the normal range 6. Select speed-tracking startup or wait until the motor stops before starting. 7. Eliminate sudden load surges 8. Select an inverter with a higher power rating
Err02	over-current protection	1. The inverter output circuit has a ground fault or short circuit. 2. The control method is vector-based and no parameter tuning has been performed. 3. The deceleration time is too short 4. Low voltage 5. Sudden load during deceleration 6. No braking unit or braking resistor is installed.	1. Eliminate peripheral faults 2. Tuning motor parameters 3. Increase the deceleration time 4. Set the voltage to the normal range 5. Eliminate sudden load surges 6. Installation of a braking unit and resistor
Err03	Constant-speed over-current	1. The inverter output circuit has a ground fault or short circuit. 2. The control method is vector-based and no parameter tuning has been performed. 3. Low voltage 4. Is there any sudden load during operation? 5. The selected VFD is too small in	1. Eliminate peripheral faults 2. Tuning motor parameters 3. Set the voltage to the normal range 4. Eliminate sudden load surges 5. Select an inverter with a higher power rating

Fault code	Name	Failure cause	Fault handling measures
		size.	
Err04	Accelerated over-voltage	1. The input voltage is too high 2. During acceleration, an external force drives the motor to operate. 3. Insufficient acceleration time 4. No braking unit or braking resistor is installed.	1. Set the voltage to the normal range 2. Discontinue this additional power source or install a braking resistor 3. Increase acceleration time 4. Install the braking unit and resistor
Err05	over-voltage reduction	1. The input voltage is too high 2. During deceleration, an external force drives the motor to operate. 3. The deceleration time is too short 4. No braking unit or braking resistor is installed.	1. Set the voltage to the normal range 2. Discontinue this additional power source or install a braking resistor 3. Increase the deceleration time 4. Install the braking unit and resistor
Err06	Constant-speed over-voltage	1. The input voltage is too high 2. During operation, an external force is driving the motor.	1. Set the voltage to the normal range 2. Discontinue this additional power source or install a braking resistor
Err07	Buffer resistor overload fault	1. Unstable power supply voltage 2. Main control board malfunction	1. Set the voltage to the normal range 2. Seek technical support
Err08	under-voltage fault	1. Instant power outage 2. The input voltage of the VFD falls outside the specified range. 3. The busbar voltage is abnormal. 4. The rectifier bridge and buffer resistor are malfunctioning. 5. Drive board malfunction 6. Abnormal control board	1. Reduction failure 2. Adjust the voltage to the normal range 3. Seek technical support
Err09	Inverter overload	1. Is the load excessive or has the motor stalled? 2. The selected VFD is too small in size.	1. Reduce the load and inspect the motor and mechanical condition 2. Select an inverter with a higher power rating
Err10	Motor overload	1. Are the motor protection parameter settings appropriate? 2. Is the load excessive or has the motor stalled? 3. The selected VFD is too small in size.	1. Set this parameter correctly 2. Reduce the load and inspect the motor and mechanical condition 3. Select an inverter with a higher power rating
Err11	Input phase loss	1. The three-phase input power supply is abnormal 2. Drive board malfunction 3. Abnormal lightning protection panel 4. Main control board malfunction	1. Inspect and resolve any issues present in the peripheral circuits 2. Seek technical support

Fault code	Name	Failure cause	Fault handling measures
Err12	Output phase loss	1. The wiring from the VFD to the motor is abnormal. 2. Unbalanced three-phase output from the VFD during motor operation 3. Drive board malfunction 4. Module Exception	1. Eliminate peripheral faults 2. Check whether the motor's three-phase windings are functioning properly and eliminate any faults. 3. Seek technical support
Err13	radiator overheating/module overheating	1. Excessively high ambient temperature 2. Air duct blockage 3. The fan is damaged. 4. The module thermistor is damaged. 5. The inverter module is damaged	1. Reduce the ambient temperature 2. Clean the air duct 3. Replace the fan 4. Replace the thermistor 5. Replace the inverter module
Err14	Contactor fault	1. The driver board and power supply are malfunctioning. 2. The contactor is malfunctioning.	1. Replace the driver board or power board 2. Replace the contactor
Err15	Current measurement failure	1. Check for abnormalities in the Hall device 2. Drive board malfunction	1. Replace the Hall device 2. Replace the driver board
Err16	Motor tuning fault	1. Motor parameters are not set according to the nameplate specifications. 2. Parameter tuning process timed out	1. Set the motor parameters correctly according to the nameplate. 2. Check the wiring from the VFD to the motor
Err17	Drive disk failure	1. The encoder model does not match 2. Encoder wiring error 3. Encoder damaged 4. PG card error 5. External disturbance	1. Correctly set the encoder type 2. Eliminate line faults 3. Alternate coding 4. Replace the PG card 5. Run the encoder wires separately, equip with magnetic rings, and keep them away from interference sources.
Err18	Motor short-circuit fault to ground	The motor is short-circuited to ground.	Replace the cable or motor
Err19	Dropload	The operating current of the VFD is less than P7-61.	Check whether the load is disconnected or whether the P7-61 and P7-62 parameter settings match the actual operating conditions.
Err20	Wave-based current limiting fault	1. Is the load excessive or has the motor stalled? 2. The selected VFD is too small in size.	1. Reduce the load and inspect the motor and mechanical condition 2. Select an inverter with a higher power rating
Err21	Failed to detect the magnetic pole position	1. The motor parameters deviate excessively from the actual values.	1. Redetermine the motor parameters, with particular attention to whether the motor's rated current is too low.
Err23	Short circuit in	1. The output current is too high	1. Increase acceleration and

Fault code	Name	Failure cause	Fault handling measures
	the braking resistor		deceleration time 2. Reduce the load
Err26	SVC stall failure	1. Overload 2. The torque limit is too low (P6-11)	1. Reduce the load 2. Increase torque limit
Err35	The synchronous machine is operating with uncalibrated faults.	The VFD with a synchronous motor starts operating without being properly tuned.	1. The VFD is tuned with a synchronous motor. 2. Set P1-24=1 to disable this alarm
Err37	Low-voltage fault in the encoder battery	The encoder battery voltage is below 2.7 V	Change the encoder's power battery
Err43	External Fault	1. Input external fault signals through the multi-functional terminal X 2. Input external fault signals via the virtual Y function	Reset operation
Err44	Communication (Timeout) Error	1. The host computer is not functioning properly. 2. The communication cable is abnormal. 3. The communication parameter settings for Group P9 are incorrect.	1. Check the host computer program 2. Check whether the communication cable is disconnected 3. Correctly set communication parameters
Err45	EEPROM read/write failure	The EEPROM chip is damaged.	Replace the main board
Err46	Run time reached	The cumulative runtime has reached the set value.	Use the parameter initialization feature to clear record information
Err47	Power-on time has arrived	The cumulative power-on time has reached the set value.	Use the parameter initialization feature to clear record information
Err48	User-defined Fault 1	1. Input the user-defined fault 1 signal through the multi-functional terminal X 2. Input the signal for user-defined fault 1 via the virtual IO function	Reset operation
Err49	User-defined Fault 2	1. Input the user-defined fault signal 2 via the multi-functional terminal X 2. Enter user-defined data through the virtual IO function Define the signal for Fault 2	Reset operation
Err50	PID feedback loss during operation	The PID feedback is lower than the PA-27 setpoint.	Check the PID feedback signal or set PA-27 to an appropriate value.
Err51	Switch motors during operation	During the inverter operation, change the current motor selection via the terminals.	Perform the motor switching operation after the VFD has stopped.
Err52	The speed variation is too	1. The encoder parameter settings are incorrect.	1. Set encoder parameters correctly

Fault code	Name	Failure cause	Fault handling measures
	large.	2. Motor stalling 3. The UVW wiring is incorrect.	2. Check for any abnormalities in the machinery 3. Check whether the wiring between the VFD and the motor is abnormal.
Err53	Motor overspeed fault	1. The encoding parameter is incorrect. 2. The motor is not tuned. 3. The motor overspeed detection parameters P7-63 and P7-64 are improperly set.	1. Set encoder parameters correctly 2. Tune 3. Set reasonable parameters based on actual conditions
Err54	Motor overheating fault	1. The temperature sensor wiring is loose. 2. The motor temperature is too high.	1. Test the temperature sensor wiring and troubleshoot any faults. 2. Reduce the carrier frequency or take other measures to dissipate heat from the motor.
Err56	The power-on lock time has reached 1	1. The power-on time for the password-locked section A4-00 to A4-03 has arrived. 2. A4-04~A4-06: The first phase of the timed lock mechanism has completed its timing process.	1. Time limit reached. Enter the verification password in A4-00 2. Set the correct password for the first timed lock
Err57	The power-on lockout time has reached 2	A4-07~A4-09: The second phase of the timed lock mechanism has completed its timing process.	Set the correct password for the second timed lock
Err58	The power-on lockout time has reached 3.	A4-10~A4-012: The third phase of the timed lock mechanism has completed its timing process.	Set the correct password for the third timed lock
Err63	The spindle stop signal has been disconnected.	The X-terminal signal for spindle stoppage is disconnected, and A6-20 is set to 2.	Reduction Operation
Err70	PID breakage	1、The received value of the AI terminal is greater than PA-32 2、The received value of the AI terminal is ≤ PA-33	1、Check the wiring of the AI terminal. 2、Stable analog voltage/current signals input to the AI terminals 3、Set the PID parameters to appropriate values
Err71	STO out of sync	The input states of the X3 and X4 terminals are inconsistent.	1、If the STO function is not used, set P2-85 to 0 2、When using the STO function, ensure both X3 and X4 are connected to the signal for proper operation.

7.2 Warning Phenomena and Countermeasures

When an abnormality occurs in the VFD, the LED display will show the corresponding warning function code and its description. During a warning event, the motor may continue rotating, stop abruptly, or decelerate until complete cessation of rotation. The possible warning types for the VFD are listed in the table below. Upon receiving a warning, users should first follow the instructions in the table to perform diagnostics and document the warning details thoroughly. For technical assistance, please contact our After-Sales Service and Technical Support Department or any of our regional agents.

Warning Code	Name	Action After Warning	Warning Reason	Warning Handling Measures
A32	Synchroizer tuning failed	Shut down	Synchroizer tuning failed	1、Correctly set the motor parameters for Group P1 2、Confirm with the motor manufacturer the manually set operating parameters for the P1 group motors after tuning. 3、Re-tune
A33	Stoppage-free operation during temporary suspension: timeout warning	Stop and shut down	The input voltage is unstable and continuously exhibits a hysteresis loop characterized by frequent transient stops.	A voltage stabilizer is added on the input side to stabilize the incoming voltage.
A34	During the stop-and-go loop process, issue a STOP command.	Stop and shut down	During the continuous loop-stopping process, the STOP command is issued.	A voltage stabilizer is added on the input side to stabilize the incoming voltage.
A37	Encoder battery low-voltage warning	Continue Running	The encoder battery voltage is below 3.1 V	Replace the encoder battery promptly.
A70	PID Line Break Warning	Run at a frequency of 0 Hz	1. The received value of the AI terminal is greater than PA-32 2. 2; the received value of the AI terminal is less than or equal to PA-33	1、Check the wiring of the AI terminal. 2、Stable analog voltage/current signals input to the AI terminals 3、Set the PID parameters to appropriate values

7.3 Fault Log Query

This series of inverters records the last three fault codes and operating parameters. Consulting this information helps identify the cause of faults. All fault details are stored in Group P7 parameters; refer to the keyboard operation guide to access them.

7.4 Fault Reset

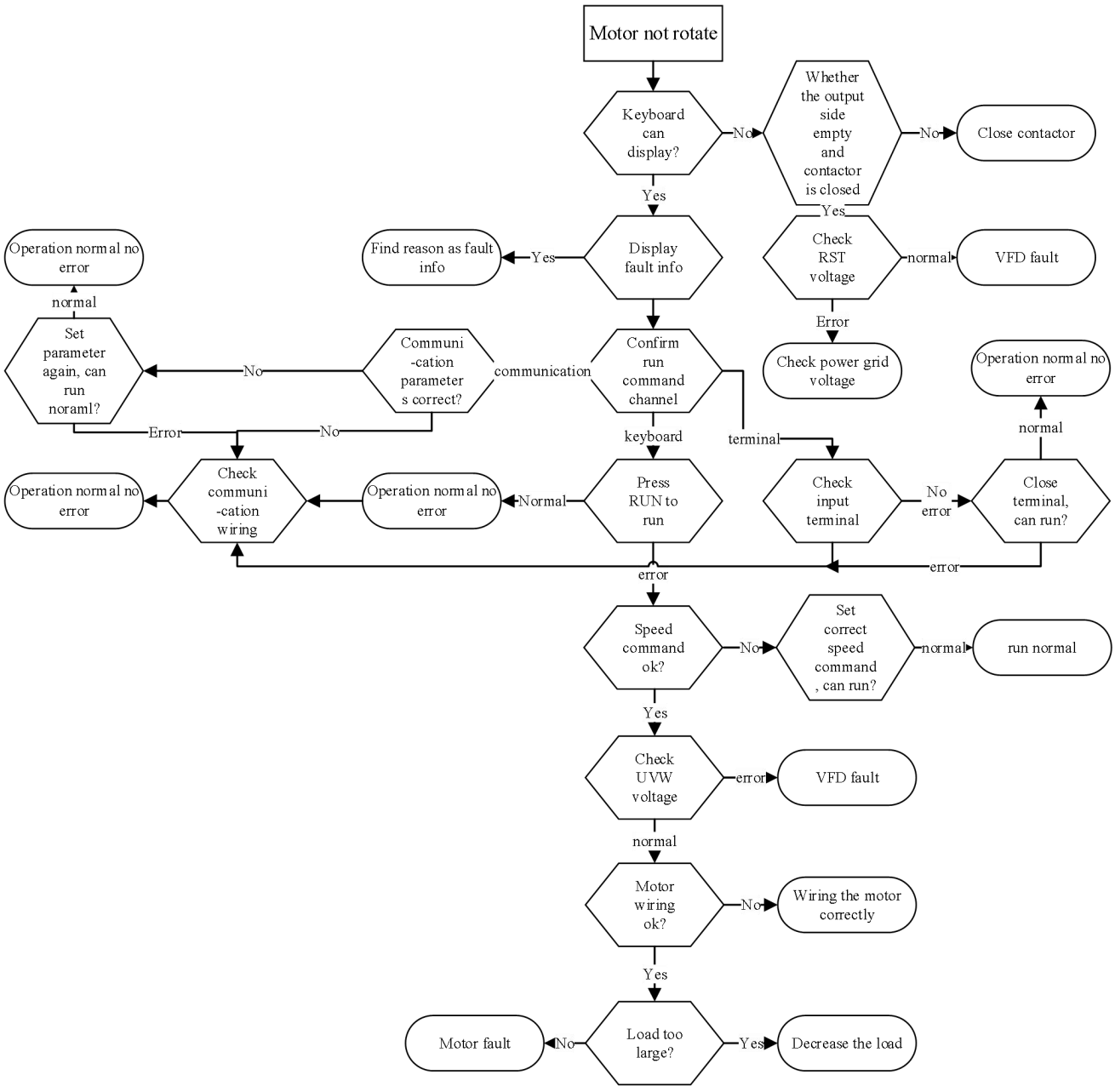
When a VFD fails, you can select any of the following actions to restore normal operation.

- When a fault code appears, confirm that you can reset the device, then press the STOP button.
- Set any terminal from X1 to X5 as the external fault reset STOP input, then close it with the COM terminal before disconnecting.
- Cut off the electricity supply,power cut,dump

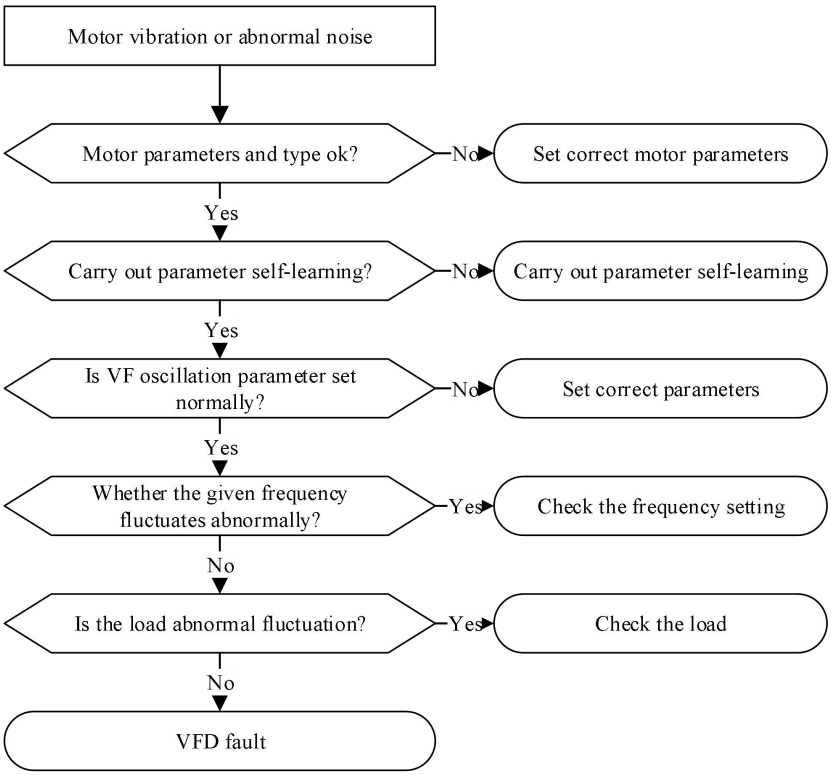
- Before performing the reset, the cause of the fault must be thoroughly identified and resolved; otherwise, it may lead to permanent damage to the VFD.
- If the device cannot be reset or malfunctions again after resetting, investigate the cause; repeated resets may damage the VFD.
- During overload or overheating protection activation, the system shall reset after a delay of 5 minutes.

7.5 Analysis of Common Faults in VFD

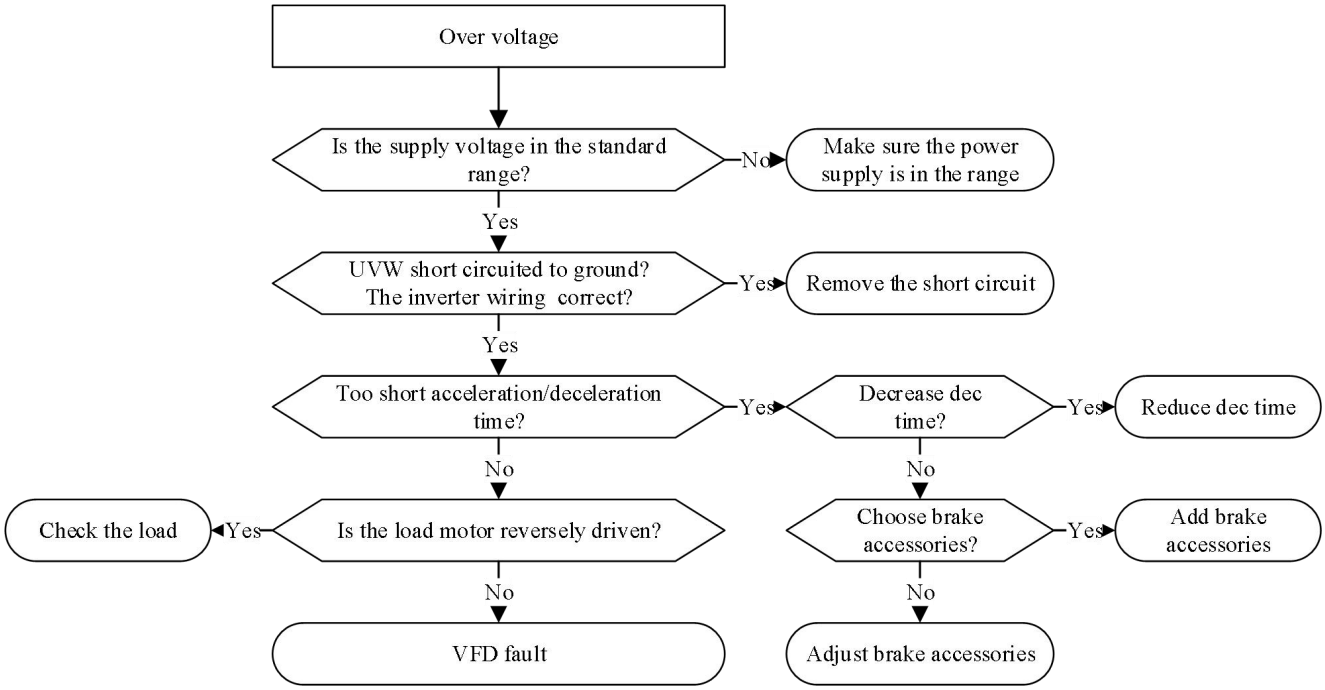
7.5.1 The motor is not rotating



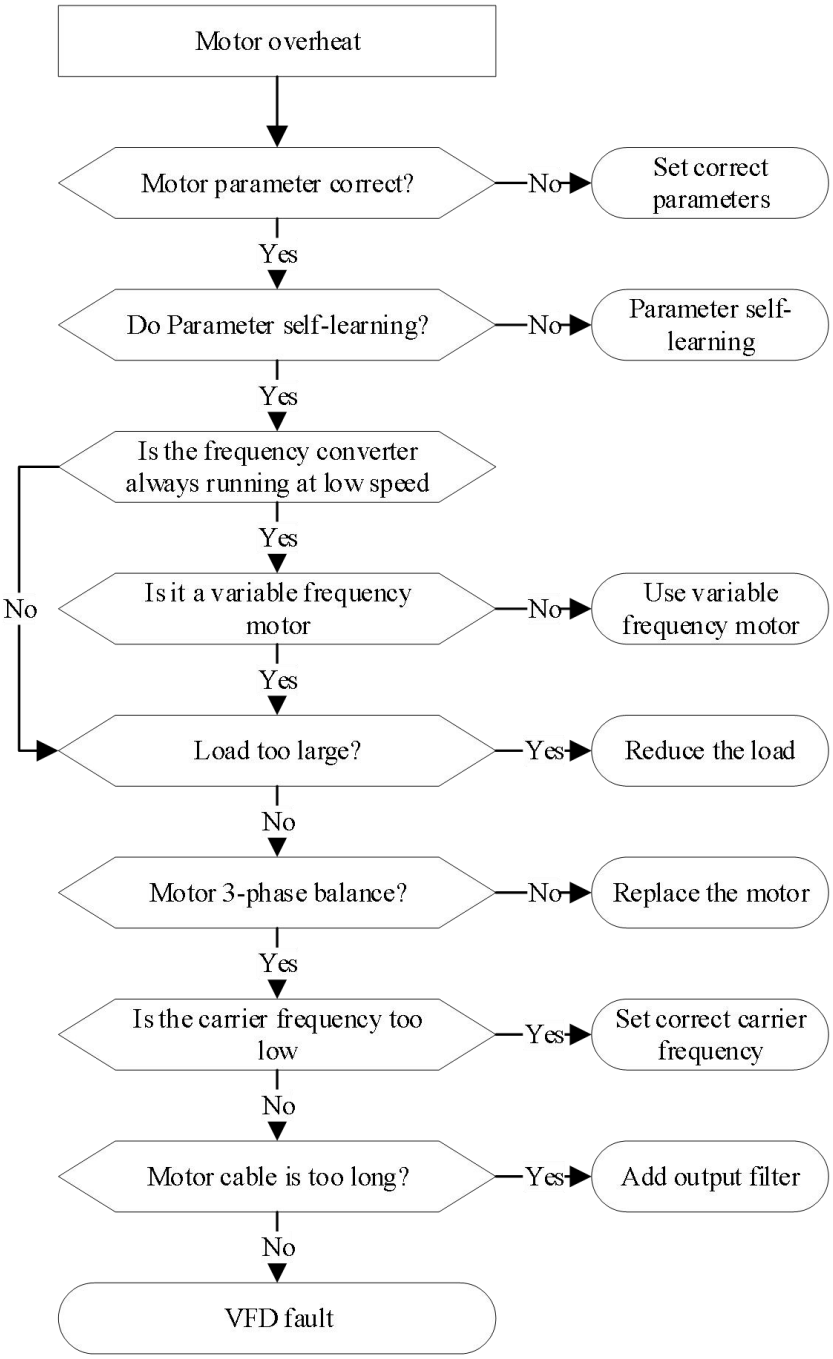
7.5.2 Motor vibration



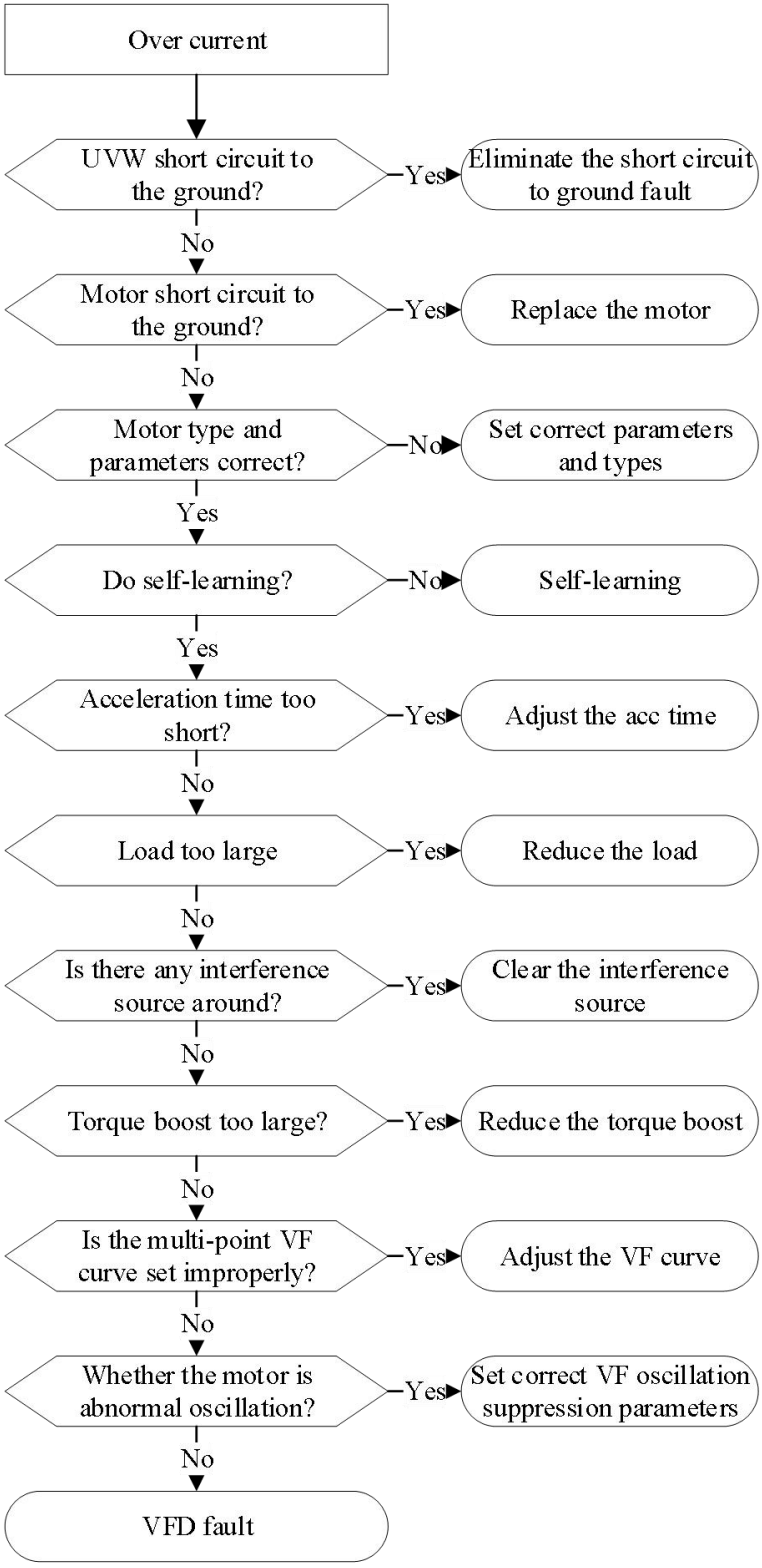
7.5.3 Over voltage



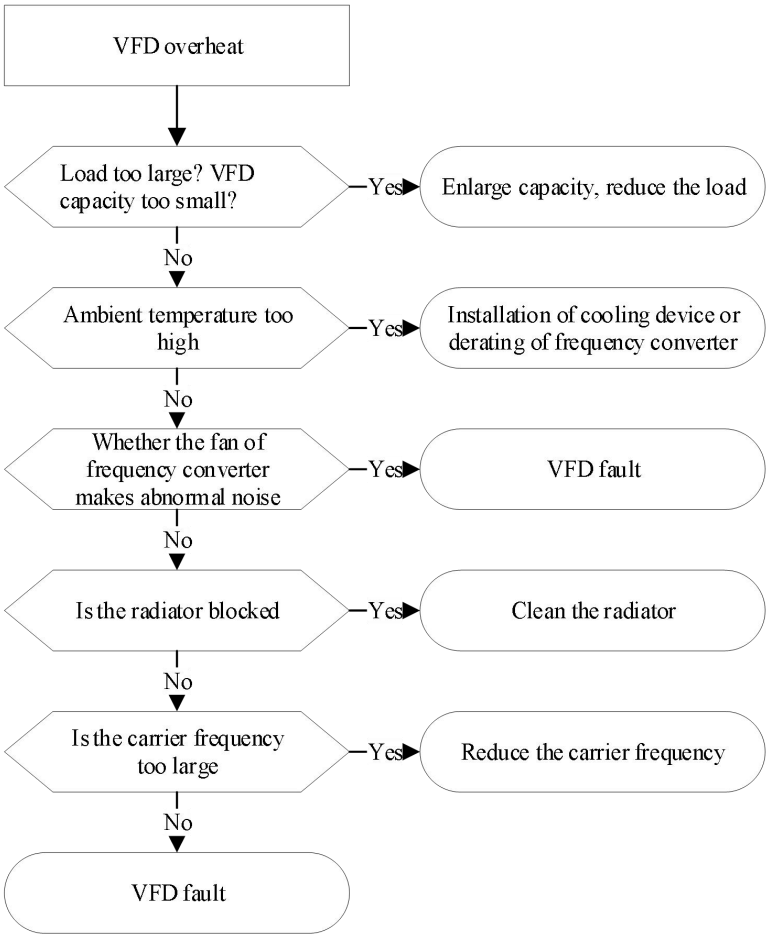
7.5.4 Abnormal motor heating



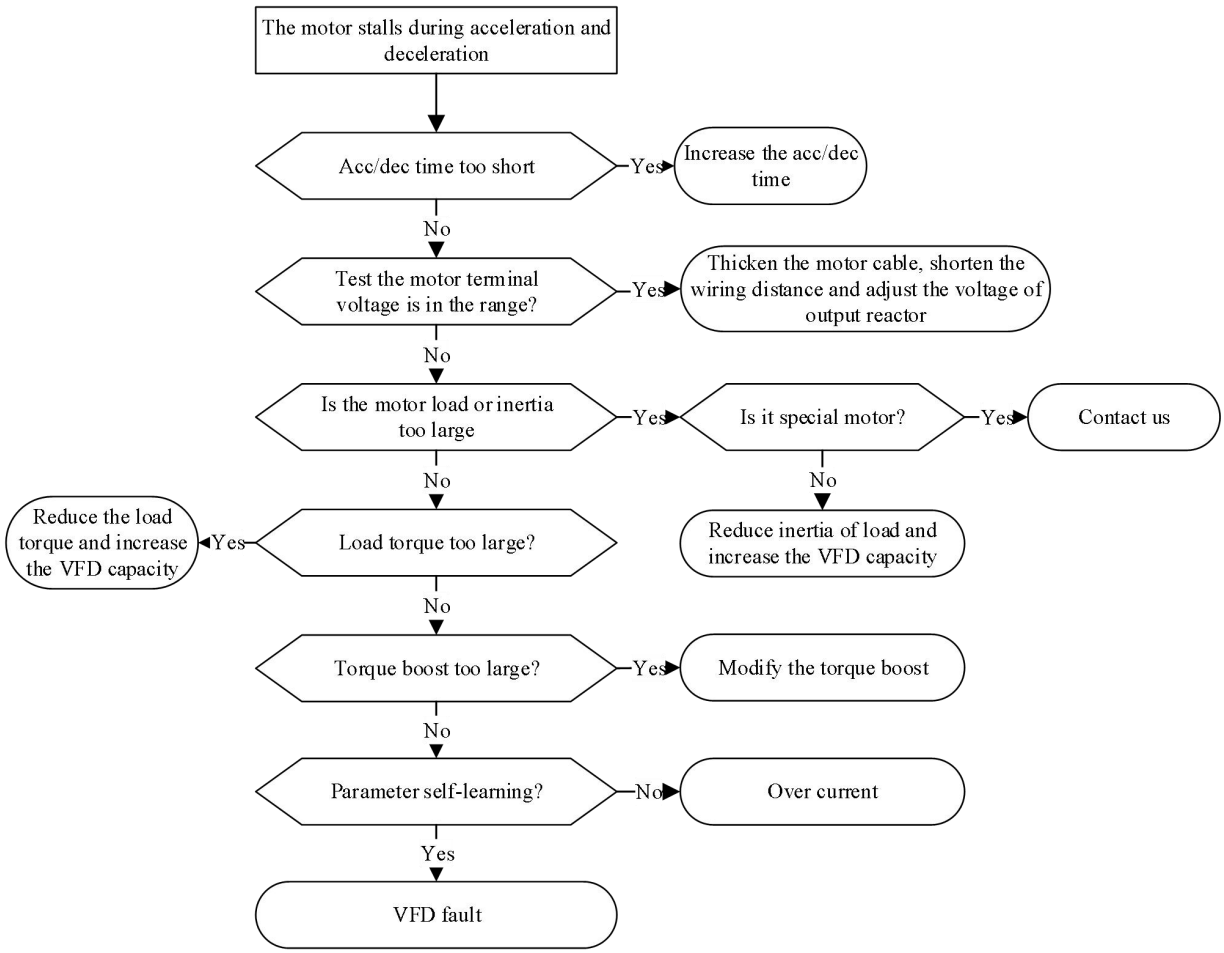
7..5.5 Over current



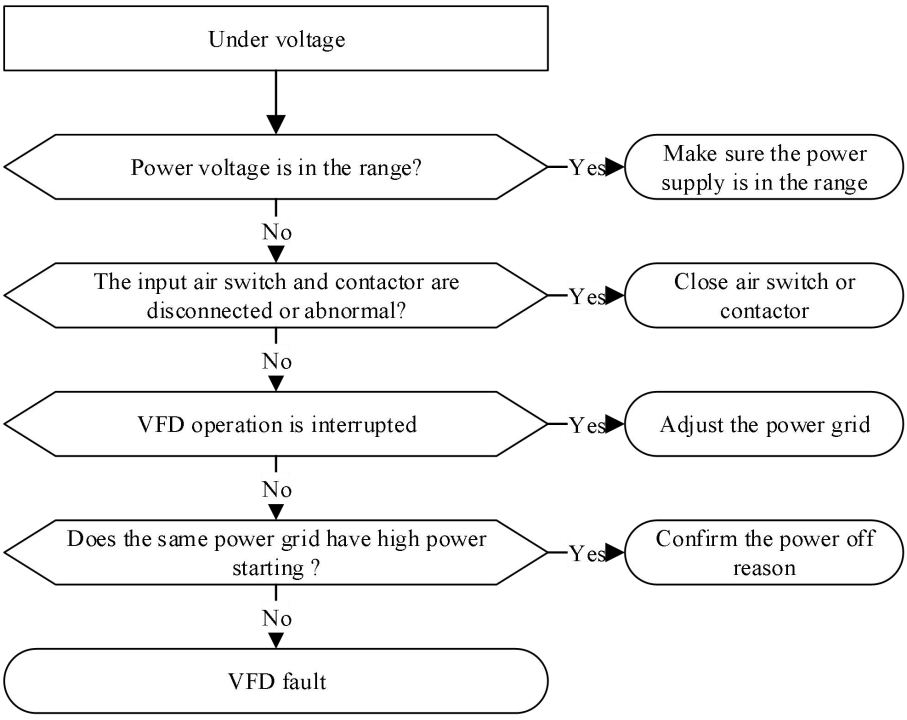
7.5.6 VFD overheat



7.5.7 Stalling of the motor during acceleration and deceleration



7.5.8 Under voltage fault



8. Maintenance and Care

8.1 Maintenance and Care

Changes in the operating environment of VFD—such as variations in temperature, humidity, and smoke exposure—as well as the aging of internal components may lead to various malfunctions. Therefore, routine inspections and periodic maintenance must be performed during storage and use.

8.1.1 Daily Maintenance

When the VFD is operating normally, please confirm the following:

- Is there any abnormal noise or vibration from the motor?
- Is the VFD and motor exhibiting abnormal heating?
- Is the ambient temperature too high?
- Is the load current meter reading the same as usual?
- Is the cooling fan of the VFD operating normally?

8.2 Regular Maintenance and Care

8.2.1 Regular Maintenance

During regular maintenance inspections of the VFD, the power supply must be disconnected. Inspection may only proceed after the monitor shows no display and the main circuit power indicator light has turned off. The inspection items are listed in the table below.

Inspection item	Scope of examination	Abnormal procedure
Screws for the main circuit terminals and control circuit terminals	Is the screw loose?	Tighten with a screwdriver
air-cooling fin	Is there any dust?	Blow off with dry compressed air at a pressure of 4–6 kg/cm².
PCB printed circuit board	Is there any dust?	Blow off with dry compressed air at a pressure of 4–6 kg/cm².
cooling fan	Are there any abnormal sounds or vibrations, with a cumulative operating time reaching 20,000 hours?	Replace the cooling fan
power component	Is there any dust?	Blow off with dry compressed air at a

		pressure of 4–6 kg/cm².
Aluminum electrolytic capacitor	Color change, odor, or blistering	Replace the aluminum electrolytic capacitor

8.2.2 Regular Maintenance

To ensure the inverter operates reliably over the long term, regular maintenance and upkeep must be performed based on the service life of its internal electronic components. The lifespan of these components varies depending on the operating environment and conditions. As shown in the table below, the recommended maintenance intervals are provided for users' reference only.

Device name	Standard replacement year
cooling fan	2 to 3 years
electrolysis condenser	4 to 5 years
printed circuit board	5 to 8 years
fuse	10 years

The operating conditions for the replacement intervals of the above inverter components are as follows:

- Environmental temperature: annual average of 30°C.
- Load factor: below 80%.
- Running time: less than 12 hours per day.

8.3 Inverter Warranty

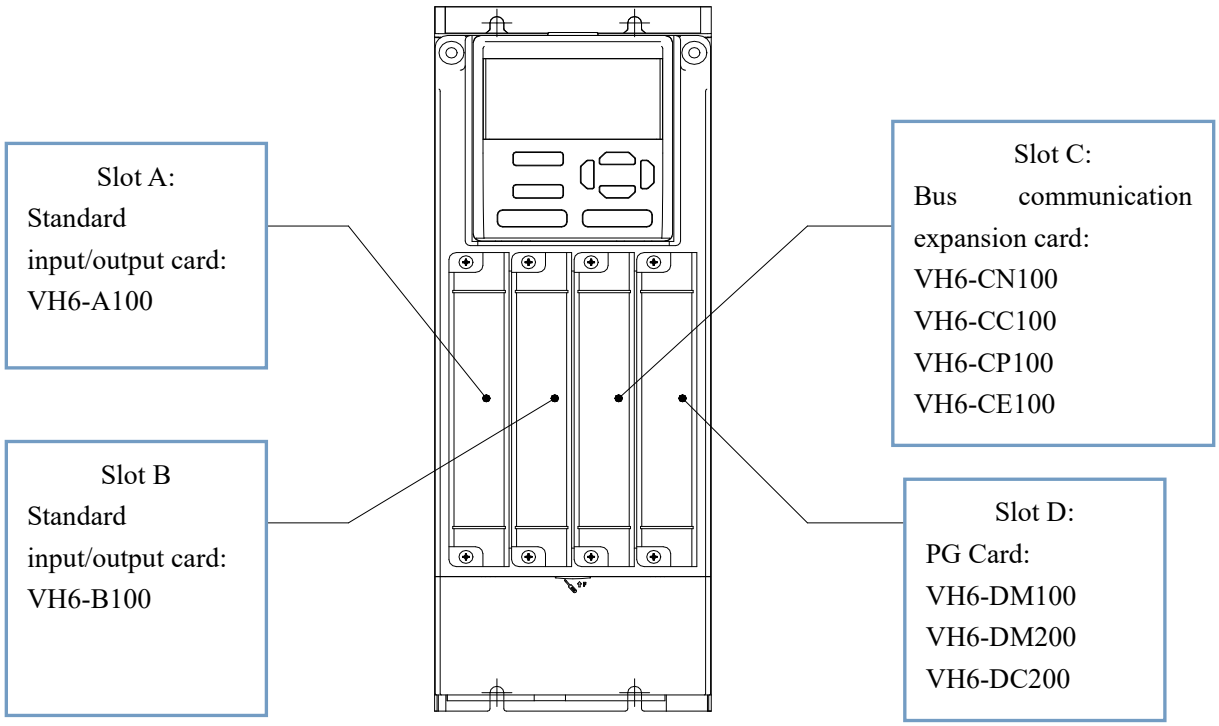
The company will provide warranty service under the following circumstances for the inverter:

- The warranty coverage applies only to the inverter itself.
- Under normal operating conditions, if the inverter fails or is damaged within 15 months, the company provides warranty coverage; for periods exceeding 15 months, reasonable repair costs will be charged.
- Within 15 months, a certain maintenance fee shall also be charged in the event of the following circumstances:
  - Failure to follow the operational steps outlined in the user manual may result in damage to the VFD.
  - Inverter damage caused by floods, fires, voltage abnormalities, etc.;
  - Inverter damage caused by connection line errors or similar issues;
  - Damages caused by the use of VFDs under abnormal operating conditions;
- Service fees are calculated based on actual costs. If a contract exists, the contract takes precedence.

Appendix

Appendix A. Extension Card

The VH6 series VFDs support a wide range of external expansion cards, enabling compatibility with various fieldbus protocols and encoder types. This chapter details the installation and usage of each expansion card.



expansion card naming rules

VH6 - CC 100
① ② ③

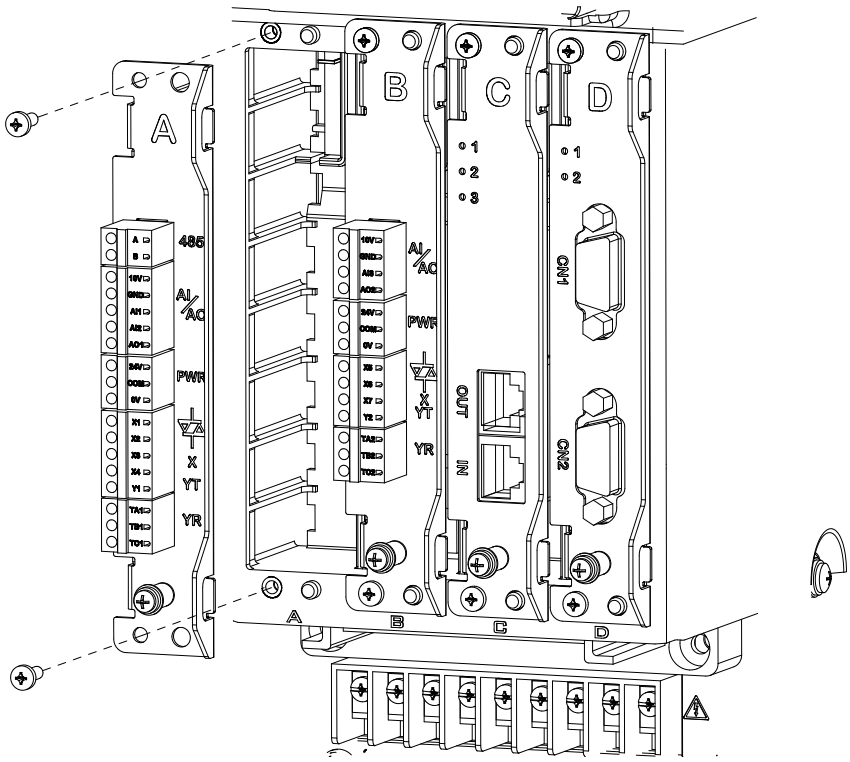
Field Identification	Field Detailed Explanation	
①	product line	VH6: Full-function closed-loop vector VFD
②	expansion card type	A: Standard input/output card B: Extended Input/Output Card CC: EtherCAT bus communication expansion card CN: CANopen bus communication expansion card CP: Profinet bus communication expansion card CE: Ethernet IP bus communication expansion card DM: Incremental Encoder Expansion Card DC: Tama River Agreement Communication Encoder PG Extension Card

Field Identification	Field Detailed Explanation	
③	Version Code	100: Version code 100 200: Version code 200

Appendix A-1. Description of the Expansion Card Functions

Model	Name	Functions and Specifications	Device Model
VH6-A100	Standard Input/Output Card	4 digital inputs, 1 digital output, 2 analog inputs, 1 analog output, 1 relay, 485 communication interface	The entire range of models
VH6-B100	Expand the input/output card	3 digital inputs, 1 digital output, 1 analog input, 1 analog output, 1 relay	The entire range of models
VH6-CN100	CANopen communication card	Supports the standard CANopen protocol	The entire range of models
VH6-CC100	EtherCAT Communication Card	Supports the EtherCAT protocol standard	The entire range of models
VH6-CP100	Profinet communication card	Supports the Profinet protocol standard	The entire range of models
VH6-CE100	Ethernet IP Communication Card	Supports the standard Ethernet IP protocol	The entire range of models
VH6-DM100	Multifunctional Incremental PG Card	Supports differential, NPN-type collector, and push-pull encoded signal inputs, as well as differential frequency division outputs.	The entire range of models
VH6-DM200	Simple Incremental PG Card	Supports differential, NPN-type collector, and push-pull encoded signal inputs; does not support frequency division output	The entire range of models
VH6-DC200	Simple Tama River Protocol Communication Encoder PG Card	Supports Tama River protocol encoded signal input; does not support frequency division output	The entire range of models

Appendix A-2. Installation Method for the Expansion Card



- Each slot of the VFD features an ABCD letter marker directly below it, indicating the slot type and corresponding to the ABCD letters on the expansion card. Proper installation and operation require that the letters on the expansion card match those below the corresponding converter slot.
- Each slot features an anti-mismatch mechanism, preventing improperly matched expansions from installing correctly.
- The screw post directly below the expansion card is used for grounding the expansion card.

Appendix A-3: Introduction to the IO Expansion Card

Appendix A-3-1: VH6-A100 (A-Slot IO Card)

1) Overview

The VH6-A100 is the standard expansion card included with the A-slot VFD upon factory delivery. Its I/O functions and number of channels meet the requirements for general field applications, featuring 1 485 communication channel, 2 AI channels, 1 AO channel, 4 bipolar input channels, 1 YT channel, and 1 YR channel.

2) Detailed specifications of VH6-A100

Class	Terminal	Name	Function Declaration
Power supply	24V-0V	+24V power supply	Provide a 24V power supply to terminal X; maximum output current: 200 mA; the 24V power supply at terminal X cannot be used externally.
	10V-GND	+10V power supply	Provide a +10V power supply with a maximum output current of 20 mA; It is generally used for speed control via an external potentiometer.
	COM	Power input terminal	When driving the X terminal with an internal power supply: The COM pin is shorted to 24V to form an NPN input; The COM and 0V are shorted to form a PNP input; When driving the X terminal with an external power supply: For the NPN-type input configuration, connect COM to the 24V+ power supply and disconnect it from the 24V terminal of the VFD unit. For the PNP-type input connection, connect COM to the power supply's 0V terminal and disconnect it from the inverter unit's 0V terminal.
Digital input terminal	X1	Digital input terminal 1	Optocoupler isolated input; compatible with bipolar input; Input impedance: R = 2 kΩ; Input voltage range: 9–30 V;
	X2	Digital input terminal 2	
	X3	Digital input terminal 3	
	X4	Digital input terminal 4	In addition to its features specified for X1-X3, it can also serve as a high-speed pulse input channel. Maximum frequency: 50 kHz;
Digital output terminal	Y1	Digital output terminal 1	open-collector output ； Output voltage range: 0–24 V; Output current range: 0–50 mA;
Relay output terminal	TA1 TB1 TC1	Relay 1	The programmable device is defined as a multi-functional relay output terminal. TA-TC: normally closed; TA-TB: normally open; Contact capacity: AC250V/2A (COSΦ=1)； AC250V/1A (COSΦ=0.4)； DC24V/1A；

Class	Terminal	Name	Function Declaration
Common terminal for analog input/output	GND	Enter AI/Output AO common port	Use in conjunction with AI/AO
read analogue input	AI1-GND	Analog input AI1	Select voltage/current input via the digital code switch; Input voltage range: 0–10 V (input impedance: 22 kΩ); Input current range: 0–20 mA (input impedance: 500 Ω);
	AI2-GND	Analog Input AI2	
Analog Output	AO1-GND	Analog Output AO1	Select voltage/current output via the digital code switch; Output voltage range: 0–10 V; Output current range: 0–20 mA;
communication	485+、485-	RS485 communication interface	Standard RS485 communication interface, using twisted pair or shielded cable;
DIP switch	S1	AI1	OFF = 0–10 V, ON = 0–20 mA. Factory default: OFF
	S2	AI2	OFF = 0–10 V, ON = 0–20 mA. Factory default: OFF
	S3	AO1	OFF = 0–10 V, ON = 0–20 mA. Factory default: OFF

Appendix A-3-2: VH6-B100 (B-Slot IO Card)

1) Overview

The VH6-B100 is an expansion card for the B slot of the VFD. When the functionality or number of input/output channels on the A slot fails to meet field requirements, this expansion card can be utilized. It features 1 AI channel, 1 AO channel, 3 bipolar input channels, 1 YT channel, and 1 YR channel.

2) Detailed specifications of VH6-B100

Class	Terminal	Name	Function Declaration
source	24V-0V	+24V power supply	Provide a 24V power supply to terminal X; maximum output current: 200 mA; the 24V power supply at terminal X cannot be used externally.
	10V-GND	+10V power supply	Provide a +10V power supply with a maximum output current of 50mA;
	COM	Power input terminal	When driving the X terminal with an internal power supply: The COM pin is shorted to 24V to form an NPN input; The COM and 0V are shorted to form a PNP input;

Class	Terminal	Name	Function Declaration
			When driving the X terminal with an external power supply: For the NPN-type input configuration, connect COM to the 24V+ power supply and disconnect it from the 24V terminal of the VFD unit. For the PNP-type input connection, connect COM to the power supply's 0V terminal and disconnect it from the inverter unit's 0V terminal.
Digital input terminal	X5	Digital input terminal 5	Optocoupler isolated input; Input impedance: R = 2 kΩ; Input voltage range: 9–30 V; Compatible with bipolar input;
	X6	Digital input terminal 6	
	X7	Digital input terminal 7	
Digital output terminal	Y2	Digital output terminal 2	open-collector output ； Output voltage range: 0–24 V; Output current range: 0–50 mA; It can output high-speed pulses at 50 kHz;
Relay output terminal	TA2 TB2 TC2	Relay 2	A programmable relay is defined as a multi-functional relay with output terminals. TA-TB: Always on; TA-TC: normally closed; Contact capacity: AC250V/2A (COSΦ=1)； AC250V/1A (COSΦ=0.4)； DC24V/1A；
read analogue input	AI3-GND	Analog Input AI3	Select voltage/PT100 input via the digital code switch; Input voltage range: -10V to 10V; Supports PT100 sensors;
Analog Output	AO2-GND	Analog Output AO2	Select voltage/current output via the digital code switch; Output voltage range: 0–10 V; Output current range: 0–20 mA;
DIP switch	S1	AI3	Set both S1 and S2 to OFF simultaneously: voltage range-10V to 10V S1 and S2 both set to ON: PT100 The default value upon factory shipment is OFF
	S2		
	S3	AO2	OFF = 0–10 V, ON = 0–20 mA. Factory default: OFF

Appendix A-4: Introduction to the Communication Expansion Card

Appendix A-4-1: VH6-CC100 (EtherCAT communication card)

1) Overview

EtherCAT is an Ethernet-based, open-architecture fieldbus system that sets new standards for real-time performance and topology flexibility, while also reducing or even eliminating fieldbus implementation costs. The VH6-CC100 is an extension interface card specifically designed by XJ Company for the EtherCAT protocol, tailored for XJ VFDs. This card enables XJ converters to connect to internationally standardized EtherCAT networks and operate as slaves.

2) Stitch Definition

The VH6-CC100 expansion card features two network ports, with their pin configurations shown in the table below:

Terminal number	Name	Function
1	TX A+	Data sent +
2	TX A-	Data Send-
3	RX A+	data acceptance +
4	empty	-
5	empty	-
6	RX A-	data acceptance -
7	empty	-
8	empty	-

For detailed guidance, please visit the XINJE Electric official website (www.XINJE.com) under Services & Support> Download Center to download the "VH6 Inverter EtherCAT Expansion Card User Manual".

Appendix A-4-2: VH6-CN100 (CANopen communication card)

1) Overview

CANopen is the application-layer protocol defined under the international CAN fieldbus standard. The VH6-CN100 is an extension interface card specifically designed by XJ Company for the CANopen protocol, tailored for XJ VFDs. This card enables XJ VFDs to connect to internationally standardized CANopen networks and operate as slaves.

2) Stitch Definition

The VH6-CN100 expansion card features two network ports, with their pin configurations shown in the table below:

Terminal number	Name	Function
1	CAN_H	Connect to the positive terminal of the CAN bus
2	CAN_L	Connect to the negative terminal of the CAN bus
3	CGND	Connect the reference ground to all CAN nodes
4~10	empty	empty

3) Decoding Switch Description

ON: Connected to a 120Ω terminal resistor
OFF: Not connected to the 120Ω terminal resistor

For detailed guidance, please visit the XINJE Electric official website (www.XINJE.com) under Services & Support> Download Center to download the "VH6 Inverter CANopen Expansion Card User Manual".

Appendix A-5. Introduction to the Encoder Expansion Card

Appendix A-5-1: VH6-DM100 (Multifunctional Incremental PG Card)

1) Overview

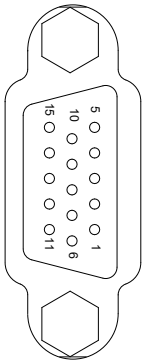
The VH6-DM100 is used for feedback of motor speed and direction detection signals in VFDs, enabling more precise control of motor speed, direction, and torque. It features differential and push-pull inputs, collector signal inputs, differential and collector frequency division outputs, with encoder input signals isolated by optocouplers, providing strong anti-interference performance.

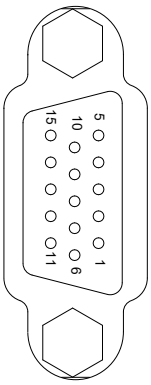
2) Detailed specifications of VH6-DM100

Project	Class	Specifications
import	Encoder input interface type	Collector, push-pull, differential
	Encoder input frequency	Collector frequency: 200 kHz; Differential frequency: 500 kHz
	Pulse input type	Collector, Differential
	Pulse Command Pattern	Pulse + direction, AB phase, CW/CCW
output	Frequency division output signal type	Differential
	Frequency Division Factor	The frequency division factor can be set from 0 to 255.
source	Encoder power supply	5V/200MA，12V/100MA
cable	Cable Specifications	16~26AWG
connect	CN1 Encoder Signal Input Interface	DB15 Mother Head
	CN2 pulse input and encoder signal	DB15 Mother Head

Project	Class	Specifications
	frequency division output interface	

3) Stitch Definition

CN1 Encoder Signal Input				
Pin diagram	Needle size	Definition	Needle size	Definition
	1	Encoder input A+	9	empty
	2	Encoder input A-	10	Encoder input Z-
	3	Encoder input B+	11	empty
	4	Encoder input B-	12	The encoder is powered by 5V/12V.
	5	Encoder input Z+	13	empty
	6	Encoder power supply: 0V	14	empty
	7	The encoder is powered by 5V/12V.	15	empty
	8	empty		

CN2 pulse input and encoder signal split-frequency output				
Pin diagram	Needle size	Definition	Needle size	Definition
	1	Frequency division output OZ-	9	empty
	2	Frequency division output OB-	10	24V pulse input PLA
	3	Frequency division output OB+	11	5V pulse input RA+
	4	Frequency division output OA-	12	5V/24V pulse input RA-
	5	Frequency division output OA+	13	5V/24V pulse input RB-
	6	Frequency division output OZ+	14	5V pulse input RB+
	7	empty	15	24V pulse input PLB
	8	empty		

4) LED light status

The VH6-DM100 expansion card features two LED lights that display its current status, with their functions detailed in the table below:

Pilot Lamp	Meaning	Pigment	State	Function Indicator
LED1	Encoder input signal quality indicator light	red	Always Off	The encoder signal is highly stable, free from interference, with no external disturbances and consistent speed.
			2Hz	The encoder signal exhibits slight instability, with

Pilot Lamp	Meaning	Pigment	State	Function Indicator
			flicker	minimal external interference or during motor acceleration/deceleration processes.
			Always On	The encoder signal is severely unstable, with significant external interference, or the motor is undergoing rapid acceleration and deceleration.
LED2	PG Card Operation Indicator Light	green	Always On	The PG card system is functioning normally.
			Always Off	The PG card system is malfunctioning and has stopped working.

5) The VH6-DM100 digital switch is defined as shown in the table below:

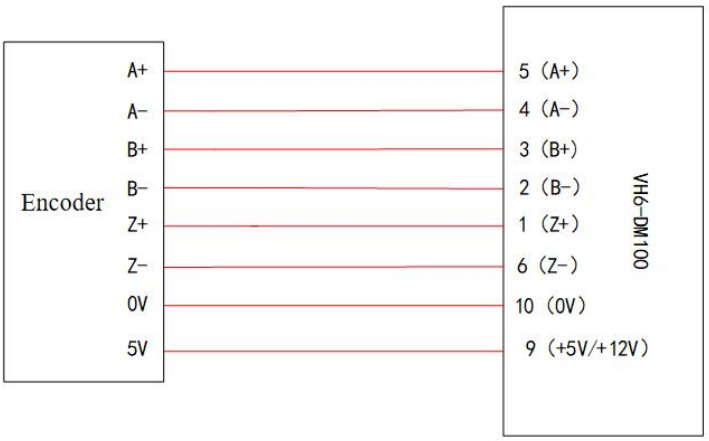
Dial-up	Meaning	Dial direction	Meaning
S1	Selection of power supply for the encoder	+5V	+5V encoder power supply
		+12V	+12V encoder power supply
S2	Encoder input type selection	A	Differential
		B	collector

6) VH6-DM100 CN1 encoder input wiring:

- The collector power supply wiring is set to 5V/12V (the S1 DIP switch must be adjusted to the corresponding position, and set the S2 DIP switch to position B).

Collector 5V/12V connection method

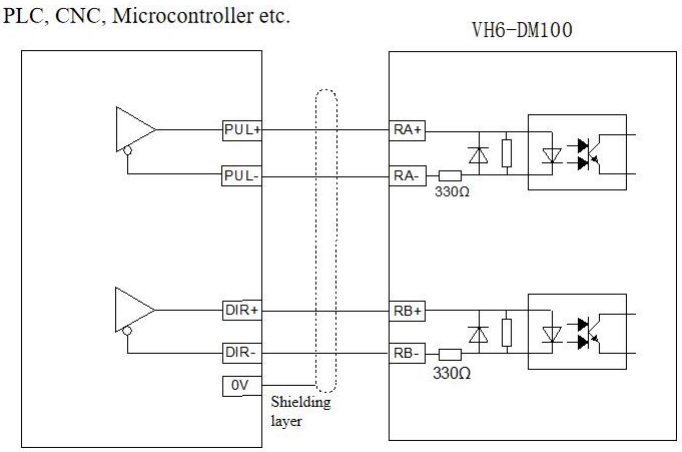
- Differential 5V power supply wiring (the S1 dial code must be set to the 5V position, and set the S2 DIP switch to position A)



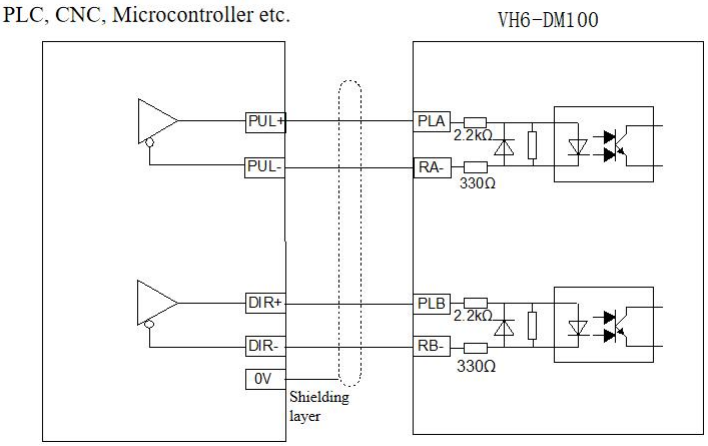
Differential 5V connection method

7）Wiring for VH6-DM100 CN2 pulse input and encoder signal split-frequency output:

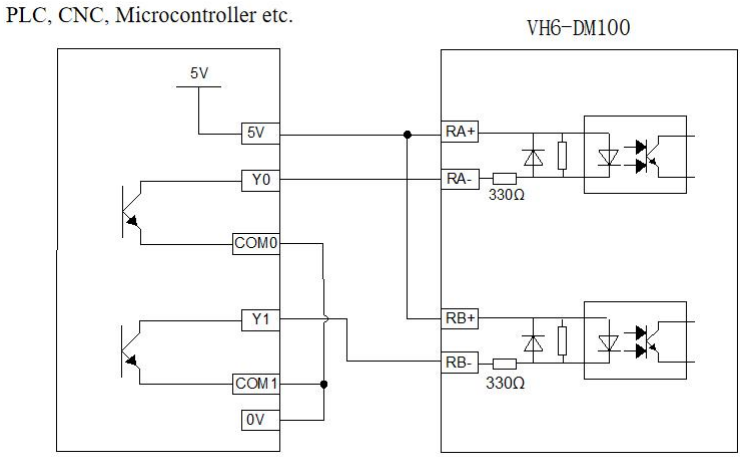
- 5V differential pulse input wiring



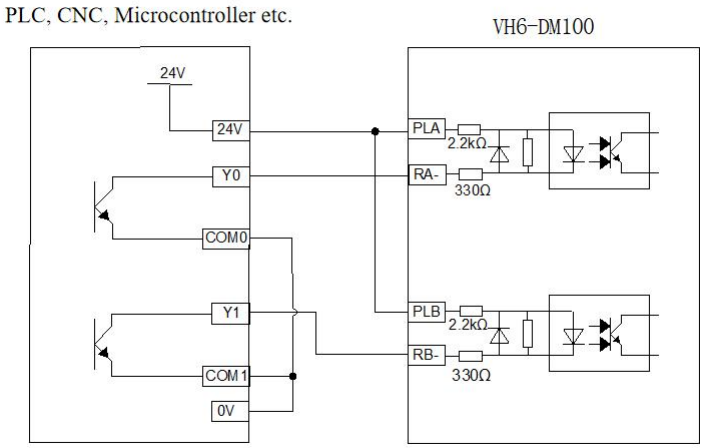
- 24V differential pulse input wiring



- 5V collector pulse input wiring

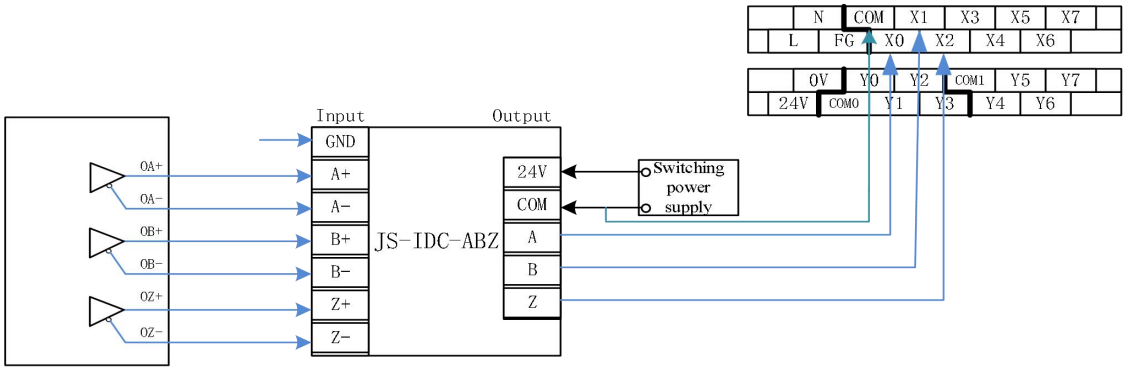


- 24V pulse input wiring



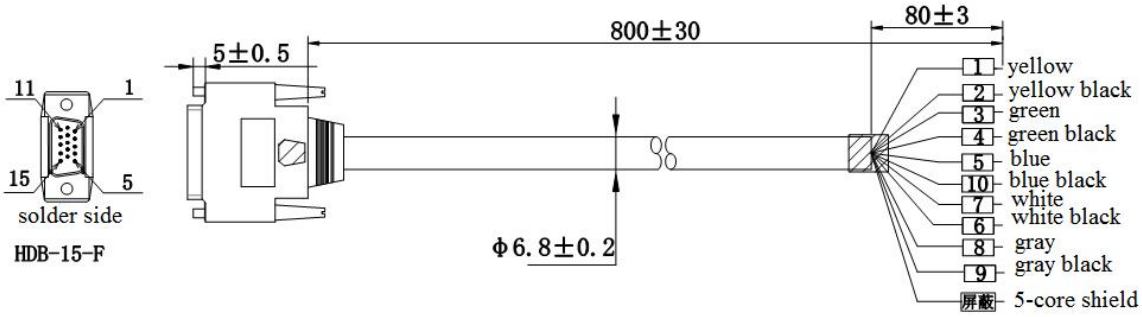
- Encoder signal frequency division output wiring

The encoder frequency division output circuit generates differential signals via a differential driver. When used in conjunction with the JS-IDC-ABZ differential board, it provides closed-loop feedback signals for the host device when implementing a position control system.



8）PG Card Wiring

The VH6-DM100 PG card comes standard with a 10-core cable, allowing users to easily connect the field encoder signal to the PG card.



The user needs to define and encode the encoder's signal pins based on the following wire colors and pin numbers.

CN1 Encoder Signal Input Port					
Pin Number	Color	Function Definition	Pin Number	Color	Function Definition
1	yellow	A+	7	White	5V/12V Power Supply
2	Yellow-Black	A-	8	Gray	empty
3	Green	B+	9	Gray-Black	empty
4	Green-Black	B-	10	Blue-Black	Z-
5	Blue	Z+	Iron Shell Wide Face	Shield	shield
6	White-Black	0V			

Appendix A-5-2: VH6-DM200 (Simplified Incremental PG Card)

1) Overview

The VH6-DM200 provides feedback signals for the inverter to detect motor speed and direction, enabling more precise control of the motor's speed, direction, and torque. It supports differential, push-pull, and NPN-type collector signal inputs, with encoder input signals isolated by optocouplers, ensuring strong anti-interference performance.

2) Detailed specifications of VH6-DM200

Class	Specifications
Encoder input interface type	NPN-type collector, push-pull configuration, differential
Encoder power supply	5V/200MA，12V/100MA
Encoder input frequency	NPN collector: 200 kHz; differential: 500 kHz
wire gage	16-26AWG
Encoder input interface	DB15 Mother Head
Frequency Division Factor	Frequency division is not supported

3) The VH6-DM200 digital switch is defined as shown in the table below:

Dial-up	Meaning	Dial Direction	Meaning
ON1	Selection of power supply for the encoder	+5V	+5V encoder power supply
		+12V	+12V encoder power supply
ON2	Encoder input type selection	S1	single-ended
		S2	Differential

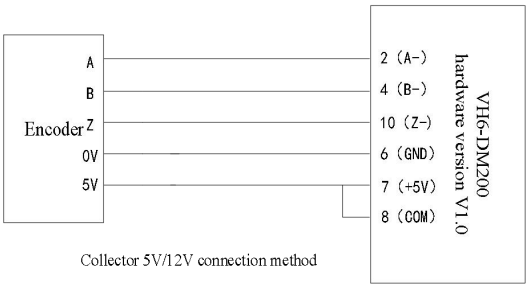
4) Stitch Definition

CN1 Encoder Signal Input Port		
Needle size	Definition	Explain
1	A+	The differential input A signal of the encoder is positive.
2	A-	The differential input A signal of the encoder is negative.
3	B+	The differential input B signal of the encoder is positive.
4	B-	The differential input B signal of the encoder is negative.
5	Z+	The differential input Z signal of the encoder is positive.
6	GND	Encoder power supply ground
7	+5V/+12V	5V /12Vpower supply for the encoder
8	COM	Common terminal of the collector input
9	empty	-
10	Z-	The differential input Z signal of the encoder is negative.

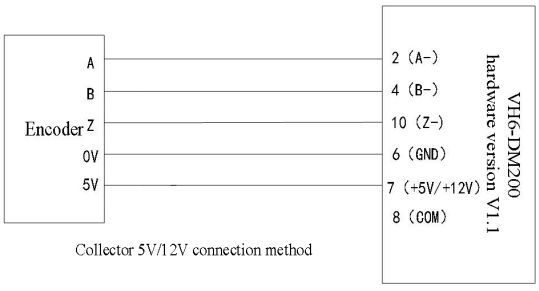
Here are the precautions users should take when using PG cards:

(1) Regarding the power supply method for the encoder

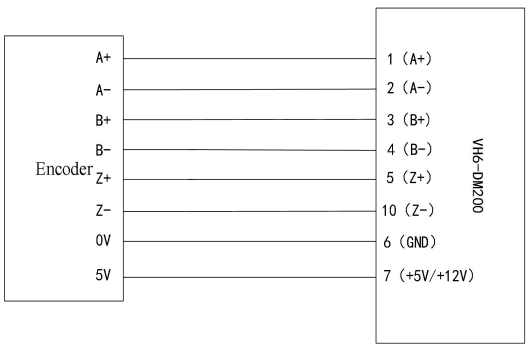
Common encoders support 5V and 12V power supply options.
When the encoder is powered by a DC 5V/12V power supply:
The user can power the device directly using either the PG card power supply or an external switching power supply. When using a 5V collector (single-ended) connection, pins 7 and 8 must be shorted (for PG hardware version V1.1, this step is omitted; instead, set the rotary switch to the 5V terminal). Connect the encoder's power supply to pin 7 of CN1 and its GND to pin 6 of CN1. For a differential 5V configuration, connect the encoder's power supply to pin 7 of CN1 and its GND to pin 6 of CN1.



Collector 5V/12V connection method



Collector 5V/12V connection method



差分5V/12V接法

(2) Introduction to the wiring methods for single-ended and differential encoders when connected to PG cards

- Differential connection method: Connect the encoder's output signals to A+, A-, B+, B-, Z+, and Z-on the PG card respectively.
- Collector (single-ended) connection method: Connect the encoder's output signal to A-, B-, and Z-.
- If the encoder lacks a Z signal, it may be omitted.
- The wiring method for the differential 5V encoder is identical for both PG card versions V1.0 and V1.1.

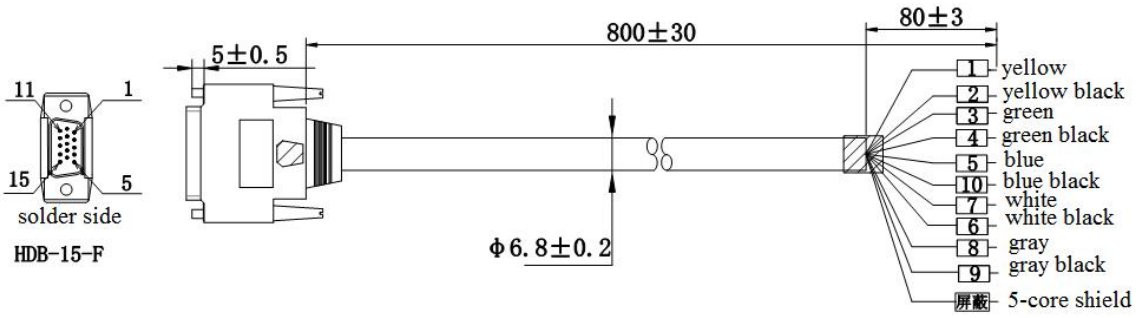
(3) Introduction to methods for enhancing the anti-interference capability of PG cards in environments with significant on-site interference

Method ①: Connect one end of the shielding layer to the PE terminal of the VFD;
Method ②: Separate the encoder signal lines from the power lines during routing.

For PG hardware version V1.1, the PG card features +5V and +12V dip switches. Select the appropriate voltage value based on the encoder's power supply voltage; pins 7 and 8 do not require shorting.

5) PG card wiring

The VH6-DM200 PG card comes standard with a 10-core cable, enabling users to easily connect field encoder signals to the PG card.



The user must connect the encoder's signal pins according to the following wire colors and pin numbers:

CN1 Encoder Signal Input Port					
Needle size	Pigment	Function definition	Needle size	Pigment	Function definition
1	Huang	A+	7	white	5V/12V power supply
2	Yellow and Black	A-	8	Gray	Common source of the collector input
3	Green	B+	9	Gray-black	empty
4	Green and Black	B-	10	bluish dark color	Z-
5	Lan	Z+	Iron Shell	shield	shield

CN1 Encoder Signal Input Port					
Needle size	Pigment	Function definition	Needle size	Pigment	Function definition
			Wide Face		
6	Black and White	0V			

Appendix A-5-3: VH6-DC200 (Simplified Tama River Protocol Communication Encoder PG Card)

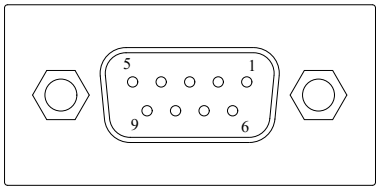
1) Overview

The VH6-DC200 provides feedback signals for the inverter to monitor the motor's speed and direction, enabling more precise control of the motor's speed, direction, and torque.

2) Detailed Specifications of VH6-DC200

Class	Specifications
Encoder input interface type	RS485
Encoder power supply	5V
Communication Frequency	Communication frequency ≤ 16 kHz
Baud rate	2.5Mbps
Encoder input interface	DB9 Mother Head
Frequency Division Factor	Frequency division output is not supported

3) Pin Definition

Pin diagram	Needle size	Definition
	1	empty
	2	empty
	3	485-
	4	485+
	5	PEGND
	6	GND
	7	GND
	8	5V
	9	5V

Appendix B. Communication Protocol

Appendix B-1. Overview of the Communication Protocol

Our series of VFD provide users with the widely adopted RS485 communication interface for industrial control. Utilizing the MODBUS standard protocol, these converters can communicate as slaves with host devices (such as PLC controllers or PCs) that share the same communication interface and protocol, enabling centralized monitoring of the converters. The communication port also supports remote control keyboards, allowing users to operate the converters remotely.

This VFD supports both RTU and ASCII modes of its MODBUS communication protocol. The following provides a detailed description of the converter's communication protocol.

Appendix B-2: Description of the Communication Protocol

Appendix B-2-1. Communication Protocol Method

This VFD can operate as a slave device in an RS485 network, while a PC or PLC can serve as the master unit to control its operation. The specific communication protocol is as follows:

(1) The VFD acts as a slave device, operating in master-slave point-to-point communication mode. When the master device sends commands via broadcast address, the slave device should not respond.

(2) Users can configure the inverter's local address, baud rate, and data format via keyboard or serial communication.

(3) The slave device reports the current fault information in the response frame from the latest host polling.

Appendix B-2-2. Communication Interface Method

The communication uses an RS485 interface with asynchronous serial and half-duplex transmission. The default data format consists of: 1 start bit, 8 data bits, and 1 stop bit.

The default rate is 19200 bps; refer to Group P9 for communication parameter settings.

Appendix B-3: Modbus Communication Protocol

Appendix B-3-1. Character Structure

RTU (1 - 8 - 2, no parity)

Start bit	0	1	2	3	4	5	6	7	Stop bit	Stop bit

RTU (1 - 8 - 1, odd parity)

Start bit	0	1	2	3	4	5	6	7	Odd parity	Stop bit

RTU (1 - 8 - 1, even parity)

Start bit	0	1	2	3	4	5	6	7	Even parity	Stop bit

RTU (1 - 8 - 1, no parity)

Start bit	0	1	2	3	4	5	6	7	Stop bit

ASCII (1－7－1, even parity) (supported in versions 3742 and above)

Start bit	0	1	2	3	4	5	6	Even parity	Stop bit

Appendix B-3-2: Structure of Contact Information

1) Data Structure

- RTU pattern

START	Maintain no input signal for ≥10 ms
Address	Address: 8-bit binary address
Function	Function code: 8-bit binary address
DATA（n-1）	Data content: N×8-bit data, where N≤8, with a maximum of 8 bytes
……	
DATA 0	
CRC CHK Low	CRC check code
CRC CHK High	The 16-bit CRC check code consists of two 8-bit binary combinations.
END	Maintain the input/output signal duration ≥10 ms

- ASCII pattern

START	1 character: Maintain no input signal for ≥10 ms
Address	Address: An ASCII character containing two hexadecimal characters
Function	Function code: An ASCII character containing two hexadecimal characters
DATA（n-1）	Data content: N×8-bit data, where N≤7, with a maximum of 7 data bits
……	

DATA 0	
LRC CHK	An LRC check code consists of two ASCII characters in hexadecimal format.
END	2 characters CR, LF Maintain the input/output signal duration ≥10 ms

2) Mailing Address

00H: Broadcast by all inverters

01H: Communication with the 01 address inverter.

0FH: Communication with the 15-channel VFD.

10H: Communicates with the 16-bit address inverter. The same logic applies sequentially, supporting up to 254 addresses (FEH).

3) Function Code (Function) and Data Content (DATA)

FC	Explain
03H	Read the contents of registers. You can read the contents of multiple registers, but no more than 12 at a time; each read operation can only access data within the same register group.
06H	Write one piece of data to the register
08H	Loop Detection

(1) Function code 03H: Read register content

For example: Read the content of register address 7000H (operating frequency).

RTU pattern ：

Information query format		Response message format	
address	01H	address	01H
FC	03H	FC	03H
Register address	70H	Byte count	02H
	00H		
Number of registers	00H	Data Content	00H
	01H		00H
CRC CHECK Low	9EH	CRC CHECK Low	B8H
CRC CHECK High	CAH	CRC CHECK High	44H

(2) Function code 06H: Write one piece of data to the register

For example: Write 100.00 Hz to VFD address 1000H. When the maximum output frequency P0-13 is 100 Hz, the data content is written as follows:

RTU pattern ：

Information query format		Response message format	
address	01H	address	01H
FC	06H	FC	06H

Information query format		Response message format	
Register address	10H	Register address	10H
	00H		00H
Data Content	27H	Data Content	27H
	10H		10H
CRC CHECK Low	97H	CRC CHECK Low	97H
CRC CHECK High	36H	CRC CHECK High	36H

(3) Command code: 10H writes data to multiple registers (supported in versions 3730 and above)

For example: Write 1 to address 0001H (P0-01) and write 2 to address 0002H (P0-02) in the VFD.

RTU pattern ：

Information query format		Response message format	
address	01H	address	01H
FC	10H	FC	10H
Register address	00H	Register address	00H
	01H		01H
Number of registers	00H	Number of registers	00H
	02H		02H
Number of bytes written	04H (2 * number of registers)	CRC CHECK Low	10H
Write the high bit of data 1	00H	CRC CHECK High	08H
Write the low bits of data 1	01H		
Write the high bit of data 2	00H		
Write the low bits of data 2	02H		
CRC CHECK Low	E2H		
CRC CHECK High	62H		

(4) Command code: 08H Communication Loop Test (not supported currently)

This command tests whether the communication between the master device and the VFD is functioning properly. The VFD sends the received data unchanged to the master device.

RTU pattern ：

Information query format		Response message format	
address	01H	address	01H
FC	08H	FC	08H
content	01H	content	01H
	02H		02H
	03H		03H
	04H		04H
CRC CHECK Low	41H	CRC CHECK Low	41H

CRC CHECK High	04H	CRC CHECK High	04H

4) Verification Code

RTU mode: two-byte hexadecimal number.

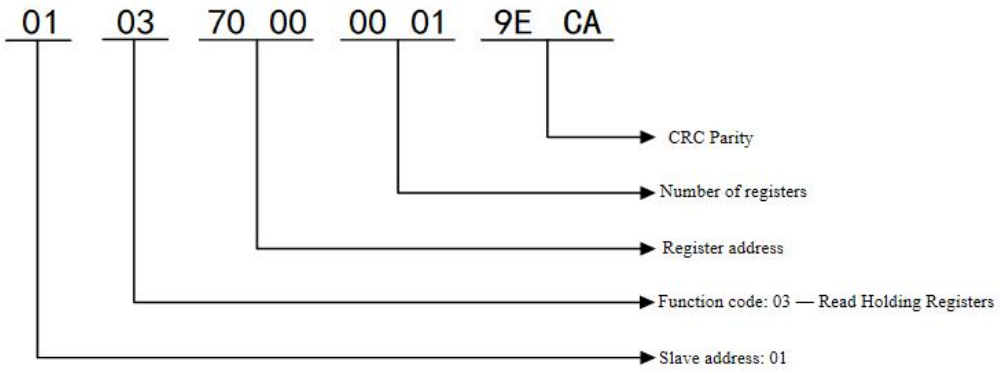
The CRC field is a two-byte structure containing a 16-bit binary value. Calculated by the sender, it is appended to the message with the lower byte added first and the upper byte followed; consequently, the high byte of the CRC represents the final byte of the transmitted message. The receiver recalculates the CRC of the received message and compares it with the value in the CRC field. If the two values differ, the message is deemed erroneous, discarded without any response, and the receiver proceeds to receive the next data frame.

The LRC field is a byte containing an 8-bit binary value. The LRC value is calculated by the transmitting device and included in the message frame. Upon receiving the message, the receiving device calculates its own LRC value and compares it with the value in the LRC field of the received message. If the two values differ, an error is detected. The LRC check is relatively simple; it is implemented in the ASCII protocol and examines the content of the message field, excluding the colon at the beginning and the end-of-line carriage return character.

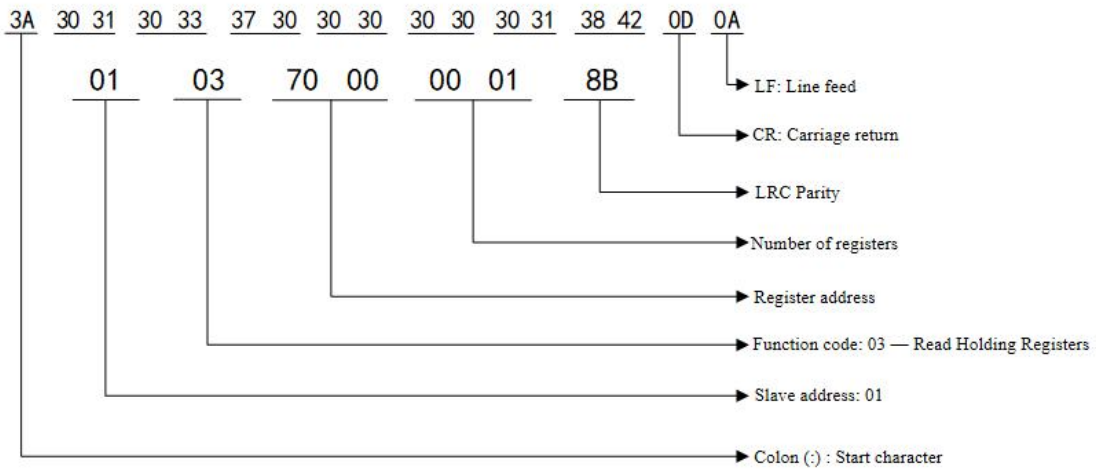
In ASCII mode, each 8-bit byte is split into two ASCII characters for transmission. For example, the hexadecimal number 0x03 is decomposed into the ASCII characters "0" and "3", corresponding to the ASCII codes 0x30 and 0x33 (binarily 00110000 and 00110011). This doubles the character throughput compared to RTU mode. In RTU mode, each byte can transmit one hexadecimal character; thus, the hexadecimal number 0x33 is sent directly as 0x33 (binarily 00110011), achieving twice the transmission efficiency of ASCII mode.

For example: Read the content of register address 7000H (operating frequency).

RTU mode data transmission: 01 03 70 00 00 01 9E CA



ASCII data transmission: 3A 30 31 30 33 37 30 30 30 30 30 30 31 38 42 0D 0A (01 03 70 00 00 01 8B)



5) Common ASCII Code Correspondence Table

Binary system	Decimal system	Hexadecimal	Character	Binary system	Decimal system	Hexadecimal	Character
0000 1101	13	0D	CR（carriage return）	0011 1000	56	38	8
0000 1010	10	0A	LF（line feed）	0011 1001	57	39	9
0011 0000	48	30	0	0011 1010	58	3A	:
0011 0001	49	31	1	0100 0001	65	41	A
0011 0010	50	32	2	0100 0010	66	42	B
0011 0011	51	33	3	0100 0011	67	43	C
0011 0100	52	34	4	0100 0100	68	44	D
0011 0101	53	35	5	0100 0101	69	45	E
0011 0110	54	36	6	0100 0110	70	46	F
0011 0111	55	37	7				

Appendix B-3-3. Communication Protocol Parameter Address

1) The communication addresses for functional code parameters are shown in the table below, where the high bit represents the group number and the low bit represents the parameter sequence number.

Parameter group	Power-off address retention	No address saved after power loss
P0 ~ PF	0x0000 ~ 0x0FFF	0x3000 ~ 0x3FFF
A0 ~ AF	0xA000 ~ 0xAFFF	0x4000 ~ 0x4FFF
U0	0x7000~0x70xx	

- When reading function code data for communication

  For the functional code data of Group P and Group A, the upper 16 bits of the communication address represent the group number, while the lower 16 bits directly indicate the sequence number of the functional code within the functional group. For example:
  The P0-16 functional parameters have a communication address of 0x0010, where 00 denotes the P0 group functional parameters, and 10 represents the hexadecimal data format for the function code at position 16 within the functional group.
  The A0-15 function parameters have a communication address of 0xA00F, where A0 denotes the A0 group of function parameters, and 0F represents the hexadecimal data format for function code number 15 within the function group.

- When writing function code data for communication

  For the P-group function code data, the high 16 bits of the communication address are categorized as either 0x0000–0x0FFF or 0x3000–0x3FFF depending on whether they are written to the EPPROM; the low 16 bits directly represent the sequence number of the function code within the function group. For example:
  Write functional parameters P0-16:
  When no data needs to be written to the EPPROM, its communication address is 0x3010.
  When writing to the EPPROM, the communication address is 0x0010.

  For Group A function code data, the high 16 bits of the communication address are categorized as either 0xA000–0x0FFF or 0x4000–0x4FFF depending on whether they are written to the EPPROM; the low 16 bits directly represent the sequence number of the function code within the function group. For example:
  Write functional parameters A0-15:
  When no writing to the EPPROM is required, its communication address is 0x400F.
  When writing to the EPPROM, the communication address is 0xA00F.

2) Non-functional code

Definition	Modbus address	Function declaration	Remarks
Communication Settings	1000H	Communication Frequency	write
control command	1100H	1: Forward rotation 2: Reverse Operation 3: Forward point movement 4: Reverse Dot Motion 5: Reduce speed and stop the machine 6: Free shutdown 7: Fault Reset	write
Digital output terminal control	1101H	bit0: Y1 output control bit1: Y2 output control bit2: retained bit3: RELAY1 output control bit4: RELAY2 output control	write
Y2 High-Speed Pulse Transmission Control	1102H	0~7FFF representation 0%~100%	write
Analog output AO1	1103H	0~7FFF representation 0%~100%	write
Analog AO2 output	1104H	0~7FFF representation 0%~100%	write
Given torque (Supports version 3730 and above)	1105H	0~1000 represents 0.0%~100.0%	write
running state	1200H	1: Forward rotation 2: Reverse Operation 3: Shutdown	a slight pause in reading
Inverter failure	1210H	000H: None 0001H: Acceleration over-current 00002H: Speed reduction circuit 0003H: Constant-speed over-current 0004H: Acceleration over-voltage 0005H: Deceleration over-voltage 0006H: Constant-speed over-voltage 0007H: Buffer resistor overload fault 0008H: Low voltage fault 0009H: Inverter overload 000AH: Motor overload 000BH: Input phase missing 000CH: Output phase loss 000DH: Radiator overheating 000EH: Contactor fault 000FH: Current detection failure 0010H: Motor tuning fault 0011H: Disk drive failure 0012H: Motor ground short-circuit fault	a slight pause in reading

Definition	Modbus address	Function declaration	Remarks
		0014H: Wave-by-wave current limiting fault 0015H: Magnetic pole position detection failed 0016H: UVW signal feedback error 0017H: Brake resistor short circuit 001AH: SVC stall fault 0023H： The synchronous machine is operating with tuned faults. 0025H：Encoder battery voltage low fault 002BH: External Fault 002CH: Communication (Timeout) Fault 002DH: EEPROM read/write failure 002EH: Run time reached 002FH: Power-on time reached 0030H: User-defined fault 1 0031H: User-defined fault 2 0032H: PID feedback loss during operation 0033H: Switch motor during operation 0034H: Large speed deviation 0035H: Motor overspeed 0036H: Motor overheating 0038H： The power-on lock time has reached 1 0039H：The power-on lockout time has reached 2 003AH：The power-on lockout time has reached 3. 003FH： Main spindle stop signal disconnection fault 0046H：PID line break fault 0047H：STO Asynchronous Failure	

When the communication frequency is specified (P0-03 = 6), the corresponding communication frequency address is fixed at 1000H $Frequency\ (\text{Hz}) = \frac{Data \times \text{P0-13}}{10000}$. The Data parameter can be either a register value or a direct numerical value. Users can calculate the specified Data value using this formula when employing the 485 communication frequency; the Data range is 0–10000, corresponding to 0.00–100.00%, with the unit being the maximum output frequency of (P0-13). Values exceeding this specified range cannot be written. Users can calculate the specified Data value using this formula when utilizing the 485 communication frequency.

For example: Set the maximum output frequency for P0-13 to 50 Hz and write 10000 to address H1000 corresponding to this frequency. The actual displayed frequency value on the panel will be 100.00 × 50% = 50 Hz.

If a user password is set: After entering the correct password, perform a read operation within 30 seconds; otherwise, you will need to rewrite it.

The H1000 retains data during power loss. If the supply voltage is too low or the write operation duration is too short, the H1000 may lose its memory upon power failure.

Manual Update Log

Order Number	File Number	Change Content
1	INV C 04 20200826 1.0	First edition released
2	INV C 04 20210114 1.0	1. Updates to Appendices and Other Content
3	INV C 04 20210319 1.0	1. Chapters 2–4 have been revised; 2. Parameter modifications for Chapters 4-1, P0-03, P3-05, P6-04, and P6-05; 3. Amendments to Chapters 4-2-3 and 4-2-9
4	INV C 04 20210407 1.0	1. Revision of Chapter 4-2-1
5	INV C 04 20210714 1.1	1. Added relevant documentation for VH6S; 2、 Changes to the main circuit terminal diagram in Chapter 2-3-2; 3. Introduction to the newly added EtherCAT and CANopen communication expansion cards; 4. Correct errors in the previous version
6	INV C 04 20220420 1.2	1、Chapter 1-2-1 now includes descriptions for power models of 3.7 kW, 37–55 kW, and 75–110 kW; additional schematic diagrams for each section of Chapters 1–3; terminal wiring diagrams in Chapter 2-3-1; dimensional drawings in Chapter 6-2; and selection guidelines for optional accessories in Chapters 6-3-1, 6-3-3, and 6-3-4. 2、The output frequency range for Chapter 1-2-2 has been changed to 0–600 Hz. 3、2-4-3 Chapter: Modification of the wiring diagram for digital input/output terminals; 4、Chapters 3-1-4 now include instructions on how to modify first-level menu parameters within the secondary menu. 5、3-8-2 adds the static tuning 2 function; 6、P0-03 adds a dedicated mode for wire drawing and winding; 7、The default value for P0-12 is changed to 1; 8、Add the parameters P0-20, P0-21, P1-35, P8-16, P9-02, PC-70-76, and A2-35 along with their descriptions; 9、Delete U0-34 and add P7-11, P7-21, and P7-31; 10、Change the PE group parameters to change the factory settings. 11、Adjust the PF-02-08 parameter for torque control; 12、Add A4 group parameters and a password countdown feature; 13、Add A9 communication address mapping functionality; 14、Add parameter descriptions for Group U0;

Order Number	File Number	Change Content
		15、Add communication monitoring parameters for Group U4; 16、Add an ERR56 alarm; 17、Update Appendix A-5-2, Chapter VH6-DM200: Pin definitions, and add instructions for PG card wiring. 18. Correct errors in the previous version
7	INV C 04 20230323 1.2.1	1. Update the P0-04 parameter specifications; 2. Add descriptions for the P0-11 parameters; 3. The parameter descriptions for P4-00 and P4-06 have been revised; 4. Add parameter description for P9-07; 5. Add an explanation for parameter P5-39 regarding the deceleration and shutdown method; 6. Increase the setting range of parameter P9-02
8	INV C 04 20230626 1.2.2	1. Modify the factory settings of parameters P5-21 and P6-14 to P6-17; 2. Update the brake resistor selection table
9	INV C 04 20230826 1.2.3	1. Update the documentation for parameters P0-12; 2. Update the parameter descriptions for P6-00, P6-02, and P6-07; 3. Update the parameter specifications for PC-50 and PC-62; 4. Update the parameter descriptions for P9-00, P9-02, and P9-03; 5. Update the parameter specifications for P8-02; 6. Add the ASCII code mode for MODBUS communication
10	INV C 04 20231228 1.2.4	1、Add an explanation for the P0-11 parameter; 2. Modify the P8-22 parameter specifications
11	INV C 04 20240301 1.3	1. New power rating specifications added for 132–160 kW, 185–220 kW, 250–280 kW, and 315–450 kW, covering Chapters 1–2, 1–3, 2–3–1, 6–2, 6–3–1, 6–3–3, and 6–3–4.
12	INV C 04 20241011 1.3.1	1. Update the parameter descriptions for P2-06, P7-55, P7-56, PC-16, P0-03, P5-00, P5-07, and P7 groups; 2. Modify the Err44 alarm description
13	INV C 04 20250414 1.4	1、Update the parameter descriptions for P4-00, P5-18, P5-21, P6-08, P7-52, P8-19, PC-17, and PF-01; 2、Modify the communication protocol method in the appendix; 3、Newly added VH6-DC200 simplified 17-bit magnetic encoder type PG card; 4、New version record description: **Version 3740:** ① P0-04: Auxiliary frequency source selection – the upper limit increased from 9 to 11; 10: Special mode for wire drawing and winding; 11: Frequency source determined by

Order Number	File Number	Change Content
		PE200. ② P0-11: Frequency instruction decimal point position. The parameter was changed from fixed to adjustable, with a range of 1–2. The default value was 2 (two decimal places), now set to 1 (one decimal place). ③ Supports VF speed tracking functionality, retains SVC speed tracking functionality, and enables optional P4-06 parameter speed tracking modes: 0 – track from shutdown frequency; 1 – track from power frequency; 2 – track from maximum frequency (synchronous machines lack speed tracking functionality). ④ The ten-position 1 model, enhanced with the P9-07 parameter, enables the VH series to replace the VB5 communication control words; entering a VB5 control word activates the corresponding function. ⑤ Add the P5-34 to P5-39 deceleration and shutdown mode to reduce the deceleration and shutdown time. **Version 3742:** ① P9-02: The upper limit has been changed from 39 to 29, and the upper limit for the tenth digit has been changed from 3 to 2. ② Adjust the default parameters of the speed loop: change the default value of P6-00 from 30 to 20, change the default value of P6-02 from 20 to 6, and change the default value of P6-07 from 100 to 110. ③ Added MODBUS communication in ASCLL mode; ④ New PC-50 = 1: Added a jogging priority function; ⑤ Add a P1-33 setting for detection time and enable the encoder disconnection detection function, which is effective in FVC mode. **Version 3746:** ① New P8-25 function code added, allowing the up/down buttons to adjust the number of initial digits in the frequency setting. ② The Bit14 of U0-76 is configured as an error alarm bit: it reads 1 when an error occurs in the VFD and 0 when no error is detected. ③ The upper limit value for the P1-25 parameter of the new encoder type has been changed from 1 to 5. ④ New P7-79 parameter: Absolute value encoder communication verification error alarm threshold; ⑤ New P7-80 parameter: Absolute encoder communication disconnection detection alarm threshold; ⑥ Add monitoring parameters related to the U0-83~U0-87

Order Number	File Number	Change Content
		encoder; 5. Other error corrections.
14	INV C 04 20251110 1.4.1	1、Additional specifications have been added for the VH6-CP100, VH6-CE100, VH6-DM100, and VH6-DC100 expansion cards. 2、New integrated synchronous-asynchronous machine model; 3、Update chapters 2-4-2 and 2-4-3; 4、Update the descriptions for P0-25, P7-35, P8-07 to P8-09, P8-19, PC-47, and PC-69; 5、New parameters P7-36 to P7-38 added; 6、New naming rules for expansion cards; 7、New VH6-DM200 digital switch definition added; 5、Other error corrections.
15	INV C 04 20260528 1.5	New version record description: Version 3748: New features: Validity delay for physical/virtual/X/Y terminals; Version 3750: ① Modify default values: change P0-03 from 0 to 1, PC-77 from 333 to 963, and PE group parameters from P0.00 to P9.14; ② Add new alarms: ERR35, ERR37, ERR57, ERR58, ERR63, ERR70, ERR71; ③ Support VH6-DM100 expansion cards; ④ Adjust parameter positions for P1-36/P1-37, changing P8-03 to P8-31; ⑤ Modify the FDT frequency arrival output judgment logic; ⑥ Add new functions: X-terminal polarity reversal prohibition, three-wire configuration 3, spindle stop function, external pulse function, STO function, P4-27 point-based DC braking function, new speed tracking feature, 485 communication broadcast function, PID disconnection threshold detection, monitoring of historical maximum bus voltage and current values, three-stage timed machine lockout function, frequency division output function, U1 group position monitoring parameters, and introduce the A*B/P0-05 calculation relationship between main and auxiliary frequency sources. ⑦ deletion functions: PID and parabolic shutdown modes; ⑧ modified setting ranges: P4-01 from 0–10 to 0–50, P4-23 from 0–P0-13 to 0–PC-88, P4-25 from 0–100 to 0–150, P5-25 from 0–100 to 0–200, P5-27 from 0–50 to 0–420, P7-34 from 0.2–10 to 0.01–10

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