MANUAL

HIGH-PERFORMANCE VECTOR
VARIABLE FREQUENCY DRIVE

V2.1VERSIONS

HIGH-PERFORMANCE VECTOR VARIABLE FREQUENCY DRIVE USER MANUAL

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PREFACE

First of all, thank you for purchasing this series of frequency converters!

This series of frequency converters is a universal high-performance current vector frequency converter, mainly used for controlling and regulating the speed of three-phase AC asynchronous motors. It adopts high-performance vector control technology, with high torque output at low speeds, featuring excellent dynamic characteristics, strong overload capacity, added user programmable functions and background monitoring software, communication bus function, support for various PG cards, etc. It has a rich and powerful combination of functions and stable performance. It can be used for driving in industries such as textiles, papermaking, drawing, machine tools, packaging, food, fans, water pumps, and various automated production equipment.

This manual introduces the functional characteristics and usage methods of this series of frequency converters, including product selection, parameter setting, operation and debugging, maintenance and inspection, etc. Please read this manual carefully before use. For equipment manufacturers, please send this manual along with the equipment to the end users to facilitate subsequent use reference.

ANNOUNCEMENTS

- To illustrate the detailed parts of the product, the illustrations in this manual sometimes show the state where the outer cover or safety shield is removed. When using this product, please make sure to properly install the casing or shield as per the instructions, and follow the content of the manual for operation.
- The illustrations in this manual are provided for explanation purposes only and may differ from the products you have ordered.
- Our company is committed to continuously improving our products. The functions of the products will be constantly upgraded. Please be aware that any changes to the provided materials will not be notified separately.
- If you encounter any problems during use, please contact the regional agents of our company or directly contact the customer service center of our company.

1

SAFETY INFORMATION AND PRECAUTIONS

SAFETY INFORMATION AND PRECAUTIONS

Safety Definition:

In this manual, safety precautions are classified into the following two categories:

⚠ Danger: Risks arising from improper operation as per the requirements, which may result in serious injuries or even death.

⚠ Note: The risks resulting from failure to follow the instructions properly may lead to moderate injuries or minor injuries, as well as equipment damage.

When installing, debugging and maintaining this system, please read this chapter carefully and ensure that you follow the safety precautions specified in this chapter when operating. Any injuries or losses resulting from improper operation shall not be the responsibility of our company.

1.1 SAFETY ISSUES

Service Stage	Safety Class	Matters
Before Installation	⚠ Danger	◆ If you find water ingress in the control system, any missing components or damaged components during unpacking, please do not install it. ◆ If the packing list does not match the actual item names, please do not install them.
	⚠ Note	◆ When moving, handle with care and lift . there is a risk of damaging the equipment! ◆ Do not use the damaged drives or the faulty frequency converters. ◆ Do not touch the components of the control system with your hands; otherwise.
During Installation	⚠ Danger	◆ Install on flame-retardant objects such as metal; keep away from combustibles. ◆ Do not casually loosen the fixing bolts of the equipment components, especially those with red markings!
	⚠ Note	◆ Make sure that the wire ends or screws do not fall into the drive. ◆ Please install the drive in a place with less vibration and away from direct sunlight. ◆ When installing multiple inverters, attention should be paid to the installation location.
When Wiring	⚠ Danger	◆ It must be carried out by professional electrical engineers; otherwise, it will be dangerous! ◆ A circuit breaker must be installed to separate the inverter from the power supply. ◆ Before connecting, please ensure that the power supply is in a zero-energy state. ◆ Carry out correct and standardized grounding according to the standards.
	⚠ Note	◆ Never connect the input power supply to the output terminals (U, V, W) of the inverter. Pay attention to the markings on the connection terminals and do not connect the wires incorrectly! Otherwise, it may cause damage to the drive! ◆ The braking resistor must not be connected between the (+) and (-) terminals of the DC bus. ◆ Please refer to the manual for the recommended wire diameter. Avoid any accidents. ◆ The encoder must use shielded cables, and the shield layer must be ensured to be reliably grounded in a single-ended manner!
Before powering on	⚠ Danger	◆ Please confirm whether the voltage level of the input power is consistent with the rated voltage level of the frequency converter; check if the wiring positions of the input terminals (R, S, T) and output terminals (U, V, W) are correct; and pay attention to checking if there is any short circuit in the peripheral circuits connected to the driver, and whether the connected lines are securely fastened. Otherwise, it may cause damage to the driver! ◆ No withstand voltage test is required for any part of the frequency converter. This test has already been conducted during the manufacturing process. Failure to do so could lead to accidents!
	⚠ Note	◆ The inverter must be fully covered with the cover plate before it can be powered on. ◆ The wiring of all peripheral accessories must follow the instructions in this manual and be connected correctly according to the circuit connection methods provided in this manual. Failure to do so may result in accidents!

Service Stage	Safety Class	Matters
After powering on	Danger	◆ Do not open the cover after powering on. Otherwise, there is a risk of electric shock! ◆ Do not touch any of the input or output terminals of the inverter. Avoid electric shock.
	Note	◆ If parameter tuning is required, please be aware of the danger of injury caused by the rotation of the motor.Otherwise, it may cause an accident! ◆ Do not arbitrarily modify the parameters set by the frequency converter manufacturer. Otherwise, it may cause damage to the equipment!
in service	Danger	◆ Non-professional technicians are prohibited from detecting signals during operation. Otherwise, it may cause personal injury or equipment damage. ◆ Do not touch the cooling fan or the discharge resistor to test the temperature. Otherwise, it may cause burns!
	Note	◆ During the operation of the inverter, it is essential to prevent any foreign objects from falling into the equipment. Otherwise, it may cause damage to the equipment. ◆ Do not use the contactor's on-off function to control the start and stop of the driver. Otherwise, it will cause damage to the equipment!
During maintenance	Danger	◆ Do not perform maintenance or repair on the inverter without professional training. Otherwise, it may cause personal injury or equipment damage! ◆ Do not perform maintenance or repair on the equipment while it is powered on. Otherwise, there is a risk of electric shock! ◆ It is confirmed that the input power supply of the inverter must be disconnected for 10 minutes before carrying out maintenance and repair on the driver. Otherwise, the residual charges on the capacitors could cause harm to people! ◆ Before conducting maintenance work on the frequency converter, make sure that the inverter is safely disconnected from all power sources. ◆ All plug-in devices must be plugged in or unplugged when the power is off! ◆ After replacing the frequency converter, the parameters must be set and checked.
	Note	◆ The rotating motor will supply power to the inverter, which means that even when the motor stops and the power is cut off, the frequency converter will remain energized. Before conducting maintenance on the frequency converter, make sure that the motor and the frequency converter are safely disconnected.

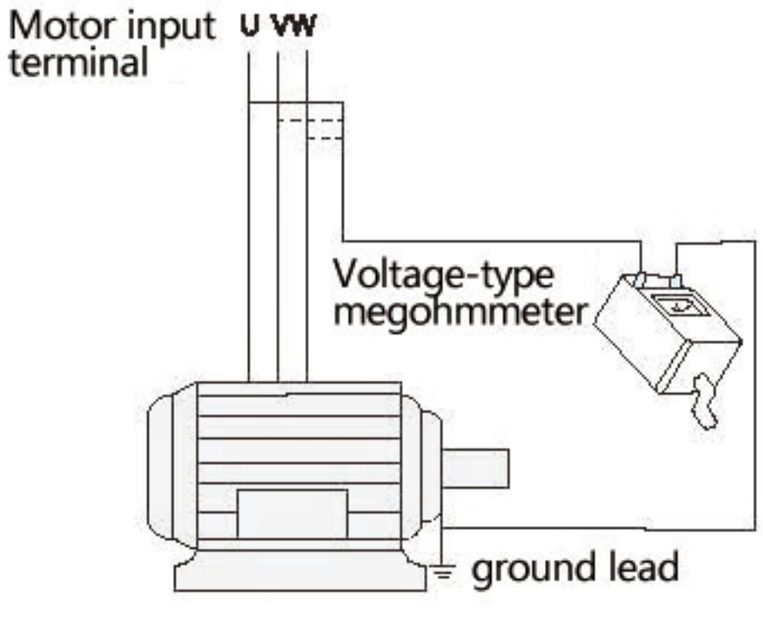
1.2 ANNOUNCEMENTS

(1)Requirements for Leakage Circuit Breaker (RCD)

During the operation of the equipment, a large leakage current will flow through the protective grounding conductor. Therefore, a type B leakage current protector (RCD) should be installed on the primary side of the power supply. When selecting the leakage current protector (RCD), the transient and steady-state ground leakage currents that may occur during the startup and operation of the equipment should be considered. A dedicated RCD with measures to suppress high-order harmonics or a general RCD with a larger residual current should be selected.

(2)Motor insulation inspection

Before the first use of the motor, after a long period of storage before its reuse, and during regular inspections, insulation checks of the motor should be conducted to prevent damage to the frequency converter due to the failure of the insulation of the motor windings. During the insulation check, the motor connections must be disconnected from the frequency converter. It is recommended to use a 500V voltage-type megohmmeter, and it is necessary to ensure that the measured insulation resistance is not less than 5MΩ.



(3)Thermal protection of the motor

If the rated capacity of the motor and the frequency converter do not match, especially when the rated power of the frequency converter is greater than that of the motor, it is essential to adjust the relevant parameter values of the motor protection in the frequency converter or add a thermal relay in front of the motor to protect the motor.

(4)Operation above the power frequency

This frequency converter offers an output frequency ranging from 0Hz to 500Hz. If the customer needs to operate above 50Hz, please consider the bearing capacity of the mechanical device.

(5)Vibration of mechanical devices

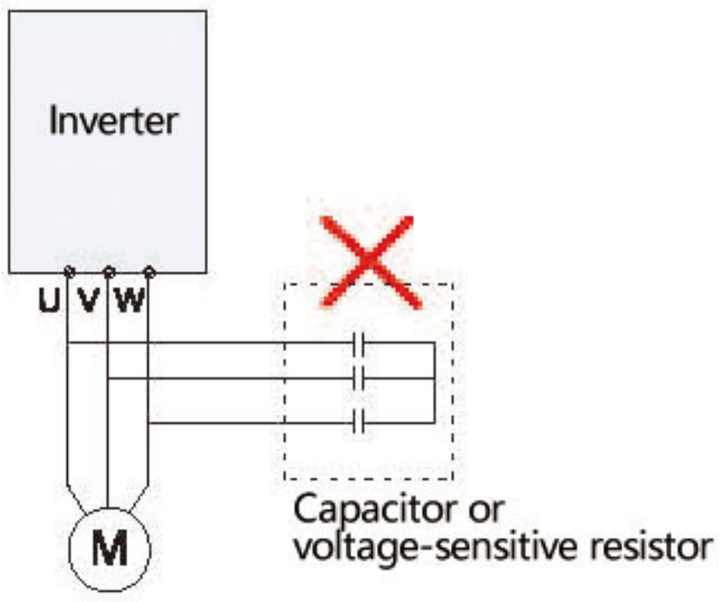
At certain output frequencies, the frequency converter may encounter the mechanical resonance points of the load device. This can be avoided by setting the jump frequency parameters within the frequency converter.

(6)Regarding the heating and noise of the motor

Since the output voltage of the frequency converter is a PWM wave, which contains certain harmonics, the rise, sound and vibration of the motor will increase slightly compared to the vehicle's operation.

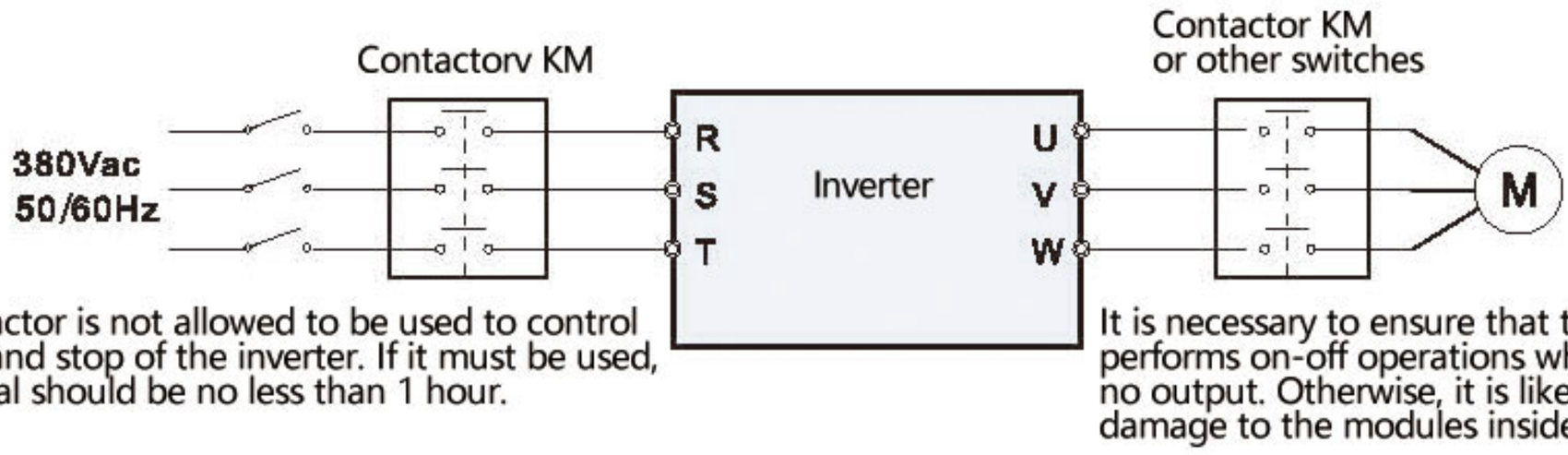
(7)The output side features pressure - sensitive devices or capacitors for power factor improvement.

The output of the frequency converter is a PWM wave. If capacitors for improving power factor or surge protectors with voltage-sensitive resistors are installed on the output side, it is likely to cause instantaneous overcurrent in the frequency converter or even damage to the frequency converter. Please do not use it.



(8)The contactors and other switching devices used at the input and output terminals of the inverter

If a contactor is installed between the power supply and the input terminal of the inverter, it is not allowed to use this contactor to control the start and stop of the inverter. If this contactor is used to control the start and stop of the inverter, the interval should be no less than one hour. Frequent charging and discharging can easily reduce the service life of the capacitors inside the inverter. If there are contactors or other switching devices installed between the output terminal and the motor, it is necessary to ensure that the inverter is switched on and off when there is no output. Otherwise, it is likely to cause damage to the modules inside the inverter.



(9)Use beyond the rated voltage value

It is not suitable to use the frequency converter outside the permitted working voltage range specified in the manual. This may cause damage to the internal components of the frequency converter. If necessary, please use a corresponding voltage booster or voltage reducer device to process the power supply and then input it into the frequency converter.

(10)Change from three-phase input to two-phase input

It is not allowed to use the three-phase inverters in this series in a two-phase configuration. Otherwise, it will cause faults or damage to the inverters.

(11)Lightning protection

This series of frequency converters are equipped with a lightning surge current protection device, which has a certain self-protection capability against induced lightning. However, for customers located in areas with frequent lightning strikes, it is still necessary to install a lightning protection device at the front end of the frequency converter.

(12)Altitude and reduced usage

In areas with an altitude exceeding 1000 meters, due to the thin air, the cooling effect of the frequency converter deteriorates. It is necessary to use it at a reduced capacity.For this situation, please seek technical consultation from our company.

(13)Some special usages

If the customer needs to use methods other than the wiring diagrams provided in this manual during use, such as a common DC bus, please contact our company for assistance.

(14)When disposing of the frequency converter, please be cautious.

During the burning process of the electrolytic capacitors in the main circuit and those on the printed circuit board, an explosion may occur. When plastic parts are burned, toxic gases will be produced. Please handle them as industrial waste.

(15)Regarding the motor adaptation

- The standard adapter motor is a four-stage squirrel-cage asynchronous induction motor. If the above-mentioned motor is not used, please be sure to select the frequency converter according to the rated current of the motor.

- The cooling fan of non-frequency conversion motors is coaxially connected to the rotor shaft. When the rotational speed decreases, the cooling effect of the fan also decreases. Therefore, in cases where the motor overheats, a strong exhaust fan should be installed or a frequency conversion motor should be replaced.

- The frequency converter has already incorporated the standard parameters for the motor. Depending on the specific situation, it is necessary to adjust the motor parameters or modify the default values to closely match the actual values. Otherwise, it will affect the operation performance and protection capabilities.

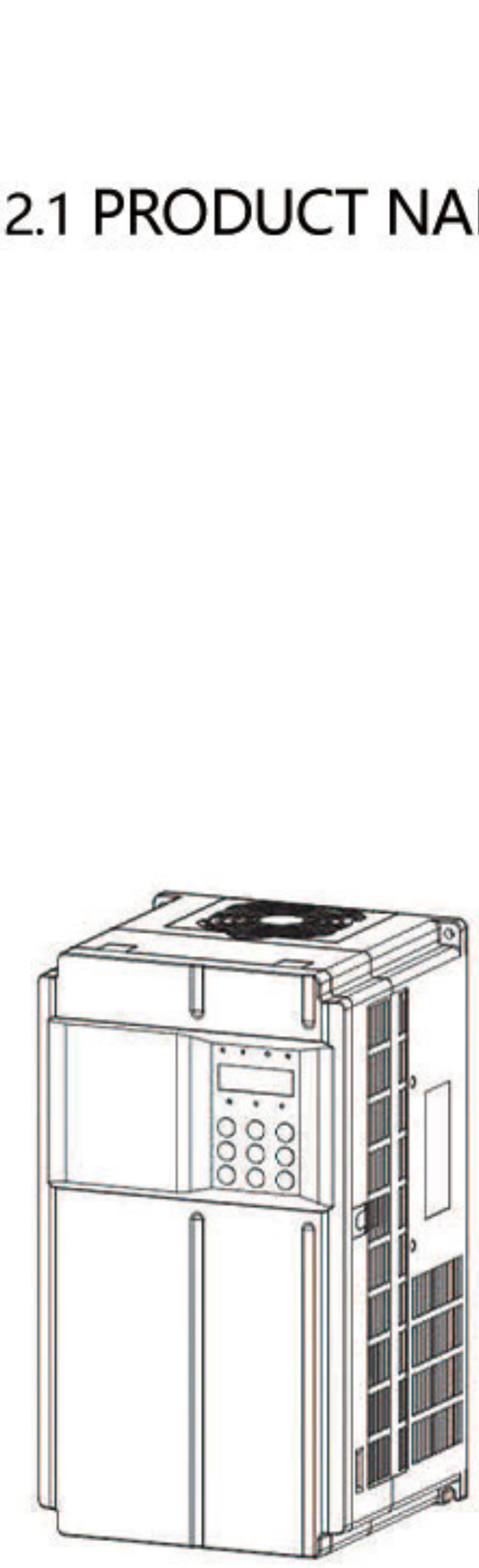
- Since a short circuit inside the cable or the motor can cause the frequency converter to alarm and even cause the machine to malfunction, please first conduct an insulation short circuit test on the initially installed motor and cable. This test should also be carried out frequently during daily maintenance. Note that when conducting this test, make sure to disconnect the frequency converter and the tested part completely.

2

PRODUCT INFORMATION

PRODUCT INFORMATION

2.1 PRODUCT NAMING AND LABELING



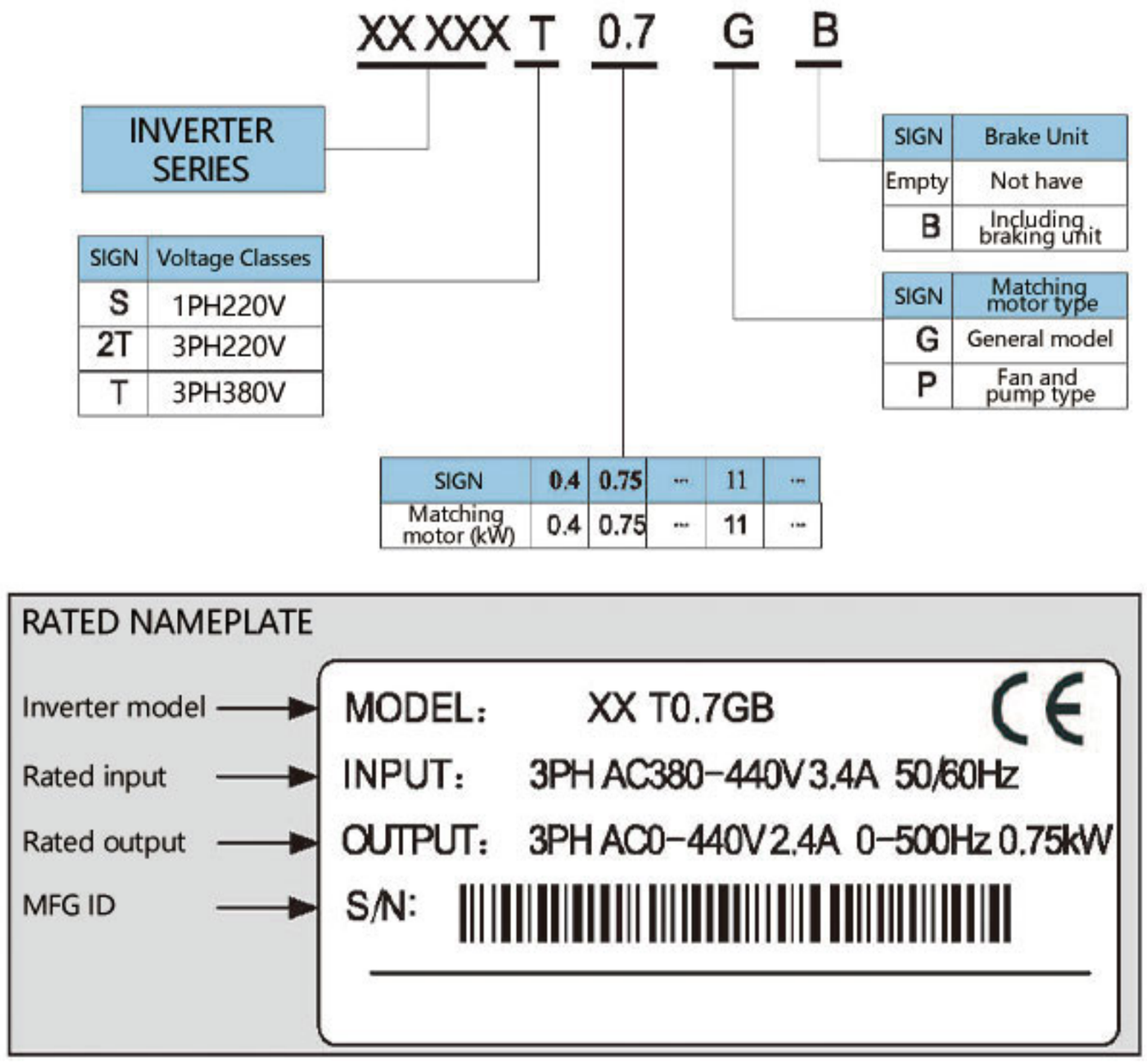


Figure 2-1 Product Naming and Labeling

2.2 NAMES OF EACH PART OF THE FREQUENCY CONVERTER

This series of frequency converters have two structural types depending on the voltage and power rating. They are plastic structure and sheet metal structure. The shell structure types for different voltage and power ratings are as shown in the list below:

MILL TYPE	SHELL TYPE
Single-Phase 220V	
0.4kW~2.2kW	Plastic structure
Three-Phase 220V	
0.4kW~7.5kW	Plastic structure
11kW~75kW	Sheet metal structure
Three-Phase 380V	
0.75kW~18.5kW	Plastic structure
22kW~400kW	Sheet metal structure

2.3 BASIC TECHNICAL SPECIFICATIONS

List 2-1 Technical Specifications of inverter

PROJECT		SPECIFICATION	
BASIC FUNCTION	Highest Frequency	Vector control: 0 - 500Hz V/F control: 0 - 500Hz	
	Carrier Frequency	0.5kHz to 1GkHz: The carrier frequency can be automatically adjusted according to the load characteristics.	
	Highest Frequency	Digital setting: 0.01Hz Analog setting: Maximum frequency 0.025%	
	Control Mode	Open-loop vector control (SVC) Closed-loop vector control (FVC) V/F control	
	Pull-in Torque	Digital setting: 0.01Hz Analog setting: Maximum frequency 0.025%	
	Speed Range	1:100 (SVC)	1:1000 (FVC)
	Rotating Speed	±0.5% (SVC)	±0.02% (FVC)
	Torque Control Accuracy	±5%(FVC)	
	Overload Capacity	G-type machine: 150% rated current for 60 seconds; 180% rated current for 3 seconds. P-type machine: 120% rated current for 60 seconds; 150% rated current for 3 seconds.	
	Torque Increase	Automatic torque increase: Manual torque increase range is 0.1% to 30.0%	
	V/F Curve	Three types: linear type; multi-point type; Nth power type; V-shaped curve (1.2th power, 1.4th power, 1.6th power, 1.8th power, 2th power)	
	V/F Separation	Two methods: complete separation, partial separation	
	Acceleration And Deceleration Curves	Linear or S-curve acceleration/deceleration mode. Four types of acceleration/deceleration times, with the acceleration/deceleration time range being 0.0 to 6500.0 seconds.	
	DC braking	DC braking frequency: 0.00 Hz to maximum frequency Braking time: 0.0s to 36.0s Brake action current value: 0.0% - 100.0%	
	Point Control	Jogging frequency range: 0.00 Hz to 50.00 Hz.The jog acceleration and deceleration time ranges from 0.0 s to 6500.0 s.	
	Simple PLC, multi-stage speed operation	Through the built-in PLC or control terminals, up to 16 sections of rapid operation can be achieved.	
	Built-in PID	It can conveniently realize the closed-loop control system for process control.	
	Automatic Voltage Regulation (AVR)	When the grid voltage changes, it can automatically maintain the output voltage constant.	
BASIC FUNCTION	Overvoltage and overcurrent speed control	Automatic current and voltage limit during operation to prevent frequent overcurrent and overvoltage tripping	
	Fast current-limiting function	Minimize overcurrent faults to ensure the normal operation of the frequency converter	
	Torque Limitation and Control	The "excavator" feature automatically limits the torque during operation to prevent frequent overcurrent trips; the closed-loop vector mode enables torque control.	

PROJECT		SPECIFICATION
Personalization Function	Outstanding performance	Realize asynchronous motor control through high-performance current vector control technology.
	Instant stop, no pause	During an instantaneous power outage, energy is fed back to the load to compensate for the drop in voltage, allowing the frequency converter to continue operating for a short period of time.
	Fast current limiting	Prevent the frequency converter from frequently experiencing overcurrent faults
	Virtual IO	Five sets of virtual DIDO can achieve simple logical control.
	Timed control	Timer control function: Set time range from 0.0 minutes to 6500.0 minutes.
	Multi-motor switching	Two sets of motor parameters enable the control of switching between two motors.
	Multi-threaded bus support	Support four types of field buses: Modbus, Profibus-DP, CANlink, CANopen
	Special parameter group for constant pressure water supply	Optimize the pressure calculation method, adopt pressure feedback control for sleep and wake-up, which is more convenient and efficient. At the same time, dual sleep control based on pressure and frequency can be used, suitable for more scenarios.
	Multi-encoder support	Supports differential, open-collector, UVW, rotary transformer, sine-cosine, etc. encoders
	User programmable	By selecting the user-programmable card, you can achieve secondary development. The programming method is compatible with the PLC of our company.
	Powerful back-end software	Supports parameter operation of the frequency converter and the virtual oscilloscope function. Through the virtual oscilloscope, graphical monitoring of the internal status of the frequency converter can be achieved.
Operation	Command source	The operation panel is set, the control terminals are set, and the serial communication port is set. It can be switched in multiple ways.
	Frequency source	10 types of frequency sources: digital input, analog voltage input, analog current input, pulse input, serial port input. They can be switched in multiple ways.
	Auxiliary frequency source	10 types of auxiliary frequency sources. Capable of flexibly achieving auxiliary frequency fine-tuning and frequency synthesis.
	Input terminal	Standard: Five digital input terminals, among which one supports high-speed pulse input up to 100kHz. Two analog input terminals, one of which only supports 0 to 10V voltage input. 1 channel supports 0-10V voltage input or 0-20mA current input Expansion capability (for expansion of dedicated motherboard): Five digital input terminals 1 analog input terminal, capable of accepting voltage input ranging from -10V to 10V, and supporting PT100/PT1000
	Output terminal	Standard: 1 high-speed pulse output terminal (can be selected as an open-collector type) Supports square wave signal output ranging from 0 to 100 kHz One digital output terminal Two relay output terminals Two analog output terminals, supporting 0-20mA current output or 0-10V voltage output. Expansion capability (for expansion of dedicated motherboard): One digital output terminal One relay output terminal 1 analog output terminal, supporting 0-20mA current output or 0-10V voltage output

PROJECT		SPECIFICATION
Display and keyboard operation	LED Display	Display Parameter
	LCD Display	Optional items, Chinese/English instructions for operation content
	Parameter Copy	The parameters can be quickly copied through the LCD operation panel option.
	Key lock and Function selection	Implement partial or complete locking of the keys, define the function scope of some keys to prevent accidental operation
	Defensive Function	Power-on motor short-circuit detection, input/output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheating protection, overload protection, etc.
	Choose Accessories	LCD operation panel, braking component, I0 expansion card 1, I0 expansion card 2, user programmable card, RS485 communication card, differential input PG card, UVT differential input PG card, transformer PG card 0C input PG card, etc. All of these are paired with the dedicated motherboard.
Surroundings	Usage Location	Inside the room, it is not exposed to direct sunlight, and there are no dust, corrosive gases, flammable gases, oil mist, water vapor, dripping water or salt particles.
	Altitude	Below 1000 meters
	Ambient Temperature	-10℃ to -40℃ (The ambient temperature should be between 40℃ and 50℃. Please use it at reduced capacity.)
	Humidity	Less than 95% RH, no water droplets condensing
	Vibration	Less than 5.9 ms² (0.6g)
	Storage Temperature	—20℃~+60℃
	IP Rating	IP20
	Class of Pollution	PD2
	Power Distribution System	TN，TT

2.4 PERIPHERAL ELECTRICAL COMPONENTS AND SYSTEMS COMPOSITION

When using this series of frequency converters to control asynchronous motors to form a control system, various electrical components need to be installed on the input and output sides of the frequency converter to ensure the safety and stability of the system. In addition, this series of frequency converters are equipped with multiple optional and expansion cards to achieve multiple functions. The three-phase 220V/380V voltage level series system is composed as shown in the following figure:

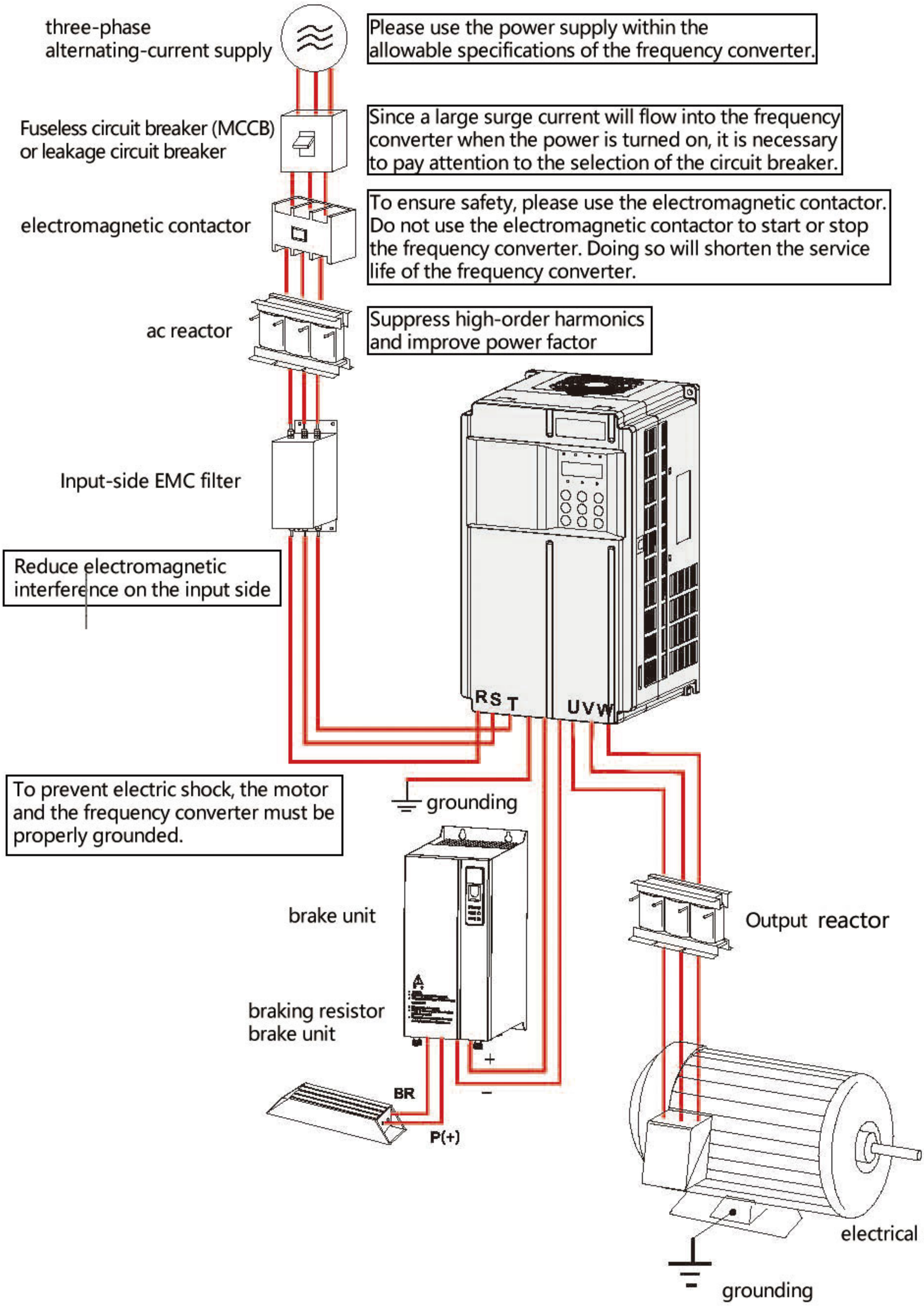


Figure 2-4 System Composition Diagram

2.4.1 INSTRUCTIONS FOR USING PERIPHERAL ELECTRICAL COMPONENTS

List 2-2 Instructions for Using Peripheral Electrical Components of the Frequency Converter

PARETS NAME	INSTALLATION SITE	FUNCTIONAL SPECIFICATION
Air Switch	Input loop front end	Cut off the power supply when the downstream equipment exceeds the current limit.
Contactor	Between the circuit breaker and the input side of the frequency converter	When turning the frequency converter on and off, you should avoid frequently powering it on and off via the contactor (less than twice a minute) or directly starting it.
AC input reactor	Input side of the frequency converter	Improve the power factor at the input side: Effectively eliminate the high-order harmonics on the input side and prevent damage to other equipment caused by distorted voltage waveforms. Eliminate the imbalance in input current caused by the imbalance between power phases.
EMC input filter	Input side of the frequency converter	Reduce the external transmission and radiation interference of the frequency converter; Reduce the conducted interference flowing from the power source to the frequency converter, and enhance the anti-interference capability of the frequency converter.
Direct Current Reactor	Transformer side of the frequency converter	Improve the power factor at the input side; Improve the overall efficiency and thermal stability of the inverter; Effectively eliminate the influence of high-order harmonics on the input side on the transformer, and reduce external conduction and radiation interference.
AC Output Reactor	Between the output side of the frequency converter and the motor. Installed close to the frequency converter.	The output side of the frequency converter usually contains a considerable amount of higher-order harmonics. When the motor is far away from the frequency converter, due to the presence of a large distributed capacitance in the lines, certain harmonics may cause resonance in the circuit, resulting in two kinds of impacts: ◆ It damages the insulation performance of the motor, and over time, it will cause damage to the motor. ◆ Causes significant leakage current, resulting in frequent protection actions of the frequency converter. If the distance between the frequency converter and the motor exceeds 100 meters, it is recommended to install an output AC reactor.

1).Do not install capacitors or surge suppressors on the output side of the frequency converter. This will cause faults in the frequency converter or damage to the capacitors and surge suppressors.

2).The input/output (main circuit) of the frequency converter contains harmonic components, which may interfere with the communication equipment of the frequency converter's accessories. Therefore, an anti-interference filter should be installed to minimize the interference.

3

MECHANICAL AND ELECTRICAL INSTALLATION

MECHANICAL AND ELECTRICAL INSTALLATION

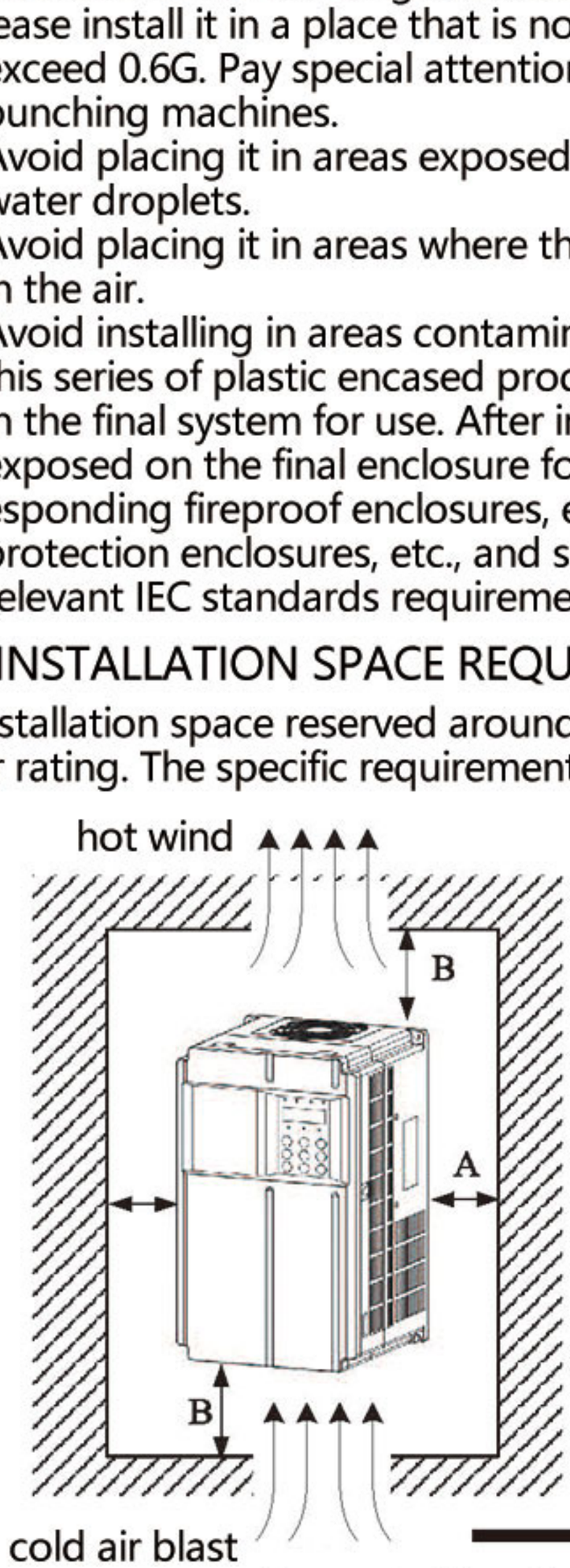
3.1 MECHANICAL INSTALLATION

3.1.1 INSTALLATION ENVIRONMENT

1). Environmental temperature: The ambient temperature has a significant impact on the lifespan of the inverter. The operating environment temperature of the inverter must not exceed the permitted range (-10℃ to 50℃).
2). Mount the frequency converter on the surface of a flame-retardant material, and ensure there is sufficient space for heat dissipation around it. When the inverter is in operation, it generates a large amount of heat and is installed vertically using screws on the mounting bracket.
3). lease install it in a place that is not prone to vibration. The vibration should not exceed 0.6G. Pay special attention to keeping it away from equipment such as punching machines.
4). Avoid placing it in areas exposed to direct sunlight, in damp conditions, or near water droplets.
5). Avoid placing it in areas where there are corrosive, flammable or explosive gases in the air.
6). Avoid installing in areas contaminated with oil, dusty, or with excessive metal dust.
7) This series of plastic encased products are built-in products and need to be installed in the final system for use. After installation, only the keyboard panel part may be exposed on the final enclosure for operation. The final system should provide corr-esponding fireproof enclosures, electrical protection enclosures, and mechanical protection enclosures, etc., and should comply with local laws and regulations and relevant IEC standards requirements.

3.1.2 INSTALLATION SPACE REQUIREMENTS

The installation space reserved around the frequency converter varies depending on the power rating. The specific requirements are as shown in the following figure:



Installation space requirements for each power level

Power Level	Dimensional Requirement	
0.4kW~15kW	A≥10mm	B≥100mm
18.5kW~22kW	A≥10mm	B≥200mm
22kW~37kW	A≥50mm	B≥200mm
37kW~450kW	A≥50mm	B≥300mm

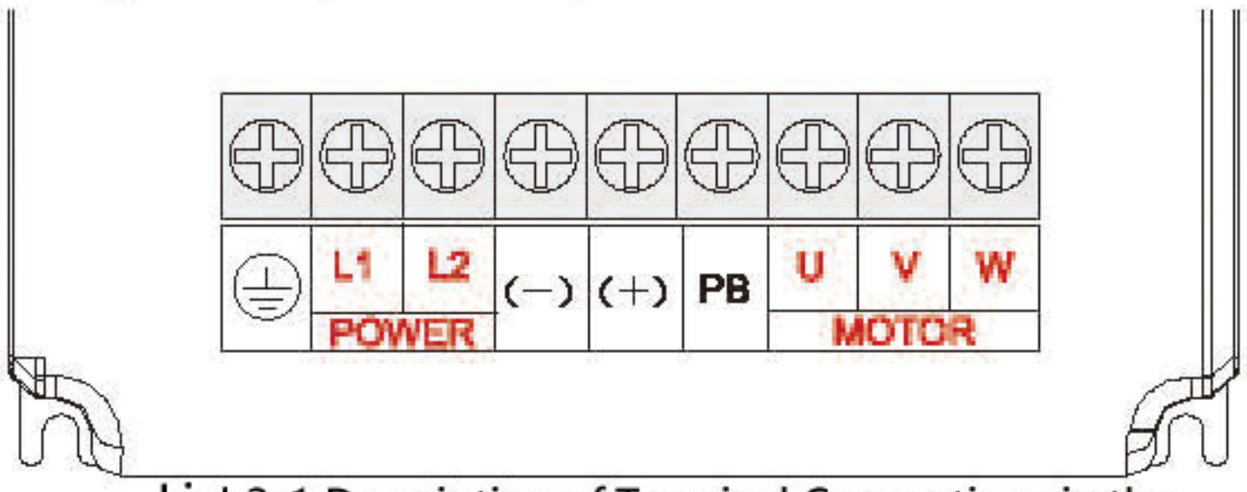
Figure 3-1 Installation space requirements for each power level of the frequency converter

When a frequency converter dissipates heat, the heat is emitted from the bottom upwards. When multiple frequency converters are operating, they are usually installed side by side. In cases where installation in rows is required (up and down), since the heat from the bottom row of frequency converters can cause the temperature of the equipment in the upper row to rise and lead to failures, measures such as installing heat insulation conduits should be taken to address this issue.

3.2 ELECTRICAL INSTALLATION

3.2.1 MAIN CIRCUIT TERMINAL DESCRIPTION

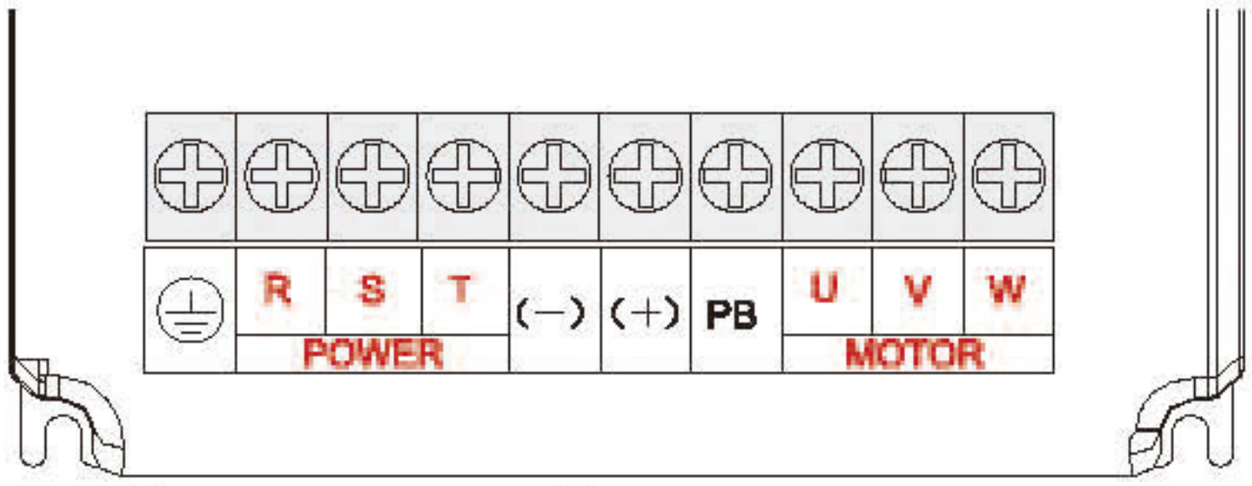
Single-phase frequency converter main circuit terminal description (there may be slight differences depending on the power level):



List 3-1 Description of Terminal Connections in the Main Circuit of Single-Phase Frequency Converter

TERMINAL MARK	NAME	EXPLAIN
L1、L2	Single-phase power input terminal	Single-phase 220V AC power connection point
(+)、(-)	Positive and negative terminals of the DC busbar	Common DC busbar input point
(+)、PB	Brake resistor connection terminal	Connect the braking resistor
U、V、W	Output terminals of the frequency converter	Connect the three-phase motor
⏚	Grounding terminal	Grounding terminal

Three-phase frequency converter main circuit terminal description (there may be slight differences depending on the power level):

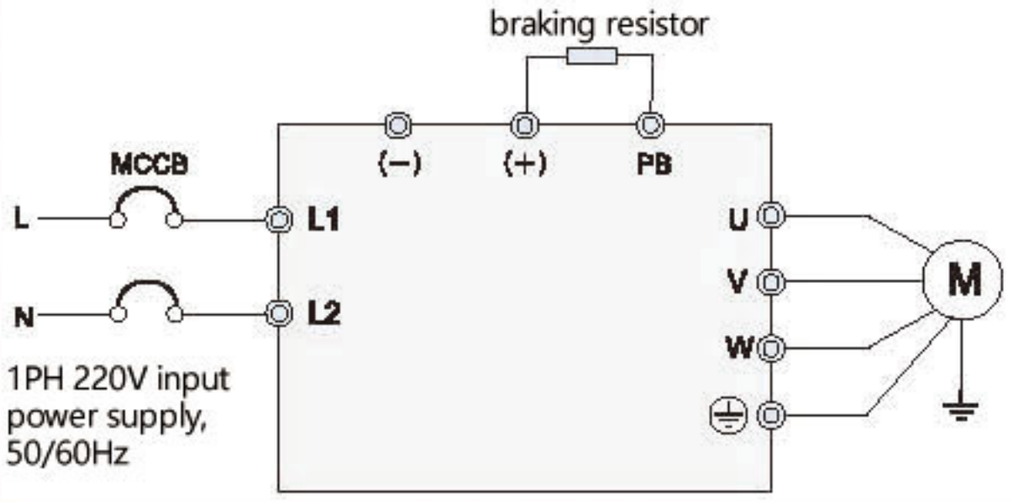
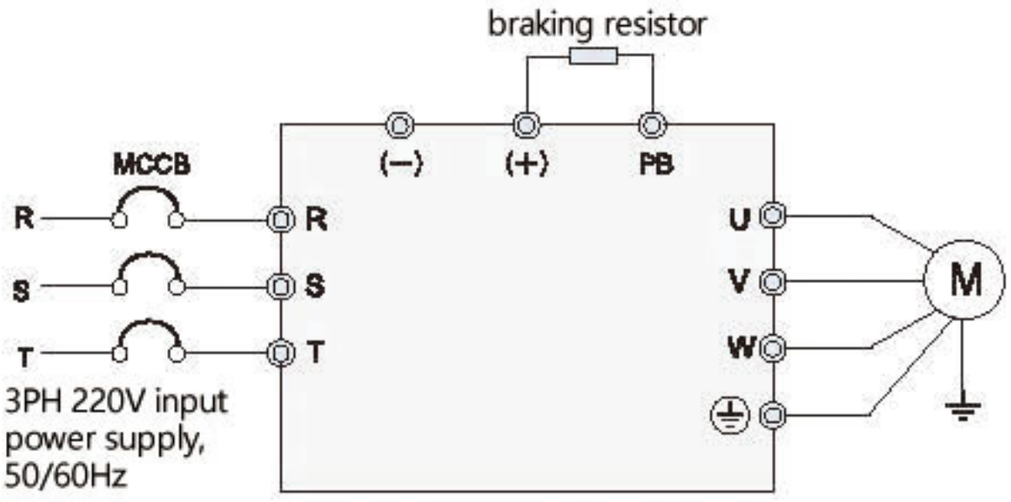
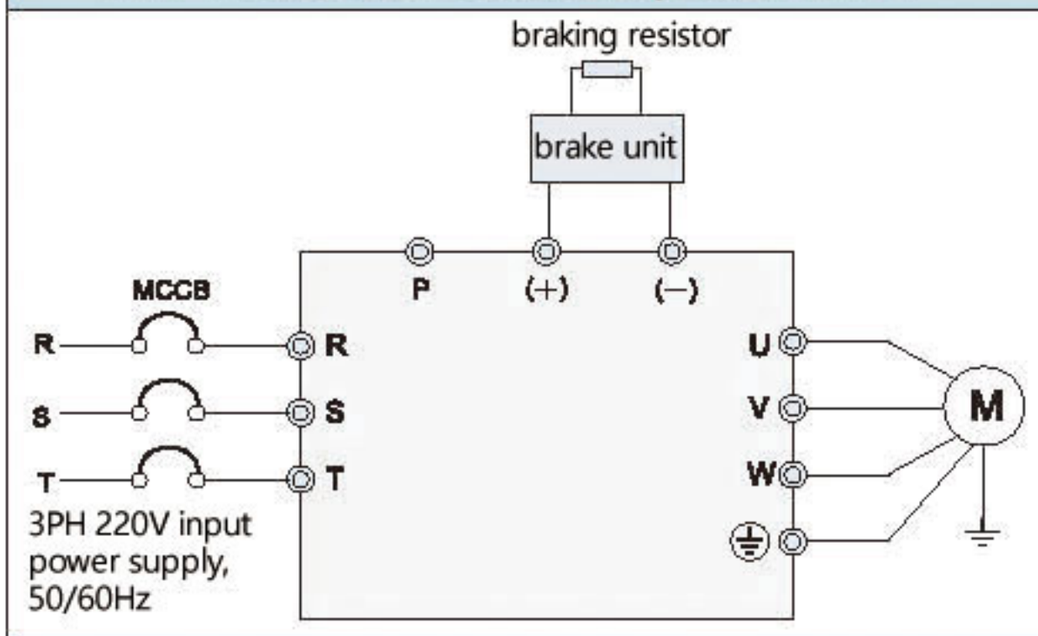
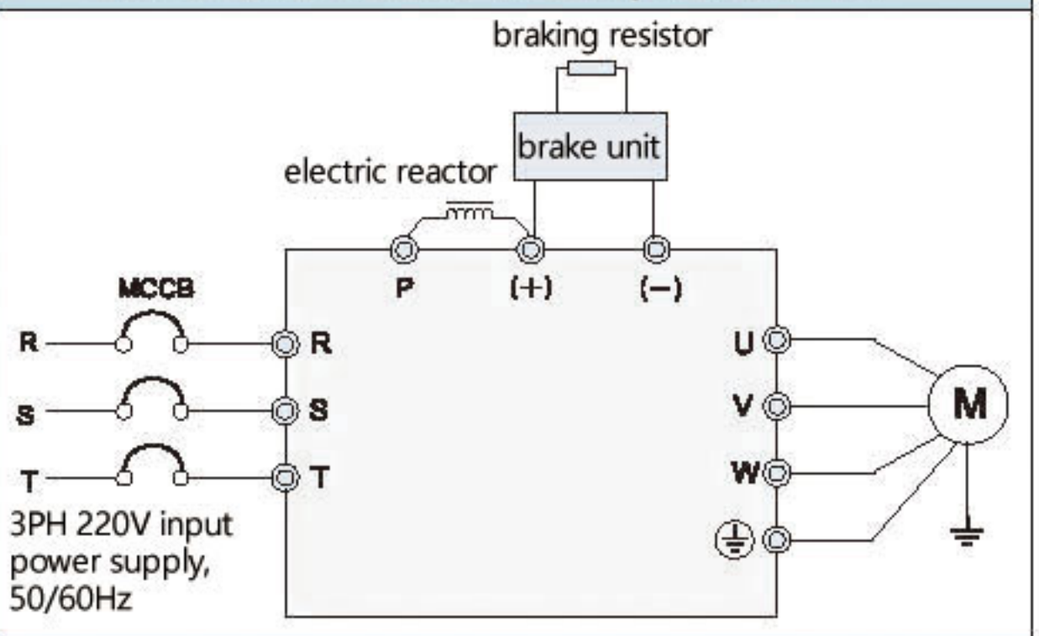
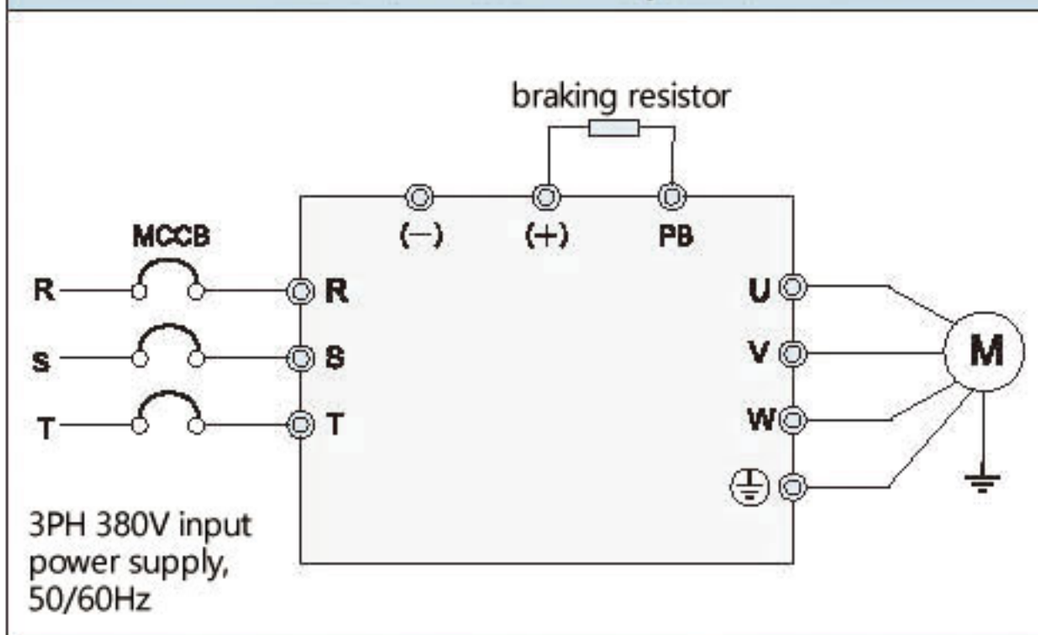
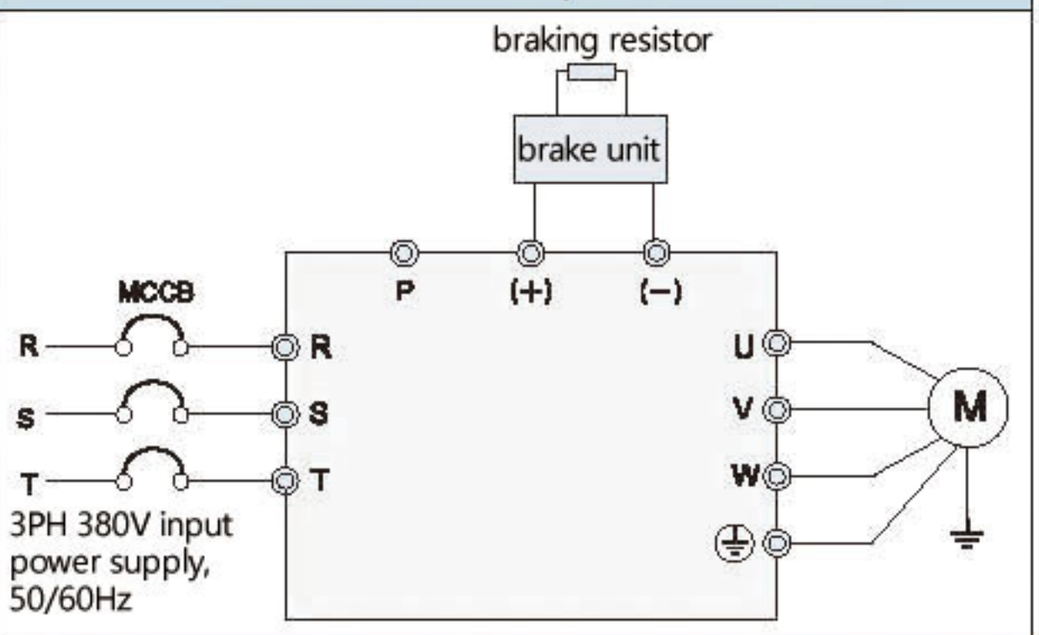
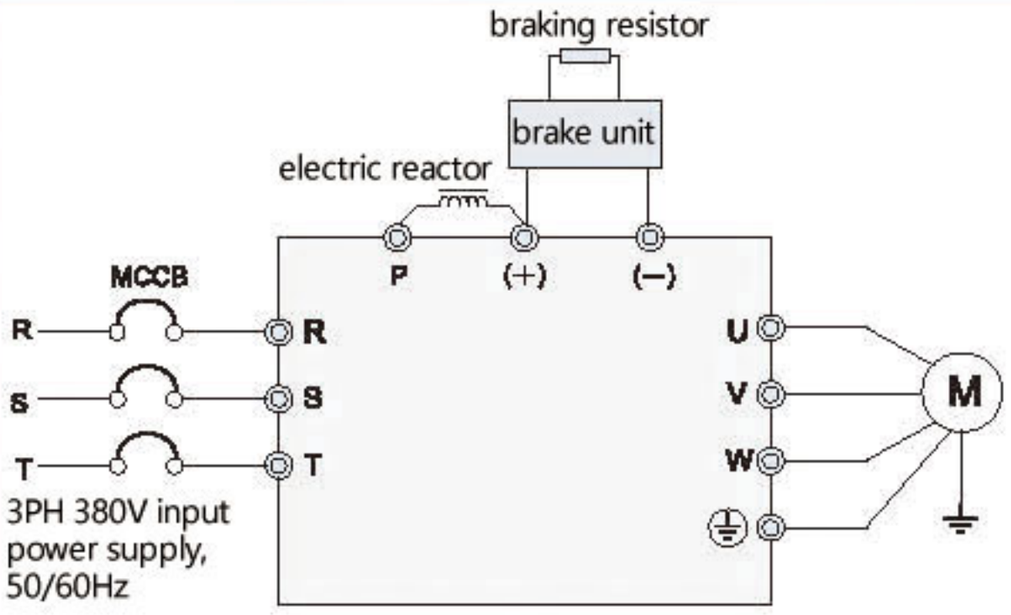


List 3-2 Description of Terminal Connections in the Main Circuit of Three-phase Frequency Converter

TERMINAL MARK	NAME	EXPLAIN
R、S、T	Three-phase power input terminals	Communication input connection point for three-phase power supply
(+)、(-)	Positive and negative terminals of the DC busbar	Common DC bus input point, for external braking units with a power of over 37kw (for 220V, over 18.5kw)
(+)、PB	Positive and negative terminals of the DC busbar	Brake resistor connection points for 30kW and below (15kW and below for 220V)
P、(+)	Brake resistor connection terminal	External reactor connection point
U、V、W	Output terminals of the frequency converter	Connect the three-phase motor
⏚	Grounding terminal	Grounding terminal

3.2.2 THE MAIN CIRCUIT WIRING METHOD OF THE FREQUENCY CONVERTER

List 3-3 Wiring Method of the Main Circuit of the Frequency Converter

<table>
<tr><th>Single-phase 220V</th><th>15kW and below three-phase 220V</th></tr>
<tr><td>
</td><td>
</td></tr>
<tr><th>18.5 kW to 30 kW three-phase 220V</th><th>37kW and above three-phase 220V</th></tr>
<tr><td>
</td><td>
</td></tr>
<tr><th>30kW and below three-phase 380V</th><th>37 - 75 kW three-phase 380V</th></tr>
<tr><td>
</td><td>
</td></tr>
<tr><th>90kW and above three-phase 380V</th><th></th></tr>
<tr><td>
</td><td></td></tr>
</table>

Cabling Precautions:

1) Input power supply L1, L2 or R, S, T:

- The input wiring of the frequency converter does not have any phase sequence requirements.
- The specifications and installation methods of the external power wiring must comply with local regulations and the requirements of relevant IEC standards.

2) DC bus (+), (-):

- Be aware that immediately after the power outage, there will still be residual voltage at the (+) and (-) terminals of the DC bus. You must wait until the CHARGE indicator goes out and confirm that the power outage has lasted for 10 minutes before performing wiring operations. Otherwise, there is a risk of electric shock.
- When using an external braking component for lines over 37 km (with a voltage of 220V and power exceeding 18.5kW), be sure that the (+) and (-) polarities are not reversed. Otherwise, it may cause damage to the frequency converter or even lead to a fire.
- The wiring length of the braking unit should not exceed 10 meters. Twisted-pair cables or closely arranged parallel cables should be used.
- It is not advisable to directly connect the braking resistor to the DC bus. This may cause damage to the frequency converter or even lead to a fire.

3) Brake resistor connection terminals (+), PB:

- For models with a power of less than 30kW (15kW for 220V) and where the built-in braking unit has been confirmed, the connection terminals of the braking resistor are effective.
- The selection of braking resistors should refer to the recommended values, and the wiring distance should be less than 5 meters. Otherwise, it may cause damage to the frequency converter.

4) External reactor connection terminals P, (+):

- For frequency converters with a power of 90kw or above (for 220V, 37k or above), the reactor is external. During assembly, remove the connection piece between the P and (+) terminals, and connect the reactor between the two terminals.

5) Output side U, V, W of the frequency converter:

- The specifications and installation methods of the external power wiring must comply with local regulations and the requirements of relevant IEC standards.
- For power cable distribution, please select the corresponding size of copper wire according to the values in the recommended list of Section 8.3.
- On the inverter side, the side outlet cannot be connected to capacitors or surge absorbers; otherwise, it will cause the inverter to frequently trigger protection or even be damaged.
- When the motor cable is too long, due to the influence of distributed capacitance, electrical resonance is likely to occur, which may cause damage to the motor insulation or result in a large leakage current, triggering the overcurrent protection of the frequency converter.
  When the length of the motor cable exceeds 100 meters, an AC output reactor should be installed near the frequency converter.

6) Ground terminal ⏚ PE:

- The terminals must be reliably grounded, and the resistance value of the grounding wire must be less than 0.1Ω. Otherwise, it will cause abnormal operation of the equipment or even damage to it.
- The grounding terminal ⏚ and the power neutral terminal N must not be shared.
- The impedance of the protective grounding conductor must meet the requirement that it can withstand the possible large short-circuit current in case of a fault.
- The size of the protective grounding conductor is selected according to the list below.

The cross-sectional area of a conductor (S)	Minimum cross-sectional area of protective conductor (S_p)
$S \leq 16mm^2$	S
$16mm^2 < S \leqslant 35mm^2$	$16mm^2$
$35mm^2 < S$	S/2

- The protective grounding conductor must be connected with yellow-green cables.

7）Requirements for the preceding-level protection device:

- On the input distribution lines, appropriate protective devices should be installed. These devices need to provide functions such as overcurrent protection, short-circuit protection and isolation protection.
- When selecting protection devices, factors such as the current capacity of the power cable, the system's overload capacity requirements, and the short-circuit capacity of the equipment's front -stage power distribution should be taken into consideration.

3.2.3 CONTROL TERMINAL DESCRIPTION

The layout diagram of the control circuit terminals is as follows:

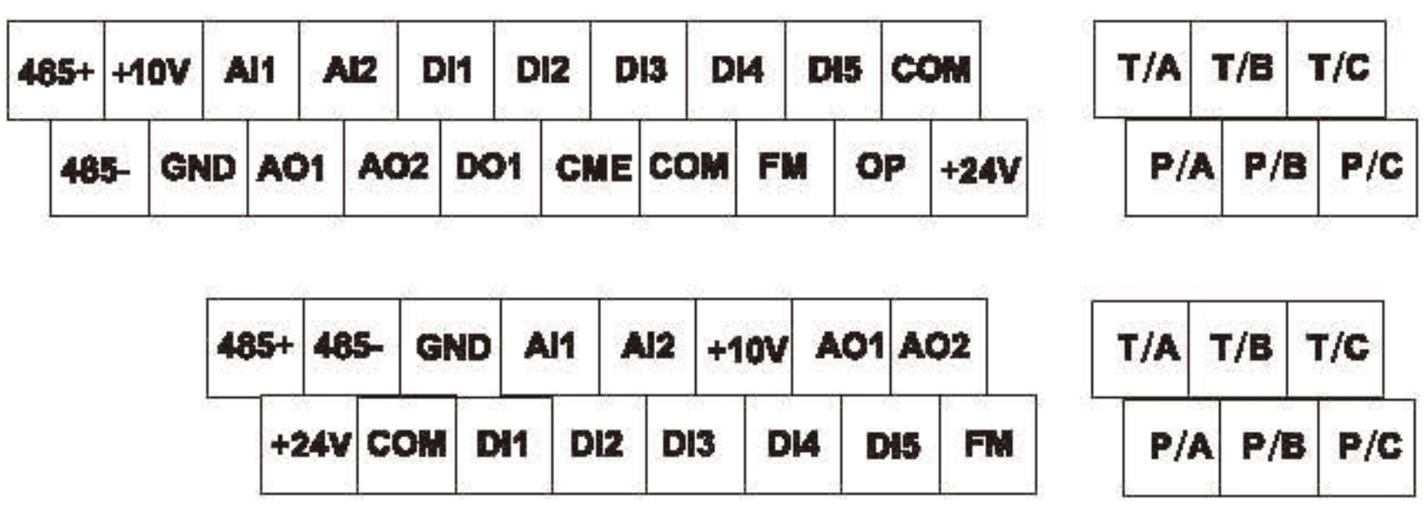


Figure 3-14 Control Loop Terminal Layout Diagram

Function description of the control terminal:

List 3-4 Function Description of Frequency Converter Control Terminals

Category	Terminal symbol	Terminal name	Function Description
power supply	+10V-GND	External +10V power supply	Provide an external +10V power supply with a maximum output current of 10mA. It is generally used as the power supply for external potentiometers. The resistance range of the potentiometer is:1kΩ~5kΩ
	+24V-COM	External +24V power supply	Provide an external +24V power supply. It is typically used for the operation of digital input/output terminals. Power supply and external sensor power supply Maximum output current: 200mA
	OP	External power input terminal	The factory default is to connect to 24V. When driving DI1-DI5 with external signals, OP needs to be connected to the external power supply,And disconnect from the +24V power terminal.
analog input	AI1-GND	Analog input terminal 1	1、Input voltage range: DC 0V to 10V 2、Input impedance: 22 kΩ
	AI2-GND	Analog input terminal 2	1、Input range: DC 0~10V / 0~20mA, determined by the selection of J8 on the control board. 2、Input impedance: 22kΩ when using voltage input, 500Ω when using current input.
digital input	DI1- COM	Enter the number 1	1、Optical isolation, compatible with bipolar input 2、Input impedance: 2.4 kΩ 3、Voltage range for level input: 9V to 30V
	DI2- COM	Enter the number 2	
	DI3- COM	Enter the number 3	
	DI4- COM	Enter the number 4	
	DI5- COM	High-speed pulse input terminal	In addition to having the characteristics of DI1-DI4, it can also be used as a high-speed pulse input channel with the maximum input frequency of 100 kHz.

Category	Terminal symbol	Terminal name	Function Description
analog output	AO1-GND AO2-GND	Simulation output 1	By using the J1 and J5 jumpers on the control board, you can select to determine the output voltage or current. The output voltage range is: 0V to 10V. Output current range: 0mA to 20mA
digital output	DO1-CME	Digital output 1	Optical isolation, bipolar open-collector output Output voltage range: 0V to 24V Output current range: 0mA to 50mA 【Note: The digital output terminal CME is isolated from the digital input terminal COM internally. However, during factory assembly, CME and COM are already externally connected (at this point, DO1 defaults to a 24V drive from the internal power supply). When DO1 needs to be driven by an external power source, the external connection between CME and COM must be disconnected. 】
	FM- COM	High-speed pulse output	It is restricted by the function code "P5-00" for selecting the output mode of the FM terminal. When used as a high-speed pulse output, the maximum frequency can reach up to 100kHz; when used as a collector open-circuit output, it is the same as the DO1 specification.
relay output	T/A-T/B	Normally closed terminal	Contact-driven capability: 250Vac, 3A, COSØ=0.4 30Vdc, 1A
	T/A-T/C	Regular socket adapter	
	P/A-P/B	Normally closed terminal	
	P/A-P/C	Regular socket adapter	
commu-nicate	485+-485-		Modbus communication terminal

3.2.4 THE WIRING METHOD OF THE FREQUENCY CONVERTER CONTROL CIRCUIT

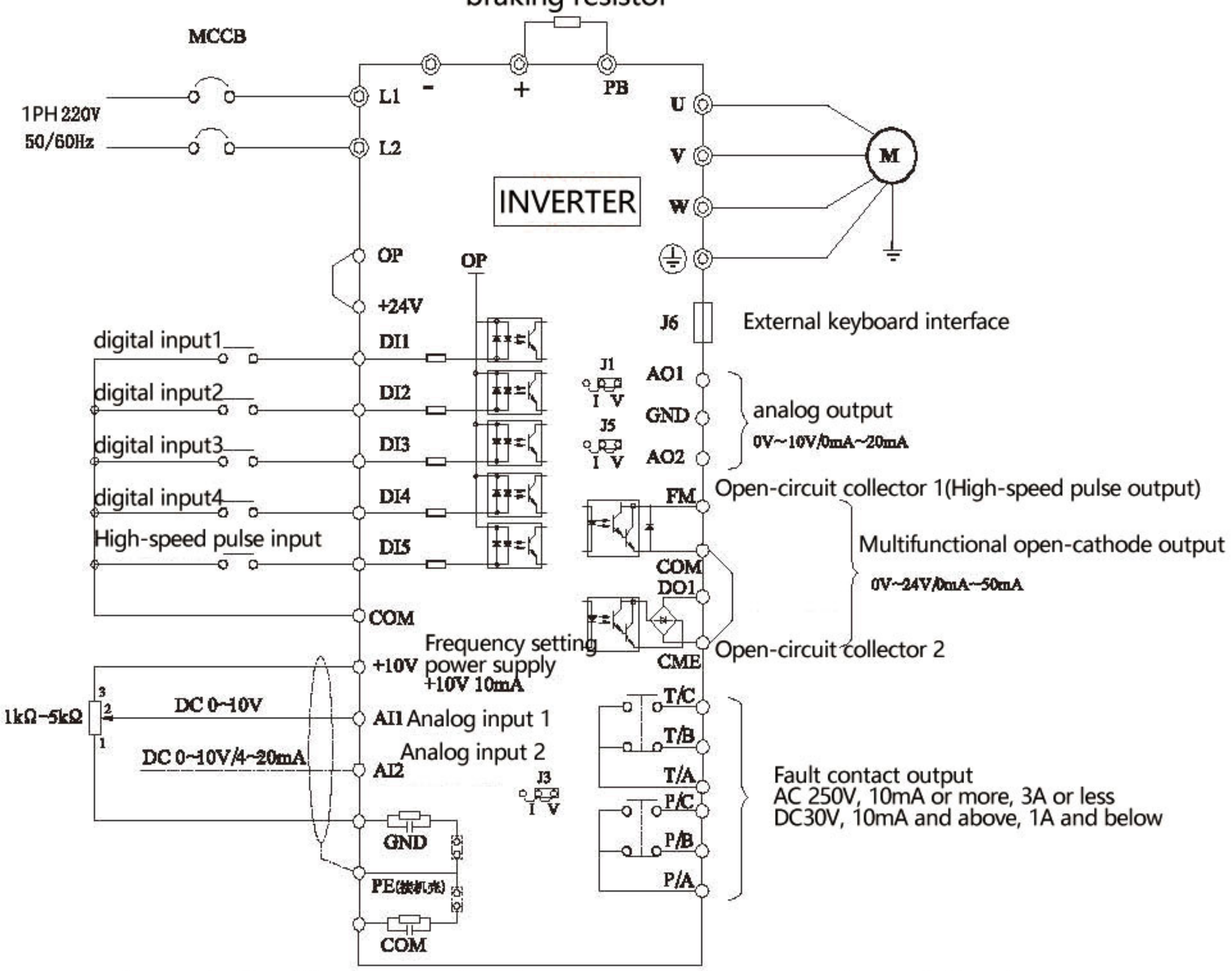


Figure 3-16 Wiring Method of the Frequency Converter Control Circuit

Note: The wiring methods for all the control circuits of this series of frequency converters are the same. The above figure is a schematic diagram of the wiring for a single-phase 220V frequency converter. The symbol ◎ represents the main circuit terminals, and the symbol ○ represents the control circuit terminals.

Signal input terminal wiring instructions:

1) AI simulation input terminal:

Because the weak analog voltage signal is particularly susceptible to external interference, it is generally necessary to use shielded cables, and the wiring distance should be as short as possible, not exceeding 20 meters, as shown in Figure 3-16. In some cases where the analog signal is severely interfered with, a filter capacitor or ferrite core should be added on the signal source side, as shown in Figure 3-17.

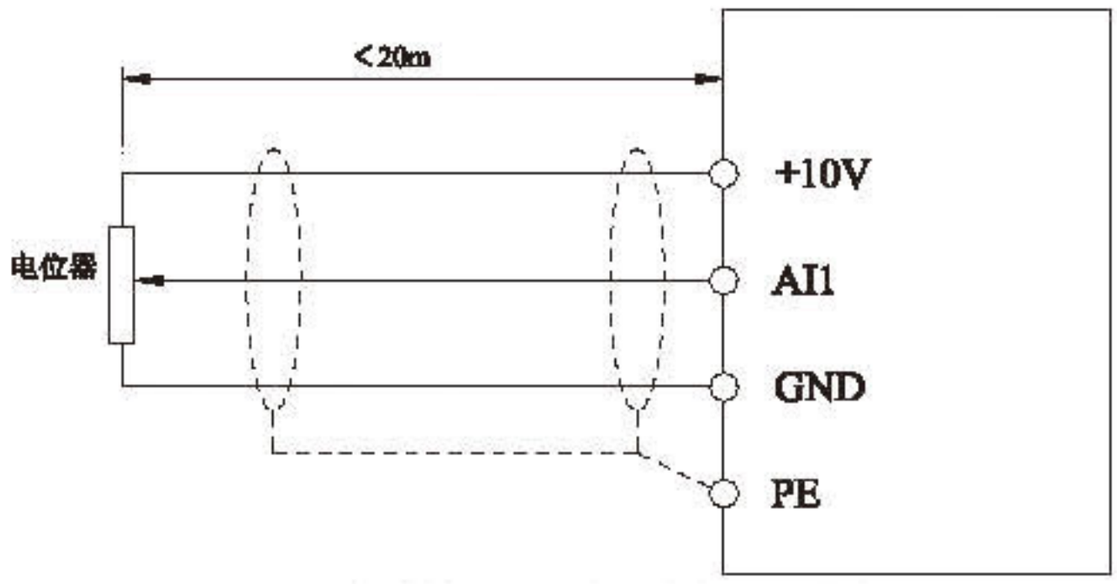


Figure 3-17 Wiring Diagram of Analog Input Terminal

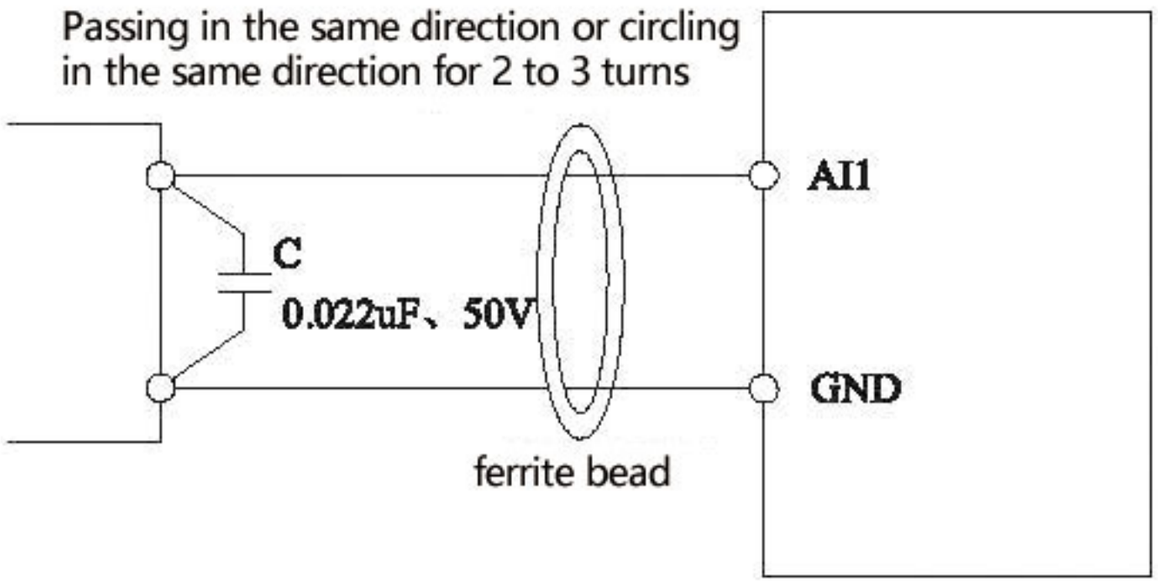


Figure 3-18 Wiring Diagram for Analog Input Terminal Processing

2) DI Digital Input Terminal:
Generally, shielded cables are required, and the wiring distance should be as short as possible, not exceeding 20 meters. When using an active drive method, necessary filtering measures should be taken to address the crosstalk of the power supply. It is recommended to use the contact control method.

◆ Leak-type wiring method

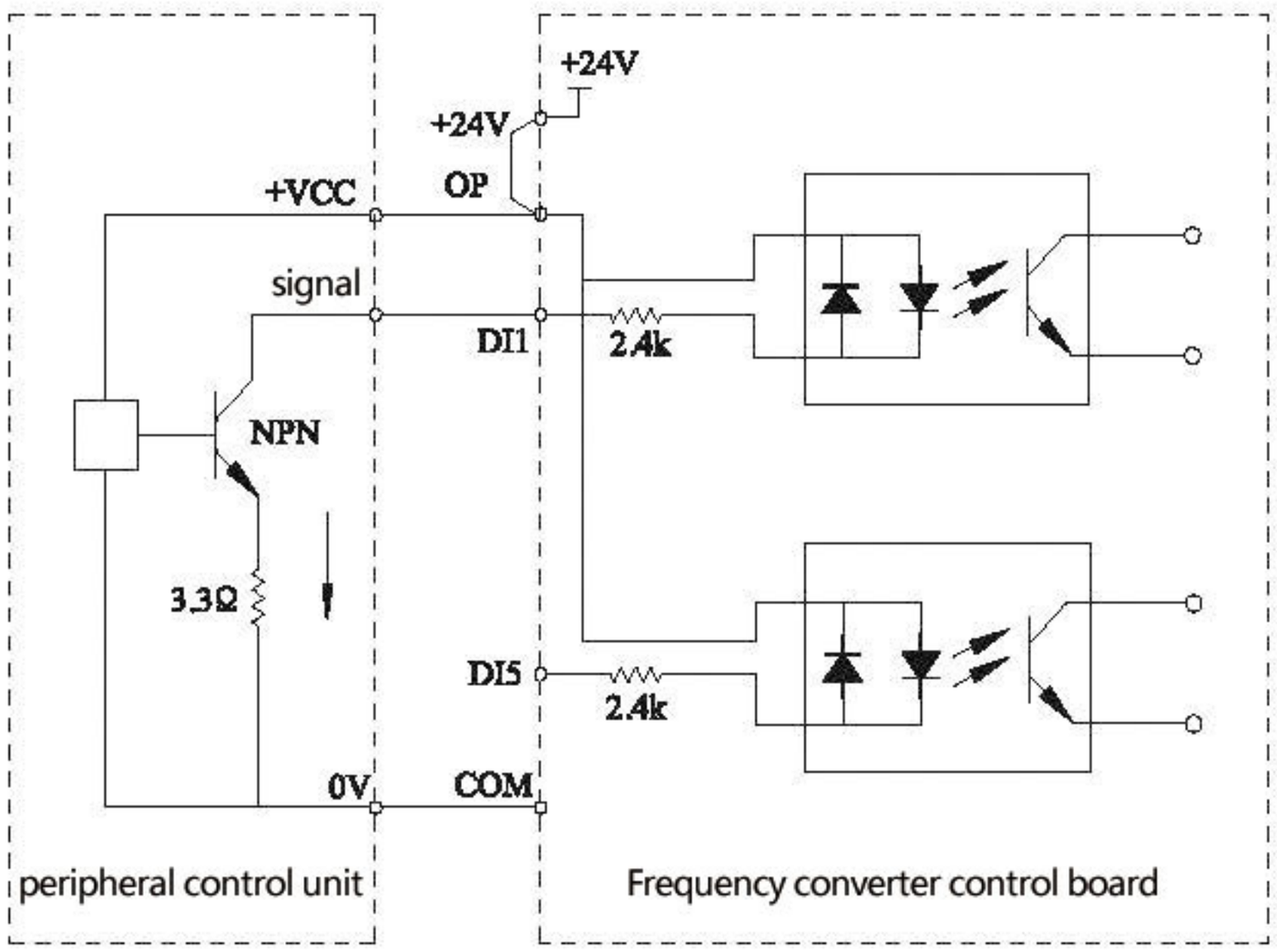


Figure 3-19 Open-type wiring method

This is the most commonly used wiring method. If an external power supply is used, the shorting piece between +24V and the OP must be removed. Connect the positive pole of the external power supply to the OP terminal, and the 0V of the external power supply is connected to the corresponding DI terminal through the controller's control contact.
Note: In this wiring method, the DI terminals of different frequency converters cannot be connected in parallel; otherwise, it may cause incorrect operation of the DI. If the DI terminals need to be connected in parallel (between different frequency converters), a diode (with the anode connected to DI) should be connected in series at the DI terminal. The diode should meet the conditions: IF > 10mA and UF < 1V, as shown in the following figure.

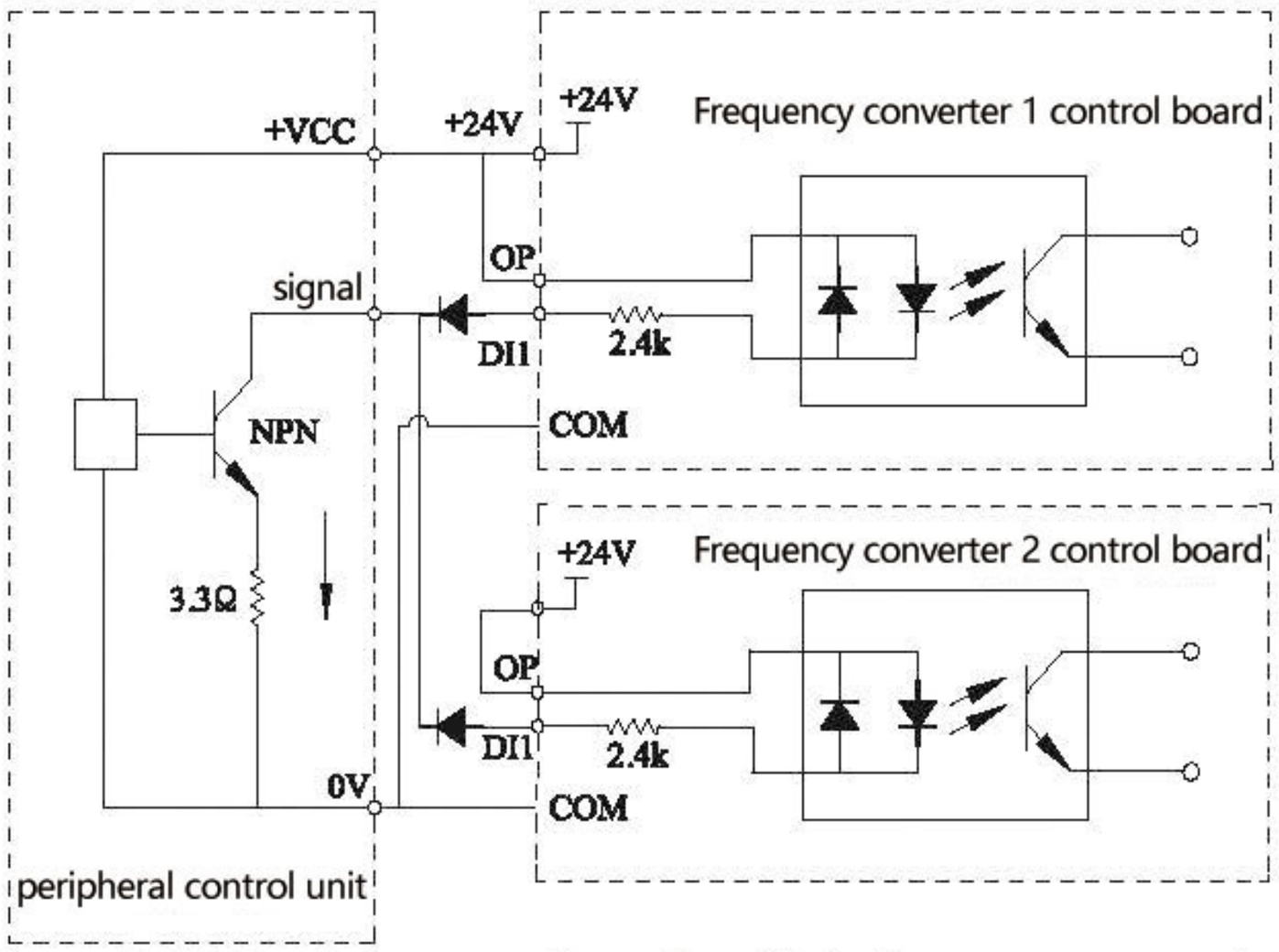


Figure 3-20 Parallel connection of multiple frequency converter DI terminals in a leakage type wiring method

◆ Source-type wiring method

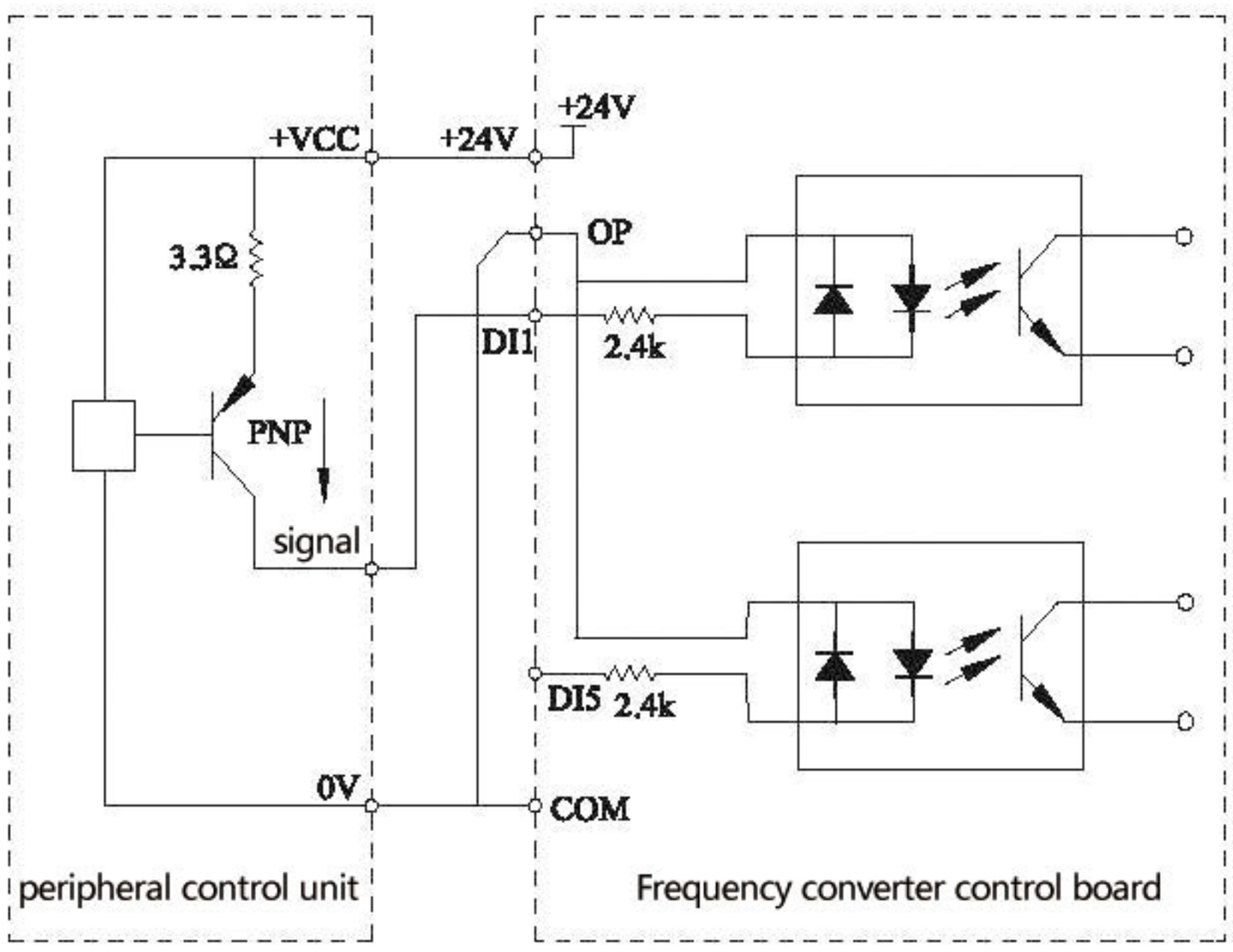


Figure 3-21 Source-type wiring method

This wiring method requires removing the shorting piece between +24V and OP, connecting +24V to the common terminal of the external controller, and connecting OP to COM. If an external power supply is used, the shorting piece between +24V and OP must be removed, connecting OP to the 0V of the external power supply, and the positive pole of the 24V of the external power supply is connected to the corresponding terminal of DI through the control contact of the external controller.

Description of Wiring for Control Signal Output Terminal

3) DO Digital Output Terminals:

When the digital output terminals need to drive relays, diodes should be added on both sides of the relay coil. Otherwise, it is likely to damage the 24V DC power supply. The driving capacity should not exceed 50mA. Note 1: The polarity of the absorption diode must be installed correctly. As shown in the figure below. Otherwise, when the digital output terminal has an output, it will immediately burn out the 24V DC power supply.

Note 2: The digital output terminal CME and the digital input terminal COM are internally isolated. However, during the factory production, CME and COM have already been externally short-circuited (at this time, D01 defaults to +24V drive). When D01 intends to be driven by an external power supply, the external short connection between CME and COM must be disconnected.

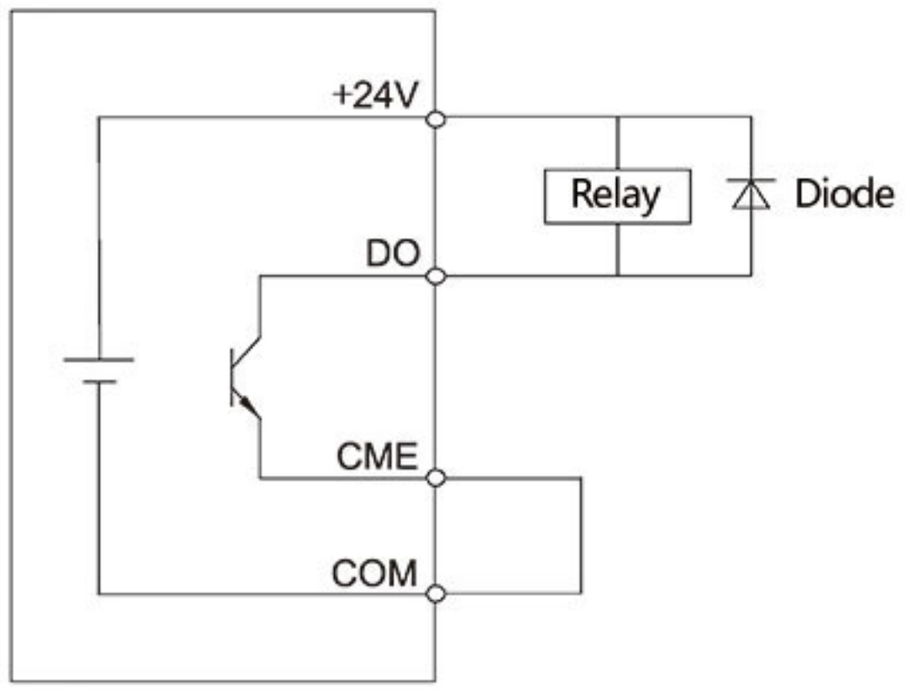


Figure 3-21 Wiring Diagram for Digital Output Terminals

3.2.5 Electrical Wiring Example of Frequency Converter

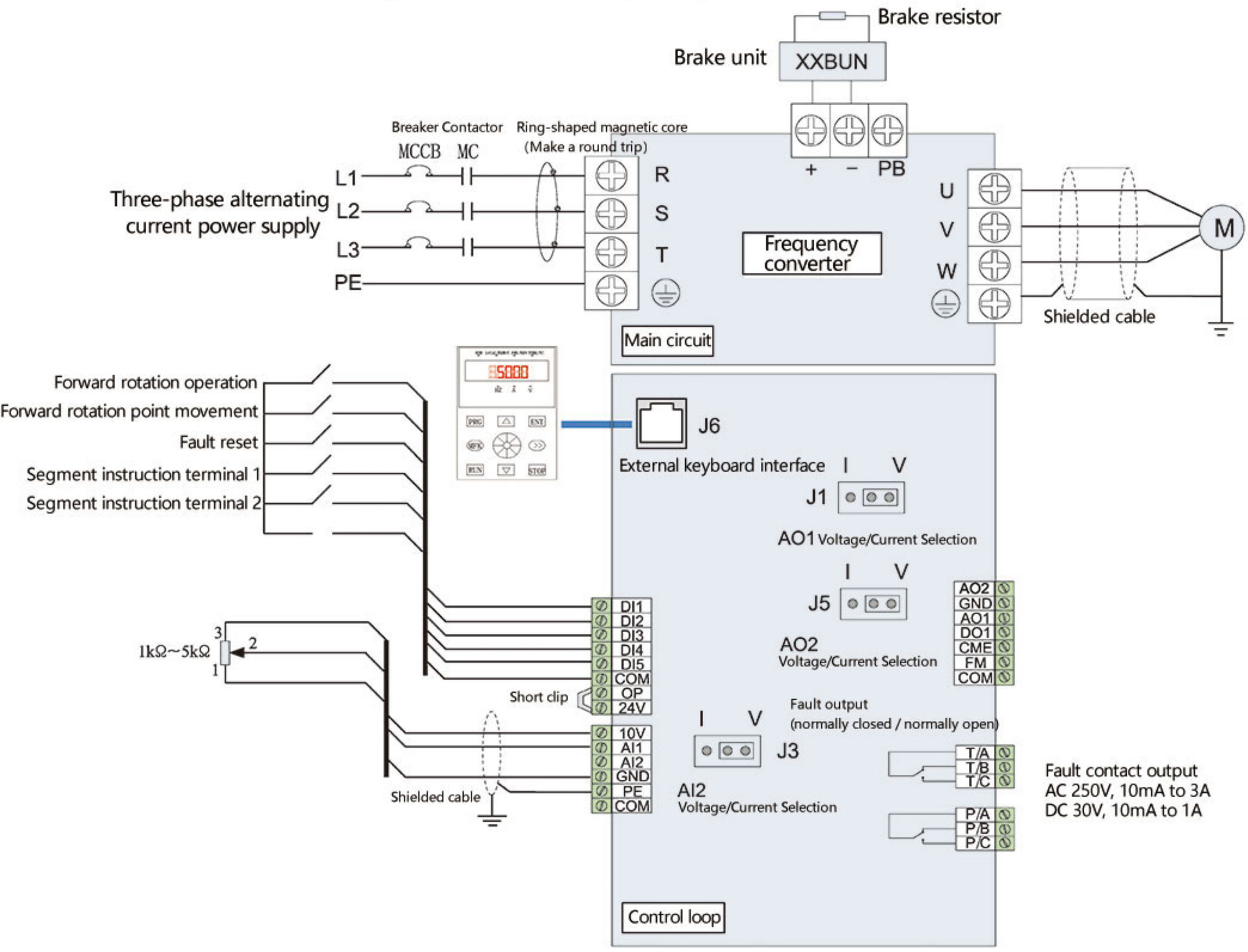


Figure 3-22 Electrical Wiring Example

4

OPERATION DISPLAY AND APPLICATION EXAMPLES

SAFETY INFORMATION AND PRECAUTIONS

4.1INTRODUCTION TO THE OPERATION AND DISPLAY INTERFACE

Using the operation panel, you can modify the functional parameters of the inverter, monitor the working status of the inverter, and control the operation of the inverter (start, stop), etc. Its appearance and functional areas are shown in the following figure:

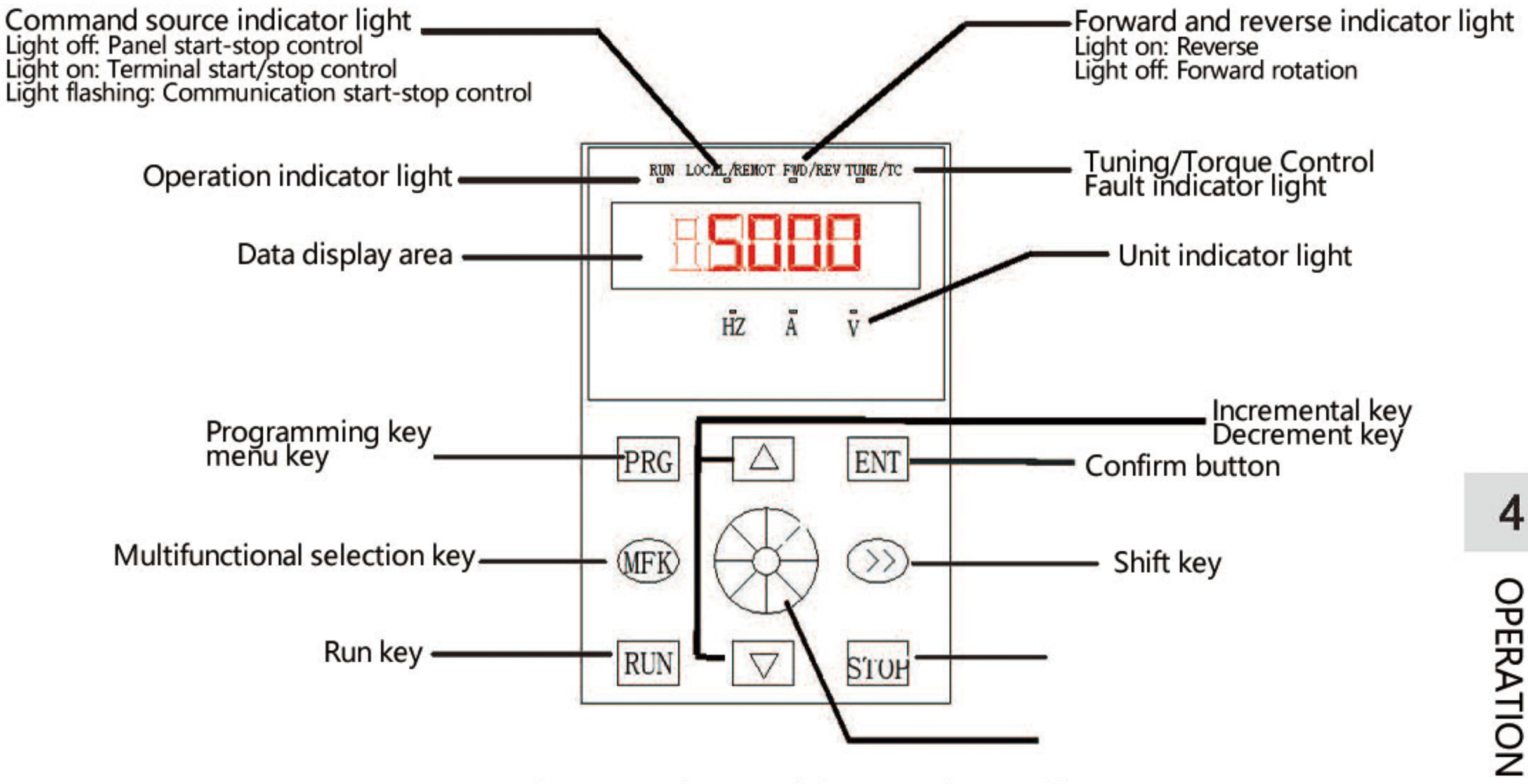


Figure 4-1 Diagram of the Operation Panel

Function indicator light explanation:

- **RUN:** When the light is on, it indicates that the frequency converter is in operation; when the light is off, it indicates that the frequency converter is in a stopped state.
- **LOCAL/REMOT:** Keyboard operation, terminal operation and remote operation (communication control) indicator lights:

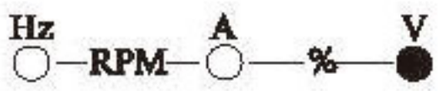
○ LOCAL/REMOT: The light went out.	Panel start-stop control mode
● LOCAL/REMOT: Constantly on	Terminal start-stop control method
◑ LOCAL/REMOT: Flashing	Communication start-stop control mode

- **FWD/REV :** The forward/reverse indicator light. When the light is on, it indicates that the machine is in reverse operation mode.
- **TUNE/TC :** Tuning/Torque Control/Fault Indicator Light. When the light is on, it indicates that the system is in torque control mode. When the light flashes slowly, it means the system is in tuning state. When the light flashes rapidly, it indicates the system is in fault state.

Hz ○ —RPM— A ○ —%— V ○ : Unit indicator lights are used to indicate the units of the current displayed data. There are several units as follows: ○ Indication light off ● Indication light on

Hz ● —RPM— A ○ —%— V ○ : HZ frequency unit

Hz ○ —RPM— A ● —%— V ○ : A current unit



: V - VOLTAGE UNIT



: RMP - ROTATION PER MINUTE UNIT



: % PERCENTAGE

Digital display area:
There are 5 LED displays, which can show the set frequency, output frequency, various monitoring data, and alarm codes, etc.

Keyboard Button Description list

List 4-1 Keyboard Function List

PRG	Programming key	Entering and exiting the main menu
ENT	Confirm button	Progressively enter the menu screen, confirm the parameter settings
△	Incremental key	The increment of data or function codes
▽	Decrement key	Decrease in data or function codes
>>	Shift key	On the shutdown display interface and the operation display interface, the display parameters can be selected cyclically; when modifying the parameters, the modification position of the parameters can be selected.
RUN	Run key	In the keyboard operation mode, it is used for performing operations
STOP	Stop / Reset	When the device is in operation mode, pressing this key can be used to stop the operation; in the fault alarm mode, it can be used to reset the operation. The characteristics of this key are restricted by function code P7-02.
MF.K	Multifunctional selection key	According to the function switching selection on P7-01, it can be defined as a command source or a rapid direction switch.

4.2 Instructions for Viewing and Modifying Function Codes

The operation panel of the frequency converter adopts a three-level menu structure for parameter settings and other operations.
The three-level menus are as follows: Function Parameter Group (I-level menu) - Function Code (II-level menu) - Function Code Setting Value (III-level menu).

The operation process is shown in Figure 4-2.

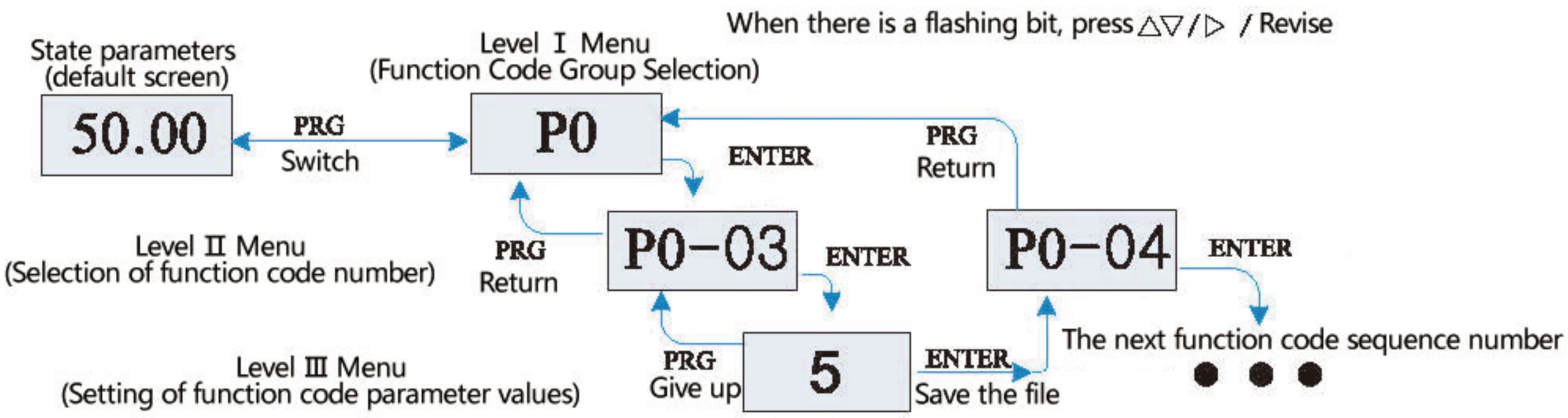
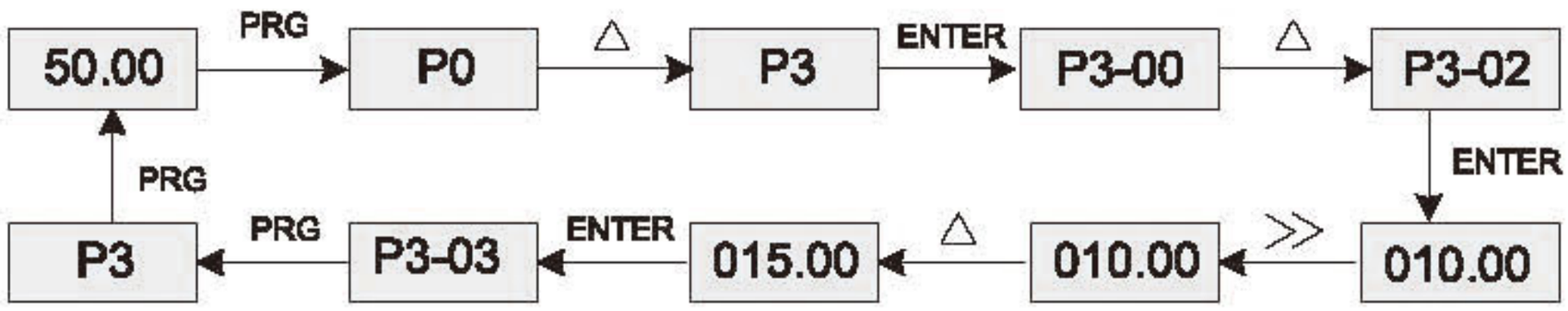


Figure 4-2 Three-level Menu Operation Flow Chart

Explanation: When operating the three-level menu, you can press the PRG key or the ENTER key to return to the second-level menu. The difference between the two is as follows: pressing the ENTER key will save the set parameters and then return to the second-level menu, and automatically move to the next function code; while pressing the PRG key is to abandon the current parameter modification and directly return to the second-level menu of the current function code number.

Example: An example of changing the function code P3-02 from 10.00 Hz to 15.00 Hz.



When in the third-level menu state, if the parameter does not have a flashing indicator, it indicates that this function code cannot be modified. Possible reasons include:
1)This function code is a non-modifiable parameter, such as the type of frequency converter, actual detection parameters, and operation record parameters, etc.
2)This function code cannot be modified while the system is running. It can only be modified after the system is shut down.

4.3 Motor characteristic parameter settings and automatic tuning

4.3.1 Parameters that need to be set for the motor

When the frequency converter operates in the "vector control" (P0-01 = 0 or 1) mode, it is highly dependent on accurate motor parameters. This is one of the significant differences from the "VF control" (P0-01 = 2) mode. To ensure the frequency converter has good driving performance and operational efficiency, it must obtain the accurate parameters of the controlled motor.

The required motor parameters are as follows (with the default function code for motor 1):

Parameter of Motor 1	Parameter description	Explanation
P1-00	Motor type	Asynchronous, variable-frequency asynchronous
P1-01～P1-05	Motor rated power/voltage/current/frequency/rotational speedMotor type	Model parameters, input manually
P1-06～P1-20	The equivalent stator resistance, inductance, and rotor inductance within the motor	Tuning parameters
P1-27～P1-34	Encoder parameters, with sensor vector mode, need to be set	Encoder parameters

For complex multi-motor application systems, the corresponding parameters of motor 2 are:

Motor 2 parameters	Explanation
A2-00	Asynchronous, variable-frequency asynchronous
A2-01～A2-05	Model parameters, input manually
A2-06～A2-20	Tuning parameters
A2-27～A2-34	Encoder parameters

4.3.2 Automatic Tuning of Motor Parameters

The methods for enabling the frequency converter to obtain the internal electrical parameters of the controlled motor include: dynamic tuning, static tuning 1, static tuning 2, and manual input of motor parameters, etc.

Tuning method	Applicable circumstances	Tuning effect
Unloaded dynamic tuning	Suitable for asynchronous motors. Suitable for scenarios where the motor can be easily disconnected from the application system.	Best
Load-carrying dynamic tuning	Applicable to asynchronous motors. In situations where the motor and the application system cannot be separated.	Generally
Static Tuning 1	This is only applicable to asynchronous motors where the motor and the load are difficult to separate and dynamic tuning operation is not allowed. In such cases, P1-09 and P1-10 are not tuned.	Best
Static Tuning 2	Only applicable to asynchronous motors where the motor and the load are difficult to separate and dynamic tuning operation is not allowed.	Good
Manually input parameters	Applicable only to asynchronous motors. In situations where the motor and the application system are closely integrated and it is difficult to separate them, copy and input the previously successfully tuned parameters of the same model motor into the corresponding function codes P1-00 to P1-10.	Generally

The steps for automatic tuning of motor parameters are as follows:

The following will explain the parameter tuning method for the default motor 1. The tuning method for motor 2 is the same, but the function code number needs to be changed accordingly.

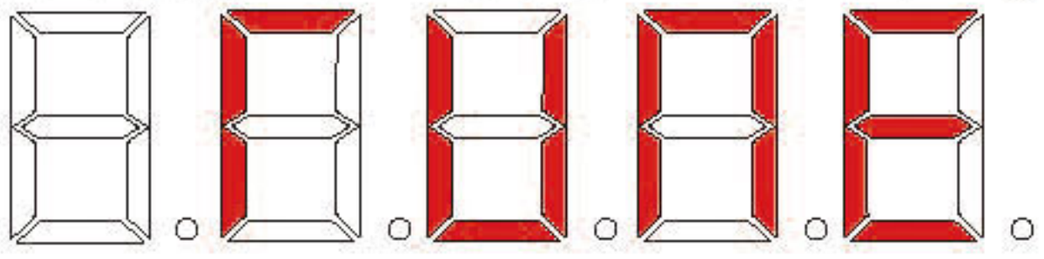
Step 1: If it is a motor, it can be completely disconnected from the load. In the case of power failure, mechanically separate the motor from the load to allow the motor to rotate freely without load.

Step 2: After powering on, first select the frequency converter command source (P0-02) to be the operation panel command channel.

Step 3: Precisely input the nameplate parameters of the motor (such as P1-00 to P1-05). Please enter the following parameters based on the actual parameters of the motor (select according to the current motor):

Motor selection	Parameters
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 to A2-05: The same as the above definition

Step 4: If it is an asynchronous motor, then P1-37 (tuning selection, for motor 2 it corresponds to function code A2-37) select 2 (asynchronous motor dynamic tuning), press the ENTER key to confirm. At this time, the keyboard displays "TUNE", as shown in the following figure:



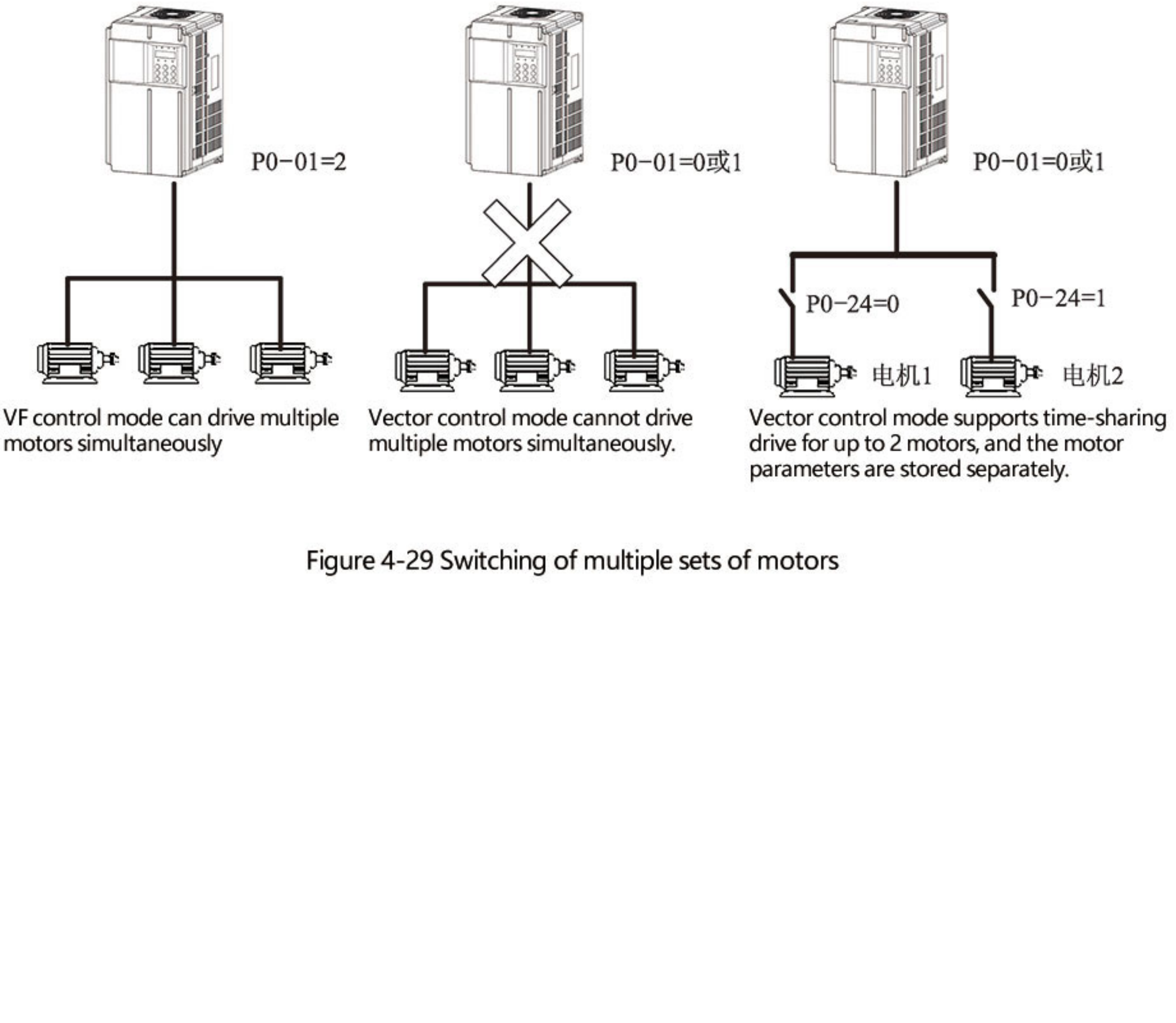
Then press the RUN button on the keyboard panel. The frequency converter will drive the motor to accelerate, decelerate, and operate in forward and reverse directions. The operation indicator light will illuminate. The tuning operation duration is approximately 2 minutes. When the above display information disappears and returns to the normal parameter display state, it indicates that the tuning is complete.
After this dynamic tuning, the frequency converter will automatically calculate the following parameters of the motor:

Motor selection	Parameters
Motor 1	P1-06: Stator Resistance of Asynchronous Motor P1-07: Rotor Electrical Resistance of Asynchronous Motor P1-08: Leakage Inductance of Asynchronous Motor P1-09: Mutual Inductance of Asynchronous Motors P1-10: No-load Current of Asynchronous Motor
Motor 2	A2-06 to A2-10: The definitions are the same as above.

If the motor cannot be completely disconnected from the load, then for P1-37 (with motor 2 being A2-37), select 3 (Static Tuning 2 for Step Motor), and then press the RUN button on the keyboard panel to start the tuning operation of the motor parameters.

4.3.3 Setting and Switching of Multiple Motor Parameters

The frequency converter supports the switching of two sets of motor parameters. The parameters of motor 1 and the encoder disk parameters are grouped as P1 and P2 respectively: the parameters of motor 2 correspond to the A2 function code parameter group. These can be specified through function codes P0-24, or selected from the digital input terminals function 41 and 42 to choose the current valid motor parameter group. However, when the function input terminals function 41 and 42 are valid, it takes precedence. At this time, the settings of P0-24 are invalid.



VF control mode can drive multiple motors simultaneously

Vector control mode cannot drive multiple motors simultaneously.

Vector control mode supports time-sharing drive for up to 2 motors, and the motor parameters are stored separately.

Figure 4-29 Switching of multiple sets of motors

4.4 PASSWORD SETTING

The frequency converter provides a user password protection function. When PP-00 is set to a non-zero value, it becomes the user password. Once the function code editing state is exited and the password protection is activated, pressing the PRG key again will display "---". The user password must be entered correctly to access the normal menu; otherwise, access will not be possible.
To disable the password protection function, you must enter the system using the password and set PP-00 to 0.

4.5 PARAMETER SAVING FEATURE AND FACTORY PARAMETER RESTORATION

After modifying the function codes of the frequency converter through the panel, the modified settings will be saved in the memory of the frequency converter. They will take effect the next time it is powered on, unless they are modified again by human intervention.
The frequency converter provides a function for backing up and restoring the user-set parameters, which is convenient for debugging and testing.
The frequency converter also has the function of saving information such as alarm messages and cumulative running time even in the event of power failure.
To restore the backup values of the function codes, the factory settings, or to clear the running data of the frequency converter, you can do so by operating the PP-01. For detailed instructions, please refer to the PP-01 function code manual.

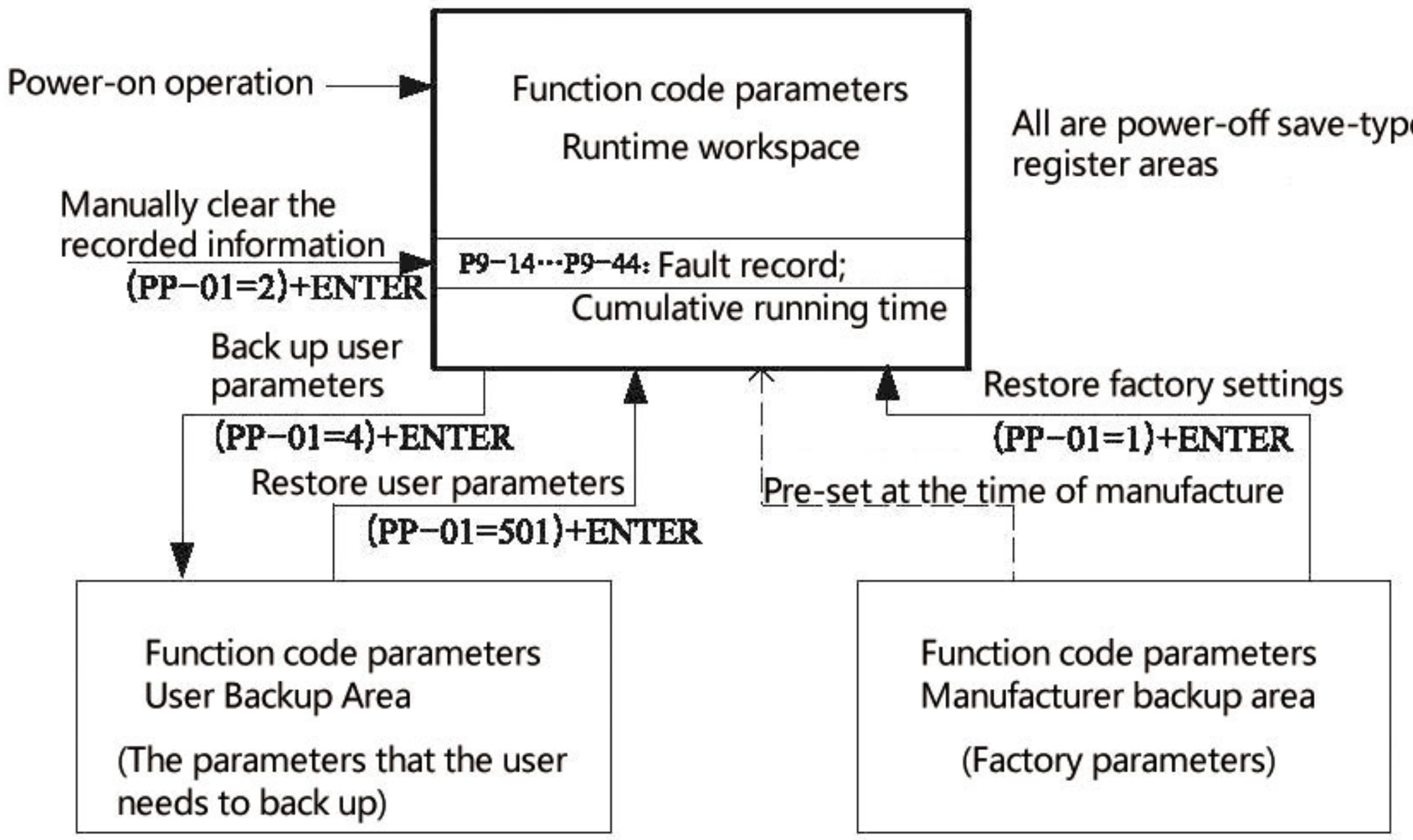


Figure 4-32 Parameter Backup and Recovery Settings

5

FUNCTION PARAMETER LIST

Function Parameter List

PP–00 Set to a non-zero value.That is, a parameter protection password has been set.In the function parameter mode and the user change parameter mode, the parameter menu can only be accessed after the correct password is entered. To cancel the password, PP -00 needs to be set to 0.

The parameter menu in the user-defined parameter mode is not password-protected. Group P and Group A are the basic functional parameters, while Group U is the monitoring functional parameter.
The symbols in the function menu are described as follows:

" " : The set value of this parameter can be changed when the frequency converter is in the off or running state;
" ® " : The set value of this parameter cannot be changed when the frequency converter is in operation;
"●" : The value indicating this parameter is the actual detection record value and cannot be changed;

"*" : This parameter indicates that it is a "manufacturer parameter", which can only be set by the manufacturer and is prohibited for users to operate;

5.1 Beief list of basic functional parameters

(Due to different software versions, in some versions, the first character of the function code is F, and F0 is equivalent to P0)

List 5-1 Brief Table of Basic Functional Parameters

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P0 Basic Function Group				
P0–00	GP type display	1: G type (Constant torque load model) 2: P type (Fan and pump load models)	Model confirmation	●
P0–01	The first motor control method	0: speed sensorless vector control (SVC) 1: speed sensor vector control (FVC) 2: V/F control	2	®
P0–02	Command Source Selection	0: Operation panel command channel (LED off) 1: Terminal command channel (LED on) 2: Communication command channel (LED flashing)	0	

P0–03	Selection of main frequency source X	0: Digital Settings (Pre-set frequencies P0-08, UP/DOWN adjustable, power loss does not retain data.) 1: Digital Settings (Pre-set frequencies P0-08, UP/DOWN adjustable, memory retained upon power loss) 2: AI1 3: AI2 4: Operation panel potentiometer (AI3) 5: PULSE Pulse Setting (DI5) 6: Multiple instructions 7: Simple PLC 8: PID 9: Communication given	4	®
P0–04	Selection of auxiliary frequency source Y	The same as P0-03(main frequency source X selection)	0	®
P0–05	Selection of the Y-range of the auxiliary frequency source during superposition	0: Relative to the maximum frequency 1: Relative to frequency source X	0	
P0–06	The range of the auxiliary frequency source Y during superposition	0%~150%	100%	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P0–07	Frequency source superposition selection	Unit: Frequency source selection 0: Main frequency source X 1: Main auxiliary operation result (operation relationship determined by the tens place) 2: Switch between main frequency source X and auxiliary frequency source Y 3: Switch between main frequency source X and main auxiliary operation result 4: Switch between auxiliary frequency source Y and main auxiliary operation result Tens place: Frequency source main-aided operation relationship 0: Main + Aid 1: Main - Aid 2: Maximum of both 3: Minimum of both	00	
P0–08	Pre-set frequency	0.00Hz ~ maximum frequency (P0—10)	50.00Hz	
P0–09	Direction selection for operation	0: Runs in the default direction; FWD/REV indicator lights are off; 1: Runs in the opposite direction of the default direction; FWD/REV indicator lights are constantly on;	0	
P0–10	Maximum frequency	50.00Hz ~ 500 .00Hz	50.00Hz	®
P0–11	Upper limit frequency source	0: P0 - 12 Setting 1: AI1 2: AI2 3: Operation Panel Potentiometer 4: PULSE Pulse Setting 5: Communication Setting	0	®
P0–12	Upper limiting frequency	Lower limit frequency P0-14 ~ maximum frequency P0-10	50.00Hz	

P0–13	Upper frequency bias	0.00Hz～maximum frequency P0—10	0.00Hz	
P0–14	Lower frequency limit	0.00Hz～upper limiting frequency P0—12	0.00Hz	
P0–15	Carrier frequency	0.5kHz～16 .0kHz	Model confirmation	
P0–16	The carrier frequency is adjusted according to the temperature.	0: No 1: Yes	1	
P0–17	Accelerate time 1	0.00s～650 .00s(P0—19=2) 0.0s～6500 .0s(P0—19=1) 0s～65000s(P0—19=0)	20.00	
P0–18	Deceleration time 1	0.00s～650 .00s(P0—19=2) 0.0s～6500 .0s(P0—19=1) 0s～65000s(P0—19=0)	20.00	
P0–19	Acceleration and deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	1	®
P0–21	Biasing of the auxiliary frequency source during superposition - frequency	0.00Hz～maximum frequency P0—10	0.00Hz	
P0–22	Frequency command resolution	2: 0.01Hz	2	®
P0–23	Digital set frequency shutdown memory selection	0: No memory 1: Memory	0	
P0–24	Selection of motor parameter group	0: Motor Parameter Group 1 1: Motor Parameter Group 2	0	®

Function Code	Name	Setting Range	Factory Value	Change
P0-25	Acceleration and deceleration time reference frequency	0: Maximum frequency (P0-10) 1: Set the frequency 2: 100Hz	0	®
P0-26	Reference for the UP/DOWN command of the operating frequency	0: Operating frequency 1:Set the frequency	0	®
P0-27	Command source is bundled with frequency source	Unit: Operation panel command binding frequency source selection 0: Unbinding 1: Set the frequency numerically 2: AI1 3: AI2 4: Operation panel potentiometer 5: PULSE Pulse setting(DI5) 6: Multiple-speed mode 7: Simple PLC 8: PID 9: Communication given Ten: Terminal command binding frequency source selection Hundredth position: Communication command binding frequency source selection	0000	
P0-28	Serial port communication protocol selection	0: MODBUS-RTU Agreement 1: Profibus-DP bridge or CANopen bridge	0	®
P0-29	Serial port communication protocol selection	0: No application macros 1: Water supply one-to-one application macro	0	®
P1 First Motor Parameters				
P1-00	Selection of motor type	0: Ordinary asynchronous motor 1: Variable-frequency asynchronous motor	0	®
P1-01	Motor rated power	0.1kW~1000.0kW	Model confirmed	®
P1-02	Rated voltage of the motor	1V~2000V	Model confirmed	®
P1-03	Rated current of the motor	0.01A~655.35A (Inverter power ≤ 55kW) 0.1A~6553.5A (Inverter power >55kW)	Model confirmed	®
P1-04	Rated frequency of the motor	0.01Hz~ Maximum power	Model confirmed	®
P1-05	Rated rotational speed of the motor	1rpm~65535rpm	Model confirmed	®
P1-06	Asynchronous motor stator resistance	0.001Ω ~65.535Ω (Inverter power ≤55kW) 0.0001Ω ~6.5535Ω (Inverter power >55kW)	Tuning parameters	®
P1-07	Asynchronous motor rotor resistance	0.001Ω ~65.535Ω (Inverter power ≤55kW) 0.0001Ω ~6.5535Ω (Inverter power >55kW)	Tuning parameters	®
P1-08	Asynchronous motor leakage inductance reactance	0.01mH~655.35mH (Inverter power ≤ 55kW) 0.001mH~65.535mH (Inverter power >55kW)	Tuning parameters	®

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P1–09	Asynchronous motor mutual inductance	0.1mH～6553.5mH (Frequency converter power≤ 55kW) 0.01mH～655.35mH (Frequency converter power>55kW)	Tuning parameters	®
P1–10	No-load current of asynchronous motor	0.01A～P1–03 (Frequency converter power≤ 55kW) 0.1A～P1–03 (Frequency converter power>55kW)	Tuning parameters	®
P1–27	Number of encoder lines	1～65535	1024	®
P1–28	Encoder type	0: ABZ incremental encoder 1: UVW incremental encoder 2: Rotating transformer 3: Sine and cosine encoder 4: Reduced-wire UVW encoder	0	®
P1–30	ABZ incremental encoder phase sequence of A B phase	0: Forward 1: Reverse	0	®
P1–31	Encoder installation angle	0.0～359.9°	0.0°	®
P1–32	UVW encoder UVW phase sequence	0: Forward 1: Reverse	0	®
P1–33	UVW encoder offset angle	0.0～359.9°	0.0°	®
P1–34	UVW encoder offset angle	1～65535	1	®
P1–36	Speed feedback, PG disconnection detection time	0.0s～10.0s	0.0s	®
P1–37	Tuning selection	0: No operation 1: Asynchronous motor stationary tuning 1 2: Asynchronous motor dynamic tuning 3: Asynchronous motor stationary tuning 2	0	®

P2 group - First motor vector control parameters				
P2–00	Speed loop proportional gain 1	1 ~ 100	30	
P2–01	Integral time of speed loop 1	0.01s ~ 10.00s	0.50s	
P2–02	Switching frequency 1	0.00 ~ P2–05	5.00Hz	
P2–03	Speed loop proportional gain 2	1 ~ 100	20	
P2–04	Integral time of speed loop 2	0.01s ~ 10.00s	1.00s	
P2–05	Switching frequency 2	P2–02 ~ maximum frequency	10.00Hz	
P2–06	Vector control slip gain	50% ~ 200%	100%	
P2–07	SVC speed feedback filtering time	0.000s~1.000s	0.015s	
P2–08	Vector control over-excitation gain	0~200	64	
P2–09	Torque upper limit source in speed control mode	0: Function code P2-10 setting 1: AI1 2: AI2 3: Operation panel potentiometer 4: PULSE pulse setting 5: Communication setting 6: MIN(AI1, AI2) 7: MAX(AI1, AI2) The full-scale range of options 1 to 7 corresponds to P2-10.	0	
P2–10	Setting of the torque upper limit value under the speed control mode	0.0% ~ 200%	150.0%	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P2–13	Excitation regulation proportional gain	0～60000	2000	
P2–14	Excitation regulation integral gain	0～60000	1300	
P2–15	Torque regulation proportional gain	0～60000	2000	
P2–16	Torque regulation integral gain	0～60000	1300	
P2–17	Speed loop integral property	Unit: Integral Separation 0: Invalid 1: Valid	0	
P2–21	Maximum torque coefficient in the weak magnetic region	50%~200%	100%	
P2–22	Power generation capacity limit enabled	0: Invalid 1: Valid	0	®
P2–23	Upper limit of power generation capacity	0%~200%	20%	®
P3 group V/F control parameters				
P3-00	VF curve setting	0: Linear V/F 1: Multiple V/F 2: Square V/F 3: 1.2th Power V/F 4: 1.4th Power V/F 6: 1.6th Power V/F 8: 1.8th Power V/F 9: Keep 10: VF Fully Separated Mode 11: VF Semi-Separated Mode	0	®
P3-01	Torque increase	0.0% (Automatic torque increase) 0.1%～30.0%	Model confirm	®

			ation	
P3-02	Torque boost cutoff frequency	0.00Hz ~ maximum frequency	50.00Hz	®
P3-03	Multiple VF frequency points 1	0.00Hz ~ P3-05	0.00Hz	®
P3-04	Multi-point VF voltage point 1	0.0% ~ 100.0%	0.0%	®
P3-05	Multi-point VF frequency point 2	P3-03 ~ P3-07	0.00Hz	®
P3-06	Multi-point VF voltage point 2	0.0% ~ 100.0%	0.0%	®
P3-07	Multi-point VF frequency point 3	P3-05 ~ Rated frequency of the motor(P1—04)	0.00Hz	®
P3-08	Multi-point VF voltage point 3	0.0% ~ 100.0%	0.0%	®
P3-09	VF slip compensation gain	0.0% ~ 200.0%	0.0%	
P3-10	VF over-excitation gain	0 ~ 200	64	
P3-11	VF oscillation suppression gain	0 ~ 100	Model confirm ation	
P3-12	Selection of Oscillation Suppression Mode	0~4	3	®
P3-13	The voltage source separated by VF	0: Digital Settings (P3-14) 1: AI1 2: AI2 3: Operation Panel Potentiometer 4: PULSE Pulse Setting (D15) 5: Multiple Instruction Segments 6: Simple PLC 7: PID 8: Communication Input Note: 100.0% corresponds to the rated voltage of the motor	0	
P3-14	Voltage digital	0V ~ Rated voltage of the motor	0V	
	setting for VF separation			

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P3-15	The voltage acceleration time of VF separation	0.0s ~ 1000 .0s Note: It indicates the time from 0V to the rated voltage of the motor	0.0s	
P3-16	The voltage deceleration time of VF separation	0.0s ~ 1000 .0s Note: It indicates the time from 0V to the rated voltage of the motor	0.0s	
P3-17	Selection of VF separation shutdown mode	0: Frequency/voltage is reduced to 0 independently. 1: Frequency is further reduced after the voltage reaches 0.	0	
P3-18	Overcurrent rapid operating current	50~200%	150%	®
P3-19	Over-loss rate suppression enablement	0 - Invalid; 1 - Valid	1	®
P3-20	Over-loss rate suppression gain	0~100	20	
P3-21	Speed-up loss reduction action current compensation coefficient	50~200%	50%	®
P3-22	Overvoltage stall action voltage	200.0V~2000.0V	Model confirmation 220V: 380V 380V: 780V	®
P3-23	Overpressure stall enable function	0 - Invalid; 1 - Valid	1	®
P3-24	Overpressure stall suppression frequency gain	0~100	30	
P3-25	Overvoltage stall suppression voltage gain	0~100	30	
P3-26	Maximum rate of ascent for overpressure stall limitation	0~50Hz	5Hz	®

P4 group input terminals				
Function Code	Parameter Name	Set Value range	Factory Default	Modification
P4–00	DI1 Terminal function selection	0: No function 1: Forward operation (FWD or run command) 2: Reverse operation (REV or forward/reverse operation direction) (Note: When setting to 1 or 2, it needs to be used in conjunction with P4-11. See the function code parameter description) 3: Three-wire operation control 4: Forward point operation (FJOG) 5: Reverse point operation (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Free stop 9: Fault reset (RESET) 10: Operation pause 11: External fault normally open input 12: Multi-segment instruction terminal 1 13: Multi-segment instruction terminal 2 14: Multi-segment instruction terminal 3 15: Multi-segment instruction terminal 4 16: Acceleration/deceleration time selection terminal 1 17: Acceleration/deceleration time selection terminal 2 18: Frequency source switching 19: UP/DOWN setting reset (terminal, keyboard) 20: Control command switching terminal 1 21: Acceleration/deceleration prohibition 22: PID pause	1	®
P4–01	DI2 Terminal function selection		2	®
P4–02	DI3 Terminal function selection		9	®
P4–03	DI4 Terminal function selection		12	®
P4–04	DI5 Terminal function selection		13	®
P4–05	DI6 Terminal function selection		0	®
P4–06	DI7 Terminal function selection		0	®
P4–07	DI8 Terminal function selection		0	®
P4–08	DI9 Terminal function selection		0	®

P4–09	DI10 Terminal function selection	23: PLC status reset 24: Frequency counter pause 25: Counter input 26: Counter reset 27: Length counter input 28: Length reset 29: Torque control prohibition 30: PULSE (pulse) frequency input (only valid for DI5) 31: Reserved 32: Immediate direct braking 33: External fault normally closed input 34: Frequency modification enable 35: PID action direction inversion 36: External stop terminal 1 37: Control command switching terminal 2 38: PID integral pause 39: Frequency source X and preset frequency switching 40: Frequency source Y and preset frequency switching 41: Motor selection terminal 1 42: Reserved 43: PID parameter switching 44: User-defined fault 1 45: User-defined fault 2 46: Speed control/torque control switch 47: Emergency stop 48: External stop terminal 2 49: Deceleration direct braking 50: Reset of this run time 51: Two-wire/Three-wire switching 52: Prohibit reverse 53-59: Reserved	0	®
P4–10	DI Filtering time	0.000s ~ 1 .000s	0.010s	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P4–11	Terminal command mode	0: Two-wire Type 1 1: Two-wire Type 2 2: Three-wire Type 1 3: Three-wire Type 2	0	®
P4–12	Terminal UP/DOWN rate change	0.001Hz/s ~ 65 .535Hz/s	1.00Hz/s	
P4–13	Minimum input for AI Curve 1	0.00V ~ P4—15	0.00V	
P4–14	The minimum input corresponding setting for AI Curve 1	–100.0% ~ +100 .0%	0.0%	
P4–15	Maximum input for AI Curve 1	P4–13 ~ +10 .00V	10.00V	
P4–16	The maximum input corresponding setting for AI Curve 1	–100.0% ~ +100 .0%	100.0%	
P4–17	AI1 filtering time	0.00s ~ 10 .00s	0.10s	
P4–18	Minimum input for AI Curve 2	0.00V ~ P4–20	0.00V	
P4–19	The minimum input corresponding setting for AI Curve 2	–100.0% ~ +100 .0%	0.0%	
P4–20	Maximum input for AI Curve 2	P4–18 ~ +10 .00V	10.00V	
P4–21	The maximum input corresponding setting for AI Curve 2	–100.0% ~ +100 .0%	100.0%	
P4–22	AI2 filtering time	0.00s ~ 10 .00s	0.10s	

P4–23	Minimum input of panel potentiometer	–10.00V ~ P4–25	-10.00V	
P4–24	The minimum input corresponding setting of the panel potentiometer	–100.0% ~ +100.0%	0.0%	
P4–25	Maximum input of panel potentiometer	P4–23 ~ +10.00V	10.00V	
P4–26	The maximum input corresponding setting of the panel potentiometer	–100.0% ~ +100.0%	100.0%	
P4–27	Panel potentiometer filtering time	0.00s ~ 10.00s	0.10s	
P4–28	PULSE Minimum Input	0.00kHz ~ P4—30	0.00kHz	
P4–29	The minimum input corresponding setting of PULSE	–100.0% ~ 100.0%	0.0%	
P4–30	Maximum input value of pulse	P4–28 ~ 100.00kHz	50.00kHz	
P4–31	Maximum input setting of PULSE	–100.0% ~ 100.0%	100.0%	
P4–32	PULSE filtering time	0.00s ~ 10.00s	0.10s	
P4–33	AI curve selection	Unit: AI1 Curve Selection 1: Curve 1 (2 points, see P4-13 to P4-16) 2: Curve 2 (2 points, see P4-18 to P4-21) 3: Curve 2 (2 points, see P4-23 to P4-26) 4: Curve 4 (4 points, see A6-00 to A6-07) 5: Curve 5 (4 points, see A6-08 to A6-15) Tens place: AI2 Curve Selection, the same as above Hundreds place: AI3 Curve Selection, the same as above	321	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P4–34	AI selection below the minimum input setting	Unit: AI1 below the minimum input setting selection 0: Corresponds to the minimum input setting 1: 0.0% Tens place: AI2 below the minimum input setting selection, same as above Hundreds place: Panel potentiometer below the minimum input setting selection, same as above	000	
P4–35	DI1 delay time	0.0s ~ 3600 .0s	0.0s	®
P4–36	DI2 delay time	0.0s ~ 3600 .0s	0.0s	®
P4–37	DI3 delay time	0.0s ~ 3600 .0s	0.0s	®
P4–38	DI Terminal effective mode selection 1	0: High level valid 1: Low level valid Unit: DI1 Tens: DI2 Hundreds: DI3 Thousands: DI4 Ten-thousands: DI5	00000	®
P4–39	DI Terminal effective mode selection 2	0: High level valid 1: Low level valid Unit: DI6 Tens: DI7 Hundreds: DI8 Thousands: DI9 Ten-thousands: DI10	00000	®
P5 group output terminals				
P5–00	Selection of FM terminal output mode	0: Pulse Output (FMP) 1: Switching Output (FMR))	0	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P5-01	FMR output function selection	0: No output 1: Frequency converter is running 2: Fault output (for free shutdown fault) 3: Frequency level detection FDT1 output 4: Frequency reached 5: Zero-speed operation (no output when stopping) 6: Motor overload pre-alarm 7: Frequency converter overload pre-alarm 8: Set value reached 9: Specified value reached 10: Length reached 11: PLC cycle completed 12: Cumulative running time reached 13: Frequency limit in progress 14: Torque limit in progress 15: Ready for operation 16: AI1 > AI2 17: Upper limit frequency reached 18: Lower limit frequency reached (related to operation) 19: Undervoltage state output 20: Communication settings 21: Positioning completed (retained) 22: Position proximity (retained) 23: Zero-speed operation 2 (output also when stopping) 24: Cumulative power-on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 reached output 27: Frequency 2 reached output	0	
P5-02	Control board relay function selection (T/A-T/B-T/C)		2	
P5-03	Control board relay function selection (P/A-P/B-P/C)		0	
P5-04	DO1 output function selection		1	
P5-05	Output selection for expansion card DO2		4	

		28: Current 1 reached output 29: Current 2 reached output 30: Timing reached output 31: AI1 input over-limit 32: Load shedding in progress 33: Reverse operation in progress 34: Zero current state 35: Module temperature reached 36: Output current over-limit 37: Lower limit frequency reached (output also when stopping) 38: Alarm output (all faults) 39: Motor over-temperature pre-alarm 40: Current running time reached 41: Fault output (for free shutdown fault and undervoltage, no output)		

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P5–06	FMP output function selection	0: Operating Frequency 1: Set Frequency 2: Output Current 3: Motor Output Torque (Absolute Value, as a percentage of the motor) 4: Output Power 5: Output Voltage 6: PULSE Input (100.0% corresponds to 100.0kHz) 7: AI1 8: AI2 9: Operation Panel Potentiometer 10: Length 11: Count Value 12: Communication Settings 13: Motor Speed 14: Output Current (100.0% corresponds to 1000.0A) 15: Output Voltage (100.0% corresponds to 1000.0V) 16: Motor Output Torque (Actual Value, as a percentage of the motor) 17: Frequency Converter Output Torque (Actual Value, as a percentage of the frequency converter)	0	
P5–07	AO1 output function selection		0	
P5–08	Selection of output functions for expansion card AO2		1	
P5–09	FMP output maximum frequency	0.01kHz ~ 100 .00kHz	50.00kHz	
P5–10	AO1 Zero-bias coefficient	−100.0% ~ +100 .0%	0.0%	
P5–11	AO1 Gain	−10.00 ~ +10 .00	1.00	
P5–12	AO2 Zero Bias	−100.0% ~ +100 .0%	0.0%	

	Coefficient			
P5–13	AO2 Gain	−10.00 ~ +10.00	1.00	
P5–17	FMR output delay time	0.0s ~ 3600 .0s	0.0s	
P5–18	RELAY1 output delay time	0.0s ~ 3600 .0s	0.0s	
P5–19	RELAY2 output delay time	0.0s ~ 3600 .0s	0.0s	
P5–20	DO1 output delay time	0.0s ~ 3600 .0s	0.0s	
P5–21	DO2 output delay time	0.0s ~ 3600 .0s	0.0s	
P5–22	DO output terminal valid status selection	0: Positive Logic 1: Negative Logic Unit digit: FMR Tens digit: RELAY1 Hundreds digit: RELAY2 Thousands digit: DO1 Ten-thousands digit: DO2	00000	
P6 group start-stop control				
P6–00	Startup mode	0: Direct start 1: Speed tracking restart 2: Pre-excitation start (AC asynchronous motor)	0	
P6–01	Speed tracking mode	0: Start from the shutdown frequency 1: Start from the power frequency 2: Start from the maximum frequency	0	®
P6–02	Speed tracking speediness	1 ~ 100	20	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P6–03	Start frequency	0.00Hz ~ 10 .00Hz	0.00Hz	
P6–04	Frequency startup hold time	0.0s ~ 100 .0s	0.0s	®
P6–05	Activate the direct current braking current/pre-magnetization current	0% ~ 100%	50%	®
P6–06	Start-up DC braking time / Pre-excitation time	0.0s ~ 100 .0s	0.0s	®
P6–07	Acceleration and deceleration mode	0: Linear acceleration and deceleration 1: Static S-curve 2: Dynamic S-curve	0	®
P6–08	The initial period proportion of the S-curve	0.0% ~ (100.0%—P6—09)	30.0%	®
P6–09	Proportion of time at the end of the S-curve	0.0% ~ (100.0%—P6—08)	30.0%	®
P6–10	halt mode	0: Slow down and stop 1: Free stop	0	
P6–11	Shutdown direct current braking starting frequency	0.00Hz ~ maximum frequency	0.00Hz	
P6–12	Shutdown direct current braking waiting time	0.0s ~ 100 .0s	0.0s	
P6–13	Stall direct current braking current	0% ~ 100%	50%	
P6–14	Braking time for shutdown with	0.0s ~ 100 .0s	0.0s	

	direct current			
P6–15	Brake usage rate	0%~100%	100%	
P6–18	Speed tracking current	30%~200%	Model confirmation	®
P6–21	Demagnetization time	0.0~5.0s	Model confirmation	®
P7 group keyboard and display				
P7–01	Function selection of the MF.K key	0: MF.K is invalid 1: Switch between the operation panel command channel and the remote command channel (terminal command channel or communication command channel) 2: Forward/reverse switch 3: Forward jog 4: Reverse jog	0	®
P7–02	STOP/RESET key function	0: The 'STOP/RES' key's shutdown function is only effective when using the keyboard operation mode. 1: The 'STOP/RES' key's shutdown function is effective in any operation mode.	1	
P7–03	LED operation display parameters 1	0000 - FFFF Bit 00: Operating frequency (Hz) Bit 01: Set frequency (Hz) Bit 02: Bus voltage (V) Bit 03: Output voltage (V) Bit 04: Output current (A) Bit 05: Output power (kW) Bit 06: Output torque (%) Bit 07: Input status of DI Bit 08: Output status of DO Bit 09: Voltage of AI1 (V) Bit 10: Voltage of AI2 (V) Bit 11: Voltage (V) Bit 12: Count value Bit 13: Length value Bit 14: Display of load speed Bit 15: PID setting	1F	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P7–04	LED operation display parameters 2	0000 - FFFF Bit 00: PLD feedback Bit 01: PLC stage Bit 02: PULSE input pulse frequency (kHz) Bit 03: Operating frequency 2 (Hz) Bit 04: Remaining operating time Bit 05: AI1 correction before voltage (V) Bit 06: AI2 correction before voltage (V) Bit 07: Panel potentiometer correction before voltage (V) Bit 08: Linear speed Bit 09: Current power-on time (Hour) Bit 10: Current operating time (Min) Bit 11: PULSE input pulse frequency (Hz) Bit 12: Communication setting value Bit 13: Encoder feedback speed (Hz) Bit 14: Main frequency X display (Hz) Bit 15: Auxiliary frequency Y display (Hz)	0	
P7–05	LED shutdown display parameters	0000 ~ FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: Input state of DI Bit03: Output state of DO Bit04: Voltage of AI1 Bit05: Voltage of AI2 Bit06: Voltage of operation panel potentiometer (V) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PLD setting Bit12: PULSE input pulse frequency (kHz)	33	
P7–06	Load speed display	0.0001 ~ 6 .5000	1.0000	

	coefficient			
P7–07	The temperature of the inverter module heat sink	0.0℃~100 .0℃	—	•
P7–08	Product ID	—	—	•
P7–09	Cumulative running time	0h ~ 65535h	—	•
P7–10	Performance version number	—	—	•
P7–11	Function version number	—	—	•
P7–12	Display the number of decimal places for load speed	Unit: Number of decimal points for numbers ranging from U0 to 14 0: 0 decimal places 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places Tens place: Number of decimal points for numbers ranging from U0 to 19/U0 to 29 1: 1 decimal place 2: 2 decimal places	20	
P7–13	Cumulative power-on time	0 ~ 65535 h	—	•
P7–14	Cumulative power consumption	0 ~ 65535 degrees	—	•
P7–15	Temporary software version number of performance	—	—	•
P7–16	Function Temporary Software Version Number	—	—	•
P7–17	Second display shows the running status at runtime	U0-00 ~ U0-74	04	
P7–18	Second display	U0-00 ~ U0-74	02	
	shows the shutdown status			

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P8 group auxiliary function				
P8–00	Point motion operating frequency	0.00Hz ~ maximum frequency	2.00Hz	
P8–01	Pointed acceleration time	0.0s ~ 6500 .0s	20.0s	
P8–02	Pointed motion deceleration time	0.0s ~ 6500 .0s	20.0s	
P8–03	Acceleration time 2	0.0s ~ 6500 .0s	Model confirmation	
P8–04	Deceleration time 2	0.0s ~ 6500 .0s	Model confirmation	
P8–05	Acceleration time 3	0.0s ~ 6500 .0s	Model confirmation	
P8–06	Deceleration time 3	0.0s ~ 6500 .0s	Model confirmation	
P8–07	Acceleration time 4	0.0s ~ 6500 .0s	Model confirmation	
P8–08	Deceleration time 4	0.0s ~ 6500 .0s	Model confirmation	
P8–09	Jumping frequency 1	0.00Hz ~ maximum frequency	0.00Hz	
P8–10	Jumping frequency 2	0.00Hz ~ maximum frequency	0.00Hz	
P8–11	Jumps frequency range	0.00Hz ~ maximum frequency	0.00Hz	
P8–12	Forward-Reverse Dead Zone Time	0.0s ~ 3000 .0s	0.0s	
P8–13	Reverse frequency prohibition	0: Invalid 1: Valid	0	

P8–14	Set the operation mode with a frequency lower than the lower limit frequency.	0: Run at the lower limit frequency 1: Shut down 2: Zero-speed operation	0	
P8–15	Droop control	0.00Hz ~ 10 .00Hz	0.00Hz	
P8–16	Set the cumulative power-on arrival time	0h ~ 65000h	0h	
P8–17	Set the cumulative running arrival time	0h ~ 65000h	0h	
P8–18	Activate protection selection	0: No protection 1: Protection	0	
P8–19	Frequency Detection Value (FDT1)	0.00Hz ~ maximum frequency	50.00Hz	
P8–20	Frequency Detection Lag Value (FDT1))	0.0% ~ 100 .0% (FDT1 Level)	5.0%	
P8–21	Frequency detection detection width	0.0% ~ 100 .0% (maximum frequency)	0.0%	
P8–22	Is the frequency of jumps effective during the acceleration and deceleration process?	0: Invalid 1: Valid	0	
P8–25	Switching frequency points of acceleration time 1 and acceleration time 2	0.00Hz ~ maximum frequency	0.00Hz	
P8–26	Switching frequency points of deceleration time 1 and deceleration time 2	0.00Hz ~ maximum frequency	0.00Hz	

P8–27	Terminal point operation priority	0: Invalid 1: Valid	0	
P8–28	Frequency Detection Value (FDT2)	0.00Hz ~ maximum frequency	50.00Hz	
P8–29	Frequency Detection Lag Value (FDT2)	0.0% ~ 100 .0% (FDT2 Level)	5.0%	
P8–30	Any arrival frequency detection value 1	0.00Hz ~ maximum frequency	50.00Hz	
P8–31	Any arrival frequency detection width 1	0.0% ~ 100 .0% (maximum frequency)	0.0%	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P8–32	Any arrival frequency detection value 2	0.00Hz ~ maximum frequency	50.00Hz	
P8–33	Any arrival frequency detection width 2	0.0% ~ 100.0% (maximum frequency)	0.0%	
P8–34	Zero current detection level	0.0% ~ 300.0% 100.0% Corresponding to the rated current of the motor	5.0%	
P8–35	Zero current detection delay time	0.01s ~ 600.00s	0.10s	
P8–36	Output current exceeds the limit value	0.0% (No detection) 0.1% ~ 300.0% (Rated current of the motor)	200.0%	
P8–37	Output current over-limit detection delay time	0.00s ~ 600.00s	0.00s	
P8–38	Arbitrary arrival current 1	0.0% ~ 300.0%(Rated current of the motor)	100.0%	
P8–39	Arbitrary arrival current 1 width	0.0% ~ 300.0%(Rated current of the motor)	0.0%	
P8–40	Arbitrary arrival current 2	0.0% ~ 300.0%(Rated current of the motor)	100.0%	
P8–41	Arbitrary arrival current 2 width	0.0% ~ 300.0%(Rated current of the motor)	0.0%	
P8–42	Timer function selection	0: Invalid 1: Valid	0	®
P8–43	Timer function selection	0: P8-44 Setting 1: AI1 2: AI2 3: Operation Panel Potentiometer Analog Input Range Corresponding to P8-44	0	®
P8–44	Scheduled running time	0.0Min ~ 6500.0Min	0.0Min	®

P8–45	AI1 Lower limit of input voltage protection value	0.00V ~ P8–46	3.10V	
P8–46	AI1 Upper limit of input voltage protection value	P8–45 ~ 11 .00V	6.80V	
P8–47	Module temperature	0℃~100℃	75℃	
P8–48	Cooling fan control	0: The fan is running during operation 1: The fan is constantly running	0	
P8–49	Retain			
P8–50	Retain			
P8–51	Retain			
P8–52	Retain			
P8–53	The arrival time for this run has been set.	0.0 ~ 6500 .0 minute	0.0Min	
P8–54	Output power correction coefficient	0.00% ~ 200 .0%	100.0%	
P9 group Faults and Protection				
P9–00	Motor overload protection selection	0: Prohibited 1: Allowed	1	
P9–01	Motor overload protection gain	0.20 ~ 10 .00	1.00	
P9–02	Motor overload warning coefficient	50% ~ 100%	80%	
P9–03	Overvoltage stall gain	0 ~ 100	30	
P9–04	Overvoltage stall protection voltage	200 ~ 2000	760	
P9–05	Overcurrent loss reduction gain	0 ~ 100	20	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P9–06	Overcurrent velocity protection current	100%~200%	150%	
P9–07	Short-circuit protection selection to ground upon power-on	0: Invalid 1: Valid	1	
P9–08	Brake unit action starting voltage	200.0~2000.0V	Model confirmation 220V:370V 380V:760V	
P9–09	Number of automatic fault resets	0~20	0	
P9–10	Selection of fault DO action during automatic fault reset	0: No action 1: Action	0	
P9–11	Automatic fault reset interval time	0.1s~100 .0s	6.0s	
P9–12	Input phase missing / Contactor closing protection selection	Unit 1: Input phase loss protection selection Unit 2: Contactor energization protection selection 0: Prohibited 1: Allowed	11	
P9–13	Output phase loss protection selection	0: Prohibited 1: Allowed	1	

P9–14	First type of failure	0: No Fault 1: Retain 2: Acceleration Overcurrent 3: Deceleration Overcurrent 4: Constant Speed Overcurrent 5: Acceleration Overvoltage 6: Deceleration Overvoltage 7: Constant Speed Overvoltage 8: Buffer Resistor Overload 9: Under Voltage 10: Inverter Overload 11: Motor Overload 12: Input Phase Missing 13: Output Phase Missing 14: Module Overheating 15: External Fault 16: Communication Error 17: Contactor Malfunction 18: Current Detection Error 19: Motor Tuning Error	20: Encoder/PG card anomaly 21: Parameter read/write anomaly 22: Frequency converter hardware anomaly 23: Motor ground short circuit 24: Reserved 25: Reserved 26: Run time reached 27: Reserved 28: Reserved 29: Power-on time reached 30: Load shedding 31: PLC feedback lost during operation 40: Fast current limiting timeout 41: Motor switching during operation 42: Excessive speed deviation 43: Motor overspeed 45: Motor overheating 51: Initial position error 55: Slave machine failure in load distribution	-	●
P9–15	Second type of failure			-	●
P9–16	The third (most recent) type of failure			-	●

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P9-17	The frequency of the third (most recent) malfunction	-	-	●
P9-18	The current during the third (most recent) malfunction	-	-	●
P9-19	The voltage of the busbar during the third (most recent) malfunction	-	-	●
P9-20	The status of the input terminals during the third (most recent) malfunction	-	-	●
P9-21	Output terminal status during the third (most recent) malfunction	-	-	●
P9-22	The status of the frequency converter during the third (most recent) malfunction	-	-	●
P9-23	The power-on time during the third (most recent) malfunction	-	-	●
P9-24	The running time during the third (most recent) malfunction	-	-	●
P9-27	The frequency during the second failure	-	-	●

P9-28	The current during the second malfunction	-	-	●
P9-29	The voltage of the busbar during the second failure	-	-	●
P9-30	Status of input terminals during the second failure	-	-	●
P9-31	The status of the output terminals during the second failure	-	-	●
P9-32	The status of the frequency converter during the second failure	-	-	●
P9-33	Power-on time during the second failure	-	-	●
P9-34	The running time during the second failure	-	-	●
P9-37	The frequency during the first malfunction	-	-	●
P9-38	The current during the first malfunction	-	-	●
P9-39	The voltage of the busbar during the first failure	-	-	●
P9-40	The status of the input terminals during the first	-	-	●

	malfunction			
P9-41	The status of the output terminals during the first failure	-	-	●
P9-42	The status of the frequency converter during the first failure	-	-	●
P9-43	The power-on time during the first failure	-	-	●
P9-44	The running time during the first failure	-	-	●

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P9–47	Fault protection action selection 1	Unit: Motor overload (11) 0: Free stop 1: Stop according to shutdown mode 2: Continue operation Tens place: Input phase loss (12) Hundreds place: Output phase loss (13) Thousands place: External fault (15) Ten-thousands place: Communication abnormality (16)	00000	
P9–48	Fault protection action selection 2	Unit: Encoder/PG card error (20) 0: Free Stop Unit 2: Function code read/write error (21) 0: Free Stop 1: Stop according to shutdown mode Hundred place: Keep Thousandth place: Motor overheating (25) Ten-thousandth place: Running time has reached (26)	00000	
P9–49	Fault protection action selection 3	Unit: User-defined Fault 1 (27) 0: Free stop 1: Stop according to shutdown mode 2: Continue operation Ten position: User-defined Fault 2 (28) 0: Free stop 1: Stop according to the shutdown mode 2: Continue operation Hundredth position: Power-on time reached (29) 0: Free stop 1: Stop according to shutdown mode 2: Continue operation Thousandth position: Shutdown (30) 0: Free stop 1: Deceleration stop 2: Directly jump to 7% of the motor's rated frequency and continue	00000	

		running. Without shutdown, it will automatically return to the set frequency for operation. Ten-thousandth position: PID feedback lost during operation (31) 0: Free stop 1: Stop according to shutdown mode 2: Continue operation		
P9–50	Fault protection action selection 4	Unit: Excessive speed deviation (42) 0: Free stop 1: Stop according to shutdown mode 2: Continue operation Tens position: Motor over-speed (43) Hundreds position: Initial position error (51)	00000	
P9–54	Continue to operate with frequency selection in case of failure	0: Run at the current operating frequency 1: Run at the set frequency 2: Run at the upper limit frequency 3: Run at the lower limit frequency 4: Run at the abnormal standby frequency	0	
P9–55	Abnormal standby frequency	0.0% ~ 100 .0% (100 .0% Corresponding to the maximum frequency P0—10)	100.0%	
P9–56	Type of motor temperature sensor	0： No temperature sensor 1： PT100 2： PT1000	0	
P9–57	Motor overheating protection threshold	0℃~200℃	110℃	
P9–58	Motor overheating pre-alarm threshold	0℃~200℃	90℃	

Function Code	Parameter Name	Set Value range	Factory Default	Modification
P9–59	Instant stop and non-stop function selection	0~2	0	®
P9–60	Voltage judgment for instantaneous stop action suspension	80.0%～100.0%	85.0%	®
P9–61	Time for judging voltage recovery after sudden power interruption	0.0s～100 .0s	0.5s	®
P9–62	Instantaneous stop and non-stop motion voltage determination	60.0%～100 .0%(Standard Bus Voltage)	80.0%	
P9–63	Load shedding protection selection	0: Invalid 1: Valid	0	
P9–64	Load shedding detection level	0.0～100 .0%	10.0%	
P9–65	Drop detection time	0.0s～60 .0s	1.0s	
P9–67	Exceeding the speed limit value	0.0%～50 .0%(maximum frequency)	20.0%	
P9–68	Exceed the speed limit detection time	0.0s: No detection 0.1～60 .0s	1.0s	
P9–69	Excessive speed deviation detection value	0.0%～50 .0%(maximum frequency)	20.0%	
P9–70	Detection time for excessive speed deviation	0.0s: No detection 0.1～60 .0s	5.0s	

P9–71	Kp gain retention during instantaneous stop (without shutdown)	0~100	40	
P9–72	Ki Gain Retention during Instantaneous Stop (without shutdown)	0~100	30	
P9–73	Deceleration Time Retention during Instantaneous Stop (without shutdown)	0~300.0s	20.0s	®
PA group PID function				
PA–00	PID Setpoint Source	0: PA-01 Setting 1: AI1 2: AI2 3: Operation Panel Potentiometer 4: PULSE Pulse Setting (D15) 5: Communication Setting 6: Multiple Instruction Setting 7: Digital Setting (Pre-set PA0-01 UP/DOWN can be modified))	7	
PA–01	PID Numerical Setpoint	0.0 ~ PA–04	5.0	
PA–02	PID Feedback Source	0: AI1 1: AI2 2: Operation panel potentiometer 3: AI1 - AI2 4: PULSE pulse setting (D15) 5: Communication setting 6: AI1 + AI2 7: MAX (|AI1|' |AI2|) 8: MIN (|AI1|' |AI2|)	0	
PA–03	The direction of the PID effect	0: Direct Action 1: Reverse Action	0	
PA–04	PID Setpoint & Feedback Range	0 ~ 6553.5	10.0	
PA–05	Proportional gain Kp1	0.0 ~ 1000 .0	90.0	

PA–06	Integration time Ti1	0.01s ~ 10 .00s	0.50s	
PA–07	Differential time Td1	0.000s ~ 10 .000s	0.000s	
PA–08	PID inversion cutoff frequency	0.00 ~ maximum frequency	0.00Hz	
PA–09	PID deviation limit	0.0% ~ 100 .0%	0.0%	

Function Code	Name	Setting Range	Factory Default	Change
PA–10	PID Differential Limiter	0.00%~100 .00%	0.50%	
PA–11	PID Given the time of change	0.00~650 .00s	0.00s	
PA–12	PID Anti-jitter filtering time	0.00~60 .00s	0.00s	
PA–13	PID Output filtering time	0.00~60 .00s	0.00s	
PA–14	Retain	-	-	
PA–15	Proportional Gain kp2	0.0~1000 .0	20.0	
PA–16	Integral Time Ti2	0.01s~10 .00s	2.00s	
PA–17	Derivative Time Td2	0.000s~10 .000s	0.000s	
PA–18	PID Parameter switching conditions	0: No switching 1: By switching through the DI terminal 2: Automatically switch according to the deviation 3: Switch automatically according to the operating frequency	0	
PA–19	PID Parameter switching deviation1	0.0%~PA—20	20.0%	
PA–20	PID Parameter switching deviation2	PA—19~100 .0%	80.0%	
PA–21	PID Starter	0.0%~100 .0%	0.0%	
PA–22	PID Initial value holding time	0.00~650 .00s	0.00s	
PA–25	PID Integral attribute	Unit: Integral separation 0: Invalid 1: Valid Ten: Whether to stop accumulating points after reaching the limit of output 0: Continue to accumulate points 1: Stop accumulating points	00	
PA–26	PID Performance degradation detection value	0.0%: Do not judge the loss of reputation 0.1%~100 .0%	0.0%	
PA–27	PID Anti-fraud loss detection time	0.0s~20 .0s	0.0s	
PA–28	PID Shut down the operation	0: Stop the operation and power off 1: Operation during shutdown	0	
PA–29	Hibernation function mode	0; Turn off sleep mode 1; Reaches the target pressure and enters hibernation; if the reverse pressure is greater than the hibernation pressure, then enter hibernation 2; Frequency sleep; sleep when the running frequency reaches the sleep	1	

		frequency 3：Pressure + frequency sleep; The adverse pressure and the operating frequency both reach the sleep threshold, and then the system enters sleep mode		
PA–30	Dormant pressure	0~10.00	5.0	
PA–31	Dormant pressure deviation	0.0%~100 .0%(	0.0%	
PA–32	Awaken stress	0~10.00	3	
PA–33	Awakening pressure deviation	0.0%~100 .0%	0.0%	
PA–34	Pressure ratio linkage enablement	0：Linked shutdown 1：Activate in sequence	1	
PA–35	Hibernation linkage pressure difference setting	0~10.00	0	
PA–36	Activate the linkage pressure difference setting	0~10.00	1.0	
PA–37	Awakening delay time	0s~6500s	0s	
PA–38	Dormancy frequency	0.00Hz~P0—10	0Hz	

Function Code	Name	Setting Range	Factory Default	Change
pA-39	Hibernation duration	0s~6500s	60s	
pb group: Frequency adjustment, length setting and counting				
pb-05	Set the length	0m~65535m	1000m	
pb-06	Physical length	0m~65535m	0m	
pb-07	Pulse count per meter	0.1~6553 .5	100.0	
pb-08	Set the count value	1~65535	1000	
pb-09	Specified count value	1~65535	1000	
PC group: Multiple instructions, simple PLC				
PC-00	Multiple instructions 0	-100.0%～100 .0%	0.0%	
PC-01	Multiple instructions 1	-100.0%～100 .0%	0.0%	
PC-02	Multiple instructions 2	-100.0%～100 .0%	0.0%	
PC-03	Multiple instructions 3	-100.0%～100 .0%	0.0%	
PC-04	Multiple instructions 4	-100.0%～100 .0%	0.0%	
PC-05	Multiple instructions 5	-100.0%～100 .0%	0.0%	
PC-06	Multiple instructions 6	-100.0%～100 .0%	0.0%	
PC-07	Multiple instructions 7	-100.0%～100 .0%	0.0%	
PC-08	Multiple instructions 8	-100.0%～100 .0%	0.0%	
PC-09	Multiple instructions 9	-100.0%～100 .0%	0.0%	
PC-10	Multiple instructions 10	-100.0%～100 .0%	0.0%	
PC-11	Multiple instructions 11	-100.0%～100 .0%	0.0%	
PC-12	Multiple instructions 12	-100.0%～100 .0%	0.0%	
PC-13	Multiple instructions 13	-100.0%～100 .0%	0.0%	
PC-14	Multiple instructions 14	-100.0%～100 .0%	0.0%	
PC-15	Multiple instructions 15	-100.0%～100 .0%	0.0%	
PC-16	Simple PLC operation mode	0：Shut down after a single run is completed 1：Maintain the final value after the completion of a single run 2：Continuously repeating	0	
PC-17	Simple PLC Power Failure Memory Selection	Unit: Power-off Memory Selection 0：Power loss does not cause memory retention 1：Power-off memory Ten: Shutdown Memory Selection0：Shutdown without memory retention 1：Shutdown Memory	00	
PC-18	The running time of the 0th section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	
PC-19	Simple PLC Segment 0 - Acceleration and Deceleration Time Selection	0～3	0	
PC-20	Operation time of the first section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	

Function Code	Name	Setting Range	Factory Default	Change
PC–21	Simple PLC Section 1 - Acceleration and Deceleration - Time Selection	0～3	0	
PC–22	Operation time of the second section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	
PC–23	Simple PLC Section 2 - Acceleration and Deceleration Time Selection	0～3	0	
PC–24	Operation time of the third section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	
PC–25	Simple PLC Section 3 - Acceleration and Deceleration Time Selection	0～3	0	
PC–26	Operation time of the 4th section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	
PC–27	Simple PLC Section 4 - Acceleration and Deceleration Time Selection	0～3	0	
PC–28	Operation time of the 5th section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	
PC–29	Simple PLC Section 5 - Acceleration and Deceleration Time Selection	0～3	0	
PC–30	Operation time of the 6th section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	
PC–31	Simple PLC Section 6 - Acceleration and Deceleration Time Selection	0～3	0	
PC–32	Operation time of the 7th section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	
PC–33	Simple PLC Section 7 - Acceleration and Deceleration Time Selection	0～3	0	
PC–34	Operation time of the 8th section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	

PC–35	Simple PLC Section 8 - Acceleration and Deceleration Time Selection	0～3	0	
PC–36	Operation time of the 9th section of the simple PLC	0.0~6500.0s(h)	0.0s(h)	
PC–37	Simple PLC Section 9 - Acceleration and Deceleration Time Selection	0～3	0	
PC–38	Simple PLC 10th running time	0.0~6500.0s(h)	0.0s(h)	
PC–39	Simple PLC Section 10 - Speed Increase and Decrease Time Selection	0～3	0	

Function Code	Name	Setting Range	Factory Default	Change
PC-40	Simple PLC Segment 11 Operating Time	0.0~6500.0s(h)	0.0s(h)	
PC-41	Simple PLC Section 11 - Speed Increase and Decrease Time Selection	0~3	0	
PC-42	Simple PLC Segment 12 - Running Time	0.0~6500.0s(h)	0.0s(h)	
PC-43	Simple PLC Section 12 - Speed Increase and Decrease Time Selection	0~3	0	
PC-44	Simple PLC Section 13 - Running Time	0.0~6500.0s(h)	0.0s(h)	
PC-45	Simple PLC Section 13 - Speed Increase and Decrease Time Selection	0~3	0	
PC-46	Simple PLC Segment 14 - Running Time	0.0~6500.0s(h)	0.0s(h)	
PC-47	Simple PLC Section 14 - Speed Increase and Decrease Time Selection	0~3	0	
PC-48	Simple PLC Segment 15 - Running Time	0.0~6500.0s(h)	0.0s(h)	
PC-49	Simple PLC Section 15 - Speed Increase and Decrease Time Selection	0~3	0	
PC-50	Simple PLC operation time unit	0: s （Second） 1: h（Hour）	0	
PC-51	Multi-segment instruction 0 given mode	0: Function code PC-00 is set 1: AI1 2: AI2 3: Operation panel potentiometer 4: PULSE Pulse 5: PID 6: Pre-set frequency（P0—08）Given, UP/ DOWN Revisability	0	

Function Code	Name	Setting Range	Factory Default	Change
Pd group - Communication parameters				
Pd–00	Data transmission rate	Unit: MODBUS 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS Ten-digit: Profbus-DP 0: 115200BPs 1: 208300BPs 2: 256000BPs 3: 512000Bps Hundred place: Keep Thousandth place: CANlink baud rate 0: 20 1: 50 2: 100 3: 125 4: 250 5: 500 6: 1M	6005	
Pd–01	MODBUS Data Format	0: No verification(8—N—2) 1: Even parity check(8–E–1) 2: Odd parity check(8—O—1) 3: No verification(8—N—1) (MODBUS Valid)	3	
Pd–02	This machine's address	0: Broadcast address 1～247 (MODBUS、Profbus—DP、CANlink Valid)	1	
Pd–03	MODBUS Answering Delay	0～20ms (MODBUS Valid)	2	
Pd–04	Serial port communication timeout period	0.0: Invalid 0.1～60 .0s (MODBUS、Profbus—DP、CANopen Valid)	0.0	
Pd–05	MODBUS、Profbus — DP Communication s data format	Unit: MODBUS 0: Nonstandard MODBUS—RTU Protocol 1: Standard MODBUS—RTU Protocol Ten-digit: Profbus-DP 0: PPO1 Format 1: PPO2 Format 2: PPO3 Format 3: PPO5 Format	31	
Pd–06	Communication readout current resolution	0: 0.01A 1: 0.1A	0	
Pd–08	Canlink Communication timeout period	0.0s: Invalid 0.1~60.0s	0	

Function Code	Name	Setting Range	Factory Default	Change
PE group - User-defined function code				
PE–00	User function code0	P0–00～PP–xx A0–00～Ax–xx U0–xx～U0–xx U3–00~U3–xx	U3–17	
PE–01	User function code1		U3–16	
PE–02	User function code2		P0.00	
PE–03	User function code3		P0.00	
PE–04	User function code4		P0.00	
PE–05	User function code5		P0.00	
PE–06	User function code6		P0.00	
PE–07	User function code7		P0.00	
PE–08	User function code8		P0.00	
PE–09	User function code9		P0.00	
PE–10	User function code10		P0.00	
PE–11	User function code11		P0.00	
PE–12	User function code12		P0.00	
PE–13	User function code13		P0.00	
PE–14	User function code14		P0.00	
PE–15	User function code15		P0.00	
PE–16	User function code16		P0.00	
PE–17	User function code17		P0.00	
PE–18	User function code18		P0.00	
PE–19	User function code19		P0.00	
PE–20	User function code20		U0–68	
PE–21	User function code21		U0–69	
PE–22	User function code22		P0.00	
PE–23	User function code23		P0.00	
PE–24	User function code24		P0.00	
PE–25	User function code25		P0.00	
PE–26	User function code26		P0.00	
PE–27	User function code27		P0.00	
PE–28	User function code28		P0.00	
PE–29	User function code29		P0.00	
PP group - Function code management				
PP–00	User password	0～65535	0	
PP–01	parameter initialization	0：No-operation 01：Restore factory settings, excluding motor parameters 02：Clear the record information 03：Restore factory settings, including motor parameters 04：Back up user parameters 501：Restore user parameters	0	®

Function Code	Name	Setting Range	Factory Default	Change
PP–02	Function parameter group display selection	Unit: U Group display selection 0: No Display 1: Display Ten-digit: Group A display selection 0: No Display 1: Display	11	®
PP–03	Individual parameter group display selection	Unit: User-defined parameter group display selection 0: No Display 1: Display Ten-digit: User changes parameter group - display selection 0: No Display 1: Display	01	
PP–04	Function code modification attribute	0: Revisability 1: Irrevocable	0	
Group A0 - Torque Control Parameters				
A0–00	Speed/Torque Control Mode Select	0: Speed Control 1: Torque Control	0	®
A0–01	Torque control mode torque Set source selection	0: Digital settings1(A0—03) 1: AI1 2: AI2 3: Operation panel potentiometer 4: PULSE Pulse 5: Communication given 6: MIN(AI1,AI2) 7: MAX(AI1,AI2) （The full-scale values of options 1 to 7 correspond to the A0-03 digital settings.）	0	®
A0–03	In the torque control mode Torque digital setting	–200.0%～200 .0%	150.0%	
A0–05	Forward maximum frequency of torque control	0.00Hz～Maximum Frequency	50.00Hz	
A0–06	Reverse maximum frequency of torque control	0.00Hz～Maximum Frequency	50.00Hz	
A0–07	Torque acceleration time	0.00s～650 .00s	0.00s	
A0–08	Torque deceleration time	0.00s～650 .00s	0.00s	
Group A1 Virtual IO				
A1–00	Virtual VDI 1 Terminal Function Selection	0～59	0	®
A1–01	Virtual VDI 2 Terminal Function Selection	0～59	0	®
A1–02	Virtual VDI 3 Terminal Function Selection	0～59	0	®
A1–03	Virtual VDI 4 Terminal Function Selection	0～59	0	®
A1–04	Virtual VDI 5 Terminal Function Selection	0～59	0	®

Function Code	Name	Setting Range	Factory Default	Change
A1–05	Virtual VDI Terminal Status Setting Mode	0: The validity of VDI is determined by the state of the virtual VDOx 1: The validity of VDI is determined by function code A1-06 Unit: Virtual VDI1 Ten-digit: Virtual VDI2 Hundreds place: Virtual VDI3 Kilobit: Virtual VDI4 Myriabit: Virtual VDI5	00000	®
A1–06	Virtual VDI Terminal Status Settings	0: Invalid 1: Valid Unit: Virtual VDI1 Ten-digit: Virtual VDI2 Hundreds place: Virtual VDI3 Kilobit: Virtual VDI4 Myriabit: Virtual VDI5	00000	®
A1–07	Function selection of the AI1 terminal when used as a DI (Digital Input)	0~59	0	®
A1–08	The function selection of the AI2 terminal when used as a DI input	0~59	0	®
A1–09	The function selection of the AI3 terminal when used as a DI input	0~59	0	®
A1–10	When used as a DI terminal, the effective mode selection for the AI terminal	0: High level effective 1: Low level effective Unit: AI1 Ten-digit: AI2 Hundredsplace: AI3	000	®
A1–11	Virtual VDO1Output Function Selection	0: Connecting internally within the physical DIx 1~40: See the physical DO output selection in Group P5	0	
A1–12	Virtual VDO2Output Function Selection	0: Connecting internally within the physical DIx 1~40: See the physical DO output selection in Group P5	0	
A1–13	Virtual VDO3Output Function Selection	0: Connecting internally within the physical DIx 1~40: See the physical DO output selection in Group P5	0	
A1–14	Virtual VDO4Output Function Selection	0: Connecting internally within the physical DIx 1~40: See the physical DO output selection in Group P5	0	
A1–15	Virtial VDO5Output Function Selection	0: Connecting internally within the physical DIx 1~40: See the physical DO output selection in Group P5	0	
A1–16	VDO1Output delay time	0.0s~3600 .0s	0.0s	

A1–17	VDO2Output delay time	0.0s～3600 .0s	0.0s	
A1–18	VDO3Output delay time	0.0s～3600 .0s	0.0s	
A1–19	VDO4Output delay time	0.0s～3600 .0s	0.0s	
A1–20	VDO5 Output delay time	0.0s～3600 .0s	0.0s	
A1–21	VDO Output terminal Effective state selection	0：Positive Logic 1：Antilogical Unit：VDO1 Ten-digit：VDO2 Hundreds place：VDO3 Kilobit：VDO4 Myriabit：VDO5	00000	

Function Code	Parameter Name	Setting Range	Factory Default	Changeable
A2 Group Second Motor Control				
A2-00	Motor Type Selection	0: Standard Asynchronous Motor 1: Inverter-duty Asynchronous Motor	0	⑧
A2-01	Motor Rated Power	0.1kW～1000.0kW	Model Dependent	⑧
A2-02	Motor Rated Voltage	1V～2000V	Model Dependent	⑧
A2-03	Motor Rated Current	0.01A ~ 655.35A (Inverter Power ≤ 55kW) 0.1A ~ 6553.5A (Inverter Power > 55kW)	Model Dependent	⑧
A2-04	Motor Rated Frequency	0.01Hz ~ Maximum Frequency	Model Dependent	⑧
A2-05	0.01Hz ~ Maximum Frequency	1rpm～65535rpm	Model Dependent	⑧
A2-06	Stator Resistance	0.001Ω ~ 65.535Ω (Inverter Power ≤ 55kW) 0.0001Ω ~ 6.5535Ω (Inverter Power > 55kW)	Model Dependent	⑧
A2-07	Rotor Resistance	0.001Ω ~ 65.535Ω (Inverter Power ≤ 55kW) 0.0001Ω ~ 6.5535Ω (Inverter Power > 55kW)	Model Dependent	⑧
A2-08	Leakage Inductance	0.01mH ~ 655.35mH (Inverter Power ≤ 55kW) 0.001mH ~ 65.535mH (Inverter Power > 55kW)	Model Dependent	⑧
A2-09	Mutual Inductance	0.1mH ~ 6553.5mH (Inverter Power ≤ 55kW) 0.01mH ~ 655.35mH (Inverter Power > 55kW)	Model Dependent	⑧
A2-10	No-load Current	0.01A ~ A2-03 (Inverter Power ≤ 55kW) 0.1A ~ A2-03 (Inverter Power > 55kW)	Model Dependent	⑧
A2-27	Encoder Line Number	1～65535	1024	⑧
A2-28	Encoder Type	0: ABZ Incremental Encoder 1: UVW Incremental Encoder 2: Resolver 3: Sin/Cos Encoder 4: UVW Encoder (Wiring Saving Type)	0	⑧
A2-29	Speed Feedback PG Selection	0: Local PG 1: Extension PG 2: PULSE Input (DI5)	0	⑧
A2-30	ABZ Encoder AB Phase Sequence	0: Forward 1: Reverse	0	⑧
A2-31	Encoder Mounting Angle	0.0～359.9°	0.0°	⑧
A2-32	UVW Encoder UVW Phase Sequence	0: Forward 1: Reverse	0	⑧
A2-33	UVW Encoder Offset Angle	0.0～359.9°	0.0°	⑧
A2-34	Resolver Pole Pairs	1～65535	1	⑧
A2-36	Speed Feedback PG Break Detection Time	0.0: Disabled 0.1s ~ 10.0s	0.0	⑧

A2-37	Tuning Selection	0: No Operation 1: Asynchronous Motor Static Tuning 1 2: Asynchronous Motor Rotation Tuning 3: Asynchronous Motor Static Tuning 2	0	⑧
A2-38	Speed Loop Proportional Gain 1	1～100	30	
A2-39	Speed Loop Integral Time 1	0.01s～10 .00s	0.50s	
A2-40	Switch Frequency 1	0.00～A2-43	5.00Hz	

Function Code	Parameter Name	Setting Range	Factory Default	Changeable
A2-41	Speed Loop Proportional Gain 2	1～100	20	
A2-42	Speed Loop Integral Time 2	0.01s～10 .00s	1.00s	
A2-43	Switch Frequency 2	A2-40 ~ Maximum Frequency	10.00Hz	
A2-44	Vector Control Slip Gain	50%～200%	100%	
A2-45	SVC Torque Filter Time Constant	1～31	28	
A2-47	Torque Limit Source in Speed Control Mode	0: Set by A2-48 1: A11 2: A12 3: Keypad Potentiometer 4: PULSE Input 5: Communication 6: MIN(A11,A12) 7: MAX(A11,A12) The full-scale values of options 1 to 7 correspond to digital settings A2 to 48.	0	
A2-48	Torque Limit Digital Setting in Speed Control Mode	0.0%～200 .0%	150.0%	
A2-51	Excitation Regulation Proportional Gain	0～20000	2000	
A2-52	Excitation Regulation Integral Gain	0～20000	1300	
A2-53	Torque Regulation Proportional Gain	0～20000	2000	
A2-54	Torque Regulation Integral Gain	0～20000	1300	
A2-55	Speed Loop Integral Attribute Units: Integral Separation	Individual digit: Integral separation 0: Disabled 1: Enabled	0	
A2-61	Second Motor Control Mode	0: Sensorless Vector Control (SVC) 1: Flux Vector Control (FVC) with PG 2: V/F Control	0	⑧
A2-62	Second Motor Acceleration/Deceleration Time Selection	0: Same as Motor 1 1: Acc/Dec Time 1 2: Acc/Dec Time 2 3: Acc/Dec Time 3 4: Acc/Dec Time 4	0	
A2-63	Second Motor Torque Boost	0.0%: Automatic Torque Boost 0.1%~30.0%	Model Dependent	
A2-65	Second Motor Oscillation Suppression Gain益	0～100	Model Dependent	
A5 **Group Control Optimization Parameters**				
A5-00	DPWM Switchover Upper Limit Frequency	5.00Hz ~ Maximum Frequency	8.00Hz	
A5-01	PWM Modulation Mode	0: Asynchronous Modulation 1: Synchronous Modulation	0	

A5-02	Dead-Time Compensation Mode Selection	0: No Compensation 1: Compensation Mode 1	1	
A5-04	Fast Current Limit Enable	0: Disabled 1: Enabled	1	
A5-05	Current Detection Compensation	0~100	5	

Function Code	Parameter Name	Setting Range	Factory Default	Changeable
A5-06	Undervoltage Point Setting	200.00V~2000.0V	Model Dependent 220V: 200V 380V: 350V	
A5-07	SVC Optimization Mode Selection	1: Optimization Mode 1 2: Optimization Mode 2	2	
A5-08	Dead Time Adjustment	100%～200%	150%	⑧
A5-09	Overvoltage Point Setting	200.0V～2200 .0V	Model Dependent	⑧
		A6 Group AI Curve Settings		
A6-00	AI Curve 4 Minimum Input	-10.00V～A6-02	0.00V	
A6-01	Setting Corresponding to AI Curve 4 Minimum Input	-100.0%～+100 .0%	0.0%	
A6-02	AI Curve 4 Breakpoint 1 Input	A6-00～A6-04	3.00V	
A6-03	Setting Corresponding to AI Curve 4 Breakpoint 1 Input	-100.0%～+100 .0%	30.0%	
A6-04	AI Curve 4 Breakpoint 2 Input	A6-02～A6-06	6.00V	
A6-05	Setting Corresponding to AI Curve 4 Breakpoint 2 Input	-100.0%～+100 .0%	60.0%	
A6-06	AI Curve 4 Maximum Input	A6-06～+10 .00V	10.00V	
A6-07	Setting Corresponding to AI Curve 4 Maximum Input	-100.0%～+100 .0%	100.0%	
A6-08	AI Curve 5 Minimum Input	-10.00V～A6-10	-10.00V	
A6-09	Setting Corresponding to AI Curve 5 Minimum Input	-100.0%～+100 .0%	-100.0%	
A6-10	AI Curve 5 Breakpoint 1 Input	A6-08～A6-12	-3.00V	
A6-11	Setting Corresponding to AI Curve 5 Breakpoint 1 Input	-100.0%～+100 .0%	-30.0%	
A6-12	AI Curve 5 Breakpoint 2 Input	A6-10～A6-14	3.00V	
A6-13	Setting Corresponding to AI Curve 5 Breakpoint 2 Input	-100.0%～+100 .0%	30.0%	
A6-14	AI Curve 5 Maximum Input	A6-12～+10 .00V	10.00V	

A6–15	Setting Corresponding to AI Curve 5 Maximum Input	–100.0%～+100.0%	100.0%	
A6–24	AI1 Setting Jump Point	–100.0%～100.0%	0.0%	
A6–25	AI1 Setting Jump Range	0.0%～100.0%	0.5%	
A6–26	AI2 Setting Jump Point	–100.0%～100.0%	0.0%	
A6–27	AI2 Setting Jump Range	0.0%～100.0%	0.5%	
A6–28	V ” μ GΔ Set the jumping point	–100.0%～100.0%	0.0%	

Function Code	Parameter Name	Setting Range	Factory Default	Changeable
A6-29	Keypad Potentiometer Setting Jump Range	0.0%～100 .0%	0.5%	
A7 Group User Programmable Card Parameters				
A7-00	User Programmable Function Selection	0: Disabled 1: Enabled	0	⑧
A7-01	Control Board Output Terminal Control Mode Selection	0: Inverter Control 1: Programmable Card Control • Units: FMR (FM terminal as digital output) • Tens: Relay (T/A-T/B-T/C) • Hundreds: DO1 • Thousands: FMP (FM terminal as pulse output) • Ten-thousands: AO1	0	⑧
A7-02	Programmable Card Extended AI/AO Terminal Function Configuration	0: AI3 Voltage Input, AO2 Voltage Output 1: AI3 Voltage Input, AO2 Current Output 2: AI3 Current Input, AO2 Voltage Output 3: AI3 Current Input, AO2 Current Output 4: AI3 PTC Input, AO2 Voltage Output 5: AI3 PTC Input, AO2 Current Output 6: AI3 PT100 Input, AO2 Voltage Output 7: AI3 PT100 Input, AO2 Current Output	0	⑧
A7-03	FMP Output	0.0%～100 .0%	0.0%	
A7-04	AO1 Output	0.0%～100 .0%	0.0%	
A7-05	Digital Output	Binary Setting: • Units: FMR • Tens: Relay 1 • Hundreds: DO	1	
A7-06	Programmable Card Frequ	−100.00%～100 .00%	0.0%	
A7-07	Programmable Card Torque Reference	−200.0%～200 .0%	0.0%	
A7-08	Programmable Card Command	0: No Command 1: Forward Run 2: Reverse Run 3: Forward Jog 4: Reverse Jog 5: Free-Run Stop 6: Deceleration Stop 7: Fault Reset	0	
A7-09	Programmable Card Fault	0: No Fault 80-89: Fault Code	0	
A8 Group Point-to-Point Communication				
A8-00	Master-Slave Control Function Selection	0: Disabled 1: Enabled	0	
A8-01	Master-Slave Selection	0: Master 1: Slave	0	

Function Code	Parameter Name	Setting Range	Factory Default	Changeable
A8-02	Master-Slave Information Exchange	Units: Followed by the machine command 0: Slave doesn't follow master run command 1: Slave follows master run command Tens:: Transmission of aircraft fault information 0: Slave fault info not transmitted 1: Slave fault info transmittedHundreds:The host indicates that the slave device has disconnected. 0: No master fault when slave offline 1: Master faults (Err16) when slave offline	011	
A8-03	Master Transmit Data Function Selection	0: Output Frequency 1: Target Frequency	0	
A8-04	Receive Data Zero Offset	-100.00%~100.00%	0.00%	⑧
A8-05	Receive Data Gain	-10.00~100.00	1.00	⑧
A8-06	Point-to-Point Communication Break Detection Time	0.0~10.0s	1.0s	
A8-07	Point-to-Point Communication Master Data Transmission Cycle	0.001~10.000s	0.001s	
A8-11	Window	0.20Hz ~10.00Hz	0.50Hz	⑧
AC Group AI/AO Calibration				
AC-00	AI1 Actual Measured Voltage 1	0.500V~4.000V	Factory Calibrated	
AC-01	AI1 Display Voltage 1	0.500V~4.000V	Factory Calibrated	
AC-02	AI1 Actual Measured Voltage 2	6.000V~9.999V	Factory Calibrated	
AC-03	AI1 Display Voltage 2	6.000V~9.999V	Factory Calibrated	
AC-04	AI2 Actual Measured Voltage 1	0.500V~4.000V	Factory Calibrated	
AC-05	AI2 Display Voltage 1	0.500V~4.000V	Factory Calibrated	
AC-06	AI2 Actual Measured Voltage 2	6.000V~9.999V	Factory Calibrated	
AC-07	AI2 Display Voltage 2	6.000V~9.999V	Factory Calibrated	
AC-08	Keypad Potentiometer Actual Measured Voltage 1	-9.999V~10.000V	Factory Calibrated	
AC-09	Keypad Potentiometer Display Voltage 1	-9.999V~10.000V	Factory Calibrated	
AC-10	Keypad Potentiometer Actual Measured Voltage 2	-9.999V~10.000V	Factory Calibrated	
AC-11	Keypad Potentiometer Display Voltage 2	-9.999V~10.000V	Factory Calibrated	

AC—12	AO1 Target Voltage 1	0.500V～4 .000V	Factory Calibrated	
AC—13	AO1 Actual Measured Voltage 1	0.500V～4 .000V	Factory Calibrated	
AC—14	AO1 Target Voltage 2	6.000V～9 .999V	Factory Calibrated	
AC—15	AO1 Actual Measured Voltage 2	6.000V～9 .999V	Factory Calibrated	
AC—16	AO2 Target Voltage 1	0.500V～4 .000V	Factory Calibrated	
AC—17	AO2 Actual Measured Voltage 1	0.500V～4 .000V	Factory Calibrated	
AC—18	AO2 Target Voltage 2	6.000V～9 .999V	Factory Calibrated	
AC—19	AO2 Actual Measured Voltage 2	6.000V～9 .999V	Factory Calibrated	

Function Code	Parameter Name	Setting Range	Factory Default	Changeable
AC-20	AI2 Actual Measured Current 1	0.000mA～20.000mA	Factory Calibrated	
AC-21	AI2 Sampled Current 1	0.000mA～20.000mA	Factory Calibrated	
AC-22	AI2 Actual Measured Current 2	0.000mA～20.000mA	Factory Calibrated	
AC-23	AI2 Sampled Current 2	0.000mA～20.000mA	Factory Calibrated	
AC-24	AO1 Target Current 1	0.000mA～20.000mA	Factory Calibrated	
AC-25	AO1 Actual Measured Cur	0.000mA～20.000mA	Factory Calibrated	
AC-26	AO1 Target Current 2	0.000mA～20.000mA	Factory Calibrated	
AC-27	AO1 Actual Measured Current 2	0.000mA～20.000mA	Factory Calibrated	

Function Code	Parameter Name	Resolution	Communication Address
U0 Group Basic Monitoring Parameters			
U0-00	Output Frequency (Hz)	0.01Hz	7000H
U0-01	Set Frequency (Hz)	0.01Hz	7001H
U0-02	DC Bus Voltage (V)	0.1V	7002H
U0-03	Output Voltage (V)	1V	7003H
U0-04	Output Current (A)	0.01A	7004H
U0-05	Output Power (kW)	0.1kW	7005H
U0-06	Output Torque (%) Percentage of Motor Rated Torque	0.1%	7006H
U0-07	DI Input Status	1	7007H
U0-08	DO Output Status	1	7008H
U0-09	AI1 Voltage (V)	0.01V	7009H
U0-10	AI2 Voltage (V) / Current (mA)	0.01V/0.01mA	700AH
U0-11	Keypad Potentiometer Voltage (V)	0.01V	700BH
U0-12	Counter Value	1	700CH
U0-13	Length Value	1	700DH
U0-14	Load Speed Display	1	700EH
U0-15	PID Setpoint	1	700FH
U0-16	PID Feedback	1	7010H
U0-17	PLC Stage	1	7011H
U0-18	PULSE Input Frequency (kHz)	0.01kHz	7012H
U0-19	Feedback Speed (Hz)	0.01Hz	7013H
U0-20	Remaining Run Time (Min)	0.1Min	7014H
U0-21	AI1 Voltage Before Calibration (V)	0.001V	7015H
U0-22	AI2 Voltage (V) / Current (mA) Before Calibration	0.001V/0.01mA	7016H

Function Code	Parameter Name	Resolution	Communication Address
U0 Group Basic Monitoring Parameters			
U0-23	Keypad Potentiometer Voltage Before Calibration	0.001V	7017H
U0-24	Line Speed	1m/Min	7018H
U0-25	Current Power-On Time	1Min	7019H
U0-26	Current Running Time	0.1Min	701AH
U0-27	PULSE Input Frequency	1Hz	701BH
U0-28	Communication Setpoint	0.01%	701CH
U0-29	Encoder Feedback Speed	0.01Hz	701DH
U0-30	Main Frequency X Display	0.01Hz	701EH
U0-31	Auxiliary Frequency Y Display	0.01Hz	701FH
U0-32	Arbitrary Memory Address Value	1	7020H
U0-34	Motor Temperature	1℃	7022H
U0-35	Target Torque (%)	0.1%	7023H
U0-36	Resolver Position	1	7024H
U0-37	Power Factor Angle	0.1°	7025H
U0-38	ABZ Position	1	7026H
U0-39	V/F Separation Target Voltage	1V	7027H
U0-40	V/F Separation Output Voltage	1V	7028H
U0-41	DI Input Status Visual Display	1	7029H
U0-42	DO Output Status Visual Display	1	702AH
U0-43	DI Function Status Visual Display 1 (Functions 01-40)	1	702BH
U0-44	DI Function Status Visual Display 2 (Functions 41-80)	1	702CH
U0-45	Fault Information	1	702DH
U0-58	Z-signal Counter	1	703AH
U0-59	Set Frequency (%)	0.01%	703BH
U0-60	Output Frequency (%)	0.01%	703CH
U0-61	Inverter Status	1	703DH
U0-62	Current Fault Code	1	703EH
U0-63	Point-to-Point Communication Transmit Value	0.01%	703FH
U0-64	Number of Slave Stations	1	7040H
U0-65	Torque Upper Limit	0.01%	7041H
U0-66	Communication Expansion Card Model	100:CANOpen 200:Profbus—DP 300:CANLink	7042H
U0-67	Communication Expansion Card Version	Display Range	—

Function Code	Parameter Name	Resolution	Communication Address
U0 Group Basic Monitoring Parameters			
U0-68	DP Card Inverter Status	• bit0: Run Status • bit1: Rotation Direction • bit2: Fault Status • bit3: Target Frequency Reached • bit4-bit7: Reserved • bit8-bit15: Fault Code	7043H
U0-69	Speed Sent to DP Card	0.00~maximum frequency	7044H
U0-70	Speed Sent to DP Card (RPM)	0~65535	7045H
U0-71	Communication Card Specific Current Display	Display Range	—
U0-72	Communication Card Error Status	Display Range	—
U0-73	Motor Number Selection	0: Motor 1 1: Motor 2	7046H
U0-74	Actual Motor Output Torque	-300-300%	7047H

6

SELECTION AND DIMENSIONS

Chapter 6 Selection and Dimensions

6.1 Electrical Specifications of the Frequency Converter

List 6-1 Frequency Converter Model and Technical Data

Frequency Converter Model	Power Capacity kVA	Curren Input A	Curren output A	Adaptive Motor kW	Adaptive Motor HP	Heat Dissipatio Power Consumption kW
Single-phase Source: 220V (-15%~+20%), 50/60Hz						
XXX-S0.4GB	1	5.4	2.3	0.4	0.5	0.016
XXX-S0.7GB	1.5	8.2	4	0.75	1	0.030
XXX-S1.5GB	3	14	7	1.5	2	0.055
XXX-S2.2GB	4	23	9.6	2.2	3	0.072
Three-phase Sources: 220V (-15%~+20%), 50/60Hz						
XXX–2T0.4GB	1.5	3.4	2.1	0.4	0.5	0.016
XXX–2T0.75GB	3	5	3.8	0.75	1	0.030
XXX–2T1.1GB	4	5.8	5.1	1.5	2	0.055
XXX–2T2.2GB	5.9	10.5	9	2.2	3	0.072
XXX–2T4.0GB	8.9	14.6	13	3.7	5	0.132
XXX–2T5.5GB	17	26	25	5.5	7.5	0.214
XXX–2T7.5GB	21	35	32	7.5	10	0.288
XXX–2T11G	30	46.5	45	11	15	0.489
XXX–2T15G	40	62	60	15	20	0.608
XXX–2T18.5G	57	76	75	18.5	25	0.716
XXX–2T22G	69	92	91	22	30	0.887
XXX–2T30G	85	113	112	30	40	1.11
XXX–2T37G	114	157	150	37	50	1.32
XXX–2T45G	134	180	176	45	60	1.66
XXX–2T55G	160	214	210	55	75	1.98
XXX–2T75G	231	307	304	75	100	2.02
Three-phase Sources: 380V (-15%~+20%), 50/60Hz						
XXX-T0.7GB	1.5	3.4	2.1	0.75	1	0.027
XXX-T1.5GB	3	5	3.8	1.5	2	0.050
XXX-T2.2GB	4	5.8	5.1	2.2	3	0.066
XXX-T4,0GB	5.9	10.5	9	3.7	5	0.120
XXX-T5.5GB XXX-T5.5PB	8.9	14.6	13	5.5	7.5	0.195
XXX-T7.5GB XXX-T7.5PB	11	20.5	17	7.5	10	0.262
XXX-T11GB XXX-T11PB	17	26	25	11	15	0.445
XXX-T15GB XXX-T15PB	21	35	32	15	20	0.553

Frequency Converter Model		Power Capacity kVA	Current Input A	Current Output A	Adaptive Motor		Heat Dissipation Power Consumption kW
					kW	HP	
XXX-T18 .5G	XXX-T18 .5PB	24	38.5	37	18.5	25	0.651
XXX-T22G	XXX-T22P	30	46.5	45	22	30	0.807
XXX-T30G	XXX-T30P	40	62	60	30	40	1.01
XXX-T37G	XXX-T37P	57	76	75	37	50	1.20
XXX-T45G	XXX-T45P	69	92	91	45	60	1.51
XXX-T55G	XXX-T55P	85	113	112	55	75	1.80
XXX-T75G	XXX-T75P	114	157	150	75	100	1.84
XXX-T90G	XXX-T90P	134	180	176	90	125	2.08
XXX-T110G	XXX-T110P	160	214	210	110	150	2.55
XXX-T132G	XXX-T132P	192	256	253	132	200	3.06
XXX-T160G	XXX-T160P	231	307	304	160	250	3.61
XXX-T200G	XXX-T200P	250	385	377	200	300	4.42
XXX-T220G	XXX-T220P	280	430	426	220	300	4.87
XXX-T250G	XXX-T250P	355	468	465	250	400	5.51
XXX-T280G	XXX-T280P	396	525	520	280	370	6.21
XXX-T315G	XXX-T315P	445	590	585	315	500	7.03
XXX-T355G	XXX-T355P	500	665	650	355	420	7.81
XXX-T400G	XXX-T400P	565	785	725	400	530	8.51
XXX-T450P		630	883	820	450	600	9.23

6.2 TYPE AND DIMENSIONS OF THE FREQUENCY CONVERTER

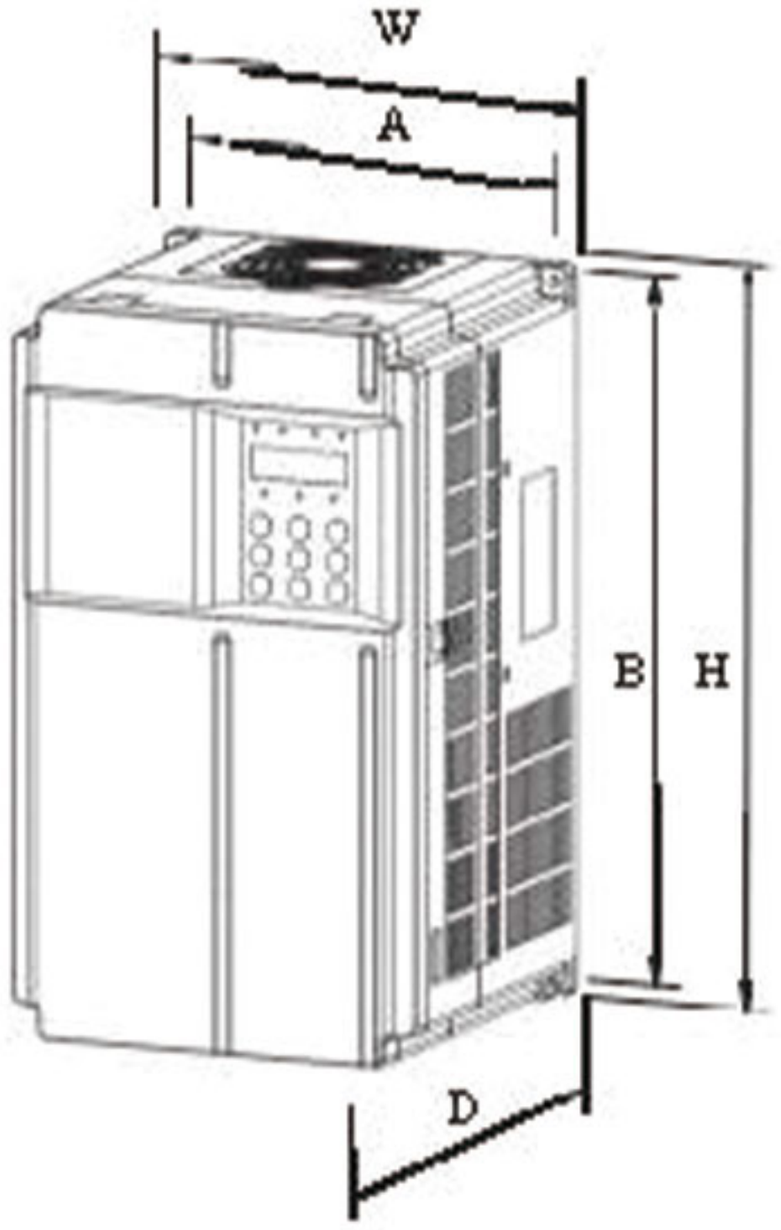


Figure 6-1 Illustration of the external dimensions and installation dimensions of the plastic structure

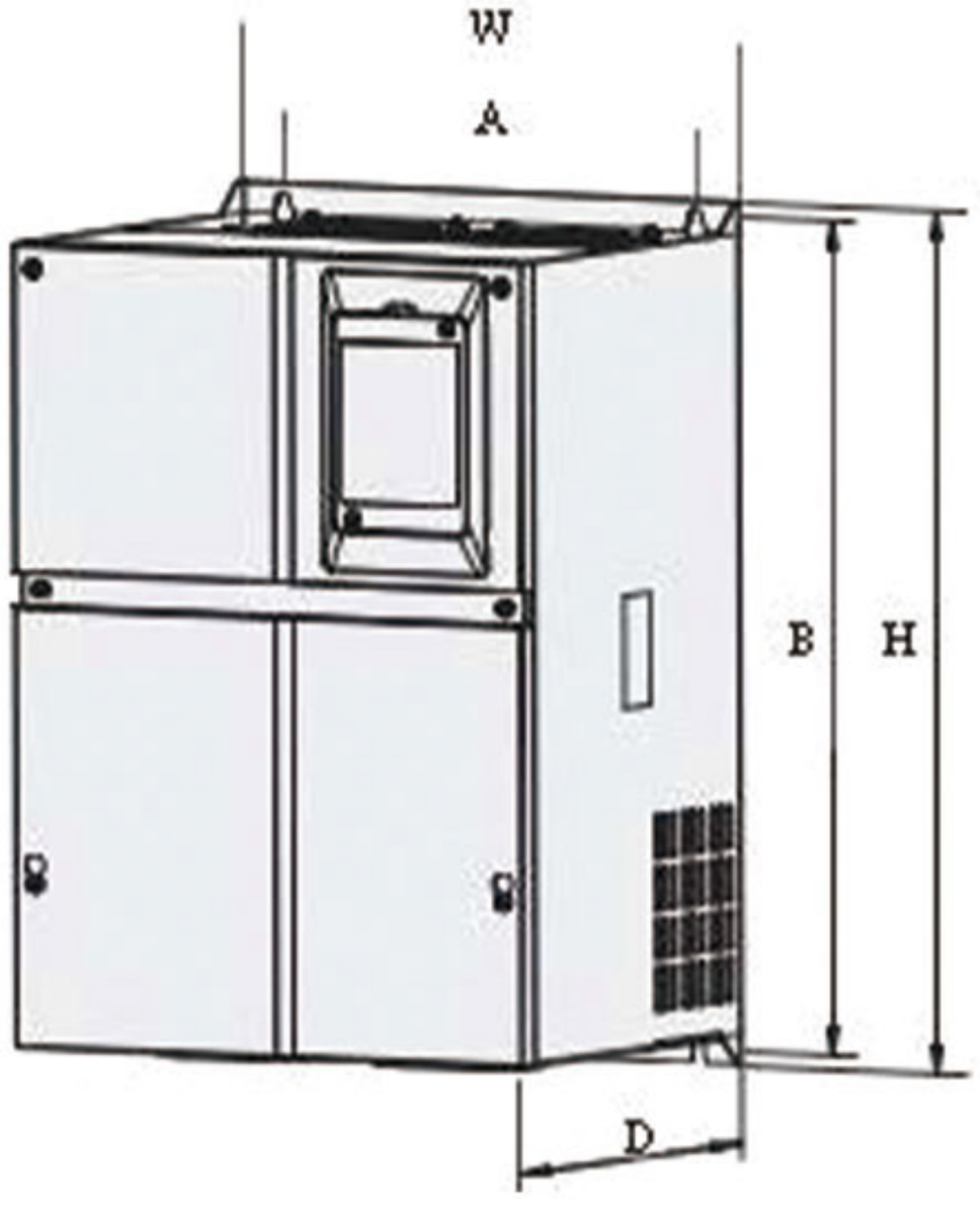


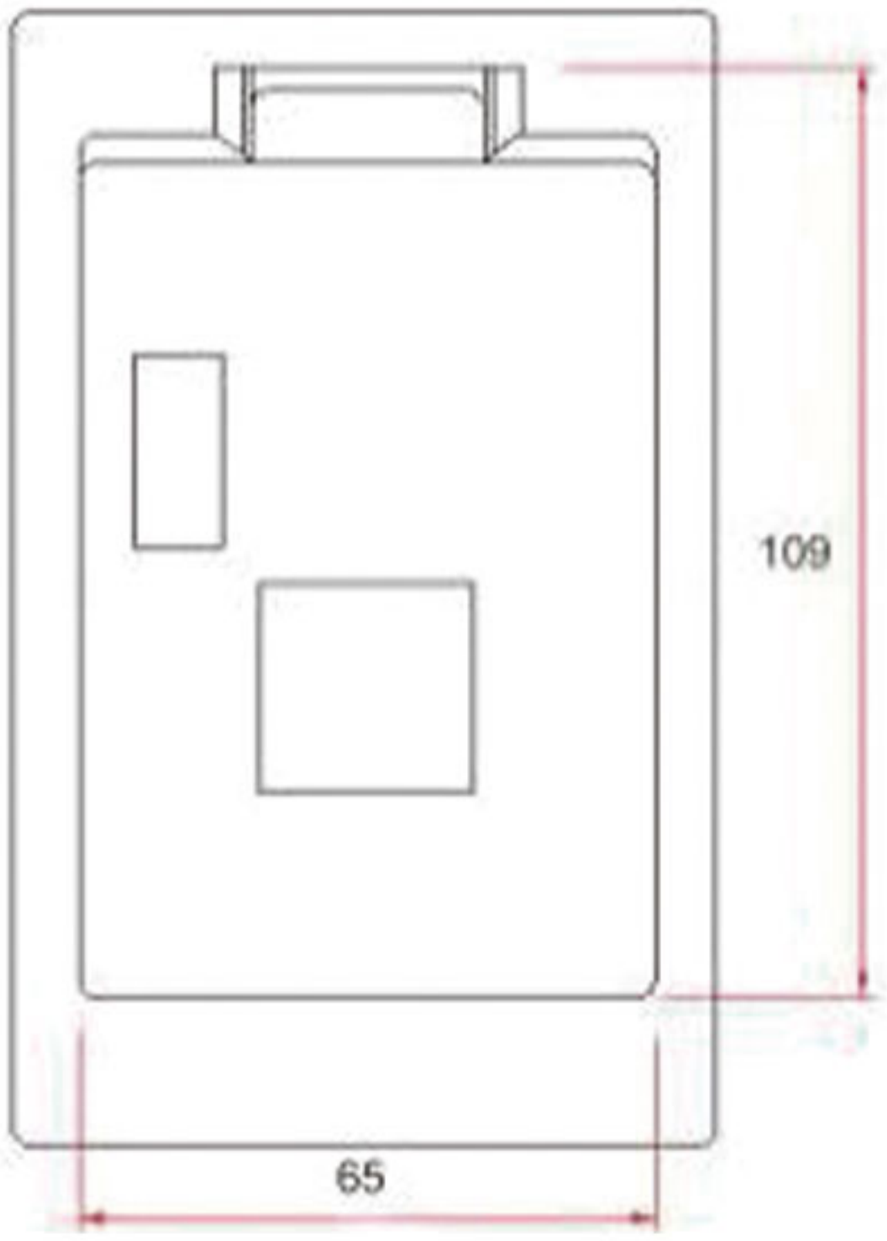
Figure 6-2 Schematic Diagram of Outer Dimensions and Installation Dimensions of Sheet Metal Structure

List 6-1 Dimensions of Shape and Installation Holes

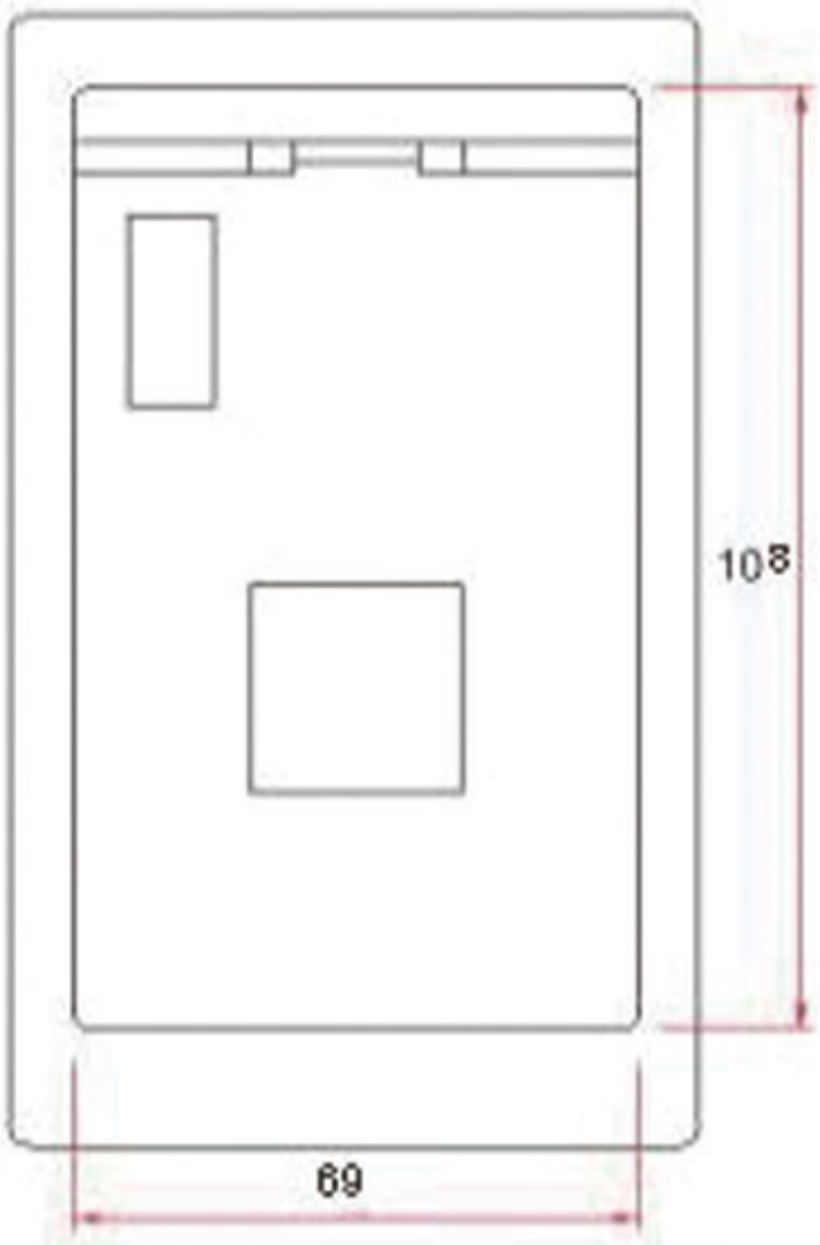
Frequency Converter Model	Insert Cavity Position mm		External Dimension mm			Texture	Installatio Aperture mm	Weight kg
	A	B	H	W	D			
Single-phase 220V								
XXX-S0.4GB XXXS0.7GB XXX-S1.5GB XXX-S2.2GB	80	160	170	90	135	Plastic Case	O5.0	1.1
Three Phase 380V								
XXX-T0.7GB XXX-T1.5GB XXX-T2.2GB	80	160	170	90	135	Plastic Case	O5.0	1.1
XXX-T4.0GB XXX-T5.5PB XXX-T5.5GB XXX-T7.5PB	120	190	200	130	155	Plastic Case	O5.0	2.0
XXX-T7.5GB XXX-T11PB XXX-T11GB XXX-T15PB	130	240	250	140	165	Plastic Case	O5.0	3.1
XXX-T15GB XXX-T18.5PB XXX-T18.5G XXX-T22P	165	267	280	180	165	Plastic Case	O6	4.2
XXX-T22G XXX-T30P XXX-T30G XXX-T37P	182	415	430	230	225	Metal Plate	O6.5	10
XXX-T37G XXX-T45P XXX-T45G XXX-T55P	223	415	430	270	225	Metal Plate	O6.5	13
XXX-T55G XXX-T75P XXX-T75G XXX-T90P	175	545	560	270	295	Metal Plate	O10	25

Frequency Converter Model	Insert Cavity Position mm		Insert Cavity Position mm			Texture	Installatio Aperture mm	Weight kg
	A	B	H	W	D			
XXX-T90G XXX-T110P	205	630	650	300	295	Metal Plate	Ø10	32.5
XXX-T110G XXX-T132P								
XXX-T132G XXX-T160P	285	775	800	380	305	Metal Plate	Ø10	44.6
XXX-T160G XXX-T200P								
XXX-T185G XXX-T200P	190*2	920	950	500	355	Metal Plate	Ø12	90
XXX-T200G XXX-T220P								
XXX-T220G XXX-T250P								
XXX-T250G XXX-T280P	215*2	1020	1050	550	355	Metal Plate	Ø12	107
XXX-T280G XXX-T315P								
XXX-T315G XXX-T355P								
XXX-T355G | XXX-T630G	315*2	1020	1050	750	355	Metal Plate	Ø16	187
XXX-T800G	470*2	1140	1170	1115	365	Metal Plate	Ø16	210

6.3 DIMENSIONS OF THE EXTERNAL KEYBOARD COMPARTMENT



Single-display panel compartment



Dual-display panel compartment

Figure 6-16 Installation opening dimensions of the external keyboard compartment (unit: m)

6.4 Brake resistor selection and brake unit

6.4.1 Selection of braking resistor resistance value

During braking, the regenerative energy of the motor is almost entirely dissipated on the braking resistor.

According to the formula:

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

U—The braking voltage for system stabilization braking (the value of U varies for different systems; for the 380Vac system, it is generally set at 700V).

Pb—Braking Power

6.4.2 Selection of braking resistor power

Theoretically, the power of the braking resistor is the same as the braking power, but considering a reduction factor of 70%. According to the formula:

$$0.7 \times Pr = Pb \times D$$

Pr—Power of the resistor;

D—The frequency of braking, that is, the proportion of the regenerative process in the entire working process.

Common Application Scenarios	Elevator	Opening the book and taking out the pages	Centrifugal Machine	Accidental braking load	In general situations
Braking frequency value	20% ~30%	20 ~30%	50%~60%	5%	10%

Table 6-7 is the guidance data. Users can select different resistance values and power according to the actual situation (but the resistance value must not be less than the recommended value in the table, and the power can be larger). The selection of the braking resistor needs to be determined based on the power of the motor-generated electricity in the actual application system. It is related to the system inertia, deceleration time, energy of the potential load, etc. Customers need to make the selection according to the actual situation. The larger the system inertia, the shorter the required deceleration time, and the more frequently the braking needs to be performed, then the braking resistor needs to be selected with a larger power and a smaller resistance value.

List 6-7 Selection Table for Brake Components of Frequency Converter

Frequency Converter Model	Recommended Power of the Braking Resistor	Recommended Resistance Value of the Braking Resistor	Brake Unit	Note
Single-phase 220V				
XXX-S0.4GB	80W	≥200Ω	Standard built-in	Without any special indication
XXX-S0.7GB	80W	≥150Ω		
XXX-S1.5GB	100W	≥100Ω		
XXX-S2.2GB	100W	≥70Ω		

Three Phase 220V				
XXX-2T0 .4GB	150W	≥150Ω	Standard built-in	Without any special indication
XXX-2T0 .75GB	150W	≥110Ω		
XXX-2T1 .1GB	250W	≥100Ω		
XXX-2T2 .2GB	300W	≥65Ω		
XXX-2T3 .7GB	400W	≥45Ω		
XXX-2T5 .5GB	800W	≥22Ω		
XXX-2T7 .5GB	1000W	≥16Ω		
XXX-2T11G	1500W	≥11Ω		
XXX-2T15G	2500W	≥8Ω		
XXX-2T18 .5G	3.7 kW	≥6 .7Ω	Built-in option	

Frequency Converter Model	Recommended Power of the Braking Resistor	Recommended Resistance Value of the Braking Resistor	Brake Unit	Note
XXX-2T22G	4.5 kW	≥6.7Ω	Built-in option	Without any special indication
XXX-2T30G	5.5 kW	≥5Ω	Extraposition	
XXX-2T37G	7.5 kW	≥3.3Ω	Extraposition	
XXX-2T45G	4.5 kW Roots 2	≥5Ω×2	Extraposition	
XXX-2T55G	5.5 kW Roots 2	≥5Ω×2	Extraposition	
XXX-2T75G	16kW	≥3.3Ω×2	Extraposition	
Three Phase 380V				
XXX-T0.7GB	150W	≥300Ω	Standard built-in	Without any special indication
XXX-T1.5GB	150W	≥220Ω		
XXX-T2.2GB	250W	≥200Ω		
XXX-T3.7GB	300W	≥130Ω		
XXX-T5.5GB	400W	≥90Ω		
XXX-T7.5GB	500W	≥65Ω		
XXX-T11GB	800W	≥43Ω		
XXX-T15GB	1000W	≥32Ω		
XXX-T18.5	1300W	≥25Ω		
XXX-T22	1500W	≥22Ω		
XXX-T30	2500W	≥16Ω		
XXX-T37	3.7 kW	≥12.6Ω	Built-in option	
XXX-T45	4.5 kW	≥9.4Ω		
XXX-T55	5.5 kW	≥9.4Ω	Extraposition	
XXX-T75	7.5 kW	≥6.3Ω	Extraposition	
XXX-T90	4.5 kW Roots 2	≥9.4Ω×2	Extraposition	
XXX-T110	5.5 kW Roots 2	≥9.4Ω×2	Extraposition	
XXX-T132	6.5 kW Roots 2	≥6.3Ω×2	Extraposition	
XXX-T160	16kW	≥6.3Ω×2	Extraposition	
XXX-T200	20 kW	≥2.5Ω	Extraposition	
XXX-T220	22 kW	≥2.5Ω	Extraposition	
XXX-T250	12.5 kW Roots 2	≥2.5Ω×2	Extraposition	
XXX-T280	14kW Roots 2	≥2.5Ω×2	Extraposition	
XXX-T315	16kW Roots 2	≥2.5Ω×2	Extraposition	
XXX-T355	17kW Roots 2	≥2.5Ω×2	Extraposition	
XXX-T400	14 kW Roots 3	≥2.5Ω×3	Extraposition	
XXX-T450	15kW Roots 3	≥2.5Ω×3	Extraposition	

Note: ×2 indicates that two braking units are connected in parallel with their own braking resistors; ×3 has the same meaning as ×2.

7

MAINTENANCE AND FAULT DIAGNOSIS

Chapter 7 Maintenance and Troubleshooting

7.1 Daily Maintenance and Care of Frequency Converters

7.1.1 Daily Maintenance

Due to the influence of environmental temperature, humidity, dust and vibration, the components inside the frequency converter will age, which may cause potential faults in the frequency converter or reduce its service life. Therefore, it is necessary to carry out daily and regular maintenance and servicing of the frequency converter.

Daily inspection items:

1) Has there been any abnormal change in the sound during the operation of the motor.

2) Did the motor generate any vibration during operation.

3) Has the installation environment of the frequency converter changed.

4) Is the cooling fan of the frequency converter operating normally.

5) Is the frequency converter overheating.

6) Daily cleaning.

7) The frequency converter should always be kept in a clean state.

8) Effectively remove the accumulated dust on the surface of the frequency converter to prevent the dust from entering the internal part of the frequency converter. Especially for metallic dust.

9) Effectively remove the oil stains from the cooling fan of the frequency converter.

7.1.2 periodical inspection

Please conduct regular inspections of the areas that are difficult to check during operation.

Regular inspection items:

1) Check the ventilation ducts and clean them regularly.

2) Check if the screws are loose.

3) Check for corrosion on the frequency converter.

4) Check if there are any arcing marks on the connection terminals.

5) Main circuit insulation test.

Reminder: When measuring insulation resistance using an ohmmeter (please use a 500V DC ohmmeter), disconnect the main circuit line from the inverter. Do not test the

insulation of the control circuit with an insulation resistance meter. No high-voltage tests are required (these have been completed during factory production).

7.1.3 Replacement of vulnerable parts of the frequency converter

The vulnerable components of the frequency converter mainly include the cooling fan and the electrolytic capacitors for filtering. Their lifespan is closely related to the usage environment and maintenance conditions. The general lifespan is approximately:

Device Name	Service life
fan	2 ~ 3year
electrolytic capacitor	4 ~ 5year

Note: The standard replacement time refers to the period during which the device should be used. Users can determine the replacement period based on the usage duration.

- Environmental temperature: The annual average temperature is around 30°C
- Load rate: Below 80%
- Operation rate: Less than 20 hours per day

1) cooling fan

Possible causes of damage: Bearing wear, blade aging.

Determination criteria: Whether there are cracks on the fan blades or other parts, and whether there is any abnormal vibration sound during startup.

2) Filtering electrolytic capacitor

Possible causes of damage: Poor quality of input power supply, high ambient temperature, frequent load fluctuations, and electrolyte aging.

Determination criteria: Presence or absence of liquid leakage, whether the safety valve has protruded, measurement of static capacitance, measurement of insulation resistance.

7.1.4 The storage of the frequency converter

After the user purchases the frequency converter, they must pay attention to the following points for both temporary storage and long-term storage:

1) When storing, please place the items in the company's packaging boxes in their original packaging.

2) Long-term storage will cause deterioration of electrolytic capacitors. It is necessary to ensure that they are powered on once within 2 years, with the power-on time being at least 5 hours. The input voltage must be gradually increased to the rated value using a voltage regulator.

7.2 Fault Alarm and Countermeasures

relay contacts will act. The frequency converter panel will display the fault code. The corresponding fault type and common solutions for the fault are listed in the List below. The information in the List is for reference only. Do not attempt to repair or modify it without authorization. If the fault cannot be eliminated, please seek technical support from our company or the product agent.

List 7-1 List of Fault Information

Fault Name	Operation surface panel display	Troubleshooting of the fault causes	Fault handling measures
Inverter unit protection	Err01	1、Short circuit in the output circuit of the frequency converter 2、The wiring of the motor and the frequency converter is too long 3、Module overheating 4、Loose wiring inside the frequency converter 5、Main control board malfunction 6、Driver board malfunction 7、Inverter module malfunction	1、Eliminate peripheral faults 2、Install reactors or output filters 3、Check whether the air duct is blocked, whether the fan is working properly, and eliminate any existing problems 4、Connect all the cables properly 5、Seek technical support 6、Seek technical support 7、Seek technical support
Accelerated overcurrent	Err02	1、The output circuit of the frequency converter has a ground connection or a short circuit 2、The control mode is vector and no parameter tuning has been performed. 3、The acceleration time is too short 4、Manual torque increase or inappropriate V/F curve 5、Low voltage 6、Start the rotating motor 7、Adding load suddenly during the acceleration process 8、The selection of the frequency converter is too small	1、Eliminate peripheral faults 2、Carry out motor parameter tuning 3、Increase the acceleration time 4、Adjust the manual lifting torque or V/F curve 5、Adjust the voltage to the normal range 6、Choose to start with speed tracking or wait until the motor stops before starting 7、Cancel sudden load increase 8、Select a more powerful frequency converter

Deceleration overcurrent	Err03	1、The output circuit of the frequency converter has a ground connection or a short circuit 2、The control mode is vector and no parameter tuning has been performed 3、The deceleration time is too short 4、Low voltage 5、Applying load suddenly during deceleration 6、No braking unit and braking resistor were installed	1、Eliminate peripheral faults 2、Carry out motor parameter tuning 3、Increase the deceleration time 4、Adjust the voltage to the normal range 5、Cancel sudden load increase 6、Install braking units and resistors
Constant-speed overcurrent	Err04	1、The output circuit of the frequency converter has a ground connection or a short circuit 2、The control mode is vector and no parameter tuning has been performed 3、Low voltage 4、Is there any sudden increase in load during operation 5、The selection of the frequency converter is too small	1、Eliminate peripheral faults 2、Carry out motor parameter tuning 3、Adjust the voltage to the normal range 4、Cancel sudden load increase 5、Select a more powerful frequency converter

Fault Name	Operation surface panel display	Troubleshooting of the fault causes	Fault handling measures
Accelerated overvoltage	Err05	1、Input voltage is too high 2、During the acceleration process there is an external force that is dragging the motor to operate 3、The acceleration time is too short 4、No braking unit and braking resistor were installed	1、Adjust the voltage to the normal range 2、Disable the additional power supply or install braking resistors 3、Increase the acceleration time 4、Install braking units and resistors
Deceleration overvoltage	Err06	1、Input voltage is too high 2、During the deceleration process, there is an external force pulling the motor to operate 3、The deceleration time is too short 4、No braking unit and braking resistor were installed	1、Adjust the voltage to the normal range 2、Disable the additional power supply or install braking resistors 3、Increase the deceleration time 4、Install braking units and resistors
Constant-speed overvoltage	Err07	1、Input voltage is too high 2、During operation, there is external force causing the motor to run	1、Adjust the voltage to the normal range 2、Disable the additional power supply or install braking resistors
Control power failure	Err08	1、The input voltage is not within the range specified by the standard	1、Adjust the voltage to the range specified by the regulations
Under-voltage fault	Err09	1、Instantaneous power outage 2、The input voltage of the frequency converter is not within the range specified by the standard 3、The bus voltage is abnormal 4、The rectifier bridge and the buffer resistor are not functioning properly 5、Driver board malfunction 6、Control panel malfunction	1、Reset failure 2、Adjust the voltage to the normal range 3、Seek technical support 4、Seek technical support 5、Seek technical support 6、Seek technical support

Frequency converter overload	Err10	1、Is the load too heavy or is the motor in a stalled condition 2、The selection of the frequency converter is too small	1、Reduce the load and inspect the motor and mechanical conditions 2、Select a more powerful frequency converter
motor overload	Err11	1、Is the setting of the motor protection parameter P9-01 appropriate 2、Is the load too heavy or is the motor in a stalled condition 3、The selection of the frequency converter is too small	1、Properly set this parameter 2、Reduce the load and inspect the motor and mechanical conditions 3、Select a more powerful frequency converter
Input phase missing	Err12	1、The three-phase input power is abnormal 2、Driver board malfunction 3、Abnormality of lightning protection board 4、Main control board malfunction	1、Check and eliminate any problems existing in the peripheral lines 2、Seek technical support 3、Seek technical support 4、Seek technical support
Output phase missing	Err13	1、The wiring from the frequency converter to the motor is abnormal 2、The three-phase output of the frequency converter is unbalanced when the motor is running 3、Driver board malfunction 4、Module anomaly	1、Eliminate peripheral faults 2、Check whether the three-phase windings of the motor are normal and eliminate any faults 3、Seek technical support 4、Seek technical support
Module overheating	Err14	1、Excessive environmental temperature 2、Air duct blockage 3、Fan is damaged 4、Module thermistor damaged 5、Inverter module damaged	1、Reduce the environmental temperature 2、Clean the air ducts 3、Replace the fan 4、Replace the thermistor 5、Replace the inverter module

Fault Name	Operation surface panel display	Troubleshooting of the fault causes	Fault handling measures
External device failure	Err15	1、Input the external fault signal through the multi-function terminal DI 2、Input external fault signals through the virtual IO function	1、Reset operation 2、Reset operation
communication failure	Err16	1、The upper computer is not functioning properly 2、The communication line is not functioning properly 3、The settings for the communication expansion card P0-28 are incorrect 3、The settings for the FD group of communication parameters are incorrect	1、Check the wiring of the upper computer 2、Check the communication connection cable 3、Properly set the type of communication expansion card 4、Properly set communication parameters
Contactor failure	Err17	1、The driver board and the power supply are not functioning properly 2、The contactor is not functioning properly	1、Replace the driver board or power board 2、Replace the contactor
Current detection failure	Err18	1、Check for abnormalities in the Hall device 2、Driver board malfunction	1、Replace the Hall device 2、Replace the driver board
Motor tuning failure	Err19	1、The motor parameters have not been set according to the nameplate 2、Parameter tuning process timeout	1、Set the motor parameters correctly according to the nameplate 2、Check the wiring from the frequency converter to the motor
Code plate failure	Err20	1、Encoder model does not match 2、Encoder connection error 3、Encoder malfunction 4、PG card anomaly	1、Set the encoder type correctly based on the actual situation 2、Eliminate line faults 3、Replace the encoder 4、Replace the PG card

EEPROM Reading and writing errors	Err21	1、EEPROM chip damaged	1、Replace the main control board
Hardware failure of the frequency converter	Err22	1、There was overpressure 2、There was an overcurrent	1、Handle overvoltage faults 2、Handle the overcurrent fault
Ground short-circuit fault	Err23	Motor ground short circuit	Replace the cables or the motor
Cumulative operation time has reached the fault limit	Err26	The cumulative running time has reached the set value	Use the parameter initialization function to clear the record information
User-defined fault 1	Err27	1、Input the signal of the user-defined fault 1 through the multi-function terminal DI 2、Input the signal of user-defined fault 1 through the virtual I/O function	1、Reset operation 2、Reset operation
User-defined fault 2	Err28	1、Input the signal of user-defined fault 2 through the multi-function terminal DI 2、Input the signal of user-defined fault 2 through the virtual IO function	1、Reset operation 2、Reset operation
Cumulative power-on time - Fault occurred	Err29	1、The cumulative power-on time has reached the set value	1、Use the parameter initialization function to clear the record information
Load shedding failure	Err30	1、The operating current of the frequency converter is less than P9-64	1、Confirm whether the load has been disconnected or check whether the P9-64 and P9-65 parameter settings are in line with the actual operating conditions

Running PID Loss of feedback fault	Err31	1、The performance of PID is lower than the set value of PA-26	1、Check the PID feedback signal or set PA -26 to an appropriate value
Wave-by-wave current-limiting failure	Err40	1、Is the load too heavy or is the motor in a stalled condition 2、The selection of the frequency converter is too small	1、Reduce the load and inspect the motor and mechanical conditions 2、Select a more powerful frequency converter

Fault Name	Operation surface panel display	Troubleshooting of the fault causes	Fault handling measures
Switching during operation - Motor failure	Err41	During the operation of the frequency converter, the current motor selection can be changed through the terminals	After the frequency converter is shut down, then proceed with the motor switching operation
Excessive speed deviation fault	Err42	1、The encoder parameter settings are incorrect (when P0 -01 = 1) 2、motor stalling 3、The detection parameters P9-69 and P9-70 for excessive speed deviation are set improperly 4、The wiring from the output terminals UVW of the frequency converter to the motor is incorrect	1、Properly set the encoder parameters 2、Check if the machinery is abnormal, whether the motor has undergone parameter tuning, and whether the torque setting value P2-10 is too small 3、The detection parameters P9 -69 and P9-70 for excessive speed deviation are set improperly 4、Check whether the wiring between the frequency converter and the motor is disconnected
Motor over-speed fault	Err43	1、The encoder parameters are set incorrectly 2、No parameter tuning was carried out 3、The parameters P9 -67 and P9-68 for detecting motor over -speed are set improperly	1、Properly set the encoder parameters 2、Carry out motor parameter tuning 3、Set the detection parameters reasonably based on the actual situation
Motor overheating fault	Err45	1、The wiring of the temperature sensor is loose 2、The motor temperature is too high	1、Check the wiring of the temperature sensor and troubleshoot the problem 2、Reduce the operating frequency or take other cooling measures to cool the motor
Incorrect initial	Err51	The motor parameters deviate too much from the	Reconfirm whether the motor parameters are correct, with

position		actual values	particular attention to whether the rated current is set too low
Master-slave control from the slave machine failure	Err55	The slave machine has malfunctioned, Check the slave machine.	Carry out troubleshooting based on the slave machine fault codes
Brake pipe protection failure	Err60	The braking resistor is short-circuited or the braking module is malfunctioning	Check the braking resistor or seek technical support

7.3 Common Faults and Their Solutions

During the operation of the frequency converter, the following fault situations may occur. Please refer to the following methods for a simple fault analysis:

List 7-2 Common Faults and Their Solutions

serial number	fault phenomenon	possible cause	solution
1	Power-on but no display	1、The grid voltage is either absent or too low 2、The switch power supply on the inverter drive board has failed 3、Rectifier bridge is damaged 4、The buffer resistor of the frequency converter is damaged 5、Control panel and keyboard malfunction 6、The connection between the control board, the driver board and the keyboard has been broken	1、Check the input power supply 2、Check the bus voltage 3、Reinsert the 8-core and 28-core cables 4-6. Seek service from the manufacturer
2	Power-on display: HC	1、The connection between the driver board and the control board is poor 2、Damage to the related components on the control panel 3、The motor or the motor wire has a ground short circuit 4、Hall fault 5、Low grid voltage	1、Reinsert the 8-core and 28-core cables 2-5. Seek service from the manufacturer

serial number	fault phenomenon	possible cause	solution
3	Power-on display shows "Err23" alarm	1、Motor or output line is short-circuited to the ground 2、Frequency converter is damaged	1、Measure the insulation of the motor and the output line using a megohmmeter 2、Seeking manufacturer's services
4	The inverter powers on and displays "normal". After it starts running, it displays "HC" and immediately shuts down	1、The fan is damaged or is in a blocked rotation state 2、The wiring of the peripheral control terminals is short-circuited	1、Replace the fan 2、Eliminate external short-circuit faults
5	Frequent occurrence of Err14 (Module Overheating) faults	1、The carrier frequency is set too high 2、The fan is damaged or the air duct is blocked 3、Internal components of the frequency converter are damaged (such as thermocouples or others)	1、Reduce the carrier frequency (P0-15) 2、Replace the fan and clean the air duct 3、Seeking manufacturer's services
6	The motor does not rotate after the frequency converter is turned on	1、Motor and motor wires 2、Incorrect parameter settings for the frequency converter (motor parameters) 3、The connection between the driver board and the control board is poor 4、Fault of the driver board	1、Reconfirm the connection between the frequency converter and the motor 2、Replace the motor or eliminate mechanical faults 3、Check and reconfigure the motor parameters 4、Seeking manufacturer's services
7	DI terminal failure	1、Incorrect parameter settings 2、External signal error 3、The +24V jumper wire of OP is loose 4、Control panel failure	1、Check and reconfigure the relevant parameters of the P4 group 2、Reconnect the external signal line 3、Reconfirm the connection between the OP and the +24V jumper wire 4、Seeking manufacturer's services

8	During closed-loop vector control, the motor speed cannot be increased	1、Encoder failure 2、The encoder was connected with the wrong wires or had poor contact 3、PG card malfunction 4、Fault of the driver board	1、Replace the code wheel and reconfirm the wiring 2、Replace the PG card 3~4、Seeking manufacturer's services
9	The frequency converter frequently reports overcurrent and overvoltage faults	1、The motor parameters are set incorrectly 2、The acceleration and deceleration times are inappropriate 3、Load fluctuation	1、Reset the motor parameters or perform motor tuning 2、Set appropriate acceleration and deceleration times 3、Seeking manufacturer's services
10	Power-on (or operation) error code Err17 occurred	1、The soft start contactor has not engaged	1、Check if the contactor cable is loose 2、Check if the contactor is faulty 3、Check whether the 24V power supply for the contactor is faulty 4、Seeking manufacturer's services
11	Power-on display 8.8.8.8.8	1、Damage to the related components on the control panel	1、Replace the control board

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Fault Name	Operation surface panel display	Troubleshooting of the fault causes	Fault handling measures
Accelerated overvoltage	Err05	1、Input voltage is too high 2、During the acceleration process there is an external force that is dragging the motor to operate 3、The acceleration time is too short 4、No braking unit and braking resistor were installed	1、Adjust the voltage to the normal range 2、Disable the additional power supply or install braking resistors 3、Increase the acceleration time 4、Install braking units and resistors
Deceleration overvoltage	Err06	1、Input voltage is too high 2、During the deceleration process, there is an external force pulling the motor to operate 3、The deceleration time is too short 4、No braking unit and braking resistor were installed	1、Adjust the voltage to the normal range 2、Disable the additional power supply or install braking resistors 3、Increase the deceleration time 4、Install braking units and resistors
Constant-speed overvoltage	Err07	1、Input voltage is too high 2、During operation, there is external force causing the motor to run	1、Adjust the voltage to the normal range 2、Disable the additional power supply or install braking resistors
Control power failure	Err08	1、The input voltage is not within the range specified by the standard	1、Adjust the voltage to the range specified by the regulations
Under-voltage fault	Err09	1、Instantaneous power outage 2、The input voltage of the frequency converter is not within the range specified by the standard 3、The bus voltage is abnormal 4、The rectifier bridge and the buffer resistor are not functioning properly 5、Driver board malfunction 6、Control panel malfunction	1、Reset failure 2、Adjust the voltage to the normal range 3、Seek technical support 4、Seek technical support 5、Seek technical support 6、Seek technical support

I.2Non-functional code data

Non-functional code data	Status Data (Read Only)	Group U monitoring parameters, inverter fault description, inverter operating status
	Controls Parameter (Write Only)	Control commands, communication settings, digital output terminal control, analog output AO1 control, analog output AO2 control, high-speed pulse (FMP) output control, parameter initialization

1、Non-functional

Control commands and status data are divided into U group monitoring parameters, inverter fault descriptions, and inverter operating status.

Control commands, U group parameters, monitoring parameters

The description of the U group monitoring data can be found in the relevant sections of Chapter 5 and Chapter 6. The address definition is as follows:

U0~UF, Its communication address has the upper 16 bits ranging from 70 to 7F, and the lower 16 bits represent the sequence number of the monitoring parameters within the group. For example:

U0—11, Its mailing address is 700BH.

Description of Frequency Converter Fault

When reading the fault description of the frequency converter, the communication address is fixed at 8000H. The upper computer can obtain the current fault code of the frequency converter by reading the data at this address. The description of the fault code can be found in the function code defined on page 9-14 of Chapter 5. Operating status of the frequency converter

When reading the operating status of the frequency converter, the communication address is fixed at 3000H. The upper computer can obtain the current operating status information of the frequency converter by reading the data at this address. The definition is as follows:

Communication Address Mapping for Inverter Operational Status	Read the definition of the status word
3000H	1: Forward rotation operation
	2: Reverse operation
	3: Halt

2、controls parameter

The control parameters are divided into control commands, digital output terminal control, analog output AO1 control, analog output AO2 control, and high-speed pulse (FMP) output control.

Control Command

In P0-02 (command source), select as 2: During communication control, the upper computer can use this communication address to control the start and stop of the inverter and other related commands. The control commands are defined as follows:

Control command communication address	Command Function
2000H	1: Forward rotation operation
	2: Reverse Operation
	3: Normal Inching Turning
	4: Reverse Inching Turning
	5: Free Shutdown
	6: Reduce Speed And Stop The Machine
	7: Fault Resetting

Communication setting value

The communication setting values mainly include the selection of frequency source, torque upper limit source, VF separation voltage source, PID setpoint source, PID feedback source, etc. as the set data for communication timing. The communication address is 1000H. When the upper computer sets this communication address value, the data range is -10000 to 10000, corresponding to the relative setpoint range of -100.00% to 100.00%.

Digital output terminal control

When the function selection of the digital output terminals is set to 20: Communication Control, the upper computer can control the digital output terminals of the inverter through this communication address. The definition is as follows:

Digital output terminal control communication address	Command content
2001H	BIT0: DO1 Output control BIT1: DO2 Output control BIT2: RELAY1 Output control BIT3: RELAY2 Output control BIT4: FMR Output control BIT5: VDO1 BIT6: VDO2 BIT7: VDO3 BIT8: VDO4 BIT9: VDO5

Analog output AO1 and AO2, high-speed pulse output FMP control

When the analog output A01 and A02, and the high-speed pulse output FMP functions are set to 12: communication settings, the upper computer can control the analog output and high-speed pulse output of the frequency converter through this communication address. The definition is as follows:

Output control communication addressCommand content		Command content
AO1	2002H	0 - 7FPP represents 0% - 100%.
AO2	2003H	
FMP	2004H	

Parameter initialization

When it is necessary to perform the parameter initialization operation of the frequency converter through the upper computer, this function needs to be utilized.

If PP-00 (user password) is not 0, then the password verification must be conducted via communication first. Once the verification is successful, within 30 seconds, the upper computer will perform the parameter initialization operation.

The communication address for verifying the user password is 1F00H. By directly writing the correct user password to this address, the password verification can be completed.

The address for initializing the communication parameters is 1F01H. The data content is defined as follows:

Parameter initialization communication address	Command Function
1F01H	1: Restore factory settings
	2: Clearly record the information
	4: Restore user backup parameters
	501: Backup the current parameters of the user

Appendix 1: Modbus Communication Protocol

This series of frequency converters offer an RS485 communication interface and support the Modbus-RTU slave station communication protocol. Users can achieve centralized control through a computer or PLC. Using this communication protocol, they can set the operation commands of the frequency converter, modify or read the function code parameters, and read the working status and fault information of the frequency converter, etc.

II.1 The content of the agreement

This serial communication protocol defines the content and format of the information transmitted in serial communication. It includes: the host polling (or broadcasting) format; the encoding method of the host, which includes: the function code for the required action, the transmitted data, and error checking, etc. The response of the slave machine also adopts the same structure, including: action confirmation, returned data, and error checking, etc. If the slave machine encounters an error when receiving the information or fails to complete the action required by the host, it will organize a fault information as a response and feedback it to the host.

■ II.1.1 Application method

The frequency converter is connected to a "single master multiple slaves" PCIPLC control network equipped with an RS485 bus, functioning as a communication slave.

■ II.1.2 Bus structure

(1) Hardware interface

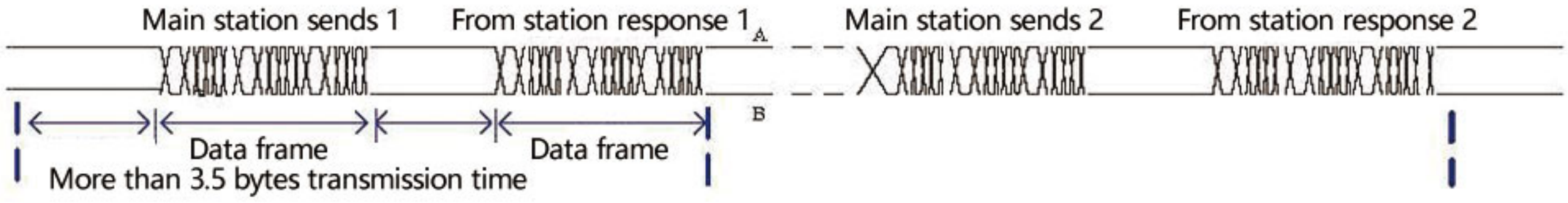
An RS485 expansion card IX1 hardware needs to be inserted into the frequency converter.

(2) Topological structure

Single host with multiple slave machines system. In the network, each communication device has a unique slave station address. Among them, one device acts as the communication host (usually a PC upper computer, PLC, HMI, etc.), initiates communication actively, performs parameter reading or writing operations on the slaves, while the other devices act as communication slaves, responding to the inquiries or communication operations of the host for their own machines. At the same time, only one device can send data, while the others are in the receiving state.
The setting range for slave addresses is from 1 to 247. 0 is the broadcast communication address. The slave address in the network must be unique.

(3) Communication transmission method

Asynchronous serial, half-duplex transmission mode. In the process of serial asynchronous communication, data is sent in the form of messages, one piece of data at a time. According to the MODBUS -RTU protocol, when there is no data on the communication data line for a free period longer than 3.5 bytes of transmission time, it indicates the beginning of a new communication frame.

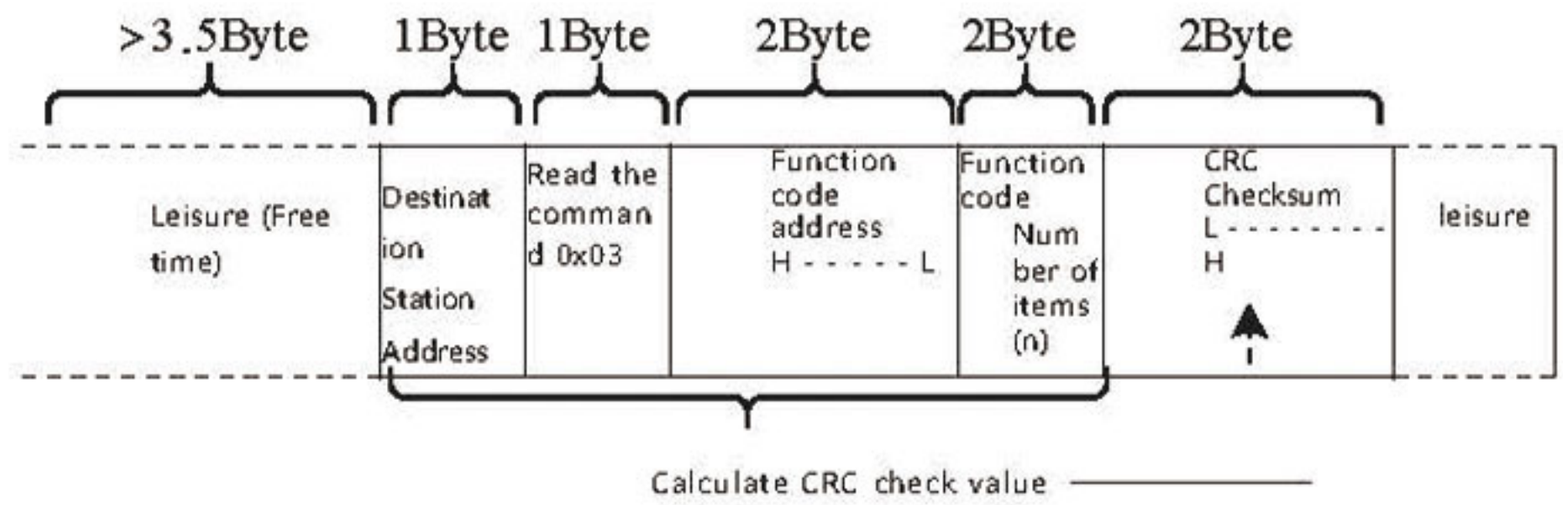


The communication protocol built into this series of frequency converters is the Modbus-RTU slave communication protocol. It can respond to the "queries/commands" from the host or take corresponding actions based on the "queries/commands" from the host, and the communication data should be responded to accordingly.
The host can refer to a personal computer (PC), industrial control equipment or a programmable logic controller (PLC), etc. The host can communicate with a specific slave device individually, and can also broadcast information to all subordinate slave devices. For the individual access to the host, the accessed slave device is required to return a response frame; for the broadcast information sent by the host, the slave device does not need to respond to the host.

II.2 Communication Data Structure

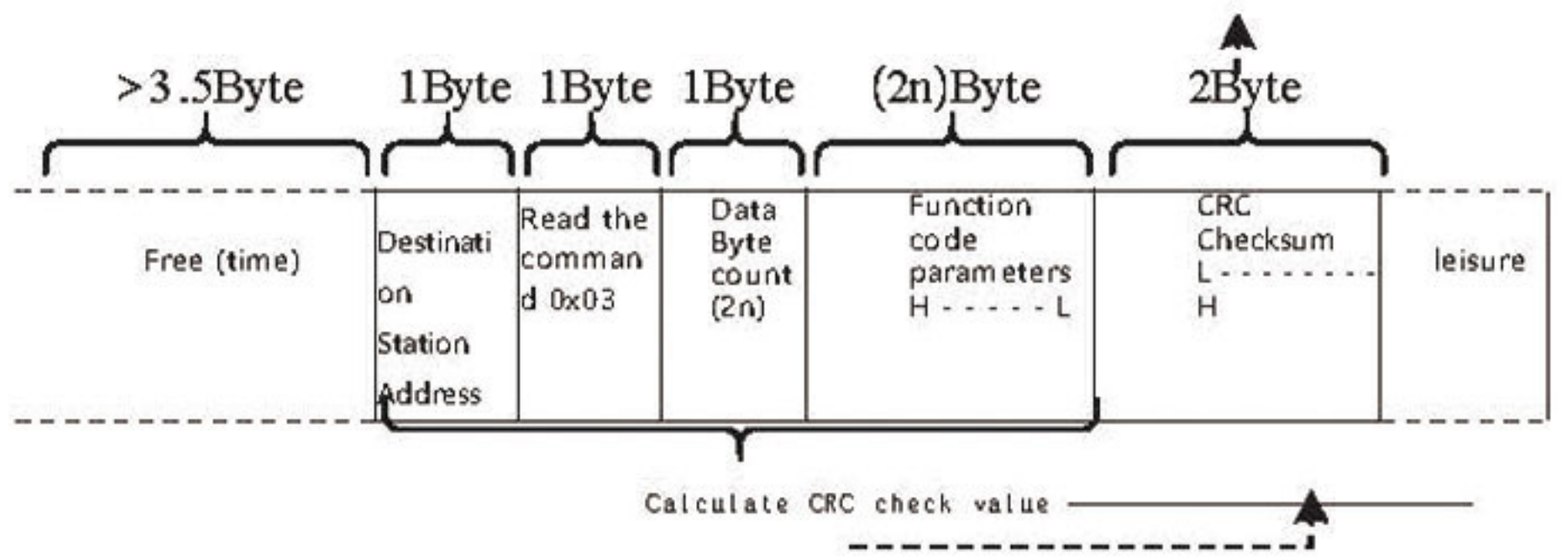
The Modbus-RTU protocol communication data format for this series of frequency converters is as follows: The frequency converter only supports reading or writing of word-type parameters. The corresponding communication read operation command is 0x03; the write operation command is 0x06. It does not support reading or writing of bytes or bits:

The main station reads the command recovery



Theoretically, the host computer can read a series of consecutive function codes at one time (with the maximum number of n being up to 12). However, it should be noted that it cannot skip the last function code of this function code group; otherwise, an error will be returned.

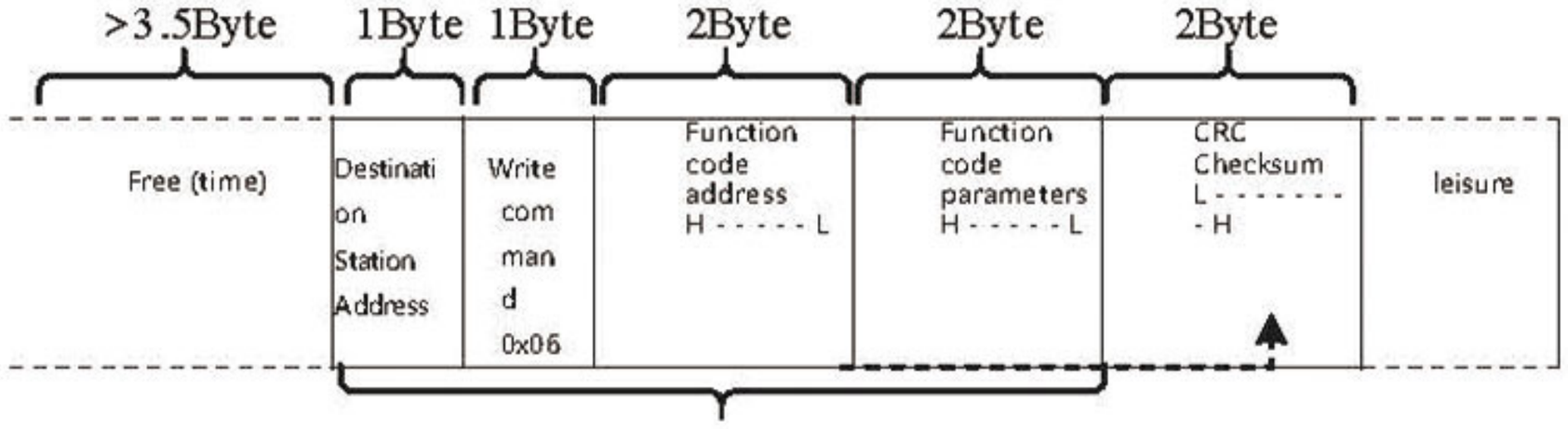
From the station, the response was received and processed



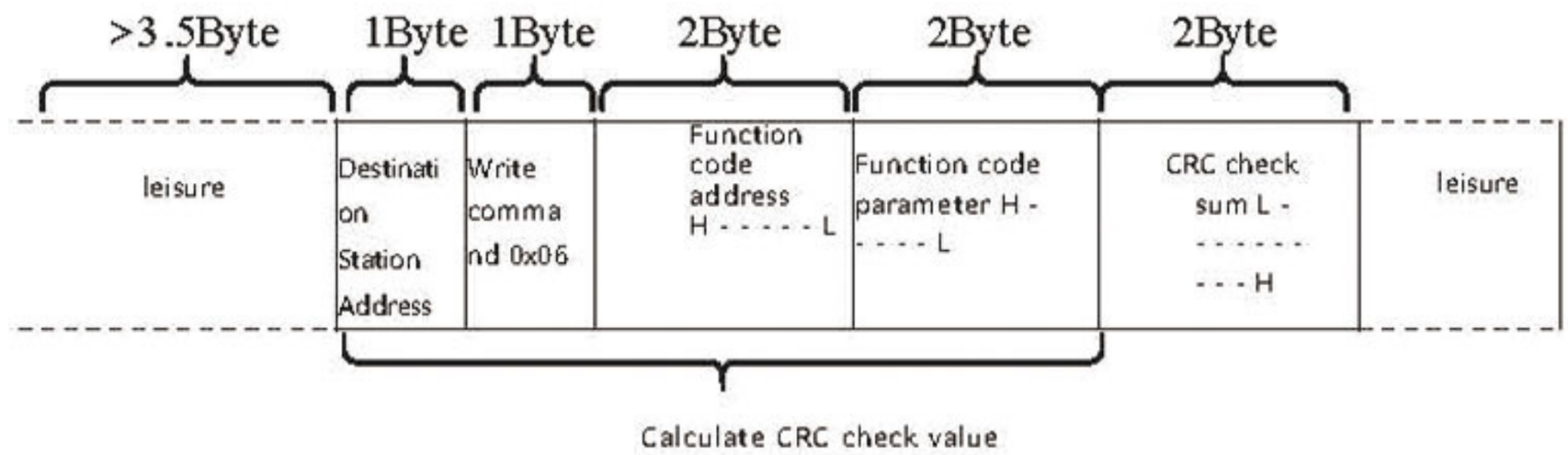
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Main station sends command recovery request

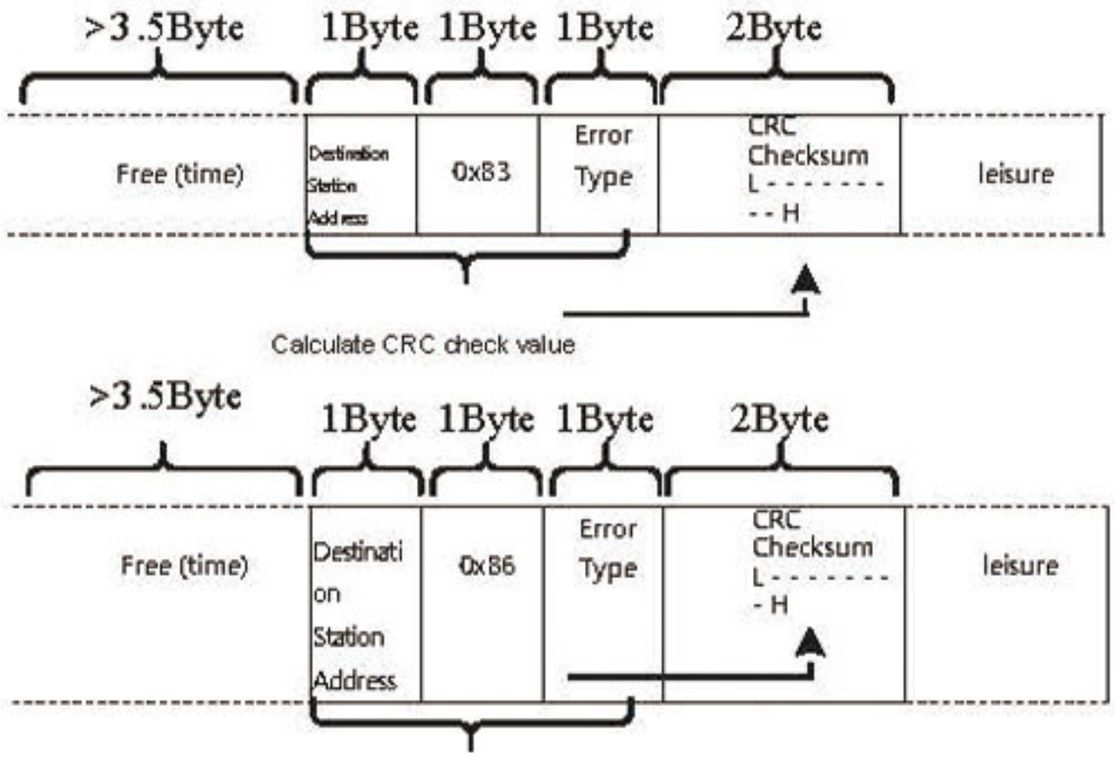


From the station, send the response back



If the machine detects a communication failure or any other reason causing unsuccessful reading or writing, it will reply with an error recovery.

From the station, the response was incorrect. Restoration was carried out



type of error:
01: Command code error
02: address error
03: error in data
04: Command cannot be processed

From the station, write the response error recovery procedure

Description of Data Frame Fields:

Start	Idle state with a transmission time greater than 3.5 characters

From machine address ADR	Communication address range: 1 to 247; 0 = broadcast address
Command Code CMD	03: Read slave machine parameters; 06: Write slave machine parameters
Function code address H	The parameter addresses inside the frequency converter are represented in hexadecimal. They are divided into functional code type and non-functional code type parameters (such as operating status parameters, operation commands, etc.), and details can be found in the address definitions. During transmission, the high byte comes first, followed by the low byte.
Function code address L	
Number of function codes H	The number of function codes read in this frame. If it is 1, it means reading 1 function code. During transmission, the high byte comes first and the low byte follows. This protocol can only rewrite 1 function code at a time and there is no such field.
Number of function codes L	
Data H	When transmitting the response data or the data to be written, the high-order bytes come first, followed by the low-order bytes.
Data L	
Low bit of CRC CHK	Measurement value: CRC16 checksum value. During transmission, the lower byte comes first and the higher byte follows. The calculation method is detailed in the CRC checksum section of this section.
CRC CHK high position	
END	When there are 3.5 characters

CRC verification method:

CRC (Cyclic Redundancy Check) uses the RTU frame format, and the message includes an error detection field based on the CRC method. The CRC field detects the content of the entire message. The CRC field is two bytes and contains 16-bit binary values. It is calculated by the transmission device and added to the message. The receiving device recalculates the CRC of the received message and compares it with the value in the received CRC field. If the two CRC values are not equal, it indicates that there is a transmission error.

CRC is initially stored as 0xFFFF, and then a process is called to process the consecutive 8-bit bytes in the message with the current register value. Only the 8-bit data of each character is valid for CRC, and the start bit, stop bit, and parity check bit are invalid.

During the CRC generation process, each 8-bit character is XORed separately with the register content, and the result is shifted towards the lowest valid bit, with the highest valid bit padded with 0. The LSB is extracted for detection. If the LSB is 1, the register is XORed separately with the preset value; if the LSB is 0, no operation is performed. The entire process is repeated 8 times After the last bit (the 8th bit) is completed, the next 8-bit byte is XORed separately with the current value of the register. The final value in the register is the CRC value after all bytes in the message have been processed.

When CRC is added to the message, the low byte is added first, followed by the high byte.
The simple CRC function is as follows:

```
unsigned int crc_chk_value（unsigned char *data_value,unsigned char length）
{
unsigned int crc_value=0xFFFF;
    int i;
  while（length--）
     {
        crc_value^=*data_value++;
         for（i=0;i<8;i++）
        {
          if（crc_value&0x0001）
              {
                crc_value=（crc_value>>1）^0xa001;
          }
          else
          {
                crc_value=crc_value>>1;
          }
       }
   }
return（crc_value);
 }
```

Address definition of communication parameters:

Read/write function code parameters (some function codes cannot be changed and are only used by manufacturers or for monitoring purposes):

II.3 Function Code Parameter Address Indication Rules

Using the function code group number and label as parameter address representation rules:

High byte: P0~PF(P group)、A0~AF(A group)、70~7F(U group)

Low-order byte: 00~PF

For example: If you want to access function code P3-12, the access address of the function code is represented as 0xF30C.;

Notice:

FF group: Neither the parameters can be read nor can they be changed.;

U group: Parameters can only be read, not modified.。

Some parameters cannot be changed when the frequency converter is in operation; some parameters cannot be changed regardless of the state of the frequency converter; when modifying function code parameters, it is also necessary to pay attention to the parameter range, unit, and related explanations.

Function code group number	Communication access address	Modify the function code address in the RAM of the communication unit.
P0~PE group	0xF000~0xFEFF	0x0000~0x0EFF
A0~AC group	0xA000~0xACFF	0x4000~0x4CFF
U0 group	0x7000~0x70FF	

Note that since EEPROM is frequently used for storage, it will shorten its service life. Therefore, for some function codes, in the communication mode, there is no need to store them. Instead, just changing the values in the RAM is sufficient.

If it is a parameter of group F, to achieve this function, simply change the high-order F bit of the function code address to 0. If it is a parameter of group A, to achieve this function, simply change the high-order A bit of the function code address to 4. The corresponding function code addresses are as follows:

High byte: 00~0F(P group)、40~4F(A group)

Low-order byte: 00~PF

For example:

Function code P3-12 is not stored in the EEPROM. The address is represented as 030C;

Function code A0-05 is not stored in the EEPROM. The address is represented as 4005;

This address indicates that it can only be used for writing to RAM, and not for reading.

During reading, it is regarded as an invalid address.

For all parameters, this function can also be achieved by using the command code 07H.Shutdown/Operation Parameters Section:

Argument Addresses	Parameter Description	Argument Addresses	Parameter Description
1000H	*Communication setting value (decimal) −10000 ~10000	1010H	PID settings
1001H	Operating frequency	1011H	PID feedback
1002H	Busbar voltage	1012H	PLC steps
1003H	Output Voltage	1013H	PULSE input pulse frequency, unit 0.01 kHz

Argument Addresses	Parameter Description	Argument Addresses	Parameter Description
1004H	Output current	1014H	Feedback speed, unit: 0.1 Hz
1005H	Output power	1015H	Remaining running time
1006H	Output torque	1016H	AI1 Voltage before calibration
1007H	Operating speed	1017H	AI2 Voltage before calibration
1008H	DI input flag	1018H	The voltage before the potentiometer correction on the operation panel
1009H	DO output flag	1019H	Linear speed
100AH	AI1 Voltage	101AH	Current power-on time
100BH	AI2 Voltage	101BH	Current running time
100CH	Operation panel potentiometer voltage	101CH	PULSE input pulse frequency, unit 1Hz
100DH	Count value input	101DH	Communication setting value
100EH	Length value input	101EH	Actual feedback speed
100FH	Load speed	101FH	Main frequency X display
-	-	1020H	Auxiliary frequency Y display

*Note:

The communication setting value is a percentage of a relative value. 10000 corresponds to 100.00%, and -10000 corresponds to -100.00%.

For data with frequency dimension, this percentage represents the percentage of the maximum frequency (P0 - 10); for data with torque dimension, this percentage is P2 - 10, A2 - 48 (the upper limit of torque values are set, corresponding to the first and second motors respectively).

Control command input to the frequency converter: (Leave blank)

Command word address	Command Function
2000H	0001：Forward rotation operation
	0002：Reverse operation
	0003：Normal inching turning
	0004：Reverse inching turning
	0005：Free shutdown
	0006：Reduce speed and stop the machine.
	0007：Fault resetting

Read the status of the frequency converter: (read-only)

status word address	Status word function
3000H	0001：Forward rotation operation
	0002：Reverse operation
	0003： Halt

Parameter lock password verification: (If the result is 8888H, it indicates that the password verification is successful.)

Password address	The input of the password content
1F00H	*****

Digital output terminal control: (Leave blank)

Command Address	Command content
2001H	BIT0: DO1 Output Control BIT1: DO2 Output Control BIT2: RELAY1 Output Control BIT3: RELAY2 Output Control BIT4: FMR Output Control BIT5: VDO1 BIT6: VDO2 BIT7: VDO3 BIT8: VDO4 BIT9: VDO5

Simulation output AO1 control: (Leave blank)

Command Address	Command Content
2002H	0 ~ 7FFF expression 0% ~ 100%

Simulation output AO2 control: (Just write)

Command Address	Command Content
2003H	0 ~ 7FFFexpression0% ~ 100%

Pulse (PULSE) output control: (omit)

Command Address	Command Content
2004H	0 ~ 7FFFexpression0% ~ 100%

Frequency converter fault description:

Frequency converter fault address	Frequency converter fault information

8000H	0000: Troublr-free 0001: Retain 0002: Accelerated overcurrent 0003: Deceleration overcurrent 0004: Constant-speed overcurrent 0005: Accelerated overvoltage 0006: Deceleration overvoltage 0007: Constant-speed overvoltage 0008: Buffer resistor overload fault 0009: Under-voltage fault 000A: Frequency converter overload 000B: Motor overload 000C: Input phase missing 000D: Output phase missing 000E: Module overheating 000F: External fault 0010: Communication failure 0011: Contactor malfunction 0012: Current detection failure 0013: Motor tuning failure 0014: Encoder/PG card failure	0015: Parameter reading and writing exception 0016: Hardware failure of the frequency converter 0017: Motor ground fault 0018: Retain 0019: Retain 001A: The running time has reached 001B: User-defined fault 1 001C: User-defined fault 2 001D: Power-on time has arrived 001E: Unload 001F: Loss of PID feedback during operation 0028: Fast current-limiting timeout failure 0029: Motor failure during operation switching 002A: Excessive speed deviation 002B: Motor overspeed 002D: Motor overheating 005A: Incorrect setting of encoder line count 005B: Unconnected encoder 005C: Incorrect initial position 005E: Speed feedback error

II.4 Communication Parameters Description for FD Group

Pd-00	Baud Rate	Factory Default	6005
	Setting Range	Unit: Modbus Baud Rate	
		0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS	5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS

This parameter is used to set the data transmission rate between the host computer and the frequency converter. Note that the baud rates set for the host computer and the frequency converter must be the same otherwise, communication cannot be carried out. The higher the baud rate, the faster the communication speed.

Pd-01	Data Format	Factory Default	0
	Setting Range	0: No Parity - Data Format: <8, N, 2> 1: Even Parit - Data Format: <8, E, 1> 2: Odd Parity - Data Format: <8, O, 1> 3: No Parity - Data Format: <8, N, 1>	

The data format set by the host computer and the frequency converter must be consistent; otherwise, communication cannot be carried out.

Pd-02	Local Address	Factory Default	1
	Setting Range	1~247, 0 Represents The Broadcast Address	

0 When the local address is set to 0, it becomes the broadcast address, enabling the upper computer to perform broadcasting functions.

The local address is unique (except for the broadcast address), which forms the basis for point-to-point communication between the host computer and the frequency converter.

Pd-03	Response Delay	Factory Default	2ms
	Setting Range	0~20ms	

Response delay: This refers to the interval time between the end of receiving the data from the frequency converter and the transmission of the data to the upper computer. If the response delay is shorter than the system processing time, then the response delay shall be taken as the system processing time. If the response delay is longer than the system processing time, after the system finishes processing the data, it needs to wait for a delay until the response delay time is reached before sending the data to the upper computer.

Pd-04	Response Delay Communication Timeout Time	Factory Default	0.0 s
	Setting Range	0.0 s (Invalid) ; 0.1~60.0s	

When the function code is set to 0.0 s, the communication timeout parameter is invalid.

Pd-05	Selection Of Communication Protocol	Factory Default	0
	Setting Range	0: Non-Standard Modbus-Rtu Protocol; 1: Standard Modbus-Rtu Protocol	

When this function code is set to an effective value, if the interval between one communication and the next exceeds the communication timeout time, the system will report a communication failure error (Err16). Usually, it is set to invalid. If this parameter is set in a continuous communication system, it can monitor the communication status.

Pd-05=1: Select the standard Modbus protocol.

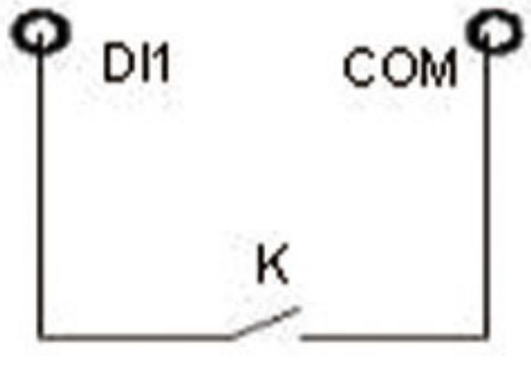
Pd-05=0: When reading the command, the slave device returns one more byte than the standard Modbus protocol. For details, please refer to the "5 Communication Data Structure" section of this protocol.

Pd-06	Communication Readout Current Resolution	Factory Default	0
	Setting Range	0: 0.01A; 1: 0.1A	

The unit of the output current value used to determine the output current when reading the communication.

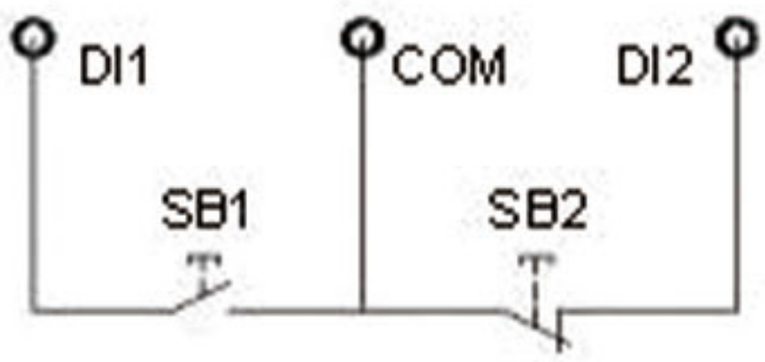
"APPENDIX": COMMON FUNCTION WIRING DIAGRAMS AND PARAMETER SETTINGS

III.1 Single-terminal startup



Parameter settings： P0-02设为1

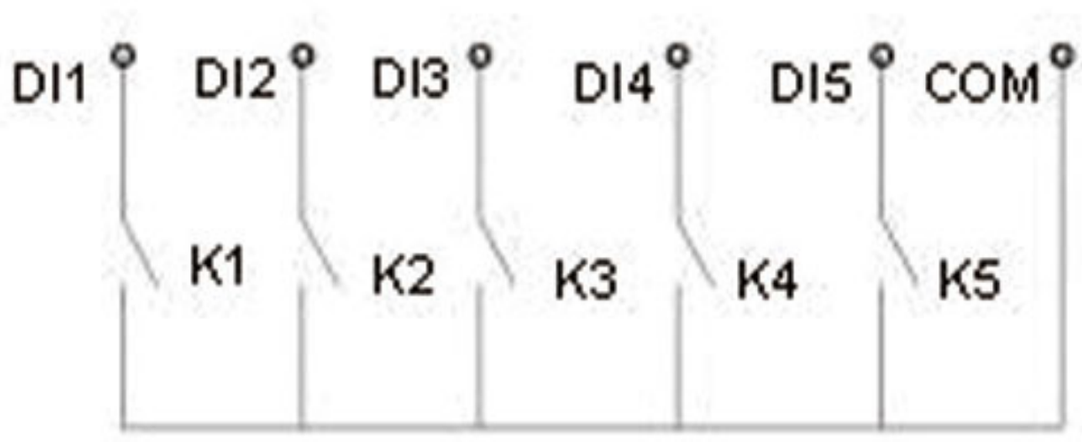
III.2 Three-wire starting system



Parameter settings： P0-02 Set as1
P4-00 Set as1
P4-01 Set as3
P4-11 Set as2

Explanation: SB1 is the start button (normally open)
SB2 is the stop button (normally closed)

III.3 Multiple-speed mode



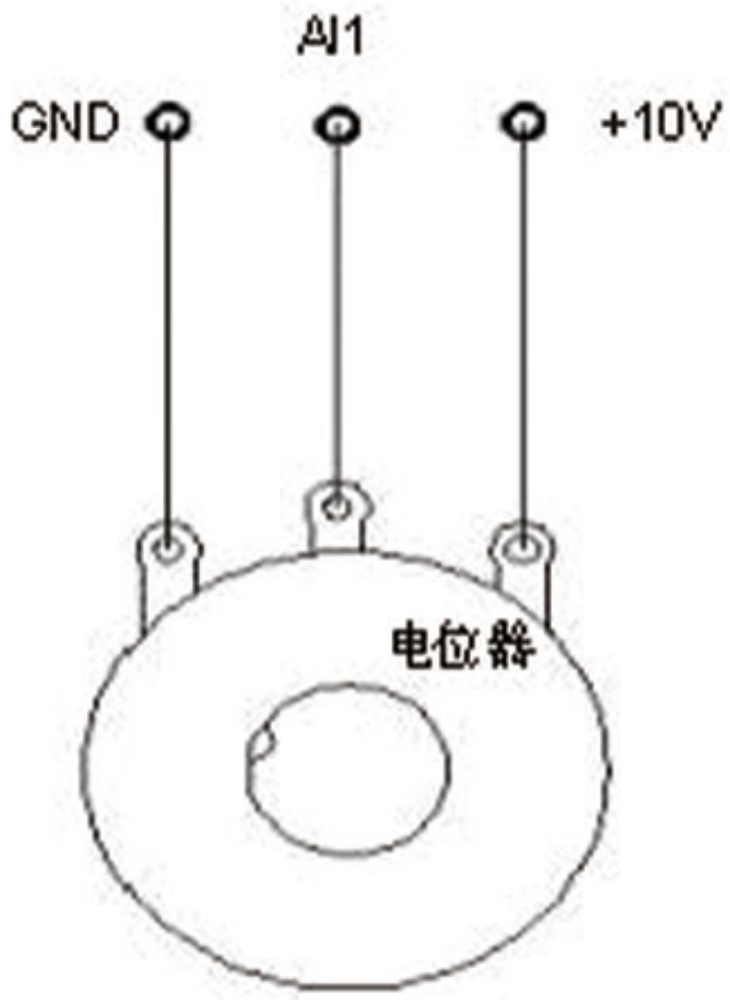
Parameter settings:
P0-02 Set as1
P4-00 Set as1
P4-01 Set as12
P4-02 Set as13
P4-03 Set as14
P4-04 Set as15

PC-00~PC-15 Set the corresponding frequency

Multiple-speed Comparison List

DI1	DI2	DI3	DI4	DI5	Frequency of the inverter operation
ON	OFF	OFF	OFF	OFF	PC-00
ON	ON	OFF	OFF	OFF	PC-01
ON	OFF	ON	OFF	OFF	PC-02
ON	ON	ON	OFF	OFF	PC-03
ON	OFF	OFF	ON	OFF	PC-04
ON	ON	OFF	ON	OFF	PC-05
ON	OFF	ON	ON	OFF	PC-06
ON	ON	ON	ON	OFF	PC-07
ON	OFF	OFF	OFF	ON	PC-08
ON	ON	OFF	OFF	ON	PC-09
ON	OFF	ON	OFF	ON	PC-10
ON	OFF	OFF	ON	ON	PC-11
ON	ON	ON	OFF	ON	PC-12
ON	ON	OFF	ON	ON	PC-13
ON	OFF	ON	ON	ON	PC-14
ON	ON	ON	ON	ON	PC-15

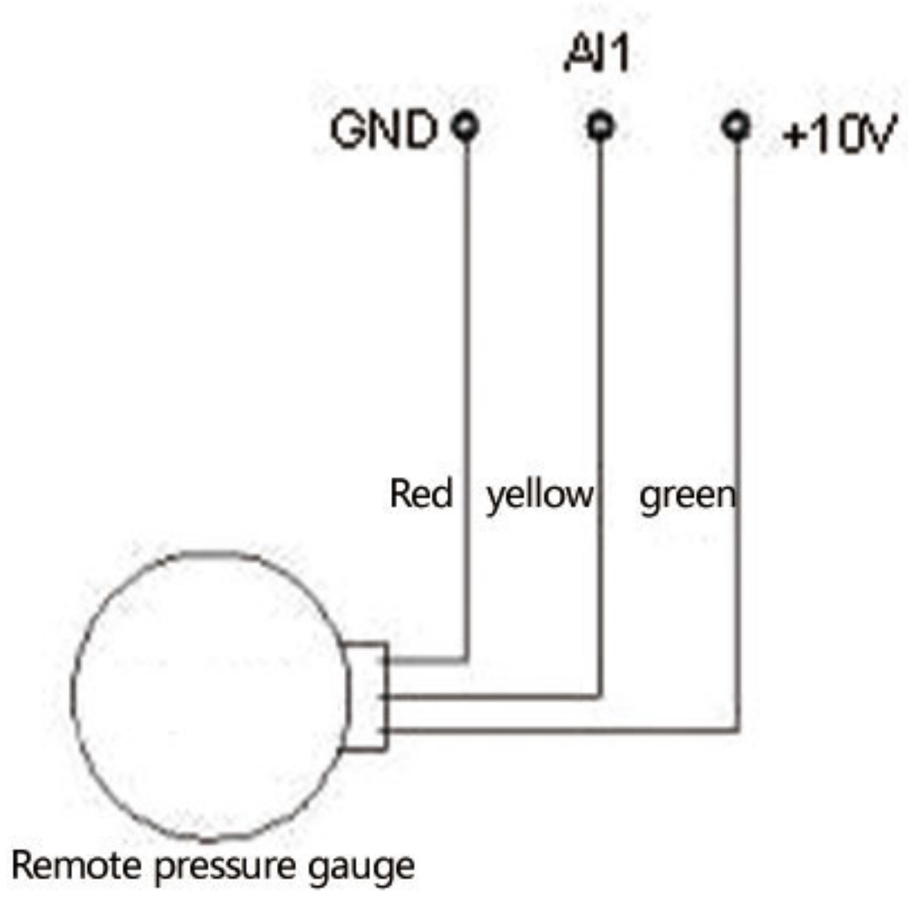
III. 4External potentiometer



Set parameters: Set P0-03 to 2
Annotation: The variable resistance of the potentiometer is adjusted at the left end of A11 potentiometer. The left end is connected to the ground (GND) and the other end has a limit value of 0.

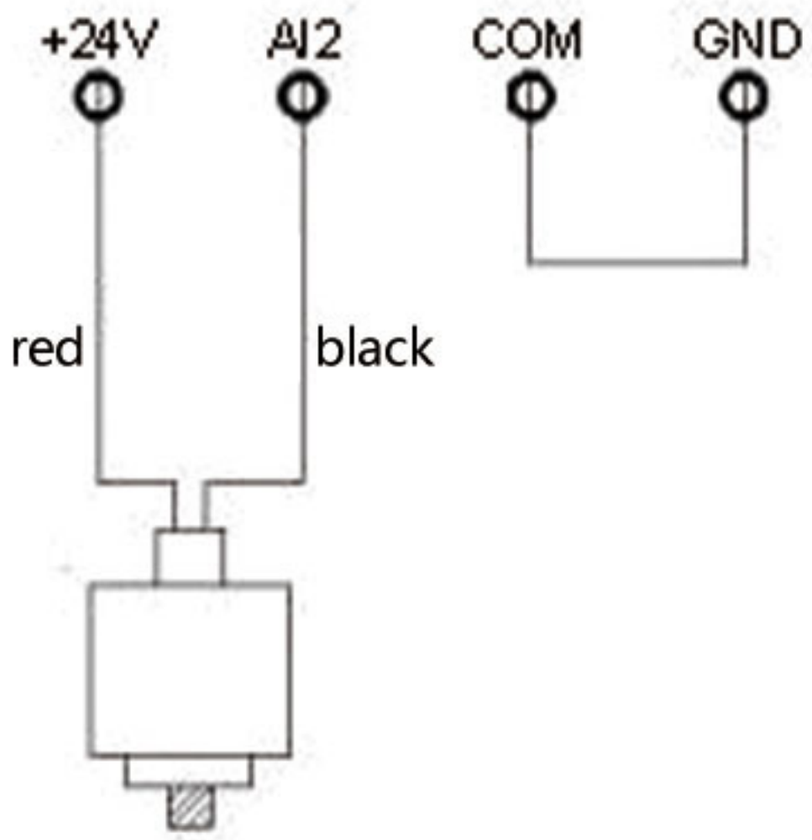
III. 5 Constant pressure water supply

III.5.1 Remote pressure gauge



Set parameters: Set P0-03 to 8
The pressure setting function allows for speed increase, speed reduction, and key adjustment. The factory operator believes that the pressure is in a dormant state. The dormant mode can be adjusted through PA-29. For more details, please consult the PA team for clarification.

III.5.2Pressure sensor (24V 4--20mA)

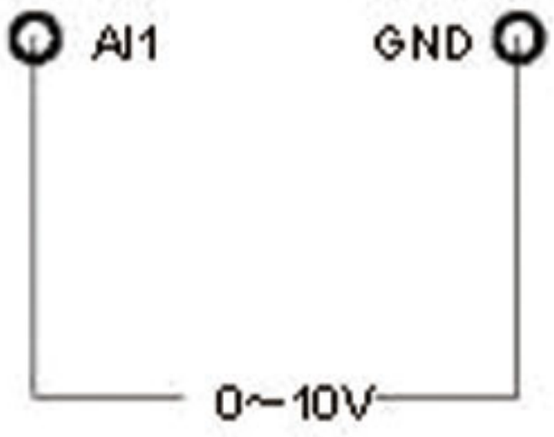


Set parameters: Set P0-03 to 8
PA-02 remains as 1.
(J3 needs to be installed at the current terminal)
The pressure is set with a default adjustment of increasing then decreasing. The factory default setting is pressure sleep mode. The sleep mode can be adjusted via PA-29. For more details, please refer to the PA group instructions.

III.6Input and output of analog quantities

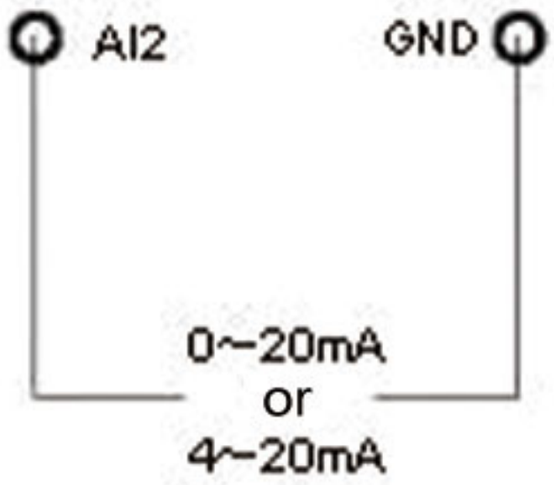
III.6.1 Analog input

0 to 10V voltage analog input



Set parameters: Set P0-03 to 2

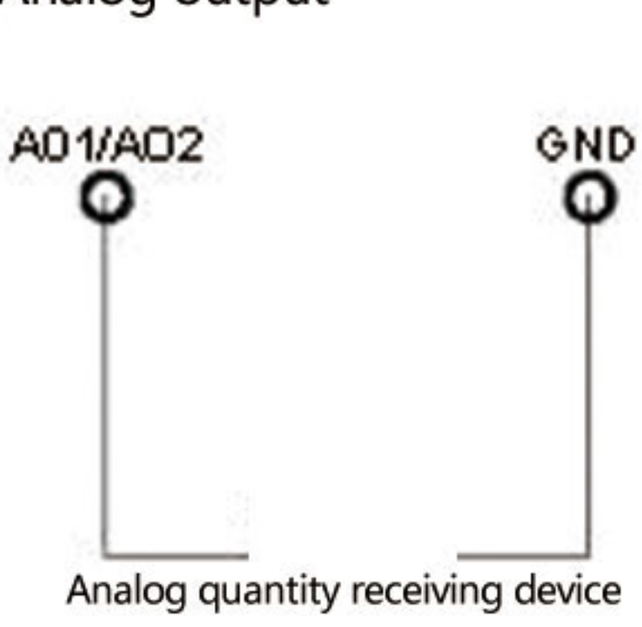
0 to 20mA or 4~20mA current analog input



Set parameters: Set P0-03 to 3
The pins on the J3 port of the motherboard are adjusted from voltage to current. When the current signal is between 4 and 20A, the parameter 04-18 needs to be set to 2.00.



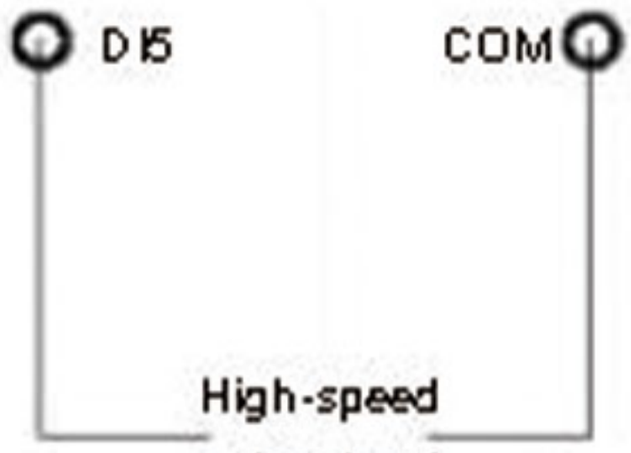
III.6.2Analog output



Set parameters: P5-07(A01) or P5-08(A02)
According to the requirements, set the corresponding output reference (the factory default needle operation frequency output analog quantity signal). The main board corresponds to the jump pins J1 (AO1) and J5 (AO2). When the output analog quantity needs to be a voltage signal, adjust the corresponding jump pins to the voltage terminal. When the output analog quantity signal needs to be an current signal, then adjust them to the current terminal.
When the current signal needs to be within the range of 4 to 20mA, the following parameters need to be set:
Set F5-10 to 20 Set F5-11 to 08

III.7 High-speed Pulse Input

High-speed pulse input is only applicable to the DI5 terminal



Paramter setting:

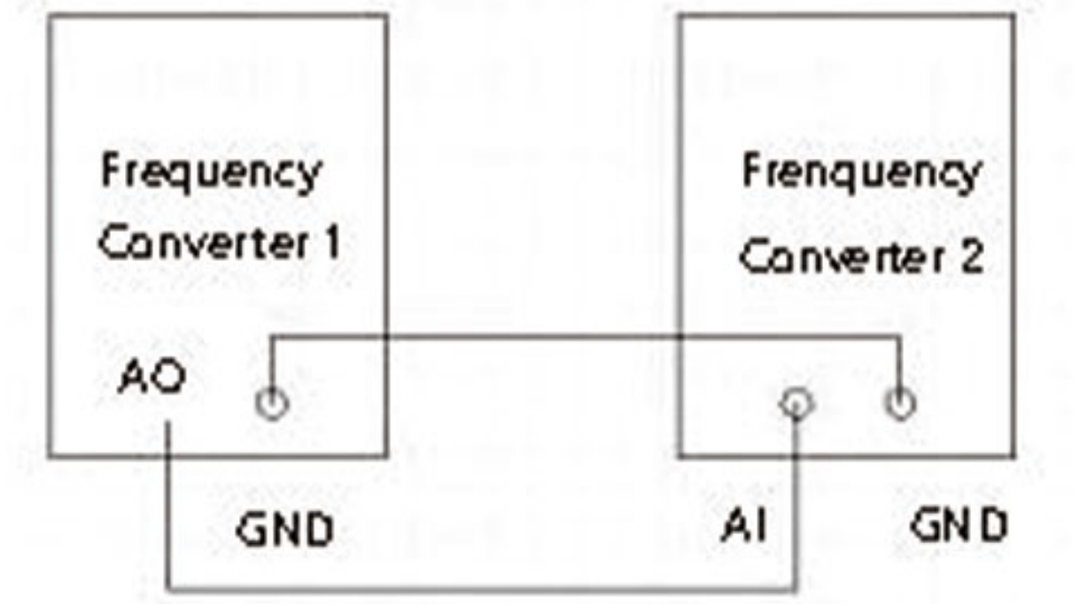
P0-03 set as 5

P4-04 set as 30

P4-30According to the pulse value setting (The factory default frequency is 50KHz))

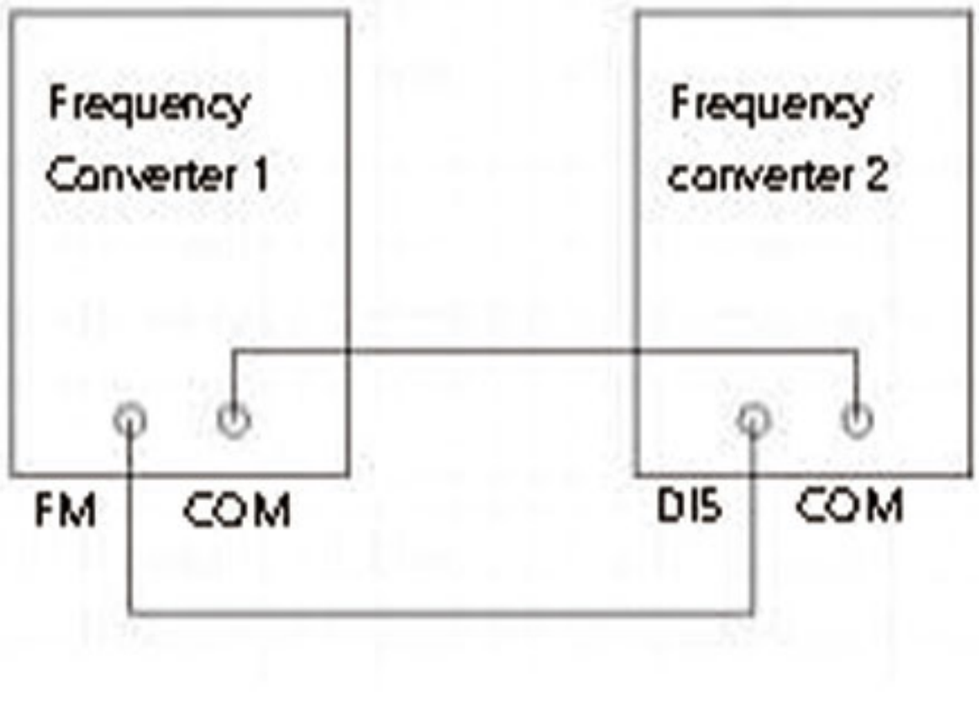
III.8 Variable frequency converter frequency synchronization

III.8.1Analog quantity synchronization



The analog output of frequency converter 1 is used to control the analog input of frequency converter 2, thereby achieving synchronous frequency of the two frequency converters. The specific parameters should be adjusted according to III.6 Analog Input and Output (note: the output and input must be either both voltage or both current).

III.8.1Analog quantity synchronization



The pulse output from frequency converter 1 is used to control the pulse input of frequency converter 2, thereby achieving frequency synchronization of the two frequency converters.

Set the parameters of the frequency converter 1 to the factory default values

The parameter settings for the frequency converter 2 should refer to Section III.7.(Attention: The P5-09 of the frequency converter 1 should be consistent with the P4-30 of the frequency converter 2.)

III.9 Switching between two frequency sources

When it is necessary to switch between two frequency sources, this can be done through the multi-function terminal (taking DI3 as an example), and the parameter settings (taking the potentiometer on the operation panel and the external potentiometer as an example)

P0-03 set as 4

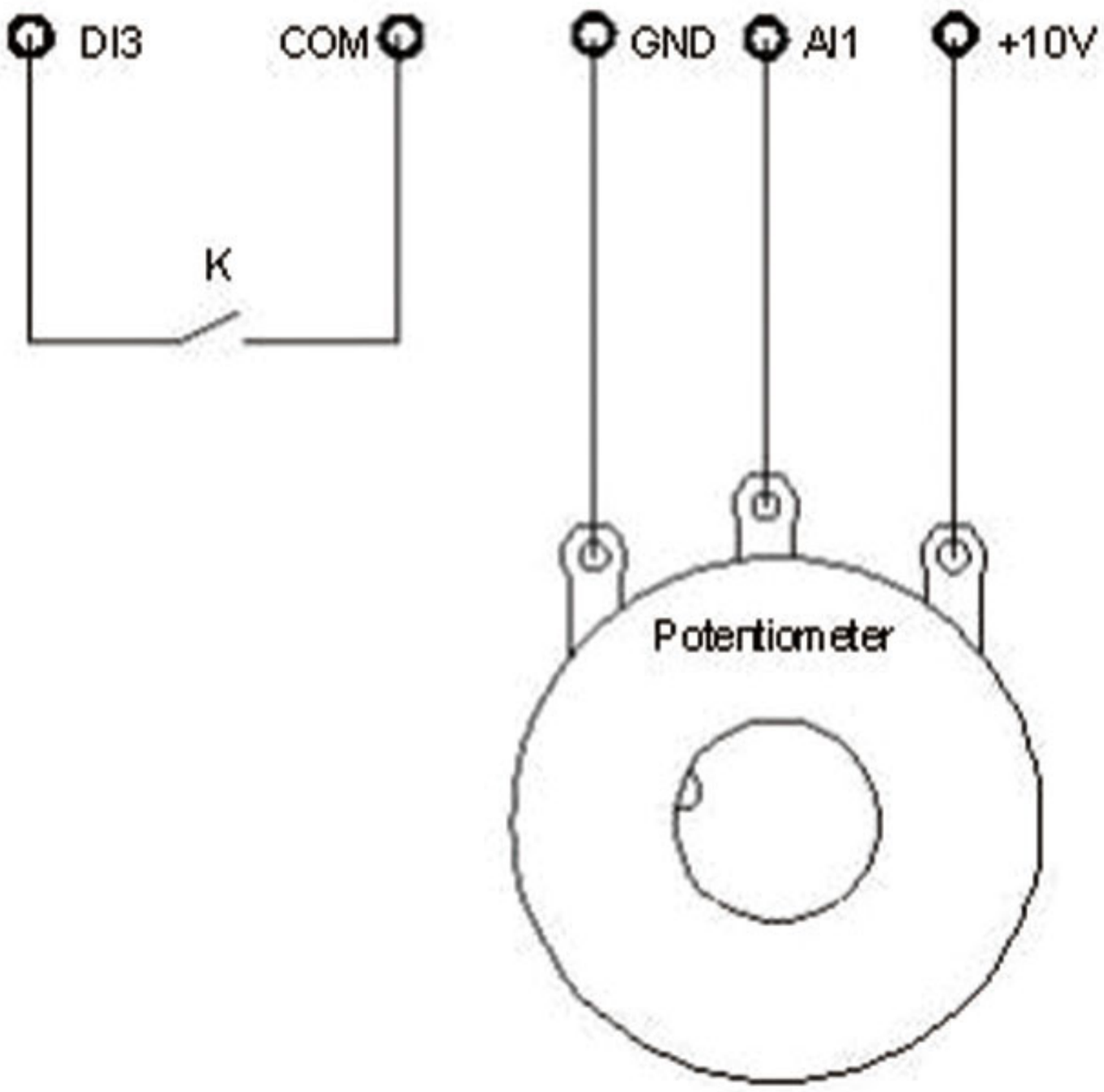
P0-04 set as 2

P0-07 set as 02

P4-02 set as 18

Explain: When DI3 is disconnected, the frequency source of the frequency converter is controlled by the potentiometer on the operation panel

When DI3 is closed, the frequency source of the frequency converter is controlled by an external potentiometer



CERTIFICATE

PRODUCT: INVERTER

INSPECTOR: Quality Control Department

This product has been inspected by our quality control and quality assurance departments. Its performance parameters comply with the standards specified in the accompanying "User Manual", and it is permitted to be released from the factory.

USER WARRANTY CARD

Customer name:	
Detailed address:	
Postcode:	Contact person:
Telephone:	Fax:
Product Number:	Product model:
Use device:	Matching motor:
Purchase Date:	Supplier:
linkman:	Telephone:
Maintenance worker:	Telephone:
Maintenance date:	