



## MK80 Series Vector Frequency Converter(220V input 380V output) Simplified Manual



## Preface

### Introduction to the Material

This product is a general-purpose high-performance current vector frequency converter, primarily used for controlling and adjusting the speed and torque of three-phase AC asynchronous motors. It is applicable in textile, paper-making, wire drawing, machine tools, packaging, food, fans, pumps, and various automation production equipment.

This manual provides information about the system composition, components, dimensions, technical data, as well as mechanical installation, electrical installation, commissioning and test runs, troubleshooting, routine maintenance and upkeep, specifications and selection of optional accessories, function codes, fault codes, and other information.

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### Note

The operation keypad does not support the display of uppercase letters PB and PD; the Pb and Pd displayed on the operation keypad correspond to the PB and PD group parameters in the manual.

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### Warranty Statement

Under normal usage, if the product malfunctions or is damaged, The Company provides warranty service within the warranty period (please refer to the order form for the product warranty period). Beyond the warranty period, repair charges will be incurred.

During the warranty period, if the product is damaged due to the following reasons, the manufacturer will not bear the repair costs. If repair is required, the manufacturer will charge a certain amount of repair fees.

- Damage to the product due to non-compliance with the instructions in the manual.
- Damage caused by fire, flooding, or abnormal voltage.
- Damage caused by using the product for abnormal functions.
- Damage caused by using the product beyond the specified usage range.
- Secondary damage to the product caused by force majeure (natural disasters, earthquakes, lightning strikes).

Service fees are calculated according to the manufacturer's standard rates. In the case of a contract, the contract terms take precedence. For detailed warranty information, please refer to the "Product Warranty Card."

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## Safety Precautions

### Safety Statement

- This chapter explains the safety precautions that need to be observed for the correct use of this product. Before using this product, please read the product manual and understand the relevant information regarding safety precautions. Failure to comply with the safety precautions may result in death, serious injury, or equipment damage.
- The "Danger," "Warning," and "Caution" notes in the manual are not exhaustive of all safety precautions but are supplementary to all safety measures.
- This product should be used in an environment that meets the design specifications; otherwise, it may lead to malfunctions. Faults or damage caused by non-compliance with relevant regulations are not covered under the product quality assurance.
- The Company assumes no legal liability for personal safety accidents or property damage arising from non compliance with the content of this manual or unauthorized operation of the product.

### Safety Level Definitions

-  **Danger:** Non-compliance with procedures may lead to death or serious bodily harm.
-  **Warning:** Indicates that failure to follow procedures could result in death or serious bodily harm.
-  **Caution:** Indicates that failure to comply with procedures may cause minor bodily injury or equipment damage.

### Safety Precautions

- The illustrations of the product in this manual sometimes show the product without its cover or safety shield for detail demonstration. When using this product, ensure to properly install the cover or shield and operate according to the manual's instructions.
- The product illustrations in this manual are examples and may slightly differ from the product you ordered; please refer to the actual product you receive.
- Operators must take mechanical protective measures for personal safety. Please wear and use necessary protective gear, such as anti-smash shoes, safety clothing, safety goggles, protective gloves, and sleeves.

Unboxing and Acceptance	
 <b>Warning</b>	<ul style="list-style-type: none"><li>● If the product or its accessories are found damaged, rusted, used, etc., during unboxing, do not install!</li><li>● If water intrusion, missing parts, or damaged components are discovered inside the product upon unboxing, do not install!</li><li>● Carefully compare the packing list with the product name. If they do not match, do not install!</li></ul>
 <b>Caution</b>	<ul style="list-style-type: none"><li>● Before unboxing, check whether the external packaging of the equipment is intact, without any damage, soaking, dampness, or deformation.</li><li>● Open the packaging in the order of layers and avoid knocking it hard!</li><li>● Check the equipment and accessories for damage, rust, or dents during unboxing.</li><li>● After unboxing, carefully compare with the packing list to verify the quantity and completeness of equipment and accessories.</li></ul>

<b>Storage and Transportation</b>	
<p> <b>Warning</b></p> <ul style="list-style-type: none"> <li>● Use professional lifting equipment handled by qualified personnel for transporting large or heavyweight products. Failure to do so poses a risk of injury or product damage.</li> <li>● Before lifting the product vertically, ensure that components like the front cover and terminal block are securely fastened with screws to prevent the risk of falling components causing injury or product damage.</li> <li>● Do not stand or stay under the product when it is lifted by lifting equipment.</li> <li>● When lifting the product with a steel rope, lift it steadily and evenly. Avoid vibrating or impacting the product, flipping it over, or keeping it suspended for long periods, as this could cause injury or product damage.</li> </ul>	
<p> <b>Caution</b></p> <ul style="list-style-type: none"> <li>● Handle the product with care during transportation, being mindful of objects underfoot to prevent tripping or falling, which could cause injury or product damage.</li> <li>● When carrying the product by hand, securely hold the casing to prevent parts from falling, which could cause injury.</li> <li>● Store and transport the product strictly according to the required conditions to avoid product damage. Avoid storing or transporting in places with water splashes, direct sunlight, strong electric fields, magnetic fields, or intense vibrations.</li> <li>● Avoid storing the product for more than three months. If stored for extended periods, take extra protective measures and conduct necessary inspections.</li> <li>● Securely package the product before transporting it by vehicle. For long-distance transportation, use an enclosed container.</li> <li>● Do not transport this product with equipment or items that could potentially affect or damage it.</li> </ul>	
<b>Installation</b>	
<p> <b>Danger</b></p> <ul style="list-style-type: none"> <li>● Only trained professionals with electrical equipment knowledge should operate the device. Operation by non-professionals is strictly prohibited.</li> </ul>	
<p> <b>Warning</b></p> <ul style="list-style-type: none"> <li>● Before installation, please read the product manual and safety precautions carefully!</li> <li>● Do not install the product in areas with strong electric fields or electromagnetic interference!</li> <li>● Before installing, ensure the mechanical strength of the installation site is sufficient to support the weight of the equipment, as failure to do so may lead to mechanical hazards.</li> <li>● When installing, do not wear loose clothing or jewelry, as they may pose an electrocution risk!</li> <li>● When installing the product in a closed environment (such as inside a cabinet or case), use cooling devices (like cooling fans or air conditioning) to adequately cool the environment to meet installation requirements, as failure to do so may cause overheating or fire.</li> <li>● Do not modify this product!</li> <li>● Do not twist the fixed bolts of product components and elements, especially bolts marked in red!</li> <li>● When the product is installed in a cabinet or terminal device, the cabinet or terminal device must provide appropriate protective devices, such as fireproof, electrical, and mechanical protective shells, meeting the relevant IEC standards and local laws and regulations.</li> <li>● When installing devices like transformers that cause strong electromagnetic interference, install shielding protection devices to avoid malfunctions in this product!</li> <li>● Install the product on non-flammable materials like metal, and ensure no flammable materials come into contact with or adhere to the product, as this poses a fire hazard.</li> </ul>	
<p> <b>Caution</b></p> <ul style="list-style-type: none"> <li>● During installation, cover the top of the product with cloth or paper to prevent metal filings, oil, water, and other foreign objects from entering the product and causing faults. After the operation, remove the cover to avoid blocking ventilation holes, which can lead to abnormal heating.</li> <li>● When converting a machine from constant speed to variable speed operation, resonance may occur. Installing anti-vibration rubber under the motor frame or using vibration suppression functions can effectively reduce resonance.</li> </ul>	

<b>When Wiring</b>	
 <b>Danger</b>	<ul style="list-style-type: none"><li>• Non-professionals must not perform equipment installation, wiring, maintenance, inspection, or part replacement!</li><li>• Before wiring, cut off all power supplies. After power is cut off, wait for the time specified on the product's warning label before proceeding, as capacitors inside the equipment may retain voltage. Measure the main circuit DC voltage to ensure it is below the safety threshold, as failure to do so poses an electrocution risk.</li><li>• Perform wiring, remove the product cover, or touch the circuit board only after cutting off the power to avoid electrocution risk.</li><li>• Ensure proper grounding of equipment and product to prevent electric shock.</li></ul>
 <b>Warning</b>	<ul style="list-style-type: none"><li>• Do not connect the input power to the output terminals of the device or product, as it can cause damage to the equipment and even lead to a fire.</li><li>• When connecting the drive equipment to the motor, ensure the product and motor terminals are correctly sequenced to prevent the motor from rotating in reverse.</li><li>• The cables used for wiring must meet the appropriate gauge and shielding requirements, with the shielding layer of shielded cables needing reliable grounding at one end!</li><li>• Tighten terminal screws according to the specified torque in the manual. Insufficient or excessive torque may lead to overheating or damage at the connection, posing a fire hazard.</li><li>• After wiring, ensure all cables are correctly connected, and there are no loose screws, washers, or exposed wires inside the product, as they may pose an electrocution risk or damage the product.</li></ul>
 <b>Caution</b>	<ul style="list-style-type: none"><li>• Follow electrostatic discharge (ESD) precautions and wear an anti-static wristband during wiring to avoid damaging the device or internal circuits.</li><li>• When wiring the control circuit, use twisted-pair shielded cables and connect the shield layer to the product's grounding terminal to prevent abnormal operation.</li></ul>
<b>When Powering On</b>	
 <b>Danger</b>	<ul style="list-style-type: none"><li>• Before powering on, ensure the product is properly installed, wired securely, and the motor device is ready to restart.</li><li>• Before powering on, confirm that the power supply meets the product's requirements to avoid product damage or fire hazards!</li><li>• Do not open the product cabinet door or protective cover, touch any wiring terminals, or disassemble any device or parts while the product is powered on, as it poses an electrocution risk.</li></ul>
 <b>Warning</b>	<ul style="list-style-type: none"><li>• After wiring and parameter setting, conduct a test run to ensure the machine operates safely, as failure to do so may result in injury or equipment damage.</li><li>• Before powering on, ensure the product's rated voltage matches the power supply voltage. Incorrect voltage can cause a fire hazard.</li><li>• Before powering on, ensure no one is around the product, motor, or machinery, as it may lead to injury or death.</li></ul>
<b>During Operation</b>	
 <b>Danger</b>	<ul style="list-style-type: none"><li>• Operation of the product by non-professionals is strictly prohibited, as it may lead to injury or death.</li><li>• It is forbidden to touch any wiring terminals of the equipment or disassemble any devices or components while the equipment is in operation, as this poses a risk of electric shock.</li></ul>

<p><b>⚠ Warning</b></p> <ul style="list-style-type: none"> <li>● Do not touch the exterior of the equipment, fans, or resistors to gauge temperature, as this may cause burns.</li> <li>● During operation, avoid allowing foreign objects or metal items to fall into the equipment, as this may cause a fire or damage the product.</li> </ul>
<p><b>During Maintenance</b></p>
<p><b>⚠ Danger</b></p> <ul style="list-style-type: none"> <li>● Non-professionals are prohibited from installing, wiring, maintaining, inspecting, or replacing parts of the equipment.</li> <li>● Do not perform maintenance on the equipment while it is powered, as this poses a risk of electric shock.</li> <li>● After cutting off power to all equipment, wait for the duration specified on the product's warning label before performing any maintenance.</li> <li>● When using PM motors, even if the product's power is off, induced voltage can be generated at the motor terminals during rotation. Do not touch the motor terminals, as this may lead to electric shock.</li> </ul>
<p><b>⚠ Warning</b></p> <ul style="list-style-type: none"> <li>● Conduct routine and periodic inspections and maintenance of the equipment and product as per maintenance requirements, and keep maintenance records.</li> </ul>
<p><b>During Repair</b></p>
<p><b>⚠ Danger</b></p> <ul style="list-style-type: none"> <li>● Non-professionals are prohibited from installing, wiring, maintaining, inspecting, or replacing parts of the equipment.</li> <li>● Do not perform repairs on the equipment while it is powered, as this poses a risk of electric shock.</li> <li>● After cutting off power to all equipment, wait for the duration specified on the product's warning label before conducting any inspection or repair.</li> </ul>
<p><b>⚠ Warning</b></p> <ul style="list-style-type: none"> <li>● Follow the product warranty agreement for equipment repair.</li> <li>● When a fuse blows, a circuit breaker trips, or an Earth Leakage Circuit Breaker (ELCB) trips, wait for the duration specified on the product's warning label before reconnecting power or operating the machine, as failing to do so may lead to injury or equipment damage.</li> <li>● If the equipment malfunctions or is damaged, have it repaired by professionals following repair guidelines, and keep repair records.</li> <li>● Follow guidelines for replacing wear parts.</li> <li>● Do not continue to use a damaged machine, as it may cause injury or further damage to the product. After replacing equipment, ensure to recheck the wiring and reset the parameters.</li> </ul>
<p><b>During Disposal</b></p>
<p><b>⚠ Warning</b></p> <ul style="list-style-type: none"> <li>● Dispose of the equipment and products according to national regulations and standards to avoid property loss or personal injury.</li> <li>● Handle and recycle discarded equipment and products as industrial waste to prevent environmental pollution.</li> </ul>

**Safety Labels**

For safe operation, strictly adhere to the safety labels affixed to the equipment. Do not damage or remove the safety labels. The safety label explanations are as follows:

Safety Labels	Content Explanation
	<ul style="list-style-type: none"><li>• Before using the product, read the safety-related manuals and instructions carefully, as failure to do so may lead to injury or product damage.</li><li>• Do not touch terminal parts or remove covers within 10 minutes after the equipment is powered and after power is cut off, as this poses a risk of electric shock.</li></ul>

# 1 Product Information

## 1.1 Product Positioning and Features

This product is a general-purpose high-performance current vector frequency converter, primarily used for controlling and adjusting the speed and torque of three-phase AC asynchronous motors. It employs high-performance vector control technology, offering low-speed, high-torque output, excellent dynamic characteristics, and strong overload capacity. It features programmable functions for users, backend software monitoring, communication bus functions, and supports various types of encoders. Its combination of functions is rich and powerful, ensuring stable performance. It can be used for driving textile, paper-making, wire drawing, machine tools, packaging, food processing, fans, pumps, and various types of automated production equipment.

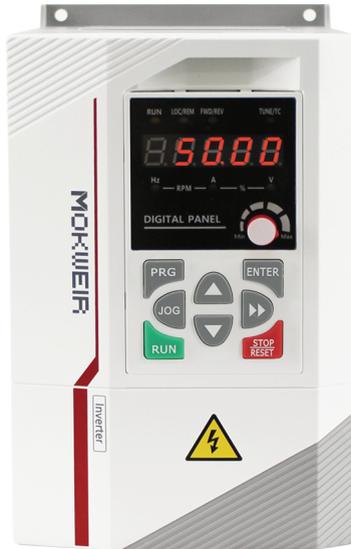
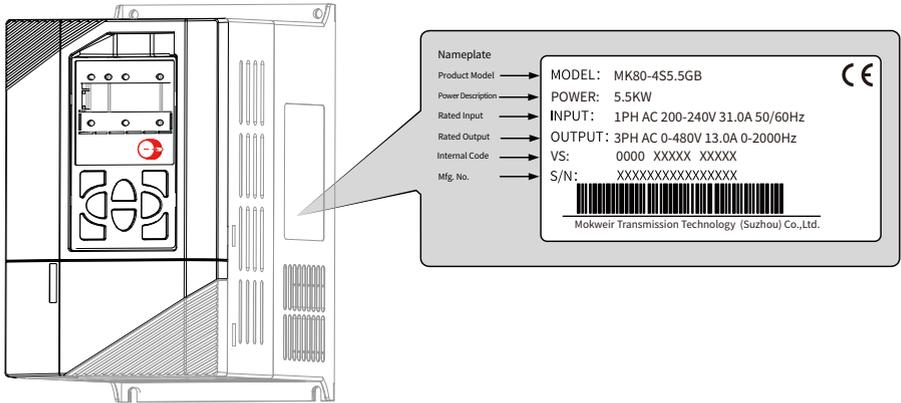


Figure 1-1 Product Appearance

## 1.2 Nameplate and Model



### MK80-4S5.5GB

Identifier	Product Name
MK80	Frequency Converter Series

Identifier	Voltage Level
4S	Single-phase 200V~240V

Identifier	Power Level (k)
0.4	0.4
...	...
75	75

Identifier	Adapted Motor Type
G	Constant Torque Type

Identifier	Brake Unit
Blank	See explanation below
B	With Brake Unit

Figure 1-2 Nameplate Identification and Product Naming

### 1.3 System Connection Diagram

When this series of frequency converters controls synchronous motors to form a control system, various electrical components must be installed on the input and output sides of the converter to ensure the system's safety and stability. The product system composition is as shown in the diagram below.

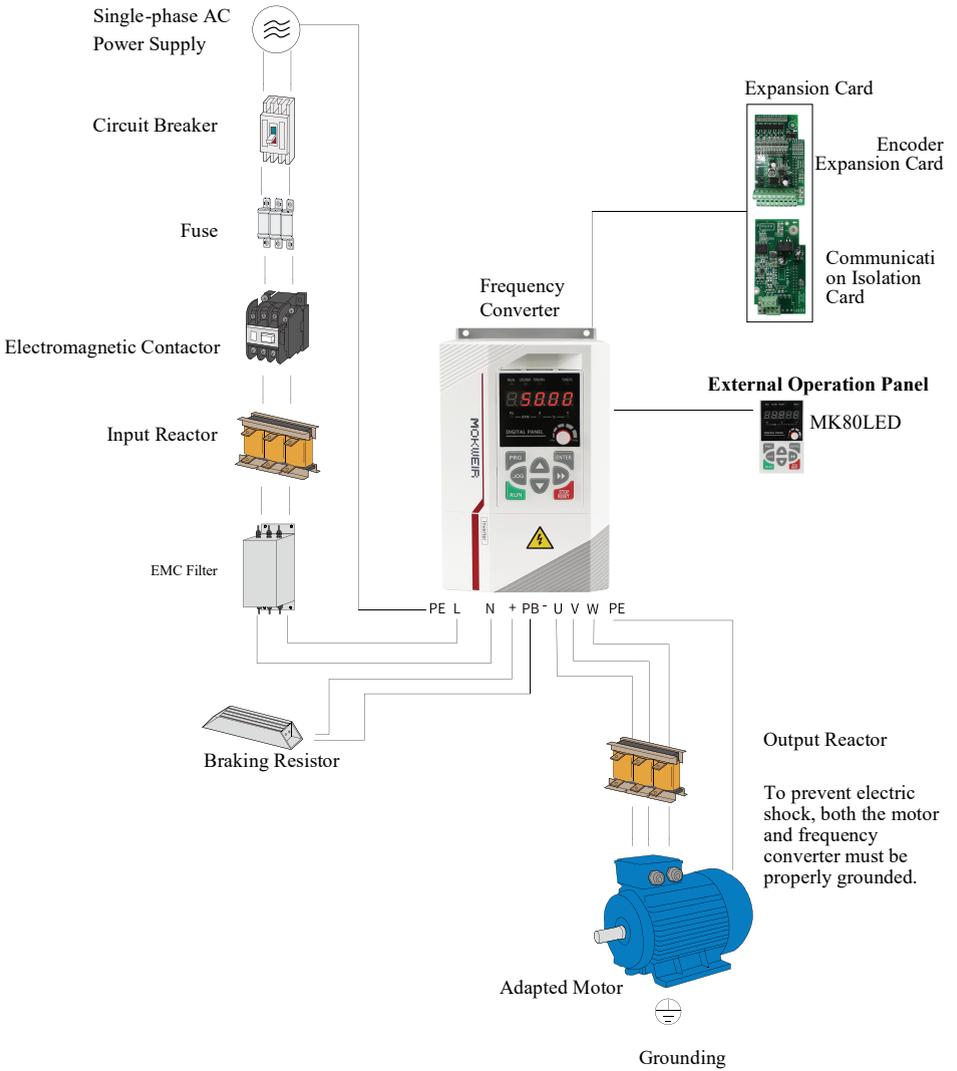


Figure 1-3 System Composition Diagram

## Product Information

Table 1-1 Usage Instructions for Peripheral Electrical Components of the System

Name	Description
Circuit Breaker	Installed between the power supply and the input side of the frequency converter. Short-circuit breaker: Cuts off the power supply in the event of overcurrent in downstream equipment to prevent accidents. Earth Leakage Circuit Breaker: The frequency converter may produce high-frequency leakage current during operation. To prevent electric shock and potential electric fires, install an appropriate earth leakage circuit breaker according to the site conditions.
Fuse	Prevents accidents due to short circuits, protecting downstream semiconductor devices.
(Electromagnetic) Contactor	For switching the frequency converter on and off. Avoid frequent power cycling (intervals should not be less than one hour) or direct starting operations through the contactor.
AC Input Reactor	Improves the power factor on the input side. Effectively eliminates high-order harmonics on the input side, preventing damage to other equipment due to voltage waveform distortion. Eliminates input current imbalance caused by power phase imbalance.
EMC Filter	Reduces conducted and radiated interference from the frequency converter. Lowers the conducted interference flowing from the power source to the frequency converter, enhancing its interference resistance.
Simple Filter	Reduces conducted and radiated interference from the frequency converter.
Braking Resistor	For models with a B in the name, use a braking resistor; the motor dissipates regenerative energy through the braking resistor during deceleration.
Brake Unit	For models without a B in the name, use a braking unit and the recommended braking resistor; the motor dissipates regenerative energy through the braking resistor during deceleration.
AFE Unit (Active Front End)	Mokweir frequency converters can optionally be equipped with an AFE (Active Front End) unit. The AFE unit can feed the energy generated during motor braking back into the grid, eliminating the need for a braking unit and resistor, and reducing heat pollution to the surrounding environment. The AFE unit features energy saving, low noise, low harmonic pollution, and high power factor.
DC Reactor	Improves the power factor on the input side. Improves the overall efficiency and thermal stability of the frequency converter; Effectively eliminates the impact of high-order harmonics on the input side of the frequency converter, reducing conducted and radiated interference.
Output Reactor	The output side of the frequency converter generally contains many high-order harmonics. When the distance between the motor and the frequency converter is significant, large distributed capacitance in the line can occur. In this scenario, certain harmonics might resonate in the circuit, causing two types of impacts: 1. Damaging the insulation properties of the motor, which can lead to long-term motor damage. 2. Generating significant leakage current, triggering frequent protection in the frequency converter. Installing an output reactor can protect motor insulation and reduce bearing currents.
Ferrite Cores and Snap-On Ferrites	Installing ferrite cores on the input side can suppress noise in the drive's input power system. Installing ferrite cores on the output side primarily reduces drive interference with external devices, while also lowering bearing currents.
Motor	Please choose an adapted motor as recommended.
External Keypad	External LED keypads MK80LED.

## 2 Overall Dimensions

### 2.1 MK80 Overall Dimensions

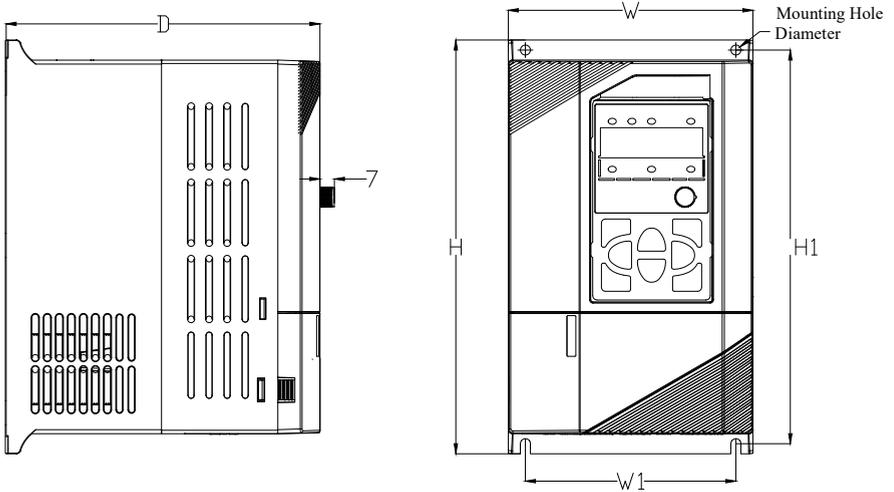


Figure 2-1 MK80 External Dimensions and Installation Diagram

MK80 External and Mounting Hole Dimensions

Drive Model	Structural Parameters									
	External Dimensions mm			Installation Dimensions mm			Packaging Dimensions cm			Total Weight KG
	H	W	D	H1	W1	Mounting Hole Diameter	H2	W2	D2	KG
Single-phase 220V										
MK80-4S0.75GB	206	122	164	196	105	Φ4	24	17	21	2.3
MK80-4S1.5GB										2.3
MK80-4S2.2GB										2.5
MK80-4S3.0GB	278	142	181	267	120	Φ5	31	20	24	3.6
MK80-4S4.0GB										3.7
MK80-4S5.5GB										4
MK80-4S7.5GB										4.5
MK80-4S11GB	348	208	205	336	186	Φ6	39	27	27	6.8
MK80-4S15GB										7.3
MK80-4S18.5G	430	283	247	418	200	Φ6.5	51	36	32	17
MK80-4S22G										18
MK80-4S30G	510	340	280	495	270	Φ8	64	45	39	31
MK80-4S37G										31
MK80-4S45G										33
MK80-4S55G	601	474	315	576	413	Φ8	69.5	55	52	57
MK80-4S75G										59

### 3 Technical Data

#### 3.1 Electrical Parameters

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##### Description

The rated power of the frequency converter under the following conditions:

- For single-phase 200V~240V, the rated power of the frequency converter is measured at an input of 220VAC.
- 

Frequency Converter Power	Electrical Parameters				
	Power Supply Capacity	Input Current	Output Current	Adapted Motor	
	KVA	A	A	KW	HP
Overload: G-type 150% for 1 minute, 180% for 2 seconds; P-type 120% for 1 minute, 150% for 2 seconds					
Single-phase Input: Rated 220V (allowable fluctuation range 208~240V), 50/60HZ (±5%)					
MK80-4S0.75GB	2.8	5.0	2.1	0.75	1
MK80-4S1.5GB	5.0	9.0	3.8	1.5	2
MK80-4S2.2GB	6.7	12.0	5.1	2.2	3
MK80-4S3.0GB	10.0	17.0	7	3	4.0
MK80-4S4.0GB	12.0	22.0	9	4	5.0
MK80-4S5.5GB	17.5	31.0	13	5.5	7
MK80-4S7.5GB	23.0	41.0	17	7.5	10
MK80-4S11GB	33.0	60	25	11	15
MK80-4S15GB	43.0	77	32	15	20
MK80-4S18.5G	45.0	89	37	18.5	25
MK80-4S22G	54.0	108	45	22	30
MK80-4S30G	61.0	144	60	30	40
MK80-4S37G	65.0	180	75	37	50
MK80-4S45G	81.0	216	90	45	60
MK80-4S55G	97.0	264	110	55	74
MK80-4S75G	128	364	152	75	100

### 3.2 Technical Specifications

Table 3-1 Frequency Converter Technical Specifications

Item		Technical Specifications
Basic Functions	Input Frequency Resolution	Digital setting: 0.01Hz Analog setting: Maximum frequency × 0.025%
	Control Methods	Open-loop vector control (SVC), closed-loop vector control (FVC), V/F control
	Starting Torque	0.25Hz/150%(SVC),0Hz/180%(FVC)
	Speed Regulation Range	1:200(SVC),1:1000(FVC)
	Speed Stability Accuracy	±0.5%(SVC) ±0.02%(FVC)
	Torque Control Accuracy	FVC:±3% SVC: Above 5Hz +5%
	Torque Boost	Automatic torque boost; manual torque boost 0.19%~30.0%.
	V/F Curve	Four types: linear, multi-point, complete V/F separation, incomplete V/F separation.
	Acceleration/Deceleration Curve	Linear or S-curve acceleration/deceleration; Four acceleration/deceleration time periods, range 0.0s~6500.0s.
	DC Braking	DC braking start frequency: 0.00Hz~maximum frequency; Braking time: 0.0s~36.0s; Braking action current value: 0.0%~100.0%.
	Jog Control	Jog frequency range: 0.00Hz~50.00Hz; Jog acceleration/deceleration time 0.0s~6500.0s.
	Simple PLC, Multi-Speed Operation	Achieve up to 16-speed operation through built-in PLC or control terminals.
	Built-in PID	Facilitates implementation of process control closed-loop control systems.
	Automatic Voltage Regulation (AVR)	Maintains constant output voltage in response to grid voltage fluctuations.
	Custom Functions	Overvoltage/Overcurrent Stall Control
Rapid Current Limit		Minimizes overcurrent faults to protect the normal operation of the frequency converter.
Torque Limit and Control		Excavator characteristics, automatically limits torque during operation to prevent frequent overcurrent tripping; vector control mode enables torque control.
Momentary Stop Non-Stop		Compensates for voltage drop during momentary power outages using load feedback energy, maintaining operation of the frequency converter for a short time.
Rapid Current Limit		Avoids frequent overcurrent faults in the frequency converter.
Virtual I0		Five groups of virtual DIDO, enabling simple logic control.
Timer Control		Timer control function: Set time range 0.0Min~6500.0Min.
Multi-Motor Switching		Two sets of motor parameters, allowing control switching between two motors.
Multi-Thread Bus Support	Supports Modbus-RTU.	
Multi-Encoder Support	Supports differential, open-collector	
Powerful Backend Software	Supports frequency converter parameter operations and virtual oscilloscope functions; The virtual oscilloscope enables monitoring of the internal state of the frequency converter.	

## Technical Data

Item		Technical Specifications
Operation	Operation Command	Operation Panel Setting, Control Terminal Setting, Serial Communication Port Setting, Can switch between multiple modes
	Frequency Command	10 types of frequency commands: Digital setting, analog voltage setting, analog current setting, pulse setting, serial port setting, Can switch between multiple modes
	Auxiliary Frequency Command	10 types of auxiliary frequency commands. Flexible implementation of auxiliary frequency fine-tuning, frequency synthesis
	Input Terminals	Standard: 6 X terminals, one of which supports high-speed pulse input up to 100kHz 2 AI terminals, one supports only 0V~10V voltage input, and the other supports 0V~10V voltage input or 0mA~20mA current input
	Output Terminals	Standard 1 high-speed pulse output terminal (optional open-collector type) Supports square wave signal output from 0kHz~100kHz 1 Y terminal 2 relay output terminals 2 AO terminals, supporting 0mA~20mA current output or 0V~10V voltage output
Display and Keyboard Operation	LED Display	Displays parameters
	LCD Display	Optional, with Chinese/English prompts for operation content
	Parameter Copying	Parameters can be quickly copied via the optional LCD operation panel
	Key Lock and Function Selection	Enables partial or complete locking of keys, defines the scope of certain keys to prevent accidental operation
Protection Functions	Phase Loss Protection	Input phase loss protection, output phase loss protection
	Instantaneous Overcurrent Protection	Stops operation at over 250% of the rated output current
	Overvoltage Protection	The main circuit DC voltage above 820V triggers shutdown.
	Undervoltage Protection	The main circuit DC voltage below 350V triggers shutdown.
	Overheat Protection	Protection is triggered when the inverter bridge overheats.
	Overload Protection	Shutdown occurs after operating at 150% of the rated current for 60 seconds.
	Overcurrent Protection	Shutdown protection when exceeding 2.5 times the rated current of the frequency converter.
	Braking Protection	Overload protection for the braking unit, short circuit protection for the braking resistor.
	Short Circuit Protection	Inter-phase short circuit protection for the output, ground short circuit protection for the output.
Environment	Operating Conditions	Indoors, not directly exposed to sunlight, free from dust, corrosive gases, flammable gases, oil mist, steam, dripping water, or salt.
	Altitude	For use below 1000m without derating; above 1000m, derate by 1% for every additional 100m of elevation, with a maximum operating altitude of 3000m. Contact the manufacturer for use above 3000m. (Note: For frequency converters from 0.4kW to 3kW, the maximum operating altitude is 2000m. Contact the manufacturer for use above 2000m.)
	Ambient Temperature	-10°C~+50°C, with derating required between 40°C and 50°C, derating by 1.5% for each 1°C increase in temperature.
	Humidity	Less than 95% RH, no condensation.
	Vibration	Less than 5.9m/s <sup>2</sup> (0.6g)
	Storage Temperature	-20°C~+60°C

## 4 Installation and Wiring

### 4.1 Mechanical Installation

#### 4.1.1 Installation Site Inspection

##### 4.1.1.1 Installation Environment

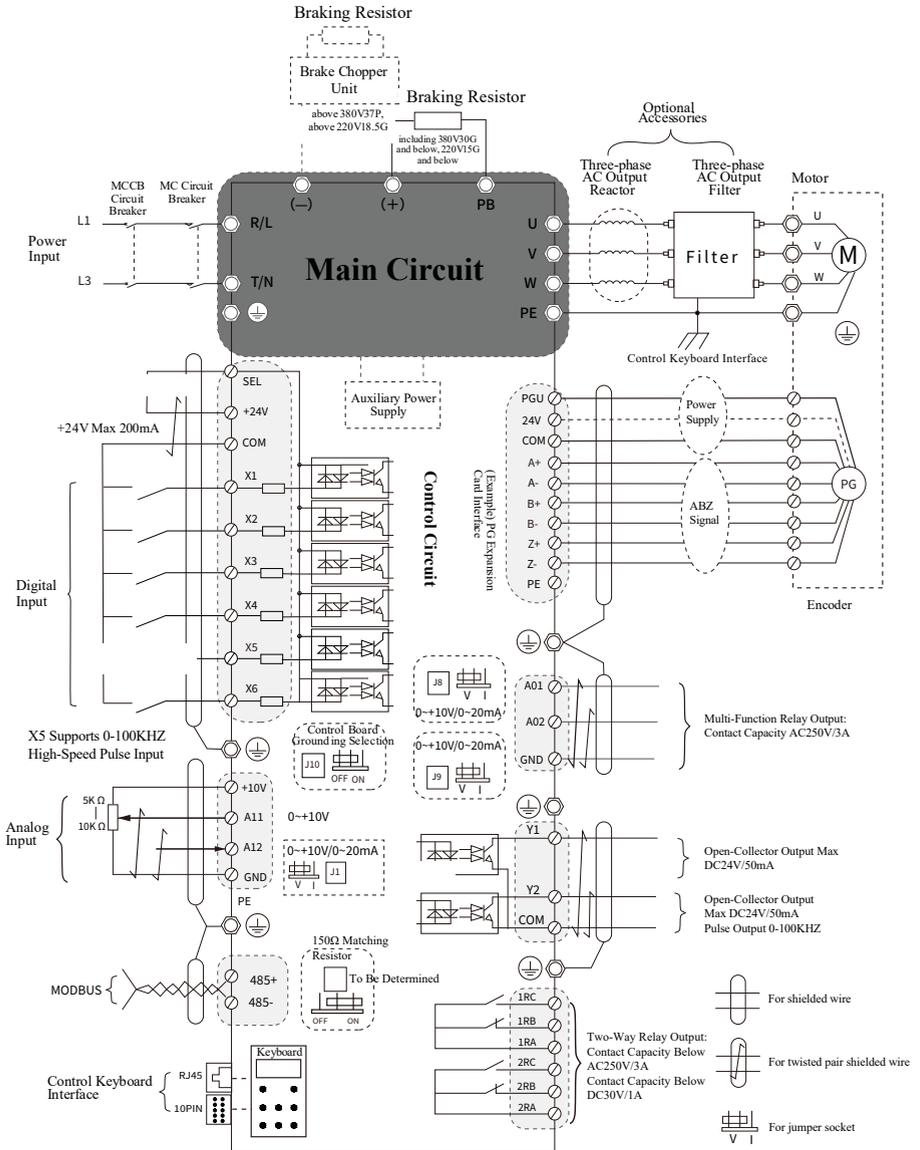
To fully utilize this product's performance and ensure long-term use, install the product in the following environment.

Table 4-1 Environmental Requirements

Environment	Conditions
Installation Site	Indoors
Grid Overvoltage	Overvoltage Level III (OVCIII)
Temperature	<ul style="list-style-type: none"> <li>● Installation/Operating Temperature: <math>-10^{\circ}\text{C}\sim+50^{\circ}\text{C}</math> (<math>-10^{\circ}\text{C}\sim+40^{\circ}\text{C}</math> without derating, derate when temperature exceeds <math>40^{\circ}\text{C}</math>, derating by 1.5% for each <math>1^{\circ}\text{C}</math> increase).</li> <li>● Storage/Transportation Temperature: <math>-20^{\circ}\text{C}\sim+60^{\circ}\text{C}</math>.</li> <li>● For improved equipment reliability, use the product where temperature changes are not abrupt.</li> <li>● When used in enclosed spaces like control cabinets, use cooling fans or air conditioning for cooling to keep the inlet temperature of the device below <math>50^{\circ}\text{C}</math>. Otherwise, it may lead to overheating or fire.</li> <li>● Install the product on the surface of a flame-retardant object, ensuring sufficient space around it for heat dissipation.</li> <li>● Avoid freezing the product.</li> </ul>
Humidity	Below 95% RH, no condensation.
Environment	<p>Pollution Degree 2 or lower. Please install the product in the following locations:</p> <ul style="list-style-type: none"> <li>● Places not exposed to direct sunlight, free from dust, corrosive gases, flammable or explosive gases, oil mist, steam, dripping water, or salt.</li> <li>● Install in places with minimal vibration (especially away from equipment like punch presses),</li> <li>● Prevent metal powder, oil, water, or other foreign substances from entering the product's interior.</li> <li>● Locations free from radioactive substances, flammables, harmful gases and liquids, and minimal salt corrosion.</li> <li>● Do not install the product on inflammable materials like wood.</li> </ul>
Altitude	<ul style="list-style-type: none"> <li>● No derating required for use below 1000m.</li> <li>● Derate by 1% for every 100m increase above 1000m.</li> </ul> <p>The maximum altitude for 0.4kW~3kW is 2000m, contact the manufacturer for altitudes above 2000m; for over 3kW, the maximum altitude is 3000m, contact the manufacturer for altitudes above 3000m.</p>
Vibration Resistance	<ul style="list-style-type: none"> <li>● During transportation in packaging: Complies with EN60721-3-2 standard, class 2M3.</li> <li>● When unpackaged and in the installed state: Complies with ISTA1H standard.</li> </ul>

## 4.2 Electrical Installation

### 4.2.1 MK80 Electrical Wiring Diagram



### 4.2.2 Main Circuit Terminal Description

**MK80-4S0.75GB~MK80-4S7.5GB terminal meanings are as follows:**

PE	R/L	S	T/N	P+	PB	(—)	U	V	W
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**MK80-4S11GB~MK80-4S15GB terminal meanings are as follows:**

PE	R/L	S	T/N	P+	PB	(—)	U	V	W
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Terminal Marking	Terminal Name	Function Description
R/L, T/N	Single-Phase Power Input Terminals	AC power connection points for single-phase input
(P+), (-)	Positive and Negative DC Bus Terminals	Common DC bus input points, Connection points for external braking units
(+), PB	Braking Resistor Connection Terminals	Connection points for the braking resistor
U, V, W	Output Terminals	Connection to three-phase motors
PE	Ground Terminal (PE)	Protective Grounding

**MK80-4S18.5G terminal meanings are as follows:**

	R	S	T	P1	(+)	PB	(—)	U	V	W	
--	---	---	---	----	-----	----	-----	---	---	---	---

Terminal Marking	Terminal Name	Function Description
R, T	Single-Phase Power Input Terminals	AC power connection points for single-phase input
(+), (-)	Positive and Negative DC Bus Terminals	Common DC bus input points, Connection points for external braking units
P1, (+)	DC Reactor Connection Terminals	Factory short-circuited with a copper strip
(+), PB	Braking Resistor Connection Terminals	Connection points for the braking resistor
U, V, W	Output Terminals	Connection to three-phase motors
	Ground Terminal (PE)	Protective Grounding

**MK80-4S22G terminal meanings are as follows:**

	R	S	T	P1	PB	(-)	(+)	U	V	W	
--	---	---	---	----	----	-----	-----	---	---	---	---

Terminal Marking	Terminal Name	Function Description
R, T	Single-Phase Power Input Terminals	AC power connection points for single-phase input
(+), (-)	Positive and Negative DC Bus Terminals	Common DC bus input points, connection points for external braking units
(+), PB	Braking Resistor Connection Terminals	Connection points for the braking resistor
U, V, W	Output Terminals	Connection to three-phase motors
	Ground Terminal (PE)	Protective Grounding

**MK80-4S30G~MK80-4S45G terminal meanings are as follows:**

R	S	T	P1	(+)	PB	(-)	U	V	W
---	---	---	----	-----	----	-----	---	---	---

	
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Terminal Marking	Terminal Name	Function Description
R, T	Single-Phase Power Input Terminals	AC power connection points for single-phase input
(+), (-)	Positive and Negative DC Bus Terminals	Common DC bus input points, connection points for external braking units
P1, (+)	DC Reactor Connection Terminals	Factory short-circuited with a copper strip
(+), PB	Braking Resistor Connection Terminals	Connection points for the braking resistor
U, V, W	Output Terminals	Connection to three-phase motors
	Ground Terminal (PE)	Protective Grounding

**MK80-4S55G~MK80-4S75G terminal meanings are as follows:**

	R	S	T	(-)	P1	(+)	U	V	W	
--	---	---	---	-----	----	-----	---	---	---	---

Terminal Marking	Terminal Name	Function Description
R,T	Single-Phase Power Input Terminals	AC power connection points for single-phase input
(+), (-)	Positive and Negative DC Bus Terminals	Common DC bus input points, connection points for external braking units
P1, (+)	DC Reactor Connection Terminals	Factory short-circuited with a copper strip
U, V, W	Output Terminals	Connection to three-phase motors
	Ground Terminal (PE)	Protective Grounding

### 4.2.3 MK80 Control Circuit Terminal Description

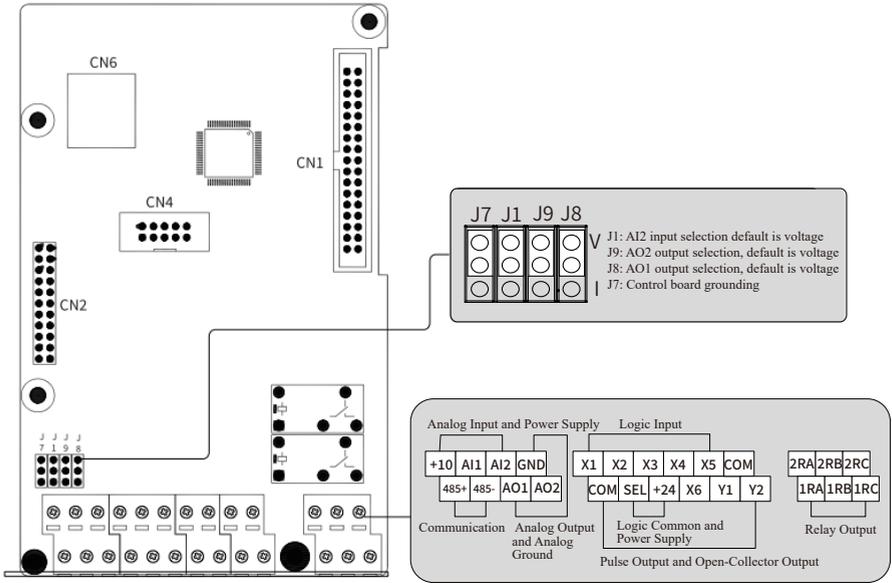


Figure 4-1 MK80 Control Circuit Terminal Distribution Diagram

Table 4-2 MK80 Frequency Converter Control Terminal Function Description

Category	Terminal Symbol	Terminal Name	Function Description
Power Supply	+10V-GND	External +10V Power Supply	Provides an external +10V power supply, maximum output current: 10mA. Generally used as a working power supply for external potentiometers, with a potentiometer resistance range of 1k $\Omega$ ~5k $\Omega$ .
	+24V-COM	External +24V Power Supply	Provides an external +24V power supply, typically used as a working power supply for digital input/output terminals and external sensors. Maximum output current: 200mA <b>【Note 1】</b>
	SEL	External Power Input Terminal	Factory default connected to +24V. When driving X1~X6 with an external signal, SEL should be connected to an external power supply and disconnected from the +24V power terminal.
Analog Input	A11-GND	Analog Input Terminal 1	Input voltage range: DC0V~10V Input impedance: 22k $\Omega$
	A12-GND	Analog Input Terminal 2	Input range: 0Vdc~10Vdc/0mA~20mA, determined by the J1 jumper on the control board.
Digital Input	X1-SEL	Digital Input 1	Optocoupler isolated, compatible with bipolar input. Input impedance: 1.39k $\Omega$ Effective level input voltage range: 9V~30V
	X2-SEL	Digital Input 2	
	X3-SEL	Digital Input 3	
	X4-SEL	Digital Input 4	
	X5-SEL	Digital Input 5	
	X6-SEL	High-Speed Pulse Input Terminal	In addition to the features of X1~X5, also serves as a high-speed pulse input channel. Maximum input frequency: 100kHz Input impedance: 1.03k $\Omega$
Analog Output	AO1-GND	Analog Output 1	Voltage or current output determined by the J9 jumper on the control board. Output voltage range: 0V~10V Output current range: 0mA~20mA
	AO2-GND	Analog Output 2	Voltage or current output determined by the J8 jumper on the control board. Output voltage range: 0V~10V Output current range: 0mA~20mA
Digital Output	Y1-COM	Digital Output 1	Optocoupler isolated, bipolar open-collector output. Output voltage range: 0V~24V Output current range: 0mA~50mA
	Y2-COM	High-Speed Pulse Output	Constrained by parameter P5-00 "Y2 Terminal Output Mode Selection"; as a high-speed pulse output, the maximum frequency reaches 100kHz; As an open-collector output, it has the same specifications as Y1.

Category	Terminal Symbol	Terminal Name	Function Description
Relay Output	1RA-1RB	Normally Closed Terminal	Contact driving capability: 250Vac, 3A, COS $\phi$ =0.4 30Vdc, 1A
	2RA-2RB		
	1RA-1RC	Normally Open Terminal	
	2RA-2RC		
Auxiliary Interface	CN2	Function Expansion Card Interface	22-pin terminal, interface with encoder expansion card and communication isolation card.
	CN6, CN4	External Keyboard Interface	External Keypad
Jumper	J8	AO1 Output Selection	Voltage or current output selectable, default is voltage output.
	J9	AO2 Output Selection	
	J1	AI2 Input Selection	Voltage or current input selectable, default is voltage input.
Communication	485+	RS485 Differential Signal Positive Terminal	Standard RS485 communication interface
	485-	RS485 Differential Signal Negative Terminal	

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Note

- Output current needs to be derated when ambient temperature exceeds 23°C, decreasing by 1.8mA for each 1°C increase. At 40°C ambient temperature, the maximum output current is 170mA. When the user shorts SEL with 24V, the current on the X terminals also needs to be considered.
-

## 5 Commissioning

### 5.1 Operation Panel Description

#### Component Description

The LED operation panel displays the running status, allows for parameter settings, fault information, etc. The operation panel is as illustrated below.

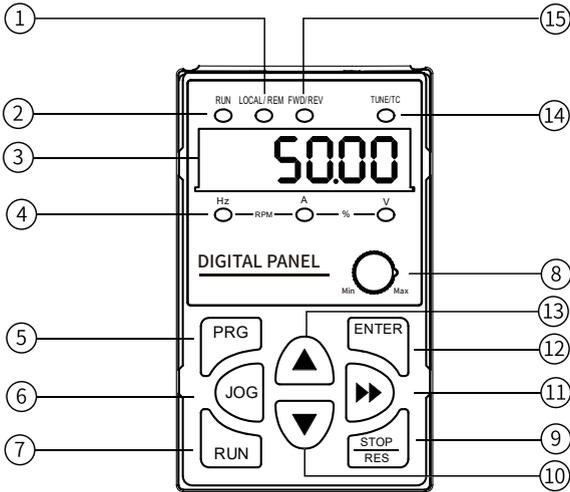


Figure 5-1 Component Diagram

Table 5-1 Operation Panel Composition Description

Number	Component Name	Number	Component Name
1	Command Source Indicator	9	Stop/Reset Button
2	Running Indicator	10	Decrease Button
3	Data Display Area	11	Shift Button
4	Unit Indicator	12	Confirm Button
5	Programming Button	13	Increase Button
6	Multi-function Select Button	14	Tuning/Torque Control/Fault Indicator
7	Run Button	15	Forward/Reverse Indicator
8	Speed Potentiometer	-	-

**Button Information**

Table 5-2 Button Description

Button	Name	Function
	Programming Button	Return to the previous screen; Enter the primary menu.
	Confirm Button	Proceed to the next screen; Confirm modes, parameters, set values.
	Increase Button	Change (increase) parameter numbers and set values.
	Decrease Button	Change (decrease) parameter numbers and set values.
	Shift Button	Left shift to cycle through display parameters; When setting parameter numbers/values, the digit to be changed shifts left.
	Run Button	In "Operation Panel" start-stop control mode, used for running operations.
	Stop Command/Fault Reset	During running state, used for stop operation; in fault alarm state, used for reset operation.
	Multi-function Select Button	Switch between functions selected based on the value set in P7-01.

**Status Indicator**

In the table below,  indicates the light is on,  indicates the light is off, and  indicates flashing.

Table 5-3 Panel Indicator Light Explanation

Indicator Light Status		Status Explanation
RUN Running Indicator	 RUN	Light Off: Stopped
	 RUN	Light On: Running
LOC/REM Command Source Indicator Light	 LOCAL/ REMOT	Light Off: Panel Control
	 LOCAL/ REMOT	Light On: Terminal Control
	 LOCAL/ REMOT	Flashing: Communication Control
FWD/REV Forward/Reverse Indicator Light	 FWD/REV	Light Off: Forward Running
	 FWD/REV	Light On: Reverse Running
TUNE/TC Tuning/Torque Control/Fault Indicator Light	 TUNE/ TC	Light Off: Normal Operation
	 TUNE/ TC	Light On: Torque Control Mode
	 TUNE/TC	Slow Flashing: Tuning State (1 time/second)
	 TUNE/TC	Fast Flashing: Fault State (4 times/second)
    	Frequency Unit Hz	
    	Current Unit A	
    	Voltage Unit V	

Indicator Light Status	Status Explanation
	Speed Unit RPM
	Percentage %

**Data Display**

The operation panel has 5 LED data displays, which can show set frequency, output frequency, various monitoring data, and alarm codes, etc.

Table 5-4 LED Data Display and Actual Data Correspondence

LED Display	Actual Correspondence	LED Display	Actual Correspondence	LED Display	Actual Correspondence	LED Display	Actual Correspondence
0	0	6	6	C	C	n	N
1	1	7	7	c	c	p	P
2	2	8	8	d	D	r	R
3	3	9	9	E	E	T	T
4	4	A	A	F	F	u	u
5	5	b	B	L	L	U	U

## 6 Troubleshooting

### 6.1 Trial Run Handling Strategies Under Different Control Modes

- Open Loop Vector Control Mode (P0-01=0, Factory Default)

This control mode is used for applications where the motor does not have encoder speed feedback and controls the speed and torque of the motor. In this mode, it is necessary to perform self-learning of the motor parameters to complete the automatic tuning of the motor parameters.

Table 6-1 Open Loop Vector Control Mode Handling Strategies

Issue and Fault	Handling Strategy
Motor reports overload or overcurrent fault during startup	Set motor parameters (P1-01~P1-05) according to the motor nameplate. Perform motor parameter tuning (P1-37). If possible, complete a full dynamic tuning of the motor.
Slow torque or speed response, motor vibration below 5Hz	To improve torque and speed response, strengthen the speed loop proportional regulation (increase P2-00 setting value by units of 10) or reduce the speed loop integral time (decrease P2-01 by units of 0.05); If vibration occurs, weaken P2-00 and increase P2-01 parameter values.
Slow torque or speed response, motor vibration above 5Hz	To improve torque and speed response, strengthen the speed loop proportional regulation (increase P2-03 setting value by units of 10) or reduce the speed loop integral time (decrease P2-04 by units of 0.05); If vibration occurs, weaken P2-03 and increase P2-04 parameter values.
Low speed accuracy	When there's a large deviation in motor speed under load, increase the vector slip compensation gain (P2-06) by units of 10%.
Large speed fluctuations	When the motor speed fluctuates abnormally, moderately increase the speed filter time (A9-5) by units of 0.001s.
High motor noise	Appropriately increase the carrier frequency value (P0-15) by units of 1.0KHz. (Note: Increasing the carrier frequency may increase motor leakage current)
Insufficient motor torque or output	Check if the torque limit is restricted; in speed mode, increase the torque limit (P2-10); in torque mode, increase the torque command.

- Closed Loop Vector Control Mode (P0-01=1)

This mode is used in applications where the motor has encoder speed feedback. It requires correct setting of encoder lines, encoder type, and signal direction, as well as completion of automatic tuning of motor parameters.

Table 6-2 Closed Loop Vector Control Mode Handling Strategies

Issue and Fault	Handling Strategy
Startup reports overcurrent or overload fault	Correctly set the number of encoder lines, type, and encoder direction.
Motor reports overload or overcurrent fault during operation	Set motor parameters (P1-01~P1-05) according to the motor nameplate. Perform motor parameter tuning (P1-37). If possible, complete a full dynamic tuning of the motor.
Slow torque or speed response, motor vibration below 5Hz	To improve torque and speed response, strengthen the speed loop proportional regulation (increase P2-00 setting value by units of 10) or reduce the speed loop integral time (decrease P2-01 by units of 0.05); If vibration occurs, weaken the P2-00, P2-01 parameter values.

Issue and Fault	Handling Strategy
Slow torque or speed response, motor vibration above 5Hz	To improve torque and speed response, strengthen the speed loop proportional regulation (increase P2-03 setting value by units of 10) or reduce the speed loop integral time (decrease P2-04 by units of 0.05); If vibration occurs, weaken the P2-03, P2-04 parameter values.
Large speed fluctuations	When motor speed fluctuates abnormally, appropriately increase the speed filter time (P2-07) by units of 0.001s.
High motor noise	Appropriately increase the carrier frequency value (P0-15) by units of 1.0kHz. (Note: Increasing the carrier frequency may increase motor leakage current)
Insufficient motor torque or output	Check if the torque limit is restricted; in speed mode, increase the torque limit (P2-10); in torque mode, increase the torque command.

- V/f Control Mode (P0-01=2)

This mode is used in applications where the motor does not have encoder speed feedback, insensitive to motor parameters, only requiring the correct setting of the motor's rated voltage and frequency.

Table 6-3 V/f Control Mode Handling Strategies

Issue and Fault	Handling Strategy
Motor Oscillation During Operation	Reduce V/f oscillation suppression gain (P3-11) by units of 5 (minimum reduction to 5).
Overcurrent at High-Power Startup	Lower the torque boost (P3-01) by units of 0.5%.
High Current During Operation	Correctly set the motor's rated voltage (P1-02), rated frequency (P1-04); lower the torque boost (P3-01) by units of 0.5%.
High motor noise	Appropriately increase the carrier frequency value (P0-15) by units of 1.0kHz. (Note: Increasing carrier frequency may increase motor leakage current)
Overvoltage, Deceleration Overvoltage with Sudden Unloading/Overloading	Ensure overvoltage stall enable (P3-23) is set to enable; increase overvoltage stall gain (P3-24/F3-25, factory 30) by units of 10 (maximum adjustment to 100); Decrease overvoltage stall action voltage (P3-22 factory 770V) by units of 10V (minimum adjustment to 700V).
Overcurrent with Sudden Overloading/Acceleration	Increase overcurrent stall gain (P3-20 factory 20) by units of 10 (maximum adjustment to 100); Decrease overcurrent stall action current (P3-18 factory 150%) by units of 10% (minimum adjustment to 50%).

## 6.2 Fault Code Overview

During product usage, the following types of faults may occur. Please refer to the methods below for troubleshooting and handling.

Table 6-4 Fault Code Table

Fault Name	Panel Display	Fault Investigation	Fault Handling Strategy
Overcurrent During Acceleration	Err02	Frequency Converter Output Circuit Grounded or Short-Circuited	Check if the motor or contactor has a short circuit.
		Control mode is FVC or SVC without parameter tuning	Set the motor parameters according to the motor nameplate and perform motor parameter tuning.
		Sudden Acceleration Condition, Set Acceleration Time Too Short	Increase acceleration time (P0-17).
		Overcurrent Stall Suppression Setting Inappropriate	Ensure overcurrent stall suppression function (P3-19) is enabled; Set overcurrent stall action current (P3-18) value too high, recommend adjusting within 120% to 150%; Set overcurrent stall suppression gain (P3-20) too low, recommend adjusting between 20 to 40.
		Manual Torque Boost or V/F Curve Inappropriate	Adjust the manual torque boost or V/F curve.
		No Brake Unit and Brake Resistor Installed	Install a brake unit and resistor.
		External Interference	Review the historical fault record to see if the current value reached overcurrent (P3-18) during the fault. If not, deduce external interference and investigate the source of interference to resolve the fault. If no external interference source is found after investigation, it might be due to damage in the drive board or Hall device, contact the manufacturer for replacement.
Deceleration Overcurrent	Err03	Frequency Converter Output Circuit Grounded or Short-Circuited	Check if the motor has a short circuit or open circuit.
		Control mode is FVC or SVC without parameter tuning	Set the motor parameters according to the motor nameplate and perform motor parameter tuning.
		Sudden Deceleration Condition, Set Deceleration Time Too Short	Increase deceleration time (P0-18).
		Overcurrent Stall Suppression Setting Inappropriate	Ensure overcurrent stall suppression function (P3-19) is enabled; Set overcurrent stall action current (P3-18) value too high, recommend adjusting within 120% to 150%; Set overcurrent stall suppression gain (P3-20) too low, recommend adjusting between 20 to 40.
		No Brake Unit and Brake Resistor Installed	Install a brake unit and resistor.
		External Interference	Review the historical fault record to see if the current value reached overcurrent (P3-18) during the fault. If not, deduce external interference and investigate the source of interference to resolve the fault. If no external interference source is found after investigation, it might be due to damage in the drive board or Hall device, contact the manufacturer for replacement.
		Constant Speed Overcurrent	Err04
Control mode is FVC or SVC without parameter tuning	Set the motor parameters according to the motor nameplate and perform motor parameter tuning.		

## Troubleshooting

Fault Name	Panel Display	Fault Investigation	Fault Handling Strategy
		Overcurrent Stall Suppression Setting Inappropriate	Ensure overcurrent stall suppression function (P3-19) is enabled; Set overcurrent stall action current (P3-18) value too high, recommend adjusting within 120% to 150%; Set overcurrent stall suppression gain (P3-20) too low, recommend adjusting between 20 to 40.
		Frequency Converter undersized	If the operating current exceeds the motor's rated current or frequency converter's rated output current during stable operation, choose a higher power rating frequency converter.
		External Interference	Review the historical fault record to see if the current value reached overcurrent (P3-18) during the fault. If not, deduce external interference and investigate the source of interference to resolve the fault. If no external interference source is found after investigation, it might be due to damage in the drive board or Hall device, contact the manufacturer for replacement.
Acceleration Overvoltage	Err05	Input power grid voltage too high	Adjust the voltage to the normal range.
		External force driving the motor during acceleration	Remove the external force or install a brake resistor.
		Overvoltage suppression setting inappropriate	Ensure overvoltage suppression function (P3-23) is enabled; Overvoltage suppression action voltage (P3-22) set too high, recommend adjusting within 770V~700V; Overvoltage suppression gain (P3-24) set too low, recommend adjusting between 30 to 50.
		No Brake Unit and Brake Resistor Installed	Install a brake unit and resistor.
		Acceleration time too short	Increase acceleration time.
Deceleration Overvoltage	Err06	Overvoltage suppression setting inappropriate	Ensure overvoltage suppression function (P3-23) is enabled; Overvoltage suppression action voltage (P3-22) set too high, recommend adjusting within 770V~700V. Overvoltage suppression gain (P3-24) set too low, recommend adjusting between 30 to 50.
		External force driving the motor during deceleration	Remove the external force or install a brake resistor.
		Deceleration time too short	Increase deceleration time.
		No Brake Unit and Brake Resistor Installed	Install a brake unit and resistor.
Constant Speed Overvoltage	Err07	Overvoltage suppression setting inappropriate	Ensure overvoltage suppression function (P3-23) is enabled; Overvoltage suppression action voltage (P3-22) set too high, recommend adjusting within 770V~700V; Overvoltage suppression gain (P3-24) set too low, recommend adjusting between 30 to 50.
		External force driving the motor during operation	Remove the external force or install a brake resistor.
Buffer Resistor Overload Fault	Err08	Input voltage not within specified range, causing contactor to repeatedly engage and disengage	Check if input power grid voltage fluctuates significantly; Adjust the voltage to the specified range to ensure bus voltage fluctuation does not cause contactor engagement and disengagement.

Fault Name	Panel Display	Fault Investigation	Fault Handling Strategy
Under-Voltage Fault	Err09	Momentary Power Outage	Enable the "Momentary Power Loss Non-Stop" function (P9-59) to prevent under-voltage faults during temporary power outages.
		Frequency converter input voltage not within the specified range	Adjust the voltage to the normal range.
		Abnormal bus voltage	Seek technical support.
		Anomalies in the rectification section, frequency converter drive board, frequency converter control board	Seek technical support.
Drive Overload	Err10	Appropriateness of motor protection parameter P9-01 setting	Set this parameter correctly, increasing P9-01 can extend the motor overload time.
		Is the load too large or is the motor jammed?	Reduce the load and check the motor and mechanical conditions.
Motor Overload	Err11	Appropriateness of motor protection parameter P9-01 setting	Set this parameter correctly, increasing P9-01 can extend the motor overload time.
		Is the load too large or is the motor jammed?	Reduce the load and check the motor and mechanical conditions.
Input Phase Loss	Err12	Abnormal three-phase power supply input	Check the RST wiring and the normality of the three-phase input voltage.
		Anomalies in the drive board, surge protection board, main control board, rectifier bridge	Seek technical support.
Output Phase Loss	Err13	Motor Fault	Check if the motor is open-circuited.
		Abnormal wiring from frequency converter to motor	Eliminate peripheral faults.
		Unbalanced three-phase output of the frequency converter during motor operation	Check the motor's three-phase windings for normality and resolve the issue.
		Anomalies in the drive board, IGBT module	Seek technical support.
Module Overheating	Err14	High ambient temperature	Lower the ambient temperature.
		Air duct blockage	Clean the air duct.
		Damaged fan	Replace the fan.
		Thermal resistor in the module is damaged	Seek technical support.
		Module damage	Seek technical support.
External device fault	Err15	External fault input through multifunction terminal X	Investigate peripheral faults, ensure machinery allows for restart (P8-18), reset operation.
		External fault input through virtual IO function	Confirm that the parameters of Group A1 virtual IO are correctly set, reset operation.
Communication fault	Err16	Upper computer not working properly	Check the wiring of the upper computer.
		Abnormal communication line	Check the communication connection line.
		Incorrect setting of communication expansion card P0-28	Set the communication expansion card type correctly.
		Incorrect setting of communication parameters in PD group	Set the communication parameters correctly.
			Try restoring to factory settings.
Contactor fault	Err17	Drive board and power supply anomalies	Replace the drive board or power board.
		Contactor anomalies	Replace the contactor.
		Surge protection board anomalies	Replace the surge protection board.
Current detection fault	Err18	Abnormal frequency converter current sampling	Check if the main circuit is powered on.
		Abnormal frequency converter current sampling	Damaged Hall sensor, damaged current sampling circuit, contact manufacturer.

## Troubleshooting

Fault Name	Panel Display	Fault Investigation	Fault Handling Strategy
Motor tuning fault	Err19	Motor parameters not set according to nameplate	Set motor parameters correctly based on the nameplate.
		Parameter identification process timeout	Check the frequency converter to motor wiring;
		Encoder anomalies	Check if the encoder line count setting is correct P1-27, check if the encoder's signal line connection is correct and secure.
Encoder fault	Err20	Encoder model mismatch	Set the encoder type correctly based on actual use.
		Encoder wiring error	Check the power supply and phase sequence of the PG card.
		Encoder damage	Replace the encoder.
		PG card anomalies	Replace the PG card.
EEPROM read/write fault	Err21	EEPROM chip damaged	Seek manufacturer service.
Ground short circuit fault	Err23	Motor ground short circuit	Replace or check the cable or motor for ground short circuits.
Accumulated runtime fault	Err26	Accumulated runtime reaches set value	Use parameter initialization function to clear record information.
User-defined fault 1	Err27	User-defined fault 1 signal input via multifunction terminal X	Reset operation.
		User-defined fault 1 signal input via virtual IO function	Reset operation.
User-defined fault 2	Err28	User-defined fault 2 signal input via multifunction terminal X	Reset operation.
		User-defined fault 2 signal input via virtual IO function	Reset operation.
Accumulated power-on time fault	Err29	Accumulated power-on time reaches set value	Use parameter initialization function to clear record information.
Underload fault	Err30	Frequency Converter running current less than P9-64	Confirm if the load has disengaged or if parameters P9-64, P9-65 are set according to actual operating conditions.
Running PID feedback loss fault	Err31	PID feedback less than PA-26 set value	Check PID feedback signal or set PA-26 to a suitable value.
Current limiting fault	Err40	Is the load too large or is the motor jammed?	Reduce the load and check the motor and mechanical conditions.
		Frequency Converter undersized	Use an frequency converter with a higher power rating.
Running motor switch fault	Err41	Changing current motor selection through terminals during frequency converter operation	Switch motors after frequency converter stops.
Speed deviation fault	Err42	Encoder parameter setting incorrect	Set encoder parameters correctly.
		No parameter tuning performed	Perform motor parameter tuning.
		Speed deviation detection parameters P9-69, P9-70 set unreasonably	Set detection parameters reasonably according to actual conditions.
Motor overspeed fault	Err43	Encoder parameter setting incorrect	Set encoder parameters correctly.
		No parameter tuning performed	Perform motor parameter tuning.
		Motor overspeed detection parameters P9-67, P9-68 set unreasonably	Set detection parameters reasonably according to actual conditions.
Continuous current limiting fault	Err52	Overloaded load	Check the load

## 7 Routine Maintenance

### 7.1 Routine Inspection Items

#### 7.1.1 Routine inspection items

Due to the influence of environmental temperature, humidity, dust, and vibration, internal components of the equipment may age, potentially leading to faults or reduced equipment lifespan. Therefore, it is necessary to perform routine and periodic maintenance and upkeep, especially in environments with high temperatures, frequent startups and shutdowns, fluctuating AC power and load, significant vibration or shock, and dusty/metallic dust/corrosive conditions like hydrochloric acid. In such environments, the interval between regular inspections should be shortened.

To ensure normal functioning of the equipment and to prevent damage, please check the following items daily. You may photocopy this inspection checklist for use, and after each inspection, stamp the "Confirmed" column.

Inspection Items	Inspection Content	Troubleshooting	Confirmation Column
Motor	Check for abnormal sounds and vibrations in the motor	<ul style="list-style-type: none"> <li>● Check for anomalies in mechanical connections;</li> <li>● Confirm motor phase integrity</li> <li>● Ensure motor mounting screws are secure</li> </ul>	
Fan Cooling	Check for anomalies in the cooling fans of the Frequency Converter and motor	<ul style="list-style-type: none"> <li>● Confirm operation of the cooling fan on the device side</li> <li>● Check for abnormalities in the motor side cooling fan</li> <li>● Ensure air passages are not blocked</li> <li>● Confirm the environmental temperature is within the allowable range</li> </ul>	
Installation Environment	Check for abnormalities in electrical cabinets and cable trays	<ul style="list-style-type: none"> <li>● Inspect insulation integrity of incoming and outgoing cables</li> <li>● Check for vibrations in mounting brackets</li> <li>● Inspect busbars and cable terminal connections for looseness or corrosion</li> </ul>	
Load	Check if the operating current of the frequency converter exceeds its rated current and the motor's rated current	<ul style="list-style-type: none"> <li>● Confirm correct motor parameter settings</li> <li>● Check for motor overload</li> <li>● Confirm mechanical vibration is within normal limits (normal condition &lt;0.6g)</li> </ul>	
Input Voltage	Check for anomalies in the main circuit and control circuit power supply voltage	<ul style="list-style-type: none"> <li>● Confirm input voltage is within the allowable range</li> <li>● Check for large loads starting up nearby</li> </ul>	

#### 7.1.2 Regular Inspection Item List

The table below lists the periodic inspection items for this product. Generally, it is recommended to conduct a periodic maintenance every 1 to 2 years. The actual maintenance cycle should be determined based on the product's usage and working environment. Regular maintenance helps prevent deterioration of product functionality and damage.

When performing maintenance, please photocopy the periodic maintenance item table and stamp "Confirmed" in the inspection column after each confirmation.

 **Caution**

To prevent electric shock, do not inspect or wire while the power is on. Before wiring or repairing, be sure to cut off the power supply to all equipment. After turning off the power, the internal capacitors of the equipment may still retain residual voltage, so please wait for the time specified on the warning label of the product before proceeding with wiring or repair work. Measure the main circuit DC voltage and ensure it is below the safe voltage level to avoid the risk of electric shock.

Inspection Items	Inspection Content	Troubleshooting	Inspection Column
Entire Machine	Check for accumulation of trash, dirt, or dust on the surface.	<ul style="list-style-type: none"> <li>● Confirm the controller cabinet is powered off.</li> <li>● Use a vacuum cleaner to remove trash or dust to avoid contact with components.</li> <li>● If surface dirt cannot be removed, wipe with alcohol and allow it to dry completely.</li> </ul>	
Cables	<ul style="list-style-type: none"> <li>● Check if power lines and connections are discolored.</li> <li>● Inspect for aging or cracking of the insulation layer.</li> </ul>	<ul style="list-style-type: none"> <li>● Replace cables that are cracked.</li> <li>● Replace damaged connection terminals.</li> </ul>	
Peripheral of Electromagnetic Contactor	<ul style="list-style-type: none"> <li>● Check if it fails to engage firmly or makes abnormal noise during operation.</li> <li>● Look for short-circuited, water-damaged, swollen, or ruptured foreign components.</li> </ul>	Replace any malfunctioning components.	
Ventilation Ports of Air Duct	<ul style="list-style-type: none"> <li>● Check for blockages in air ducts and heat sinks.</li> <li>● Inspect for damaged fans.</li> </ul>	<ul style="list-style-type: none"> <li>● Clean air ducts.</li> <li>● Replace the fan.</li> </ul>	
Control Circuit	<ul style="list-style-type: none"> <li>● Inspect control components for poor contact. · Check for loose terminal screws.</li> <li>● Look for cracked insulation in control cables.</li> </ul>	<ul style="list-style-type: none"> <li>● Clean foreign substances from control circuits and connection terminals.</li> <li>● Replace damaged or corroded control cables.</li> </ul>	

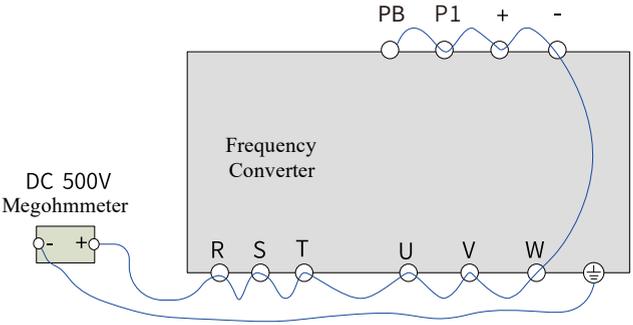
## 7.2 Main Circuit Insulation Test

 **Caution**

It is strictly forbidden to conduct high voltage (>500V) tests (these have already been completed at the factory).

Before testing, remove the varistor screw and disconnect the varistor.

When measuring insulation resistance with a megohmmeter (please use a DC 500V megohmmeter), disconnect the main circuit from the frequency converter. Do not use an insulation resistance meter to test the insulation of the control circuit; refer to the diagram below.



The measurement result should be greater than 5 MΩ.

### 7.3 Replacement of Consumable Parts

#### 7.3.1 Wear Part Lifespan

The main consumable parts of this product are cooling fans and filtering electrolytic capacitors, whose lifespan is closely related to the operating environment and maintenance status. General lifespan times are shown in the table below.

Component Name	Lifespan [Note]
Fan	≥5 years
Electrolytic Capacitor	≥5 years
<p>Note:                      The lifespan is based on usage under the following conditions. Users can determine the replacement period based on operational hours.                      Environmental Temperature: 40°C                      Load Rate: 80%                      Operational Rate: 24 hours/day</p>	

#### 7.3.2 Cooling Fan Replacement

##### Number of Fans Used

- Possible reasons for fan damage: Bearing wear, blade aging.
- Criteria for fan damage: Check for cracks in fan blades, abnormal noise or vibration when starting, and abnormal fan operation.
- Method of fan replacement: Press the plastic protective cover of the fan and pull it outwards. After replacing the fan, ensure the airflow direction is upwards. Pay attention to the direction of the airflow.

### 7.3.3 Filter Electrolytic Capacitor Replacement

- Possible damage reasons: Poor input power quality, high ambient temperature, frequent load fluctuations, aging of the electrolyte.
- Criteria for damage: Check for liquid leakage, whether the safety valve is protruding, measurement of static capacitance, and insulation resistance.
- Replacement of filtering capacitors: As filtering capacitors involve internal components, users are prohibited from replacing them themselves. Please contact The Company technical support for replacement.

## 7.4 Storage and Warranty

### Storage

When storing products purchased temporarily or for a long period, please note the following:

- Store in the original packaging box of the company whenever possible.
- Do not store the entire unit in humid, high-temperature environments, or under direct sunlight for extended periods.
- Long-term storage can lead to deterioration of electrolytic capacitors. Ensure to power the unit at least once every 6 months for at least 5 hours, with input voltage gradually increased to the rated value using a voltage regulator, or consult Mokweir technical support.

### Warranty

Under normal usage, if the product malfunctions or is damaged, The Company provides warranty service within the warranty period (please refer to the order form for the product warranty period). Beyond the warranty period, repair charges will be incurred.

During the warranty period, repair charges will be incurred for product damage caused by the following:

- Damage caused by operating the product not in accordance with the manual's instructions.
- Damage caused by fire, flood, or abnormal voltage fluctuations.
- Damage caused by using the product for abnormal functions.
- Damage due to usage beyond the specified range of the product.
- Secondary damage to the product caused by force majeure (natural disasters, earthquakes, lightning strikes).

Service fees are calculated according to the manufacturer's standard rates. In the case of a contract, the contract terms take precedence. For detailed warranty information, please refer to the "Product Warranty Card."

## 8 Optional Accessories

### 8.1 Braking Components

Table 8-1 Braking Component Selection Table

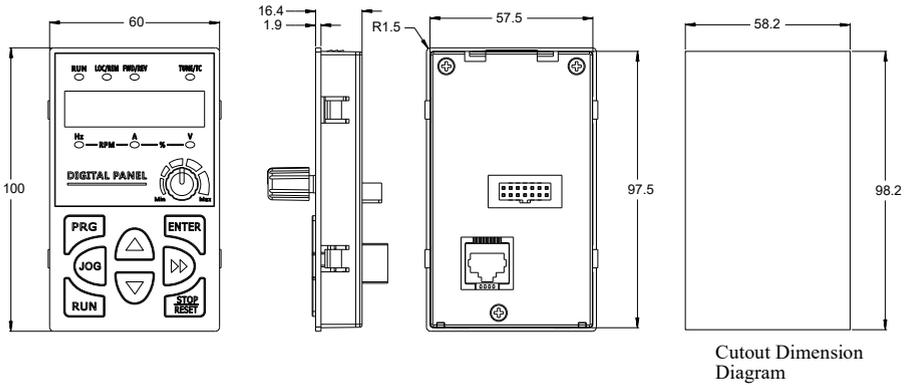
Model	Motor Compatibility (KW)	Brake Unit	125% Braking Torque (10% ED, max 10 seconds)		Remarks	Minimum Braking Resistor Value ( $\Omega$ )
			Recommended Braking Resistor Specifications	Number of Braking Resistors		
Single-phase 220V						
MK80-4S0.75GB	0.8	Standard built-in	140W 800 $\Omega$	1	Model suffix "B"	96
MK80-4S1.5GB	1.5		300W 380 $\Omega$	1		96
MK80-4S2.2GB	2.2		440W 260 $\Omega$	1		64
MK80-4S4.0GB	4.0		740W 150 $\Omega$	1		32
MK80-4S5.5GB	5.5		1100W 100 $\Omega$	1		32
MK80-4S7.5GB	7.5		1500W 75 $\Omega$	1		32
MK80-4S11GB	11.0		2200W 50 $\Omega$	1		24
MK80-4S15GB	15.0		3000W 38 $\Omega$	1		24
MK80-4S18.5G	18.5	Optional built-in	4000W 32 $\Omega$	1	Model suffix "B"	24
MK80-4S22G	22.0		4500W 27 $\Omega$	1		24
MK80-4S30G	30.0		6000W 20 $\Omega$	1		19
MK80-4S37G	37.0		7000W 16 $\Omega$	1		15
MK80-4S45G	45.0		9000W 13 $\Omega$	1		13
MK80-4S55G	55.0	External	11000W 10.5 $\Omega$	1		10
MK80-4S75G	75.0		15000W 7.7 $\Omega$	1		7

#### Description

- The above table provides guideline data. Users can select different resistor values and power ratings based on actual conditions (but the resistance value must not be less than the minimum specified in the table, and the power rating can be higher). The choice of braking resistor depends on the power generated by the motor in the actual application system and is related to the system's inertia, deceleration time, and potential energy load. The user should choose based on actual conditions.
- The larger the system's inertia, the shorter the required deceleration time, and the more frequent the braking, the greater the power and the lower the resistance value required for the braking resistor.

## 8.2 Operating Panels

Model	Description	Appearance
MK80LED	An external operating panel compatible with this product, featuring an LED display. Its operating mode is identical to the machine's own panel, and its external nature facilitates user debugging.	



Openings for the panel: Height 132mm, Width 66.6mm

Figure 8-1 MK80LED External Operating Panel Dimensions (unit: mm) .

## 9 Parameter Overview Table

P group and A group are basic function parameters, while the U group is for monitoring function parameters. Methods for changing parameters are as follows:

- Shutdown Change: Parameters can only be changed when the machine is stopped.
- Unchangeable: Parameters that cannot be changed, used for monitoring purposes, or temporarily unavailable for customer modification, fixed parameters.
- Change in Real Time: Parameters that can be changed at any time.

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P0-01	0xF001	First Motor Control Mode	0: Vector control without speed sensor (SVC) 1: Vector control with speed sensor (FVC) 2: V/F control	2	-	Shutdown Change
P0-02	0xF002	Command Source Selection	0: Operation panel command channel 1: Terminal command channel 2: Communication command channel	2	-	Change in Real Time
P0-03	0xF003	Main Frequency Source X Selection	0: Digital setting (not remembered after power off) 1: Digital setting (remembered after power off) 2: All 3: AI2 4: Keyboard potentiometer 5: PULSE pulse setting 6: Multi-step instruction 7: Simple PLC 8: PID 9: Communication command	0	-	Shutdown Change
P0-04	0xF004	Auxiliary Frequency Source Y Selection	0: Digital setting (not remembered after power off) 1: Digital setting (remembered after power off) 2: All 3: AI2 4: Keyboard potentiometer 5: PULSE pulse setting 6: Multi-step instruction 7: Simple PLC 8: PID 9: Communication command	0	-	Shutdown Change
P0-05	0xF005	Auxiliary Frequency Source Y Range Selection when Overlapping	0: Relative to maximum frequency 1: Relative to frequency source X	0	-	Change in Real Time
P0-06	0xF006	Auxiliary Frequency Source Y Range when Overlapping	0%~150%	100	%	Change in Real Time

## Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P0-07	0xF007	Frequency Source Overlap Selection	Units: Frequency Command Selection 0: Main frequency source X 1: Main-auxiliary calculation result (the calculation relationship is determined by the tens digit) 2: Switch between main frequency source X and auxiliary frequency source Y 3: Switch between main frequency source X and main-auxiliary calculation result 4: Switch between auxiliary frequency source Y and main-auxiliary calculation result Tens Digit: Frequency Command Main-Auxiliary Calculation Relationship 0: Main + Auxiliary 1: Main - Auxiliary 2: Maximum value of both 3: Minimum value of both	0	-	Change in Real Time
P0-08	0xF008	Preset Frequency	0.00Hz~P0-10	50.00	Hz	Change in Real Time
P0-09	0xF009	Running Direction Selection	0: Run in default direction 1: Run in the opposite direction to the default	0	-	Change in Real Time
P0-10	0xF00A	Maximum Frequency	50.00Hz~2000.0Hz	50.00	Hz	Shutdown Change
PO-11	0xF00B	Upper Limit Frequency Source	0: Set by PO-12 1: All 2: AI2 3: Keyboard potentiometer 4: PULSE pulse setting 5: Communication Setting	0	-	Shutdown Change
P0-12	0xF00C	Upper Limit Frequency	0.00Hz~2000.0Hz	50.00	Hz	Change in Real Time
PO-13	0xF00D	Upper Limit Frequency Offset	0.00Hz~2000.0Hz	0.00	Hz	Change in Real Time
P0-14	0xF00E	Lower Limit Frequency	0.00Hz~2000.0Hz	0.00	Hz	Change in Real Time
P0-15	0xF00F	Carrier Frequency	0.5kHz~16.0kHz	6.0	kHz	Change in Real Time
P0-16	0xF010	Carrier Frequency Adjustment with Temperature	0: No 1: Yes	1	-	Change in Real Time
P0-17	0xF011	Acceleration Time 1	0.0s~6500.0s	0.0	S	Change in Real Time
P0-18	0xF012	Deceleration Time 1	0.0s~6500.0s	0.0	S	Change in Real Time
P0-19	0xF013	Acceleration/Deceleration Time Unit	0: 1 second 1: 0.1 second 2: 0.01 second	1	-	Shutdown Change
P0-21	0xF015	Auxiliary Frequency Source Offset Frequency during Overlay	0.00Hz~2000.0Hz	0.00	Hz	Change in Real Time

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P0-22	0xF016	Decimal Places for Frequency Command	1:0.1Hz 2:0.01Hz	2	-	Unchangeable
P0-23	0xF017	Digital Set Frequency Memory Selection	0: Do Not Remember 1: Remember	0	-	Change in Real Time
P0-24	0xF018	Motor Parameter Group Selection	0: Motor Parameter Group 1 1: Motor Parameter Group 2	0	-	Shutdown Change
P0-25	0xF019	Reference Frequency for Acceleration/Deceleration Time	0: Maximum Frequency (P0-10) 1: Set Frequency 2:10 AM0Hz	0	-	Shutdown Change
P0-26	0xF01A	Reference for Running Frequency UP/DOWN	0: Running Frequency 1: Set Frequency	0	-	Shutdown Change
P0-27	0xF01B	Command Source Bundled with Frequency Source	Units; Operation Panel Command Bundled with Frequency Source Selection 0: No Bundling 1: Digital Set Frequency 2: AI1 3: AI2 4: Keyboard potentiometer 5: PULSE pulse setting 6: Multi-Speed 7: Simple PLC 8: PID 9: Communication command Tens Digit: Terminal Command Bundling with Frequency Source Selection Hundreds Digit: Communication Command Bundling with Frequency Source Selection	0	-	Change in Real Time
P1-00	0xF100	Motor Type Selection	0: Standard Asynchronous Motor 1: Variable Frequency Asynchronous Motor	0	-	Shutdown Change
P1-01	0xF101	Motor Rated Power	0.1kW~1000.0kW	3.7	kW	Shutdown Change
P1-02	0xF102	Motor Rated Voltage	1V~2000V	380	V	Shutdown Change
P1-03	0xF103	Motor Rated Current	0.1A~6553.5A	9.0	A	Shutdown Change
P1-04	0xF104	Motor Rated Frequency	0.01Hz~2000.0Hz	50.00	Hz	Shutdown Change
P1-05	0xF105	Motor Rated Speed	1rpm~65535rpm	1460	rpm	Shutdown Change
P1-06	0xF106	Asynchronous Motor Stator Resistance	0.001Ω~65.535Ω	1.204	Ω	Shutdown Change
P1-07	0xF107	Asynchronous Motor Rotor Resistance	0.0012~65.535Ω	0.908	Ω	Shutdown Change
P1-08	0xF108	Asynchronous Motor Leakage Reactance	0.01mH~655.35mH	5.28	mH	Shutdown Change
P1-09	0xF109	Asynchronous Motor Mutual Reactance	0.01mH~655.35mH	156.80	mH	Shutdown Change
P1-10	0xF10A	Asynchronous Motor No-Load Current	0.1A~6553.5A	4.2	A	Shutdown Change
P1-27	0xF11B	Encoder Line Count	1~65535	1024	-	Shutdown Change

## Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P1-28	0xF11C	Encoder Type	0: ABZ Incremental Encoder 2: Rotary Transformer	0	-	Shutdown Change
P1-30	0xF11E	Encoder AB Phase Sequence	0: Forward 1: Reverse	0	-	Shutdown Change
P1-34	0xF122	Rotary Transformer Pole Pair Number	1-65535	1	-	Shutdown Change
P1-36	0xF124	Speed Feedback PG Disconnection Detection Time	0.0s~10.0s	0.0	S	Shutdown Change
P1-37	0xF125	Tuning Selection	0: No operation 1: Static tuning of asynchronous motor 2: Dynamic tuning of asynchronous motor 3: Complete static tuning of asynchronous motor	0	-	Shutdown Change

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P2-00	0xF200	Speed Loop Proportional Gain 1	1~100	30	-	Change in Real Time
P2-01	0xF201	Speed Loop Integral Time 1	0.01s~10.00s	0.50	S	Change in Real Time
P2-02	0xF202	Switching Frequency 1	0.00Hz~2000.0Hz	5.00	Hz	Change in Real Time
P2-03	0xF203	Speed Loop Proportional Gain 2	1~100	20	-	Change in Real Time
P2-04	0xF204	Speed Loop Integral Time 2	0.01s~10.00s	1.00	S	Change in Real Time
P2-05	0xF205	Switching Frequency 2	0.00Hz~2000.0Hz	10.00	Hz	Change in Real Time
P2-06	0xF206	Vector Control Slip Gain	50%~200%	100	%	Change in Real Time
P2-07	0xF207	SVC Speed Feedback Filter Time	0.000s~0.100s	0.015	s	Change in Real Time
P2-09	0xF209	Speed Control Torque Limit Source	0: Upper Limit Digital Setting (P2-10) 1: AI1 2: AI2 3: Keyboard potentiometer 4: PULSE pulse setting 5: Communication Setting 6: MIN(AI1, AI2) 7: MAX(AI1, AI2)	0	-	Change in Real Time
P2-10	0xF20A	Speed Control Torque Upper Limit Digital Setting	0.0%~200.0%	150.0	%	Change in Real Time
P2-11	0xF20B	Speed Control (Braking) Torque Upper Limit Source	0: Upper Limit Digital Setting (P2-10) 1: AI1 2: AI2 3: Keyboard potentiometer 4: PULSE pulse setting 5: Communication Setting 6: MIN(AI1, AI2) 7: MAX(AI1, AI2) 8: Upper Limit Digital Setting (P2-12)	0	-	Change in Real Time
P2-12	0xF20C	(Braking) Torque Upper Limit Digital Setting	0.0%~200.0%	150.0	%	Change in Real Time
P2-13	0xF20D	Excitation Adjustment Proportional Gain	0~60000	2000	-	Change in Real Time
P2-14	0xF20E	Excitation Adjustment Integral Gain	0~60000	1300	-	Change in Real Time
P2-15	0xF20F	Torque Control Proportional Gain	0~60000	2000	-	Change in Real Time
P2-16	0xF210	Torque Control Integral Gain	0~60000	1300	-	Change in Real Time
P2-17	0xF211	Speed Loop Integral Attribute	0: Integral Separation Ineffective 1: Integral Separation Effective	0	-	Change in Real Time
P2-21	0xF215	Weak Magnetic Field Maximum Torque Coefficient	50~200	100	-	Change in Real Time

## Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P2-22	0xF216	Power Generation Limit Enable	0: Ineffective 1: Effective 2: Effective at Constant Speed 3: Effective during Deceleration	0	-	Change in Real Time
P2-23	0xF217	Upper Limit of Power Generation	0.09%~200.09%	0.0	%	Change in Real Time
P3-00	0xF300	V/F Curve Setting	0: Linear V/F Curve 1: Multi-point V/F Curve 2: Square V/F Curve 3: 1.2 Times V/F Curve 4: 1.4 Times V/F Curve 6: 1.6 Times V/F Curve 8: 1.8 Times V/F Curve 9: Reserved 10: V/F Complete Separation Mode 11: V/F Partial Separation Mode	0	-	Shutdown Change

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P3-01	0xF301	Torque Boost	0.09%~30.0%	0.0	%	Change in Real Time
P3-02	0xF302	Torque Boost Cut-off Frequency	0.00Hz~2000.0Hz	50.00	Hz	Shutdown Change
P3-03	0xF303	Multi-point V/F Frequency Point 1	0.00Hz~2000.0Hz	0.00	Hz	Shutdown Change
P3-04	0xF304	Multi-point V/F Voltage Point 1	0.0%~100.0%	0.0	%	Shutdown Change
P3-05	0xF305	Multi-point V/F Frequency Point 2	0.00Hz~2000.0Hz	0.00	Hz	Shutdown Change
P3-06	0xF306	Multi-point V/F Voltage Point 2	0.0%~100.0%	0.0	%	Shutdown Change
P3-07	0xF307	Multi-point V/F Frequency Point 3	0.00Hz~2000.0Hz	0.00	Hz	Shutdown Change
P3-08	0xF308	Multi-point V/F Voltage Point 3	0.09%~100.0%	0.0	%	Shutdown Change
P3-10	0xF30A	V/F Overexcitation Gain	0~200	64	-	Change in Real Time
P3-11	0xF30B	V/F Oscillation Suppression Gain	0~100	40	--	Change in Real Time
P3-13	0xF30D	V/F Separation Voltage Source	0: Digital Setting (P3-14) 1: All 2: AI2 3: Keyboard potentiometer 4: PULSE pulse setting 5: Multi-step Instruction 6: Simple PLC 7: PID 8: Communication Setting	0	-	Change in Real Time
P3-14	0xF30E	V/F Separation Voltage Source Digital Setting	0V~2000V	0	V	Change in Real Time
P3-15	0xF30F	V/F Separation Voltage Rise Time	0.0s~1000.0s	0.0	S	Change in Real Time
P3-16	0xF310	V/F Separation Voltage Fall Time	0.0s~1000.0s	0.0	S	Change in Real Time
P3-17	0xF311	V/F Separation Shutdown Mode Selection	0: Frequency/Voltage Independently Reduced to 0 1: Voltage Reduced to 0 Then Frequency Reduced	0	-	Shutdown Change
P3-18	0xF312	Overcurrent Stall Operating Current	50%~200%	150	%	Shutdown Change
P3-19	0xF313	Overcurrent Stall Suppression	0: Ineffective 1: Effective	1	-	Shutdown Change
P3-20	0xF314	Overcurrent Stall Suppression Gain	0~100	20	-	Change in Real Time
P3-21	0xF315	Multiplication Factor for Overcurrent Stall Operating Current Compensation	50%~2009%	50	%	Shutdown Change
P3-22	0xF316	Overvoltage Stall Operating Voltage	650.0V~800.0V	770.0	V	Shutdown Change
P3-23	0xF317	Overvoltage Stall Suppression	0: Ineffective 1: Effective	1	-	Shutdown Change
P3-24	0xF318	Overvoltage Stall Suppression Frequency Gain	0~100	30	-	Change in Real Time
P3-25	0xF319	Overvoltage Stall Suppression Voltage Gain	0~100	30	-	Change in Real Time
P3-26	0xF31A	Maximum Rise Frequency Limit for Overvoltage Stall	0Hz~50Hz	5	Hz	Shutdown Change

# Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P4-00	0xF400	X1 Terminal Function Selection	0: No Function 1: Forward Running FWD or Running Command 2: Reverse Running REV or Forward/Reverse Running Direction (Note: When set to 1 or 2, use in conjunction with F4-11, see function code parameter description for details)	1	-	Shutdown Change
P4-01	0xF401	X2 Terminal Function Selection	3: Three-wire Running Control 4: Forward Jog (FJOG) 5: Reverse Jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Free Stop	2	-	Shutdown Change
P4-02	0xF402	X3 Terminal Function Selection	9: Fault Reset (RESET) 10: Run Pause 11: External Fault Normally Open Input 12: Multi-step Instruction Terminal 1 13: Multi-step Instruction Terminal 2 14: Multi-step Instruction Terminal 3 15: Multi-step Instruction Terminal 4	4	-	Shutdown Change
P4-03	0xF403	X4 Terminal Function Selection	16: Acceleration/Deceleration Time Selection Terminal 1 17: Acceleration/Deceleration Time Selection Terminal 2 18: Frequency Source Switching	12	-	Shutdown Change
P4-04	0xF404	X5 Terminal Function Selection	19: UP/DOWN Setting Reset (Terminal, Keyboard) 20: Run Command Switching Terminal 21: Acceleration/Deceleration Inhibition 22: PID Pause 23: PLC Status Reset	13	-	Shutdown Change
P4-05	0xF405	X6 Terminal Function Selection	24: Swing Frequency Pause 25: Counter Input 26: Counter Reset 27: Length Count Input 28: Length Reset 29: Torque Control Prohibition 30: PULSE Frequency Input (only effective for X6)	0	-	Shutdown Change
P4-06	0xF406	X7 Terminal Function Selection	31: Reserved 32: Immediate DC Braking 33: External Fault Normally Closed Input 34: Frequency Modification Enable	0	-	Shutdown Change
P4-07	0xF407	X8 Terminal Function Selection	35: PID Action Direction Inversion 36: External Stop Terminal 1 37: Control Command Switch Terminal 2 38: PID Integral Pause 39: Frequency Source X and Preset Frequency Switch	0	-	Shutdown Change
P4-08	0xF408	X9 Terminal Function Selection	40: Frequency Source Y and Preset Frequency Switch 41: Motor Selection Terminal 1 42: Reserved 43: PID Parameter Switch 44: User-Defined Fault 1 45: User-Defined Fault 2	0	-	Shutdown Change
P4-09	0xF409	X10 Terminal Function Selection	46: Speed Control/Torque Control Switch 47: Emergency Stop 48: External Stop Terminal 2 49: Deceleration DC Braking 50: Current Run Time Reset 51: Two-wire/Three-wire Switch 52: Reverse Frequency Prohibition 53-59: Reserved	0	-	Shutdown Change

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P4-10	0xF40A	X Filter Time	0.000s~1.000s	0.010	S	Change in Real Time
P4-11	0xF40B	Terminal Command Mode	0: Two-wire Type 1 1: Two-wire Type 2 2: Three-wire Type 1 3: Three-wire Type 2	0		Shutdown Change
P4-12	0xF40C	Terminal UP/DOWN Rate of Change	0.001Hz/s~65.535Hz/s	1.000	Hz/s	Change in Real Time
P4-13	0xF40D	AI Curve 1 Minimum Input	0.00V~10.00V	0.00	V	Change in Real Time
P4-14	0xF40E	AI Curve 1 Minimum Input Corresponding Setting	-100.0%~100.0%	0.0	%	Change in Real Time
P4-15	0xF40F	AI Curve 1 Maximum Input	0.00V~10.00V	10.00	V	Change in Real Time
P4-16	0xF410	AI Curve 1 Maximum Input Corresponding Setting	-100.0%~100.0%	100.0	%	Change in Real Time
P4-17	0xF411	AI1 Filter Time	0.00s~10.00s	0.10	S	Change in Real Time
P4-18	0xF412	AI Curve 2 Minimum Input	0.00V~10.00V	0.00	V	Change in Real Time
P4-19	0xF413	AI Curve 2 Minimum Input Corresponding Setting	-100.0%~100.0%	0.0	%	Change in Real Time
P4-20	0xF414	AI Curve 2 Maximum Input	0.00V~10.00V	10.00	V	Change in Real Time
P4-21	0xF415	AI Curve 2 Maximum Input Corresponding Setting	-100.0%~100.0%	100.0	%	Change in Real Time
P4-22	0xF416	AI2 Filter Time	0.00s~10.00s	0.10	S	Change in Real Time
P4-23	0xF417	AI Curve 3 Minimum Input	-10.00V~10.00V	-10.00	V	Change in Real Time
P4-24	0xF418	AI Curve 3 Minimum Input Corresponding Setting	-100.0%~100.0%	-100.0	%	Change in Real Time
P4-25	0xF419	AI Curve 3 Maximum Input	0.00V~10.00V	10.00	V	Change in Real Time
P4-26	0xF41A	AI Curve 3 Maximum Input Corresponding Setting	-100.0%~100.0%	100.0	%	Change in Real Time
P4-27	0xF41B	-	-	-	-	-
P4-28	0xF41C	PULSE Minimum Input	0.00kHz~100.00kHz	0.00	kHz	Change in Real Time
P4-29	0xF41D	PULSE Minimum Input Corresponding Setting	-100.0%~100.0%	0.0	%	Change in Real Time
P4-30	0xF41E	PULSE Maximum Input	0.00kHz~100.00kHz	50.00	kHz	Change in Real Time
P4-31	0xF41F	PULSE Maximum Input Setting	-100.0%~100.0%	100.0	%	Change in Real Time
P4-32	0xF420	PULSE Filter Time	0.00s~10.00s	0.10	S	Change in Real Time

# Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P4-33	0xF421	AI Curve Selection	Units: AI1 Curve Selection 1: Curve 1 (2 points, P4-13~P4-16) 2: Curve 2 (2 points, P4-18~P4-21) 3: Curve 2 (2 points, P4-23~P4-26) 4: Curve 4 (4 points, A6-00~A6-07) 5: Curve 5 (4 points, A6-08~A6-15) Ten: AI2 Curve Selection 1: Curve 1 (2 points, P4-13~P4-16) 2: Curve 2 (2 points, P4-18~P4-21) 3: Curve 3 (2 points, P4-23~P4-26) 4: Curve 4 (4 points, A6-00~A6-07) 5: Curve 5 (4 points, A6-08~A6-15) Hundred: Keypad Potentiometer Curve Selection 1: Curve 1 (2 points, P4-13~P4-16) 2: Curve 2 (2 points, P4-18~P4-21) 3: Curve 3 (2 points, P4-23~P4-26) 4: Curve 4 (4 points, A6-00~A6-07) 5: Curve 5 (4 points, A6-08~A6-15)	321	-	Change in Real Time
P4-34	0xF422	AI Lower Limit Selection	Units: AI1 below minimum input setting selection 0: Corresponds to minimum input setting 1: 0.0% Tens: AI2 below minimum input setting selection 0: Corresponds to minimum input setting 1: 0.0% Hundreds: Keyboard potentiometer below minimum input setting selection 0: Corresponds to minimum input setting 1: 0.0%	0	-	Change in Real Time
P4-35	0xF423	X1 Delay Time	0.0s~3600.0s	0.0	S	Shutdown Change
P4-36	0xF424	X2 Delay Time	0.0s~3600.0s	0.0	S	Shutdown Change
P4-37	0xF425	X3 Delay Time	0.0s~3600.0s	0.0	S	Shutdown Change
P4-38	0xF426	X Terminal Effective Mode Selection 1	Units: X1 0: High level effective 1: Low level effective Tens: X2 0: High level effective 1: Low level effective Hundreds: X3 0: High level effective 1: Low level effective Thousands: X4 0: High level effective 1: Low level effective Ten-thousands: X5 0: High level effective 1: Low level effective	0	-	Shutdown Change

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P4-39	0xF427	X Terminal Effective Mode Selection 2	Units: X6 0: High level effective 1: Low level effective Tens: X7 0: High level effective 1: Low level effective Hundreds: X8 0: High level effective 1: Low level effective Thousands: X9 0: High level effective 1: Low level effective Ten-thousands: X10 0: High level effective 1: Low level effective	0		Shutdown Change
F5-00	0xF500	Multi-Function Terminal Output Selection	0: Pulse Output (Y2P) 1: Digital Output (Y2R)	0		Change in Real Time
P5-01	0xF501	Y2R Output Function Selection	0: No output 1: Frequency converter operating 2: Fault output (for free-stopfaults) 3: Frequency level detection FDT1 output 4: Frequency attained 5: Zero speed operation (no output when stopped) 6: Motor overload pre-alarm 7: Frequency converter overload pre-alarm 8: Set count value reached 9: Specified count value reached	0		Change in Real Time
P5-02	0xF502	Relay 1 Output Function Selection	10: Length reached 11: PLC cycle complete 12: Cumulative operating time reached 13: Frequency limitation active 14: Torque limitation active 15: Ready for operation 16: A11 > A12 17: Upper frequency limit reached 18: Lower frequency limit reached (no output when stopped) 19: Unde-voltage condition output 20: Communication setting	2		Change in Real Time

# Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P5-03	0xF503	Relay 2 Output Function Selection	22: Reserved 23: Zero speed operation 2 (output also when stopped) 24: Cumulative power-on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 attained output 27: Frequency 2 attained output 28: Current 1 attained output 29: Current 2 attained output 30: Timer attained output	0		Change in Real Time
P5-04	0xF504	Y1 Output Function Selection	31: All input over limit 32: Unloading 33: Reverse operation 34: Zero current state 35: Module temperature reached 36: Output current over limit 37: Lower frequency limit reached (also outputs when stopped) 38: Alarm output (all faults) 39: Reserved 40: Current operation time reached 41: Fault output (for free-stop faults and does not output for under-voltage)	1		Change in Real Time
P5-06	0xF506	Y2P Output Function Selection	0: Running Frequency 1: Set Frequency 2: Output current 3: Output torque (absolute value) 4: Output power 5: Output voltage 6: PULSE input 7: All 8: AI2 9: Keyboard potentiometer 10: Length 11: Count value 12: Communication setting 13: Motor speed 14: Output current 15: Bus voltage 16: Output torque (actual value)	0		Change in Real Time
P5-07	0xF507	AO1 Output Function Selection	Same as P5-06	0		Change in Real Time
P5-08	0xF508	AO2 Output Function Selection	Same as P5-06	1		Change in Real Time
P5-09	0xF509	Y2P Output Maximum Frequency	0.01kHz~100.00kHz	50.00	kHz	Change in Real Time

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P5-10	0xF50A	AO1 Zero Offset Coefficient	-100.0%~100.0%	0.0	%	Change in Real Time
P5-11	0xF50B	AO1 Gain	-10.00~10.00	1.00	-	Change in Real Time
P5-12	0xF50C	AO2 Zero Offset Coefficient	-100.0%~100.0%	20.0	%	Change in Real Time
P5-13	0xF50D	AO2 Gain	-10.00~10.00	0.8	-	Change in Real Time
P5-17	0xF511	Y2R Output Delay Time	0.0~3600.0	0.0	-	Change in Real Time
P5-18	0xF512	Relay 1 Output Delay Time	0.0~3600.0	0.0	-	Change in Real Time
P5-19	0xF513	Relay 2 Output Delay Time	0.0~3600.0	0.0	-	Change in Real Time
P5-20	0xF514	Y1 Output Delay Time	0.0~3600.0	0.0	-	Change in Real Time
P5-21	0xF515	Y2 Output Delay Time	0.0~3600.0	0.0	-	Change in Real Time
P5-22	0xF516	DO Output Terminal Effective State Selection	Units: Y2R 0: Positive logic 1: Negative logic Tens: Relay 1 0: Positive logic 1: Negative logic Hundreds: Relay 2 0: Positive logic 1: Negative logic Thousands: Y1 0: Positive logic 1: Negative logic Ten-thousands: Y2 0: Positive logic 1: Negative logic	0	-	Change in Real Time
P6-00	0xF600	Starting Method	0: Direct start 1: Speed tracking restart 2: Pre-excitation start (for asynchronous motors)	0	-	Change in Real Time
P6-01	0xF601	Speed Tracking Method	0: Start from stop frequency 1: Start from power frequency 2: Start from maximum frequency	0	-	Change in Real Time
P6-02	0xF602	Speed Tracking Speed	1~100	20	-	Unchangeable
P6-03	0xF603	Starting Frequency	0.00Hz~10.00Hz	0.00	Hz	Change in Real Time
P6-04	0xF604	Starting Frequency Holding Time	0.0s~100.0s	0.0	5	Shutdown Change
P6-05	0xF605	Starting DC Braking Current	0~100	0	-	Shutdown Change
P6-06	0xF606	Starting DC Braking Time	0.0s~100.0s	0.0	S	Shutdown Change
P6-07	0xF607	Acceleration/Deceleration Mode	0: Linear acceleration/deceleration 1, 2: Dynamic S-curve acceleration/deceleration	0	-	Shutdown Change
P6-08	0xF608	S-Curve Initial Segment Time Proportion	0.0%~100.0%	30.0	%	Shutdown Change
P6-09	0xF609	S-Curve Final Segment Time Proportion	0.09%~100.0%	30.0	%	Shutdown Change
P6-10	0xF60A	Stopping Method	0: Deceleration stop 1: Free stop	0	-	Change in Real Time
P6-11	0xF60B	Stopping DC Braking Start Frequency	0.00Hz~2000.0Hz	0.00	Hz	Change in Real Time

## Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P6-12	0xF60C	Stopping DC Braking Wait Time	0.0s~100.0	0.0	S	Change in Real Time
P6-13	0xF60D	Stopping DC Braking Current	09%~100%	50	%	Change in Real Time
P6-14	0xF60E	Stopping DC Braking Time	0.0s~100.0s	0.0	5	Change in Real Time
P6-15	0xF60F	Braking Utilization	09%~100%	100	%	Change in Real Time
P6-18	0xF612	Speed Tracking Closed Loop Current Size	30%~200%	100	%	Unchangeable
P6-21	0xF615	Demagnetization Time (Effective in SVC)	0.00s~5.00s	0.50	5	Change in Real Time
P6-23	0xF617	Overexcitation Selection	0~2	0	-	Change in Real Time
P6-24	0xF618	Overexcitation Suppression Current Value	0%~150%	0	%	Change in Real Time
P6-25	0xF619	Overexcitation Gain	1.00~2.50	1.25	-	Change in Real Time
P7-01	0xF701	JOG Key Function Selection	0: JOG invalid 1: Switch between operation panel command channel and remote command channel (terminal command channel or communication command channel) 2: Forward/reverse switching 3: Forward jog 4: Reverse jog	0	-	Shutdown Change
P7-02	0xF702	STOP/RESET Key Function	0: Only keyboard mode S/R effective 1: S/R effective in any mode	1	-	Change in Real Time
P7-03	0xF703	LED Operating Display Parameter 1	bit0: Operating frequency (Hz) bit1: Set frequency (Hz) bit2: Bus voltage (V) bit3: Output voltage (V) bit4: Output current (A) bit5: Output power (kW) bit6: Output torque (%) bit7: X input status bit8: DO output status bit9: A11 voltage (V) bit10: A12 voltage (V) bit11: - bit12: Count value bit13: Length value bit14: Load speed display bit15: PID setting	31	-	Change in Real Time

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P7-04	0xF704	LED Operating Display Parameter 2	bit0: PID feedback bit1: PLC phase bit2: PULSE input pulse frequency (kHz) bit3: Feedback frequency(Hz) bit4: Remaining operation time bit5: A11 voltage before correction (V) bit6: A12 voltage before correction (V) bit7: - bit8: Motor speed bit9: Current power-on time (Hour) bit10: Current operating time (Min) bit11: PULSE input pulse frequency (Hz) bit12: Communication set value bit13: Encoder feedback speed bit14: Main frequency X display bit15: Auxiliary frequency Y display	0	-	Change in Real Time
P7-05	0xF705	LED Stop Display Parameter	bit0: Set frequency (Hz) bit1: Bus voltage (V) bit2: DI input status bit3: DO output status bit4: A11 voltage (V) bit5: A12 voltage (V) bit6: - bit7: Count value bit8: Length value bit9: PLC phase bit10: Load speed bit11: PID setting bit12: PULSE input pulse frequency (kHz)	51	-	Change in Real Time
P7-06	0xF706	Load Transmission Ratio	0.001~65.000	1.000	-	Change in Real Time
P7-07	0xF707	Frequency Converter Module Heat Sink Temperature	0°C~999°C	0	°C	Unchangeable
P7-08	0xF708	Rectifier Bridge Heat Sink Temperature	0°C~999°C	0	°C	Unchangeable
P7-09	0xF709	Cumulative Operating Time	0h~65535h	0	h	Unchangeable
P7-10	0xF70A	Performance Version Number	0.00~655.35	0.00	-	Unchangeable
P7-11	0xF70B	Software Version Number	0.00~655.35	0.00	-	Unchangeable
P7-12	0xF70C	Load Speed Display Decimal Point Position	Units: Number of decimal points for U0-14 0: 0 decimal places 1: 1 decimal place 2: 2 decimal place Tens: Number of decimal points for U0-19/U0-29 0: 0 decimal places 1: 1 decimal place 2: 2 decimal place	20	-	Change in Real Time
P7-13	0xF70D	Cumulative Power-On Time	0h~65535h	0	h	Unchangeable
P7-14	0xF70E	Cumulative Power Consumption	0kWh~65535kWh	0	kWh	Unchangeable
P7-15	0xF70F	Temporary Performance Software Version Number	0.00~655.35	0.00	-	Unchangeable

## Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P7-16	0xF710	Temporary Function Software Version Number	0.00~655.35	0.00	-	Unchangeable
P8-00	0xF800	Jog Operating Frequency	0.00Hz~P0-10	2.00	Hz	Change in Real Time
P8-01	0xF801	Jog Acceleration Time	0.0s~6500.0s	20.0	S	Change in Real Time
P8-02	0xF802	Jog Deceleration Time	0.0s~6500.0s	20.0	S	Change in Real Time
P8-03	0xF803	Acceleration Time 2	0.0s~6500.0s	0.0	S	Change in Real Time
P8-04	0xF804	Deceleration Time 2	0.0s~6500.0s	0.0	S	Change in Real Time
P8-05	0xF805	Acceleration Time 3	0.0s~6500.0s	0.0	S	Change in Real Time
P8-06	0xF806	Deceleration Time 3	0.0s~6500.0s	0.0	S	Change in Real Time
P8-07	0xF807	Acceleration Time 4	0.0s~6500.0s	0.0	S	Change in Real Time
P8-08	0xF808	Deceleration Time 4	0.0s~6500.0s	0.0	S	Change in Real Time
P8-09	0xF809	Skip Frequency 1	0.00Hz~P0-10	0.00	Hz	Change in Real Time
P8-10	0xF80A	Skip Frequency 2	0.00Hz~P0-10	0.00	Hz	Change in Real Time
P8-11	0xF80B	Skip Frequency Amplitude	0.00Hz~P0-10	0.00	Hz	Change in Real Time
P8-12	0xF80C	Forward/Reverse Dead Time	0.0s~3000.0s	0.0	S	Change in Real Time
P8-13	0xF80D	Reverse Frequency Prohibition	0: Reverse allowed 1: Reverse prohibited	0	-	Change in Real Time
P8-14	0xF80E	Operation Mode When Frequency Is Below Lower Limit	0: Operate at lower limit frequency 1: Stop 2: Zero speed operation	0	-	Change in Real Time
P8-15	0xF80F	Droop Rate	0.00Hz~10.00Hz	0.00	Hz	Change in Real Time
P8-16	0xF810	Set Time to Reach Power-On	0h~65000h	0	h	Change in Real Time
P8-17	0xF811	Set Time to Reach Operation	0h~65000h	0	h	Change in Real Time
P8-18	0xF812	Start Protection Selection	0: No protection 1: Protected	0	-	Change in Real Time
P8-19	0xF813	Frequency Detection Value 1	0.00Hz~P0-10	50.00	Hz	Change in Real Time
P8-20	0xF814	Frequency Detection Hysteresis Value 1	0.0%~100.0%	5.0	%	Change in Real Time
P8-21	0xF815	Frequency Attainment Detection Width	0.0%~100.0%	0.0	%	Change in Real Time
P8-22	0xF816	Skip Frequency Validity During Acceleration/Deceleration	0: Ineffective 1: Effective	0	-	Change in Real Time
P8-25	0xF819	Acceleration Time 1/2 Switching Frequency Point	0.00Hz~P0-10	0.00	Hz	Change in Real Time
P8-26	0xF81A	Deceleration Time 1/2 Switching Frequency Point	0.00Hz~P0-10	0.00	Hz	Change in Real Time
P8-27	0xF81B	Terminal Jog Priority	0: Ineffective 1: Effective	0	-	Change in Real Time

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P8-28	0xF81C	Frequency Detection Value 2	0.00Hz~P0-10	50.00	Hz	Change in Real Time
P8-29	0xF81D	Frequency Detection Hysteresis Value 2	0.0%~100.0%	5.0	%	Change in Real Time
P8-30	0xF81E	Frequency Attainment Detection Value 1	0.00Hz~P0-10	50.00	Hz	Change in Real Time
P8-31	0xF81F	Frequency Attainment Detection Range 1	0.0%~100.0%	0.0	%	Change in Real Time
P8-32	0xF820	Frequency Attainment Detection Value 2	0.00Hz~P0-10	50.00	Hz	Change in Real Time
P8-33	0xF821	Frequency Attainment Detection Range 2	0.0%~100.0%	0.0	%	Change in Real Time
P8-34	0xF822	Zero Current Detection Level	0.0%~300.0%	5.0	%	Change in Real Time
P8-35	0xF823	Zero Current Detection Delay Time	0.01s~600.00s	0.10	S	Change in Real Time
P8-36	0xF824	Output Current Overlimit Value	0.09%~300.0%	200.0	%	Change in Real Time
P8-37	0xF825	Output Current Overlimit Detection Delay Time	0.00s~600.00s	0.00	S	Change in Real Time
P8-38	0xF826	Arbitrary Current Attainment 1	0.09%~300.0%	100.0	%	Change in Real Time
P8-39	0xF827	Arbitrary Current Attainment 1 Width	0.0%~300.0%	0.0	%	Change in Real Time
P8-40	0xF828	Arbitrary Current Attainment 2	0.0%~300.0%	100.0	%	Change in Real Time

# Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P8-41	0xF829	Arbitrary Current Attainment 2 Width	0.0%~300.0%	0.0	%	Change in Real Time
P8-42	0xF82A	Timer Function Selection	0: Ineffective 1: Effective	0	-	Shutdown Change
P8-43	0xF82B	Timer Operation Time Selection	0: Set by P8-44 1: All 2: AI2 3: Keyboard potentiometer	0	-	Shutdown Change
P8-44	0xF82C	Timer Operation Time	0.0min~6500.0min	0.0	min	Shutdown Change
P8-45	0xF82D	All Input Voltage Protection Lower Limit	0.00V~P6-46	3.10	V	Change in Real Time
P8-46	0xF82E	All Input Voltage Protection Upper Limit	P8-45~11.00V	6.80	V	Change in Real Time
P8-47	0xF82F	Module Temperature Attainment	0°C~100°C	75	°C	Change in Real Time
P8-48	0xF830	Heat Dissipation Fan Control	0: Fan operates when running 1: Fan always operates 2: Fan operates based on current Frequency Converter temperature	0	-	Shutdown Change
P8-49	0xF831	Wake-up Frequency	P8-51~P0-10	0.00	Hz	Change in Real Time
P8-50	0xF832	Wake-up Delay Time	0.0s~6500.0s	0.0	S	Change in Real Time
P8-51	0xF833	Sleep Frequency	0.00Hz~P8-49	0.00	Hz	Change in Real Time
P8-52	0xF834	Sleep Delay Time	0.0s~6500.0s	0.0	S	Change in Real Time
P8-53	0xF835	Current Operation Time Setting	0.0min~6500.0min	0.0	min	Shutdown Change
P8-54	0xF836	Output Power Correction Coefficient	0.0%~200.0%	100.0	%	Change in Real Time
P8-55	0xF837	Emergency Stop Deceleration Time	0.0s~6553.5s	0.0	S	Change in Real Time
P9-00	0xF900	Motor Overload Protection Selection	0: Disable 1: Enable	1	-	Change in Real Time
P9-01	0xF901	Motor Overload Protection Gain	0.20~10.00	1.00	-	Change in Real Time
P9-02	0xF902	Motor Overload Pre-alarm Coefficient	50%~100%	80	%	Change in Real Time
P9-03	0xF903	Overvoltage Stall Gain	0~100	30	-	Change in Real Time
P9-04	0xF904	Overvoltage Stall Protection Voltage	650V~800V	770	V	Change in Real Time
P9-07	0xF907	Ground Fault Protection Selection	Units: Power-on ground fault protection selection 0: Invalid 1: Effective Tens: Pre-operation ground fault protection selection 0: Invalid 1: Effective	1	-	Change in Real Time
P9-08	0xF908	Braking Unit Activation Start Voltage	650V~800V	690	V	Shutdown Change
P9-09	0xF909	Fault Auto Reset Count	0~20	0	-	Change in Real Time
P9-10	0xF90A	Fault Auto Reset Period DO Action Selection	0: No action 1: Action	0	-	Change in Real Time
P9-11	0xF90B	Fault Auto Reset Interval Time	0.1s~100.0s	1.0	S	Change in Real Time

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P9-12	0xF90C	Input Phase Loss/Contactor Engagement Protection Selection	Units: Input phase loss protection selection 0: Disable input phase loss 1: Protect when both software and hardware input phase loss conditions are met 2: Protect when software input phase loss condition is met 3: Protect when hardware input phase loss condition is met Tens: Contactor engagement protection selection 0: Disable 1: Enable	11	-	Change in Real Time
P9-13	0xF90D	Output Phase Loss Protection Selection	Units: Output phase loss protection selection 0: Disable 1: Enable Tens: Pre-operation output phase loss protection selection 0: Disable 1: Enable	1	-	Change in Real Time
P9-14	0xF90E	First Fault Type	0: No fault 1: Reserved 2: Overcurrent during acceleration 3: Overcurrent during deceleration 4: Overcurrent at constant speed 5: Overvoltage during acceleration 6: Overvoltage during deceleration 7: Overvoltage at constant speed 8: Buffer resistor overload 9: Undervoltage 10: Frequency Converter overload 11: Motor overload 12: Input phase loss 13: Output phase loss 14: Module overheating 15: External fault 16: Communication abnormality 17: Reserved 18: Current detection abnormality 19: Motor tuning abnormality 20: Reserved 21: Parameter read/write abnormality	0	-	Unchangeable
P9-15	0xF90F	Second Fault Type	22: Reserved 23: Motor Ground Fault 24: Reserved 25: Reserved 26: Operation Time Reached 27: User-Defined Fault 1 28: User-Defined Fault 2 29: Power-On Time Reached 30: Load Loss 31: PID Feedback Loss During Operation 33: Drive Board Internal Communication Receive Timeout	0	-	Unchangeable

## Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P9-16	0xF910	Third (Most Recent) Fault Type	40: Fast Current Limit Timeout 41: Motor Switching During Operation 42: Excessive Speed Deviation 43: Reserved 45: Reserved 51: Reserved 52: Continuous Current Limit 96: Control Board Internal Communication Receive Timeout	0		Unchangeable
P9-17	0xF911	Frequency at Most Recent Fault	0.00Hz~655.35Hz	0.00	Hz	Unchangeable
P9-18	0xF912	Current at Most Recent Fault	0.00A~655.35A	0.00	A	Unchangeable
P9-19	0xF913	Bus Voltage at Most Recent Fault	0.0V~6553.5V	0.0	V	Unchangeable
P9-20	0xF914	Input Terminal Status at Most Recent Fault	0~9999	0		Unchangeable
P9-21	0xF915	Output Terminal Status at Most Recent Fault	0~9999	0		Unchangeable
P9-22	0xF916	Frequency Converter Status at Most Recent Fault	0~65535	0		Unchangeable
P9-23	0xF917	Most Recent Fault Power-On Time	0min~65535min	0	min	Unchangeable
P9-24	0xF918	Most Recent Fault Operation Time	0.0min~6553.5min	0.0	min	Unchangeable
P9-27	0xF91B	Frequency at Second Fault	0.00Hz~655.35Hz	0.00	Hz	Unchangeable
P9-28	0xF91C	Current at Second Fault	0.00A~655.35A	0.00	A	Unchangeable
P9-29	0xF91D	Bus Voltage at Second Fault	0.0V~6553.5V	0.0	V	Unchangeable
P9-30	0xF91E	Input Terminal Status at Second Fault	0~9999	0		Unchangeable
P9-31	0xF91F	Output Terminal Status at Second Fault	0~9999	0		Unchangeable
P9-32	0xF920	Frequency Converter Status at Second Fault	0~65535	0		Unchangeable
P9-33	0xF921	Power-On Time at Second Fault	0min~65535min	0	min	Unchangeable
P9-34	0xF922	Operation Time at Second Fault	0min~65535min	0	min	Unchangeable
P9-37	0xF925	Frequency at First Fault	0.00Hz~655.35Hz	0.00	Hz	Unchangeable

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P9-38	0xF926	Current at First Fault	0.00A~655.35A	0.00	A	Unchangeable
P9-39	0xF927	Bus Voltage at First Fault	0.0V~6553.5V	0.0	V	Unchangeable
P9-40	0xF928	Input Terminal Status at First Fault	0~9999	0	-	Unchangeable
P9-41	0xF929	Output Terminal Status at First Fault	0~9999	0	-	Unchangeable
P9-42	0xF92A	Frequency Converter Status at First Fault	0~65535	0	-	Unchangeable
P9-43	0xF92B	Power-On Time at First Fault	0min~65535min	0	min	Unchangeable
P9-44	0xF92C	Operation Time at First Fault	0min~65535min	0	min	Unchangeable
P9-47	0xF92F	Fault Protection Action Selection 1	Units: Motor Overload (Err11) 0: Free Stop 1: Stop according to stop mode 2: Continue operation Tens: Input Phase Loss (Err12) 0: Free Stop 1: Stop according to stop mode 2: Continue operation Hundreds: Output Phase Loss (Err13) 0: Free Stop 1: Stop according to stop mode 2: Continue operation Thousands: External Fault (Err15) 0: Free Stop 1: Stop according to stop mode 2: Continue operation Ten-thousands: Communication Anomaly (Err16) 0: Free Stop 1: Stop according to stop mode 2: Continue operation	0	-	Change in Real Time
P9-48	0xF930	Fault Protection Action Selection 2	Units: Encoder/PG Card Anomaly (Err20) 0: Free stop Tens: Parameter Read/Write Anomaly (Err21) 0: Free stop 1: Stop according to stop mode Hundreds: Reserved (Err24) 0: Free Stop 1: Stop according to stop mode Thousands: Reserved (Err25) 0: Free Stop 1: Stop according to stop mode 2: Continue operation Ten-thousands: Operation Time Reached (Err26) 0: Free Stop 1: Stop according to stop mode 2: Continue operation	0	-	Change in Real Time

# Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P9-49	0xF931	Fault Protection Action Selection 3	Units: User-Defined Fault 1(Err27) 0: Free stop 1: Stop according to stop mode 2: Continue operation Tens: User-Defined Fault 2 (Err28) 0: Free stop 1: Stop according to stop mode 2: Continue operation Hundreds: Power-On Time Reached (Err29) 0: Free stop 1: Stop according to stop mode 2: Continue operation Thousands: Load Loss (Err30) 0: Free Stop 1: Stop according to stop mode 2: Jump directly to 79% of motor rated frequency and continue operation, automatically revert to set frequency if no load loss Ten-thousands: PID Loss During Operation (Err31) 0: Free stop 1: Stop according to stop mode 2: Continue operation	0		Change in Real Time
P9-50	0xF932	Fault Protection Action Selection 4	Units: Excessive Speed Deviation (Err42) 0: Free stop 1: Stop according to stop mode 2: Continue operation Tens: Motor Overspeed (Err43) 0: Free stop 1: Stop according to stop mode 2: Continue operation Hundreds: Initial Position Error (Err51) 0: Free stop 1: Stop according to stop mode 2: Continue operation	0		Change in Real Time
P9-54	0xF936	Fault Operation Frequency Selection	0: Operate at current running frequency 1: Operate at set frequency 2: Operate at upper limit frequency 3: Operate at lower limit frequency 4: Operate at abnormal standby frequency	0		Change in Real Time
P9-55	0xF937	Abnormal Standby Frequency	0.0%~100.0%	100.0	%	Change in Real Time
P9-59	0xF93B	Momentary Stop Non-Stop Function Selection	0: Ineffective 1: Decelerate 2: Decelerate to stop 3: Sway power	0		Shutdown Change

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
P9-60	0xF93C	Momentary Stop Non-Stop Recovery Voltage	80%~100%	85	%	Shutdown Change
P9-61	0xF93D	Momentary Stop Non-Stop Voltage Recovery Judgment Time	0.0s~100.0s	0.5	S	Shutdown Change
P9-62	0xF93E	Momentary Stop Non-Stop Action Voltage	60%~100%	80	%	Shutdown Change
P9-63	0xF93F	Load Loss Protection Selection	0: Invalid 1: Valid	0	-	Change in Real Time
P9-64	0xF940	Load Loss Detection Level	0.0%~100.0%	10.0	%	Change in Real Time
P9-65	0xF941	Load Loss Detection Time	0.0s~60.0s	1.0	S	Change in Real Time
P9-67	0xF943	Overspeed Detection Value	0.0%~50.0%	20.0	%	Change in Real Time
P9-68	0xF944	Overspeed Detection Time	0.0s~60.0s	1.0	S	Change in Real Time
P9-69	0xF945	Excessive Speed Deviation Detection Value	0.0%~50.0%	20.0	%	Change in Real Time
P9-70	0xF946	Excessive Speed Deviation Detection Time	0.0s~60.0s	5.0	S	Change in Real Time
P9-71	0xF947	Momentary Stop Non-Stop Gain Kp	0~100	40	-	Change in Real Time
P9-72	0xF948	Momentary Stop Non-Stop Integral Coefficient Ki	0~100	30	-	Change in Real Time
P9-73	0xF949	Momentary Stop Non-Stop Action Deceleration Time	0.0s~300.0s	20.0	S	Change in Real Time
P9-74	0xF94A	Sway Power Suppression Time	0.1s~600.0s	0.5	S	Change in Real Time
PA-00	0xFA00	PID Setpoint Source	0: Function code PA-01 setting 1: All 2: AI2 3: Keyboard potentiometer 4: PULSE setting 5: Communication setting 6: Multi-step command setting	0	-	Change in Real Time
PA-01	0xFA01	PID Numeric Setpoint	0.09%~100.0%	50.0	%	Change in Real Time
PA-02	0xFA02	PID Feedback Source	0: AI1 1: AI2 2: Keyboard potentiometer 3: AI1-AI2 4: Pulse setting 5: Communication setting 6: AI1+AI2 7: MAX(AI1, AI2) 8: MIN(AI1, AI2)	0	-	Change in Real Time
PA-03	0xFA03	PID Action Direction	0: Positive action 1: Negative action	0	-	Change in Real Time
PA-04	0xFA04	PID Setpoint Feedback Range	0~65535	1000	-	Change in Real Time
PA-05	0xFA05	Proportional Gain Kp1	0.0~1000.0	20.0	-	Change in Real Time

# Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
PA-06	0xFA06	Integral Time T <sub>i1</sub>	0.01s~10.00s	2.00	S	Change in Real Time
PA-07	0xFA07	Derivative Time T <sub>d1</sub>	0.000s~10.000s	0.000	S	Change in Real Time
PA-08	0xFA08	PID Reversal Cutoff Frequency	0.00Hz~2000.0Hz	0.00	Hz	Change in Real Time
PA-09	0xFA09	PID Deviation Limit	0.0%~100.0%	0.0	%	Change in Real Time
PA-10	0xFA0A	PID Differential Limit	0.00%~100.00%	0.10	%	Change in Real Time
PA-11	0xFA0B	PID Setpoint Change Time	0.00s~650.00s	0.00	S	Change in Real Time
PA-12	0xFA0C	PID Feedback Filter Time	0.00s~60.00s	0.00	S	Change in Real Time
PA-13	0xFA0D	PID Output Filter Time	0.00s~60.00s	0.00	S	Change in Real Time
PA-15	0xFA0F	Proportional Gain K <sub>p2</sub>	0.0~1000.0	20.0	-	Change in Real Time
PA-16	0xFA10	Integral Time T <sub>i2</sub>	0.01s~10.00s	2.00	S	Change in Real Time
PA-17	0xFA11	Derivative Time T <sub>d2</sub>	0.000s~10.000s	0.000	S	Change in Real Time
PA-18	0xFA12	PID Parameter Switching Condition	0: No switching 1: Switch through X terminal 2: Automatic switching based on deviation 3: Automatic switching based on operating frequency	0		Change in Real Time
PA-19	0xFA13	PID Parameter Switching Deviation 1	0.0%~100.0%	20.0	%	Change in Real Time
PA-20	0xFA14	PID Parameter Switching Deviation 2	0.0%~100.0%	80.0	%	Change in Real Time
PA-21	0xFA15	PID Initial Value	0.0%~100.0%	0.0	%	Change in Real Time
PA-22	0xFA16	PID Initial Value Holding Time	0.00s~650.00s	0.00	S	Change in Real Time
PA-23	0xFA17	Maximum Value of Two Output Deviations	0.00%~100.00%	1.00	%	Change in Real Time
PA-24	0xFA18	Minimum Value of Two Output Deviations	0.00%~100.00%	1.00	%	Change in Real Time
PA-25	0xFA19	PID Integral Attribute	Units: Integral Separation 0: Invalid 1: Valid Tens: Stop Integration After Output Reaches Limit Value 0: Continue integration 1: Stop integration	0	-	Change in Real Time
PA-26	0xFA1A	PID Feedback Loss Detection Value	0.0%~100.0%	0.0	%	Change in Real Time
PA-27	0xFA1B	PID Feedback Loss Detection Time	0.0s~20.0s	0.0	S	Change in Real Time
PA-28	0xFA1C	PID Operation at Stop	0: No operation at stop 1: Operate at stop	0	-	Change in Real Time
PB-05	0xFB05	Set Length	0m~65535m	1000	m	Change in Real Time
PB-06	0xFB06	Actual Length	0m~65535m	0	m	Change in Real Time
PB-07	0xFB07	Pulses per Meter	0.1~6553.5	100.0		Change in Real Time

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
PB-08	0xFB08	Set Count Value	1~65535	1000	-	Change in Real Time
PB-09	0xFB09	Specified Count Value	1~65535	1000	-	Change in Real Time
PC-00	0xFC00	Multi-Step Command 0	-100.09%~100.0%	0.0	%	Change in Real Time
PC-01	0xFC01	Multi-Step Command 1	-100.0%~100.0%	0.0	%	Change in Real Time
PC-02	0xFC02	Multi-Step Command 2	-100.096~100.0%	0.0	%	Change in Real Time
PC-03	0xFC03	Multi-Step Command 3	-100.0%~100.0%	0.0	%	Change in Real Time
PC-04	0xFC04	Multi-Step Command 4	-100.096~100.0%	0.0	%	Change in Real Time
PC-05	0xFC05	Multi-Step Command 5	-100.09%~100.0%	0.0	%	Change in Real Time
PC-06	0xFC06	Multi-Step Command 6	-100.09%~100.0%	0.0	%	Change in Real Time
PC-07	0xFC07	Multi-Step Command 7	-100.0%~100.0%	0.0	%	Change in Real Time
PC-08	0xFC08	Multi-Step Command 8	-100.0%~100.0%	0.0	%	Change in Real Time
PC-09	0xFC09	Multi-Step Command 9	-100.0%~100.0%	0.0	%	Change in Real Time
PC-10	0xFC0A	Multi-Step Command 10	-100.0%~100.0%	0.0	%	Change in Real Time
PC-11	0xFC0B	Multi-Step Command 11	-100.09%~100.0%	0.0	%	Change in Real Time
PC-12	0xFC0C	Multi-Step Command 12	-100.0%~100.0%	0.0	%	Change in Real Time
PC-13	0xFC0D	Multi-Step Command 13	-100.0%~100.0%	0.0	%	Change in Real Time
PC-14	0xFC0E	Multi-Step Command 14	-100.0%~100.0%	0.0		Change in Real Time
PC-15	0xFC0F	Multi-Step Command 15	-100.0%~100.0%	0.0	%	Change in Real Time
PC-16	0xFC10	Simple PLC Operating Mode	0: Stop after single run completion 1: Maintain final value after single run completion 2: Continuous loop	0	-	Change in Real Time
PC-17	0xFC11	Simple PLC Power-Off Memory Selection	Units: Power-off memory selection 0: Do not remember on power-off 1: Remember on power-off Tens: Stop memory selection 0: Do not remember on stop 1: Remember on stop	0	-	Change in Real Time
PC-18	0xFC12	PLC Segment 0 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-19	0xFC13	PLC Segment 0 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-20	0xFC14	PLC Segment 1 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time

## Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
PC-21	0xFC15	PLC Segment 1 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-22	0xFC16	PLC Segment 2 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-23	0xFC17	PLC Segment 2 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-24	0xFC18	PLC Segment 3 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-25	0xFC19	PLC Segment 3 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-26	0xFC1A	PLC Segment 4 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-27	0xFC1B	PLC Segment 4 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-28	0xFC1C	PLC Segment 5 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-29	0xFC1D	PLC Segment 5 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-30	0xFC1E	PLC Segment 6 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-31	0xFC1F	PLC Segment 6 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-32	0xFC20	PLC Segment 7 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-33	0xFC21	PLC Segment 7 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-34	0xFC22	PLC Segment 8 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-35	0xFC23	PLC Segment 8 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-36	0xFC24	PLC Segment 9 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-37	0xFC25	PLC Segment 9 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-38	0xFC26	PLC Segment 10 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-39	0xFC27	PLC Segment 10 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time
PC-40	0xFC28	PLC Segment 11 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-41	0xFC29	PLC Segment 11 Acceleration/Deceleration Time Selection	0~3	0	-	Change in Real Time

Parameter s	Communicatio n Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
PC-42	0xFC2A	PLC Segment 12 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-43	0xFC2B	PLC Segment 12 Acceleration/Decelerati on Time Selection	0~3	0	-	Change in Real Time
PC-44	0xFC2C	PLC Segment 13 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-45	0xFC2D	PLC Segment 13 Acceleration/Decelerat ion Time Selection	0~3	0	-	Change in Real Time
PC-46	0xFC2E	PLC Segment 14 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-47	0xFC2F	PLC Segment 14 Acceleration/Decelerat ion Time Selection	0~3	0	-	Change in Real Time
PC-48	0xFC30	PLC Segment 15 Operation Time	0.0s(h)~6500.0s(h)	0.0	s(h)	Change in Real Time
PC-49	0xFC31	PLC Segment 15 Acceleration/Decelerat ion Time Selection	0~3	0	-	Change in Real Time
PC-50	0xFC32	PLC Operation Time Unit	0: s (seconds) 1: h (hours)	0	-	Change in Real Time
PC-51	0xFC33	Multi-Step Command 0 Set Mode	0: Set by function code (PC-00) 1: A11 2: A12 3: Keyboard potentiometer 4: PULSE pulse 5: PID 6: Preset frequency (PO-08)	0	-	Change in Real Time
PD-00	0xFD00	Baud Rate	Units: Modbus 0: 300bps 1: 600bps 2: 1200bps 3: 2400bps 4: 4800bps 5: 9600bps 6: 19200bps 7: 38400bps 8: 57600bps 9: 115200bps Tens: Reserved Hundreds: Reserved Thousands: Reserved	5005	-	Change in Real Time
PD-01	0xFD01	Modbus Data Format	0: No parity (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity (8-N-1)	0	-	Change in Real Time
PD-02	0xFD02	Local Address	0~247	1	-	Change in Real Time
PD-03	0xFD03	Modbus Response Delay	0ms-20m	2	ms	Change in Real Time
PD-04	0xFD04	Communication Timeout	0.05-60.0	0.0	S	Change in Real Time
PD-05	0xFD05	Data Transmission Format Selection	Units: Modbus 0: Non-standard Modbus protocol 1: Standard Modbus protocol Tens: Reserved	31	-	Change in Real Time
PD-06	0xFD06	Communication Read Current Resolution	0: 0.01A (Effective for ≤55KW) 1: 0.1A	0	-	Change in Real Time

# Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
PP-00	0x1F00	User Password	0~65535	0	-	Change in Real Time
PP-01	0x1F01	Parameter Initialization	0: No operation 1: Restore factory parameters, excluding motor parameters 2: Clear record information 3: Restore factory parameters, including motor parameters	0	-	Shutdown Change
PP-02	0x1F02	Functional Parameter Group Display Selection	Units: U group display selection 0: Do not display 1: Display Tens: A group display selection 0: Do not display 1: Display	11	-	Shutdown Change
PP-03	0x1F03	Custom Parameter Group Display Selection	Units: User-customized parameter group display selection 0: Do not display 1: Display Tens: User-changed parameter group selection 0: Do not display 1: Display	0	-	Change in Real Time
PP-04	0x1F04	Parameter Modification Attribute	0: Modifiable 1: Not modifiable	0	-	Change in Real Time
A0-00	0xA000	Speed/Torque Control Mode Selection	0: Speed control 1: Torque control	0	-	Change in Real Time
A0-01	0xA001	Torque Setting Selection in Torque Control Mode	0: Numeric setting (A0-03) 1: AI1 2: AI2 3: Keyboard potentiometer 4: PULSE pulse 5: Communication setting 6: MIN(AI1, AI2) 7: MAX(AI1, AI2)	0	-	Change in Real Time
A0-02	0xA002	Friction Torque	0%~200.0%	5.0	%	Change in Real Time
A0-03	0xA003	Torque Numeric Setting in Torque Control Mode	-200.09%~200.0%	150.0	%	Change in Real Time
A0-04	0xA004	Friction Torque Frequency Range	0~Maximum frequency	0.00	Hz	Change in Real Time
A0-05	0xA005	Maximum Frequency for Forward Torque Control	0.00Hz~2000.0Hz	0.00	Hz	Change in Real Time
A0-06	0xA006	Maximum Frequency for Reverse Torque Control	0.00Hz~2000.0Hz	0.00	Hz	Change in Real Time
A0-07	0xA007	Torque Rise Filter Time	0.00s~650.00s	0.00	S	Change in Real Time
A0-08	0xA008	Torque Fall Filter Time	0.00s~650.00s	0.00	S	Change in Real Time

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
A5-00	0xA500	DPWM Switching Upper Limit Frequency	5.00Hz~2000.0Hz	8.00	Hz	Change in Real Time
A5-01	0xA501	PWM Modulation Method	0: Asynchronous modulation 1: Synchronous modulation	0	-	Change in Real Time
A5-02	0xA502	Dead Zone Compensation Mode Selection	0: No compensation 1: Compensation Mode 1	1	-	Change in Real Time
A5-03	0xA503	Random PWM Depth	0~10	0	-	Change in Real Time
A5-04	0xA504	Per-Wave Current Limit Enable	0: Not enabled 1: Enabled	1	-	Change in Real Time
A5-05	0xA505	Overmodulation Coefficient	100%~110%	105	%	Shutdown Change
A5-06	0xA506	Undervoltage Point Setting	210.0V~420.0V	350.0	V	Change in Real Time
A5-08	0xA508	Low-Speed Carrier Frequency Upper Limit	0.0kHz~8.0kHz	0.0	kHz	Change in Real Time
A5-09	0xA509	Overvoltage Point Setting	650.0V~820.0V	820.0	V	Shutdown Change
AC-00	0xAC00	AI1 Actual Voltage 1	-10.000V~10.000V	0.000	V	Change in Real Time
AC-01	0xAC01	AI1 Display Voltage 1	-10.000V~10.000V	0.000	V	Change in Real Time
AC-02	0xAC02	AI1 Actual Voltage 2	-10.000V~10.000V	0.000	V	Change in Real Time
AC-03	0xAC03	AI1 Display Voltage 2	-10.000V~10.000V	0.000	V	Change in Real Time
AC-04	0xAC04	AI2 Actual Voltage 1	-10.000V~10.000V	0.000	V	Change in Real Time
AC-05	0xAC05	AI2 Display Voltage 1	-10.000V~10.000V	0.000	V	Change in Real Time
AC-06	0xAC06	AI2 Actual Voltage 2	-10.000V~10.000V	0.00	V	Change in Real Time
AC-07	0xAC07	AI2 Display Voltage 2	-10.000V~10.000V	0.000	V	Change in Real Time
AC-12	0xAC0C	AO1 Target Voltage 1	-10.000V~10.000V	0.000	V	Change in Real Time
AC-13	0xAC0D	AO1 Actual Voltage 1	-10.000V~10.000V	0.000	V	Change in Real Time
AC-14	0xAC0E	AO1 Target Voltage 2	-10.000V~10.000V	0.000	V	Change in Real Time
AC-15	0xAC0F	AO1 Actual Voltage 2	-10.000V~10.000V	0.000	V	Change in Real Time
AC-16	0xAC10	AO2 Target Voltage 1	-10.000V~10.000V	0.000	V	Change in Real Time
AC-17	0xAC11	AO2 Actual Voltage 1	-10.000V~10.000V	0.000	V	Change in Real Time
AC-18	0xAC12	AO2 Target Voltage 2	-10.000V~10.000V	0.000	V	Change in Real Time
AC-19	0xAC1B	AO2 Actual Voltage 2	-10.000V~10.000V	0.000	V	Change in Real Time
U0-00	0x7000	Operating Frequency (Hz)	0.00Hz~2000.0Hz	0.00	Hz	Unchangeable
U0-01	0x7001	Set Frequency (Hz)	0.00Hz~2000.0Hz	0.00	Hz	Unchangeable
U0-02	0x7002	Bus Voltage (V)	0.0V~3000.0V	0.0	V	Unchangeable
U0-03	0x7003	Output Voltage (V)	0V~1140V	0	V	Unchangeable
U0-04	0x7004	Output Current (A)	0.00A~655.35A	0.00	A	Unchangeable
U0-05	0x7005	Output Power (kW)	0.0kW~3276.7kW	0.0	kW	Unchangeable

# Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
U0-06	0x7006	Output Torque (%)	-200.0%~200.0%	0.0	%	Unchangeable
U0-07	0x7007	X Input Status	0~32767	0	-	Unchangeable
U0-08	0x7008	DO Output Status	0~32767	0	-	Unchangeable
U0-09	0x7009	A11 Voltage (V)	-10.57V~10.57V	0.00	V	Unchangeable
U0-10	0x700A	A12 Voltage (V)	-10.57V~10.57V	0.00	V	Unchangeable
U0-11	0x700B	-	-	-	-	-
U0-12	0x700C	Count Value	0~65535	0	-	Unchangeable
U0-13	0x700D	Length Value	0~65535	0	-	Unchangeable
U0-14	0x700E	Load Speed Display	0rpm~65535rpm	0	rpm	Unchangeable
U0-15	0x700F	PID Setting	0~65535	0	-	Unchangeable
U0-16	0x7010	PID Feedback	0~65535	0	-	Unchangeable
U0-17	0x7011	PLC Stage	0~15	0	-	Unchangeable
U0-18	0x7012	PULSE Input Pulse Frequency (kHz)	0.00kHz~100.00kHz	0.00	kHz	Unchangeable
U0-19	0x7013	Feedback Speed (Hz)	5000.00Hz~5000.00Hz	0.00	Hz	Unchangeable
U0-20	0x7014	Remaining Operating Time	0.0min~6500.0min	0.0	min	Unchangeable
U0-21	0x7015	A11 Pre-correction Voltage	-10.570V~10.570V	0.000	V	Unchangeable
U0-22	0x7016	A12 Pre-correction Voltage	-10.570V~10.570V	0.000	V	Unchangeable
U0-23	0x7017	Keypad Potentiometer Pre-correction Voltage	-10.570V~10.570V	0.000	V	Unchangeable
U0-24	0x7018	Motor Speed (RPM)	0rpm~65535rpm	0	rpm	Unchangeable
U0-25	0x7019	Current Power-on Time	0min~65535min	0	min	Unchangeable
U0-26	0x701A	Current Operating Time	0.0min~6553.5min	0.0	min	Unchangeable
U0-27	0x701B	PULSE Input Pulse Frequency (Hz)	0Hz~65535Hz	0	Hz	Unchangeable
U0-28	0x701C	Communication Set Value	-100.00%~100.00%	0.00	%	Unchangeable
U0-29	0x701D	Encoder Feedback Speed (Hz)	2000.0Hz~2000.0Hz	0.00	Hz	Unchangeable
U0-30	0x701E	Main Frequency X Display	-2000.0Hz~2000.0Hz	0.00	Hz	Unchangeable
U0-31	0x701F	Auxiliary Frequency Y Display	-2000.0Hz~2000.0Hz	0.00	Hz	Unchangeable
U0-32	0x7020	View Any Memory Address Value	0~65535	0	-	Unchangeable
U0-33	0x7021	Synchronous Machine Rotor Position	0.0°~359.9°	0.0	°	Unchangeable
U0-34	0x7022	Motor Temperature Value	0°C~200°C	0	°C	Unchangeable
U0-35	0x7023	Target Torque (%)	-200.0%~200.0%	0.0	%	Unchangeable
U0-36	0x7024	Resolver Position	0~4095	0	-	Unchangeable
U0-37	0x7025	Power Factor Angle	0.0°~6553.5°	0.0	°	Unchangeable
U0-38	0x7026	ABZ Position	0~65535	0	-	Unchangeable
U0-39	0x7027	VP Separation Target Voltage	0V~65535V	0	V	Unchangeable
U0-40	0x7028	VP Separation Output Voltage	0V~65535V	0	V	Unchangeable
U0-41	0x7029	X Input Status Visual Display	0~65535	0	-	Unchangeable

## Specification Table

Parameters	Communication Address	Parameter Name	Setting Value	Default Value	Unit	Change Method
U0-42	0x702A	DO Input Status Visual Display	0~65535	0	-	Unchangeable
U0-43	0x702B	X Function Status Visual Display 1	0~65535	0	-	Unchangeable
U0-44	0x702C	X Function Status Visual Display 2	0~65535	0	-	Unchangeable
U0-45	0x702D	Fault Information	0~65535	0	-	Unchangeable
U0-58	0x703A	Motor Rotation Count	0~65535	0	-	Unchangeable
U0-59	0x703B	Set Frequency (%)	-100.00%~100.00%	0.00	%	Unchangeable
U0-60	0x703C	Operating Frequency (%)	-100.00%~100.00%	0.00	%	Unchangeable
U0-61	0x703D	Frequency Converter Status	0~65535	0	-	Unchangeable
U0-62	0x703E	Current Fault Code	0~99	0	-	Unchangeable
U0-63	0x703F	Point-to-Point Communication Torque Value	-100.0%~100.0%	0.0	%	Unchangeable
U0-64	0x7040	Number of Slave Stations in Master-Slave Control	0~63	0	-	Unchangeable
U0-65	0x7041	Torque Limit (%)	-200.0%~200.0%	0.0	%	Unchangeable
U0-66	0x7042	Communication Expansion Card Model	0~65535	0	-	Unchangeable
U0-67	0x7043	Communication Expansion Card Software Version	0.00~655.35	0.00	-	Unchangeable
U0-68	0x7044	Communication Reading Frequency Converter Status	0~65535	0	-	Unchangeable
U0-69	0x7045	Transmission DP Card Speed /0.01Hz	0.00Hz~655.35Hz	0.00	Hz	Unchangeable
U0-70	0x7046	Transmission DP Card Speed/RPM	-32767rpm~32767rpm	0	rpm	Unchangeable
U0-71	0x7047	Communication Card Specific Current Display (A)	0.0A~6553.5A	0.0	A	Unchangeable
U0-72	0x7048	Communication Card Error Status	0~65535	0	-	Unchangeable
U0-73	0x7049	Motor Serial Number	0~65535	0	-	Unchangeable
U0-74	0x704A	Frequency Converter Output Torque	0.09%~6553.5%	0.0	%	Unchangeable
U0-75	0x704B	Reserved	0~65535	0	-	Unchangeable
U0-76	0x704C	Accumulated Power Consumption Low Word	0~6553.5	0.0	-	Unchangeable
U0-77	0x704D	Accumulated Power Consumption High Word	0~65535	0	-	Unchangeable
U0-78	0x704E	Line Speed	0m/min~65535m/min	0	m/min	Unchangeable

## Appendix: MK80 Series Frequency Converter Modbus Communication Protocol

The MK80 series frequency converters provide an RS485 communication interface and support the Modbus communication protocol. Users can realize centralized control through a computer or PLC, set frequency converter operating commands through this communication protocol, modify or read function code parameters, and read the frequency converter's operating status and fault information, etc.

### 1.1 Protocol Content

This serial communication protocol defines the content and format of information transmitted in serial communication. It includes: master polling (or broadcasting) format; the master's coding method, which includes: the function code of the requested action, transmission data, and error checking, etc. The slave's response also uses the same structure, including: action confirmation, return data, and error checking, etc. If the slave encounters an error while receiving information or cannot complete the action requested by the master, it will organize a fault message as a response to the master.

**Application Method** The frequency converter is connected to a "single master-multiple slave" PC/PLC control network with an RS485 bus.

**Bus Structure**

(1) **Interface Method**

RS485 hardware interface

(2) **Transmission Method** Asynchronous serial,

half-duplex transmission. At any given moment, only the master or a slave can send data while the other can only receive data. Data in serial asynchronous communication is transmitted frame by frame in the form of messages.

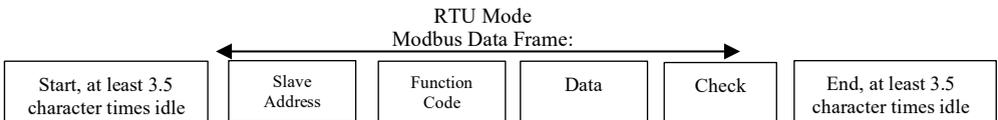
(3) **Topology Structure**

Single master-multiple slave system. The setting range of the slave address is 1~247, with 0 being the broadcast communication address. Each slave address in the network must be unique.

### 1.2 Protocol Description

The MK80 series frequency converter communication protocol is an asynchronous serial master-slave Modbus communication protocol, where only one device (the master) in the network can establish the protocol (referred to as "query/command"). Other devices (slaves) can only provide data in response to the master's "query/command" or take appropriate action based on the master's "query/command". In this context, the host refers to Personal Computers (PC), Industrial Control Equipment, or Programmable Logic Controllers (PLC), etc., while the slave refers to MK series frequency converters. The host can communicate individually with a particular slave or broadcast to all subordinate slaves. For each direct host "query/command," the slave must return a message (referred to as a response); for broadcast messages issued by the host, the slave need not feedback a response.

The communication data structure of MK80 series frequency converters with Modbus protocol is as follows:



The entire message frame must be transmitted as a continuous stream. If there is a pause of more than 1.5 character times before the frame is complete, the receiving device will discard the incomplete message and assume the next byte is the start of a new message's address field. Similarly, if a new message starts within less than 3.5 character times after the previous message, the receiving device will consider it a

continuation of the previous message. This will lead to an error because the last CRC field's value will likely be incorrect.

RTU Frame Format:

Frame Head START	3.5 character times
Slave Address ADR	Communication address: 1~247
Command Code CMD	03: Read slave parameters; 06: Write slave parameters
Data Content Data(N-1)	Data Content includes Function Code parameter Address, number of parameters, parameter values, etc.
Data Content Data(N-2)	
—	
Data Content DATA0	
CRCCHK high	Check value: CRC value
CRCCHK low	
END	3.5 character times

CMD (Command Instruction) and DATA (Data Word Description):

Command code 03H reads N words (Word), with a maximum of 12 words. For example, for the frequency converter with slave address 01, it continuously reads 2 values starting from address F002.

Host Command Information:

ADR	01H
CMD	03H
Starting Address High	FOH
Starting Address Low	02H
Register Count High	
Register Count Low	
CRC CHK Low	
CRC CHK High	

Slave Response Information

When PD-05 is set to the unit digit as 0:

ADR	01H
CMD	03H
Byte Count High	00H
Byte Count Low	04H
Data F002H High	00H
Data F002H Low	00H
Data F003H High	00H
Data F003H Low	01H
CRC CH K Low	CRC CHK value pending calculation
CRC CHK High	

Appendix

When PD-05 is set to the tens digit as 1:

ADR	01H
CMD	03H
Byte Count	04H
Data F002H High	00H
Data F002H Low	00H
Data F003H High	00H
Data F003H Low	01H
CRCCHK low	CRC CHK value pending calculation
CRCCHK high	

Command code: 06H writes a word, for example, writing 5000 (1388H) to the F00AH address of the Frequency Converter at slave address 02H.

Host Command Information:

ADR	02H
CMD	06H
Data Address High	FOH
Data Address Low	0AH
Data Content High	13H
Data Content Low	88H
CRC CH K Low	CRC CHK value pending calculation
CRCCHK high	

Slave Response Information:

ADR	02H
CMD	06H
Data Address High	FOH
Data Address Low	OAH
Data Content High	13H
Data Content Low	88H
CRCCHK low	CRC CHK value pending calculation
CRC CHK High	

Verification Method - CRC Verification Method: CRC (Cyclical Redundancy Check) uses RTU frame format, including an error detection field based on the CRC method. The CRC field checks the entire message content. It is two bytes long, containing a 16-bit binary value. The transmitting device calculates this value and adds it to the message. The receiving device recalculates the CRC for the received message and compares it with the received CRC field value. If the two CRC values are not equal, it indicates an error in transmission.

CRC begins with a preset value of 0xFFFF, then a procedure is called that processes consecutive 8-bit bytes from the message against the current value in the register. Only the 8-bit data of each character is significant for CRC, while start, stop, and parity bits are not.

In the CRC generation process, each 8-bit character is exclusively Ored (XOR) with the register content, shifted towards the least significant bit, and the most significant bit is filled with 0. The LSB is extracted and checked; if it is 1, the register is Xored with a preset value; if 0, it's not. This process is repeated 8 times. After completing the last bit (8th bit), the next 8-bit byte is Xored with the current register value. The final value in the register after all bytes are processed is the CRC value of the message.

When added to the message, the low byte is added first, followed by the high byte. A simple function for CRC 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;j<8;i++)
        {
            if(crc_value&0x0001)
            {
                crc_value=(crc_value>>1)^0xa001;
            }
            Else
            {
                crc_value =crc_value>>1
            }
        }
    }
}
return(crc_value);
}
```

The address definition of communication parameters.

This part is the content of communication used to control the operation of the frequency converter, the status of the frequency converter, and the setting of related parameters.

Read and write function code parameters (some function codes are unchangeable, for manufacturer use or monitoring only): The addressing rule for function code parameters is as follows:

The parameter address is represented by the function code group number and identifier as per the addressing rule.

High byte: F0~FF (P group), A0~AF (A group), 70~7F (U0 group). Low byte: 00~FF

For example: P3-12 is represented as F30C;

**Note: PF group parameters are neither readable nor changeable; U0 group parameters are only readable and not changeable.**

Some parameters cannot be changed while the frequency converter is running; some parameters are unchangeable regardless of the frequency converter's state. When changing function code parameters, also consider the parameter's range, unit, and related instructions.

For P group parameters, to activate the function, change the high F of the function code address to 0.  
 For A group parameters, to activate the function, change the high A of the function code address to 4.  
 The corresponding function code addresses are represented as follows: High byte: 00~0F (P group), 40~4F (A group) Low byte:

00~FF.

For example:

Function code P3-12, not stored to EEPROM, is represented as 030C; function code A0-05, not stored to EEPROM, is represented as 4005; this address representation can only be used for writing to RAM, not for reading, as it is an invalid address for reading. For all parameters, command code 07H can also be used to implement the function.

Function code P3-12 stored to EEPROM is represented as F30C; A0-05 stored to EEPROM is represented as A005.

**Additionally, frequent storing to EEPROM can reduce the lifespan of EEPROM. Therefore, some function codes in communication mode do not need to be stored; altering the values in RAM is sufficient.**

Stop/Run parameter part:

Parameter Address	Parameter Description
1000	*Communication Set Value (-10000~10000) (Decimal)
1001	Operating Frequency
1002	Bus Voltage
1003	Output Voltage
1004	Output Current
1005	Output Power
1006	Output Torque
1007	Operating Speed
1008	X Input Flag
1009	DO Output Flag
100A	A11 Voltage
100B	A12 Voltage
100C	-
100D	Count Value Input
100E	Length Value Input
100F	Load Speed
1010	PID Setting
1011	PID Feedback
1012	PLC Step
1013	PULSE Input Pulse Frequency, unit 0.01kHz
1014	Feedback Speed, unit 0.1Hz
1015	Remaining Operating Time
1016	A11 Pre-correction Voltage
1017	A12 Pre-correction Voltage
1018	-

Parameter Address	Parameter Description
1019	Line Speed
101A	Current Power-on Time
101B	Current Operating Time
101C	PULSE Input Pulse Frequency, unit 1Hz
101D	Communication Set Value
101E	Actual Feedback Speed
101F	Main Frequency X Display
1020	Auxiliary Frequency Y Display

**Note:**

The communication set value is a percentage of a relative value, with 1000 corresponding to 100.00%, and -10000 corresponding to -100.00%. For frequency dimension data, this percentage is relative to the maximum frequency (P0-10). For torque dimension data, this percentage relates to the upper limit digital setting for the first, second, and third motors respectively (P2-10, A2-48, A3-48).

Control command input to the frequency converter: (Write only)

Command Word Address	Command Function
2000	0001: Forward operation
	0002: Reverse operation
	0003: Jog forward
	0004: Jog reverse
	0005: Free stop
	0006: Deceleration stop
	0007: Fault reset

Read frequency converter status: (Read only)

Status Word Address	Status Word Function
3000	0001: Forward operation
	0002: Reverse operation
	0003: Stop

Parameter lock password verification: (If the return is 8888H, it indicates password verification passed)

Password Address	Input password content
1F00	****

Command Address	Command Content
2001	BIT0: Y1 output control BIT1: Reserved BIT2: Relay 1 output control BIT3: Relay 2 output control BIT4: Y2 output control (Y2 terminal for collector open circuit output) BIT5:VDO1 BIT6:VDO2 BIT7:VDO3 BIT8:VDO4 BIT9:VDO5

Analog output AO1 control: (Write only)

Command Address	Command Content
2002	0~7FFF represents 0%~100%

Analog output AO2 control: (Write only)

Command Address	Command Content
2003	0~7FFF represents 0%~100%

Pulse (PULSE) output control: (Write only)

Command Address	Command Content
2004	0~7FFF represents 0%~100%

Frequency Converter fault description:

Frequency Converter Fault Address	Frequency Converter Fault Information
8000	0000: No fault 0001: Reserved 0002: Overcurrent during acceleration 0003: Overcurrent during deceleration 0004: Overcurrent at constant speed 0005: Overvoltage during acceleration 0006: Overvoltage during deceleration 0007: Overvoltage at constant speed 0008: Buffer resistor overload fault 0009: Under-voltage fault

Frequency Converter Fault Address	Frequency Converter Fault Information
8000	000A: Frequency converter overload 000B: Motor overload 000C: Input phase loss 000D: Output phase loss 000E: Module overheating 000F: External fault 0010: Communication abnormality 0011: Contactor abnormality 0012: Current detection fault 0013: Motor tuning fault 0014: Encoder/PG card fault 0015: Parameter read/write anomaly 0016: Frequency converter hardware fault 0017: Motor ground short-circuit fault 0018: Reserved 0019: Reserved 001A: Operating time reached 001B: User-defined fault 1 001C: User-defined fault 2 001D: Power-on time reached 001E: Load drop 001F: Operating PID feedback lost 0028: Rapid current limit timeout fault 0029: Motor switch fault during operation 002A: Excessive speed deviation 002B: Motor overspeed 002D: Motor overtemperature 005A: Encoder line count setting error 005B: Encoder not connected 005C: Initial position error 005E: Speed feedback error
8001	0000: No fault 0001: Password error 0002: Command code error 0003: CRC verification error 0004: Invalid address 0005: Invalid parameter 0006: Parameter change invalid 0007: System locked 0008: EEPROM operation in progress

Pd Group Communication Parameter Description

Pd-00	Baud Rate	Factory Value	5005
	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 sets the data transfer rate between the master device and the frequency converter. Note that the baud rate set on the master device and the frequency converter must match; otherwise, communication cannot occur. The higher the baud rate, the faster the communication speed.

Pd-01	Data Format	Factory Value	0
	Setting Range	0: No parity: Data format <8,N,2> 1: Even parity: 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 on the master device and the frequency converter must be consistent; otherwise, communication cannot occur.

Pd-02	Local Address	Factory Value	1
	Setting Range	1~247, 0 as broadcast address	

When the local address is set to 0, it acts as a broadcast address, enabling the broadcasting function from the master device.

The local address is unique (except for the broadcast address), which is essential for facilitating point-to-point communication between the master device and the frequency converter.

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

Response delay refers to the interval between the end of data reception by the frequency converter and the start of data transmission to the master device. If the response delay is less than the system processing time, the system processing time prevails. If the response delay is longer than the system processing time, the system waits after processing the data until the response delay time has elapsed before sending data to the master device.

Pd-04	Communication Timeout	Factory Value	0.0 s
	Setting Range	0.0s (Invalid) 0.1~60.0s	

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

If set to a valid value and the interval between one communication and the next exceeds the set communication timeout, the system will report a communication fault error (Err16). Typically, this is set to invalid. However, in a system with continuous communication, setting this parameter can monitor communication status.

Pd-05	Communication Protocol Selection	Factory Value	31
	Setting Range	Unit: MODBUS 1: Selects standard Modbus protocol. 0: When reading commands, the slave returns one more byte than the standard Modbus protocol; refer to the "(4) Communication Data Structure" section of this protocol. Tens: Reserved	

Pd-05=0: When reading commands, the slave returns one more byte than the standard Modbus protocol; refer to "Appendix Mk500 Modbus Communication Protocol (4) Communication Data Structure".

Pd-05=1: Selects standard Modbus protocol.

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

Used to determine the output unit of the current value when the communication reads the output current.



# **MOKWEIR** Warranty Agreement

- 1) The warranty period for this product is eighteen months (based on the barcode information on the machine body). During the warranty period, under normal usage as per the user manual, if the product malfunctions or is damaged, our company is responsible for free repairs.
- 2) During the warranty period, if the product is damaged due to the following reasons, the manufacturer will not bear the repair costs. If repair is required, the manufacturer will charge a certain amount of repair fees.
  - A. Damage due to incorrect usage, unauthorized repairs, or modifications;
  - B. Damage due to fire, flooding, abnormal voltage, other natural disasters, and secondary disasters;
  - C. Hardware damage due to human drops or transportation after purchase;
  - D. Damage due to operation not following the user manual provided by our company;
  - E. Faults and damages due to obstacles external to the machine (such as external device factors).
- 3) When the product malfunctions or is damaged, please fill in the "Product Warranty Card" accurately and in detail.
- 4) The charging of repair fees will be in accordance with the "Repair Price List" most recently adjusted by our company.
- 5) This warranty card is generally not reissued; please be sure to retain this card and present it to the service personnel during the warranty service.
- 6) If there are any issues during the service process, please contact our agents or our company promptly.
- 7) The right to interpret this agreement belongs to MOKWEIR.

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