MOKWEIR


# MK500 Series Vector Frequency Converter
## Simplified Manual

Mokweir Transmission Technology (Suzhou) Co., Ltd.

# 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** |
|---|
| ⚠ **Warning**<br>● If the product or its accessories are found damaged, rusted, used, etc., during unboxing, do not install!<br>● If water intrusion, missing parts, or damaged components are discovered inside the product upon unboxing, do not install!<br>● Carefully compare the packing list with the product name. If they do not match, do not install! |
| ⚠ **Caution**<br>● Before unboxing, check whether the external packaging of the equipment is intact, without any damage, soaking, dampness, or deformation.<br>● Open the packaging in the order of layers and avoid knocking it hard!<br>Check the equipment and accessories for damage, rust, or dents during unboxing.<br>● After unboxing, carefully compare with the packing list to verify the quantity and completeness of equipment and accessories. |

**Storage and Transportation**

### ⚠Warning

- 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.
- 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.
- Do not stand or stay under the product when it is lifted by lifting equipment.
- 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.

### ⚠Caution

- Handle the product with care during transportation, being mindful of objects underfoot to prevent tripping or falling, which could cause injury or product damage.
- When carrying the product by hand, securely hold the casing to prevent parts from falling, which could cause injury.
- 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.
- Avoid storing the product for more than three months. If stored for extended periods, take extra protective measures and conduct necessary inspections.
- Securely package the product before transporting it by vehicle. For long-distance transportation, use an enclosed container.
- Do not transport this product with equipment or items that could potentially affect or damage it.

**Installation**

### ⚠ Danger

- Only trained professionals with electrical equipment knowledge should operate the device. Operation by non-professionals is strictly prohibited.

### ⚠Warning

- Before installation, please read the product manual and safety precautions carefully!
- Do not install the product in areas with strong electric fields or electromagnetic interference!
- 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. ·
- When installing, do not wear loose clothing or jewelry, as they may pose an electrocution risk!
- 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.
- Do not modify this product!
- Do not twist the fixed bolts of product components and elements, especially bolts marked in red!
- 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.
- When installing devices like transformers that cause strong electromagnetic interference, install shielding protection devices to avoid malfunctions in this product!
- 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.

### ⚠Caution

- 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.
- 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.

**When Wiring**

**Danger**

- Non-professionals must not perform equipment installation, wiring, maintenance, inspection, or part replacement!
- 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.
- Perform wiring, remove the product cover, or touch the circuit board only after cutting off the power to avoid electrocution risk.
- Ensure proper grounding of equipment and product to prevent electric shock.

**Warning**

- 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.
- 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.
- 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!
- 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.
- 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.

**Caution**

- Follow electrostatic discharge (ESD) precautions and wear an anti-static wristband during wiring to avoid damaging the device or internal circuits.
- 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.

**When Powering On**

**Danger**

- Before powering on, ensure the product is properly installed, wired securely, and the motor device is ready to restart.
- Before powering on, confirm that the power supply meets the product's requirements to avoid product damage or fire hazards!
- 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.

**Warning**

- 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.
- Before powering on, ensure the product's rated voltage matches the power supply voltage. Incorrect voltage can cause a fire hazard.
- Before powering on, ensure no one is around the product, motor, or machinery, as it may lead to injury or death.

**During Operation**

**Danger**

- Operation of the product by non-professionals is strictly prohibited, as it may lead to injury or death.
- 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.

**⚠ Warning**

- Do not touch the exterior of the equipment, fans, or resistors to gauge temperature, as this may cause burns.
- During operation, avoid allowing foreign objects or metal items to fall into the equipment, as this may cause a fire or damage the product.

**During Maintenance**

**⚠ Danger**

- Non-professionals are prohibited from installing, wiring, maintaining, inspecting, or replacing parts of the equipment.
- Do not perform maintenance on the equipment while it is powered, as this poses a risk of electric shock.
- After cutting off power to all equipment, wait for the duration specified on the product's warning label before performing any maintenance.
- 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.

**⚠ Warning**

- Conduct routine and periodic inspections and maintenance of the equipment and product as per maintenance requirements, and keep maintenance records.

**During Repair**

**⚠ Danger**

- Non-professionals are prohibited from installing, wiring, maintaining, inspecting, or replacing parts of the equipment.
- Do not perform repairs on the equipment while it is powered, as this poses a risk of electric shock.
- After cutting off power to all equipment, wait for the duration specified on the product's warning label before conducting any inspection or repair.

**⚠ Warning**

- Follow the product warranty agreement for equipment repair.
- 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.
- If the equipment malfunctions or is damaged, have it repaired by professionals following repair guidelines, and keep repair records.
- Follow guidelines for replacing wear parts.
- 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.

**During Disposal**

**⚠ Warning**

- Dispose of the equipment and products according to national regulations and standards to avoid property loss or personal injury.
- Handle and recycle discarded equipment and products as industrial waste to prevent environmental pollution.

**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 |
| --- | --- |
|  | ● Before using the product, read the safety-related manuals and instructions carefully, as failure to do so may lead to injury or product damage.<br>● 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. |

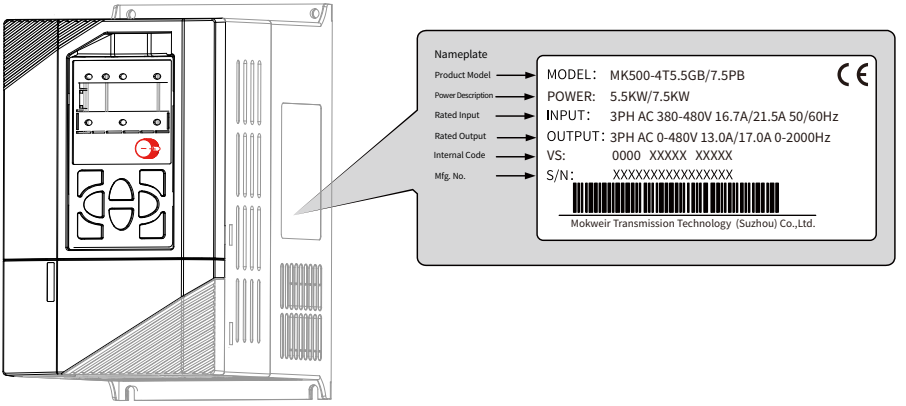
# 1 Product Information

## 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




MK500-4T5.5GB/7.5PB

| Identifier | Product Name |
|---|---|
| MK500 | Frequency Converter Series |

| Identifier | Voltage Level |
|---|---|
| 4T | Three-phase 380V~480V |
| 2T | Three-phase 200V~240V |
| 2S | Single-phase 200V~240V |

| Identifier | Power Level (k) |
|---|---|
| 0.4 | 0.4 |
| … | … |
| 630 | 630 |

| Identifier | Adapted Motor Type |
|---|---|
| G | Constant Torque Type |
| P | Variable Torque Type |

| Identifier | Define |
|---|---|
| Blank | Universal machine |
| XX | Special machine code |

| 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.

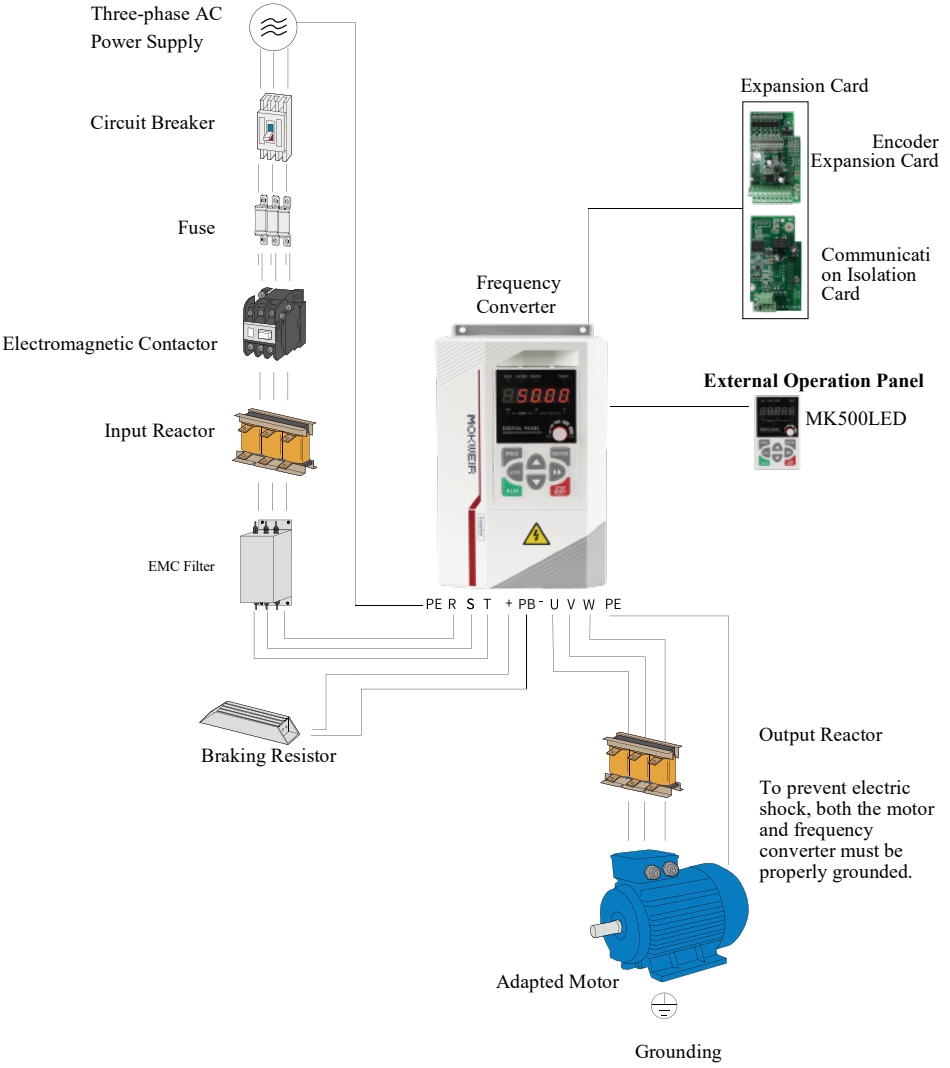



Figure 1-3 System Composition Diagram

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.<br>Short-circuit breaker: Cuts off the power supply in the event of overcurrent in downstream equipment to prevent accidents.<br>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.<br>Effectively eliminates high-order harmonics on the input side, preventing damage to other equipment due to voltage waveform distortion.<br>Eliminates input current imbalance caused by power phase imbalance. |
| EMC Filter | Reduces conducted and radiated interference from the frequency converter.<br>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.<br>Improves the overall efficiency and thermal stability of the frequency converter;<br>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:<br>1. Damaging the insulation properties of the motor, which can lead to long-term motor damage.<br>2. Generating significant leakage current, triggering frequent protection in the frequency converter.<br>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 MK500LED. |

# 2 Overall Dimensions

## 2.1 MK500 Overall Dimensions

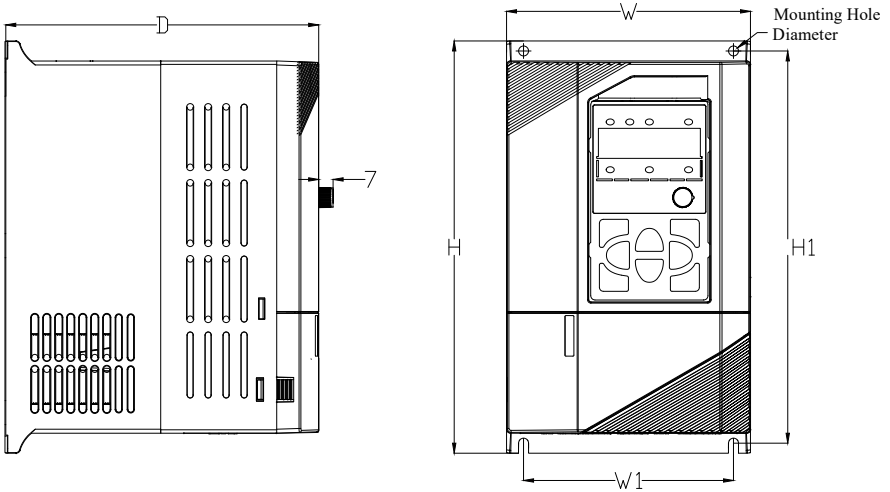



Figure 2-1 MK500 External Dimensions and Installation Diagram

MK500 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 | | | | | | | | | | |
| MK500-2S0.4GB | 206 | 122 | 164 | 196 | 105 | φ4 | 24 | 17 | 21 | 2.3 |
| MK500-2S0.75GB | | | | | | | | | | 2.3 |
| MK500-2S1.5GB | | | | | | | | | | 2.3 |
| MK500-2S2.2GB | | | | | | | | | | 2.4 |
| MK500-2S4.0GB | | | | | | | | | | 2.5 |
| MK500-2S5.5GB | 278 | 142 | 181 | 267 | 120 | φ5 | 31 | 20 | 24 | 3.6 |
| MK500-2S7.5PB | | | | | | | | | | 3.7 |
| MK500-2S7.5GB | 348 | 208 | 205 | 336 | 186 | φ6 | 39 | 27 | 27 | 6.2 |
| MK500-2S11GB | | | | | | | | | | 6.6 |
| MK500-2S15GB | | | | | | | | | | 7.1 |
| Three-phase 220V | | | | | | | | | | |
| MK500-2T0.4GB | 206 | 122 | 164 | 196 | 105 | φ4.7 | 24 | 17 | 21 | 2.3 |
| MK500-2T0.75GB | | | | | | | | | | 2.3 |
| MK500-2T1.5GB | | | | | | | | | | 2.3 |
| MK500-2T2.2GB | | | | | | | | | | 2.4 |
| MK500-2T4.0GB | | | | | | | | | | 2.5 |

## Overall 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 |
| Three-phase 220V | | | | | | | | | | |
| MK500-2T5.5GB | 278 | 142 | 181 | 267 | 120 | φ6 | 31 | 20 | 24 | 3.6 |
| MK500-2T7.5PB | | | | | | | | | | 3.7 |
| MK500-2T7.5GB | 348 | 208 | 205 | 336 | 186 | φ5.8 | 39 | 27 | 27 | 6.2 |
| MK500-2T11GB | | | | | | | | | | 6.6 |
| MK500-2T15GB | | | | | | | | | | 7.1 |
| MK500-2T18.5G | 430 | 283 | 247 | 418 | 200 | φ6.5 | 51 | 36 | 32 | 17 |
| MK500-2T22G | | | | | | | | | | 18 |
| MK500-2T30G | 510 | 340 | 280 | 495 | 270 | φ8 | 64 | 45 | 39 | 30 |
| MK500-2T37G | | | | | | | | | | 31 |
| MK500-2T45G | 602 | 474 | 315 | 576 | 413 | φ8 | 69.5 | 55 | 52 | 54 |
| MK500-2T55G | | | | | | | | | | 55 |
| MK500-2T75G | | | | | | | | | | 57 |
| MK500-2T90G | 870 | 400 | 355 | 840 | 300 | φ12 | 104 | 53 | 56 | 88 |
| MK500-2T110G | | | | | | | | | | 90 |
| MK500-2T132G | 966 | 569 | 390 | 932 | 500 | φ12 | 112 | 67 | 60 | 123 |
| Three-phase 380V | | | | | | | | | | |
| MK500-4T0.75GB/1.5PB | 206 | 122 | 164 | 196 | 105 | φ4.7 | 24 | 17 | 21 | 2.3 |
| MK500-4T1.5GB/2.2PB | | | | | | | | | | 2.3 |
| MK500-4T2.2GB/4.0PB | | | | | | | | | | 2.3 |
| MK500-4T4.0GB/5.5PB | | | | | | | | | | 2.4 |
| MK500-4T5.5GB-S | | | | | | | | | | 2.5 |
| MK500-4T5.5GB/7.5PB | 278 | 142 | 181 | 267 | 120 | φ6 | 31 | 20 | 24 | 3.6 |
| MK500-4T7.5GB/11PB | | | | | | | | | | 3.7 |
| MK500-4T11GB/15PB | | | | | | | | | | 4 |
| MK500-4T15GB-S | | | | | | | | | | 4.5 |
| MK500-4T15GB/18.5PB | 348 | 208 | 205 | 336 | 186 | φ5.8 | 39 | 27 | 27 | 6.4 |
| MK500-4T18.5GB/22PB | | | | | | | | | | 6.5 |
| MK500-4T22GB/30PB | | | | | | | | | | 6.8 |
| MK500-4T30GB-S | | | | | | | | | | 7.3 |
| MK500-4T30G/37P | 430 | 283 | 247 | 418 | 200 | φ6.5 | 51 | 36 | 32 | 16 |
| MK500-4T37G/45P | | | | | | | | | | 17 |
| MK500-4T45G/55P-S | | | | | | | | | | 18 |
| MK500-4T45G/55P | 510 | 340 | 280 | 495 | 270 | φ8 | 64 | 45 | 39 | 29 |
| MK500-4T55G/75P | | | | | | | | | | 30 |
| MK500-4T75G/90P | | | | | | | | | | 31 |
| MK500-4T90G/110P | 602 | 474 | 315 | 576 | 413 | φ8 | 69.5 | 55 | 52 | 54 |
| MK500-4T110G/132P | | | | | | | | | | 55 |
| MK500-4T132G/160P | | | | | | | | | | 57 |
| MK500-4T160G-S | | | | | | | | | | 59 |
| MK500-4T160G/185P | 870 | 400 | 355 | 840 | 300 | φ12 | 104 | 53 | 56 | 85 |
| MK500-4T185G/200P | | | | | | | | | | 88 |
| MK500-4T200G/220P | | | | | | | | | | 88 |
| MK500-4T220G/250P-S | | | | | | | | | | 90 |
| MK500-4T220G/250P | 966 | 569 | 390 | 932 | 500 | φ12 | 112 | 67 | 60 | 123 |
| MK500-4T250G/280P | | | | | | | | | | 123 |
| MK500-4T280G/315P | | | | | | | | | | 125 |
| MK500-4T315G/355P-S | | | | | | | | | | 130 |
| MK500-4T315G/355P | 1160 | 720 | 380 | 1130 | 600 | φ12 | 128 | 83 | 58 | 165 |
| MK500-4T355G/400P | | | | | | | | | | 167 |
| MK500-4T400G/450P | | | | | | | | | | 175 |
| MK500-4T450G/500P | 1620 | 720 | 380 | Vertical | | | 174 | 83 | 58 | 245 |
| MK500-4T500G/560P | | | | | | | | | | 250 |

# 3 Technical Data

## 3.1 Electrical Parameters

**Description**

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

- For three-phase 380V~480V, the rated power of the frequency converter is measured at an input of 440VAC.
- For three-phase 200V~240V, the rated power of the frequency converter is measured at an input of 220VAC.
- 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%) | | | | | |
| MK500-2S0.4GB | 1.0 | 5.1 | **2.5** | 0.4 | 0.5 |
| MK500-2S0.75GB | 1.5 | 8.2 | **4** | 0.75 | 1 |
| MK500-2S1.5GB | 3.0 | 14 | **7.5** | 1.5 | 2 |
| MK500-2S2.2GB | 4.0 | 23 | **10** | 2.2 | 3 |
| MK500-2S4.0GB | 7.5 | 38 | **17** | 4.0 | 5.0 |
| MK500-2S5.5GB | 11 | 55 | **25** | 5.5 | 7.5 |
| MK500-2S7.5PB | 13 | 61 | **30** | 7.5 | 10 |
| MK500-2S7.5GB | 15 | 64 | **32** | 7.5 | 10 |
| MK500-2S11GB | 25 | 80 | **45** | 11 | 15 |
| MK500-2S15GB | 30 | 105 | **55** | 15 | 20 |
| Three-phase Input: Rated 220V (allowable fluctuation range 208~240V), 50/60HZ (±5%) | | | | | |
| MK500-2T0.4GB | 1.1 | 2.4 | **2.1** | 0.4 | 0.5 |
| MK500-2T0.75GB | 2.1 | 4.6 | **3.8** | 0.75 | 1 |
| MK500-2T1.5GB | 4.2 | 9.0 | **7.5** | 1.5 | 2 |
| MK500-2T2.2GB | 5.3 | 11.4 | **10.0** | 2.2 | 3 |
| MK500-2T4.0GB | 8.9 | 21.2 | **17** | 4.0 | 5.0 |
| MK500-2T5.5GB | 14.8 | 32.2 | **25** | 5.5 | 7.5 |
| MK500-2T7.5PB | 18.9 | 41.3 | **32** | 7.5 | 10 |
| MK500-2T7.5GB | 18.9 | 41.3 | **32** | 7.5 | 10 |
| MK500-2T11GB | 27.0 | 46.5 | **45** | 11 | 15 |
| MK500-2T15GB | 29.3 | 57.0 | **57** | 15 | 20 |
| MK500-2T18.5G | 31.6 | 69.0 | **75** | 18.5 | 25 |
| MK500-2T22G | 41.3 | 89.0 | **90** | 22 | 30 |
| MK500-2T30G | 48.5 | 106.0 | **110** | 30 | 40 |
| MK500-2T37G | 63.6 | 141.0 | **152** | 37 | 50 |
| MK500-2T45G | 75.0 | 164.0 | **176** | 45 | 60 |
| MK500-2T55G | 89.7 | 196.0 | **210** | 55 | 70 |
| MK500-2T75G | 110 | 240.0 | **253** | 75 | 100 |
| MK500-2T90G | 150 | 326 | **350** | 90 | 125 |
| MK500-2T110G | 188 | 410 | **426** | 110 | 150 |
| MK500-2T132G | 204 | 446 | **470** | 132 | 175 |

| Frequency Converter Power | Electrical Parameters | | | | |
|---|---|---|---|---|---|
| | Power Supply Capacity | Input Current | Output Current | **Adapted Motor** | |
| | KVA | A | A | KW | HP |
| Three-phase Input: Rated 380V (allowable fluctuation range 323~528V), 50/60HZ (±5%) | | | | | |
| MK500-4T0.75GB/1.5PB | 2.8 | 2.4 | **2.1** | 0.75 | 1 |
| MK500-4T1.5GB/2.2PB | 5 | 4.6 | **3.8** | 1.5 | 2 |
| MK500-4T2.2GB/4.0PB | 6.7 | 6.3 | **5.1** | 2.2 | 3 |
| MK500-4T4.0GB/5.5PB | 12.0 | 11.5 | **9** | 4 | 5 |
| MK500-4T5.5GB-S | 17.5 | 16.7 | **13** | 5.5 | 7.5 |
| MK500-4T5.5GB/7.5PB | 17.5 | 16.7 | **13** | 5.5 | 7.5 |
| MK500-4T7.5GB/11PB | 22.8 | 21.5 | **17** | 7.5 | 10 |
| MK500-4T11GB/15PB | 33.4 | 32.2 | **25** | 11 | 15 |
| MK500-4T15GB-S | 42.8 | 41.3 | **32** | 15 | 20 |
| MK500-4T15GB/18.5PB | 42.8 | 41.3 | **32** | 15 | 20 |
| MK500-4T18.5GB/22PB | 45 | 49.5 | **37** | 18.5 | 25 |
| MK500-4T22GB/30PB | 54 | 59 | **45** | 22 | 30 |
| MK500-4T30GB-S | 57 | 56 | **57** | 30 | 40 |
| MK500-4T30G/37P | 61 | 57 | **63** | 30 | 40 |
| MK500-4T37G/45P | 65 | 69 | **75** | 37 | 50 |
| MK500-4T45G/55P-S | 81 | 88 | **90** | 45 | 60 |
| MK500-4T45G/55P | 81 | 88 | **90** | 45 | 60 |
| MK500-4T55G/75P | 97 | 105 | **110** | 55 | 70 |
| MK500-4T75G/90P | 128 | 141 | **152** | 75 | 100 |
| MK500-4T90G/110P | 150 | 164 | **178** | 90 | 125 |
| MK500-4T110G/132P | 179 | 196 | **210** | 110 | 150 |
| MK500-4T132G/160P | 220 | 240 | **253** | 132 | 175 |
| MK500-4T160G-S | 263 | 287 | **304** | 160 | 210 |
| MK500-4T160G/185P | 263 | 287 | **304** | 160 | 210 |
| MK500-4T185G/200P | 303 | 331 | **350** | 185 | 250 |
| MK500-4T200G/220P | 337 | 368 | **380** | 200 | 260 |
| MK500-4T220G/250P-S | 375 | 410 | **426** | 220 | 300 |
| MK500-4T220G/250P | 375 | 410 | **426** | 220 | 300 |
| MK500-4T250G/280P | 408 | 446 | **470** | 250 | 350 |
| MK500-4T280G/315P | 453 | 495 | **520** | 280 | 370 |
| MK500-4T315G/355P-S | 521 | 570 | **590** | 315 | 400 |
| MK500-4T315G/355P | 521 | 570 | **590** | 315 | 400 |
| MK500-4T355G/400P | 565 | 617 | **650** | 355 | 420 |
| MK500-4T400G/450P | 629 | 687 | **725** | 400 | 530 |
| MK500-4T450G/500P | 716 | 782 | **820** | 450 | 600 |
| MK500-4T500G/560P | 760 | 830 | **860** | 500 | 660 |

## 3.2 Technical Specifications

Table 3-1 Frequency Converter Technical Specifications

| Item | | Technical Specifications |
|---|---|---|
| Basic Functions | Input Frequency Resolution | Digital setting: 0.01Hz<br>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)<br>±0.02%(FVC) |
| | Torque Control Accuracy | FVC:±3%<br>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;<br>Four acceleration/deceleration time periods, range 0.0s~6500.0s. |
| | DC Braking | DC braking start frequency: 0.00Hz~maximum frequency;<br>Braking time: 0.0s~36.0s;<br>Braking action current value: 0.0%~100.0%. |
| | Jog Control | Jog frequency range: 0.00Hz~50.00Hz;<br>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. |
| | Overvoltage/Overcurrent Stall Control | Automatically limits current and voltage during operation to prevent frequent overcurrent and overvoltage tripping. |
| | 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. |
| Custom Functions | 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. |

| 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:<br>6 X terminals, one of which supports high-speed pulse input up to 100kHz<br>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<br>1 high-speed pulse output terminal (optional open-collector type)<br>Supports square wave signal output from 0kHz~100kHz<br>1 Y terminal<br>2 relay output terminals<br>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.<br>(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℃~+50℃, with derating required between 40℃ and 50℃, derating by 1.5% for each 1℃ increase in temperature. |
| | Humidity | Less than 95% RH, no condensation. |
| | Vibration | Less than 5.9m/s2 (0.6g) |
| | Storage Temperature | -20℃~+60℃ |

# 4 Installation and Wiring

## 4.1 Mechanical Installation

### 4.1.1 Installation Site Inspection

#### 4.1.1.1 Installation Environment

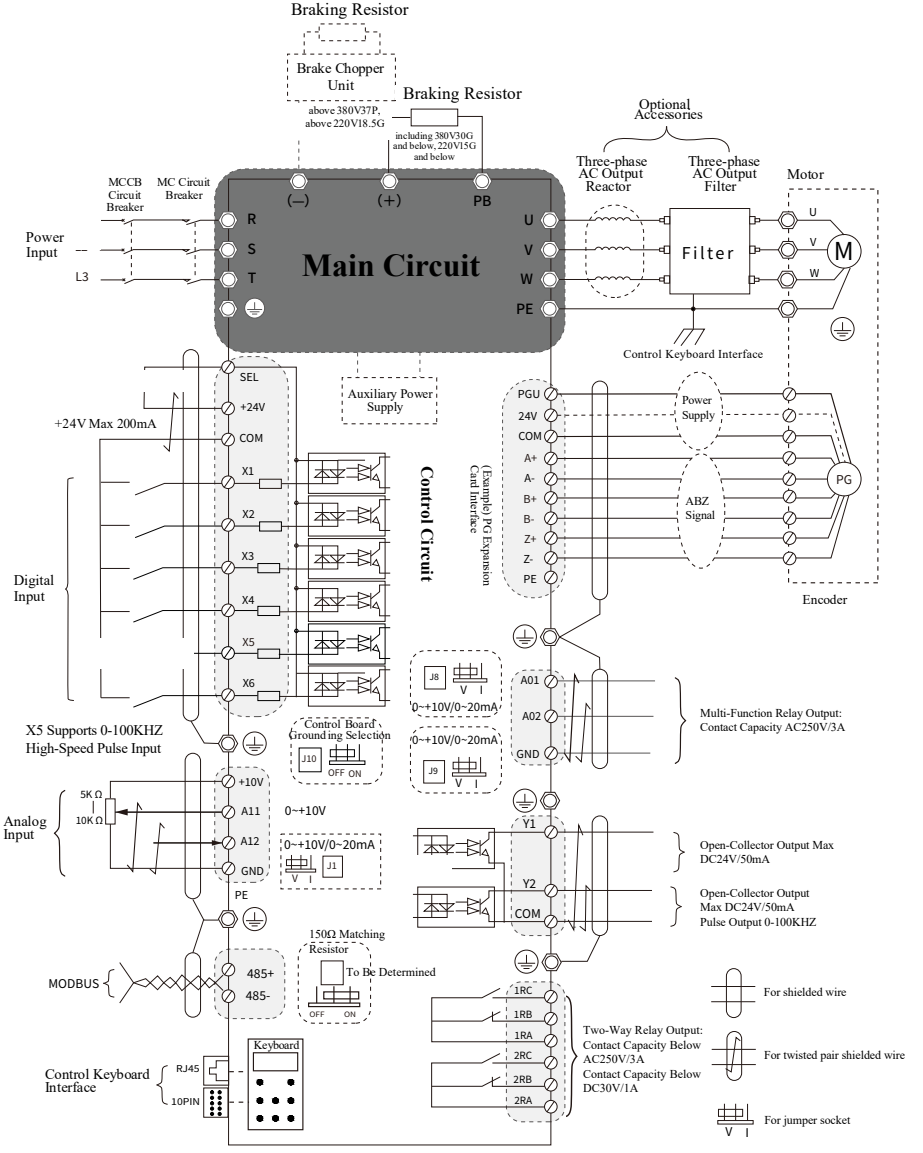
To fully utilize this product's performance and ensure long-term use, install the product in the following environment.

Table 4-1 Environmental Requirements

| Environment | Conditions |
|---|---|
| Installation Site | Indoors |
| Grid Overvoltage | Overvoltage Level III (OVCIII) |
| Temperature | ● Installation/Operating Temperature: -10℃~+50℃ (-10°℃~+40℃ without derating, derate when temperature exceeds 40℃, derating by 1.5% for each 1℃ increase).<br>Storage/Transportation Temperature: -20℃~+60℃.<br>● For improved equipment reliability, use the product where temperature changes are not abrupt.<br>● 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 50℃. Otherwise, it may lead to overheating or fire.<br>● Install the product on the surface of a flame-retardant object, ensuring sufficient space around it for heat dissipation.<br>● Avoid freezing the product. |
| Humidity | Below 95% RH, no condensation. |
| Environment | Pollution Degree 2 or lower.<br>Please install the product in the following locations:<br>● Places not exposed to direct sunlight, free from dust, corrosive gases, flammable or explosive gases, oil mist, steam, dripping water, or salt.<br>● Install in places with minimal vibration (especially away from equipment like punch presses),<br>● Prevent metal powder, oil, water, or other foreign substances from entering the product's interior.<br>● Locations free from radioactive substances, flammables, harmful gases and liquids, and minimal salt corrosion.<br>● Do not install the product on inflammable materials like wood. |
| Altitude | ● No derating required for use below 1000m.<br>● Derate by 1% for every 100m increase above 1000m.<br>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. |
| Vibration Resistance | ● During transportation in packaging: Complies with EN60721-3-2 standard, class 2M3.<br>● When unpackaged and in the installed state: Complies with ISTA1H standard. |

## 4.2 Electrical Installation

### 4.2.1 MK500 Electrical Wiring Diagram



### 4.2.2 Main Circuit Terminal Description

**MK500-2S0.4GB~MK500-2S7.5PB;MK500-2T0.4GB~MK500-2T7.5PB; MK500-4T0.75GB/1.5PB~MK500-4T15GB-S terminal meanings are as follows:**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PE | R/L | S | T/N | P+ | PB | (—) | U | V | W |

**MK500-2S7.5GB~MK500-2S15GB;MK500-2T7.5GB~MK500-2T15GB; MK500-4T15GB/18.5PB~MK500-4T30GB-S terminal meanings are as follows:**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PE | R/L | S | T/N | P+ | PB | (—) | U | V | W |

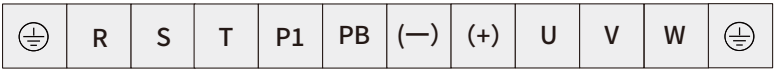
| Terminal Marking | Terminal Name | Function Description |
|---|---|---|
| R/L, S, T/N | Three-Phase Power Input Terminals | AC power connection points for three-phase input |
| (P+), (-) | Positive and Negative DC Bus Terminals | Common DC bus input points, Connection points for external braking units |
| (+), 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 |

**MK500-2T18.5G;**
**MK500-4T30GB/37PB~MK500-4T37GB/45PB terminal meanings are as follows:**

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

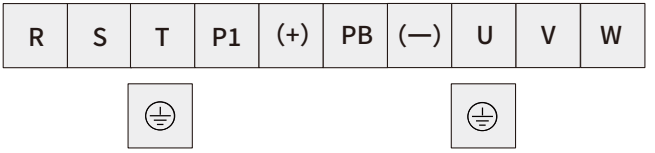
| Terminal Marking | Terminal Name | Function Description |
|---|---|---|
| R、S、T | Three-Phase Power Input Terminals | AC power connection points for three-phase input |
| (+)、 (-) | Positive and Negative DC Bus Terminals | Common DC bus input points, Connection points for external braking units |
| 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 |

**MK500-2T22G;**
**MK500-4T45GB/55PB-Sterminal meanings are as follows:**



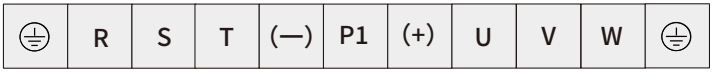

| Terminal Marking | Terminal Name | Function Description |
|---|---|---|
| R、S、T | Three-Phase Power Input Terminals | AC power connection points for three-phase input |
| (+)、 (-) | Positive and Negative DC Bus Terminals | Common DC bus input points, connection points for external braking units |
| (+), 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 |

**MK500-2T30G~MK500-2T37G;**
**MK500-4T45GB/55PB~MK500-4T75GB/90PB terminal meanings are as follows:**



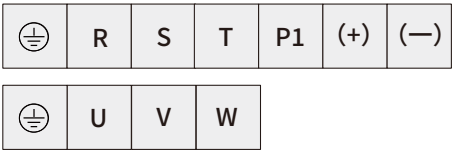

| Terminal Marking | Terminal Name | Function Description |
|---|---|---|
| R, S, T | Three-Phase Power Input Terminals | AC power connection points for three-phase input |
| (+)、 (-) | Positive and Negative DC Bus Terminals | Common DC bus input points, connection points for external braking units |
| 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 |

**MK500-2T45G~MK500-2T75G;**
**MK500-4T90G/110P~MK500-4T160G-S terminal meanings are as follows:**



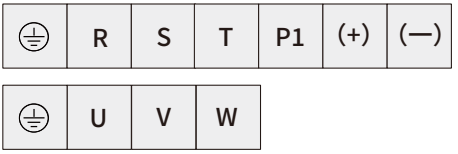

| Terminal Marking | Terminal Name | Function Description |
|---|---|---|
| R, S, T | Three-Phase Power Input Terminals | AC power connection points for three-phase input |
| (+)、 (-) | Positive and Negative DC Bus Terminals | Common DC bus input points, connection points for external braking units |
| 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 |

**MK500-2T90G~MK500-2T110G;**
**MK500-4T160G/185P~MK500-4T220G/250P-S terminal meanings are as follows:**



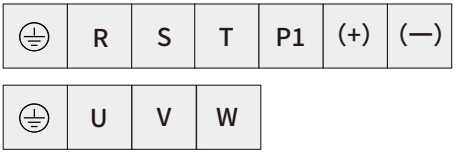

| Terminal Marking | Terminal Name | Function Description |
|---|---|---|
| R、S、T | Three-Phase Power Input Terminals | AC power connection points for three-phase input |
| (+)、 (-) | Positive and Negative DC Bus Terminals | Common DC bus input points, connection points for external braking units |
| 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 |

**MK500-2T132G;**
**MK500-4T220G/250P~MK500-4T315G/355P-S terminal meanings are as follows:**




| Terminal Marking | Terminal Name | Function Description |
|---|---|---|
| R、S、T | Three-Phase Power Input Terminals | AC power connection points for three-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 |

**MK500-4T315G/355P~MK500-4T500G/560P terminal meanings are as follows:**




| Terminal Marking | Terminal Name | Function Description |
|---|---|---|
| R, S, T | Three-Phase Power Input Terminals | AC power connection points for three-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 MK500 Control Circuit Terminal Description

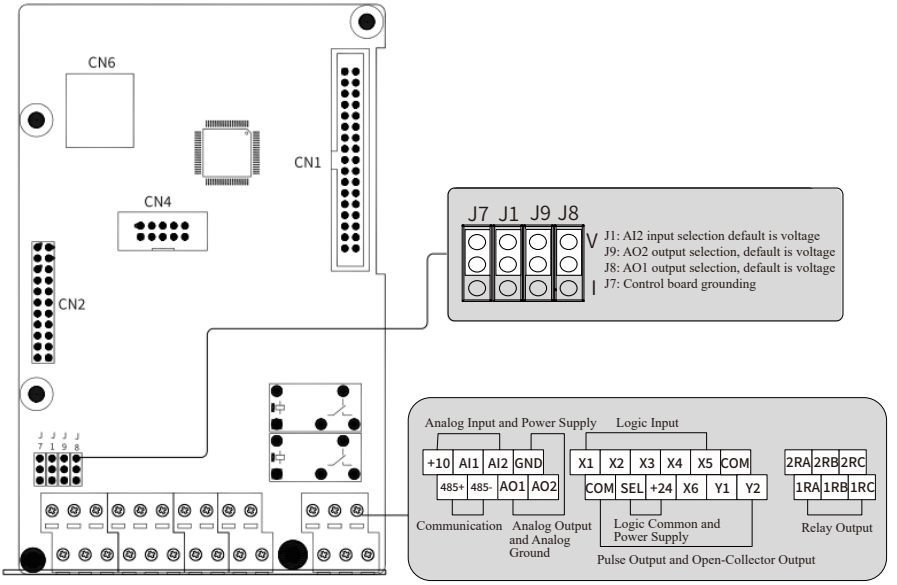



Figure 4-1 MK500 Control Circuit Terminal Distribution Diagram

Table 4-2 MK500 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 1kΩ~5kΩ. |
| | +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【Note 1】 |
| | 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 | AI1-GND | Analog Input Terminal 1 | Input voltage range: DC0V~10V Input impedance: 22kΩ |
| | AI2-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: 1.39kΩ 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: 1.03kΩ |
| 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:<br>250Vac, 3A, COSØ=0.4<br>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 | |

Note

- Output current needs to be derated when ambient temperature exceeds 23℃, decreasing by 1.8mA for each 1℃ increase. At 40℃ 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.

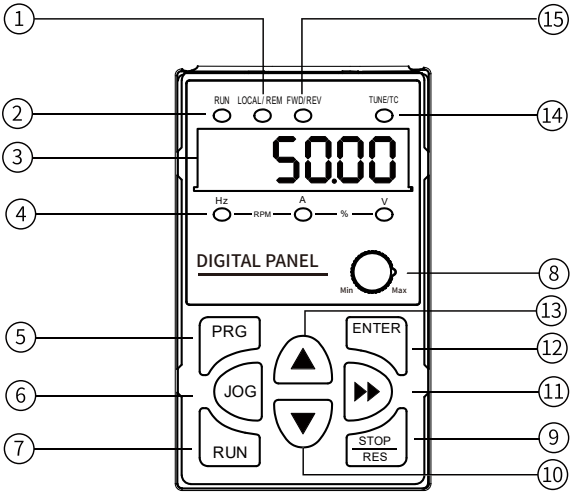



Figure 5-1 Component Diagram

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

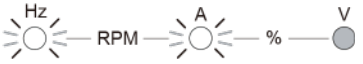
| Button | Name | Function |
|---|---|---|
|  | Programming Button | Return to the previous screen;<br>Enter the primary menu. |
|  | Confirm Button | Proceed to the next screen;<br>Confirm modes, parameters, set values. |
|  | Increase Button | Change (increase) parameter numbers and set values. |
|  | Decrease Button | Change (decrease) parameter numbers and set values. |
|  | Shift Button | Left shift to cycle through display parameters;<br>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

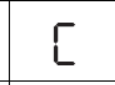
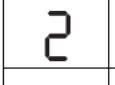
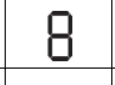
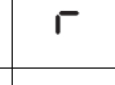
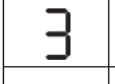
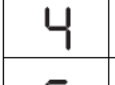
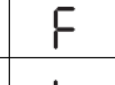
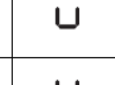
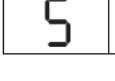
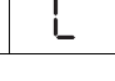
| Indicator Light Status | | Status Explanation |
|---|---|---|
| RUN<br>Running Indicator |  | Light Off: Stopped |
| |  | Light On: Running |
| LOC/REM Command Source Indicator Light |  | Light Off: Panel Control |
| |  | Light On: Terminal Control |
| |  | Flashing: Communication Control |
| FWD/REV<br>Forward/Reverse Indicator Light |  | Light Off: Forward Running |
| |  | Light On: Reverse Running |
| TUNE/TC Tuning/Torque Control/Fault Indicator Light |  | Light Off: Normal Operation |
| |  | Light On: Torque Control Mode |
| |  | Slow Flashing: Tuning State (1 time/second) |
| |  | 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 |  | 6 |  | C |  | N |
|  | 1 |  | 7 |  | c |  | P |
|  | 2 |  | 8 |  | D |  | R |
|  | 3 |  | 9 |  | E |  | T |
|  | 4 |  | A |  | F |  | u |
|  | 5 |  | B |  | L |  | 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.<br>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);<br>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);<br>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.<br>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);<br>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);<br>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 ($P_{0-15}$) 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:<br>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);<br>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);<br>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;<br>Set overcurrent stall action current (P3-18) value too high, recommend adjusting within 120% to 150%;<br>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;<br>Set overcurrent stall action current (P3-18) value too high,<br>recommend adjusting within 120% to 150%;<br>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 | Frequency Converter Output Circuit Grounded or Short-Circuited | Check if the motor is short-circuited or open-circuited. |
| | | Control mode is FVC or SVC without parameter tuning | Set the motor parameters according to the motor nameplate and perform motor parameter tuning. |

| Fault Name | Panel Display | Fault Investigation | Fault Handling Strategy |
|---|---|---|---|
| | | Overcurrent Stall Suppression Setting Inappropriate | Ensure overcurrent stall suppression function (P3-19) is enabled;<br>Set overcurrent stall action current (P3-18) value too high, recommend adjusting within 120% to 150%;<br>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;<br>Overvoltage suppression action voltage (P3-22) set too high, recommend adjusting within 770V~700V;<br>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;<br>Overvoltage suppression action voltage (P3-22) set too high, recommend adjusting within 770V~700V.<br>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;<br>Overvoltage suppression action voltage (P3-22) set too high, recommend adjusting within 770V~700V;<br>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;<br>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 | Errl6 | 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. |

| 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 | ● Check for anomalies in mechanical connections;<br>● Confirm motor phase integrity<br>● Ensure motor mounting screws are secure | |
| Fan Cooling | Check for anomalies in the cooling fans of the Frequency Converter and motor | ● Confirm operation of the cooling fan on the device side<br>● Check for abnormalities in the motor side cooling fan<br>● Ensure air passages are not blocked<br>● Confirm the environmental temperature is within the allowable range | |
| Installation Environment | Check for abnormalities in electrical cabinets and cable trays | ● Inspect insulation integrity of incoming and outgoing cables<br>● Check for vibrations in mounting brackets<br>● Inspect busbars and cable terminal connections for looseness or corrosion | |
| Load | Check if the operating current of the frequency converter exceeds its rated current and the motor's rated current | ● Confirm correct motor parameter settings<br>● Check for motor overload<br>● Confirm mechanical vibration is within normal limits (normal condition <0.6g) | |
| Input Voltage | Check for anomalies in the main circuit and control circuit power supply voltage | ● Confirm input voltage is within the allowable range<br>● Check for large loads starting up nearby | |

### 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. | ● Confirm the controller cabinet is powered off.<br>● Use a vacuum cleaner to remove trash or dust to avoid contact with components.<br>● If surface dirt cannot be removed, wipe with alcohol and allow it to dry completely. | |
| Cables | ● Check if power lines and connections are discolored.<br>● Inspect for aging or cracking of the insulation layer. | ● Replace cables that are cracked.<br>● Replace damaged connection terminals. | |
| Peripheral of Electromagnetic Contactor | ● Check if it fails to engage firmly or makes abnormal noise during operation.<br>● Look for short-circuited, water-damaged, swollen, or ruptured foreign components. | Replace any malfunctioning components. | |
| Ventilation Ports of Air Duct | ● Check for blockages in air ducts and heat sinks.<br>● Inspect for damaged fans. | ● Clean air ducts.<br>● Replace the fan. | |
| Control Circuit | ● Inspect control components for poor contact. · Check for loose terminal screws.<br>● Look for cracked insulation in control cables. | ● Clean foreign substances from control circuits and connection terminals.<br>● Replace damaged or corroded control cables. | |

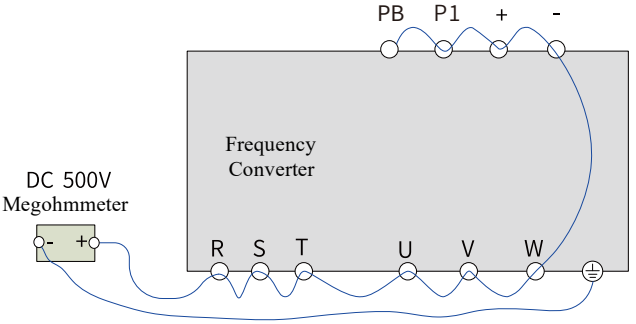
## 7.2 Main Circuit Insulation Test

**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 |
| Note:<br>The lifespan is based on usage under the following conditions. Users can determine the replacement period based on operational hours.<br>Environmental Temperature: 40°C<br>Load Rate: 80%<br>Operational Rate: 24 hours/day | |

### 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 (Ω) |
|---|---|---|---|---|---|---|
| | | | Recommended Braking Resistor Specifications | Number of Braking Resistors | | |
| Single-phase 220V | | | | | | |
| MK500-2S0.4GB | 0.4 | Standard built-in | 90W 300Ω | 1 | Model suffix “B” | 48 |
| MK500-2S0.75GB | 0.8 | | 160W 170Ω | 1 | | 48 |
| MK500-2S1.5GB | 1.5 | | 340W 80Ω | 1 | | 32 |
| MK500-2S2.2GB | 2.2 | | 500W 55Ω | 1 | | 6 |
| MK500-2S4.0GB | 4.0 | | 800W 33Ω | 1 | | 6 |
| MK500-2S5.5GB | 5.5 | | 1300W 22Ω | 1 | | 10 |
| MK500-2S7.5PB | 7.5 | | 1700W 16Ω | 1 | | 0 |
| MK500-2S7.5GB | 7.5 | | 1700W 16Ω | 1 | | 10 |
| MK500-2S11GB | 11.0 | | 2300W 12Ω | 1 | | 12 |
| MK500-2S15GB | 15.0 | | 3000W 9Ω | 1 | | 9 |
| Three-phase 220V | | | | | | |
| MK500-2T0.4GB | 0.4 | Standard built-in | 90W 300Ω | 1 | Model suffix “B” | 48 |
| MK500-2T0.75GB | 0.8 | | 160W 170Ω | 1 | | 48 |
| MK500-2T1.5GE | 1.5 | | 340W 80Ω | 1 | | 32 |
| MK500-2T2.2GB | 2.2 | | 500W 55Ω | 1 | | 6 |
| MK500-2T4.0GB | 4.0 | | 800W 33Ω | 1 | | 16 |
| MK500-2T5.5GB | 5.5 | | 1300W 22Ω | 1 | | 0 |
| MK500-2T7.5PB | 7.5 | | 1700W 16Ω | 1 | | 0 |
| MK500-2T7.5GB | 7.5 | | 1700W 16Ω | 1 | | 0 |
| MK500-2T11GB | 11.0 | | 2300W 12Ω | 1 | | 2 |
| MK500-2T15GB | 15.0 | | 3000W 9Ω | 1 | | 9 |
| MK500-2T18.5G | 18.5 | Optional built-in | 3900W 7Ω | 1 | | 7 |
| MK500-2T22G | 22.0 | | 4600W 6Ω | 1 | | 6 |
| MK500-2T30G | 30.0 | | 5500W 5Ω | 1 | | 5 |
| MK500-2T37G | 37.0 | | 6800W 4Ω | 1 | | 4 |
| MK500-2T45G | 45.0 | External | 5000W 5.4Ω | 2 | | 4.9 |
| MK500-2T55G | 55.0 | | 6000W 4.4Ω | 2 | | 4.0 |
| MK500-2T75G | 75.0 | | 7500W 4.0Ω | 2 | | 3.7 |
| MK500-2T90G | 90.0 | | 6000W 4.0Ω | 3 | | 3.7 |
| MK500-2T110G | 110.0 | | 7500W 4.0Ω | 3 | | 3.7 |
| MK500-2T132G | 132.0 | | 7000W 4.0Ω | 4 | | 3.7 |
| Three-phase 380V | | | | | | |
| MK500-4T0.75GB/1.5PB | 0.8 | Standard built-in | 140W 800Ω | 1 | Model suffix “B” | 96 |
| MK500-4T1.5GB/2.2PB | 1.5 | | 300W 380Ω | 1 | | 96 |
| MK500-4T2.2GB/4.0PB | 2.2 | | 440W 260Ω | 1 | | 64 |
| MK500-4T4.0GB/5.5PB | 4.0 | | 740W 150Ω | 1 | | 32 |
| MK500-4T5.5GB-S | 5.5 | | 1100W 100Ω | 1 | | 32 |
| MK500-4T5.5GB/7.5PB | 5.5 | | 1100W 100Ω | 1 | | 32 |
| MK500-4T7.5GB/11PB | 7.5 | | 1500W 75Ω | 1 | | 32 |

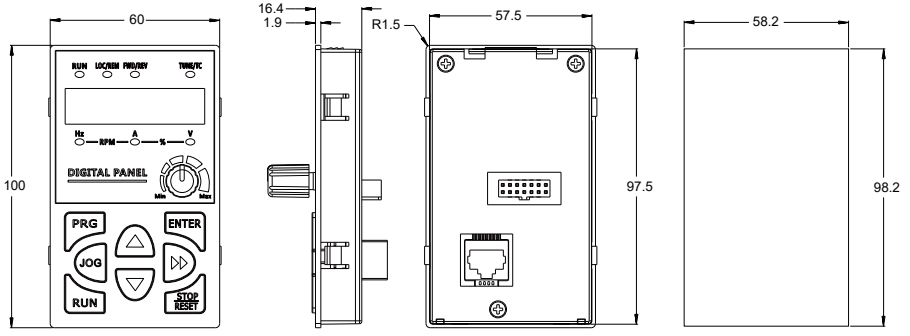
| Model | Motor Compatibility (KW) | Brake Unit | 125% Braking Torque (10% ED, max 10 seconds) | | Remarks | Minimum Braking Resistor Value (Ω) |
|---|---|---|---|---|---|---|
| | | | Recommended Braking Resistor Specifications | Number of Braking Resistors | | |
| Three-phase 380V | | | | | | |
| MK500-4T11GB/15PB | 11.0 | Standard built-in | 2200W 50Ω | 1 | Model suffix “B” | 24 |
| MK500-4T15GB-S | 15.0 | | 3000W 38Ω | 1 | | 24 |
| MK500-4T15GB/18.5PB | 15.0 | | 3000W 38Ω | 1 | | 24 |
| MK500-4T18.5GB/22PB | 18.5 | | 4000W 32Ω | 1 | | 24 |
| MK500-4T22GB/30PB | 22.0 | | 4500W 27Ω | 1 | | 24 |
| MK500-4T30GB-S | 30.0 | | 6000W 20Ω | 1 | | 19 |
| MK500-4T30GB/37PB | 30.0 | Optional built-in | 6000W 20Ω | 1 | | 19 |
| MK500-4T37GB/45PB | 37.0 | | 7000W 16Ω | 1 | | 15 |
| MK500-4T45GB/55PB-S | 45.0 | | 9000W 13Ω | 1 | | 13 |
| MK500-4T45GB/55PB | 45.0 | | 9000W 13Ω | 1 | | 13 |
| MK500-4T55GB/75PB | 55.0 | | 11000W 10.5Ω | 1 | | 10 |
| MK500-4T75GB/90PB | 75.0 | | 15000W 7.7Ω | 1 | | 7 |
| MK500-4T90G/110P | 90.0 | External | 9000W 10.2Ω | 2 | | 10.2*2 |
| MK500-4T110G/132P | 110.0 | | 11000W 8.0Ω | 2 | | 6.8*2 |
| MK500-4T132G/160P | 132.0 | | 13000W 6.8Ω | 2 | | 6.8*2 |
| MK500-4T160G-S | 160.0 | | 16000W 2.8Ω | 2 | | 2.5*2 |
| MK500-4T160G/185P | 160.0 | | 16000W 2.8Ω | 2 | | 2.5*2 |
| MK500-4T185G/200P | 185.0 | | 19000W 4.5Ω | 2 | | 2.5*2 |
| MK500-4T200G/220P | 200.0 | | 19000W 4.5Ω | 2 | | 2.5*2 |
| MK500-4T220G/250P-S | 220.0 | | 21000W 4.1Ω | 2 | | 2.5*2 |
| MK500-4T220G/250P | 220.0 | | 21000W 4.1Ω | 2 | | 2.5*2 |
| MK500-4T250G/280P | 250.0 | | 24000W 3.6Ω | 2 | | 2.5*2 |
| MK500-4T280G/315P | 280.0 | | 27000W 3.2Ω | 2 | | 2.5*2 |
| MK500-4T315G/355P-S | 315.0 | | 20000W 4.3Ω | 3 | | 2.5*3 |
| MK500-4T315G/355P | 315.0 | | 20000W 4.3Ω | 3 | | 2.5*3 |
| MK500-4T355G/400P | 355.0 | | 23000W 3.8Ω | 3 | | 2.5*3 |
| MK500-4T400G/450P | 400.0 | | 26000W 3.4Ω | 3 | | 2.5*3 |
| MK500-4T450G/500P | 450.0 | | 29000W 3.0Ω | 3 | | 2.5*3 |
| MK500-4T500G/560P | 500.0 | | 21000W 4.1Ω | 4 | | 2.5*4 |

## Description

- For models 380~480V, the default starting brake voltage for built-in braking units is 690V; for models 200~240V, it's 360V.
- 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 |
|---|---|---|
| MK500LED | 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. |  |




Cutout Dimension Diagram

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

Figure 8-1 MK500LED 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 |
|---|---|---|---|---|---|---|
| P0-00 | 0xF000 | GP Type Display | 1: G type (constant torque load model)<br>2: P type (fan, pump load model) | 1 | - | Unchangeable |
| P0-01 | 0xF001 | First Motor Control Mode | 0: Vector control without speed sensor (SVC)<br>1: Vector control with speed sensor (FVC)<br>2: V/F control | 0 | - | Shutdown Change |
| P0-02 | 0xF002 | Command Source Selection | 0: Operation panel command channel<br>1: Terminal command channel<br>2: Communication command channel | 0 | - | Change in Real Time |
| P0-03 | 0xF003 | Main Frequency Source X Selection | 0: Digital setting (not remembered after power off)<br>1: Digital setting (remembered after power off)<br>2: AII<br>3: AI2<br>4: Keyboard potentiometer<br>5: PULSE pulse setting<br>6: Multi-step instruction<br>7: Simple PLC<br>8: PID<br>9: Communication command | 0 | - | Shutdown Change |
| P0-04 | 0xF004 | Auxiliary Frequency Source Y Selection | 0: Digital setting (not remembered after power off)<br>1: Digital setting (remembered after power off)<br>2: AII<br>3: AI2<br>4: Keyboard potentiometer<br>5: PULSE pulse setting<br>6: Multi-step instruction<br>7: Simple PLC<br>8: PID<br>9: Communication command | 0 | - | Shutdown Change |
| P0-05 | 0xF005 | Auxiliary Frequency Source Y Range Selection when Overlapping | 0: Relative to maximum frequency<br>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 |

| Parameters | Communication Address | Parameter Name | Setting Value | Default Value | Unit | Change Method |
|---|---|---|---|---|---|---|
| P0-07 | 0xF007 | Frequency Source Overlap Selection | Units: Frequency Command Selection<br>0: Main frequency source X<br>1: Main-auxiliary calculation result (the calculation relationship is determined by the tens digit)<br>2: Switch between main frequency source X and auxiliary frequency source Y<br>3: Switch between main frequency source X and main-auxiliary calculation result<br>4: Switch between auxiliary frequency source Y and main-auxiliary calculation result<br>Tens Digit: Frequency Command Main-Auxiliary Calculation Relationship<br>0: Main + Auxiliary<br>1: Main - Auxiliary<br>2: Maximum value of both<br>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<br>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<br>1:AI1<br>2:AI2<br>3: Keyboard potentiometer<br>4: PULSE pulse setting<br>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<br>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<br>1: 0.1 second<br>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<br>2:0.01Hz | 2 | - | Unchangeable |
| P0-23 | 0xF017 | Digital Set Frequency Memory Selection | 0: Do Not Remember<br>1: Remember | 0 | - | Change in Real Time |
| P0-24 | 0xF018 | Motor Parameter Group Selection | 0: Motor Parameter Group 1<br>1: Motor Parameter Group 2 | 0 | - | Shutdown Change |
| P0-25 | 0xF019 | Reference Frequency for Acceleration/Deceleration Time | 0: Maximum Frequency (P0-10)<br>1: Set Frequency<br>2:10 AM0Hz | 0 | - | Shutdown Change |
| P0-26 | 0xF01A | Reference for Running Frequency UP/DOWN | 0: Running Frequency<br>1: Set Frequency | 0 | - | Shutdown Change |
| P0-27 | 0xF01B | Command Source Bundled with Frequency Source | Units; Operation Panel Command Bundled with Frequency Source Selection<br>0: No Bundling<br>1: Digital Set Frequency<br>2: AI1<br>3: AI2<br>4: Keyboard potentiometer<br>5: PULSE pulse setting<br>6: Multi-Speed<br>7: Simple PLC<br>8: PID<br>9: Communication command<br>Tens Digit: Terminal Command Bundling with Frequency Source Selection<br>Hundreds Digit: Communication Command Bundling with Frequency Source Selection | 0 | - | Change in Real Time |
| P1-00 | 0xF100 | Motor Type Selection | 0: Standard Asynchronous Motor<br>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 |

| Parameters | Communication Address | Parameter Name | Setting Value | Default Value | Unit | Change Method |
|---|---|---|---|---|---|---|
| P1-28 | 0xF11C | Encoder Type | 0: ABZ Incremental Encoder<br>2: Rotary Transformer | 0 | - | Shutdown Change |
| P1-30 | 0xF11E | Encoder AB Phase Sequence | 0: Forward<br>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<br>1: Static tuning of asynchronous motor<br>2: Dynamic tuning of asynchronous motor<br>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)<br>1: AI1<br>2: AI2<br>3: Keyboard potentiometer<br>4: PULSE pulse setting<br>5: Communication Setting<br>6: MIN(AI1, AI2)<br>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)<br>1: AI1<br>2: AI2<br>3: Keyboard potentiometer<br>4: PULSE pulse setting<br>5: Communication Setting<br>6: MIN(AI1, AI2)<br>7: MAX(AI1, AI2)<br>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<br>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 |

| Parameters | Communication Address | Parameter Name | Setting Value | Default Value | Unit | Change Method |
|---|---|---|---|---|---|---|
| P2-22 | 0xF216 | Power Generation Limit Enable | 0: Ineffective<br>1: Effective<br>2: Effective at Constant Speed<br>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<br>1: Multi-point V/F Curve<br>2: Square V/F Curve<br>3: 1.2 Times V/F Curve<br>4: 1.4 Times V/F Curve<br>6: 1.6 Times V/F Curve<br>8: 1.8 Times V/F Curve<br>9: Reserved<br>10: V/F Complete Separation Mode<br>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)<br>1: AI<br>2: AI2<br>3: Keyboard potentiometer<br>4: PULSE pulse setting<br>5: Multi-step Instruction<br>6: Simple PLC<br>7: PID<br>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 | 5 | Change in Real Time |
| P3-17 | 0xF311 | V/F Separation Shutdown Mode Selection | 0: Frequency/Voltage Independently Reduced to 0<br>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<br>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<br>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 |

| Parameters | Communication Address | Parameter Name | Setting Value | Default Value | Unit | Change Method |
|---|---|---|---|---|---|---|
| P4-00 | 0xF400 | X1 Terminal Function Selection | 0: No Function<br>1: Forward Running FWD or Running Command<br>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)<br>3: Three-wire Running Control<br>4: Forward Jog (FJOG)<br>5: Reverse Jog (RJOG)<br>6: Terminal UP<br>7: Terminal DOWN<br>8: Free Stop<br>9: Fault Reset (RESET)<br>10: Run Pause<br>11: External Fault Normally Open Input<br>12: Multi-step Instruction Terminal 1<br>13: Multi-step Instruction Terminal 2<br>14: Multi-step Instruction Terminal 3<br>15: Multi-step Instruction Terminal 4<br>16: Acceleration/Deceleration Time Selection Terminal 1<br>17: Acceleration/Deceleration Time Selection Terminal 2<br>18: Frequency Source Switching<br>19: UP/DOWN Setting Reset (Terminal, Keyboard)<br>20: Run Command Switching Terminal<br>21: Acceleration/Deceleration Inhibition<br>22: PID Pause<br>23: PLC Status Reset<br>24: Swing Frequency Pause<br>25: Counter Input<br>26: Counter Reset<br>27: Length Count Input<br>28: Length Reset<br>29: Torque Control Prohibition<br>30: PULSE Frequency Input (only effective for X6)<br>31: Reserved<br>32: Immediate DC Braking<br>33: External Fault Normally Closed Input<br>34: Frequency Modification Enable<br>35: PID Action Direction Inversion<br>36: External Stop Terminal 1<br>37: Control Command Switch Terminal 2<br>38: PID Integral Pause<br>39: Frequency Source X and Preset Frequency Switch<br>40: Frequency Source Y and Preset Frequency Switch<br>41: Motor Selection Terminal 1<br>42: Reserved<br>43: PID Parameter Switch<br>44: User-Defined Fault 1<br>45: User-Defined Fault 2<br>46: Speed Control/Torque Control Switch<br>47: Emergency Stop<br>48: External Stop Terminal 2<br>49: Deceleration DC Braking<br>50: Current Run Time Reset<br>51: Two-wire/Three-wire Switch<br>52: Reverse Frequency Prohibition<br>53-59: Reserved | 1 | - | Shutdown Change |
| P4-01 | 0xF401 | X2 Terminal Function Selection | | 2 | - | Shutdown Change |
| P4-02 | 0xF402 | X3 Terminal Function Selection | | 4 | - | Shutdown Change |
| P4-03 | 0xF403 | X4 Terminal Function Selection | | 12 | - | Shutdown Change |
| P4-04 | 0xF404 | X5 Terminal Function Selection | | 13 | - | Shutdown Change |
| P4-05 | 0xF405 | X6 Terminal Function Selection | | 0 | - | Shutdown Change |
| P4-06 | 0xF406 | X7 Terminal Function Selection | | 0 | - | Shutdown Change |
| P4-07 | 0xF407 | X8 Terminal Function Selection | | 0 | - | Shutdown Change |
| P4-08 | 0xF408 | X9 Terminal Function Selection | | 0 | - | Shutdown Change |
| P4-09 | 0xF409 | X10 Terminal Function Selection | | 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<br>1: Two-wire Type 2<br>2: Three-wire Type 1<br>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 | $ | 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% | 1000 | % | 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 |

| Parameters | Communication Address | Parameter Name | Setting Value | Default Value | Unit | Change Method |
|---|---|---|---|---|---|---|
| P4-33 | 0xF421 | AI Curve Selection | Units: AI1 Curve Selection<br>1: Curve 1 (2 points, P4-13~P4-16)<br>2: Curve 2 (2 points, P4-18~P4-21)<br>3: Curve 2 (2 points, P4-23~P4-26)<br>4: Curve 4 (4 points, A6-00~A6-07)<br>5: Curve 5 (4 points, A6-08~A6-15)<br>Ten: AI2 Curve Selection<br>1: Curve 1 (2 points, P4-13~P4-1)<br>2: Curve 2 (2 points, P4-18~P4-21)<br>3: Curve 3 (2 points, P4-23~P4-26)<br>4: Curve 4 (4 points, A6-00~A6-07)<br>5: Curve 5 (4 points, A6-08~A6-15)<br>Hundred: Keypad Potentiometer Curve Selection<br>1: Curve 1 (2 points, P4-13~P4-1)<br>2: Curve 2 (2 points, P4-18~P4-21)<br>3: Curve 3 (2 points, P4-23~P4-26)<br>4: Curve 4 (4 points, A6-00~A6-07)<br>5; Curve 5 (4 points, A6-08~A6-15) | 321 | - | Change in Real Time |
| P4-34 | 0xF422 | Al Lower Limit Selection | Units: Al1 below minimum input setting selection<br>0: Corresponds to minimum input setting<br>1: 0.0%<br>Tens: Al2 below minimum input setting selection<br>0: Corresponds to minimum input setting<br>1: 0.0%<br>Hundreds: Keyboard potentiometer below minimum input setting selection<br>0: Corresponds to minimum input setting<br>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<br>0: High level effective<br>1: Low level effective<br>Tens: X2<br>0: High level effective<br>1: Low level effective<br>Hundreds: X3<br>0: High level effective<br>1: Low level effective<br>Thousands: X4<br>0: High level effective<br>1: Low level effective<br>Ten-thousands: X5<br>0: High level effective<br>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<br>0: High level effective<br>1: Low level effective<br>Tens: X7<br>0: High level effective<br>1: Low level effective<br>Hundreds: X8<br>0: High level effective<br>1: Low level effective<br>Thousands: X9<br>0: High level effective<br>1: Low level effective<br>Ten-thousands: X10<br>0: High level effective<br>1: Low level effective | 0 | - | Shutdown Change |
| F5-00 | 0xF500 | Multi-Function Terminal Output Selection | 0: Pulse Output (Y2P)<br>1: Digital Output (Y2R) | 0 | - | Change in Real Time |
| P5-01 | 0xF501 | Y2R Output Function Selection | 0: No output<br>1: Frequency converter operating<br>2: Fault output (for free-stopfaults)<br>3: Frequency level detection FDT1 output<br>4: Frequency attained<br>5: Zero speed operation (no output when stopped)<br>6: Motor overload pre-alarm<br>7: Frequency converter overload pre-alarm<br>8: Set count value reached<br>9: Specified count value reached<br>10: Length reached<br>11: PLC cycle complete<br>12: Cumulative operating time reached<br>13: Frequency limitation active<br>14: Torque limitation active<br>15: Ready for operation<br>16: Al1 > Al2<br>17: Upper frequency limit reached<br>18: Lower frequency limit reached (no output when stopped)<br>19: Unde-voltage condition output<br>20: Communication setting | 0 | - | Change in Real Time |
| P5-02 | 0xF502 | Relay 1 Output Function Selection | | 2 | - | Change in Real Time |

| Parameters | Communication Address | Parameter Name | Setting Value | Default Value | Unit | Change Method |
|---|---|---|---|---|---|---|
| P5-03 | 0xF503 | Relay 2 Output Function Selection | 22: Reserved<br>23: Zero speed operation 2 (output also when stopped)<br>24: Cumulative power-on time reached<br>25: Frequency level detection FDT2 output<br>26: Frequency 1 attained output<br>27: Frequency 2 attained output<br>28: Current 1 attained output<br>29: Current 2 attained output<br>30: Timer attained output<br>31: AI1 input over limit<br>32: Unloading<br>33: Reverse operation<br>34: Zero current state<br>35: Module temperature reached<br>36: Output current over limit<br>37: Lower frequency limit reached (also outputs when stopped)<br>38: Alarm output (all faults)<br>39: Reserved<br>40: Current operation time reached<br>41: Fault output (for free-stop faults and does not output for under-voltage) | 0 | - | Change in Real Time |
| P5-04 | 0xF504 | Y1 Output Function Selection | | 1 | - | Change in Real Time |
| P5-06 | 0xF506 | Y2P Output Function Selection | 0: Running Frequency<br>1: Set Frequency<br>2: Output current<br>3: Output torque (absolute value)<br>4: Output power<br>5: Output voltage<br>6: PULSE input<br>7: AI1<br>8: AI2<br>9: Keyboard potentiometer<br>10: Length<br>11: Count value<br>12: Communication setting<br>13: Motor speed<br>14: Output current<br>15: Bus voltage<br>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<br>0: Positive logic<br>1: Negative logic<br>Tens: Relay 1<br>0: Positive logic<br>1: Negative logic<br>Hundreds: Relay 2<br>0: Positive logic<br>1: Negative logic<br>Thousands: Y1<br>0: Positive logic<br>1: Negative logic<br>Ten-thousands: Y2<br>0: Positive logic<br>1: Negative logic | 0 | - | Change in Real Time |
| P6-00 | 0xF600 | Starting Method | 0: Direct start<br>1: Speed tracking restart<br>2: Pre-excitation start (for asynchronous motors) | 0 | - | Change in Real Time |
| P6-01 | 0xF601 | Speed Tracking Method | 0: Start from stop frequency<br>1: Start from power frequency<br>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<br>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<br>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 |

| 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<br>1: Switch between operation panel command channel and remote command channel (terminal command channel or communication command channel)<br>2: Forward/reverse switching<br>3: Forward jog<br>4: Reverse jog | 0 | - | Shutdown Change |
| P7-02 | 0xF702 | STOP/RESET Key Function | 0: Only keyboard mode S/R effective<br>1: S/R effective in any mode | 1 | - | Change in Real Time |
| P7-03 | 0xF703 | LED Operating Display Parameter 1 | bit0: Operating frequency (Hz)<br>bit1: Set frequency (Hz)<br>bit2: Bus voltage (V)<br>bit3: Output voltage (V)<br>bit4: Output current (A)<br>bit5: Output power (kW)<br>bit6: Output torque (%)<br>bit7: X input status<br>bit8: DO output status<br>bit9: Al1 voltage (V)<br>bit10: Al2 voltage (V)<br>bit11: -<br>bit12: Count value<br>bit13: Length value<br>bit14: Load speed display<br>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<br>bit1: PLC phase<br>bit2: PULSE input pulse frequency (kHz)<br>bit3: Feedback frequency(Hz)<br>bit4: Remaining operation time<br>bit5: AI1 voltage before correction (V)<br>bit6: AI2 voltage before correction (V)<br>bit7: -<br>bit8: Motor speed<br>bit9: Current power-on time (Hour)<br>bit10: Current operating time (Min)<br>bit11: PULSE input pulse frequency (Hz)<br>bit12: Communication set value<br>bit13: Encoder feedback speed<br>bit14: Main frequency X display<br>bit15: Auxiliary frequency Y display | 0 | - | Change in Real Time |
| P7-05 | 0xF705 | LED Stop Display Parameter | bit0: Set frequency (Hz)<br>bit1: Bus voltage (V)<br>bit2: DI input status<br>bit3: DO output status<br>bit4: AI1 voltage (V)<br>bit5: AI2 voltage (V)<br>bit6: -<br>bit7: Count value<br>bit8: Length value<br>bit9: PLC phase<br>bit10: Load speed<br>bit11: PID setting<br>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°℃~999℃ | 0 | ℃ | Unchangeable |
| P7-08 | 0xF708 | Rectifier Bridge Heat Sink Temperature | 0℃~999℃ | 0 | ℃ | 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<br>0: 0 decimal places<br>1: 1 decimal place<br>2: 2 decimal place<br>Tens: Number of decimal points for U0-19/U0-29<br>0: 0 decimal places<br>1: 1 decimal place<br>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 |

| 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 | 5 | 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 | 5 | 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 | 5 | 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<br>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<br>1: Stop<br>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<br>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<br>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<br>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 |

| 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<br>1: Effective | 0 | | Shutdown Change |
| P8-43 | 0xF82B | Timer Operation Time Selection | 0: Set by P8-44<br>1: All<br>2: AI2<br>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℃~100℃ | 75 | ℃ | Change in Real Time |
| P8-48 | 0xF830 | Heat Dissipation Fan Control | 0: Fan operates when running<br>1: Fan always operates<br>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<br>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<br>0: Invalid<br>1: Effective<br>Tens: Pre-operation ground fault protection selection<br>0: Invalid<br>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<br>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<br>0: Disable input phase loss<br>1: Protect when both software and hardware input phase loss conditions are met<br>2: Protect when software input phase loss condition is met<br>3: Protect when hardware input phase loss condition is met<br>Tens: Contactor engagement protection selection<br>0: Disable<br>1: Enable | 11 | - | Change in Real Time |
| P9-13 | 0xF90D | Output Phase Loss Protection Selection | Units: Output phase loss protection selection<br>0: Disable<br>1: Enable<br>Tens: Pre-operation output phase loss protection selection<br>0: Disable<br>1: Enable | 1 | - | Change in Real Time |
| P9-14 | 0xF90E | First Fault Type | 0: No fault<br>1: Reserved<br>2: Overcurrent during acceleration<br>3: Overcurrent during deceleration<br>4: Overcurrent at constant speed<br>5: Overvoltage during acceleration<br>6: Overvoltage during deceleration<br>7: Overvoltage at constant speed<br>8: Buffer resistor overload<br>9: Undervoltage<br>10: Frequency Converter overload<br>11: Motor overload<br>12: Input phase loss<br>13: Output phase loss<br>14: Module overheating<br>15: External fault<br>16: Communication abnormality<br>17: Reserved<br>18: Current detection abnormality<br>19: Motor tuning abnormality<br>20: Reserved<br>21: Parameter read/write abnormality<br>22: Reserved<br>23: Motor Ground Fault<br>24: Reserved<br>25: Reserved<br>26: Operation Time Reached<br>27: User-Defined Fault 1<br>28: User-Defined Fault 2<br>29: Power-On Time Reached<br>30: Load Loss<br>31: PID Feedback Loss During Operation<br>33: Drive Board Internal Communication Receive Timeout | 0 | - | Unchangeable |
| P9-15 | 0xF90F | Second Fault Type | | 0 | - | Unchangeable |

| 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<br>41: Motor Switching During Operation<br>42: Excessive Speed Deviation<br>43: Reserved<br>45: Reserved<br>51: Reserved<br>52: Continuous Current Limit<br>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)<br>0: Free Stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Tens: Input Phase Loss (Err12)<br>0: Free Stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Hundreds: Output Phase Loss (Err13)<br>0: Free Stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Thousands: External Fault (Err15)<br>0: Free Stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Ten-thousands: Communication Anomaly (Err16)<br>0: Free Stop<br>1: Stop according to stop mode<br>2: Continue operation | 0 | - | Change in Real Time |
| P9-48 | 0xF930 | Fault Protection Action Selection 2 | Units: Encoder/PG Card Anomaly (Err20)<br>0: Free stop<br>Tens: Parameter Read/Write Anomaly (Err21)<br>0: Free stop<br>1: Stop according to stop mode<br>Hundreds: Reserved (Err24)<br>0: Free Stop<br>1: Stop according to stop mode<br>Thousands: Reserved (Err25)<br>0: Free Stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Ten-thousands: Operation Time Reached (Err26)<br>0: Free Stop<br>1: Stop according to stop mode<br>2: Continue operation | 0 | - | Change in Real Time |

| 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)<br>0: Free stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Tens: User-Defined Fault 2 (Err28)<br>0: Free stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Hundreds: Power-On Time Reached (Err29)<br>0: Free stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Thousands: Load Loss (Err30)<br>0: Free Stop<br>1: Stop according to stop mode<br>2: Jump directly to 79% of motor rated frequency and continue operation, automatically revert to set frequency if no load loss<br>Ten-thousands: PID Loss During Operation (Err31)<br>0: Free stop<br>1: Stop according to stop mode<br>2: Continue operation | 0 | - | Change in Real Time |
| P9-50 | 0xF932 | Fault Protection Action Selection 4 | Units: Excessive Speed Deviation (Err42)<br>0: Free stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Tens: Motor Overspeed (Err43)<br>0: Free stop<br>1: Stop according to stop mode<br>2: Continue operation<br>Hundreds: Initial Position Error (Err51)<br>0: Free stop<br>1: Stop according to stop mode<br>2: Continue operation | 0 | - | Change in Real Time |
| P9-54 | 0xF936 | Fault Operation Frequency Selection | 0: Operate at current running frequency<br>1: Operate at set frequency<br>2: Operate at upper limit frequency<br>3: Operate at lower limit frequency<br>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<br>1: Decelerate<br>2: Decelerate to stop<br>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<br>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<br>1: All<br>2: AI2<br>3: Keyboard potentiometer<br>4: PULSE setting<br>5: Communication setting<br>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<br>1: AI2<br>2: Keyboard potentiometer<br>3: AI1-AI2<br>4: Pulse setting<br>5: Communication setting<br>6: AI1+AI2<br>7: MAX(AI1, AI2)<br>8: MIN(AI1,AI2) | 0 | - | Change in Real Time |
| PA-03 | 0xFA03 | PID Action Direction | 0: Positive action<br>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 |

| Parameters | Communication Address | Parameter Name | Setting Value | Default Value | Unit | Change Method |
|---|---|---|---|---|---|---|
| PA-06 | 0xFA06 | Integral Time Til | 0.01s~10.00s | 2.00 | S | Change in Real Time |
| PA-07 | 0xFA07 | Derivative Time Td1 | 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 Kp2 | 0.0~1000.0 | 20.0 | - | Change in Real Time |
| PA-16 | 0xFA10 | Integral Time Ti2 | 0.01s~10.00s | 2.00 | S | Change in Real Time |
| PA-17 | 0xFA11 | Derivative Time Td2 | 0.000s~10.000s | 0.000 | S | Change in Real Time |
| PA-18 | OxFA12 | PID Parameter Switching Condition | 0: No switching<br>1: Switch through X terminal<br>2: Automatic switching based on deviation<br>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<br>0: Invalid<br>1: Valid<br>Tens: Stop Integration After Output Reaches Limit Value<br>0: Continue integration<br>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<br>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 | OxFC08 | 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<br>1: Maintain final value after single run completion<br>2: Continuous loop | 0 | - | Change in Real Time |
| PC-17 | 0xFC11 | Simple PLC Power-Off Memory Selection | Units: Power-off memory selection<br>0: Do not remember on power-off<br>1: Remember on power-off<br>Tens: Stop memory selection<br>0: Do not remember on stop<br>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 |

| 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 | OxFC1F | 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 |

| Parameters | Communication 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/Deceleration 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/Deceleration 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/Deceleration 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/Deceleration Time Selection | 0~3 | 0 | - | Change in Real Time |
| PC-50 | 0xFC32 | PLC Operation Time Unit | 0: s (seconds)<br>1: h (hours) | 0 | - | Change in Real Time |
| PC-51 | 0xFC33 | Multi-Step Command 0 Set Mode | 0: Set by function code (PC-00)<br>1: AI1<br>2: AI2<br>3: Keyboard potentiometer<br>4: PULSE pulse<br>5: PID<br>6: Preset frequency (P0-08) | 0 | - | Change in Real Time |
| PD-00 | 0xFD00 | Baud Rate | Units: Modbus<br>0: 300bps<br>1: 600bps<br>2: 1200bps<br>3: 2400bps<br>4: 4800bps<br>5: 9600bps<br>6: 19200bps<br>7: 38400bps<br>8: 57600bps<br>9: 115200bps<br>Tens: Reserved<br>Hundreds: Reserved<br>Thousands: Reserved | 5005 | - | Change in Real Time |
| PD-01 | 0xFD01 | Modbus Data Format | 0: No parity (8-N-2)<br>1: Even parity (8-E-1)<br>2: Odd parity (8-O-1)<br>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<br>0: Non-standard Modbus protocol<br>1: Standard Modbus protocol<br>Tens: Reserved | 31 | - | Change in Real Time |
| PD-06 | OxFD06 | Communication Read Current Resolution | 0: 0.01A (Effective for ≤55KW)<br>1:0.1A | 0 | | Change in Real Time |

| 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<br>1: Restore factory parameters, excluding motor parameters<br>2: Clear record information<br>3: Restore factory parameters, including motor parameters | 0 | - | Shutdown Change |
| PP-02 | 0x1F02 | Functional Parameter Group Display Selection | Units: U group display selection<br>0: Do not display<br>1: Display<br>Tens: A group display selection<br>0: Do not display<br>1: Display | 11 | - | Shutdown Change |
| PP-03 | 0x1F03 | Custom Parameter Group Display Selection | Units: User-customized parameter group display selection<br>0: Do not display<br>1: Display<br>Tens: User-changed parameter group selection<br>0: Do not display<br>1: Display | 0 | - | Change in Real Time |
| PP-04 | 0x1F04 | Parameter Modification Attribute | 0: Modifiable<br>1: Not modifiable | 0 | - | Change in Real Time |
| A0-00 | 0xA000 | Speed/Torque Control Mode Selection | 0: Speed control<br>1: Torque control | 0 | - | Change in Real Time |
| A0-01 | 0xA001 | Torque Setting Selection in Torque Control Mode | 0: Numeric setting (A0-03)<br>1: AI1<br>2: AI2<br>3: Keyboard potentiometer<br>4: PULSE pulse<br>5: Communication setting<br>6: MIN(AI1, AI2)<br>7: MAX(AI1,Al2) | 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<br>1: Synchronous modulation | 0 | - | Change in Real Time |
| A5-02 | 0xA502 | Dead Zone Compensation Mode Selection | 0: No compensation<br>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<br>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 |

| 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 | AI1 Voltage (V) | -10.57V~10.57V | 0.00 | V | Unchangeable |
| U0-10 | 0x700A | AI2 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 | AI1 Pre-correction Voltage | -10.570V~10.570V | 0.000 | V | Unchangeable |
| U0-22 | 0x7016 | AI2 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℃~200℃ | 0 | ℃ | 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 |

| 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 | 0.0~6553.5 | 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: MK500 Series Frequency Converter Modbus Communication Protocol

The MK500 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.

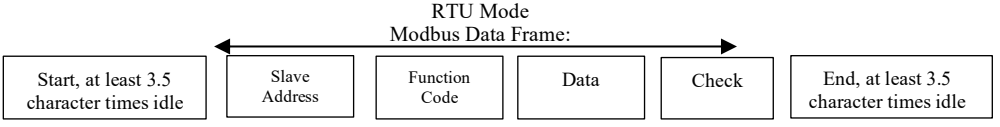
(3) Topology Structure

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 MK500 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 MK500 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 | |

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 F0OAH 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 | AI1 Voltage |
| 100B | AI2 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 | AI1 Pre-correction Voltage |
| 1017 | AI2 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<br>BIT1: Reserved<br>BIT2: Relay 1 output control<br>BIT3: Relay 2 output control<br>BIT4: Y2 output control (Y2 terminal for collector open circuit output)<br>BIT5:VDO1<br>BIT6:VDO2<br>BIT7:VDO3<br>BIT8:VDO4<br>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<br>0001: Reserved<br>0002: Overcurrent during acceleration<br>0003: Overcurrent during deceleration<br>0004: Overcurrent at constant speed<br>0005: Overvoltage during acceleration<br>0006: Overvoltage during deceleration<br>0007: Overvoltage at constant speed<br>0008: Buffer resistor overload fault<br>0009: Under-voltage fault |

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

Pd Group Communication Parameter Description

| | | | |
|---|---|---|---|
| Pd-00 | Baud Rate | Factory Value | 5005 |
| | Setting Range | Unit: MODBUS baud rate<br>0:300BPS<br>1:600BPS<br>2:1200BPS<br>3:2400BPS<br>4:4800BPS<br>5:9600BPS<br>6:19200BPS<br>7:38400BPS<br>8:57600BPS<br>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><br>1: Even parity: Data format <8,E,1><br>2: Odd parity: Data format <8,O,1><br>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)<br>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<br>1: Selects standard Modbus protocol.<br>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.<br>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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National Unified Service Telephone: 0512-67865782 Postal Code: 215000 Website: http://www.cn-vfd.com

# Product Warranty Card

<table>
<tr><td rowspan="3">Customer Information</td><td colspan="2">Company Address:</td></tr>
<tr><td rowspan="2">Company Name:<br>Postal Code:</td><td>Contact Person:</td></tr>
<tr><td>Contact Telephone:</td></tr>
<tr><td rowspan="3">Product Information</td><td colspan="2">Product Model:</td></tr>
<tr><td colspan="2">Machine Body Barcode (affix here)</td></tr>
<tr><td colspan="2">Agent Name:</td></tr>
<tr><td>Fault Description</td><td colspan="2">Description of Fault<br><br>Recorder:</td></tr>
</table>

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