

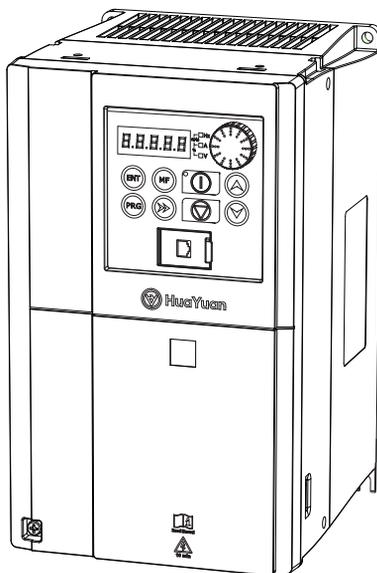


PV100 Series

PV Water Pump Inverter

Power Range: 0.4kW~400kW

User Manual



Version
V2.0

File No. : 29900041

Always read this manual carefully for the safe use of this product.
In addition, this manual should be properly kept and be available to the actual operator.

Preface

Dear Customer,

Welcome to the use of our photovoltaic (PV) water pump system. We sincerely hope that this product meets your requirements.

The PV100 series photovoltaic water pump inverter is developed based on the core control algorithms of the G100E series, combined with the application control requirements of PV water pumps. It is a dedicated inverter specifically designed for outdoor PV-powered water pumps. The inverter features maximum power point tracking (MPPT), low-light sleep mode, light-intensity wake-up, high-water-level sleep, underload warning, and remote communication monitoring, among other control and protection functions.

When commissioning this product, please refer to the commissioning guidelines in this manual. This inverter has the following features:

- Fully automatic operation of the water-lifting system, requiring no manual supervision or only minimal routine maintenance.
- Optional AC mains/diesel engine input switch module enables all-weather operation without the need for battery storage or a control room.
- Multiple inverters can be operated in parallel with an optional sequential control module to maximize pump efficiency.
- Advanced control technology and novel variable-frequency inverter technology ensure the system maximizes the utilization of solar power.
- Optional remote monitoring module allows IoT-based backend management.

Version V3.0

Revision Date: December 2025

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1. Safety Precautions

1.1 Safety Symbol Definitions

To ensure the safety of personnel, equipment, and property, please read this chapter carefully before using the inverter, and strictly follow the instructions during handling, installation, commissioning, operation, and maintenance. Users must comply with the relevant safety instructions provided in this manual. Any injuries or property damage resulting from user violations or improper operation shall not be the responsibility of the company.

In this manual, safety symbols are classified into two categories: "Danger" and "Caution".

⚠ DANGER : Failure to follow the instructions may result in serious injury or death, as well as significant property damage.

⚠ WARNING : Failure to follow the instructions may result in moderate or minor injury, and may cause damage to equipment or property.

1.2 Safety Instructions

① Before Installation

⚠ DANGER

- (1) Do not install the inverter if water ingress or water traces are found in the unit upon unpacking, as this indicates the inverter may have been exposed to moisture or water damage.
- (2) Do not install the inverter if any components are damaged or missing upon unpacking, or if the packaging labels do not match the actual contents.
- (3) Handle the unit with care during transportation; lift and place gently to avoid the risk of damaging the equipment.
- (4) Do not touch internal components with your hands, as this may cause damage due to static electricity.

② Installation

DANGER

- (1) Install the inverter on a metal or other flame-retardant surface, and keep it away from combustible materials, otherwise there is a risk of fire.
- (2) Assemble and tighten the mounting bolts of the inverter according to the instructions, otherwise there is a risk of the unit falling.
- (3) Do not loosen or turn the mounting bolts of the inverter arbitrarily, especially those marked in red.

WARNING

- (1) Do not allow wire ends, screws, or other debris to fall into the inverter, as this may cause damage to the unit.
- (2) Install the inverter in a location with minimal vibration, free from water splashes, and avoid direct sunlight exposure.
- (3) When installing two or more inverters in the same cabinet, pay attention to their relative positions and ensure good ventilation of the cabinet, to facilitate proper heat dissipation.

③ Wiring

DANGER

- (1) All installation work must follow the instructions in this manual and be performed by qualified electrical engineers, otherwise there is a risk of danger.
- (2) A DC circuit breaker rated according to the inverter capacity must be installed between the inverter and the power supply, otherwise there is a risk of fire.
- (3) Before wiring, ensure that the power supply is disconnected; live work is strictly prohibited, otherwise there is a risk of electric shock.
- (4) Never connect the input power to the U, V, W output terminals of the inverter. When wiring, verify the terminal markings on the inverter and do not connect incorrectly, as this will damage the inverter.
- (5) Ensure that the cable cross-section of the main circuit meets the standard, and that wiring complies with EMC requirements and regional safety standards, otherwise there may be hidden hazards or the risk of accidents.

④ Before Power-On

⚠ DANGER

- (1) Before powering on the inverter, ensure once again that all peripheral devices and cables are configured according to the recommended models in this manual, and that all wiring is correctly connected as instructed, otherwise accidents or equipment damage may occur.
- (2) Before powering on the inverter, ensure that the inverter voltage level matches the power supply voltage level, otherwise accidents or equipment damage may occur.

⑤ After Power-On

⚠ DANGER

- (1) Do not open the inverter cover after powering on the unit, to avoid the risk of electric shock.
- (2) Do not touch or operate the inverter with wet hands, to avoid electric shock.
- (3) At any time after powering on, do not touch any input or output terminals of the inverter, or pull the connected wires and cables, as this may cause electric shock and/or equipment damage.
- (4) Do not attempt to access or modify the factory parameters, as this may render the inverter inoperable or cause damage.
- (5) Before conducting a load test run, ensure that the mechanical equipment is in a startable condition and that all personnel are in a safe area, otherwise equipment damage or personal injury may occur.

⑥ During Operation

⚠ DANGER

- (1) Do not touch the cooling fan, as this may cause personal injury.
- (2) Non-professional personnel must not perform any testing on the inverter while it is operating, as this may result in inverter damage or personal injury.

⚠ WARNING

- (1) During inverter operation, avoid moving the inverter unit or its installation cabinet, and prevent foreign objects from falling into the inverter, as this may cause inverter damage.
- (2) Start and stop the inverter using terminal functions or other control circuits whenever possible. Avoid using the inverter's power-on state as a control method to start the inverter, and never use a contactor on the inverter output to control the pump start/stop, as this is strictly prohibited.

⑦ During Maintenance

⚠ DANGER

- (1) Never perform any maintenance or repair on the inverter while it is energized, to avoid electric shock.
- (2) Do not disassemble the inverter internally when any indicator lights on the panel or inside the unit are still on, to avoid electric shock.
- (3) Maintenance or servicing must only be performed by qualified or trained personnel; otherwise, the inverter may be damaged or personal injury may occur.
- (4) All standard or optional accessories of the inverter must be installed or removed only when the inverter is powered off.

1.3 Precautions

1.3.1 Insulation Check of Pump Motor

For the first use, after long-term idle periods, or during periodic inspections, the pump motor insulation must be checked to prevent inverter damage caused by insulation failure between motor windings. When performing the insulation test, disconnect the motor from the inverter. It is recommended to use a 500V insulation resistance tester (megohmmeter), and the measured insulation resistance must be not less than 5 M Ω to be considered qualified.

1.3.2 Presence of Voltage-Sensitive Devices or Power Factor Correction Capacitors on the Output Side

The inverter output is PWM voltage. If devices such as power factor correction capacitors or varistors for surge protection are installed on the output side, this may cause instantaneous overcurrent faults or even damage the inverter. Remove such devices before installing the inverter.

1.3.3 Switch Devices (Contactors, etc.) on the Input/Output Side

- If a contactor is installed between the power supply and the inverter input, it must not be used to control the inverter's start/stop.
- If this contactor must be used to control the inverter, the interval between consecutive start/stop operations must be no less than 1 hour, as frequent charging/discharging will reduce the service life of the electrolytic capacitors inside the inverter.
- If switch devices such as contactors are installed between the inverter output and the motor, ensure that they are only operated when the inverter has no output and the motor is at a standstill, otherwise there is a risk of inverter damage.

1.3.4 Operation Beyond Rated Voltage

The inverter's operating voltage must not exceed the range specified in this manual. Too low or too high voltage may damage the inverter. If the power supply does not meet the requirements, use step-up or step-down transformers to adjust the voltage to comply with the inverter input specifications.

1.3.5 Lightning and Surge Protection

Although the inverter is equipped with overvoltage and overcurrent protection for lightning strikes, it only provides partial self-protection against induced lightning. In regions with frequent lightning, it is strongly recommended to install an external lightning protection device at the inverter input to prolong the inverter's service life.

1.3.6 Altitude and Derating

In regions above 2000 meters above sea level, reduced air density will impair the inverter's

heat dissipation. Derating the inverter is strongly recommended under such conditions.

1.3.7 Use of Common DC Bus

When multiple inverters are used in a shared system, a common DC bus may be employed to save energy. All inverters of this series support common DC bus operation. Ensure that inverters connected to a common DC bus have the same or similar rated power, otherwise there is a risk of inverter damage.

1.3.8 End-of-Life Disposal

The inverter is a power electronic device. Incineration may release large amounts of toxic gases and could even cause explosions. Follow national regulations and standards when disposing of or scrapping the inverter.

1.3.9 Pump Motor Compatibility

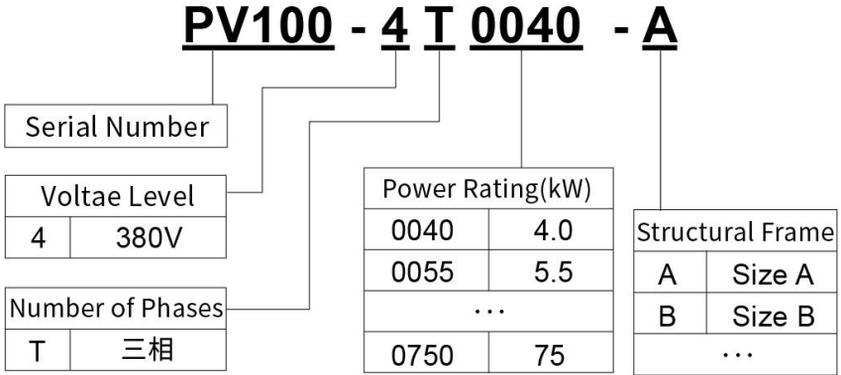
- The standard compatible motor for this inverter series is asynchronous induction motor.
- Standard motors have cooling fans coaxially connected to the rotor shaft. If the motor operates at low speed for long periods, the cooling fan speed decreases proportionally, reducing heat dissipation. In such cases, it is recommended to install a forced ventilation fan or replace with a variable-frequency motor.
- Short circuits in cables or motor internals can trigger inverter alarms or damage. Therefore, before connecting the motor, perform insulation and short-circuit tests on the pump motor and cables.
- If the system has been idle for a long period, perform insulation and short-circuit tests again before use to prevent performance degradation or equipment damage.

2. Product Information

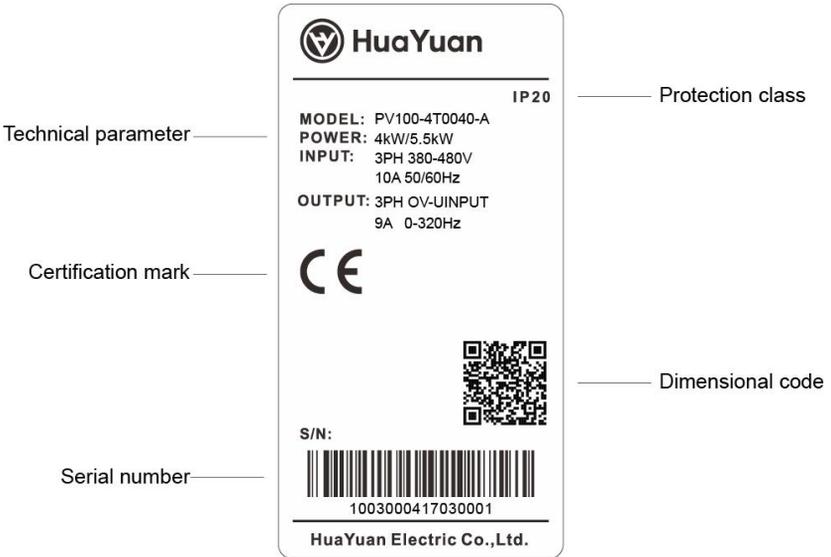
The PV100 series photovoltaic (PV) water pump inverter is developed based on the core control algorithms of the G100E series inverter, combined with the application-specific control characteristics of PV water pumps. It is a dedicated inverter designed specifically for outdoor PV-powered water pumps.

This series is primarily used to drive three-phase synchronous or asynchronous pump motors and features maximum power point tracking (MPPT), low-light sleep mode, light-intensity wake-up, high-water-level sleep, underload warning, and remote communication monitoring, among other control and protection functions.

2.1 Product Model Description



2.2 Product Nameplate Description



⚠WARNING

The barcode on the inverter nameplate is the unique identifier for each inverter, and therefore serves as the most important reference for after-sales service.

2.3 Electrical Specifications

| PV Input | | |
|---|---|-------------------|
| Voltage Level | AC 220V Pump | AC 380V Pump |
| DC Input Voltage Range | 160-400VDC | 300-810VDC |
| Recommended MPPT Voltage | 170-390VDC | 350-800VDC |
| MPPT Efficiency | 99.9% | |
| AC Mains or Backup Generator Input | | |
| AC Input Voltage | 3PH 220V(-15%-30%) | 3PH380V(-15%-30%) |
| Output Parameters | | |
| Rated Output Voltage | 3PH 220V | 3PH 380V |
| Output Frequency | 0-320.00Hz (Factory Default:0-50.00Hz) | |
| Protection | | |
| Built-in Protection | Lightning, Overcurrent, Overvoltage, Output Phase Loss, Underload, Undervoltage, Short Circuit, Overtemperature, Dry- | |
| General Specifications | | |
| Operating Location | Protected from direct sunlight; free of dust, corrosive gases, flammable gases, oil mist, water vapor, dripping water, or salt. | |
| Altitude | 0-2000 m; derate above 2000 m. For every 100 m increase above 2000 m, reduce the rated output current by 1%. | |
| Ambient Temperature | 15°C-60°C (Derate when ambient temperature is between 45°C and 60°C) | |

3. Installation and Wiring

This chapter introduces the correct installation and wiring methods for the PV100 series inverter. To ensure system safety and the proper operation of the equipment, please read this manual carefully before installation. When performing wiring, be sure to follow the wiring methods provided in this chapter.

3.1 Installation

① Installation Environment Requirements

- Operating Temperature Range: -15°C to 45°C. When the ambient temperature exceeds 45°C, the inverter should be installed in a well-ventilated location. For every additional 5°C, derate the inverter by 10%. Maximum ambient temperature: 60°C.
- Altitude: If installed above 2000 m, derate the inverter. For every 1000 m increase in altitude, reduce the rated output current by 10%. Maximum altitude: 3000 m.
- Note: If temperature or altitude exceeds the specified range, consult the manufacturer's technical personnel before selecting the inverter model.

② Installation Location Requirements

- Avoid high-temperature and high-humidity locations. Relative humidity should be below 90%, non-condensing, and frost-free.
- No dripping water, vapor, dust, or metallic particles.
- Keep away from flammable, explosive, and corrosive gases or liquids.
- Install on a firm, flat surface with vibration below 5.9 mm/s² (0.6g).
- Keep away from sources of electromagnetic interference (EMI).

3.2 Wiring

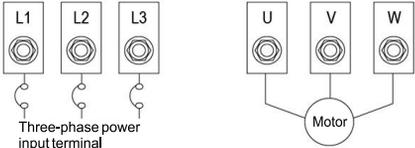
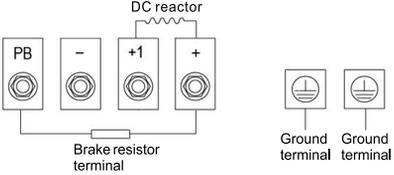
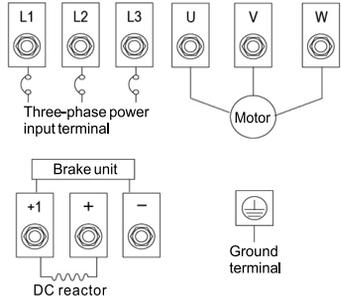
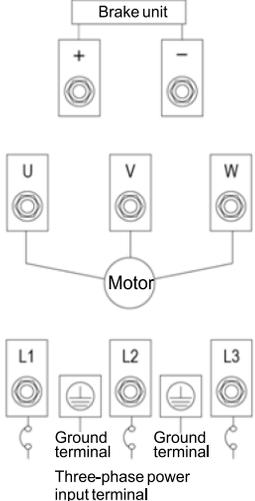
The inverter wiring is divided into the main circuit and the control circuit. Users may open the cover of the enclosure to access the main circuit terminals and control circuit terminals. All connections must be made exactly as indicated in the diagrams below.

① Main Circuit Wiring

Main Circuit Terminal Description

| Model | Terminal Wiring Description |
|--|---|
| PV100-4T0040-A PV100-4T0055-A PV100-4T0075-B PV100-4T0110-B PV100-4T0150-C PV100-4T0185-C PV100-4T0220-C | <p>Ground terminal Brake resistor terminal Three-phase power input terminal Motor Ground terminal</p> |
| PV100-4T0300-D PV100-4T0370-D | <p>Ground terminal Brake resistor terminal Three-phase power input terminal Motor Ground terminal</p> |

3. Installation and Wiring

| Model | Terminal Wiring Description |
|---|--|
| <p>PV100-4T0450-E PV100-4T0550-E PV100-4T0750-E</p> |  |
| <p>PV100-4T0900-F PV100-4T1100-F</p> |  |
| <p>PV100-4T1320-G PV100-4T1600-G</p> |  |
| <p>PV100-4T1850-H PV100-4T2000-H PV100-4T2200-H PV100-4T2500-H PV100-4T2800-J PV100-4T3150-J PV100-4T3500-J PV100-4T4000-J</p> |  |

Main Circuit Terminal Symbol Description

| Terminal Symbol | Function Description |
|--|---|
| L1、L2、L3 | Three-phase AC power input |
| U、V、W | Connects to three-phase AC motor |
| + | DC side positive terminal |
| - | DC side negative terminal |
| PB | +, PB can connect a braking resistor |
| +1 | +1、+ can connect a DC reactor +1、- can connect an external braking unit (for models 30 kW and above) |
|  | Ground terminal |

⚠ WARNING

- √ Inverter input power wiring does not require phase sequence.
- √ For main circuit terminal wiring, select the appropriate copper conductor size according to the recommended values in Appendix 4, and the installation must comply with local regulations and relevant IEC standards.
- √ The cable from the inverter to the motor should avoid running parallel to the power lines (L1, L2, L3) as much as possible; a separation of at least 30 cm is recommended.
- √ Do not connect other equipment to the inverter power input terminals (L1, L2, L3). Do not connect a power supply to the inverter output terminals (U, V, W), and do not connect capacitors or surge absorbers on the output side.
- √ A fuse-less circuit breaker must be installed between the input power and the inverter to prevent accident escalation due to inverter faults, which may damage the distribution device or cause fire.
- √ The inverter does not contain an internal braking resistor. In cases of high load inertia or frequent start/stop operation, a braking resistor must be installed. When using an external braking unit, the wiring length to the braking unit should not exceed 10 m, and the wiring length to the braking resistor should not exceed 5 m.
- √ The inverter ground terminal (PE) must be reliably grounded. The resistance of the grounding wire must be less than 0.4 Ω. Do not share the ground terminal (PE) with the neutral terminal (N).
- √ The specification of the inverter grounding wire can be selected according to the table below:

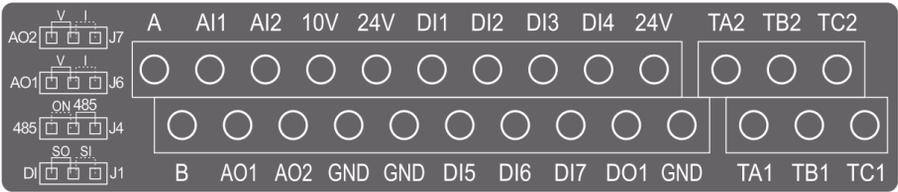
| Cross-sectional area of a phase conductor (S) | Minimum cross-sectional area of the grounding conductor (S1) |
|---|--|
| $S \leq 16\text{mm}^2$ | S |
| $16\text{mm}^2 < S \leq 35\text{mm}^2$ | 16mm ² |
| $35\text{mm}^2 < S$ | S/2 |

√ The inverter grounding wire must use a yellow-green cable.

② Control Circuit Wiring

Control Circuit Terminal Description

Control circuit wiring must be separated from main circuit wiring and shall not be placed in the same cable duct.



Control Terminal Symbol Description

| Category | Terminal Symbol | Terminal Function Description | Technical Specifications |
|----------------------------|-----------------|--|--|
| Control Terminals – Inputs | DI1 | Multi-Function Digital Input Terminals 1 | Selectable via J1 jumper terminals for Sink (SO) or Source (SI) mode. For analog input: voltage below 5 V is considered low level, above 9.8 V is considered high level. For digital input: high/low logic threshold voltage is 9.8 V, with a sampling period of 2 ms. |
| | DI2 | Multi-Function Digital Input Terminals 2 | |
| | DI3 | Multi-Function Digital Input Terminals 3 | |
| | DI4 | Multi-Function Digital Input Terminals 4 | |
| | DI5 | Multi-Function Digital Input Terminals 5 | |
| | DI6 | Multi-Function Digital Input Terminals 6 | |

| Category | Terminal Symbol | Terminal Function Description | Technical Specifications |
|--------------------|-------------------|---|---|
| | DI7 | Multi-Function Digital Input Terminals 7 | <p>When DI7 is configured as a multifunction digital input terminal:</p> <ul style="list-style-type: none"> ● For analog input: voltage below 4.5 V is considered low level, above 6.5 V is considered high level. ● For digital input: high/low logic threshold voltage is 6.5 V. <p>When DI7 is configured as a high-speed pulse input terminal:</p> <ul style="list-style-type: none"> ● Pulse input signal specifications: voltage range 10 V –30 V, frequency range 0 Hz – 100 kHz. |
| Run Status Outputs | DO1 | Programmable Digital Output 1 | Provides 24 V, 50 mA power supply; maximum output frequency 100 kHz. |
| | TA1 TB1 TC1 | Multi-Function Relay Output 1 TA1-TB1: Normally Closed (NC) TA1-TC1: Normally Open (NO) | Contact rating 250VAC, 3A (cosφ=1), 250VAC, 1A (cosφ=0.4), 30VDC, 3A |
| | TA2 TB2 TC2 | Multi-Function Relay Output 2 TA2-TB2: Normally Closed (NC) TA2-TC2: Normally Open (NO) | Contact rating 250VAC, 3A (cosφ=1), 250VAC, 1A (cosφ=0.4), 30VDC, 3A |
| Analog Input | AI1 | Analog Input 1 | Selectable as voltage or current input via function code P05.59 |
| | AI2 | Analog Input 2 | Input range: Voltage input 0–10 V, Current input 0–20 mA Input impedance: Voltage input 22 kΩ, Current input 500 Ω |
| Analog Output | AO1 | Analog Output 1 | Selectable as voltage or current output via jumper terminal J6 Output voltage: 0–10 V Output current: 0–20 mA |
| | AO2 | Analog Output 2 | Selectable as voltage or current output |

3. Installation and Wiring

| Category | Terminal Symbol | Terminal Function Description | Technical Specifications |
|-----------------------------------|-----------------|----------------------------------|---|
| | | | via jumper terminal J7 Output voltage: 0–10 V Output current: 0–20 mA |
| RS485 Communication | A | RS485 Differential Signal + | MODBUS RTU Communication Protocol |
| | B | RS485 Differential Signal – | |
| Power Supply and Reference Ground | 10V | +10V Power Terminal | Output 10 V, 20 mA, accuracy $\pm 2\%$ |
| | 24V | +24V Power Terminal | Output 24 V, 100 mA, accuracy $\pm 15\%$ |
| | GND | Control Circuit Reference Ground | Digital inputs, analog inputs, and power supply share a common reference ground |

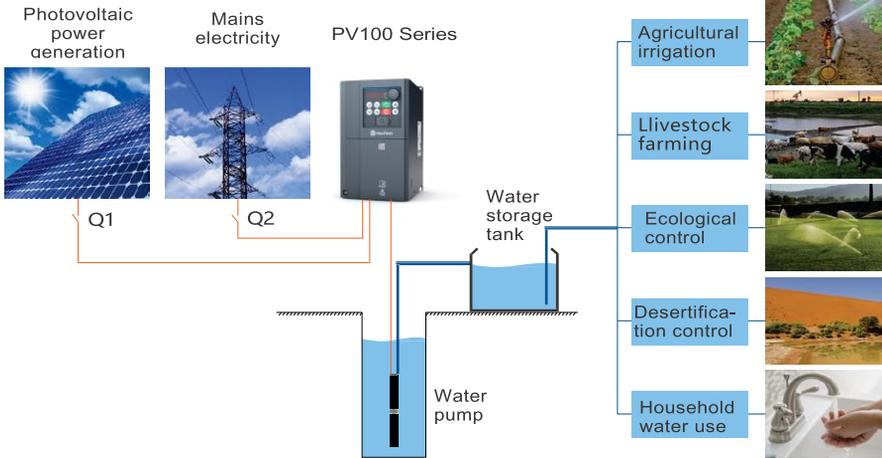
Jumper Terminal Description

| Jumper Type | Function Description | Jumper Selection | |
|-------------|--|------------------|----------------|
| | | Left Position | Right Position |
| J7 | AO2 Analog Output Voltage/Current Selection | 0-10V | 0-20mA |
| J6 | AO1 Analog Output Voltage/Current Selection | 0-10V | 0-20mA |
| J1 | Multifunction Digital Input Sink/Source Selection | Sink Input | Source Input |
| J4 | RS485 Termination Resistor Selection | 120 Ω | — |

WARNING

- √ It is recommended to use wires with a cross-sectional area of 0.3–0.75 mm² for control circuit terminals.
- √ The wiring length should not exceed 30 m.
- √ To avoid noise and interference, control circuit terminals must be connected using shielded wires, and wiring must be separated from the main circuit and high-voltage circuits.
- √ For RS485 communication, it is recommended to use shielded twisted-pair cables.

③ Introduction to PV System Applications



The PV water pump system mainly consists of solar panel modules, a PV inverter, and a PV water pump.

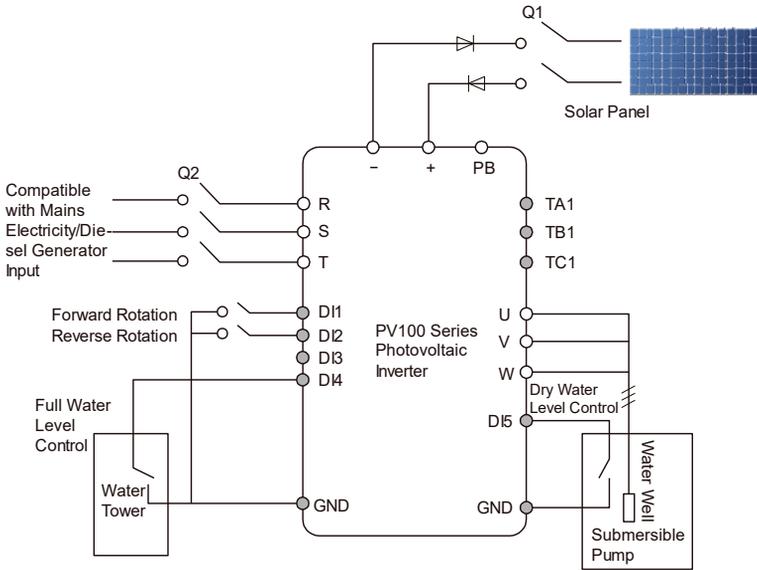
The solar panel modules absorb solar radiation energy and convert it into electrical energy, providing power for the entire system. The PV inverter controls and regulates the system operation, using the power generated by the solar array to drive the water pump. It adjusts the output frequency in real time according to changes in solar irradiance to achieve Maximum Power Point Tracking (MPPT), maximizing the utilization of solar energy. The water pump is driven by an electric motor to lift water from deep wells or rivers. Following the design principle that storing water is more efficient than storing electricity in solar pumping systems, the system does not include a battery, thereby simplifying the system and reducing costs.

The core technology of the system lies in the PV inverter. To drive the water pump, the inverter must provide the following two functions:

- (1) Inversion Function – converting the DC power output from the solar array into AC power.
- (2) Maximum Power Point Tracking (MPPT) Function – adjusting the output frequency in real time according to sunlight intensity to ensure the system delivers maximum power.

The PV water pump system adopts an economic and environmentally friendly concept of storing water instead of electricity. It does not require energy storage batteries and uses solar energy to directly drive the pump motor. This greatly reduces system construction and operation costs. Through the core MPPT technology, the system provides a stable water supply for irrigation, significantly increasing agricultural economic benefits and improving the ecological environment.

④ System Wiring Diagram



PV100 Series PV Water Pump Inverter System Wiring Diagram

- (1) +: Connect the crystalline silicon module output (+) in series (through the DC circuit breaker in the combiner box) to the inverter "+" terminal.
- (2) -: Connect the crystalline silicon module output (-) in series (through the DC circuit breaker in the combiner box) to the inverter "-" terminal. The lightning arrester "+" and "-" terminals shall be connected in parallel with the DC circuit breaker "+" and "-". If there is no utility power connection, please ignore this item.
- (3) U, V, W: Connect to the water pump terminals U, V, and W.
- (4) After confirming that the wiring is correct, close the power switch Q1 to energize the system. The inverter will display "50.00".

⑤ Electrical Connection Requirements

- (1) Wiring must be performed by qualified electrical engineering personnel to prevent equipment damage caused by incorrect wiring.
- (2) Ensure that all wiring connections are correct.
- (3) Do not directly touch terminals or circuit boards. Do not short-circuit terminals.
- (4) The positive and negative terminals of the PV array must not be reversed. Use a multimeter to verify polarity before closing the circuit breaker.
- (5) All electrical installations must comply with local national standards.

⑥ Advanced Parameter Settings and Commissioning

Note: The default settings of the water pump inverter are suitable for most operating conditions. Advanced parameter settings are generally not required.

System Water Output Speed PI Adjustment

If the user has specific requirements for water output speed, the PI parameters (P23.06–P23.10) may be adjusted appropriately. The larger the PI parameter values, the stronger the control effect and the faster the water output; however, motor frequency fluctuation will increase. Conversely, smaller PI parameter values result in slower water output and relatively more stable motor operating frequency.

4. Operation Keypad

This chapter provides a detailed introduction to the operation methods and display information of the PV100 Series PV Water Pump Inverter keypad. Please read this chapter carefully before operating the inverter.

4.1 Keypad Introduction

The PV100 keypad uses a non-removable fixed keypad.

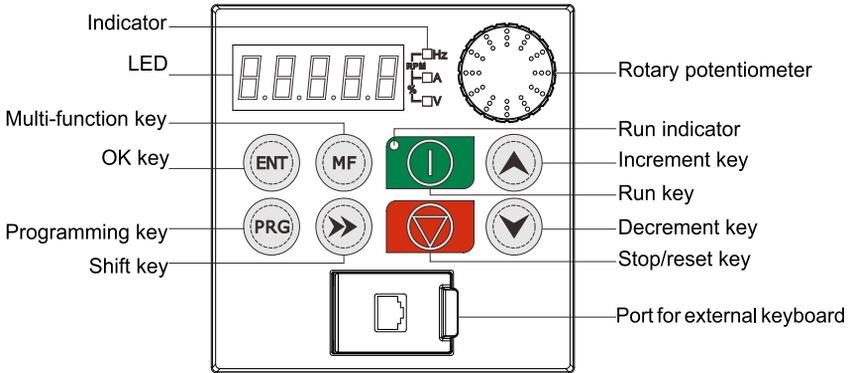
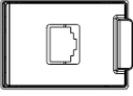


Figure 4-1 Keyboard Overview

Keypad Function Description

| Item | Name | Function Description |
|------|----------------------------|---|
| | Single-Digit LED Display | Displays output frequency, current, parameter settings, and faults. |
| | Parameter Indicator Lights | <p>Hz: Steady on indicates the current display shows frequency in Hz.</p> <p>A: Steady on indicates the current display shows current in A.</p> <p>V: Steady on indicates the current display shows voltage in V.</p> <p>Hz/A: All lights steady on indicates the current display shows rotational speed in RPM.</p> <p>A/V: All lights steady on indicates the current display shows percentage (%).</p> |
| | Rotary Encoder | Adjusts parameter values; clockwise rotation increases the value, counterclockwise rotation decreases the value. |
| | Multi-Function Key | Can be set as disabled, jog, or forward/reverse function. |
| | Programming Key | Enters or exits the first-level menu. |

4. Operation Keypad

| Item | Name | Function Description |
|---|----------------------|---|
|  | Confirm Key | Enters parameter menu and confirms the currently modified value. |
|  | Shift Key | Switches monitored operational data or shifts parameters during modification. |
|  | Run Key | Keypad run command; indicator on = forward rotation, off = stop, blinking = reverse rotation. |
|  | Stop/Reset Key | Keypad stop command or fault reset. |
|  | Up Key | Increases function code or numerical value. |
|  | Down Key | Decreases function code or numerical value. |
|  | External Keypad Port | Open the cover and insert an external network cable to enable external keypad operation. |

4.2 Keypad Operation Methods

① Function Parameter Query and Modification

The PV100 Series PV Water Pump Inverter keypad uses a three-level menu structure for parameter settings, status monitoring, and other operations. The three levels are: Function Parameter Group (Level 1 Menu), Function Code (Level 2 Menu), and Parameter Setting Value (Level 3 Menu). The process for querying and modifying function parameters is shown in Figure 3-2.

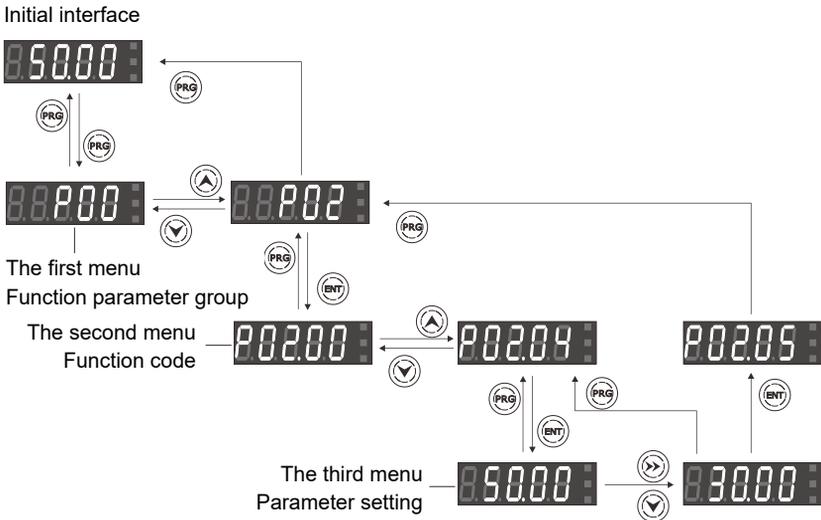


Figure 4-2 Parameter Query and Modification Flow

Note:

When operating within the three-level menu, the “PRG” key or “ENT” key can be used to return to the Level 2 menu. The difference between the two is as follows:

- Pressing “ENT” saves the currently set value. After returning to the Level 2 menu, the system will automatically jump to the next function code.
- Pressing “PRG” does not save the current setting and returns directly to the Level 2 menu at the current function code.

② Parameter Upload and Download

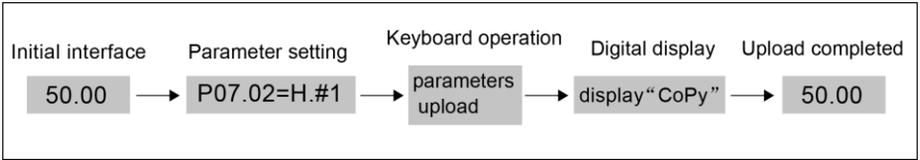
(1) Parameter Upload

The keypad can copy the inverter’s internal parameters to its own memory and save them permanently. Users can back up their typical parameter settings to the keypad for emergency use. The backup parameters stored in the keypad do not affect inverter operation.

To perform a parameter upload, set function parameter P07.02 = H.#1 and press the keypad

4. Operation Keypad

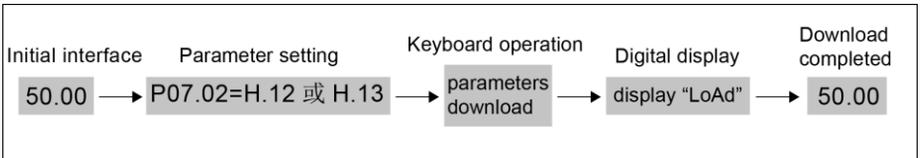
“OK” key. The keypad will begin reading the inverter’s internal parameters. During this process, the LED display will show the code “CoPy”. After the upload is complete, the display will return to the initial screen “50.00”.



(2) Parameter Download

The keypad can copy backup parameters to the inverter’s internal memory. Users can write the typical settings stored in the keypad to the inverter all at once without modifying parameters individually.

While the inverter is in stop mode, set function parameter P07.02 = H.12 or H.13 and press the keypad “OK” key. The inverter will start downloading the parameters stored in the keypad to the control board memory. During this process, the LED display will show the code “LoAd”. After the download is complete, the display will return to the initial screen “50.00”.



Note: The built-in fixed keypad does not support upload or download. An external keypad must be connected for these operations.

5. Function Parameter List

This chapter provides only a brief summary of functions. For detailed function descriptions, please refer to the G100E Technical Manual or consult the manufacturer.

The symbols used in the function list are defined as follows:

| | |
|------|--|
| “△” | The parameter setting can be modified while the inverter is in stop or run mode. |
| “▲” | The parameter setting cannot be modified while the inverter is in run mode. |
| “●” | The parameter value is an actual measured record and cannot be changed. |
| “H.” | The parameter setting value is in hexadecimal format. |

5.1 Function Parameter List

P00 Group – Basic Functions

| Code | Name | Setting Range | Default | Changeable |
|--------|--|--|---------|------------|
| P00.00 | Motor 1 Control Mode | 0: Synchronous Motor Water Pump Control 1: Reserved 2: Asynchronous Motor Water Pump Control | 2 | ▲ |
| P00.01 | Command Source Selection | 0: Keypad Command Channel 1: Terminal Command Channel 2: Communication Command Channel | 0 | △ |
| P00.02 | Primary Frequency Source X Selection | 0: Digital Setting (Preset Frequency P00.08, adjustable via UP/DOWN, not retained after power off) 1: Digital Setting (Preset Frequency P00.08, adjustable via UP/DOWN, retained after power off) 2: AI1 | 0 | ▲ |
| P00.03 | Secondary Frequency Source Y Selection | 3: AI2 4: Reserved 5: DI7 Pulse Input Command 6: Multi-step Command 7: Simple PLC 8: PID 9: Communication Command 10: Extended AI3 11: Extended AI4 12: PV Water Pump Function Command | 0 | ▲ |
| P00.04 | Y Range Selection for Secondary Frequency Source During Superposition | 0: Relative to Maximum Frequency 1: Relative to Frequency Source X | 0 | △ |
| P00.05 | Y Offset Frequency for Secondary Frequency Source During Superposition | 0.00 Hz – Maximum Frequency (P00.10) | 0.00Hz | △ |
| P00.06 | Y Range for Secondary Frequency Source During Superposition | 0%-150% | 100% | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|--|--|----------------------|------------|
| P00.07 | Frequency Source Superposition Selection | Units Digit: Frequency Source Selection 0: Primary Frequency Source X 1: Primary + Secondary Calculation Result (operation relationship determined by tens digit) 2: Toggle between Primary Frequency Source X and Secondary Frequency Source Y 3: Toggle between Primary Frequency Source X and Primary + Secondary Calculation Result 4: Toggle between Secondary Frequency Source Y and Primary + Secondary Calculation Result Tens Digit: Primary-Secondary Calculation Relationship 0: Primary + Secondary 1: Primary – Secondary 2: Maximum of the two 3: Minimum of the two | 00 | △ |
| P00.08 | Preset Frequency | 0.00 Hz – Maximum Frequency (P00.10) | 50.00Hz | △ |
| P00.09 | Rotation Direction | 0: No Change 1: Reverse | 0 | △ |
| P00.10 | Maximum Frequency | 50.00Hz-320.00Hz | 50.00Hz | ▲ |
| P00.11 | Upper Frequency Source | 0: Set by P00.12 1: AI1 2: AI2 3: Reserved 4: DI7 Pulse Input Command 5: Communication Command 6: Extended AI3 7: Extended AI4 | 0 | ▲ |
| P00.12 | Upper Frequency | Lower Frequency: P00.14 – Maximum Frequency (P00.10) | 50.00Hz | △ |
| P00.13 | Upper Frequency Offset | 0.00 Hz – Maximum Frequency (P00.10) | 0.00Hz | △ |
| P00.14 | Lower Frequency | 0.00 Hz – Upper Frequency (P00.12) | 0.00Hz | △ |
| P00.15 | Carrier Frequency | 0.5kHz-16.0kHz | Model Identification | △ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|---|--|-------------------------|------------|
| P00.16 | Carrier Frequency Temperature Compensation | 0: No 1: Yes | 0 | △ |
| P00.17 | Acceleration Time 1 | 0.00s-650.00s(P00.28=2) 0.0s-6500.0s(P00.28=1) 0s-65000s(P00.28=0) | Model Identification | △ |
| P00.18 | Deceleration Time 1 | 0.00s-650.00s(P00.28=2) 0.0s-6500.0s(P00.28=1) 0s-65000s(P00.28=0) | Model Identification | △ |
| P00.19 | High/Low Speed Switching | 1: High-Speed Mode (0.0 – 3200.0 Hz) 2: Low-Speed Mode (0.00 – 320.00 Hz) | 2 | ▲ |
| P00.20 | Motor Selection | 0: Motor 1 1: Motor 2 | 0 | ▲ |
| P00.21 | Digital Setting Frequency Power-off Retention Selection | 0: Do Not Retain 1: Retain | 0 | △ |
| P00.22 | Acceleration/Decelerat ion Time Reference Frequency | 0: Maximum Frequency (P00.10) 1: Set Frequency 2: 100 Hz | 0 | ▲ |
| P00.23 | Frequency Command During Operation UP/DOWN Reference | 0: Operating Frequency 1: Set Frequency | 0 | ▲ |
| P00.24 | Command Source Bound Frequency Source Selection | Units Digit: Keyboard Command Frequency Source Selection 0: Not Bound 1: Digital Setting Frequency 2: AI1 3: AI2 4: Keyboard Potentiometer Command 5: DI7 Pulse Input Command 6: Multi-Step Command 7: Simple PLC 8: PID 9: Communication Command Tens Digit: Terminal Command Frequency Source Selection (same as above) Hundreds Digit: Communication | 0 | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|---|---|---------|------------|
| | | Command Frequency Source Selection (same as above) | | |
| P00.25 | Motor Parameter Auto-Learning | 00: No Operation 11: Synchronous Pump Load Tuning 12: Synchronous Pump No-Load Tuning | 00 | ▲ |
| P00.26 | Restore Factory Parameter Settings | 0: No Operation 01: Restore Factory Parameters, Excluding Motor Parameters 02: Restore Factory Parameters, Including Motor Parameters | 0 | ▲ |
| P00.28 | Unit of Acceleration/Decelerat ion Time | 0: 1 second 1: 0.1 second 2: 0.01 second | 1 | ▲ |

P01 Group – Start/Stop Control

| Code | Name | Setting Range | Default | Changeable |
|--------|---|---|---------|------------|
| P01.00 | Starting Method | 0: Direct Start | 0 | △ |
| P01.01 | Starting Frequency | 0.00Hz-10.00Hz | 0.00Hz | △ |
| P01.02 | Starting Frequency Hold Time | 0.0s-100.0s | 0.0s | ▲ |
| P01.05 | Starting Protection Selection | 0: No protection 1: Protection enabled | 0 | △ |
| P01.08 | Acceleration/Deceleration Mode | 0: Linear acceleration/deceleration 1:S-curve acceleration/deceleration A 2:S-curve acceleration/deceleration B | 0 | ▲ |
| P01.09 | S-Curve Start Segment Time Ratio | 0.0%-(100.0%-P01.10) | 30.0% | ▲ |
| P01.10 | S-Curve End Segment Time Ratio | 0.0%-(100.0%-P01.09) | 30.0% | ▲ |
| P01.11 | Stopping Method | 0: Deceleration stop 1: Coast to stop | 0 | △ |
| P01.16 | Operation Mode When Command Is Below Starting Frequency | 0: Do not start 1: Start at zero frequency 2: Start at preset frequency 3: Start at starting frequency | 0 | ▲ |

P05 Group – Input Terminal Functions

| Code | Name | Setting Range | Default | Changeable |
|--------|---------------------------------|--|---------|------------|
| P05.00 | DI1 Terminal Function Selection | 0: No function 1: Forward run (FWD) or Run command 2: Reverse run (REV) or Forward/Reverse direction control (Note: When set to 1 or 2, must be used in conjunction with P05.08. Refer to function code description for details.) 3: Three-wire run control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: UP terminal 7: DOWN terminal 8: Coast to stop 9: Fault reset (RESET) 10: Run pause | 1 | ▲ |
| P05.01 | DI2 Terminal Function Selection | 11: External fault normally open input | 2 | ▲ |
| P05.02 | DI3 Terminal Function Selection | 12: Multi-step command terminal 1 | 9 | ▲ |
| P05.03 | DI4 Terminal Function Selection | 13: Multi-step command terminal 2 | 61 | ▲ |
| P05.04 | DI5 Terminal Function Selection | 14: Multi-step command terminal 3 | 62 | ▲ |
| P05.05 | DI6 Terminal Function Selection | 15: Multi-step command terminal 4 | 4 | ▲ |
| P05.06 | DI7 Terminal Function Selection | 16: Acceleration/Deceleration time selection terminal 1 17: Acceleration/Deceleration time selection terminal 2 18: Frequency command switching | 0 | ▲ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|------|------|--|---------|------------|
| | | 19: UP/DOWN setting clear (terminal/keypad) 20: Control command switching terminal 1 21: Acceleration/Deceleration prohibit 22: PID pause 23: Simple PLC status reset 24: Swing frequency pause 25: Counter input 26: Counter reset 27: Length counting input 28: Length reset 29: Torque control prohibit 30: Pulse frequency input (valid for DI7 only) 31: Reserved 32: Immediate DC braking 33: External fault normally closed input 34: Frequency modification enable 35: PID action direction reverse 36: External stop terminal 1 37: Control command switching terminal 2 38: PID integral pause 39: Main frequency and preset frequency switching 40: Auxiliary frequency and preset frequency switching 41: Motor terminal selection function 42: Reserved 43: PID parameter switching | | |

| Code | Name | Setting Range | Default | Changeable |
|--------|--------------------------------------|--|-----------|------------|
| | | 44: User-defined fault 1 45: User-defined fault 2 46: Speed control / Torque control switching 47: Emergency stop 48: External stop terminal 2 49: Deceleration DC braking 50: Clear current run time 51: Two-wire / Three-wire switching 52-59: Reserved 60: Photovoltaic low voltage input 61: Water full signal input 62: Water empty signal input | | |
| P05.07 | DI Filter Time | 0.000s-1.000s | 0.010s | △ |
| P05.08 | Terminal Command Mode | 0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2 | 0 | ▲ |
| P05.09 | Terminal UP/DOWN Change Rate | 0.001Hz/s-65.535Hz/s | 1.000Hz/s | △ |
| P05.10 | DI1 Delay Time | 0.0s-3600.0s | 0.0s | △ |
| P05.11 | DI2 Delay Time | 0.0s-3600.0s | 0.0s | △ |
| P05.12 | DI3 Delay Time | 0.0s-3600.0s | 0.0s | △ |
| P05.13 | DI Terminal Active State Selection 1 | 0: High level active 1: Low level active Ones place: DI1 Tens place: DI2 Hundreds place: DI3 Thousands place: DI4 Ten-thousands place: DI5 | 00000 | ▲ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|--|---|---------|------------|
| P05.14 | DI Terminal Active State Selection 2 | 0: High level active 1: Low level active Ones place: DI6 Tens place: DI7 | 00 | ▲ |
| P05.15 | AI Curve Selection | Ones place: AI1 curve selection 1: Curve 1 (2 points, see P05.16–P05.19) 2: Curve 2 (2 points, see P05.20–P05.23) 3: Curve 3 (2 points, see P05.24–P05.27) 4: Curve 4 (4 points, see P05.28–P05.35) 5: Curve 5 (4 points, see P05.36–P05.43) Tens place: AI2 curve selection (same as above) Hundreds place: Extended AI3 curve selection (same as above) Thousands place: Extended AI4 curve selection (same as above) | H.4321 | △ |
| P05.16 | AI Curve 1 Minimum Input | 0.00V-P05.18 | 0.00V | △ |
| P05.17 | AI Curve 1 Minimum Input Corresponding Setting | -100.0%~+100.0% | 0.0% | △ |
| P05.18 | AI Curve 1 Maximum Input | P05.16~+10.00V | 10.00V | △ |
| P05.19 | AI Curve 1 Maximum Input Corresponding Setting | -100.0%~+100.0% | 100.0% | △ |
| P05.20 | AI Curve 2 Minimum Input | 0.00V-P05.22 | 0.00V | △ |
| P05.21 | AI Curve 2 Minimum Input Corresponding Setting | -100.0%~+100.0% | 0.0% | △ |
| P05.22 | AI Curve 2 Maximum Input | P05.20~+10.00V | 10.00V | △ |
| P05.23 | AI Curve 2 Maximum Input Corresponding Setting | -100.0%~+100.0% | 100.0% | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|--|-----------------|---------|------------|
| P05.24 | AI Curve 3 Minimum Input | 0.00V-P05.26 | 0.00V | △ |
| P05.25 | AI Curve 3 Minimum Input Corresponding Setting | -100.0%~+100.0% | 0.0% | △ |
| P05.26 | AI Curve 3 Maximum Input | P05.24~+10.00V | 10.00V | △ |
| P05.27 | AI Curve 3 Maximum Input Corresponding Setting | -100.0%~+100.0% | 100.0% | △ |
| P05.28 | AI Curve 4 Minimum Input | 0.00V-P05.30 | 0.00V | △ |
| P05.29 | AI Curve 4 Minimum Input Corresponding Setting | -100.0%~+100.0% | 0.0% | △ |
| P05.30 | AI Curve 4 Breakpoint 1 Input | P05.28-P05.32 | 3.00V | △ |
| P05.31 | AI Curve 4 Breakpoint 1 Input Corresponding Setting | -100.0%~+100.0% | 30.0% | △ |
| P05.32 | AI Curve 4 Breakpoint 2 Input | P05.30-P05.34 | 6.00V | △ |
| P05.33 | AI Curve 4 Breakpoint 2 Input Corresponding Setting | -100.0%~+100.0% | 60.0% | △ |
| P05.34 | AI Curve 4 Maximum Input | P05.32~+10.00V | 10.00V | △ |
| P05.35 | AI Curve 4 Maximum Input Corresponding Setting | -100.0%~+100.0% | 100.0% | △ |
| P05.36 | AI Curve 5 Minimum Input | 0.00V-P05.38 | 0.00V | △ |
| P05.37 | AI Curve 5 Minimum Input Corresponding Setting | -100.0%~+100.0% | -100.0% | △ |
| P05.38 | AI Curve 5 Breakpoint 1 Input | P05.36-P05.40 | 3.00V | △ |
| P05.39 | AI Curve 5 Breakpoint 1 Input Corresponding Setting | -100.0%~+100.0% | -30.0% | △ |
| P05.40 | AI Curve 5 Breakpoint 2 Input | P05.38-P05.42 | 3.00V | △ |
| P05.41 | AI Curve 5 Breakpoint 2 Input Corresponding Setting | -100.0%~+100.0% | 30.0% | △ |
| P05.42 | AI Curve 5 Maximum Input | P05.40~+10.00V | 10.00V | △ |
| P05.43 | AI Curve 5 Maximum Input Corresponding Setting | -100.0%~+100.0% | 100.0% | △ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|--|---|---------|------------|
| P05.44 | AI1 Filter Time | 0.00s-10.00s | 0.10s | △ |
| P05.45 | AI2 Filter Time | 0.00s-10.00s | 0.10s | △ |
| P05.46 | AI Below Minimum Input Setting Selection | Ones place: AI1 selection when input is lower than minimum setting 0: Corresponds to minimum input setting 1: 0.0% Tens place: AI2 selection when input is lower than minimum setting (same as above) Hundreds place: Extended AI3 selection when input is lower than minimum setting (same as above) Thousands place: Extended AI4 selection when input is lower than minimum setting (same as above) | H.0000 | △ |
| P05.47 | AI1 Setpoint Jump | -100.0%-100.0% | 0.0% | △ |
| P05.48 | AI1 Setpoint Jump Magnitude | 0.0%-100.0% | 0.5% | △ |
| P05.49 | AI2 Setpoint Jump | -100.0%-100.0% | 0.0% | △ |
| P05.50 | AI2 Setpoint Jump Magnitude | 0.0%-100.0% | 0.5% | △ |
| P05.51 | AI1 Input Voltage Protection Lower Limit | 0.00V-P05.52 | 3.10V | △ |
| P05.52 | AI1 Input Voltage Protection Upper Limit | P05.51-10.00V | 6.80V | △ |
| P05.53 | DI7 Function Selection | 0: DI7 as digital input 1: DI7 as pulse input 2: DI7 as pulse counting input 3: DI7 as length counting input | 0 | △ |
| P05.54 | DI7 Pulse Minimum Input | 0.00kHz-P05.56 | 0.00kHz | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|--|--|----------|------------|
| P05.55 | DI7 Pulse Minimum Input Corresponding Setting | -100.0%-100.0% | 0.0% | △ |
| P05.56 | DI7 Pulse Maximum Input | P05.54-100.00kHz | 50.00kHz | △ |
| P05.57 | DI7 Pulse Maximum Input Corresponding Setting | -100.0%-100.0% | 100.0% | △ |
| P05.58 | DI7 Pulse Input Filter Time | 0.00s-10.00s | 0.10s | △ |
| P05.59 | AI Input Voltage and Current Mode Selection | Ones place: AI1 voltage/current mode selection 0: Voltage input 1: Current input Tens place: AI2 voltage/current mode selection 0: Voltage input 1: Current input | 00 | ▲ |

P06 Group – Output Terminal Functions

| Code | Name | Setting Range | Default | Changeable |
|--------|--|--|---------|------------|
| P06.00 | Control Board Relay Function Selection (TA1-TB1-TC1) RELAY1 | 0: No output 1: Inverter running 2: Fault output (fault causing shutdown) 3: Frequency level detection FDT1 output 4: Frequency reached 5: Zero-speed running (no output when stopped) 6: Motor overload pre-alarm 7: Inverter overload pre-alarm 8: Set count value reached 9: Specified count value reached 10: Length reached 11: Simple PLC cycle completed 12: Accumulated running time reached 13: Frequency limiting active 14: Torque limiting active 15: Ready for operation 16: AI1 > AI2 17: Upper frequency limit reached 18: Lower frequency limit reached (no output when stopped) 19: Undervoltage status 20: Communication setpoint active 21: Reserved 22: Reserved 23: Zero-speed running 2 (output also active when stopped) 24: Accumulated power-on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 reached output 27: Frequency 2 reached output | 2 | △ |
| P06.01 | Control Board Relay Function Selection (TA2-TB2-TC2) RELAY2 | 28: Current 1 reached output 29: Current 2 reached output 30: Timer reached output 31: AI1 input over-limit | 0 | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|---|---|---------|------------|
| P06.02 | DO1 Output Function Selection | 32: Reserved 33: Reverse running 34: Zero current status 35: Module temperature reached 36: Output current over-limit 37: Lower frequency limit reached (output also active when stopped) 38: Alarm output (continues running) 39: Reserved 40: Current run time reached 41: Fault output (fault causing shutdown, excluding undervoltage) 42: PV and mains frequency switching | 0 | △ |
| P06.03 | RELAY1 Output Delay Time | 0.0s-3600.0s | 0.0s | △ |
| P06.04 | RELAY2 Output Delay Time | 0.0s-3600.0s | 0.0s | △ |
| P06.05 | DO1 Output Delay Time | 0.0s-3600.0s | 0.0s | △ |
| P06.06 | DO Output Terminal Active State Selection | 0: Positive logic 1: Negative logic Ones place: RELAY1 Tens place: RELAY2 Hundreds place: DO1 | 0 | △ |
| P06.07 | AO1 Output Function Selection | 0: Run frequency 1: Set frequency 2: Output current 3: Motor output torque (absolute torque value, relative to the motor as a percentage) | 0 | △ |
| P06.08 | AO2 Output Function Selection | 4: Output power 5: Output voltage 6: DI7 pulse input frequency (100.0% corresponds to 100.00 kHz) 7: AI1 8: AI2 | 1 | △ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|------------------------------------|--|---------|------------|
| | | 9: Reserved 10: Length value 11: Count value 12: Communication setpoint 13: Motor speed 14: Output current (100.0% corresponds to 1000.0 A) 15: Bus voltage (100.0% corresponds to 1000.0 V) 16: Motor output torque (actual torque value, relative to the motor as a percentage) 17: Extended AI3 18: Extended AI4 | | |
| P06.09 | AO1 Zero Offset Coefficient | -100.0%~+100.0% | 0.0% | △ |
| P06.10 | AO1 Gain | -10.00~+10.00 | 1.00 | △ |
| P06.11 | AO2 Zero Offset Coefficient | -100.0%~+100.0% | 0.0% | △ |
| P06.12 | AO2 Gain | -10.00~+10.00 | 1.00 | △ |
| P06.13 | DO1 Terminal Output Mode Selection | 0: Pulse output 1: Digital (switching) output | 1 | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|-------------------------------------|---|----------|------------|
| P06.14 | DO1 Pulse Output Function Selection | 0: Run frequency 1: Set frequency 2: Output current 3: Motor output torque (absolute torque value, relative to the motor as a percentage) 4: Output power 5: Output voltage 6: DI7 pulse input frequency (100.0% corresponds to 100.0 kHz) 7: AI1 8: AI2 9: Reserved 10: Length value 11: Count value 12: Communication setpoint 13: Motor speed 14: Output current (100.0% corresponds to 1000.0 A) 15: Output voltage (100.0% corresponds to 1000.0 V) 16: Motor output torque (actual torque value, relative to the motor as a percentage) 17: Extended AI3 18: Extended AI4 | 0 | △ |
| P06.15 | DO1 Pulse Output Maximum Frequency | 0.01kHz-100.00kHz | 50.00kHz | △ |
| P06.16 | AO Output Mode Selection | LED ones place: AO1 selection LED tens place: AO2 selection 0: 0 V - 10 V (0 - 20 mA) 1: 10 V - 0 V (20 - 0 mA) 2: 2 V - 10 V (4 - 20 mA) 3: 10 V - 2 V (20 - 4 mA) Note: Output voltage/current selection is configured via jumper on the control board. | 00 | △ |

P07 Group – Keypad Display and Function Code Management

| Code | Name | Setting Range | Default | Changeable |
|--------|---------------------------|---|---------|------------|
| P07.00 | MF Key Function Selection | 0: MF invalid 1: Switch between operation panel command channel and remote command channel (terminal command channel or communication command channel) 2: Forward/Reverse switching 3: Forward jog 4: Reverse jog 5: Menu mode switching | 3 | ▲ |
| P07.01 | Stop Key Function | 0: Stop key valid only in keypad operation mode 1: Stop key valid in all operation modes | 1 | △ |
| P07.02 | Keyboard Parameter Copy | Ones place: Upload/Download operation 0: No operation 1: Parameter upload 2: Parameter download (excluding motor parameters) 3: Parameter download (including motor parameters) Tens place: Local download permission 0: Parameter download prohibited 1: Parameter download allowed | H.00 | ▲ |

| Code | Name | Setting Range | Default | Changeable |
|--------|--------------------------------|---|---------|------------|
| P07.03 | LED Run Display Parameter 1 | 0000–FFFF Bit00: Run frequency 1 (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: DI input status Bit08: DO output status Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: Load speed display Bit12: PID setpoint Bit13: PID feedback Bit14: PLC stage Bit15: Run frequency 2 (Hz) | H. 001F | △ |
| P07.04 | LED Run Display Parameter 2 | 000–FFF Bit00: Remaining running time Bit01: AI1 pre-calibration voltage (V) Bit02: AI2 pre-calibration voltage (V) Bit03: Line speed Bit04: Current power-on time (Min) Bit05: Current running time (Min) Bit06: Communication setpoint Bit07: Main frequency X display (Hz) Bit08: Auxiliary frequency Y display (Hz) Bit09: DI7 pulse input frequency (kHz) Bit10: Count value Bit11: Length value Bit12: Motor speed | H. 0000 | △ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|--|--|---------|------------|
| P07.05 | LED Stop Display Parameter | 000–FFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: DI input status Bit03: DO output status Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: PLC stage Bit07: Load speed Bit08: PID setpoint Bit09: DI7 pulse input frequency (kHz) Bit10: Count value Bit11: Length value Bit12: Motor speed | H.0033 | △ |
| P07.06 | Custom Parameter Group Display Selection | Ones place: User-defined parameter group display selection 0: Not displayed 1: Displayed Tens place: User-modified parameter group display selection 0: Not displayed 1: Displayed | 0 | △ |
| P07.07 | Function Code Modification Attribute | 0: Modifiable 1: Not modifiable | 0 | △ |
| P07.08 | Heatsink Temperature | -20°C-100°C | - | ● |
| P07.09 | Software Version Number | - | - | ● |
| P07.10 | Software Function Code Version Number | - | - | ● |
| P07.11 | User Password | 0-65535 | 0 | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|---|---|---------|------------|
| P07.12 | Function Parameter Mode Attribute | Ones place: P30 group display selection 0: Do not display 1: Display Tens place: P00–P18 group display selection (excluding P07 group) 0: Do not display 1: Display | 11 | △ |
| P07.13 | Software Material Code Serial Number – Low | 0-9999 | - | ● |
| P07.14 | Software Material Code Serial Number – High | 0-9999 | - | ● |
| P07.17 | Keyboard Display Mode | 0: Single display 1: Dual display | 0 | △ |
| P07.18 | Communication Expansion Card Software Version Number | 0-655.35 | - | ● |

P09 Group – Protection and Fault Record

| Code | Name | Setting Range | Default | Changeable |
|--------|--|--|--------------------|------------|
| P09.00 | Motor Overload Protection Selection | 0: Disabled 1: Enabled | 1 | △ |
| P09.01 | Motor Overload Protection Gain | 0.20–10.00 | 1.00 | △ |
| P09.02 | Motor Overload Warning Factor | 50%–100% | 80% | △ |
| P09.03 | Overvoltage Stall Gain | 0–100 | 30 | △ |
| P09.04 | Overvoltage Stall Protection Voltage | 630.0V–795.0V | 710.0V | ▲ |
| P09.05 | Overcurrent Stall Gain | 0–100 | 20 | △ |
| P09.06 | Overcurrent Stall Protection Current | 100%–200% | 150 | △ |
| P09.07 | Undervoltage Point Setting | 200.0V–1500.0V | 350.0V | △ |
| P09.08 | Overvoltage Point Setting | 200.0V–2500.0V | Model Confirmation | ▲ |
| P09.09 | Fast Current Limiting Enable | 0: Disabled 1: Enabled | 1 | △ |
| P09.10 | Power-On Ground Short Protection Selection | 0: Invalid 1: Valid | 1 | △ |
| P09.11 | Input Phase Loss Selection | Ones place: Input phase loss protection action 0: Invalid 1: Valid Tens place: Input phase loss protection mode 0: Protection according to model 1: Software protection | 11 | △ |
| P09.12 | Output Phase Loss Protection Selection | 0: Invalid 1: Valid | 1 | △ |
| P09.13 | Low Temperature Fault Protection Selection | 0: Invalid 1: Valid | 1 | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|---|--|---------|------------|
| P09.14 | Terminal 24V Short-Circuit Protection Selection | 0: Invalid 1: Valid | 0 | △ |
| P09.15 | Energy Dissipation Braking Enable | Ones place: Dynamic braking selection Tens place: Standby dynamic braking selection 0: Invalid 1: Valid | 1 | △ |
| P09.16 | Energy Dissipation Braking Voltage Point | 630.0V–790.0V | 680.0V | △ |
| P09.17 | Energy Dissipation Braking Duty Cycle | 0%–100% | 100% | △ |
| P09.18 | Momentary Power Loss Action Selection | 0: Invalid 1: DC bus voltage constant control 2: Deceleration stop | 0 | △ |
| P09.19 | Momentary Power Loss Pause Judgment Voltage | 80%–100% | 90.0% | △ |
| P09.20 | Momentary Power Loss Voltage Recovery Judgment Time | 0.0–100.0s | 0.50s | △ |
| P09.21 | Momentary Power Loss Action Judgment Voltage | 60.0%–100.0% | 80.0% | △ |
| P09.22 | Reserved | - | 0 | △ |
| P09.23 | Reserved | - | 10.0% | △ |
| P09.24 | Reserved | - | 1.0s | △ |
| P09.25 | Automatic Fault Reset Count | 0–20 | 0 | △ |
| P09.26 | Automatic Fault Reset Interval | 0.1s–100.0s | 1.0s | △ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|---|--|---------|------------|
| P09.27 | Fault DO and Relay Action During Automatic Reset Period | 0: No action 1: Action | 0 | △ |
| P09.28 | Input Phase Loss Filter Coefficient | 1-50000 | 50 | △ |
| P09.29 | Input Phase Loss Voltage Threshold | 50.0-200.0V | 70.0V | ▲ |
| P09.30 | Soft Start Fault Detection Cycle | 0-65535 | 0 | △ |
| P09.33 | Fault Protection Action Selection 1 | Ones place: Motor overload (Err11) 0: Coast to stop 1: Stop according to stop mode 2: Continue running Tens place: Input phase loss (Err12) (same as ones place) Hundreds place: Output phase loss (Err13) (same as ones place) Thousands place: External fault (Err15) (same as ones place) Ten-thousands place: Communication abnormal (Err16) (same as ones place) | 00000 | △ |
| P09.34 | Fault Protection Action Selection 2 | Ones place: Terminal 24V short circuit (Err08) 0: Coast to stop 1: Stop according to stop mode 2: Continue running Tens place: Parameter read/write error (Err21) 0: Coast to stop 1: Stop according to stop mode Hundreds place: Reserved Thousands place: Brake VCE fault (Err01) | 00000 | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|-------------------------------------|---|---------|------------|
| | | 0: Coast to stop 1: Stop according to stop mode 2: Continue running Ten-thousands place: Run time reached (Err26) 0: Coast to stop 1: Stop according to stop mode 2: Continue running | | |
| P09.35 | Fault Protection Action Selection 3 | Ones place: User-defined fault 1 (Err27) 0: Coast to stop 1: Stop according to stop mode 2: Continue running Tens place: User-defined fault 2 (Err28) 0: Coast to stop 1: Stop according to stop mode 2: Continue running Hundreds place: Power-on time reached (Err29) 0: Coast to stop 1: Stop according to stop mode 2: Continue running Thousands place: Weak light warning Ten-thousands place: PID feedback lost during operation (Err31) 0: Coast to stop 1: Stop according to stop mode 2: Continue running | 02000 | △ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|---|--|---------|------------|
| P09.36 | Fault Protection Action Selection 4 | Ones place: Excessive speed deviation (Err42) 0: Coast to stop 1: Stop according to stop mode 2: Continue running Tens place: Motor overspeed (Err43) Hundreds place: Initial position error (Err51) Thousands place: Water full warning Ten-thousands place: Water empty warning | 22000 | △ |
| P09.40 | Frequency Selection During Fault Continuation | 0: Run at current running frequency 1: Run at set frequency 2: Run at upper limit frequency 3: Run at lower limit frequency 4: Run at backup frequency | 0 | △ |
| P09.41 | Exception Backup Frequency | 0.0%–100.0% (100.0% corresponds to maximum frequency P00.10) | 100.0% | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|-------------------|---|---------|------------|
| P09.42 | First Fault Type | 0: No fault 1: Brake VCE fault (Err01) 2: Acceleration overcurrent (Err02) 3: Deceleration overcurrent (Err03) 4: Constant-speed overcurrent (Err04) 5: Acceleration overvoltage (Err05) 6: Deceleration overvoltage (Err06) 7: Constant-speed overvoltage (Err07) 8: 24V short circuit (Err08) 9: Undervoltage (Err09) 10: Inverter overload (Err10) 11: Motor overload (Err11) 12: Input phase loss (Err12) 13: Output phase loss (Err13) 14: Module overtemperature (Err14) 15: External fault (Err15) 16: Communication abnormal (Err16) 17: Phase-to-phase short circuit (Err17) 18: Current detection abnormal (Err18) 19: Motor tuning abnormal (Err19) 21: Parameter read/write error (Err21) | - | ● |
| P09.43 | Second Fault Type | 23: Motor-to-ground short circuit (Err23) 26: Accumulated running time reached (Err26) | - | ● |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|---|---|---------|------------|
| P09.44 | Third (Most Recent) Fault Type | 27: User-defined fault 1 (Err27) 28: User-defined fault 2 (Err28) 29: Accumulated power-on time reached (Err29) 30: Reserved 31: PID feedback lost during operation (Err31) 32: Inverter unit U-phase protection (Err32) 33: Inverter unit V-phase protection (Err33) 34: Inverter unit W-phase protection (Err34) 35: Soft start fault (Err35) 40: Fast current limit timeout (Err40) 41: Motor switching during operation (Err41) 42: Excessive speed deviation (Err42) 43: Motor overspeed (Err43)51: 51: Initial position error (Err51) 64: Abnormal back EMF fault (Err64) | - | ● |
| P09.45 | Frequency at Third (Most Recent) Fault | 0.00Hz–655.35Hz | - | ● |
| P09.46 | Current at Third (Most Recent) Fault | 0.00A–655.35A | - | ● |
| P09.47 | Bus Voltage at Third (Most Recent) Fault | 0.0V–6553.5V | - | ● |
| P09.48 | Input Terminal Status at Third (Most Recent) Fault | 0–32767 | - | ● |
| P09.49 | Output Terminal Status at Third (Most Recent) Fault | 0–511 | - | ● |

| Code | Name | Setting Range | Default | Changeable |
|--------|--|------------------|---------|------------|
| P09.50 | Inverter Status at Third (Most Recent) Fault | 0-32767 | - | ● |
| P09.51 | Power-On Time at Third (Most Recent) Fault | 0Min-65535Min | - | ● |
| P09.52 | Run Time at Third (Most Recent) Fault | 0.0Min-6553.5Min | - | ● |
| P09.53 | Reserved | | | |
| P09.54 | Temperature at Third (Most Recent) Fault | -20°C-100°C | - | ● |
| P09.55 | Frequency at Second Fault | 0.00Hz-655.35Hz | - | ● |
| P09.56 | Current at Second Fault | 0.00A-655.35A | - | ● |
| P09.57 | Bus Voltage at Second Fault | 0.0V-6553.5V | - | ● |
| P09.58 | Input Terminal Status at Second Fault | 0-32767 | - | ● |
| P09.59 | Output Terminal Status at Second Fault | 0-511 | - | ● |
| P09.60 | Inverter Status at Second Fault | 0-32767 | - | ● |
| P09.61 | Power-On Time at Second Fault | 0Min-65535Min | - | ● |
| P09.62 | Run Time at Second Fault | 0.0Min-6553.5Min | - | ● |
| P09.63 | Reserved | | - | ● |
| P09.64 | Temperature at Second Fault | -20°C-100°C | - | ● |
| P09.65 | Frequency at First Fault | 0.00Hz-655.35Hz | - | ● |
| P09.66 | Current at First Fault | 0.00A-655.35A | - | ● |
| P09.67 | Bus Voltage at First Fault | 0.0V-6553.5V | - | ● |
| P09.68 | Input Terminal Status at First Fault | 0-32767 | - | ● |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|---------------------------------------|------------------|---------|------------|
| P09.69 | Output Terminal Status at First Fault | 0-511 | - | ● |
| P09.70 | Inverter Status at First Fault | 0-32767 | - | ● |
| P09.71 | Power-On Time at First Fault | 0Min-65535Min | - | ● |
| P09.72 | Run Time at First Fault | 0.0Min-6553.5Min | - | ● |
| P09.73 | Reserved | | - | ● |
| P09.74 | Temperature at First Fault | -20°C-100°C | - | ● |

P13 Group – Communication Parameters

| Code | Name | Setting Range | Default | Changeable |
|--------|---|---|---------|------------|
| P13.00 | Communication Baud Rate MODBUS Data Check Format Local Device Address MODBUS Response Delay Serial Communication Timeout Communication Data Format Selection Communication Current Reading Resolution Communication Protocol Selection | 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS | 5 | △ |
| P13.01 | Communication Baud Rate MODBUS Data Check Format Local Device Address MODBUS Response Delay Serial Communication Timeout Communication Data Format Selection Communication Current Reading Resolution Communication Protocol Selection | 0: No parity (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity (8-N-1) (Valid for MODBUS) | 3 | △ |
| P13.02 | Communication Baud Rate MODBUS Data Check Format | 0: Broadcast address 1–247 | 1 | △ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|--|----------------------------|---------|------------|
| | Local Device Address MODBUS Response Delay Serial Communication Timeout Communication Data Format Selection Communication Current Reading Resolution Communication Protocol Selection | | | |
| P13.03 | Communication Baud Rate MODBUS Data Check Format Local Device Address MODBUS Response Delay Serial Communication Timeout Communication Data Format Selection Communication Current Reading Resolution Communication Protocol Selection | 0–20 ms (Valid for MODBUS) | 2 | △ |
| P13.04 | Communication Baud Rate MODBUS Data Check Format Local Device Address MODBUS Response Delay Serial Communication Timeout | 0.0: Invalid 0.1–60.0 s | 0 | △ |

| Code | Name | Setting Range | Default | Changeable |
|--------|--|--|---------|------------|
| | Communication Data Format Selection Communication Current Reading Resolution Communication Protocol Selection | | | |
| P13.05 | Communication Baud Rate MODBUS Data Check Format Local Device Address MODBUS Response Delay Serial Communication Timeout Communication Data Format Selection Communication Current Reading Resolution Communication Protocol Selection | LED ones place: 0: Non-standard MODBUS protocol 1: Standard MODBUS protocol LED tens place: 0: Non-standard MODBUS fault response protocol 1: Standard MODBUS fault response protocol | 01 | △ |
| P13.06 | Communication Baud Rate MODBUS Data Check Format Local Device Address MODBUS Response Delay Serial Communication Timeout Communication Data Format Selection Communication Current Reading Resolution Communication Protocol | 0: 0.01A 1: 0.1A | 0 | △ |

5. Function Parameter List

| Code | Name | Setting Range | Default | Changeable |
|--------|---|--|---------|------------|
| | Selection | | | |
| P13.07 | Communication Baud Rate MODBUS Data Check Format Local Device Address MODBUS Response Delay Serial Communication Timeout Communication Data Format Selection Communication Current Reading Resolution Communication Protocol Selection | 0: Modbus protocol 1: Profibus-DP, CANopen protocol | 0 | ▲ |

P23 Group – Photovoltaic Inverter Function

| Code | Name | Detailed Parameter Description | Setting Range | Default | Changeable |
|--------|----------------------------------|---|---------------|---------|------------|
| P23.00 | PV Inverter Selection | 0: Invalid 1: Enabled | 0-1 | 1 | ▲ |
| P23.01 | Vmpp Voltage Command Selection | 0: Voltage Reference 1: Maximum Power Tracking Reference | 0-1 | 1 | ▲ |
| P23.02 | Vmpp Voltage Keyboard Command | 0.0-6553.5Vdc | 0.0-6553.5 | 450.0V | △ |
| P23.03 | PID Control Deviation Limit | 0.0-100.0% (100.0% corresponds to P23.02) | 0.0-100.0% | 0.0% | △ |
| P23.04 | PID Output Upper Frequency Limit | P23.05-100.0% (100.0% corresponds to P00.03) | P23.05-100.0% | 100.0% | △ |
| P23.05 | PID Output Lower Frequency Limit | 0.0%-P23.04 (100.0% corresponds to P00.03) | 0.0%-P23.04 | 20.0% | △ |
| P23.06 | KP1 | 0.00-100.00 | 0.00-100.00 | 5.00 | △ |
| P23.07 | KI1 | 0.00-100.00 | 0.00-100.00 | 5.00 | △ |
| P23.08 | KP2 | 0.00-100.00 | 0.00-100.00 | 35.00 | △ |
| P23.09 | KI2 | 0.00-100.00 | 0.00-100.00 | 35.00 | △ |
| P23.10 | PI Switching Point | 0.0-6553.5Vdc | 0.0-6553.5 | 20.0V | ▲ |
| P23.11 | Water Level Control Selection | 0: Water level control switch input 1: AI1 (Water level signal from analog input AI1, currently unsupported) 2: AI2 (Water level signal from analog input AI2) 3: AI3 (Water level signal from analog input AI3) | 0-3 | 0.0% | ▲ |
| P23.12 | Full Water Level Threshold | 0.0%-P23.13 | 0.0-P23.13 | 25.0% | △ |
| P23.13 | Empty Water Level Threshold | P13.12-100.0% | P23.12-100.0% | 75.0% | △ |

5. Function Parameter List

| Code | Name | Detailed Parameter Description | Setting Range | Default | Changeable |
|--------|--|--|---------------|---------|------------|
| P23.14 | Full Water Level Delay | 0-10000s | 0-10000 | 5s | △ |
| P23.15 | Full Water Level Wake-up Delay | 0-10000s | 0-10000 | 20s | △ |
| P23.16 | Empty Water Level Delay | 0-10000s | 0-10000 | 5s | △ |
| P23.17 | Empty Water Level Wake-up Delay | 0-10000s | 0-10000 | 20s | △ |
| P23.18 | Hydraulic Probe Fault Point | 0.0-100.0% | 0.0-100.0% | 0.0% | △ |
| P23.19 | Pump Underload Running Time | 0.0-1000.0s | 0.0-1000.0 | 60.0s | △ |
| P23.20 | Underload Running Current Detection Value | 0.0%: Automatic underload detection 0.1-100.0% | 0.0-100.0 | 0.00% | △ |
| P23.21 | Underload Reset Delay | 0.0-1000.0s | 0.0-1000.0 | 120.0s | △ |
| P23.22 | Hysteresis Frequency Threshold | 0.00-200.00Hz | 0.00-200.00 | 0.30Hz | ▲ |
| P23.23 | Low Irradiance Delay Time | 0.0-3600.0s | 0.0-3600.0 | 100.0s | △ |
| P23.24 | Low Irradiance Wake-up Delay | 0.0-3600.0s | 0.0-3600.0 | 300.0s | △ |
| P23.25 | Initial Actual Reference Voltage Command Display | 0.0-2000.0V | 0.0-2000.0 | 0.0 | ● |
| P23.26 | Reference Coefficient | | | | |
| P23.27 | MPPT Minimum Voltage Reference | 0.00-1.00 | 0.00-1.00 | 0.70 | △ |
| P23.28 | MPPT Maximum Voltage Reference | Maximum Power Point Tracking Minimum Voltage Reference - | P23.26-P23.31 | 400.0V | △ |

| Code | Name | Detailed Parameter Description | Setting Range | Default | Changeable |
|--------|--|---|---------------|---------|------------|
| | | P23.31 | | | |
| P23.29 | Reference Voltage Initial Value Adjustment | 0.0-200.0V | 0.0-200.0 | 5.0V | △ |
| P23.30 | Auto-Adjust Vmppt Upper and Lower Limit Time | 0.0-10.0s | 0.0-10.0 | 1.0s | △ |
| P23.31 | Auto-Adjust Vmppt Upper and Lower Limits | 1.0-100.0V | 1.0-100.0 | 30.0V | △ |
| P23.32 | Vmppt Maximum Value | P23.27-6553.5V | P23.27-6553.5 | 400.0V | △ |
| P23.33 | PV Input and Mains Input Selection | 0: Auto Switching Mode 1: Grid Frequency Input Mode 2: Photovoltaic Input Mode | 0-2 | 2 | ▲ |
| P23.34 | Switch to Mains Input Threshold Setting | 0.0V-P23.34 | 0.0-P23.34 | 140.0V | △ |
| P23.35 | Switch to PV Input Threshold Setting | P23.33-400.0V | P23.33-400.0 | 200.0V | △ |
| P23.36 | Pump Rated Flow | 0.0-6553.5m ³ /h | 0.0-6553.5 | 0.0 | △ |
| P23.37 | Pump Rated Head | 0.0-6553.5m ³ /h | 0.0-6553.5 | 0.0 | △ |
| P23.38 | Pump Total Flow Reset | 0-1 | 0-1 | 0 | ▲ |
| P23.39 | PV Undervoltage Point Voltage Setting | 0.0-400.0 | 0.0-400.0 | 140.0V | △ |
| P23.40 | Reserved | | | | |
| P23.41 | Product Model | 0: -SS2 220V Single-phase Input, Single-phase Output 1: -S2 220V Single-phase Input, Three-phase Output 2: -2 220V Three-phase Input, | 0-3 | 0 | ▲ |

5. Function Parameter List

| Code | Name | Detailed Parameter Description | Setting Range | Default | Changeable |
|-------------|-------------|---|----------------------|----------------|-------------------|
| | | Three-phase Output 3: -4 380V Three-phase Input, Three-phase Output | | | |

5.2 Monitoring Parameter Summary

P30 Group – Display Parameters

| Code | Name | Setting Range | Minimum Unit | Changeable |
|--------|--|---------------|---------------|------------|
| P30.00 | Running Frequency (Hz) | - | 0.01Hz | ● |
| P30.01 | Set Frequency (Hz) | - | 0.01Hz | ● |
| P30.02 | Bus Voltage (V) | - | 0.1V | ● |
| P30.03 | Output Voltage (V) | - | 1V | ● |
| P30.04 | Output Current (A) | - | 0.01A | ● |
| P30.05 | Output Power (kW) | - | 0.1kW | ● |
| P30.06 | Output Torque (%) (relative to motor rated torque) | - | 0.1% | ● |
| P30.07 | DI Input Status | - | 1 | ● |
| P30.08 | DO Output Status | - | 1 | ● |
| P30.09 | AI1 Voltage (V) / Current (mA) | - | 0.01V/0.01mA | ● |
| P30.10 | AI2 Voltage (V) / Current (mA) | - | 0.01V/0.01mA | ● |
| P30.11 | Load Speed Display | - | 1 | ● |
| P30.12 | PID Setpoint | - | 1 | ● |
| P30.13 | PID Feedback | - | 1 | ● |
| P30.14 | PLC Step | - | 1 | ● |
| P30.15 | Feedback Speed (Hz) | - | 0.01Hz | ● |
| P30.16 | Remaining Running Time | - | 0.1Min | ● |
| P30.17 | AI1 Pre-calibration Voltage (V) / Current (mA) | - | 0.001V/0.01mA | ● |
| P30.18 | AI2 Pre-calibration Voltage (V) / Current (mA) | - | 0.001V/0.01mA | ● |
| P30.19 | Line Speed | - | 1m/Min | ● |
| P30.20 | Current Power-On Time | - | 1Min | ● |
| P30.21 | Current Running Time | - | 0.1Min | ● |
| P30.22 | Communication Setpoint | - | 0.01% | ● |
| P30.23 | Main Frequency X Display | - | 0.01Hz | ● |
| P30.24 | Auxiliary Frequency Y Display | - | 0.01Hz | ● |
| P30.25 | Read Any Memory Address Value | - | 1 | ● |
| P30.26 | Target Torque (%) | - | 0.1% | ● |
| P30.27 | DI7 Input Pulse Frequency (kHz) | - | 0.01kHz | ● |

5. Function Parameter List

| Code | Name | Setting Range | Minimum Unit | Changeable |
|--------|--|----------------------|---------------|------------|
| P30.28 | Power Factor Angle | - | 0.1° | • |
| P30.29 | VF Separated Target Voltage | - | 1V | • |
| P30.30 | VF Separated Output Voltage | - | 1V | • |
| P30.31 | DI Input Status Visual Display | - | 1 | • |
| P30.32 | DO Output Status Visual Display | - | 1 | • |
| P30.33 | DI Functional Status Visual Display 1 (Function 01–Function 40) | - | 1 | • |
| P30.34 | DI Functional Status Visual Display 2 (Function 41–Function 80) | - | 1 | • |
| P30.35 | Fault Information | - | 1 | • |
| P30.36 | Set Frequency (%) | - | 0.01% | • |
| P30.37 | Running Frequency (%) | - | 0.01% | • |
| P30.38 | Inverter Status | - | 1 | • |
| P30.39 | Torque Limit | - | 0.1% | • |
| P30.40 | Counter Value | - | 1 | • |
| P30.41 | Length Value | - | 1 | • |
| P30.42 | Motor Speed | - | 1 | • |
| P30.44 | Extended DI Input Status | - | 1 | • |
| P30.45 | Extended AI3 Voltage (V) / Current (mA) | - | 0.01V/0.01mA | • |
| P30.46 | Extended AI4 Voltage (V) / Current (mA) | - | 0.01V/0.01mA | • |
| P30.51 | Output Torque (%) (relative to inverter rated torque) | - | 0.1% | • |
| P30.52 | Actual Carrier Frequency During Operation | - | 0.1kHz | • |
| P30.54 | Extended AI3 Pre-calibration Voltage (V) / Current (mA) | - | 0.001V/0.01mA | • |
| P30.55 | Extended AI4 Pre-calibration Voltage (V) / Current (mA) | - | 0.001V/0.01mA | • |
| P30.56 | Accumulated Energy Consumption (kWh) | Two Parameters | 1 kWh | • |
| P30.57 | Accumulated Energy Consumption (kWh) | Combined Accumulated | 10,000 kWh | • |

| Code | Name | Setting Range | Minimum Unit | Changeable |
|--------|--|--------------------|--------------|------------|
| | | Energy Consumption | | |
| P30.58 | Heatsink Temperature | - | 1°C | • |
| P30.61 | Synchronous Motor Rotor Position | - | 0.1° | • |
| P30.65 | Communication Expansion Card Frequency Setpoint | - | 0.01Hz | • |
| P30.66 | Communication Expansion Card Command Control | - | 1 | • |
| P30.67 | Communication Expansion Card Digital Output Terminal Control | - | 1 | • |
| P30.68 | Communication Expansion Card Analog Output AO1 Control | - | 1 | • |
| P30.69 | Communication Expansion Card Analog Output AO2 Control | - | 1 | • |
| P30.70 | Inverter Status 2 | - | 1 | • |

6. Faults and Diagnostics

When the inverter encounters a fault, the LED digital display will show the corresponding fault code, the fault relay will activate, the inverter output will stop, and the motor will coast to a stop. If a fault occurs during inverter operation, please refer to this chapter to check the fault type, fault cause, and countermeasures. The table provided is for reference only; do not disassemble or modify the unit without authorization. If the cause cannot be resolved, please contact our company or an authorized distributor for technical support.

| Fault Code | Fault Type | Possible Cause | Troubleshooting |
|--|---------------------------------------|---|---|
|  | Overcurrent During Acceleration | <ol style="list-style-type: none"> 1. Inverter output circuit is grounded or short-circuited 2. Control mode is vector control and parameter tuning has not been performed 3. Acceleration time is too short 4. Manual torque boost or V/F curve is inappropriate 5. Input voltage is too low 6. Starting a motor that is already rotating 7. Sudden load applied during acceleration 8. Inverter capacity is too small | <ol style="list-style-type: none"> 1. Eliminate external circuit faults. 2. Perform motor parameter auto-tuning. 3. Increase the acceleration time. 4. Adjust manual torque boost or the V/F curve. 5. Adjust the voltage to the normal range. 6. Enable speed tracking start or start after the motor has completely stopped. 7. Remove sudden load application. 8. Select an inverter with a higher power rating. |
|  | Overcurrent During Deceleration | <ol style="list-style-type: none"> 1. Inverter output circuit is grounded or short-circuited 2. Control mode is vector control and parameter tuning has not been performed 3. Deceleration time is too short 4. Input voltage is too low 5. Sudden load applied during deceleration 6. No braking unit or braking resistor installed | <ol style="list-style-type: none"> 1. Eliminate external circuit faults. 2. Perform motor parameter auto-tuning. 3. Increase the deceleration time. 4. Adjust the voltage to the normal range. 5. Remove sudden load application. 6. Install a braking unit and braking resistor. |
|  | Overcurrent at Constant Speed | <ol style="list-style-type: none"> 1. Inverter output circuit is grounded or short-circuited 2. Control mode is vector control and parameter tuning has not been performed | <ol style="list-style-type: none"> 1. Eliminate external circuit faults. Perform motor parameter auto-tuning. 2. Adjust the voltage to the normal range. 3. Remove sudden load |

6.Faults and Diagnostics

| Fault Code | Fault Type | Possible Cause | Troubleshooting |
|--|------------------------------------|---|---|
| | | 3. Input voltage is too low 4. Sudden load applied during operation 5. Inverter capacity is too small | application. 4. Select an inverter with a higher power rating. |
|  | Overvoltage During Acceleration | 1. Input voltage is too high 2. External force drives the motor during acceleration 3. Acceleration time is too short 4. No braking unit or braking resistor installed | 1. Adjust the voltage to the normal range. 2. Remove external driving force or install a braking resistor. 3. Increase the acceleration time. Install a braking unit and braking resistor. |
|  | Overvoltage During Deceleration | 1. Input voltage is too high 2. External force drives the motor during deceleration 3. Deceleration time is too short 4. No braking unit or braking resistor installed | 1. Adjust the voltage to the normal range. 2. Remove external driving force or install a braking resistor. 3. Increase the deceleration time. Install a braking unit and braking resistor. |
|  | Overvoltage at Constant Speed | 1. Input voltage is too high 2. External force drives the motor during operation | 1. Adjust the voltage to the normal range. 2. Remove external driving force or install a braking resistor. |
|  | 24V Short Circuit | 1. 24V terminal short-circuited to ground 2. 24V power supply overloaded | 1. Check the wiring. 2. Reduce the 24V power supply load. |
|  | Undervoltage | 1. Momentary power failure 2. Inverter input voltage is too low 3. Abnormal DC bus voltage 4. Rectifier bridge or pre-charge resistor abnormal | 1. Reset the fault. 2. Adjust the voltage to the normal range. 3. Contact technical support. 4. Contact technical support. |
|  | Inverter Overload | 1. Load is too heavy or motor is stalled | 1. Reduce the load and check the motor and mechanical system. |

| Fault Code | Fault Type | Possible Cause | Troubleshooting |
|--|--|--|---|
| | | 2. Inverter capacity is too small | 2. Select an inverter with a higher power rating. |
|  | Motor Overload | <ol style="list-style-type: none"> 1. Motor protection parameter P09.01 setting is inappropriate 2. Load is too heavy or motor is stalled 3. Inverter capacity is too small | <ol style="list-style-type: none"> 1. Set this parameter correctly. 2. Reduce the load and check the motor and mechanical system. 3. Select an inverter with a higher power rating. |
|  | Input Phase Loss | <ol style="list-style-type: none"> 1. Three-phase input power supply abnormal 2. Drive board abnormal 3. Main control board abnormal | <ol style="list-style-type: none"> 1. Inspect and eliminate problems in the external wiring. 2. Contact technical support. Contact technical support. |
|  | Output Phase Loss | <ol style="list-style-type: none"> 1. Wiring between inverter and motor abnormal 2. Inverter three-phase output unbalanced during operation 3. Drive board abnormal 4. Power module abnormal | <ol style="list-style-type: none"> 1. Eliminate external circuit faults. 2. Check whether the motor three-phase windings are normal and clear the fault. 3. Contact technical support. Contact technical support. |
|  | Module Overtemperature | <ol style="list-style-type: none"> 1. Ambient temperature too high or below -20°C 2. Air duct blocked 3. Cooling fan damaged 4. Module thermistor damaged or disconnected | <ol style="list-style-type: none"> 1. Lower the ambient temperature or raise it above -20°C. 2. Clean the air duct. 3. Replace the cooling fan. 4. Replace the thermistor. |
|  | External Fault | <ol style="list-style-type: none"> 1. External fault signal input via DI or VDI | <ol style="list-style-type: none"> 1. Check the external fault source. |
|  | Communication Fault | <ol style="list-style-type: none"> 1. Host computer not operating normally 2. Communication wiring abnormal 3. Communication parameters (P13 group) set incorrectly | <ol style="list-style-type: none"> 1. Check the host controller wiring. 2. Check the communication cable. 3. Set the communication parameters correctly. |
|  | Phase-to-Phase Short Circuit (U, V, W) | <ol style="list-style-type: none"> 1. Short circuit in inverter three-phase output 2. Motor phase-to-phase short | <ol style="list-style-type: none"> 1. Check the inverter three-phase connections. 2. Check whether the motor three |

6.Faults and Diagnostics

| Fault Code | Fault Type | Possible Cause | Troubleshooting |
|------------|------------------------------------|---|---|
| | | circuit | phases are short-circuited. |
| | Current Detection Fault | <ol style="list-style-type: none"> Hall sensor abnormal Drive board abnormal | <ol style="list-style-type: none"> Replace the Hall sensor. Replace the drive board. |
| | Motor Tuning Fault | <ol style="list-style-type: none"> Motor parameters not set according to nameplate Parameter auto-tuning timeout | <ol style="list-style-type: none"> Set the motor parameters correctly according to the nameplate. Check the wiring between inverter and motor. |
| | Encoder Fault | <ol style="list-style-type: none"> Encoder model mismatch Encoder wiring incorrect Encoder damaged PG card abnormal | <ol style="list-style-type: none"> Set the encoder type correctly according to actual conditions. Check the PG card power supply and phase sequence. Replace the encoder. Replace the PG card. |
| | Parameter Read/Write Fault | <ol style="list-style-type: none"> EEPROM chip interfered Control board EEPROM chip damaged Keypad board EEPROM chip damaged | <ol style="list-style-type: none"> Power on again and eliminate the interference source. Replace the control board. Replace the keypad board. |
| | Motor Ground Fault | <ol style="list-style-type: none"> Motor grounded or motor cable insulation damaged | <ol style="list-style-type: none"> Replace the cable or motor. |
| | Cumulative Running Time Reached | <ol style="list-style-type: none"> Accumulated running time has reached the preset value | <ol style="list-style-type: none"> Clear the fault record. |
| | User-Defined Fault 1 | <ol style="list-style-type: none"> User-defined Fault 1 signal input via DI or VDI | <ol style="list-style-type: none"> Check the external fault source. |
| | User-Defined Fault 2 | <ol style="list-style-type: none"> User-defined Fault 2 signal input via DI or VDI | <ol style="list-style-type: none"> Check the external fault source. |
| | Cumulative Power-On Time Reached | <ol style="list-style-type: none"> Accumulated power-on time has reached the preset value | <ol style="list-style-type: none"> Clear the fault record. |
| | PID Feedback Lost During Operation | <ol style="list-style-type: none"> PID feedback is lower than P10.25 setting | <ol style="list-style-type: none"> Check the PID feedback signal or set P10.25 to an appropriate value. |

| Fault Code | Fault Type | Possible Cause | Troubleshooting |
|--|--|--|---|
|  | Inverter Unit Phase U Protection | <ol style="list-style-type: none"> 1. Acceleration too fast 2. Inverter output short circuit 3. Output cable too long 4. Internal inverter wiring loose 5. Drive board abnormal 6. Power module abnormal | <ol style="list-style-type: none"> 1. Increase the acceleration time. 2. Check the output wiring and eliminate faults. 3. Add an output reactor. Secure the internal wiring connections. 4. Contact technical support. 5. Contact technical support. |
|  | Inverter Unit Phase V Protection | <ol style="list-style-type: none"> 1. Acceleration too fast 2. Inverter output short circuit 3. Output cable too long 4. Internal inverter wiring loose 5. Drive board abnormal 6. Power module abnormal | <ol style="list-style-type: none"> 1. Increase the acceleration time. 2. Check the output wiring and eliminate faults. 3. Add an output reactor. 4. Secure the internal wiring connections. 5. Contact technical support. 6. Contact technical support. |
|  | Inverter Unit Phase W Protection | <ol style="list-style-type: none"> 1. Acceleration too fast 2. Inverter output short circuit 3. Output cable too long 4. Internal inverter wiring loose 5. Drive board abnormal 6. Power module abnormal | <ol style="list-style-type: none"> 1. Increase the acceleration time. 2. Check the output wiring and eliminate faults. 3. Add an output reactor. 4. Secure the internal wiring connections. 5. Contact technical support. 6. Contact technical support. |
|  | Soft Start Fault | <ol style="list-style-type: none"> 1. Power board abnormal 2. Internal inverter wiring loose 3. Rectifier module abnormal | <ol style="list-style-type: none"> 1. Contact technical support. Secure the internal wiring connections. 2. Contact technical support. |
|  | Fast Current Limit Timeout | <ol style="list-style-type: none"> 1. Load is too heavy or motor is stalled 2. Inverter capacity is too small | <ol style="list-style-type: none"> 1. Reduce the load and check the motor and mechanical system. 2. Select an inverter with a higher power rating. |
|  | Motor Switching During Operation | <ol style="list-style-type: none"> 1. Motor selection changed via terminal during inverter operation | <ol style="list-style-type: none"> 1. Switch the motor only after the inverter has stopped. |

6.Faults and Diagnostics

| Fault Code | Fault Type | Possible Cause | Troubleshooting |
|------------|---------------------------|--|---|
| E2242 | Excessive Speed Deviation | <ol style="list-style-type: none"> 1. Encoder parameter settings incorrect 2. Parameter identification not performed 3. Speed deviation detection parameters P09.79 and P09.80 set improperly | <ol style="list-style-type: none"> 1. Set the encoder parameters correctly. 2. Perform motor parameter identification. 3. Set the detection parameters appropriately according to actual conditions. |
| E2243 | Motor Overspeed | <ol style="list-style-type: none"> 1. Encoder parameter settings incorrect 2. Parameter identification not performed 3. Speed deviation detection parameters P09.78 and P09.81 set improperly | <ol style="list-style-type: none"> 1. Set the encoder parameters correctly. 2. Perform motor parameter identification. 3. Set the detection parameters appropriately according to actual conditions. |
| E2251 | Initial Position Error | <ol style="list-style-type: none"> 1. Motor parameters deviate significantly from actual values | <ol style="list-style-type: none"> 1. Reconfirm whether the motor parameters are correct, especially whether the rated current is set too low. |
| Err64 | Back-EMF Abnormal Fault | <ol style="list-style-type: none"> 2. Back EMF identification fault during parameter auto-learning | <ol style="list-style-type: none"> 1. Motor parameters not set to rated values. 2. Maximum frequency and upper limit frequency not set to rated values. |

Appendix II Product Technical Specifications

| Inverter Model | Frame Size | Rated Output Voltage (VAC) | Rated Output Current (A) | Rated Capacity (kVA) | Compatible Motor (kW) |
|----------------|------------|----------------------------|--------------------------|----------------------|-----------------------|
| PV100-4T0040-A | A | 380 | 10 | 5.9 | 4 |
| PV100-4T0055-A | A | 380 | 13 | 8.6 | 5.5 |
| PV100-4T0075-B | B | 380 | 17 | 11.2 | 7.5 |
| PV100-4T0110-B | B | 380 | 25 | 16.5 | 11 |
| PV100-4T0150-C | C | 380 | 32 | 21 | 15 |
| PV100-4T0185-C | C | 380 | 38 | 25 | 18.5 |
| PV100-4T0220-C | C | 380 | 45 | 30 | 22 |
| PV100-4T0300-D | D | 380 | 60 | 40 | 30 |
| PV100-4T0370-D | D | 380 | 75 | 50 | 37 |
| PV100-4T0450-E | E | 380 | 90 | 60 | 45 |
| PV100-4T0550-E | E | 380 | 110 | 75 | 55 |
| PV100-4T0750-E | E | 380 | 150 | 99 | 75 |
| PV100-4T0900-F | F | 380 | 176 | 116 | 90 |
| PV100-4T1100-F | F | 380 | 210 | 139 | 110 |
| PV100-4T1320-G | G | 380 | 250 | 164 | 132 |
| PV100-4T1600-G | G | 380 | 300 | 197 | 160 |
| PV100-4T1850-H | H | 380 | 340 | 224 | 185 |
| PV100-4T2000-H | H | 380 | 380 | 250 | 200 |
| PV100-4T2200-H | H | 380 | 415 | 273 | 220 |
| PV100-4T2500-H | H | 380 | 470 | 309 | 250 |
| PV100-4T2800-J | J | 380 | 520 | 342 | 280 |
| PV100-4T3150-J | J | 380 | 600 | 395 | 315 |
| PV100-4T3500-J | J | 380 | 650 | 421 | 350 |
| PV100-4T4000-J | J | 380 | 720 | 454 | 400 |

Appendix III Product Installation Dimensions

① Installation Dimensions of Remote Keypad

Dual-display remote keypad installation dimensions:

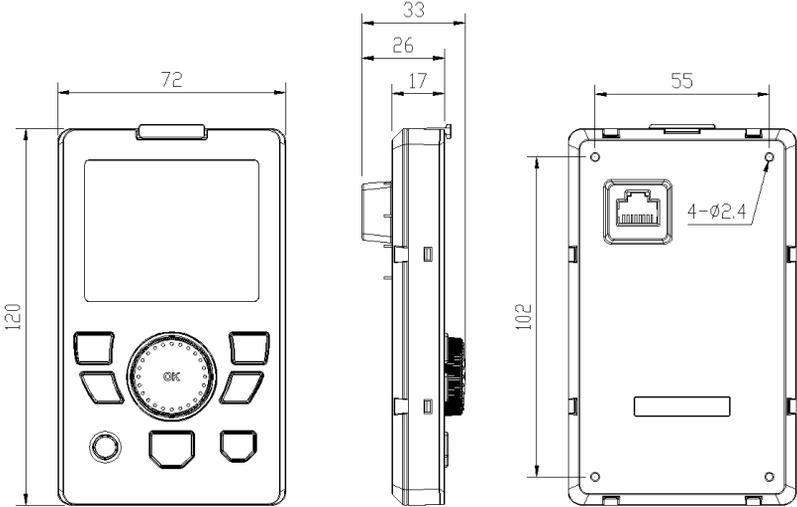


Figure C-1 Dual-display Remote Keypad Installation Dimensions (unit: mm)

LCD remote keypad installation dimensions:

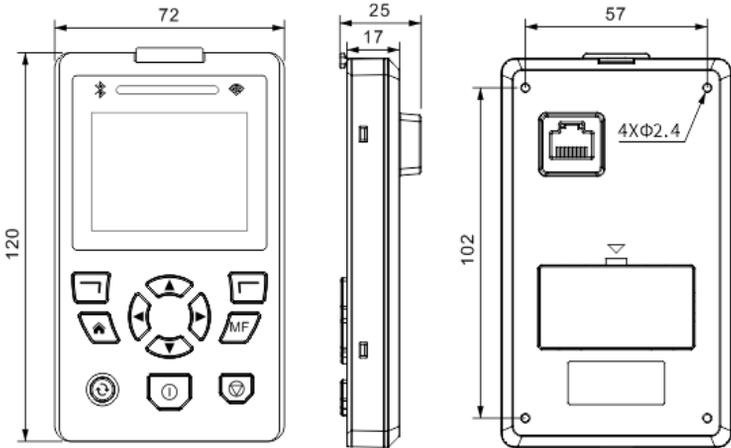


Figure C-2 LCD Remote Keypad Installation Dimensions (unit: mm)

According to actual installation requirements, both the dual-display and LCD remote keypads can be mounted using a bracket. Bracket cutout dimensions are as follows:

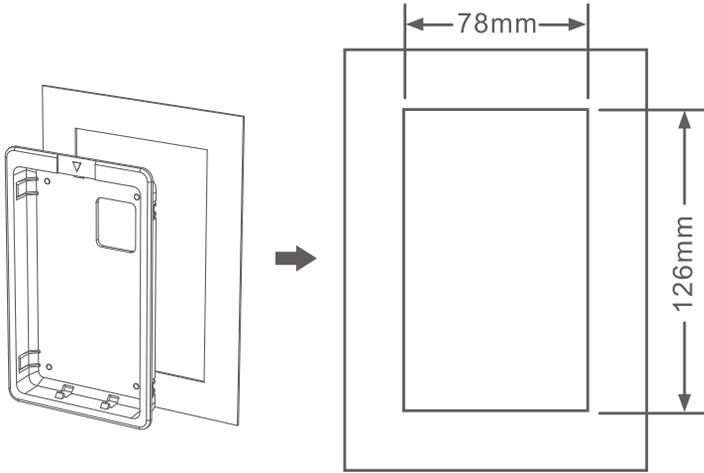


Figure C-3 External Keypad Bracket Mounting Dimensions (Unit: mm)

Notes:

- (1) For detailed operation instructions of the dual-display and LCD remote keypads, please refer to their respective manuals.
- (2) For the PV100 series inverters, the cable connecting the remote keypad control port to the inverter body (RJ45 interface) should be less than 200 m. If operation beyond this distance is required, a long-distance remote keypad must be used.

Remote Keypad Removal Procedure:

The remote keypad is built into the inverter enclosure (for models 45 kW and above). When installing and using the remote keypad, open the inverter front cover, unscrew the remote keypad assembly screws, remove the remote keypad and bracket, and then proceed with remote installation. The steps are illustrated below:

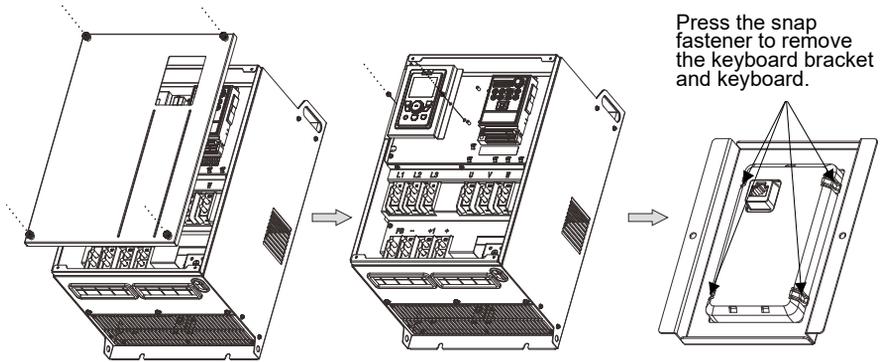


Figure C-4 Remote Keypad Removal Procedure

② Installation Dimensions of the Inverter

Frames A/B/C/D applicable models: PV100-4T0040-A - PV100-4T0370-D
As shown in Figure C-5:

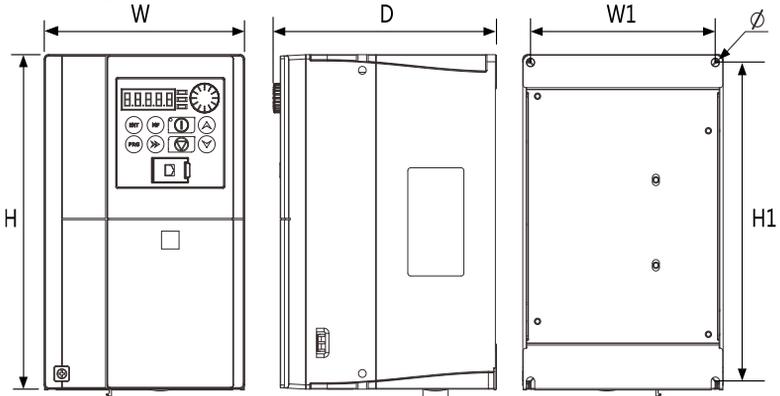


Figure C-5 Frame A/B/C/D Installation Dimensions

Frames E/F/G applicable models: PV100-4T0450-E - PV100-4T1600-G

As shown in Figure C-6:

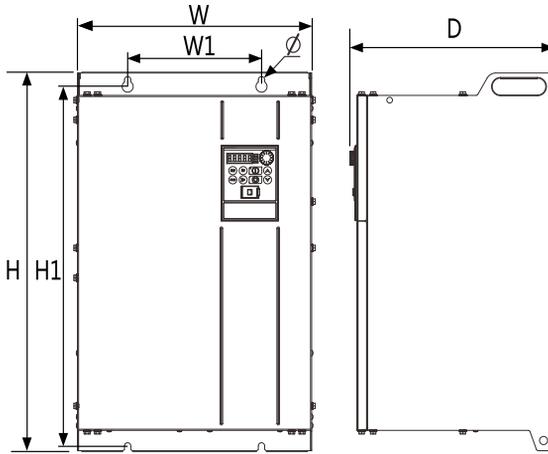


Figure C-6 Frame E/F/G Installation Dimensions

Inverter Installation Dimensions Table

| Frame | Inverter Model | Mounting Dimensions (mm) | | Overall Dimensions (mm) | | | | Screw Specification | Torque (kgf·cm) |
|-------|--|--------------------------|-----|-------------------------|-----|-----|-----|---------------------|-----------------|
| | | W1 | H1 | W | H | D | ∅ | | |
| A | PV100-4T0040-A PV100-4T0055-A | 132 | 224 | 143 | 235 | 160 | 5.5 | M5 | 30±10% |
| B | PV100-4T0075-B PV100-4T0110-B | 150 | 250 | 167 | 265 | 170 | 5.5 | M5 | 30±10% |
| C | PV100-4T0150-C PV100-4T0185-C PV100-4T0220-C | 183 | 285 | 200 | 300 | 186 | 6 | M5 | 30±10% |
| D | PV100-4T0300-D PV100-4T0370-D | 218 | 375 | 235 | 390 | 196 | 7 | M6 | 45±10% |
| E | PV100-4T0450-E PV100-4T0550-E PV100-4T0750-E | 200 | 525 | 350 | 544 | 311 | 9.5 | M8 | 110±10% |
| F | PV100-4T0900-F PV100-4T1100-F | 200 | 625 | 350 | 644 | 311 | 9.5 | M8 | 110±10% |
| G | PV100-4T1320-G PV100-4T1600-G | 200 | 865 | 350 | 884 | 351 | 9.5 | M8 | 110±10% |

Notes:

- (1) For M5 screws, a recommended screw length $L \geq 12$ mm;
- (2) For M6 or M8 screws, a recommended screw length $L \geq 16$ mm.

Frames H/J applicable models: PV100-4T1850-H - PV100-4T4000-J, as shown in Figure C-7.

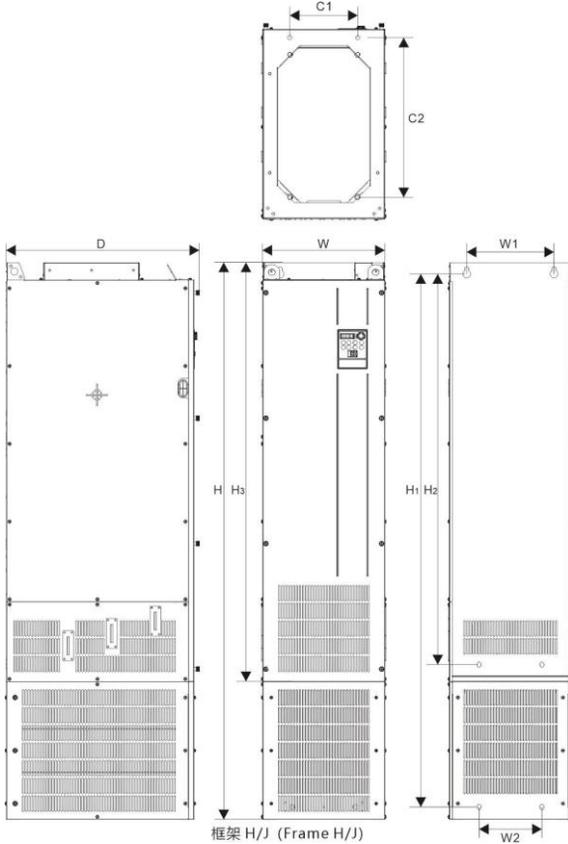


Figure C-7 Frame H/J Installation Dimensions

| Frame | Inverter Model | Mounting Dimensions (mm) | | | | | | Overall Dimensions (mm) | | | | Screw Spec | Torque (kgf·cm) |
|-------|--|--------------------------|-----|------|------|-------|-----|-------------------------|------|------|-----|------------|-----------------|
| | | W1 | W2 | H1 | H2 | C1 | C2 | W | H | H3 | D | | |
| H | PV100-4T1850-H PV100-4T2000-H PV100-4T2200-H PV100-4T2500-H | 280 | 180 | 1540 | 1140 | 221.5 | 405 | 350 | 1608 | 1208 | 545 | M10 | 220±10% |

| | | | | | | | | | | | | | |
|---|--|-----|-----|------|------|-------|-----|-----|------|------|-----|-----|---------|
| J | PV100-4T2800-J PV100-4T3150-J PV100-4T3500-J PV100-4T4000-J | 280 | 180 | 1665 | 1265 | 221.5 | 405 | 350 | 1738 | 1338 | 545 | M12 | 390±10% |
|---|--|-----|-----|------|------|-------|-----|-----|------|------|-----|-----|---------|

③ Central Mounting (Optional) Dimensions

Frames A/B/C/D applicable models: PV100-4T0040-A - PV100-4T0370-D
As shown in Figure C-8:

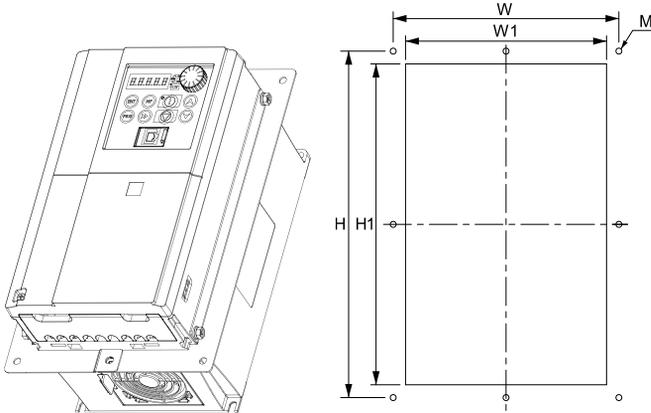


Figure C-8 Frame A/B/C/D Central Mounting Dimensions

Central Mounting Dimensions Table

| Frame | Inverter Model | Mounting Panel Cutout Dimensions (mm) | | Mounting Screw Hole Dimensions (mm) | | |
|-------|--|---------------------------------------|-----|-------------------------------------|-----|---|
| | | W1 | H1 | W | H | M |
| A | PV100-4T0040-A PV100-4T0055-A | 147 | 143 | 164 | 259 | 5 |
| B | PV100-4T0075-B PV100-4T0110-B | 171 | 273 | 192 | 291 | 5 |
| C | PV100-4T0150-C PV100-4T0185-C PV100-4T0220-C | 204 | 308 | 226 | 326 | 5 |
| D | PV100-4T0300-D PV100-4T0370-D | 239 | 398 | 260 | 416 | 6 |

Frames E/F/G Applicable Models: PV100-4T0450-E - PV100-4T1600-G, as shown in Figure C-9.

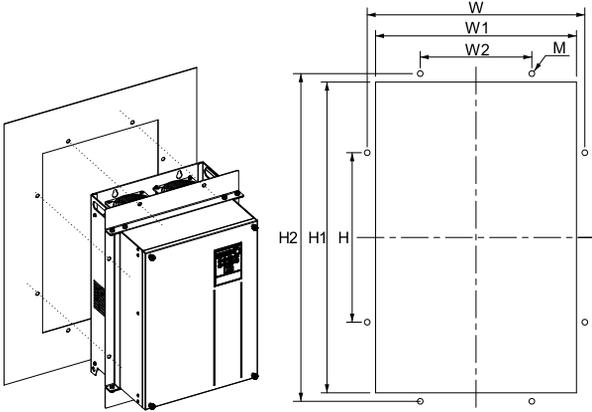


Figure C-9 Midsection Mounting Dimensions for Frames E/F/G

Midsection Mounting Dimensions Table

| Frame Frame Frame | Inverter Model | Mounting Panel Cutout Dimensions (mm) | | Mounting Screw Hole Dimensions (mm) | | | | |
|-------------------------|--|--|-----|--|-----|-----|-----|---|
| | | W1 | H1 | W | H | W2 | H2 | M |
| E | PV100-4T0450-E PV100-4T0550-E PV100-4T0750-E | 360 | 550 | 390 | 300 | 200 | 580 | 8 |
| F | PV100-4T0900-F PV100-4T1100-F | 360 | 650 | 390 | 400 | 200 | 680 | 8 |
| G | PV100-4T1320-G PV100-4T1600-G | 360 | 890 | 390 | 600 | 200 | 920 | 8 |

Appendix VI MODBUS Protocol Description

① Functional Code Parameter Addressing Rules

Parameter addresses are represented using the function code group number and index number:

- High byte: 00-FF
- Low byte: 00-FF

For example:

To access function code P03.12, the corresponding MODBUS address is 0x030C.

Note:

- P07 Group: P07.11 is write-only; P07.06 is read-only; P07.07 and P07.02 are neither readable nor writable; all other parameters follow their functional code attributes for read/write.
- P30 Group: Read-only; parameter modification is not allowed.
- Some parameters cannot be modified while the inverter is in operation; some parameters cannot be modified regardless of the inverter's operating state. When modifying functional code parameters, attention must be paid to the parameter range, units, and relevant notes.

WARNING

Note: Frequent writes to the EEPROM can reduce its service life. Therefore, some function codes do not need to be stored in the EEPROM when operating in communication mode; modifying the value in RAM is sufficient. To enable this behavior, simply set the highest bit of the function code address from 0 to 1.

For example: Function code P03.12, if it is not stored in the EEPROM, its address is represented as 0x830C.

- This address can only perform RAM write operations.
- Read operations on this address are invalid.

② Other Address Function Description

| Function Description | Parameter Address | Parameter Description | R/W |
|-----------------------------|-------------------|---|-----|
| Shutdown/Running Parameters | D100H | Communication setpoint (decimal) –10000-10000 | R/W |
| | D101H | Running frequency | R |
| | D102H | Bus voltage | |
| | D103H | Output voltage | |
| | D104H | Output current | |
| | D105H | Output power | |
| | D106H | Output torque | |

Appendix VI MODBUS Protocol Description

| Function Description | Parameter Address | Parameter Description | R/W |
|-------------------------------|-------------------|---|-----|
| | D107H | Running speed | |
| | D108H | DI input status | |
| | D109H | DO output status | |
| | D10AH | AI1 voltage | |
| | D10BH | AI2 voltage | |
| | D10CH | Load speed | |
| | D10DH | PID setpoint | |
| | D10EH | PID feedback | |
| | D10FH | PLC step | |
| | D110H | Feedback speed (unit 0.1 Hz) | |
| | D111H | Remaining running time | |
| | D112H | AI1 pre-calibration voltage | |
| | D113H | AI2 pre-calibration voltage | |
| | D114H | Line speed | |
| | D115H | Current power-on time | |
| | D116H | Current running time | |
| | D117H | Communication setpoint | |
| | D118H | Main frequency X display | |
| | D119H | Auxiliary frequency Y display | |
| | D11AH | DI7 pulse input frequency (kHz) | |
| | D11BH | Counter value | |
| D11CH | Length value | | |
| D11DH | Motor speed | | |
| Communication command control | D200H | 0001: Forward Run 0002: Reverse Run 0003: Forward Jog 0004: Reverse Jog 0005: Coast to Stop 0006: Decelerate to Stop 0007: Fault Reset 0008: Start Auto-Tuning | W |

| Function Description | Parameter Address | Parameter Description | | R/W |
|---------------------------------|-------------------|--|--|-----|
| Digital output terminal control | D201H | BIT0: DO1 Output Control BIT1: RELAY1 Output Control BIT2: RELAY2 Output Control BIT3: VDO1 BIT4: VDO2 BIT5: VDO3 BIT6: VDO4 BIT7: VDO5 | | W |
| Analog output AO1 control | D202H | 0-7FFF: Represents 0% - 100% | | W |
| Analog output AO2 control | D203H | 0-7FFF: Represents 0% - 100% | | W |
| Pulse output DO1 control | D204H | 0-7FFF: Represents 0% - 100% | | W |
| Inverter status word | D300H | 0001: Forward Operation | | R |
| | | 0002: Reverse Operation | | |
| | | 0003: Stop | | |
| Inverter fault description | D400H | 0000: No Fault | 0013: Motor Tuning Abnormal | R |
| | | 0001: Brake VCE Fault | 0015: Parameter Read/Write Error | |
| | | 0002: Acceleration Overcurrent | 0017: Motor Ground Short Circuit | |
| | | 0003: Deceleration Overcurrent | 001A: Operation Time Reached | |
| | | 0004: Constant Speed Overcurrent | 001B: User Custom Fault 1 | |
| | | 0005: Acceleration Overvoltage | 001C: User Custom Fault 2 | |
| | | 0006: Deceleration Overvoltage | 001D: Power-On Time Reached | |
| | | 0007: Constant Speed Overvoltage | 001E: Reserved | |
| | | 0008: 24V Short Circuit | 001F: PID Feedback Loss During Operation | |
| | | 0009: Undervoltage Fault | 0020: Inverter Unit U Phase Protection | |
| | | 000A: Inverter Overload | 0021: Inverter Unit V Phase | |
| | | 000B: Motor Overload | | |
| | | | | |
| | | | | |
| | | | | |

| Function Description | Parameter Address | Parameter Description | | R/W |
|--------------------------------------|-------------------|---|---|-----|
| | | 000C: Input Phase Loss 000D: Output Phase Loss 000E: Module Overtemperature 000F: External Fault 0010: Communication Abnormal 0011: Phase-to-Phase Short Circuit 0012: Current Detection Abnormal | Protection 0022: Inverter Unit W Phase Protection 0023: Soft Start Fault 0028: Fast Current Limit Timeout 0029: Motor Switching During Operation 002A: Speed Deviation Too Large 002B: Motor Overspeed 0033: Initial Position Error 0040: Back EMF Abnormal Fault | |
| Parameter lock password verification | 070BH | Enter password (returns 8888H if correct) | | W |
| Communication fault | DD88H | 0000: No Fault 0001: Password Error 0002: Command Code Error 0003: CRC Checksum Error 0004: Invalid Address 0005: Invalid Parameter 0006: Invalid Parameter Change 0007: System Locked 0008: EEPROM Operation in Progress | | R |

*Note:

- The communication set value is expressed as a percentage of a relative value: 10000 corresponds to 100.00%, and -10000 corresponds to -100.00%.
- For frequency-based data, this percentage is relative to the maximum frequency (P00.10). For torque-based data, this percentage corresponds to P03.10 and P15.21 (torque upper limit settings for the first and second motors, respectively).
- R/W indicates the read/write characteristic of this function code.

③ Read/Write Operation Instructions

(1) *Read Command 03H: Command code 03H is used to read N words, with a maximum of 12 words per read.*

Example:

To read the preset frequency of an inverter at address 01H. The function code for preset frequency is P00.08, which corresponds to function code address 0008H. Suppose the preset frequency is 50 Hz.

The command sent by the master would be:

| Inverter Address | Read Command | Function Code Address | Data Length | CRC Check |
|------------------|--------------|-----------------------|-------------|-----------|
| 01 | 03 | 00 08 | 00 05 | 05 C8 |

Slave response command information:

Correct response from the slave:

| When P13.05 is set to 0: | | | | |
|--------------------------|--------------|------------|--------------|-----------|
| Inverter Address | Read Command | Byte Count | Data Content | CRC Check |
| 01 | 03 | 00 02 | 13 88 | E9 5C |
| When P13.05 is set to 1: | | | | |
| Inverter Address | Read Command | Byte Count | Data Content | CRC Check |
| 01 | 03 | 02 | 13 88 | B5 12 |

Error response from the slave:

| Inverter Address | Read Command | Comm. Fault Address | Comm. Fault Code | CRC Check |
|------------------|--------------|---------------------|------------------|-----------|
| 01 | 03 | DD 88 | XX XX | XX XX |

(2) *Command 06H: Write One Word (Word)*

Example:

Set the preset frequency of the inverter with address 01H to 50 Hz. The function code for preset frequency is P00.08, which maps to the function code address 0008H. Based on the number of decimal places, the fieldbus scaling factor for the preset frequency is 100. Therefore, 50 Hz multiplied by the scaling factor 100 gives 5000, corresponding to the hexadecimal value 1388H. This value (1388H) shall be written.

The command information sent by the master for writing to EEPROM is:

| Inverter Address | Write Command | Function Code Address | Data Content | CRC Check |
|------------------|---------------|-----------------------|--------------|-----------|
| 01 | 06 | 00 08 | 13 88 | 05 5E |

Correct response from the slave:

| Inverter Address | Write Command | Function Code Address | Data Content | CRC Check |
|------------------|---------------|-----------------------|--------------|-----------|
| 01 | 06 | 00 08 | 13 88 | 05 5E |

If the write operation is successful, the response command information is identical to the sent command information.

Error response from the slave:

| Inverter Address | Write Command | Communication Fault Address | Communication Fault Code | CRC Check |
|------------------|---------------|-----------------------------|--------------------------|-----------|
| 01 | 06 | DD 88 | XX XX | XX XX |

The command information sent by the master for writing to RAM is:

| Inverter Address | Write Command | Function Code Address | Data Content | CRC Check |
|------------------|---------------|-----------------------|--------------|-----------|
| 01 | 06 | 80 08 | 13 88 | 2C 9E |

Correct response from the slave:

| Inverter Address | Write Command | Function Code Address | Data Content | CRC Check |
|------------------|---------------|-----------------------|--------------|-----------|
| 01 | 06 | 80 08 | 13 88 | 2C 9E |

Error response from the slave:

| Inverter Address | Write Command | Communication Fault Address | Communication Fault Code | CRC Check |
|------------------|---------------|-----------------------------|--------------------------|-----------|
| 01 | 06 | DD 88 | XX XX | XX XX |

(3)Multiple-Byte Write Command 10H: Command code 10H is used to write multiple words (maximum 12 words) consecutively.

Example:

Set the function codes P11.00–P11.03 of the inverter with address 01H to 10.0%, 25.0%, 50.0%, and 100.0% respectively. The function code address corresponding to P11.00 is 0B00H.

The command information sent by the master for writing to EEPROM is:

| Inverter Address | Multiple-Byte Write Command | Function Code Address | Data Length | Byte Count |
|------------------|-----------------------------|-----------------------|--------------|------------|
| 01 | 10 | 0B 00 | 00 04 | 08 |
| Data Content | Data Content | Data Content | Data Content | CRC Check |
| 00 64 | 00 FA | 01 F4 | 03 E8 | 11 93 |

☑ Correct response from the slave:

| Inverter Address | Multiple-Byte Write Command | Function Code Address | Data Content | CRC Check |
|------------------|-----------------------------|-----------------------|--------------|-----------|
| 01 | 10 | 0B 00 | 00 04 | C3 EE |

If the write operation is successful, the first six bytes of the response command information are identical to those of the sent command information.

☒ Error response from the slave:

| Inverter Address | Multiple-Byte Write Command | Communication Fault Address | Communication Fault Code | CRC Check |
|------------------|-----------------------------|-----------------------------|--------------------------|-----------|
| 01 | 10 | DD 88 | XX XX | XX XX |

The command information sent by the master for writing to RAM is:

| Inverter Address | Multiple-Byte Write Command | Function Code Address | Data Length | Byte Count |
|------------------|-----------------------------|-----------------------|-------------|------------|
| 01 | 10 | 8B 00 | 00 04 | 08 |

| Data Content | Data Content | Data Content | Data Content | CRC Check |
|--------------|--------------|--------------|--------------|-----------|
| 00 64 | 00 FA | 01 F4 | 03 E8 | EE 52 |

☑ Correct response from the slave:

| Inverter Address | Multiple-Byte Write Command | Function Code Address | Data Content | CRC Check |
|------------------|-----------------------------|-----------------------|--------------|-----------|
| 01 | 10 | 8B 00 | 00 04 | EA 2E |

☒ Error response from the slave:

| Inverter Address | Multiple-Byte Write Command | Communication Fault Address | Communication Fault Code | CRC Check |
|------------------|-----------------------------|-----------------------------|--------------------------|-----------|
| 01 | 10 | DD 88 | XX XX | XX XX |

Note:

Frequent writes to the EEPROM will reduce its service life. Caution is required during operation.

Warranty Terms

Our company solemnly promises that from the date the user purchases the product from the manufacturer, the user is entitled to the following after-sales warranty services:

1. **Free Warranty Period:** The product is covered by a free warranty for eighteen months from the date of purchase (excluding exported products and non-standard models).
2. **One-Month Quality Guarantee:** If a quality issue occurs within one month from the date of purchase, the manufacturer will provide return, replacement, or repair.
3. **Three-Month Quality Guarantee:** If a quality issue occurs within three months from the date of purchase, the manufacturer will provide replacement or repair.
4. **Lifetime Paid Service:** From the date of purchase, the product is entitled to lifetime paid service.
5. **Exclusions:** The following causes of product damage or malfunction are not covered by the manufacturer's eighteen-month free warranty:
 - Damage caused by use inconsistent with the user manual or exceeding standard specifications;
 - Damage caused by earthquakes, fire, floods, abnormal voltage, or other force majeure events;
 - Damage caused by incorrect use, unauthorized disassembly, repair, or modification;
 - Damage caused by using the product for abnormal functions;
 - Damage caused by improper storage.
6. **Warranty Refusal:** The manufacturer reserves the right to refuse warranty service under the following conditions:
 - The product's relevant information (nameplate, labels, serial number, etc.) cannot be verified;
 - The user has not paid in full according to the signed sales contract between both parties;
 - The user intentionally conceals improper use of the product during installation, wiring, operation, or maintenance from the manufacturer's after-sales service provider.

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