

YD287 Series

AC Driver for Crane



380V 3-phase 0.75 ~ 22kW

Ver 1.2

Preface

Thank you for purchasing Yolico's YD287 series AC drive for cranes.

This product is a compact, small-power, and cost-effective AC drive for cranes developed by Yolico for the crane industry. AC drives of this series support sensorless vector control (SVC) and V/f control, have high startup torque, and can be used to drive asynchronous motors. It is equipped with the brake control function specific to the crane drive, as well as various main control signal input terminals for easy commissioning. These AC drives are used in drive and control scenarios such as hoisting, translation, and rotation performed by a compact crane.

This manual describes the functions and correct use of the YD287 crane AC drive, including model selection, parameter setting, operation, commissioning, maintenance, and inspection. Read and understand the manual before use. The device manufacturer will deliver the manual to end users along with the device for later reference.

Precautions

- ◆ For the illustration purpose, the drawings in this user guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified before using the product, and perform operations in accordance with the instructions.
- ◆ The drawings in the user guide are for illustration only and may be different from the product you purchased.
- ◆ The instructions are subject to change without notice due to product upgrade, specification modification as well as efforts to improve the accuracy and convenience of the guide.
- ◆ Contact the regional agent or customer service center of Inovance if you need a new user guide.
- ◆ Contact the customer service center of Inovance if you have problems during the use.

| | |
|---|----|
| Table of Contents | |
| Preface | 2 |
| Safety Precautions | 5 |
| 1 Product Information | 6 |
| 1.1 Nameplate and Model Number | 6 |
| 2 System Connection | 7 |
| 2.1 Connection Diagram | 8 |
| 3 Installation and Wiring | 9 |
| 3.1 Installation | 9 |
| 3.1.1 Installation Environment | 9 |
| 3.2 Wiring | 10 |
| 3.2.1 Standard Wiring Diagram | 10 |
| 3.2.2 Main Circuit Terminals | 11 |
| 3.2.3 Control Circuit Terminals | 12 |
| 4 Operating Panel Operations | 14 |
| 4.1 Instruction | 14 |
| 4.2 LED Operating Panel | 14 |
| 4.2.1 Function Indicators | 15 |
| 4.2.2 LED Display | 16 |
| 4.2.3 Keys on the LED Operating Panel | 16 |
| 4.2.4 Viewing and Modifying Parameters | 17 |
| 4.2.5 Parameter Group | 18 |
| 4.2.6 Viewing Status Parameters | 18 |
| 5 System Commissioning | 20 |
| 5.1 Quick Commissioning Guide | 20 |
| 5.2 Precautions Before Power-on | 21 |
| 5.3 Status Display After Power-on | 21 |
| 5.4 Restoring to Factory Settings | 21 |
| 5.5 Motor Control Modes | 22 |
| 5.6 Start and Stop Commands | 22 |
| 5.6.1 Operating Panel Control | 22 |
| 5.6.2 Terminal Control (DI) | 22 |
| 5.6.3 Communication Control | 23 |
| 5.7 Start and Stop Settings | 24 |
| 5.7.1 Start Mode | 24 |
| 5.7.2 Stop Mode | 24 |
| 5.8 Frequency Reference Source Selection | 25 |
| 5.8.1 Setting the Multi-Reference Mode | 25 |
| 5.9 Terminal Descriptions | 25 |
| 5.9.1 DI Descriptions | 25 |
| 5.10 Auto-tuning | 26 |
| 5.10.1 Motor Parameter Settings | 26 |
| 5.10.2 Motor Parameter Auto-tuning | 26 |
| 5.11 Password Settings | 27 |
| 5.12 Application Examples | 28 |
| 5.12.1 Crane System Braking | 28 |
| 5.12.2 Safety Limit and Stop upon Faults | 28 |
| 6 Parameter List | 29 |
| 6.1 Level-1 Menu (Group P) Parameter List | 29 |
| Group P0: Basic crane parameters | 29 |
| Group PF: Auxiliary parameters | 30 |
| 6.2 Level-2 Menu (Group b, E*, U) Parameter List | 31 |
| Group b0: Basic motor parameters | 31 |
| Group b1: Motor control parameters | 31 |
| Group b3: I/O control parameters | 33 |
| Group b4: Ramp parameters | 36 |
| Group b5: Multi-frequency parameters | 37 |
| Group b6: Brake logic control parameters | 38 |
| Group b7: Light-load and positioning control parameters | 39 |
| Group b8: Special curve parameters | 46 |
| Group bA: Acceleration/Deceleration parameters | 47 |
| Group bb: Torque control parameters | 49 |
| Group bC: Overspeed protection parameters | 51 |
| Group bd: Communication parameters | 51 |
| Group bE: Fault and protection parameters | 54 |
| Group bF: Auxiliary parameters in the level-2 menu | 59 |
| Groups E0 to E9 display fault information | 64 |
| Groups U0 monitoring information | 66 |
| Groups U1 monitoring information | 69 |
| 6.3 Level-3 Menu (Group F) Parameter Table | 70 |
| Group F0: Motor parameters | 70 |
| Group F1: Vector control parameters | 72 |
| Group F2: V/f control parameters | 72 |
| Group F3: Control optimization parameters | 73 |
| Group FF: Factory parameters | 75 |
| 7 Troubleshooting | 78 |
| 7.1 Safety Precautions | 78 |
| 7.2 Troubleshooting Before Trial Run | 78 |
| 7.3 Fault Display | 80 |
| 7.4 Reset upon Fault | 83 |
| 7.5 Error Codes and Solutions | 84 |
| 7.6 Fault Symptoms and Solutions | 89 |
| 7.7 Fault Subcodes | 91 |

| | |
|---|-----|
| 8 Maintenance and Inspection | 94 |
| 8.1 Routine Maintenance..... | 94 |
| 8.1.1 Periodic Inspection Items | 94 |
| 8.2 Periodic Inspection | 95 |
| 8.2.1 Periodic Inspection Items..... | 95 |
| 8.2.2 Main Circuit Insulation Test .. | 96 |
| 8.3 Part Replacement..... | 97 |
| 8.3.1 Service Life of Quick-Wear Parts.. | 97 |
| 8.3.2 Number of Fans on the AC Drive. | 97 |
| 9 Technical Data and Model Selection..... | 98 |
| 9.1 Technical Data..... | 98 |
| 9.1.1 Technical Data | 98 |
| 9.1.2 Outline Dimensions..... | 101 |
| 9.2 Selection of Braking Components. | 104 |
| 9.2.1 Selection of Braking Resistors..... | 104 |

Safety Precautions

Safety Disclaimer

- 1) Read the safety precautions before installing, operating, and maintaining this product.
- 2) To ensure personal and equipment safety, follow all safety precautions marked on the product and described in the user guide when installing, operating, and maintaining this product.
- 3) "CAUTION", "WARNING", and "DANGER" messages in the guide are only examples and do not cover all safety precautions.
- 4) Use this product in an environment that complies with the design specifications. Malfunctions or component damage caused by improper use is not covered by warranty.
- 5) Inovance shall not be liable for any physical injuries or property loss caused by improper use.

Safety Categories and Definitions



Danger

"DANGER" indicates that failure to comply with the notice will result in severe physical injuries or even death.



Warning

"WARNING" indicates that failure to comply with the notice may result in severe physical injuries or even death.



Caution

"CAUTION" indicates that failure to comply with the notice may result in minor or moderate physical injuries or equipment damage.

Safety Precautions

| Unpacking | |
|--|--|
| <p>Caution</p> <ul style="list-style-type: none"> ◆ Before unpacking, check whether the package is intact without damage, water seepage, damp, and deformation. ◆ Unpack the product layer by layer. Do not strike the package violently. ◆ Check the surface of the product and accessories for damage or rust. ◆ Check the product, accessories, and materials in the package against the packing list to ensure that all items are complete. | |

Safety Label

For safe operation and maintenance, follow the instructions on safety labels on the equipment. Do not stain or remove the safety labels. The following table describes the safety labels.

| Safety Label | Description |
|--------------|---|
| | <ul style="list-style-type: none"> ◆ Read the user guide before installation and operation. Failure to comply will result in an electric shock. ◆ Do not remove the cover during power-on or within 10 minutes after power-off. ◆ Before maintenance, inspection, and wiring, cut off the input and output power and wait for 10 minutes until the power indicator goes off. |



Chapter 1 Product Information

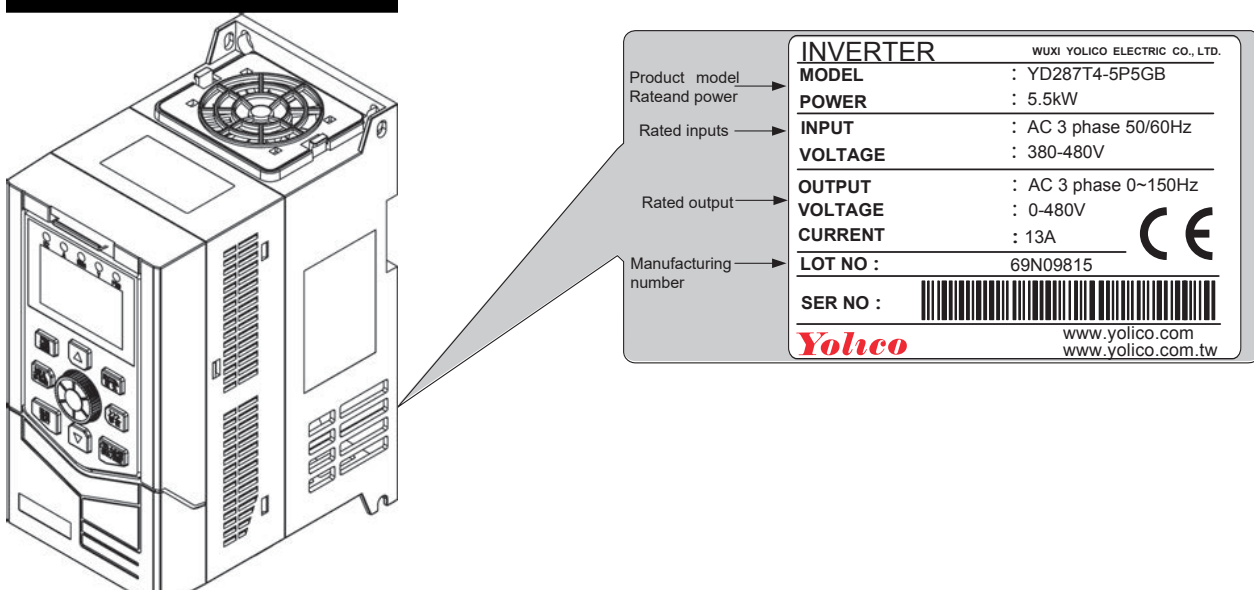
Safety Precautions



note

- Do not grasp the front or terminal cover to carry the inverter. If only the front cover is grasped, Inverter will fall and there is a risk of smashing;
- When operating drive, follow the step set forth in the ESD prevention measures.or the inside of the inverter will be damaged due to static electricity circuits.

1.1 Nameplate Model



YD287 T4- 5P5 G B

| Mark | Product name |
|-------|--------------------|
| YD287 | AC Drive for Crane |

| Mark | Voltage level |
|------|-----------------|
| T4- | 3-PH 380~480VAC |

| Mark | Power Rating (kW) |
|------|-------------------|
| 0P7 | 0.75 |
| 1P5 | 1.5 |
| ... | ... |
| 22 | 22 |

| Mark | Overload type |
|------|----------------|
| G | 150%*60s level |

| Mark | Brake unit |
|------|------------|
| NULL | Without |
| B | With |

Figure 1-1 Product naming and nameplate identification



Chapter 2 System Connection

Safety Precautions



Danger

- It is strictly forbidden to wire when power on, or there will be a risk of electric shock!
- Be sure to keep the circuit breaker in the OFF state.



Warning

- When install inverter in a closed cabinet , use a cooling fan to fully cool it to make the inverter keep inlet air temperature of inverter below 50°C, or it may cause overheating.



Caution

- When install inverter, cover the upper of the inverter with cloth or paper to prevent metal shaving, oil, and water from the hole during drilling into inside of the inverter. If foreign matter gets inside inverter, it may cause inverter to malfunction, so remove it after the work is finished. If cloth or paper continues to be covered on it, the ventilation effect will be worse, resulting in abnormal heating of inverter!
- When using the drive, please follow the steps specified in the ESD prevention measures, otherwise the drive will be damaged due to static electricity!
- The torque characteristics are different when driving with an inverter and when driving with a commercial power supply, so check the load torque characteristics of the machine to be connected.
- Do not lift the inverter with the housing removed, as this may cause damage to the inverter's circuit board or terminal strip!



2.1 YD287 System Connection Diagram

When using YD587 series inverter to control asynchronous motor to form a control system, it is necessary to install various electrical components on the input and output sides of the inverter to ensure the safety and stability of the system. The product system composition of three-phase 380V~480V 0.75kW and above power is shown in the following figure:

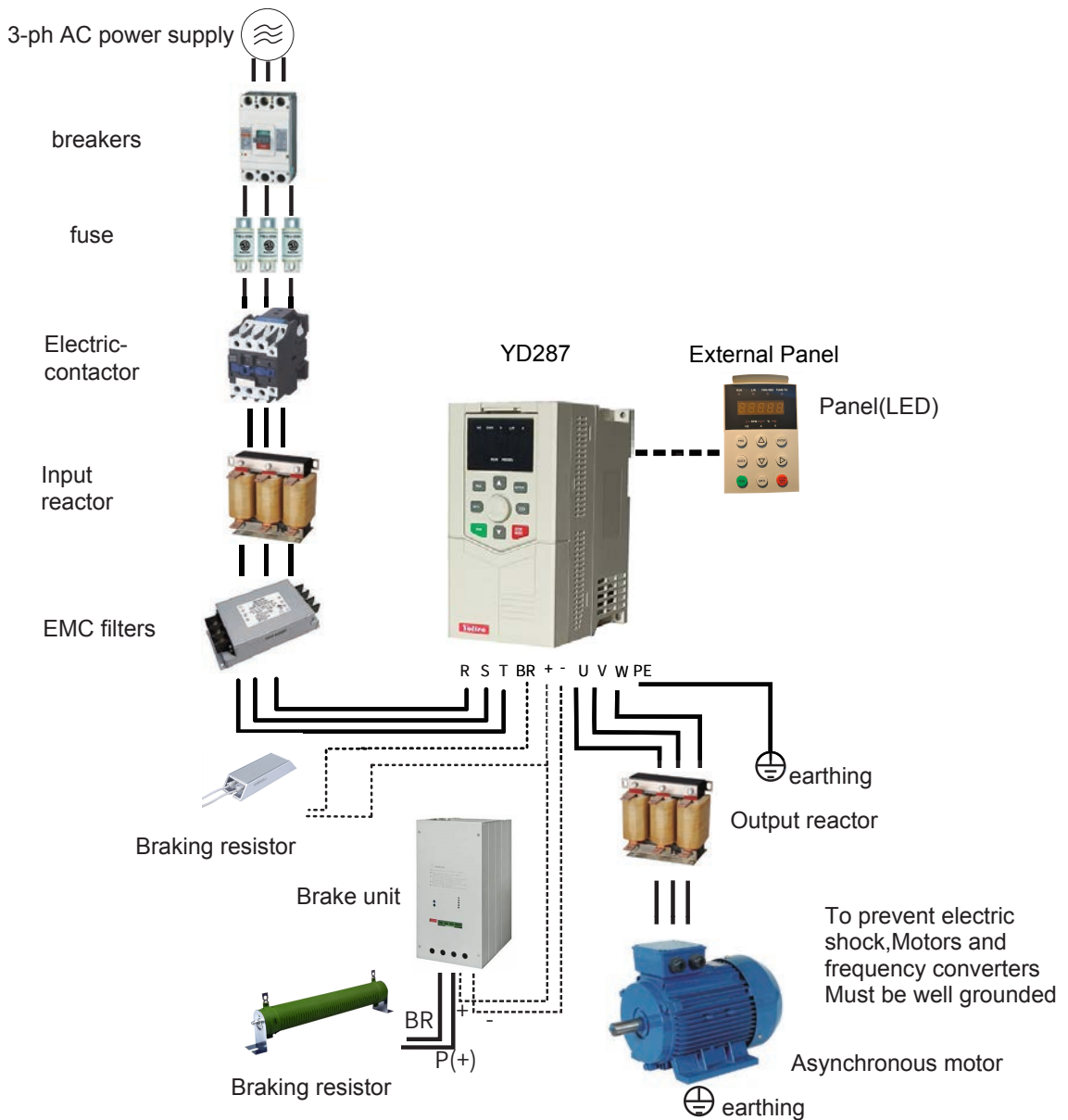


Figure 2-1 YD287 series system configuration



● The above picture is only used as a schematic diagram of the YD287 inverter system connection, please refer to Chapter 9 "Specifications and Selection" for the selection of peripheral equipment.



Chapter 3 Installation and Wiring

3.1 Installation

3.1.1 Installation Environment

1) Ambient temperature: The ambient temperature has a great impact on the life of the inverter, and the operating ambient temperature of the inverter is not allowed Exceeding the allowable temperature range (-10°C~ 50°C).

2) Install the inverter on the surface of a flame-retardant object, and there should be enough space around it to dissipate heat. The inverter is prone to produce a large amount when working Heat. And install it vertically on the mounting support with screws.

3) Install it in a place where it is not easy to vibrate. The vibration should not be greater than 0.6G. Pay special attention to stay away from equipment such as punches.

4) Avoid direct sunlight, humidity, and water droplets.

5) Avoid places with corrosive, flammable and explosive gases in the air.

6) Avoid installation in places with oil and dust.

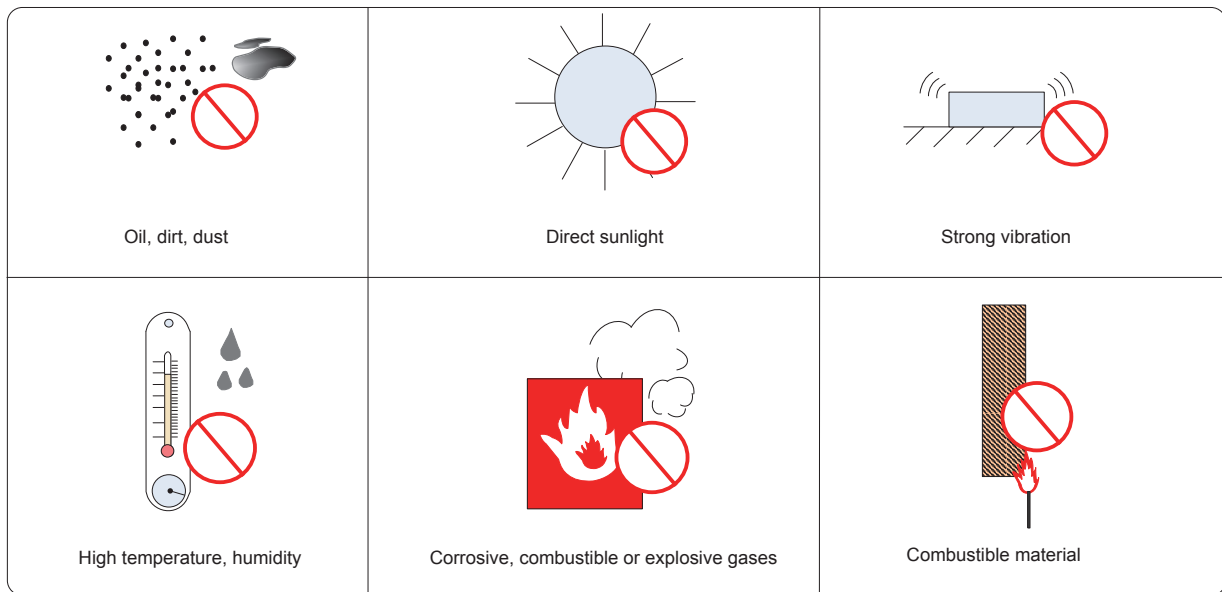


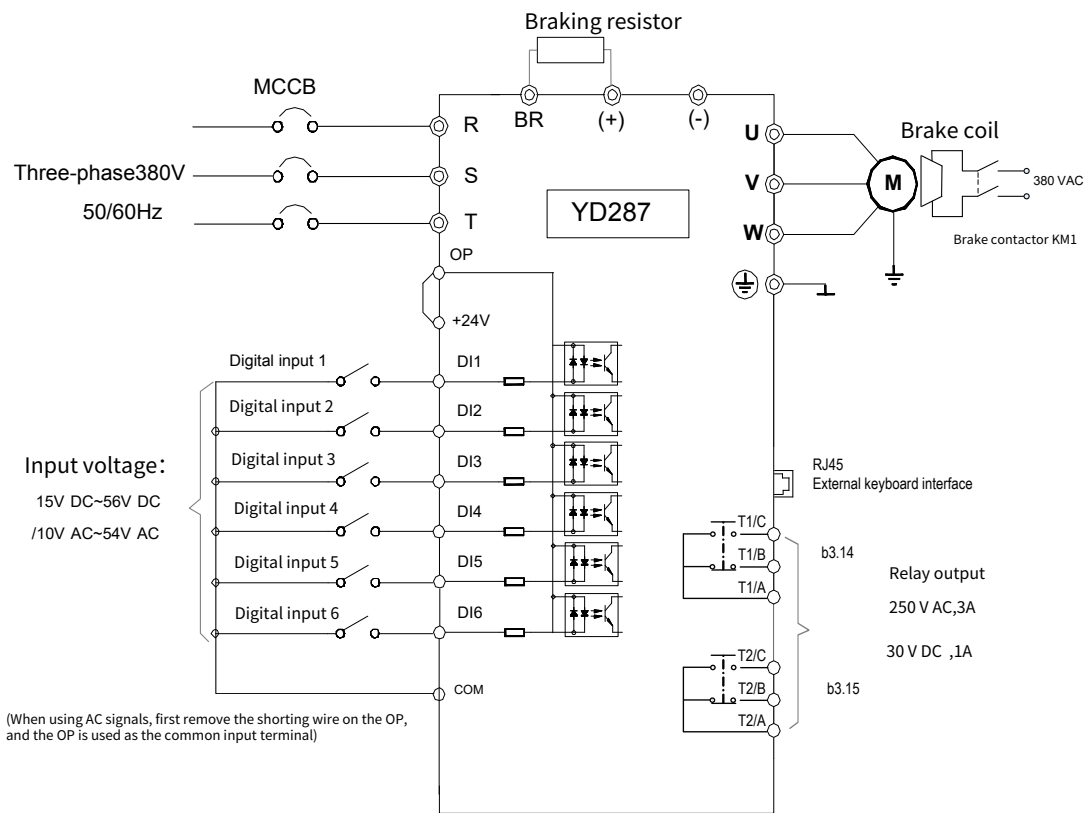
Figure 3-1 Requirements for the installation environment

7) YD287 series products are cabinet installation products, which need to be installed in the final system for use, and the final system should be provided corresponding fireproof enclosures, electrical protective enclosures and mechanical protective enclosures, etc., and comply with local laws and regulations and relevant IEC Standard requirements:



3.2 Wiring

3.2.1 Standard Wiring Diagram

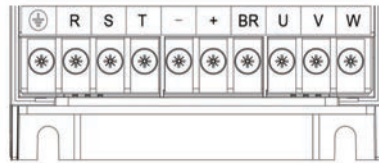


Note: —Shield; —Twisted pair

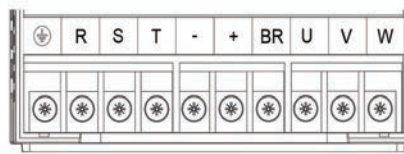
Figure 3-26 Typical wiring of three-phase 380–480 V drive



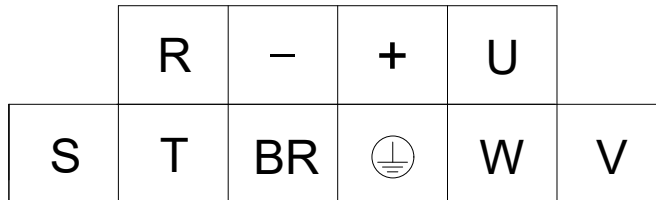
3.2.2 Function of main circuit terminal



0.75kW ~ 3.7kW



5.5kW ~ 7.5kW



11kW ~ 22kW

Table 3-3 Main circuit terminals of YD287 series inverters

| Terminal marking | Terminal name | Feature description |
|------------------|-----------------------------|--|
| R、S、T | 3-phase power input | AC input three-phase power connection point |
| (+)、(-) | DC bus positive、negative | Common DC bus input , and connect external braking units |
| (+)、BR | Braking resistor connection | Braking resistor connection point |
| U、V、W | Inverter output terminal | Connect a three-phase motor |
| | Ground Terminal (PE) | Protective grounding |



3.2.3 Distribution of Control circuit terminal

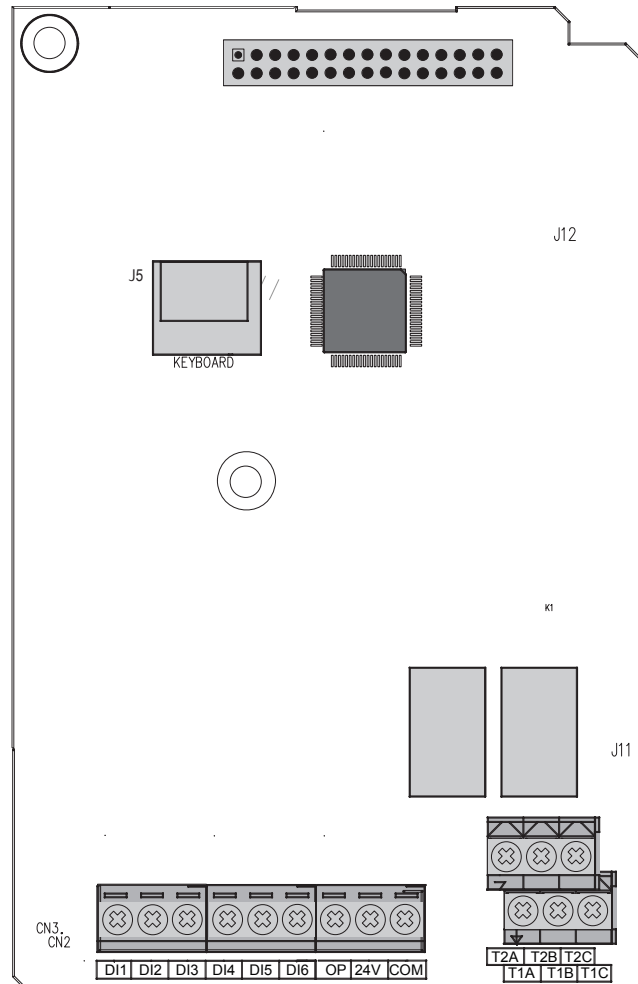


Figure 3-57 Terminal layout of the control circuit



Table 3-17 YD287 inverter control terminal function description

| Category | Terminal Mark | Terminal Name | Function |
|---------------|---------------|--|---|
| Power supply | +24V-COM | 24 V power supply | Provides +24 V power supply to external units. Generally, it is used to power up the DI/DO terminals or external sensor. Maximum output current: 200 mA |
| | OP | Input terminal for external power supply | Connected to the +24 V power supply by default When DI1 to DI6 are driven by external signals, OP needs to be connected to an external power supply and disconnected from the +24 V power supply. |
| Digital input | DI1-COM | DI1 | <ol style="list-style-type: none"> 1. Optically-coupled isolation compatible with dual-polarity inputs 2. Input impedance: 1.39kΩ 3. Input voltage 9 VDC to 30 VDC |
| | DI2-COM | DI2 | |
| | DI3-COM | DI3 | |
| | DI4-COM | DI4 | |
| | DI5-COM | DI5 | |
| | DI6-COM | DI6 | |
| Relay output | T1A-T1B | Normally closed (NC)terminal 1 | Driving capacity of the contact: 250 VAC, 3A, COS ϕ = 0.4 30 VDC, 1 A |
| | T1A-T1C | Normally open (NO)terminal 1 | |
| | T2A-T2B | Normally closed (NC)terminal 2 | Driving capacity of the contact: 250 VAC, 3A, COS ϕ = 0.4 30 VDC, 1 A |
| | T2A-T2C | Normally open (NO)terminal 2 | |



Chapter 4 Operating Panel

4.1 Introduction

The YD287 AC drive provides an LED operating panel, which is a standard component. On the operating panel, you can modify the functional parameters, monitor the working status, and control the operation (such as start and stop) of the AC drive. The following figure shows the appearance and functional areas of the operating panel.

4.2 Introduction to LED Operator Panel

With the operation panel, you can set and modify the parameters of the inverter, monitor the working status, and control the operation (start, stop) and other operations. The appearance of the operation panel and the names of the operation keys are shown in the following figure:





4.2.1 Function Indicator

Table 4-1 Indicator descriptions on the operation panel

■ **Status Indicators**

There are four red LED status indicators at the top of the operating panel.

| Indicator | Indication |
|---------------------|--|
| ○ RUN | OFF indicates the STOP status. |
| | ON indicates the RUNNING status. |
| ○ L/R | OFF indicates under operating panel control. |
| | ON indicates under terminal control. |
| | FLASHING indicates under serial communication control. |
| ○ FWD/REV | OFF indicates reverse motor rotation. |
| | ON indicates forward motor rotation. |

■ **Unit Indicators**

There are three red unit indicators below the data display. These indicators operate individually or in pairs to show the units used to display data,

| Indicator appearance | Meaning |
|----------------------|---------------------|
| Hz RPM A % V | Hz for frequency |
| Hz RPM A % V | A for current |
| Hz RPM A % V | V for voltage |
| Hz RPM A % V | RPM for motor speed |
| Hz RPM A % V | Percentage |

4.2.2 LED display area

There are a total of 5-digit LED displays on the operation panel, which can display the setting frequency, output frequency, various monitoring data, and alarm codes.

Table 4-2 Actual correspondence and LED display correspondence table

| LED Display | Indication | LED Display | Indication | LED Display | Indication | LED Display | Indication |
|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| 2 | 2 | 8 | 8 | d | D | r | R |
| 3 | 3 | 9 | 9 | E | E | f | T |
| 4 | 4 | A | (A) | F | F | U | U |
| 5 | 5 or S | b | B | L | L | u | u |

The five-digit LED display shows monitoring data, fault codes, and parameters.

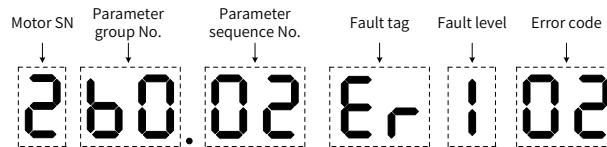


Figure 4-2 Example of the LED display



- ◆ If DI is not set to motor switching (input functions 27 and 28), the LED display does not show the sequence number of the currently connected motor.




4.2.3 Keys on the LED Operating Panel

Table 4-3 Functions of keys on the operating panel

| Key | Key Name | Function |
|-----|-------------|---|
| | Programming | Enter or exit level I menu. |
| | Enter | Access the menu interfaces level by level and confirm parameter settings. |
| | Up | Used to increase the data or parameter. |
| | Down | Used to decrease the data or parameter. |
| | Shift | Used to select any parameters displayed cyclically in the STOP or RUNNING status. Select the bit to modify when modifying a parameter. |
| | Run | Start the AC drive in the operating panel running mode. |
| | Stop/Reset | Stop the AC drive in the operating panel control mode. Reset the AC drive in the faulty state. |
| | Reserved | Function reserved. |
| | Quick | Press the key to quickly enter the password input interface. Long-press the key for 5s to quickly enter the parameter auto-tuning mode. |



4.2.4 How to view and modify parameters

The operating panel of the YD287 series AC drive provides three interfaces: status display → parameter numbers → parameter settings. When you enter a menu and see the displayed data blinking, you can press the , , or  key to modify the data.

The following figure shows the operation flowchart.

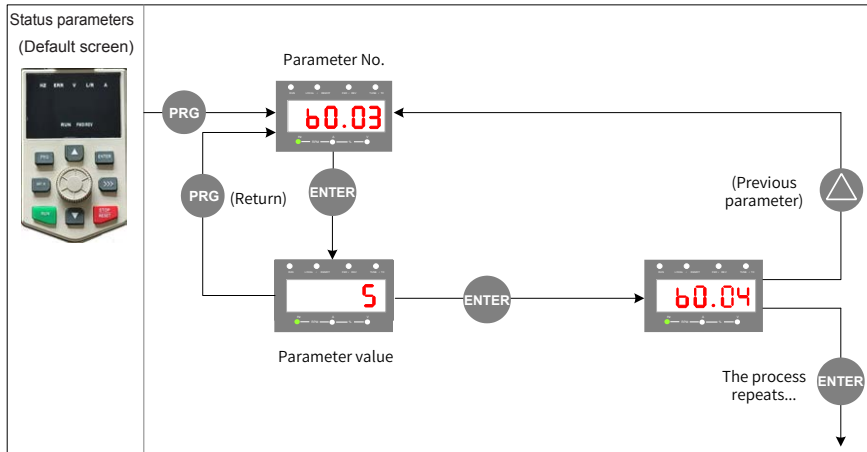


Figure 4-3 Switching between different operation interfaces

Example: Change the value of parameter b1.02 from 10.00 Hz to 15.00 Hz.

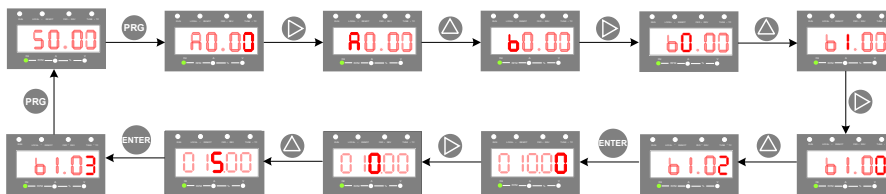


Figure 4-4 Changing the value of a parameter

In the parameter setting interface, if a parameter has no blinking digit, the parameter cannot be modified. Possible causes include:

- 1) The parameter is read-only. For example, it indicates the monitoring information and running status.
- 2) The parameter cannot be modified while the AC drive is running. You can modify it only after stopping the AC drive.




4.2.5 Parameter Group

Table 4-4 Parameter groups

| Parameter Group | Function Description | Description |
|-----------------|--------------------------------------|--|
| Group P | Basic crane parameter group | Used to set motor parameters and basic information about the crane |
| Group b | AC drive function parameter group | Function parameters such as operation command, frequency command, speed curve, and brake time sequence |
| Group F | AC drive performance parameter group | Core performance parameters of the AC drive |
| Group U | Monitoring parameter group | Basic monitoring parameters of the AC drive |
| Group E | Fault parameter group | Fault record display |

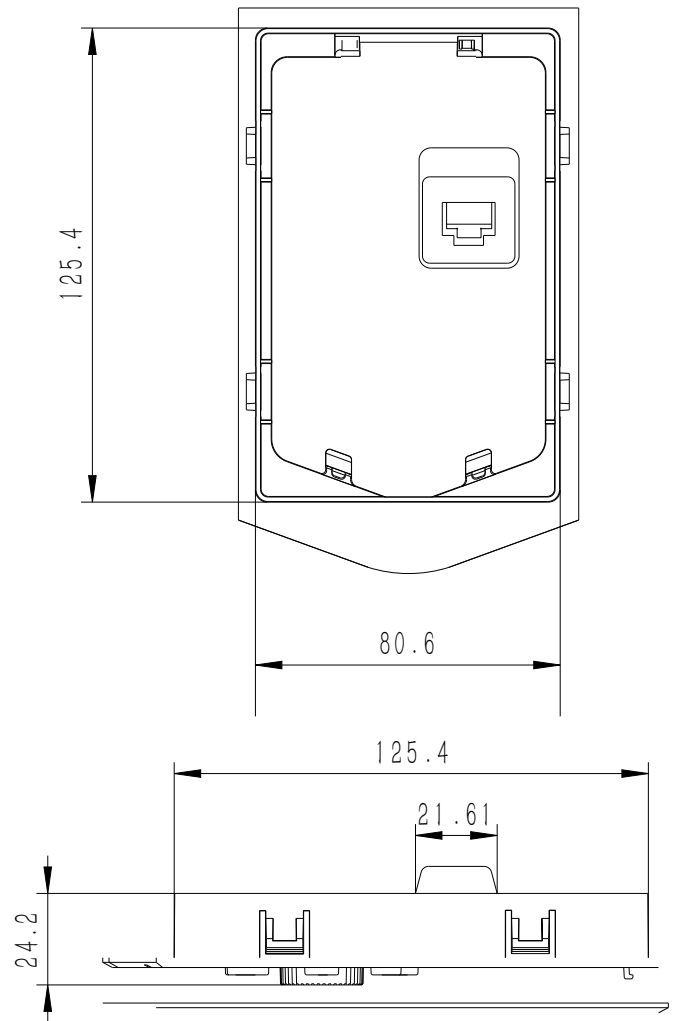
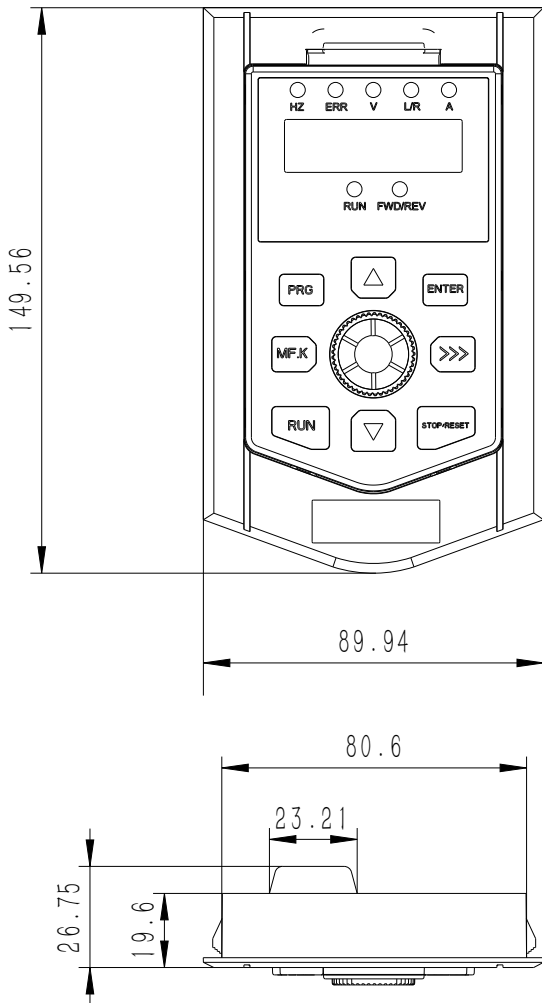
4.2.6 Viewing Status Parameters

When the AC drive is in the stop or running state, you can view multiple status parameters by pressing the  key on the operating panel. In the operation state, you can view five parameters: reference frequency, output synchronous frequency, output current, output voltage, and bus voltage. In the stop state, you can view only the target frequency and bus voltage.

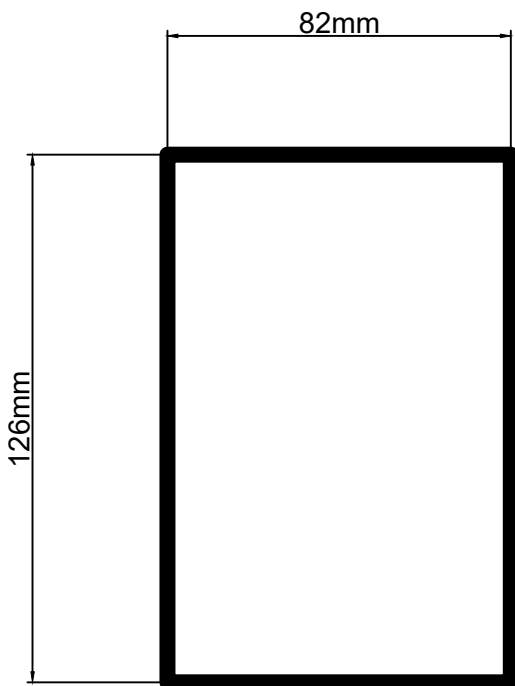


4.3 Keyboard Tray (YCON3231) Dimensions and Usage Instructions

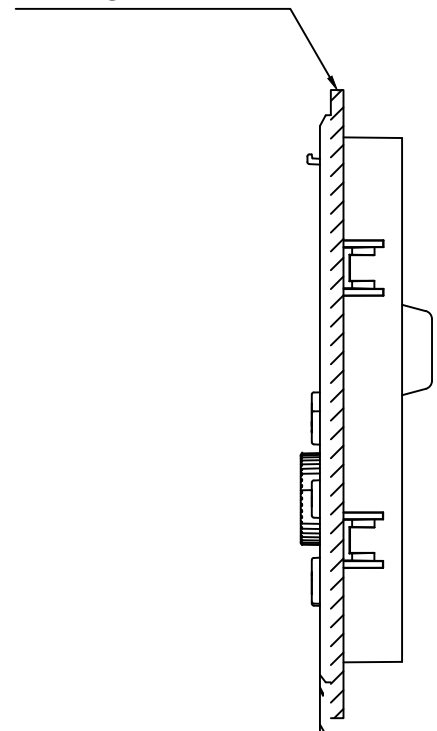
4.3.1 Keyboard and Tray dimensions



4.3.2 Hole size



Thickness of mounting plate shall not exceed 3mm



5 System Commissioning

This chapter describes basic commissioning operations for a trial run of the AC drive, including setting the frequency reference, and stopping and starting the AC drive.

5.1 Quick Commissioning Guide

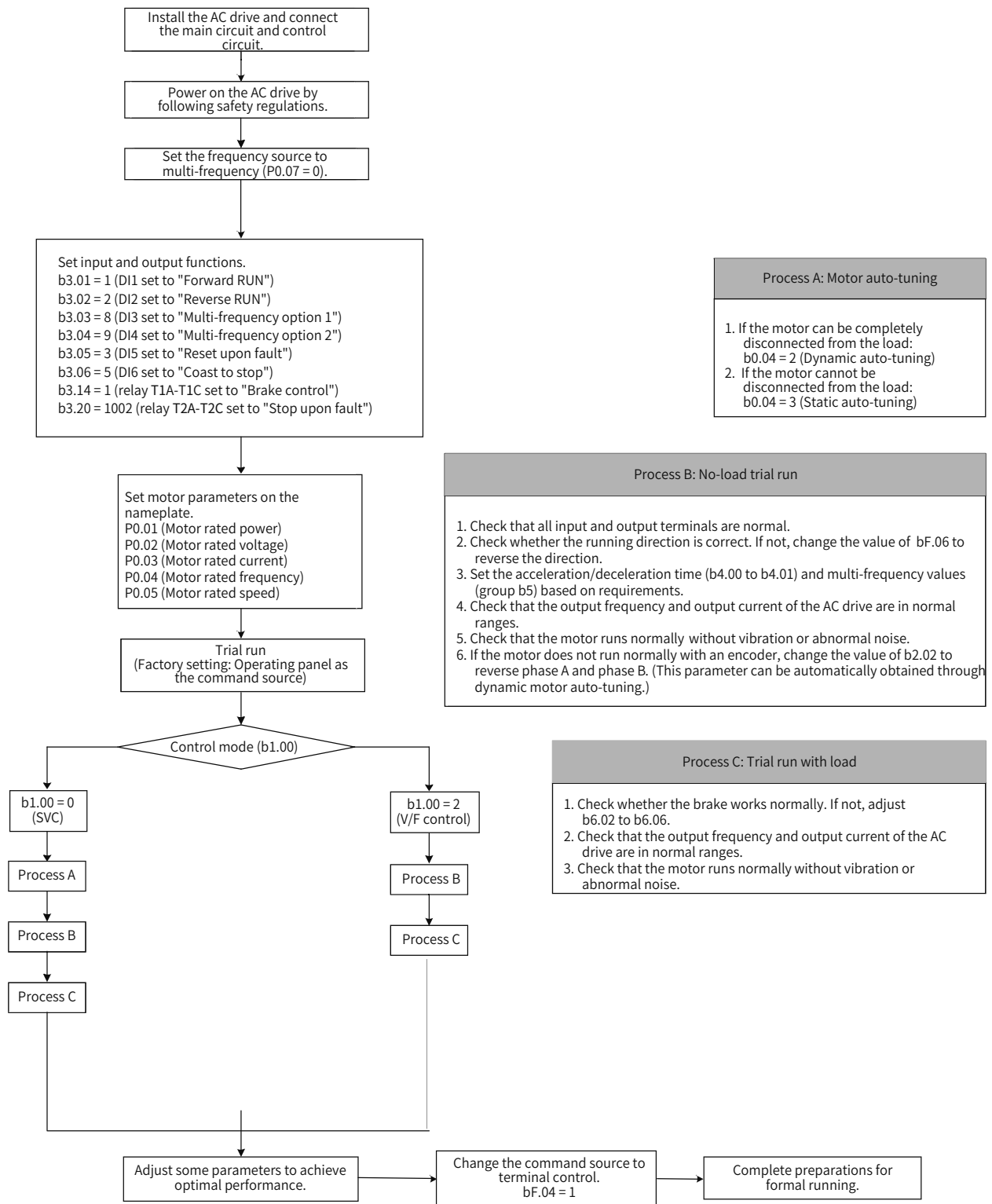


Figure 5-1 Quick commissioning steps



5.2 Precautions Before Power-on

Check the following items before powering on the AC drive.

| Item | Requirement |
|--|--|
| Power supply voltage | The input voltage is in the range of three-phase 380 VAC to 480 VAC, 50/60 Hz. |
| | The input terminals R, S, and T are connected reliably. |
| | The AC drive and motor are reliably grounded. |
| Connection between AC drive output terminals and motor terminals | The AC drive output terminals U, V, and W are correctly and firmly connected to the motor terminals. |
| Connection of control circuit terminals | Control circuit terminals of the AC drive are correctly and firmly connected to other control devices. |
| Status of AC drive control terminals | All terminals of the AC drive control circuit are OFF (the AC drive is not running). |
| Load | The motor is off load and disconnected from the mechanical system. |

5.3 Status Display After Power-on

After power-on, the operating panel displays the following information.

| State | Display | Description |
|--------|---|---|
| Normal |  | The default value 8.00 Hz is displayed. |
| Faulty |  | The AC drive stops and the error type is displayed. |

5.4 Restoring to Factory Settings

The YD587 series defines three levels of menus for parameters. Each menu allows you to restore to factory settings (except for certain parameters) and check user-defined settings. The operating panel displays only parameters whose default values are changed.

| Menu Level | Parameter | Function Description | Remarks |
|--------------|-----------|---|--|
| Level-1 menu | PF.01 | Restoration of parameters in the level-2 menu to factory settings | Some parameters cannot be restored to the factory settings. For details, see the description of PF.01. |
| | PF.02 | Display of user-defined parameter settings in the level-1 menu | The operating panel displays only parameters whose default values are changed in the level-1 menu. |

| Menu Level | Parameter | Function Description | Remarks |
|--------------|-----------|---|---|
| Level-2 menu | bF.01 | Restoration of parameters in the level-2 menu to factory settings | You can restore parameters in the level-2 menu or in the level-1 and level-2 menus to factory settings. Some parameters cannot be restored to factory settings. For details, see the description of bF.01. |
| | bF.02 | Display of user-defined parameter settings in the level-2 menu | The operating panel displays only parameters whose default values are changed in the level-2 menu. |
| | bF.03 | Removal of historical records | This parameter is used to clear parameters stored upon a power failure of the AC drive, including the monitoring parameters in group U1 and fault record parameters. For the usage of bF.03, see its description. |
| Level-3 menu | FF.10 | Restoration of parameters in the level-3 menu to factory settings | You can restore parameters in the level-3 menu or all parameters to factory settings. Some parameters cannot be restored to factory settings. For details, see the description of FF.10. |
| | FF.11 | Display of user-defined parameter settings in the level-3 menu | The operating panel displays only parameters whose default values are changed in the level-3 menu. |

5.5 Motor Control Modes

| Parameter | Description | Scenario |
|---------------------------|----------------|--|
| b1.00: Motor control mode | 0: SVC | SVC is the sensorless vector control mode applicable to common hoisting scenarios. |
| | 2: V/f control | This control mode is applicable to scenarios that do not require high load capacity or where one drive is used to drive multiple motors. |

5.6 Start and Stop Commands

There are three sources of start/stop commands for the AC drive: operating panel control, terminal control, and communication control. You can select the command source using bF.04.

| bF.04 | Command source selection | | Default |
|-------|--------------------------|---|-----------------------------------|
| | Value range | 0 | Operating panel control (LED off) |
| | | 1 | Terminal control (LED on) |

This parameter defines the input channel of the AC drive control commands, such as start, stop, forward running, and reverse running.

0: Operating panel control (LOCAL/REMOT indicator off)

The commands are given by pressing the RUN and STOP/RES keys on the operating panel.

1: Terminal I/O control (LOCAL/REMOT indicator on)

The commands are given by using multi-functional input terminals.

5.6.1 Operating Panel Control

Set bF.04 to 0 to select the operating panel as the input channel for the AC drive control commands. After you press the RUN key on the operating panel, the AC drive starts to run (the RUN indicator is on). After you press the STOP key while the AC drive is running, the AC drive stops running (the RUN indicator is off).

5.6.2 Terminal Control (DI)

This control mode is applicable to scenarios where the DIP switch or electromagnetic button is used to start or stop the application system or scenarios where the dry contact signal is used to start or stop the AC drive.

The YD287 series AC drive can be controlled using terminals. Parameters b3.01 to b3.13 determine the functions of the AC drive control signals. For details, see the description of these parameters.

Example 1: To use the DIP switch to start and stop the AC drive, and allocate the forward rotation switch signal to DI1 and the reverse rotation switch signal to DI2, perform the settings according to the following figure.

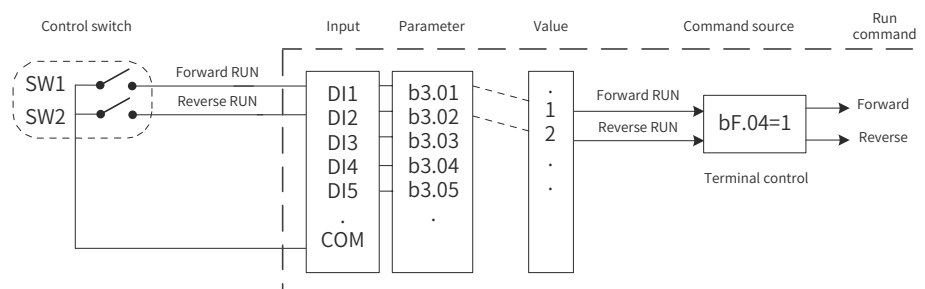


Figure 5-2 Example of AC drive control using terminals

In the figure above, when SW1 is closed, the AC drive runs in the forward direction; when SW1 is open, the AC drive stops. When SW2 is closed, the AC drive runs in the reverse direction; when SW2 is open, the AC drive stops. When both SW1 and SW2 are closed, the AC drive reports error 44# (both forward and reverse running commands are active).

In operating panel control mode, the AC drive drives the motor to operate in the forward direction after you press the RUN key. If the rotating direction is reverse to the direction required by the device, power off the AC drive (after the main capacitor of the AC drive is discharged) and exchange any two of the output U, V, and W cables. You can also set bF.06 to 1 to reverse the rotating direction of the motor.

5.7 Start and Stop Settings

5.7.1 Start Mode

The YD287 supports the direct startup mode and provides professional brake sequence control dedicated for cranes. (For details, see the description of parameters in group b6.)

5.7.2 Stop Mode

The YD287 supports two stop modes: decelerate to stop and coast to stop, which can be set using b4.03. The default mode is decelerate to stop (b4.03 = 0).

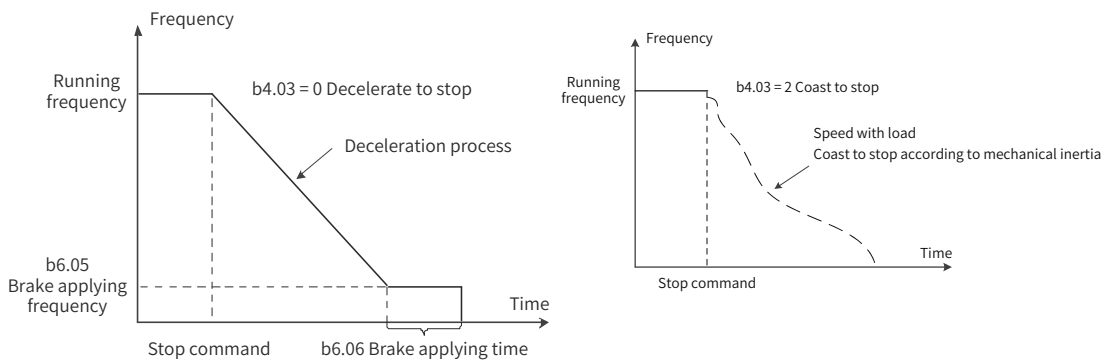


Figure 5-4 Stop modes

5.8 Frequency Reference Source Selection

The YD287 series AC drive supports five frequency reference sources, namely, multi-reference, analog AI1, analog AI2, acceleration/deceleration, and communication. You can select the sources using P0.07 and b3.00. For details, see the description of the two parameters.

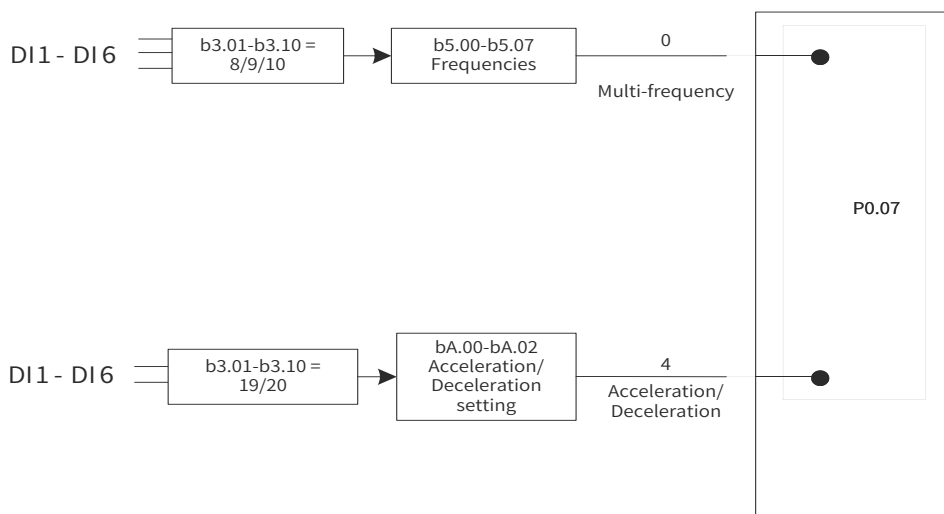


Figure 5-5 Frequency reference source selection

Set the related parameters for each frequency reference source according to the preceding figure.

5.8.1 Setting the Multi-Reference Mode

You can select the multi-reference mode in scenarios where only several frequencies are required and continuous adjustment of frequencies are not required. For the YD587 series AC drive, you can set a maximum of eight frequencies using a maximum of three DI functions. To specify multi-frequency command input terminals, set the parameters corresponding to the DIs to values in the range of 8 to 10. You can set the multi-frequency values according to the multi-frequency table of b5 group parameters. Set the frequency source to multi-frequency, as shown in the following figure.

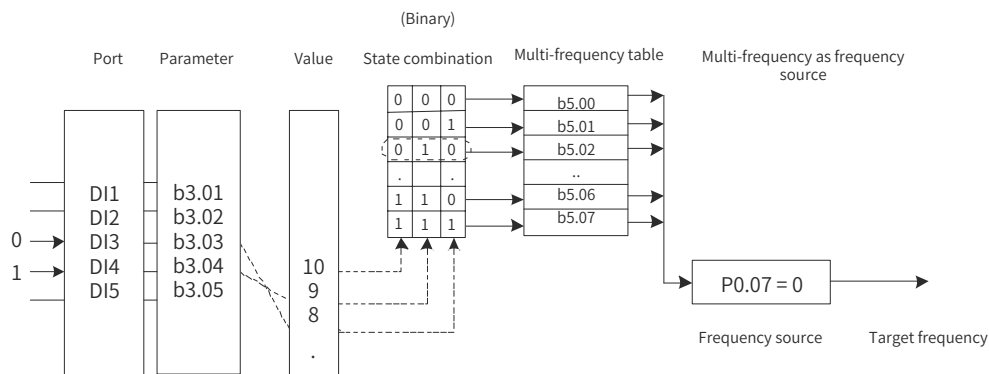


Figure 5-6 Setting the multi-reference mode

In the preceding figure, DI3 and DI4 are used as the multi-frequency input terminals. Each state combination is a 3-bit binary value. Therefore, if only two DIs are used, supplement bit 0 after the binary values of the two DIs. For example, when the input states of DI3 and DI4 are set to 0 and 1, respectively, the binary value is 0 1 0 and therefore the state combination value is 2. In this case, the frequency set by b5.02 is used. As the frequency source is multi-frequency, the value of b5.02 determines the target frequency.

For the YD287 series AC drive, you can select a maximum of three DIs as multi-frequency command input terminals (as described above). The empty bits are calculated as 0.

5.9 Terminal Descriptions

5.9.1 DI Descriptions

The internal hardware of a DI is configured with a 24 VDC power supply for detection. After you short the DI and the COM terminal, the DI can input signals to the AC drive.

You can also set the software filter time (b3.21) for input signals from the DI to improve the anti-interference capability of the AC drive.

Parameters b3.01 to b3.08 can be used to select functions for the eight DIs. For details, see the description of parameters b3.01 to b3.08.

5.9.3 DO Descriptions

The control board provides five DOs:

T1A-T1B-T1C, T2A-T2B-T2C are relay outputs capable of driving a 250 VAC control circuit.

| Terminal | Parameter | Output Specification |
|-------------|-----------|-------------------------------------|
| T1A-T1B-T1C | b3.14 | Relay; drive capacity: 250 VAC, 3 A |
| T2A-T2B-T2C | b3.15 | |

5.10 Auto-tuning

5.10.1 Motor Parameter Settings

When the AC drive runs in vector control mode (b1.00 = 0 or 1), accurate motor parameters are required to ensure excellent drive performance and running efficiency. This is one of major differences between the vector control mode and the V/f control mode (b1.00 = 2).

5.10.2 Motor Parameter Auto-tuning

The AC drive can automatically obtain internal electrical parameters of the motor in the following ways: dynamic auto-tuning and static auto-tuning.

| Auto-tuning Mode | Application | Auto-tuning Effect | Parameter Setting |
|--|--|--------------------|-------------------|
| Static auto-tuning (complete auto-tuning) | Applicable to all scenarios. | Good | b0.04 = 3 |
| No-load dynamic auto-tuning (complete auto-tuning) | Applicable to scenarios where the motor can be disconnected from the load. If the motor load is of the roller type (pure inertia load), the roller can remain attached during the parameter auto-tuning process. | Optimal | b0.04 = 2 |
| Static auto-tuning (incomplete auto-tuning) | Applicable to scenarios where the motor cannot be disconnected from the load and dynamic auto-tuning is not allowed (no auto-tuning for motor mutual inductance and no-load current). | Acceptable | b0.04 = 1 |

1. Procedure for implementing dynamic auto-tuning of motor parameters:

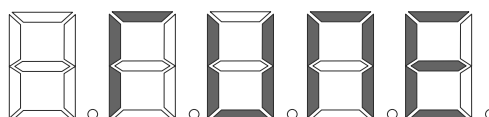
Step 1: If the motor can be disconnected from the load, cut off the power and disconnect the motor from the load so that the motor runs without load.

Step 2: Power on the AC drive, and then set the command source (bF.04 of the AC drive to operating panel control).

Step 3: Correctly set the nameplate parameters (P0.01 to P0.05) of the motor. Set the following parameters based on motor selection:

| Manually Set Parameters |
|------------------------------|
| P0.01: Rated motor power |
| P0.02: Rated motor voltage |
| P0.03: Rated motor current |
| P0.04: Rated motor frequency |
| P0.05: Rated motor speed |

Step 4: If the motor can be disconnected from the load, set parameter b0.04 to 2 (asynchronous motor dynamic auto-tuning) and press **ENTER**. The display on the operating panel is as follows:



Press "RUN" on the operating panel. The AC drive then drives the motor (acceleration time and deceleration time set by b4.06 and b4.07 respectively), and the RUN indicator turns on. Then, the preceding display disappears and the operating panel returns to parameter display state, indicating completion of the parameter auto-tuning.

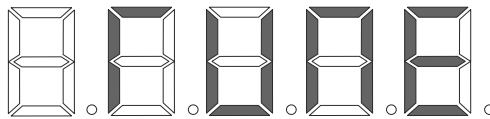
After dynamic parameter auto-tuning, the AC drive automatically obtains the following motor parameters:

| Automatically Refreshed Parameters After Auto-tuning |
|---|
| F0.00: Asynchronous motor stator resistance |
| F0.01: Asynchronous motor rotor resistance |
| F0.02: Asynchronous motor leakage inductive reactance |
| F0.03: Asynchronous motor mutual inductive reactance |
| F0.04: Asynchronous motor no-load current |

If the motor cannot be disconnected from the load, set b0.04 to 1 or 3 (recommended) to start static auto-tuning of motor parameters. Static auto-tuning mode 3 can be used to obtain all motor parameters but takes a relatively long time.

2. One-key quick auto-tuning:

Hold down the QUICK key on the AC drive panel for 5s until "TUNE" is displayed, and then press RUN to start auto-tuning.



The quick auto-tuning function can be used when a new round of auto-tuning is required after motor parameters are set. Auto-tuning mode 3 (complete static auto-tuning) is used by default in this case. You do not need to disconnect the motor from the load or change the value of bF.04 or any other parameters.

5.11 Password Settings

The YD587 series AC drive provides user password protection.

| Parameter | Function Description | Content |
|-----------|--|---------------------------------------|
| PF.00 | Password for all functional parameters | Password for groups P, b, E, U, and F |
| bF.00 | Level-2 menu password | Password for groups b, E, U, and F |
| FF.00 | Level-3 menu password | Password for group F |

The password function is enabled when PF.00, bF.00, and FF.00 are set to non-zero values. In this case, after you press the QUICK key, the operating panel displays -----. You can enter the menu only after entering the correct password. If you enter wrong passwords for three consecutive times, the system is locked. In this case, restart the system to unlock it. To disable the password protection function, set PF.00, bF.00, and FF.00 to 0.

5.12 Application Examples

5.12.1 Crane System Braking

■ Brake time sequence overview

The YD287 provides the built-in brake time sequence control function. To use this function, set the function of an output terminal to output function 1 (brake control). The following figure shows the brake control time sequence.

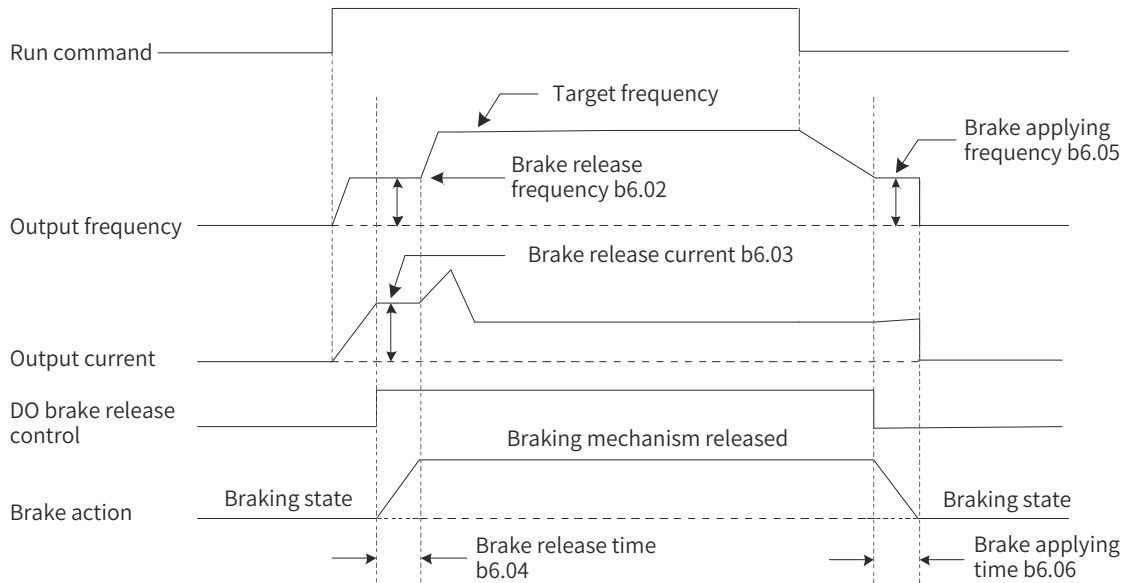


Figure 5-9 Typical control process of a crane system and parameter settings

The brake is engaged when it is powered off and is released after it is powered on. Actions of the brake are controlled with mechanical operations; therefore, there is a delay between brake signal output and braking state change. Set the brake time (6.06) and brake release time (b6.04) based on the mechanical operation delay of the brake. Theoretically, the time set by the two parameters should be slightly longer than the mechanical operation delay to prevent unintentional slip.

5.12.2 Safety Limit and Stop upon Faults

The following figure shows the electrical wiring for safety limit and stop upon faults. A limit switch is installed on each end of the rail. When the mechanism touches a limit switch, the control cabinet automatically stops running of the AC drive in this direction. Running of the AC drive in the opposite direction is not affected, and you can press the opposite running switch to restore running of the equipment.

When a level-I fault occurs on the AC drive, relay terminal P/C-P/A on the I/O expansion card sends a fault stop signal to trigger an action of contactor KM in the control cabinet. (For example, the contactor may cut off power to the running circuit. In this case, the equipment can resume normal running only after being reset).

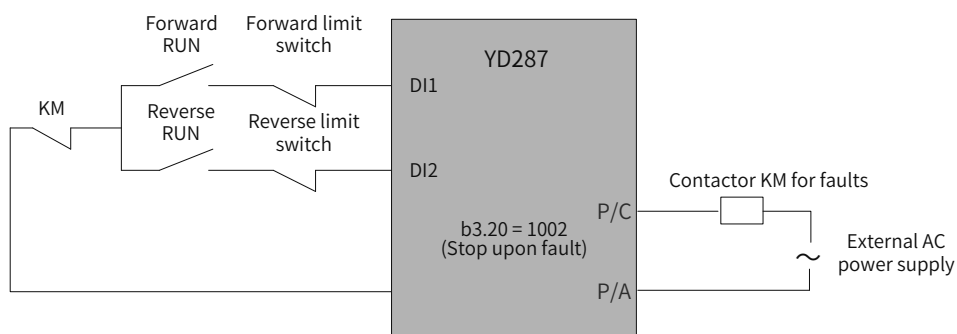


Figure 5-10 Circuit for safety limit and stop upon faults



- ◆ The figure shows a commonly used connection of limit switches. You can change the connection based on your own requirements.

6 Parameter List

The YD287 series AC drive has some manufacturer-reserved parameters, and their parameter numbers are not listed in the parameter tables. Therefore, the parameter numbers in the parameter tables are discontinuous. Do not modify the parameters that are not described in this user guide as doing so may cause errors in equipment operation.

You can modify some functional parameters only after the AC drive stops. Do not modify these parameters when the AC drive is running. The monitoring parameters are displayed on the operating panel only for view and cannot be modified.

6.1 Level-1 Menu (Group P) Parameter List

The level-1 menu contains motor parameters and basic feature parameters of the crane. Correct settings of level-1 menu parameters can ensure normal running of the motor driven by the AC drive. Parameters for enhanced functions of the AC drive need to be set in the level-2 menu.

| Parameter No. | Parameter Name | Description | Value Range | Default |
|----------------------------------|----------------------------|--|--------------------------------------|--------------------------|
| Group P0: Basic crane parameters | | | | |
| P0.01 | Rated motor power | This parameter sets the rated motor power displayed on the motor nameplate. | 0.4 kW to 22 kW | Depending on drive model |
| P0.02 | Rated motor voltage | This parameter sets the rated motor voltage displayed on the motor nameplate. | 0 V to 2000 V | 380 V |
| P0.03 | Rated motor current | This parameter sets the rated motor current displayed on the motor nameplate. | 0.01 A to 655.35 A | Depending on drive model |
| P0.04 | Rated motor frequency | Indicates the rated motor frequency displayed on the motor nameplate. | 0.01 Hz to b1.02 (maximum frequency) | 50.00 Hz |
| P0.05 | Rated motor speed | Indicates the rated motor speed displayed on the motor nameplate. | 0 RPM to 65535 RPM | 1400 RPM |
| P0.07 | Frequency source selection | 0: Multi-speed setting The input functions 8, 9, and 10 use binary combinations of three dots to implement eight segment speeds corresponding to the frequencies set by b5.00~b5.07. For specific usage, please refer to the introduction of b5 group parameters. 4: acceleration and deceleration setting This needs to be used in conjunction with input functions 19 and 20. See the introduction of bA group parameters for details | 0~4 | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|-------------|---------|----------------|--|-------------|--------------------|-----------|-------------------------------------|---------------|--|---------------|-------------------------|---------------|-------------------------|------------|-------------------------------------|-----------------------|-----------|---|--------------|---|--------------|-----------------------|--------------|-----------------------|------------|-------------------------------------|--------------------|------------------------------------|--|
| P0.08 | Crane mechanism selection | This parameter is used to select the crane mechanism driven by the AC drive. 0: Hoisting mechanism 1: Translation mechanism 2: Rotation mechanism | 0 to 2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>Mechanism Type</th> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Hoisting mechanism</td> <td>b1.00 = 0</td> <td>The control mode is changed to SVC.</td> </tr> <tr> <td>b6.03 = 30.0%</td> <td>The brake release current is changed to 30.0%.</td> </tr> <tr> <td>bC.02 = 0.50s</td> <td>Error 37# is triggered.</td> </tr> <tr> <td>bC.04 = 0.50s</td> <td>Error 38# is triggered.</td> </tr> <tr> <td>F1.00 = 60</td> <td>Speed loop gain 1 is changed to 60.</td> </tr> <tr> <td rowspan="5">Translation mechanism</td> <td>b1.00 = 2</td> <td>The control mode is changed to V/f control.</td> </tr> <tr> <td>b6.03 = 0.0%</td> <td>The brake release current is changed to 0.0%.</td> </tr> <tr> <td>bC.02 = 0.0s</td> <td>Error 37# is invalid.</td> </tr> <tr> <td>bC.04 = 0.0s</td> <td>Error 38# is invalid.</td> </tr> <tr> <td>F1.00 = 30</td> <td>Speed loop gain 1 is changed to 30.</td> </tr> <tr> <td>Rotation mechanism</td> <td colspan="2">Same as the translation mechanism.</td> </tr> </tbody> </table> | | | Mechanism Type | Parameter | Description | Hoisting mechanism | b1.00 = 0 | The control mode is changed to SVC. | b6.03 = 30.0% | The brake release current is changed to 30.0%. | bC.02 = 0.50s | Error 37# is triggered. | bC.04 = 0.50s | Error 38# is triggered. | F1.00 = 60 | Speed loop gain 1 is changed to 60. | Translation mechanism | b1.00 = 2 | The control mode is changed to V/f control. | b6.03 = 0.0% | The brake release current is changed to 0.0%. | bC.02 = 0.0s | Error 37# is invalid. | bC.04 = 0.0s | Error 38# is invalid. | F1.00 = 30 | Speed loop gain 1 is changed to 30. | Rotation mechanism | Same as the translation mechanism. | |
| | | Mechanism Type | | | Parameter | Description | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Hoisting mechanism | | | b1.00 = 0 | The control mode is changed to SVC. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | b6.03 = 30.0% | The brake release current is changed to 30.0%. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | bC.02 = 0.50s | Error 37# is triggered. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | bC.04 = 0.50s | Error 38# is triggered. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | F1.00 = 60 | Speed loop gain 1 is changed to 60. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Translation mechanism | | | b1.00 = 2 | The control mode is changed to V/f control. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | b6.03 = 0.0% | The brake release current is changed to 0.0%. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | bC.02 = 0.0s | Error 37# is invalid. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | bC.04 = 0.0s | Error 38# is invalid. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F1.00 = 30 | Speed loop gain 1 is changed to 30. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rotation mechanism | Same as the translation mechanism. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: When the value of P0.08 is changed, the values of parameters listed in the preceding table are also changed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Group AF: Level-1 menu auxiliary parameters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF.00 | User password | This parameter is used to set the password for displaying and modifying all functional parameters. If this parameter is set to a non-zero value, you must enter the password before accessing any menu. If you enter wrong passwords for three consecutive times, all menus are locked. In this case, you must power off and restart the AC drive to view or modify parameters. After this parameter is set to 0, the password protection function is disabled. | 0 to 65535 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF.01 | Restoration of parameters in the level-1 menu to factory settings | 0: No operation 1: Restore parameters in level-1 menu to factory settings P0.00 to P0.05, P0.08 to P0.09, and PF.00 in the level-1 menu cannot be restored to factory settings. | 0 to 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|------------------------------|--|-------------|---------|
| PF.02 | Level-1 menu setting display | 0: Display level-1 menu parameters normally 1: Display level-1 menu parameters with default values changed 2: Display level-1 menu parameters with all indicators on | 0 to 2 | 0 |

6.2 Level-2 Menu (Group b, Group E*, Group U) Parameter List

The level-2 menu contains basic functional parameters, monitoring parameters, and fault record parameters of the AC drive. You can implement all functions of the AC drive by setting parameters in the level-2 menu. To improve the output performance of the AC drive, you need to set parameters in the level-3 menu.

You can enter the level-2 menu only after entering the correct password set by bF.00.

| Parameter No. | Parameter Name | Description | Value Range | Default |
|------------------------------------|--|---|---------------------|---------|
| Group b0: Basic motor parameters | | | | |
| b0.00 | Protection frequency of shaft-cooling motor running at a low speed | The two parameters are used when error 43# occurs, and are used for shaft-cooling motor protection. When the reference frequency of the AC drive keeps below the value set in b0.00 for a period longer than the value specified by b0.01, the AC drive reports error 43#. This function is invalid when b0.01 is set to 0. | 0.01 Hz to 20.00 Hz | 5.00 Hz |
| b0.01 | Low-speed running time of shaft-cooling motor | | 0s to 1000s | 0s |
| b0.04 | Parameter auto-tuning selection | 0: No operation 1: Static auto-tuning for an asynchronous motor (some motor parameters obtained) 2: Dynamic auto-tuning for an asynchronous motor (all motor parameters obtained) 3: Static auto-tuning for an asynchronous motor (all motor parameters obtained) | 0 to 3 | 0 |
| b0.05 | Auto-tuning upon power-on | The YD587 series AC drive supports auto-tuning of stator resistance upon power-on. If this function is enabled, the AC drive takes 2s to 3s in static auto-tuning to achieve the optimal control effect every time it is powered on. 0: Disable 1: Enable | 0 to 1 | 0 |
| Group b1: Motor control parameters | | | | |
| b1.00 | Control mode | 0: SVC control (open-loop control) 2: V/f control | 0 to 2 | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|---|---|-----------------------|----------|
| b1.01 | Slip compensation | This parameter is used to adjust the speed stability accuracy of the motor in SVC control mode. When the motor is connected to a heavy load and runs at a too low speed, increase the value of this parameter; otherwise, decrease the value of this parameter. In FVC control mode, this parameter can be used to change the output current of the AC drive under the same load. | 50.0% to 200.0% | 100.0% |
| b1.02 | Maximum frequency | This parameter is used as the base value for calculating the target frequency when the frequency source is set to the analog or communication. It indicates the maximum output frequency of the AC drive at any time. | 50.00 Hz to 300.00 Hz | 50.00 Hz |
| b1.03 | Minimum frequency | This parameter is used to set the minimum output frequency of the AC drive at any time. | 0.00 Hz to 15.00 Hz | 0.00 Hz |
| b1.04 | Forward torque upper limit | Used to set the output torque upper limits when DI function 1 (Forward RUN) and DI function 2 (Reverse RUN) are enabled. The values are percentages of the rated motor torque. In SVC mode, even if the parameters are set to below 50.0%, the AC drive will regard the output torque upper limit as 50.0%. | | 180.0% |
| b1.05 | Reverse torque upper limit | | | |
| b1.06 | Forward torque upper limit during brake release | The two parameters are valid only when b6.00 is set to 2 (manual brake control). The torque upper limits specified by the two parameters are used within the brake release time (b6.04) after the AC drive starts. After the brake is released completely, the torque upper limits change to the values specified by b1.04 and b1.05. | 0.0% to 500.0% | 150.0% |
| b1.07 | Reverse torque upper limit during brake release | | | 130.0% |

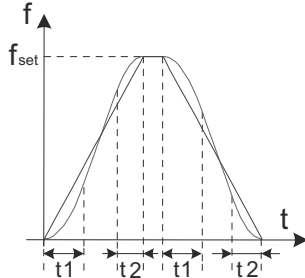
| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|------------------------|---|---|---------|
| b3.01 | DI1 function selection | 1: Forward run 2: Reverse run An external terminal is used to control forward or reverse operation of the AC drive. | 0 to 133 (Input functions 1 to 33 are NO inputs. Input functions 101 to 133 are NC inputs. Input functions 0 and 100 are invalid.) | 1 |
| b3.02 | DI2 function selection | 3: Reset upon fault A terminal is used the reset the AC drive when a fault occurs. It functions the same as the RESET key on the operating panel. This function allows you to reset the AC drive remotely. | | 2 |
| b3.03 | DI3 function selection | 4: Quick stop The AC drive outputs brake frequency (b6.05) immediately and executes the brake time sequence normally. 5: Coast to stop The AC drive blocks output and does not control the stop process of the motor. This stop mode is the same as coast to stop described in b4.03. | | 8 |
| b3.04 | DI4 function selection | 6: Decelerate to stop The AC drive decelerates normally and stops the motor after the brake time sequence is complete. | | 9 |
| b3.05 | DI5 function selection | 7: External fault input When this signal is sent to the AC drive, the AC drive reports error 50# (external input fault). | | 3 |
| b3.06 | DI6 function selection | 8: Multi-frequency selection 1 9: Multi-frequency selection 2 10: Multi-frequency selection 3 These options are valid when the frequency source is set to multi-frequency. For details, see the description of parameters in group b5. 11: Brake release feedback 12: Brake feedback They are feedback input signals of errors 41# and 42#. For details, see the description of the two errors. 13: Second acceleration ramp switching 14: Second deceleration ramp switching 15: Third acceleration ramp switching 16: Third deceleration ramp switching They are the DI switching point input functions for the acceleration and deceleration time during a special curve running. For details, see the description of special curve parameters in group b8. | | 5 |

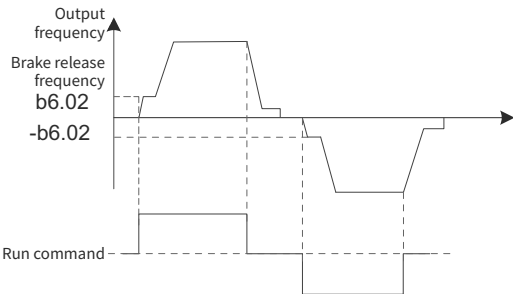
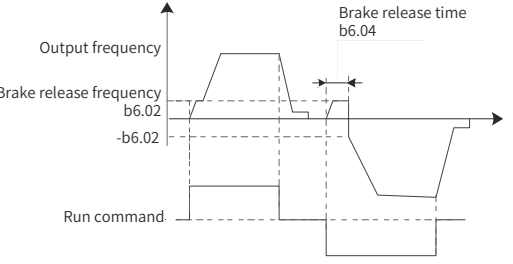
| Parameter No. | Parameter Name | Description | Value Range | Default | | | | | | | | | | | | | | | |
|-------------------|-------------------|---|-------------------|-------------------|----------|-----|-----|----|-----|----|----|----|-----|----|----|----|----|--|--|
| | | <p>19: Acceleration 20: Deceleration They are used as the frequency increment and decrement commands when the frequency is determined by external terminals. They are valid when the frequency source is set to acceleration/ deceleration.</p> <p>21: Torque/Speed control switchover If the function is valid, the AC drive changes to the torque control mode. If the function is invalid, the AC drive changes to the speed control mode. For details, see the description torque control parameters in group bb.</p> <p>22: Forward stop switch 23: Reverse stop switch 24: Forward deceleration switch 25: Reverse deceleration switch After a stop switch takes effect, the AC drive performs the quick stop action (the same as input function 4). After a deceleration switch takes effect, the maximum output frequency of the AC drive is limited below the value specified by bF.16 (deceleration frequency limit). Using functions 22 and 24 and functions 23 and 25 can implement simple positioning function.</p> <p>26: Positioning point shielding If this function is active, the stop and deceleration switch inputs are both invalid.</p> <p>27: Motor switchover switch 1 28: Motor switchover switch 2 A YD287 series AC drive has three sets of functional parameters for switchover between three motors. The motor switchover function takes effect only after the AC drive stops output. If you select functions 27 and 28 for one motor, they are also forcibly selected for the same DIs of the other two motors. The two input functions are used in combination in binary format, with the logic in the following table.</p> <table border="1"> <thead> <tr> <th>Input Function 28</th> <th>Input Function 27</th> <th>Motor SN</th> </tr> </thead> <tbody> <tr> <td>Off</td> <td>Off</td> <td>1#</td> </tr> <tr> <td>Off</td> <td>On</td> <td>2#</td> </tr> <tr> <td>On</td> <td>Off</td> <td>3#</td> </tr> <tr> <td>On</td> <td>On</td> <td>3#</td> </tr> </tbody> </table> <p>31: Position check If the function becomes active, the accumulative number of pulses in the AC drive is reset to b7.10 x b7.11, and the position value is reset to b7.11. For details, see the description of b7.10 and b7.11.</p> | Input Function 28 | Input Function 27 | Motor SN | Off | Off | 1# | Off | On | 2# | On | Off | 3# | On | On | 3# | <p>0 to 133 (Input functions 1 to 33 are NO inputs. Input functions 101 to 133 are NC inputs. Input functions 0 and 100 are invalid.)</p> | |
| Input Function 28 | Input Function 27 | Motor SN | | | | | | | | | | | | | | | | | |
| Off | Off | 1# | | | | | | | | | | | | | | | | | |
| Off | On | 2# | | | | | | | | | | | | | | | | | |
| On | Off | 3# | | | | | | | | | | | | | | | | | |
| On | On | 3# | | | | | | | | | | | | | | | | | |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|--|---|--|---------|
| b3.14 | Relay 1 function selection (T1A-T1B-T1C) | 1: Brake control This output is valid when the brake release condition is met in the brake sequence. For details, see the description of parameters in group b6. 2: Stop upon fault This output becomes valid after a level-1 fault occurs on the AC drive. 3: Alarm upon fault | 0 to 118 (Output functions 1 to 18 are NO outputs, 101 to 118 are NC outputs, and 0 and 100 are invalid.) | 1 |
| b3.15 | Relay 2 function selection (T2A-T2B-T2C) | This output becomes valid after a level-2 or level-3 fault occurs on the AC drive. 4: Fault prompt This output becomes valid after a level 4 fault occurs on the AC drive. 5: Motor 1 connected indication 6: Motor 2 connected indication 7: Motor 3 connected indication If you select output functions 5 to 7 for one motor, they are also forcibly selected for the same outputs of the other two motors. | | - |
| | | 8: AC drive overload pre-warning This output becomes valid signals 10s before the AC drive performs overload protection. 9: Motor overload pre-warning Before triggering motor overload protection, the AC drive determines whether the load of the motor exceeds the overload pre-warning threshold. If the pre-warning threshold is exceeded, the output becomes valid. For details, see the description of the motor overload parameters bE.00 to bE.02. | | 0 |
| | | 11: Overload protection start This output function becomes valid after the AC drive enters the overload protection state. For details, see the description of bE.13. 12: Over-torque output This output function becomes valid when the output torque of the AC drive exceeds the threshold set in bF.17 and becomes invalid when the output torque is less than 90% of the threshold. For details, see the description of bF.17. 13: Motor fan control This output function becomes valid after the AC drive starts to operate and become invalid when the delay time set in bF.21 expires after the AC drive stops operation. 14: Output upon frequency reached For details, see the description of the parameters bF.07 and bF.08. 15: AC drive running This output function becomes valid when the AC drive is under operation and becomes invalid after the AC drive stops operation. 16: Automatic start output This output function is valid when the automatic start function of the AC drive is enabled. For details, see the description of bC.00. 17: Reserved 18: Communication control The output function is controlled by communication commands. For details, see the description of U0.11. | | 4 |

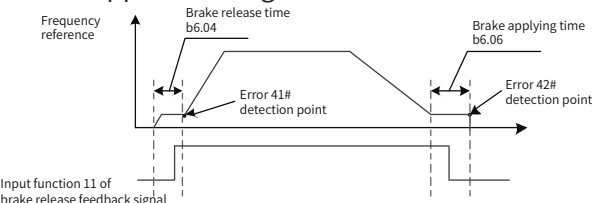
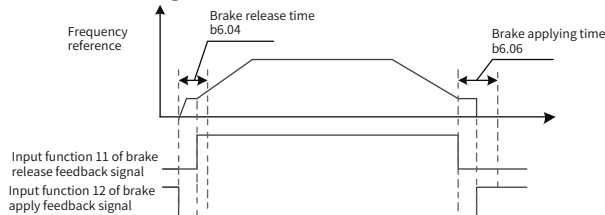
| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|----------------|---|------------------|---------|
| b3.21 | DI filter time | This parameter is used to set the software filter time of DI status. If DIs are prone to suffer from interference, which may cause malfunction, increase the value of this parameter to enhance the anti-interference capability. However, increasing the DI filter time will slow the response speed of DIs. | 0.000s to 1.000s | 0.010s |

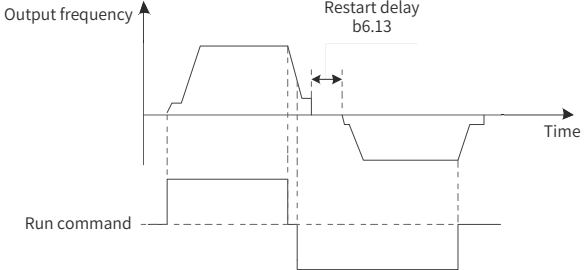
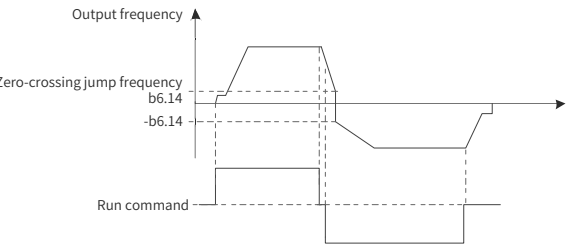
| Parameter No. | Parameter Name | Description | Value Range | Default |
|----------------------------------|------------------------------|---|----------------|---------|
| Group b4: Ramp parameters | | | | |
| b4.00 | Acceleration time | Acceleration time (t1 in the following figure) is the time required for the AC drive to accelerate from 0 to the rated frequency (P0.04). Deceleration time (t2 in the following figure) is the time required for the AC drive to decelerate from the rated frequency (P0.04) to 0. | 0.0s to 600.0s | 3.0s |
| b4.01 | Deceleration time | | | |
| b4.02 | Running curve mode selection | 0: Linear acceleration/deceleration The output frequency increases or decreases linearly. 1: S-curve acceleration/deceleration The output frequency increases or decreases along the S curve. This mode is applicable to the scenarios that require soft start or stop. | 0 to 1 | 0 |
| b4.03 | Stop mode selection | 0: Decelerate to stop After the stop command takes effect, the AC drive ramps to stop based on the deceleration time set by b4.01. 1: Coast to stop After the stop command becomes valid, the AC drive immediately stops output. Then, the motor coasts to stop based on the mechanical inertia. | 0 to 1 | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|-------------------|------------------|------------------|--------------|-----|-----|-----|-------|-----|-----|----|-------|-----|----|-----|-------|-----|----|----|-------|----|-----|-----|-------|----|-----|----|-------|----|----|-----|-------|----|----|----|-------|--|---------|
| b4.04 | Time proportion of S-curve initial segment | <p>The two parameters define the time proportions of the initial and final segments for S-curve acceleration and deceleration, respectively. In the following figure, t1 is defined by b4.04, during which the slope of the output frequency increases gradually. t2 is defined by b4.05, during which the slope of the output frequency change gradually decreases to 0. Within the time between t1 and t2, the slope of the output frequency remains unchanged. That is, the output frequency increases or decreases linearly.</p>  | 0.0% to 40.0% | 30.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.05 | Time proportion of S-curve final segment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Group b5: Multi-frequency parameters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.00 | Multi-frequency 1 | <p>The multi-frequency functions are selected by input terminal functions 8, 9, and 10. The AC drive supports eight speeds through digital status combinations of the three input functions, as shown in the following table.</p> <table border="1"> <thead> <tr> <th>Input Function 10</th> <th>Input Function 9</th> <th>Input Function 8</th> <th>Target Speed</th> </tr> </thead> <tbody> <tr> <td>Off</td> <td>Off</td> <td>Off</td> <td>b5.00</td> </tr> <tr> <td>Off</td> <td>Off</td> <td>On</td> <td>b5.01</td> </tr> <tr> <td>Off</td> <td>On</td> <td>Off</td> <td>b5.02</td> </tr> <tr> <td>Off</td> <td>On</td> <td>On</td> <td>b5.03</td> </tr> <tr> <td>On</td> <td>Off</td> <td>Off</td> <td>b5.04</td> </tr> <tr> <td>On</td> <td>Off</td> <td>On</td> <td>b5.05</td> </tr> <tr> <td>On</td> <td>On</td> <td>Off</td> <td>b5.06</td> </tr> <tr> <td>On</td> <td>On</td> <td>On</td> <td>b5.07</td> </tr> </tbody> </table> | Input Function 10 | Input Function 9 | Input Function 8 | Target Speed | Off | Off | Off | b5.00 | Off | Off | On | b5.01 | Off | On | Off | b5.02 | Off | On | On | b5.03 | On | Off | Off | b5.04 | On | Off | On | b5.05 | On | On | Off | b5.06 | On | On | On | b5.07 | Minimum frequency (b1.03) to maximum frequency (b1.02) | 5.00 Hz |
| Input Function 10 | Input Function 9 | | Input Function 8 | Target Speed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Off | Off | | Off | b5.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Off | Off | | On | b5.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Off | On | | Off | b5.02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Off | On | | On | b5.03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| On | Off | | Off | b5.04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| On | Off | | On | b5.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| On | On | Off | b5.06 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| On | On | On | b5.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.01 | Multi-frequency 2 | 20.00 Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.02 | Multi-frequency 3 | 35.00 Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.03 | Multi-frequency 4 | 50.00 Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.04 | Multi-frequency 5 | 0.00 Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.05 | Multi-frequency 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.06 | Multi-frequency 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.07 | Multi-frequency 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

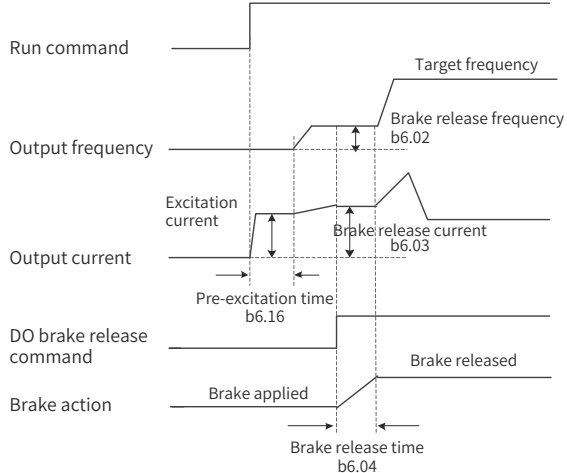
| Parameter No. | Parameter Name | Description | Value Range | Default |
|---|-------------------------|--|---------------------------------------|---------|
| Group b6: Brake logic control parameters | | | | |
| b6.00 | Brake curve type | <p>0: No brake control The AC drive does not define the brake release frequency, brake release time, or brake applying time. Output function 1 is equivalent to the output function of "AC drive under operation."</p> <p>1: Automatic brake control The AC drive automatically retains current (with upper torque limits specified by b1.04 and b1.05) within the brake release time. When the output current reaches the product of b6.03 multiplied by the rated motor current, the AC drive delivers the brake release command.</p> <p>2: Manual brake control The AC drive uses values specified by b1.06 and b1.07 as torque upper limits. When the output current reaches the product of b6.03 multiplied by the rated motor current, the AC drive delivers the brake release command. For details, see the descriptions of the parameters b1.06 and b1.07.</p> | 0 to 2 | 1 |
| b6.01 | Startup direction | <p>This parameter defines the output torque direction of the AC drive within the brake release time.</p> <p>0: The direction of brake release torque is the same as the running direction.</p>  <p>1: The direction of brake release torque is always forward.</p>  | 0 to 1 | 0 |
| b6.02 | Brake release frequency | This parameter is used to set the output frequency of the AC drive before the brake releases completely, namely, the minimum frequency at which the motor can have full torque. | Minimum frequency (b1.03) to 15.00 Hz | 2.00 Hz |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|-----------------------|--|---------------------------------------|---------|
| b6.03 | Brake release current | This parameter is used to set the percentage of the output current to the rated motor current (P0.03). When the output current of the AC drive reaches this value, the AC drive delivers the brake release command immediately (output function 1 valid). | 0.0% to 150.0% | 30.0% |
| b6.04 | Brake release time | This parameter is used to set the time from start to complete of mechanical brake release. The AC drive keeps the output at the brake release frequency within this period of time. | 0.00s to 5.00s | 0.50s |
| b6.05 | Brake apply frequency | When the output frequency of the AC drive falls below this value during deceleration after the RUN command is canceled, the AC drive delivers the brake command immediately (output function 1 invalid). | Minimum frequency (b1.03) to 20.00 Hz | 2.00 Hz |
| b6.06 | Brake time | This parameter defines the time required for the mechanical brake to apply completely. The AC drive maintains the output at the brake applying frequency within this period of time. | 0.00s to 5.00s | 0.50s |
| b6.07 | Brake delay | This parameter defines the delay time for the AC drive to output the brake applying command when the brake applying condition is met. This function is invalid when quick stop or coast to stop is selected and the crane mechanism type (P0.08) is set to 0, 3, or 4. | 0.0s to 30.0s | 0.0s |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|------------------------|---|-------------|---------|
| b6.08 | Brake feedback purpose | <p>It is used when errors 41# and 42# occur. For details, see the description of the two errors.</p> <p>0: Brake feedback not used No brake feedback contact is not connected to the AC drive, or the brake feedback function is not required.</p> <p>1: Feedback over one terminal The AC drive detects brake feedback signals only during brake applying and release processes. This application requires only one brake feedback contact input. The following figure shows the correct application logic.</p>  <p>2: Feedback over two terminals The brake release time and brake applying time are determined by the brake feedback contact signal. The AC drive starts to check brake feedback signals immediately after being powered on. In this application, both the brake release contact and brake contact must be connected to the AC drive. The following figure shows the correct application logic.</p>  | 0 to 2 | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|-------------------------|---|-------------|---------|
| b6.09 | Command reverse control | <p>0: Direct reverse not allowed during operation When the operating AC drive receives the reverse run command, it decelerates following the normal stop process and then starts reverse operation.</p>  <p>1: Reverse allowed during operation When the operating AC drive receives the reverse run command, it decelerates to the zero-crossing jump frequency (b6.14) and then directly starts reverse operation from the reversed zero-crossing jump frequency. Brake applying and release control are not performed in this process.</p>  <p>When the crane mechanism type is set to hoisting mechanism (P0.08 = 0), this function is valid only in closed-loop control mode. When other mechanism types are selected, this function is valid in all control modes.</p> | 0 to 1 | 0 |

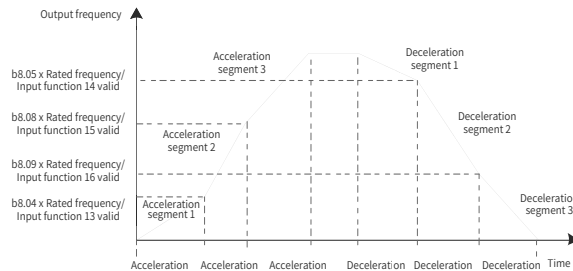
| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|------------------------------|--|---------------------|---------|
| b6.12 | Restart during braking | <p>0: Restart not allowed during braking The AC drive does not accept the start command if the braking has started in the stop process. The AC drive can restart only after the brake is applied completely and the AC drive stops output.</p> <p>1: Restart allowed during braking The AC drive accepts a new operation command even if the braking has started in the stop process.</p> | 0 to 1 | 0 |
| b6.13 | Restart delay time | This parameter defines the delay time for the AC drive to wait before a restart every time it stops. For details, see the description of b6.09. | 0.0s to 15.0s | 0.3s |
| b6.14 | Zero-crossing jump frequency | If the AC drive can change to run in the reverse direction to the current direction during running (b6.09 = 1) and the output frequency falls below the value of b6.14 during deceleration, the output frequency will jump from b6.14 to -b6.14. The actual value of this parameter must be greater than the brake release frequency b6.02 and braking frequency b6.05. For details, see the description of b6.09. | 0.00 Hz to 20.00 Hz | 2.00 Hz |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|------------------------------------|---|----------------|---------|
| b6.16 | Pre-excitation time |  <p>This parameter is used to set how long the pre-excitation stage lasts during AC drive startup. This function takes effect only in closed-loop vector control mode. When it is set to 0, the pre-excitation function is invalid.</p> | 0.00s to 5.00s | 0.30s |
| b6.17 | Excitation holding time after stop | This parameter defines the holding time of the excitation state after the AC drive stops. During this holding time, the AC drive provides zero speed output and retains the exciting current. If the AC drive receives the RUN command during this period, it can skip the pre-excitation stage and release the brake quickly. | 0s to 65535s | 30s |
| b6.18 | Droop adjustment frequency | This parameter is read-only. It shows the difference value between the set frequency and actual frequency after droop calculation. See the description of b6.19 for more details. | - | - |
| b6.19 | Droop control | <p>This parameter is used to set the droop rate for droop control. When it is set to 0, the droop control function is disabled.</p> <p>Droop control is applicable to scenarios where two AC drives drive two motors in rigid connection. To prevent running conflict between the two motors, droop control allows minor speed deviation between the two motors.</p> <p>The droop rate is calculated using the following formula: Droop adjustment frequency (b6.18) = Set frequency x Output torque x Droop rate (b6.19)/10 Example: If b6.19 is 1.00, the set frequency is 50.00 Hz, and the output torque is 50.0%, then: Droop adjustment frequency = 50.00 Hz x 50.0% x 1.00/10 = 2.50 Hz Actual frequency of the AC drive = 50.00 Hz - 2.50 Hz = 47.50 Hz</p> | 0.00 to 20.00 | 0.00 |

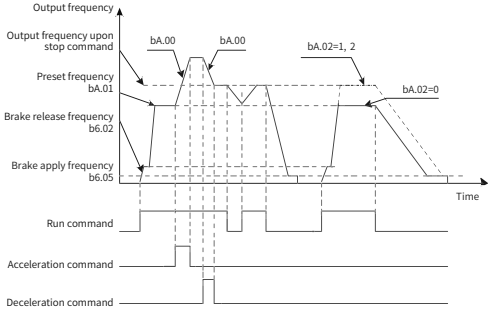
| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|-----------------------------------|--|---------------|---------|
| b6.21 | Stator auto-tuning before startup | This parameter is used to enable or disable stator auto-tuning before startup. 0: Disable 1: Enable | 0 to 1 | 0 |
| b6.22 | Brake release timeout interval | If brake release is not implemented after the time set by this parameter, a brake release error is reported. | 0s to 5.00s | 3.00s |
| B6.23 | Delay time before braking | This parameter indicates the delay time before braking. | 0s to 1.00s | 0.1s |
| B6.24 | Current threshold for braking | This parameter indicates the current threshold for braking. | 0% to 500% | 0% |
| B6.25 | Coefficient for braking | This parameter indicates the coefficient for braking. | 100% to 1000% | 500% |

| Parameter No. | Parameter Name | Description | Value Range | Default | |
|--|-----------------------------|---|---|------------|------|
| Group b7: Light-load and positioning control parameters | | | | | |
| b7.00 | Flux weakening multiplier | <p>The light-load high-speed function enables the AC drive to automatically calculate the maximum output frequency based on the load when the target frequency is greater than the rated frequency, thereby preventing faults caused by a heavy load, such as overload and overcurrent. The parameters b7.00 to b7.07 are used to set the light-load high-speed function.</p> <p>When the output frequency of the AC drive reaches the value specified by b7.07, the AC drive retains the output frequency for the time set in b7.06. When the time expires, the AC drive measures the output torque T and uses it to calculate the maximum frequency F for operation according to the curve, as shown in the following figure. If the target frequency is greater than the rated frequency and the value of b7.00 exceeds 100.0%, the light-load high-speed function is enabled.</p> <p>When the $T \leq$ losing rope torque or $T \geq$ allowed load condition is met, the maximum value of F is the rated frequency. When the losing rope torque $< T \leq$ light-load coefficient condition is met, the maximum value of F is b7.00 multiplied by the rated frequency. When the light-load coefficient $< T <$ allowed load condition is met, F is automatically adjusted according to the following curve.</p> <div style="text-align: center;"> </div> | 100.0% to 300.0% | 100.0% | |
| b7.01 | Loosing rope torque | | 0.0% to light-load coefficient (b7.02) | 5.0% | |
| b7.02 | Light-load coefficient | | Loosing rope torque (b7.01) to Allowed load (b7.03) | 35.0% | |
| b7.03 | Load capacity | | Light-load coefficient (b7.02) to 100.0% | 80.0% | |
| b7.06 | Detection time | | 0.0s to 5.0s | 0.5s | |
| b7.07 | Detection frequency | | Brake release frequency (b6.02) to rated frequency (A0.04) | 40.00 Hz | |
| b7.08 | Forward correction | | 0% to 100% | 100% | |
| b7.09 | Reverse correction | | <p>b7.08 and b7.09 indicate that when the light-load coefficient $\leq T \leq$ allowed load condition is met, the target frequency is calculated as follows: $F \times b7.08$ (forward run) or $F \times b7.09$ (reverse run). The actual running frequency is limited by the maximum torque of the AC drive or motor.</p> | 0% to 100% | 100% |
| b7.10 | Position display proportion | | <p>This parameter is set based on the position display accuracy. It is used to convert the number of pulses into position data. Position data displayed in U0.08 and U0.09 is the current number of pulses divided by the value of b7.10.</p> <p>Note: The pulses provided to YD587 series AC drive are quadruplicated.</p> | 1 to 65535 | 1 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|------------------------------------|----------------------|---|-------------|---------|
| b7.11 | Position check value | When input function 31 (position check) is valid, the accumulative number of pulses in the AC drive is reset to the value of b7.10 multiplied by the value of b7.11, and the position data is reset to the value specified by b7.11. | 0 to 65535 | 0 |
| Group b8: Special curve parameters | | | | |
| b8.00 | Special acceleration | <p>0: Disabled Special acceleration/deceleration is not used.</p> <p>1: Two-segment (frequency switchover) Two-segment acceleration/deceleration is used. When the output frequency exceeds the rated frequency multiplied by b8.04 during acceleration, the acceleration time changes to the value of b8.02. When the output frequency falls below the rated frequency multiplied by b8.05 during deceleration, the deceleration time changes to the value of b8.03.</p> <p>2: Three-segment (frequency switchover) Three-segment acceleration/deceleration is used. Functions in the two segments (frequency switchover) are supported in the three segments. Moreover, when the output frequency exceeds the rated frequency multiplied by b8.08 during acceleration, the acceleration time changes to the value of b8.06. When the output frequency falls below the rated frequency multiplied by b8.09 during deceleration, the deceleration time changes to the value of b8.07.</p> | | |
| b8.01 | Special deceleration | <p>3: Two-segment (DI switchover) Two-segment acceleration/deceleration is used. When input function 13 is valid during acceleration, the acceleration time changes to the value of b8.02. When input function 14 is valid during deceleration, the deceleration time changes to the value of b8.03.</p> <p>4: Three-segment (DI switchover) Three-segment acceleration/deceleration is used. Functions in the two segments (DI switchover) are supported in the three segments. Moreover, when input function 15 is valid during acceleration, the acceleration time changes to the value of b8.06. When input function 16 is valid during deceleration, the deceleration time changes to the value of b8.07.</p> | 0 to 4 | 0 |



| Parameter No. | Parameter Name | Description | Value Range | Default |
|---|---|---|--|-----------|
| b8.02 | Segment-2 acceleration time | For details, see the descriptions of b8.00 and b8.01. | 0.1s to 600.0s | 3.0s |
| b8.03 | Segment-2 deceleration time | | 0.1s to 600.0s | 3.0s |
| b8.04 | Segment-2 acceleration switchover frequency | | 0% to segment-3 acceleration switchover frequency (b8.08) | 0% |
| b8.05 | Segment-2 deceleration switchover frequency | | Segment-3 deceleration switchover frequency (b8.09) to 99% | 99% |
| b8.06 | Segment-3 acceleration time | | 0.1s to 600.0s | 3.0s |
| b8.07 | Segment-3 deceleration time | | 0.1s to 600.0s | 3.0s |
| b8.08 | Segment-3 acceleration switchover frequency | | Segment-2 acceleration switchover frequency b8.04 to 99% | 99% |
| b8.09 | Segment-3 deceleration switchover frequency | | 0% to segment-2 deceleration switchover frequency (b8.05) | 0% |
| Group bA: Acceleration/Deceleration parameters | | | | |
| bA.00 | Acceleration/Deceleration rate | This parameter is used to set the frequency change rate when the frequency source is set to acceleration/deceleration or input function 19 (acceleration) and input function 20 (deceleration) are valid. | 0.01 Hz/s to 50.00 Hz/s | 5.00 Hz/s |
| bA.01 | Preset frequency | This parameter is used to set the initial value of the target frequency when the frequency source is set to acceleration/deceleration. | Brake release frequency (b6.02) to Maximum frequency (b1.02) | 50.00 Hz |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|--|---|---------------------|---------|
| bA.02 | Frequency retentive option | <p>0: Not save The value of bA.01 is used as the initial target frequency each time.</p> <p>1: Retentive until power failure The value of bA.01 is used as the initial target frequency for the first run of the AC drive after power-on. If the power is not cut off, the initial target frequency is always the output frequency of the AC drive when it cancels the run command last time.</p> <p>2: Retentive all along The initial target frequency is the frequency set when the AC drive cancels the run command and starts to decelerate last time. This frequency is retentive upon power failure.</p>  | 0 to 2 | 0 |
| bA.03 | Minimum frequency for acceleration/ deceleration | This parameter is used to set the lower limit of the output frequency during deceleration when the deceleration switch is active. | 0.00 Hz to 15.00 Hz | 0.00 Hz |

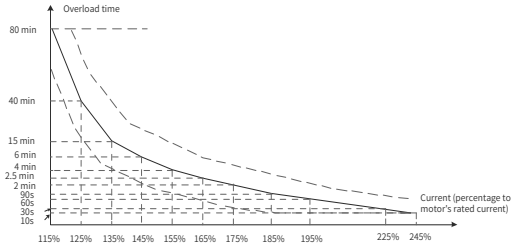
| Parameter No. | Parameter Name | Description | Value Range | Default |
|-------------------------------------|-----------------------------------|--|--------------------------------------|----------|
| Group bb: Torque control parameters | | | | |
| bb.00 | Torque control function selection | <p>0: Disable torque control The speed control mode is used all the time.</p> <p>1: Torque control all along The torque control mode is used all the time.</p> <p>2: Torque/Speed control mode switchover by frequency The torque control mode is used when the output frequency of the AC drive is greater than the value of bb.01. Otherwise, the speed control mode is used.</p> <p>3: Torque/Speed control mode switchover by torque The torque control mode is used when the output torque of the AC drive is greater than the value of bb.02. Otherwise, the speed control mode is used.</p> <p>4: Torque/Speed control mode switchover by frequency and torque The torque control mode is used when the output frequency of the AC drive is greater than the value of bb.01 and the output torque is greater than the value of bb.02. Otherwise, the speed control mode is used.</p> <p>5: Torque/Speed control mode switchover by DI The torque control mode is used when input function 21 is valid, and the speed control mode is used when the function is invalid.</p> <p>6: Torque/Speed control mode switchover by communication</p> | 0 to 6 | 0 |
| bb.01 | Frequency threshold | For details, see the description of bb.00. | 0.00 Hz to maximum frequency (b1.02) | 25.00 Hz |
| bb.02 | Torque threshold | | 0.0% to 150.0% | 50.0% |
| bb.03 | Torque source | <p>1: AI1 AI1 supports only the voltage input of 0 V to 10 V.</p> <p>2: AI2 AI2 supports voltage input of 0 V to 10 V or current input of 4 mA to 20 mA, which is determined by jumper J9 on the control board.</p> <p>When AI is used as the torque reference, 100.0% of voltage/current input corresponds to 200.0% of output torque.</p> <p>4: Operating panel, with the value set by bb.08</p> <p>5: Communication, with the torque written into address 0xbb08</p> | 0 to 5 | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|--|--|--------------------------------------|----------|
| bb.04 | Maximum forward frequency in torque control mode | These two parameters set the maximum frequency in the forward or reverse direction when the torque control mode is used. In torque control mode, if the load torque is less than the output torque of the motor, the motor speed keeps rising. Therefore, to prevent accidents such as runaway in the mechanical system, the motor speed must be controlled within a proper range. | 0.00 Hz to maximum frequency (b1.02) | 50.00 Hz |
| bb.05 | Maximum reverse frequency in torque control mode | | | |
| bb.06 | Torque control acceleration time | In torque control mode, the difference between the output torque of the motor and the load torque determines the speed change rate of the motor and load. The motor speed may change quickly, which may result in too loud noise or high mechanical stress. Setting the acceleration and deceleration time properly in torque control mode can ensure smooth change of the motor speed. If the motor needs to respond to torque changes quickly, set the torque control acceleration/deceleration time to 0.0s. For example, two motors are connected in the hard connection mode to drive the same load. To ensure balanced load distribution, set one AC drive as the master to work in speed control mode and the other as the slave to work in torque control mode. The slave receives the master's output torque as the torque command and must follow the master rapidly. In this case, the acceleration/deceleration time of the slave in torque control mode is set to 0.0s. The time base of the two parameters is 200.0% of the output torque. | 0.0s to 600.0s | 0.0s |
| bb.07 | Torque control deceleration time | | | |
| bb.08 | Target torque | This parameter is used to set the target torque used when bb.03 is set to 4 or 5. | -500.0% to +500.0% | 180.0% |
| bb.09 | Connection method selection | The torque control mode is usually used for master-slave control among multiple AC drives. The master AC drive uses the speed control mode, and the slave drives use the torque control mode. This parameter determines the type of connection used between master and slave drives. 0: Hard connection 1: Soft connection | 0 to 1 | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---|--------------------------------------|--|----------------|---------|
| Group bC: Overspeed protection parameters | | | | |
| bC.00 | Number of pulses for automatic start | This parameter is used to set the automatic start function of the AC drive. When the AC drive stops in the closed-loop mode with the brake in the stop state, the AC drive can automatically run with 0 Hz output if the system detects that the change of encoder pulses reaches the value of this parameter multiplied by the encoder pulses per revolution. Meanwhile, the AC drive reports error E453#, and output function 16 takes effect. | 0 to 100.00 | 0 |
| bC.01 | Detection time of V/f speed error | When the difference between the motor actual running speed and the synchronous speed is above the deviation threshold specified by bC.03, Er*52 is reported after the time specified by bC.01. | 0s to 60.0s | 5.0s |
| bC.02 | Abnormal frequency detection period | This parameter is used to set the error 37# detection time. When the motor feedback frequency keeps in an opposite direction to the reference frequency in a period longer than the value specified by bC.02, the AC drive reports error 37#. If this parameter is set to 0, error 37# is shielded. | 0.00s to 1.00s | 0.50s |
| bC.03 | Frequency following error | This parameter is used to set the error 38# detection threshold. For details, see the description of bC.04 or error 38#. | 0% to 30% | 20% |
| bC.04 | Frequency following detection period | This parameter is used to set the error 38# detection time. When the difference between the motor feedback frequency and reference frequency stays above the value of bC.03 multiplied by the rated frequency for a period longer than the value specified by bC.04, the AC drive reports error 38#. If this parameter is set to 0, error 38# is shielded. After the reference frequency and output frequency are higher than the rated frequency, this fault is invalid. | 0.00s to 1.00s | 0.50s |
| Group bd: Communication parameters | | | | |
| bd.00 | Baud rate | This parameter is used to set the speed of data transmission between the host controller and the AC drive in the Modbus communication mode. The baud rate of the host controller must be the same as that of the AC drive. Otherwise, communication will fail. A higher baud rate results in a faster communication speed. 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS | 5 to 9 | 5 |

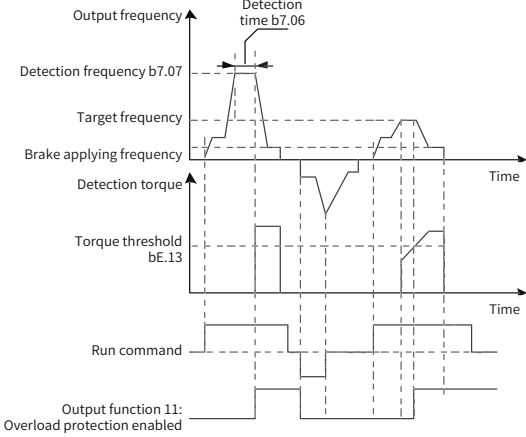
| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|---------------------------------|--|---------------|---------|
| bd.01 | Data format | This parameter is used to set the data format used in the Modbus communication mode. The data format on the host controller must be the same as that on the AC drive. Otherwise, communication will fail. 0: No check, with the data format of <8,N,2> 1: Even parity check, with the data format of <8,E,1> 2: Odd parity check, with the data format of <8,O,1> 3: No check, with the data format of <8,N,1> | 0 to 3 | 0 |
| bd.02 | Local address | When the local address is set to 0 (broadcast address), host controller broadcast is enabled. The local address (except the broadcast address) is unique, which is the prerequisite for point-to-point communication between the host controller and AC drive. | 0 to 247 | 1 |
| bd.03 | Expansion card response delay | This parameter is used to set the time that the AC drive waits before sending data to the host controller after it finishes receiving data. If the response delay is shorter than the system processing time, the system processing time prevails. If the response delay is longer than the system processing time, the AC drive sends data to the host controller only after the response delay elapses. This parameter is valid only for RS485 communication. | 0 ms to 20 ms | 2 ms |
| bd.04 | Expansion card timeout interval | If the communication interval between the AC drive and communication expansion card exceeds the value set by bd.04, the AC drive reports error 48#. This parameter is valid only for Modbus RTU, EtherCAT, EtherNet/IP, CANopen, and PROFINET communication modes. | 0.0s to 60.0s | 0.0s |
| bd.07 | Expansion card selection | 0: Modbus RTU communication 2: CANopen, PROFINET, EtherCAT, or EtherNet/IP communication Different communication modes require different expansion cards. | 0 to 2 | 0 |
| bd.08 | Expansion card software version | This parameter sets the software version of the optional expansion card in use, such as the CANopen PROFINET, EtherCAT, or EtherNet/IP card. | 0 to 65535 | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|----------------|---------------------------------|---|--|---------|
| bd.11 to bd.30 | User-defined parameters 1 to 20 | <p>You can use the 20 user-defined parameters to redefine parameter and address mapping for the AC drive. For example, if bd.11 is mapped to P0.01, you can obtain the value of P0.01 by reading the bd.11 address.</p> <p>With settings of the user-defined parameters, inconsecutive parameters can be read continuously. For example, if values of P0.01, b0.05, and F0.04 need to be read circularly in Modbus RTU communication, three data frames need to be sent. However, after mapping bd.11, bd.12, and bd.13 to P0.01, b0.05, and F0.04, respectively, only one data frame needs to be sent to read the three continuous parameters starting with bd.11.</p> <p>In PROFIBUS DP communication and CANopen communication, each user-defined parameter is mapped to a communication address (one-to-one mapping).</p> <p>PROFIBUS DP communication: bd.11 to bd.20 are mapped to PZD3 to PZD12 sent from the master to the slave. bd.21 to bd.30 are mapped to PZD3 to PZD12 sent from the slave to the master.</p> <p>CANopen communication: bd.11 to bd.18 are mapped to RPDO1 to RPDO3. bd.21 to bd.28 are mapped to TPDO2 to TPDO3.</p> | P0-00 to P*-** b0-00 to b*-** U0-00 to U*-** F0-00 to F*-** | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|--|--------------------------------|---|--|---------|
| Group bE: Fault and protection parameters | | | | |
| bE.00 | Motor overload protection | <p>To provide effective protection for motors with different loads, you need to set bE.00 properly based on motor overload capacity. See the following inverse time curve for motor overload protection.</p>  <p>The graph shows an inverse time curve where overload time decreases as current percentage increases. Key points include: 115% current for 80 minutes, 125% for 40 minutes, 150% for 2 minutes, and 10s for 10s.</p> <p>When the motor runs at 175% of the rated motor current for 2 minutes, the AC drive reports a motor overload error (11#). When the motor runs at 115% of the rated motor current for 80 minutes, the AC drive reports a motor overload error (11#).</p> <p>Example: The rated motor current is 100 A. bE.01 = 1.00: When the motor runs at 125 A (125% of 100 A) for 40 minutes, the AC drive reports a motor overload error. bE.01 = 1.20: When the motor runs at 125 A (125% of 100 A) for 48 (40 x 1.2) minutes, the AC drive reports a motor overload error.</p> <p>The maximum time for reporting a motor overload error is 80 minutes, and the minimum time is 10 seconds.</p> <p>Example of setting the motor overload protection function: The AC drive needs to report a motor overload error after the motor runs for 2 minutes at 150% of the rated current. In the preceding figure, 150% (I) is between 145% (I1) and 155% (I2). The overload error reporting time for 145% of the rated current is 6 minutes (T1), and that for 155% is 4 minutes (T2). Therefore, the overload error reporting time for 150% of the rated current is calculated as follows by default: $T = T1 + (T2 - T1) \times (I - I1) / (I2 - I1) = 4 + (6 - 4) \times (150\% - 145\%) / (155\% - 145\%) = 5 \text{ (minutes)}$ If you want the AC drive to report a motor overload error after the motor runs for 2 minutes at 150% of the rated current, the motor overload protection gain should be: $bE.01 = 2/5 = 0.4$ Caution: Set bE.01 properly based on the actual overload capacity of the motor. If the value is too large, the AC drive may not report an alarm timely when the motor is damaged caused by overheating.</p> <p>The motor overload pre-warning coefficient indicates the percentage of the time the motor can continuously run at a certain overload point without reporting an overload fault. When the motor overload detection level reaches the value of this parameter, output function 9 (motor overload pre-warning) is active.</p> <p>For example, if the motor overload protection gain is set to 1.00 and the motor overload pre-warning coefficient is set to 80%, output function 9 (motor overload pre-warning) is active after the motor runs consecutively for 4.8 minutes (80% x 6 minutes) at 145% of the rated current.</p> | <p>0: Motor overload protection is disabled. 1: Motor overload protection is enabled.</p> | 1 |
| bE.01 | Motor overload protection gain | <p>In the preceding figure, 150% (I) is between 145% (I1) and 155% (I2). The overload error reporting time for 145% of the rated current is 6 minutes (T1), and that for 155% is 4 minutes (T2). Therefore, the overload error reporting time for 150% of the rated current is calculated as follows by default: $T = T1 + (T2 - T1) \times (I - I1) / (I2 - I1) = 4 + (6 - 4) \times (150\% - 145\%) / (155\% - 145\%) = 5 \text{ (minutes)}$ If you want the AC drive to report a motor overload error after the motor runs for 2 minutes at 150% of the rated current, the motor overload protection gain should be: $bE.01 = 2/5 = 0.4$ Caution: Set bE.01 properly based on the actual overload capacity of the motor. If the value is too large, the AC drive may not report an alarm timely when the motor is damaged caused by overheating.</p> <p>The motor overload pre-warning coefficient indicates the percentage of the time the motor can continuously run at a certain overload point without reporting an overload fault. When the motor overload detection level reaches the value of this parameter, output function 9 (motor overload pre-warning) is active.</p> <p>For example, if the motor overload protection gain is set to 1.00 and the motor overload pre-warning coefficient is set to 80%, output function 9 (motor overload pre-warning) is active after the motor runs consecutively for 4.8 minutes (80% x 6 minutes) at 145% of the rated current.</p> | 0.01 to 10.00 | 1.00 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|--|---|-------------|---|
| bE.02 | Motor overload pre-warning coefficient | <p>The AC drive can send a pre-warning signal to the control system through the DO before triggering motor overload protection. The pre-warning coefficient determines how early the AC drive sends the pre-warning signal before motor overload protection.</p> <p>The larger the value is, the later the pre-warning signal is sent.</p> <p>When the accumulative output current of the AC drive is greater than the product of overload inverse time-lag curve multiplied by the value of bE.02, output function 9 (motor overload pre-warning) becomes valid.</p> | 50% to 100% | 80% |
| bE.03 | Overvoltage stall gain | <p>When the DC bus voltage exceeds the overvoltage stall protective voltage during deceleration of the AC drive, the AC drive stops deceleration and keeps the present operation frequency. After the bus voltage drops, the AC drive continues to decelerate.</p> <p>This parameter is used to adjust the overvoltage suppression capacity of the AC drive. A larger value indicates a greater the overvoltage suppression capacity. The value should be kept as small as possible as long as overvoltage does not occur. For small-inertia load, the value should be small. Otherwise, the system dynamic response will be slow. For large-inertia load, the overvoltage stall gain should be large, because a small gain cannot achieve good overvoltage suppression effect. When the overvoltage stall gain is set to 0, the overvoltage stall function is disabled. This function is invalid for the hoisting mechanism (P0.08 = 0).</p> | 0 to 100 | 0 |
| bE.04 | Overvoltage stall protection voltage | <p>When the DC bus voltage exceeds the overvoltage stall protective voltage during deceleration of the AC drive, the AC drive stops deceleration and keeps the present operation frequency. After the bus voltage drops, the AC drive continues to decelerate.</p> <p>This parameter is used to adjust the overvoltage suppression capacity of the AC drive. A larger value indicates a greater the overvoltage suppression capacity. The value should be kept as small as possible as long as overvoltage does not occur. For small-inertia load, the value should be small. Otherwise, the system dynamic response will be slow. For large-inertia load, the overvoltage stall gain should be large, because a small gain cannot achieve good overvoltage suppression effect. When the overvoltage stall gain is set to 0, the overvoltage stall function is disabled. This function is invalid for the hoisting mechanism (P0.08 = 0).</p> | 330–800 V | <p>Three-phase 380–400 V models: 670 V</p> <p>Three-phase 200–240 V models: 380 V</p> |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|--|--|--------------|---------|
| bE.05 | Overcurrent stall gain | When the output current exceeds the overcurrent stall protective current during acceleration/ deceleration of the AC drive, the AC drive stops acceleration/deceleration and keeps the current frequency. After the output current decreases, the AC drive continues acceleration/deceleration. | 0 to 100 | 20 |
| bE.06 | Overcurrent stall protective current | This parameter is used to adjust the overcurrent suppression capacity of the AC drive during acceleration/deceleration. A larger the value indicates a greater the overcurrent suppression capacity. The value should be kept as small as possible as long as overcurrent does not occur. For small-inertia load, the value should be small. Otherwise, the system dynamic response will be slow. For large-inertia load, the overcurrent stall gain should be large, because a small gain cannot achieve good overcurrent suppression effect. If the overcurrent stall gain is set to 0, the overcurrent stall function is disabled. bE.05 and bE.06 are valid only in V/f control mode. | 100% to 200% | 150% |
| bE.07 | Protection against short circuit to ground upon power-on | This parameter is used to check whether the motor is short-circuited to the ground after the AC drive is powered on. If this function is enabled, the U, V, and W terminals of the AC drive will have voltage output for a while after power-on. 0: Disable 1: Enable | 0 to 1 | 1 |
| bE.08 | Input phase loss protection | This parameter determines whether to enable input phase loss protection. 0: Disable 1: Enable hardware input phase loss protection Note: YD587 series AC drive models with power ratings lower than 18.5 kW do not support this function. 2: Enable both hardware and software input phase loss protection 3: Enable software input phase loss protection | 0 to 3 | 2 |
| bE.09 | Output phase loss protection | If this parameter is set to 1, output phase loss protection is enabled. If it is set to 0, output phase loss protection is disabled. | 0 to 1 | 1 |

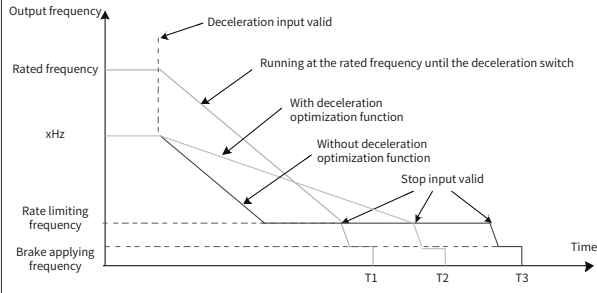
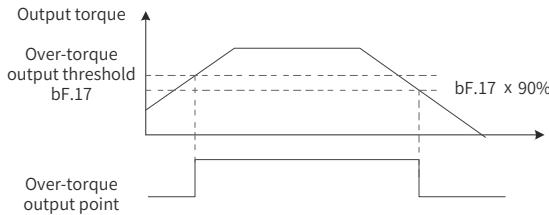
| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|----------------------------------|--|----------------|---------|
| bE.13 | Overload protective torque limit | <p>This parameter is used to set the start torque for triggering the overload protection function. When the parameter is set to 0, the overload protection function is disabled.</p> <p>During forward running, the AC drive measures the output torque when the output frequency reaches the value of b7.07 or keeps at a constant value. For details, see the descriptions of b7.06 and b7.07. If the output torque exceeds the value of bE.13, the AC drive stops automatically and restricts forward running. The restriction is disabled immediately after the AC drive starts reverse running.</p>  | 0.0% to 150.0% | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|--|---|-------------|--|
| bE.14 | Power dip ride-through function Select | The two parameters are used to set the power dip ride-through function. The power dip ride-through function enables the AC drive to automatically reduce the output frequency to maintain full torque output when the DC bus voltage stays low. When bE.14 is set to 1, the power dip ride-through function is enabled. When bE.14 is set to 0, this function is disabled. bE.15 is used to set the voltage for triggering power dip ride-through. This parameter sets the percentage to the standard DC bus voltage. | 0 to 1 | 0 |
| bE.15 | Power dip ride-through Voltage | | 70% to 95% | 85% |
| bE.16 | Built-in braking unit action voltage | This parameter is used to set the built-in braking unit applied voltage V_{break} . The value range is as follows: $800 \geq V_{break} \geq (1.414V_s + 30)$ V_s is the input AC voltage of the AC drive. Note: If V_{break} is not set properly, the built-in braking unit may run abnormally. | 330–800 V | Three-phase 380–480 V models: 660 V Three-phase 200–240 V models: 370 V |
| bE.17 | Contactor fault detection | When this parameter is set to 1, contactor fault (17#) detection is enabled. When it is set to 0, contactor fault detection is disabled. Note: YD587 series AC drive models with power ratings lower than 18.5 kW do not support this function. | 0 to 1 | 1 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|--|---|---|-------------|---------|
| Group bF: Auxiliary parameters in the level-2 menu | | | | |
| bF.00 | Level-2 menu password | This parameter is used to set the password for displaying and modifying level-2 menu parameters. If this parameter is set to a non-zero value, you must enter the password before accessing the level-2 menu. If you enter wrong passwords for three consecutive times, all menus are locked. In this case, you must power off and restart the AC drive to view or modify parameters. After this parameter is set to 0, the password protection function is disabled. | 0 to 65535 | 0 |
| bF.01 | Restoration of parameters in the level-2 menu to factory settings | 0: No operation 1: Restore in the level-2 menu to factory settings b0.02 to b0.03, b2.00 to b2.02, b7.10 to b7.11, and bF.00 in the level-2 menu cannot be restored to factory settings. 2: Restore parameters in the level-1 and level-2 menus to factory settings | 0 to 2 | 0 |
| bF.02 | Display of user-defined parameter settings in the level-2 menu | 0: Display all level-2 menu parameters 1: Display parameters with default values changed in the level-2 menu | 0 to 1 | 0 |
| bF.03 | Clearing of historical data | 0: No operation 1: Clear historical data When this parameter is set to 1, all parameters stored upon power failure and fault records (parameters in groups E* and U1) are cleared. | 0 to 1 | 0 |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|--|--|--|----------|
| bF.04 | Command source selection | <p>This parameter determines the input channel of AC drive control commands, including start, stop, forward run, and reverse run commands.</p> <p>0: Operating panel control (LOCAL/REMOT indicator off) The commands are given by pressing the RUN and STOP/RES keys on the operating panel. When the operating panel is used as the input channel of AC drive control commands, all DI and DO terminals and the brake control logic sequence are invalid. When the AC drive receives the RUN command, output function 1 (brake control) becomes valid. When the AC drive receives the STOP command, it decelerates to the braking frequency (b6.05) and then stops output. Output function 1 becomes invalid.</p> <p>1: Terminal I/O control (LOCAL/REMOT indicator on) AC drive control commands are given through terminal input functions 1 (Forward RUN) and 2 (Reverse RUN).</p> <p>2: Communication control (LOCAL/REMOT indicator blinking) AC drive control commands are given by a host controller, PLC, or touch screen through communication.</p> | 0 to 2 | 0 |
| bF.05 | Operation frequency in operating panel control | This parameter is used to set the target operation frequency of the AC drive when bF.04 (command source selection) is set to 0. | Minimum frequency (b1.03) to Maximum frequency (b1.02) | 50.00 Hz |
| bF.06 | Running direction | <p>You can change the rotation direction of the motor by modifying this parameter without changing the motor wiring. Modifying this parameter is equivalent to exchanging any two of the U, V, and W wires of the motor.</p> <p>Note that the motor will resume operation in the original direction after parameter initialization. Do not use this function in applications where changing the motor rotation direction is prohibited after system commissioning is completed.</p> <p>0: Run in the same direction 1: Enable</p> | 0 to 1 | 0 |

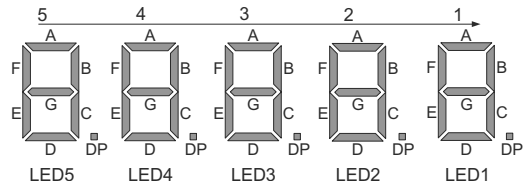
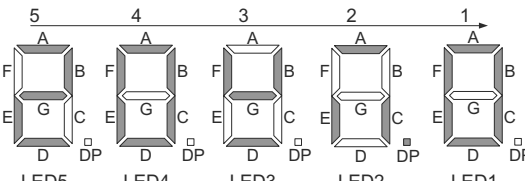
| Parameter No. | Parameter Name | Description | Value Range | Default | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--------------------------------------|---|--|----------|-------------|-------|---------------|--------------------|-------|-----------|--------------------|-----|-----|-----|-------|------|--------------------|-------|---------------|--------------------|-----|-----|-----|-------|------|--------------------|-----|-----|-----|-------|---------------|--------------------|-----|-----|-----|-------|------|--------------------|----------------|-------|
| bF.07 | Frequency detection value | When the reference frequency is greater than the frequency detection value, output function 7 (output upon frequency limit) of the AC drive becomes valid. When the reference frequency is lower than the detection value, output function 7 becomes invalid. These two parameters are used to set the detection value of the output frequency and hysteresis value upon output cancellation, respectively. bF.07 sets the detection value, and bF.08 sets the hysteresis level (percentage to the value set in bF.07). | Minimum frequency (b1.03) to Maximum frequency (b1.02) | 50.00 Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.08 | Frequency detection hysteresis value | | 0.0 to 100.0%. | 5.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.09 | Cooling fan working mode | This parameter is used to set the working mode of the cooling fan. 0: Working during motor operation The cooling fan works when the AC drive is in the operation state. When the AC drive stops, the cooling fan works if the heatsink temperature is higher than 40° C, and stops working when the heatsink temperature is lower than 40° C. 1: Working continuously after power-on | 0 to 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.10 | Fault protection action 1 | These parameters are used to determine the fault level of errors 41# to 65#. The value of each parameter is a 5-digit number, representing levels of five faults. The following table describes the relationship between digits and fault meanings. <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Parameter</th> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>bF.10</td> <td>Ten thousands</td> <td>Fault level of 41#</td> </tr> <tr> <td>bF.10</td> <td>Thousands</td> <td>Fault level of 42#</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>bF.10</td> <td>Ones</td> <td>Fault level of 45#</td> </tr> <tr> <td>bF.11</td> <td>Ten thousands</td> <td>Fault level of 46#</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>bF.11</td> <td>Ones</td> <td>Fault level of 50#</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>bF.14</td> <td>Ten thousands</td> <td>Fault level of 61#</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>bF.14</td> <td>Ones</td> <td>Fault level of 65#</td> </tr> </tbody> </table> | Parameter | Bit | Description | bF.10 | Ten thousands | Fault level of 41# | bF.10 | Thousands | Fault level of 42# | ... | ... | ... | bF.10 | Ones | Fault level of 45# | bF.11 | Ten thousands | Fault level of 46# | ... | ... | ... | bF.11 | Ones | Fault level of 50# | ... | ... | ... | bF.14 | Ten thousands | Fault level of 61# | ... | ... | ... | bF.14 | Ones | Fault level of 65# | 11111 to 55555 | 11115 |
| Parameter | Bit | | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.10 | Ten thousands | | Fault level of 41# | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.10 | Thousands | | Fault level of 42# | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | ... | | ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.10 | Ones | Fault level of 45# | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.11 | Ten thousands | Fault level of 46# | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | ... | ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.11 | Ones | Fault level of 50# | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | ... | ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.14 | Ten thousands | Fault level of 61# | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | ... | ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.14 | Ones | Fault level of 65# | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.11 | Fault protection action 2 | 11111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.12 | Fault protection action 3 | 11411 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.13 | Fault protection action 4 | 11111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.14 | Fault protection action 5 | 11111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|------------------------------|---|--|---------|
| bF.16 | Deceleration frequency limit | <p>When the deceleration switch (input functions 24 and 25) becomes valid, the output frequency of the AC drive is limited below the value specified by bF.16. After the stop switch (input functions 22 and 23) becomes valid, the AC drive performs a quick stop.</p> <p>bF.15 is used to select the deceleration mode after the deceleration switch becomes valid.</p> <p>0: Disable deceleration optimization The AC drive decelerates normally according to the deceleration time specified by the corresponding parameter in group b4.</p> <p>1: Enable deceleration optimization After the deceleration switch is turned on, the AC drive recalculates the optimal deceleration time based on the deceleration distance from the rated frequency to the frequency set in bF.16. This minimizes the operation time in the deceleration process.</p>  | Minimum frequency (b1.03) to Rated frequency (P0.04) | 5.00 Hz |
| bF.17 | Over-torque output threshold | <p>This parameter is used together with output function 12. When the output torque reaches the threshold specified by this parameter, output function 12 becomes valid. When the output torque falls below 90% of the threshold specified by this parameter, output function 12 becomes invalid.</p> <p>In vector control mode, the AC drive controls the output function based on the output torque.</p> <p>In V/f control mode, the AC drive controls this function based on the percentage of the output current divided by the rated motor current.</p> <p>When this parameter is set to 0, the output function 12 is invalid.</p>  | 0.0 to 200.0%. | 0.0% |

| Parameter No. | Parameter Name | Description | Value Range | Default |
|---------------|---|--|-------------|---------|
| bF.19 | Operation mode selection | 0: Application mode This parameter must be set to 0 for normal use of the AC drive. 1: Commissioning mode The commissioning mode is used for AC drive or control cabinet inspection before delivery. In this mode, functions such as brake release time sequence and output phase loss protection are shielded, and the V/f control mode is used forcibly. The parameter value is automatically cleared after the AC drive is powered on. | 0 to 1 | 0 |
| bF.20 | Constant power function | 0: Disable 1: Enable | 0 to 1 | 1 |
| bF.21 | Motor fan control delay | This parameter is used together with output function 13. For details, see the description of output function 13. | 0s to 3000s | 30s |
| bF.25 | Frequency limit | This parameter is used to enable frequency limit in different modes. Ones position: Enable frequency limit in the SVC mode. Tens position: Enable frequency limit in the FVC mode. Hundreds position: Enable frequency limit in the V/f mode. | 0 to 111 | 1 |
| bF.26 | Execution of coast to stop during auto-tuning upon power-on | 0: Disable 1: Enable | 0 to 1 | 0 |
| bF.30 | Stator resistance auto-tuning upon motor switchover | By default, the stator resistance will be tuned upon motor switchover. | 0 to 1 | 1 |

Groups E0 to E9 display fault information. Each group of parameters indicates a fault record. Group E0 displays information about the latest fault, and group E9 displays information about the earliest fault. All groups display the information using the same structure. Parameters of group E* cannot be modified and are retentive at power failure.

| Parameter No. | Parameter Name | Minimum Unit | Description |
|---------------|--------------------------------|--|---|
| E*.00 | Fault codes | 0.01 | The five LEDs on the operating panel are numbered 5, 4, 3, 2, and 1 from left to right. Take the display of 104.01 as an example. LEDs 5, 4, and 3 display the error code, where 1 on LED 5 indicates the fault level, and 04 on LEDs 4 and 3 indicate the error code. LEDs 2 and 1 are reserved by the manufacturer. |
| E*.01 | Frequency reference upon fault | Display on the operating panel: 0.1 Hz Value read by communication: 0.01 Hz | It displays the value of U0.00 when a fault occurs. |
| E*.02 | Feedback frequency upon fault | Display on the operating panel: 0.1 Hz Value read by communication: 0.01 Hz | It displays the value of U0.01 when a fault occurs. |
| E*.03 | Output current upon fault | 0.01 A | It displays the value of U0.03 when a fault occurs. |
| E*.04 | Output voltage upon fault | 1 V | It displays the value of U0.04 when a fault occurs. |
| E*.05 | Output power upon fault | 0.1% | It displays the value of U0.05 when a fault occurs. |
| E*.06 | Output torque upon fault | 0.1% | It displays the value of U0.06 when a fault occurs. |
| E*.07 | Bus voltage upon fault | 0.1 V | It displays the value of U0.07 when a fault occurs. |

| Parameter No. | Parameter Name | Minimum Unit | Description | | | | | | | | | | | | | | | | | | |
|---------------|--|---------------------------------|---|-----|-------------|-------------|---------------|----------|---|-----------|----------|---|----------|----------------|---------------------------------|------|------------------|---------------------------------|------|--------------------|---------------------------------|
| E*.08 | State of input functions 1 to 16 upon fault | 1 | The four parameters indicate the status of input and output functions. Each parameter can indicate the states of 16 input or output functions with its bits. When you select a parameter, its decimal value is displayed on the operating panel. Press Δ to switch the user view mode. In this mode: The five LEDs on the operating panel are numbered 5, 4, 3, 2, and 1 from left to right. | | | | | | | | | | | | | | | | | | |
| E*.09 | State of input functions 17 to 32 upon fault | 1 |  <p>Digits 5 and 4 show the number of the current input/output function. Digit 1 shows the validity of this function (0: invalid; 1: valid). You can press Δ and ∇ to change the number of the input/output function to be displayed. Digits 2 and 3 show 16 functions and their status in combination using the following mappings: A to DP on LED2 mapping functions 1 to 8 and A to DP on LED3 mapping functions 9 to 16. The following is an example.</p> | | | | | | | | | | | | | | | | | | |
| E*.10 | State of input functions 33 to 48 upon fault | 1 |  <p>The above figure shows that input function 20 (display of LEDs 5 and 4) is invalid (display of LED 1), and among functions 17 to 32, functions 17, 19, 21, 24, 26, 28, 30, and 31 are valid, while the others are invalid (display of LEDs 2 and 3).</p> | | | | | | | | | | | | | | | | | | |
| E*.11 | State of output functions 1 to 16 upon fault | 1 | | | | | | | | | | | | | | | | | | | |
| E*.12 | Running step upon fault | 1 | This parameter records the step performed in the AC drive when a fault occurs. For details, see the description of U0.26. | | | | | | | | | | | | | | | | | | |
| E*.13 | Control mode upon fault | 1 | <p>This parameter records settings of the command source, frequency source, and control mode when a fault occurs.</p> <table border="1"> <thead> <tr> <th>Bit</th> <th>Description</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Ten thousands</td> <td>Reserved</td> <td>-</td> </tr> <tr> <td>Thousands</td> <td>Reserved</td> <td>-</td> </tr> <tr> <td>Hundreds</td> <td>Command source</td> <td>See bF.04 for data description.</td> </tr> <tr> <td>Tens</td> <td>Frequency source</td> <td>See P0.07 for data description.</td> </tr> <tr> <td>Ones</td> <td>Drive control mode</td> <td>See b1.00 for data description.</td> </tr> </tbody> </table> | Bit | Description | Description | Ten thousands | Reserved | - | Thousands | Reserved | - | Hundreds | Command source | See bF.04 for data description. | Tens | Frequency source | See P0.07 for data description. | Ones | Drive control mode | See b1.00 for data description. |
| Bit | Description | Description | | | | | | | | | | | | | | | | | | | |
| Ten thousands | Reserved | - | | | | | | | | | | | | | | | | | | | |
| Thousands | Reserved | - | | | | | | | | | | | | | | | | | | | |
| Hundreds | Command source | See bF.04 for data description. | | | | | | | | | | | | | | | | | | | |
| Tens | Frequency source | See P0.07 for data description. | | | | | | | | | | | | | | | | | | | |
| Ones | Drive control mode | See b1.00 for data description. | | | | | | | | | | | | | | | | | | | |

| Parameter No. | Parameter Name | Minimum Unit | Description |
|---------------|---------------------------------------|--|---|
| E*.15 | Synchronous frequency upon fault | Display on the operating panel: 0.1 Hz Value read by communication: 0.01 Hz | This parameter records the instantaneous value of the synchronous frequency displayed on the operating panel when a fault occurs. |
| E*.16 | Braking transistor current upon fault | 0.01 A | This parameter records the instantaneous current of the braking transistor when a braking transistor overload fault (15#) occurs. |
| E*.17 | Accumulative running time upon fault | 1 h | It displays the value of U1.05 when a fault occurs. |
| E*.18 | Accumulative power-on time upon fault | 1 h | It displays the value of U1.06 when a fault occurs. |

Groups U0 and U1 display real-time monitoring information of the AC drive. Parameters in group U0 are refreshed in real time and are not saved upon power-off. Parameters in group U1 display accumulated information and are saved upon power-off.

| Parameter No. | Parameter Name | Minimum Unit | Description |
|---------------|--------------------|--|--|
| U0.00 | Running frequency | Display on the operating panel: 0.1 Hz Value read by communication: 0.01 Hz | It displays the current reference frequency of the AC drive. |
| U0.01 | Feedback frequency | Display on the operating panel: 0.1 Hz Value read by communication: 0.01 Hz | It displays the feedback value of the actual motor operation frequency. If the AC drive runs without an encoder, this parameter shows the feedback frequency calculated by the AC drive software. If the AC drive operates with an encoder, this parameter shows the actual motor operation frequency provided by the encoder. |
| U0.02 | Target frequency | Display on the operating panel: 0.1 Hz Value read by communication: 0.01 Hz | It displays the final frequency of the AC drive in this operation process. |
| U0.03 | Output current | 0.01 A | It displays the output current of the operating AC drive. |
| U0.04 | Output voltage | 1 V | It displays the output voltage of the operating AC drive. |
| U0.05 | Output power | 0.1% | It displays the output power of the operating AC drive. |

| Parameter No. | Parameter Name | Minimum Unit | Description |
|---------------|----------------------------------|--------------|--|
| U0.06 | Output torque | 0.1% | It displays the output torque (percentage of the rated motor torque) of the running AC drive. |
| U0.07 | Bus voltage | 0.1 V | It displays the bus voltage of the AC drive. |
| U0.08 | High-order bits of position data | 1 | These two parameters display the current position of the hoisting mechanism, that is, accumulative number of pulses/b7.10. U0.08 shows the high-order 16 bits (with negative or positive signs) of the current position, and U0.09 shows the low-order 16 bits (only positive values) of the current position. For details, see the descriptions of b7.10 and b7.11. |
| U0.09 | Low-order bits of position data | 1 | |
| U0.10 | DI state | 1 | It displays the DI state of the AC drive (Y1 delay state or state when an AO functions as a DO). The display mode is the same as that of E*.08 to E*.11. |
| U0.11 | DO state | 1 | It displays the DO state of the AC drive. The display mode is the same as that of E*.08 to E*.11. |
| U0.12 | AI1 voltage | 0.01 V | It displays the input voltage of AI1 on the AC drive. |
| U0.13 | AI2 voltage | 0.01 V | It displays the input voltage of AI2 on the AC drive. |
| U0.15 | AO1 output voltage | 0.01 V | It displays the output voltage of AO1 on the AC drive. |
| U0.16 | AO2 output voltage | 0.01 V | It displays the output voltage of AO2 on the AC drive. |
| U0.19 | CAN communication quality | 1% | It displays the CAN communication quality between the AC drive expansion card and an external device in the percentage of correct received frames to total received frames. The AC drive detects the communication quality every time after it sends 100 data frames. |
| U0.20 | SPI communication quality | 1% | It displays the communication quality between the AC drive and the process sheet. The AC drive detects the communication quality every time after it sends 100 data frames. |
| U0.23 | Drive unit heatsink temperature | 1° C | It displays temperature of the insulated gate bipolar transistor (IGBT) in the inverter. |
| U0.24 | Function software version | 0.01 | It displays the function software version of the AC drive. |
| U0.25 | Performance software version | 0.01 | It displays the performance software version of the AC drive. |

| Parameter No. | Parameter Name | Minimum Unit | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---|--------------|--|-------------------------|-------------|-------------------------------------|-------------|---|----------|---|---|---|-------------------------|---|-------------------------------------|---|----------------------------------|---|------------------------|---|------------------------------------|---|---------------------------------|---|----------------|---|---------|---|---------------------------|---|---------------------------|---|---|---|--|---|-------------------------|---|---------------------------|
| U0.26 | AC drive internal status | 1 | <p>It displays the internal operation approach of the AC drive. This parameter facilitates field commissioning and troubleshooting. The LEDs are numbered 5 to 1 from left to right. The following table describes the information displayed on the LEDs.</p> <table border="1"> <thead> <tr> <th>LED No.</th> <th>Description</th> <th>Content</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>Reserved</td> <td>-</td> <td>-</td> </tr> <tr> <td rowspan="2">3</td> <td rowspan="2">Brake applying approach</td> <td>0</td> <td>No brake applying command delivered</td> </tr> <tr> <td>1</td> <td>Brake applying command delivered</td> </tr> <tr> <td rowspan="2">2</td> <td rowspan="2">Brake release approach</td> <td>0</td> <td>No brake release command delivered</td> </tr> <tr> <td>1</td> <td>Brake release command delivered</td> </tr> <tr> <td rowspan="7">1</td> <td rowspan="7">Operation step</td> <td>0</td> <td>Standby</td> </tr> <tr> <td>1</td> <td>Brake release in progress</td> </tr> <tr> <td>2</td> <td>The system runs normally.</td> </tr> <tr> <td>3</td> <td>Run command canceled and brake applying in progress</td> </tr> <tr> <td>4</td> <td>Operation state in operating panel control</td> </tr> <tr> <td>6</td> <td>Motor auto-tuning state</td> </tr> <tr> <td>7</td> <td>AC drive stop in progress</td> </tr> </tbody> </table> | LED No. | Description | Content | Description | 5 | Reserved | - | - | 3 | Brake applying approach | 0 | No brake applying command delivered | 1 | Brake applying command delivered | 2 | Brake release approach | 0 | No brake release command delivered | 1 | Brake release command delivered | 1 | Operation step | 0 | Standby | 1 | Brake release in progress | 2 | The system runs normally. | 3 | Run command canceled and brake applying in progress | 4 | Operation state in operating panel control | 6 | Motor auto-tuning state | 7 | AC drive stop in progress |
| | | | LED No. | Description | Content | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 5 | Reserved | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 3 | Brake applying approach | 0 | No brake applying command delivered | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 1 | Brake applying command delivered | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 2 | Brake release approach | 0 | No brake release command delivered | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 1 | Brake release command delivered | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | Operation step | 0 | Standby | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 1 | Brake release in progress | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 2 | The system runs normally. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Run command canceled and brake applying in progress | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Operation state in operating panel control | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Motor auto-tuning state | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | AC drive stop in progress | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.28 | Fault codes | 1 | It displays the code of the fault that occurs on the AC drive. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.29 | Braking transistor current | 0.01 A | It displays the output current of the braking transistor when the built-in braking unit of the AC drive is working. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.30 | Maximum frequency in flux weakening area | 0.01 Hz | It displays the maximum frequency in the flux weakening area. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.31 | Temporary function software version | 0.01 | It displays the temporary function software version. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.32 | Temporary performance software version | 0.01 | It displays the temporary performance software version. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Parameter No. | Parameter Name | Minimum Unit | Description |
|---------------|---|--------------|--|
| U1.00 | Number of emergency stops | 1 | It displays the total number of level-1 faults that have occurred in the AC drive. |
| U1.01 | Number of quick stops | 1 | It displays the total number of level-2 and level-3 faults that have occurred in the AC drive. |
| U1.02 | High bits in the number of brake operations | 1 | The two parameters display the total number of operations of the brake when controlled by the AC drive. When the value of low bits reaches 65535, the value of high bits increases by 1 and the low bits are reset to 0. |
| U1.03 | Low bits in the number of brake operations | 1 | |
| U1.04 | Total time used to reach the torque limit | 0.1 h | It displays the total time elapsed before the output torque of the AC drive reaches or exceeds the torque upper limits (b1.04 and b1.05). |
| U1.05 | Accumulative running time | 1 h | It displays the accumulative running time of the AC drive. |
| U1.06 | Accumulative power-on time | 1 h | It displays the accumulative power-on time of the AC drive. |

6.3 Level-3 Menu (Group F) Parameter Table

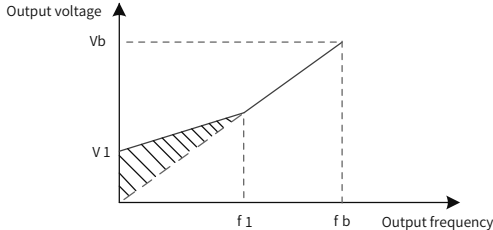
Level-3 menu parameters include output performance adjusting parameters and factory parameters of the AC drive. You do not need to change the values of level-3 menu parameters in most cases.

To access a level-3 menu, you need to enter the password specified by FF.00.

| No. | Parameter Name | Description | Value Range | Default |
|----------------------------|---------------------------------------|---|--------------------------------------|-------------|
| Group F0: Motor parameters | | | | |
| F0.00 | Asynchronous motor stator resistance | <p>The five parameters are asynchronous motor parameters, and they are unavailable on the motor nameplate and are obtained by means of AC drive auto-tuning. In auto-tuning mode 1, only parameters F0.00 to F0.02 can be obtained. In auto-tuning mode 3, all the five parameters can be obtained. In auto-tuning mode 2, the five parameters as well as other parameters, such as the encoder phase sequence and current loop PI parameters can be obtained. When you change the rated motor power (P0.01), the AC drive automatically restores values of these five parameters to commonly used settings for standard Y series asynchronous motors. If the motor parameters are known, you can manually input the five parameters.</p> | (≤ 55 kW) 0.001 Ω to 65.535 Ω | Motor OK |
| F0.01 | Asynchronous motor rotor resistance | | 0.001 Ω to 65.535 Ω | Motor OK |
| F0.02 | Asynchronous motor leakage inductance | | 0.01 mH to 655.35 mH | Motor OK |
| F0.03 | Asynchronous motor mutual inductance | | 0.1 mH to 6553.5 mH | Motor OK |
| F0.04 | Asynchronous motor no-load current | | 0.01 A to 0.03A | Motor OK |

| No. | Parameter Name | Description | Value Range | Default | | | | | | | | | | | | | | |
|---------------------------------|-------------------|--|-------------------|------------|-------------|---------------|-------------------------|------------|------------------------|------------|---------------------------|------------|-----------------|---------------|---------------------------------|---------------|---------------------|--------------------------------|
| F0.16 | Carrier frequency | <p>This parameter is used to adjust the carrier frequency of the AC drive. It helps reduce the motor noise, avoid the resonance of the mechanical system, and reduce the leakage current to the earth and interference generated by the AC drive.</p> <p>A low carrier frequency will cause an increase in the high-order harmonic components of the output current and the power loss and temperature rise of the motor.</p> <p>A high carrier frequency can reduce the power loss and temperature rise of the motor. However, it will cause an increase in interference, power loss, and temperature of the AC drive.</p> <p>Adjusting the carrier frequency will affect the parameters in the following table.</p> <table border="1"> <tbody> <tr> <td>Carrier frequency</td> <td>Low → High</td> </tr> <tr> <td>Motor noise</td> <td>Large → Small</td> </tr> <tr> <td>Output current waveform</td> <td>Bad → Good</td> </tr> <tr> <td>Motor temperature rise</td> <td>High → Low</td> </tr> <tr> <td>AC drive temperature rise</td> <td>Low → High</td> </tr> <tr> <td>Leakage current</td> <td>Small → Large</td> </tr> <tr> <td>External radiation interference</td> <td>Small → Large</td> </tr> </tbody> </table> | Carrier frequency | Low → High | Motor noise | Large → Small | Output current waveform | Bad → Good | Motor temperature rise | High → Low | AC drive temperature rise | Low → High | Leakage current | Small → Large | External radiation interference | Small → Large | 1.0 kHz to 12.0 kHz | Depending on drive model OK |
| Carrier frequency | Low → High | | | | | | | | | | | | | | | | | |
| Motor noise | Large → Small | | | | | | | | | | | | | | | | | |
| Output current waveform | Bad → Good | | | | | | | | | | | | | | | | | |
| Motor temperature rise | High → Low | | | | | | | | | | | | | | | | | |
| AC drive temperature rise | Low → High | | | | | | | | | | | | | | | | | |
| Leakage current | Small → Large | | | | | | | | | | | | | | | | | |
| External radiation interference | Small → Large | | | | | | | | | | | | | | | | | |

| No. | Parameter Name | Description | Value Range | Default |
|-------------------------------------|------------------------------------|--|------------------|----------|
| Group F1: Vector control parameters | | | | |
| F1.00 | Speed loop proportional gain 1 | Speed loop PI parameters vary with operation frequencies of the AC drive. If the operation frequency is less than switchover frequency 1 (F1.02), the speed loop PI parameters F1.00 and F1.01 are used. If the operation frequency is greater than the switchover frequency 2, the speed loop PI parameters F1.03 and F1.04 are used. If the operation frequency is between switchover frequency 1 and switchover frequency 2, the speed loop PI parameters are obtained from linear switchover between the two groups of PI parameters. The speed dynamic response characteristics in the vector control mode can be adjusted by setting the proportional gain and integral time of the speed regulator. To achieve a faster system response, increase the proportional gain or reduce the integral time. Be aware that either a too big gain or a too short time may lead to system oscillation. We recommend that you adjust these parameters as follows: If the default setting cannot meet the requirements, make proper adjustment. Increase the proportional gain first to ensure that the system does not oscillate, and then reduce the integral time to ensure that the system has quick response and small overshoot. Caution: Improper PI parameter settings may cause high speed overshoot. Even worse, overvoltage may occur when overshoot drops. | 1 to 100 | 60 |
| F1.01 | Speed loop integral time 1 | | 0.01s to 10.00s | 0.50s |
| F1.02 | Switchover frequency 1 | | 0.00 Hz to F1.05 | 5.00 Hz |
| F1.03 | Speed loop proportional gain 2 | | 1 to 100 | 20 |
| F1.04 | Speed loop integral time 2 | | 0.01s to 10.00s | 1.00s |
| F1.05 | Switchover frequency 2 | | F1.02 to b1.02 | 10.00 Hz |
| F1.06 | Filter time constant of speed loop | In VC mode, the output of the speed loop regulator is torque current command. This parameter is used to filter the torque commands. This parameter need not be adjusted generally and can be increased in the case of large speed fluctuation. In the case of motor oscillation, decrease the value of this parameter properly. If the value of this parameter is small, the output torque of the AC drive may fluctuate greatly, but the response is quick. | 0.000s to 1.000s | 0.070s |

| No. | Parameter Name | Description | Value Range | Default |
|---|---|--|------------------|-----------------------|
| F1.08 | Excitation adjustment proportional gain | They are current loop PI parameters for vector control. Their values are automatically obtained after the asynchronous motor completes auto-tuning mode 2, and do not need to be changed. The dimension of the current loop integral regulator is integral gain rather than integral time. Note that too large current loop PI gain may lead to oscillation of the entire control loop. Therefore, when current oscillation or torque fluctuation is great, manually decrease the proportional gain or integral gain. | 0 to 20000 | 2000 |
| F1.09 | Excitation adjustment integral gain | | 0 to 20000 | 1300 |
| F1.10 | Torque adjustment proportional gain | | 0 to 20000 | 2000 |
| F1.11 | Torque adjustment integral gain | | 0 to 20000 | 1300 |
| Group F2: V/f control parameters | | | | |
| F2.01 | Torque boost | To compensate for the low frequency torque of V/f control, you can boost the output voltage of the AC drive running at low frequency. A very large setting will result in motor overheat and AC drive overcurrent. If the motor is connected to heavy load but does not have sufficient startup torque, increase the torque boost. If the motor is connected to light load, decrease the torque boost. | 0.0% to 30.0% | Motor power dependent |
| F2.02 | Cut-off frequency of torque boost | If torque boost is set to 0.0, the AC drive performs automatic torque boost. In this case, the AC drive automatically calculates the torque boost value based on motor parameters including the stator resistance. Cutoff frequency of torque boost: Torque boost is valid when the operation frequency within this value and becomes invalid when the operation frequency exceeds this value, as shown in the following figure.  V1: Manual torque boost voltage Vb: Max. output voltage f1: Manual torque boost cutoff frequency fb: Rated running frequency | 0.00 Hz to b1.02 | 50.00 Hz |

| No. | Parameter Name | Description | Value Range | Default |
|-------|-----------------------------------|--|----------------|---------|
| F2.09 | V/f slip compensation coefficient | <p>This parameter is valid only for the asynchronous motor.</p> <p>It can compensate for the speed slip of an asynchronous motor when the load increases, reducing the variation in the motor speed in case of load change.</p> <p>If this parameter is set to 100.0%, it indicates that the compensation when the motor bears rated load is the rated motor slip. The rated motor slip is automatically obtained by the AC drive through calculation based on the rated motor frequency and rated motor speed in group F1.</p> <p>When adjusting the V/f slip compensation gain, confirm that the motor speed under the rated load is the same as the target motor speed. Generally, if the motor speed is different from the target speed, slightly adjust this parameter.</p> | 0.0% to 100.0% | 0.0% |
| F2.10 | V/f overexcitation gain | <p>During deceleration of the AC drive, over-excitation control can suppress rise of the bus voltage to avoid the overvoltage fault. A larger overexcitation gain indicates better suppression effect.</p> <p>Increase the over-excitation gain if the AC drive is liable to overvoltage fault during deceleration. However, too large over-excitation gain may lead to an increase in the output current. Set this parameter to a proper value in actual applications.</p> <p>Set the over-excitation gain to 0 in the applications where the inertia is small and the bus voltage will not rise during motor deceleration or where there is a braking resistor.</p> | 0 to 200 | 0 |
| F2.11 | Oscillation suppression gain | <p>To avoid negative influence on V/f control, keep this gain as small as possible while ensuring efficient oscillation suppression. Set this parameter to 0 if the motor has no oscillation. Increase the value properly only when the motor has obvious oscillation. A larger oscillation suppression gain indicates a better suppression effect.</p> <p>When oscillation suppression is enabled, the rated motor current and no-load current must be accurate. Otherwise, the V/f oscillation suppression effect will not be satisfactory.</p> | 0 to 100 | 40 |

| No. | Parameter Name | Description | Value Range | Default |
|---|--|--|--|----------|
| Group F3: Control optimization parameters | | | | |
| F3.00 | DPWM switchover frequency upper limit | <p>This parameter determines the wave modulation mode of an asynchronous motor. If the frequency reference of the AC drive is lower than the upper limit, the waveform is modulated continuously in seven segments. If the frequency reference is higher than or equal to the upper limit, the waveform is modulated intermittently in 5 segments.</p> <p>The 7-segment continuous modulation causes more loss to switches of the AC drive but smaller current ripple. The 5-segment intermittent modulation causes less loss to switches of the AC drive but larger current ripple. This may lead to motor operation instability at high frequency. Generally, you do not need to modify this parameter.</p> <p>For details about AC drive loss and temperature rise, see the description of F0.16.</p> | 0.00 Hz to maximum frequency (b1.02) | 12.00 Hz |
| F3.01 | PWM Modulation Mode | <p>This parameter is valid only for V/f control. In synchronous modulation mode, the carrier frequency changes linearly with the output frequency, so the ratio between them (carrier ratio) remains unchanged. This modulation mode is generally used at high output frequency, which helps improve the output voltage quality.</p> <p>Synchronous modulation is not required at low output frequency (100 Hz or lower). This is because asynchronous modulation is preferred when the ratio of carrier frequency to output frequency is high.</p> <p>Synchronous modulation takes effect only when the reference frequency is higher than 85 Hz. Asynchronous modulation is used when the reference frequency is below 85 Hz.</p> <p>0: Asynchronous modulation 1: Synchronous commissioning</p> | 0 to 1 | 0 |
| F3.02 | Deadzone compensation | <p>Generally, this parameter does not need to be modified. You need to try a different compensation mode only when there is any special requirement on the waveform quality of the output voltage or when oscillation occurs on the motor. Mode 2 is recommended for high-power drives.</p> <p>0: Disabled 1: Compensation mode 1 2: Compensation mode 2</p> | 0 to 2 | 1 |

| No. | Parameter Name | Description | Value Range | Default |
|-------|--------------------------------------|---|-------------|--|
| F3.03 | Random PWM depth | This parameter is used to lower the unpleasant motor noise and reduce the electromagnetic interference. If this parameter is set to 0, random PWM is invalid. You will obtain different results by adjusting the random PWM depth. 0: Random PWM invalid 1 to 10: Random PWM depth | 0 to 10 | 0 |
| F3.04 | Fast current limit | Rapid current limit minimizes risks of overcurrent, ensuring uninterrupted operation of the AC drive. However, if the AC drive stays in the fast current limit state for a long time, it may be damaged due to over-temperature or other reasons. To prevent this problem, the AC drive reports error 40# (pulse-by-pulse current limit) if current limit lasts for a long time. This error indicates that the AC drive is overloaded and needs to be stopped. (This parameter must be set to 0 for the hoisting mechanism to prevent unintentional slip.) 0: Disable 1: Enable | 0 to 1 | 0 |
| F3.05 | Current detection delay compensation | This parameter is used to set the current detection compensation for the AC drive. If the compensation value is too large, the control performance may deteriorate. Generally, you do not need to change this parameter. | 0 to 100 | 5 |
| F3.06 | Undervoltage threshold | This parameter is used to set the voltage value for triggering an undervoltage error (09#). When the bus voltage falls below this value, the AC drive changes to the undervoltage state and stops running. | 140–630 V | Three-phase 380–480 V models: 350 V Three-phase 200–240 V models: 200 V |

| No. | Parameter Name | Description | Value Range | Default |
|------------------------------|---|---|-------------|---------|
| Group FF: Factory parameters | | | | |
| FF.00 | Level-3 menu password | This parameter is used to set the password for displaying and modifying level-3 menu parameters. If this parameter is set to a non-zero value, you must enter the password before accessing the level-3 menu. If you enter wrong passwords for three consecutive times, all menus are locked. In this case, you must power off and restart the AC drive to view or modify parameters. After this parameter is set to 0, the password protection function is disabled. | 0 to 65535 | 0 |
| FF.10 | Restoration of parameters in the level-3 menu to factory settings | 0: No operation 1: Restore parameters in the level-3 menu to factory settings Parameters F0.00 to F0.04, F0.16, F2.01, F2.11, and FF.00 in the level-1 menu cannot restore to factory settings. 2: Restore all parameters to factory settings | 0 to 2 | 0 |
| FF.11 | Display of user-defined parameter settings in the level-3 menu | 0: Display all level-3 menu parameters 1: Display parameters whose default values are changed in the level-3 menu | 0 to 1 | 0 |

7 Troubleshooting

7.1 Safety Precautions

Danger

- * Perform wiring only when the power is disconnected (all circuit breakers must be shut off). Failure to comply may result in an electric shock.

Warning

- * Ground the AC drive according to local laws and regulations. Failure to comply may result in an electric shock or fire.
- * Never remove the front cover or touch internal circuit while the power is on. Failure to comply may result in an electric shock.
- * Never allow unqualified personnel to perform any maintenance, inspection, or repair. Failure to comply may result in an electric shock or fire.
- * When installing the AC drive inside an enclosed cabinet or chassis, use a cooling fan or air conditioner to keep the temperature below 50° C. Failure to comply will result in overheat or fire.
- * Tighten all screws with the specified tightening torque. Failure to comply may result in an electric shock or a fire.
- * Ensure that the input voltage of the AC drive is not higher than the rated voltage on the nameplate. Failure to comply may result in an electric shock or fire.
- * Keep flammable and combustible materials away from the AC drive.

Caution

- * Cover the top of the AC drive with a piece of cloth or paper during installation to prevent unwanted objects such as metal chippings, oil, and water from falling into the equipment. Failure to comply may cause malfunction of the AC drive.
- * Remove the paper or cloth after installation is done. Failure to comply will deteriorate ventilation and result in overheating.
- * Follow the proper ESD procedure when operating the AC drive. Failure to comply will damage the internal circuit of the AC drive.

7.2 Troubleshooting Before Trial Run

1) SVC (b1.00 = 0: Factory Default)

In this mode, the drive controls the speed and torque of the motor in scenarios without an encoder for speed feedback. Motor auto-tuning is required to obtain motor-related parameters.

| Problem | Solution |
|---|---|
| Overload or overcurrent detected during motor start | <ul style="list-style-type: none"> ◆ Set motor parameters (P0.01 to P0.05) according to values on the motor nameplate. ◆ Select a proper motor auto-tuning mode (b0.04) and perform motor auto-tuning. |
| Slow torque or speed response and motor vibration at a frequency below 5 Hz | <ul style="list-style-type: none"> ◆ To speed up the torque and speed response, increase the value of F1.00 (speed loop proportional gain) in increments of 10 or decrease the value of F1.01 (speed loop integral time) in decrements of 0.05. ◆ If vibration occurs, decrease the values of F1.00 and F1.01. |
| Slow torque or speed response and motor vibration at a frequency above 5 Hz | <ul style="list-style-type: none"> ◆ To speed up the torque and speed response, increase the value of F1.03 (speed loop proportional gain) in increments of 10 or decrease the value of F1.04 (speed loop integral time) in decrements of 0.05. ◆ If vibration occurs, decrease the values of F1.03 and F1.04. |
| Low speed accuracy | <ul style="list-style-type: none"> ◆ If there is an excessive deviation in the motor's load speed, increase the value of b1.01 (slip compensation gain) in increments of 10%. |
| Large speed fluctuation | <ul style="list-style-type: none"> ◆ If the motor speed fluctuates severely, increase the value of F1.06 (speed filter time) in increments of 0.001s. |
| Loud motor noise | <ul style="list-style-type: none"> ◆ Increase the value of F0.16 (carrier frequency) in increments of 1.0 kHz. (Note that increasing the carrier frequency will result in a capacity decrease of the AC drive and an increase in the leakage current of the motor. For details about capacity decrease, contact the manufacturer.) |
| Insufficient motor torque | <ul style="list-style-type: none"> ◆ Check whether the torque upper limit is low. If so, increase the torque upper limit (b1.04 and b1.05) in velocity mode or increase the torque demand value in torque mode. |

2) FVC (b1.00 = 1)

This mode is applicable to scenarios with an encoder for speed feedback. In this mode, you need to set the encoder pulses per revolution, encoder type, and encoder direction correctly and perform auto-tuning on motor parameters.

| Problem | Solution |
|---|--|
| Overload or overcurrent detected during motor start | <ul style="list-style-type: none"> ◆ Set the encoder pulses per revolution, encoder type, and encoder direction correctly. |
| Overload or overcurrent during motor running | <ul style="list-style-type: none"> ◆ Set motor parameters (P0.01 to P0.05) according to values on the motor nameplate. ◆ Select a proper motor auto-tuning mode (b0.04) and perform motor auto-tuning. |
| Slow torque or speed response and motor vibration at a frequency below 5 Hz | <ul style="list-style-type: none"> ◆ To speed up the torque and speed response, increase the value of F1.00 (speed loop proportional gain) in increments of 10 or decrease the value of F1.01 (speed loop integral time) in decrements of 0.05. ◆ If vibration occurs, decrease the values of F1.00 and F1.01. |

| Problem | Solution |
|---|---|
| Slow torque or speed response and motor vibration at a frequency above 5 Hz | <ul style="list-style-type: none"> ◆ To speed up the torque and speed response, increase the value of F1.03 (speed loop proportional gain) in increments of 10 or decrease the value of F1.04 (speed loop integral time) in decrements of 0.05. ◆ If vibration occurs, decrease the values of F1.03 and F1.04. |
| Large speed fluctuation | <ul style="list-style-type: none"> ◆ If the motor speed fluctuates severely, increase the value of F1.06 (speed filter time) in increments of 0.001s. |
| Loud motor noise | <ul style="list-style-type: none"> ◆ Increase the value of F0.16 (carrier frequency) in increments of 1.0 kHz. (Note that increasing the carrier frequency will result in a capacity decrease of the AC drive and an increase in the leakage current of the motor. For details about capacity decrease, contact the manufacturer.) |
| Insufficient motor torque | <ul style="list-style-type: none"> ◆ Check whether the torque upper limit is low. If so, increase the torque upper limit (b1.04 and b1.05) in velocity mode or increase the torque demand value in torque mode. |

3) V/f Control (b1.00 = 2)

This mode is applicable to scenarios without an encoder for speed feedback. You only need to set rated motor voltage and rated motor frequency correctly.

| Problem | Solution |
|-------------------------------------|---|
| Oscillation of the running motor | <ul style="list-style-type: none"> ◆ Increase the value of F2.11 (oscillation suppression gain) in increments of 10. The permissible maximum value of this parameter is 100. |
| Overcurrent during high-power start | <ul style="list-style-type: none"> ◆ Decrease the value of F2.01 (torque boost) in decrements of 0.5%. |
| Large current during running | <ul style="list-style-type: none"> ◆ Set the rated voltage (P0.02) and rated frequency (P0.04) of the motor correctly. ◆ Decrease the value of F2.01 (torque boost) in decrements of 0.5%. |
| Loud motor noise | <ul style="list-style-type: none"> ◆ Increase the value of F0.16 (carrier frequency) in increments of 1.0 kHz. (Note that increasing the carrier frequency will result in a capacity decrease of the AC drive and an increase in the leakage current of the motor. For details about capacity decrease, contact the manufacturer.) |

7.3 Fault Display

The YD287 series AC drive monitors various input signals, operating conditions, and external feedback in real time. Once a fault occurs, the AC drive takes the corresponding protection action, and the operating panel displays fault information, such as Er 102.

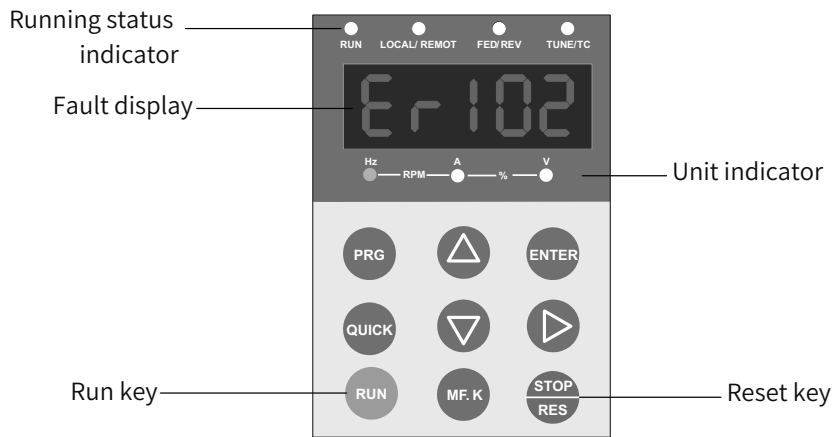


Figure 7-1 Fault display

The five digits on the operating panel are numbered 5, 4, 3, 2, and 1 from left to right. Take the display of 103.02 as an example. Digits 5, 4, and 3 show the fault code, in which 1 on digit 5 indicates the fault level, and 03 on digits 4 and 3 indicates the fault code. 02 on digits 2 and 1 indicates the fault subcode, which is reserved by the manufacturer. You can obtain fault information by checking parameters in E* group. The following figure shows the display in this example.



Figure 7-2 LED display of a fault

Before asking Inovance engineers for help, you can perform self-check according to instructions in this section, analyze the fault causes, and find solutions.


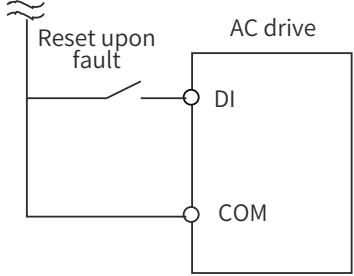
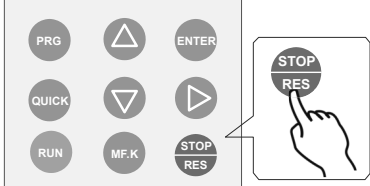
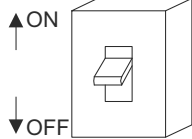
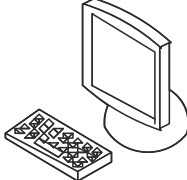
The YD287 series AC drive is the core of a crane's electronic control system. Fault information provided by the AC drive is graded into five levels based on the impact on the system. The following table describes responses of the AC drive to different levels.

| Fault Level | Response | Display |
|-------------|--|---------|
| Level 1 | <ul style="list-style-type: none"> ◆ The operating panel displays the error code. ◆ Output function 1 (brake control) is inactive. ◆ Output function 2 (stop upon fault) is active. ◆ The AC drive coasts to stop. | Er 1** |
| Level 2 | <ul style="list-style-type: none"> ◆ The operating panel displays the error code. ◆ Output function 3 (fault alarm) is active. ◆ The AC drive performs a quick stop. | Er 2** |
| Level 3 | <ul style="list-style-type: none"> ◆ The operating panel displays the error code. ◆ Output function 3 (fault alarm) is active. ◆ The AC drive decelerates to stop. | Er 3** |
| Level 4 | <ul style="list-style-type: none"> ◆ The operating panel displays the error code. ◆ Validate output function 4 (fault prompt). ◆ System operation is not affected. | Er 4** |
| Level 5 | <ul style="list-style-type: none"> ◆ System operation is not affected. | □ |



- ◆ Faults with error codes 1# to 40# are driving performance faults of YD587 series AC drive and are graded level 1 by default. Their fault levels cannot be changed.
- ◆ Faults with error codes 41# to 65# are function faults. You can change their fault levels by setting parameters bF.10 to bF.14. (See the descriptions of bF.10 to bF.14.)

7.4 Reset upon Fault

| Stage | Solution | Remarks |
|-----------------------|--|---|
| When the fault occurs | Check fault information on the operating panel. | View groups E0 to E9.  |
| Before reset | Find the cause of the fault based on the fault type displayed on the operating panel and rectify the fault. Then reset the AC drive. | Troubleshoot the fault according to "7.5 Error Codes and Solutions." |
| Reset method | 1. Set the DI to function 3 (b3.01 to b3.10 = 3: reset upon fault). Verify that the RUN command has been canceled, and the reset terminal is valid. |  |
| | 2. Press the stop/reset key on the operating panel to reset the AC drive. | Press the red STOP key on the operating panel to reset the fault.  |
| | 3. Power off and then power on the AC drive to reset it. Cut off the power supply to the main circuit. When the error code on the operating panel disappears, resume the power supply. |  |
| | 4. Reset the AC drive on the host controller (Modbus RTU serial communication control). In communication control mode (bF.04 = 2), confirm that the RUN command has been canceled, and then write 7 (reset upon fault) to the 2000H communication address, so that the AC drive will reset after the fault is rectified. ^[Note] | Host controller  |

7.5 Error Codes and Solutions

The following table lists the faults that may occur during use of the AC drive and solutions to these faults.

| Fault Code | Fault Name | Cause | Solution |
|------------|---------------------------------|--|--|
| Er102 | Overcurrent during acceleration | <ol style="list-style-type: none"> 1. The output circuit of the AC drive is grounded or short-circuited. 2. The control mode is vector control but motor auto-tuning is not performed. 3. The acceleration time is too short. 4. The customized torque boost or V/f curve is not appropriate. 5. The voltage is too low. 6. The motor is started while rotating. 7. A sudden load is applied during acceleration. 8. The AC drive power rating is too low. | <ol style="list-style-type: none"> 1. Eliminate external faults. 2. Perform motor auto-tuning. 3. Increase the acceleration time. 4. Adjust the customized torque boost or V/f curve. 5. Adjust the voltage to the normal range. 6. Enable the flying start function or start the motor after it stops. 7. Remove the sudden load. 8. Select an AC drive of a higher power rating. |
| Er103 | Deceleration Overcurrent | <ol style="list-style-type: none"> 1. The output circuit of the AC drive is grounded or short-circuited. 2. The control mode is vector control but motor auto-tuning is not performed. 3. The deceleration time is too short. 4. The voltage is too low. 5. A sudden load is applied during deceleration. 6. The braking unit and braking resistor are not installed. 7. The braking circuit is short-circuited. | <ol style="list-style-type: none"> 1. Eliminate external faults. 2. Perform motor auto-tuning. 3. Increase the deceleration time. 4. Adjust the voltage to the normal range. 5. Remove the sudden load. 6. Install the braking unit and braking resistor. 7. Check whether the braking resistor is faulty. |
| Er104 | Constant speed Overcurrent | <ol style="list-style-type: none"> 1. The output circuit of the AC drive is grounded or short-circuited. 2. The control mode is vector control but motor auto-tuning is not performed. 3. The voltage is too low. 4. A sudden load is applied during operation. 5. The AC drive power rating is too low. 6. The braking circuit is short-circuited. | <ol style="list-style-type: none"> 1. Eliminate external faults. 2. Perform motor auto-tuning. 3. Adjust the voltage to the normal range. 4. Remove the sudden load. 5. Select an AC drive of a higher power rating. 6. Check whether the braking resistor is faulty. |

| Fault Code | Fault Name | Cause | Solution |
|------------|----------------------------|--|--|
| Er105 | Acceleration Overvoltage | <ol style="list-style-type: none"> 1. The input voltage is too high. 2. An external force drives the motor during acceleration. 3. The acceleration time is too short. 4. The braking unit and braking resistor are not installed. | <ol style="list-style-type: none"> 1. Adjust the voltage to the normal range. 2. Cancel the external force or install a braking resistor. 3. Increase the acceleration time. 4. Install the braking unit and braking resistor. |
| Er106 | Deceleration Overvoltage | <ol style="list-style-type: none"> 1. The input voltage is too high. 2. An external force drives the motor during deceleration. 3. The deceleration time is too short. 4. The braking unit and braking resistor are not installed. | <ol style="list-style-type: none"> 1. Adjust the voltage to the normal range. 2. Cancel the external force or install a braking resistor. 3. Increase the deceleration time. 4. Install the braking unit and braking resistor. |
| Er107 | Constant speed Overvoltage | <ol style="list-style-type: none"> 1. The input voltage is too high. 2. An external force drives the motor during operation. | <ol style="list-style-type: none"> 1. Adjust the voltage to the normal range. 2. Cancel the external force or install a braking resistor. |
| Er108 | Control power supply fault | The input voltage is out of the specified range. | Adjust the input voltage to the specified range. |
| Er109 | Undervoltage Fault | <ol style="list-style-type: none"> 1. An instantaneous power failure occurs. 2. The input voltage of the AC drive is out of the allowable range. 3. The bus voltage is lower than the voltage specified by F3.06. 4. The rectifier bridge and pre-charge resistor are faulty. 5. The driver board is faulty. 6. The control board is faulty. | <ol style="list-style-type: none"> 1. Reset to clear the fault. 2. Adjust the voltage to the normal range. 3. Contact the agent for technical support. 4. Contact the agent for technical support. 5. Contact the agent for technical support. 6. Contact the agent for technical support. |
| Er110 | AC drive Overload | <ol style="list-style-type: none"> 1. The load is too heavy or locked-rotor occurs on the motor. 2. The AC drive power rating is too low. | <ol style="list-style-type: none"> 1. Reduce the load and check the motor and machinery. 2. Select an AC drive of a higher power rating. |
| Er111 | Motor overload | <ol style="list-style-type: none"> 1. The motor overload protection gain (bE.01) is set incorrectly. 2. The load is too heavy or locked-rotor occurs on the motor. 3. The AC drive power rating is too low. | <ol style="list-style-type: none"> 1. Set the parameter properly. 2. Reduce the load and check the motor and machinery. 3. Select an AC drive of a higher power rating. |
| Er112 | Input phase loss | <ol style="list-style-type: none"> 1. Three-phase power input is abnormal. 2. The driver board, lightning protection board, main control board, or rectifier bridge is abnormal. | <ol style="list-style-type: none"> 1. Check and eliminate external wiring problems. 2. Contact the agent for technical support. |

| Fault Code | Fault Name | Cause | Solution |
|------------|---------------------------------------|---|--|
| Er114 | AC drive overheating | <ol style="list-style-type: none"> 1. The ambient temperature is too high. 2. The air filter is blocked. 3. The fan is damaged. 4. The thermistor of the IGBT is damaged. 5. The inverter module is faulty. | <ol style="list-style-type: none"> 1. Reduce the ambient temperature. 2. Clean the air filter. 3. Replace the fan. 4. Replace the thermistor. 5. Replace the inverter module. |
| Er115 | Built-in braking unit overloaded | <ol style="list-style-type: none"> 1. The resistance of the braking resistor is too small. | <ol style="list-style-type: none"> 1. Use a braking resistor with larger resistance. 2. Check the wiring between the AC drive and braking resistor. 3. Contact the agent for technical support. |
| Er116 | Built-in braking unit short-circuited | <ol style="list-style-type: none"> 2. The braking resistor is short-circuited. 3. The built-in braking unit is damaged. 4. The power rate of the external load is too high. | |
| Er117 | Contactor Fault | <ol style="list-style-type: none"> 1. The driver board and power supply are faulty. 2. The contactor is faulty. | <ol style="list-style-type: none"> 1. Replace the driver board or power supply board. 2. Replace the contactor. |
| Er118 | Current detection fault | <ol style="list-style-type: none"> 1. The Hall device is faulty. 2. The driver board is faulty. | <ol style="list-style-type: none"> 1. Replace the Hall device. 2. Replace the driver board. |
| Er119 | Motor parameter auto-tuning fault | <ol style="list-style-type: none"> 1. The motor parameters are not set according to the nameplate. 2. Motor auto-tuning times out. | <ol style="list-style-type: none"> 1. Set the motor parameters according to the nameplate properly. 2. Check the wiring between the AC drive and the motor. |
| Er120 | Encoder Fault | <ol style="list-style-type: none"> 1. The encoder model does not match the AC drive. 2. The encoder wiring is incorrect. 3. The encoder is damaged. 4. The PG card is faulty. | <ol style="list-style-type: none"> 1. Set the encoder model correctly based on the actual situation. 2. Eliminate the wiring fault. 3. Replace the encoder. 4. Replace the PG card. |
| Er123 | Short circuit to ground | <ol style="list-style-type: none"> 1. The motor is short-circuited to the ground. | <ol style="list-style-type: none"> 1. Replace the cable or motor. |
| Er125 | Output phase loss | <ol style="list-style-type: none"> 1. The wiring between the AC drive and the motor is faulty. 2. The three-phase outputs of the AC drive are unbalanced when the motor is running. 3. The driver board is faulty. 4. The IGBT is faulty. | <ol style="list-style-type: none"> 1. Eliminate external faults. 2. Check whether the motor three-phase winding is normal and eliminate the fault. 3. Contact the agent for technical support. 4. Contact the agent for technical support. |
| Er137 | Abnormal frequency direction | The directions of operation frequency and motor feedback frequency are reverse. | <ol style="list-style-type: none"> 1. Check whether motor parameters are set properly. 2. Check whether the load is too heavy. 3. Adjust the setting of bC.02. |

| Fault Code | Fault Name | Cause | Solution |
|------------|---|---|--|
| Er138 | Abnormal frequency following | The error between the frequency reference and motor feedback frequency is too large. | <ol style="list-style-type: none"> 1. Check whether motor parameters are set properly. 2. Check whether the load is too heavy. 3. Adjust the settings of bC.03 and bC.04. |
| Er140 | Pulse-by-pulse current limit fault | <ol style="list-style-type: none"> 1. The load is too heavy or locked-rotor occurs on the motor. 2. The AC drive power rating is too low. | <ol style="list-style-type: none"> 1. Reduce the load and check the motor and machinery. 2. Select an AC drive of a higher power rating. |
| Er453 | Brake failure protection | When b1.00 is set to 1 (FVC) and the AC drive stops and detects accumulated encoder pulse feedback, the brake is loose and has not completely gripped the motor shaft. In this case, the AC drive automatically runs at 0 Hz. | <ol style="list-style-type: none"> 1. Check whether the brake is loose. If yes, increase the braking torque or contact the manufacturer. 2. Check whether bC.00 is set correctly. If its value is too small, increase the value as required. When it is set to 0, this function is disabled. |
| Er*41 | Brake release fault | <ol style="list-style-type: none"> 1. The brake release time exceeds the timeout interval specified by B6.22. 2. The input brake release feedback signal is incorrect. For details, see the description of b6.08. | <ol style="list-style-type: none"> 1. Check whether the brake output signal is correct. 2. Check the wiring of the brake circuit. 3. Check the function selection (input function 11) of the brake release feedback input point on the control board. |
| Er*42 | Brake applying fault | The brake applying feedback signal input is abnormal. For details, see the description of b6.08. | <ol style="list-style-type: none"> 1. Check the wiring of the brake circuit. 2. Check the function selection (input function 12) of brake applying feedback input point on the control board. |
| Er*43 | Timeout of shaft-cooling motor at low-speed operation | See the descriptions of b0.00 and b0.01. | <ol style="list-style-type: none"> 1. Adjust the settings of b0.00 and b0.01. 2. Protect the motor from overheating. |
| Er*44 | Forward and reverse run commands valid simultaneously | The AC drive detects the forward and reverse run commands at the same time. | <ol style="list-style-type: none"> 1. Check the external circuit of the forward and reverse run command input points. 2. Increase the terminal filter time properly. |
| Er*45 | Joystick not reset | A run command or frequency reference signal input is detected when the AC drive is powered on. | <ol style="list-style-type: none"> 1. Ensure that all the NO input signals are invalid during the power-on process. 2. Input a run command after the system initialization is completed. |
| Er*46 | Process sheet communication fault | Communication between the AC drive and process sheet (587CF*) is abnormal. | <ol style="list-style-type: none"> 1. Check that bF.18 is set correctly. 2. Contact the agent or Inovance for technical support. |

| Fault Code | Fault Name | Cause | Solution |
|------------|---------------------------------------|---|--|
| Er*47 | CAN bus fault | <ol style="list-style-type: none"> 1. The CANlink expansion card does not work normally. 2. The communication cable does not work normally. | <ol style="list-style-type: none"> 1. Check that communication cables between expansion cards are securely connected. 2. Check that the expansion card interfaces are securely connected. 3. Shorten the distances between communication nodes. |
| Er*48 | Communication error | <ol style="list-style-type: none"> 1. The host controller does not work normally. 2. The communication cable does not work normally. 3. Communication parameters in group bd are not set properly. | <ol style="list-style-type: none"> 1. Check the wiring of the host controller. 2. Check the communication cable connection. 3. Set the communication expansion card type correctly. 4. Set the communication parameters correctly. |
| Er*49 | Parameter read-write fault | The EEPROM chip is damaged. | Replace the main control board. |
| Er*50 | External input fault | DI function 7 is valid. | Reset the AC drive. |
| Er*51 | Parameter Fault | <ol style="list-style-type: none"> 1. Parameters are set incorrectly. 2. The EEPROM memory chip is damaged. | <ol style="list-style-type: none"> 1. Use the parameter self-check function and correct the parameters that are set incorrectly. 2. Replace the main control board. |
| Er*52 | Excessive speed deviation in V/f mode | The difference between the motor actual running frequency and the synchronous frequency exceeds the speed difference threshold. | <ol style="list-style-type: none"> 1. Check whether the load is too heavy. 2. Adjust the settings of bC.01 and bC.03. 3. Check whether motor parameters are set properly. |



- ◆ In the preceding table, the asterisk (*) represents the fault level, with a value range of 1 to 5. For example, in Er*52, 52 is the fault code, and the * represents the adjustable fault level.

7.6 Fault Symptoms and Solutions

| No. | Fault Description | Possible Cause | Solution |
|----------------------------------|---|--|---|
| 1 | No information is displayed upon power-on. | The drive is not connected to the grid or the grid voltage is too low. | Check the power supply. |
| | | The switched-mode power supply (SMPS) on the driver board of the AC drive is faulty. | Check the bus voltage or contact the agent . |
| | | The control board is disconnected from the driver board or the operating panel. | Reconnect the 8-pin and 40-pin cables. |
| | | The pre-charge resistor of the AC drive is damaged. | Contact the agent for technical support. |
| | | The control board or operating panel is faulty. | |
| The rectifier bridge is damaged. | | | |
| 2 | "CrAnE" is displayed after power-on. | The cable connection between the driver board and control board is poor. | Reconnect the 8-pin and 28-pin cables. |
| | | Related components on the control board are damaged. | Contact the agent for technical support. |
| | | The motor or motor cable is short-circuited to the ground. | |
| | | The Hall sensor is faulty. | |
| | | The grid voltage is too low. | |
| 3 | "Er123" is displayed upon power-on. Alarm | The motor or output cable is shorted to ground. | Check the insulation status of the motor and the output cable with a megohmmeter. |
| | | The AC drive is damaged. | Contact the agent for technical support. |
| 4 | The display is normal after power-on, but "CrAnE" is displayed in the running state and the AC drive stops immediately. | The cooling fan is damaged or locked-rotor occurs. | Replace the fan. |
| | | A short circuit occurs on external control terminals. | Rectify the short circuit fault. |
| 5 | Er114 (IGBT overtemperature) is reported frequently. | The carrier frequency is set too high. | Reduce the carrier frequency (F0.15). |
| | | The fan is damaged or the air duct is clogged. | Replace the fan or clean the air duct. |
| | | Components (thermistor or others) inside the AC drive are damaged. | Contact the agent for technical support. |

| No. | Fault Description | Possible Cause | Solution |
|-----|--|--|---|
| 6 | The motor does not rotate after the AC drive runs. | The motor or motor cable is abnormal. | Check that wiring between the AC drive and motor is normal. |
| | | Motor parameters on the AC drive are set incorrectly. | <ul style="list-style-type: none"> ◆ Restore the servo drive to default settings and reset related parameters correctly. ◆ Ensure proper settings of the encoder parameters and rated motor parameters (such as the rated motor frequency and rated motor speed). ◆ Check that b1.00 (control mode) and bF.04 (command source selection) are set correctly. ◆ Adjust F2.01 (torque boost) in V/f control mode under heavy load. |
| | | The cable connection between the driver board and control board is poor. | Re-connect the cables and ensure secure connection. |
| | | The driver board is faulty. | Contact the agent for technical support. |
| 7 | DI terminals are invalid. | Incorrect parameter | Check and reset parameters in group b3. |
| | | External signal transmission errors occurred. | Re-connect the external signal cable. |
| | | The jumper across OP and +24 V becomes loose. | Connect the jumper across OP and +24 V securely. |
| | | The control board is faulty. | Contact the agent for technical support. |
| 8 | The motor speed fails to rise in FVC mode. | The encoder is faulty. | Replace the encoder and check the cable connection. |
| | | The encoder connection is incorrect or in poor contact. | Replace the PG card. |
| | | The PG card is faulty. | Contact the agent for technical support. |
| | | The driver board is faulty. | |
| 9 | Frequent overcurrent and overvoltage faults | Motor parameters are set incorrectly. | Set the motor parameters or perform motor auto-tuning again. |
| | | The acceleration/deceleration time is improper. | Set a proper acceleration/deceleration time. |
| | | The load fluctuates. | Contact the agent for technical support. |

| No. | Fault Description | Possible Cause | Solution |
|-----|---|--|---|
| 10 | Er117 is displayed when the AC drive is powered on or is running. | The soft start contactor is not closed or it is not conductive in a low-temperature and high-humidity environment. | <ul style="list-style-type: none"> * Check whether the contactor cable is loose. * Check whether the contactor is faulty. * Check whether the +24V power supply of the contactor is faulty. * Contact the agent for technical support. * Apply a heating device in the electric cabinet. |
| 11 | The lightning protection board reports Err12. | The cable between the lightning protection board and the driver board is loosen. | Check that the input phase loss signal cable between the lightning protection board and the driver board is connected reliably. |
| | | The lightning protection board is damaged or corroded. | Replace the lightning protection board. |

7.7 Fault Subcodes

The YD287 series AC drive provides fault subcodes to facilitate fault analysis and location. The two digits after the decimal point in a parameter of group E* indicate the fault subcode.

The following table describes fault subcodes.

| Fault Code | Code Meaning | Fault Subcode | Subcode Meaning |
|------------|--|---------------|--|
| 02# to 04# | Overcurrent | 1 | Overcurrent on the drive unit hardware |
| | | 10 | Overcurrent on the built-in braking unit |
| 05# to 07# | Overvoltage | 1 | Software overvoltage fault 1 |
| | | 2 | Software overvoltage fault 2 |
| 08# | Pre-charge resistor overheat or control power supply fault | 1 | The voltage fluctuates during power-on, and the power-on process repeats more than five times within a short time due to undervoltage. |
| 09# | Undervoltage | 1 | The bus voltage of the running AC drive is lower than the value of F3.06. |
| 10# | AC drive overload | 1 | The overload fault is detected based on the overload curve of the AC drive. |
| | | 2 | The output pulse-by-pulse current limit time of any phase reaches 5s. |
| 11# | Motor overload | 1 | The overload fault is detected based on the overload curve of the motor. |



| Fault Code | Code Meaning | Fault Subcode | Subcode Meaning |
|------------|--|---------------|---|
| 12# | Input phase loss | 1 | Hardware input phase loss 1 is detected. |
| | | 2 | Hardware input phase loss 2 is detected. |
| | | 3 | Software input phase loss 1 is detected. |
| | | 4 | Software input phase loss 2 is detected. |
| 14# | Heatsink or module overheat | 1 | The inverter temperature exceeds the over-temperature threshold. |
| 15# | Built-in braking transistor overload | 1 | The instantaneous current of the braking transistor exceeds twice the rated braking current. |
| | | 2 | The instantaneous current of the braking transistor exceeds the AC drive overvoltage threshold divided by the minimum resistance. |
| | | 3 | The overload fault is detected based on the overload curve of the built-in braking transistor. |
| 16# | Built-in braking transistor short circuit | 1 | The current of the braking transistor exceeds the detection threshold during the power-on or stop process of the AC drive. |
| 17# | Pre-charge resistor not closed | 1 | Hardware pre-charge resistor fault 1 is detected. |
| | | 2 | Hardware pre-charge resistor fault 2 is detected. |
| 18# | Zero drift too large or current sensor fault | 1 | The zero drift on phase U is too large. |
| | | 2 | The zero drift on phase V is too large. |
| | | 3 | The zero drift on phase W is too large. |
| 19# | Parameter auto-tuning failure | 1 | The no-load current is abnormal. |
| 20# | Encoder fault | 1 | Hardware encoder disconnection is detected (supported only by YD580-ABZ). |
| | | 2 | Software encoder disconnection is detected. |
| | | 9 | The encoder pulses per revolution is incorrect during dynamic complete auto-tuning in closed-loop mode. |
| | | 10 | The encoder is disconnected during dynamic complete auto-tuning in closed-loop mode. |
| 23# | Short circuit to ground | 1 | Hardware overcurrent occurs during detection of short circuit to ground. |
| | | 2 | Hardware overvoltage occurs during detection of short circuit to ground. |
| | | 3 | The detection current exceeds the rated peak current of the AC drive during detection of short circuit to ground. |

| Fault Code | Code Meaning | Fault Subcode | Subcode Meaning |
|------------|------------------------------------|---------------|---|
| 25# | Output phase loss | 1 | Phase U output loss occurs. |
| | | 2 | Phase V output loss occurs. |
| | | 3 | Phase W output loss occurs. |
| | | 4 | The output voltage in closed-loop mode is high. |
| | | 5 | The fault is reported upon output phase loss during stator resistance auto-tuning. |
| 37# | Stall warning 1 | 1 | See the description of bC.02. |
| 38# | Stall warning 2 | 1 | See the descriptions of bC.03 to bC.04. |
| 40# | Pulse-by-pulse current limit fault | 1 | Continuous pulse-by-pulse current limit occurs on any phase output in a short time. |



Chapter 8 Routine Maintenance and Maintenance

8.1 Routine Maintenance

| Safety Information | |
|--|--|
|  WARNING | <ul style="list-style-type: none"> • Do not connect or disconnect wiring while the power is on. • Disconnect all power and wait for several minutes. Do not touch any terminals before the capacitors have fully discharged. • Do not modify or disconnect wiring, remove optional extension card or replace the cooling fan while the power is on. • Make sure to connect the motor-side grounding terminal. Failure to comply may result in electric shock due to touching motor housing. • e work. • Installation, wiring, commissioning, repair & maintenance, and component |
|  CAUTION | <ul style="list-style-type: none"> • Do not run the AC drive with front cover removed. • Drawings in the manual are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as and then perform operations in accordance with instructions. • T • Ensure that input voltage is within permissible range. Incorrect input voltage of main circuit may result in abnormal running. • Keep combustible materials far away from the AC drive or mount the AC drive on incombustible surfaces such as a metal wall. • pter. Ensure correct air outlet direction of the fan. Incorrect air direction will diminish the • Do not connect or disconnect motor while the drive is running. Failure to comply may result in electric shock and damage to the AC drive. • Use shielded cables for control circuit wiring. Meanwhile, ground the shield to the grounding terminal reliably. • Do not modify the drive circuitry. Failure to comply will damage the AC drive. • Make sure to connect the output terminals of the AC drive and the motor terminals correctly. • If it is necessary to change the motor rotation direction, exchange any two of UVW cables of the AC drive. • Do not operate the AC drive that has been damaged. This is to prevent further damage to external equipments. |



8.1.1 Routine inspection items

Influence of ambient temperature, humidity, dust and vibration will cause aging of components in the AC drive, which may cause potential faults or reduce the product life. Therefore, it is necessary to carry out routine and periodic maintenance.

More frequent inspection will be required if it is used in harsh environments, such as:

- High ambient temperature
- Frequent starting and stopping
- Fluctuations in the AC power supply or load
- Excessive vibrations or shock loading
- Dust, metal dust, salt, sulfuric acid, chlorine atmospheres
- Poor storage conditions.

Check the following items daily to avoid deterioration in performance or product. Copy this checklist and sign the "checked" column after each inspection.

| Inspection Item | Inspection Points | Solutions | Checked |
|--------------------------|--|--|---------|
| Motor | Inspect whether abnormal oscillation or noise exists. | <ul style="list-style-type: none"> ● Check mechanical connections. ● Check power phases of the motor. ● Tighten all loose screws. | |
| Fan | Inspect whether the cooling fan of the AC drive and the motor works abnormally. | <ul style="list-style-type: none"> ● Check running of the drive-side cooling fan. ● Check running of the motor-side cooling fan. ● Check whether the cooling fan is clogged or dirty. ● Check whether ambient temperature is within the permissible range. | |
| Installation environment | Inspect whether the cabinet and cable duct are abnormal. | <ul style="list-style-type: none"> ● Check for input and output cables with insulation damaged. ● Check for vibration of hanging bracket. ● Check whether ground bars and terminals become loose or get corroded. | |
| Load | Inspect whether the drive output current exceeds the drive or motor rating for an extended period of time. | <ul style="list-style-type: none"> ● Check for setting of motor parameters. ● Check for excessive load. ● Check for mechanical vibration (< 0.6 g on normal condition). | |
| Input voltage | Inspect whether the power voltage of the main and control circuits is within the allowed range. | <ul style="list-style-type: none"> ● Adjust the input voltage to the permissible range. ● Check whether start of heavy load exists. | |

8.2 Periodic inspection

8.2.1 Periodic inspection items

Always keep the AC drive clean. Clear away dusts especially metal powder on the surface of the AC drive, to prevent dust from entering the drive. Clear oil dirt from the cooling fan of the AC drive.



- Do not perform inspection work while the power is on.
- Disconnect all power and wait for several minutes. Do not touch any terminal before the capacitors have fully discharged.



Check the following items every day to avoid deterioration in performance or product. Copy this checklist and sign the "checked" column after each inspection.

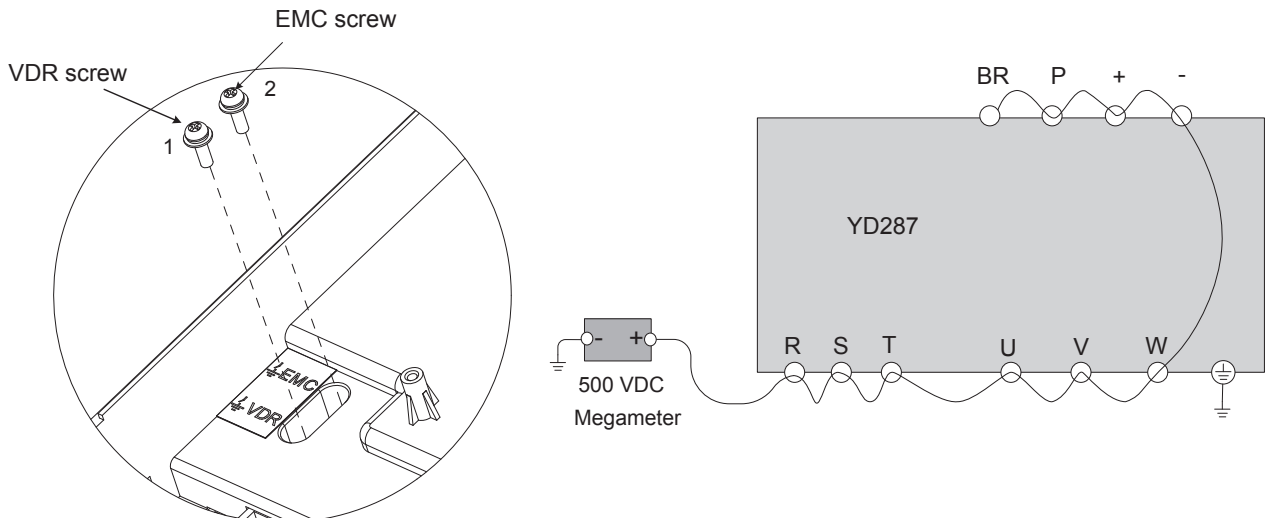
| Inspection Item | Inspection Points | Solutions | Checked |
|--|---|--|---------|
| General | Inspect for wastes, dirt and dust on the surface of the AC drive. | Use a vacuum cleaner to suck up wastes and dust to prevent direct touching. Wipe surface dirt gently with a soft cloth immersed in neutral detergent. | |
| Cables | Inspect power cables and connections for discoloration. Inspect wiring insulation for aging or wear. | Replace cracked cable. Replace damaged terminals. | |
| Peripheral devices such as relay and contactor | Inspect contactors and relays for excessive noise during operation. Inspect coils for signs of overheating such as melted or cracked insulation. | Check whether the coil voltage is normal. Replace abnormal peripheral device. | |
| Ventilation | Inspect whether ventilation and heatsink are clogged. Check whether the fan is damaged. | Clean ventilation. Replace the fan. | |
| Control circuit | Inspect for control components in poor contact. Inspect for loose terminal screws. Inspect for control cables with cracked insulation. | Clear away foreign matters on the surface of control cables and terminals. Replace damaged or corroded control cables. | |

8.2.2 Insulation Test on Main Circuit

| | |
|-------------|---|
| Note | <ul style="list-style-type: none"> • Before measuring insulation resistance with megameter (500 VDC megameter recommended), disconnect the main circuit from the AC drive. • Do not conduct the dielectric strength test. High voltage (> 500 V) test need not be performed again because it has been completed before delivery. |
|-------------|---|

Figure 8-1 Test insulation on the main circuit

The measured insulation resistance must be greater than 5 MΩ. Before test, remove the VDR screw, as shown in the following position.



8.3 Lifetime of Fans and Electrolytic DC Bus Capacitors



8.3.1 Number of Fans on the Drive

The lifetime of fans and electrolytic DC bus capacitors is related to the operating environment and maintenance status. Generally, the lifetime is shown as follows:

| Component | Service Life | Possible Cause | Judging Criteria |
|-------------------------------|--------------|---|--|
| Fan | ≥ 5 years | <ul style="list-style-type: none"> Bearing worn Blade aging | <ul style="list-style-type: none"> Whether there is crack on the blade Whether there is abnormal vibration noise upon startup |
| Electrolytic DC bus capacitor | ≥ 5 years | <ul style="list-style-type: none"> Input power supply in poor quality High ambient temperature Frequent load jumping Electrolytic aging | <ul style="list-style-type: none"> Whether there is liquid leakage. Whether the safe valve has projected. Measure the static capacitance. Measure the insulation resistance. |

8.3.2 Number of Fans on the Drive

| Model | number of fans |
|-----------------------|----------------|
| 3PH 380~480V, 50/60Hz | |
| YD287T4-0P7GB | 1 |
| YD287T4-1P5GB | 1 |
| YD287T4-2P2GB | 1 |
| YD287T4-3P0GB | 1 |
| YD287T4-3P7GB | 1 |
| YD287T4-5P5GB | 1 |
| YD287T4-7P5GB | 1 |
| YD287T4-11GB | 1 |
| YD287T4-15GB | 1 |
| YD287T4-18P5GB | 1 |
| YD287T4-22GB | 1 |



Chapter 9 Specifications and Selection

9.1 YD287 Specifications and Dimensions

9.1.1 Technical Specifications.

Table 9-1 YD287 inverter model and technical data (3-phase 380V~480V)

| 项目 | | 规格 | | | | | | | | | | |
|------------------|-------------------------|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| YD287T4-□G(B) | | 0P7 | 1P5 | 2P2 | 3P0 | 3P7 | 5P5 | 7P5 | 11 | 15 | 18P5 | 22 |
| Adaptation motor | (kW) | 0.75 | 1.5 | 2.2 | 3.0 | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 |
| | (HP) | 1 | 2 | 3 | 4 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 |
| Input | Rated input current(A) | 2.4 | 4.6 | 6.3 | 9.0 | 11.4 | 16.7 | 21.9 | 32.2 | 41.3 | 49.5 | 59.0 |
| output | Rated output current(A) | 2.1 | 3.8 | 5.1 | 7.2 | 9.0 | 13.0 | 17.0 | 25.0 | 32.0 | 37.0 | 45.0 |
| | Output Voltage | 3-phase 380~480V (follow input voltage) | | | | | | | | | | |
| | Max.output frequency | 150Hz | | | | | | | | | | |
| | Carrier freq | 0.8kHz~8.0kHz | | | | | | | | | | |
| | Overload | G: 150% for 60s | | | | | | | | | | |
| power supply | Rated input frequency | 50/60Hz(±5%) | | | | | | | | | | |
| | Rated input voltage | 3-phase 380-480vac 15~+10%, (Actual: AC 323~528V) | | | | | | | | | | |
| | Power capacity(kVA) | 2.8 | 5.0 | 6.7 | 9.5 | 12.0 | 17.5 | 22.8 | 33.4 | 42.8 | 45.0 | 54.0 |
| Cooling | design power (kW) | 0.046 | 0.068 | 0.081 | 1.009 | 0.138 | 0.201 | 0.24 | 0.355 | 0.454 | 0.478 | 0.551 |
| | (CFM) | 9 | 9 | 9 | 9 | 20 | 24 | 30 | 40 | 42 | 51.9 | 57.4 |



Table 9-2 Technical specifications of YD287 series AC drives

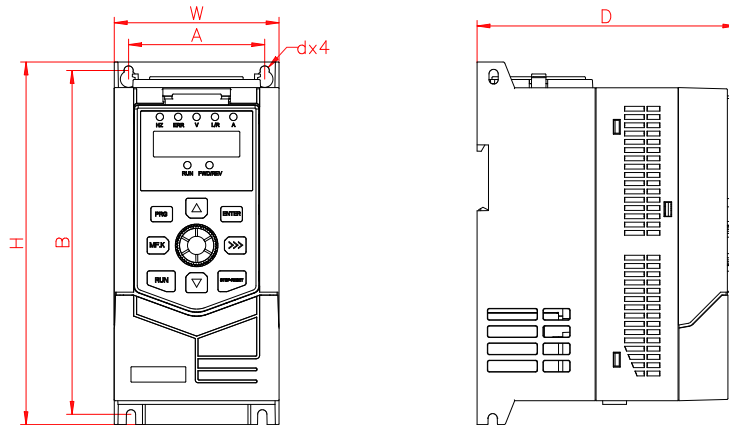
| Item | | Technical Specifications |
|----------------------|--|--|
| Basic functions | Input frequency resolution | Digital setting: 0.01 Hz Analog setting: maximum frequency x 0.025% |
| | Control mode | SVC V/f control |
| | Starting torque | 0.25 Hz/150% (SVC) |
| | Speed range | 1:200 (SVC) |
| | Speed stability accuracy | ±0.5% (SVC) |
| | Torque control accuracy | ±5% above 10 Hz (SVC) |
| | Torque boost | Automatic torque boost; customized torque boost: 0.1% to 30.0% |
| | DC injection braking | DC injection braking frequency: Minimum frequency to rated frequency DC injection braking current: 0.0% to 120.0% of the rated current |
| | Acceleration/Deceleration curve | Straight-line or S-curve acceleration/deceleration |
| | Automatic voltage regulation (AVR) | Automatically maintains a constant output voltage when the grid voltage changes. |
| | Overvoltage/Overcurrent stall control | Automatically limits the current and voltage during operation to avoid frequent tripping caused by overvoltage/overcurrent. |
| | Fast current limit | This function reduces overcurrent to the minimum and guarantees normal running of the AC drive. |
| | Torque limit and control | The system limits the torque automatically to prevent frequent trips caused by overcurrent during operation. Torque control is applied in vector control mode. |
| Customized functions | Crane process sheet | The AC drive can use a crane process sheet to implement complex crane process control for the built-in anti-sway device. |
| | Overload protection | Overloads are automatically identified to permit falling-down and deny rising in case of overload. |
| | Multi-motor switchover | Three backups for all parameters of the AC drive, allowing switchover between three motors |
| | Multiple field buses | The AC drive supports six types of field buses: Modbus, CANopen, PROFINET, EtherNet/IP, and EtherCAT. |
| | Motor overtemperature protection | The optional I/O expansion card 1 enables AI3 to receive the motor temperature sensor input (PT100 and PT1000). |
| | Multiple encoder types | The AC drive supports differential encoders, open collectors, UVW encoders, and resolvers. |
| | Speed reduction with the voltage drop | When the bus voltage is too low, the AC drive can keep the voltage at a normal level through load feedback energy. |
| | Brake sequence control | Provides professional brake sequence control dedicated for cranes. |
| | Light-load and high-speed | Automatically calculates the highest output frequency by detecting the output torque of the AC drive. |
| | Special curve | Three-segment acceleration/deceleration curves are supported. |
| | Load overspeed determination | Designs the frequency direction exception alarm and frequency following exception alarm according to the encoder feedback frequency. |
| | Deceleration/Stop switch | Provides a simple positioning function. |
| | Various fault alarms | Optional AC drive output fault types and handling modes |
| | Static auto-tuning of motor parameters | Supports static auto-tuning of all motor parameters. |
| | Advanced software tool | The AC drive software allows you to configure parameters, and provides a virtual oscilloscope to show the internal status of the AC drive. |



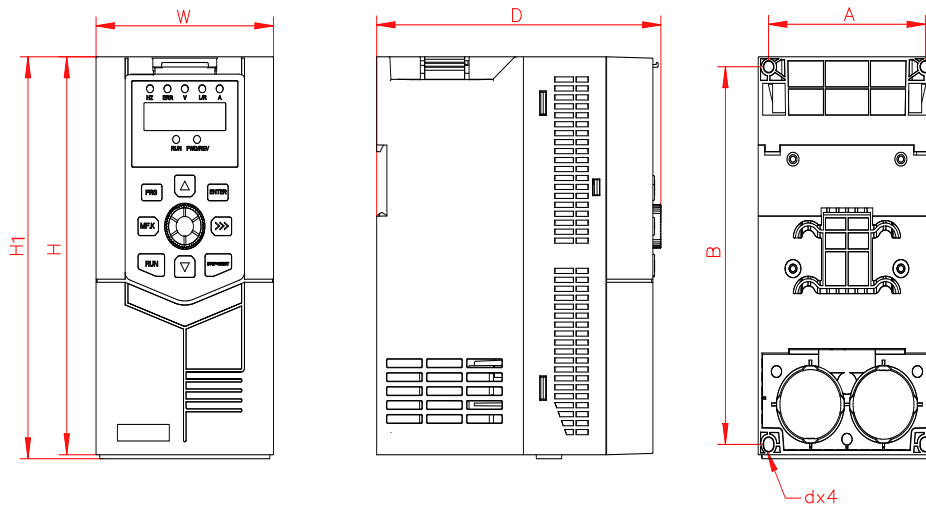
| | Item | Specifications |
|-----------------------|---------------------------|---|
| Operation environment | Command source | Operating panel and control terminal |
| | Frequency source | Multi-speed and acceleration/deceleration |
| | Input terminal | Six DI terminals, compatible with AC and DC input signals |
| | Output terminal | Two relay output terminals |
| | Operating location | Free of direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapor, drip, or salt |
| | Altitude | Less than 1000 m (derated if above 1000 m, with an amplitude of 1% per 100 m) |
| | Ambient temperature | -10° C to +40° C (derated if the ambient temperature is 40° C to 65° C, with an amplitude of 2% per degree Celsius) |
| | Humidity | Less than 95% RH, non-condensing |
| | Vibration | 9.8 m/s ² below 20 Hz and 5.9 m/s ² above 20 Hz |
| | Storage temperature | -20° C to +70° C |
| | IP rating | IP20 |
| | Pollution degree | PD2 |
| | Power distribution system | TN and TT |



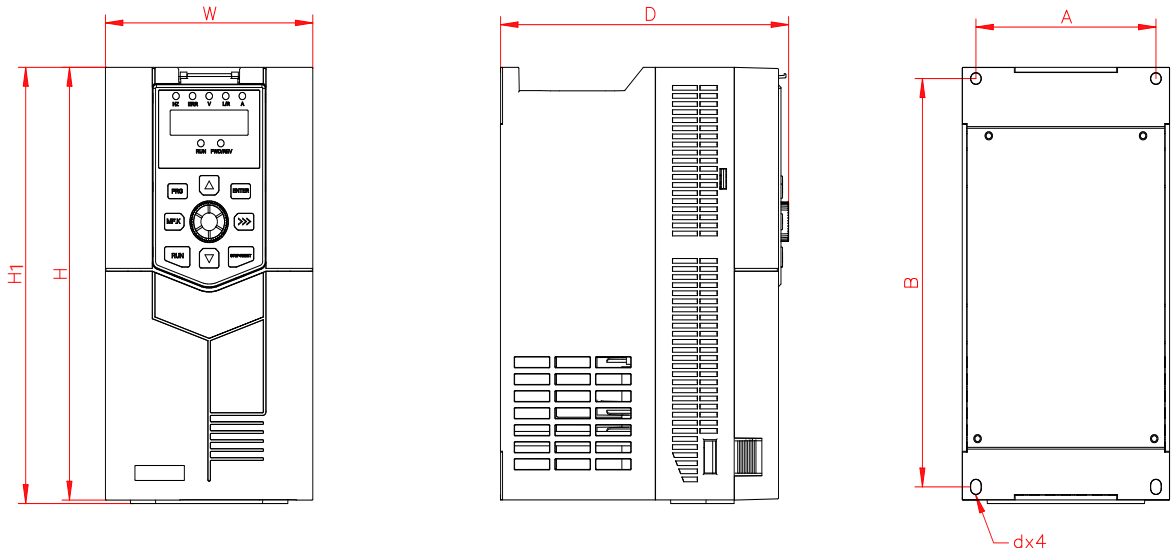
9.1.2 Appearance and installation dimensions



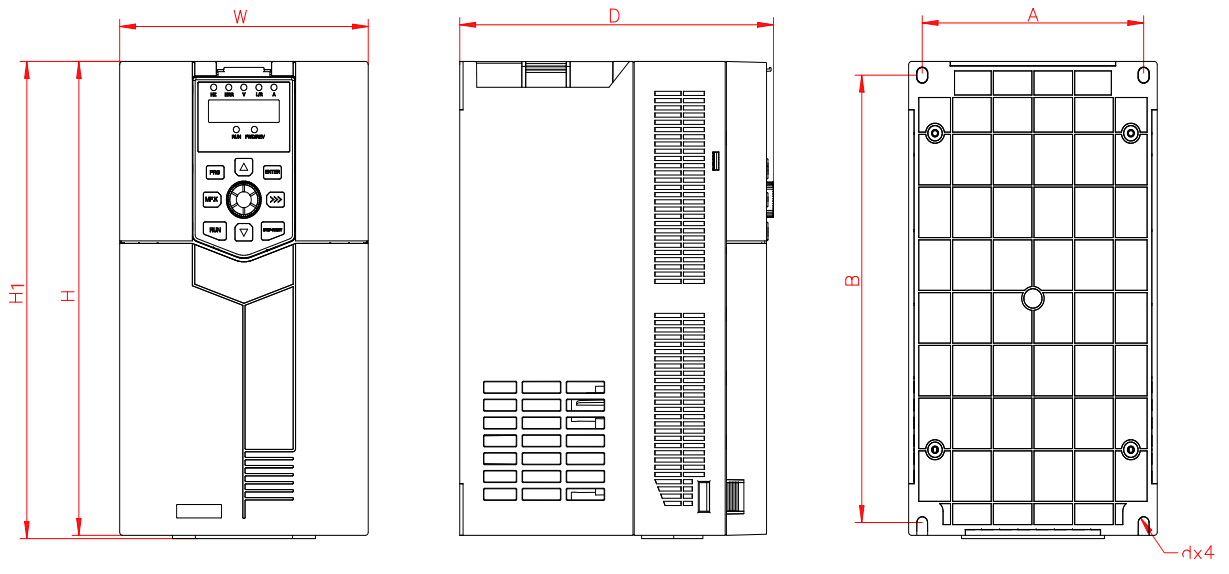
YD287T4-0P7GB~ 3P7GB



YD287T4-5P5GB~ YD287-7P5GB



YD287T4-11GB~ YD287T4-15GB



YD287T4-18P5GB ~ YD287T4-22GB



Table YD287 AC drive models and mounting dimensions

| AC Drive Model | Mounting Hole (mm) | | Physical Dimensions (mm) | | | | Hole Diameter (mm) | Weight (kg) |
|----------------|--------------------|-------|--------------------------|-------|-----|-------|--------------------|-------------|
| | A | B | H | H1 | W | D | | |
| YD287T4-0P7GB | 74 | 187 | 197.5 | / | 90 | 141 | Ø5.0 | 1.3 |
| YD287T4-1P5GB | | | | | | | | |
| YD287T4-2P2GB | | | | | | | | |
| YD287T4-3P7GB | | | | | | | | |
| YD287T4-5P5GB | 90 | 190 | 200 | 202 | 102 | 163.5 | Ø6.0 | 1.95 |
| YD287T4-7P5GB | | | | | | | | |
| YD287T4-11GB | 108.5 | 227 | 240.5 | 242.5 | 125 | 173 | Ø6.5 | 3.1 |
| YD287T4-15GB | | | | | | | | |
| YD287T4-18P5GB | 147 | 278.5 | 295 | 297 | 165 | 208.3 | Ø7.2 | 5.55 |
| YD287T4-22GB | | | | | | | | |



9.2 Selection Guidance

9.2.1 Brake Resistance Selection Table

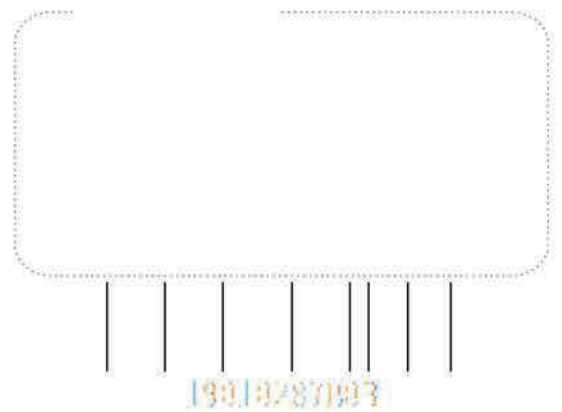
Table 9-13 YD287 Brake Component Selection Table (3-phase 380~480V)

| Model | Adaptation motor kW | Brake unit | | 125% Brake torque (10% ED@10 S) | | Note | Minimum resistance Ω |
|----------------|---------------------|-------------------|-----|---------------------------------|---------|-----------------|----------------------|
| | | Model | Num | Resistance specifications | Res Num | | |
| YD287T4-0P7GB | 0.75 | Built-in standard | | 140W 800Ω | 1 | Model suffix +B | 96 |
| YD287T4-1P5GB | 1.5 | | | 300W 380Ω | 1 | | 96 |
| YD287T4-2P2GB | 2.2 | | | 440W 260Ω | 1 | | 64 |
| YD287T4-3P0GB | 3.0 | | | 440W 200Ω | 1 | | 64 |
| YD287T4-3P7GB | 3.7 | | | 740W 150Ω | 1 | | 32 |
| YD287T4-5P5GB | 5.5 | | | 1100W 100Ω | 1 | | 32 |
| YD287T4-7P5GB | 7.5 | | | 1500W 75Ω | 1 | | 32 |
| YD287T4-11GB | 11 | | | 2200W 50Ω | 1 | | 20 |
| YD287T4-15GB | 15 | | | 3000W 38Ω | 1 | | 20 |
| YD287T4-18P5GB | 18.5 | | | 4000W 32Ω | 1 | | 24 |
| YD287T4-22GB | 22 | | | 4500W 27Ω | 1 | | 24 |

Innovation Harmony Honesty Pragmatic

WUXI YOLICO ELECTRIC CO.,LTD

Add: No.98, Meiyuan Zha Lane, Binhu District.Wuxi City, Jiangsu Province
PHONE: +086(0510) 8516 1131
<http://www.yolico.com>



YD287 系列

起重专用变频器用户手册



380V 3-phase 0.75 ~ 630kW

Ver 1.2

前言

首先感谢您购买使用无锡优利康电气开发生产的 YD287 系列变频器！

该产品是优利康电气为起重行业量身打造的一款小体积、小功率、高性价比的起重专用变频器。本系列变频器支持开环矢量控制和V/f控制方式，启动力矩大，用于驱动异步电机。配备了起重驱动应用特有的抱闸控制功能，以及各种主控信号输入端口，调试方便。主要应用于小型起重设备中的提升、平移、回转等驱动和控制场合。

初次使用

对于初次使用本产品的用户，应先认真阅读本手册。若对一些功能及性能方面有所疑惑，请咨询我公司的技术支持人员，以获得帮助，对正确使用本产品有利。

符合标准

相关认证指令与标准如下表所示，是否获得相关认证资质以产品铭牌标识为准。

| 认证名称 | 指令名称 | 标准 | |
|-------|---------|------------|--------------|
| CE 认证 | EMC 指令 | 2014/30/EU | EN 61800-3 |
| | LVD 指令 | 2014/35/EU | EN 61800-5-1 |
| | RoHS 指令 | 2011/65/EU | EN 50581 |

- 在正确安装和正确使用的条件下，满足 IEC/EN 61800-3 标准要求，或GB/T 12668.1 2002 详细请参照外围设备连接及常见 EMC 问题整改部分。



| | |
|------------------------------|----|
| 目录 | |
| 前言 | 2 |
| 安全注意事项 | 5 |
| 第一章 产品信息 | 6 |
| 1.1 铭牌及型号 | 6 |
| 第二章 系统连接 | 7 |
| 2.1 系统连接图 | 8 |
| 第三章 安装与接线 | 9 |
| 3.1 安装 | 9 |
| 3.1.1 安装环境 | 9 |
| 3.2 接线 | 10 |
| 3.2.1 标准接线图 | 10 |
| 3.2.2 主回路端子 | 11 |
| 3.2.3 主回路端子布置 | 12 |
| 第四章 面板操作 | 14 |
| 4.1 操作面板说明 | 14 |
| 4.2 LED 操作面板 | 14 |
| 4.2.1 功能指示灯 | 15 |
| 4.2.2 LED 显示区 | 16 |
| 4.2.3 键盘按钮功能 | 16 |
| 4.2.4 参数查看、修改方法 | 17 |
| 4.2.5 参数群组成 | 18 |
| 4.2.6 状态参数查询 | 18 |
| 第五章 基本操作与试运行 | 20 |
| 5.1 快速调试指南 | 20 |
| 5.2 接通电源前确认事项 | 21 |
| 5.3 接通电源后显示状态确认 | 21 |
| 5.4 参数初始化 | 21 |
| 5.5 电机控制方式选择 | 22 |
| 5.6 启动和停机命令 | 22 |
| 5.6.1 操作面板启停 | 22 |
| 5.6.2 端子启停 (DI) | 22 |
| 5.6.3 通信启停 | 23 |
| 5.7 启停设置 | 23 |
| 5.7.1 启动模式 | 23 |
| 5.7.2 停机模式 | 23 |
| 5.8 频率给定的来源选择 | 23 |
| 5.8.1 多段速模式的设置方法 | 24 |
| 5.8.2 模拟量给定频率的设置方法 | 24 |
| 5.9 变频器端口使用说明 | 24 |
| 5.9.1 DI 端口使用说明 | 24 |
| 5.9.2 AI 端口使用说明 | 24 |
| 5.9.3 DO 端口使用说明 | 25 |
| 5.9.4 AO 端口使用说明 | 25 |
| 5.10 电机参数辨识 | 25 |
| 5.10.1 需要设定的电机参数 | 25 |
| 5.10.2 电机参数的自动参数辨识 | 26 |
| 5.11 密码设置 | 26 |
| 5.12 应用举例 | 27 |
| 5.12.1 起重系统的制动 | 27 |
| 5.12.2 安全限位及故障停机 | 27 |
| 第六章 参数说明 | 28 |
| 6.1 一级菜单 (B 组) 参数表 | 28 |
| P0组: 起重机基本参数表 | 28 |
| PF组: 一级菜单辅助参数表 | 28 |
| 6.2 二级菜单 (b、E、U 组) 参数表 | 29 |
| b0组: 电机基本参数表 | 29 |
| b1组: 电机控制参数表 | 29 |
| b3组: 输入输出控制参数表 | 29 |
| b4组: 输入输出控制参数表 | 32 |
| b5组: 多段速参数表 | 33 |
| b6组: 制动逻辑控制参数表 | 33 |
| b7组: 轻载与定位控制参数表 | 36 |
| b8组: 特殊曲线设置参数表 | 37 |
| b9组: 寸动设置参数表 | 37 |
| bA组: 加减速设置参数表 | 38 |
| bb组: 转矩控制参数表 | 39 |
| bc组: 负载超速保护参数表 | 39 |
| bE组: 故障与保护参数表 | 42 |
| bF组: 二级菜单辅助参数表 | 44 |
| E*组: 故障记录讯息参数表 | 46 |
| U0组: 监控0参数表 | 47 |
| U1组: 监控1参数表 | 48 |
| 6.3 三级菜单 (F 组) 参数表 | 49 |
| F0组: 电机内部参数表 | 49 |
| F1组: 矢量控制参数表 | 50 |
| F2组: V/F 控制参数表 | 51 |
| F3组: 控制优化参数表 | 52 |
| FF组: 厂家参数表 | 53 |
| 第七章 故障处理 | 54 |
| 7.1 安全注意事项 | 54 |
| 7.2 试运行前调整指南 | 55 |
| 7.3 警报及故障显示 | 56 |
| 7.4 故障复位 | 57 |
| 7.5 故障码处理 | 58 |
| 7.6 故障现象处理 | 60 |
| 7.7 故障子码介绍 | 61 |

| | |
|-----------------------|----|
| 第八章 保养与维护 | 68 |
| 8.1 日常保养 | 68 |
| 8.1.1 日常检查项目 | 69 |
| 8.2 定期检查 | 69 |
| 8.2.1 定期检查项目 | 69 |
| 8.2.2 主回路绝缘测试 | 70 |
| 8.3 易损部件更换 | 71 |
| 8.3.1 易损件寿命 | 71 |
| 8.3.2 冷却风扇的使用数量 | 71 |
| 第九章 规格与选型 | 72 |
| 9.1 技术规格 | 72 |
| 9.1.1 电气规格 | 72 |
| 9.1.2 外观尺寸 | 76 |
| 9.2 制动组件选型指导 | 79 |
| 9.2.1 制动组件选型表 | 79 |

安全注意事项

安全声明

- ◆ 在安装、操作、维护产品时，请先阅读并遵守本安全注意事项。
- ◆ 为保障人身和设备安全，在安装、操作和维护产品时，请遵循产品上标识及手册中说明的所有安全注意事项。
- ◆ 手册中的“注意”、“警告”和“危险”事项，并不代表所应遵守的所有安全事项，只作为所有安全注意事项的补充。
- ◆ 本产品应在符合设计规格要求的环境下使用，否则可能造成故障，因未遵守相关规定引发的功能异常或部件损坏等不在产品质量保证范围之内。
- ◆ 因违规操作产品引发的人身安全事故、财产损失等，我司将不承担任何法律责任。

安全等级定义



危险

“危险”表示如果不按规定操作，则导致死亡或严重身体伤害。



警告

“警告”表示如果不按规定操作，则可能导致死亡或严重身体伤害。



注意

“注意”如果不按规定操作，则可能导致轻微身体伤害或设备损坏。

安全注意事项

| 开箱验收 | |
|---|--|
| <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> 注意 </div> <ul style="list-style-type: none"> ◆ 开箱前请检查产品的外包装是否完好，有无破损、浸湿、受潮、变形等情况。 ◆ 请按照层次顺序打开包装，严禁猛烈敲打！ ◆ 开箱时请检查产品和产品附件表面有无残损、锈蚀、碰伤等情况。 ◆ 开箱后请仔细对照装箱单，查验产品及产品附件数量、资料是否齐全 | |
| <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> 警告 </div> <ul style="list-style-type: none"> ◆ 开箱时发现产品及产品附件有损伤、锈蚀、使用过的迹象等问题，请勿安装！ ◆ 开箱时发现产品内部进水、部件缺少或有部件损坏时，请勿安装！ ◆ 请仔细对照装箱单，发现装箱单与产品名称不符时，请勿安装！ | |
| 储存与运输时 | |
| <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> 注意 </div> <ul style="list-style-type: none"> ◆ 请按照产品的储存与运输条件进行储存与运输，储存温度、湿度满足要求。 ◆ 避免在水溅雨淋、阳光直射、强电场、强磁场、强烈振动等场所储存与运输。 ◆ 避免产品储存时间超过3个月，储存时间过长时，请进行更严密的防护和必要的检验。 ◆ 请将产品进行严格包装后再进行车辆运输，长途运输时必须使用封闭的箱体。 ◆ 严禁将本产品与可能对本产品构成影响或损害的设备或物品一起混装运输。 | |



第一章 产品信息

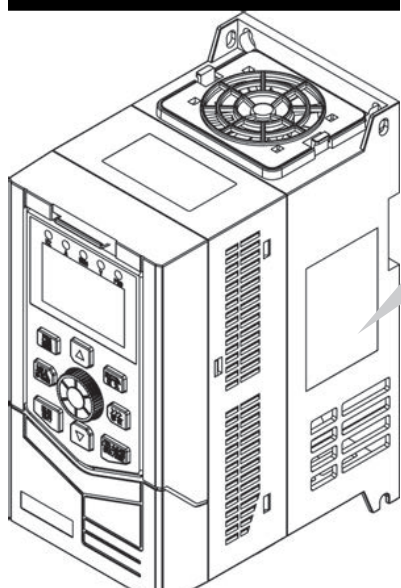
安全注意事项





注意

- 请勿抓住前盖板或端子外罩搬运变频器。如果仅抓住前盖板，则会使主体掉落，有砸伤的危险；
- 操作变频器时，请遵守静电防止措施（ESD）规定的步骤。否则会因静电而损坏变频器内部的回路。

1.1 铭牌及型号



| | | |
|------|--|---|
| 产品系列 | INVERTER | WUXI YOLIGO ELECTRIC CO., LTD. |
| 额定功率 | MODEL | : YD287T4-5P5GB |
| 额定输入 | POWER | : 5.5kW |
| | INPUT | : AC 3 phase 50/60Hz |
| | VOLTAGE | : 380-480V |
| 额定输出 | OUTPUT | : AC 3 phase 0~150Hz |
| | VOLTAGE | : 0-480V |
| | CURRENT | : 13A |
| 生产序号 | LOT NO : | 69N09815 |
| | SER NO : |  |
| |  | |

YD287 T4- 5P5 G B

| 标识 | 产品名称 |
|-------|----------|
| YD287 | 起重(开环)专用 |

| 标识 | 电压等级 |
|-----|-------------|
| T4- | 三相380V~480V |

| 标识 | G型功率等级(kW) |
|-----|------------|
| 0P7 | 0.7 |
| 1P1 | 1.1 |
| ... | ... |
| 22 | 22 |

| 标识 | 类过载型 |
|----|-------------|
| G | 150%*60秒 重载 |

| 标识 | 制动单元 |
|----|-------|
| 空 | 无 |
| B | 含制动单元 |

图 1-1 产品命名与铭牌标识



第二章 系统连接

安全注意事项



危险

- 严禁在电源接通的状态下进行接线，否则会有触电的危险！
- 请务必将断路器保持在 OFF 状态。



警告

- 将变频器安装在封闭的柜内或机壳箱内时，请用冷却风扇或冷却空调等充分冷却，以使变频器进气温度保持在 50°C 以下，否则可能导致过热或火灾！



注意

- 进行安装作业时，请用布或纸等遮住变频器的上部，以防止钻孔时的金属屑、油、水等进入变频器内部。如果异物进入变频器内部，可能导致变频器故障；作业结束后，请拿掉这些布或纸，如果继续盖在上面，则会使通风效果变差，导致变频器异常发热！
- 在使用变频器时，请遵守静电防止措施（ESD）规定的步骤，否则会因静电而损坏变频器！
- 用变频器驱动时和用商用电源驱动时的转矩特性不同，请确认要连接的机械的负载转矩特性。
- 请勿在拆下外壳的状态下吊起变频器，否则可能导致变频器的电路板或端子排损坏！



2.1 YD287 系统连接图

使用 YD287 系列变频器控制电机构成控制系统时，需要在变频器的输入输出侧安装各类电气元件保证系统的安全稳定。产品系统构成如下图所示：

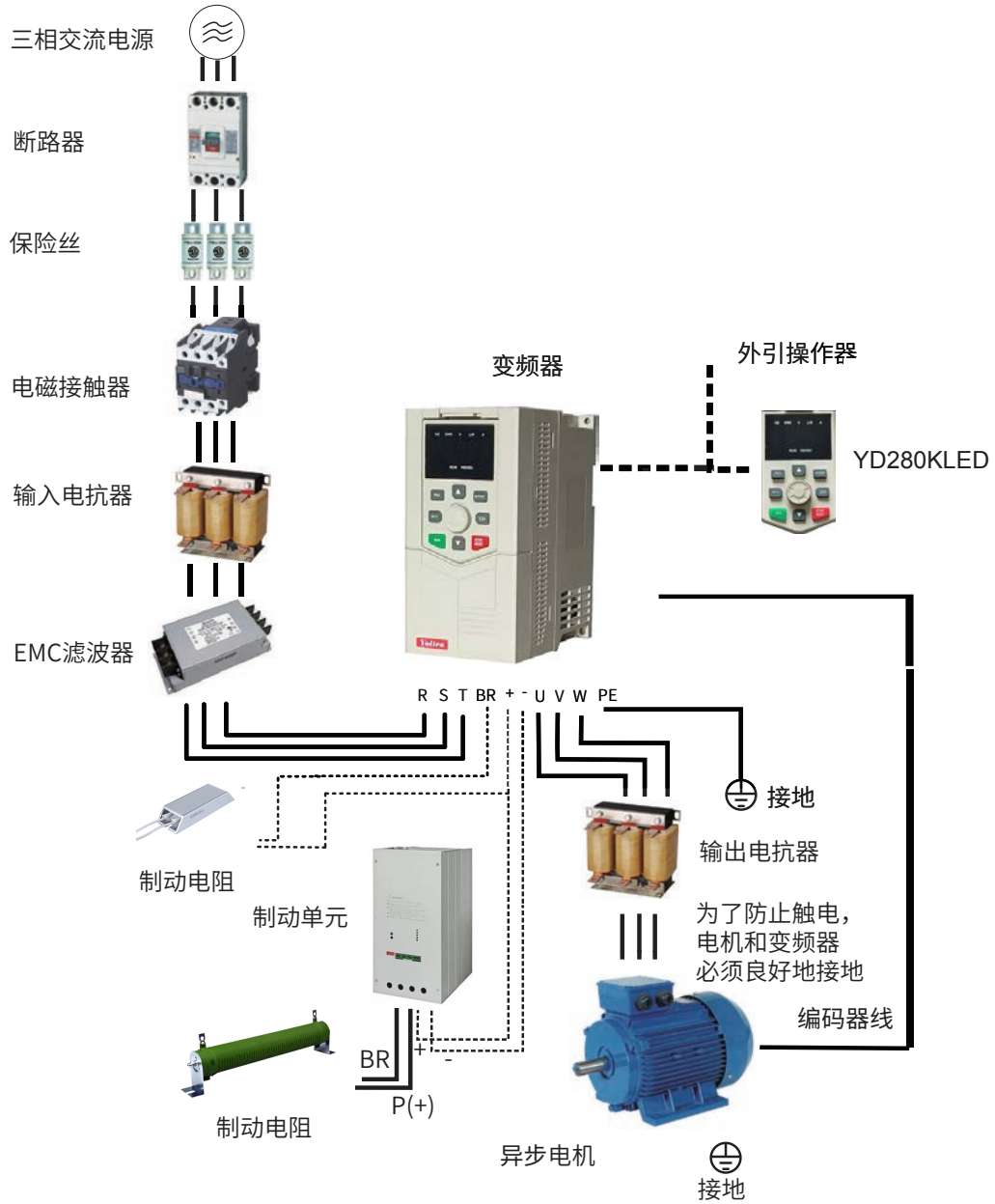


图 2-1 YD287 系列系统构成



● 上图仅作为 YD287变频器系统连接示意图，外围设备选型参见第 9 章《规格与选型》。



第三章 安装与接线

3.1 安装

3.1.1 安装环境

- 1) 环境温度：周围环境温度对变频器寿命有很大影响，不允许变频器的运行环境温度超过允许温度范围（ $-10^{\circ}\text{C}\sim 50^{\circ}\text{C}$ ）。
- 2) 将变频器装于阻燃物体的表面，周围要有足够空间散热。变频器工作时易产生大量热量。并用螺丝垂直安装在安装支座上。
- 3) 请安装在不易振动的地方。振动应不大于 0.6G。特别注意远离冲床等设备。
- 4) 避免装于阳光直射、潮湿、有水珠的地方。
- 5) 避免装于空气中有腐蚀性、易燃性、易爆性气体的场所。
- 6) 避免装在有油污、粉尘的场所。

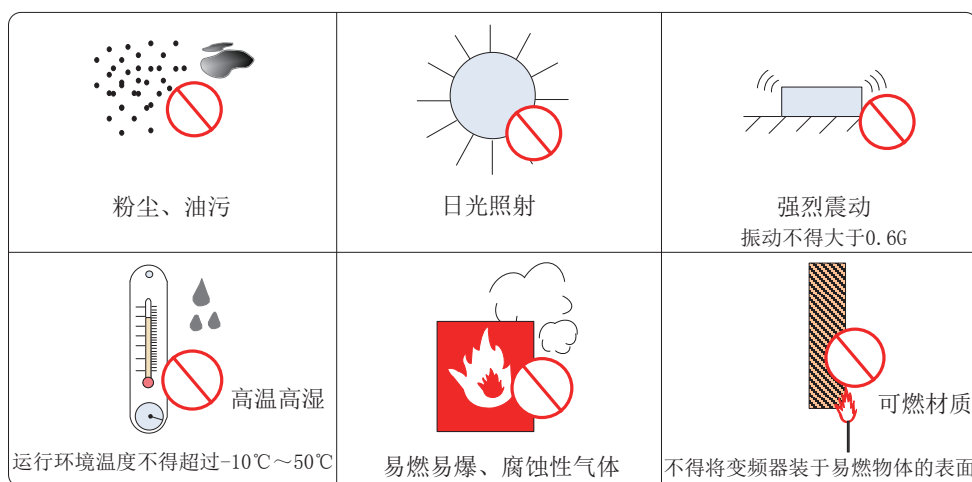


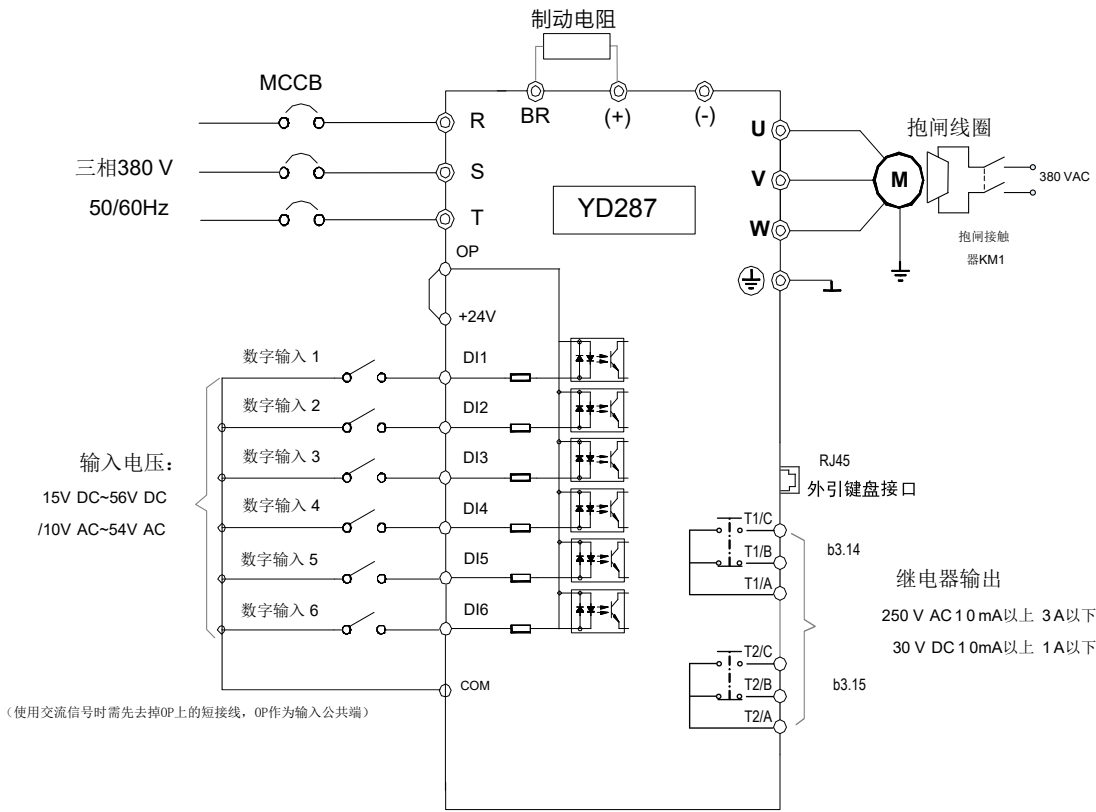
图 3-1 安装环境要求

- 7) YD287 系列产品为机柜内安装产品，需要安装在最终系统中使用，最终系统应提供相应的防火外壳、电气防护外壳和机械防护外壳等，并符合当地法律法规和相关 IEC 标准要求。



3.2 接线

3.2.1 标准接线图



注：() — 屏蔽层； / — 双绞线

图 3-26 YD287 典型接线图



3.2.2 主回路端子功能说明及注意事项

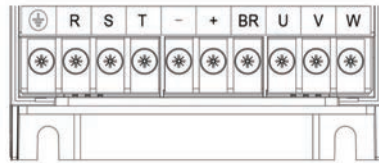


图 3-27 0.75kW ~ 3.7kW 主回路端子分配图

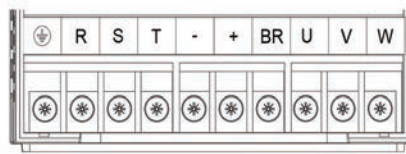


图 3-28 5.5kW ~ 7.5kW
主回路端子分布图

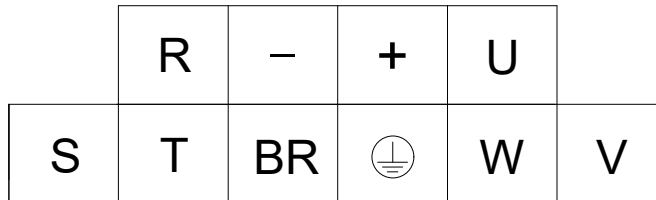


图 3-29 11kW ~ 22kW 主回路端子接线图

主回路端子分布图 图表 3-3 YD287 系列变频器主回路端子说明

| 端子标记 | 端子名称 | 功能说明 |
|---------|-----------|--------------------|
| R、S、T | 三相电源输入端子 | 交流输入电源连接点 |
| (+)、(-) | 直流母线正、负端子 | 共直流母线输入点，或制动单元的连接点 |
| (+)、BR | 制动电阻连接端子 | 制动电阻连接点 |
| U、V、W | 变频器输出端子 | 连接三相电动机 |
| | 接地端子 (PE) | 保护接地 |



3.2.3 控制回路端子分布

◆ 控制回路端子布置

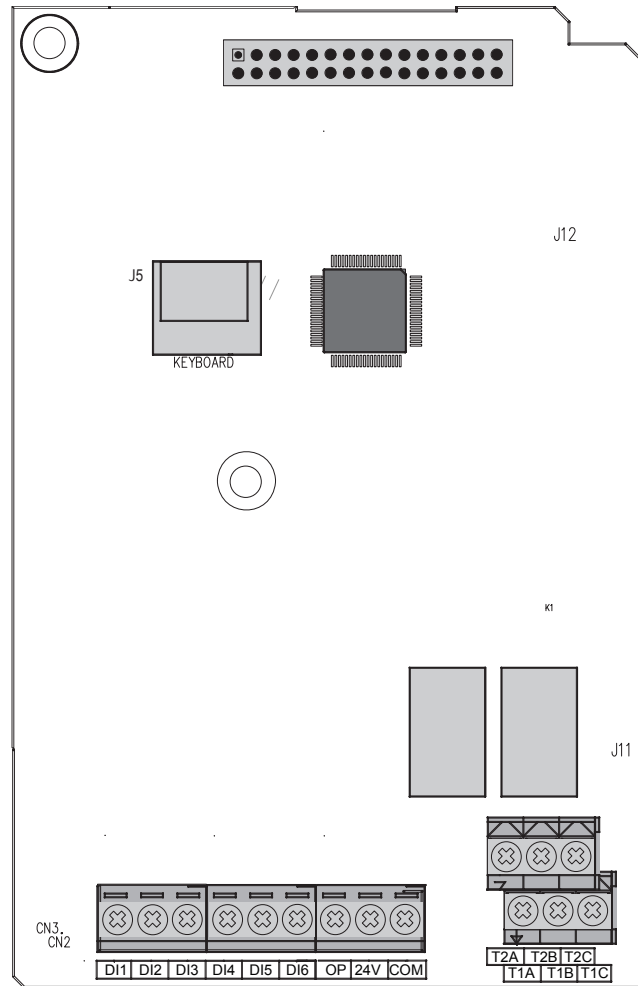


图 3-57 控制回路端子布置图



表 3-17 YD287 变频器控制端子功能说明

| 类别 | 端子符号 | 端子名称 | 功能说明 |
|-------|----------|------------|---|
| 电源 | +24V-COM | 外接 +24V 电源 | 向外提供 +24V 电源，一般用作数字输入输出端子工作电源和外接传感器电源 最大输出电流：200mA 【注 1】 |
| | OP | 外部电源输入端子 | 出厂默认与 +24V 连接 当利用外部信号驱动 DI1~DI6 时，OP 需与外部电源连接，且与 +24V 电源端子断开 |
| 数字输入 | DI1- OP | 数字输入 1 | 光耦隔离，兼容双极性输入 输入阻抗：1.39kΩ 工作电压范围：+9V~+30V |
| | DI2- OP | 数字输入 2 | |
| | DI3- OP | 数字输入 3 | |
| | DI4- OP | 数字输入 4 | |
| | DI5- OP | 数字输入 5 | |
| | DI6- OP | 数字输入 6 | |
| 继电器输出 | T1A-T1B | 常闭端子 1 | 触点驱动能力： 250V AC, 3A, COS φ =0.4 30V DC, 1A |
| | T1A-T2C | 常开端子 1 | |
| | T2A-T2B | 常闭端子 2 | 触点驱动能力： 250V AC, 3A, COS φ =0.4 30V DC, 1A |
| | T2A-T2C | 常开端子 2 | |



- 【注 1】 在环境温度大于 23°C 时，用户需按照“环境温度每升高 1°C，输出电流降低 1.8mA”进行降额使用；40°C 环境温度时最大输出电流为 170mA，当用户将 OP 与 24V 短接时，DI 端子的电流也须考虑在内。



第四章 面板操作

4.1 面板操作说明

YD287 系列变频器可通过 LED 操作面板或 LCD 操作面板进行参数操作、状态监控与控制。除变频器自带的 LCD 操作面板外，用户还可选配 LED 操作面板,并实现面板外引。

参见“4.2 LED 操作面板介绍”；通过选配 LCD 操作面板，可实现参数拷贝、上下载等功能。键盘详细使用介绍请参见“4.3 LCD 操作面板介绍”。

用操作面板，可对变频器进行参数设定 / 修改、工作状态监控、运行控制（起动、停止）等操作。操作面板的外观和操作键名称如下图所示：

4.2 LED 操作面板介绍





4.2.1 功能指示灯

下表中 表示灯亮； 表示灯灭。 表示闪烁

表 4-1 操作面板指示灯说明

| 指示灯状态 | | 状态说明 |
|------------------------------|--------------|-----------------|
| RUN 运行指示灯 | RUN | 灯灭：停机 |
| | RUN | 灯亮：运行 |
| L/R 运行指令指示灯 | LOCAL/ REMOT | 灯灭：面板控制 |
| | LOCAL/ REMOT | 灯亮：端子控制 |
| | LOCAL/ REMOT | 闪烁：通讯控制 |
| FWD/REV 正反转指示灯 | FED/REV | 灯灭：正转运行 |
| | FED/REV | 灯亮：反转运行 |
| TUNE/TC 调谐 / 转矩控制 / 故障指示灯 | TUNE/TC | 灯灭：正常运行 |
| | TUNE/TC | 灯亮：转矩控制模式 |
| | TUNE/TC | 慢闪：调谐状态（1次 / 秒） |
| | TUNE/TC | 快闪：故障状态（4次 / 秒） |
| Hz — RPM — A — % — V | 频率单位 Hz | |
| Hz — RPM — A — % — V | 电流单位 A | |
| Hz — RPM — A — % — V | 电压单位 V | |
| Hz — RPM — A — % — V | 转速单位 RMP | |
| Hz — RPM — A — % — V | 百分数 % | |



4.2.2 LED 显示区

操作面板上共有 5 位 LED 显示，可以显示设定频率、输出频率，各种监视数据以及报警代码等。

表 4-2 实际对应与 LED 显示对应表

| LED 显示 | 实际对应 | LED 显示 | 实际对应 | LED 显示 | 实际对应 | LED 显示 | 实际对应 |
|--------|------|--------|------|--------|------|--------|------|
| 0 | 0 | 6 | 6 | C | C | n | N |
| 1 | 1 | 7 | 7 | c | c | p | P |
| 2 | 2 | 8 | 8 | d | D | r | R |
| 3 | 3 | 9 | 9 | E | E | r | T |
| 4 | 4 | A | A | F | F | U | U |
| 5 | 5、S | b | B | L | L | u | u |

5 位 LED 显示，可显示各种监视数据、报警代码以及功能参数等，例如：



图 4-2 LED 显示举例



◆ 当 DI 没有设置为电机切换功能（输入功能 27 和 28）时，当前连接的电机序号位默认不显示。

4.2.3 键盘按钮功能

表 4-3 键盘按钮功能表

| 按键 | 按键名称 | 按键功能 |
|----|---------|--|
| | 编程键 | 一级菜单进入或退出。 |
| | 确认键 | 逐级进入菜单画面、设定参数确认。 |
| | 递增键 | 数据或功能码的递增。 |
| | 递减键 | 数据或功能码的递减。 |
| | 移位键 | 在停机显示界面和运行显示界面下，可循环选择显示参数；在修改参数时，可以选择参数的修改位。 |
| | 运行键 | 在“操作面板”启停控制方式下，用于运行操作。 |
| | 停机 / 复位 | 在“操作面板”启停控制方式下，用于停止操作；故障报警状态时，可用来复位操作。 |
| | 保留 | 功能保留。 |
| | 快捷键 | 按此键可快速进入密码输入界面、长按 5 秒可进入快速参数辨识模式。 |



4.2.4 参数查看、修改方法

YD287 的操作面板显示分为三个界面，分别为：状态显示→功能参数代码→功能参数设定值，进入每一级菜单之后，当显示位闪烁时，可以按 键、 键、 键进行修改。

操作流程如下图所示。

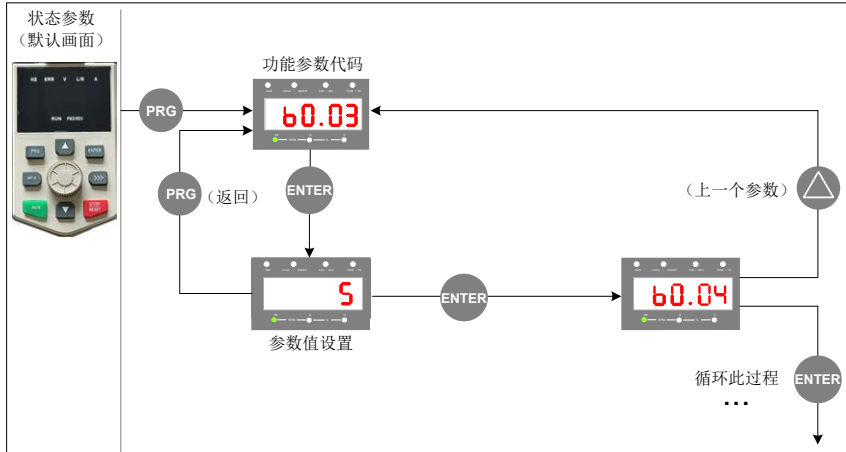


图 4-3 不同界面操作流程图

举例：将功能码 b1.02 从 10.00Hz 更改设定为 15.00Hz。

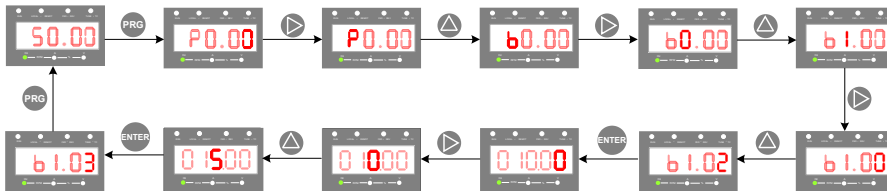


图 4-4 功能码修改示意图

在功能参数设置界面时，若参数没有闪烁位，表示该功能码不能修改，可能原因有：

- 1) 该功能码为不可修改参数，如监控参数、运行记录参数等。
- 2) 该功能码在运行状态下不可修改，需停机后才能进行修改。




4.2.5 参数组成

表 4-4 参数组成

表 4-4 功能码组成

| 功能码组 | 功能描述 | 说明 |
|------|----------|--------------------------|
| P 组 | 起重机基本参数组 | 设定电机参数和起重机的基本信息 |
| b 组 | 变频器功能组 | 运行指令、频率指令、速度曲线、制动时序等功能参数 |
| F 组 | 变频器性能组 | 变频器的核心性能参数 |
| U 组 | 监视功能码组 | 变频器基本监视参数的显示。 |
| E 组 | 故障参数组 | 故障记录的显示 |

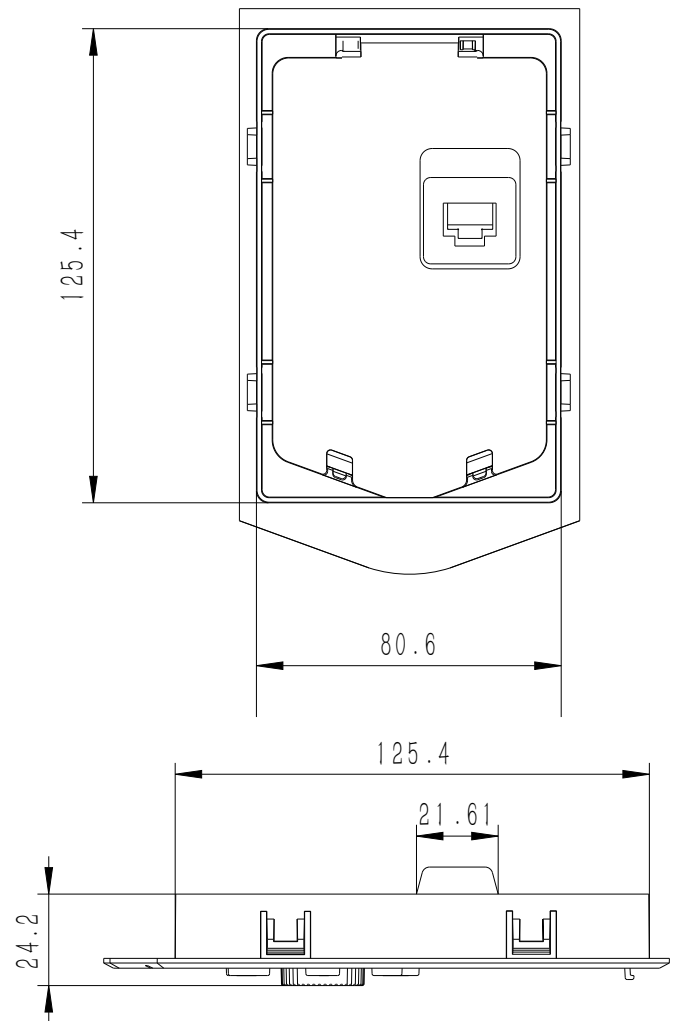
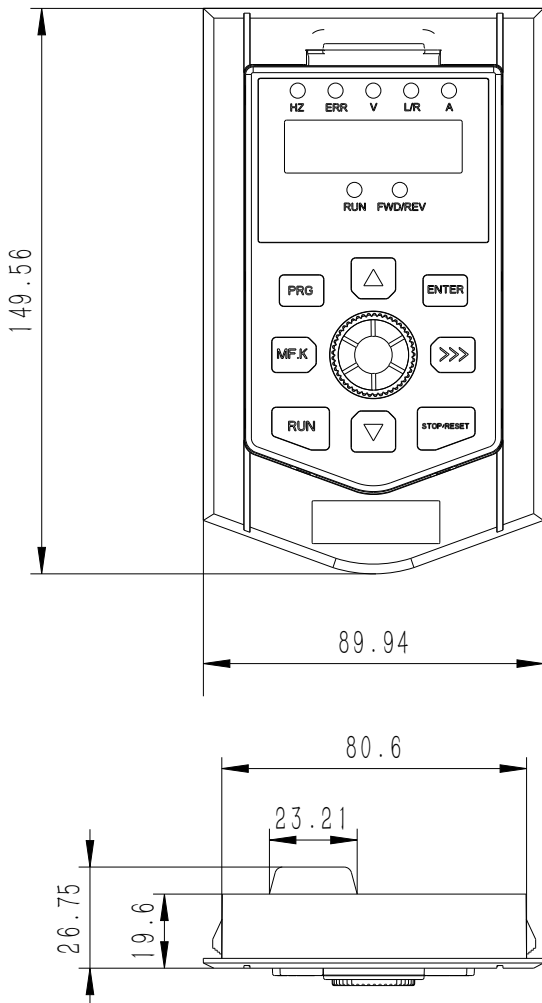
4.2.6 状态参数的查询

在停机或运行状态下，用操作面板上的  键，可以显示多个状态参数。在运行状态下，可查阅给定频率、输出同步频率、输出电流、输出电压、母线电压等五个参数。在停机状态下，只可显示目标频率和母线电压这两个参数。

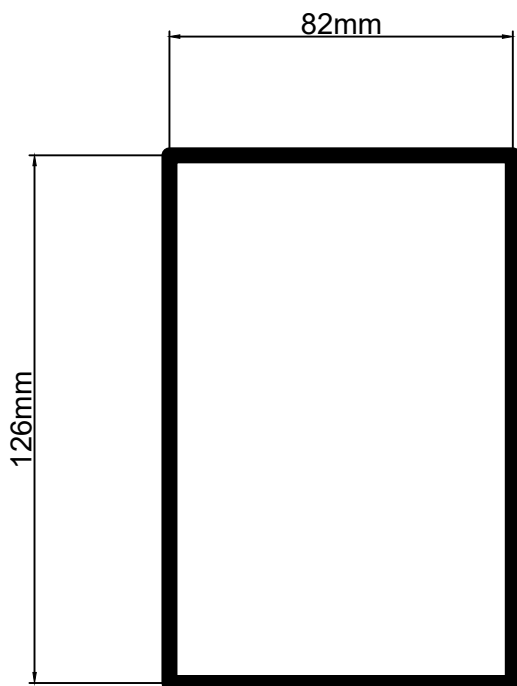


4.3 键盘托盘(YCON3231)尺寸与使用说明

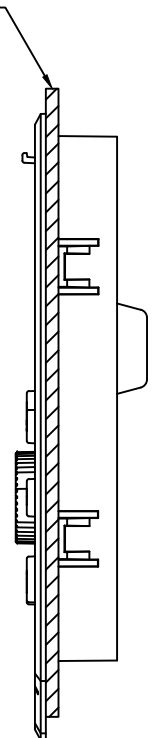
4.3.1 键盘、托盘尺寸



4.3.2 开孔尺寸



安装板厚度不大于3mm





第五章 基本操作与试运行

本章介绍起重专用变频器的基本调试步骤，主要包括变频器的频率指令设置、启动和停机的控制，根据本章内容可以实现变频器控制电机的试运行。

5.1 快速调试指南

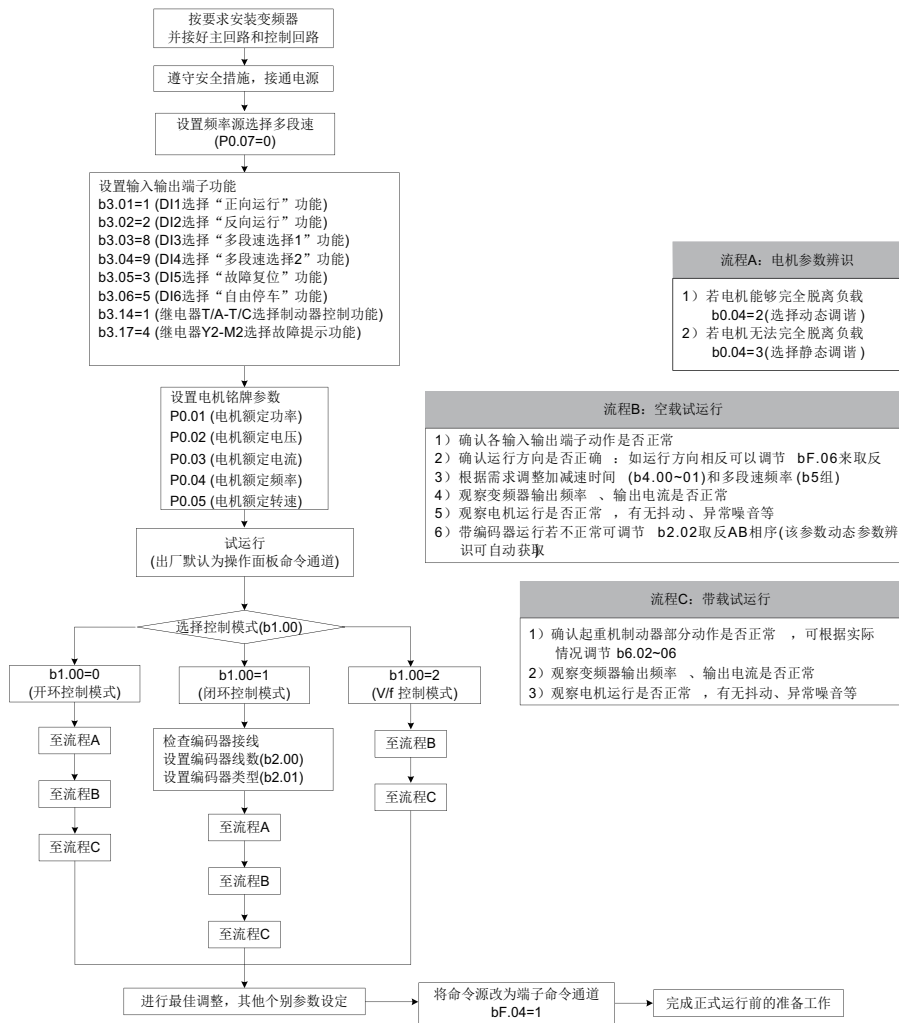


图 5-1 快速调试步骤指南



5.2 接通电源前确认事项

请务必确认以下项目后，再接通电源。

| 项目 | 内容 |
|-------------------|---|
| 电源电压的确认 | 请确认电源电压是否正确 3PH 380V AC~480V AC 50/60Hz |
| | 请对电源输入端子 (R/S/T) 可靠接线 |
| | 确认变频器和电机正确接地 |
| 变频器输出端子和电机端子的连接确认 | 请确认变频器输出端子 (U/V/W) 和电机端子的连接是否正确及可靠 |
| 和变频器控制回路端子的连接确认 | 请确认变频器的控制回路端子和其他控制装置的连接是否正确及可靠 |
| 变频器控制端子的状态确认 | 请确认变频器控制回路端子是否都处于 OFF 状态 (变频器不运行状态) |
| 负载确认 | 请确认电机是否为空载状态，未与机械系统连接 |

5.3 接通电源后显示状态确认

接通电源后，正常状态下的操作器显示如下所示。

| 状态 | 显示 | 说明 |
|-----|----|--------------------|
| 正常时 | | 出厂默认显示为数字设定 8.00Hz |
| 故障时 | | 故障时变频器处停机状态，显示故障类型 |

5.4 参数初始化

YD287 将整个功能参数分为三级，每级菜单都为用户提供了恢复出厂参数(个别参数不能够恢复)以及用户设定检查功能 (操作面板只显示与出厂默认值不同的参数)。

| 菜单号 | 参数名 | 功能描述 | 备注 |
|------|-------|------------|--|
| 一级菜单 | PF.01 | 一级菜单恢复出厂参数 | 个别参数不能恢复，具体使用方法请参阅 PF.01 的详细说明 |
| | PF.02 | 一级菜单用户设定检查 | 只显示一级菜单中与出厂默认值不同的参数 |
| 二级菜单 | bF.01 | 二级菜单恢复出厂参数 | 支持恢复二级菜单或一级二级同时恢复功能；个别参数不能恢复，具体使用方法请参阅 bF.01 的详细说明 |
| | bF.02 | 二级菜单用户设定检查 | 只显示二级菜单中与出厂默认值不同的参数 |
| | bF.03 | 历史记录清除 | 清除变频器内掉电存储参数，主要为 U1 组监控参数和故障记录参数，具体使用方法请参阅 bF.03 的详细说明 |
| 三级菜单 | FF.10 | 三级菜单恢复出厂参数 | 支持恢复三级菜单或所有参数同时恢复的功能；个别参数不能恢复，具体使用方法请参阅 FF.10 的详细说明 |
| | FF.11 | 三级菜单用户设定检查 | 只显示三级菜单中与出厂默认值不同的参数 |



5.5 电机控制方式选择

| 功能码 | 说明 | 应用场合 |
|-----------------|-------------------|--------------------------------|
| b1.00: 选择电机控制方式 | 设置为 0: 无速度传感器矢量控制 | 指开环矢量控制, 适用于普通提升应用 |
| | 设置为 2: V/f 控制 | 适用于对负载要求不高, 或一台变频器拖动多台电机的平移应用。 |

5.6 启动和停机命令

变频器的启停控制命令有 2 个来源, 分别是面板控制、端子控制, 通过功能参数 bF.04 选择。

| bF.04 | 命令指令选择 | | 出厂值 |
|-------|--------|---|------------------|
| | 设定范围 | 0 | 操作面板命令通道 (LED 灭) |
| | | 1 | 端子命令通道 (LED 亮) |

选择变频器控制命令的输入通道。变频器控制命令包括: 启动、停机、正转、反转等。

0: 操作面板命令通道 (“LOCAL/REMOT” 灯灭);

由操作面板上的 RUN、STOP/RES 按键进行运行命令控制。

1: 端子命令通道 (“LOCAL/REMOT” 灯亮);

由多功能输入端子功能进行运行命令控制。

5.6.1 操作面板启停

通过键盘操作, 使功能码 bF.04=0, 即为面板启停控制方式, 按下键盘上 RUN 键, 变频器即开始运行 (RUN 指示灯点亮); 在变频器运行的状态下, 按下键盘上 STOP 键, 变频器即停止运行 (RUN 指示灯熄灭)。

5.6.2 端子启停 (DI)

端子启停控制方式适合采用拨动开关、电磁开关按钮作为应用系统启停的场合, 也适合控制器以干接点信号控制变频器运行的电气设计。

YD287提供了端子控制功能, 参数 b3.01~b3.13 确定启停控制信号的输入端口。具体设定方法, 请查阅 b3.01~b3.13 等参数的详细说明。

例 1: 要求将变频器用拨动开关作为变频器启停开关, 将正转运行开关信号接 DI1 端口、反转运行开关信号接 DI2 端口, 使用与设置的方法如下图:

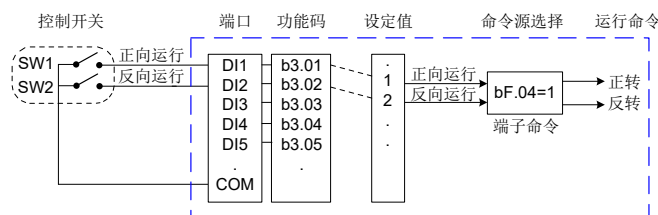


图 5-2 端子启停控制方式举例

上图控制方式中, SW1 命令开关闭合时, 变频器正向运行, SW1 命令开关断开时, 变频器停机; 而 SW2 命令开关闭合时, 变频器反向运行, SW2 命令开关断开时, 变频器停机; 若将 SW1 和 SW2 同时闭合, 变频器报 44#(正、反向运行指令同时有效) 故障。

在面板控制方式, 按下 RUN 键, 变频器驱动马达的转向, 称为正向, 若此时的旋转方向与设备要求的转向相反, 请断电后 (注意待变频器主电容电荷泄放完毕), 将变频器 UVW 输出线中的任何两个接线掉换一下, 排除旋转方向的问题; 或可以通过将 bF.06 设置为 1 来取反电机的转向。



5.7 启停设置

5.7.1 启动模式

YD287 采用直接启动方式，内置了专业起重制动器控制时序（详见 b6 组参数介绍）。

5.7.2 停机模式

YD287的停机模式有2种，分别为减速停机和自由停机，通过功能码b4.03选择。出厂默认采用“减速停机”模式（b4.03=0）。

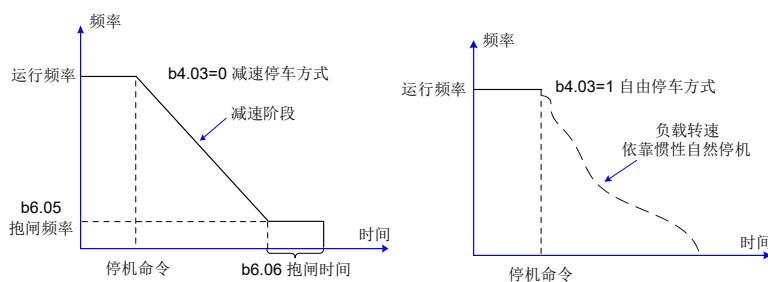


图 5-4 停机模式

5.8 频率给定的来源选择

YD287 共设置了 2 个频率源，分别为多段速和加减速，可以通过 P0.07 来选择，具体使用方法请查阅这个参数的说明。

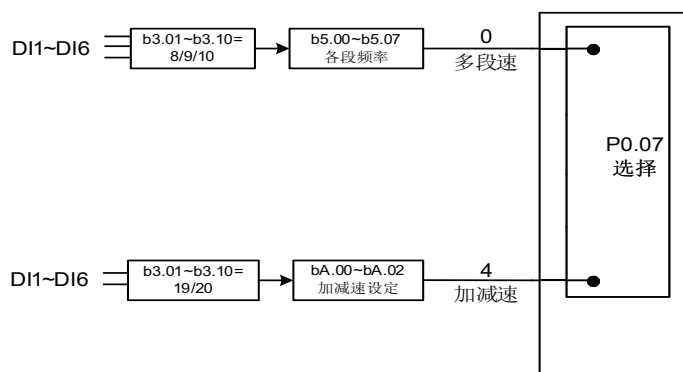


图 5-5 频率给定来源选择

上图中给出了每种频率源给定设置的相关参数，设置时可查阅对应参数的说明。



5.8.1 多段速模式的设置方法

对于仅使用若干个频率值，不需要连续调整变频器给定频率的应用场合，可使用多段速控制。YD587 最多可设定 8 段给定频率，最多可通过 3 个 DI 输入功能的组合来选择。将 DI 端口对应的功能码设置为 8~10 的功能值，即指定成了多段频率指令输入端口，多段频率可通过 b5 组的多段频率表来设定。将“频率源选择”指定为多段频率给定方式，如下图所示：

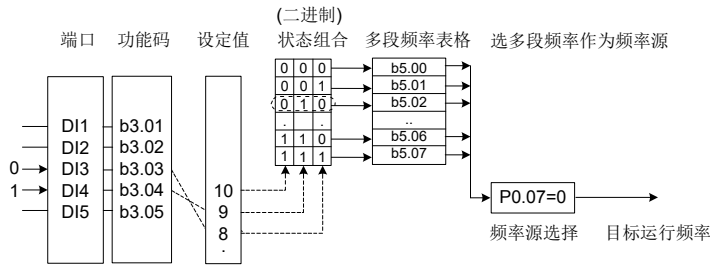


图 5-6 多段速模式设置

上图中，选择了 DI3、DI4 作为多段频率指定的信号输入端，对于缺少的设置位，按状态 0 计算，并按位组成3位二进制数，并按状态组合值，挑选多段频率。如图，当 (DI3、DI4 的输入状态)=(0、 1) 时，依次组成 (0、 1、 0)3 位二进制数，形成的状态组合数为 2，就会挑选 b5.02 功能码所设定的频率值，加之频率源选为“多段速”，即由 (b5.02) 功能码值决定了目标给定频率。

YD287 最多可以设定 3 个 DI 端口作为多段频率指令输入端，也允许少于 3 个 DI 端口进行多段频率给定的情况 (如本例所示)，对于缺少的设置位，一直按状态 0 计算。

5.9 变频器端口使用说明

5.9.1 DI 端口使用说明

DI 端口的内部硬件上配有 24V DC 检测用电源，用户只需将 DI 端口与 COM 端口短接，即可给变频器输入该 DI 的信号。

变频器对 DI 端口的输入信号还设置了软件滤波时间 (b3.21)，可提高抗干扰水平。

上述 8 个 DI 端口的功能，可在 b3.01~b3.08 功能码中进行使用功能选择。具体使用方法参阅b3.01~b3.08 功能码的详细说明。



5.9.3 DO 端口使用说明

控制板自带 2 路 DO 输出，分别为 T2A-T2B-T2C 和 T1A-T2B-T1C，这两个都是继电器输出，可驱动 250V AC 控制回路。

| 端口名称 | 对应功能码 | 输出特性说明 |
|-------------|-------|---------------------|
| T1A-T1B-T1C | b3.14 | 继电器；驱动能力：250V AC，3A |
| T2A-T2B-T2C | b3.20 | |

5.10 电机参数辨识

5.10.1 需要设定的电机参数

变频器以“矢量控制” (b1.00=0) 模式运行时，对准确的电机参数依赖性很强，这是与“V/f 控制” (b1.00=2) 模式的重要区别之一，要让变频器有良好的驱动性能和运行效率，变频器必须获得被控电机的准确参数。



5.10.2 电机参数的自动参数辨识

让变频器自动学习电机内部电气参数的方法有：动态辨识、静态辨识方式。

| 辨识方式 | 适用情况 | 辨识效果 | 参数设定 |
|---------------|--|------|---------|
| 静态辨识 (完整辨识) | 适用于所有场合 | 佳 | b0.04=3 |
| 空载动态辨识 (完整辨识) | 电机与应用系统方便脱离的场合, 如果电机负载为滚筒类型负载 (纯惯量负载), 在参数辨识过程中也可以不拆除滚筒直接进行辨识。 | 最优 | b0.04=2 |
| 静态辨识 (不完整辨识) | 适用于电机与负载很难脱离, 且不允许动态辨识运行的场合 (不辨识电机互感抗、空载电流) | 可以 | b0.04=1 |

1. 电机参数动态参数辨识步骤如下:

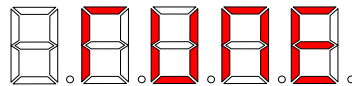
第一步: 若电机可以和负载完全脱开, 请在断电的情况下, 从机械上将电机与负载部分脱离, 保证电机能空载自由转动。

第二步: 上电后, 首先将变频器命令源 (bF.04) 选择为操作面板命令通道。

第三步: 准确输入电机的铭牌参数 (如 P0.01~P0.05), 请按电机实际参数输入下面的参数 (根据当前电机选择):

| 手动设置参数 |
|---------------|
| P0.01: 电机额定功率 |
| P0.02: 电机额定电压 |
| P0.03: 电机额定电流 |
| P0.04: 电机额定频率 |
| P0.05: 电机额定转速 |

第四步: 若电机可以和负载完全脱开, 则将功能码 b0.04 设为 2 (异步机动态参数辨识), 然后按 ENTER 键确认。此时, 键盘显示:



然后按键盘面板上“RUN”键, 变频器会驱动电机开始运行 (加减速时间为 b4.06 和 b4.07 的设定值), 运行指示灯点亮。上述显示信息消失, 退回正常参数显示状态时, 表示参数辨识完成。

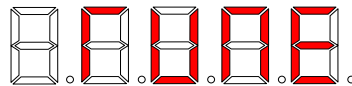
经过该动态参数辨识, 变频器会自动学习出电机的下列参数:

| 辨识后自动刷新的参数 |
|-----------------|
| F0.00: 异步电机定子电阻 |
| F0.01: 异步电机转子电阻 |
| F0.02: 异步电机漏感抗 |
| F0.03: 异步电机互感抗 |
| F0.04: 异步电机空载电流 |

如果电机不可和负载完全脱开, 则将 b0.04 设置为 1 或 3 (推荐), 开始电机参数的静态参数辨识。静态参数辨识方式 3 也能够学习完整电机参数, 但参数辨识时间略长。

2. 一键快速参数辨识功能:

长按变频器面板上的“M.F.K”按键 5s, 面板直接显示“TUNE”标识, 再按“RUN”启动参数辨识。



该功能主要针对于现场电机参数已经设置完成, 需要重新进行电机参数辨识的情况, 快速参数辨识默认参数辨识方式为 3, 完整静态电机参数辨识, 不需要电机脱开负载, 不需要更改 bF.04 等参数。

5.11 密码设置

YD287 提供了用户密码保护功能

| 参数名 | 功能描述 | 内容 |
|-------|----------|-----------------------|
| PF.00 | 所有功能参数密码 | P 组、b 组、E 组、U 组、F 组密码 |
| bF.00 | 二级菜单密码 | b 组、E 组、U 组、F 组密码 |
| FF.00 | 三级菜单密码 | F 组密码 |

当 PF.00、bF.00、FF.00 设为非零时启用密码功能, 此时按下操作面板的“M.F.K”键将显示“----”, 必须正确输入用户密码, 才能进入菜单, 否则无法进入。如果连续输入三次以上错误密码, 系统将被锁定, 无法查看。断电再上电后可以继续输入密码, 将 PF.00、bF.00、FF.00 重新设为 0 后, 密码解除。



5.12 应用举例

5.12.1 起重系统的制动

■ 制动时序介绍

YD287 软件内置了制动器时序控制功能，该功能要求将一个输出端口选择为输出功能 1(制动器控制)。具体的制动器控制时序如下图所示：

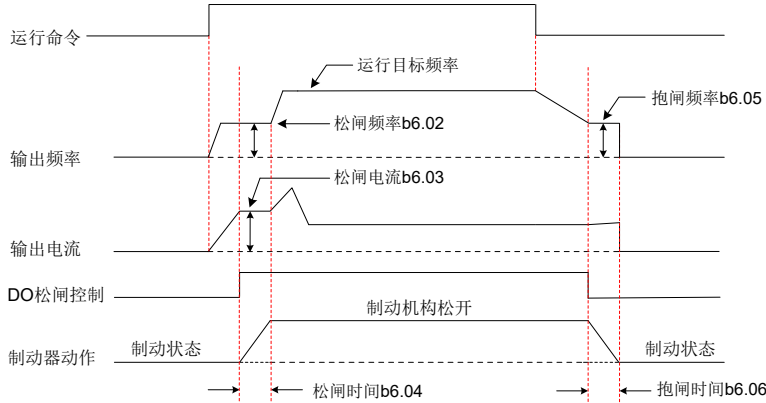


图 5-9 起重系统典型控制工艺及功能码

制动器的制动机构在没有得电时，为抱闸状态，必须在给制动机构通电的条件下，才会松闸；由于制动器的动作需要有机械动作，因此变频器的制动器输出信号与制动状态会有一个机械延迟，松闸时间 (b6.04)、抱闸时间 (b6.06) 需根据实际制动器的机械延迟来进行设置。理论上，这两个参数的设置实际要稍长于机械延迟，避免出现溜钩的现象。

5.12.2 安全限位及故障停机

安全限位与故障停机的电气接线图如下图所示，在轨道的两端分别安装一个限位开关，在机构触碰到限位开关时，控制柜自动切断变频器该方向的运行命令，此时反方向运行不受影响，在此情况下，可通过按反方向运行开关，使设备恢复正常运行；

当变频器产生一级故障时，继电器端子 T2C-T2A 吸合，输出故障停机信号使控制柜中的故障接触器 KM 动作继而做出相应处理 (如断开运行回路等，此时需进行故障复位后设备才能够恢复正常运行。)

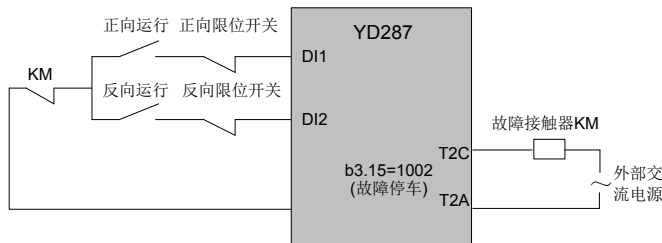


图 5-10 安全限位及故障停机应用接线图



◆ 在此提到的限位开关接法为常用接法之一，用户可以根据自身情况进行更改。



第六章 参数说明

YD287 系列变频器中，部分参数为“厂家保留”，其序号在功能参数表中没有列出，导致表中部分参数序号不连续，对于手册中没有介绍的参数，请用户不要试图进行修改，避免引起错误。

变频器的功能参数需要在变频器停机状态下修改，变频器正在运行时不能修改。监控参数在操作面板上稳定显示，不能修改。

6.1 一级菜单 (P 组) 参数表

一级菜单主要包含电机参数和起重机的基本特性参数，正确完成一级菜单参数的设置便能控制变频器带动电机正常运行，若需要进一步完善变频器功能则需要进入二级菜单进行设置。

| 序号 | 名称 | 内容 | 设置范围 | 出厂值 | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|-------------|--|------------------------|----------|----|------|---------|----------|-------------|--------------|-------------|----------|-------------|----------|------|----------|---------------|---------|---------------|------------|-------------|------------|----------|------|------------|----------|----------|---------------|-----|---|
| P0 组：起重机基本参数 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0.01 | 电机额定功率 | 该参数表示电机铭牌显示的该电机的额定功率。 | 0.4kW~22kW | 机型确定 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0.02 | 电机额定电压 | 该参数表示电机铭牌显示的该电机的额定电压。 | 0V~2000V | 380V | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0.03 | 电机额定电流 | 该参数表示电机铭牌显示的该电机的额定电流。 | 0.01A~655.35A | 机型确定 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0.04 | 电机额定频率 | 该参数表示电机铭牌显示的该电机的额定频率。 | 0.01Hz~b1.02 (最高频率) | 50.00 Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0.05 | 电机额定转速 | 该参数表示电机铭牌显示的该电机的额定转速。 | 0rpm~3000 rpm | 1400 rpm | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0.07 | 频率源选择 A | 0: 多段速给定 输入功能 8、9、10 三个点进行二进制组合实现八个段速，分别对应 b5.00~b5.07 所设定的频率。具体使用方法请查阅 b5 组参数的介绍。 4: 加减速给定 需配合输入功能 19 和 20 一同使用。详见 bA 组参数介绍。 | 0~4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0.08 | 起重机构选择 | 该参数用于选择变频器所驱动的起重机构类型。 0: 起升机构 1: 平移机构 2: 旋转机构 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>机构类型</th> <th>相关功能码</th> <th>含义</th> </tr> </thead> <tbody> <tr> <td rowspan="4">起升机构</td> <td>b1.00=0</td> <td>控制模式改为开环</td> </tr> <tr> <td>b6.03=30.0%</td> <td>松闸电流改为 30.0%</td> </tr> <tr> <td>bC.02=0.50s</td> <td>37# 故障使能</td> </tr> <tr> <td>bC.04=0.50s</td> <td>38# 故障使能</td> </tr> <tr> <td rowspan="4">平移机构</td> <td>F1.00=60</td> <td>速度环增益 1 改为 60</td> </tr> <tr> <td>b1.00=2</td> <td>控制模式改为 V/f 控制</td> </tr> <tr> <td>b6.03=0.0%</td> <td>松闸电流改为 0.0%</td> </tr> <tr> <td>bC.02=0.0s</td> <td>37# 故障无效</td> </tr> <tr> <td rowspan="2">旋转机构</td> <td>bC.04=0.0s</td> <td>38# 故障无效</td> </tr> <tr> <td>F1.00=30</td> <td>速度环增益 1 改为 30</td> </tr> </tbody> </table> <p>注： 当改变 P0.08 时，表格中涉及到的功能码将会自动更改。</p> | 机构类型 | 相关功能码 | 含义 | 起升机构 | b1.00=0 | 控制模式改为开环 | b6.03=30.0% | 松闸电流改为 30.0% | bC.02=0.50s | 37# 故障使能 | bC.04=0.50s | 38# 故障使能 | 平移机构 | F1.00=60 | 速度环增益 1 改为 60 | b1.00=2 | 控制模式改为 V/f 控制 | b6.03=0.0% | 松闸电流改为 0.0% | bC.02=0.0s | 37# 故障无效 | 旋转机构 | bC.04=0.0s | 38# 故障无效 | F1.00=30 | 速度环增益 1 改为 30 | 0~2 | 0 |
| 机构类型 | 相关功能码 | 含义 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 起升机构 | b1.00=0 | 控制模式改为开环 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | b6.03=30.0% | 松闸电流改为 30.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | bC.02=0.50s | 37# 故障使能 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | bC.04=0.50s | 38# 故障使能 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 平移机构 | F1.00=60 | 速度环增益 1 改为 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | b1.00=2 | 控制模式改为 V/f 控制 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | b6.03=0.0% | 松闸电流改为 0.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | bC.02=0.0s | 37# 故障无效 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 旋转机构 | bC.04=0.0s | 38# 故障无效 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | F1.00=30 | 速度环增益 1 改为 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0-09 | 制动器品牌系列 | - | 0~9999 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0-10 | 制动器松闸时间微调 | - | 10.0~90.0 | 50.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P0-11 | 制动器抱闸时间微调 | - | 10.0~90.0 | 50.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF 组：一级菜单辅助参数 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF.00 | 用户密码 | 该参数表示所有功能参数的显示和修改密码。若该参数设置为非零值则进入任何菜单均需要输入该密码。若连续输入三次错误密码则所有菜单被锁定，需要重新上电才能继续查看或修改参数 | 0~65535 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF.01 | 一级菜单恢复出厂参数 | 0: 不恢复 1: 恢复一级菜单出厂参数 一级菜单中的 P0.00~06、P0.08、PF.00 不恢复。 | 0~1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PF.02 | 一级菜单用户设定检查 | 0: 正常显示所有一级菜单参数 1: 只显示与出厂默认值不同的一级菜单参数 | 0~1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |



6.2 二级菜单 (b 组、E 组、U 组) 参数表

二级菜单主要包含变频器的各种基本功能参数、监控参数和故障存储参数组，正确完成二级菜单参数的设置便能实现内含的所有功能，若需要进一步提升变频器的输出性能则需要进入三级菜单进行设置。

进入二级菜单需要正确输入参数 bF.00 所设定的密码。

| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
|--------------|--------------|--|------------------|---------|
| b0 组: 电机基本参数 | | | | |
| b0.00 | 轴冷电机低速运行保护频率 | 这两个参数为 43# 故障所使用, 属于对轴冷电机的一项保护。当变频器给定频率低于 b0.00 的设定值且维持时间超过 b0.01 的设定值时变频器报 43# 故障。 b0.01 设定为 0 则该功能无效。 | 0.01Hz~20.00Hz | 5.00Hz |
| b0.01 | 轴冷电机低速运行时间 | | 0s~1000s | 0s |
| b0.02 | 减速箱理论运行时间 | 该参数表示减速箱额定使用寿命 (小时), 用作监控参数 U1.07(减速箱使用率)的计算用。该参数设置为 0 则 U1.07 所表示的功能无效。 | 0~65535 | 0 |
| b0.03 | 减速箱铭牌负载值 | 该参数表示减速箱带额定负载时变频器的输出转矩 (百分比), 用作监控参数 U1.07(减速箱使用率)的计算用。该参数设置为 0 则 U1.07 所表示的功能无效。 | 0.0%~200.0% | 0.0% |
| b0.04 | 参数辨识选择 | 0: 无操作 1: 异步机静态参数辨识 (学习部分电机参数) 2: 异步机动态参数辨识 (学习全部电机参数) 3: 异步机静态参数辨识 (学习全部电机参数) | 0~3 | 0 |
| b0.05 | 上电自动参数辨识选择 | YD287 具上电自动参数辨识定子电阻功能。若启用该功能, 则变频器每次上电后自动进行 2~3 秒静态参数辨识, 确保最佳控制效果。 0: 不使用该功能 1: 使用 | 0~1 | 0 |
| b1 组: 电机控制参数 | | | | |
| b1.00 | 控制方式 | 0: 不带编码器矢量控制 (开环控制模式) 2: V/f 控制 | 0~2 | 0 |
| b1.01 | 滑差补偿 | 该参数用来调整电机的稳速精度, 当电机重载时速度偏低则加大该参数, 反之则减小。 | 50.0%~200.0% | 100.0% |
| b1.02 | 最高频率 | 该参数表示变频器在任意时刻输出频率的最高上限值。 | 50.00Hz~150.00Hz | 50.00Hz |
| b1.03 | 最低频率 | 该参数表示变频器在任意时刻输出频率的最低下限值。 | 0.00Hz~15.00Hz | 0.00Hz |

| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
|-------|----------|--|-------------|--------|
| b1.04 | 正向转矩上限 | 这两个参数分别表示变频器正转运行 (输入功能 1 有效) 和反向运行 (输入功能 2 有效) 时的输出转矩上限值, 对应电机额定转矩的百分比。在无传感器矢量控制模式 (开环) 下, 即使设定值小于 50.0% 变频器也判定为 50.0%。 这两个参数仅在 b6.00 选择为 2 (手动制动控制) 时有效: 变频器启动后在松闸时间 (b6.04) 内, 转矩上限为这两个参数的设定值, 当制动器完全打开后转矩上限切换为 b1.04 和 b1.05 的设定值。 | 0.0%~500.0% | 180.0% |
| b1.05 | 反向转矩上限 | | | |
| b1.06 | 松闸正向转矩上限 | | | 150.0% |
| b1.07 | 松闸反向转矩上限 | | | 130.0% |



| b3 组：输入输出控制参数 | | | | |
|---------------|----------|--|--|---|
| b3.01 | D11 功能选择 | 0: 无功能 (常开点) 1: 正转运行 (常开点) 2: 反转运行 (常开点) 通过外部端子来控制变频器正转与反转。 3: 故障复位 (常开点) 利用端子进行故障复位的功能。与键盘上 RESET 键功能相同。用此功能可实现远距离故障复位。 4: 快速停机 (常开点) 变频器立即输出抱闸频率 (b6.05) 并正常执行抱闸时序。 5: 自由停机 (常开点) 变频器封锁输出, 此时电机的停机过程不受变频器控制。此方式与 b4.03 所述的自由停机的含义是相同的。 6: 减速停机 (常开点) 变频器正常减速并经过抱闸时序后停机, 与取消运行命令的效果相同。 7: 外部故障输入 (常开点) 当该信号送给变频器后, 变频器报 50#(外部输入) 故障。 8: 多段速 1(常开点) 9: 多段速 2(常开点) 10: 多段速 3(常开点) 频率源选择“多段速给定”时有效, 详细内容请查阅 b5 组参数的介绍。 11: 松闸反馈 (常开点) 12: 抱闸反馈 (常开点) 41# 和 42# 故障的反馈输入信号。具体使用方法请查阅这两个故障的详细介绍。 13: 第二段加速斜坡切换 (常开点) 14: 第二段减速斜坡切换 (常开点) 续下 ~ | 0~133 (输入功能 1~33 为对应功能的常开输入; 101~133 为对应功能的常闭输入; 0 和 100 无效) | 1 |

| 序号 | 名称 | 内容 | 设置范围 | 出厂值 | | | | | | | | | | | | | | | |
|---------|---------|--|---------|---------|--------|----|----|-------|----|----|-------|----|----|-------|----|----|-------|----|----|
| 同上 | 同上 | 续上 ~ 15: 第三段加速斜坡切换 (常开点) 16: 第三段减速斜坡切换 (常开点) 特殊曲线运行加减速时间的 DI 切换点输入功能。具体使用方法请查阅 b8 组特殊曲线参数。 17~18: 保留 19: 加速运行 20: 减速运行 由外部端子给定频率时修改频率的递增、递减指令。在频率源选择为“加减速给定”时有效。 21: 速度 / 转矩切换 (常开点) 该功能输入有效则变频器进入转矩控制模式; 无效则进入速度控制模式。具体使用方法请查阅 bb 组转矩控制参数。 22: 正向停止开关 (常开点) 23: 反向停止开关 (常开点) 24: 正向减速开关 (常开点) 25: 反向减速开关 (常开点) 停止开关有效后变频器执行快速停车动作 (与输入功能 4 相同), 减速开关有效后变频器运行的最高输出频率被限制到 bF.16(减速开关限制频率) 所设定的频率。通过这 2 对输入点可以实现简易的定位功能。 26: 定点屏蔽 (常开点) 该功能输入有效则停止和减速开关输入均无效。 27: 电机切换开关 1(常开点) 28: 电机切换开关 2(常开点) YD287 内置 3 套完整功能参数, 可实现 3 台电机的切换使用。电机切换功能必须在变频器停止输出时才有效。一旦选择这两个输入功能, 则其他两套参数的相同 DI 点将强制选择这两个输入功能。这两个输入功能为二进制组合, 逻辑如下表所示: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>输入功能 28</th> <th>输入功能 27</th> <th>使用电机序号</th> </tr> </thead> <tbody> <tr> <td>无效</td> <td>无效</td> <td>1# 电机</td> </tr> <tr> <td>无效</td> <td>有效</td> <td>2# 电机</td> </tr> <tr> <td>有效</td> <td>无效</td> <td>3# 电机</td> </tr> <tr> <td>有效</td> <td>有效</td> <td>3# 电机</td> </tr> </tbody> </table> 29: 保留 (常开点) 30: 保留 (常开点) 31: 位置校验 续下 ~ | 输入功能 28 | 输入功能 27 | 使用电机序号 | 无效 | 无效 | 1# 电机 | 无效 | 有效 | 2# 电机 | 有效 | 无效 | 3# 电机 | 有效 | 有效 | 3# 电机 | 同上 | 同上 |
| 输入功能 28 | 输入功能 27 | 使用电机序号 | | | | | | | | | | | | | | | | | |
| 无效 | 无效 | 1# 电机 | | | | | | | | | | | | | | | | | |
| 无效 | 有效 | 2# 电机 | | | | | | | | | | | | | | | | | |
| 有效 | 无效 | 3# 电机 | | | | | | | | | | | | | | | | | |
| 有效 | 有效 | 3# 电机 | | | | | | | | | | | | | | | | | |



| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
|-------|----------|---|---------|-----|
| 同上 | 同上 | 续上~ 32: 保留 33: 计数器输入 100: 无功能 (常闭点) 101: 正转运行 (常闭点) 102: 反转运行 (常闭点) 103: 故障复位 (常闭点) 104: 快速停机 (常闭点) 105: 自由停机 (常闭点) 106: 减速停机 (常闭点) 107: 外部故障输入 (常闭点) 108: 多段速 1(常闭点) 109: 多段速 2(常闭点) 110: 多段速 3(常闭点) 111: 松闸反馈 (常闭点) 112: 抱闸反馈 113: 第二段加速斜坡切换 (常闭点) 114: 第二段减速斜坡切换 (常闭点) 115: 第三段加速斜坡切换 (常闭点) 116: 第三段减速斜坡切换 (常闭点) 117~118: 保留 119: 加速运行 (常闭点) 120: 减速运行 (常闭点) 121: 速度 / 转矩切换 (常闭点) 122: 正向停止开关 (常闭点) 123: 反向停止开关 (常闭点) 124: 正向减速开关 (常闭点) 125: 反向减速开关 (常闭点) 126: 定点屏蔽 (常闭点) 127: 电机切换开关 1(常闭点) 128: 电机切换开关 2(常闭点) 129: 保留 (常闭点) 130: 保留 (常闭点) 131: 计数器复位 132: 保留 133: 计数器输入 | 同上 | 同上 |
| b3.02 | DI2 功能选择 | 同 B3.01 | 同 b3.01 | 2 |
| b3.03 | DI3 功能选择 | 同 B3.01 | 同 b3.01 | 8 |
| b3.04 | DI4 功能选择 | 同 B3.01 | 同 b3.01 | 9 |
| b3.05 | DI5 功能选择 | 同 B3.01 | 同 b3.01 | 3 |
| b3.06 | DI6 功能选择 | 同 B3.01 | 同 b3.01 | 5 |



| | | | | |
|-------|---------------|--|--|--------|
| b3.14 | 继电器 1 功能选择 | <p>0: 无功能 (常开点) 1: 制动器控制 (常开点) 在制动时序中满足制动器打开条件后该输出有效。具体使用方法请查阅 b6 组参数介绍。 2: 故障停机输出 (常开点) 变频器产生 1 级故障后输出。 3: 故障报警输出 (常开点) 变频器产生 2 级、3 级故障后输出。 4: 故障提示输出 (常开点) 变频器产生 4 级故障后输出。 5: 电机 1 接通指示 (常开点) 6: 电机 2 接通指示 (常开点) 7: 电机 3 接通指示 (常开点)</p> <p>若选择 5~7 三种输出功能, 则其他两套电机参数相同输出点的输出功能将会强制跟随变化。 8: 变频器过载预警 (常开点) 在变频器过载保护发生前 10s, 输出有效信号。 9: 电机过载预警 (常开点) 电机过载保护动作之前, 根据过载预警的阈值判断, 在超过预警阈值后输出有效。电机过载参数设定参见 bE.00~bE.02 的说明。 10: 保留 (常开点) 11: 超载保护 (常开点) 变频器进入超载保护状态后该输出功能有效。具体使用方法请查阅 bE.13 的说明。 12: 过转矩输出 (常开点) 变频器的输出转矩超过参数 bF.17 的设定值后该功能输出有效, 低于设定值的 90% 后输出无效。具体使用方法请查阅 bF.17 的说明。 13: 电机风扇控制 (常开点) 变频器运行后该功能输出有效, 变频器停止运行后延迟 bF.21 设定的时间后该功能输出无效。 14: 频率到达输出 (常开点) 具体使用方法请查阅 bF.07 及 bF.08 说明。 15: 变频器运行中 (常开点) 变频器处于运行状态时该功能输出有效, 变频器停机运行后该功能输出无效。 16: 保留 17: 保留 (常开点) 18: 通讯控制 (常开点) 输出功能受通信命令控制, 具体参照 U0.11 介绍。</p> <p>100: 无功能 (常闭点) 101: 制动器控制 (常闭点) 102: 故障停机输出 (常闭点) 103: 故障报警输出 (常闭点) 104: 故障提示输出 (常闭点) 105: 电机 1 接通指示 (常闭点) 106: 电机 2 接通指示 (常闭点) 107: 电机 3 接通指示 (常闭点) 108: 变频器过载预警 (常闭点) 109: 电机过载预警 (常闭点) 110: 保留 (常闭点) 111: 超载保护 (常闭点) 112: 过转矩输出 (常闭点) 113: 电机风扇控制 (常闭点) 114: 频率到达输出 (常闭点) 115: 运行中输出 (常闭点) 116: 自启动功能输出 (常闭点) 117: 保留 (常闭点) 118: 通讯控制 (常闭点)</p> | <p>0~118 (输出功能) 0和100无效</p> <p>1~15 为对应功能的常开输出;</p> <p>101~118 为对应功能的常闭输出;</p> | 0 |
| b3.15 | 继电器 2 功能选择 | 同 b3.14 | 同 b3.14 | 13 |
| b3.16 | 保留 | 保留 | 保留 | 0 |
| b3.17 | 保留 | 保留 | 保留 | 4 |
| b3.18 | FM 功能选择 | 保留 | 保留 | 0 |
| b3.21 | DI 滤波时间 | 设置 DI 端子状态的软件滤波时间。若使用场合输入端子易受干扰而引起误动作, 可将此参数增大, 以增强其抗干扰能力。但是该滤波时间增大会引起 DI 端子的响应变慢。 | 0.000s~ 1.000s | 0.010s |



| 序号 | 名称 | 内容 | 设置范围 | 出厂值 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|------------|--|-------------|--------|--------|------|----|----|----|-------|----|----|----|-------|----|----|----|-------|----|----|----|-------|----|----|----|-------|----|----|----|-------|----|----|----|-------|----|----|----|-------|---------------------------------------|
| b4 组：斜坡设置参数 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.00 | 加速时间 | 加速时间指变频器从零频率加速到额定频率 (P0.04) 所需要的时间, 见下图中的 t1。减速时间指变频器从额定频率 (P0.04) 减速到零频率所需时间, 见下图中的 t2。 | 0.1s~600.0s | 3.0s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.01 | 减速时间 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.02 | 加速类型 | 0: 直线加减速 输出频率按照直线递增或递减。 1: S 曲线加减速 输出频率按照 S 曲线递增或递减。S 曲线在要求平缓启动或停机的场合使用。 | 0~1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.03 | 减速类型 | 2: 自由停机 (仅 b4.03 可以选择) 停机命令有效后, 变频器立即终止输出, 此时电机按照机械惯性自由停机。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.04 | S 曲线开始段比例 | 这两个参数分别定义了, S 曲线加减速的起始段和结束段时间比例。下图中 t1 即为参数 b4.04 定义的参数, 在此段时间内输出频率变化的斜率逐渐增大。t2 即为参数 b4.05 定义的时间, 在此时间段内输出频率变化的斜率逐渐变化到 0。在 t1 和 t2 之间的时间内, 输出频率变化的斜率是固定的, 即此区间进行直线加减速。 | 0.0%~40.0% | 30.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.05 | S 曲线结束段比例 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.06 | 动态参数辨识加速时间 | 这两个参数表示在变频器动态参数辨识运行 (b0.04=2) 时的加减速时间。计算标准和定义与 b4.00 和 b4.01 完全相同。 | 0.1s~600.0s | 20.0s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b4.07 | 动态参数辨识减速时间 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5 组：多段速参数 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.00 | 多段速 1 | 多段速功能由输入端子功能的 8、9 和 10 来选择。8 个多段速是通过三个端子的数字状态组合来实现, 详细组合如下表所示: <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>输入功能 10</th> <th>输入功能 9</th> <th>输入功能 8</th> <th>目标段速</th> </tr> </thead> <tbody> <tr> <td>无效</td> <td>无效</td> <td>无效</td> <td>b5.00</td> </tr> <tr> <td>无效</td> <td>无效</td> <td>有效</td> <td>b5.01</td> </tr> <tr> <td>无效</td> <td>有效</td> <td>无效</td> <td>b5.02</td> </tr> <tr> <td>无效</td> <td>有效</td> <td>有效</td> <td>b5.03</td> </tr> <tr> <td>有效</td> <td>无效</td> <td>无效</td> <td>b5.04</td> </tr> <tr> <td>有效</td> <td>无效</td> <td>有效</td> <td>b5.05</td> </tr> <tr> <td>有效</td> <td>有效</td> <td>无效</td> <td>b5.06</td> </tr> <tr> <td>有效</td> <td>有效</td> <td>有效</td> <td>b5.07</td> </tr> </tbody> </table> | 输入功能 10 | 输入功能 9 | 输入功能 8 | 目标段速 | 无效 | 无效 | 无效 | b5.00 | 无效 | 无效 | 有效 | b5.01 | 无效 | 有效 | 无效 | b5.02 | 无效 | 有效 | 有效 | b5.03 | 有效 | 无效 | 无效 | b5.04 | 有效 | 无效 | 有效 | b5.05 | 有效 | 有效 | 无效 | b5.06 | 有效 | 有效 | 有效 | b5.07 | 最低频率 (b1.03) ~ 最高频率 (b1.02) 0.00Hz |
| 输入功能 10 | 输入功能 9 | | 输入功能 8 | 目标段速 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 无效 | 无效 | | 无效 | b5.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 无效 | 无效 | | 有效 | b5.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 无效 | 有效 | | 无效 | b5.02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 无效 | 有效 | | 有效 | b5.03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 有效 | 无效 | | 无效 | b5.04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 有效 | 无效 | | 有效 | b5.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 有效 | 有效 | 无效 | b5.06 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 有效 | 有效 | 有效 | b5.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.01 | 多段速 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.02 | 多段速 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.03 | 多段速 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.04 | 多段速 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.05 | 多段速 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.06 | 多段速 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b5.07 | 多段速 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b6 组：制动逻辑控制参数 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b6.00 | 制动曲线类型 | 0: 无制动控制 变频器不具有开闸频率和开、抱闸时间等功能, 此时输出功能 1 等效于“变频器运行中”输出功能。 1: 自动制动控制 开闸时间内变频器自动憋电流 (此时的转矩上限为 b1.04 和 b1.05 的设定值), 当输出电流达到 (b6.03 × 电机额定电流) 后输出松闸指令。 2: 手动制动控制 开闸时间内变频器以 b1.06 和 b1.07 为转矩上限, 当输出电流值达到 (b6.03 × 电机额定电流) 后输出松闸指令, 具体使用详见 b1.06 和 b1.07 的说明。 3: 锥形电机控制 | 0~3 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



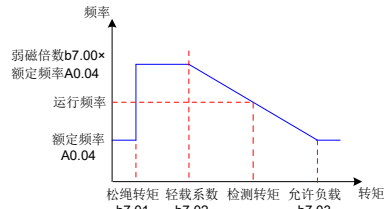
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
|-------|--------|--|-----------------------|--------|
| b6.01 | 启动方向 | <p>该参数表示在松闸时间内变频器输出转矩的方向选择。</p> <p>0: 松闸力矩与运行方向相同</p> <p>1: 松闸力矩始终为正转方向</p> | 0~1 | 0 |
| b6.02 | 松闸频率 | 该参数表示变频器在制动器完全打开前的输出频率,即电机能够输出满力矩的最低频率。 | 最低频率 (b1.03) ~20.00Hz | 2.00Hz |
| b6.03 | 松闸电流 | 该参数表示电机额定电流 (P0.03) 的百分比。当变频器的输出电流达到该值后立即输出制动器打开指令 (输出功能 1 有效)。具体使用方法请查阅 4.11 小节的说明。 | 0.0%~150.0% | 30.0% |
| b6.04 | 松闸时间 | 该参数表示机械制动器由开始打开到完全打开的时间,该段时间内变频器维持松闸频率输出。具体使用方法请查阅 4.11 小节的说明。 | 0.00s~5.00s | 0.50s |
| b6.05 | 抱闸频率 | 该参数表示取消运行命令后变频器减速过程中输出频率低于该参数的设定值则立即输出制动器关闭指令 (输出功能 1 无效)。具体使用方法请查阅 4.11 小节的说明。 | 最低频率 (b1.03) ~20.00Hz | 2.00Hz |
| b6.06 | 抱闸时间 | 该参数表示机械制动器由开始闭合到完全闭合的时间,该段时间内变频器维持抱闸频率输出。具体使用方法请查阅 4.11 小节的说明。 | 0.00s~5.00s | 0.50s |
| b6.07 | 抱闸延时 | 该参数表示当符合制动器关闭条件后不立即输出制动器关闭指令,而是经过该参数的设置时间延迟后再输出制动器关闭指令。当快速停机、自由停机、起重机构类型选择 (P0.08) 为 0 和 4 时,该功能无效。 | 0.0s~30.0s | 0.0s |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
| b6.08 | 制动反馈用途 | <p>该参数涉及到 41# 和 42# 故障的使用,具体使用方法请查阅这两个故障的说明。</p> <p>0: 不使用制动反馈 表示没有制动反馈接点输入到变频器或不需要使用制动反馈功能。</p> <p>1: 用于动作时检测 表示只有在制动器打开和关闭过程中才检测制动器反馈信号,其他时间均不检测。此种应用只需要一个制动器反馈触点输入即可。正确应用逻辑图如下图所示:</p> <p>2: 用于全程监控 表示开闸和关闸时间由制动器反馈触点信号决定,且只要变频器上电就开始检测制动器的反馈信号是否正确。此种应用需要开闸和抱闸两个反馈触点均接入变频器。正确应用逻辑图如下图所示:</p> | 0~2 | 0 |



| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
|-------|---------|---|-----------------------|--------|
| b6.09 | 指令反向控制 | <p>0: 不允许在运行过程中直接反向 若在运行过程中给定反向运行指令则变频器按正常停机过程停止输出后重新开始反向运行。</p> | 0~1 | 0 |
| | | <p>1: 允许在运行过程中反向 若在运行过程中给定反向运行指令则变频器减速到过零跳跃频率 (b6.14) 后直接由反向过零跳跃频率开始反向运行, 整个过程中不进行制动器开关控制。</p> | | |
| b6.10 | 直流制动电流 | <p>直流制动电流指直流制动时变频器的输出电流相对电机额定电流的百分比。此值越大则直流制动效果越强, 但是电机和变频器的发热越大。 直流制动频率指停机减速过程中, 当给定频率降低到该频率时, 开始直流制动过程。进入直流制动状态后变频器输出制动器关闭指令。</p> | 0~120% | 0% |
| b6.11 | 直流制动频率 | | 最低频率 (b1.03) ~50.00Hz | 0.00Hz |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
| b6.12 | 制动过程再启动 | <p>0: 在制动过程中不允许再启动 在停机过程中若制动器已经开始关闭则不接受启动指令, 必须等到制动器完全关闭变频器停止输出后才能继续运行</p> | 0~1 | 0 |
| | | <p>1: 在制动过程中允许再启动 在停机过程中即使制动器已经开始关闭, 变频器同样接受新的运行命令</p> | | |
| b6.13 | 再启动等待时间 | <p>该参数指变频器每次停机后必须经过该参数设置时间的延迟才能开始下次启动运行。详见参数 b6.09 介绍中的图例。</p> | 0.0s~15.0s | 0.3s |
| b6.14 | 过零跳跃频率 | <p>该参数指在变频器允许指令反向运行 (b6.09=1) 时, 在减速过程中输出频率直接由 b6.14 跳变到 -b6.14。详见参数 b6.09 介绍中的图例。</p> | 0.00Hz~20.00Hz | 2.00Hz |



| 参数 | 名称 | 参数说明 | 设置范围 | 出厂值 |
|------------------|--------|--|-----------------------------|---------|
| b7 组：轻载与定位控制功能参数 | | | | |
| b7.00 | 弱磁倍数 | 轻载高速功能指的是当目标频率大于额定频率时，变频器根据负载情况自动计算最高可达输出频率从而避免由于负载太大而发生过载、过流等故障。b7.00~07 是轻载高速功能的相关设定参数。 | 100.0%~300.0% | 100.0% |
| b7.01 | 松绳转矩 | 当变频器的输出频率达到 b7.07 的设定值时，变频器维持该频率输出，维持时间为 b7.06，维持时间到后检测输出转矩 T 用于下图曲线计算，得到本次运行所能达到的最高频率 F。若本次运行的目标频率大于额定频率且 b7.00 > 100.0%，则启用轻载高速功能。当 $T \leq$ 松绳转矩或 $T \geq$ 允许负载时，F 的最高值为额定频率；当松绳转矩 $< T \leq$ 轻载系数时，F 的最高值为 $b7.00 \times$ 额定频率；当轻载系数 $< T <$ 允许负载时，F 根据下图曲线进行自动调整。 | 0.0%~ 轻载系数 (b7.02) | 5.0% |
| b7.02 | 轻载系数 | | 松绳转矩 (b7.01) ~ 允许负载 (b7.03) | 35.0% |
| b7.03 | 允许负载 | | 轻载系数 (b7.02) ~100.0% | 80.0% |
| b7.06 | 检测时间 | | 0.0s~5.0s | 0.5s |
| b7.07 | 检测频率 | | 松闸频率 (b6.02) ~ 额定频率 (A0.04) | 40.00Hz |
| b7.08 | 正向修正 | | 0%~100% | 100% |
| b7.09 | 反向修正 | b7.08 和 b7.09 表示当轻载系数 $\leq T \leq$ 允许负载时，最终变频器的目标频率为 $F \times b7.08$ (正向运行时) 或 $F \times b7.09$ (反向运行时)。实际运行频率还会受到变频器或电机所能达到的最大转矩限制。 | 0%~100% | 100% |
| b7.10 | 位置显示比例 | 该参数由用户根据显示位置的精度进行设定，用于将脉冲数折算成位置数据。U0.08 和 U0.09 显示的位置数据为当前脉冲数 / b7.10。 注：YD287 提供的脉冲数已经经过四倍频。 | 1~65535 | 1 |
| b7.11 | 位置校验值 | 该参数表示当输入功能 31(位置校验)有效时，变频器内部累计的当前脉冲数复位成 $b7.10 \times b7.11$ ，位置数据被复位成 b7.11 的设定值。 | 0~65535 | 0 |





| 参数 | 名称 | 参数说明 | 设置范围 | 出厂值 |
|----------------------|------------|--|------------------------|------|
| b8 组：特殊曲线设置参数 | | | | |
| b8.00 | 特殊加速 | <p>0：不使用 表示设置为 0 表示不使用特殊加减速功能。</p> <p>1：两段（频率切换） 表示使用两段加减速功能，加速过程中输出频率大于（额定频率 × b8.04）后加速时间切换到 b8.02 的设定值；减速过程中输出频率小于（额定频率 × b8.05）后减速时间切换到 b8.03 的设定值。</p> <p>2：三段（频率切换） 表示使用三段加减速功能，在第二段的基础上，加速过程中输出频率大于（额定频率 × b8.08）后加速时间切换到 b8.06 的设定值；减速过程中输出频率小于（额定频率 × b8.09）后减速时间切换到 b8.07 的设定值。</p> <p>3：两段（DI 切换） 表示使用两段加减速功能，加速过程输入功能 13 有效则加速时间切换到 b8.02 的设定值；减速过程中输入功能 14 减速时间切换到 b8.03 的设定值。</p> <p>4：三段（DI 切换） 表示使用三段加减速功能，在第二段的基础上，加速过程输入功能 15 有效则加速时间切换到 b8.06 的设定值；减速过程中输入功能 16 减速时间切换到 b8.07 的设定值。</p> | 0~4 | 0 |
| b8.01 | 特殊减速 | <p>输出频率 ↑</p> <p>加速时间 ↑ 时间</p> <p>加速时间 ↑ 时间</p> <p>加速时间 ↑ 时间</p> <p>减速时间 ↓ 时间</p> <p>减速时间 ↓ 时间</p> <p>减速时间 ↓ 时间</p> | | |
| b8.02 | 第二段加速时间 | 具体使用方法请查阅 b8.00 及 b8.01 说明 | 0.1s~600.0s | 3.0s |
| b8.03 | 第二段减速时间 | | 0.1s~600.0s | 3.0s |
| b8.04 | 第二段加速频率切换点 | | 0%~ 第三段加速频率切换点 (b8.08) | 0% |
| b8.05 | 第二段减速频率切换点 | | 第三段减速频率切换点 (b8.09)~99% | 99% |
| b8.06 | 第三段加速时间 | | 0.1s~600.0s | 3.0s |
| b8.07 | 第三段减速时间 | | 0.1s~600.0s | 3.0s |
| b8.08 | 第三段加速频率切换点 | | 第二段加速频率切换点 (b8.04)~99% | 99% |
| b8.09 | 第三段减速频率切换点 | | 0%~ 第二段减速频率切换点 (b8.05) | 0% |



| b9 组: 寸动设置参数 | | | | |
|--------------|----------|---|-----------------------------|----------|
| b9.00 | 寸动频率 | 运行命令使用输入功能 17(寸动正向运行)和输入功能 18(寸动反向运行)启动后即进入寸动运行模式。该参数表示寸动运行时的目标频率。 | 松闸频率 (b6.02) ~10.00Hz | 5.00Hz |
| b9.01 | 寸动加速时间 | 这两个参数表示寸动运行模式下的加减速时间。使用方法请查阅 b4.00 和 b4.01 的说明 | 0.1s~10.0s | 0.1s |
| b9.02 | 寸动减速时间 | | | |
| b9.03 | 寸动松闸类型选择 | 0: 与正常松闸频率相同 1: 与寸动频率相同 具体使用方法请查阅 b9.04 的图例介绍。 | 0~1 | 0 |
| b9.04 | 寸动抱闸类型选择 | 0: 与正常抱闸频率相同  1: 与寸动频率相同  | 0~1 | 0 |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
| bA 组: 加减速参数 | | | | |
| bA.00 | 加减速变化率 | 该参数用于设置频率源为加减速给定时输入功能 19(加速运行)和输入功能 20(减速运行)有效时频率变化的速度,即每秒钟频率的变化量 | 0.01Hz/s~50.00Hz/s | 5.00Hz/s |
| bA.01 | 预置频率 | 该参数表示当频率源选择为加减速给定时变频器的运行目标频率的初始值。 | 开闸频率 (b6.02) ~ 最高频率 (b1.02) | 50.00Hz |
| bA.02 | 速度保存类型选择 | 0: 不保存 表示每次运行的初始目标频率均为 bA.01 的设定值。 1: 保存至断电 表示变频器上电后首次运行的初始目标频率为 bA.01 的设定值,不断电情况下,运行的初始目标频率均为上次取消运行命令时刻的输出频率。 2: 始终保持 表示每次运行的初始目标频率均为上次运行取消运行命令开始减速时的设定频率。该频率掉电保存。  | 0~2 | 0 |



| 参数 | 名称 | 参数说明 | 设置范围 | 出厂值 |
|-------------|------------|---|-------------------------|---------|
| bb 组：转矩控制参数 | | | | |
| bb.00 | 转矩控制功能选择 | 0: 不使用转矩控制功能 表示全程使用速度控制模式运行 1: 全程转矩控制 表示全程使用转矩控制模式运行 2: 使用转矩控制, 频率切换 表示当变频器输出频率大于 bb.01 的设定值后使用转矩控制模式, 否则使用速度控制模式。 3: 使用转矩控制, 转矩切换 表示当变频器输出转矩大于 bb.02 的设定值后使用转矩控制模式, 否则使用速度控制模式。 4: 使用转矩控制, 频率转矩切换 表示当变频器输出频率大于 bb.01 的设定值并且输出转矩大于 bb.02 的设定值时使用转矩控制模式, 否则使用速度控制模式。 5: 使用转矩控制, DI 切换 当输入功能 21 有效时使用转矩控制模式, 无效时使用速度控制模式。 6: 使用转矩控制, 通信切换 | 0~6 | 0 |
| bb.01 | 转矩切换频率门槛 | 具体使用方法请查阅 bb.00 的说明 | 0.00Hz~ 最高频率 (b1.02) | 25.00Hz |
| bb.02 | 转矩切换转矩门槛 | | 0.0%~150.0% | 50.0% |
| bb.03 | 转矩源 | 1: AI1 仅支持 0V~10V 电压型输入。 2: AI2 给定 支持 0V~10V 电压型输入或 4mA~20mA 电流型输入, 由控制板上的 J9 跳线选择输入类型。 AI 作为转矩给定时, 电压 / 电流输入对应设定的 100.0% 对应 200.0% 的输出转矩。 4: 键盘设定, 设定值由 bb.08 设置 5: 通信给定, 转矩写入地址 0xbb08 | 0~5 | 0 |
| bb.04 | 转矩控制正向最大频率 | 用于设置转矩控制方式下, 变频器的正向或反向最高给定频率。 当变频器转矩控制时, 如果负载转矩小于电机输出转矩, 则电机转速会不断上升, 为防止机械系统出现飞车等事故, 必须限制转矩控制时的电机最高转速。 | 0.00Hz~ 最高频率 (b1.02) | 50.00Hz |
| bb.05 | 转矩控制反向最大频率 | | | |
| bb.06 | 转矩控制加速时间 | 转矩控制方式下, 电机输出转矩与负载转矩的差值, 决定电机及负载的速度变化率, 所以电机转速有可能快速变化, 造成噪音或机械应力过大等问题。通过设置转矩控制加减速时间, 可以使电机转速平缓变化。但是对需要转矩快速响应的场合, 需要设置转矩控制加减速时间为 0.0s。 例如: 两个电机硬连接拖动同一负载, 为确保负荷均匀分配, 设置一台变频器为主机, 采用速度控制方式, 另一台变频器为从机并采用转矩控制, 主机的实际输出转矩作为从机的转矩指令, 此时从机的转矩需要快速跟随主机, 那么从机的转矩控制加减速时间为 0.0s。 这两个参数的时间计算基准为 200.0% 输出转矩。 | 0.0s~600.0s | 0.0s |
| bb.07 | 转矩控制减速时间 | | | |
| bb.08 | 目标转矩 | 该参数用于设置目标转矩, 当 bb.03 设置为 4 或者 5 时, 该值为当前的目标转矩。 | -500.0%~ 500.0% | 0.0% |
| bb.09 | 连接方式选择 | 转矩模式一般应用于多台变频器的主从控制, 此时主机使用速度模式, 从机使用转矩模式, 该功能码用于选择主机与从机间的连接方式。 0: 硬连接 1: 软连接 | 0~1 | 1 |



bC 组：负载超速保护参数

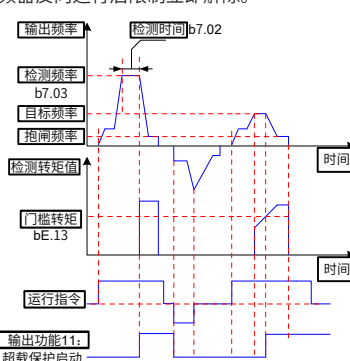
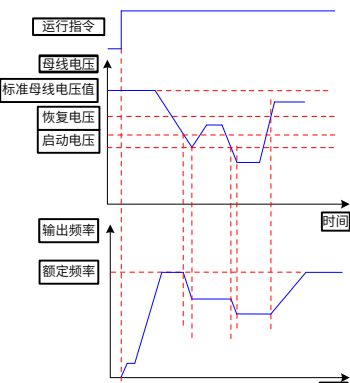
| | | | | |
|-------|----------|--|-------------|-------|
| bC.02 | 频率异常检测周期 | 该参数表示 37# 故障的检测时间。当电机反馈频率与给定频率的方向相反且持续时间超过 bC.02 的设定值则变频器报 37# 故障。该参数设置为 0 则可屏蔽 37# 故障。 | 0.00s~1.00s | 0.50s |
| bC.03 | 频率跟随误差 | 该参数表示 38# 故障的检测基准。具体使用方法请查阅 bC.04 或 38# 故障的说明。 | 0%~30% | 20% |
| bC.04 | 频率跟随检测周期 | 该参数表示 38# 故障的检测时间。当电机反馈频率与给定频率的差值大于 (bC.03 × 额定频率) 且持续时间超过 bC.04 的设定值则变频器报 38# 故障。该参数设置为 0 则可屏蔽 38# 故障。给定频率和输出频率均大于额定频率后该故障无效。 | 0.00s~1.00s | 0.50s |





| 序号 | 名称 | 内容 | 设置范围 | 出厂值 | |
|--------------|----------|---|------------|------|--|
| bE 组：故障与保护参数 | | | | | |
| bE.00 | 电机过载保护选择 | bE.00 设置为 0 则无电机过载保护功能，可能存在电机过热损坏的危险，建议变频器与电机之间加热继电器；设置为 1 此时变频器根据电机过载保护的反时限曲线，判断电机是否过载。 | 0~1 | 1 | |
| bE.01 | 电机过载保护增益 | 电机过载保护的反时限曲线为： 220%×(bE.01)× 电机额定电流，持续 1 分钟则报警电机过载故障；150%×(bE.01)× 电机额定电流，持续 60 分钟则报警电机过载。用户需要根据电机的实际过载能力，正确设置 bE.01 的值，该参数设置过大容易导致电机过热损坏而变频器未报警的危险！ | 0.20~10.00 | 1.00 | |
| bE.02 | 电机过载预警系数 | 该参数用于在电机过载故障保护前，通过 DO 给控制系统一个预警信号。该预警系数用于确定在电机过载保护前多大程度进行预警。该参数设置越大则预警提前量越小。当变频器输出电流累积量大于过载反时限曲线与 bE.02 乘积后，变频器输出功能 9(电机过载预报警) 输出有效。 | 50%~100% | 80% | |
| bE.03 | 过压失速增益 | 在变频器减速过程中，当直流母线电压超过过压失速保护电压后，变频器停止减速保持当前给定频率，待母线电压下降后继续减速。 过压失速增益用于调整在减速过程中变频器抑制过压的能力。此值越大抑制过压能力越强。在不发生过压的前提下该增益设置的越小越好。 | 0~100 | 0 | |
| bE.04 | 过压失速保护电压 | 对于小惯量的负载，过压失速增益宜小，否则引起系统动态响应变慢。对于大惯量的负载此值宜大，否则抑制效果不好，可能出现过压故障。 | 120%~150% | 130% | |
| | | 当过压失速增益设置为 0 时，取消过压失速功能。过压失速保护电压设定 100% 对应基值如下： | | | |
| | | 电压等级 | 过压失速保护电压基值 | | |
| | | 三相 380V | 530V | | |



| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
|-------|------------|---|-------------|------|
| bE.05 | 过流失速增益 | 在变频器加减速过程中，当输出电流超过过流失速保护电流后，变频器停止加减速过程保持在当前给定频率，待输出电流下降后再继续加减速。 | 0~100 | 20 |
| bE.06 | 过流失速保护电流 | 过流失速增益用于调整在加减速过程中变频器抑制过流的能力。此值越大抑制过流能力越强。在不发生过流的前提下该增益设置的越小越好。 对于小惯量的负载，过流失速增益宜小，否则引起系统动态响应变慢。对于大惯量的负载此值宜大，否则抑制效果不好，可能出现过流故障。 当过流失速增益设置为 0 时，取消过流失速功能。 bE.05、bE.06 仅在 V/f 控制时有效。 | 100%~200% | 150% |
| bE.07 | 上电对地短路保护选择 | 该参数用于选择变频器在上电时，检测电机是否对地短路。如果此功能有效，则变频器 UVW 端在上电后一段时间内会有电压输出。 | 0~1 | 1 |
| bE.08 | 输入缺相保护选择 | 该参数用于选择是否对输入缺相进行保护。YD287 变频器各电压等级只有以上起始频率及以上才有输入缺相保护功能，此时将 bE.08 设置为 1 则启用输入缺项保护功能；上表内以下功率段无论 bE.08 设置为 0 或 1 都无输入缺相保护功能。 | 0~1 | 1 |
| bE.09 | 输出缺相保护选择 | 该参数设置为 1 则变频器对输出缺相的进行保护；设置为 0 则不启用输出缺相保护功能。 | 0~1 | 1 |
| bE.10 | 制动使用率 | 该参数仅对内置制动单元的变频器有效。用于调整制动单元的占空比。制动使用率高则制动单元动作占空比高，制动效果强，但是制动过程变频器母线电压波动较大。 | 0%~100% | 100% |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
| bE.13 | 过载保护转矩限制门槛 | 该参数用于设置过载限制功能的启动转矩。该参数设置为 0 则超载保护功能无效。 当变频器正向运行时，输出频率达到 b7.07 或达到恒速运行状态时检测输出转矩 (检测方法同轻载高速功能相同，详见 b7.07 和 b7.06 的说明)，若输出转矩大于 bE.13 的设定值则自动停机并限制继续正向运行；当变频器反向运行后限制立即解除。  | 0.0%~150.0% | 0 |
| bE.14 | 随压降速功能选择 | 这两个参数用于随压降速功能的设置。随压降速功能表示在母线电压持续偏低的情况下变频器能够自动降低输出频率维持满力矩输出的功能。 bE.14 置 1 则启用随压降速功能，设置为 0 则该功能无效。bE.15 用于设置随压降速功能的启动电压。该参数表示标准母线电压的百分比。  | 0~1 | 0 |
| bE.15 | 随压降速动作电压 | | 70%~95% | 85% |



| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
|----------------------|------------|---|-----------------------------|---------|
| bF 组：二级菜单辅助参数 | | | | |
| bF.00 | 二级菜单密码 | 该参数表示二级菜单功能参数的显示和修改密码。若该参数设置为非零值则进入二级菜单需要输入该密码。若连续输入三次错误密码则所有菜单被锁定，需要重新上电才能继续查看或修改参数 | 0~65535 | 0 |
| bF.01 | 二级菜单恢复出厂参数 | 0: 不恢复 1: 恢复二级菜单出厂参数 二级菜单中的 b0.02 ~ 03、b7.11~12、bF.00 不恢复。 2: 恢复一二级菜单参数 | 0~2 | 0 |
| bF.02 | 二级菜单用户设定检查 | 0: 正常显示所有二级菜单参数 1: 只显示与出厂默认值不同的二级菜单参数 | 0~1 | 0 |
| bF.03 | 历史记录数据清零 | 0: 不处理 1: 历史记录清空 清除所有掉电存储参数以及故障记录，即 E* 组和 U1 组参数全部清零。 | 0~1 | 0 |
| bF.04 | 命令源选择 | 该参数用于选择变频器控制命令(启动、停机、正转、反转、点动等)的输入通道。 0: 操作面板命令通道(“LOCAL/REMOT”灯灭) 由操作面板上的 RUN、STOP/RES 按键进行运行命令控制。在操作面板命令通道下变频器的所有端子输入输出以及制动器控制的逻辑时序功能均无效。此时，当变频器接收到 RUN 指令后输出功能 1 “制动器控制”有效，当变频器接收到 STOP 指令开始减速，减速到抱闸频率 (b6.05) 后停止输出，输出功能 1 无效。 1: 端子命令通道(“LOCAL/REMOT”灯亮) 由端子输入功能 1(正向运行)、2(反向运行)、17(寸动正向运行)和 18(反向寸动运行)进行运行命令控制。 | 0~1 | 0 |
| bF.05 | 操作面板运行频率 | 当 bF.04(命令源选择)选择为 0 时，变频器的运行目标频率由该参数确定 | 最低频率 (b1.03) ~ 最高频率 (b1.02) | 50.00Hz |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
| bF.06 | 运行方向选择 | 通过更改该参数可以不改变电机接线而实现改变电机转向的目的，其作用相当于调整电机 (U、V、W) 任意两条线实现电机旋转方向的转换。 提示：参数初始化后电机运行方向会恢复原来的状态。对于系统调试好后严禁更改电机转向的场合慎用。 0: 方向一致 1: 方向取反 | 0~1 | 0 |
| bF.07 | 频率检测值 | 当给定频率高于频率检测值时变频器的 DO 输出功能 7(频率到达输出)有效；给定频率低于检测值一定频率后，输出功能 7 无效。这 2 个参数用于设定输出频率的检测值及输出动作解除的滞后值。其中 bF.07 表示检测值，bF.08 是滞后频率(相对于频率检测值 bF.07 的百分比)。 | 最低频率 (b1.03) ~ 最高频率 (b1.02) | 50.00Hz |
| bF.08 | 频率检测滞后值 | | 0.0%~100.0% | 5.0% |
| bF.09 | 散热风扇控制 | 该参数用于选择散热风扇的动作模式 0: 电机运行时散热风扇运转 变频器在运行状态下风扇运转，停机状态下如果散热器温度高于 40°C 则风扇运转，低于 40°C 时风扇不运转。 1: 上电后散热风扇一直运转 | 0~1 | 0 |



| 序号 | 名称 | 内容 | 设置范围 | 出厂值 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------|------------|---|-----------------------------|--------|----|-------|----|----------|-------|----|----------|-----|-----|-----|-------|----|----------|-------|----|----------|-----|-----|-----|-------|----|----------|-----|-----|-----|-------|----|----------|-----|-----|-----|-------|----|----------|-------------|-------|
| bF.10 | 故障保护动作 1 | 这几个参数用于选择 41#~65# 故障的故障等级。每个参数由一个 5 位数字组成，代表 5 个故障的故障等级，具体对应关系如下表所示： <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>参数名</th> <th>位数</th> <th>含义</th> </tr> </thead> <tbody> <tr> <td>bF.10</td> <td>万位</td> <td>41# 故障等级</td> </tr> <tr> <td>bF.10</td> <td>千位</td> <td>42# 故障等级</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>bF.10</td> <td>个位</td> <td>45# 故障等级</td> </tr> <tr> <td>bF.11</td> <td>万位</td> <td>46# 故障等级</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>bF.11</td> <td>个位</td> <td>49# 故障等级</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>bF.14</td> <td>万位</td> <td>61# 故障等级</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>bF.14</td> <td>个位</td> <td>65# 故障等级</td> </tr> </tbody> </table> | 参数名 | 位数 | 含义 | bF.10 | 万位 | 41# 故障等级 | bF.10 | 千位 | 42# 故障等级 | ... | ... | ... | bF.10 | 个位 | 45# 故障等级 | bF.11 | 万位 | 46# 故障等级 | ... | ... | ... | bF.11 | 个位 | 49# 故障等级 | ... | ... | ... | bF.14 | 万位 | 61# 故障等级 | ... | ... | ... | bF.14 | 个位 | 65# 故障等级 | 11111~55555 | 11115 |
| 参数名 | 位数 | | 含义 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.10 | 万位 | | 41# 故障等级 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.10 | 千位 | | 42# 故障等级 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | ... | | ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.10 | 个位 | | 45# 故障等级 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.11 | 万位 | | 46# 故障等级 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | ... | | ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.11 | 个位 | | 49# 故障等级 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | ... | ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.14 | 万位 | 61# 故障等级 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | ... | ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.14 | 个位 | 65# 故障等级 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.11 | 故障保护动作 2 | 11111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.12 | 故障保护动作 3 | 11111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.13 | 故障保护动作 4 | 11111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.14 | 故障保护动作 5 | 11111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.15 | 减速开关优化功能选择 | 这 2 个参数配合输入功能 22~25 使用，可以实现简易的定位功能。当减速开关（输入功能 24、25）输入有效后变频器输出频率最高被限制为 bF.16 设置的频率，当停机开关（输入功能 22、23）输入有效后变频器执行快速停机。 bF.15 用于选择减速开关有效后的减速模式 0：不带减速优化功能 按照 b4 组参数设定的减速时间正常减速 1：带减速优化功能 当减速开关输入有效后，变频器按照以额定频率撞击减速开关的减速距离为基准，重新计算本次运行的减速时间，实现整个减速过程运行时间最短的效率最佳控制。 | 0~1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.16 | 减速开关限制频率 | | 最低频率 (b1.03) ~ 额定频率 (A0.04) | 5.00Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.17 | 过转矩输出门槛 | 该参数配合输出功能 12 使用。输出转矩达到该参数的设置值则输出功能 12 有效。当输出转矩回落到该参数设置值的 90% 以下，输出功能 12 无效 矢量控制时该功能的检测值使用转矩输出，V/f 控制使用输出电流 ÷ 电机额定电流的百分比。 该参数设置为 0 则该输出功能 12 无效。 | 0.0%~200.0% | 0.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.19 | 运行模式选择 | 0：应用模式 正常使用情况下该参数必须选择为 0。 1：调试模式 调试模式用于变频器 / 控制柜的出厂检测时使用。该模式下 YD287 屏蔽了开闸时序和输出缺相保护等功能，并且强制使用 V/f 控制方式运行。 | 0~1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| bF.21 | 电机风扇控制延时 | 该参数配合输出功能 13 使用。详细使用方法参见输出功能 13 的说明 | 0~3000s | 30s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



E0~EF 组参数显示故障信息，每组参数分别代表一个故障的记录信息。E0 组表示最近一次故障记录信息，EF 组表示最早一次故障记录信息，每组故障信息的显示内容都完全相同。E* 组参数为显示值，不能更改，掉电保存。

| 序号 | 名称 | 内容 |
|-------|------------------|---|
| E*.00 | 故障代码 | 操作面板上的五个数码管从左至右依次编号为 5、4、3、2、1，例如：显示内容为 104.01，5#、4# 和 3# 数码管组成故障代码，其中 5# 数码管的“1”为故障等级；4# 和 3# 数码管的“04”为故障代号；2# 和 1# 数码管是厂家保留内容。 |
| E*.01 | 故障时输出频率 | 故障时监控参数 U0.01 的显示值 (V/f 控制时为 U0.00 的显示值) |
| E*.02 | 故障时目标频率 | 故障时监控参数 U0.02 的显示值 |
| E*.03 | 故障时输出电流 | 故障时监控参数 U0.03 的显示值 |
| E*.04 | 故障时输出电压 | 故障时监控参数 U0.04 的显示值 |
| E*.05 | 故障时输出功率 | 故障时监控参数 U0.05 的显示值 |
| E*.06 | 故障时输出转矩 | 故障时监控参数 U0.06 的显示值 |
| E*.07 | 故障时母线电压 | 故障时监控参数 U0.07 的显示值 |
| 序号 | 名称 | 内容 |
| E*.08 | 故障时输入功能 1~16 状态 | 这 4 个参数表示多功能输入输出功能的状态。每个功能码可以按照比特位指示出 16 个输入或者输出功能的状态。当进入该功能码时，显示该功能码的十进制数值，按下△键后切换到用户查看模式，查看方式如下： 操作面板上的五个数码管从左至右依次编号为 5、4、3、2、1。 |
| E*.09 | 故障时输入功能 17~32 状态 | |
| E*.10 | 故障时输入功能 33~48 状态 | 进入查看模式后，5、4 号数码管直接显示当前查看的输入 / 输出功能号；1 号数码管显示该功能号的输入 / 输出是否有效，0 表示无效，1 表示有效，利用△和▽键可以改变当前查看的输入 / 输出功能号；通过 2、3 两个数码管的按段位显示，将 16 个功能的状态一起显示出来，其对应关系为 1~8 对应第 2 个数码管的 A~D 段，8~16 对应第 3 个数码管的 A~D 段。举例如下： |
| E*.11 | 故障时输出功能 1~16 状态 | <p>该图表示：当前显示的是输入功能 20 的状态 (5、4 号数码管)；目前输入功能 20 无效 (第 1 号数码管)；输入功能 17~32 中 17、19、21、24、26、28、30 和 31 有效，其余无效 (2、3 号数码管)。</p> |



U0 和 U1 组参数显示变频器的实时监控信息，U0 组参数实时刷新，掉电不保存；U1 组参数显示需要累积计算的信息，掉电存储。

| 序号 | 名称 | 内容 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------|------------|---|-----------------|----|------|----|---|----|---|---|---|------|---|-------------|---|-------------|---|----------|---|------|---|---------|---|---------|---|------|---|---------|---|---------|---|------|---|------|---|----------|---|--------|---|-----------------|---|----------|---|--------|---|----------|---|----------|
| U0.00 | 给定频率 | 变频器的当前给定频率。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.01 | 反馈频率 | 该参数显示的是电机实际运行频率的反馈值。在不带编码器运行时该参数为变频器软件计算的反馈频率，带编码器运行时为编码器反馈的实际电机运行频率。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.02 | 目标频率 | 变频器本次运行最终需要达到的频率。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.03 | 输出电流 | 显示运行时变频器输出电流值。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.04 | 输出电压 | 显示运行时变频器输出电压值。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.05 | 输出功率 | 显示运行时变频器输出功率值。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 序号 | 名称 | 内容 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.06 | 输出转矩 | 显示运行时变频器输出转矩值。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.07 | 母线电压 | 显示变频器的母线电压值。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.10 | DI 输入状态 | 显示变频器 DI 端子的输入状态，显示方式与 E*.08~11 相同。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.11 | DO 输出状态 | 显示变频器 DO 端子的输出状态，显示方式与 E*.08~11 相同。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.12 | 电位器电压值 | 显示变频器控制板上电位计输入的实际电压值。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.23 | 逆变器模块散热器温度 | 显示逆变模块 IGBT 的温度。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.24 | 功能软件版本号 | 显示变频器功能软件版本号。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.25 | 性能软件版本号 | 显示变频器性能软件版本号。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U0.26 | 变频器内部状态 | <p>显示变频器内部运行步骤，通过该参数能够方便现场调试以及查找疑难问题。键盘上数码管从左到右的排列顺序是 5、4、3、2、1，具体显示内容如下表所示：</p> <table border="1"> <thead> <tr> <th>数码管序号</th> <th>含义</th> <th>显示内容</th> <th>说明</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>保留</td> <td>-</td> <td>-</td> </tr> <tr> <td rowspan="3">4</td> <td rowspan="3">寸动步骤</td> <td>0</td> <td>寸动加速、恒速运行状态</td> </tr> <tr> <td>1</td> <td>寸动减速、停机运行状态</td> </tr> <tr> <td>2</td> <td>寸动抱闸延时状态</td> </tr> <tr> <td rowspan="2">3</td> <td rowspan="2">抱闸步骤</td> <td>0</td> <td>未发出抱闸指令</td> </tr> <tr> <td>1</td> <td>已发出抱闸指令</td> </tr> <tr> <td rowspan="2">2</td> <td rowspan="2">开闸步骤</td> <td>0</td> <td>未发出开闸指令</td> </tr> <tr> <td>1</td> <td>已发出开闸指令</td> </tr> <tr> <td rowspan="7">1</td> <td rowspan="7">运行步骤</td> <td>0</td> <td>待机状态</td> </tr> <tr> <td>1</td> <td>制动器开闸过程中</td> </tr> <tr> <td>2</td> <td>正常运行状态</td> </tr> <tr> <td>3</td> <td>取消运行命令及制动器抱闸过程中</td> </tr> <tr> <td>4</td> <td>操作面板运行状态</td> </tr> <tr> <td>5</td> <td>寸动运行状态</td> </tr> <tr> <td>6</td> <td>电机参数辨识状态</td> </tr> <tr> <td>7</td> <td>变频器停机过程中</td> </tr> </tbody> </table> | 数码管序号 | 含义 | 显示内容 | 说明 | 5 | 保留 | - | - | 4 | 寸动步骤 | 0 | 寸动加速、恒速运行状态 | 1 | 寸动减速、停机运行状态 | 2 | 寸动抱闸延时状态 | 3 | 抱闸步骤 | 0 | 未发出抱闸指令 | 1 | 已发出抱闸指令 | 2 | 开闸步骤 | 0 | 未发出开闸指令 | 1 | 已发出开闸指令 | 1 | 运行步骤 | 0 | 待机状态 | 1 | 制动器开闸过程中 | 2 | 正常运行状态 | 3 | 取消运行命令及制动器抱闸过程中 | 4 | 操作面板运行状态 | 5 | 寸动运行状态 | 6 | 电机参数辨识状态 | 7 | 变频器停机过程中 |
| 数码管序号 | 含义 | 显示内容 | 说明 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 保留 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 寸动步骤 | 0 | 寸动加速、恒速运行状态 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 寸动减速、停机运行状态 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | 寸动抱闸延时状态 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 抱闸步骤 | 0 | 未发出抱闸指令 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 已发出抱闸指令 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 开闸步骤 | 0 | 未发出开闸指令 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 已发出开闸指令 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 运行步骤 | 0 | 待机状态 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 制动器开闸过程中 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | 正常运行状态 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3 | 取消运行命令及制动器抱闸过程中 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 4 | 操作面板运行状态 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 5 | 寸动运行状态 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 6 | 电机参数辨识状态 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 变频器停机过程中 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U1.00 | 紧急停止次数 | 显示该台变频器累计发生 1 级故障的次数。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U1.01 | 快速停止次数 | 显示该台变频器累计发生 2 级和 3 级故障的次数。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| 序号 | 名称 | 内容 |
|-------|-----------------|---|
| U1.02 | 制动器使用次数 高位 | 显示该台变频器所控制的制动器累计使用次数。低位累计超过65535次后高位加1同时低位清零。 |
| U1.03 | 制动器使用次数 低位 | |
| U1.04 | 达到转矩限幅的 总计时间 | 显示该台变频器的输出转矩达到或超过转矩上限值（b1.04和b1.05）的累计时间。 |
| U1.05 | 累计运行时间 | 显示该台变频器累计运行时间。 |
| U1.06 | 累计上电时间 | 显示该台变频器累计上电时间。 |
| U1.07 | 减速箱使用率 | 显示该台变频器所驱动的减速箱的使用率。必须正确设置b0.02和b0.03后该功能才会有效。 |



6.3 三级菜单 (F 组) 参数表

三级菜单主要包含变频器输出性能的调节参数以及厂家参数。一般情况下用户无需调节三级菜单参数。

进入三级菜单需要正确输入参数 FF.00 所设定的密码。

| 序号 | 名称 | 内容 | 设置范围 | 出厂值 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|-----------|---|-----------------|-------|----|---|------|---|---|---|--------|---|---|---|------|---|---|---|-------|---|---|---|-----|---|---|---|--------|---|---|---|----------------|------|
| F0 组：电机参数 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F0.00 | 异步机定子电阻 | 这 5 个参数是异步电机的电机参数，这些参数电机铭牌上一般没有，需要通过变频器自动参数辨识获得。参数辨识方式 1 只能获得 F0.00~F0.02 这 3 个参数，参数辨识方式 3 可以获得全部 5 个参数，参数辨识方式 2 除可以获得这里全部 5 个参数外，还可以获得编码器相序、电流环 PI 参数等。 更改电机额定功率 (A0.01) 时，变频器会自动修改这 5 个参数值，将这 5 个参数恢复为常用标准 Y 系列电机参数。 | 0.001Ω~65.535Ω | 电机确定 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F0.01 | 异步机转子电阻 | | 0.001Ω~65.535Ω | 电机确定 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F0.02 | 异步机漏感抗 | | 0.01mH~655.35mH | 电机确定 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F0.03 | 异步机互感抗 | | 0.1mH~6553.5mH | 电机确定 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F0.04 | 异步机空载电流 | | 0.01A~0.03A | 电机确定 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F0.10 | TZ 信号滤波系数 | | 误报过流时，将本参数调大 | 0~255 | 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F0.16 | 载波频率 | <p>此功能调节变频器的载波频率。通过调整载波频率可以降低电机噪声，避开机械系统的共振点，减小线路对地漏电流及减小变频器产生的干扰。变频器产生的干扰。当载波频率较低时，输出电流高次谐波分量增加，电机损耗增加，电机温升增加。当载波频率较高时，电机损耗降低，电机温升减小，但变频器损耗增加，变频器温升增加，干扰增加。升增加，干扰增加。调整载波频率会对下列性能产生影响：调整载波频率会对下列性能产生影响：</p> <table border="1"> <tr> <td>载波频率</td> <td>低</td> <td>→</td> <td>高</td> </tr> <tr> <td>电机噪音</td> <td>大</td> <td>→</td> <td>小</td> </tr> <tr> <td>输出电流波形</td> <td>差</td> <td>→</td> <td>好</td> </tr> <tr> <td>电机温升</td> <td>高</td> <td>→</td> <td>低</td> </tr> <tr> <td>变频器温升</td> <td>低</td> <td>→</td> <td>高</td> </tr> <tr> <td>漏电流</td> <td>小</td> <td>→</td> <td>大</td> </tr> <tr> <td>对外辐射干扰</td> <td>小</td> <td>→</td> <td>大</td> </tr> </table> | 载波频率 | 低 | → | 高 | 电机噪音 | 大 | → | 小 | 输出电流波形 | 差 | → | 好 | 电机温升 | 高 | → | 低 | 变频器温升 | 低 | → | 高 | 漏电流 | 小 | → | 大 | 对外辐射干扰 | 小 | → | 大 | 0.5kHz~16.0kHz | 机型确定 |
| 载波频率 | 低 | → | 高 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 电机噪音 | 大 | → | 小 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 输出电流波形 | 差 | → | 好 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 电机温升 | 高 | → | 低 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 变频器温升 | 低 | → | 高 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 漏电流 | 小 | → | 大 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 对外辐射干扰 | 小 | → | 大 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| F1 组: 矢量控制参数 | | | | |
|----------------|-----------|---|---------------|--------|
| F1.00 | 速度环比例增益 1 | 变频器运行在不同频率下, 可以选择不同的速度环 PI 参数。给定频率小于切换频率 1(F1.02) 时, 速度环 PI 调节参数为 F1.00 和 F1.01。给定频率大于切换频率 2 时, 速度环 PI 调节参数为 F1.03 和 F1.04。切换频率 1 和切换频率 2 之间的速度环 PI 参数为两组 PI 参数线性切换。通过设定速度调节器的比例系数和积分时间, 可以调节矢量控制的速度动态响应特性。 增加比例增益, 减小积分时间, 均可加快速度环的动态响应。但是比例增益过大或积分时间过小均可能使系统产生振荡。建议调节方法为: 如果出厂参数不能满足要求, 则在出厂值参数基础上进行微调, 先增大比例增益, 保证系统不振荡; 然后减小积分时间, 使系统既有较快的响应特性, 超调又较小。注意: 如 PI 参数设置不当, 可能会导致速度超调过大。甚至在超调回落时产生过电压故障。 | 1~100 | 60 |
| F1.01 | 速度环积分时间 1 | | 0.01s~10.00s | 0.50s |
| F1.02 | 切换频率 1 | | 0.00Hz~F1.05 | 5.00Hz |
| F1.03 | 速度环比例增益 2 | | 1~100 | 20 |
| F1.04 | 速度环积分时间 2 | | 0.01s~10.00s | 1.00s |
| F1.05 | 切换频率 2 | F1.02~b1.02 | 10.00Hz | |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
| F1.06 | 速度环滤波时间常数 | 矢量控制方式下, 速度环调节器的输出为力矩电流指令, 该参数用于对力矩指令滤波。此参数一般无需调整, 在速度波动较大时可适当增大该滤波时间; 若电机出现振荡, 则应适当减小该参数。 速度环滤波时间常数小, 变频器输出力矩可能波动较大, 但速度的响应快。 | 0.000s~1.000s | 0.070s |
| F1.07 | 矢量控制过励磁增益 | 在变频器减速过程中, 过励磁控制可以抑制母线电压上升, 避免出现过压故障。过励磁增益越大, 抑制效果越强。 对变频器减速过程容易过压报警的场合, 需要提高过励磁增益。但过励磁增益过大, 容易导致输出电流增大, 需要在应用中权衡。 对惯量很小的场合, 电机减速中不会出现电压上升, 则建议设置过励磁增益为 0; 对有制动电阻的场合, 也建议过励磁增益设置为 0。 | 0~200 | 64 |
| F1.08 | 励磁调节比例增益 | 矢量控制电流环 PI 调节参数, 该参数在异步机参数辨识方式 2 完成后会自动获得, 一般不需要修改。 | 0~20000 | 2000 |
| F1.09 | 励磁调节积分增益 | 需要提醒的是, 电流环的积分调节器, 不是采用积分时间作为量纲, 而是直接设置积分增益。电流环 PI 增益设置过大, 可能导致整个控制环路振荡, 故当电流振荡或者转矩波动较大时, 可以手动减小此处的 PI 比例增益或者积分增益。 | 0~20000 | 1300 |
| F1.10 | 转矩调节比例增益 | | 0~20000 | 2000 |
| F1.11 | 转矩调节积分增益 | | 0~20000 | 1300 |
| F2 组: V/f 控制参数 | | | | |



| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
|-------|------------|---|--------------|---------|
| F2.01 | 转矩提升 | 为了补偿 V/f 控制低频转矩特性, 对低频时变频器输出电压做一些提升补偿。但是转矩提升设置过大, 电机容易过热, 变频器容易过流。 当负载较重而电机启动力矩不够时, 建议增大此参数。在负载较轻时可减小转矩提升。 当转矩提升设置为 0.0 时, 变频器为自动转矩提升, 此时变频器根据电机定子电阻等参数自动计算需要的转矩提升值。 | 0.0%~30.0% | 电机功率确定 |
| F2.02 | 转矩提升截止频率 | 转矩提升转矩截止频率: 在此频率之下, 转矩提升转矩有效, 超过此设定频率, 转矩提升失效, 具体如下图所示: V1: 手动转矩提升电压 Vb: 最大输出电压 f1: 手动转矩提升截止频率 fb: 额定运行频率 | 0.00Hz~b1.02 | 50.00Hz |
| F2.09 | V/f 转差补偿系数 | 该参数只对异步电机有效。 V/f 转差补偿, 可以补偿异步电机在负载增加时产生的电机转速偏差, 使负载变化时电机的转速能够基本保持稳定。 V/f 转差补偿增益设置为 100.0%, 表示在电机带额定负载时补偿的转差为电机额定滑差, 而电机额定转差, 变频器通过 F1 组电机额定频率与额定转速自行计算获得。 调整 V/f 转差补偿增益时, 一般以当额定负载下, 电机转速与目标转速基本相同为原则。当电机转速与目标值不同时, 需要适当微调该增益。 | 0.0%~100.0% | 0.0% |
| F2.10 | V/f 过励磁增益 | 在变频器减速过程中, 过励磁控制可以抑制母线电压上升, 避免出现过压故障。过励磁增益越大, 抑制效果越强。 对变频器减速过程容易过压报警的场合, 需要提高过励磁增益。但过励磁增益过大, 容易导致输出电流增大, 需要在应用中权衡。 对惯量很小的场合, 电机减速中不会出现电压上升, 则建议设置过励磁增益为 0; 对有制动电阻的场合, 也建议过励磁增益设置为 0。 | 0~200 | 64 |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
| F2.11 | 振荡抑制增益 | 该增益的选择方法是在有效抑制振荡的前提下尽量取小, 以免对 V/f 运行产生不利的影响。在电机无振荡现象时请选择该增益为 0。只有在电机明显振荡时, 才需适当增加该增益, 增益越大, 则对振荡的抑制越明显。 使用抑制振荡功能时, 要求电机额定电流及空载电流参数要准确, 否则 V/f 振荡抑制效果不好。 | 0~100 | 机型确定 |
| F2-12 | 振荡抑制模式 | - | 0~4 | 3 |



| F3 组：控制优化参数 | | | | |
|-------------|----------------|---|----------------------------|---------|
| F3.00 | DPWM 切换上限频率 | 该参数只对 V/f 控制有效。异步机 V/f 运行时的发波方式确定，低于此数值为 7 段式连续调制方式，相反则为 5 段断续调制方式。 为 7 段式连续调制时变频器的开关损耗较大，但带来的电流纹波较小；5 段断续调制方式下开关损耗较小，电流纹波较大；但在高频率时可能导致电机运行的不稳定性，一般不需要修改。 关于 V/f 运行不稳定性请参考参数 F2.11，关于变频器损耗和温升请参考参数 F0.16 的调试。 | 0.00Hz~ 最大频率 (b1.02) | 12.00Hz |
| F3.01 | PWM 调制方式 | 该参数只对 V/f 控制有效。同步调制指载波频率随输出频率变换而线性变化，保证两者的比值（载波比）不变，一般在输出频率较高时使用，有利于输出电压质量。在较低输出频率时（100Hz 以下），一般不需要同步调制，因为此时载波频率与输出频率的比值比较高，异步调制优势更明显一些。 给定频率高于 85Hz 时，同步调制才生效，该频率以下固定为异步调制方式。 0：异步调制 1：同步调制 | 0~1 | 0 |
| F3.02 | 死区补偿模式选择 | 此参数一般不需要修改，只在输出电压波形质量有特殊要求，或者电机出现振荡等异常时，需要尝试切换选择不同的补偿模式。大功率建议使用补偿模式 2。 0：不补偿 1：补偿模式 1 2：补偿模式 2 | 0~2 | 1 |
| 序号 | 名称 | 内容 | 设置范围 | 出厂值 |
| F3.03 | 随机 PWM 深度 | 设置随机 PWM，可以把单调刺耳的电机声音变得较为柔和，并能有利于减小对外的电磁干扰。 当设置随机 PWM 深度为 0 时，随机 PWM 无效。调整随机 PWM 不同深度将得到不同的效果。 0：随机 PWM 无效 1~10：PWM 载频随机深度 | 0~10 | 0 |
| F3.04 | 快速限流使能 | 启用快速限流功能，能最大限度的减小变频器过流故障，保证变频器不间断运行。若变频器长时间持续处于快速限流状态，变频器有可能出现过热等损坏，这种情况是不允许的，所以变频器长时间快速限流时将报 40# 故障，表示变频器过载并需要停机。 0：不使能 1：使能 | 0~1 | 1 |
| F3.05 | 电流检测延时补偿 | 该参数用于设置变频器的电流检测补偿，设置过大可能导致控制性能下降。一般该数不需要修改。 | 0~100 | 5 |
| F3.06 | 欠压点设置 | 该参数用于设置变频器 09# 故障（欠压故障）的电压值，不同电压等级的变频器 100.0%， | 60.0%~ 140.0% | 100.0% |



| FF 组：厂家参数 | | | | |
|-----------|------------|---|---------|---|
| FF.00 | 三级菜单密码 | 该参数表示三级菜单功能参数的显示和修改密码。若该参数设置为非零值则进入三级菜单需要输入该密码。若连续输入三次错误密码则所有菜单被锁定，需要重新上电才能继续查看或修改参数，重新设为0后，密码解除。 | 0~65535 | 0 |
| FF.10 | 三级菜单恢复出厂参数 | 0: 不恢复 1: 恢复三级菜单出厂参数 一级菜单中的 F0.00~04、F0.16、F2.01、F2.11、FF.00 不恢复。 2: 恢复所有参数 | 0~2 | 0 |
| FF.11 | 三级菜单用户设定检查 | 0: 正常显示所有三级菜单参数 1: 只显示与出厂默认值不同的三级菜单参数 | 0~1 | 0 |



第七章 故障诊断及对策

7.1 安全注意事项

安全注意事项



危险

- 严禁在电源接通的状态下进行接线，请务必将所有断路器保持在 OFF 状态。否则会有触电的危险。



警告

- 请保证变频器按照当地法规进行接地。否则会有触电危险或火灾危险。
- 变频器带电后请勿拆卸外壳或触摸内部电路。否则会有触电危险。
- 故障查检必须由专业人员进行，非专业人员严禁对变频器进行查检、维护、维修。否则会有触电危险或火灾危险。
- 将变频器安装在封闭的柜内或机壳箱内时，请用冷却风扇或冷却空调等充分冷却，以使变频器进气温度保持在 50°C 以下。否则会导致过热或火灾。
- 请按规定扭矩锁紧所有螺钉。否则可能有火灾或触电危险。
- 请确认产品的输入电压在铭牌的额定电压范围内，否则会有触电或火灾危险。
- 变频器附近请勿放置易燃易爆物品。



注意

- 进行安装作业时，请用布或纸等遮住变频器的上部，以防止钻孔时的金属屑、油、水等进入变频器内部。如果异物进入变频器内部，可能导致变频器故障。
- 作业结束后，请拿掉这些布或纸。如果继续盖在上面，则会使通气性变差，导致变频器异常发热。
- 操作变频器时，请遵守静电防止措施（ESD）规定的步骤，否则会因静电而损坏变频器内部的电路。



7.2 试运行前调整指南

1) 开环矢量控制模式 (b1.00=0 出厂默认值)

该控制模式是在电机没有编码器速度反馈的应用场合下，对电机的速度和转矩进行控制。该控制模式下需要对电机参数进行电机参数辨识，完成电机参数的自动整定。

| 故障描述 | 解决对策 |
|---------------------|--|
| 电机启动过程中报过载或过流故障 | <ul style="list-style-type: none"> ◆ 电机参数 (P0.01~P0.05) 按电机铭牌设定。 ◆ 进行电机参数辨识 (b0.04)。 |
| 5Hz 以上转矩或速度响应慢、电机振动 | <ul style="list-style-type: none"> ◆ 改善转矩和速度的响应，需要加强速度环比例调节 (F1.03 按 10 为单位增大设定值) 或者降低速度环积分时间 (F1.04 按 0.05 为单位降低)。 ◆ 如果出现振动，需要减弱 F1.03 和 F1.04 参数值。 |
| 速度精度低 | <ul style="list-style-type: none"> ◆ 当电机带载速度偏差过大时，需增大滑差补偿 (b1.01)，按 10% 为单位增减。 |
| 速度波动大 | <ul style="list-style-type: none"> ◆ 当电机速度有异常波动时，可适当增加速度环滤波时间常数 (F1.06)，按 0.001s 为单位增加。 |
| 电机噪音大 | <ul style="list-style-type: none"> ◆ 适当增加载频频率值 (F0.16)，以 1.0kHz 为单位升高。(注意：1、升高载频变频器会降容 (具体细节咨询厂家)；2、升高载频电机漏电流会增大) |
| 电机转矩不足或出力不够 | <ul style="list-style-type: none"> ◆ 转矩上限是否被限制，速度模式下提高转矩上限 (b1.04 和 b1.05)；转矩模式下增大转矩指令。 |

2) V/f 控制模式 (b1.00=2)

该种模式是在电机没有编码器速度反馈的应用场合下使用，对电机参数不敏感，只需要正确设置电机的额定电压和额定频率值。

| 故障描述 | 解决对策 |
|----------|---|
| 运行中电机振荡 | <ul style="list-style-type: none"> ◆ 增加振荡抑制参数 (F2.11)，以 10 为单位增加 (最大调整到 100)。 |
| 大功率启动报过流 | <ul style="list-style-type: none"> ◆ 降低转矩提升 (F2.01)，以 0.5% 为单位调节。 |
| 运行中电流偏大 | <ul style="list-style-type: none"> ◆ 正确设置电机的额定电压 (A0.02)、额定频率 (P0.04)。 ◆ 降低转矩提升 (F2.01)，以 0.5% 为单位调节。 |
| 电机噪音大 | <ul style="list-style-type: none"> ◆ 适当增加载波频率值 (F0.16)，以 1.0kHz 为单位升高。 <p>(注意：1、升高载频变频器会降容 (具体细节咨询厂家)； 2、升高载频电机漏电流会增大)</p> |



7.3 警报及故障显示

YD287 实时监控着各种输入信号、运行条件、外部反馈信息等，一旦发生异常，相应的保护功能动作同时操作面板显示故障信息，如“Er 102”等。

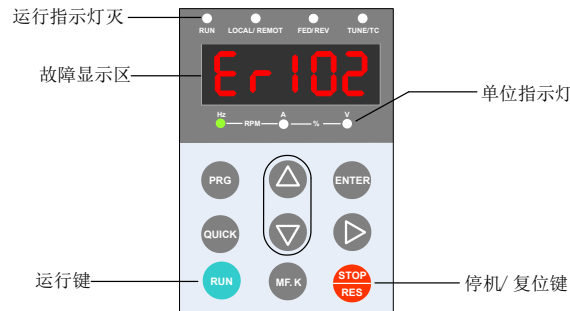


图 7-1 故障界面示意图

操作面板上的五个数码管从左至右依次编号为 5、4、3、2、1，例如：显示内容为 103.02，5#、4# 和 3# 数码管组成故障代码，其中 5# 数码管的“1”为故障等级；4# 和 3# 数码管的“03”为故障代码；2# 和 1# 数码管的“02”为故障子码，作为厂家保留内容，用户可通过故障记录（E*组参数）查看。具体如下图所示。

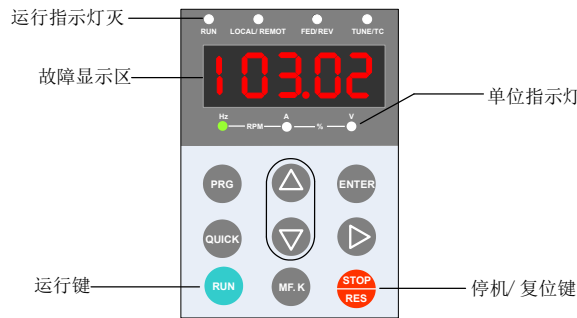


图 7-2 故障记录界面 LED 显示举例

用户在寻求服务之前，可以先按本节提示进行自查，分析故障原因，找出解决方法。YD287 是整个起重机电控系统的核心，它产生的故障信息可以根据对系统的影响程度分为 5 个类别，不同类别的故障相应的处理方式也不同，对应关系如下表所示。



◆ * 表示故障级，* 的取值范围为 1~5。例如 Er*52，其中 52 为故障码，* 表示故障等级可调整。


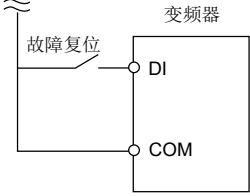
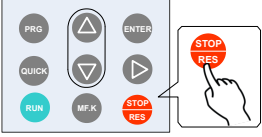
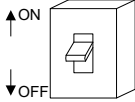
| 故障等级 | 处理方式 | 显示方式 |
|------|--|--------|
| 一级故障 | <ul style="list-style-type: none"> ◆ 操作面板显示故障代码 ◆ 输出功能 1(制动器控制)无效 ◆ 输出功能 2(故障停机)有效 ◆ 变频器执行自由停机 | Er 1** |
| 二级故障 | <ul style="list-style-type: none"> ◆ 操作面板显示故障代码 ◆ 输出功能 3(故障报警)有效 ◆ 变频器执行快速停机 | Er 2** |
| 三级故障 | <ul style="list-style-type: none"> ◆ 操作面板显示故障代码 ◆ 输出功能 3(故障报警)有效 ◆ 变频器执行减速停机 | Er 3** |
| 四级故障 | <ul style="list-style-type: none"> ◆ 操作面板显示故障代码 ◆ 输出功能 4(故障提示)有效 ◆ 各种工况运行不受影响 | Er 4** |
| 五级故障 | <ul style="list-style-type: none"> ◆ 各种工况运行不受影响 | Er 5** |



◆ 1#~40# 故障为变频器驱动性能故障，YD287 默认为一级故障无法更改；
 ◆ 41#~65# 故障为变频器功能故障，用户可通过参数 bF.10~14 更改相应故障的故障等级（详见 bF.10~14 的说明）。



7.4 故障复位

| 阶段 | 措施 | 备注 |
|--------------|--|--|
| 故障时 | 通过操作面板显示查看记录 | 通过 E0 组 ~E9 组可查看  |
| 故障复位前 | 从操作面板显示的故障类型上查找故障原因并解除故障，解除故障原因后再复位 | 请参考“7.5 故障码处理”进行处理 |
| 解除故障 复位方法 | 1) 将 DI 设定为功能 3 (b3.01~b3.10=3 故障复位)，确认已经取消变频器的运行命令后，复位功能端子有效。 |  |
| | 2) 确认已经取消变频器的运行命令后，按下面板上红色停机复位键使其复位 | 按面板红色停机复位键  |
| | 3) 给变频器重新上电后自动复位 暂时将主回路电源切断，待操作面板上显示的内容消失后再次接通电源 |  |

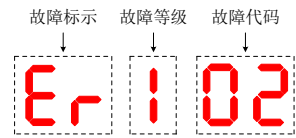




7.5 故障码处理

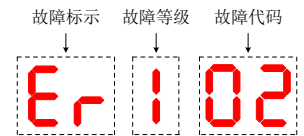
变频器使用过程中可能会遇到下列故障类型情况，请参考下述方法进行简单故障分析。

| 故障码 | 故障名称 | 故障原因 | 解决对策 |
|-------|----------|---|---|
| Er102 | 加速过电流 | 1、变频器输出回路存在接地或短路 2、控制方式为矢量且没有进行参数辨识 3、加速时间太短 4、手动转矩提升或 V/f 曲线不合适 5、电压偏低 6、对正在旋转的电机进行启动 7、加速过程中突加负载 8、变频器选型偏小 | 1、排除外围故障 2、进行电机参数辨识 3、增大加速时间 4、调整手动提升转矩或 V/f 曲线 5、将电压调至正常范围 6、选择转速追踪启动或等电机停止后再启动 7、取消突加负载 8、选用功率等级更大的变频器 |
| Er103 | 减速过电流 | 1、变频器输出回路存在接地或短路 2、控制方式为矢量且没有进行参数辨识 3、减速时间太短 4、电压偏低 5、减速过程中突加负载 6、没有加装制动单元和制动电阻 7、制动电路短路 | 1、排除外围故障 2、进行电机参数辨识 3、增大减速时间 4、将电压调至正常范围 5、取消突加负载 6、加装制动单元及电阻 7、排查制动电阻 |
| Er104 | 恒速过电流 | 1、变频器输出回路存在接地或短路 2、控制方式为矢量且没有进行参数辨识 3、电压偏低 4、运行中是否有突加负载 5、变频器选型偏小 6、制动电路短路 | 1、排除外围故障 2、进行电机参数辨识 3、将电压调至正常范围 4、取消突加负载 5、选用功率等级更大的变频器 6、排查制动电阻 |
| Er105 | 加速过电压 | 1、输入电压偏高 2、加速过程中存在外力拖动电机运行 3、加速时间过短 4、没有加装制动单元和制动电阻 | 1、将电压调至正常范围 2、取消外力或加装制动电阻 3、增大加速时间 4、加装制动单元及电阻 |
| Er106 | 减速过电压 | 1、输入电压偏高 2、减速过程中存在外力拖动电机运行 3、减速时间过短 4、没有加装制动单元和制动电阻 | 1、将电压调至正常范围 2、取消外力或加装制动电阻 3、增大减速时间 4、加装制动单元及电阻 |
| Er107 | 恒速过电压 | 1、输入电压偏高 2、运行过程中存在外力拖动电机运行 | 1、将电压调至正常范围 2、取消外力或加装制动电阻 |
| Er108 | 控制电源故障 | 输入电压不在规定的范围内 | 将电压调至要求的范围内 |
| Er109 | 欠压故障 | 1、瞬时停电 2、变频器输入端电压不在要求的范围 3、母线电压低于 F3.06 4、整流桥及缓冲电阻不正常 5、驱动板异常 6、控制板异常 | 1、复位故障 2、调整电压到正常范围 3、寻求技术支持 4、寻求技术支持 5、寻求技术支持 6、寻求技术支持 |
| Er110 | 变频器过载 | 1、负载是否过大或发生电机堵转 2、变频器选型偏小 | 1、减小负载并检查电机及机械情况 2、选用功率等级更大的变频器 |
| Er111 | 电机过载 | 1、电机保护参数 bE.01 设定是否合适 2、负载是否过大或发生电机堵转 3、变频器选型偏小 | 1、正确设定此参数 2、减小负载并检查电机及机械情况 3、选用功率等级更大的变频器 |
| Er112 | 输入缺相 | 1、三相电源输入不正常 2、驱动板、防雷板、主控板、整流桥异常 | 1、检查并排除外围接线问题 2、寻求厂家技术支持 |
| Er114 | 变频器过热 | 1、环境温度过高 2、风道堵塞 3、风扇损坏 4、模块热敏电阻损坏 5、逆变模块损坏 | 1、降低环境温度 2、清理风道 3、更换风扇 4、更换热敏电阻 5、更换逆变模块 |
| Er115 | 内置制动单元过载 | 1、制动电阻选型偏小 2、制动电阻短路 | 1、选择更大阻值的制动电阻 2、检查变频器到制动电阻的接线是否正常 |
| Er116 | 内置制动单元直通 | 3、内置制动单元损坏 4、外部负载发电量偏大 | 3、寻求技术支持 |
| Er117 | 接触器故障 | 1、驱动板和电源不正常 2、接触器不正常 | 1、更换驱动板或电源板 2、更换接触器 |
| Er118 | 电流检测故障 | 1、霍尔器件异常 2、驱动板异常 | 1、更换霍尔器件 2、更换驱动板 |
| Er119 | 电机参数辨识故障 | 1、电机参数未按铭牌设置 2、参数辨识过程超时 | 1、根据铭牌正确设定电机参数 2、检查变频器到电机接线 |





| 故障码 | 故障名称 | 故障原因 | 解决对策 |
|-------|--------|--|---|
| Er120 | 编码器故障 | 1、编码器型号不匹配 2、编码器连线错误 3、编码器损坏 4、PG 卡异常 | 1、根据实际正确设定编码器类型 2、排除线路故障 3、更换编码器 4、更换 PG 卡 |
| Er123 | 对地短路故障 | 1、电机对地短路 | 1、更换电缆或电机 |
| Er125 | 输出缺相 | 1、变频器到电机的接线不正常 2、电机运行时变频器三相输出不平衡 3、驱动板异常 4、模块异常 | 1、排除外围故障 2、检查电机三相绕组是否正常并排除故障 3、寻求技术支持 4、寻求技术支持 |
| Er137 | 频率方向异常 | 运行给定频率和电机反馈频率的方向相反。 | 1、检查电机参数设置是否正确 2、检查负载是否过重 3、调整 bC.02 的设置 |
| Er138 | 频率跟随异常 | 给定频率和电机反馈频率跟随误差过大 | 1、检查电机参数设置是否正确 2、检查负载是否过重 3、调整 bC.03 和 bC.04 的设置 |
| Er140 | 逐波限流故障 | 1、负载是否过大或发生电机堵转 2、变频器选型偏小 | 1、减小负载并检查电机及机械情况 2、选用功率等级更大的变频器 |



| 故障码 | 故障名称 | 故障原因 | 解决对策 |
|-------|----------------|---|--|
| Er*41 | 松闸故障 | 1、在松闸阶段，松闸时间超过 b6.22 设置超时时间 2、松闸反馈信号输入有误。 详见参数 b6.08 的使用说明。 | 1、检查抱闸输出信号是否正确 2、检查制动器电路接线 3、检查控制板松闸反馈输入点的功能选择 (输入功能 11) |
| Er*42 | 抱闸故障 | 抱闸反馈信号输入有误。 详见参数 b6.08 的使用说明。 | 1、检查制动器电路接线 2、检查控制板抱闸反馈输入点的功能选择 (输入功能 12) |
| Er*43 | 轴冷电机低速运行超时 | 详见参数 b0.00 和 b0.01 的使用说明。 | 1、适当调整 b0.00 和 b0.01 的设置 2、注意保护电机过热 |
| Er*44 | 正、反向运行指令同时有效 | 变频器同时检测到正反向运行指令 | 1、检查正反向运行命令输入点的外围电路 2、适当提高端子滤波时间 |
| Er*45 | 操纵杆未归零 | 变频器上电时检测到有运行命令或频率给定信号输入 | 1、上电过程中确保各常开输入点信号无效； 2、待系统初始化结束后再开始输入运行指令。 |
| Er*46 | 工艺卡通信异常 | 变频器与工艺卡 (YD587CF*) 之间通信异常 | 1、检查 bF.18 的设置是否正确 2、寻求技术支持 |
| Er*47 | CAN 总线故障 | 1、CANlink 扩展卡工作异常 2、通信线不正常 | 1、检查各扩展卡之间的通信接线是否有松动 2、检查各扩展卡接口是否有松动 3、尽可能缩短各个通信节点之间的距离 |
| Er*48 | 通信异常 | 1、上位机工作异常 2、通信线异常 3、通信参数 bd 组设置不正确 | 1、检查上位机接线 2、检查通信连接线 3、正确设置通信扩展卡类型 4、正确设置通信参数 |
| Er*49 | 参数读写异常 | EEPROM 芯片损坏 | 更换主控板 |
| Er*50 | 外部输入故障 | DI 输入功能 7 有效 | 复位运行 |
| Er*51 | 功能码故障 | 1、功能参数设置异常 2、EEPROM 存储芯片异常 | 1、使用参数自检功能，查看出错功能后修改 2、更新主控板 |
| Er*52 | V/f 模式专用速度偏差过大 | 电机实际运行频率与同步频率超出速度偏差阈值 | 1、检查负载是否过重 2、调整 bC.01 和 bC.03 的设置 3、检查电机参数设置是都正确。 |



7.6 故障现象处理

| 序号 | 故障现象 | 可能原因 | 解决对策 |
|--------|------------------------------|-------------------------------|---|
| 1 | 上电无显示 | 电网电压没有或者过低 | 检查输入电源 |
| | | 变频器驱动板上的开关电源故障 | 检查母线电压或寻求厂家服务 |
| | | 控制板与驱动板、键盘之间连线断 | 重新拔插 8 芯和 40 芯排线 |
| | | 变频器缓冲电阻损坏 | 寻求厂家服务 |
| | | 控制板、键盘故障 | |
| 整流桥损坏 | | | |
| 2 | 上电一直显示 CrAnE | 驱动板与控制板之间的连线接触不良 | 重新拔插 8 芯和 28 芯排线 |
| | | 控制板上相关器件损坏 | 寻求厂家服务 |
| | | 电机或者电机线有对地短路 | |
| | | 霍尔故障 | |
| 电网电压过低 | | | |
| 3 | 上电显 Er123 报警 | 电机或者输出线对地短路 | 用摇表测量电机和输出线的绝缘 |
| | | 变频器损坏 | 寻求厂家服务 |
| 4 | 上电变频器显示正常, 运行后显示 CrAnE 并马上停机 | 风扇损坏或者堵转 | 更换风扇 |
| | | 外围控制端子接线有短路 | 排除外部短路故障 |
| 5 | 频繁报 Er114 (模块过热) 故障 | 载频设置太高 | 降低载频 (F0.15) |
| | | 风扇损坏或者风道堵塞 | 更换风扇、清理风道 |
| | | 变频器内部器件损坏 (热电偶或其他) | 寻求厂家服务 |
| 6 | 变频器运行后电机不转动 | 电机及电机线 | 重新确认变频器与电机之间连线正确 |
| | | 变频器参数设置错误 (电机参数) | <ul style="list-style-type: none"> ◆ 恢复出厂参数, 重新设置使用参数组; ◆ 检查编码器参数设置正确、电机额定参数设置正确, 如电机额定频率、额定转速等; ◆ 检查 b1.00 (控制方式)、bF.04 (运行方式) 设置正确; ◆ V/f 模式下, 重载启动下, 调整 F2.01(转矩提升) 参数 . |
| | | 驱动板与控制板连线接触不良 | 重新拔插连接线吗, 确认接线牢固; |
| | | 驱动板故障 | 寻求厂家服务 |
| 7 | DI 端子失效 | 参数设置错误 | 检查并重新设置 b3 组相关参数 |
| | | 外部信号错误 | 重新接外部信号线 |
| | | OP 与 +24V 跳线松动 | 重新确认 OP 与 +24V 跳线, 并确保紧固。 |
| | | 控制板故障 | 寻求厂家服务 |
| 8 | 闭环矢量控制时, 电机速度无法提升 | 编码器故障 | 更换码盘并重新确认接线 |
| | | 编码器接错线或者接触不良 | 更换 PG 卡 |
| | | PG 卡故障 | 寻求厂家服务 |
| | | 驱动板故障 | |
| 9 | 变频器频繁报过流和过压故障。 | 电机参数设置不对 | 重新设置电机参数或者进行电机参数辨识 |
| | | 加减速时间不合适 | 设置合适的加减速时间 |
| | | 负载波动 | 寻求厂家服务 |
| 10 | 上电 (或运行) 报 Er117 | 软启动接触器未吸合或在低温高湿环境下, 软启动接触器未导通 | <ul style="list-style-type: none"> * 检查接触器电缆是否松动 * 检查接触器是否有故障 * 检查接触器 +24V 供电电源是否有故障 * 寻求厂家服务 * 在电控箱里加设加热装置 |
| 11 | 防雷板异常报 Err12 | 防雷板与驱动板之间连线松动 | 检查防雷板与驱动板之间的输入缺相信号线是否连接可靠 |
| | | 防雷板腐蚀或损坏 | 检查防雷板是否明显损坏或腐蚀严重, 更换防雷板 |



7.7 故障子码介绍

为了更好的推断故障原因及排查故障，YD287 对部分故障设计了子码。

用户查看故障记录（E*组参数）时，E*.00 的小数点后两位表示故障子码。具体的子码内容请参考下表。

| 故障代码 | 代码含义 | 故障子码 | 子码含义 |
|---------|---------------------|------|---------------------------------------|
| 02#~04# | 过流 | 1 | 逆变单元硬件过流 |
| | | 10 | 内置制动单元硬件过流 |
| 05#~07# | 过压 | 1 | 软件过压故障 1 |
| | | 2 | 软件过压故障 2 |
| 08# | 缓冲电阻过热故障 或控制电源故障 | 1 | 上电过程中电压不稳，造成上电后欠压，短时间内再次上电次数达到 5 次以上。 |
| 09# | 欠压 | 1 | 变频器运行过程中母线电压低于欠压点的（F3.06）设定电压 |
| 10# | 变频器过载 | 1 | 按照变频器过载曲线报出的过载故障 |
| | | 2 | 任何一相输出逐波限流时间达到 5s |
| 11# | 电机过载 | 1 | 按照电机过载曲线报出的过载故障 |
| 12# | 输入缺相 | 1 | 硬件输入缺相 1 |
| | | 2 | 硬件输入缺相 2 |
| | | 3 | 软件输入缺相 1 |
| | | 4 | 软件输入缺相 2 |
| 14# | 散热器过热或模块 过热 | 1 | 逆变器温度超过过温点 |
| 15# | 内置制动管过载 | 1 | 制动管瞬时电流大于两倍的额定制动电流 |
| | | 2 | 制动管瞬时电流大于“变频器过压点电压除以最小电阻值” |
| | | 3 | 根据内置制动管过载曲线报出故障 |
| 16# | 内置制动管直通 | 1 | 在变频器上电过程及停机时检测到制动管电流大于检测阈值 |
| 17# | 缓冲电阻吸合故障 | 1 | 硬件缓冲电阻检测故障 1 |
| | | 2 | 硬件缓冲电阻检测故障 2 |
| 18# | 零漂检测过大 或电流传感器故障 | 1 | U 相检测零漂过大 |
| | | 2 | V 相检测零漂过大 |
| | | 3 | W 相检测零漂过大 |
| 19# | 参数辨识失败 | 1 | 空载电流异常 |
| 20# | 编码器故障 | 1 | 硬件编码器断线检测（仅 MD38PGMD 支持） |
| | | 2 | 软件编码断线检测 |
| | | 9 | 闭环模式下动态完整参数辨识，编码器线数错误 |
| | | 10 | 闭环模式下动态完整参数辨识，编码器断线 |
| 23# | 对地短路故障 | 1 | 对地短路检测阶段发生硬件过流 |
| | | 2 | 对地短路检测阶段发生硬件过压 |
| | | 3 | 对地短路检测阶段检测电流大于变频器额定电流峰值 |
| 25# | 输出缺相 | 1 | U 相输出缺相 |
| | | 2 | V 相输出缺相 |
| | | 3 | W 相输出缺相 |
| | | 4 | 闭环模式下输出电压较大 |
| | | 5 | 定子电阻参数辨识时，输出缺相时报此故障 |
| 37# | 失速预警 1 | 1 | 详见 bC.02 的介绍 |
| 38# | 失速预警 2 | 1 | 详见 bC.03~bC.04 的介绍 |
| 40# | 逐波限流故障 | 1 | 任何一相输出短时间内连续出现逐波限流 |



第八章 日常保养与维护

8.1 日常保养

安全注意事项



危险

- 请勿在电源接通条状态下进行操作接线，否则有触电危险！
- 进行检查前，请切断所有的设备电源，切断变频器输入电源后，因变频器内部直流电容上仍有残压，请至少等待几分钟待电源指示灯熄灭后方可操作，再次上电操作时，需要等待变频器规定的间隔上电时间；
- 在变频器上电后，请勿更改接线、拆下线缆、拆下选配卡和更换冷却风扇，否则有触电危险；
- 请务必将电机的接地端子接地，否则与电机外壳接触有触电危险；
- 非专业电气人员，请勿进行维护、保养和维修；
- 安装、接线、调试、修理、检查和元器件更换，请由熟悉变频器的安装、调试、维修、电气专业施工人员进行。



警告

- 请勿在拆下变频器外壳下，使变频器处于运行状态；
- 为说明产品细节部分，本说明书中的图解有时为拆下外罩和端盖状态，请务必在安装有规定的外罩下和安全遮盖物下遵照说明书运行变频器；
- 请按指定的拧固力紧固螺钉端子，防止连接松动导致电线连接处发热而引发火灾；
- 请勿接错主回路输入电压的范围，防止因输入变频器的额定电压超出变频器允许的范围，导致运行异常；
- 请勿使易燃物紧密接触变频器或将变频器安装易燃物体上。



注意

- 请遵照本说明书指示正确更换风扇。特别针对风扇出风口方向，如果方向错误，会导致冷却效果差，不能发挥冷却作用；
- 在变频器运行时，请勿拆装电机。否则会引起触电和变频器损坏；
- 对控制回路接线时，请使用屏蔽性电缆；
- 防止变频器异动，同时将屏蔽层单端可靠接地。
- 请勿更改变频器回路，否则会引起变频器损坏；
- 请正确连接变频器输出回路端子同电机回路接线端子；
- 如果需要更改电机运行方向，请任意调换变频器输出端子；
- 请勿操作已损坏的变频器，以免波及变频器以外的设备器件损坏。



8.1.1 日常检查项目

由于环境的温度、湿度、粉尘及振动的影响，会导致变频器内部的器件老化，导致变频器潜在的故障发生或降低了变频器的使用寿命。因此，有必要对变频器实施日常和定期的保养及维护，特别是针对高温环境、频繁起停场合、存在交流电源和负载波动环境、存在大震动或冲击的环境、存在粉尘 / 盐酸类腐蚀性环境中应该缩短定期检查周期间隔。

为确保变频器功能正常和产品免受损坏，请每日对以下项目进行确认，请复印该检查确认表进行使用，每次确认后在确认栏上盖签“确认”章。

| 检查项目 | 检查内容 | 故障时对策 | 确认栏 |
|------|---------------------------|--|-----|
| 电机 | 电机是否存在异常声音和振动现象 | <ul style="list-style-type: none"> ● 确认机械连接是否异常； ● 确认电机是否缺相； ● 确认电机固定螺丝是否牢固。 | |
| 风扇 | 变频器和电机冷却风扇使用异常 | <ul style="list-style-type: none"> ● 确认变频器冷却风扇是否运行； ● 确认电机侧冷却风扇是否异常； ● 确认通风通道是否堵塞； ● 确认环境温度是否在允许范围内。 | |
| 安装环境 | 电柜和线缆槽是否异常 | <ul style="list-style-type: none"> ● 确认变频器进出线缆是否有绝缘破损； ● 确认安装固定支架是否有震动； ● 确认铜排和连接线缆端子是否有松动和被腐蚀穿。 | |
| 负载 | 变频器运行电流是否超出变频器额定和电机额定一定时间 | <ul style="list-style-type: none"> ● 确认电机参数设置是否正确； ● 确认电机是否过载； ● 确认机械振动是否过大（正常情况 < 0.6g）。 | |
| 输入电压 | 主回路和控制回路间电源电压是否 | <ul style="list-style-type: none"> ● 确认输入电压是否在允许范围内； ● 确认周围是否有大负载启动。 | |

8.2 定期检查

8.2.1 定期检查项目

请定期对运行中难以检查的地方检查，应始终保持变频器处于清洁状态，有效清除变频器上表面积尘，防止积尘进入变频器内部，特别是金属粉尘，有效清除变频器散热风扇的油污。



危险

- 为防止触电，请勿在带电状态下进行检查作业，否则有触电危险。
- 检查前请切断所有设备的电源，并等待 10 分钟以上，以免变频器内部电容的残余电压造成危险。



| 检查项目 | 检查内容 | 故障时对策 | 检查栏 |
|---------|-------------------------------------|---|-----|
| 整机 | 表面是否有垃圾、污垢、粉尘堆积 | <ul style="list-style-type: none"> ● 确认变频器柜是否断电； ● 用吸尘器清除垃圾或粉尘，以免接触部件； ● 用软布浸入中性清洁剂轻轻擦去油污。 | |
| 线缆 | 动力线及连接处是否变色；绝缘层是否老化或开裂。 | <ul style="list-style-type: none"> ● 更换已经开裂的线缆； ● 更换已经损坏的连接端子。 | |
| 电磁接触器外围 | 动作时是否吸合不牢或发出异响；是否有短路、被水污、膨胀、破裂的外围器件 | <ul style="list-style-type: none"> ● 更换已异常的元器件。 | |
| 风道通风口 | 风道、散热片是否阻塞；风扇是否损坏； | <ul style="list-style-type: none"> ● 清扫风道； ● 更换风扇。 | |
| 控制回路 | 控制元器件是否有接触不良；端子螺丝是否松动；控制线缆是否有绝缘开裂。 | <ul style="list-style-type: none"> ● 清扫控制线路和连接端子表面异物； ● 更换已破损腐蚀的控制线缆。 | |

8.2.2 主回路绝缘测试

- 提醒：在用兆欧表（请用直流 500V 兆欧表）测量绝缘电阻时，要将主回路线与变频器脱开。不要用绝缘电阻表测试控制回路绝缘，请参考下图。（严禁进行高压 (> 500V) 测试，出厂时已完成）。

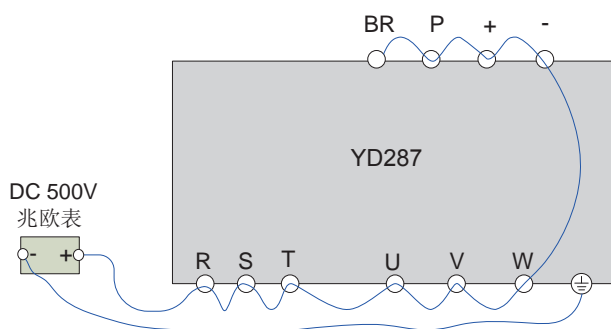


图 8-1 主回路绝缘测试示意图

要求测量结果大于 5 MΩ。

测试前需将压敏电阻螺钉卸下，断开压敏接入：

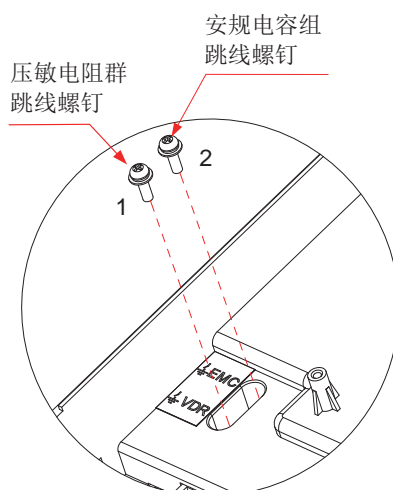


图 8-2 压敏电阻 (VDR)、安规电容 (EMC) 对地跳线位置示意图



8.3 变频器易损件更换

8.3.1 易损件寿命

变频器易损件主要有冷却风扇和滤波用电解电容器，其寿命与使用的环境及保养状况密切相关。一般寿命时间为：

| 器件名称 | 寿命时间【注】 |
|------|---------|
| 风扇 | ≥ 5 年 |
| 电解电容 | ≥ 5 年 |

【注】：寿命时间为在下列条件下使用时的时间，用户可以根据运行时间确定更换年限。

- 1) 环境温度：40°C
- 2) 负载率：80%
- 3) 运行率：24 小时 / 日

8.3.2 冷却风扇的使用数量

表 3-16 冷却风扇使用数量

| 型号 | 冷却风扇 |
|----------------------|------|
| 三相 380~480V, 50/60Hz | |
| YD287T4-0P7GB | 1 |
| YD287T4-1P5GB | 1 |
| YD287T4-2P2GB | 1 |
| YD287T4-3P0GB | 1 |
| YD287T4-3P7GB | 1 |
| YD287T4-5P5GB | 1 |
| YD287T4-7P5GB | 1 |
| YD287T4-11GB | 1 |
| YD287T4-15GB | 1 |
| YD287T4-18P5GB | 1 |
| YD287T4-22GB | 1 |



第九章 规格与选型

9.1 YD287 变频器技术规格与尺寸

9.1.1 电气规格

表 9-1 YD287 变频器型号与技术数据 (三相 380V~480V)

| 项目 | | 规格 | | | | | | | | | | |
|-------------|--------------|-----------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| YD287T4-□GB | | 0P7 | 1P5 | 2P2 | 3P0 | 3P7 | 5P5 | 7P5 | 11 | 15 | 18P5 | 22 |
| 适用电机容量 (kW) | | 0.75 | 1.5 | 2.2 | 3.0 | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 |
| 适用电机容量 (HP) | | 1 | 2 | 3 | 4 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 |
| 输入 | 额定输入电流 (A) | 2.4 | 4.6 | 6.3 | 9.0 | 11.4 | 16.7 | 21.9 | 32.2 | 41.3 | 49.5 | 59.0 |
| | 额定输出电流 (A) | 2.1 | 3.8 | 5.1 | 7.2 | 9.0 | 13.0 | 17.0 | 25.0 | 32.0 | 37.0 | 45.0 |
| 输出 | 输出电压 | 三相 380~480V (跟随输入电压) | | | | | | | | | | |
| | 最高输出频率 | 150Hz (可通过参数更改) | | | | | | | | | | |
| | 载波频率 | 0.8kHz~8.0kHz (可根据负载特性, 自动调整载波频率) | | | | | | | | | | |
| | 过载能力 | G型 150% 额定电流 60s | | | | | | | | | | |
| 电源 | 额定电压 额定频率 | AC: 三相 380~480V, 50/60Hz | | | | | | | | | | |
| | 电压允许波动范围 | -15~+10%, 实际允许范围: AC 323~528V | | | | | | | | | | |
| | 频率允许波动范围 | ±5% | | | | | | | | | | |
| | 电源容量 (kVA) | 2.8 | 5.0 | 6.7 | 9.5 | 12.0 | 17.5 | 22.8 | 33.4 | 42.8 | 45.0 | 54.0 |
| 散热设计 | 发热功耗 (kW) | 0.046 | 0.068 | 0.081 | 1.009 | 0.138 | 0.201 | 0.24 | 0.355 | 0.454 | 0.478 | 0.551 |
| | 排风量 (CFM) | 9 | 9 | 9 | 9 | 20 | 24 | 30 | 40 | 42 | 51.9 | 57.4 |





| 项目 | | 规格 | | |
|-------|--------------|---|----------------|--|
| 基本功能 | 最高频率 | 150Hz | | |
| | 载波频率 | 0.5kHz~12kHz; 可根据负载特性, 自动调整载波频率。 | | |
| | 输入频率分辨率 | 数字设定: 0.01Hz | | |
| | 控制方式 | 不带编码器矢量控制 (开环控制) V/f 控制 | | |
| | 启动转矩 | V/f 控制: 0.5Hz/150% 开环控制: 0.5Hz/200% | | |
| | 调速范围 | 1: 100 (开环控制) | 1: 50 (V/f 控制) | |
| | 稳速精度 | ±0.5% (开环控制) | ±1% (V/f 控制) | |
| | 过载能力 | 120% 额定电流 1 小时 150% 额定电流 1 分钟 180% 额定电流 2 秒 | | |
| | 转矩提升 | 自动转矩提升; 手动转矩提升 0.1%~30.0% | | |
| | 加减速时间 | 直线或 S 曲线加减速方式可选 | | |
| | 直流制动 | 直流制动频率: 最低频率 ~ 额定频率 直流制动电流: 0.0%~120.0% 额定电流 | | |
| | 自动电压调整 (AVR) | 当电网电压变化时, 能自动保持输出电压恒定 | | |
| | 过压过流失速控制 | 对运行期间电流电压自动限制, 防止频繁过流过压跳闸 | | |
| | 转矩限定与控制 | “挖土机”特性, 对运行期间转矩自动限制, 防止频繁过流跳闸 | | |
| 个性化功能 | 出色的性能 | 以高性能的电流矢量控制技术实现对异步电机的控制 | | |
| | 瞬停不停 | 母线电压持续偏低时通过降低负载的给定频率维持变频器正常输出, 避免运行中报欠压故障 | | |
| | 超载保护 | 自动识别负载情况, 超载后限制提升运行, 只能下放运行 | | |
| | 快速限流 | 避免变频器频繁出现过流故障 | | |
| | 功能参数三级菜单模式 | 将变频器功能参数分为三类, 分别对应初级、中级和高级使用者 | | |
| | 轴冷电机低速保护 | 针对轴冷电机制定了低速长时间运行的保护功能 | | |
| | 减速箱使用率显示 | 内置减速箱使用率的计算公式, 提供给用户当前减速箱的使用率提示 | | |
| | 制动器时序控制 | 内置专业的起重专用制动器时序控制 | | |
| | 轻载高速 | 通过检测变频器输出转矩自动计算最高可达输出频率 | | |
| | 减速、停止开关 | 简易的定位功能 | | |
| | 负载超速判断 | 依据反馈频率设计频率方向异常和频率跟随异常两个报警 | | |
| | 多类故障报警 | 变频器输出故障类型以及处理方式可选 | | |
| | 多电机切换 | 变频器所有参数备份三套, 可实现三个电机切换控制 | | |



| 项目 | | 规格 |
|------|-------|--|
| 运行环境 | 命令源 | 操作面板给定、控制端子给定 |
| | 频率源 | 多段速给定、加减速给定 |
| | 输入端子 | 6个数字输入端子，同时兼容交流和直流输入信号 |
| | 输出端子 | 2个继电器输出端子 |
| | 使用场所 | 不受阳光直射，无尘埃、腐蚀性气体、可燃性气体、油雾、水蒸汽、滴水或盐分等 |
| | 海拔高度 | 低于1000m (高于1000米时请降额使用，降额幅度为1%/100米) |
| | 环境温度 | -10°C ~+40°C (环境温度在40°C ~65°C，请降额使用。降额幅度为2%/度) |
| | 湿度 | 小于95%RH，无凝露 |
| | 振动 | 使用场景：根据IEC 60068-2-6测试。5Hz~8.4Hz时振幅为3.5mm，8.4Hz~200Hz时加速度为1g，10个循环/轴向。 运输场景：根据IEC 60068-2-64测试。5Hz~100Hz时功率谱密度为0.01g ² /Hz，200Hz时功率谱密度为0.001g ² /Hz，Grms为1.14g。 |
| | 冲击 | 使用/运输场景：根据IEC 60068-2-27测试。加速度为15g，脉宽为11ms，三轴向共18次。 |
| | 存储温度 | -20°C ~+70°C |
| | 过电压等级 | OVCI |
| | 防护等级 | IP20 |
| | 污染等级 | PD2 |
| | 电网类型 | TN、TT |



9.1.2 外型与安装尺寸

◆ YD287整机尺寸

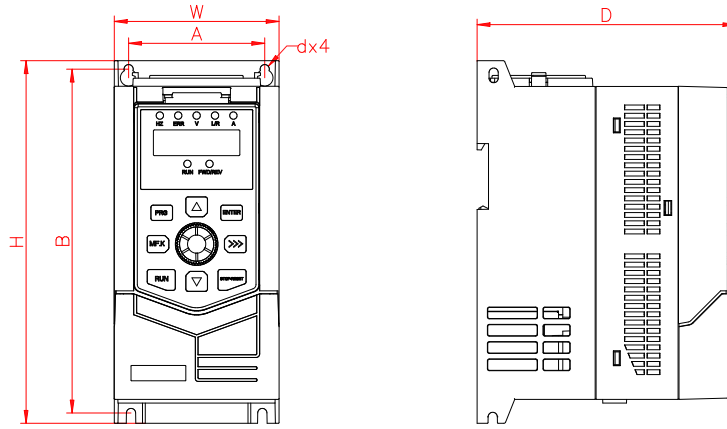


图 9-1 YD287T4-0P7G~3P7G 外型尺寸及安装尺寸示意图

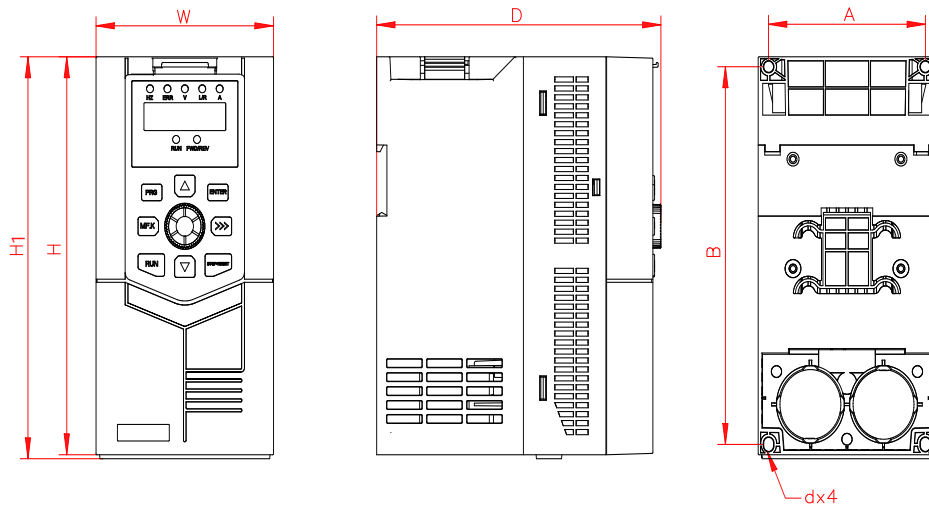


图 9-2 YD287T4-5P5G~YD287T4-7P5GB 外型尺寸及安装尺寸示意图

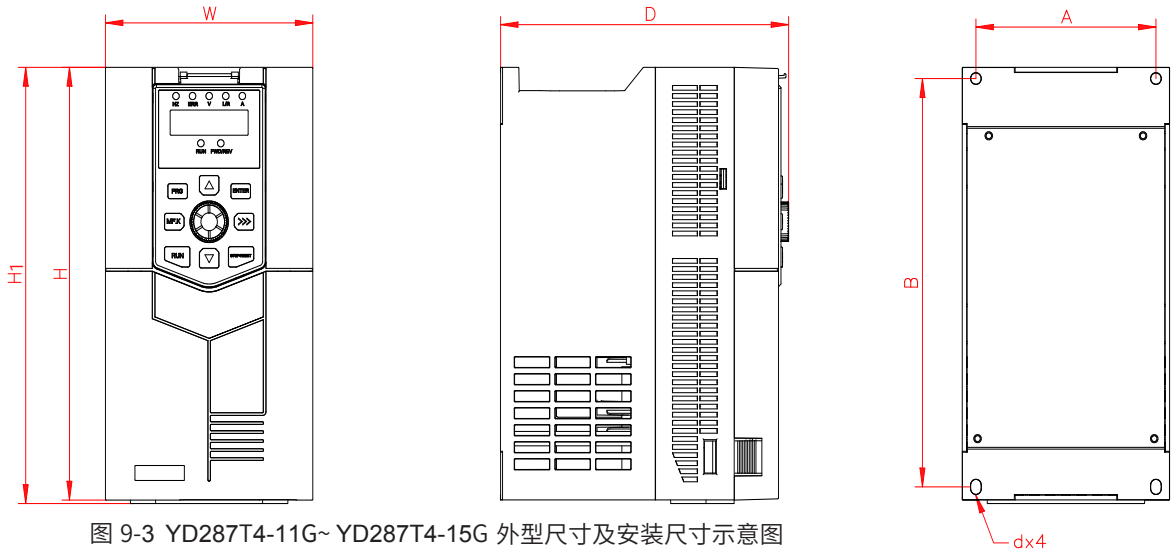


图 9-3 YD287T4-11G~YD287T4-15G 外型尺寸及安装尺寸示意图

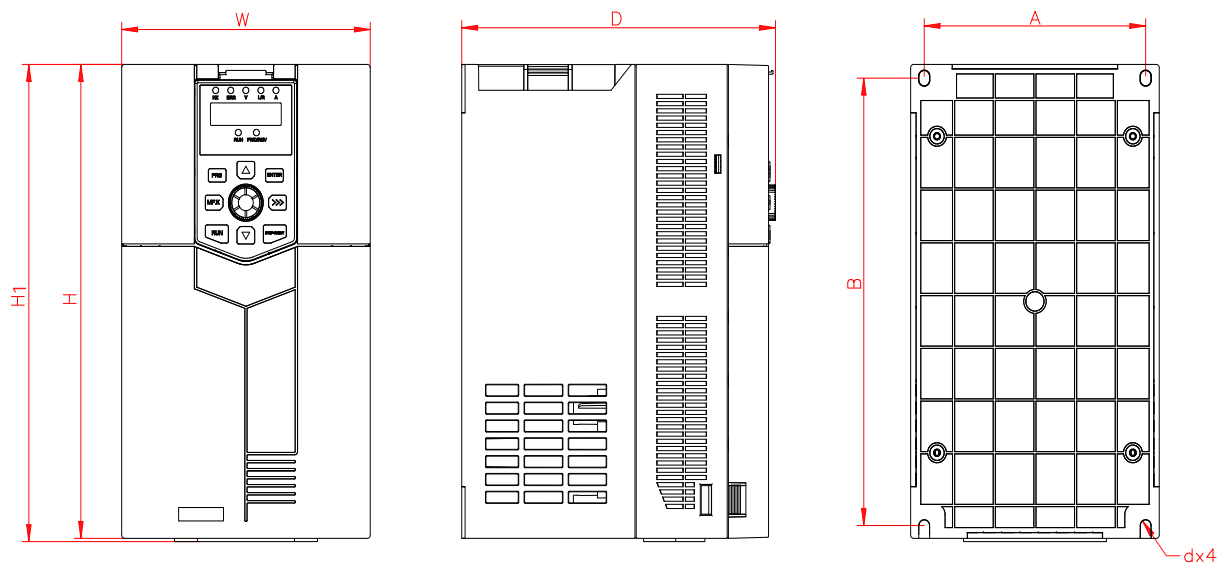


图 9-4 YD287T4-18P5G~ YD287T4-22GB 外型尺寸及安装尺寸示意图



表 9-4 YD287T4-0P7G ~ 22GB 外型及安装孔位尺寸 (三相 380V~480V)

| 框号 | 变频器型号 | 安装孔位 mm | | 外型尺寸 mm | | | | 安装孔径 mm | 重量 kg |
|----|---------------|---------|-------|---------|-------|-----|-------|---------|-------|
| | | A | B | H | H1 | W | D | | |
| F1 | YD287T4-0P7G | 74 | 187 | 197.5 | - | 90 | 141 | Ø5 | F11 |
| | YD287T4-1P5G | | | | | | | | |
| | YD287T4-2P2G | | | | | | | | |
| | YD287T4-3P0G | | | | | | | | |
| | YD287T4-3P7G | | | | | | | | |
| F2 | YD287T4-5P5G | 90 | 190 | 200 | 202 | 102 | 163.5 | Ø6 | F11 |
| | YD287T4-7P5GB | | | | | | | | |
| F3 | YD287T4-11G | 108.5 | 227 | 240.5 | 242.5 | 125 | 173 | Ø6.5 | F11 |
| | YD287T4-15G | | | | | | | | |
| F4 | YD287T4-18P5G | 147 | 278.5 | 295 | 297 | 165 | 208.3 | Ø7.2 | F11 |
| | YD287T4-22GB | | | | | | | | |



9.2 制动组件选型指导

9.2.1 制动组件选型表

表 9-13 变频器制动组件选型表

| 变频器型号 | 制动单元 | 125% 制动转矩 (10% ED, 最大 10 秒) | | 备注 | 最小制动 电阻值 Ω |
|---------------|------|--------------------------------|------------|------------|----------------------|
| | | 推荐制动电阻规格 | 制动电 阻数量 | | |
| YD287T4-0P7G | 内置标配 | 140W 800 Ω | 1 | 变频器型号后加“B” | 96 |
| YD287T4-1P5G | | 300W 380 Ω | 1 | | 96 |
| YD287T4-2P2G | | 440W 260 Ω | 1 | | 96 |
| YD287T4-3P0G | | 600W 190 Ω | 1 | | 96 |
| YD287T4-3P7G | | 740W 150 Ω | 1 | | 64 |
| YD287T4-5P5G | | 1100W 100 Ω | 1 | | 32 |
| YD287T4-7P5GB | | 1500W 75 Ω | 1 | | 32 |
| YD287T4-11G | | 2200W 50 Ω | 1 | | 20 |
| YD287T4-15G | | 3000W 38 Ω | 1 | | 20 |
| YD287T4-18P5G | | 4000W 32 Ω | 1 | | 24 |
| YD287T4-22GB | | 4500W 27 Ω | 1 | | 24 |

创新 和谐 诚信 务实

无锡市优利康电气有限公司
WUXI YOLICO ELECTRIC CO.LTD
地址：无锡市滨湖区梅园查巷98号
总机：(0510)8516 1131
传真：(0510)8516 1139 <http://www.yolico.com>

销售服务联络地址

