Four-quadrant inverter

CL200 Series

User Manual

Preface

Thank you for purchasing the CL200 AC drive developed by our company.

CL200 series vector control general purpose vfd with high quality, multiple functions and low noise.

It can realize open loop and close loop control of different mode,and also signal detection of PT100/PT1000 motor temperature.It support speed sensorless vector control,sensor vector control and V/F control.Performance of motor control has beed improved obviously.Easy operation,perfect self-learning of motor static and dynamic state.

AC drives are compact structure, easy installation, and reasonable heat dissipation design ,that ensure reliability of product. Various of expansion cards are available for your choice.

We provide information of model selection, installation, parameter setting, field debugging, fault diagnosis and daily maintenance for users in this manual.

First-time Use

For the users who use this product for the first time, read the manual carefully. If in doubt concerning some functions or performances, contact the technical support personnel of Our company to ensure correct use.

ATTENTIONS

- Please power off when wiring.
- Electronic components inside AC drive are especially sensitive to static electricity, do not put anything into internal of AC drive.And do not touch main circuit board.
- After power cut, if indicator is still lamp, it still have high voltage in AC drive. It is very dangerous, please do not touch internal circuit and components.
- Please ensure the grounding terminals of AC drive is grounded correctly.
- Never connect input power supply with output terminal U,V,W of AC drive.

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Chapter 1

Safety and Attentions

1.1 Safety Matters.....4
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Users are requested to read this chapter carefully when installing, commissioning and repairing this product and perform the operation according to safety precautions as set forth in this chapter without fail. Our company will bear no responsibility for any injury and loss as a result of any violation operation.

Safety signs in this manual	
DANGER	Dangers caused by operations beyond requirements may lead to serious injury,and even death.
CAUTION	angers caused by operations beyond requirements may lead to moderate damages or minor injuries, as well equ-ipment damages.

1.1 Safety Matters

Use Stage	Safety Grade	Precautions
Before Installation	DANGER	✧ Do not install the product if the package is with water, or component is missing or broken; ✧ Do not install the product if the label on the package is not identical to that on the inverter.
	CAUTION	✧ Be careful of carrying or transportation. Risk of devices damage; ✧ Do not use damaged product or the inverters missing component .Risk of injury; ✧ Do not touch the parts of control system with bare hands. Risk of ESD hazard.
Installation	DANGER	✧ Installation base shall be metal or other non-flammable material. Risk of fire; ✧ Do not install inverter in an environment containing explosive gases, otherwise there is danger of explosion; ✧ Do not unscrew the fixing bolts, especially the bolts with red mark.
	DANGER	✧ Do not leave cable strips or screws in the inverter. Risk of inverter damage; ✧ Install the product at the place with less vibration and no direct sunlight;

Use Stage	Safety Grade	Precautions
Installation	 DANGER	✧ Consider the installation space for cooling purpose when two or more inverters are placed in the same cabinet.
Wiring	 DANGER	✧ Wiring must be performed by authorized and qualified personnel. Risk of danger; ✧ Circuit-breaker should be installed between inverter and the mains. Risk of fire; ✧ Make sure the input power supply has been completely disconnected before wiring. Failure to comply may result in personnel injury and/or equipment damage; ✧ Since overall leakage current of this equipment may be bigger than 3.5mA, for safety's sake, this equipment and its associated motor must be well grounded so as to avoid risk of electric shock; ✧ Never connect the power cables to the output terminals (U,V,W) of the AC drive. Pay attention to the marks of the wiring terminals and ensure correct wiring. Failure to comply will result in damage to the AC drive; ✧ Install braking resistors at terminals (P+)and (P- or PB) only. Failure to comply may result in equipment damage.
	 CAUTION	✧ Since all adjustable frequency AC drives from Our company have been subjected to hi-pot test before delivery, users are prohibited from implementing such a test on this equipment. Failure to comply may result in equipment damage. ✧ Signal wires should to the best of the possibility be away from main power lines. If this cannot be ensured, vertical cross-arrangement shall be implemented, otherwise interference noise to control signal may occur. ✧ If motor cables are longer than 100m, it is recommended output AC reactor be used. Failure to comply may result in faults.
Before Power-on	 DANGER	✧ Inverter shall be power-on only after the front cover is assembled. Risk of electrical hazard.
	 CAUTION	✧ Verify that the input voltage is identical to the rated voltage of product, correct wiring of input terminals R,

Use Stage	Safety Grade	Precautions
Before Power-on	CAUTION	S, T or L1, L2 and output terminals U, V, and W, wiring of inverter and its peripheral circuits, and all wires should be in good connection. Risk of inverter damage.
After Power-on	DANGER	✧ Do not open the cover after power. Rick of electrical hazard; ✧ Do not touches any input/output terminals of inverter with bare hands. Rick of electrical hazard.
	CAUTION	✧ If auto tuning is required, be careful of personal injury when motor is running. Risk of accident; ✧ Do not change the defaults of parameters. Risk of devices damage.
During Operation	DANGER	✧ Non-professionals shall not detect signals during operation. Risk of personal injury or device damage; ✧ Do not touch the fan or the discharging resistor to check the temperature. Failure to comply will result in personal burnt.
	CAUTION	✧ Prevent any foreign items from being left in the devices during operation. Risk of device damage; ✧ Do not control start/stop of inverter by ON/OFF of contactor. Risk of device damage.
Main-tenance	DANGER	✧ Please do not make repair and maintenance over equipment in a charged state, or it will give rise to electric shock hazard! ✧ AC drive can be put into maintenance and repair only you confirm the AC drive charge light out, or the remaining electric charge of capacitance will cause damages to people! ✧ Any people who are not trained professionally cannot make repair and maintenance, or it will cause personal injuries or equipment troubles!

1.2 Use Considerations

1.2.1 Motor Insulation Inspection

When the motor is used for the first time or when the motor is reused after being kept, or when periodical inspection is performed, insulation inspection shall be conducted with motor so as to avoid damaging the inverter because of the insulation failure of the motor windings. The motor wires must be disconnected from the inverter during the insulation inspection. It is recommended to use the 500V mega meter, and the insulating resistance measured shall be 5MΩ at least.

1.2.2 Motor Thermal Protection

If the motor rating does not match that of the inverter, especially when the rated power of the inverter is higher than that of the motor, adjust motor protection parameters in the inverter or install thermal relay to protect motor.

1.2.3 Operating with the Frequency Higher than Grid Power Frequency

Output frequency of is 0.00Hz~500Hz. If product is required to operate above 50.00Hz, please take the endurance of mechanical devices into consideration.

1.2.4 Mechanical Vibrations

Inverter may encounter mechanical resonance point of the load device at certain output frequencies which can be avoided by setting the skip frequency parameters of the inverter.

1.2.5 Motor Heat and Noise

Since output voltage of inverter is PWM wave and contains a certain amount of harmonics, so that the temperature, noise and vibration of the motor will be higher than those when the inverter runs at grid power frequency.

1.2.6 Voltage-sensitive device or capacitor on output side of the AC drive

Do not install the capacitor for improving power factor or lightning protection voltage-sensitive resistor on the output side of the AC drive because the output of the AC drive is PWM wave. Otherwise, the AC drive may suffer transient overcurrent or even be damaged.

1.2.7 Contactor at the I/O terminal of the AC drive

When a contactor is installed between the input side of the AC drive and the power supply, the AC drive must not be started or stopped by switching the contactor on or off. If the AC drive has to be operated by the contactor, ensure that the time interval between switching is at least one hour since frequent charge and discharge will shorten the service life of the capacitor inside the AC drive;

When a contactor is installed between the output side of the AC drive and the motor, do not turn off the contactor when the AC drive is active. Otherwise, modules inside the AC drive may be damaged.

1.2.8 Applied with the Rated Voltage

Apply product with the rated voltage. Failure to comply will damage inverter. If required, take a transformer to boost or step-down voltage.

1.2.9 Do Not Apply a 3-Phase Input Inverter to 2-Phase Input Applications

Do not apply a 3-phase input FR inverter to 2-phase input applications. Otherwise, it will result in faults or damage inverter.

1.2.10 Lightning Protection

The product has integrated lightning over-current protection device which has certain self-protection capacity against the lightning. Additional protection devices have to be installed between inverter and power supply in the area where lightning occurs frequently.

1.2.11 Altitude De-rating

In places where the altitude is above 1000 m and the cooling effect reduces due to thin air, it is necessary to de-rate the AC drive. Contact Our company for technical support.

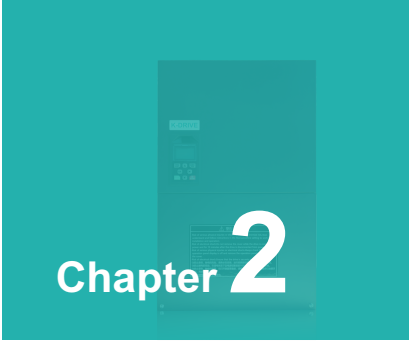
1.2.12 Adaptable Motor

Standard adaptive motor is quadrupole squirrel- cage asynchronous induction motor. If it is not above- mentioned motor, please select AC drive upon rated current of moter. If you need to drive permanent magnet synchronous motor, please consult our company;

The cooling fan of non variable frequency motor and rotor spindle are coaxially connected. While despinning, the fan cooling effect also declines at the same time.Hence, for overheated occasion of moter, you shall install strong exhaust fan or change variable frequency motor;

AC drives have built- in adaptive motor standard parameters. It is necessary to make motor parameter identification or amend default values to accord with actual values, or it will influence operation effects and protective values;

As short circuit existing inside cable or motor will cause inverter alarming, enen explosion. Therefore, please make insulation short- circuit test of initial installed motor and cable first. And the test also is necessary in routine maintenance.



Chapter 2

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2.1 Position and content of nameplate

2.2 Nameplate model description and rated parameters

CL200 - A - 4T - 55KW

① ② ③ ④

Serial number	Description	Meaning
①	CL200 series	Series Name
②	Version	First generation vacant, upgraded to A, B, C
③	Voltage level	3S: Single-phase 220V 4T: Three-phase 380V 7T: Three-phase 690V
④	Adaptable motor power(KW)	18.5KW~315KW

2.3 Specifications and models of AC drives

Models	Adapter motor (KW)	Rated output current(A)	Adaptive motor (KW)
CL200-4T-18.5KW	18.5	38	37
CL200-4T-22KW	22	46	45
CL200-4T-30KW	30	62	60
CL200-4T-37KW	37	76	75
CL200-4T-45KW	45	92	90
CL200-4T-55KW	55	113	110
CL200-4T-75KW	75	157	150
CL200-4T-93KW	93	180	176
CL200-4T-110KW	110	214	210
CL200-4T-132KW	132	256	253
CL200-4T-160KW	160	307	304
CL200-4T-185KW	185	345	340
CL200-4T-200KW	200	385	380
CL200-4T-220KW	220	430	426
CL200-4T-250KW	250	468	465
CL200-4T-280KW	280	525	520
CL200-4T-315KW	315	590	585

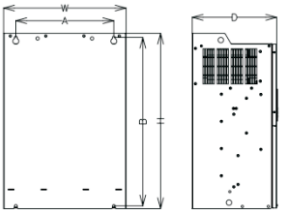
2.4 Technical Features

Control performance	
Frequency control range	0-300Hz
Output frequency accuracy	0.01Hz
Set frequency resolution	Digital setting: 0.01Hz; Simulation setting: AD conversion accuracy is one thousandth
Control mode	Three phase asynchronous motor: VF control, SVC, FVC Permanent magnet synchronous motor: SVC, FVC
Overload capacity	150% rated current for 60 seconds; 180% rated current for 1 second

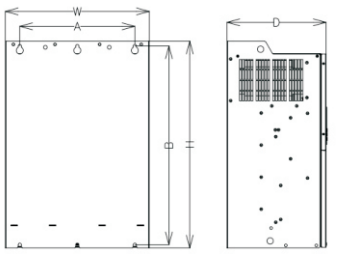
Function Description	
V/F curve	Three methods: linear type; Multi point type; Square V/F curve
DC braking	DC braking frequency: 0.00 Hz to maximum frequency; Braking time: 0.0s 100.0s; Braking action current value: 0.0% 100%
Automatic Voltage Adjustment (AVR)	When the voltage of the power grid changes, it can automatically maintain a constant output voltage
Acceleration and deceleration curve	Linear or S-curve acceleration and deceleration; Four types of acceleration and deceleration times; 0.1 6500.0 seconds continuously adjustable
Standard function	Motor parameter automatic detection function, open-loop vector, closed-loop vector, multi-point VF curve, manual torque increase, skip frequency function, carrier frequency automatic adjustment, start DC brake, stop DC brake, instantaneous power outage restart, automatic fault reset, 16 segment multi speed operation, simple PLC program operation, textile swing frequency function, closed-loop PID adjustment control
Control characteristics	Automatic torque increase, automatic slip compensation, automatic stable output voltage, speed tracking start function, overcurrent suppression during acceleration, overcurrent frequency reduction function at constant speed, overvoltage suppression during deceleration, and automatic energy-saving operation
Run Command Channel	Three control methods: keyboard control, terminal control, and serial communication control
Frequency source selection	Digital setting, analog voltage setting, analog current setting, and serial communication port setting; Multiple ways to combine and switch
Frequency source	There are a total of 10 frequency sources: digital given, analog voltage given, analog current given pulse given, and serial communication given. It can be switched in multiple ways
Auxiliary frequency source	10 types of auxiliary frequency sources. Flexible implementation of auxiliary frequency fine-tuning and frequency synthesis
Input terminals	Standard with seven digital input terminals, up to nine digital input terminals (AI1 and AI2 can be used as DI terminals), compatible with active PNP or NPN input methods Two analog input terminals, where AI1 can only be used as voltage input and AI2 can be used as voltage or current input
Output terminal	One digital output terminal (bipolar output) Two relay output terminals Two analog output terminals, optional from 0/4mA to 20mA or 0/2V to 10V, can output physical quantities such as set frequency, output frequency, and speed

Function Description	
Protection function	Overvoltage protection, undervoltage protection, overcurrent protection, module protection, radiator overheating protection, motor overload protection, external fault protection, current detection abnormality, input power supply abnormality, output phase loss abnormality, EEPROM abnormality, relay suction abnormality
Display	
LED display	Display parameters, support parameter copying
LCD display	Optional, Chinese/English prompt operation content, supporting parameter copying
Protection level	IP20
Operating environment	
Installation site	Vertically installed in a well ventilated electrical control cabinet, in an environment free of dust, corrosive gases, flammable gases, oil mist, steam, and dripping water, and not exposed to direct sunlight
Ambient temperature	-10 ° C to+40 ° C (If the ambient temperature is higher than 40 ° C, please reduce the rated output current by 1% for every 1 ° C increase)
Altitude	0-2000 meters, for use with a reduction of 1000 meters or more, for every 100 meters increase, the rated output current decreases by 1%
Humidity	20% to 90% RH (without condensation)
Vibration	Less than 5.8 meters per square second (0.6g)
Storage temperature	-25 ° C to+65 ° C

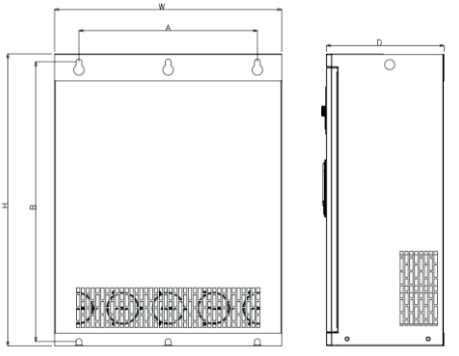
2.5 Appearance and installation dimensions



18.5KW-37KW

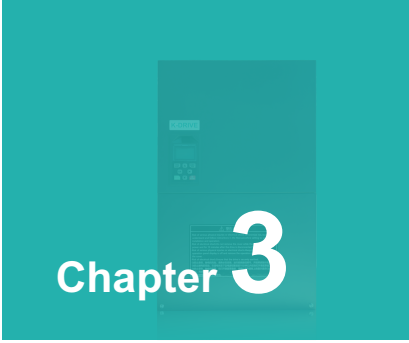


45KW-55KW



75KW-315KW

AC Drive Model	Installation size(mm)		Dimensions (mm)			Aperture
	A	B	H	W	D	d
CL200-4T-18.5KW	300	575	592	360	220	8
CL200-4T-22KW						
CL200-4T-30KW						
CL200-4T-37KW						
CL200-4T-45KW	360	620	645	450	310	10
CL200-4T-55KW						
CL200-4T-75KW	440	690	720	560	290	12
CL200-4T-93KW						
CL200-4T-110KW	700	717.5	750	820	300	12
CL200-4T-132KW						
CL200-4T-160KW	720	1026	900	960	330	12
CL200-4T-185KW						
CL200-4T-200KW						
CL200-4T-220KW	900	933	965	1175	350	12
CL200-4T-250KW						
CL200-4T-280KW						
CL200-4T-315KW						



Chapter 3

Installation

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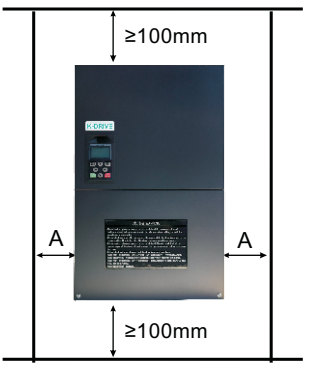
3.1 Mechanical Installation

3.1.1 Installation Environment

- Environment temperature: Surrounding environment temperature has a great impact on lifetime of AC drive, and the operation environment temperature of AC drive shall not exceed allowable temperature range (- 10℃ ~ 40℃).
- While AC drive is installed on the surface of inflaming retardants, and enough space around is necessary for heat dissipation. When AC drive works, it will produce plenty of heats. And make vertical installation onto supporting holder with screw.
- Please install it in some places that are not easy to vibrate. And the vibration shall not be larger than 0. 6G. Especially pay attention to keep away from punching machine and other equipments.
- Avoid to be installed where there are direct sunlights, moist surroundings and water drops.
- Avoid to be installed where there are corrosivity, inflammability and explosive gas.
- Avoid to be installed where there are oil contamination, dirts and metal dusts.



Explanation:
When installing the frequency converter up and down, please follow the insulation guide plate shown in the installation diagram.

Figure 3-1 Individual installation diagram

3.1.2 The installation of the model needs to pay attention to the problem of heat dissipation. So please note the following:

- Please install the inverter vertically so that the heat can be dissipated upwards. But not upside down. If there are many inverters in the cabinet, it is better to install them side by side. In the occasions that need to be installed up and down, please refer to Figure 3-1 to install the heat insulation deflector.
- The installation space is as shown in Figure 3-1 to ensure the cooling space of the inverter. However, please consider the heat dissipation of other components in the cabinet when arranging.
- The mounting bracket must be made of flame retardant material.
- For applications with metal dust, it is recommended to install the radiator outside the cabinet. At this time, the space in the fully sealed cabinet should be as large as possible.

3.2 Basic wiring diagram

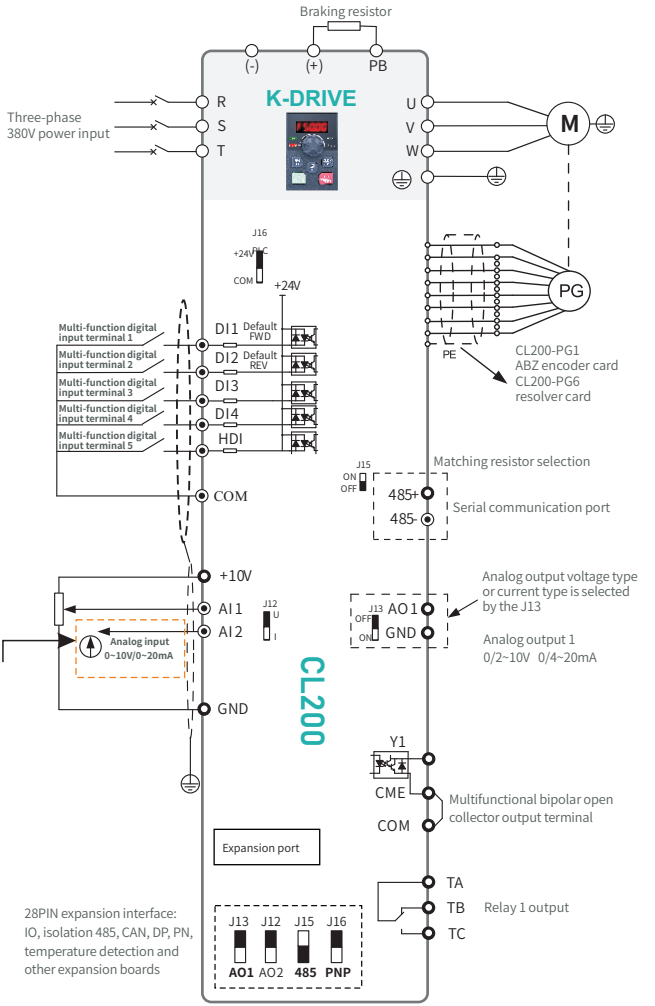


Figure 3-2 CL200-4T-18.5-315KW Variable Frequency Converter Wiring Diagram

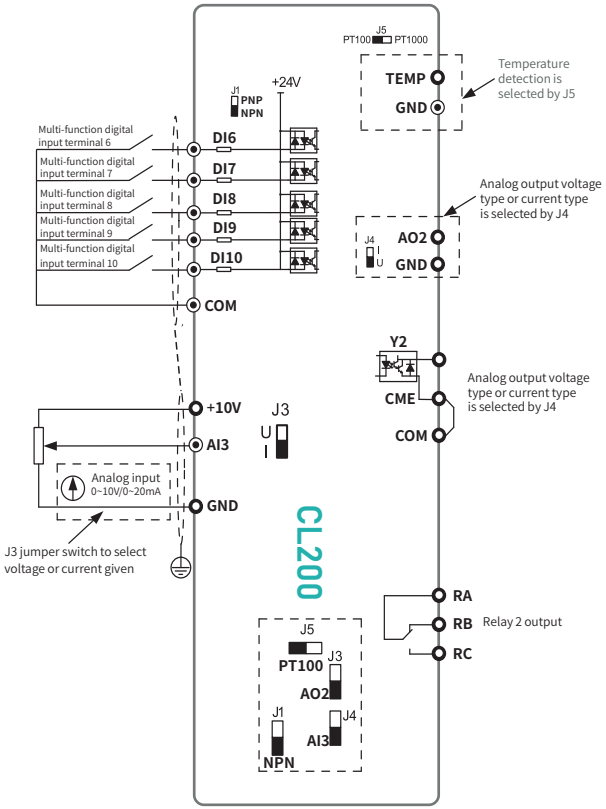


Figure 3-3 IO1 expansion card

3.2.1 Main circuit terminals and wiring

Terminal	Name	Function description
R、S、T	Three-phase power input terminal	AC input three-phase power connection point
P(+)、(-)	DC bus positive and negative terminals	Common DC bus input point
P(+)、PB	Braking resistor connection terminal	Connection points for braking resistors below 7.5kW for 220V and 18.5kW for other voltage levels
U、V、W	Inverter output terminal	Connecting a three-phase motor
⏚	Ground terminal	Ground terminal

Attentions of wiring

A.Input power L, N or R, S and T:

The connection of inverter input side has no phase sequence requirements.

B.DC bus ⊕2 , ⊖ terminals:

At the moment of power failure,DC bus ⊕2 , ⊖ terminals still have residual voltage, you just can touch it after internal"charge" power light is off confirming the voltage is less than 36V, it may cause electric shock.

When you select external brake unit for AC drive ≥30KW, the polarity of ⊕ 2 and ⊖ cannot be connected inversely or it will cause damages to ACdrive, or even fire hazard.

The wiring length of brake unit shall not be more than 10m, and only twisted pair or tight double-line is available in parallel.

Brake resistance cannot be connected onto DC bus directly, or it may cause damages to AC drive, or even fire hazard.

C.Brake resistance connection terminal (+) and PB:

AC drive ≤22KW and built- in brake unit.

The recommended value of brake resistance model selection reference and wiring distance shall be less than 5m, or it may cause damages to AC drive.

D.AC drive output side U, V and W:

AC drive output side shall not be connected to capacitor or surge absorber, or it will frequent protection of AC drive, or even damages.

When the cable of motor is overlong, the effects of distributed capacitance will generate electric resonance easily, and give rise to dielectric breakdown of motor.

The generated large leakage current makes AC drive suffer overcurrent protection. If cable length is more than 100m,alternating current output reactor shall be installed.

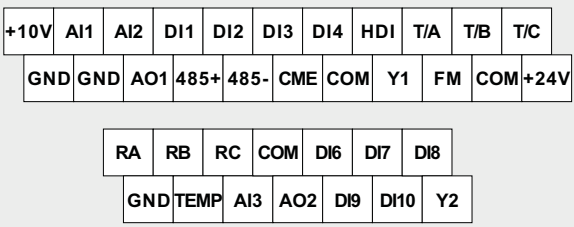
E.Grounding terminal ⏚:

Terminals must have been reliable ground connection,and resistance value ofground wire shall be less than 4Ω ,or it will cause abnormal work of equipment,and even damages.

Grounding terminal ⏚ and null line N terminal of power supply cannot be shared.

3.2.2 Control terminals and wiring

The layout diagram of control circuit terminals is as follows:



3.2.3 Function Description of Control Terminals

Sort	Terminal	Name	Function Description
Power supply	+10V-GND	External +10V power supply	Provide +10V power supply to the outside, the maximum output current: 10mA Generally used as working power supply of external potentiometer, potentiometer resistance range: 1~5kΩ
	24V-COM	External +24V power supply	Provide +24V power supply to the outside, generally used as the working power supply of digital input and output terminals and external sensor power supply, Maximum output current: 200mA

Sort	Terminal	Name	Function Description
Analog input	AI1-GND	Analog input terminal 1	1. Input voltage range: DC0~10V 2. Input impedance: 100KΩ
	AI2-GND	Analog input terminal 2	1. Input range: DC0~10V/4~20mA, determined by the J12 DIP switch on the control board, the factory is voltage mode. 2. Input impedance: 100kΩ for voltage input, 500Ω for current input. (Optional accessories: IO1 supports AI3 function)
Digital input	DI1-COM	Digital input 1	1. Optical coupling isolation, compatible with bipolar input, switch by DI DIP switch, the factory is NPN mode 2. Input impedance: 3.3kΩ 3. Voltage range for level input: 9~30V 4. HDI5 can be used as high-speed input port, the maximum input frequency is 50KHz
	DI2-COM	Digital input 2	
	DI3-COM	Digital input 3	
	DI4-COM	Digital input 4	
	DI5-COM	Digital input 5	
Digital input	DI6-COM	Digital input 6	
	DI7-COM	Digital input 7	
	DI8-COM	Digital input 8	
	DI9-COM	Digital input 9	
	DI10-COM	Digital input 10	
Analog output	AO1-GND	Analog output 1	The voltage or current output is determined by the DIP switch on the control board (refer to the bit number of the terminal wiring diagram). (Optional accessories: IO1, IO2 support AO2 function) Output voltage range: 0~10V Output current range: 0~20mA
	AO2-GND	Analog output 2	
Digital output	Y1-CME	Digital output 1	Optocoupler isolation, bipolar open collector output Output voltage range: 0~24V Output current range: 0-50mA Attention: The digital output ground CAE and the digital input ground COM are internally isolated, but when they leave the factory, CAE and COM have been externally short circuited (Y1 defaults to+24V drive). When Y1 wants to use an external power source to drive, it must disconnect the external short circuit between CAE and COM.

Sort	Terminal	Name	Function Description
Digital output	FM (optional Y2)	High-speed pulse output	Programmable optocoupler isolation, open collector output Maximum frequency: 50KHz; When the collector is open circuit output, it is consistent with the Y1 specification. Output voltage range: 0/24VDC, output current range: 50mA
Communi cation Interface	485+ , 485-	Modbus communication interface	Modbus communication interface, you can choose whether to need communication matching resistance through the DIP switch (refer to the bit number of the terminal wiring diagram). If Profibus communication function is required, please select CL200 series expansion card and Profibus DP card.
Relay output 1	TA-TB	Normally closed terminal	Contact drive capability: AC250V, 3A, COSφ=0.4. DC30V, 1A
	TA-TC	Normally open terminal	
Relay output 2	RA-RB	Normally closed terminal	
	RA-RC	Normally open terminal	
Keyboard extension cable interface	Control board RJ45 interface	External keyboard interface	External keyboard interface, can use standard network cable for external extension.

3.2.4 Signal input terminal wiring instructions

AI analog input terminals:

Due to the weak analog voltage signal being particularly susceptible to external interference, shielded cables are generally required, and the wiring distance should be as short as possible, not exceeding 20m, as shown in Figure 3-4. In certain situations where analog signals are severely interfered with, filtering capacitors or ferrite cores need to be added to the analog signal source side.

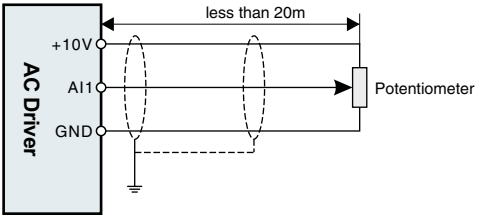
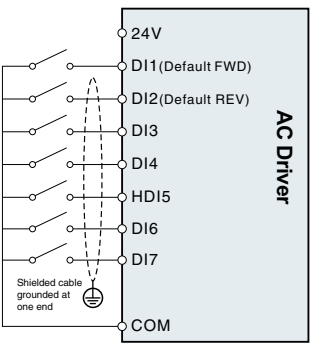


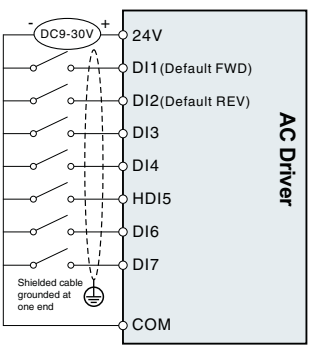
Figure 3-4 Schematic diagram of analog input terminal wiring

Digital input terminal:

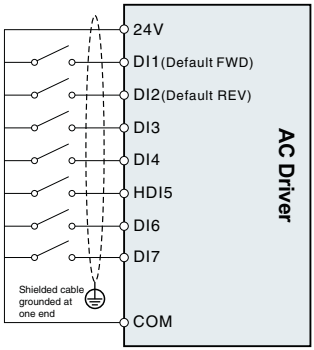
DI wiring mode 1 (factory default wiring mode): When the DI DIP switch is in NPN mode, no external power supply is used



DI wiring mode 2 :
Use an external power supply when the DI DIP switch is in NPN mode



DI wiring mode 3 :
No external power supply is used when the DI DIP switch is in PNP mode



DI wiring mode 4 :
Use an external power supply when the DI DIP switch is in PNP mode

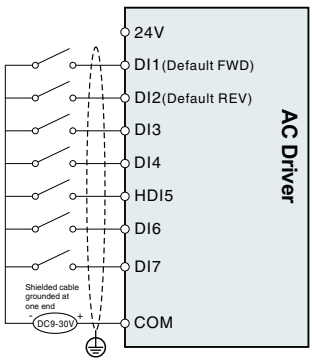


Figure 3-5 Wiring diagram of digital input terminals in four different modes

Generally, shielded cables are required, and the wiring distance should be as short as possible, not exceeding 20 meters. When using active driving mode, necessary filtering measures should be taken for the crosstalk of the power supply. Suggest using contact control method.

Y1 digital output terminal:

When the digital output terminal needs to drive the relay, an absorption diode should be installed on both sides of the relay coil, and the driving capacity is not more than 50mA. Otherwise, it is easy to cause damage to the DC 24V power supply.

Note: The polarity of the absorption diode must be installed correctly, as shown in Figure 3-15, otherwise when the digital output terminal has output, the DC 24V power supply will be burned out immediately.

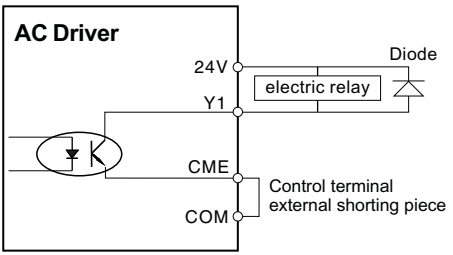


Figure 3-6 Internal power supply wiring diagram

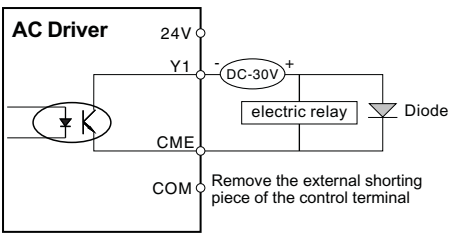
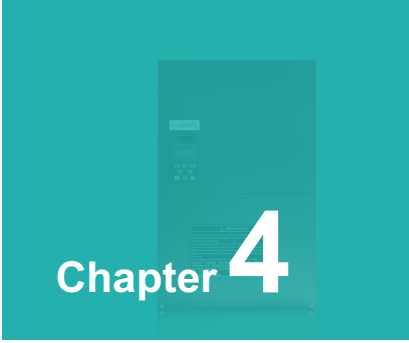


Figure 3-7 External power supply wiring diagram



Chapter 4

Operation and Display

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4.1 Keypad description

4.1.1 Keypad explanation and function

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

Explanation: Figure 4-1 shows the standard LED keyboard configuration, and Figure 4-2 shows the LCD keyboard. If you need to select this keyboard, please specify it when placing an order.

Figure 4-1. Schematic diagram of the operation panel 1

Figure 4-4. Schematic diagram of the operation panel 2

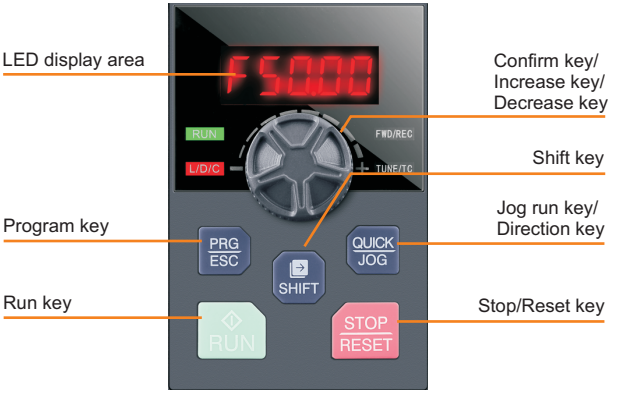

Figure 4-3 Operation panel diagram 1
(standard configuration LED keyboard 1)

4.1.2 Function indicator description

Indicator sign	Name	meaning	Color
RUN	Operating status indicator	On - the inverter is running Off - Inverter is in stop state Flashing - the inverter is in sleep state	Green
L/D/C	Control mode indicator	Off - Inverter is in keypad control mode On - the inverter is in terminal control mode Flashing-Inverter is in remote communication control mode	Red
FWD/REV	Running direction indication	Off - Forward state On - inversion state Flashing - the target frequency is opposite to the actual frequency or is in the reverse running prohibited state	Red
TUNE/TC	Tuning/Torque Control/Fault Indicator	On - torque control Flashing - Tuning\Fault status	Red

4.1.3 Description of keyboard buttons

Button	Name	Function Description
PRG ESC	Program / Escape key	Enter or exit the first-level menu, return to the upper-level menu
	Enter	Enter the menu screen step by step, set parameters to confirm
	Increment key (+)	Increment of data or function code
	Decrement key (-)	Decrement of data or function code
SHIFT	Shift key	In the stop display interface and the running display interface, the display parameters can be selected cyclically. For the specific display meaning, please refer to P7-29 and P7-30; when modifying the parameters, you can select the modification bit of the parameter
RUN	Run key	In keyboard operation mode, used to run operation
STOP RESET	Stop/Reset key	In the running state, pressing this key can be used to stop the running operation; in the fault alarm state, it can be used to reset the operation. The characteristics of this key are restricted by the function code P7-27.

Button	Name	Function Description
QUICK JOG	Jog run/Direction keys	When P7-28 is set to 0, it is the jog running button, and when P7-28 is set to 1, it is the direction button. Press this button to reverse the direction.

4.2 Function code organization method

Operational state	Main
Quick monitoring	Quickly monitor multiple operational states. Including setting frequency, output frequency, output current, etc
Function code settings	Modification of functional code. The F function group in the first level menu
Fault alarm reset	Frequency converter fault alarm display and reset
Quick modification of keyboard number settings	When the frequency setting source is keyboard numerical setting, quickly modify the set frequency (UP, DOWN functions)

4.2.1 Quick watch

After power on initialization, the frequency converter automatically switches to the fast monitoring state. If you want to enter the fast monitoring state in other states, you can press the "monitoring button" to enter. In fast monitoring mode, switch monitoring parameters through the "shift key".

In the running state, quickly monitor the following:

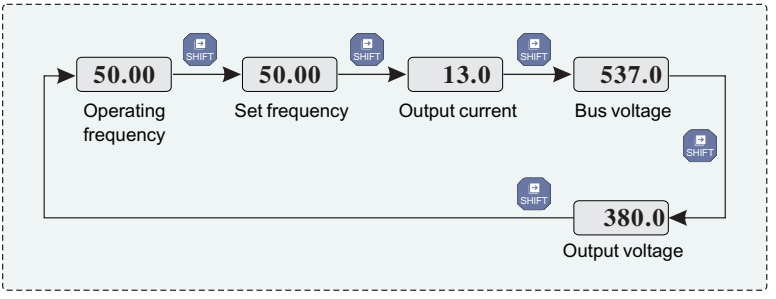

Figure 4-4 Quick monitoring diagram

4.2.2 Function code settings

The function codes of the F0-FF function groups in the first level menu are read-write parameters that users can modify.

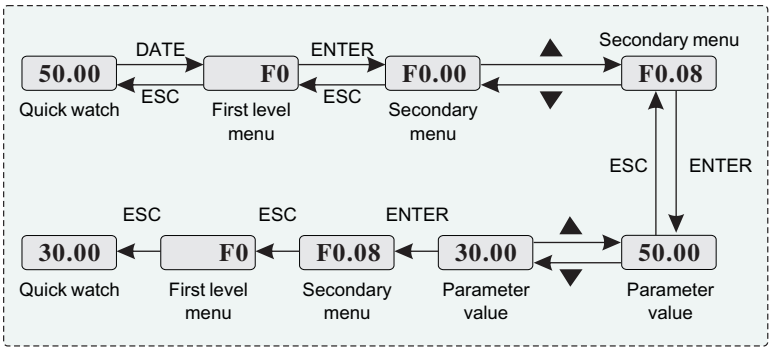

Figure 4-5 Function code setting diagram

4.2.3 Fault alarm reset

When the frequency converter malfunctions or alarms, the operation keyboard will display the fault alarm code.

When an ERR1~ERR99 fault occurs, please use the "reset button" to clear the fault.

When an OPEN alarm occurs, please use the "Exit" button to clear the alarm.

4.2.4 Quick modification of keyboard number settings

When F0.03=0 and F0.07=0, the frequency source is set to the keyboard number.

The frequency converter is in a parked state, and UP and Down adjustments are effective in "fast monitoring mode";

The frequency converter is in operation, and UP and Down adjustments are effective in "fast monitoring mode".

Chapter 4

Chapter 5

Troubleshooting and Countermeasures

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5.1 Faults and alarms

If a fault occurs during the system operation, the inverter will immediately protect the motor to stop the output, and the corresponding inverter fault relay contact will act. The inverter panel displays the fault code. The fault type and common solution corresponding to the fault code are shown in the following table. The list in the table is for reference only, please do not repair or modify it without authorization. If the fault cannot be eliminated, please seek technical support from our company or the product agent.

5.1.1 Fault indication and fault reset

ERR01 to ERR99 are all fault indications.

There are various methods for resetting faults in frequency converters: operate the "RESET" key on the keyboard, reset the terminal function, or if necessary, turn off the main power for a period of time to reset the fault. If the fault has disappeared, the frequency converter will resume normal operation; If the fault still exists, the frequency converter will report the fault again and stop outputting.

5.1.2 Alarm indication and alarm reset

OPERR is an alarm indication.

The alarm reset of the frequency converter can only be achieved by operating the "ESC" key on the keyboard.

5.2 Fault alarm and countermeasures

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
Feedback section			
Module malfunction	Err01	◆ Whether there is a phase to phase or ground short circuit at the grid connection terminals R, S, and T ◆ Is the module overheated ◆ Is the internal wiring of the rectification unit loose ◆ Is the main control board, driver board, or module functioning properly	◆ Contact short circuit ◆ Are the fans and air ducts normal? ◆ Connect all loose wires ◆ Seek technical support

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
Loss of lock fault in phase-locked loop	Err02	◆ The power grid is severely unstable ◆ Is there any looseness in the connection terminals R, S, and T of the power grid ◆ Is the internal wiring of the rectification unit loose ◆ Is the main control board or driver board functioning properly	◆ Check the power grid situation ◆ Connect all loose wires properly ◆ Seeking technical support
External phase loss fault	Err03	◆ The power grid is severely unstable ◆ Is there any looseness in the connection terminals R, S, and T of the power grid ◆ Is the internal wiring of the rectification unit loose ◆ Is the main control board or driver board functioning properly	◆ Check the power grid situation ◆ Connect all loose wires properly ◆ Seeking technical support
Overcurren t fault	Err04	◆ There is grounding or short circuit in the rectification circuit ◆ PI parameter setting error ◆ Bus voltage rise rate set too high ◆ The speed of sudden loading or unloading of the load is too fast ◆ Is the main control board, driver board, or module functioning properly	◆ Check for short circuits ◆ Check parameter settings ◆ Reduce load acceleration and deceleration rate ◆ Seeking technical support
Bus overvoltag e fault	Err07	◆ Input voltage too high ◆ The sudden acceleration speed of the load is too fast ◆ The selection of rectification units is too small ◆ The operating power of the frequency converter is too high ◆ Is the rectification feedback voltage set too high	◆ Troubleshooting peripheral faults ◆ Reduce the rate of sudden load increase ◆ Choose a higher power rectifier unit ◆ Adjust the voltage to the normal range ◆ Seeking technical support

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
Bus undervoltage fault	Err09	◆ Input voltage too low ◆ Is the main control board, driver board, or module functioning properly	◆ Troubleshooting peripheral faults ◆ Seeking technical support
Overload fault	Err10	◆ The selection of rectification unit is too small ◆ The operating power of the frequency converter is too high	◆ Choose a higher power rectifier unit ◆ Reduce the operating power of the frequency converter
Low grid frequency	Err11	◆ Low input voltage frequency ◆ Is the main control board, driver board, or module functioning properly	◆ Troubleshooting peripheral faults ◆ Seeking technical support
Low grid voltage	Err12	◆ Low input voltage ◆ Is the main control board, driver board, or module functioning properly	◆ Troubleshooting peripheral faults ◆ Seeking technical support
High grid frequency	Err13	◆ Input voltage frequency is too high ◆ Is the main control board, driver board, or module functioning properly	◆ Troubleshooting peripheral faults ◆ Seeking technical support
High grid voltage	Err14	◆ Input voltage is too high ◆ Is the main control board, driver board, or module functioning properly	◆ Troubleshooting peripheral faults ◆ Seeking technical support
Severe imbalance of the power grid	Err15	◆ The power grid is severely unstable ◆ Is there any looseness in the connection terminals R, S, and T of the power grid ◆ Is the internal wiring of the rectifier element loose ◆ Is the main control board or driver board functioning properly	◆ Check the power grid situation ◆ Connect all loose wires properly ◆ Seeking technical support

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
Module overheating	Err16	◆ The selection of rectification unit is too small ◆ The operating power of the frequency converter is too high	◆ Choose a higher power rectifier unit ◆ Reduce the operating power of the frequency converter
Current sampling fault	Err18	◆ Is the main control board or driver board functioning properly	◆ Seeking technical support
Data overflow protection	Err21	◆ Parameter setting error	◆ Parameter reset ◆ Seeking technical support
Inverter part			
Inverter module protection	Err01	◆ Whether the motor connection terminals U, V and W are short-circuited between phases or to ground ◆ Is the module overheated? ◆ Whether the internal wiring of the inverter is loose ◆ Whether the main control board, driver board or module is normal	◆ Contact short circuit ◆ Are the fans and air ducts normal? ◆ Connect all loose wires ◆ Seek technical support
Overcurrent during acceleration	Err04	◆ There is grounding or short circuit in the output circuit of the inverter ◆ The motor parameters are incorrect ◆ The acceleration time is too short ◆ V/F torque boost or inappropriate curve ◆ The input voltage is low ◆ Start the rotating motor ◆ Sudden load during acceleration ◆ Inverter selection is too small	◆ Eliminate peripheral faults ◆ Check parameters and parameter identification ◆ Increase the acceleration time ◆ Adjust the V/F boost torque or curve ◆ Adjust the voltage to the normal range ◆ Select the speed tracking start or wait for the motor to stop before starting ◆ Cancel sudden load ◆ Use inverters with larger power levels

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
Overcurrent during deceleration	Err05	◆ There is grounding or short circuit in the output circuit of the inverter ◆ The motor parameters are incorrect ◆ The deceleration time is too short ◆ The input voltage is low ◆ Sudden load during deceleration ◆ No braking unit and braking resistor ◆ The magnetic flux braking gain is too large	◆ Eliminate peripheral faults ◆ Perform motor parameter identification ◆ Increase the deceleration time ◆ Adjust the voltage to the normal range ◆ Cancel sudden load ◆ Install braking unit and resistance ◆ Reduce the magnetic flux braking gain
Overcurrent in constant speed operation	Err06	◆ There is grounding or short circuit in the output circuit of the inverter ◆ The motor parameters are incorrect ◆ The input voltage is low ◆ Is there a sudden load during operation? ◆ Inverter selection is too small	◆ Eliminate peripheral faults ◆ Check parameters and parameter identification ◆ Adjust the voltage to the normal range ◆ Cancel sudden load ◆ Select the inverter with a larger power level
Overvoltage during acceleration	Err08	◆ The input voltage is too high ◆ There is an external force driving the motor to run during the acceleration process ◆ The acceleration time is too short ◆ No braking unit and braking resistor ◆ The motor parameters are incorrect	◆ Adjust the voltage to the normal range ◆ Cancel external power or install braking resistor ◆ Increase the acceleration time ◆ Install braking unit and resistor ◆ Check parameters and parameter identification
Overvoltage during deceleration	Err09	◆ The input voltage is too high ◆ There is an external force driving the motor to run during the deceleration process ◆ The deceleration time is too short ◆ No braking unit and braking resistor	◆ Adjust the voltage to the normal range ◆ Cancel external power or install braking resistor ◆ Increase the deceleration time ◆ Install braking unit and resistor

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
Overvoltage during constant speed operation	Err10	◆ The input voltage is too high ◆ There is an external force driving the motor to run during the acceleration process	◆ Adjust the voltage to the normal range ◆ Cancel external power or install braking resistor
Undervoltage fault	Err12	◆ Instantaneous power failure ◆ The input voltage of the inverter is not within the range required by the specification ◆ The bus voltage is abnormal ◆ The rectifier bridge and buffer resistance are abnormal ◆ Abnormal drive board ◆ The control panel is abnormal	◆ Reset fault ◆ Adjust the voltage to the normal range ◆ Seek technical support
Drive overload fault	Err13	◆ Whether the load is too large or the motor is blocked ◆ Inverter selection is too small	◆ Reduce the load and check the motor and mechanical conditions ◆ Select the inverter with a larger power level
Motor overload fault	Err14	◆ Whether the setting of motor protection parameter P9-01 is appropriate ◆ Whether the load is too large or the motor is blocked ◆ Inverter selection is too small	◆ Correctly set this parameter ◆ Reduce the load and check the motor and mechanical condition ◆ Select the inverter with a larger power level
drive overheating	Err15	◆ The ambient temperature is too high ◆ The air duct is blocked ◆ The fan is damaged ◆ The module thermistor is damaged ◆ The inverter module is damaged	◆ Lower the ambient temperature ◆ Clean the air duct ◆ Replace the fan ◆ Replace the thermistor ◆ Replace the inverter module

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
Current detection failure	Err17	◆ Whether the internal wiring of the inverter is loose ◆ Is the current detection device normal? ◆ Whether the main control board or driver board is normal	◆ Check the wiring ◆ Seek technical support
Short to ground fault	Err20	◆ Motor short circuit to ground	◆ Replace the cable or motor
Input phase loss fault	Err23	◆ The three-phase input power supply is abnormal ◆ The driver board is abnormal ◆ The lightning protection board is abnormal ◆ The main control board is abnormal	◆ Check and eliminate problems in peripheral circuits ◆ Seek technical support
Output phase loss fault	Err24	◆ The lead wire from the inverter to the motor is abnormal ◆ The three-phase output of the inverter is unbalanced when the motor is running ◆ The driver board is abnormal ◆ Module exception	◆ Eliminate peripheral faults ◆ Check whether the three-phase windings of the motor are normal and troubleshoot ◆ Seek technical support
read and write failure	Err25	◆ EEPROM chip damaged	◆ Replace the main control board
Parameter	Err27	◆ Is the host computer working? ◆ Is the communication connection normal? ◆ Whether the communication parameter P8 group is correct	◆ Check the wiring of the host computer, etc. ◆ Check the communication wiring ◆ Check the parameters of P8 group
Parameter	Err28	◆ Input external normally open or normally closed fault signal through multi-function DI terminal	◆ Fault reset
Excessive speed deviation	Err29	◆ The load is too heavy and the set acceleration time is too short ◆ The setting of fault detection parameters P9-31 and P9-32 is unreasonable	◆ Extend the set acceleration and deceleration time ◆ Reset P9-31 and P9-32

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
User-defined fault 1	Err30	◆ User-defined fault 1 signal input through multi-function terminal DI	◆ Reset
User-defined fault 2	Err31	◆ User-defined fault 2 signal input through multi-function terminal DI	◆ Reset
PID feedback lost at runtime	Err32	◆ PID feedback value is less than the set value of PA-13	◆ Check the feedback signal or reset the PA-13
Fast current limiting	Err33	◆ The load is too large or the stall occurs ◆ The set acceleration time is too short	◆ Reduce the load or replace the inverter with a higher power ◆ Properly extend the acceleration time
load drop failure	Err34	◆ When the load drop detection condition is reached, please refer to P9-28-P9-30 for specific use.	◆ Reset or reset detection conditions
input power failure	Err35	◆ The input voltage is not within the specified range ◆ Power on and off too frequently	◆ Adjust the input voltage ◆ Extend the power cycle
parameter storage exception	Err37	◆ Abnormal communication between DSP and EEPROM chip	◆ Replace the main control board ◆ Seek manufacturer service
The running time has arrived	Err39	◆ The current running time of the inverter > the set value of P7-38	◆ Reset
Accumulated running time reached	Err40	◆ The accumulated running time reaches the set value P7-20	◆ Use parameter initialization function 2 to clear the recording time or reset the accumulated running time
Switching motors during operation	Err42	◆ Switch the motor through the terminals during operation	◆ Motor switch after shutdown

Fault name	Panel display	Troubleshooting	Troubleshooting Countermeasures
Master-slave control communication dropped	Err46	◆ The master is not set but the slave is set ◆ The communication line is abnormal or the communication parameters are incorrect	◆ Set the host and reset the fault ◆ Check the communication line and communication parameter P8 group

5.3 Handling methods for other abnormal situations

5.3.1 No display when powered on

⌑ Use a multimeter to check if the input power of the frequency converter is consistent with the rated voltage of the frequency converter.

⌑ Use a multimeter to check the voltage of the inverter bus and determine if the three-phase rectification is intact.

⌑ The keyboard cable or keyboard is not installed properly;

If all of the above are normal, the fault may be in the switch power supply section. Please seek service.

5.3.2 The motor does not run after the frequency converter is running

⌑ For motors with brake devices, please confirm that the motor is not in the brake state.

⌑ Disconnect the connection between the frequency converter and the motor, run the frequency converter to 50Hz, and use a multimeter to check if there is a balanced AC voltage between the three-phase outputs U, V, and W.

Note that due to the high-frequency pulses between U, V, and W, please use an analog voltmeter to measure (with a range of AC 500V or 1000V, depending on the rated voltage of the frequency converter. If it is 380V, AC 500V can be used; if it is 660V/690V, AC 1000V is required). If the output voltage is unbalanced or there is no output voltage, the frequency converter module is damaged. Please seek service.

⌑ If all of the above are normal. Please seek service.

Chapter 6

Modbus protocol

CL200 series inverter provides RS232/RS485 communication interface and supports Modbus communication protocol. Users can realize centralized control through computer or PLC, set inverter running commands, modify or read function code parameters, and read inverter working status and fault information through this communication protocol.

1.Agreement

The serial communication protocol defines the content and format of information transmitted in serial communication. It includes: host polling (or broadcast) format; host encoding method, including: function code required for action, transmission data and error checking, etc. The response of the slave also adopts the same structure, including: action confirmation, return data and error checking, etc. If the slave has an error in receiving the information, or cannot complete the action required by the master, it will organize a fault message as a response and feed it back to the master.

2.Application method

The inverter is connected to the "single master and multiple slave" PC/PLC control network with RS232/RS485 bus.

3.Bus structure

(1) The interface way RS232/RS485 hardware interface

(2) Transfer method

Asynchronous serial, half-duplex transmission mode. At the same time, only one of the master and slave can send data and the other can only receive data. In the process of serial asynchronous communication, data is sent frame by frame in the form of messages.

(3) Topology

Single master multi-slave system. The setting range of the slave address is 1 to 247, and 0 is the broadcast communication address. Slave addresses in the network must be unique.

4.Protocol description

CL200 series inverter communication protocol is an asynchronous serial master-slave Modbus communication protocol. Only one device (host) in the network can establish a protocol (called "query/command"), other devices (slave) can only provide The data responds to the "query/command" of the host, or makes corresponding actions according to the "query/command" of the host. The host here refers to personal computer (PC), industrial control equipment or programmable logic controller (PLC), etc., and the slave refers to the CL200 inverter. The master can not only communicate with a certain slave, but also publish broadcast information to all the lower slaves. For the "inquiry/command" of the host that is accessed individually, the slave must return a message (called a response). For the broadcast information sent by the host, the slave does not need to respond to the host.

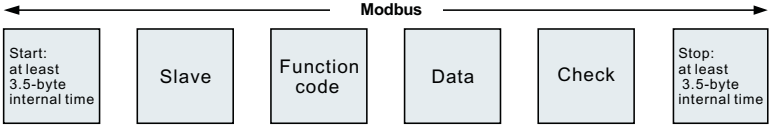
5.Communication frame structure

The Modbus protocol communication data format of CL200 series inverter is as follows.

Using RTU mode, message transmission starts with a pause interval of at least 3.5 character times. This is the easiest to implement with various character times at the network baud rate (as shown in T1-T2-T3-T4 in the figure below). The first field of the transfer is the device address. The transfer characters that can be used are 0...9,A...F in hexadecimal. The network device continuously detects the network bus, including the pause interval. When the first field (address field) is received, each device decodes it to determine whether it is destined for its own. After the last transmitted character, a pause of at least 3.5 character times marks the end of the message. A new message can start after this pause.

The entire message frame must be transmitted as a continuous stream. If there is a pause of more than 1.5 character times before the frame is complete, the receiving device will flush the incomplete message and assume the next byte is the address field of a new message. Likewise, if a new message follows the previous message in less than 3.5 characters, the receiving device will consider it a continuation of the previous message. This will cause an error because the value in the final CRC field cannot be correct.

RTU Data Frame Format



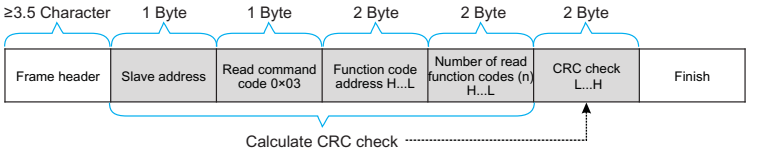
RTU frame format:

Frame header START	3.5 character time
Slave address ADR	Communication address: 1 ~ 247 (set by F8-02)
Command code CMD	03: Read slave parameters; 06: Write slave parameters
Data content DATA (N-1)	Data content: Function code parameter address, function code parameter number, function code parameter value, etc.
Data content DATA (N-2)	
...	
Data content DATA0	
CRC CHK low order	Detection value: CRC16 check value. When transmitting, the low byte comes first and the high byte follows. For the calculation method, please refer to the description of CRC check in this section.
CRC CHK high bits	
END	3.5 character time

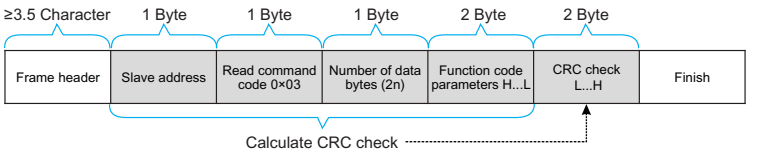
Command command (CMD) and data description (DATA)

Command code: 03H, read N words (Word), can read up to 12 words and N=1~ 12. The specific format is as follows:

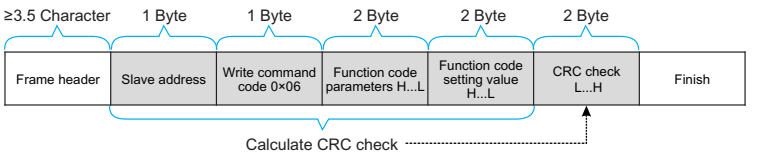
Host read command frame



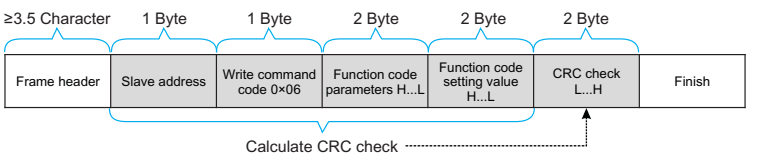
Slave read response frame



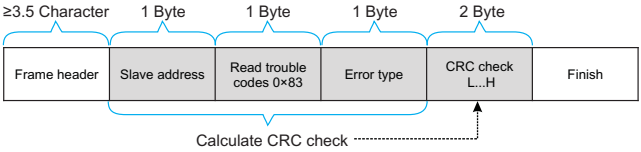
Host write command frame



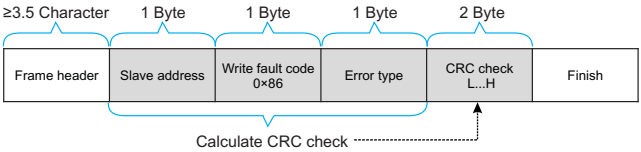
Slave write response frame



If the slave detects a communication frame error, or fails to read and write due to other reasons, it will reply with an error frame. Slave read response error frame:



Slave write response error frame



Example: read the contents of two consecutive parameters starting from P0-03 of the inverter whose slave address P8-02 is 01.

The frame sent by the host is shown in the figure:

Frame header ≥3.5 Character	Slave address 0×01	Read command code 0×03	Function code address 0×F0 0×03	Number of read function codes 0×00 0×02	CRC check 0×07 0×0B	Finish

The slave reply frame is as shown in the figure:

Frame header ≥3.5 Character	Slave address 0×01	Read command code 0×03	Data bytes 0×04	P0.03 parameter value 0×00 0×00	P0.04 parameter value 0×00 0×00	CRC check 0×FA 0×33	Finish

Note: If the write command is unsuccessful, the failure reason will be returned.

6.Check method (CRC check method)

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

The CRC is stored in 0xPFPF first, and then a process is called to process the consecutive 8-bit bytes in the message with the value in the current register. Only the 8Bit data in each character is valid for CRC, and the start and stop bits and parity bits are invalid.

In the process of CRC generation, each 8-bit character is XORed with the contents of the register independently, and the result is moved to the direction of the least significant bit, and the most significant bit is filled with 0. The LSB is extracted and detected. If the LSB is 1, the register is individually ORed with the preset value. If the LSB is 0, it is not performed. The whole process is repeated 8 times. After the last bit (8th bit) is completed, the next 8-bit byte is XORed with the current value of the register independently. The value in the final register is the CRC value after all bytes in the message are executed.

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

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

7. Address Definition of Communication Parameters

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

Read and write function code parameters (some function codes cannot be changed, and are only used by manufacturers or monitored):

Function code parameter address marking rules:

The rules are represented by the function code group number and label as the parameter address:

High-order byte: P0~FPF (group P), A0~AF (group A), B0~BF (group B), C0~CF (group C),

D0~DF (group D), 70~7F (group U) low byte: 00~FF

Such as: P0-11, the address is expressed as F00B;

Notice:

FF group: parameters can neither be read nor changed;

Group U: can only be read, parameters cannot be changed.

Some parameters cannot be changed when the inverter is running; some parameters cannot be changed no matter what state the inverter is in; when changing the function code parameters, pay attention to the range, unit, and related descriptions of the parameters.

Function code group	Communication visit address	Function code address of communication change RAM
P0 ~ PE	0xF000 ~ 0xPEPF	0x0000 ~ 0x0EPF
A0 ~ AF	0xA000 ~ 0xAPFF	0x4000 ~ 0x4PFF
B0 ~ BF	0xB000 ~ 0xBPFF	0x5000 ~ 0x5PFF
C0 ~ CF	0xC000 ~ 0xCPFF	0x6000 ~ 0x6PFF
U0、U1	0x70xx、0x71xx	

Note that, because the EEPROM is frequently stored, the service life of the EEPROM will be reduced. Therefore, some function codes do not need to be stored in the communication mode, just change the value in the RAM.

If it is a parameter of group P, to realize this function, it can be realized only by changing the high-order F of the function code address to 0.

If it is a group A parameter, to realize this function, just change the high-order A of the function code address to 4 to realize it.

The corresponding function code addresses are expressed as follows: high byte: 00~0F (group P), 40~4F (group A) low byte: 00~PF

For example, the function code P0-11 is not stored in the EEPROM, and the address is expressed as 000B; this address indicates that it can only be written to RAM, but cannot be read. When reading, it is an invalid address.

Stop/Run parameter section:

Address	Parameter Description
0X1000/ 0X9000	1000:*communication setting value (-10000～10000) (decimal) (unit: 0.01%), readable and writable
	9000: Communication setting frequency: 0HZ～P0-14 (minimum unit: 0.01HZ), readable and writable
0x1001	Set frequency (unit: 0.01Hz), read only
0x1002	Running frequency (unit: 0.01Hz), read only
0x1003	Bus voltage (unit: 0.1V), read only
0x1004	Output voltage (unit: 0.1V), read only
0x1005	Output current (unit: 0.1A), read only
0x1006	Output power (unit: 0.1kW), read only
0x1007	DI input flag (unit: 1), read only
0x1008	DO output flag (unit: 1), read only
0x1009	PID setting (unit: 1), read only
0x100A	PID feedback (unit: 1), read only
0x100B	Ai1 voltage (unit: 0.01V), read only
0x100C	Ai2 voltage (unit: 0.01V), read only
0x100D	Ao1 output voltage (unit: 0.01V) read only
0x100E	PLC step (unit: 1), read only
0x100F	Speed (unit: 1rpm), read only
0x1010	Count value input (unit: 1), read only
0x1011	Input pulse frequency (unit: 0.01kHz), read only
0x1012	Feedback speed (unit: 0.1Hz), read only
0x1013	Remaining running time (unit: 0.1min), read only
0x1014	AI1 voltage before calibration (unit: 0.001V), read only
0x1015	AI2 voltage before calibration (unit: 0.001V), read only
0x1016	Actual linear speed (unit: 1m/min), read only
0x1017	Load speed (unit: user-defined, refer to P7-31), read only
0x1018	Current power-on time (unit: 1min), read only
0x1019	Current running time (unit: 0.1min) read only
0x101A	Input pulse frequency (unit: 1Hz), read only

Address	Parameter Description
0x101B	Main frequency X display (unit: 0.01Hz), read only
0x101C	Auxiliary frequency Y display (unit: 0.01Hz), read only
0x101D	Target torque (unit: 0.1%), Take the motor rated torque as 100%, read only
0x101E	Output torque (unit: 0.1%), Take the motor rated torque as 100%, read only
0x101F	Output torque (unit: 0.1%), Take the inverter rated current as 100%, read only
0x1020	Torque upper limit (unit: 0.1%, Take the inverter rated current as 100%, read only
0x1021	VF separation target voltage (unit: 1V), read only
0x1022	VF separate output voltage (unit: 1V), read only
0x1023	Reserved, read only
0x1024	Motor 1\2 indication (unit: 1), read only
0x1025	Length value input (unit: 1) read only
0x1026	AO2 output voltage (unit: 0.01V), read only
0x1027	Inverter status (unit: 1), read only
0x1028	Current fault (unit: 1), read only

Example 1: Read the operating frequency of the first device: 0x01 0x03 0x10 0x02 0x00 0x01 0x21 0x0A

0x10 0x02 (1002) operating frequency address, 0x00 0x01 (0001) a data

0x21 0x0A (210A) CRC check value

Example 2: Read the bus voltage, output voltage and output current of the first device at the same time: 0x01 0x03 0x10 0x03 0x00 0x03 CRC check value, the meaning of the data is similar to that of example 1.

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

For frequency dimension data, the percentage is relative to the maximum frequency (P0-14); for torque dimension data, the percentage is P3-21, P3-23, A3-21, A3-23.

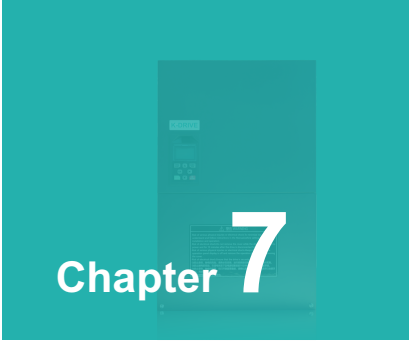
Note: D0 output terminal needs to select 16 (communication control) function.

AO output needs to select 7 (communication control output) function.

Type	Command address	Command content
Control command input (write only)	0x2000	0001: Forward run 0002: Reverse run 0003: Forward jog 0004: Reverse jog 0005: Coast to stop 0006: Decelerate to stop 0007: Fault reset 0008: Fault reset (only in communication control mode can fault reset)
Status read (read only)	0x3000	0001: Forward running 0002: Reverse running 0003: Stop
Digital output terminal control (write only)	0x2001	BIT0: RELAY1 output control BIT1: DO1 output control BIT2: RELAY2 output control
Analog output AO1 control (write only)	0x2002	0 ~ 7PFF means 0% ~ 100%
Analog output AO2 control (write only)	0x2003	0 ~ 7PFF means 0% ~ 100%
Inverter fault address	0x8000	0000: No fault 0001: Reserved 0002: Reserved 0003: Reserved 0004: Acceleration overcurrent 0005: Deceleration overcurrent 0006: Constant speed overcurrent 0007: Stop overcurrent 0008: Acceleration overvoltage 0009: Deceleration overvoltage 000A: Constant speed overvoltage 000B: Stop overvoltage 000C: Undervoltage fault 000D: Inverter overload 000E: Motor overload 000F: Module overheat 0010: Reserved 0011: Current detection fault 0012: Reserved 0013: Reserved 0014: Motor short circuit fault to ground 0015: Motor tuning fault 0016: Reserved

Type	Command address	Command content
Inverter fault address	0x8000	0017: Input phase loss 0018: Output phase loss 0019: EEPROM read and write abnormality 001A: Password input exceeded times 001B: Communication abnormal 001C: External fault 001D: Excessive speed deviation 001E: User-defined fault 1 001F: User-defined fault 2 0020: Loss of PID feedback during runtime 0021: Hardware current limit fault 0022: Loss of load 0023: Overload fault of buffer resistor 0024: The contactor is abnormal 0025: The agent running time has arrived 0026: Motor over temperature (reserved) 0027: Current running time reached 0028: Cumulative running time reached 0029: Power-on time reached 002A: Switching motor failure during operation 002B: Motor overspeed 002C: Reserved 002D: Reserved 002E: reserved 002F: point-to-slave fault

The return address when communication fails: read fault 83XX, write fault 86X.



Chapter 7

Function & Parameter Table

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The function code symbols are explained as follows:

Icons	Content
☆	Indicates that the inverter parameters can be modified during stop and running (0)
★	Indicates that the inverter is in a running state and cannot be modified (1)
○	Indicates that this parameter is a manufacturer's parameter and cannot be changed by the user (3)
●	Indicates the actual detection value of the inverter or the manufacturer's fixed value, which cannot be changed (2)

7.1 Feedback section function code

- ⌑ The L/D/C light is a fault light;
- ⌑ The FWD/REV light is a fault interface light;
- ⌑ TUNE/TC is the power mode light.

Function code	Name	Description (setting range)	Factory Default	Change
Group F0: Basic function group				
F0-00	Run Command Channel	0: Keyboard control 1: Terminal control	0	★
F0-01	Keyboard control mode	0: Feedback mode 1: Rectification mode	0	★
F0-02	Grid or power frequency selection	0: 50Hz 1: 60Hz	0	★
F0-03	Power mode selection	0: Rated emergency power supply 1: VF power mode (not open)	0	★
F0-04	Modulation mode	0: Bipolarity 1: Unipolarity	1	★
Group F2: Control group				
F2-00	Terminal settings	0: No terminal control required 1: DI1 control fault reset, DI2 operation enable	0	☆
F2-01	Bus voltage set value	400.0V~800.0V	620.0V	☆
F2-02	Voltage rise slope	10V/s~120V/s	40V/s	☆
F2-03	Voltage drop slope	10V/s~120V/s	40V/s	☆

Function code	Name	Description (setting range)	Factory Default	Change
F2-04	Voltage hysteresis range	1.0V~50.0V	0V	☆
F2-05	Reactive power given polarity	0: capacitive reactive power 1: Sensory reactive power	0	☆
F2-06	Slope of reactive current rise	0.0A/s~100.0A/s	5.0A/s	☆
F2-07	Slope of reactive current decrease	0.0A/s~100.0A/s	5.0A/s	☆
F2-08	Reactive power allocation	0-100.0%	0.0%	☆
F2-09	Maximum reactive voltage limit	0-20.0%	100.0%	☆
F2-10	Voltage loop feedback current limiting	90% to 180% (rated current of feedback unit)	160%	☆
F2-11	Phase locked loop ratio	10-100	10	☆
F2-12	Phase-locked loop integral	10-100	10	☆
Group F4: Functional parameter group				
F4-00	Minimum soft charging duration	500ms~3000ms	1000ms	★
F4-01	Input overvoltage Protection	120%~150%	130%	☆
F4-02	Input undervoltage protection	50%~80%	60%	☆
F4-03	Overload protection starting point	65%~105%	95%	☆
F4-04	50Hz overfrequency	55.00 Hz~65.00 Hz	65.00Hz	★
F4-05	50Hz underfrequency	35.00 Hz~45.00 Hz	35.00 Hz	★
F4-06	60Hz overfrequency	65.00 Hz~75.00 Hz	75.00Hz	★
F4-07	Delay start time of emergency power supply function	45.00 Hz~55.00 Hz	45.00Hz	★
F4-08	Emergency power supply rise time	0.0s~1200.0s	2.0s	☆
F4-09	Rated output of emergency power supply	500ms~5000ms	2000ms	☆
F4-10	VF maximum frequency (not open)	0.0%~150.0%	1000%	☆
F4-11	VF rated output (not open)	0.01Hz~200.00Hz	50.00Hz	★
F4-12	VF adjustment time (not open)	1%~100%	100%	★

Function code	Name	Description (setting range)	Factory Default	Change
F4-13	VF frequency setting (not open)	0.01Hz/s~10.00Hz/s	5.00Hz/s	★
F4-14	Current loop proportional adjustment (in automatic calculation mode)	0~F4.11	50.00Hz	★
F4-15	Current loop proportional adjustment (in automatic calculation mode)	1~50	12	●
F4-16	Current loop integral adjustment (in automatic calculation mode)	1~10	5	●
F4-17	Voltage loop proportional adjustment (in automatic calculation mode)	1~20	2	●
F4-18	Voltage loop integral regulation (in automatic calculation mode)	1~20	10	●
Group F5: Data Display Group (Read Only)				
F5-00	Feedback Total Active Power Low Double Word Low Word	0-65535	--	●
F5-01	Feedback Total Active Power Low Double Word High Word	0-65535	–	●
F5-02	Feedback always has merit, high is the lowest of the two characters	0-65535	–	●
F5-03	Module malfunction	1: Module malfunction	–	●
F5-04	Loss of lock fault in phase-locked loop	1: Loss of lock fault in phase-locked loop	–	●
F5-05	External faults	1: External faults	–	●
F5-06	Overcurrent fault	1: Overcurrent fault	–	●
F5-07	Bus overvoltage fault	1: Bus overvoltage fault	–	●
F5-08	Bus undervoltage fault	1: Bus undervoltage fault	–	●
F5-09	Overload fault	1: Overload fault	–	●
F5-10	Low grid frequency fault	1: Low grid frequency fault	–	●
F5-11	Low voltage fault in the power grid	1: Low voltage fault in the power grid	–	●

Function code	Name	Description (setting range)	Factory Default	Change
F5-12	High frequency faults in the power grid	1: High frequency faults in the power grid	–	●
F5-13	High voltage fault in the power grid	1: High voltage fault in the power grid	–	●
F5-14	Severe unbalanced faults in the power grid	1: Severe unbalanced faults in the power grid	–	●
F5-15	Over temperature fault	1: Over temperature fault	–	●
F5-16	Current sampling fault	1: Current sampling fault	–	●
F5-17	Modbus communication failure	1: Modbus communication failure	–	●
F5-18	ROM data overflow fault	1: ROM data overflow fault	–	●
F5-19	Zero drift value of A-phase current	0-4095	–	●
F5-20	Zero drift value of phase B current	0-4095	–	●
F5-21	Zero drift value of C-phase current	0-4095	–	●
F5-22	Temperature AD value	0-4095	–	●
F5-23	Temperature AD right shift value	0-65535	–	●
F5-24	EPPROM error data	0-199	–	●
F5-25	Voltage loop proportional gain	0~65535 (actual value is 1000 * F5.25)	–	●
F5-26	Voltage loop integral gain	0-65535	–	●
F5-27	Current loop proportional gain	0-65535	–	●
F5-28	Current loop integral gain	0-65535	–	●
F5-29	Proportional gain of phase-locked loop	0-65535	–	●
F5-30	Phase locked loop integral gain	0-65535	–	●
F5-31	Calculation result of phase-locked loop 1	0-65535	–	●
F5-32	Calculation result of phase-locked loop 2	0-65535	–	●

Function code	Name	Description (setting range)	Factory Default	Change
Group F6: Fan Function Group				
F6-00	Fan control	0: Run immediately upon power on 1: Controlled by temperature (starting at 55 ℃) 2: Start the fan during runtime	2	☆
Group F8: Protection setting group				
F8-00	Overload minimum running time	8.0s~1200.0s	8.0s	☆
F8-02	Number of automatic fault resets	0 ~ 65535	50000	☆
F8-04	Number of automatic fault resets	2s ~ 100.0s	2.0s	☆
Group FB: Serial communication group				
FB-00	Local communication address	0:1200BPS 1: 2400BPS 2: 4800BPS 3: 9600BPS 4: 19200BPS 5: 38400BPS	1	☆
FB-01	Communication baud rate setting	0: No verification RTU 1: Even check RTU 2: Odd check RTU	3	☆
FB-02	Data format	0-200ms	1	☆
FB-03	Communication response delay	0.0 (invalid)~100.0 seconds	5ms	☆
FB-04	Communication timeout failure time	0: Alarm and free parking	0.0s	☆
FB-05	Communication transmission error handling	1: Do not alarm and continue running	0	☆
Group FD: Human machine interface group				
FD-00	User password	1000~9999	100	☆
FD-01	Functional parameter recovery	0: No operation 1: Restore default values 2: Clear fault file	0	★

Function code	Name	Description (setting range)	Factory Default	Change
FD-02	Battery display mode	0: General display 1: Scientific notation	0	☆
Group FE: Status Display Group (Read Only)				
FE-00	The first two types of faults	0: No fault 1: Module malfunction (ERR01) 2: Phase lock failure (ERR02) 3: External fault (ERR03) 4: Overcurrent fault (ERR04) 7: Bus overvoltage fault (ERR07) 9: Bus undervoltage fault (ERR09) 10: Overload fault (ERR10) 11: Low grid frequency fault (ERR11) 12: Low grid voltage fault (ERR12) 13: High grid frequency fault (ERR13) 14: High grid voltage fault (ERR14) 15: Severe unbalanced fault of the power grid (ERR15) 16: Module overheating fault (ERR16) 18: Current sampling fault (ERR18) 21: Storage Data Overflow Fault (ERR21)	0	●
FE-01	Previous fault type	0-21	0	●
FE-02	Current fault type	0-21	0	●
FE-04	Feedback current during fault	0.1A ~ 2000.0A	0.0A	●
FE-05	Bus voltage during fault	0.0V ~ 2000.0V	0.0V	●
FE-06	Input terminal during fault	00 ~ 11	00	●
FE-08	Module temperature	0℃ ~ 120℃	–	●
FE-09	Grid frequency	0.00 Hz ~ 655.36Hz	–	●
FE-10	Grid voltage	0.0V ~ 700.0V	–	●
FE-11	Bus voltage	0.0V ~ 2000.0V	–	●

Function code	Name	Description (setting range)	Factory Default	Change
Group FE: Status Display Group (Read Only)				
FE-12	output voltage	0.0V ~ 2000.0V	–	●
FE-13	Feedback current	0.0A ~ 2000.0A	–	●
FE-18	Previous fault feedback current	0.1A ~ 2000.0A	0.0A	●
FE-19	Previous fault bus voltage	0.0V ~ 2000.0V	0.0V	●
FE-20	Last fault input terminal	00 ~ 11	00	●
FE-21	Feedback current for the first two faults	0.1A ~ 2000.0A	0.0A	●
FE-22	The voltage of the first two faulty busbars	0.0V ~ 2000.0V	0.0V	●
FE-23	The first two fault input terminals	00 ~ 11	00	●
FE-24	Feedback active power	0.0kW ~ 2000.0KW	–	●
FE-25	Feedback reactive power	0.0kVar ~ 2000.0KVar	–	●
FE-26	Accumulated feedback energy	0.0kWh ~ 6553.5KWh	–	●
FE-27	Accumulated feedback energy	0.0kWh ~ 6553.5KWh	–	●
Group FF:Unit nameplate (read-only)				
FF-00	Rated power of feedback unit	0.4kW~1000.0kW	–	●
FF-01	Rated voltage of feedback unit	100.0V~2000.0V	–	●
FF-02	Rated current of feedback unit	1.0A~2000.0A	–	●
FF-03	Eliminating narrow pulse time	3.2 us~12.0 us	Model settings	★
FF-04	Machine model	0~65535	–	●
FF-05	Software version	0~65535	–	●
FF-06	Current loop Kp coefficient	0~65535	Model settings	★
FF-07	Voltage loop Kp coefficient	0~65535	Model settings	★
FF-08	Unit password	After successful input, you can enter super user mode	–	☆
FF-09	Clear Records	0: No operation 1: Clear Records	–	☆

Function code	Name	Description (setting range)	Factory Default	Change
FF-10	Frequency converter model (select hardware ratio for voltage and current sampling)	0: Invalid 1-1200: View the corresponding table of machine models	–	☆
FF-11	Rated power of frequency converter	0.4kW~1200.0kW	–	●
FF-12	Rated voltage of frequency converter	100.0V~1000.0V	–	●
FF-13	Rated current of frequency converter	1.0A~2000.0A	Model settings	●
FF-14	Standard overcurrent value	1.0A~6000.0A	–	●
FF-15	Current echo correction (1000)	50.0%~150.0%	–	☆
FF-16	Dead Time	3.2 us~12.0 us	Model settings	★
FF-17	Bus undervoltage point	50% ~ 90%	60%	☆
FF-18	Bus overvoltage point	150% ~ 180%	150%	☆
FF-19	Zero battery	0-1	0	☆
FF-20	Over temperature point	25 ℃~120 ℃	90℃	☆
FF-21	Temperature curve	0: Temperature curve of all-in-one machine 4: Energy feedback module NTC	4	☆
FF-22	Control model	0: Phase loss operation mode (positive and negative sequence control) 1: Non phase loss operation mode (conventional control)	0	☆
FF-23	Save the current F0~FD groups as user default values	0: No operation 1: Save current value as user default 2: Initialize epprom	0	☆
FF-24	Feedback unit carrier frequency	1.0kHz~16.0kHz	Model settings	☆

Function code	Name	Description (setting range)	Factory Default	Change
FF-25	Period of positive and negative order decomposition operation (can be deleted)	1ms~20ms	1ms	★
FF-26	Current loop kp	100-30000	3000	★
FF-27	Current loop ki	1-1000	20	★
FF-28	Voltage loop kp	1~1000 (actually 1000 * FF.28)	10	★
FF-29	Voltage loop ki	1-1000	1	★
FF-30	Current direction selection	0: Forward 1: Reverse	0	★
FF-31	Current imbalance protection trigger value (belongs to redundant protection, can be left or not)	45%~60%	45%	☆
FF-32	Loss of lock detection of phase-locked loop	300~600	600	★
FF-33	Maximum operating peak current of feedback unit	1.0A~2000.0A	Model settings	●
FF-34	AC inductance		Model settings	☆
FF-35	DC capacitor		Model settings	☆
FF-36	PI mode selection	0: Automatically calculate PI 1: Manually calculating PI	1	☆
FF-37	PI mode selection	0-65535	65535	●

7.2 Inverter part function code

Function code	Name	Description (setting range)	Factory Default	Change
Group P0: Basic function group				
P0-00	Product number	Product model: 5 digits display, 2 decimal places	60#.##	●
P0-01	Inverter GP type display	0: G type 1: P type	0	★
P0-02	Rated current	0.1A ~ 3000.0A	Model is determined	●
P0-03	Motor control method	Ones place: motor control mode selection 1: Open loop vector control (speed sensorless vector) 2: VF Control 3: Closed loop vector (with speed sensor vector) Tens place: motor type selection 0: Asynchronous motor 1: Synchronous motor	2	★
P0-04	Run command source	0: Operation panel running command channel (LED off) 1: Terminal command channel (LED on) 2: Communication command channel (LED flashes)	0	★
P0-05	Up\Down to modify the frequency command reference during runtime	0: Running frequency 1: Setting frequency	1	★
P0-06	Main frequency source X selection	0: Up/Down modification frequency, no memory after shutdown 1: Up/Down modification frequency power-off memory 2: AI1 3: AI2 4: Multi-speed 5: Simple PLC 6: PID	1	★

Function code	Name	Description (setting range)	Factory Default	Change
		7: Communication given 8: PULSE pulse setting 9: Up/Down modifies the frequency, and the memory is stopped when the power is turned off		
P0-07	Auxiliary frequency source Y selection	0: Up/Down modification frequency, no memory after shutdown 1: Up/Down modification frequency power-off memory 2: AI1 3: AI2 4: Multi-speed 5: Simple PLC 6: PID 7: Communication given 8: PULSE pulse setting 9: Up/Down modifies the frequency, and the memory is stopped when the power is turned off.	0	★
P0-08	Auxiliary frequency source Y range selection	0: relative to the maximum frequency 1: Relative to frequency source X 2: The range is the same as 0 but the main and auxiliary have no negative frequency output	0	☆
P0-09	Auxiliary frequency source Y range	0% to 100%	100%	☆
P0-10	Frequency source selection	Ones place: frequency source selection 0: Main frequency source X 1: Main and auxiliary operation results (the operation relationship is determined by ten digits) 2: Switch between main frequency source X and auxiliary frequency source Y 3: Switch between the main frequency source X and the main and auxiliary operation results	00	☆

Function code	Name	Description (setting range)	Factory Default	Change
P0-10	Frequency source selection	4: Switch between auxiliary frequency source Y and main and auxiliary operation results Tens place: main and auxiliary operation relationship of frequency source 0: main + auxiliary 1: Primary-Secondary 2: the maximum value of the two 3: the minimum value of the two	00	☆
P0-11	Preset frequency	0.00Hz ~ Maximum frequency P0-14	50.00Hz	☆
P0-13	Motor running direction selection	0: Consistent with the current motor direction 1: Opposite to the current motor direction 2: Inversion is prohibited	0	☆
P0-14	Maximum output frequency	When P0-20=1, the adjustable range is 50.0Hz ~ 1200.0Hz; When P0-20=2, the adjustable range is 50.00Hz ~ 600.00Hz;	50.00Hz	★
P0-15	Upper limit frequency source	0: Digital given (P0-16) 1: AI1 2: AI2 3: Communication given 4: PULSE setting	0	★
P0-16	Upper limit frequency	Lower limit frequency P0-18 ~ maximum frequency P0-14	50.00Hz	☆
P0-17	Upper limit frequency offset	0.00 ~ Maximum frequency P0-14	0.00Hz	☆
P0-18	Lower frequency	0.00Hz ~ upper limit frequency P0-16	0.00Hz	☆
P0-19	Command source binding selection	Units digit: selection of frequency sourc-e bound by operation panel command 0: no binding 1: Digital setting frequency 2: AI1 3: AI2 4: Multi-speed 5: Simple PLC	000	☆

Function code	Name	Description (setting range)	Factory Default	Change
		6: PID 7: Communication given 8: PULSE pulse setting (DI5) Tens place: Terminal command binding frequency source selection Hundreds place: Communication command binding frequency source selection Thousands: reserved		
P0-20	Frequency Decimal Selection	1: 1 decimal point 2: 2 decimal places	2	★
P0-21	Acceleration and deceleration time unit	0: 1 second 1: 0.1 seconds 2: 0.01 seconds	1	★
P0-22	Acceleration and deceleration time reference frequency	0: Maximum frequency (P0-14) 1: Preset frequency (P0-11) 2: Motor rated frequency (P4-05 or A1-05)	0	★
P0-23	Acceleration time 1	0s ~ 30000s(P0-21=0) 0.0s ~ 3000.0s(P0-21=1) 0.00s ~ 300.00s(P0-21=2)	10.0s	☆
P0-24	Deceleration time 1	0s ~ 30000s(P0-21=0) 0.0s ~ 3000.0s(P0-21=1) 0.00s ~ 300.00s(P0-21=2)	10.0s	☆
P0-25	Overmodulation voltage boost value	0% ~ 10%	3%	★
P0-26	Carrier frequency	0.5kHz ~ 16.0kHz	Model is determined	☆
P0-27	The carrier frequency is adjusted with temperature	0: Invalid; 1: Valid;	1	☆
P0-28	Parameter initialization	0: No operation 1: Restore factory parameters, excluding motor parameters, record information and frequency decimal point P0-20 2: Clear record information	0	★

Function code	Name	Description (setting range)	Factory Default	Change
		3: Backup current user parameters 4: Restore user backup parameters		
P0-29	LCD upload and download parameter selection	0: No function 1: Download parameters to LCD 2: Upload only P4 group parameters 3: Upload parameters except for P4 group 4: Upload all parameters	0	☆
Group P1: Start-stop control				
P1-00	Start method	0: Direct start 1: Speed Tracking 2: Asynchronous motor pre-excitation start	0	☆
P1-01	Speed tracking method	0: start from stop frequency 1: Start with target frequency 2: start from maximum frequency	0	★
P1-02	Maximum speed tracking current	30% ~ 150%	100%	★
P1-03	Speed tracking speed	1 ~ 100	20	☆
P1-04	Start frequency	0.00Hz ~ 10.00Hz	0.00Hz	☆
P1-05	Start frequency hold time	0.0s ~ 100.0s	0.0s	★
P1-06	Start DC braking current	0% ~ 100%	0%	★
P1-07	Start DC braking time	0.0s ~ 100.0s	0.0s	★
P1-08	Selection of acceleration and deceleration frequency curve mode	0: Straight line 1: S curve A 2: S curve B (P1-09 ~ P1-12 unit is 0.01s)	0	★
P1-09	S-curve acceleration start time	0.0% ~ 100.0%	20.0%	★
P1-10	S-curve acceleration end time	0.0% ~ 100.0%	20.0%	★
P1-11	S-curve deceleration start time	0.0% ~ 100.0%	20.0%	★

Function code	Name	Description (setting range)	Factory Default	Change
P1-12	S-curve deceleration end time	0.0% ~ 100.0%	20.0%	★
P1-13	Stop mode	0: Decelerate to stop 1: Free stop	0	☆
P1-14	DC braking start frequency at stop	0.00Hz ~ P0-14	0.00Hz	☆
P1-15	DC braking waiting time at stop	0.0s ~ 100.0s	0.0s	☆
P1-16	Stop braking DC current	0% ~ 100%	0%	☆
P1-17	DC braking time at stop	0.0s ~ 36.0s	0.0s	☆
P1-21	Demagnetization time	0.01s ~ 3.00s	0.50s	★
P1-23	Instantaneous stop and non-stop mode selection	0: invalid 1: Automatically adjust the deceleration rate 2: Decelerate to stop	0	★
P1-24	The deceleration time of the momentary stop and non-stop deceleration stop	0.0s ~ 100.0s	10.0s	★
P1-25	Instantaneous power failure and non-stop effective voltage	60% ~ 85%	80%	★
P1-26	Instantaneous power failure and non-stop recovery of voltage	85% ~ 100%	90%	★
P1-27	Instantaneous power failure and non-stop recovery voltage judgment	0.0s ~ 300.0s	0.3s	★
P1-28	Instantaneous stop and non-stop automatic gain adjustment	0 ~ 100	40	☆
P1-29	Instantaneous stop and non-stop automatic adjustment of integral	1 ~ 100	20	☆
Group P2: V/F control parameters				
P2-00	V/F curve setting	0: Straight line VF curve 1: Multi-point VF curve 2: Square VF curve 3: 1.7th power curve 4: 1.5 power curve	0	★

Function code	Name	Description (setting range)	Factory Default	Change
		5: 1.3 power curve 6: VF full separation mode 7: V/F half separation mode		
P2-01	Torque boost	0.0% ~ 30.0%	0.0%	☆
P2-02	Torque boost cut-off frequency	0.00Hz ~ Maximum frequency	25.00Hz	★
P2-03	V/F frequency point P1	0.00Hz ~ P2-05	1.30Hz	★
P2-04	V/F voltage point V1	0.0% ~ 100.0%	5.2%	★
P2-05	V/F frequency point P2	P2-03 ~ P2-07	2.50Hz	★
P2-06	V/F voltage point V2	0.0% ~ 100.0%	8.8%	★
P2-07	V/F frequency point P3	0.00Hz ~ 50.00 Hz	15.00Hz	★
P2-08	V/F voltage point V3	0.0% ~ 100.0%	35.0%	★
P2-09	Slip Compensation Coefficient	0.0% ~ 200.0%	50.0%	☆
P2-10	Flux Brake Gain	0 ~ 200	100	☆
P2-11	Oscillation suppression gain	0 ~ 100	Model is determined	☆
P2-13	VF slip compensation time constant	0.02s ~ 1.00s	0.30s	☆
P2-15	Output voltage source selection when VF is separated	0: Digital setting (P2-14) 1: Ai1 2: Ai2 3: Multi segment instruction 4: Simple PLC 5: PID 6: Communication given 7: PULSE pulse setting (DI5) 100.0% corresponds to the rated voltage of the motor	0	☆
P2-16	V/F separation output voltage digital setting	0V ~ Motor rated voltage	0V	☆
P2-17	V/F separation output voltage acceleration time	0.0 ~ 3000.0s	1.0s	☆
P2-18	V/F separation output voltage deceleration time	0.0 ~ 3000.0s	1.0s	☆

Function code	Name	Description (setting range)	Factory Default	Change
P2-19	V/F separation and stop mode selection	0: Frequency and output voltage deceleration time are independent 1: After the voltage is reduced to 0, the frequency is reduced again	0	☆
Group P3: Vector control parameters				
P3-00	Switching frequency P1	0.00 ~ P3-02	5.00 Hz	☆
P3-02	Switching frequency P2	P3-00 ~ P0-14	10.00 Hz	☆
P3-04	Low frequency speed proportional gain	0.1 ~ 10.0	4.0	☆
P3-05	Low frequency speed integration time	0.01s ~ 10.00s	0.50s	☆
P3-06	High frequency speed proportional gain	0.1 ~ 10.0	2.0	☆
P3-07	High frequency speed integration time	0.01 ~ 10.00s	1.00s	☆
P3-08	Speed loop integral attribute selection	0: Points take effect 1: Integral separation	0	★
P3-11	Torque current regulator Kp	0 ~ 30000	2200	☆
P3-12	Torque current regulator Ki	0 ~ 30000	1500	☆
P3-13	Excitation current regulator Kp	0 ~ 30000	2200	☆
P3-14	Excitation current regulator Ki	0 ~ 30000	1500	☆
P3-15	Flux Brake Gain	0 ~ 200	0	☆
P3-16	Field weakening torque correction factor	50% ~ 200%	100%	☆
P3-17	Slip compensation gain	50% ~ 200%	100%	☆
P3-18	Speed loop feedback filter time constant	0.000 ~ 1.000s	0.015s	☆
P3-19	Speed loop output filter time constant	0.000 ~ 1.000s	0.000s	☆

Function code	Name	Description (setting range)	Factory Default	Change
P3-20	Electric torque upper limit source	0: P3-21 1: AI1 2: AI2 3: Communication given 4: PLUSE given (The analog range corresponds to P3-21)	0	☆
P3-21	Electric torque upper limit	0.0% ~ 200.0%	150.0%	☆
P3-22	Braking torque upper limit source	0: P3-23 1: AI1 2: AI2 3: Communication given 4: PLUSE given (The analog range corresponds to P3-23)	0	☆
P3-23	Braking torque upper limit	0.0 ~ 200.0%	150.0%	☆
P3-24	Low-speed magnetizing current of synchronous motor	0.0% ~ 50.0%	25.0%	★
P3-25	Magnetizing cut-off frequency of synchronous motor	0% ~ 100%	10%	★
P3-26	Pre-excitation time	0s ~ 5s	0.1s	★
P3-27	Synchronous motor initial position identification enable selection	0: Disable 1: Identification method 1 2: Identification method 2	1	★
P3-28	Initial position identification voltage given percentage	30% ~ 130%	80%	★
Group P4: First motor parameter				
P4-00	Motor parameter tuning	0: No function 1: Static tuning 2: Rotary tuning	0	★
P4-01	Motor 1 rated power	0.1kw ~ 1000.0kw	Model is determined	★
P4-02	Motor 1 rated voltage	1V ~ 1500V	380V	★
P4-03	Motor 1 Number of motor poles	2 to 64	Model is determined	○

Function code	Name	Description (setting range)	Factory Default	Change
P4-04	Motor 1 rated current	0.01A ~ 600.00A(Motor rated power<=30.0KW) 0.1A ~ 6000.0A(Motor rated power>30.0KW)	P4-01 OK	★
P4-05	Motor 1 rated frequency	0.01Hz ~ P0-14	50.00 Hz	★
P4-06	Motor 1 rated speed	0rpm ~ 60000rpm	P4-01 OK	★
P4-07	Motor 1 no-load current	0.01A ~ P4-04 (Motor rated power<=30.0KW) 0.1A ~ P4-04 (Motor rated power>30.0KW)	Model is determined	★
P4-08	Motor 1 stator resistance	0.001Ω ~ 65.535Ω	Model is determined	★
P4-09	Motor 1 rotor resistance	0.001Ω ~ 65.535Ω	Model is determined	★
P4-10	Motor 1 mutual inductance	0.1Mh ~ 6553.5Mh	Model is determined	★
P4-11	Motor 1 leakage inductance	0.01Mh ~ 655.35Mh	Model is determined	★
P4-12	Acceleration at Dynamic Full Tuning	1.0s ~ 6000.0s	10.0s	☆
P4-13	Deceleration at dynamic full tuning	1.0s ~ 6000.0s	10.0s	☆
P4-17	Synchronous motor stator resistance	0.001Ω ~ 65.535Ω	Model is determined	★
P4-18	Synchronous motor D-axis inductance	0.01Mh ~ 655.35Mh	Model is determined	★
P4-19	Synchronous motor Q-axis inductance	0.01Mh ~ 655.35Mh	Model is determined	★
P4-20	Synchronous motor back EMF	1V ~ 65535V	Model is determined	★
P4-21	No-load current of synchronous motor	0.0% ~ 50.0%	10.0%	★

Function code	Name	Description (setting range)	Factory Default	Change
Group P5: Input terminal				
P5-00	DI1 terminal function	0: No function 1: Forward rotation (FWD) 2: Reverse operation (REV) 3: Three-wire running control 4: Forward jog (FJOG) 5: Reverse Jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Free parking 9: Fault reset (RESET) 10: run pause 11: External fault normally open input 12: Multi-segment command terminal 1 13: Multi-segment command terminal 2 14: Multi-segment command terminal 3 15: Multi-segment command terminal 4 16: Acceleration and deceleration selection terminal 1 17: Acceleration and deceleration selection terminal 2 18: Frequency source switching 19: UP/DOWN setting clear (terminal, keyboard) 20: Running command switching terminal 21: Acceleration and deceleration prohibition 22: PID invalid (pause) 23: PLC status reset 24: Swing frequency pause 25: Timing trigger input 26: Immediate DC braking 27: External fault normally closed input 28: Counter input 29: Counter reset 30: Length count input 31: Length count reset 32: Torque control prohibited 33: PULSE (pulse) frequency input	1	★
P5-01	DI2 terminal function		2	★
P5-02	DI3 terminal function		9	★
P5-03	DI4 terminal function		12	★
P5-04	DI5 terminal function		13	★
P5-05	DI6 terminal function		13	★
P5-06	DI7 terminal function		13	★

Function code	Name	Description (setting range)	Factory Default	Change
		34: Frequency modification prohibited 35: PID action direction is reversed 36: External parking terminal 1 37: Control command switching terminal 2 38: PID integral pause terminal 39: Frequency source X and preset frequency switching terminal 40: Frequency source Y and preset frequency switching terminal 41: Switch between motor 1 and motor 2 42: reserved 43: PID parameter switching terminal 44: Speed control/torque control switching 45: Emergency stop 46: External parking terminal 2 47: Deceleration DC braking 48: This running time is cleared 49: Two-wire/three-wire switch 50: Inversion prohibited 51: User-defined fault 1 52: User-defined fault 2 53: Sleep Input		
P5-10	DI terminal filter time	0.000 ~ 1.000s	0.010s	☆
P5-11	Terminal command method	0: Two-wire type 1 1: Two-wire type 2 2: Three-wire type 1 3: Three-wire type 2	0	★
P5-12	Terminal UP/ DOWN change rate	0.01Hz/s ~ 100.00Hz/s	1.00Hz/s	☆
P5-13	Terminal valid logic 1	0: High level 1: low level Ones place: DI1; Tens place: DI2; Hundreds: DI3; Thousands: DI4; Ten thousand: DI5	00000	★

Function code	Name	Description (setting range)	Factory Default	Change
P5-15	AI1 minimum input value	0.00~P5-17	0.00V	☆
P5-16	AI1 minimum input corresponding setting	-100.0% ~ 100.0%	0.0%	☆
P5-17	AI1 maximum input value	P5-15~10.00V	10.00V	☆
P5-18	AI1 maximum input corresponding setting	-100.0% ~ 100.0%	100.0%	☆
P5-19	AI1 input filter time	0.00s ~ 10.00s	0.10s	☆
P5-20	AI2 minimum input value	0.00~P5-22	0.00V	☆
P5-21	AI2minimum input corresponding setting	-100.0% ~ 100.0%	0.0%	☆
P5-22	AI2 maximum input value	P5-20~10.00V	10.00V	☆
P5-23	AI2 maximum input corresponding setting	-100.0% ~ 100.0%	100.0%	☆
P5-24	AI2 input filter time	0.00s ~ 10.00s	0.10s	☆
P5-30	PULSE (pulse) input minimum frequency	0.00KHz~P5-32	0.00KHz	☆
P5-31	PULSE (pulse) input minimum frequency corresponding setting	-100.0% ~ 100.0%	0.0%	☆
P5-32	PULSE (pulse) input maximum frequency	P5-30~50.00KHz	50.00KHz	☆
P5-33	PULSE (pulse) input maximum frequency corresponding setting	-100.0% ~ 100.0%	100.0%	☆
P5-34	PULSE input filter time	0.00s ~ 10.00s	0.10s	☆
P5-35	DI1 turn-on delay time	0.0s ~ 3600.0s	0.0s	☆
P5-36	DI1 off delay time	0.0s ~ 3600.0s	0.0s	☆
P5-37	DI2 turn-on delay time	0.0s ~ 3600.0s	0.0s	☆
P5-38	DI2 off delay time	0.0s ~ 3600.0s	0.0s	☆
P5-39	DI3 turn-on delay time	0.0s ~ 3600.0s	0.0s	☆
P5-40	DI3 off delay time	0.0s ~ 3600.0s	0.0s	☆
P5-41	AI1 is selected as DI terminal function	0 ~ 53, the function is the same as the common DI terminal	0	★
P5-42	AI2 is selected as DI terminal function	0 ~ 53, the function is the same as the common DI terminal	0	★

Function code	Name	Description (setting range)	Factory Default	Change
P5-44	Valid mode selection when AI is used as DI terminal	Ones place, AI1: 0: Active high; 1: Active low Ten, AI2: 0: Active high; 1: Active low Hundreds: reserved	0x00	☆
P5-45	AI curve selection	AI multi-point curve selection: Ones place: AI1 0: 2-point straight line P5-15 ~ P5-19 1: Multi-point curve 1: PE-00 ~ PE-07 2: Multi-point curve 2: PE-08 ~ PE-15 Tenth place: AI2 0: 2-point straight line P5-20 ~ P5-24 1: Multi-point curve 1: PE-00 ~ PE-07 2: Multi-point curve 2: PE-08 ~ PE-15 Hundreds: reserved	0x00	☆
Group P6: Output terminal				
P6-00	Control board relay RELAY1 output (TA/TB/TC) selection	0: No output 1: Inverter running signal (RUN) 2: fault output 3: Frequency level detection PDT1 arrival 4: Frequency Arrival (PAR) 5: Running at zero speed 6: Motor overload pre-alarm 7: Inverter overload pre-alarm 8: PLC cycle completed	1	☆
P6-01	Control board relay RELAY2 output (RA/RB/RC) selection	9: Cumulative running time arrives 10: Frequency limited 11: Ready to run 12: AI1>AI2 13: The upper limit frequency is reached 14: The lower limit frequency is reached 15: Undervoltage status output 16: Communication settings 17: Timer output 18: Reverse running	1	☆

Function code	Name	Description (setting range)	Factory Default	Change
P6-02	Y1 output selection	19: Reserved 20: Set length reached 21: Torque limited 22: Current 1 arrives 23: Frequency 1 arrives 24: Module temperature reached 25: Dropping 26: Cumulative power-on time arrives 27: Timed arrival output 28: The running time has arrived 29: Set count value reached 30: The specified count value arrives 31: Motor 1, Motor 2 indication 32: Brake control output 33: Running at zero speed 2 34: Frequency level detection PDT2 arrival 35: Zero current state 36: Software current overrun 37: The lower limit frequency is reached, and the output is also output when stopped 38: Alarm output 39: Reserved 40: AI1 input overrun 41: Reserved 42: reserved 43: Frequency reached 2 44: Current reaches 2 45: Fault output	1	☆
P6-03	Y2 output selection (optional accessory IO1 support function)		1	☆
P6-04	FM terminal output mode selection	0: Pulse output (FMP) 1: Open collector switch output (FMR)	0	☆
P6-05	FMR output selection	Same as Y1 output selection	0	☆

Function code	Name	Description (setting range)	Factory Default	Change
P6-09	AO1 output selection	0: Running frequency 1: Set frequency 2: Output current (100% corresponds to twice the rated current of the motor) 3: Output power (100% corresponds to twice the rated power of the motor) 4: Output voltage (100% corresponds to 1.2 times the rated voltage of the inverter) 5: Analog AI1 input value 6: Analog AI2 input value 7: Communication settings 8: Output torque 9: length 10: Count value 11: Motor speed 12: Bus voltage (0 to 3 times the rated voltage of the inverter) 13: Pulse input 14: Output current (100% corresponds to 1000.0A) 15: Output voltage (100.0% corresponds to 1000.0V) 16: Output torque (actual torque value - 2 times rated to 2 times rated)	0	☆
P6-10	AO2 output selection		0	☆
P6-11	FMP output selection		0	☆
P6-12	FMP output maximum frequency	0.01KHz ~ 100.00KHz	50.00	☆
P6-13	AO1 output lower limit	-100.0% ~ P6-15	0.0%	☆
P6-14	The lower limit corresponds to AO1 output	0.00V ~ 10.00V	0.00V	☆
P6-15	AO1 output upper limit	P6-13 ~ 100.0%	100.0%	☆
P6-16	The upper limit corresponds to AO1 output	0.00 ~ 10.00V	10.00V	☆
P6-17	AO2 output lower limit	-100.0% ~ P6-19	0.0%	☆

Function code	Name	Description (setting range)	Factory Default	Change
P6-18	The lower limit corresponds to the AO2 output	0.00V ~ 10.00V	0.00V	☆
P6-19	Ao2 output upper limit	P6-17 ~ 100.0%	100.0%	☆
P6-20	The upper limit corresponds to AO2 output	0.00 ~ 10.00V	10.00V	☆
P6-21	Main relay T pick-up delay	0.0s ~ 3600.0s	0.0s	☆
P6-22	Main relay R pick-up delay	0.0s ~ 3600.0s	0.0s	☆
P6-23	Y1 high level output delay	0.0s ~ 3600.0s	0.0s	☆
P6-26	Main relay T off delay	0.0s ~ 3600.0s	0.0s	☆
P6-27	Main relay R off delay	0.0s ~ 3600.0s	0.0s	☆
P6-28	Y1 low level output delay	0.0s ~ 3600.0s	0.0s	☆
Group P7: Accessibility and keyboard display				
P7-00	Jog running frequency	0.00Hz ~ Maximum frequency	6.00Hz	☆
P7-01	Jog acceleration time	0.0s ~ 3000.0s	10.0s	☆
P7-02	Jog deceleration time	0.0s ~ 3000.0s	10.0s	☆
P7-03	Acceleration time 2	0.0s ~ 3000.0s	10.0s	☆
P7-04	Deceleration time 2	0.0s ~ 3000.0s	10.0s	☆
P7-05	Acceleration time 3	0.0s ~ 3000.0s	10.0s	☆
P7-06	Deceleration time 3	0.0s ~ 3000.0s	10.0s	☆
P7-07	Acceleration time 4	0.0s ~ 3000.0s	10.0s	☆
P7-08	Deceleration time 4	0.0s ~ 3000.0s	10.0s	☆
P7-09	Hop Frequency 1	0.00Hz ~ Maximum frequency	0.00Hz	☆
P7-10	Hop Frequency 1 Amplitude	0.00Hz ~ Maximum frequency	0.00Hz	☆
P7-11	Hop Frequency 2	0.00Hz ~ Maximum frequency	0.00Hz	☆
P7-12	Hop Frequency 2 Amplitude	0.00Hz ~ Maximum frequency	0.00Hz	☆
P7-15	Forward and reverse dead time	0.0s ~ 3000.0s	0.0s	☆

Function code	Name	Description (setting range)	Factory Default	Change
P7-16	Keyboard Knob Accuracy	0: default mode 1: 0.1Hz 2: 0.5Hz 3: 1Hz 4: 2Hz 5: 4Hz 6: 5Hz 7: 8Hz 8: 10Hz 9:0.01Hz 10:0.05Hz	2	☆
P7-17	The frequency is lower than the lower limit frequency processing	0: run at the lower frequency limit 1: shutdown 2: Running at zero speed	0	☆
P7-18	Sag rate	0.0% ~ 100.0%	0.0%	☆
P7-19	Delay time for frequency lower than lower limit shutdown	0.0s ~ 600.0s	0.0s	☆
P7-20	Set cumulative operating time	0h ~ 65000h	0h	☆
P7-21	Jog priority	0: Invalid 1: Jog priority mode 1 2: Jog priority mode 2 1) When the user fails or the PID is lost, the jog is still valid 2) Stop mode and DC braking can be set	1	☆
P7-22	Frequency detection value (PDT1 level)	0.00Hz ~ Maximum frequency	50.00Hz	☆
P7-23	Frequency check hysteresis value (PDT1 hysteresis)	0.0% ~ 100.0%	5.0%	☆
P7-24	Frequency arrival detection width	0.0% ~ 100.0%	0.0%	☆
P7-25	Reserve	--	0	●
P7-26	Fan control	0: The fan keeps running 1: The fan runs when the inverter is running	1	★

Function code	Name	Description (setting range)	Factory Default	Change
P7-27	STOP/RESET function	0: Only valid in keyboard control 1: The stop or reset function is valid in all control modes	0	☆
P7-28	Quick /JOG key function selection	0: Forward jog 1: Forward and reverse switching 2: Reverse Jogging 3: Panel and remote control switching	0	★
P7-29	LED running display	0000 ~ 0xPFPF (hexadecimal number) 0000 to 0xPFPF Bit00: Running frequency 0001 Bit01: Set frequency 0002 Bit02: Bus voltage 0004 Bit03: Output voltage 0008 Bit04: Output current 0010 Bit05: Output power 0020 Bit06: DI input status 0040 Bit07: DO output status 0080 Bit08: AI1 voltage 0100 Bit09: AI2 voltage 0200 Bit10: PID setting value 0400 Bit11: PID feedback value 0800 Bit12: Count value 1000 Bit13: Length value 2000 Bit14: Load speed display 4000 Bit15: PLC stage 8000	H.441F	☆
P7-30	LED stop display	1 ~ 0x1PPF (hexadecimal number) Bit00: Set frequency 0001 Bit01: Bus voltage 0002 Bit02: DI input status 0004 Bit03: DO output status 0008 Bit04: AI1 voltage 0010 Bit05: AI2 voltage 0020 Bit06: PID setting value 0040 Bit07: PID feedback value 0080 Bit08: Count value 0100 Bit09: Length value 0200 Bit10: Load speed display 0400 Bit11: PLC stage 0800 Bit12: Input pulse frequency 1000 Bit13 ~ Bit15: Reserved	H.0043	☆

Function code	Name	Description (setting range)	Factory Default	Change
P7-31	Load speed display factor	0.001 ~ 655.00	1.000	☆
P7-32	Radiator temperature	12℃ ~ 100℃	Measured value	●
P7-33	Cumulative power-on time	0h ~ 65535h	Measured value	●
P7-34	Cumulative running time	0h ~ 65535h	Measured value	●
P7-36	Current running timing enable selection	0: Not enabled 1: Enable	0	★
P7-37	Selection of timing source for the current run	0: Digital setting P7-38 1: AI1 2: AI2 (AI takes P7-38 as 100%)	0	★
P7-38	Current running time set value	0.0min ~ 6500.0min	0.0min	☆
P7-39	High level timing	0.0s ~ 6000.0s	2.0s	☆
P7-40	low level timing	0.0s ~ 6000.0s	2.0s	☆
P7-41	Activate the protection function	0: Invalid (start terminal command is valid and start directly) 1: Valid	1	☆
P7-43	Frequency reaches detection value 1	0.00Hz ~ P0-14	50.00Hz	☆
P7-44	Frequency detection value 1 arrival width	0.0% ~ 100.0%	0.0%	☆
P7-45	Current reaches detection value 1	0.0% ~ 300.0%	100.0%	☆
P7-46	Current detection value 1 arrival width	0.0% ~ 300.0%	0.0%	☆
P7-49	User password	0 ~ 65535	0	☆
P7-50	Whether the jump frequency is valid during acceleration and deceleration	0: invalid 1: Valid	0	☆
P7-51	Set the power-on arrival time	0h ~ 65530h	0h	☆

Function code	Name	Description (setting range)	Factory Default	Change
P7-53	Acceleration time 1/2 switching frequency point	0.00Hz ~ Maximum frequency (P0-14)	0.00Hz	☆
P7-54	Deceleration time 1/2 switching frequency point	0.00Hz ~ Maximum frequency (P0-14)	0.00Hz	☆
P7-55	Frequency detection value (PDT2 level)	0.00Hz ~ Maximum frequency (P0-14)	50.00Hz	☆
P7-56	Frequency detection PDT2 hysteresis value	0.0% ~ 100.0%	5.0%	☆
P7-57	Frequency reaches detection value 2	0.00Hz ~ Maximum frequency (P0-14)	50.00Hz	☆
P7-58	Frequency arrival detection 2 amplitude	0.0% ~ 100.0%	0.0%	☆
P7-59	Zero current detection value	0.0% ~ 300.0%	10.0%	☆
P7-60	Zero current detection delay time	0.01s ~ 300.00s	1.00s	☆
P7-61	Output current amplitude detection	20.0% ~ 400.0%	200.0%	☆
P7-62	Software overcurrent maximum allowable time	0s~6500.0s	0s	☆
P7-63	Current reaches detection value 2	20.0% ~ 300.0%	100.0%	☆
P7-64	Current arrival detection 2 amplitude	0.0% ~ 300.0%	0.0%	☆
P7-65	LED running display parameter 2	0x0 ~ 0x1PF Bit00: Target torque% 0001 Bit01: Output torque% 0002 Bit02: Pulse input pulse frequency (KHz) 0004 Bit03: DI5 high-speed pulse sampling linear speed (m/min) 0008 Bit04: Motor speed (rmp) 0010 Bit05: AC incoming line current (A) 0020 Bit06: Cumulative running time (h) 0040		

Function code	Name	Description (setting range)	Factory Default	Change
		Bit07: Current running time (min) 0080 Bit08: Cumulative power consumption (kWh) 0100 Bit09 ~ Bit15: Reserved		
P7-67	AI1 input voltage lower limit	0.00V ~ P7-68	2.00V	☆
P7-68	AI1 input voltage upper limit	P7-67 ~ 11.00V	8.00V	☆
P7-69	Module temperature reached	0℃ ~ 90℃	70℃	☆
P7-70	Output power display correction factor	0.001 ~ 3.000	1.000	☆
P7-71	Linear velocity display correction factor	Linear speed=P7-71*Number of HDI pulses sampled per second/PB-07	1.000	☆
P7-72	Cumulative power consumption (kWh)	0 ~ 65535	Measured value	●
P7-73	Performance software version	Performance software version number	#.#	●
P7-74	Functional software version	Function software version number	#.#	●
P7-75	Enhanced function parameter display selection	0: Hide enhanced function parameter group: A0 ~ A3, B0 ~ B5 1: Display enhanced function parameter group: A0 ~ A3, B0 ~ B5	0	☆
P7-76	Motor speed display correction factor	0.0010 ~ 3.0000	1.0000	☆
Group P8: Communication parameters				
P8-00	Baud rate setting	0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS	5	☆

Function code	Name	Description (setting range)	Factory Default	Change
P8-01	Data Format	0: No parity <8,N,2> 1: Even parity <8,E,1> 2: odd parity <8,O,1> 3: No parity 1<8,N,1>	0	☆
P8-02	Comunication address	0 ~ 247 (0 is the broadcast address)	1	☆
P8-03	Response time	0ms ~ 30ms	2ms	☆
P8-04	Communication timeout	0ms ~ 30ms	0.0s	☆
P8-05	Communication format selection	0: Standard ModbusRTU protocol 1: Non-standard ModBusRTU protocol	0	☆
P8-06	Background software monitoring function	0: Disable, default 485 communication function 1: On, the background software monitoring function, the 485 communication function cannot be used at this time	0	☆
Group P9: Fault and Protection				
P9-00	Motor overload protection selection	0: Disable 1: Allow	1	☆
P9-01	Motor overload protection gain	0.10~10.00	1.00	☆
P9-02	Motor overload warning coefficient (%)	50% ~ 100%	80%	☆
P9-03	Overvoltage Stall Protection Gain	000 ~ 100	030	☆
P9-04	Overvoltage stall protection voltage	200.0 ~ 1200.0V	760.0V	★
P9-05	VF Overcurrent Stall Protection Gain	0 ~ 100	20	☆
P9-06	VF Overcurrent Stall Protection Current	50% ~ 200%	150%	★
P9-07	VF field weakening area current stall protection factor	50% ~ 200%	100%	★

Function code	Name	Description (setting range)	Factory Default	Change
P9-08	Overvoltage stall allowable rise limit value	0.0% ~ 50.0%	10.0%	☆
P9-11	Fault automatic reset times	0 ~ 20	0	☆
P9-12	Fault relay action selection during automatic fault reset	0: no action 1: Action	0	☆
P9-13	Fault automatic reset interval time	0.1s ~ 100.0s	1.0s	☆
P9-14	Input phase loss enable selection	0: invalid 1: Valid	1	☆
P9-15	Output phase loss enable selection	0: invalid 1: Valid	1	☆
P9-16	Power-on to ground short-circuit protection selection	0: invalid 1: Valid	1	☆
P9-17	Undervoltage fault automatic reset selection	0: Manual reset is required after undervoltage fault 1: After the undervoltage fault, the fault will be reset by itself according to the bus voltage	0	☆
P9-18	Overvoltage suppression mode selection	0: invalid 1: Overvoltage suppression mode 1 2: Overvoltage suppression mode 2	1	★
P9-19	Overexcitation active state selection	0: invalid 1: Only the deceleration process is valid 2: The constant speed and deceleration process is valid during running	2	★
P9-20	Overvoltage suppression mode 2 limit value	1.0% ~ 150.0%	10.00%	★
P9-22	Fault protection action 1	0 ~ 22202; Units place: Motor overload - Err14 0: Free parking	00000	☆

Function code	Name	Description (setting range)	Factory Default	Change
		1: stop according to the stop mode 2: keep running Ten: reserved Hundreds place: input phase loss-Err23 Thousands place: output phase loss-Err24 Ten thousand: parameter read and write exception - Err25		
P9-23	Fault protection action 2	0 ~ 22222; Ones place: Communication failure - Err27 0: Free parking 1: stop according to the stop mode 2: keep running Tens place: External fault - Err28 Hundreds place: excessive speed deviation fault - Err29 Thousands: User-defined fault 1-Err30 Ten thousand: user-defined fault 2-Err31	00000	☆
P9-24	Fault protection action 3	0 ~ 22222; Ones place: PID feedback lost during runtime - Err32 0: Free parking 1: stop according to the stop mode 2: keep running Tens place: load loss fault - Err34 Hundreds place: software overcurrent - Err16 Thousands place: The current continuous running time reaches -Err39 Ten thousand: the running time reaches - Err40	00000	☆
P9-26	Continue to run frequency selection in case of failure	0: run at the current operating frequency 1: run at the set frequency 2: run at the upper limit frequency 3: Run at the lower frequency limit 4: Run at the standby frequency setting value P9-27	1	☆
P9-27	Abnormal standby frequency set	0.0% ~ 100.0%	100%	☆

Function code	Name	Description (setting range)	Factory Default	Change
P9-28	Drop load protection option	0: invalid 1: Valid	0	☆
P9-29	Drop load detection level	0.0% ~ 80.0%	20.0%	★
P9-30	Load drop detection time	0.0s ~ 100.0s	5.0s	☆
P9-31	Excessive speed deviation detection value	0.0% ~ 100.0%	20.0%	☆
P9-32	Excessive speed deviation detection time	0.0s ~ 100.0s	0.0s	☆
P9-33	Overspeed detection value	0.0% ~ 100.0%	20.0%	☆
P9-34	Overspeed detection time	0.0s ~ 100.0s	2.0s	☆
P9-35	Motor overload protection current coefficient	100% ~ 200%	100%	☆
Group PA: PID function				
PA-00	PID setting source	0: PID function code PA-01 1: Ai1 2: Ai2 3: Communication given 4: PULSE given 5: Multi segment instruction given 6: Up/Down modification PA-01 (effective when P0-06=6)	0	☆
PA-01	PID digital setting	0.0 ~ 100.0%	50.0%	☆
PA-02	PID given change time	0.00s ~ 650.00s	0.00s	☆
PA-03	PID feedback source	0: Ai1 1: Ai2 2: AI1-AI2 3: Communication given 4: PULSE given 5: AI1+AI2 6: MAX (| AI1 |, | AI2 |) 7: MIN (| AI1 |, | AI2 |)	0	☆
PA-04	PID action direction	0: Forward action 1: Reverse action	0	☆
PA-05	PID setting feedback range	0 ~ 65535	1000	☆

Function code	Name	Description (setting range)	Factory Default	Change
PA-06	Proportional gain P	0.0 ~ 100.0	20.0	☆
PA-07	Integral time I	0.01s ~ 10.00s	2.00s	☆
PA-08	Differential time D	0.000s ~ 10.000s	0.000s	☆
PA-09	PID reverse cutoff frequency	0.00 ~ Maximum frequency (P0-14)	0.00Hz	☆
PA-10	Deviation limit	0.0% ~ 100.0%	0.0%	☆
PA-11	Differential clipping	0.00% ~ 100.00%	0.0%	☆
PA-12	PID feedback filter time	0.00 ~ 60.00s	0.00s	☆
PA-13	PID feedback loss detection value	0.00 ~ 60.00s	0.00s	☆
PA-14	PID feedback loss detection time	0.0s ~ 3600.0s	0s	☆
PA-18	Proportional gain P2	0.0 ~ 100.0	20.0	☆
PA-19	Integration time I2	0.01s ~ 10.00s	2.00s	☆
PA-20	Differential time D2	0.000s ~ 10.000s	0.000s	☆
PA-21	PID parameter switching conditions	0: Do not switch 1: DI terminal 2: Automatically switch according to the deviation	0	☆
PA-22	PID parameter switching deviation 1	0.0% ~ PA-23	20.0%	☆
PA-23	PID parameter switching deviation 2	PA-22 ~ 100.0%	80.0%	☆
PA-24	PID initial value	0.0% ~ 100.0%	0.0%	☆
PA-25	PID initial value hold time	0.00s ~ 650.00s	0.00s	☆
PA-26	Twice output deviation positive maximum value	0.00% ~ 100.00%	1.00%	☆
PA-27	Twice output deviation reverse maximum value	0.00% ~ 100.00%	1.00%	☆
PA-28	PID integral properties	Units: Integral separation 0: invalid; 1: Valid Tens place: output to the limit value, whether to stop integration	00	☆

Function code	Name	Description (setting range)	Factory Default	Change
PA-28	PID integral properties	0: Continue points; 1: Stop integration	00	☆
PA-29	PID shutdown operation	0: stop and do not operate 1: Compute at stop	0	☆
Group Pb: Swing Frequency, Fixed Length and Count				
Pb-00	Swing setting method	0: Relative to the central frequency 1: Relative to the maximum frequency	0	☆
Pb-01	Swing frequency amplitude	0.0% ~ 100.0%	0.0%	☆
Pb-02	Jump frequency amplitude	0.0% ~ 50.0%	0.0%	☆
Pb-03	Swing frequency cycle	0.1s ~ 3000.0s	10.0s	☆
Pb-04	Triangular wave rising time coefficient	0.1% ~ 100.0%	50.0%	☆
Pb-05	Set length	0m ~ 65535m	1000m	☆
Pb-06	Actual length	0m ~ 65535m	0m	☆
Pb-07	Number of pulses per meter	0.1 ~ 6553.5	100.0	☆
Pb-08	Set count value	1 ~ 65535	1000	☆
Pb-09	Designated count value	1 ~ 65535	1000	☆
Group PC: Multi-segment instruction and simple PLC function				
PC-00	Multi-speed 0	-100.0% ~ 100.0%	0.0%	☆
PC-01	Multi-speed 1	-100.0% ~ 100.0%	0.0%	☆
PC-02	Multi-speed 2	-100.0% ~ 100.0%	0.0%	☆
PC-03	Multi-speed 3	-100.0% ~ 100.0%	0.0%	☆
PC-04	Multi-speed 4	-100.0% ~ 100.0%	0.0%	☆
PC-05	Multi-speed 5	-100.0% ~ 100.0%	0.0%	☆
PC-06	Multi-speed 6	-100.0% ~ 100.0%	0.0%	☆
PC-07	Multi-speed 7	-100.0% ~ 100.0%	0.0%	☆
PC-08	Multi-speed 8	-100.0% ~ 100.0%	0.0%	☆
PC-09	Multi-speed 9	-100.0% ~ 100.0%	0.0%	☆

Function code	Name	Description (setting range)	Factory Default	Change
PC-10	Multi-speed 10	-100.0% ~ 100.0%	0.0%	☆
PC-11	Multi-speed 11	-100.0% ~ 100.0%	0.0%	☆
PC-12	Multi-speed 12	-100.0% ~ 100.0%	0.0%	☆
PC-13	Multi-speed 13	-100.0% ~ 100.0%	0.0%	☆
PC-14	Multi-speed 14	-100.0% ~ 100.0%	0.0%	☆
PC-15	Multi-speed 15	-100.0% ~ 100.0%	0.0%	☆
PC-16	PLC operation mode	0: Stop at the end of a single operation 1: Hold the final value for a single run 2: keep looping	0	☆
PC-17	PLC power-down memory selection	0: No memory when power off and no memory when stopped 1: Memory when power off and no memory when stopped 2: No memory when power off and memory when shut down 3: Power-down memory and shutdown memory	0	☆
PC-18	Running time of simple PLC multi-speed 0	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-19	Acceleration/deceleration time of simple PLC multi-speed 0	0 ~ 3	0	☆
PC-20	Running time of simple PLC multi-speed 1	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-21	Acceleration/deceleration time of simple PLC multi-speed 1	0 ~ 3	0	☆
PC-22	Running time of simple PLC multi-speed 2	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-23	Acceleration/deceleration time of simple PLC multi-speed 2	0 ~ 3	0	☆

Function code	Name	Description (setting range)	Factory Default	Change
PC-24	Running time of simple PLC multi-speed 3	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-25	Acceleration/deceleration time of simple PLC multi-speed 3	0 ~ 3	0	☆
PC-26	Running time of simple PLC multi-speed 4	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-27	Acceleration/deceleration time of simple PLC multi-speed 4	0 ~ 3	0	☆
PC-28	Running time of simple PLC multi-speed 5	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-29	Acceleration/deceleration time of simple PLC multi-speed 5	0 ~ 3	0	☆
PC-30	Running time of simple PLC multi-speed 6	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-31	Acceleration/deceleration time of simple PLC multi-speed 6	0 ~ 3	0	☆
PC-32	Running time of simple PLC multi-speed 7	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-33	Acceleration/deceleration time of simple PLC multi-speed 7	0 ~ 3	0	☆
PC-34	Running time of simple PLC multi-speed 8	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-35	Acceleration/deceleration time of simple PLC multi-speed 8	0 ~ 3	0	☆
PC-36	Running time of simple PLC multi-speed 9	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-37	Acceleration/deceleration time of simple PLC multi-speed 9	0 ~ 3	0	☆

Function code	Name	Description (setting range)	Factory Default	Change
PC-38	Running time of simple PLC multi-speed 10	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-39	Acceleration/deceleration time of simple PLC multi-speed 10	0 ~ 3	0	☆
PC-40	Running time of simple PLC multi-speed 11	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-41	Acceleration/deceleration time of simple PLC multi-speed 11	0 ~ 3	0	☆
PC-42	Running time of simple PLC multi-speed 12	0.0s(h) ~ 6500.0s(h)	0.0s(h)	☆
PC-43	Acceleration/deceleration time of simple PLC multi-speed 12	0 ~ 3	0	☆
PC-44	Acceleration/deceleration time of simple PLC multi-speed 13	0.0 ~ 6500.0	0	☆
PC-45	Running time of simple PLC multi-speed 14	0~3 (respectively representing acceleration and deceleration time 1~4)	0.0s(h)	☆
PC-46	Acceleration/deceleration time of simple PLC multi-speed 14	0.0 ~ 6500.0	0	☆
PC-47	Running time of simple PLC multi-speed 15	0~3 (respectively representing acceleration and deceleration time 1~4)	0.0s(h)	☆
PC-48	Acceleration/deceleration time of simple PLC multi-speed 15	0.0 ~ 6500.0	0	☆
PC-49	Running time of simple PLC multi-speed 15	0~3 (respectively representing acceleration and deceleration time 1~4)	0.0s(h)	☆
PC-50	Time unit of multi-speed	0: s (second) 1:h (hour)	0	☆
PC-51	Multi-speed priority mode selection	0: Multi-speed does not have priority 1: Multi-speed priority	1	☆

Function code	Name	Description (setting range)	Factory Default	Change
PC-52	Multi-speed priority acceleration and deceleration time selection	0: Acceleration and deceleration time 1 1: Acceleration and deceleration time 2 2: Acceleration and deceleration time 3 3: Acceleration and deceleration time 4	0	☆
PC-53	Multi-speed PC-00 ~ PC-15 unit selection	0: % 1: Hz	0	☆
PC-55	Multi-segment instruction 0 given mode	0: Function code PC-00 given 1: AI1 2: AI2 3: PULSE pulse 4: PID 5: Preset frequency given (P0-11), UP/DOWN can be modified	0	☆
Group PD: Torque control				
PD-00	Torque command source selection	0: Digital setting (PD-01) 1: AI1 2: AI2 3: Communication given 4: PULSE pulse frequency setting 5: MIN (AI1, AI2) 6: MAX (AI1, AI2) (1-6 option full scale corresponds to PD-01)	0	★
PD-01	Torque digital given	-200.0% ~ 200.0%	150.0%	☆
PD-03	Torque control positive direction maximum frequency	0.00Hz ~ Maximum frequency (P0-14)	50.00Hz	☆
PD-04	Torque control reverse direction maximum frequency	0.00Hz ~ Maximum frequency (P0-14)	50.00Hz	☆
PD-06	Torque command filter time	0.00s ~ 10.00s	0.00s	☆
PD-07	Torque mode frequency acceleration time	0.0s ~ 1000.0s	10.0s	☆

Function code	Name	Description (setting range)	Factory Default	Change
PD-08	Torque mode frequency deceleration time	0.0s ~ 1000.0s	10.0s	☆
PD-10	Speed/torque mode selection	0: Speed mode 1: Torque mode	0	★
Group PE: AI multi-point curve setting				
PE-00	Curve 1 minimum input	-10.00V ~ PE-02	0.00V	☆
PE-01	Curve 1 minimum input corresponding setting	-100.0% ~ 100.0%	0.0%	☆
PE-02	Curve 1 Knee 1 Input	PE-00 ~ PE-04	3.00V	☆
PE-03	Curve 1 inflection point 1 input corresponding setting	-100.0% ~ 100.0%	30.0%	☆
PE-04	Curve 1 Knee 2 Input	PE-02 ~ PE-06	6.00V	☆
PE-05	Curve 1 inflection point 2 input corresponding setting	-100.0% ~ 100.0%	60.0%	☆
PE-06	Curve 1 maximum input	PE-04 ~ 10.00	10.00V	☆
PE-07	Curve 1 maximum input corresponding setting	-100.0% ~ 100.0%	100.0%	☆
PE-08	Curve 2 minimum input	-10.00 ~ PE-10	0.00V	☆
PE-09	Curve 2 minimum input corresponding setting	-100.0% ~ 100.0%	0.0%	☆
PE-10	Curve 2 Knee 1 Input	PE-08 ~ PE-12	3.00V	☆
PE-11	Curve 2 inflection point 1 input corresponding setting	-100.0% ~ 100.0%	30.0%	☆
PE-12	Curve 2 Knee 2 Input	PE-10 ~ PE-14	6.00V	☆
PE-13	Curve 2 inflection point 2 input corresponding setting	-100.0% ~ 100.0%	60.0%	☆
PE-14	Curve 2 maximum input	PE-12 ~ 10.00V	10.00V	☆
PE-15	Curve 2 maximum input corresponding setting	-100.0% ~ 100.0%	100.0%	☆
PE-24	AI1 set jump point	-100.0% ~ 100.0%	0.0%	☆
PE-25	AI1 sets the jump range	0.0% ~ 100.0%	0.5%	☆
PE-26	AI2 set jump point	-100.0% ~ 100.0%	0.0%	☆
PE-27	AI2 set jump range	0.0% ~ 100.0%	0.5%	☆

Function code	Name	Description (setting range)	Factory Default	Change
Group PF: Manufacturer parameters				
PF.00	Factory password	0 ~ 65535	*****	☆
Group A0: Second motor parameter setting				
A0-00	Motor selection	1: Motor No. 1 2: Motor No. 2	1	★
A0-01	The second motor control mode	1: Open loop vector control (speed sensorless vector) 2: VF Control	2	★
A0-02	Second motor acceleration and deceleration time selection	0: Consistent with the first motor 1: Acceleration and deceleration time 1 2: Acceleration and deceleration time 2 3: Acceleration and deceleration time 3 4: Acceleration and deceleration time 4	0	☆
Group A1: Second Motor Parameters				
A1-00	Motor parameter tuning	0: No function 1: Static tuning 2: Dynamic full tuning	0	★
A1-01	Motor 2 rated power	0.1Kw ~ 1000.0Kw	Model is determined	★
A1-02	Motor 2 rated voltage	1V ~ 1500V	380V	★
A1-03	Motor 2 Number of motor poles	2 to 64	Model is determined	●
A1-04	Motor 2 rated current	0.01A ~ 600.00A(Motor rated power<=30.0KW) 0.1A ~ 6000.0A(Motor rated power>30.0KW)	A1-01 OK	★
A1-05	Motor 2 rated frequency	0.01Hz ~ Maximum frequency (P0-14)	50.00Hz	★
A1-06	Motor 2 rated speed	1rpm ~ 60000rpm	A1-01 OK	★

Function code	Name	Description (setting range)	Factory Default	Change
A1-07	Motor 2 no-load current	0.01A ~ A1-04 (Motor rated power<=30.0KW) 0.1A ~ A1-04 (Motor rated power>30.0KW)	A1-01 OK	★
A1-08	Motor 2 stator resistance	0.001ohm ~ 65.535ohm	Model is determined	★
A1-09	Motor 2 rotor resistance	0.001ohm ~ 65.535ohm	Model is determined	★
A1-10	Motor 2 mutual inductance	0.1mH ~ 6553.5mH	Model is determined	★
A1-11	Motor 2 leakage inductance	0.01mH ~ 655.35mH	Model is determined	★
A1-12	Acceleration at Dynamic Full Tuning	1.0s ~ 600.0s	10.0s	☆
A1-13	Deceleration at dynamic full tuning	1.0s ~ 600.0s	10.0s	☆
Group A2: Second motor VF parameter setting				
A2-00	Torque boost	0.0% ~ 30.0%	0.0%	☆
A2-01	Oscillation suppression gain	0 ~ 100	Model is determined	☆
Group A3: Second motor vector control parameters				
A3-00	Switching frequency P1	0.00Hz ~ A3-02	5.00Hz	☆
A3-02	Switching frequency P2	A3-00 ~ P0-14	10.00Hz	☆
A3-04	Low frequency speed proportional gain	0.1 ~ 10.0	4.0	☆
A3-05	Low frequency speed integration time	0.01s ~ 10.00s	0.50s	☆
A3-06	High frequency speed proportional gain	0.1 ~ 10.0	2.0	☆
A3-07	High frequency speed integration time	0.01s ~ 10.00s	1.00s	☆
A3-08	Speed loop integral attribute selection	0: Points take effect 1: Integral separation	0	★
A3-11	Torque current regulator Kp	0 ~ 30000	2000	☆
A3-12	Torque current regulator Ki	0 ~ 30000	1300	☆

Function code	Name	Description (setting range)	Factory Default	Change
A3-13	Excitation current regulator Kp	0 ~ 30000	2000	☆
A3-14	Excitation current regulator Ki	0 ~ 30000	1300	☆
A3-15	Flux Brake Gain	0~200	0	☆
A3-16	Field weakening torque correction factor	50%~200%	100%	☆
A3-17	Slip Compensation Coefficient	50% ~ 200%	100%	☆
A3-18	Speed loop feedback filter time constant	0.000s ~ 1.000s	0.015s	☆
A3-19	Speed loop output filter time constant	0.000s ~ 1.000s	0.000s	☆
A3-20	Electric torque upper limit source	0: P3-21 2: AI2 1: AI1 (analog range corresponds to P3-21) 3: Communication given 4: PLUSE given	0	☆
A3-21	Electric torque upper limit	0.0% ~ 200.0%	150.0%	☆
A3-22	Braking torque upper limit source	0: P3-23 2: AI2 1: AI1 (analog range corresponds to P3-23) 3: Communication given 4: PLUSE given	0	☆
A3-23	Braking torque upper limit	0.0% ~ 200.0%	150%	☆
Group B0: System parameters				
B0-00	Function code read-only selection	0: invalid 1: read only	0	☆
B0-01	LCD top menu display/LED second line display	0: output current 1: Motor speed 2: Load speed 3: Output voltage 4: PID given 5: PID feedback	0	☆

Function code	Name	Description (setting range)	Factory Default	Change
B0-02	LCD language selection	0: Chinese 1: English	0	☆
B0-03	LED menu toggle selection	0: Disable 1: enable	0	☆
B0-04	Vector operating frequency display selection	0: real-time frequency 1: set frequency	0	☆
B0-05	Display selection during UP/Down adjustment	0: Display the set value 1: Display the current variable value	0	☆
Group B1: User function code customization				
B1-00	Clear custom function code selection	0: invalid 1: Valid	0	☆
B1-01	Custom function code 1	uP0-00 ~ uU1-xx	uP0-03	☆
B1-02	Custom function code 2	uP0-00 ~ uU1-xx	uP0-04	☆
B1-03	Custom function code 3	uP0-00 ~ uU1-xx	uP0-06	☆
B1-04	Custom function code 4	uP0-00 ~ uU1-xx	uP0-23	☆
B1-05	Custom function code 5	uP0-00 ~ uU1-xx	uP0-24	☆
B1-06	Custom function code 6	uP0-00 ~ uU1-xx	uP4-00	☆
B1-07	Custom function code 7	uP0-00 ~ uU1-xx	uP4-01	☆
B1-08	Custom function code 8	uP0-00 ~ uU1-xx	uP4-02	☆
B1-09	Custom function code 9	uP0-00 ~ uU1-xx	uP4-04	☆
B1-10	Custom function code 10	uP0-00 ~ uU1-xx	uP4-05	☆
B1-11	Custom function code 11	uP0-00 ~ uU1-xx	uP4-06	☆
B1-12	Custom function code 12	uP0-00 ~ uU1-xx	uP4-12	☆
B1-13	Custom function code 13	uP0-00 ~ uU1-xx	uP4-13	☆
B1-14	Custom function code 14	uP0-00 ~ uU1-xx	uP5-00	☆
B1-15	Custom function code 15	uP0-00 ~ uU1-xx	uP5-01	☆
B1-16	Custom function code 16	uP0-00 ~ uU1-xx	uP5-02	☆
B1-17	Custom function code 17	uP0-00 ~ uU1-xx	uP6-00	☆
B1-18	Custom function code 18	uP0-00 ~ uU1-xx	uP6-01	☆

Function code	Name	Description (setting range)	Factory Default	Change
B1-19	Custom function code 19	uP0-00 ~ uU1-xx	uP0-00	☆
B1-20	Custom function code 20	uP0-00 ~ uU1-xx	uP0-00	☆
B1-21	Custom function code 21	uP0-00 ~ uU1-xx	uP0-00	☆
B1-22	Custom function code 22	uP0-00 ~ uU1-xx	uP0-00	☆
B1-23	Custom function code 23	uP0-00 ~ uU1-xx	uP0-00	☆
B1-24	Custom function code 24	uP0-00 ~ uU1-xx	uP0-00	☆
B1-25	Custom function code 25	uP0-00 ~ uU1-xx	uP0-00	☆
B1-26	Custom function code 26	uP0-00 ~ uU1-xx	uP0-00	☆
B1-27	Custom function code 27	uP0-00 ~ uU1-xx	uP0-00	☆
B1-28	Custom function code 28	uP0-00 ~ uU1-xx	uP0-00	☆
B1-29	Custom function code 29	uP0-00 ~ uU1-xx	uP0-00	☆
B1-30	Custom function code 30	uP0-00 ~ uU1-xx	uP0-00	☆
B1-31	Custom function code 31	uP0-00 ~ uU1-xx	uP0-00	☆
Group B2: Optimize control parameters				
B2-00	Dead Time Compensation Enable Selection	0: no compensation 1: Compensation	1	☆
B2-01	PWM method	0: Asynchronous modulation 1: Synchronous modulation	0	☆
B2-02	PWM seven-segment/five-segment selection	0: 7 segments in the whole process 1: Seven-segment/five-segment automatic switching	0	☆
B2-03	CBC current limit enable selection	0: Disable 1: enable	1	☆
B2-04	Braking point	330.0V ~ 1200.0V	360.0V 690.0V	☆
B2-05	Undervoltage point	150.0V ~ 500.0V	200.0V 350.0V	☆
B2-06	Random PWM depth setting	0 ~ 6	0	☆

Function code	Name	Description (setting range)	Factory Default	Change
B2-07	0Hz operating mode selection	0: No current output; 1: Normal operation; 2: Output with stop DC braking current P1-16;	0	☆
B2-08	Low frequency carrier limitation mode selection	0: limit mode 0 1: Restricted Mode 1 2: Unlimited (the carrier of all frequency bands is the same)	0	☆
Group B3: AIAO correction parameters				
B3-00	AI1 shows voltage 1	-9.999V ~ 10.000V	3.000V	☆
B3-01	AI1 measured voltage 1	-9.999V ~ 10.000V	3.000V	☆
B3-02	AI1 shows voltage 2	-9.999V ~ 10.000V	8.000V	☆
B3-03	AI1 measured voltage 2	-9.999V ~ 10.000V	8.000V	☆
B3-04	AI2 shows voltage 1	-9.999V ~ 10.000V	3.000V	☆
B3-05	AI2 measured voltage 1	-9.999V ~ 10.000V	3.000V	☆
B3-06	AI2 shows voltage 2	-9.999V ~ 10.000V	8.000V	☆
B3-07	AI2 measured voltage 2	-9.999V ~ 10.000V	8.000V	☆
B3-12	AO1 target voltage 1	-9.999V ~ 10.000V	3.000V	☆
B3-13	AO1 measured voltage 1	-9.999V ~ 10.000V	3.000V	☆
B3-14	AO1 target voltage 2	-9.999V ~ 10.000V	8.000V	☆
B3-15	AO1 measured voltage 2	-9.999V ~ 10.000V	8.000V	☆
B3-16	AO2 target voltage 1	-9.999V ~ 10.000V	3.000V	☆
B3-17	AO2 measured voltage 1	-9.999V ~ 10.000V	3.000V	☆
B3-18	AO2 target voltage 2	-9.999V ~ 10.000V	8.000V	☆
B3-19	AO2 measured voltage 2	-9.999V ~ 10.000V	8.000V	☆
Group B4: Master-slave control parameters				
B4-00	Master-slave control enable selection:	0: Disable 1: Enable	0	★
B4-01	Master-slave selection:	0: Host 1: Slave	0	★

Function code	Name	Description (setting range)	Factory Default	Change
B4-02	Host sending frequency selection:	0: Running frequency 1: Target frequency	0	★
B4-03	Slave follow master command source selection	0: Do not follow 1: Follow	0	★
B4-04	Slave receive frequency coefficient	0.00% ~ 600.00%	100.00%	☆
B4-05	Slave receives torque coefficient	-10.00 ~ 10.00	1.00	☆
B4-06	Slave receives torque bias	-50.00% ~ 50.00%	0.00%	☆
B4-07	Frequency deviation threshold	0.20% ~ 10.00%	0.50%	☆
B4-08	Master-slave communication drop detection time	0.00s ~ 10.0s	0.1s	☆
Group B5: Brake function parameters				
B5-00	Brake control enable selection:	0: Disable 1: Enable	0	★
B5-01	brake release frequency	0.00Hz ~ 20.00Hz	2.50Hz	★
B5-02	Brake release frequency maintenance time	0.0s ~ 20.0s	1.0s	★
B5-03	Current limit value during holding brake	50.0% ~ 200.0%	120.0%	★
B5-04	Brake pull-in frequency	0.00Hz ~ 20.00Hz	1.50Hz	★
B5-05	Brake pull-in delay time	0.0s ~ 20.0s	0.0s	★
B5-06	Holding time of brake pull-in frequency	0.0s ~ 20.0s	1.0s	★
Group B6: Sleep wakeup function parameters				
B6-00	Hibernate selection	0: The sleep function is invalid 1: Digital input terminal DI controls sleep function 2: The sleep function is controlled by the PID setting value and feedback value 3: Control the sleep function according to the operating frequency	0	☆

Function code	Name	Description (setting range)	Factory Default	Change
B6-01	Sleep frequency	0.00Hz ~ P0-14	0.00Hz	☆
B6-02	Sleep delay	0.0s ~ 3600.0s	20.0s	☆
B6-03	Wake-up difference	0.0% ~ 100.0% When B6-00=3, the unit becomes Hz	10.0%	☆
B6-04	Wake up delay	0.0s ~ 3600.0s	0.5s	☆
B6-05	Sleep delay frequency output selection	0: PID automatic adjustment 1: Sleep frequency B6-01	0	☆

Function code	Name	Description (setting range)	Smallest unit	Change
Group U0: Fault logging parameters				
U0-00	Last failure type	00: No fault Err01: Inverter module protection Err04: Overcurrent during acceleration Err05: Overcurrent during deceleration Err06: Overcurrent during constant speed operation Err08: Overvoltage during acceleration Err09: Overvoltage during deceleration Err10: Overvoltage during constant speed operation Err12: Undervoltage fault Err13: Drive overload fault Err14: Motor overload fault Err15: Drive overheated Err17: Current detection failure Err20: Short circuit fault to ground Err23: Input phase loss fault Err24: output phase loss fault Err25: Eeprom operation failure Err27: Communication failure Err28: External fault Err29: The speed deviation is too large Err30: User-defined fault 1 Err31: User-defined fault 2	1	●
U0-01	Last failure type		1	●
U0-02	Types of first and second faults		1	●

Function code	Name	Description (setting range)	Smallest unit	Change
		Err33: Fast current limiting Err34: load drop fault Err32: PID feedback lost during runtime Err35: Input power failure Err37: parameter storage exception Err39: The running time has arrived Err40: Cumulative running time reached Err42: Switch the motor during operation Err46: Master-slave control communication dropped		
U0-03	Frequency of last failure		0.01Hz	●
U0-04	Current at last fault		0.01A	●
U0-05	Bus voltage at last fault		0.1V	●
U0-06	Input terminal status at the last fault		1	●
U0-07	Output terminal status at the last fault		1	●
U0-08	Last fault inverter status		1	●
U0-09	Running time at the last fault (starting time after power-on, minutes)		1min	●
U0-10	Running time at the last failure (time from running time, minutes)		1min	●
U0-13	Frequency at last failure		0.01Hz	●
U0-14	Current at previous fault		0.01A	●
U0-15	Bus voltage at previous fault		0.1V	●
U0-16	Input terminal at the previous fault		1	●
U0-17	Output terminal when the previous fault		1	●
U0-18	Last fault inverter status		1	●
U0-19	The running time of the previous fault (start timing after power-on, minutes)		1min	●
U0-20	Time of last failure (timed from runtime, minutes)		1min	●
U0-21	reserved variable		--	●
U0-22	reserved variable		–	●
U0-23	The frequency of the first and second faults		0.01Hz	●

Function code	Name	Smallest unit	Change
U0-24	Current at the first and second faults	0.01A	●
U0-25	Bus voltage at the first and second faults	0.1V	●
U0-26	Input terminal for the first and second faults	1	●
U0-27	Output terminal when the first and second faults	1	●
U0-28	Inverter status of previous and second faults	1	●
U0-29	The running time of the first and second faults (start timing after power-on, minutes)	1min	●
U0-30	The time of the first and second failures (timed from the running time, minutes)	1min	●
Group U1: Application Monitoring Parameters			
U1-00	Operating frequency (Hz)	0.01Hz	●
U1-01	Set frequency (Hz)	0.01Hz	●
U1-02	Bus voltage (V)	0.1V	●
U1-03	Output voltage (V)	1V	●
U1-04	Output current (A)	0.1A	●
U1-05	Output power (Kw)	0.1kW	●
U1-06	DI input status, hexadecimal number	1	●
U1-07	DO output status, hexadecimal number	1	●
U1-08	Voltage after AI1 correction	0.01V	●
U1-09	Voltage after AI2 correction	0.01V	●
U1-10	PID set value, PID set value (percentage)*PA-05	1	●
U1-11	PID feedback, PID feedback value (percentage)*PA-05	1	●
U1-12	Count value	1	●
U1-13	Length value	1	●
U1-14	Motor speed	rpm	●
U1-15	PLC stage, the current segment during multi-speed operation	1	●
U1-16	PULSE pulse input frequency	0.01kHz	●
U1-17	Feedback speed, the actual operating frequency of the motor	0.1Hz	●

Function code	Name	Smallest unit	Change
U1-18	P7-38 Remaining time of timing time	0.1Min	●
U1-19	AI1 voltage before correction	0.001V	●
U1-20	Voltage before AI2 correction	0.001V	●
U1-21	DI5 high-speed pulse sampling line speed, refer to P7-71 for use	1m/min	●
U1-22	Load speed display (set load speed when stopped), refer to P7-31 for use	customize	●
U1-23	The power-on time	1Min	●
U1-24	This running time	0.1Min	●
U1-25	PULSE pulse input frequency, different from U1-16 only in unit	1Hz	●
U1-26	Communication setting frequency value	0.01%	●
U1-27	Main frequency display	0.01Hz	●
U1-28	Auxiliary frequency display	0.01Hz	●
U1-29	Target torque, take the motor rated torque as 100%	0.1%	●
U1-30	Output torque, take the motor rated torque as 100%	0.1%	●
U1-31	Output torque, with the rated current of the inverter as 100%	0.1%	●
U1-32	Torque upper limit, the rated current of the inverter is 100%	0.1%	●
U1-33	VF separation target voltage	1V	●
U1-34	VF split output voltage	1V	●
U1-35	Reserve	—	●
U1-36	Motor serial number currently in use	1	●
U1-37	AO1 target voltage	0.01V	●
U1-38	AO2 target voltage	0.01V	●
U1-39	Inverter running status, 0: Stop, 1: Forward, 2: Reverse, 3: Fault	1	●
U1-40	Inverter current fault	1	●

Function code	Name	Smallest unit	Change
U1-41	Agent time remaining	1h	●
U1-42	AC incoming line current	0.1A	●
U1-43	PLC current phase remaining time	0.1	●
U1-47	Cumulative running time 1 (cumulative running time = U1-47 + U1-48)	1h	●
U1-48	Cumulative running time 2 (cumulative running time = U1-47 + U1-48)	1min	●

WARRANTY

❶ The company solemnly promises that users will enjoy the following warranty services from the date of purchase of products from our company (hereinafter referred to as the manufacturer).

❷ Since the product was purchased by the user from the manufacturer, enjoy the following three guarantee services:

- ⌑ Return, replacement and repair within 30 days of delivery:
- ⌑ Replacement and repair within 90 days of delivery:
- ⌑ Repair within 18 months of delivery:
- ⌑ Except when exporting abroad.

❸ This product enjoys lifetime paid service from the date of purchase by the user from the manufacturer.

❹ Disclaimer: Product failure caused by the following reasons is not covered by the manufacturer's free warranty service:

- ⌑ Failure caused by the user's use and operation in accordance with the requirements of the «Instruction Manual»:
- ⌑ Failure caused by the user to repair or modify the product without communicating with the manufacturer:
- ⌑ Failure caused by abnormal aging of the product due to poor user environment:
- ⌑ Failures caused by natural disasters such as earthquakes, fires, floods or abnormal voltages:
- ⌑ Damage to the product during transportation (the transportation method is specified by the customer, and the company assists in handling the cargo consignment procedures)

❺ Under the following conditions, manufacturers have the right not to provide warranty services:

- ⌑ When the manufacturer's product logo, trademark, nameplate, etc. are damaged or unrecognizable:
- ⌑ When the user fails to pay the purchase price in accordance with the signed contract:
- ⌑ The user intentionally conceals the manufacturer's after-sales service unit when the product is installed, wired, operated, maintained or otherwise improperly used

❻ For the service of return, replacement and repair, the company must return or return to the company, and it can only be returned or repaired after confirming the responsibility vested.

WARRANTY CARD

User information			
User name			
User address			
Postal code		Contact person	
Tel		Fax	
Machine type		Machine code	
Agent / Reseller Information			
Supplier			
Contact			
Tel		Delivery date	

CERTIFICATE OF QUALITY

QC test: _____

This product has been tested by our company's quality department, and its performance meets the standards, passes the inspection, and is approved to leave the factory.

Energy efficient , beautiful environment

SHENZHEN K-EASY AUTOMATION CO.,LIMITED

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