KD5800 Series

High performance vector
inverter

Simple manual

Index

Chapter 1 Safety Information and Precautions

1.1 Notes

### 1) Leakage protector RCD requirements

The equipment will generate large leakage current during operation. Please install a B-type leakage protector (RCD) on one side of the power supply.

When choosing a leakage protector (RCD), choose a dedicated RCD with measures to suppress higher harmonics, or a general-purpose RCD with a larger residual current.

2) Motor insulation inspection

Before using the motor , the motor insulation should be checked to prevent damage to the inverter due to the insulation failure of the motor winding.

The motor connection is separated from the inverter. It is recommended to use a 500V voltage megohmmeter, and the measured insulation resistance should not be less than 5M .

Input terminals   U V W

Voltage type megger

Ground
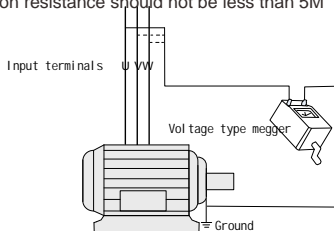
3) Motor's thermal protection

If the selected motor does not match the rated capacity of the inverter, especially when the rated power of the inverter is greater than the rated power of the motor, be sure to adjust the motor protection related parameter values in the inverter or install a thermal relay in front of the motor to protect the motor.

4) Operation above power frequency

The inverter provides an output frequency of 0Hz to 1000Hz. If the customer needs to run above 50Hz, please consider the bearing capacity of the mechanical device.

5) Vibration of mechanical devices

At some output frequencies, the inverter may encounter the mechanical resonance point of the load device, which can be avoided by setting the jump frequency parameter in the inverter.

6) About motor heating and noise

Because the output voltage is a PWM wave and contains certain harmonics, the temperature rise, noise and vibration of the motor will increase slightly compared with the power frequency operation.

7) When there are pressure-sensitive devices or capacitors for improving power factor on the output side

The output of the inverter is PWM wave, if the output side is equipped with a capacitor for improving power factor or a varistor for lightning protection, it is easy to cause instantaneous overcurrent of the inverter or even damage the inverter. Please do not use.
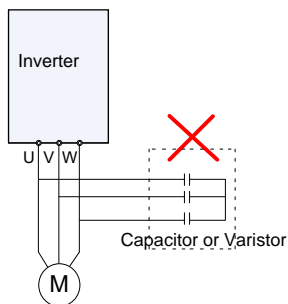
8) Switch devices such as contactors used at the input and output ends of the inverter

It is not allowed to use this contactor to control the start and stop of the inverter.

When the contactor must be used to control the start and stop of the inverter, the interval should not be less than one hour.

If there is a switch device such as a contactor between the output end and the motor, make sure that the inverter is not output, otherwise the modules in the inverter may be damaged.
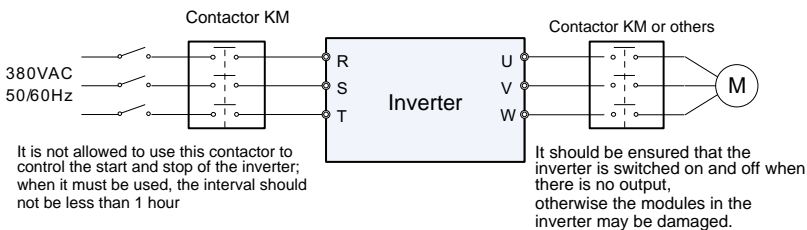
9) Use other than rated voltage

It is not suitable to use the inverter outside the allowable working voltage range specified in the manual, which may cause damage to the components in the inverter. If necessary, please use the corresponding step-up or step-down device to transform the power supply and input it to the inverter.

10) Can NOT change the three-phase input to two-phase input

Except for custom machines,like KD5800-ST series can 220V two-Phase input,380V 3-phase output

11) Lightning impulse protection

The customer should also install a lightning protection device at the front end of the inverter.

12) Altitude and derating use

Please contact our company for technical consultation.

Chapter 2 Product Information

2.1 Named nameplate

2.1.1 Named regulation
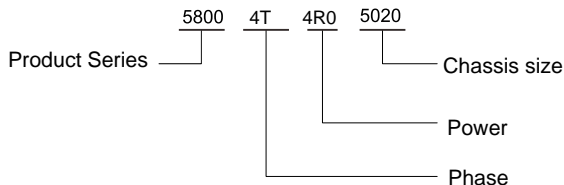
1. Inverter series: representing different series

2. Definition of power size: The number indicates the power size, ranging from 0.4-40OKW, G stands for general purpose machine, F stands for fan pump type

3. Definition of phase number: three-phase 380V is represented by 4T, single-phase 220V is represented by S, and three-phase 220V is represented by 2

4. Definition of shell model: according to the shell model used in this model

2.2 Name of each parts of KD5800

5800 series inverters are divided into plastic shell structure type and bare metal structure type, as shown in the following figure:
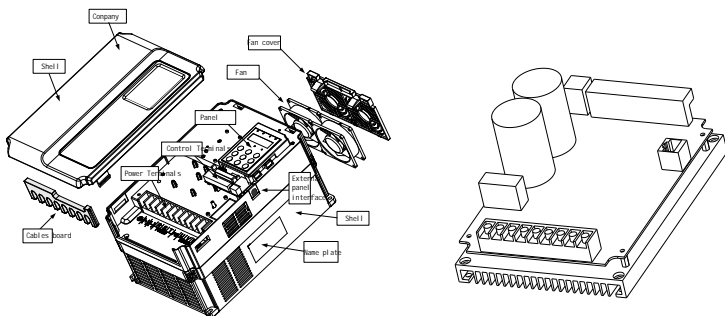
2.3 Basic technical specifications

Item		Specification	
Basic function	Max.frequency	Vector control:0 1000Hz;V/F Control:0 1000Hz	
	Carrier frequency	0.8kHz to 12kHz,Can be automatically adjusted 。	
	Input frq. resolution	Digital setting: 0.01Hz, Analog setting: Max. freq.x 0.025%(SVC)	
	Control method	Open Loop Vector Control(SVC) Closed Loop Vector Control(FVC) V/F Control	
	Starting torque	G Type: 0.5Hz/150%(SVC), 0Hz/180%(FVC) F Type: 0.5Hz/100%	
	Speed range	1：100 （SVC）	1：1000 （FVC）
	Steady speed accuracy	±0.5%（SVC）	±0.02%（FVC）
	Overload capacity	G type: 150% rated current for 60s; F-type: 120% rated current for 60s;	
	Torque boost	Automatic torque boost; manual torque boost 0.1%~30.0%	
	V/F Curve	Three ways: Linear type; multi-point type; N-th power V/F curve (1.2 power, 1.4 power, 1.6 power, 1.8 power, 2 power)	
	V/F Separation	Two ways: full separation, half separation	
	Acc. & Dec. curve	Linear or S-curve Acc.& Dec. 4 ways Acc.& Dec.time, the range:0.0~6500.0s	
	DC braking	DC braking frequency: 0.00Hz maximum frequency Braking time: 0.0s~36.0s, braking current: 0.0%~100.0%	
	Jog control	Jog frequency range: 0.00Hz ~ 1000Hz; The jog Acc& Dec. time is 0.Os 6500.0s.	
Operation	Command source	Operation panel given, Control terminal given, Serial communication port given. Switchable in a variety of ways.	
	Frequency source	Multiple frequency sources: digital given, analog voltage given, analog current given, serial port given. Switchable in a variety of ways	
	Auxiliary frequency source	10 auxiliary freq. sources. Auxiliary freq. fine-tuning and freq. synthesis can be flexibly realized	

Item		Specification
Operation	Input terminals	Standard: 7 digital input terminals, one of which supports high-speed pulse input up to 100kHz 2 analog input terminals, 1 only supports 0~10V voltage input, 1 supports 0~10V voltage input or 4~20mA current input Extensibility: 3 digital input terminals 1 analog input terminal, support -10V ~ 10V voltage input, and support PT100 / PT1000
	Output terminals	Standard: 1 high-speed pulse output terminal (open collector type is optional), Supporting square wave signal output from 0 to 100 kHz 1 digital output terminal. 1 relay output terminal. 1 analog output terminal, Support 0~20mA current output or 0~10V voltage output. Extensibility: 1 digital output terminal 1 relay output terminal. 1 analog output terminal, Support 0~20mA current output or 0~10V voltage output.
Display and Panel operation	LED display	Display parameters
	Key lock and function selection	Part or all of the keys can be locked, and the scope of action of some keys can be defined. to prevent misuse
	Protective function	Power-on motor short-circuit detection, input and output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheating protection, overload protection, etc.

Chapter 3 Installation guide

3.1 Inverter installation

3.1.1 Installation Environment

1) Ambient temperature: The ambient temperature has a great influence on the life of the inverter, and the operating ambient temperature of the inverter is not allowed to exceed the allowable

temperature range (-10 ~50).

2) Install the inverter on the surface of the flame-retardant object, and there should be enough space around to dissipate heat. When the inverter is working, it is easy to generate a lot of heat.

And install it vertically on the mounting bracket with screws.

3) Please install it in a place that is not easy to vibrate. Vibration should not be greater than 0.6G. Take special care to keep away from equipment such as punches.

4) Avoid installing in direct sunlight, damp and water droplets.

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

6) Avoid installing it in a place with oily, dusty and metallic dust.

7) The 5800 series plastic enclosure products are built-in products
and need to be installed in the final system. The final system should provide corresponding fireproof enclosures, electrical protective enclosures and mechanical protective enclosures, etc.,

and comply with local laws and regulations and relevant IEC standards.

3.1.2 Installation space requirements

5800 series inverters have different requirements for the reservation of surrounding installation space

according to different power levels, as shown in the following figure:

When 5800 series inverters dissipate heat, the heat is dissipated from bottom to top.
When multiple inverters work, they are usually installed side by side.
Where upper and lower row installations are required, the heat of the lower row inverter will cause the temperature of the upper row equipment to rise and cause failures,

and measures such as installing a heat insulation baffle should be taken.

3.1.3 Installation Precautions

Please pay attention to the following points when installing the 5800 series inverter:

1) The installation space should ensure that the inverter has enough cooling space.

Please consider the heat dissipation of other components in the cabinet when reserving space.

2) Please install the inverter vertically upwards, so that the heat can be dissipated upwards.
If there are multiple inverters in the cabinet, please install them side by side.

In the occasions that need to be installed up and down, install the heat insulation deflector.

3) The mounting bracket must be made of flame retardant material as the mounting bracket.

4) 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 Installation

3.2.1 Main circuit wiring
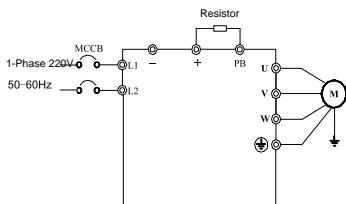
Pic.3-1 single phase 0.75~2.2kw wiring
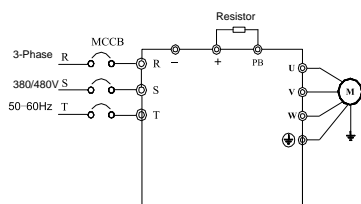
Pic.3-2 Three phase 0.75~30kw wiring
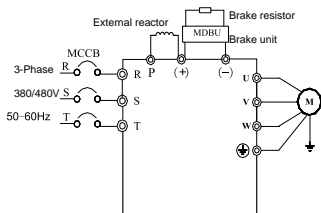
Pic.3-3 Three phase 37~400KW

3.2.2 Main circuit terminals description
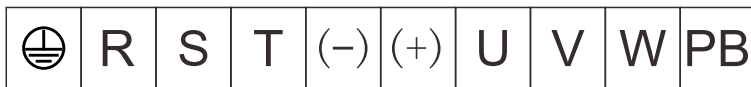
Pic.3-4   0.75~7.5kw Main wiring terminals
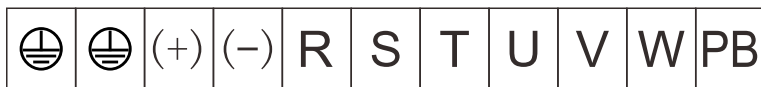
Pic.3-5   11~15kw Main wiring terminals

| R | S | T | + | PB | − | U | V | W | ⏚ |

Pic.3-6 18.5~30kw Main wiring terminals

| R | S | T | P1 | (+) | (−) | U | V | W | ⏚ |
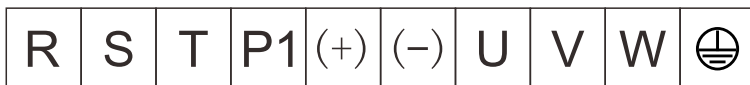
Pic.3-7 37~55kw Main wiring terminals

| ⏚ | R | S | T | P | + | − | U | V | W |

Pic.3-8 75~90kw Main wiring terminals

| R | S | T | ⏚ |

| − | P | + | U | V | W |
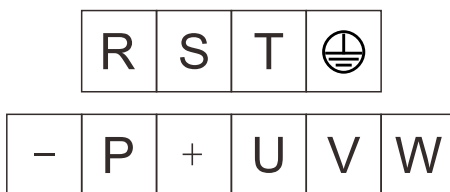
Pic.3-9 110~400kw main wiring terminals

Terminal	Name	Directions
R、S、T/L1、L2	Three-phase power input terminal	AC input three-phase power connection point, single-phase inverter R, S, T any two lines
+、PB	Brake resistor connection terminal	Brake resistor connection point
U、V、W	Inverter output terminal	Connecting a three-phase motor
⏚	Ground terminal	Ground terminal

Notice:

Asymmetrical motor cables are prohibited.

If the motor cable has a symmetrical ground conductor in addition to the conductive shield, ground the ground conductor at the inverter end and the motor end.

Route motor cables, input power cables, and control cables separately.

For single-phase input, the "T" terminal does not need to be wired.

3.2.3 Control terminals directions

Control terminals layout

485+	485-	+5V	DI1	DI2	DI3	DI4	DI5	DI6	DI7	COM

+10V	AI1	AI2	GND	AO1	DO1	FM	CME	COM	OP	+24V

Pic. 3-10 Control terminals layout

Category	Terminal symbol	Terminal name	Function Description
Power	+10V-GND	External +10V power supply	Provide +10V power supply to the outside, the maximum output current: 10mA used as power supply of external potentiometer, potentiometer resistance range: 1k ~ 5k .
	+24V-COM	External +24V power supply	Provide +24V power to the outside, used as power supply of digital input and output terminals and external sensor power supply, Maximum output current: 200mA.
	OP	External power input terminal	The factory default is connected to +24V When using external signals to drive DI1~DI5, the OP connect to external power supply. And disconnected from the +24V power terminal.
Analog input	AI1-GND	Analog input terminal 1	1. Input voltage range: DC 0V 10V 2. Input impedance: 22k
	AI2-GND	Analog input terminal 2	1. Input range: DC 0V~10V/4mA~20mA, Determined by the J8 jumper selection on the control board. 2. Input impedance: Voltage input is 22k, Current input is 500 .
Digital input	DI1-COM	Digital input 1	1. Optocoupler isolation, compatible with dual-type input 2. Input impedance: 2.4k
	DI2-COM	Digital input 2	

Category	Terminal symbol	Terminal name	Function Description
Digital input	DI3-COM	Digital input 3	3. Voltage range for level input: 9V~30V
	DI4-COM	Digital input 4	
	DI6-COM	Digital input 5	
	DI7-COM	Digital input 6	
	DI5-COM	High-speed pulse input terminal	In addition to the characteristics of DI1 to DI4, Also be used as a high-speed pulse input channel. Maximum input frequency: 100kHz
Analog output	AO1-GND	Analog output 1	The voltage or current output is determined by the J5 jumper selection on the control board. Output voltage range: 0V 10V Output current range: 0mA~20mA
Digital output	DO1-CME	Digital output 1	Optocoupler isolation, bipolar open collector output Output voltage range: 0V~24V Output current range: 0mA~50mA Note: The digital output ground CME is internally isolated from the digital input ground COM. But CME and COM have been externally shorted when leaving the factory (DO1 is driven by +24V by default). When DO1 wants to be driven by an external power supply, the external short connection between CME and COM must be disconnected.
	FM- COM	High-speed pulse output	Constrained by function code P5-00 "FM terminal output mode selection", When used as high-speed pulse output, the maximum frequency is up to 100kHz; When used as an open collector output, it is the same as the DO1 specification.
Relay output	T/A-T/B	Closed terminal	Contact drive capability: 25V Ac，3A，COSØ=0.4。 30V Dc，1A
	T/A-T/C	Normally open terminal	
Auxiliary	J12	I/O expansion card interface	28-pin terminal, interface with optional card I/O expansion card

Category	Terminal symbol	Terminal name	Function Description
interface	J3	PG card interface	Optional: OC, differential, resolver and other interfaces
	J7	External Panel interface	External keyboard
Communi cation Interface	485+ , 485-	Modbus	Modbus communication interface, Non-isolated output

3.2.4 Control loop wiring diagram

(Note: External brake unit above 18.5KW)
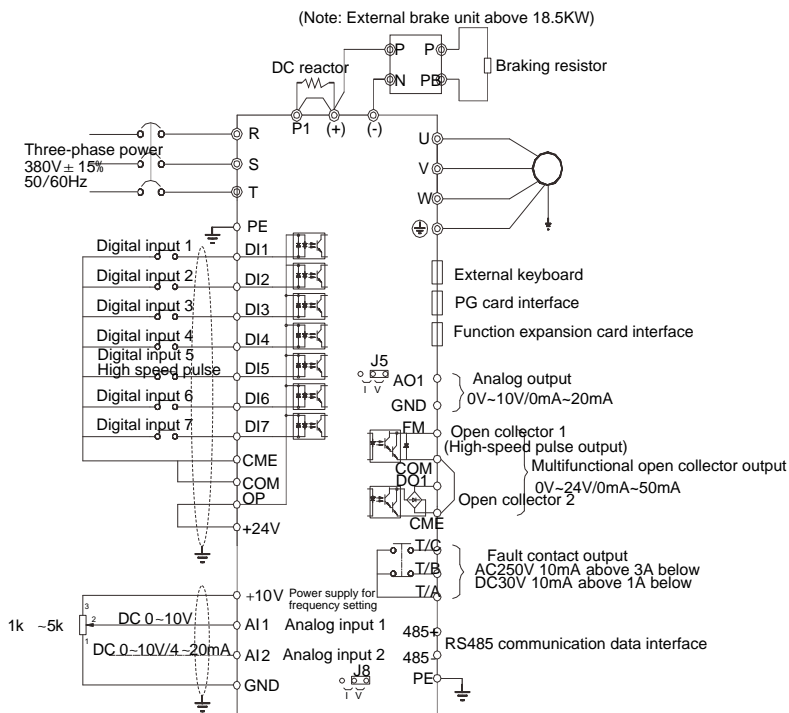
1) AI analog input terminal:
Because weak analog voltage signals are particularly susceptible to external interference, shielded cables are generally required, and the wiring distance should be as short as possible, not exceeding 20m, as shown in Pic. 3-11.
In some occasions where the analog signal is severely interfered, a filter capacitor or a ferrite core should be added on the analog signal source side, as shown in Pic. 3-12.
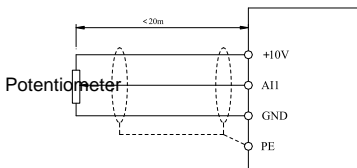
Pic.3-11 Wiring diagram of analog input terminals
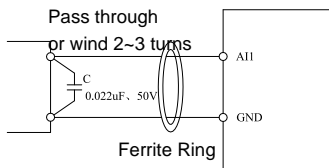
Pic.3-12 Analog input terminal processing wiring diagram

2）DI digital input terminal:

Generally, shielded cables are required, and the wiring distance should be as short as possible, not exceeding 20m.When using active drive, it is necessary to take necessary filtering measures

for the crosstalk of the power supply. It is recommended to use the contact control method.

◆ Sink connection method (NPN)
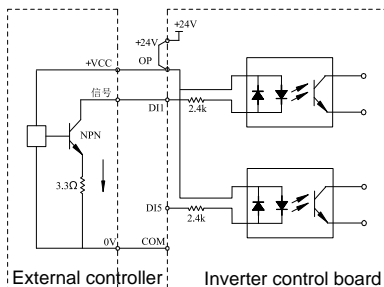
Pic.3-13 Sink connection method

This is one of the most common wiring methods. If an external power supply is used, the shorting piece between +24V and OP and the shorting piece between COM and CME must be removed, and the positive pole of the external power supply should be connected

to the OP, and the negative pole of the external power supply should be connected to the CME.

Note: In this connection mode, the DI terminals of different inverters cannot be used in parallel, otherwise it may cause DI malfunction;If the DI terminals need to be connected in parallel (between different inverters), a diode should be connected in series at the DI terminal (the anode should be connected to DI). The diode should meet the following requirements:

IF>10mA, UF<1V, as shown in the Pic.3-14 below.
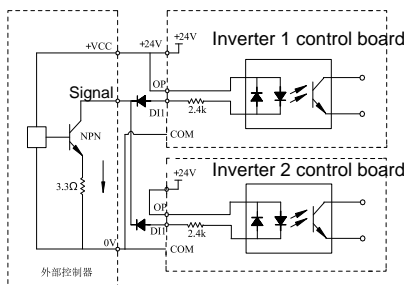
Pic.3-14 DI terminals of multiple inverters are connected in parallel with the leakage wiring method

◆ Source wiring method (PNP)
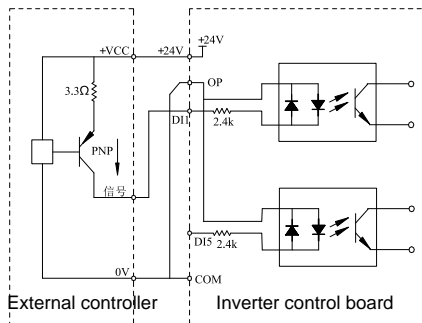
3-15 Source wiring method (PNP)

This wiring method must remove the short-circuit piece between +24V and OP, connect +24V and the common terminal of the external controller together, and connect OP and COM together at the same time.If an external power supply is used, the shorting piece between CME and COM

must also be removed.

Control signal output terminal wiring instructions

3) DO 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. Otherwise, it is easy to cause damage to the DC 24V power supply.

The driving capacity is not more than 50mA.
NOTE: Be sure to install the snubber diode with the correct polarity. As shown below.
Otherwise, when the digital output terminal has output, the DC 24V power supply will be burned

out immediately.
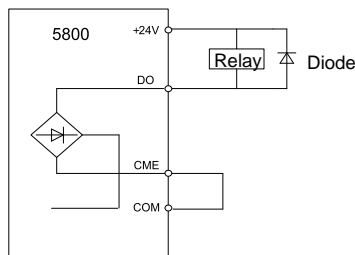
Pic.3-16 Digital output terminal wiring diagram

Chapter 4 Operation display

4.1 Introduction to operation and display interface

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 functional area are shown in the following figure:

Command source indicator
Light on: local control
Light off: panel control
Light flashing : remote control

Forward and reverse indicator
Light on: Reverse
Light off: Forward

Run lights

Tuning/Torque Control
Fault indicator

Data display area

Unit indicator

Increment key

Program key

Mode key

Shift key

Enter

Decrement key

Run key

Stop/Reset key

Multi-function selection key
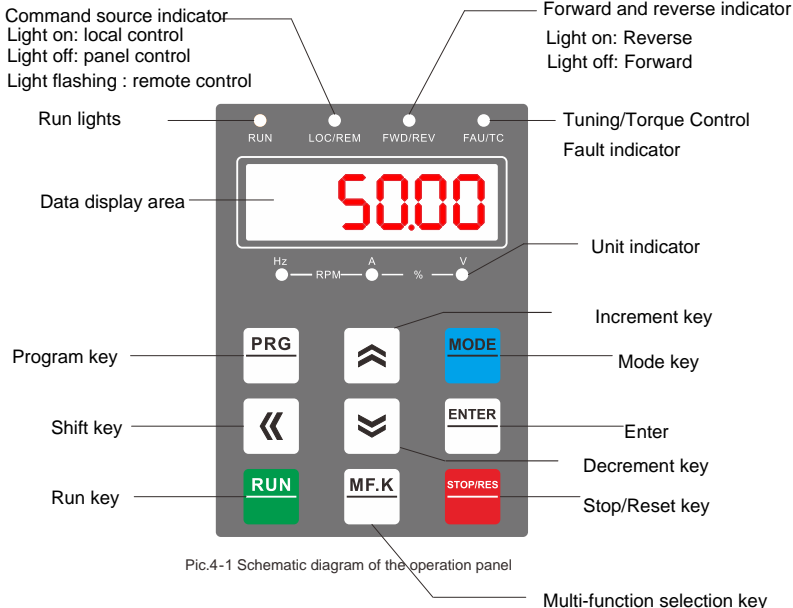
Pic.4-1 Schematic diagram of the operation panel

Function indicator description:

● RUN: When the light is on, Inverter is running, light is off, Inverter is in a stop state.
● LOC: Keypad operation, terminal operation
   and remote operation (communication control) Indicator light:

○ LOC: off	Panel start-stop control mode
● LOC: on	Terminal start-stop control mode
◑ LOC: Flashing	Communication start-stop control

● FWD: Forward and reverse indicator light, Light is on, it is in reverse running state.
● TUNE/TC: Tuning/torque control/fault indicator light,
   Light is on, it is in torque control mode, Light flashing slowly means it is in the tuning state,
   Light flashing fast means it is in the fault state.

$\overset{Hz}{\circ}$—RPM—$\overset{A}{\circ}$—%—$\overset{V}{\circ}$ The unit indicator shows currently displayed data. following units:（○ Light is off ● Light is on

$\overset{Hz}{\bullet}$—RPM—$\overset{A}{\circ}$—%—$\overset{V}{\circ}$: Hz Frequency unit $\overset{Hz}{\circ}$—RPM—$\overset{A}{\bullet}$—%—$\overset{V}{\circ}$: A Current unit

Hz〇—RPM—A〇—%—V● :V Voltage Unit   Hz●—RPM—A●—%—V〇 :RMP speed unit

Hz〇—RPM—A●—%—V● :% Percentage Unit

Digital display area:

Total of 5-digit LED display can display the set frequency, output frequency, various monitoring data and alarm codes. Keyboard button description table

Pic.4-1 Keyboard function table

Key	Name	Function
PRG	Program key	Level 1 menu entry or exit
ENTER	Enter key	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 key	In the stop/running display interface, the display parameters can be selected cyclically; When modifying a parameter, the modification bit of the parameter can be selected.
RUN	Run key	In keyboard operation mode, used to run operation
STOP/RES	Stop/Reset	In the running state, pressing this key can be used to stop the running operation; In fault alarm state, it can be used to reset the operation,it's restricted by function code P7-02.
MF.K	Multi-function selection key	According to P7-01 for function switching selection, it can be defined as command source or direction quick switching
MODE	Menu mode selection key	Switch between different menu modes according to the value of PP-03 (default is one menu mode)

Chapter 5 Function parameter

PP-00 is set to a non-zero value, means the protection password is set.

The parameter menu can only be entered after entering the password correctly.

To cancel the password, you need to set PP-00 to 0.

The parameter menu in the user-defined parameter mode is not password protected.
Group P and Group A are basic function parameters, and Group U is monitoring function parameters.

The symbols in the function table are explained as follows:

"   "   Parameter set value can be changed when the inverter is in stop or running state;

"   "   Parameter set value can NOT be changed when the inverter is running;

" "   This parameter is the actual detection record value and can NOT be changed;

"*"   "Manufacturer parameter", The manufacturer's settings, is prohibited from operating;

5.1 Brief list of basic function parameters

Code	Name	Set Range	Default	Alter
P0 basic function group				
P0-00	GP type display	1: G (constant torque load type) 2: P (fan, water pump load type)	Model Set	●
P0-01	1st motor control method	0: Speed sensorless vector control (SVC) 1: With speed sensor vector control (FVC) 2: V/F control	2	★
P0-02	Command source selection	0: Panel command channel (LED off) 1: Terminal command channel (LED on) 2: Communication channel (LED flashes)	0	☆
P0-03	Main frequency source X selection	0: Digital setting (preset frequency, P0-08 UP/DOWN can be modified, No memory) 1: Digital setting (preset frequency, P0-08 UP/DOWN can be modified, memory) 2: AI1 3: AI2 4: AI3 5: PULSE pulse setting (DI5) 6: Multi-segment instructions 7: Simple PLC 8: PID 9: Communication given	2	★
P0-04	~~Auxiliary frequency~~ source Y selection	~~Same as P0-03~~ (main frequency source X selection)	1	★

Code	Name	Set Range	Default	Alter
P0-05	Auxiliary frequency source Y range selection	0: Relative to the maximum frequency 1: Relative to frequency source X	0	☆
P0-06	Auxiliary frequency source Y range	0%～150%	100	☆
P0-07	Frequency source overlay selection	Ones place: frequency source selection 0: Main frequency source X 1: Main and auxiliary operation results (Determined by tens place) 2: Switch between main X and auxiliary Y 3: Switch between the main X and Auxiliary operation results 4: Switch between auxiliary Y and Auxiliary operation results Tens place: main and auxiliary operation relationship of frequency source 0: main + auxiliary 1:main - auxiliary 2: the maximum value of the two 3: the minimum value of the two	00	
P0-08	Preset frequency	0.00Hz ~ Maximum frequency (P0 -10)	50.00Hz	☆
P0-09	Running direction	0: Same direction 1: Opposite direction	0	☆
P0-10	maximum frequency	50.00Hz～320.00Hz	50.00Hz	★
P0-11	upper limit frequency source	0：P0-12 Setting 1：AI1 2：AI2 3：AI3 4：PULSE Pulse setting 5：Communication given	0	★
P0-12	upper limit frequency	Lowest ~ Max.frequency (P0-14 ~ P0-10)	50.00Hz	☆
P0-13	Upper frequency offset	0.00Hz ~ maximum frequency P0-10	0.00Hz	☆
P0-14	lower frequency	0.00Hz Upper limit frequency P0-12	0.00Hz	☆
P0-15	Carrier frequency	6.0KHz ～ 16.0KHz	Model Set	☆
P0-16	Carrier frequency Adjust temperature	0: No 1: Yes	1	☆
P0-17	Acceleration time 1	0.00s ～ 650.00s(P0-19=2) 0.0s ～ 6500.0s(P0-19=1) 0s ～ 65000s(P0-19=0)	Model Set	☆
P0-18	Deceleration time 1	0.00s ～ 650.00s(P0-19=2) 0.0s ～ 6500.0s(P0-19=1) 0s ～ 65000s(P0-19=0)	Model Set	☆
P0-19	Acc & Dec time unit	0 1 S 1 0.1 S 2 0.01 S	1	☆

Code	Name	Set Range	Default	Alter
P0-21	Auxiliary freq. source offset	0.00Hz　Maximum frequency P0-10	0.00Hz	☆
P0-22	Frequency command resolution	1：0.1Hz 2：0.01Hz	2	★
P0-23	Digital set freq. stop memory option 0	0: not memorized 1: memorized	1	☆
P0-24	Motor parameter group selection	0: Motor parameter group 1 1: Motor parameter group 2 2: Motor parameter group 3 3: Motor parameter group 4	0	★
P0-25	Acc & Dec time reference frequency	0: Maximum frequency (P0-10) 1: set frequency 2: 100Hz	0	★
P0-26	Runtime freq.command UP/DOWN benchmark	0: Running frequency 1: Setting frequency	0	★
P0-27	Command source bundle frequency source	Units place: selection of frequency source bound by operation panel command 0: no binding 1: Digital setting frequency 2: AI1　3: AI2　4: AI3 5: PULSE pulse setting (DI5) 6: Multi-speed　7: Simple PLC 8: PID　9: Communication given Tens place: Terminal command binding frequency source selection Hundreds place: Communication command binding frequency source selection Thousands place: Auto-run binding frequency source selection	0000	☆
P0-28	Serial communication protocol selection	0: Modbus protocol	0	☆
P1 The 1st motor group				
P1-00	Motor type selection	0: Ordinary asynchronous motor 1: Variable frequency asynchronous motor 2: Permanent magnet synchronous motor	0	★
P1-01	Motor rated power	0.1kW～1000.0kW	Model Set	★
P1-02	Motor rated voltage	1V ～2000V	Model Set	★
P1-03	Motor rated current	0.01A　655.35A (Inverter power<=55kW) 0.1A　6553.5A (Inverter power>55kW)	Model Set	★

Code	Name	Set Range	Default	Alter
P1-04	Motor rated frequency	0.01Hz ~ maximum frequency	Model Set	★
P1-05	Motor rated speed	1rpm~65535rpm	Model Set	★
P1-06	Asynchronous motor stator resistance	0.001 65.535 (Inverter power <=55kW) 0.0001 6.5535 (Inverter power>55kW)	Tuning parameters	★
P1-07	Asynchronous motor rotor resistance	0.001 65.535 (Inverter power <=55kW) 0.0001 6.5535 (Inverter power >55kW)	Tuning parameters	★
P1-08	Asynchronous motor leakage inductance	0.01mH 655.35mH (Inverter power <=55kW) 0.001mH 65.535mH (Inverter power >55kW)	Tuning parameters	★
P1-09	Asynchronous motor mutual inductance	0.1mH 6553.5mH (Inverter power <=55kW) 0.01mH 655.35mH (Inverter power >55kW)	Tuning parameters	★
P1-10	Asynchronous motor no-load current	0.01A P1-03 (Inverter power <=55kW) 0.1A P1-03 (Inverter power>55kW)	Tuning parameters	★
P1-16	Synchronous motor stator resistance	0.001 65.535 (Inverter power <=55kW) 0.0001 6.5535 (Inverter power >55kW)	Tuning parameters	★
P1-17	Synchronous motor D-axis inductance	0.01mH 655.35mH (Inverter power <=55kW) 0.001mH 65.535mH (Inverter power >55kW)	Tuning parameters	★
P1-18	Synchronous motor Q-axis inductance	0.01mH 655.35mH (Inverter power <=55kW) 0.001mH 65.535mH (Inverter power >55kW)	Tuning parameters	★
P1-20	Synchronous motor back EMF	0.1V~6553.5V	Tuning parameters	★
P1-27	Number of encoder lines	1~65535	2500	★
P1-28	Encoder type	0: ABZ incremental encoder 2: Resolver	0	★
P1-30	ABZ add Encoder AB phase sequence	0: positive 1: Reverse	0	★
P1-34	Number of pole pairs of resolver	1~65535	1	★
P1-36	Speed feedback PG disconnection	0.0: no action	0.0	★

Code	Name	Set Range	Default	Alter
	Detection time	0.1s～10.0s		
P1-37	Tuning selection	0: no operation 1: Asynchronous motor static tuning 2: Asynchronous motor complete tuning 3: Static complete parameter identification 11: On-load tuning of synchronous machine 12: Synchronous machine no-load tuning	0	★
P2 The 1st motor vector control parameters				
P2-00	Speed loop gain 1	1～100	30	☆
P2-01	Speed loop time 1	0.01s～10.00s	0.50s	☆
P2-02	Switch frequency 1	0.00 ～P2-05	5.00Hz	☆
P2-03	Speed loop gain 2	1 ～100	20	☆
P2-04	Speed loop time 2	0.01s ～10.00s	1.00s	☆
P2-05	Switch frequency 2	P2-02 Maximum frequency	10.00Hz	☆
P2-06	Vector control slip gain	50% ～200%	100%	☆
P2-07	Velocity loop filter time constant	0.000s～0.100s	0.000s	☆
P2-08	Vector control overexcitation gain	0～200	64	☆
P2-09	Torque upper limit source in speed control mode	0: Function code P2-10 setting 1: AI1 2: AI2 3: AI3 4: PULSE pulse setting 5: Communication given 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 1-7 full scale of options corresponds to P2-10	0	☆
P2-10	Torque upper of speed control digital setting	0.0%～200.0%	150.0%	☆
P2-13	Excitation gain	0～60000	2000	☆
P2-14	Excitation Integral gain	0～60000	1300	☆
P2-15	Torque gain	0～60000	2000	☆
P2-16	Torque Integral gain	0～60000	1300	☆
P2-17	Velocity Loop Integral Properties	Ones place: Integral separation 0: invalid 1: Valid	0	☆
P2-18	Synchronous machine field weakening mode	0: Field weakening is invalid 1: Direct calculation mode 2: Automatic adjustment mode	1	☆
P2-19	Field weakening depth	50%～500%	100%	☆

Code	Name	Set Range	Default	Alter
P2-20	Max.field current	1%～300%	50%	☆
P2-21	Field weakening gain	10%～500%	100%	☆
P2-22	Weak field multiple	2～10	2	☆
P3 V/F control parameters				
P3-00	VF curve setting	0: Linear V/F 1: Multi-point V/F 2: Square V/F 3: 1.2 power V/F 4: 1.4 power V/F 6: 1.6 power V/F 8: 1.8 power V/F 9: reserved 10: VF fully separated mode 11: VF semi-separation mode	0	★
P3-01	Torque boost	0.0%: (Auto torque boost) 0.1% 30.0%	Model Set	☆
P3-02	Torque frequency	0.00Hz Maximum frequency	50.00Hz	★
P3-03	VF Frequency Point 1	0.00Hz ～P3-05	0.00Hz	★
P3-04	VF Voltage Point 1	0.0% ～100.0%	0.0%	★
P3-05	VF Frequency Point 2	P3-03 ～P3-07	0.00Hz	★
P3-06	VF Voltage Point 2	0.0% ～100.0%	0.0%	★
P3-07	VF Frequency Point 3	P3-05 ~ Motor rated frequency (P1-04)	0.00Hz	★
P3-08	VF Voltage Point 3	0.0% ～100.0%	0.0%	★
P3-09	VF slip gain	0.0% ～200.0%	0.0%	☆
P3-10	VF overexcitation gain	0 ～200	64	☆
P3-11	VF oscillation suppression gain	0 ～100	Model Set	☆
P3-13	VF separated voltage source	0: Digital setting (P3-14) 1: AI1 2: AI2 3: AI3 4: PULSE pulse setting (DI5) 5: Multi-segment instruction 6: Simple PLC 7: PID 8: Communication given Note: 100.0% corresponds to the rated voltage of the motor	0	☆
P3-14	VF separation Voltage digital setting	0V Motor rated voltage	0V	☆
P3-15	VF separation voltage acceleration time	0.0s 1000.0s Note: The time from 0V~ motor's rated voltage	0.0s	☆
P3-16	VF separation voltage deceleration time	0.0s 1000.0s Note: The time from 0V~ motor's rated voltage	0.0s	☆
P3-17	VF separation and stop mode selection	0: Frequency/Voltage is reduced to 0 1: Voltage is reduced to 0, the freq. reduced	0	☆

Code	Name	Set Range	Default	Alter
		P4 Input terminals		
P4-00	DI1 terminal selection	0: No function	1	★
P4-01	DI2 terminal selection	1: FWD or Run command 2: REV or forward and Reverse running (Note: set to 1, 2, used with P4-11,) 3: Three-wire running control 4: FWD jog (FJOG) 5: REV jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Free parking 9: Fault reset (RESET) 10: Run pause 11: External fault normally open input	2	★
P4-02	DI3 terminal selection	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: Acc. & Dec. time selection terminal 1	9	★
P4-03	DI4 terminal selection	17: Acc. & Dec. time selection terminal 2 18: Frequency source switching 19: UP/DOWN Clear 0(terminal, keyboard) 20: Control command switching terminal 1	4	★
P4-04	DI5 terminal selection	21: Acc. & Dec. prohibition 22: PID pause 23: PLC status reset 24: Swing frequency pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset	0	★
P4-05	DI6 terminal selection	29: Torque control prohibited 30: PULSE (pulse) frequency input (only valid for DI5)		★
P4-06	DI7 terminal selection	31: Reserved 32: Immediate DC braking 33: External fault normally closed input 34: Frequency modification enable 35: Inversion of PID action direction	13	★
P4-07	DI8 terminal selection	36: External parking terminal 1 37: Control command switching terminal 2 38: PID integral pause 39: Switch between freq. X & preset freq.	0	★
P4-08	DI9 terminal selection	40: Switch between freq. Y & preset freq. 41: Motor terminal 1 42: Motor terminal 2 43: PID parameter switching 44: Defined fault 1 45: Defined fault 2	0	★

Code	Name	Set Range	Default	Alter
P4-09	DI10 terminal selection	46: Speed control/torque control switching 47: Emergency stop 48: External parking terminal 2 49: Deceleration DC braking 50: This running time is cleared 51: Two-wire/three-wire switch 52-59 : reserved	0	★
P4-10	DI filter time	0.000s～1.000s	0.010s	☆
P4-11	Terminal command method	0: Two-wire type 1 1: Two-wire type 2 2: Three-wire type 1 3: Three-wire type 2	0	★
P4-12	Terminal UP/DOWN change rate	0.001Hz/s～65.535Hz/s	1.00Hz/s	☆
P4-13	AI curve 1 Min. input	0.00V ～P4-15	0.00V	☆
P4-14	AI curve 1 Min. input set	-100.0% ～+100.0%	0.0%	☆
P4-15	AI curve 1 Max. input	P4-13 ～+10.00V	10.00V	☆
P4-16	AI curve 1 Max. input set	-100.0% ～+100.0%	100.0%	☆
P4-17	AI1 filter time	0.00s～10.00s	0.10s	☆
P4-18	AI curve 2 Min. input	0.00V ～P4-20	0.00V	☆
P4-19	AI curve 2 Min. input set	-100.0% ～+100.0%	0.0%	☆
P4-20	AI curve 2 Max. input	P4-18 ～+10.00V	10.00V	☆
P4-21	AI curve 2 Max. input set	-100.0% ～+100.0%	100.0%	☆
P4-22	AI2 filter time	0.00s ～10.00s	0.10s	☆
P4-23	AI curve 3 Min. input	-10.00V ～P4-25	0.10V	☆
P4-24	AI curve 3 Min. input set	-100.0% ～+100.0%	0.0	☆
P4-25	AI curve 3 Max. input	P4-23 ～+10.00V	4.00V	☆
P4-26	AI curve 3	-100.0% ～+100.0%	100.0%	☆

Code	Name	Set Range	Default	Alter
	Max. input set	-100.0% +100.0%		
P4-27	AI3 filter time	0.00s ～10.00s	0.10s	☆
P4-28	PULSE Min. input	0.00kHz ～P4-30	0.00kHz	☆
P4-29	PULSE Min. input set	-100.0% ～100.0%	0.0%	☆
P4-30	PULSE Max. input	P4-28～100.00kHz	50.00kHz	☆
P4-31	PULSE Max. input set	-100.0% ～100.0%	100.0%	☆
P4-32	PULSE filter time	0.00s ～10.00s	0.10s	☆
P4-33	AI curve selection	Ones place: AI1 curve selection 1: Curve 1 (2 points, see P4-13 ~ P4-16) 2: Curve 2 (2 points, see P4-18 ~ P4-21) 3: Curve 3 (2 points, see P4-23 ~ P4-26) 4: Curve 4 (4 points, see A6-00 ~ A6-07) 5: Curve 5 (4 points, see A6-08 ~ A6-15) Tens place: AI2 curve selection, same as above Hundreds place: AI3 curve selection, same as above	321	☆
P4-34	AI below minimum input setting selection	Ones place: AI1 is lower than the Min. input setting selection 0: corresponds to the Min. input setting 1: 0.0% Tens place: AI2 is lower than the Min. input setting selection, same as above Hundreds place: AI3 is lower than the minimum input setting selection, same as above	000	☆
P4-35	DI1 delay time	0.0s ～3600.0s	0.0s	★
P4-36	DI2 delay time	0.0s ～3600.0s	0.0s	★
P4-37	DI3 delay time	0.0s ～3600.0s	0.0s	★
P4-38	DI Terminal valid mode selection 1	0: Active high 1: Active low Ones digit: DI1 Tens place: DI2 Hundreds place: DI3 Thousands place: DI4 Ten thousand place: DI5	00000	★

Code	Name	Set Range	Default	Alter
		Ten thousand place: DI5		
P4-39	DI Terminal valid mode selection 2	0: Active high 1: Active low Ones place: DI6 Tens place: DI7 Hundreds place: DI8 Thousands place: DI9 Ten thousand place: DI10	00000	★
P4-40	AI2 input signal selection	0: Voltage signal 1: Current signal	0	★
P5 Output terminals				
P5-00	FM terminal output mode selection	0: Pulse output (FMP) 1: Switch output (FMR)	0	☆
P5-01	FMR output function selection	0: No output 1: The inverter is running 2: Fault output (for free stop fault) 3: Frequency level detection FDT1 output 4: Frequency arrives 5: Running at zero speed (no output when stopped) 6: Motor overload pre-alarm 7: Inverter overload pre-alarm	0	☆
P5-02	Control board relay function selection (T/A-T/B-T/C)	8: Set the count value to reach 9: The specified count value arrives 10: length arrives 11: PLC cycle completed 12: Accumulated running time arrives 13: Frequency limiting 14: Torque limited 15: Ready to run 16: AI1>AI2	2	☆
P5-03	Expansion card relay output function selection (P/A-P/B-P/C)	17: The upper limit frequency is reached 18: The lower limit frequency is reached (operation related) 19: Undervoltage status output 20: Communication settings 21: Positioning completed (reserved) 22: Positioning close (reserved) 23: Running at zero speed 2 (also output when stopped) 24: Cumulative power-on time arrives	0	☆

Code	Name	Set Range	Default	Alter
P5-04	DO1 output function selection	25: Frequency level detection FDT2 output 26: Frequency 1 arrival output 27: Frequency 2 arrival output 28: Current 1 reaches the output 29: Current 2 arrives at the output 30: Timed arrival output 31: AI1 input overrun 32: Dropping 33: Reverse running	1	☆
P5-05	Expansion card DO2 output selection	34: Zero current state 35: Module temperature reached 36: The output current exceeds the limit 37: The lower limit frequency is reached (it is also output when the machine is stopped) 38: Alarm output (all faults) 39: Motor over temperature pre-alarm 40: The running time has arrived 41: Fault output (it is a free stop fault and no output is under voltage)	4	☆
P5-06	FMP output function selection	0: Running frequency 1: set frequency 2: output current 3: Output torque (torque absolute value) 4: Output power 5: Output voltage 6: PULSE input (100.0% corresponds to 100.0kHz)	0	☆
P5-07	AO1 output function selection	7: AI1 8: AI2 9: AI3 (extension card) 10: length 11: count value 12: Communication settings	0	☆
P5-08	Expansion card AO2 output function selection	13: Motor speed 14: Output current (100.0% corresponds to 1000.0A) 15: Output voltage (100.0% corresponds to 1000.0V) 16: Output torque (actual torque value)	1	☆
P5-09	FMP output Max. freq.	0. 01kHz～100.00kHz	50.00kHz	☆
P5-10	AO1 0 bias coefficient	-100.0%～+100.0%	0.0%	☆
P5-11	AO1 gain	-10.00～+10. 00	1.00	☆
P5-12	Expansion card AO2 0 bias coefficient	-100.0% ～+100.0%	0.0%	☆
P5-13	Ex. card AO2 gain	-10.00 ～+10.00	1.00	☆
P5-17	FMR delay time	0.0s ～3600.0s	0.0s	☆
P5-18	RELAY1 output delay time	0.0s ～3600.0s	0.0s	☆
P5-19	RELAY2 output	0.0s ～3600.0s	0.0s	☆

Code	Name	Set Range	Default	Alter
	delay time	0.0s 3600.0s		
P5-20	DO1 output delay time	0.0s ～3600.0s	0.0s	☆
P5-21	DO1 output delay time	0.0s ～3600.0s	0.0s	☆
P5-22	DO output terminal valid state selection	0: positive logic 1: Inverse logic Ones digit: FMR Tenth place: RELAY1 Hundreds: RELAY2 Thousands: DO1 Ten thousand: DO2	00000	☆
P5-23	AO1 output signal selection	0: Voltage signal 1: Current signal	0	★
P6 Start-stop control				
P6-00	Start method	0: Direct start 1: Speed tracking restart 2: Pre-excitation start (AC asynchronous motor)	0	☆
P6-01	Speed tracking method	0: start from stop frequency 1: Start from zero speed 2: start from maximum frequency	0	★
P6-02	Speed tracking speed	1 ～100	20	☆
P6-03	Start frequency	0.00Hz ～10.00Hz	0.00Hz	☆
P6-04	Start freq. hold time	0.0s～100. 0s	0.0s	★
P6-05	Start DC brake current pre-excitation current	0% ～100%	0%	★
P6-06	Start DC brake time pre-excitation time	0.0s～100. 0s	0.0s	★
P6-07	Acc.& Dec. method	0: Linear acceleration and deceleration 1: S curve acceleration and deceleration A 2: S curve acceleration and deceleration B	0	★
P6-08	S-curve beginning time ratio	0.0%～(100.0%-P6-09)	30.0%	★
P6-09	S-curve ending time ratio	0.0%～(100.0%-P6-08)	30.0%	★
P6-10	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆
P6-11	DC braking starting frequency at stop	0.00Hz Maximum frequency	0.00Hz	☆
P6-12	DC braking waiting time at stop	0.0s～100. 0s	0.0s	☆
P6-13	Stop DC brake current	0% ～100%	0%	☆
P6-14	Stop DC brake time	0.0s ～100.0s	0.0s	☆
P6-15	brake usage	0% ～100%	100%	☆
P7 Keyboard and Display				
P7-01	MF.K key function selection	0: MF.K is invalid 1: Panel channel and remote channel (Switch between terminal channel or communication channel)	0	★

Code	Name	Set Range	Default	Alter
P7-01	MF.K key function selection	2: Forward and Reverse switching 3: Forward jog 4: Reverse jog	0	
P7-02	STOP/RESET key function	0: STOP/RES key is valid in Keyboard operation mode 1:STOP/RES key is valid in any operation mode	1	☆
P7-03	LED operation Display parameter 1	0000　FFFF Bit00: Running frequency (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: DI input status Bit08: DO input status Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: AI3 voltage (V) Bit12: count value Bit13: length value Bit14: Load speed display Bit15: PID setting	1F	☆
P7-04	LED operation Display parameter 2	0000　FFFF Bit00: PID feedback Bit01: PLC stage Bit02: PULSE input pulse frequency (kHz) Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: AI1 voltage before calibration (V) Bit06: AI2 voltage before calibration (V) Bit07: AI3 voltage before calibration (V) Bit08: Linear speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: PULSE input pulse frequency (Hz) Bit12: Communication setting value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Secondary frequency Y display (Hz)	0	☆
P7-05	LED stop display parameters	0000　FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: DI input status Bit03: DO output status Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 voltage (V)	33	☆

Code	Name	Set Range	Default	Alter
P7-05	LED stop display parameters	Bit07: count value Bit08: length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: PULSE input pulse frequency (kHz)	33	
P7-06	Load speed display	0.0001～6.5000	1.0000	☆
P7-07	Inverter module heat sink temperature	0.0℃～100.0℃	-	●
P7-08	Software version	-	-	●
P7-09	Running time	0h～65535h	-	●
P7-10	Product ID	-	-	●
P7-11	Software version	-	-	●
P7-12	Load speed display decimal places	0: 0 decimal places 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1	☆
P7-13	Power-on time	0 65535 Hour	-	●
P7-14	Power consumption	0 65535 degree	-	●
P8 Auxiliary function				
P8-00	Jog running frequency	0.00 Hz ~ maximum frequency	2.00Hz	☆
P8-01	Jog acceleration time	0.0s～6500. 0s	20.0s	☆
P8-02	Jog deceleration time	0.0s～6500. 0s	20.0s	☆
P8-03	Acceleration time 2	0.0s ～6500.0s	Mode set	☆
P8-04	Deceleration time 2	0.0s ～6500.0s	Mode set	☆
P8-05	Acceleration time 3	0.0s ～6500.0s	Mode set	☆
P8-06	Deceleration time 3	0.0s ～6500.0s	Mode set	☆
P8-07	Acceleration time 4	0.0s ～6500.0s	Mode set	☆
P8-08	Deceleration time 4	0.0s ～6500.0s	Mode set	☆
P8-09	Hopping frequency1	0.00 Hz ~ maximum frequency	0.00Hz	☆
P8-10	Hopping frequency2	0.00 Hz ~ maximum frequency	0.00Hz	☆
P8-11	Hopping freq.width	0.00 Hz ~ maximum frequency	0.00Hz	☆
P8-12	FWD&REV dead time	0.0s ～3000. 0s	0.0s	☆
P8-13	Reverse prohibited	0: Enable 1: Disable	0	☆
P8-14	Set freq. is lower than the lower limit freq.operation mode	0: run at the lower frequency limit 1: stop 2: Running at zero speed	0	☆
P8-15		0.00Hz～10.00Hz	0.00Hz	☆
P8-16	Set the cumulative power-on arrival time	0h～65000h	0h	☆
P8-17	Set the cumulative operation arrival time	0h～65000h	0h	☆
P8-18	Boot protection selection	0: Not protected 1: Protected	0	☆
P8-19	Freq. value (FDT1)	0.00 Hz ~ maximum frequency	50.00Hz	☆
P8-20	Freq hysteresis value	0.0% 100.0% (FDT1 level)	5.0%	☆

Code	Name	Set Range	Default	Alter
	(FDT1)			
P8-21	Frequency arrival width	0.0 % to 100.0% (maximum frequency)	0.0%	☆
P8-22	Whether jump freq is valid during Acc&Dec	0: Invalid 1: Valid	0	☆
P8-25	Acc time 1 & Acc time 2 switch frequency points	0.00Hz Maximum frequency	0.00Hz	☆
P8-26	Dec time 1 & Dec time 2 switch frequency points	0.00Hz Maximum frequency	0.00Hz	☆
P8-27	Terminal jog priority	0: Invalid 1: Valid	0	☆
P8-28	Freq value (FDT2)	0.00Hz Maximum frequency	50.00Hz	☆
P8-29	Freq hysteresis value (FDT2)	0.0% 100.0% (FDT2 level)	5.0%	☆
P8-30	Arbitrary arrival freq value 1	0.00Hz Maximum frequency	50.00Hz	☆
P8-31	Arbitrary arrival freq width 1	0.0% 100.0% Maximum frequency	0.0%	☆
P8-32	Arbitrary arrival freq value 2	0.00Hz Maximum frequency	50.00Hz	☆
P8-33	Arbitrary arrival freq width 2	0.0% 100.0% Maximum frequency	0.0%	☆
P8-34	Zero current detection level	0.0% 300.0% 100.0% to motor's rated current	5.0%	☆
P8-35	Current detection delay time	0.01s ～600.00s	0.10s	☆
P8-36	The output current exceeds the limit	0.0% (not detected) 0.1% 300.0% (motor rated current)	200.0%	☆
P8-37	Output current overrun detection delay time	0.00s～600.00s	0.00s	☆
P8-38	Arbitrary current 1	10.0% 300.0% (motor rated current)	100.0%	☆
P8-39	Arbitrary arrival current 1 width	0.0% 300.0% (motor rated current)	0.0%	☆
P8-40	Arbitrary current 2	0.0% 300.0% (motor rated current)	100.0%	☆
P8-41	Arbitrary arrival current 2 width	0.0% 300.0% (motor rated current)	0.0%	☆
P8-42	Timing selection	0 : invalid 1 : valid	0	☆
P8-43	Timing run time selection	0: P8-44 setting 1: AI1 2: AI2 3: AI3 Analog input range corresponds to P8-44	0	☆
P8-44	Timing run time	0.0Min～6500.0Min	0.0Min	☆
P8-45	AI1 input voltage lower limit protection	0.00V～P8-46	3.10V	☆
P8-46	AI1 input voltage upper limit protection	P8-45～10. 00V	6.80V	☆
P8-47	Module temperature	0℃ ～100 ℃	75℃	☆

Code	Name	Set Range	Default	Alter
P8-48	Cooling Fan Control	0: Fan runs during operation 1: The fan keeps running	0	☆
P8-49	Wake up frequency	Sleep freq. (P8-51)　　Max. freq. (P0-10)	0.00Hz	☆
P8-50	Wake up delay time	0.0s～6500. 0s	0.0s	☆
P8-51	Sleep frequency	0 . 0 0 Hz ~ Wake-up frequency (P8-49)	0.00Hz	☆
P8-52	Sleep delay time	0.0s～6500. 0s	0.0s	☆
P8-53	Arrival time setting for this operation	0.0 ～6500.0min	0.0Min	☆
P8-54	Output power correct	0.00% ～200.0%	100.0%	☆
P9 Fault and Protection				
P9-00	Motor overload protection selection	0: Disable 1: Allow	1	☆
P9-01	Motor overload gain	0.20 ～10.00	1.00	☆
P9-02	Motor overload warning	50%～100%	80%	☆
P9-03	Overvoltage Stall Gain	0 ～100	0	☆
P9-04	Overvoltage stall voltage	120% ～150%	130%	☆
P9-05	Overcurrent Stall Gain	0 ～100	20	☆
P9-06	Overcurrent Stall Current	100% ～200%	150%	☆
P9-07	Power-on to ground short-circuit protection	0: Invalid 1: Valid	1	☆
P9-08	Brake unit star volt	650. 0 ～800.0V	0	☆
P9-09	Times of fault auto reset	0~20	0	☆
P9-10	DO action selection during auto failure reset	0　No action;1　Action	1.0s	☆
P9-11	Interval time of automatic failure reset	0.1~100.0s	1	☆
P9-12	Input default phase/contactor closing protection selection		11	
P9-13	Output default phase	0: Disable 1: Enable	1	☆
P9-14	First time fault type	0: No fault 1: Reserved 2: Acceleration overcurrent 3: Deceleration overcurrent 4: Constant speed overcurrent 5: Acceleration overvoltage 6: Deceleration overvoltage 7: Constant speed overvoltage 8: The buffer resistor is overloaded 9: Undervoltage 10: Inverter overload	—	●

Code	Name	Set Range	Default	Alter
P9-15	Second fault type	11: Motor overload 12: Input phase loss 13: Output phase loss 14: Module overheating 15: External fault 16: Communication abnormality 17: The contactor is abnormal 18: Abnormal current detection 19: Abnormal motor tuning 20: The encoder/PG card is abnormal 21: Parameter read and write exception 22: The inverter hardware is abnormal 23: Motor short circuit to ground 24: Reserved 25: Reserved 26: Runtime arrives	—	●
P9-16	Third failure type (most recent)	27: User-defined fault 1 28: User-defined fault 2 29: Power-on time arrives 30: drop load 31: Loss of PID feedback during runtime 40: Fast current limit timeout 41: Switch the motor while running 42: Speed deviation too large 43: Motor overspeed 45: Motor over temperature 51: Initial position error	—	●
P9-17	Third failure freq. (most recent)	—	—	●
P9-18	Third failure current (most recent)	—	—	●
P9-19	Third failure Bus volt (most recent)	—	—	●
P9-20	Third failure Input terminal status (most recent)	—	—	●
P9-21	Third failure Output terminal status (most recent)	—	—	●
P9-22	Third failure Inverter status(most recent)	—	—	●
P9-23	Third failure Power-on time(most recent)	—	—	●
P9-24	Third failure runtime	—	—	●

Code	Name	Set Range	Default	Alter
	(most recent)			
P9-27	Second failure frenq.	—	—	●
P9-28	Second failure current	—	—	●
P9-29	Second failure Bus voltage	—	—	●
P9-30	Second failure Input terminal status	—	—	●
P9-31	Second failure Output terminal status	—	—	●
P9-32	Second failure Inverter status	—	—	●
P9-33	Second failure Power-on time	—	—	●
P9-34	Second failure Operating time	—	—	●
P9-37	First failure Frequency	—	—	●
P9-38	First fault Current	—	—	●
P9-39	First fault Bus voltage	—	—	●
P9-40	First fault Input terminal status	—	—	●
P9-41	First fault Output terminal status	—	—	●
P9-42	First fault Inverter status	—	—	●
P9-43	First fault Power-on time	—	—	●
P9-44	First failure operatin time	—	—	●
P9-47	Fault protection action selection 1	Ones place: Motor overload (11) 0: Free parking 1: stop according to the stop mode 2: keep running Tens place: input phase loss (12) Hundreds place: output phase loss (13) Thousands: External fault (15) Ten thousand: abnormal communication (16)	00000	☆
P9-48	Fault protection action selection 2	Ones place: Encoder/PG card abnormal (20) 0: Free parking Tens place: abnormal reading and writing of function code (21)	00000	☆

Code	Name	Set Range	Default	Alter
		0: Free parking 1: stop according to the stop mode Hundreds: reserved Thousands: Motor overheating (25) Ten thousand: running time reached (26)		
P9-49	Fault protection action selection 3	Ones place: User-defined fault 1(27) 0: Free parking 1: stop according to the stop mode 2: keep running Tens place: User-defined fault 2 (28) 0: Free parking 1: stop according to the stop mode 2: keep running Hundreds place: the power-on time arrives (29) 0: Free parking 1: stop according to the stop mode 2: keep running Thousands: drop load (30) 0: Free parking 1: Decelerate to stop 2: Jump directly to 7% of the rated frequency of the motor to continue running, and automatically return to running at the set frequency when the load is not dropped Ten thousand digits: PID feedback lost during running (31) 0: Free parking 1: stop according to the stop mode 2: keep running	00000	☆
P9-50	Fault protection action selection 4	Ones place: Speed deviation is too large (42) 0: Free parking 1: stop according to the stop mode 2: keep running Tens place: Motor overspeed (43) Hundreds place: initial position error (51)	00000	☆
P9-54	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: Running at abnormal standby frequency	0	☆
P9-55	Abnormal backup frequency	0.0%　100.0% (100.0% to the max. freq. P0-10)	100.0%	☆
P9-56	Motor temperature sensor type	0: No temperature sensor 1：PT100 2：PT1000	0	☆
P9-57	Motor overheat protection threshold　　　0℃～200 ℃		110 ℃	☆
P9-58	Motor overheating pre-alarm threshold	0℃～200 ℃	90 ℃	☆

Code	Name	Set Range	Default	Alter
P9-59	Instantaneous power failure action selection	0: Invalid 1: Slow down 2: Decelerate to stop	0	☆
P9-60	Instant shutdown pause volt judgment	80.0% ~100.0%	90.0%	☆
P9-61	Instant shutdown volt recovery time judgment	0.00s~100.00s	0.50s	☆
P9-62	Instant power failure action volt judgment	60.0% to 100.0% (standard bus voltage)	80.0%	☆
P9-63	Drop load protection option	0: Invalid 1: Valid	0	☆
P9-64	Load drop detect level	0.0 ~100.0%	10.0%	☆
P9-65	Load drop detect time	0.0 ~60.0s	1.0s	☆
P9-67	Overspeed detect value	0.0% 50.0% (maximum frequency)	20.0%	☆
P9-68	Overspeed detect time	0.0s : No detection 0.1 60.0s	1.0s	☆
P9-69	Excessive speed deviation detect value	0.0% 50.0% (maximum frequency)	20.0%	☆
P9-70	Excessive speed deviation detect time	0.0s : No detection 0.1 60.0s	5.0s	☆
PA Group PID function				
PA-00	PID given source	0: PA-01 setting 1: AI1 2: AI2 3: AI3 4: PULSE pulse setting (DI5) 5: Communication given 6: Multi-segment instruction given	0	☆
PA-01	PID value given	0.0% ~100.0%	50.0%	☆
PA-02	PID feedback source	0：AI1 1：AI2 2：AI3 3：AI1-AI2 4: PULSE pulse setting (DI5) 5: Communication given 6: AI1+AI2 7: MAX(|AI1|, |AI2|) 8: MIN(|AI1|, |AI2|)	0	☆
PA-03	PID action direction	0: Positive action 1: Reverse action	0	☆
PA-04	PID feedback range	0 ~65535	1000	☆
PA-05	Proportional gain Kp1	0.0 ~100.0	20.0	☆
PA-06	Integration time Ti1	0.01s ~10.00s	2.00s	☆
PA-07	Differential time Td1	0.000s ~10.000s	0.000s	☆

Code	Name	Set Range	Default	Alter
PA-08	PID reverse cutoff freq.	0.00 ~maximum frequency	2.00Hz	☆
PA-09	PID deviation limit	0.0% ～100.0%	0.0%	☆
PA-10	PID differential limiter	0.00% ～100.00%	0.10%	☆
PA-11	PID given change time	0.00 ～650.00s	0.00s	☆
PA-12	PID feedback filter time	0.00 ～60.00s	0.00s	☆
PA-13	PID output filter time	0.00 ～60.00s	0.00s	☆
PA-14	Reserve	-	-	☆
PA-15	Proportional gain Kp2	0.0 ～100.0	20.0	☆
PA-16	Integration time TI2	0.01s ～10.00s	2.00s	☆
PA-17	Differential time Td2	0.000s ～10.000s	0.000s	☆
PA-18	PID parameter switching conditions	0: Not switch 1: Switch via DI terminal 2: Auto switch according to deviation	0	☆
PA-19	PID switch deviation 1	0.0%～PA-20	20.0%	☆
PA-20	PID switch deviation 2	PA-19 ～100.0%	80.0%	☆
PA-21	PID initial value	0.0% ～100.0%	0.0%	☆
PA-22	PID initial hold time	0.00 ～650.00s	0.00s	☆
PA-23	Twice output deviation positive max. value	0.00% ～100.00%	1.00%	☆
PA-24	Twice output deviation reverse max. value	0.00% ～100.00%	1.00%	☆
PA-25	PID integral properties	Ones place: Integral separation 0: Invalid 1: Valid Tens place: whether to stop integration after the output reaches the limit value 0: Continue points 1: Stop integration	00	☆
PA-26	PID feedback loss detection value	0.0%: Not judged feedback loss 0.1% 100.0%	0.0%	☆
PA-27	PID feedback loss detection time	0.0s～20.0s	0.0s	☆
PA-28	PID shutdown operation	0: Stop and No operate 1: Stop and operate	0	☆
Pb Group Wobble, fixed length and count				
Pb-00	Wobble frequency setting method	0: Relative to the center frequency 1: Relative to the maximum frequency	0	☆
Pb-01	Wobble amplitude	0.0% ～100.0%	0.0%	☆

Code	Name	Set Range	Default	Alter
Pb-02	Kick frequency width	0.0%～50.0%	0.0%	☆
Pb-03	Wobble period	0.1s ～3000. 0	10.0s	☆
Pb-04	Wobble freq. triangular wave rise time	0.1%～100.0%	50.0%	☆
Pb-05	Set length	0m～65535m	1000m	☆
Pb-06	Actual length	0m～65535m	0m	☆
Pb-07	Pulses per meter	0.1～6553.5	100.0	☆
Pb-08	Set count value	1 ～65535	1000	☆
Pb-09	Specify count value	1 ～65535	1000	☆
PC Group Multi-segment instruction, simple PLC				
PC-00	Multi- command 0	-100.0% ～100.0%	0.0%	☆
PC-01	Multi- command 1	-100.0% ～100.0%	0.0%	☆
PC-02	Multi- command 2	-100.0% ～100.0%	0.0%	☆
PC-03	Multi- command 3	-100.0% ～100.0%	0.0%	☆
PC-04	Multi- command 4	-100.0% ～100.0%	0.0%	☆
PC-05	Multi- command 5	-100.0% ～100.0%	0.0%	☆
PC-06	Multi- command 6	-100.0% ～100.0%	0.0%	☆
PC-07	Multi- command 7	-100.0% ～100.0%	0.0%	☆
PC-08	Multi- command 8	-100.0% ～100.0%	0.0%	☆
PC-09	Multi- command 9	-100.0% ～100.0%	0.0%	☆
PC-10	Multi- command10	-100.0% ～100.0%	0.0%	☆
PC-11	Multi- command11	-100.0% ～100.0%	0.0%	☆
PC-12	Multi- command12	-100.0% ～100.0%	0.0%	☆
PC-13	Multi- command13	-100.0% ～100.0%	0.0%	☆
PC-14	Multi- command14	-100.0% ～100.0%	0.0%	☆
PC-15	Multi- command15	-100.0% ～100.0%	0.0%	☆
PC-16	Simple PLC operation mode	0: Stop at the end of a single operation 1: Keep the final value at the end of a single run 2: keep looping	0	☆
PC-17	Simple PLC operation mode	Ones place: power-down memory selection 0: No memory when power off 1: Power-down memory Tens place: stop memory selection 0: No memory when stopped 1: Stop memory	00	☆
PC-18	Simple PLC running time of section 0	0.0s(h)～6553.5s(h)	0.0s(h)	☆

Code	Name	Set Range	Default	Alter
PC-19	Simple PLC section 0 Acc&Dec time selection	0～3	0	☆
PC-20	Simple PLC section 1 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-21	Simple PLC section 1 Acc&Dec time selection	0～3	0	☆
PC-22	Simple PLC section 2 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-23	Simple PLC section 2 Acc&Dec time selection	0～3	0	☆
PC-24	Simple PLC section 3 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-25	Simple PLC section 3 Acc&Dec time selection	0～3	0	☆
PC-26	Simple PLC section 4 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-27	Simple PLC section 4 Acc&Dec time selection	0～3	0	☆
PC-28	Simple PLC section 5 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-29	Simple PLC section 5 Acc&Dec time selection	0～3	0	☆
PC-30	Simple PLC section 6 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-31	Simple PLC section 6 Acc&Dec time selection	0～3	0	☆
PC-32	Simple PLC section 7 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-33	Simple PLC section 7 Acc&Dec time selection	0～3	0	☆
PC-34	Simple PLC section 8 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-35	Simple PLC section 8 Acc&Dec time selection	0～3	0	☆
PC-36	Simple PLC section 9 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-37	Simple PLC section 9 Acc&Dec time selection	0～3	0	☆

Code	Name	Set Range	Default	Alter
PC-38	Simple PLC section 10 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-39	Simple PLC section 10 Acc&Dec time selection	0 ～3	0	☆
PC-40	Simple PLC section 11 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-41	Simple PLC section 11 Acc&Dec time selection	0 ～3	0	☆
PC-42	Simple PLC section 12 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-43	Simple PLC section 12 Acc&Dec time selection	0 ～3	0	☆
PC-44	Simple PLC section 13 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-45	Simple PLC section 13 Acc&Dec time selection	0 ～3	0	☆
PC-46	Simple PLC section 14 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-47	Simple PLC section 14 Acc&Dec time selection	0 ～3	0	☆
PC-48	Simple PLC section 15 running time	0.0s(h)～6553.5s(h)	0.0s(h)	☆
PC-49	Simple PLC section 15 Acc&Dec time selection	0 ～3	0	☆
PC-50	Simple PLC running time unit	0: s (seconds) 1: h (hours)	0	☆
PC-51	Multi-command 0 given mode	0: Function code PC-00 given 1: AI1 2: AI2 3: AI3 4: PULSE pulse 5: PID 6: Preset frequency (P0-08) given, UP/DOWN can be modified	0	☆

Code	Name	Set Range	Default	Alter
	Pd Group Communication parameters			
Pd-00	Communication baud rate	ones place:MODBUS 0：300BPS 1：600BPS 2：1200BPS 3：2400BPS 4：4800BPS 5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS	5	☆
Pd-01	MODBUS data format	0: No parity (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity (8-N-1) (MODBUS valid)	0	☆
Pd-02	Local address	0: Broadcast address 1 ~ 247 (MODBUS)	1	☆
Pd-03	MODBUS response delay	0 ~ 20ms (MODBUS valid)	2	☆
Pd-04	Serial communication timeout time	0.0: Invalid 0.1 60.0s	0.0	☆
Pd-05	MODBUS	Ones place: MODBUS 0: Non-standard MODBUS protocol 1: Standard MODBUS protocol	0	☆
Pd-06	Communication read current resolution	0：0.01A 1：0.1A	0	☆
	PE Group User-defined function code			
PE-00	User function code 0		P0.10	☆
PE-01	User function code 1		P0.02	☆
PE-02	User function code 2		P0.03	☆
PE-03	User function code 3		P0.07	☆
PE-04	User function code 4		P0.08	☆
PE-05	User function code 5	P0-00 ～PP-xx	P0.17	☆
PE-06	User function code 6	A0-00 ～Ax-xx	P0.18	☆
PE-07	User function code 7	U0-xx ～U0-xx	P3.00	☆
PE-08	User function code 8		P3.01	☆
PE-09	User function code 9		P4.00	☆
PE-10	User function code10		P4.01	☆
PE-11	User function code11		P4.02	☆
PE-12	User function code12		P5.04	☆
PE-13	User function code13	P0-00 ～PP-xx	P5.07	☆
PE-14	User function code14	A0-00 ～Ax-xx	P6.00	☆

Code	Name	Set Range	Default	Alter
PE-15	User function code15	U0-xx ～U0-xx	P6.10	☆
PE-16	User function code16		P0.00	☆
PE-17	User function code17		P0.00	☆
PE-18	User function code18		P0.00	☆
PE-19	User function code19		P0.00	☆
PE-20	User function code20		P0.00	☆
PE-21	User function code21		P0.00	☆
PE-22	User function code22		P0.00	☆
PE-23	User function code23		P0.00	☆
PE-24	User function code24		P0.00	☆
PE-25	User function code25		P0.00	☆
PE-26	User function code26		P0.00	☆
PE-27	User function code27		P0.00	☆
PE-28	User function code28		P0.00	☆
PE-29	User function code29		P0.00	☆
PP Group function code management				
PP-00	User password	0 ～65535	0	☆
PP-01	Parameter initialization	0: No operation 01: Restore factory parameters, excluding motor parameters 02: Clear record information 04: Backup user's current parameters 501: Restore user backup parameters	0	★
PP-02	Function parameter group display selection	Ones place: U group display selection 0: Not displayed 1: Display Tens place: Group A display selection 0: Not displayed 1: Display	11	☆
PP-04	Personality parameter group display selection	Ones place: User-defined parameter group display selection 0: Not displayed 1: Display Tens place: User changes parameter group display selection 0: Not displayed 1: Display	00	☆
A0 Group Torque control parameters				
A0-00	Speed/torque control mode selection	0: Speed control 1: Torque control	0	★
A0-01	Torque setting source selection in torque control mode	0: Digital setting 1 (A0-03) 1: AI1 2: AI2 3: AI3 4: PULSE pulse 5: Communication given 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) (The full scale of options 1-7 corresponds to the digital setting of A0-03)	0	★

Code	Name	Set Range	Default	Alter
A0-03	Torque digital setting	-200.0% ~200.0%	150.0%	☆
A0-05	Torque control forward maximum frequency	0.00Hz~max. frequency	50.00Hz	☆
A0-06	Torque control reverse maximum frequency	0.00Hz~max. frequency	50.00Hz	☆
A0-07	Torque Ctrl Acc. time	0.00s ~65000s	0.00s	☆
A0-08	Torque Ctrl Dec. time	0.00s ~65000s	0.00s	☆
A2 Group Second motor control				
A2-00	Motor type selection	0: Ordinary asynchronous motor 1: Variable frequency asynchronous motor 2: Permanent magnet synchronous motor	**0**	★
A2-01	Motor rated power	0.1kW ~1000.0kW	Model Set	★
A2-02	Motor rated voltage	1V ~2000V	Model Set	★
A2-03	Motor rated current	0.01A 655.35A (Inverter power 55kW) 0.1A 6553.5A(Inverter power>55kW)	Model Set	★
A2-04	Motor rated frequency	0.01 Hz to maximum frequency	Model Set	★
A2-05	Motor rated speed	1rpm ~65535rpm	Model Set	★
A2-06	Asynchronous motor stator resistance	0.001 65.535 (Inverter power 55kW) 0.0001 6.5535 (Inverter power >55kW)	Model Set	★
A2-07	Asynchronous motor rotor resistance	0.001 65.535 (Inverter power 55kW) 0.0001 6.5535 (Inverter power >55kW)	Model Set	★
A2-08	Asynchronous motor leakage inductance	0.001 65.535 (Inverter power 55kW) 0.0001 6.5535 (Inverter power >55kW)	Model Set	★
A2-09	Asynchronous motor mutual inductance	0.001 65.535 (Inverter power 55kW) 0.0001 6.5535 (Inverter power >55kW)	Model Set	★
A2-10	Asynchronous motor no-load current	0.001 65.535 (Inverter power 55kW) 0.0001 6.5535 (Inverter power >55kW)	Model Set	★
A2-16	Synchronous motor stator resistance	0.001 65.535 (Inverter power 55kW) 0.0001 6.5535 (Inverter power >55kW)	Model Set	★
A2-17	Synchronous motor D-axis inductance	0.001 65.535 (Inverter power 55kW)	Model Set	★

Code	Name	Set Range	Default	Alter
		0.0001 6.5535 (Inverter power >55kW)		
A2-18	Synchronous motor Q-axis inductance	0.001 65.535 (Inverter power 55kW) 0.0001 6.5535 (Inverter power >55kW)	Model Set	★
A2-20	Synchronous back EMF	0.1V ~6553.5V	Model Set	★
A2-27	Encoder lines number	1 ~65535	1024	★
A2-28	Encoder type	0: ABZ incremental encoder 2: Resolver	0	★
A2-29	Speed feedback PG selection	0: Local PG 1: Extended PG 2: PULSE pulse input (DI5)	0	★
A2-30	ABZ Incremental encoder AB phase sequence	0: Positive 1: Reverse	0	★
A2-34	Resolver's pole pairs	1 ~65535	1	★
A2-36	Speed feedback PG disconnection detection time	0.0: No action 0.1s 10.0s	0.0	★
A2-37	Tuning selection	0: No operation 1: Asynchronous motor static tuning 2: Asynchronous motor complete tuning 11: On-load tuning of synchronous machine 12: Synchronous machine no-load tuning	0	★
A2-38	Speed loop gain 1	1 ~100	30	☆
A2-39	Speed loop time 1	0.01s ~10.00s	0.50s	☆
A2-40	Switching frequency 1	0.00 ~A2-43	5.00Hz	☆
A2-41	Speed loop gain 2	1 ~100	20	☆
A2-42	Speed loop time 2	0.01s ~10.00s	1.00s	☆
A2-43	Switching frequency 2	A 2 - 4 0 Maximum frequency	10.00Hz	☆
A2-44	Vector control slip gain	50% ~200%	100%	☆
A2-45	Velocity loop filter time constant	0.000s~0.100s	0.000s	☆
A2-46	Vector control overexcitation gain	0~200	64	☆
A2-47	Torque upper limit source in speed control mode	0: A2-48 setting 1: AI1 2: AI2 3: AI3 4: PULSE pulse 5: Communication given 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) The full scale of options 1-7 corresponds to the digital setting of A2-48	0	☆
A2-48	Speed control mode down	0.0%~200.0%	150.0%	☆

Code	Name	Set Range	Default	Alter
	Torque upper limit digital set			
A2-51	Excitation proport gain	0 ~20000	2000	☆
A2-52	Excitation integral gain	0 ~20000	1300	☆
A2-53	Torque proport gain	0 ~20000	2000	☆
A2-54	Torque integral gain	0 ~20000	1300	☆
A2-55	Velocity Loop Integral Properties	Ones place: Integral separation 0: Invalid 1: Valid	0	☆
A2-56	Synchronous machine weakening mode	0: Not weak magnetic 1: Direct calculation mode 2: Auto Adjustment Mode	1	☆
A2-57	Weakening depth	50% ~500%	100%	☆
A2-58	Max.weakening current	1% ~300%	50%	☆
A2-59	Auto adjust gain	10% ~500%	100%	☆
A2-60	Integral multiple	2 ~10	2	☆
A2-61	2nd motor control method	0: Speed sensorless vector control (SVC) 1: With speed sensor vector control (FVC) 2: V/F control	0	☆
A2-62	2nd motor Acc./Dec. time selection	0: Same as the 1st 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	☆
A2-63	2nd motor torque boost	0.0%: Auto torque boost 0.1% ~30.0%	Model Set	☆
A2-65	2nd motor oscillation suppression gain	0~100	Model Set	☆
A5 Group Control optimization parameters				
A5-00	DPWM upper freq.	0.00Hz~15.00Hz	12.00Hz	☆
A5-01	PWM modulat method	0: Asynchronous modulation 1: Synchronous modulation	0	☆
A5-02	Dead time compensation mode selection	0: No compensation 1: Compensation mode 1 2: Compensation mode 2	1	☆
A5-03	Random PWM depth	0: Random PWM is invalid 1 ~ 10: PWM carrier freq. random depth	0	☆
A5-04	Fast current limit enable	0: Disable 1: enable	1	☆
A5-05	Current compensation	0 ~100	5	☆
A5-06	Undervolt point setting	60.0% ~140.0%	100.0%	☆
A5-07	SVC optimization mode selection	0: Not optimized 1: Optimization mode 1 2: Optimization Mode 2	1	☆
A5-08	Dead time adjustment	100%~200%	150%	☆
A5-09	Overvolt point setting	200.0V ~2500.0V	Model Set	★

		A6 Group AI curve setting		
A6-00	AI curve 4 min. input	-10.00V ～A6-02	0.00V	☆
A6-01	AI curve 4 min. input corresponding setting	-100.0% ～+100.0%	0.0%	☆
A6-02	AI curve 4 inflection point 1 input	A6-00～A6-04	3.00V	☆
A6-03	AI curve 4 point 1 input corresponding setting	-100.0% ～+100.0%	30.0%	☆
A6-04	AI curve 4 inflection point 2 input	A6-02～A6-06	6.00V	☆
A6-05	AI curve 4 point 2 input corresponding setting	-100.0% ～+100.0%	60.0%	☆
A6-06	AI curve 4 max. input	A6-06 ～+10.00V	10.00V	☆
A6-07	AI curve 4 max. input corresponding setting	-100.0% ～+100.0%	100.0%	☆
A6-08	AI curve 5 Min. input	-10.00V ～A6-10	-10.00V	☆
A6-09	AI curve 5 Min. input corresponding setting	-100.0% ～+100.0%	-100.0%	☆
A6-10	AI curve 5 point 1 input	A6-08～A6-12	-3.00V	☆
A6-11	AI curve 5 point 1 input corresponding setting	-100.0% ～+100.0%	-30.0%	☆
A6-12	AI curve 5 point 2 input	A6-10～A6-14	3.00V	☆
A6-13	AI curve 5 point 2 input corresponding setting	-100.0% ～+100.0%	30.0%	☆
A6-14	AI curve 5 max. input	A6-12 ～+10.00V	10.00V	☆
A6-15	AI curve 5 max. input corresponding setting	-100.0% ～+100.0%	100.0%	☆
A6-24	AI1 set jump point	-100.0% ～100.0%	0.0%	☆
A6-25	AI1 sets the jump width	0.0%～100.0%	0.5%	☆
A6-26	AI2 set jump point	-100.0% ～100.0%	0.0%	☆
A6-27	AI2 set jump width	0.0%～100.0%	0.5%	☆
A6-28	AI3 set jump point	-100.0% ～100.0%	0.0%	☆
A6-29	AI3 set jump width	0.0%～100.0%	0.5%	☆
		AC Group AIAO correction		
AC-00	AI1 Measured volt 1	0.500V ～4.000V	Factory Set	☆
AC-01	AI1 displays volt 1	0.500V ～4.000V	Factory Set	☆
AC-02	AI1 Measured volt 2	6.000V ～9.999V	Factory Set	☆
AC-03	AI1 displays volt 2	6.000V ～9.999V	Factory Set	☆
AC-04	AI2 Measured volt 1	0.500V ～4.000V	Factory Set	☆
AC-05	AI2 displays volt 1	0.500V ～4.000V	Factory Set	☆
AC-06	AI2 Measured volt 2	6.000V ～9.999V	Factory Set	☆
AC-07	AI2 displays volt 2	6.000V ～9.999V	Factory Set	☆
AC-08	AI3 Measured volt 1	-9.999V ～10.000V	Factory Set	☆
AC-09	AI3 displays volt 1	-9.999V ～10.000V	Factory Set	☆
AC-10	AI3 Measured volt 2	-9.999V ～10.000V	Factory Set	☆
AC-11	AI3 displays volt 2	-9.999V ～10.000V	Factory Set	☆

		设定范围		出厂值	Alter
AC-12	AO1 target voltage 1	0.500V	～4.000V	Factory Set	☆
AC-13	AO1 measured volt 1	0.500V	～4.000V	Factory Set	☆
AC-14	AO1 target voltage 2	6.000V	～9.999V	Factory Set	☆
AC-15	AO1 measured volt 2	6.000V	～9.999V	Factory Set	☆
AC-16	AO2 target voltage 1	0.500V	～4.000V	Factory Set	☆
AC-17	AO2 measured volt 1	0.500V	～4.000V	Factory Set	☆
AC-18	AO2 target voltage 2	6.000V	～9.999V	Factory Set	☆
AC-19	AO2 measured volt 2	6.000V	～9.999V	Factory Set	☆
AC-20	AI2 Measure current 1	0.000mA	～20.000mA	Factory Set	☆
AC-21	AI2 sampling current 1	0.000mA	～20.000mA	Factory Set	☆
AC-22	AI2 Measure current 2	0.000mA	～20.000mA	Factory Set	☆
AC-23	AI2 sampling current 2	0.000mA	～20.000mA	Factory Set	☆
AC-24	AO1 ideal current 1	0.000mA ～20.000mA		Factory Set	☆
AC-25	AO1 measure current1	0.000mA ～20.000mA		Factory Set	☆
AC-26	AO1 ideal current 2	0.000mA ～20.000mA		Factory Set	☆
AC-27	AO1 measure current2	0.000mA ～20.000mA		Factory Set	☆

5.2 Summary of monitoring parameters

Code	Name	Minimum unit	Address
U0 Group　Basic monitoring parameters			
U0-00	Operating frequency (Hz)	0.01Hz	7000H
U0-01	Set frequency (Hz)	0.01Hz	7001H
U0-02	Bus voltage (V)	0.1V	7002H
U0-03	Output voltage (V)	1V	7003H
U0-04	Output current (A)	0.01A	7004H
U0-05	Output power (kW)	0.1kW	7005H
U0-06	Output torque (%)	0.1%	7006H
U0-07	DI input status	1	7007H
U0-08	DO output status	1	7008H
U0-09	AI1 Voltage (V)	0.01V	7009H
U0-10	AI2 Voltage (V) Current (mA)	0. 01V/0.01mA	700AH
U0-11	AI3 Voltage (V)	0.01V	700BH
U0-12	Count value	1	700CH
U0-13	Length value	1	700DH
U0-14	Load speed display	1	700EH
U0-15	PID settings	1	700FH
U0-16	PID feedback	1	7010H
U0-17	PLC stage	1	7011H
U0-18	PULSE Input pulse frequency (Hz)	0.01kHz	7012H

Code	Name	Minimum unit	Address
U0-19	Feedback speed (Hz)	0.01Hz	7013H
U0-20	Remaining running time	0.1Min	7014H
U0-21	AI1 Voltage before calibration	0.001V	7015H
U0-22	AI2 Voltage (V)/Current (mA) before calibration	0.001V/0.01mA	7016H
U0-23	AI3 Voltage before calibration	0.001V	7017H
U0-24	Line speed	1m/Min	7018H
U0-25	Current power-on time	1Min	7019H
U0-26	Current running time	0.1Min	701AH
U0-27	PULSE Input pulse frequency	1Hz	701BH
U0-28	Communication settings	0.01%	701CH
U0-29	Encoder feedback speed	0.01Hz	701DH
U0-30	Main frequency X display	0.01Hz	701EH
U0-31	Auxiliary frequency Y display	0.01Hz	701FH
U0-32	View arbitrary memory address value	1	7020H
U0-33	Synchronous machine rotor position	0.1°	7021H
U0-34	Motor temperature value	1℃	7022H
U0-35	Target torque (%)	0.1%	7023H
U0-36	Resolver position	1	7024H
U0-37	Power factor angle	0.1°	7025H
U0-38	ABZ position	1	7026H
U0-39	VF separation target voltage	1V	7027H
U0-40	V F split output voltage	1V	7028H
U0-41	DI input status visual display	1	7029H
U0-42	DO input status visual display	1	702AH
U0-43	DI Status Display 1 (Function 01-Function 40)	1	702BH
U0-44	DI Status Display 2 (Function 41-Function 80)	1	702CH
U0-45	Fault details	1	702DH
U0-58	Z signal counter	1	703AH
U0-59	Set frequency (%)	0.01%	703BH
U0-60	Running frequency (%)	0.01%	703CH
U0-61	Inverter status	1	703DH
U0-62	Current fault code	1	703EH
U0-65	Torque upper limit	0.1%	7041H

Chapter 6 Maintenance and Fault Diagnosis

6.1 Daily maintenance and maintenance of the inverter

6.1.1 Daily maintenance

Due to the influence of ambient temperature, humidity, dust and vibration, the components inside the inverter will be aged, resulting in potential failure of the inverter or reducing the service life of the inverter. Therefore, it is necessary to carry out daily and regular maintenance and maintenance of the inverter. Daily inspection items:

1）Whether the sound of the motor changes abnormally during operation

2）Whether there is vibration during the operation of the motor

3）Whether the inverter installation environment has changed

4）Whether the cooling fan of the inverter is working normally

5）Whether the inverter is overheated

6）Daily cleaning:

7）Always keep the inverter in a clean state

8）Remove the dust on the inverter to prevent the accumulated dust. Especially metal dust.

9）Effectively remove the oil stains on the cooling fan of the inverter

6.1.2 Periodic inspection

Periodically check the places that are difficult to check during operation.

Regular inspection items:

1) Check the air duct and clean it regularly

2) Check whether the screws are loose

3) Check that the inverter is corroded

4) Check whether there are arc marks on the terminals 5) Insulation test of the main circuit

Reminder: Measuring insulation resistance with a megger (please use a DC 500V megger), Disconnect the main circuit line from the drive.Do not test control circuit insulation with an insulation resistance meter.High voltage testing is not necessary (done at the factory).

6.1.3 Replacement of wearing parts of inverter

The consumable parts of the inverter mainly include cooling fans and electrolytic capacitors for filtering, and their service life is closely related to the environment and maintenance conditions. The typical life time is:

Device name	Life time
Fan	2~3 years
Electrolytic capacitor	4~5 years

Note: The standard replacement time is the time when it is used under the following conditions, and the user can determine the replacement period according to the operating time.

- Ambient temperature: The annual average temperature is around 30°C
- Load rate: below 80%
- Operating rate: less than 20 hours/day

1) Cooling fan

Possible damage causes: bearing wear, blade aging.
Judgment criteria: Whether there are cracks in the fan blades, etc.,

and whether there is abnormal vibration when the sound is turned on.

    2) Filter electrolytic capacitor

Possible causes of damage: poor input power quality, high ambient temperature, frequent load jumps, and electrolyte aging.Judgment criteria: whether there is liquid leakage, whether the safety valve has protruded, the measurement of electrostatic capacitance, and the

measurement of insulation resistance.

6.1.4 Storage of the inverter

After purchasing the inverter, the user must pay attention for storage and long-term storage:

1) When storing, try to put it into the company's box according to the original packaging.
2) Long-term storage will lead to the deterioration of electrolytic capacitors.
It must be ensured that the power is turned on once within 1 years, power-on time at least 5 hours.

The input voltage must be slowly increased to the rated value with a voltage regulator.

6.2 Warranty description of inverter

1) The free warranty only refers to the inverter itself.
2) Under normal use conditions, failure or damage occurs,

our company is responsible for 18 months warranty

3) Within 18 months, if the following situations occur, a certain maintenance fee shall be charged:

4) The damage to the machine caused by the user's failure to comply with the user manual;

5) Damage caused by fire, flood, abnormal voltage, etc.;

6) Damage caused when the inverter is used for abnormal functions;

7) The relevant service fee is calculated according to the unified standard of the manufacturer.

6.3 Fault alarm and countermeasures

If a fault occurs during the operation , the inverter will immediately protect the motor and stop , and at the same time, the inverter fault relay contact will act.
The inverter panel will display the fault code. 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 ask for technical support.

Table 6-1 List of fault information

Fault name	Fault code	Troubleshooting	Troubleshooting Countermeasures
Inverter unit protection	Err01	1. The output circuit of the inverter is short-circuited 2. Motor and inverter wiring is too long 3. The module overheats 4. The internal wiring of the inverter is loose 5. The main control board is abnormal 6. The driver board is abnormal 7. Inverter module is abnormal	1. Eliminate peripheral faults 2. Install reactor or output filter 3. Check whether the air duct is blocked, fan is working? 4. Plug in all the cables 5. Ask for technical support 6. Ask for technical support 7. Ask for technical support

Fault name	Fault code	Troubleshooting	Troubleshooting Countermeasures
Acceleration overcurrent	Err02	1. Grounding or short circuit in the output circuit 2. Vector control and no parameter identification is performed 3. The Acc. time is too short 4. Manual torque boost or V/F curve is not suitable 5. Low voltage 6. Start the rotating motor 7. Sudden load during acceleration 8. Inverter selection is too small	1. Eliminate peripheral faults 2. Motor parameter identification 3. Increase the acceleration time 4. Adjust manual lifting torque or V/F curve 5. Adjust the voltage to the normal 6. Speed tracking start or Motor to stop before restarting 7. Cancel sudden load 8. Use larger power levels inverter
Deceleration overcurrent	Err03	1 Grounding or short circuit in the output circuit 2. Vector control and no parameter identification is performed 3.The Dec. time is too short 4.Relatively low voltage 5. Sudden add load when Dec. 6. Havenot brake unit or resistance	1.Eliminate peripheral faults 2. Motor parameter identification 3.Increase deceleration time 4. Adjust the voltage to the normal 5.Cancel sudden load 6.Install brake unit and resistance
Constant speed overcurrent	Err04	1. Grounding or short circuit in the output circuit 2. Vector control and no parameter identification is performed 3.Low voltage 4.Sudden load exist in the running 5. Inverter selection is too small	1.Eliminate peripheral faults 2. Motor parameter identification 3. Adjust the voltage to the normal 4.Cancel sudden load 5. Use larger power levels inverter
Accelerating overvoltage	Err05	1.Relatively high input voltage 2. External force dragging motor running when acceleration 3.Too short acceleration time 4. havenot brake unit & resistance	1. Adjust the voltage to normal 2.Cancel the external force or install brake resistance 3.Increase acceleration time 4.Install brake unit and resistance
Deceleration overvoltage	Err06	1.Relatively high input pressure 2. External force dragging motor running when deceleration 3.Too short deceleration time 4.No installing brake unit and brake resistance	1. Adjust the voltage to normal 2.Cancel the external force or install brake resistance 3.Increase deceleration time 4.Install brake unit and resistance

Fault name	Fault code	Troubleshooting	Troubleshooting Countermeasures
Constant speed overvoltage	Err07	1. The input voltage is too high 2. External force driving the motor to run during operation	1. Adjust the voltage to the normal range 2. Cancel external power or install braking resistor
Power failure	Err08	1. Input voltage is Wrong	1.Put in the right Voltage
Undervoltage fault	Err09	1. Instantaneous power failure 2. The input voltage of the inverter is not within the range required by the specification 3. The bus voltage is abnormal 4. The rectifier bridge and buffer resistance are abnormal 5. Abnormal drive board 6. The control panel is abnormal	1. Reset fault 2. Adjust the voltage to the normal range 3. Ask for technical support 4. Ask for technical support 5. Ask for technical support 6. Ask for technical support
Inverter overload	Err10	1. Loading is too large or the motor is blocked 2. Inverter selection is too small	1. Reduce loading&check motor 2. Select a larger power level
Motor overload	Err11	1. Whether the setting of motor protection parameter P9-01 is appropriate 2. Whether the load is too large or the motor is blocked 3. Inverter selection is too small	1. Correctly set this parameter 2. Reduce the load and check the motor and condition 3. Select the inverter with a larger power level
Input phase loss	Err12	1. The three-phase input power supply is abnormal 2. The driver board is abnormal 3. The lightning protection board is abnormal 4. The main control board is abnormal	1. Check and eliminate problems in peripheral circuits 2. Ask for technical support 3. Ask for technical support 4. Ask for technical support
Output phase loss	Err13	1. The lead from the inverter to the motor is abnormal 2. The three-phase output of the inverter is unbalanced 3. The driver board is abnormal 4. Module exception	1. Eliminate peripheral faults 2. Check whether the 3-phase and troubleshoot 3. Ask for technical support 4. Ask for technical support
Module overheating	Err14	1. The temperature is too high 2. The air duct is blocked 3. The fan is damaged 4. Module thermistor is damaged 5. Inverter module is damaged	1. Lower the temperature 2. Clean the air duct 3. Replace the fan 4. Replace the thermistor 5. Replace the inverter module
External device failure	Err15	1. Multi-function terminal DI input signal fault 2. Virtual IO function input signal fault	1. Reset operation 2. Reset operation

Fault name	Fault code	Troubleshooting	Troubleshooting Countermeasures
Communication fail	Err16	1. The host computer wiring is abnormal 2. The line is abnormal 3. The P0-28 setting is incorrect 4. The PD group setting is incorrect	1. Check the host computer' wiring 2. Check the communication line 3. Set the expansion card correctly 4. Set the communication parameters correctly
Contactor failure	Err17	1. The driver board and power supply are abnormal 2. The contactor is abnormal	1. Replace the driver board or power supply 2. Replace the contactor
Current detection failure	Err18	1.Inspect Hall device is abnormal 2.Abnormal drive board	1.Replace Hall device 3.Replace drive board
Motor tuning failure	Err19	1.The motor parameter is not set as per the name board 2.Parameter identification time-out	1. Set motor parameter correctly 2. Inspect the down-lead wiring
Encoder fault	Err20	1.Encoder model is not matching 2.Encoder wiring error 3.Encoder manages 4.Abnormal PG card	1. Correctly set the encoder type as per the actual situation 2.Troubleshoot line failure 3.Replace encoder 4.Replace PG card
EEPROM read-write fault	Err21	1.EEPROM chip damages	1.Replace main control board
Inverter hardware fault	Err22	1.There is overpressure 2.There is overcurrent	1.Handling for overpressure failure 2.Handling for overcurrent failure
Short circuit to ground	Err23	1.Motor short circuit to earth	1.Replace cable or motor
Running time reached	Err26	1. Running time reaches up to the set value	1.Clear the record information
User-defined fault 1	Err27	1.DI input the signal of user-defined Failure 1 2.IO input the signal of user-defined Failure 1	1.Reset running 2.Reset running
User-defined fault 2	Err28	1.DI input the signal of user-defined Failure 2 2.IO input the signal of user-defined Failure 2	1.Reset running 2.Reset running
Power-on time reached	Err29	1.Power-on time reached	1.Clear the record information
Loading become to 0	Err30	1.The inverter running current is lower than P9-64	1. Confirm loading is disconnected or P9-64 and P9-65 meets the running conditions

Fault name	Fault code	Troubleshooting	Troubleshooting Countermeasures
PID feedback loss fault	Err31	1. The PID feedback is lower than the set value of PA-26	1. Inspect PID feedback signal or set PA-26 as normal value
Wave current limit failure	Err40	1. Whether the load is too large or the motor is blocked 2. Inverter selection is too small	1. Reduce the load and check motor 2. Select a larger power level
Motor switch fault	Err41	1. Use the terminal to change the current motor selection	1. Perform motor switching operation after the inverter stops
Too large speed deviation	Err42	1. Incorrect setting for encoder 2. Parameter is not conducted 3. Too large speed deviation, and parameter P9-69 and P9-70 are not reasonably set	1. Correctly set the parameters 2. Motor parameter identification 3. Set the detection parameters reasonably
Motor overspeed fault	Err43	1. Incorrect setting for encoder 2. Parameter is not conducted 3. Overspeed detection parameter P9-69 and P9-70 are not reasonably set	1. Correctly set the parameters 2. Motor parameter identification 3. Set the detection parameters reasonably
Motor overheat	Err45	1. Loose temperature sensor wiring 2. Motor temperature is too high	1. Detect temperature sensor wiring 2. Reduce the carrier frequency or Cool the motor
Initial position fault	Err51	1. The motor parameters and the actual deviation are too large	1. Whether the motor parameters are correct, focusing on whether the rated current is set too small
Burst tube failure	Err55	1. Water pressure can't come up for a long time after the motor is started	
H-pressure fault	Err56	1. The water pressure exceeds the ultra-high pressure alarm pressure	

6.4 Common faults and their solutions

The following fault conditions may be encountered during the use of the inverter, please refer to the following methods for simple fault analysis:

Table 6-2 Common faults and their solutions

No.	Failure	Possible reasons	Solutions
1	Power on not display	The grid voltage is not available or too low; Switching power supply failure; The rectifier bridge is damaged; The buffer resistance of the inverter is damaged; Control panel, keyboard failure; The connection between the control board, the driver board and the keyboard is broken;	Check the input power; Check bus voltage; Re-plug the 8-pin and 28-pin cables; Seek manufacturer service;
2	Power-up display DFL	The connection between the driver board and the control board is in poor contact; The related devices on the control board are damaged; The motor or motor line is shorted to ground; Hall fault; The grid voltage is too low;	Re-plug the 8-pin and 28-pin cables; Seek manufacturer service;

No.	Failure	Possible reasons	Solutions
3	Power on display "Err23" alarm	The motor or short-circuited to ground;Inverter is damaged;	Use megger to measure the insulation of motor & output line; Seek factory service;
4	Inverter displays normal, When run, displays "DFL" and stops	The fan is damaged or blocked; Peripheral control terminal short circuit	Replace the fan; Eliminate short-circuit faults;
5	Frequent reports of Err14 (module overheating) fault	Carrier freq. setting is too high. Fan is damaged or Air blocked. Internal components damage (thermocouple or other)	Decrease carrier freq. (P0-15). Replace the fan& clean air duct. Seek factory service.
7	DI terminal is invalid.	Parameter setting error; External signal error; OP and +24V jumper loose; Control board failure;	Check and reset P4 group; Reconnect external signal line; Reconfirm OP and+24V jumper; Seek factory service;
8	During closed-loop vector control, the motor speed can't be increased.	Encoder failure; The encoder wrong wired or has poor contact; PG card failure; Drive board failure;	Replace Encoder and reconfirm the wiring; Replace the PG card; seek services;