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# VDF PLANCK

**Vector Frequency Inverter**

## **SU-700/800/900/1000**

## **SU-800/900/1000 series**

operating specification Manual v1.0

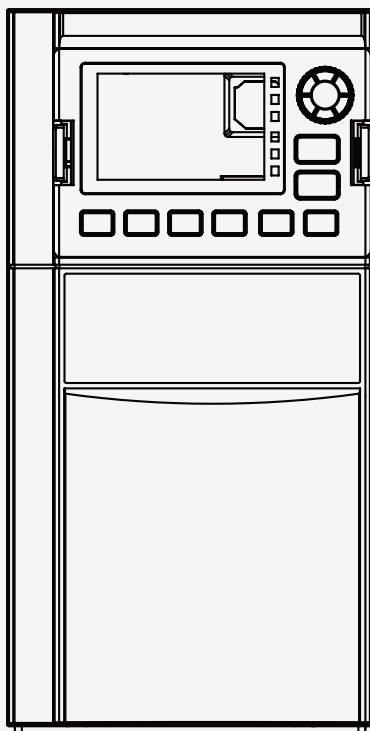
please read this specification carefully before use  
and please safety keep for future reference.



**/ VDF VECTOR**

# SU-700/800/900/1000 series vector frequency converter

## **operating specification Manual**



**Thanks for you selecting and using our 700/800/900/1000 frequency converter products.**

**Please read this specification manual carefully before using to use this product correctly and safely.**

**Please read [safety notices] carefully before using.**

**Please keep this manual properly so that it is convenient for you to check and read when required. Any questions please contact our customer service staff to ask for technical support, our professionals will do best to service for you.**

This operating manual provided the relate information of 700/800/900/1000 frequency converter, the contents include:

- ◇ safety notices of frequency converter
- ◇ installation and inspection of frequency converter
- ◇ wiring instruction of frequency converter
- ◇ operation instruction of frequency converter
- ◇ all parameters instruction
- ◇ communication agreement instruction
- ◇ troubleshooting

This operating manual suitable to be consulted by the below operators:

- ◇ system design and model select staffs
- ◇ installation or wiring staffs
- ◇ debugging staffs
- ◇ maintain or maintenance staffs

# Catalogue

## Chapter I Product Information

1.1 Security information and precautions.....	05
1.2 naming rules.....	05
1.3 Inverter Series Index.....	05
1.4 Product appearance diagram and mounting hole size.....	07
1.5 Warranty description of Inverter.....	07

## Chapter II Electrical installation

2.1 main circuit terminals and wiring.....	08
--	----

## Chapter III Operation display

3.1 introduction to the operation and display interface.....	12
--	----

## Chapter IV functional Parameter Table

4.1 basic function parameters simple table.....	15
---	----

## Chapter V Communication Protocol

5.1 function code data.....	55
5.2 non-functional code data.....	56
5.3 content of the agreement.....	59
5.4 Fault description of frequency converter description of .....	67
5.5PD group communication parameters.....	68

## Chapter VI Fault diagnosis and Countermeasures

6.1 Fault alarm and countermeasures .....	70
6.2 Common faults and their treatment methods .....	75



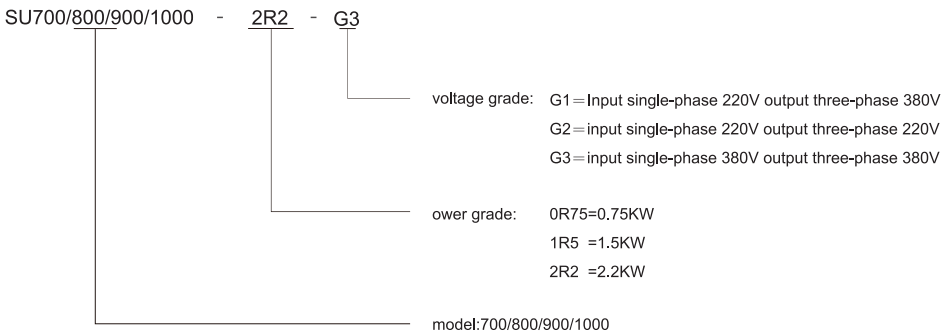
# chapter 1 product information

## 1.1 safety information and notices

safety deinition: the safety notices in this manual divided into the below two types:

- ⚠ Danger: the danger caused by that operation not according to requirements,which maybe cause serious hurt, even though death;
- ⚠ Attention: the danger caused by that operation not according to requirements maybe cause medium hurt or minor hurt and equipment damaged; please read this chapter carefully when user install, debug and maintain this system, must operating according to the required safety notices in the content of this chapter. Any hurt and loss which caused by the operation not according to the requirements are unconcerned with our company.

## 1.2 Naming rules



## 1.3 Partial indicators of frequency converter series

Frequency Converter mode	Power supply Capacity (KVA)	Rated input current (A)	Rated output current (A)	Adapted motor	
				kW	HP
single phase power supply: 220v, 50Hz/60Hz					
SU700-0R75G1	1.5	8.2	2.1	0.75	1
SU700-1R5G1	3	14	3.8	1.5	2
SU700-2R2G1	4	23	5.1	2.2	3
SU700-4R0G1	5.5	31	9	4	4
SU700-5R5G1	8.9	37	13	5.5	5
SU700-7R5G1	11	50.5	17	7.5	10

# 1.3 Inverter Series Index

Frequency Converter mode	Power supply Capacity (KVA)	Rated input current (A)	Rated output current (A)	Adapted motor	
				kW	HP
SU700-11R0G1	17	74	25	11	15
SU700-15R0G1	21	101	32	15	20
SU700-18R5G1	24	124.5	37	18.5	25
SU700-22R0G1	30	148	45	22	30

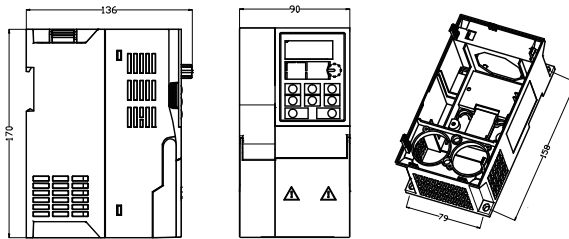
single phase power supply: 220v, 50Hz/60Hz

SU700-0R75G2	1.5	8.2	4	0.75	1
SU700-1R5G2	3	14	7	1.5	2
SU700-2R2G2	4	23	9.6	2.2	3
SU700-4R0G2	5.5	31	17	4	4
SU700-5R5G2	8.9	26	25	5.5	5
SU700-7R5G2	21	35	32	7.5	10

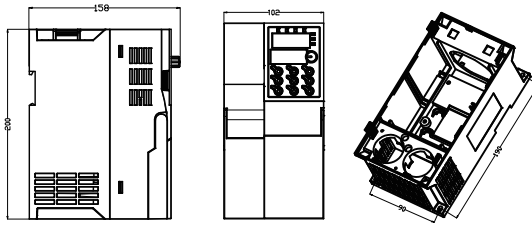
Three phase power supply: 380v, 50Hz/60Hz

SU700A-0R75G3	1.5	3.6	2.5	0.75	1
SU700A-1R5G3	3	5.1	4.1	1.5	2
SU700A-2R2G3	4	6	5.8	2.2	3
SU700A-4R0G3	6.1	10.5	9	4	5
SU700A-5R5G3	8.9	14	13	5.5	7.5
SU700A-7R5G3	11	21	17	7.5	10
SU700B-0R75G3	1.5	3.6	2.5	0.75	1
SU700B-1R5G3	3	5.1	4.1	1.5	2
SU700B-2R2G3	4	6	5.8	2.2	3
SU700B-4R0G3	6.1	10.5	9	4	5
SU700B-5R5G3	8.9	14.6	13	5.5	7.5
SU700B-7R5G3	11	21	17	7.5	10
SU700B-7R5G3	11	21	17	7.5	10
SU700B-11R0G3	17	26	25	11	15
SU700B-15R0G3	21	35	32	15	20
SU700B-18R5G3	24	38.5	37	18.5	25
SU700B-22R0G3	30	46.5	45	22	30

## 1.4 Partial appearance and dimensions of frequency converters

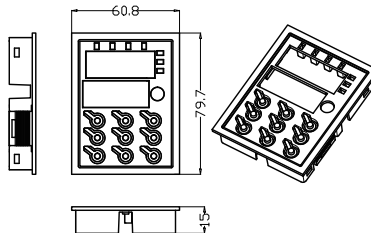


picture of 700 Series 0.75-2.2Kw shape and installation dimension



picture of 700 Series 4-7.5Kw shape and installation dimension

## Exterior dimensions of external keyboard silos



## 1.5 Warranty description of Inverter

Free warranty refers only to the frequency converter itself. In normal use, if failure or damage occurs, our company shall be responsible for the 18-month warranty (From the date of manufacture, subjected to the bar code on the appearance), a reasonable maintenance fee will be charged for more than 18 months.

Within 18 months, a certain maintenance fee shall be charged if:

- 1) damage to the machine caused by the user's failure to comply with the provisions of the manual
- 2) damage caused by fire, flood, abnormal voltage, etc.
- 3) damage caused by the application of frequency converters to abnormal functions
- 4) the relevant service costs shall be calculated in accordance with the uniform standards of the manufacturer and, if there is a contract, shall be dealt with in accordance with the principle of contract priority

# chapter 2 Electric installations

## 2.1 Main circuit terminals and wiring

1) Frequency converter main circuit terminal instruction:

Terminal marks	Name	Instruction
R、S、T/L、N	Power supply input terminals	connection point of three-phase 380V / single-phase 220VAc power supply
P+、PB	Brake electric resistance connect terminals	connect brake electric resistance
U、V、W	Frequency converter output terminals	connect three phase motor
⊕	Grounding terminals	Grounding terminals

### 2.1.2 wiring method of frequency converter control circuit

Note: the control circuit wiring of all 700 series inverter is the same, the picture is the three-phase 380V converter wiring diagram, indicate the main loop terminal, ⊙ represents the control loop terminal.

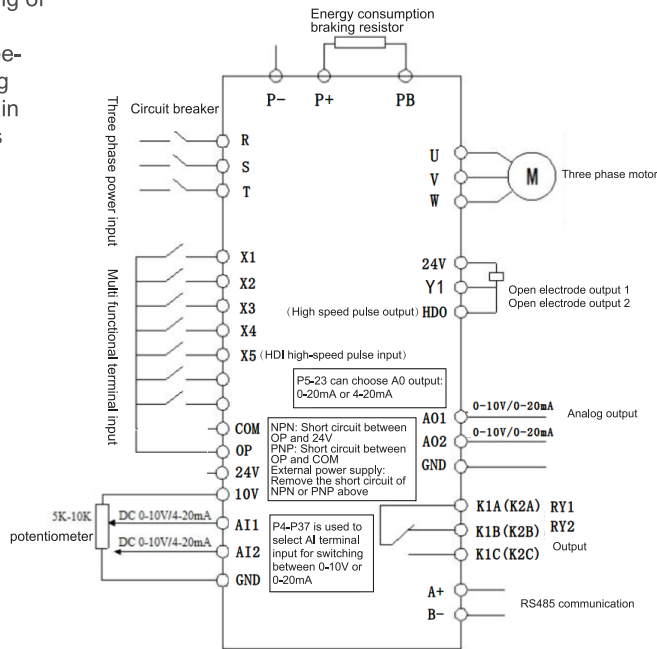


Fig 2-2 wiring method of frequency converter control circuit

2.1.3 control terminals instruction

The control circuit terminals layout diagram shown as the below:

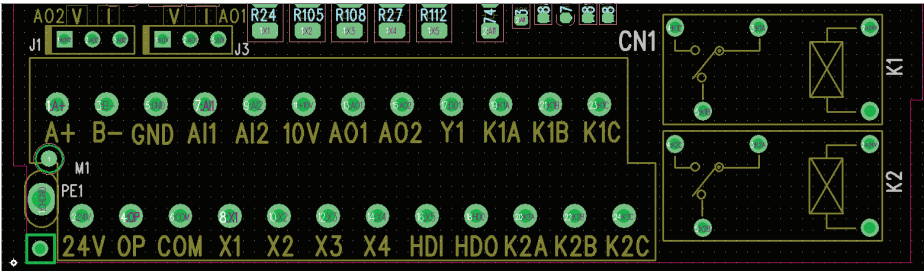


Fig 2-4 isolated(version control) circuit terminal layout

The factory default is OP and 24V short circuited (NPN) type. After removing the short circuited piece, OP and COM can use external 24V power input. AO2 has 0~10V and 0~20mA output options (selected by J1 jumper cap)

2.1.4 Control terminal function instruction:

category	Terminal symbol	Terminal name	Function instruction
power supply	+10V-GND	External+10V power supply	Provide external+10V power supply, maximum output current: 150mA (with short circuit protection) Generally used as an external potentiometer power supply, potentiometer resistance range: 1k $\Omega$ ~5k $\Omega$
	+24V- COM	External+24V power supply	Provide+24V power supply externally, generally used as working power supply for digital input/output terminals and external sensor power supply Maximum output current: 200mA
	24V-OP	Input terminal NPN	Short circuit 24V to OP, input terminal can achieve NPN mode
	OP-COM	Input terminal PNP	OP and COM are short circuited, and the input terminal can achieve PNP mode
	OP	OP and COM external 24V power supply	When the 24V and OP or OP and COM short circuiting pieces are removed, and the OP external power supply is positive and the COM external power supply is negative, external power supply to the input terminal can be achieved.
Analog terminal	AI1-GND	Analog input terminal 1	1. Input range: DC 0V~10V/0mA~20mA, determined by P4-37. 2. Input impedance: 22k $\Omega$ for voltage input and 500 $\Omega$ for current input.
	AI2-GND	Analog input terminal 1	1. Input range: DC 0V~10V/0mA~20mA, determined by P4-37. 2. Input impedance: 22k $\Omega$ for voltage input and 500 $\Omega$ for current input.
	AO1-GND	Analog output terminal 1	Output voltage range: 0V~10V Output current range: 0mA~20mA, 4~20mA (P5-23 optional) The selection of AO1 output voltage and current is determined by J3.
	AO2-GND	Analog output terminal 2	Output voltage range: 0V~10V (from J1 jumper cap on the main control board to AO2 position) Output current range: 0mA~20mA, 4~20mA (P5-23 optional) Note: It can output 0~10V or 0~20mA, selected by J1.

Digit input	X1- COM	Digit input 1	HDI still can be as high speed pulse input passageway except the characteristics of X1- X4. The highest input frequency: 50KHz Input impedance: 1KΩ Electric level input voltage range: 5v-30v
	X2- COM	Digit input 2	
	X3- COM	Digit input 3	
	X4- COM	Digit input 4	
	HDI- COM (X5 terminal)	Digit input 5	
	A+ B-	Rs485 communication	A+ is positive input of 485 communication difference signal, B- is negative input of difference signal
Digit output	Y1- COM	Collector open circuit output	When used as an open collector output terminal
	HDO- COM	High speed pulse output	Constrained by function code P5-00 "HDO terminal output mode selection" When used as a high-speed pulse output, the highest frequency reaches 50kHz; When used as an open collector output, it is the same as the Y1 specification.
	K1A-K1B-K1C	Electric relay 1 terminal	Contact description: A:public point B:normally close point C:normally open point Contact drive capacity:AC250v, 3A, COSΦ=0.4. DC 30v, 1A
	K2A-K2B-K2C	Electric relay 2 terminal	

### 2.1.5 signal input terminal wiring instruction:

Because the weak analog voltage signal especially been outer disturbed easily, so, generally need shielded cable, and the cable distribute distance should do best to be short, not exceed 20m. The analog signal source side need additionally add filter wave electric capacitor or iron-oxygen magnetism in the place where some analog signals seriously disturbed.

# chapter 3 operating display

## 3.1 introduction to the operation and display interface

Able to process the operations such as modify the function parameters of frequency converter, monitor working status of frequency converter and control frequency converter running (start and stop) through operating panel, the proile and function area shown as the below diagram:

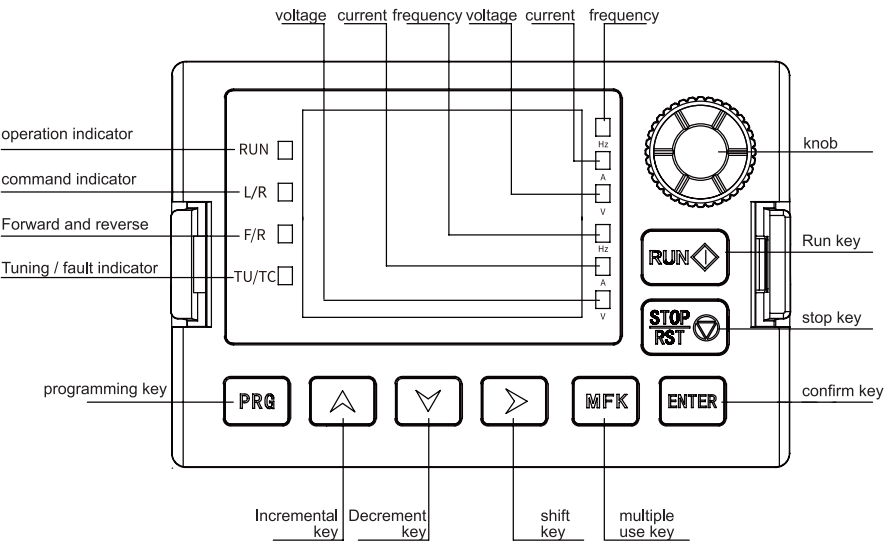


Fig 3-1 schematic diagram of operation panel



## 1) Function indicate lamp instruction:

- ◇ RUN: lamp extincted means the frequency converter be at stop machine status,
- ◇ lamp lighting means the frequency converter be at running status.

○ LOCAL/REMOTE extincted	panel start-stop control
● LOCAL/REMOTE normally lighting	Terminal start-stop control
◐ LOCAL/REMOTE lashing	Communication start-stop control

- ◇ LOCAL/REMOT: keyboard operation, terminal operation and remote operation (communication control) indicate lamp:
- ◇ FWD/REV: forward and reverse running indicate lamp, lamp lighting means it be at forward status.
- ◇ TUNE/TC: tune/torque control/failure indicate lamp, lamp lighting means it be at torque control mode, lamp slow flashing means it be at tune status, lamp quick lashing means it be at failure status.

## 2) Unit indicate lamp:

Hz	Frequency unit
A	Current unit
V	Voltage unit
RPM(Hz+A)	speed unit
%(A+V)	percentage

## 3) Digit display area:

Upward digital display: 5-digit LED main display, capable of displaying set frequency, output frequency, various monitoring data, and alarm codes.

Downward digital tube: used for monitoring function. The monitoring parameters can be set by P7-17 and P7-18 to monitor the content. The set parameter numbers correspond to the U0 group menu numbers, which can be referred to in the U0 group menu table.

4) keyboard button description table

keys	key name	key function
PRG	programming key	Level I menu enter into or withdraw
ENTER	Confirm key	Level to level enter into menu tableau, confirm setting parameters
▲	progressively increase key	Data or function code progressively increase
▼	progressively reduce key	Data or function code progressively reduce
▶	Shift key	Able to circling select the display parameters under the stop machine indicate interface and running display interface; able to select the modify bit of parameter when modifying parameters
RUN	Running key	Used in running operation under keyboard operating method
STOP/RES	Stop/reset	press this key able to used in stop running operation at running status; able to be used in reset operation at failure alarm status, the characteristics of this key restrained by function code p7-02.
MF.K	Multiply functions select key	process function shift selection according to p7-01

Table 3-1 keyboard function table

# Chapter 4 Function parameters table

## 4.1 Basic function parameters simple table

- “☆☆” : means the setting value of this parameter in frequency converter be at stop machine and running status, all can be modified;
- “★” : means the setting value of this parameter in frequency converter be at running status, can,t be modified;
- “●” : means the value of this parameter is actual test record value, can,t be modified;

### FO group-basic running parameters

Function code	Name	setting range	Leave factory value	property	EDC address
P0-00	G/P model	1: G 2: P	1	★	61440
P0-01	order source select	0:no speed sensor vector control 2:V/F control	2	★	61441
P0-02	order source selec	0:panel order passageway(LED extincted) 1:Terminal order passageway (LED lighting) 2:communication order Passageway (LED lashing)	0	☆☆	61442
P0-03	Main frequency source X selection	0: Digital setting (preset frequency P0-08, UP/DOWN can be modified, but it will not be remembered in case of power failure 1: Digital setting (preset frequency P0-08, UP/DOWN can be modified, power failure memory) 2: AI1 3: AI2 4: AI3 keyboard potentiometer 5: HDI pulse setting (X5) 6: Multi segment instruction 7: Simple PLC 8: PID 9: Communication given Note 1: When using the encoder keyboard, AI3 will fail throughout the entire process and automatically switch to 1 (numerical setting)	4	★	61443
P0-04	Assist frequency source Y selection	same to P0-03 (Main frequency source X selection)	0	★	61444

## 4.1 Basic function parameters simple table

### P0 group - basic parameters

Function code	Name	Setting range	Leave factory value	property	EDC address
P0-05	Overlay frequency source Y Scope selection	0: Relative to maximum frequency 1: Relative to frequency source X	0	☆	61445
P0-06	Range of frequency source Y during superposition	0% ~ 150%	100%	☆	61446
P0-07	Selection of frequency source superposition method	Units: Frequency source selection 0: Main frequency source X 1: Main and auxiliary operation (operation mode is determined by the tens digit) 2: Switch between main frequency source X and auxiliary frequency source Y 3: Switch between main frequency source X and main and auxiliary operation result 4: Switch between auxiliary frequency source Y and main and auxiliary operation result Tens: Main and auxiliary operation relationship of frequency source 0: Main + auxiliary 1: Main - auxiliary 2: Maximum value of the two 3: Minimum value of the two 4: Main x auxiliary 5: Main ÷ auxiliary Note: When using main ÷ auxiliary, please make sure that the main is adjusted to the minimum value first and the auxiliary is adjusted to the maximum value	00	☆	61447
P0-08	Preset frequency	0.00Hz ~ maximum frequency (P0-10)	50.00Hz	☆	61448
P0-09	Operation direction	0: same direction 1: opposite direction	0	☆	61449
P0-10	Maximum frequency	50.00Hz ~ 320.00Hz (P0-22=2) 50.0Hz ~ 3200.0Hz (P0-22=1)	50.00Hz	★	61450
P0-11	Upper frequency source	0: P0-12 setting 1: AI1 2: AI2 3: AI3 external keyboard potentiometer 4: HDI pulse setting 5: Communication setting	0	★	61451
P0-12	Upper frequency limit	Lower frequency limit P0-14 ~ Maximum frequency P0-10	50.00Hz	☆	61452
P0-13	Upper frequency limit offset	0.00Hz ~ Maximum frequency P0-10	0.00Hz	☆	61453
P0-14	Lower frequency limit	0.00Hz ~ Upper frequency limit P0-12	0.00Hz	☆	61454
P0-15	Carrier frequency	0.5kHz ~ 16.0kHz	Model confirmation	☆	61455
P0-16	Carrier frequency adjustment with temperature	0: No 1: Yes	0	☆	61456

## 4.1 Basic function parameters simple table

### P0 group - basic parameters

Function code	Name	Setting range	Leave factory value	property	EDC address
P0-17	Acceleration time 1	0s~65000s (P0-19=0) 0.0s~6500.0s (P0-19=1)	Model confirmation	☆	61457
P0-18	Deceleration time 1	0.00s~650.00s (P0-19=2)			61458
P0-19	Acceleration and deceleration time unit	0: 1 second 1: 0.1 second 2: 0.01 second	1	★	61459
P0-21	Auxiliary frequency source when superimposed Offset frequency	0.00Hz ~ Maximum frequency P0-10	0.00Hz	☆	61461
P0-22	Frequency command resolution	1: 0.1Hz 2: 0.01Hz Note: Changing to 1 can achieve high frequency output	2	★	61462
P0-23	Digital setting frequency shutdown memory	0: Do not remember 1: Remember	1	☆	61463
P0-24	Reserve	-	0	★	61464
P0-25	Acceleration/deceleration time reference frequency	0: Maximum frequency (P0-10) 1: Set frequency	0	★	61465
P0-26	Frequency command during operation	0: Operating frequency 1: Setting frequency	0	★	61466
P0-27	Upper frequency source	Units: Operation panel command binding frequency source selection 0: No binding 1: Digital setting frequency 2: AI1 3: AI2 4: AI3 external keyboard potentiometer 5: HDI pulse setting (X5) 6: Multi-speed 7: Simple PLC 8: PID 9: Communication setting Tens: Terminal command binding frequency source selection Hundreds: Communication command binding frequency source selection Thousands: Automatic operation binding frequency source selection	0000	☆	61467

## 4.1 Basic function parameters simple table

### FO group-basic running parameters

Function code	Name	setting range	Leave factory value	property	EDC address
P0-29	Apply macro	Setting range: 0-65535 10000: Function code restore factory settings macro 1: Variable frequency single pump constant pressure water supply macro 2: One to Three Constant Pressure Water Supply Macro (1 Transformer, 2 Workers) 3: One to five constant pressure water supply macro (1 transformer and 4 workers) 7: Fire inspection water supply macro 11: CNC machine tool 100Hz macro 1 12: CNC machine tool 100Hz macro 2 17: Spindle carving 300Hz macro 1 (straight line multi segment) 18: Spindle carving 300Hz macro 2 (multi-point multi segment) 19: Spindle carving 300Hz macro 3 (17+sleep mode) 20: Spindle carving 300Hz macro 4 (18+sleep mode) 21: Spindle carving 400Hz macro 1 (straight line multi segment) 22: Spindle carving 400Hz macro 2 (multi-point multi segment) 23: Spindle carving 400Hz macro 3 (21+sleep) 24: Spindle carving 400Hz macro 4 (22+sleep) 30: Spindle carving 600Hz macro 4 (multi-point+sleep) Note 1: Before selecting the macro number, execute P0-29 to restore the factory value, and then select the macro number. Note 2: For details on one to multiple water supply, please refer to parameter group b0	0	☆	61469

### F1 group-motor parameters

Function code	Name	setting range	Leave factory value	property	EDC address
P1-00	order source select	0:common asynchronous motor 1:frequency converter asynchronous motor 2: permanent magent synchronous motor (Model confirm ation)	0	★	61696
P1-01	Motor rated powe	0.1 ~ 1000KW	Model confirm ation	★	61697
P1-02	Motor rated voltage	1V ~ 380V	Model confirm ation	★	61698
P1-03	Motor rated current	0.01A ~ 100.00A	Model confirm ation	★	61699
P1-04	Motor rated frequency	0.01Hz ~ The max frequency	Model confirm ation	★	61700
P1-05	Motor rated speed	1 ~ 65535rpm	Model confirm ation	★	61701
P1-10	Asynchronous motor unload current	0.01 ~ P1-03	Tune parameters	★	61706

## 4.1 Basic function parameters simple table

### P1 Group Motor Parameters

Function code	Name	Setting range	Leave factory value	property	EDC address
P1-16	Synchronous machine stator resistance	0.001~65.535Ω(≤55KW) 0.0001~6.5535Ω(>55KW)	Tuning parameters	★	61712
P1-17	Synchronous machine D-axis inductance	0.01~655.35mH(≤55KW) 0.001~65.535 mH (>55KW)	Tuning parameters	★	61713
P1-18	Synchronous machine Q-axis inductance	0.01~655.35mH(≤55KW) 0.001~65.535 mH (>55KW)	Tuning parameters	★	61714
P1-20	Synchronous machine back electromotive force	0.0~6553.5V	Tuning parameters	★	61716
P1-37	Tuning selection	0: No operation 1: Asynchronous motor static tuning 2: Asynchronous motor complete tuning 3: Static tuning 2 11: Synchronous motor on-load tuning 12: Synchronous motor no-load tuning	0	★	61733

## 4.1 Basic function parameters simple table

P2 group-vector parameters					
Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
P2-00	Speed loop proportional gain 1	1~100	30	☆	61952
P2-01	Speed loop integral time 1	0.01~10.00s	0.50s	☆	61953
P2-02	Switching frequency 1	0.00~P2-05	5.00Hz	☆	61954
P2-03	Speed loop proportional gain 2	1~100	20	☆	61955
P2-04	Speed loop integral time 2	0.01s~10.00s	1.00s	☆	61956
P2-05	Switching frequency 2	P2-02~Maximum frequency	10.00Hz	☆	61957
P2-06	Vector control slip gain	50~200%	150%	☆	61958
P2-07	Speed loop filter time constant	0.000~0.100s	0.050s	☆	61959
P2-08	Vector control overexcitation gain	0~200	64	☆	61960
P2-09	Torque upper limit source in speed control mode	0: Function code P2-10 setting 1: AI1 2: AI2 3: Keyboard potentiometer 4: PULSE setting 5: Communication setting 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) The full scale of options 1-7 corresponds to P2-10	0	☆	61961
P2-10	In speed control mode, the torque upper limit is digitally set	0.0%~200.0%	150.0%	☆	61962
P2-13	Excitation regulation proportional gain	0~60000	2000	☆	61965
P2-14	Excitation regulation integral gain	0~60000	1300	☆	61966
P2-15	Torque regulation proportional gain	0~60000	2000	☆	61967
P2-16	Torque regulation integral gain	0~60000	1300	☆	61968



## 4.1 Basic function parameters simple table

### P2 group-vector parameters

Function code	Name	Setting range	Leave factory value	property	EDC address
P2-17	Integral attribute of speed loop	Individual position: Integral separation 0: Invalid 1: Valid	0	☆	61969
P2-18	Synchronous machine weak magnetic mode	0 ~ 2	1	★	61970
P2-19	Weak magnetic coefficient of synchronous machine	1 ~ 50	5	☆	61971
P2-20	Maximum weak magnetic current of synchronous machine	0 ~ 300	50	☆	61972
P2-21	Synchronous machine weak magnetic automatic tuning coefficient	10 ~ 500	100	☆	61973
P2-22	Synchronous machine weak magnetic integration multiple	0 ~ 1	0	★	61974
P2-23	Synchronous machine weak magnetic depth	1 ~ 50%	5%	☆	61975
P2-24	Synchronous machine initial position detection current	50 ~ 180%	80%	☆	61976
P2-25	Synchronous machine initial position detection	0 ~ 2	0	☆	61977
P2-27	Maximum output adjustment coefficient of synchronous machine	50 ~ 500	100	☆	61979
P2-28	Synchronous machine voltage frequency limiting enable	0 ~ 1	0	☆	61980
P2-33	Synchronous SVC speed filtering level	10 ~ 1000	Model determination	☆	61985
P2-34	Synchronous SVC speed estimation proportional gain	5 ~ 200	40	☆	61986
P2-35	Synchronous SVC speed estimation integral gain	5 ~ 200	30	☆	61987
P2-36	Synchronous machine SVC initial excitation current limit	0 ~ 80%	30%	☆	61988
P2-37	Synchronous SVC Minimum Carrier Frequency	0.8 ~ P0-15	1.5	☆	61989
P2-41	Low frequency braking current	0 ~ 80%	50%	☆	61993

### P3 group-v/F control parameters

Function code	Name	Setting range	Leave factory value	property	EDC address
P3-00	VF curve setting	0: Straight line 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 completely separated 11: VF semi separation	0	★	62208

## 4.1 Basic function parameters simple table

### P3 group-v/F control parameters

Function code	Name	Setting range	Leave factory value	property	EDC address
P3-01	Torque boost	0.0%: (Automatic torque boost) 0.1 ~ 30.0% 0.1 ~ 30.0%	Model determination	☆	62209
P3-02	Torque increase cut-off frequency	0.00Hz ~ Maximum frequency	50.00Hz	★	62210
P3-03	Multi point VF frequency point 1	0.00Hz ~ P3-05	1.30Hz	★	62211
P3-04	Multi point VF voltage point 1	0.0% ~ 100.0%	15.0%	★	62212
P3-05	Multi point VF frequency point 2	P3-03 ~ P3-07	5.00Hz	★	62213
P3-06	Multi point VF voltage point 2	0.0% ~ 100.0%	20.0%	★	62214
P3-07	Multi point VF frequency point 3	P3-05 ~ Rated frequency of motor (P1-04)	70.00Hz	★	62215
P3-08	Multi point VF voltage point 3	0.0% ~ 100.0%	100.0%	★	62216
P3-09	VF slip compensation gain	0.0% ~ 200.0%	0.0%	☆	62217
P3-10	VF overexcitation gain	0 ~ 200	64	☆	62218
P3-11	VF oscillation suppression gain	0 ~ 100	Model determination	☆	62219
P3-34	AVR function selection	0: Turn off AVR 1: AVR Enable	0	☆	62242

### P4 group-input terminal

Function code	Name	Setting range	Leave factory value	property	EDC address
P4-00	X1 terminal function selection	0: No functionality 1: Forward running (FWD) 2: Reverse Run (REV) 3: Three line operation control 4: Forward turning jog (FJOG) 5: Reverse Jogging (RJOG) 6: Terminal UP 7: Terminal Down 8: Free Parking 9: Fault reset (RESET) 10: Pause operation 11: External fault normally open input 12: Multi segment instruction terminal 1	01	★	62464
P4-01	X2 terminal function selection	13: Multi segment instruction terminal 2 14: Multi segment instruction terminal 3 15: Multi segment instruction terminal 4	02	★	62465

### 4.1 Basic function parameters simple table

P4 group-input terminal					
Function code	Name	Setting range	Leave factory value	property	EDC address
P4-02	X3 terminal function selection	16: Acceleration and deceleration time selection terminal 1 17: Acceleration and deceleration time selection terminal 2 18: Frequency source switching 19: UP/DOWN reset (terminal/key-board) 20: Run command to switch terminal 1 21: Acceleration and deceleration are prohibited 22: PID pause 23: PLC status reset 24: Swing frequency pause 25: Counter input 26: Counter reset 27: Length Count Input 28: Length reset 29: Torque control prohibited 30: HDMI pulse frequency input (X5)	04	★	62266
P4-03	X4 terminal function selection	31: Reserved 32: Immediate DC braking 33: External fault normally closed input 34: Frequency modification enable 35: PID action direction is reversed 36: External parking terminal 1 37: Run command to switch terminal 2 38: PID points suspended 39: Switching between frequency source X and preset frequency 40: Switching between frequency source Y and preset frequency 43: PID parameter switching 44: User defined fault 1 44: User defined fault 1 45: User defined fault 2 46: Switching between speed control and torque control	09	★	62267

## 4.1 Basic function parameters simple table

### P4 group-input terminal

Function code	Name	Setting range	Leave factory value	property	EDC address
P4-04	X5 (HDI) terminal function selection	47: Emergency stop 48: External parking terminal 2 49: Deceleration DC braking 50: This run time is reset to zero 51: Switching between two-wire and three wire modes 52: Do not reverse 53: Single terminal UP/DOWN enable, frequency source switching (same function 18) 54: Terminal activation UP not activated to DOWN	12	★	62268
P4-10	X terminal filtering time	0.000s~1.000s	0.010s	☆	62474
P4-11	Terminal command method	Position: Two line and three line options 0: Two line type 1 1: Two line type 2 2: Three line type 1 3: Three line type 2 Ten digit: Multi speed terminal start enable 0: Invalid 1: Enable	00	★	62475
P4-12	Terminal UP/DOWN change rate	0.001Hz/s~65.535Hz/s	1.00Hz/s	☆	62476
P4-13	AI curve 1 minimum input	0.00V~P4-15	0.00V	☆	62477
P4-14	AI curve 1 minimum input corresponding setting	-100.0%~+100.0%	0.0%	☆	62478
P4-15	AI curve 1 maximum input	P4-13~+10.00V	10.00V	☆	62479
P4-16	AI curve 1 maximum input corresponding setting	-100.0%~+100.0%	100.0%	☆	62480
P4-17	AI1 filtering time	0.00s~10.00s	0.10s	☆	62481
P4-18	AI curve 2 minimum input	0.00V~P4-20	0.00V	☆	62482
P4-19	AI curve 2 minimum input corresponding setting	-100.0%~+100.0%	0.0%	☆	62483
P4-20	AI curve 2 maximum input	P4-18~+10.00V	10.00V	☆	62484

## 4.1 Basic function parameters simple table

### P4 group-input terminal

Function code	Name	Setting range	Leave factory value	property	EDC address
P4-21	AI curve 2 maximum input corresponding setting	-100.0%~+100.0%	100.0%	☆	62485
P4-22	AI2 filtering time	0.00s~10.00s	0.10s	☆	62486
P4-23	AI Curve 3 Minimum Input	0.00V~P4-25	0.50V	☆	62482
P4-24	AI curve 3 minimum input corresponding setting	-100.0%~+100.0%	0.0%	☆	62483
P4-25	AI curve 3 maximum input	P4-23~+10.00V	9.70V	☆	62484
P4-26	AI curve 3 maximum input corresponding setting	-100.0%~+100.0%	100.0%	☆	62485
P4-27	AI3 filtering time	0.00s~10.00s	0.10s	☆	62486
P4-28	HDI pulse minimum input	0.00kHz~P4-30	0.00kHz	☆	62492
P4-29	HDI pulse minimum input corresponding setting	-100.0%~100.0%	0.0%	☆	62493
P4-30	HDI pulse maximum input	P4-28~50.00kHz	50.00kHz	☆	62494
P4-31	HDI pulse maximum input setting	-100.0%~100.0%	100.0%	☆	62495
P4-32	HDI pulse filtering time	0.00s~10.00s	0.10s	☆	62496
P4-33	AI curve selection	Individual position: AI1 curve selection 1: Curve 1 (2 points, P4-13 to P4-16) 2: Curve 2 (2 points, P4-18~P4-21) 3: Curve 3 (2 points, P4-23 to P4-26) Tenth digit: AI2 curve selection, as above Hundred digit: AI3 curve selection, as above	H.321	☆	62497
P4-34	AI below minimum input Set selection	Position: AI1 is below the minimum input setting selection 0: Corresponding minimum input setting 1: 0.0% Ten digit: AI2 is lower than the minimum input setting selection, as above Hundred digit: AI3 below the minimum input setting selection, as above	H.000	☆	62498
P4-35	X terminal effective mode selection 1	0: High level effective 1: Low level effective Position: X1 Tenth digit: X2 Centennial: X3 Thousand positions: X4 Number of seats: X5	00000	★	62499

## 4.1 Basic function parameters simple table

### P4 group-input terminal

Function code	Name	Setting range	Leave factory value	property	EDC address
P4-37	AI input voltage/current selection	Position: AI1 Ten: AI2 0: Voltage input 1: Current input	10	★	62501
P4-38	X1 conduction delay time	0.0s ~ 6553.5s	0.0S	★	62502
P4-39	X2 conduction delay time	0.0s ~ 6553.5s	0.0S	★	62503
P4-40	X3 conduction delay time	0.0s ~ 6553.5s	0.0S	★	62504
P4-41	X4 conduction delay time	0.0s ~ 6553.5s	0.0S	★	62505
P4-42	X5 conduction delay time	0.0s ~ 6553.5s	0.0S	★	62506
P4-43	X6 conduction delay time	0.0s ~ 6553.5s	0.0S	★	62507
P4-44	X7 conduction delay time	0.0s ~ 6553.5s	0.0S	★	62508
P4-48	X1 disconnection delay time	0.0s ~ 6553.5s	0.0S	★	62512
P4-49	X2 disconnection delay time	0.0s ~ 6553.5s	0.0S	★	62513
P4-50	X3 disconnection delay time	0.0s ~ 6553.5s	0.0S	★	62514
P4-51	X4 disconnection delay time	0.0s ~ 6553.5s	0.0S	★	62515
P4-52	X5 disconnection delay time	0.0s ~ 6553.5s	0.0S	★	62516
P4-53	X6 disconnection delay time	0.0s ~ 6553.5s	0.0S	★	62517
P4-54	X7 disconnection delay time	0.0s ~ 6553.5s	0.0S	★	62518
P4-58	Frequency UP/DOWN auto reset mode	0: No automatic reset function 1: Reset to zero during jogging 2: Reset to zero during malfunction 3: Reset to zero during reversal	0	★	62522

### P5 group output terminal

Function code	Name	Setting range	Leave factory value	property	EDC address
P5-00	HDO terminal output mode selection	0: High speed pulse output (HDO) 1: Terminal Switching Output (FMR)	0	☆	62720

# 4.1 Basic function parameters simple table

P5 group - output terminal					
Function code	Name	Setting range	Leave factory value	property	EDC address
P5-01	HDO terminal switch quantity Output function selection (FMR)	0: No output 1: Inverter in operation 2: Fault output (fault shutdown) 3: Frequency level detection FDT1 output 4: Frequency arrival 5: Zero speed operation (no output during shutdown) 6: Motor overload warning 7: Inverter overload warning 8: Set the record value to arrive 9: The specified record value has been reached	00	☆	62721
P5-02	Relay RY1 function selection (K1A-K1B-K1C)	11: PLC cycle completed 12: Accumulated running time reached 13: Under frequency limitation 14: Torque limitation 15: Ready for operation 16: AI1>AI2 17: The upper limit frequency has been reached 18: The lower limit frequency has been reached (related to operation) 19: Under voltage state output 20: Communication settings 23: Zero speed operation 2 (also output when stopped)	02	☆	62722
P5-03	Relay RY2 function selection (K2A-K2B-K2C)	24: Accumulated power on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 reaches output 27: Frequency 2 reaches output 28: Current 1 reaches output 29: Current 2 reaches output 30: Timed arrival output 31: AI1 input exceeds the limit 32: Falling load 33: Running in reverse 34: Zero current state 35: The module temperature has reached 36: Output current exceeds the limit	00	☆	62723

## 4.1 Basic function parameters simple table

### P5 group - output terminal

Function code	Name	Setting range	Leave factory value	property	EDC address
P5-04	Y1 output function selection	37: The lower limit frequency has been reached (output even when stopped) 38: Alarm output (continue running) 40: The current running time has arrived 41: Fault output (is a fault of free shutdown and does not output under voltage) 42: Frequency 1<=Operating frequency<=Frequency 2 43: Frequency 1>=Operating frequency>=Frequency 2 44: Frequency 1<=Set frequency<=Frequency 2 45: Frequency 1>=Set frequency>=Frequency 2 (Note: Frequency 1 and 2 refer to P8-30 and P8-32) 46: Linkage X1 terminal output 47: Linkage X2 terminal output 48: Linkage X3 terminal output 49: Linkage X4 terminal output 50: Auxiliary motor water pump 1 51: Auxiliary motor water pump 2 52: Auxiliary motor water pump 3 53: Auxiliary motor water pump 4 54: Sleeping	01	☆	62724
P5-06	HDO high-speed pulse Output function selection	0: Operating frequency 1: Set frequency 2: Output current 3: Output torque 4: Output power 5: Output voltage 6: HDI pulse input (100% corresponds to 100.0kHz)	00	☆	62726
P5-07	AO1 output function selection	7: AI1 8: AI2 9: AI3 11: Record numerical values 12: Communication settings 13: Motor speed	00	☆	62727
P5-08	AO2 output function selection	14: Output current (100.0% corresponds to 1000.0A) 15: Output voltage (100.0% corresponds to 1000.0V) 16: Reserved 17: Inverter output torque	01	☆	62728



## 4.1 Basic function parameters simple table

### P5 group - output terminal

Function code	Name	Setting range	Leave factory value	property	EDC address
P5-09	HDO output maximum frequency	0.01kHz~50.00kHz	50.00kHz	☆	62729
P5-10	AO1 zero bias coefficient	-100.0%~+100.0%	0.0%	☆	62730
P5-11	AO1 gain	-10.00~+10.00	1.00	☆	62731
P5-12	AO2 zero bias coefficient	-100.0%~+100.0%	0.0%	☆	62732
P5-13	AO2 gain	-10.00~+10.00	1.00	☆	62733
P5-17	FMR delay time	0.0s~6553.5s	0.0s	☆	62737
P5-18	RY1 delayed closure time	0.0s~6553.5s	0.0s	☆	62738
P5-19	RY2 delayed closure time	0.0s~6553.5s	0.0s	☆	62739
P5-20	Y1 delayed closure time	0.0s~6553.5s	0.0s	☆	62740
P5-21	retain	-	-	-	62741
P5-22	Y terminal output effective state selection	0: Positive Logic 1: Negative Logic Position: HDO terminal Tenth digit: RY1 Hundred: RY2 Thousand positions: Y1 Ten thousand positions: reserved	00000	☆	62742
P5-23	AO current output selection	Position: AO1 Ten: AO2 0: 0~20 mA 1: 4~20mA	00	☆	62743
P5-24	FMR delayed disconnection time	0.0s~6553.5s	0.0s	☆	62744
P5-25	RY1 delayed disconnection time	0.0s~6553.5s	0.0s	☆	62745
P5-26	RY2 delayed disconnection time	0.0s~6553.5s	0.0s	☆	62746
P5-27	Y1 delayed disconnection time	0.0s~6553.5s	0.0s	☆	62747

### P6 group - start stop control

Function code	Name	Setting range	Leave factory value	property	EDC address
P6-00	Start mode	0: Directly start 1: Speed tracking restart 2: Pre excitation start (AC asynchronous machine)	0	☆	62976

## 4.1 Basic function parameters simple table

### P6 group - start stop control

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
P6-01	Speed tracking method	0: Starting from the shutdown frequency 1: Starting from zero speed 2: Starting from the maximum frequency	0	★	62977
P6-02	Speed tracking speed	1 ~ 100	20	☆	62978
P6-03	Start frequency	0 ~ P0-08	0.00Hz	☆	62979
P6-04	Start frequency holding time	0.0s ~ 100.0s	0.0s	★	62980
P6-05	Start DC braking current/ Pre excitation current	0%~100%	0%	★	62981
P6-06	Start DC braking time/ Pre excitation time	0.0s~100.0s	0.0s	★	62982
P6-07	Acceleration and deceleration methods	0: Linear acceleration and deceleration 1: S-curve acceleration and deceleration A 2: S-curve acceleration and deceleration B	0	★	62983
P6-08	Proportion of time at the beginning of the S-curve	0.0% ~ (100.0%-P6-09)	30.0%	★	62984
P6-09	Proportion of time at the end of the S-curve	0.0% ~ (100.0%-P6-08)	30.0%	☆	62985
P6-10	Shutdown mode	0: Slow down and stop 1: Free Parking	0	☆	62986
P6-11	Starting frequency of shutdown DC braking	0.00Hz ~ Maximum frequency	0.00Hz	☆	62987
P6-12	Shutdown DC braking waiting time	0.0s ~ 100.0s	0.0s	☆	62988
P6-13	Shutdown DC brake current	0% ~ 100%	0%	☆	62989
P6-14	Shutdown DC braking time	0.0s ~ 100.0s	0.0s	☆	62990
P6-15	Brake utilization rate	0% ~ 100%	100%	☆	62991

### P7 Group - Keyboard and Display

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
P7-00	Display Function Extension 1	Position: Power supply voltage monitoring method 0: DC bus voltage 1: Input AC voltage (preceded by the letter U)	00000	☆	63232

## 4.1 Basic function parameters simple table

### P7 Group - Keyboard and Display

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
P7-01	MF. K key function selection	0: MF. K is invalid 1: Operation panel command channel and remote command channel Switching between terminal command channel or communication command channel 2: Forward and reverse switching 3: Forward turning jog 4: Reverse jog	0	☆	63233
P7-02	STOP/RESET button function	0: Only in keyboard operation mode, The STOP/RES button has an effective shutdown function 1: In any mode of operation, The STOP/RES button shutdown function is effective	1	☆	63234
P7-03	LED operation display parameter 1	0000 ~ FFFF Bit00: Operating frequency 1 (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: X Input Status Bit08: Y output status Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: AI3 panel potentiometer voltage (V) Bit12: Count value Bit13: Reserved Bit14: Load speed display Bit15: PID setting (water supply macro displays pressure value)	H.001F	☆	63235

# 4.1 Basic function parameters simple table

## P7 Group - Keyboard and Display

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
P7-04	LED operation display parameter 2	0000~FFFF Bit00: PID feedback (water supply macro displays pressure value) Bit01: PLC Stage Bit02: HDMI input pulse frequency (kHz) Bit03: Operating frequency 2 (Hz) Bit04: Remaining running time Bit05: AI1 pre calibration voltage (V) Bit06: AI2 pre calibration voltage (V) Bit07: Voltage before calibration of AI3 panel potentiometer (V) Bit08: Line speed Bit09: Current power on time (Hour) Bit10: Current running time (Min) Bit11: HDI input pulse frequency (Hz) Bit12: Communication settings Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	H.0000	☆	63236
P7-05	LED shutdown display parameters	0000~FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: X Input Status Bit03: Y output status Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 panel potentiometer voltage (V) Bit07: Count value Bit08: Length value Bit09: PLC Stage Bit10: Load speed Bit11: PID setting (pressure) Bit12: HDI input pulse frequency (kHz) Bit13: PID feedback (pressure)	H.0033	☆	63237

# 4.1 Basic function parameters simple table

## P7 Group - Keyboard and Display

Function code	Name	Setting range		Leave factory value	prop-erty	EDC address
P7-06	Load speed display coefficient	0.0001 ~ 6.5000		1.0000	☆	63238
P7-07	Inverter module radiator temperature	0.0℃ ~ 100.0℃		-	●	63239
P7-09	Accumulated running time	0h ~ 65535h		-	☆	63241
P7-12	Number of decimal places displayed for load speed	0:0 decimal places 1: One decimal place	2: Two decimal places 3: 3 decimal places	1	☆	63234
P7-13	Accumulated power on time	0 ~ 65535h		-	●	63245
P7-14	Accumulated power consumption	0 ~ 65535度		-	●	63246
P7-17	Selection of shutdown monitoring for digital tube 2	00 ~ 99 (Corresponding U0 group parameter number)		02	☆	63249
P7-18	Digital tube 2 operation monitoring selection	00 ~ 99 (Corresponding U0 group parameter number)		04	☆	63250

## P8 Group - Auxiliary Functions

功能码	名称	设定范围	出厂值	属性	EDC地址
P8-00	Jogging operating frequency	0.00Hz ~ Maximum frequency	6.00Hz	☆	63488
P8-01	Jogging acceleration time	0.0s ~ 6500.0s	20.0s	☆	63489
P8-02	Jogging deceleration time	0.0s ~ 6500.0s	20.0s	☆	63490
P8-03	Acceleration time 2	0.0s ~ 6500.0s	Model determination	☆	63491
P8-04	Deceleration time 2	0.0s ~ 6500.0s	Model determination	☆	63492
P8-05	Acceleration time 3	0.0s ~ 6500.0s	Model determination	☆	63493
P8-06	Deceleration time 3	0.0s ~ 6500.0s	Model determination	☆	63494
P8-07	Acceleration time 4	0.0s ~ 6500.0s	Model determination	☆	63495
P8-08	Deceleration time 4	0.0s ~ 6500.0s	Model determination	☆	63496
P8-09	Jump frequency 1	0.00Hz ~ Maximum frequency	0.00Hz	☆	63497
P8-10	Jump frequency 2	0.00Hz ~ Maximum frequency	0.00Hz	☆	63498
P8-14	Set the frequency below the lower limit frequency Operation mode	0: Running at the lower limit frequency 1: Shutdown 2: Zero speed operation	0	☆	63502

## 4.1 Basic function parameters simple table

### P8 Group - Auxiliary Functions

Function code	Name	Setting range	Leave factory value	property	EDC address
P8-15	Droop control	0.00Hz ~ 10.00Hz	0.00Hz	☆	63503
P8-16	Set the cumulative power on arrival time	0h ~ 65000h	0h	☆	63504
P8-17	Set the cumulative running arrival time	0h ~ 65000h	0h	☆	63505
P8-18	Activate protection selection	0: Not protected 1: Protected	0	☆	63506
P8-19	Frequency detection value (FDT1)	0.00Hz ~ Maximum frequency	50.00Hz	☆	63507
P8-20	Frequency detection lag value	0.0% ~ 100.0% (FDT1 level)	5.0%	☆	63508
P8-21	Frequency reaches the detection width	0.0% ~ 100.0% (Maximum frequency)	0.0%	☆	63509
P8-25	Acceleration time 1 and Acceleration Time 2 Switching Frequency Point	0.00Hz~Maximum frequency	0.00Hz	☆	63513
P8-26	Deceleration time 1 and Deceleration time 2 switching frequency point	0.00Hz~Maximum frequency	0.00Hz	☆	63514
P8-27	Terminal jog priority	0: Invalid 1: Valid	0	☆	63515
P8-28	Frequency detection value (FDT2)	0.00Hz ~ Maximum frequency	50.00Hz	☆	63516
P8-29	Frequency detection lag value	0.0% ~ 100.0% (FDT2 level)	5.0%	☆	63517
P8-30	Random arrival frequency detection value 1	0.00Hz ~ Maximum frequency	50.00Hz	☆	63518
P8-31	Random arrival frequency detection width 1	0.0% ~ 100.0% (Maximum frequency)	0.0%	☆	63519
P8-32	Random arrival frequency detection value 2	0.00Hz ~ Maximum frequency	50.00Hz	☆	63520
P8-33	Random arrival frequency detection width 2	0.0% ~ 100.0% (Maximum frequency)	0.0%	☆	63521
P8-34	Zero current detection level	0.0% ~ 300.0%	5.0%	☆	63522
P8-35	Zero current detection delay time	0.01s ~ 600.00s	0.10s	☆	63523
P8-36	Output current exceeds the limit value	0.0% (No Detect)	200.0%	☆	63524
P8-37	Delay time for detecting output current exceeding limit	0.00s ~ 600.00s	0.00s	☆	63525
P8-38	Any current reaching 1	0.0% ~ 300.0% (Rated current of motor)	100.0%	☆	63526
P8-39	Any current reaching a width of 1	0.0% ~ 300.0% (Rated current of motor)	0.0%	☆	63527
P8-40	Any current reaching 2	0.0% ~ 300.0% (Rated current of motor)	100.0%	☆	63528
P8-41	Any current reaching a width of 2	0.0% ~ 300.0% (Rated current of motor)	0.0%	☆	63529

## 4.1 Basic function parameters simple table

### P8 Group - Auxiliary Functions

Function code	Name	Setting range	Leave factory value	property	EDC address
P8-42	Timer function selection	0: Invalid 1: Valid	0	☆	63530
P8-43	Timed running time selection	0: P8-44 setting 1: AI1 2: AI2 3: AI3 Note: The analog input range corresponds to P8-44	0	☆	63531
P8-44	Timed running time	0.0Min ~ 6500.0Min	0.0Min	☆	63532
P8-45	Lower limit of AI1 input voltage protection value	0.00V ~ P8-46	3.10V	☆	63533
P8-46	AI1 input voltage protection upper limit	P8-45 ~ 10.00V	6.80V	☆	63534
P8-47	The module temperature has reached	0℃ ~ 100℃	75℃	☆	63535
P8-48	Fan control	0: Fan rotation during operation 1: The fan keeps turning 2: P8-54 Set temperature to start fan	0	☆	63536
P8-49	Wake up frequency	Sleep frequency (P8-51) to maximum frequency (P0-10)	0.00Hz	☆	63537
P8-50	Wake up delay time	0.0s ~ 6500.0s	0.0s	☆	63538
P8-51	Sleep frequency	0.00Hz ~ Wake up frequency (P8-49)	0.00Hz	☆	63539
P8-52	Sleep delay time	0.0s ~ 6500.0s	0.0s	☆	63540
P8-53	Set the arrival time for this run	0.0Min ~ 6500.0Min	0.0Min	☆	63541
P8-57	Set the temperature to start the fan	0℃ ~ 120℃	30℃	☆	63542

### P9 group faults and protection

Function	Name	Setting range	Leave factory value	property	EDC
P9-00	Selection of motor overload protection	0: Prohibit 1: Allow	1	☆	63744
P9-01	Motor overload protection gain	0.20 ~ 10.00	1.00	☆	63745
P9-02	Motor overload warning coefficient	50% ~ 100%	80%	☆	63746
P9-03	Overvoltage stall gain	0 ~ 100	30	☆	63747
P9-04	Overvoltage stall action voltage	200.0 ~ 2000.0V 220V: 380V 380V: 760V	Model determination	☆	63536

# 4.1 Basic function parameters simple table

## P9 group faults and protection

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
P9-05	Overcurrent stall gain	0 ~ 100	20	☆	63749
P9-06	Overcurrent stall protection current	100% ~ 200%	150%	☆	63750
P9-07	Selection of short-circuit protection for power on to ground	0: Invalid 1: Valid	1	☆	63751
P9-08	Energy consumption braking action voltage	200.0 ~ 2000.0V	220V:360V 380V:700V	☆	63752
P9-09	Number of automatic fault resets	0 ~ 65535	0	☆	63753
P9-10	During the automatic fault reset period Fault DO action selection	0: No action 1: Action	0	☆	63754
P9-11	Automatic fault reset interval time	0.1s ~ 100.0s	1.0s	☆	63755
P9-12	Input phase loss protection selection	0: Prohibit 1: Allow	1	☆	63756
P9-13	Output phase loss protection selection	0: Prohibit 1: Allow	1	☆	63757
P9-14	First fault type	0: No malfunction 1: Reserved 2: Accelerated overcurrent 3: Deceleration overcurrent 4: Constant speed overcurrent 5: Accelerated overvoltage 6: Deceleration overvoltage 7: Constant speed overvoltage 8: Buffer resistor overload 9: Undervoltage 10: Inverter overload 11: Motor overload 12: Input phase loss 13: Output phase loss 14: Module overheating 15: External malfunction 16: Communication abnormality 17: Abnormal contactor 18: Abnormal current detection 19: Abnormal motor tuning 20: Reserved	--	☆	63758



# 4.1 Basic function parameters simple table

## P9 group faults and protection

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
P9-15	Second fault type	21: Parameter read/write exception 22: Hardware abnormality of frequency converter 23: Motor short circuit to ground 24: Reserved 25: Reserved 26: The running time has arrived 27: User defined fault 1 28: User defined fault 2 29: The power on time has arrived	--	●	63759
P9-16	Third (most recent) fault type	30: Load shedding 31: PID feedback lost during runtime 40: Fast current limiting timeout 41: Switching motors during operation 42: Excessive speed deviation 43: Motor overspeed 45: Reserved 51: Reserved 70: Water shortage pressure fault 71: Overwater pressure fault	--	●	63760
P9-17	Frequency during the third (most recent) malfunction	--	--	●	63761
P9-18	Current during the third (most recent) malfunction	--	--	●	63762
P9-19	During the third (most recent) malfunction Bus voltage	--	--	●	63763
P9-20	During the third (most recent) malfunction Input terminal status	--	--	●	63764
P9-21	During the third (most recent) malfunction Output terminal status	--	--	●	63765
P9-22	During the third (most recent) malfunction Inverter status	--	--	●	63766
P9-23	During the third (most recent) malfunction Power on time	--	--	●	63767
P9-24	During the third (most recent) malfunction Running time	--	--	●	63768

## 4.1 Basic function parameters simple table

### P9 group faults and protection

Function code	Name	Setting range	Leave factory value	property	EDC address
P9-27	Frequency during the second malfunction	--	--	●	63771
P9-28	Current during the second fault	--	--	●	63772
P9-29	Bus voltage during the second fault	--	--	●	63773
P9-30	Input terminal status during the second malfunction	--	--	●	63774
P9-31	Output terminal status during the second fault	--	--	●	63775
P9-32	The status of the frequency converter during the second malfunction	--	--	●	63776
P9-33	Power on time during the second malfunction	--	--	●	63777
P9-34	Running time during the second malfunction	--	--	●	63778
P9-37	Frequency during the first malfunction	--	--	●	63781
P9-38	Current during the first malfunction	--	--	●	63782
P9-39	Bus voltage during the first malfunction	--	--	●	63783
P9-40	Input terminal status during the first malfunction	--	--	●	63784
P9-41	Output terminal status during the first malfunction	--	--	●	63785
P9-42	The status of the frequency converter during the first malfunction	--	--	●	63786
P9-43	Power on time during the first malfunction	--	--	●	63787
P9-44	Running time during the first malfunction	--	--	●	63788
P9-47	Fault protection action selection 1	Position: Motor overload (11) Ten digits: Input missing phase (12) Hundred bit: Output phase loss (13) Thousand positions: External faults (15) Ten thousand digits: Communication abnormality (16) 0: Free Parking 1: Stop the machine according to the shutdown method 2: Continue running	00000	☆	63791
P9-54	Continue operating frequency selection in case of malfunction	0: Run at the current operating frequency 1: Run at the set frequency 2: Operate at the upper limit frequency 3: Operate at the lower limit frequency 4: Operating at an abnormal backup frequency	0	☆	63798

## 4.1 Basic function parameters simple table

### P9 group faults and protection

Function code	Name	Setting range	Leave factory value	property	EDC address
P9-55	Abnormal backup frequency	60.0% ~ 100.0% (100.0% corresponds to maximum frequency P0-10)	100.0%	☆	63799
P9-59	Selection of instantaneous power outage action	0: Invalid 1: Slow down 2: Slow down and stop the machine	0	☆	63803
P9-60	Instant stop action pause voltage judgment	P9-62 ~ 100.0%	85.0%	☆	63804
P9-61	Instantaneous power outage voltage rebound judgment time	0.00s ~ 100.00s	0.50s	☆	63805
P9-62	Instantaneous power outage action judgment voltage	60.0% ~ 100.0% (Standard bus voltage)	80.0%	☆	63806
P9-63	Load drop protection selection	0: Invalid 1: Effective	0	☆	63807
P9-64	Load drop detection level	0.0 ~ 100.0%	10.0%	☆	63808
P9-65	Load drop detection time	0.0 ~ 60.0s	1.0s	☆	63809

### PA group PID function

Function code	Name	Setting range	Leave factory value	property	EDC address
PA-00	PID given source	0: PA-01 setting 1: AI1 2: AI2 3: AI3 external keyboard potentiometer 4: HDI input pulse setting (X5) 5: Communication given 6: Multi segment instruction given 7: Given by the pressure of water supply group b0-01	0	☆	64000
PA-01	PID value given	0.0 ~ 100.0%	50.0%	☆	64001
PA-02	PID feedback source	0: AI1 1: AI2 2: AI3 external keyboard potentiometer 3: AI1-AI2 4: HDI input pulse setting (X5) 5: Communication given 6: AI1+AI2 7: MAX ( AI1 ,  AI2 ) 8: MIN ( AI1 ,  AI2 )	0	☆	64002

# 4.1 Basic function parameters simple table

PA group PID function					
Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
PA-03	PID action direction	0: Positive effect 1: Negative effect	0	☆	64003
PA-04	PID given feedback range	0 ~ 65535	1000	☆	64004
PA-05	Proportional gain KP1	0.0 ~ 100.0	20.0	☆	64005
PA-06	Integral time Ti1	0.01 ~ 10.00s	2.00s	☆	64006
PA-07	Differential time Td1	0.000 ~ 10.000s	0.000s	☆	64007
PA-08	PID inversion cut-off frequency	0.00 to maximum frequency	0.00Hz	☆	64008
PA-09	PID deviation limit	0.0 ~ 100.0%	0.0%	☆	64009
PA-10	PID differential limiting	0.00 ~ 100.00%	0.10%	☆	64010
PA-11	PID given change time	0.00 ~ 650.00s	0.00s	☆	64011
PA-12	PID feedback filtering time	0.00 ~ 60.00s	0.00s	☆	64012
PA-13	PID output filtering time	0.00 ~ 60.00s	0.00s	☆	64013
PA-15	Proportional gain KP2	0.0 ~ 100.0	20.0	☆	64015
PA-16	Integral time Ti2	0.01s ~ 10.00s	2.00s	☆	64016
PA-17	Differential time Td2	0.000s ~ 10.000s	0.000s	☆	64017
PA-18	PID parameter switching conditions	0: No switching 1: Switching via X terminal 2: Automatic switching based on deviation	0	☆	64018
PA-19	PID parameter switching deviation 1	0.0% ~ PA-20	20.0%	☆	64019
PA-20	PID parameter switching deviation 2	PA-19 ~ 100.0%	80.0%	☆	64020
PA-21	PID initial value	0.0 ~ 100.0%	0.0%	☆	64021
PA-22	PID initial value holding time	0.00 ~ 650.00s	0.00s	☆	64022
PA-23	Maximum value of two output deviations in the positive direction	0.00 ~ 100.00%	1.00%	☆	64023
PA-24	Maximum value of two output deviations in the reverse direction	0.00 ~ 100.00%	1.00%	☆	64024
PA-25	PID integral attribute	0: Do not switch 1: Switching through X terminal 2: Automatically switch based on deviation	00	☆	64025

# 4.1 Basic function parameters simple table

## PA group PID function

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
PA-26	PID feedback loss detection value	0.0%: Feedback loss without judgment 0.1 ~ 100.0%	0.0%	☆	64026
PA-27	PID feedback loss detection time	0.0s ~ 20.0s	0.0s	☆	64027
PA-28	PID shutdown calculation	0: Shutdown without calculation 1: Calculation during shutdown	1	☆	64028

## Pb group - swing frequency, fixed length, and counting

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
Pb-00	Swing frequency setting method	0.0%: Feedback loss without judgment 0.1 ~ 100.0%	0	☆	64256
Pb-01	Swing frequency amplitude	0.0 ~ 100.0%	0.0%	☆	64257
Pb-02	Jumping frequency amplitude	0.0 ~ 50.0%	0.0%	☆	64258
Pb-03	Oscillation frequency cycle	0.1 ~ 3000.0s	10.0s	☆	64259
Pb-04	Rise time of triangular wave in oscillation frequency	0.1 ~ 100.0%	50.0%	☆	64260
Pb-05	Set length	0 ~ 65535m	1000m	☆	64261
Pb-06	Actual length	0 ~ 65535m	0m	☆	64262
Pb-07	Pulse count per meter	0.1 ~ 6553.5	100.0	☆	64263
Pb-08	Set the count value	1 ~ 65535	1000	☆	64264
Pb-09	Specify the count value	1 ~ 65535	1000	☆	64265

# 4.1 Basic function parameters simple table

PC group multi-stage instructions and simple PLC					
Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
PC-00	Multi segment instruction 0	-100.0% ~ 100.0%	0.0%	☆	64512
PC-01	Multi segment instruction 1	-100.0% ~ 100.0%	0.0%	☆	64513
PC-02	Multi segment instruction 2	-100.0% ~ 100.0%	0.0%	☆	64514
PC-03	Multi segment instruction 3	-100.0% ~ 100.0%	0.0%	☆	64515
PC-04	Multi segment instruction 4	-100.0% ~ 100.0%	0.0%	☆	64516
PC-05	Multi segment instruction 5	-100.0% ~ 100.0%	0.0%	☆	64517
PC-06	Multi segment instruction 6	-100.0% ~ 100.0%	0.0%	☆	64518
PC-07	Multi segment instruction 7	-100.0% ~ 100.0%	0.0%	☆	64519
PC-08	Multi segment instruction 8	-100.0% ~ 100.0%	0.0%	☆	64520
PC-09	Multi segment instruction 9	-100.0% ~ 100.0%	0.0%	☆	64521
PC-10	Multi segment instruction 10	-100.0% ~ 100.0%	0.0%	☆	64522
PC-11	Multi segment instruction 11	-100.0% ~ 100.0%	0.0%	☆	64523
PC-12	Multi segment instruction 12	-100.0% ~ 100.0%	0.0%	☆	645224
PC-13	Multi segment instruction 13	-100.0% ~ 100.0%	0.0%	☆	64525
PC-14	Multi segment instruction 14	-100.0% ~ 100.0%	0.0%	☆	64526
PC-15	Multi segment instruction 15	-100.0% ~ 100.0%	0.0%	☆	64527
PC-16	Simple PLC operation mode	0: Stop at the end of a single run 1: Keep the final value at the end of a single run 2: Keep looping	0	☆	64528

## 4.1 Basic function parameters simple table

PC group multi-stage instructions and simple PLC					
Function code	Name	Setting range	Leave factory value	property	EDC address
PC-17	Simple PLC power down memory selection	Position: Power down memory selection 0: No memory after power failure 1: Power off memory Ten digit: Shutdown Memory Selection 0: Shutdown without memory 1: Shutdown memory	00	☆	64529
PC-18	Simple PLC 0-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64530
PC-19	Simple PLC 0 segment Acceleration and deceleration time selection	0~3	0	☆	64531
PC-20	Simple PLC 1-stage running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64532
PC-21	Simple PLC 1 segment Acceleration and deceleration time selection	0~3	0	☆	64533
PC-22	Simple PLC 2-stage running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64534
PC-23	Simple PLC 2 segment Acceleration and deceleration time selection	0~3	0	☆	64535
PC-24	Simple PLC 3-stage running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64536
PC-25	Simple PLC 3 segment Acceleration and deceleration time selection	0~3	0	☆	64537
PC-26	Simple PLC 4-stage running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64538
PC-27	Simple PLC 4 segment Acceleration and deceleration time selection	0~3	0	☆	64539
PC-28	Simple PLC 5-stage running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64540
PC-29	Simple PLC 5 segment Acceleration and deceleration time selection	0~3	0	☆	64541
PC-30	Simple PLC 6-stage running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64542
PC-31	Simple PLC 6 segment Acceleration and deceleration time selection	0~3	0	☆	64543
PC-32	Simple PLC 7-stage running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64544
PC-33	Simple PLC 7-segment Acceleration and deceleration time selection	0~3	0	☆	64545
PC-34	Simple PLC 8-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64546

## 4.1 Basic function parameters simple table

### Pc Group - Multi-segment Instructions and Simple PLC

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
PC-35	Simple PLC 8-segment Acceleration and deceleration time selection	0~3	0	☆	64547
PC-36	Simple PLC 9-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64548
PC-37	Simple PLC 9-segment Acceleration and deceleration time selection	0~3	0	☆	64549
PC-38	Simple PLC 10-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64550
PC-39	Simple PLC 10-segment Acceleration and deceleration time selection	0~3	0	☆	64551
PC-40	Simple PLC 11-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64552
PC-41	Simple PLC 11-segment Acceleration and deceleration time selection	0~3	0	☆	64553
PC-42	Simple PLC 12-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64554
PC-43	Simple PLC 12-segment Acceleration and deceleration time selection	0~3	0	☆	64555
PC-44	Simple PLC 13-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64556
PC-45	Simple PLC 13-segment Acceleration and deceleration time selection	0~3	0	☆	64557
PC-46	Simple PLC 14-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64558
PC-47	Simple PLC 14-segment Acceleration and deceleration time selection	0~3	0	☆	64559
PC-48	Simple PLC 15-segment running time	0.0s (h) ~6553.5s (h)	0.0s(h)	☆	64560
PC-49	Simple PLC 15-segment Acceleration and deceleration time selection	0~3	0	☆	64561
PC-50	Simple PLC operation Time unit	0: s (seconds) 1: h (hours)	0	☆	64562
PC-51	Multi segment instruction 0 given method	0: Function code PC-00 given 1: AI1 2: AI2 3: AI3 external keyboard potentiometer 4: HDI input pulse 5: PID 6: Preset frequency (P0-08) given, UP/DOWN can be modified	0	☆	64563



# 4.1 Basic function parameters simple table

**Pd group communication parameters**

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
Pd-00	Baud rate	0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: Reserved	5	☆	64768
Pd-01	Data format	0: No verification (8-N-2) 1: Even verification (8-E-1) 2: Odd verification (8-O-1) 3: No verification (8-N-1)	3	☆	64769
Pd-02	Local address	1 ~ 247	1	☆	64770
Pd-03	Response delay	0 ~ 20ms	2	☆	64771
Pd-04	Communication timeout	0.0 (invalid), 0.1s~60.0s	0.0	☆	64772
Pd-05	Data transmission format selection	1: Standard MODBUS protocol	1	☆	64773
Pd-06	Communication reading current resolution	0: 0.01A 1: 0.1A	0	☆	64774
Pd-07	Reserved	-	0	☆	64775

**PP Group - Function Code Management**

功能码	名称	设定范围	出厂值	属性	EDC 地址
PP-00	Password	0~65535	00000	☆	7936
PP-01	Parameter initialization	0: No operation 01: Restore factory parameters, excluding motor parameters 02: Clear record information 03: Restore factory parameters, including motor parameters 04: Reserved 10: Switch to 60HZ mode	000	★	7937
PP-02	Function parameter group display selection	Position: U group display selection Ten digits: Group A display selection Hundred digit: Group B display selection 0: Not displayed 1: Display	111	★	7938
PP-04	Function code modification attribute	0: modifiable 1: non modifiable	0	☆	7940
PP-05	Reserved	-	-	-	-

# 4.1 Basic function parameters simple table

## A0 group torque control parameters

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
A0-00	Speed/torque selection	0: Speed control 1: Torque control	0	☆	40960
A0-01	Torque setting source	0: A0-03 setting 1: AI1 setting 2: AI2 setting 3: AI3 keyboard potentiometer setting 4: HDI high-speed pulse setting 5: Communication settings 6: MIN(AI1,AI2) 7: MAX(AI1,AI2) Note: 1-7 full range corresponds to A0-03 digital setting	0	★	40961
A0-02	retain	-	-	-	-
A0-03	Torque digital setting	-200.0% ~ 200.0%	150.0%	☆	40963
A0-04	retain	-	-	-	-
A0-05	Maximum frequency of forward torque	0.00Hz to maximum frequency (P0-10)	50.00Hz	☆	40965
A0-06	Maximum frequency of torque reversal	0.00Hz to maximum frequency (P0-10)	50.00Hz	☆	40966
A0-07	Torque to acceleration time	0 ~ 655.35s	0.00s	☆	40967
A0-08	Torque deceleration time	0 ~ 655.35s	0.00s	☆	40968

## A5 group control optimization parameters

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
A5-00	DPWM switching upper limit frequency	0.00Hz ~ 15.00Hz	12.00Hz	☆	42240
A5-01	PWM modulation method	0: Asynchronous modulation 1: Synchronous modulation	0	☆	42241
A5-02	Dead zone compensation mode selection	0: No compensation 1: Compensation mode 1 2: Compensation Mode 2	1	☆	42242
A5-03	Random PWM Depth	0: Random PWM is invalid 1-10: PWM carrier frequency random depth	0	☆	42243
A5-04	Quick current limiting enable	0: Do not enable 1: Enable	1	☆	42244
A5-05	Current detection compensation	0 ~ 100	5	☆	42245

## 4.1 Basic function parameters simple table

### A5 group control optimization parameters

Function code	Name	Setting range	Leave factory value	property	EDC address
A5-06	Undervoltage point setting	100.0 ~ 2000.0V	Model determination	☆	42246
A5-07	SVC optimization mode selection	0: Not optimized 1: Optimization Mode 1 2: Optimization Mode 2	1	☆	42247
A5-08	Dead time adjustment	100 ~ 200%	150%	☆	42248
A5-09	Overvoltage point setting	200.0-2500.0V	Model determination	★	42249

### B0 group intelligent constant pressure water supply parameter table (applicable to constant temperature control)

Function code	Name	Setting range	Leave factory value	property	EDC address
b0-00	Range of pressure sensor	0 ~ 99.99Bar (kg)	10.00	☆	45056
b0-01	Target pressure number given Note: The target pressure is selected by PA-01	0 ~ 99.99Bar (kg)	5.00	☆	45057
b0-02	Sleep pressure	0-150.0% (linked by target pressure ratio) Note: The maximum value is limited by (b0-00/b0-01) * 100%	100.0%	☆	45058
b0-03	Awaken stress	0-100.0% (linked by target pressure ratio)	95.0%	☆	45059
b0-04	Pressure deviation amount	0-100.0% (linked by target pressure ratio)	2.0%	☆	45060
b0-05	Sleep delay	0-6553.5s (0: sleep off)	20.0s	☆	45061
b0-06	Wake up delay	0 ~ 6553.5s	0.0s	☆	45062
b0-07	Pressure upper limit protection value	0-200.0% (linked by target pressure ratio)	120.0%	☆	45063
b0-08	Pressure upper limit protection shutdown delay	0-6553.5s (0: turn off detection)	0.0s	☆	45064
b0-09	Constant voltage forced sleep delay	0-6553.5s (0: turn off detection)	0.0s	☆	45065
b0-10	Quantity setting of auxiliary pumps	0-4 (0: turn off one to many)	0	☆	45066
b0-11	Pressure tolerance of auxiliary pump	0-100.0% (linked by target pressure ratio)	5.0%	☆	45067
b0-12	Add auxiliary pump delay	0 ~ 6553.5s	30.0s	☆	45068
b0-13	Pressure tolerance of auxiliary pump	0-100.0% (linked by target pressure ratio)	5.0%	☆	45069
b0-14	Delay of auxiliary pump	0 ~ 6553.5s	30.0s	☆	45070

4.1 Basic function parameters simple table

B0 group intelligent constant pressure water supply parameter table (applicable to constant temperature control)

Function code	Name	Setting range	Leave factory value	property	EDC address
b0-15	Pressure upper limit emergency reduction auxiliary pump delay (Seize the normal pump reduction time of b0-14)	0 ~ 6553.5s	3.0s	☆	45071
b0-16	Water shortage protection pressure	0-100.0% (linked by target pressure ratio) Note: Detection begins when the frequency exceeds the upper limit	20.0%	☆	45072
b0-17	Water shortage protection delay	0-6553.5s (0: turn off detection)	0.0s	☆	45073
b0-18	Sleep mode selection	0: Turn off sleep mode 1: Pressure sleep (feedback pressure ≥ b0-02) 2: Frequency sleep (output frequency ≤ b0-19) 3: Sleep pressure (b0-02)+sleep frequency (b0-19)	20.0%	★	45074
b0-19	Sleep detection frequency	0.00Hz to maximum frequency (P0-10) Note: Only valid for b0-18=2	20.00Hz	☆	45075
b0-20	Selection of pressure protection faults	00 ~ 11 Position: Overpressure upper limit protection (b0-07) Tenth digit: Water shortage and under pressure protection (b0-16) 0: No fault reported 1: Report a malfunction Note: Undervoltage fault Err70, Overvoltage fault Err71	00	★	45076
b0-21	Sleep shutdown mode	0: Slow down and stop the machine 1: Free Parking	0	★	45077

U0 parameter monitoring group

功能码	名称	设定范围	出厂值	属性	EDC地址
U0-00	Operating frequency (Hz)	--	0.01Hz	●	28672
U0-01	Set frequency (Hz)	--	0.01Hz	●	28673
U0-02	Bus voltage (V)	--	0.1V	●	28674
U0-03	Output voltage (V)	--	1V	●	28675
U0-04	Output current (A)	--	0.01A	●	28676

# 4.1 Basic function parameters simple table

U0 parameter monitoring group

Function code	Name	Setting range	Leave factory value	prop-erty	EDC address
U0-05	Output power (kW)	--	0.1kW	●	28677
U0-06	Output torque (%)	--	0.1%	●	28678
U0-07	X input status	--	1	●	28679
U0-08	Y output status	--	1	●	28680
U0-09	AI1 voltage (V)	--	0.01V	●	28681
U0-10	AI2 voltage (V)	--	0.01V	●	28682
U0-11	AI3 panel potentiometer voltage	--	0.01V	●	28683
U0-12	Count value	--	1	●	28684
U0-13	Length value	--	1	●	28685
U0-14	Load speed display	--	1	●	28686
U0-15	PID setting (dimensionless) PID set pressure value (water supply activation)	--	1 0.01kg	●	28687
U0-16	PID feedback (dimensionless) PID feedback pressure value (water supply activation)	--	1 0.01kg	●	28688
U0-17	PLC stage	--	1	●	28689
U0-18	HDI input pulse frequency (Hz)	--	0.01kHz	●	28690
U0-19	Feedback speed (unit: 0.1Hz)	--	0.1Hz	●	28691
U0-20	Remaining running time	--	0.1Min	●	28692
U0-21	AI1 pre calibration voltage	--	0.001V	●	28693
U0-22	AI2 pre calibration voltage	--	0.001V	●	28694
U0-23	Voltage before panel potentiometer calibration	--	0.001V	●	28695
U0-24	Linear velocity	--	1m/Min	●	28696
U0-25	Current power on time	--	1Min	●	28697
U0-26	Current running time	--	0.1Min	●	28698
U0-27	HDI input pulse frequency	--	1Hz	●	28699
U0-28	Communication settings	--	0.01%	●	28700
U0-30	Main frequency X display	--	0.01Hz	●	28702
U0-31	Auxiliary frequency Y display	--	0.01Hz	●	28703
U0-32	View any memory address value	--	1	●	28704
U0-35	Target torque (%)	--	0.1%	●	28707

## 4.1 Basic function parameters simple table

### U0 parameter monitoring group

Function code	Name	Setting range	Leave factory value	property	EDC address
U0-36	Current number of auxiliary pumps for work	--	0	●	28708
U0-37	Power factor perspective	--	0.1°	●	28709
U0-39	retain	--	1V	●	28711
U0-40	retain	--	1V	●	28712
U0-41	Intuitive display of X input status	--	1	●	28713
U0-42	Y Input Status Visual Display	--	1	●	28714
U0-43	Visual display of X function status 1	--	1	●	28715
U0-44	Visual display of X function status 2	--	1	●	28716
U0-45	Fault information	--	1	●	28717
U0-59	Set frequency (%)	--	0.01%	●	28731
U0-60	Operating frequency (%)	--	0.01%	●	28732
U0-61	Inverter status	--	1	●	28733
U0-62	Current fault code	--	1	●	28734
U0-65	Torque upper limit	--	0.1%	●	28737
U0-66	U-phase current display (A)	--	0.01A	●	28738
U0-67	V-phase current display (A)	--	0.01A	●	28739
U0-68	W-phase current display (A)	--	0.01A	●	28740

# P0-29 Industry Application Macro Usage Instructions

When using macro parameters, it is important to note that the macro functions of this machine are intended to reduce the number of function code parameters configured by customers. Not all parameters are considered 100% complete. If there are any problems encountered during on-site use, specific analysis should be conducted, and one's own experience should be utilized to adjust some helpful parameters to achieve the best usage effect.

When a macro has already been set, it is recommended to perform P0-29=10000 to restore the factory value before switching to another macro.

## 1、 Restore factory parameter macro

(P0-29=0, excluding motor parameter group)

P0-29=10000 is equivalent to the factory reset effect of PP-01=1. Before executing industry application macro operations, please execute P0-29=10000 once.

## 2、 Constant pressure water supply macro

(Tip: 1bar=1kg=0.1MPa=10m water column)

The characteristics of this constant pressure water supply: directly selecting the water supply macro, then inputting the sensor range value and target pressure, other parameters can be basically unchanged to directly achieve high-efficiency constant water supply control, with strong pressure regulation ability and quick and sensitive response. Therefore, it is superior to traditional PID control frequency based water supply control, with more stable pressure, energy saving and other advantages. At the same time, it has a better constant pressure and pressure holding effect on sites with pressure tanks. And the motherboard dual relay can directly achieve one to three, or with the external relay control of Y1 and HDO terminals, it can achieve up to one to five water supply. It has independent pump adding and reducing pressure and delay control, and can also achieve dedicated time control for emergency pump reduction when overpressure occurs. By appropriately reducing the time value of the emergency auxiliary pump reduction delay for the upper pressure limit of b0-15, the pump can be quickly reduced and stopped, avoiding the problem of rapid water pressure rise. In addition, the keyboard can switch between directly monitoring the pressure setting target value or pressure feedback value through the shift key. When running again after power failure, the monitoring content remains unchanged. At the same time, this machine also directly supports dual display keyboard monitoring of pressure setting values and feedback values.

1. Single pump variable frequency constant pressure water supply macro: When P0-29=1, it automatically initializes some parameters.

Note 1: After selecting any water supply macro in P0-29, press the shift key to display the set pressure value on the upstream digital tube (first digital tube) (default is 5.00KG), and the unit AV light of the first digital tube will light up at the same time; the downstream digital tube (second digital tube) will monitor the feedback pressure value, and the corresponding unit AV light of the digital tube will light up at the same time.

Note 2: Overwater pressure protection: Immediate shutdown mode: P6-10=1 (free parking)

Note 3: No sleep requirement: To disable sleep, set b0-05=0.0 (sleep delay), and b0-09=0.0 (frequency limit beyond target pressure protection delay), turn off the lower limit frequency overpressure protection to achieve the desired effect. However, it should be noted that the overpressure shutdown parameters b0-07 and b0-08 are still in effect, and it depends on whether they need to be turned off on site.

Note 4: Water shortage protection: When b0-16 and b0-17 run to the upper frequency limit and the water shortage protection delay is reached, stop the machine and report a water shortage fault Err70.

Note 5: b0-20 can be used to set whether to turn on water shortage fault (Err70) or overpressure fault (Err71).

P0-01=2, P0-02=1, P0-03=8, P0-14=20.00Hz, p4-18=2.00, P7-03=8015, P7-04=0001, P7-05=3003, P7-17=15, P7-18=16, PA-00=3, PA-05=50.0, PA-06=0.10, PA-28=0 (if you want to speed up the reaction rate, you can increase the value of PA-05 and decrease the value of PA-06); Slow down the reaction speed, these two parameters are reversed), AI1 defaults to 0~10V input as PID pressure feedback. If you need to change it to 4~20mA input, please add parameters: P4-13=2.00V, P4-37=11 (set 1 as current input type). The default AI2 input for the frequency converter itself is 0-20mA. If AI2 is used as the PID pressure feedback source, the corresponding supplementary parameters are P4-18=2.00V and P4-37=10. When AI1 and AI2 are changed to current input, a 24V terminal needs to be connected in series as the sensor power supply.

Attention: If the water supply macro function is selected and the default feedback source AI1 is changed to AI2 as the voltage feedback source, it is necessary to manually change P4-18 from 2.00V to 0.00V, and change the ten digit value of P4-37 from 1 to 0. PA-02=1 to use AI2 as the voltage feedback source.

The B0 group is a constant pressure water supply parameter group, where B0-00 is the range of the pressure sensor that needs to be accurately inputted. For example, if the maximum value of the sensor is marked as 1.6MP, then B0-00=16.00kg.

PA-00 is used to select the target pressure source. The default is 7 keyboard UP/DOWN up and down keys to adjust the target pressure value. b0-01 defaults to 5.00kg and can be changed as needed. The sleep and wake-up pressure, as well as related delays, can be adjusted. Sleep, wake-up, and various pressure deviations are automatically adjusted in conjunction with the percentage value of the target pressure, and can work stably without the need for adjustment.

\*B0-07=110% (if the target pressure is 5.0 kg, the overpressure protection is 5.5 kg) is the upper limit protection value for overpressure. When this water pressure is exceeded, the timer protection is activated. When emergency protection is required, set P06-10=1 (i.e. set the frequency converter to free parking mode) to achieve overpressure emergency protection..

Attention: Regarding the wiring of the frequency converter for constant pressure water supply, please solve it yourself and do not describe it here.



2. One drag three constant pressure water supply macro: P0-29=2, can achieve a constant pressure water supply mode of 1 variable frequency pump dragging 2 power frequency pumps

This mode is based on the initialization default parameter conditions of the "Single Pump Variable Frequency Constant Pressure Water Supply Macro" above, and adds the following default parameters:

P5-02=50 (RLY1 is auxiliary pump 1), P5-03=51 (RLY2 is auxiliary pump 2), P5-25=0.3S, P5-26=0.3S, b0-11=2 (two auxiliary pumps). For more control parameters, please refer to the B0 group of constant pressure water supply parameters.

3. One to five constant pressure water supply macro: P0-29=3, can achieve a constant pressure water supply mode of 1 variable frequency pump dragging 4 power frequency pumps:

This mode is based on the initialization default parameter conditions of the "One to Three Constant Pressure Water Supply Macro" above, and adds the following default parameters:

P5-04=52 (Y1 is auxiliary pump 3), P5-01=53 (HDO is auxiliary pump 4), P5-00=1, P5-24=0.3S, P5-27=0.3S, b0-10=4 (four auxiliary pumps). For more control parameters, please refer to the constant pressure water supply parameter B0 group.

**3、 Machine tool macro 100HZ: AI1 input 0~10V given speed, X1 terminal rotates forward to start and stop, brake resistor must be connected. If the brake overvoltage occurs, attention should be paid to reducing the overvoltage stall gain value of P9 group. If this value is too small, it is easy to cause excessive impact on IGBT.**

**4、 Carving machine 400Hz macro 1 (P0-29=21 linear multi-stage speed): 24000 revolutions per minute**

X1 is turning to start and stop, X2 multi-segment speed terminal 1 Magi X3 multi-segment speed terminal 2 and X4 multi-segment speed terminal 3. The three-terminal combination is as follows:

Section speed	Segment speed value	Corresponding frequency	Multi-stage speed terminal 1	Multi-stage speed terminal 2	Multi-stage speed terminal 3
0	0.0%	0HZ	OFF	OFF	OFF
1	25.0%	100HZ	ON	OFF	OFF
2	37.5%	150HZ	OFF	ON	OFF
3	50.0%	200HZ	ON	ON	OFF
4	62.5%	250HZ	OFF	OFF	ON
5	75.0%	300HZ	ON	OFF	ON
6	87.5%	350HZ	OFF	ON	ON
7	100.0%	400HZ	ON	ON	ON

The usage methods of other similar macros and terminals are similar and will not be given as examples.

# Chapter 5 Communication Protocol

Communication data can be divided into function code data and non-function code data, the latter including running commands, running status, running parameters, alarm information and so on.

## 5.1 function code data

The function code data is an important setting parameter of the frequency converter, there are P group and A group function parameters, the parameter groups are as follows:

Function code data	Group P(readable and writable)	P0、P1、P2、P3、P4、P5、P6、P7、P8、P9、PA、PB、PC、PD、PE、PF
	Group A(readable and writable)	A0、A1、A2、A3、A4、A5、A6、A7、A8、A9、AA、AB、AC、AD、AE、AF

The function code data communication address is defined as follows:

1. When reading function code data for communication, for the function code data of groups P0~PF, A0~AF, the high sixteen bits of the communication address are directly the function group number, and the low sixteen bits are directly the sequence number of the function code in the function group. The following is an example:

P0-16 function parameters: Its communication address is F010H, where F0H represents the P0 group function parameters, and 10H represents the hexadecimal data format of the sequence number 16 in the function group.

AC-08 function parameters: Its communication address is AC08, where ACH represents the AC group function parameters, and 08H represents the hexadecimal data format of the function code in the sequence number 08 in the function group.

2. When writing function code data for communication, for the function code data of group P0~PF, the high sixteen bits of the communication address are divided into 00~0F or F0~FF according to whether they are written into EEPROM, and the low sixteen bits are directly the serial number of the function code in the function group. The following is an example:

Write function in parameter P0-16:

When writing to EEPROM is required, the communication address is F010H,

When writing to EEPROM is not required, the communication address is 0010H,

3. When writing EEPROM data for communication, for the function code data of group A0~AF, the high sixteen bits of the communication address are divided into 10~4F or A0~AF, and the low sixteen bits are directly the serial number of the function code in the function group. For example:

Write function parameter AC-08:

When writing to EEPROM is required, the communication address is AC08H,

When writing to EEPROM is not required, the communication address is 4C08H,

# 5.2 Non-function code data

Non-function code data	Status data (readable)	U group monitoring parameters, inverter fault description, inverter operation status
	Status data (readable)	Control commands, communication set values, digital output terminal control, analog output AO1 control, analog output AO2 control, high-speed pulse (FMP) output control, parameter initializa-

## 5.2.1 Status Data

The status data is divided into U group monitoring parameters, inverter fault description, and inverter operating status.

### 1. U group parameter monitoring parameters

For the description of U group monitoring data, please refer to the relevant U0 group function description in the manual. Its address is defined as follows:

U0~UF, the communication address is 70~7F in the upper sixteen bits, and the lower sixteen bits are the serial number of the monitoring parameter in the group. For example:

U0-11, the communication address is 700BH.

### 2. Inverter fault description

When reading the inverter fault, the communication address is fixed to 8000H. The host computer can obtain the current inverter fault code by reading the address data. The fault code description is defined in Chapter 5 P9-14 Function Code.

### 3. Inverter operating status

When the communication reads the inverter running status, the communication address is set to 3000H. The host computer can obtain the current inverter running status information by reading the data at this address. The definition is as follows:

Inverter operation status communication address	Read status word definition
3000H	1: Forward operation
	2: Reverse operation
	3: Shutdown

### 5.2.2 Control parameters

The control parameters are divided into control commands, digital output terminal control, analog output AO1 control, analog output AO2 control, and high-speed pulse (FMP) output control.

### 5.2.3 Control Commands

When P0-02 (command source) is selected as 2: communication control, the host computer can use the communication address to control the start and stop of the inverter. The control commands are defined as follows:

Control command communication address	Read status word definition
2000H	1: Forward operation
	2: Reverse operation
	3: Forward jog
	4: Reverse jog
	5: Free stop
	6: Deceleration stop
	7: Fault reset

### 5.2.4 Communication setting value

The communication setting value is mainly used for the given data when the medium frequency source, torque upper limit source, VF separation voltage source, PID given source, PID feedback source, etc. are selected as the communication given. Its communication address is 1000H. When the host computer sets the communication address value, its data range is -10000~10000, corresponding to the relative given value -100.00%-100.00%

### 5.2.5 Digital output terminal control

When the digital output terminal function is selected as 20: communication control, the host computer can control the digital output terminal of the inverter through the communication address, which is defined as follows:

Digital output terminal control communication address	Command content
2001H	BiT0: DO1 output control BiT1: DO2 output control BiT2: RELAY1 output control BiT3: RELAY2 output control BiT4: FMR output control BiT5: VDO1 BiT6: VDO2 BiT7: VDO3 BiT8: VDO4 BiT9: VDO5

### 5.2.6 Analog output AO1, AO2, high-speed pulse output FMP control

When the analog output AO1, AO2, high-speed pulse output FMP output function selection is 12: communication setting, the host computer can control the analog and high-speed pulse output of the inverter through the communication address, which is defined as follows:

Output control communication address		Command content
AO1	2002H	0 ~ 7FFF means 0% ~ 100%
AO2	2003H	
FMP	2004H	

### 5.2.7 Parameter Initialization

This function is required when the inverter parameters need to be initialized through the host computer.

If PP-00 (user password) is not 0, you must first pass the password verification. After the verification is passed, the host computer will perform parameter initialization operations after 30 seconds.

The communication address for user password verification is 1F00H. Simply write the correct user password into this address to complete the password verification.

The address for communication parameter initialization is 1F01H, and its data content is defined as follows:

Parameter initialization communication address	Function
1F01H	1: Restore factory parameters
	2: Clear recorded information
	4: Restore user backup parameters
	501: Back up user current parameters

The inverter provides RS485 communication interface and supports Modbus-RTU communication protocol. Users can realize centralized control through computer or PLC, set inverter operation command, modify or read function code parameters, read inverter working status and fault information, etc. through this communication protocol.

### 5.3 Contents of the Agreement

The serial communication protocol defines the information content and format used in serial communication. These include: host polling (or broadcasting) format; host encoding method, including: function code for required 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 makes an error when receiving information, or cannot complete the action required by the host, it will organize a fault message as a response to the host.

#### 5.3.1 Application

The inverter is connected to a "single master and multiple slaves" PC/PLC control network with RS485 bus as a communication slave.

#### 5.3.2 Bus structure

##### (1) Hardware interface

Built-in communication interface A+ and B- terminals.

##### (2) Topological structure

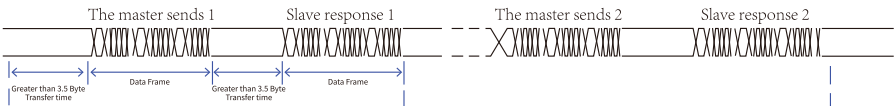
Single host and multiple slave systems. Each communication device in the network has a unique slave address, one of which is the communication host (PC host, PLC, HMI, etc.). The host initiates communication and reads or writes parameters to the slave. Other devices are communication slaves, responding to the host's inquiries or communication operations. Only one device can send data at the same time, while other devices are in receiving state.

The setting range of slave address is 1 to 247, and 0 is the broadcast communication address. The slave address in the network must be unique.

When reading the inverter fault, the communication address is fixed to 8000H. The host computer can obtain the current inverter fault code by reading the address data. The fault code description is defined in Chapter 5 P9-14 Function Code.

##### (3) Communication transmission method

Asynchronous serial, half-duplex transmission mode. In the process of serial asynchronous communication, data is sent in the form of messages, one frame of data at a time. The MODBUS-RTU protocol stipulates that when the idle time without data on the communication data line is greater than the transmission time of 3.5 bytes, it indicates the start of a new communication frame.

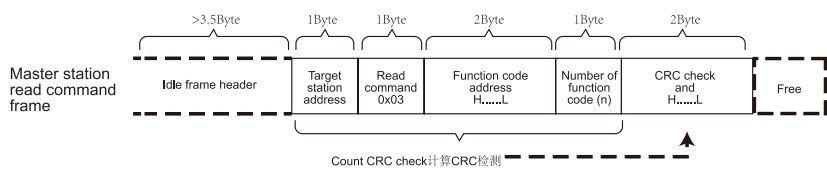


The built-in communication protocol of the inverter is the Modbus-RTU slave communication protocol, which can respond to the host's "query/command", or take corresponding actions according to the host's "query/command", and communicate data responses.

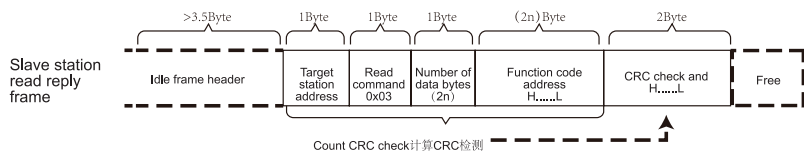
The host can refer to a personal computer (PC), industrial control equipment or programmable logic controller (PLC), etc. The host can communicate with a slave individually, and can also issue broadcast information to all subordinate slaves. For the host's individual access "query/command", the accessed slave must return a response frame rate; for the broadcast information sent by the host, the slave does not need to feedback the response to the host.

5.3.3 Communication data

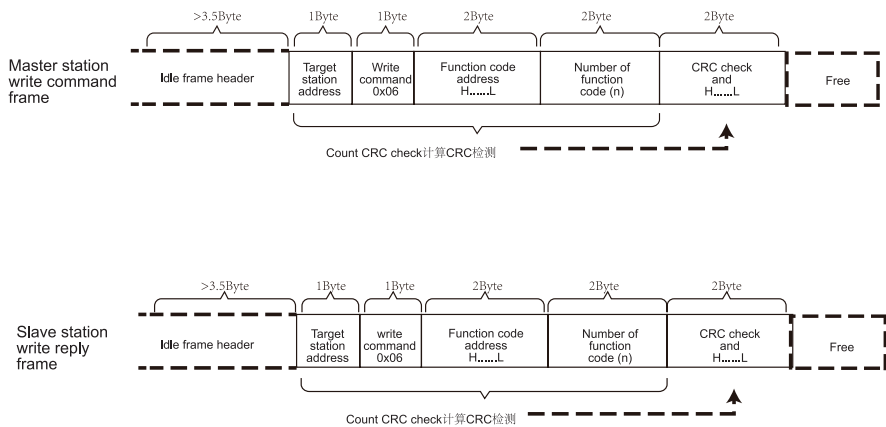
The Modbus protocol communication data format is as follows. The inverter only supports the reading or writing of Word type parameters. The corresponding communication read operation command is 0x03; the write operation command is 0x06, and does not support byte or bit read and write operations:



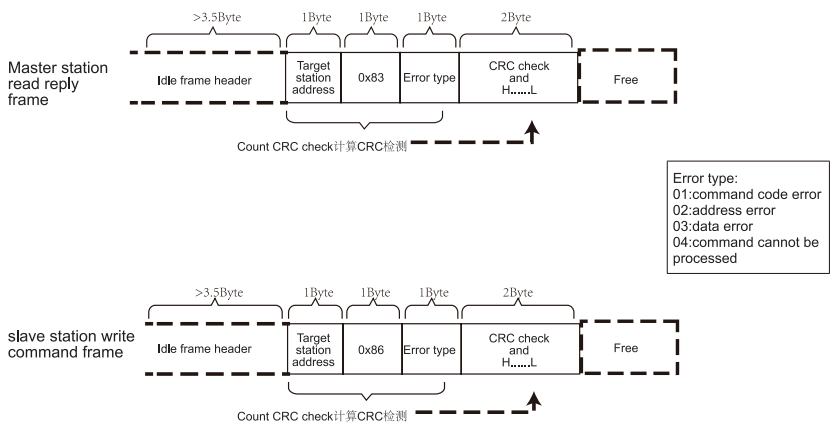
Theoretically, the host computer can read several consecutive function codes at one time (that is, n can be up to 12 at most), but be careful not to skip the last function code of this function code group, otherwise an error will be reported.







If a communication frame error is detected from the slave machine, or if the read and write are not successful due to other reasons, the error frame will be replied.



5.3.4 description of digital frame field

Frame header START	Idle more than 3.5 characters transfer time
Slave address ADR	Mailing address range:1~247; 0=Broadcast address
Command code CMD	03:Read slave parameters 06:Write slave parameters
Function code address H	The internal parameter address of the frequency converter is expressed in functional code type and non-functional code type (such as running status parameters, running commands and other parameters, running commands )and other parameters.For more information,please see the address definition. When transmitting, the high byte comes first and the low byte comes last.
Function code address L	
Number of function codes H	If the number of function codes read in this frame is 1,it means that a function code is read. When transmitting, the high byte comes first and the low byte comes last.
Number of function codes L	
Data H	When replying data or specially written data,the high byte comes first and the low byte comes last.
Data L	
CRC CHK high position	Detection value:CRC16 check value. When it is transmitted,the high byte comes first and the low byte comes last.
CRC CHK low order	
NED	3.5 characters time

5.3.5 description of digital frame field

Check mode -- CRC Check mode: CRC (Cyclical Redundancy Check) uses RTU frame format, and the message includes an error detection domain based on CRC method. The CRC domain detects the contents of the entire message. The CRC field is two bytes and contains 16-bit binary values. It is calculated by the transmission device and added to the message. The receiving device recalculates the Information CRC, and compared with the values in the received CRC domain, if the two CRC values are not equal, there is an error in the transmission.

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

During the CRC generation process, each 8-bit character is XORed with the register content, and the result is moved toward the least significant bit, and the most significant bit is filled with 0. The LSB is extracted for detection. If the LSB is 1, the register is XORed with the preset value alone. If the LSB is 0, it is not performed. The whole process is repeated 8 times. After the last bit (the 8th bit) is completed, the next 8-bit byte is XORed with the current value of the register alone. The final value in the register is the CRC value after all bytes in the message are executed.

When 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 CRC16_CHK(unsigned char *data, unsigned char length) {
    int j = 0;
    unsigned int reg_crc = 0xFFFF;

    while (length--) {
        reg_crc ^= *data++;
        for (j = 0; j < 8; j++) {
            if (reg_crc & 0x01) {
                reg_crc = (reg_crc >> 1) ^ 0xA001;
            } else {
                reg_crc = reg_crc >> 1;
            }
        }
    }
    return reg_crc;
}
```

5.3.6 Function code parameter address marking rules:

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

The function code group number and label are used as the parameter address representation rules:

- High byte: P0~PF (P group), A0~AF (A group), 70~7F (U group)
- Low byte: 00~FF

For example: if you want to range function code P3-12, the access address of the function code is expressed as F30CH

Note:

- PF group: parameters cannot be read or changed;
- U group: parameters can only be read, not changed.

Some parameters cannot be changed when the inverter is in operation; some parameters cannot be changed regardless of the inverter state;

When changing function code parameters, pay attention to the parameter range, unit and related instructions.

Function code group	Communication access address	Communication modifies the function code address in RAM
P0 ~ PE group	0xF000 ~ 0xFEFF	0x0000 ~ 0x0EFF
A0 ~ AC group	0xA000 ~ 0xACFF	0x4000 ~ 0x4CFF
U0 group	0x7000 ~ 0x70FF	Read-only, not writable

Note: because EEPROM is stored frequently, it will reduce the service life of EEPROM, so some function codes do not need to be stored in communication mode, as long as you change the value in RAM.

If it is a P group parameter, to achieve this function, just change the high order F of the function code address into 0.

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

The address of the corresponding function code of the RAM is as follows:

High -level bytes: 00 ~ 0F (group P), 40 ~ 4F (group A)

Low byte: 00 ~ ff

For example: Function code P3-12 is stored in EEPROM, the address is expressed as 030CH;

Function code A0-05 is not stored in EEPROM, and the address is 4005h;

Notice:

This address indicates that it can only be used to write RAM and cannot be read. When reading, it is an invalid address. For all parameters, you can also use the command code 07h to implement this function.

5.3.7 Disclosure/Run parameter part:

Parameter address	Parameter description	Parameter address	Parameter description
1000H	Communication setting value (decimal)	1010H	PID settings
1001H	Running frequency	1011H	Pid feedback
1002H	Bus voltage	1012H	PLC step
1003H	Output voltage	1013H	Input pulse frequency, Unit 0.01kHz
1004H	Output current	1014H	Feedback speed, unit 0.1Hz
1005H	Output power	1015	Remaining operation time
1006H	Output torque	1016	AI1 Correcting Voltage
1007H	Run speed	1017	AI2 Correcting Voltage
1008H	DI input logo	1018	AI3 Correcting voltage
1009H	Do output logo	1019	Line speed
100AH	AI1 voltage	101A	Current call time
100BH	AI2 voltage	101B	Current operation time
100CH	AI3 voltage	101C	Input pulse frequency, unit 1Hz
100DH	Critical input	101D	Communication settings
100EH	Length value input	101E	Actual feedback speed
100FH	Load speed	101F	Main frequency x display
		1020	Aid frequency y display

Note:

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

For the data of the frequency dimension, the percentage is the percentage of the relative maximum frequency (P0-10); for the data of the torque dimension, the percentage is P2-10, A2-48, A3-48, A4.48 (the upper limit of torque corresponds to the first, second, third and fourth motors, respectively).

Control command input to frequency converter: (write only)

Control command communication address	Command function
2000H	0001:Positive operation
	0002:reverse operation
	0003:turn forward and move
	0004:reverse point motion
	0005:free shutdown
	0006:slow down and stop
	0007:fault reset

States word address	States word function
3000H	0001:Positive operation
	0002:reverse operation
	0003:shutdown

Status lock password check:(if 8888H is returned,the password verification is passed):

Password address	Content of the password
1F00H	*****

5.3.8Digital output terminal control(write only)

Digital output terminal control communication address	Command content
2001H	BiT0:DO1 output control BiT1:DO2 output control BiT2:RELAY 1 output control BiT3:RELAY 2 output control BiT4:FMR output control BiT5:VDO1 BiT6:VDO2 BiT7:VDO3 BiT8:VDO4 BiT9:VDO5

5.3.9analog output AO1 control(write only)

Command address	Content of the command
2002H	0~7FFFRE represents 0%~100%

5.3.10analog output AO2 control(write only)

Command address	Content of the command
2003H	0~7FFFRE represents 0%~100%

5.3.11pulse output control(write only)

Command address	Content of the command
2004H	0~7FFFRE represents 0%~100%

# 5.4 fault description of frequency converter

fault address of frequency converter	fault information of frequency converter	
8000H	0000: no failure 0001: reserved 0002: accelerating over-current 0003: decelerate over-current 0004: constant speed over-current 0005: accelerated over-voltage 0006: deceleration over-voltage 0007: constant speed over-voltage 0008: buffer overload fault 0009: under-voltage fault 000A: frequency converter overload 000B: motor overload 000C: input out of phase 000D: output out of phase 000E: module overheating 000F: external failure 0010: communication exception 0011: abnormal contactor 0012: current detection fault 0013: motor tuning fault 0014: encoder / PG card failure	0015: read and write exception caused by participation 0016: hardware failure of frequency converter 0017: motor-to-ground short circuit fault 0018: reserved 0019: reserved 001A: run time arrives 001B: user-defined fault 1 001C: user-defined fault 2 001D: power-up time arrives 001E: unloading 001F: runtime PID feedback is lost 0028: fast current limit timeout failure 0029: switch motor failure at run time 002A: speed deviation is too large 002B: motor over-speed 002D: motor over temperature 005A: encoder line number setting error 005B: no encoder 005C: initial position error 005E: speed feedback error

### 5.5 Description of Pd group communication parameters

Pd-00	Baud rate	Leave factory value	600
	setting range	Unit :MODUBS baud	
		0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS	5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS

This parameter is used to set the data transmission rate between the host computer and frequency converter.Note that the baud rate set by the host computer and the one of frequency converter must be the same,otherwise,the one communication can not be carried out. The higher the baud rate, the faster the communication speed.

Pd-01	Data format	Leave factory value	0
	setting range	0:no check:data format(8,N,2) 1:even check:data format(8,E,1) 2:odd check:data format(8,O,1) 3:no check:data format(8-N-1)	

The data format set by the host computer and the one of frequency converter must be the same,otherwise,the one communication can not be carried out.

Pd-02	This machine address	Leave factory value	1
	setting range	1~247(0represents the broadcast address)	

When the local address is set to 0, it is the broadcast address, which realize the broadcasting function of the host computer. The local address (except the broadcast address)is unique, which is the basis for realizing point-to-point communication between the host computer and the frequency converter.

Pd-03	Apply delay	Leave factory value	2ms
	setting range	0~20ms	

Response delay refers to the interval between end of data acceptance of the frequency converter and the time when the data is sent to the host computer. If the response delay is less than the system processing time,the response delay shall be based on the system processing time, the response delay is longer the system processing time,the system will wait until the response delay time is up the send data to the upper computer.



Pd-04	Communication overtime time	Leave factory value	0.0 s
	setting range	0.0(invalid), 1.0s~60.0s	

When the function code is set to 0.0s,the communication overtime parameter is invalid.When the function code is set to a valid value,if the interval between one communication and the next communication exceeds the communication overtime, the system will report a communication error(Err16). In general, it is set to invalid, and if you set secondary parameters in a continuous communication system, you can monitor the communication status.

Pd-05	Selection of communication	Factory value	0
	Scope	0: Non -standard MODBUS protocol; 1: Standard Modbus protocol	

PD-05 = 1: Select the standard Modbus protocol.

PD-05 = 0: When reading the command, the number of bytes returned from the machine than the standard Modbus protocol one byte,  
For details, please refer to the "Communication Data Structure" part of this agreement.

Pd-06	Communication reading current resolution	Factory value	0
	Scope	0: 0.01A;; 1: 0.1A	

It is used to determine the output unit of the current value when reading the output current.

## 2.4 485 communication instructions to restore the factory value operation

1. First write the password of the menu address of the PP-00 (the address is 0x1F00. If the password is 0, you must first write the 0 password value to this address.).
2. Then PP-01 = 3, you can restore all parameters of the inverter (including motor parameters), and the address is 0x1F01

# Chapter 6 Failure diagnose and policies

## 6.1 Failure alarm and policies

SU700 frequency converter total has 24 items warning information and protection function, protection function act once happen failure, frequency converter stop output, frequency converter failure electric relay contact act and indicate failure code on the frequency converter display panel. The users able to self check according to the reminding in this chapter before seeking for service, analyse the failure reason and ind out the solve methods. If failure belong to the described reasons in dotted line frame then please seeking for service, contact the agent of the purchased frequency converter or directly contact our company.

Err22 in 21 items warning information is over current or over voltage signal, in most of the situation, hardware over voltage caused Err22 alarm.

Failure name	Failure code	Failure reason one by one check	Failure treatment policies
Inverter unit protection	Err1	1.Frequency converter output circuit short circuit 2.Too long motor and frequency converter wiring 3.overheat module 4.Internal wiring of frequency converter loosen 5.Abnormal main control board 6.Abnormal drive board 7.Abnormal mutation module	1.solve outer failure 2.Additionally install reactor or output filter wave device 3.check whether air channel blocked, whether fan normally working and solve the existing problems 4.Plug in well all wiring 5.seeking for technical support 6.seeking for technical support 7.seeking for technical support
Accelerate over current	Err2	1.Frequency converter output circuit existinggrounding or short circuit 2.control method is vector and not process parameter identification 3.Too short accelerate time 4.Manual torque rise or unsuitable V/F curve 5.Lower voltage 6.start the rotating motor 7.suddenly add load during accelerating 8.smaller frequency converter device model select	1.solve outer failure 2.process motor parameter identification 3.Increase accelerate time 4.Adjust manually rise torque or V/F curve 5.Adjust the voltage to normal range 6.select speed tracing start or restart after motor stopped 7.cancel suddenly added load 8. select more bigger power grade frequency converter

## 6.1 Failure alarm and policies

Failure name	Failure code	Failure reason one by one check	Failure treatment policies
Moderate over current	Err3	<ol style="list-style-type: none"> <li>1.Frequency converter output circuit existing grounding or short circuit</li> <li>2.control method is vector and not process parameter identification</li> <li>3.Too short moderate time</li> <li>4.Lower voltage</li> <li>5.suddenly add load during moderating</li> <li>6.Not additionally install brake unit and brake electric resistance</li> </ol>	<ol style="list-style-type: none"> <li>1.solve outer failure</li> <li>2.process motor parameter identification</li> <li>3.Increase moderate time</li> <li>4.Adjust the voltage to normal range</li> <li>5.cancel suddenly added load</li> <li>6.Additionally install brake unit and brake electric resistance</li> </ol>
constant speed over current	Err4	<ol style="list-style-type: none"> <li>1.Frequency converter output circuit existing grounding or short circuit</li> <li>2.control method is vector and not process parameter identification</li> <li>3.Lower voltage</li> <li>4.whether has sudden load during running</li> <li>5.smaller frequency converter device model select</li> </ol>	<ol style="list-style-type: none"> <li>1.solve outer failure</li> <li>2.process motor parameter identification</li> <li>3.Adjust the voltage to normal range cancel suddenly addedload</li> <li>5.select more bigger power grade frequency converter</li> </ol>
Accelerate over voltage	Err5	<ol style="list-style-type: none"> <li>1.Higher input voltage</li> <li>2.Existing outer force drive motor to run during accelerating</li> <li>3.Too short accelerate time</li> <li>4.Not additionally install brake unit and brake electric resistance</li> </ol>	<ol style="list-style-type: none"> <li>1.Adjust the voltage to normal range</li> <li>2.cancel additional power or add braking resistance</li> <li>3.Increase accelerate time</li> <li>4.Additionally install brake unit and brake electric resistance</li> </ol>
Moderate over voltage	Err6	<ol style="list-style-type: none"> <li>1.Higher input voltage</li> <li>2.Existing outer force drive motor to run during accelerating</li> <li>3.Too short moderate time</li> <li>4.Not additionally install brake unit and brake electric resistance</li> </ol>	<ol style="list-style-type: none"> <li>1.Adjust the voltage to normal range</li> <li>2.cancel additional power or add braking resistance</li> <li>3.Increase accelerate time</li> <li>4.Additionally install brake unit and brake electric resistance</li> </ol>
constant speed over voltage	Err7	<ol style="list-style-type: none"> <li>1.Higher input voltage</li> <li>2.Existing outer force drive motor to run during running</li> </ol>	<ol style="list-style-type: none"> <li>1.Adjust the voltage to normal range</li> <li>2.cancel this outer power or additionally install brake electric resistance</li> </ol>
control power supply failure	Err08	<ol style="list-style-type: none"> <li>1.Input voltage not in the standard stipulated range</li> </ol>	<ol style="list-style-type: none"> <li>1.Adjust the voltage in the standard required range</li> </ol>

## 6.1 Failure alarm and policies

Failure name	Failure code	Failure reason one by one check	Failure treatment policies
Lack voltage failure	Err09	<ol style="list-style-type: none"> <li>1.Moment power of</li> <li>2.Frequency converter input voltage not in the standard required range</li> <li>3.Abnormal bus line voltage</li> <li>4.Abnormal rectification bridge and recoil resistance</li> <li>5.Abnormal drive board</li> <li>6.Abnormal control board</li> </ol>	<ol style="list-style-type: none"> <li>1.Reset failure</li> <li>2.Adjust voltage to normal range</li> <li>3.seeking for technical support</li> <li>4.seeking for technical support</li> <li>5.seeking for technical support</li> <li>6.seeking for technical support</li> </ol>
Frequency converter over load	Err10	<ol style="list-style-type: none"> <li>1.whether too big load or happen motor blocked</li> <li>2.smaller frequency converter device model select</li> </ol>	<ol style="list-style-type: none"> <li>1.Reduce load and check the motor and mechanical situation</li> <li>2.select more bigger power grade frequency converter</li> </ol>
Motor overload	Err11	<ol style="list-style-type: none"> <li>1.whether suitable motor protect parameters P9-01</li> <li>2.whether too big load or happen motor blocked</li> <li>3.smaller frequencyconverter device model select</li> </ol>	<ol style="list-style-type: none"> <li>1.correctly set this parameter</li> <li>2.Reduce load and check the motor and mechanical situation</li> <li>3.select more bigger power grade frequency converter</li> </ol>
Input lack phase	Err12	<ol style="list-style-type: none"> <li>1.Abnormal three phase input power supply</li> <li>2.Abnormal drive board</li> <li>3.Abnormal lightning protection board</li> <li>4.Abnormal main control board</li> </ol>	<ol style="list-style-type: none"> <li>1.check and solve the existing problems in outer circuit</li> <li>2.seeking for technical support</li> <li>3.seeking for technical support</li> <li>4.seeking for technical support</li> </ol>
output lack phase	Err13	<ol style="list-style-type: none"> <li>1.Abnormal lead wire from frequency converter to motor</li> <li>2.unbalance frequency converter t hree phase output during motor running</li> <li>3.Abnormal drive board</li> <li>4.Abnormal module</li> </ol>	<ol style="list-style-type: none"> <li>1.solve outer failure</li> <li>2.check whether motor three phase winding normal and solve the problems</li> <li>3.seeking for technical support</li> <li>4.seeking for technical support</li> </ol>
Module overheat	Err14	<ol style="list-style-type: none"> <li>1.Too high environment temperature</li> <li>2.Air channel blocked</li> <li>3.Fan damaged</li> <li>4.Module thermal resistor damaged</li> <li>5.inverter module damaged</li> </ol>	<ol style="list-style-type: none"> <li>1.Reduce environment temperature</li> <li>2.clean air channel</li> <li>3.Renewal fan</li> <li>4.Renewal thermal resistor</li> <li>5.Renewal inverter module</li> </ol>
outer equipment failure	Err15	<ol style="list-style-type: none"> <li>1.Multifunctional terminal X inputsignal of outer failure</li> <li>2.virtual IO function input signal of outer failure</li> </ol>	<ol style="list-style-type: none"> <li>1. reset operation</li> <li>2. reset operation</li> </ol>

## 6.1 Failure alarm and policies

Failure name	Failure code	Failure reason one by one check	Failure treatment policies
communication failure	Err16	1.Abnormal host computer working 2.Abnormal communication wire 3.Remain 4.Incorrect communication parameter PD group setting	1.check host computer wiring 2.check communication wiring 3.correctly set communication expanding card type 4.correctly set communication parameters
contactor failure	Err17	1.Abnormal drive board and power supply 2.Abnormal contactor	1.Renewal drive board and power supply 2.Renewal contactor
current test failure	Err18	1.check abnormal Hall apparatus 2.Abnormal drive board	1.Renewal Hall apparatus 2.Renewal drive board
Motor tune failure	Err19	1.Motor parameters not set according to data plate 2.parameter identify process overtime	1.correctly set motor parameter according to data plate 2.check the lead wire from frequency converter to motor
EEPROM read and write failure	Err21	1.EEPROM chips damaged	1.Renewal main control board
Frequency converter hardware failure	Err22	1.Existing over voltage 2.Existing over current	1.Treat according to over voltage failure 2.Treat according to over current failure
Grounding short circuit failure	Err23	1.Motor grounding short circuit	1.Renewal cable or motor
Accumulated running time arrive failure	Err26	1.Accumulated running time arrived setting value	1.use parameter initialize function to clean record information
user self defined failure 1	Err27	1.Input signal of user self defined failure 1 through multifunctional terminal x 2.Input signal of user self defined failure 1 through invented 10 function	1.Reset running 2.Reset running
user self deined failure 2	Err28	1.Input signal of user self defined failure 1 through multifunctional terminal x 2.Input signal of user self defined failure 1	1.Reset running 2.Reset running
Accumulate power on time arrived failure	Err29	1.Accumulate power on time arrived setting value	1.use parameter initialize function to clean record information

## 6.1 Failure alarm and policies

Failure name	Failure code	Failure reason one by one check	Failure treatment policies
Loss load failure	Err30	1.Frequency converter running current lower than P9-64	1.confirm whether load separated or whether P9-64, P9-65 parameter setting accordance with actual running working condition
feedback loss failure during running	Err31	1.PID feedback less than PA-26 setting value	1.check PID feedback signal or set PA-26 as one suitable value
wave tracing and limit current failure	Err40	1.whether too big load or happen motor blocked 2.smaller frequency converter device model select	1.Reduce load and check the motor and mechanical situation 2.select more bigger power grade frequency
shift motor failure during running	Err41	1.Modify current motor select through terminal during frequency converter running	1.process motor shift operation after frequency converter stop machine
Motor over temperature failure	Err45	1.Temperature sensor wiring loosen 2.Too high temperature motor	1.Test temperature sensor wiring and solve the failure 2.Reduce carriage frequency or adopt other heat radiation actions to process heat radiation of motor
Initial position error	Err51	1.Too big motor parameter and actual tolerance	1.confirm again whether motor parameter correct, pay attention at focus on whether lower rated current setting
Water shortage protection	Err70	1. The on-site water pressure is lower than the water shortage protection pressure set in b0-16	1. Check whether the b0-16 value setting is reasonable, 2. Check whether the water pipe is burst, 3. Check whether the water pump is damaged
Overpressure protection	Err71	1. The on-site water pressure is higher than the set pressure value of b0-071. The on-site water pressure is higher than the set pressure value of b0-07	1. Check whether the setting value of b0-07 is reasonable, 2. Check whether the water outlet valve is closed, 3. Check whether the pressure sensor is damaged,

## 6.2 common failure and solve methods

The frequency converter maybe meeting the below failure situation during use, please process simple failure analyse refer to the below methods.

S/N	Failure appearance	possible reason	Solve method
1	power on but no indication	No power grid voltage or too low; switch power supply failure on frequency converter drive board; Rectification bridge damaged; Frequency converter bufer electric resistance damaged; control board, keyboard, keyboard wire failure; wiring among control board, drive board and keyboard broken;	check input power supply; seeking factory service; check bus line voltage; seeking factory service; seeking factory service;
2	power on repeat indication[ ]	Bad contact wiring between drive board and control board; control board related apparatus damaged; Too low power grid voltage; Drive board switch power supply problems;	pull and insert the main board pin socket again; seeking factory service; check power grid voltage; seeking factory service;
3	power on indicate "Err23" alarm	Motor or output wire grounding short circuit; Frequency converter damaged;	use meter measure insulation of motor and output wire; seeking factory service;
4	power on indication normal, indicate "[]" after running and	Fan damaged or blocked; outer control terminal wiring short circuit;	Renewal fan; solve the outer short circuit failure; seeking factory service;
5	Frequently report Err14 (module overheat) failure	Too high carriage frequency setting; Fan damaged or air channel blocked. Apparatus in frequency converter damaged (thermocouple or others) ;	Reduce carriage frequency (po-15) ; Renewal fan and clean air channel; seeking factory service;
6	Motor not running after frequency converter running	Not connect motor wire well; Error frequency converter parameter setting (motor parameter) ; Bad contact between drive board and control board wire; Drive board failure;	Confirm the wire between frequency converter and motor; Renewal motor or solve the mechanical failure; check and reset motor parameters;
7	Frequency converter frequently report over current and over voltage	Incorrect motor parameter setting; unsuitable accelerate and moderate time; Load wave;	Reset motor parameter or process motor tune; set suitable accelerate and moderate time; seeking factory service;
8	power on indication 8.8.8.8	The relate apparatus on control board damaged;	Renewal control board;