



**ISO9001 Quality
Management System
Authentication**

EN606 series

Ver. 1.2

**Injection asynchronous servo
control cabinet**

SHENZHEN ENCOM ELECTRIC TECHNOLOGIES CO.,LTD.

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1 Safety information and use notice points

To make ensure personal & equipment safety, this chapter must be read carefully before the cabinet come into use.

1.1 Safety precautions

There are three kinds of safety warnings in this manual as below:

Symbol	Symbol description
	It may cause human death, serious injury or heavy property loss with wrong operation.
	It may result body or device damage with wrong and timeless precautions under operation.
 Note	Should pay extra cautions when cabinet in use under this symbol



Forbid to cut off the power source directly when cabinet under running, acceleration or deceleration status. Power source could cut off when cabinet completely in halt and standby status. Otherwise user should be responsible for cabinet and device damage and human injury.



- (1) Forbid to connect AC power source to output terminal U,V,W, otherwise it could cause cabinet completely damage.**
- (2) Forbid to install cabinet on flammable objects, otherwise it may cause fire.**
- (3) Do not install cabinet in a environment with explosive gas, it may cause explosion.**
- (4) Bare connection terminal should be insulation treatment after main loop connection, otherwise it may cause electric shock.**
- (5) Do not operate cabinet with wet hands when cabinet power on, otherwise it may cause electric shock.**
- (6) cabinet earth terminal should be well grounding connection.**
- (7) Do not open the front cover for wiring when cabinet power on. cabinet wiring and check must handle after 10 minutes of cabinet power off.**
- (8) Wiring connection should handle by qualified person and not allow to slip any conductive objects inside cabinet, otherwise it may cause a electric shock or cabinet damage.**
- (9) when cabinet stocked for more than 6 months, using voltage regulator to boost voltage up and keep cabinet in standby status for 1 hour, otherwise it may cause electric shock and explosion.**



- (1) Forbid to connect control terminals except TA, TB, TC to AC 380V signal, otherwise it may cause cabinet completely damage.**
- (2) Do not install and run cabinet when cabinet damage or spare part less, otherwise it may cause fire or human injury.**
- (3) cabinet should install in a place where can accept itself weight, otherwise it may cause cabinet drop down or belongings damage.**

1.2 Application range

- (1) This kind of cabinet apply to 3 phase ac asynchronous motor only for general industry.
- (2) It should handle cautiously and consult with manufacturer when cabinet apply to high reliability required equipment which relevant to life, properties and safety device.
- (3) This kind of cabinet is the general motor control device in industry. When cabinet apply to dangerous equipment, safeguard should be considerable in case of cabinet failure.

1.3 Use notice points

- (1) EN606 series cabinet belong to voltage type cabinet, and it is normal with up temperature, noise and vibration of motor increasing over power frequency run slightly.
- (2) It is required to match cabinet with variable frequency motor running at low speed with constant torque for long time. When match cabinet with general asynchronous motor running at low speed, it should take measures to make motor heat dissipation or monitoring motor temperature in avoid of motor flash.
- (3) It is necessary to take measures in advance for the damage caused for the bad lubrication of the reduction box and wheel gear mechanical devices running at low speed for long time.
- (4) It is necessary to assure at first that the use speed range of motor bearings and mechanical devices, also the increasing of motor vibration and noise should be considered, when motor run over rated frequency.
- (5) It is necessary to select the suitable brake assembly for hoisting device and big inertia load to make sure the normal work when cabinet stripping from power grid for the overcurrent or overvoltage failure.
- (6) cabinet start and stop control through terminal or other normal command channel, otherwise it may cause cabinet damage via connecting cabinet input terminal to big current switch just like contactor direct to start and stop cabinet frequently.
- (7) It is necessary to make sure cabinet cut off from operation without output, when cabinet and motor connect through switch components just like contactor etc. Otherwise it will cause cabinet damage.
- (8) When cabinet output frequency within some range, it may meet mechanical resonance point of load device, through setting jump frequency to avoid it.
- (9) Checking power supply voltage within allowed working range before usage, otherwise, it need to change voltage or custom special voltage cabinet.

(10)When cabinet usage site altitude over1000 meters, cabinet should decrease current to use, output current decrease about 10% of rated current per 1000 meters increase.

(11)Motor should do insulation check before first usage or reusage after lay aside for long time. Checking method show as graph 1-1 below with 500V voltage type megohm meter , insulation resistance should not smaller than 5 MΩ, otherwise cabinet maybe damaged.

(12)Forbid cabinet output side to assemble capacitor to improve power factor or anti-thunder dependent resistor etc, otherwise it may cause cabinet fault trip or component damage show as graph 1-2.

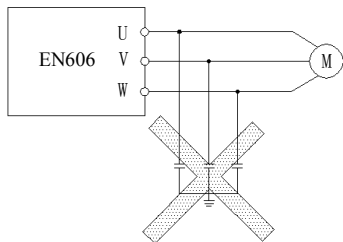
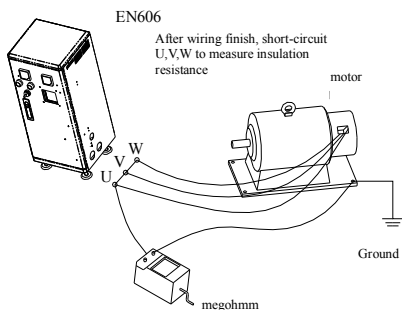


Fig.1-1 motor insulation check Fig.1-2 capacitor at output side forbidden

1.4 Scraping handling notice

Notices when handling with scrapped cabinet and components:

- (1) The unit: dispose the cabinet as industrial waste.
- (2) Electrolytic capacitor: It may cause explosion when electrolytic capacitor under burning.
- (3)Plastic: it may result in harmful and poisonous gas when plastic and rubber of cabinet burning, and safeguard preparations should be taken before burning.

2 Cabinet Type and Specification

2.1 Incoming cabinet inspect

- (1) Check if there is damage during transportation and cabinet itself has damage or fall-off parts.
- (2) Check if parts presented in packing list are all ready.
- (3) Please confirm nameplate data of the cabinet is in line with your order requirement.

Our product is guaranteed by strict quality system during manufacturing, packing, transportation etc., please contact our company or local agent rapidly if some careless omission or mistake arise, we'll deal with it as soon as Possible.

2.2 Type explanation

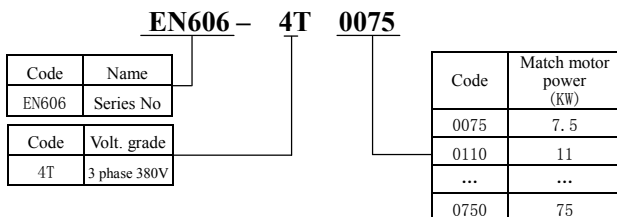


Fig.2-1 Type description

2.3 Nameplate explanation

Nameplate presented as figure 2-2 with type and rating data at the bottom of cabinet right side.

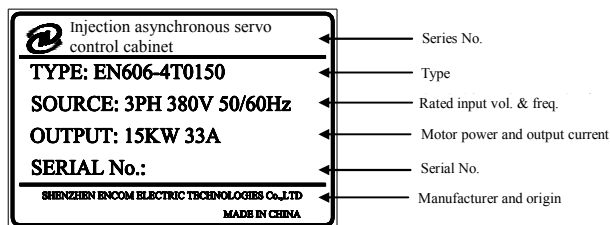


Fig.2-2 Nameplate

2.4 cabinet type explanation

Input Voltage	cabinet type	Rated output Current(A)	Adaptable motor (KW)
3 phase 380V	EN606-4T0075	17	7.5
	EN606-4T0110	25	11
	EN606-4T0150	33	15
	EN606-4T0185	39	18.5
	EN606-4T0220	45	22
	EN606-4T0300	60	30
	EN606-4T0370	75	37
	EN606-4T0450	91	45
	EN606-4T0550	112	55
	EN606-4T0750	150	75

2.5 Appearance and parts name explanation

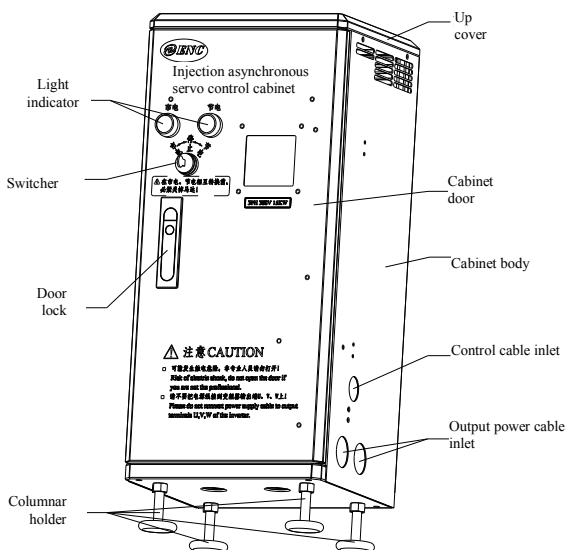


Fig.2-3 Cabinet Parts name sketch

2.6 outer size

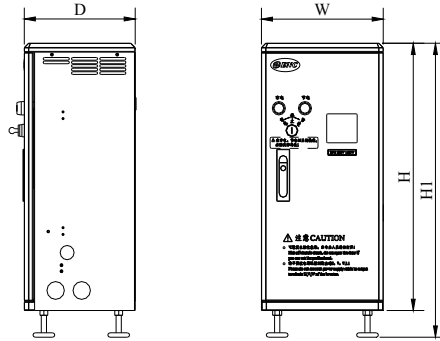


Fig.2-4 outer dimension

Table 2-1 mounting size

cabinet type	W (mm)	D (mm)	H (mm)	H1 (mm)	GW. (kg)
EN606-4T0075	260	255	570	620	19
EN606-4T0110	260	255	570	620	21
EN606-4T0150	280	255	600	660	23.5
EN606-4T0185	320	300	675	735	35
EN606-4T0220					
EN606-4T0300	360	300	770	830	39
EN606-4T0370					
EN606-4T0450	435	345	895	955	65
EN606-4T0550					
EN606-4T0750	520	450	1200	1250	153

2.7 Outer size of keypad and its fixing box(unit:mm)

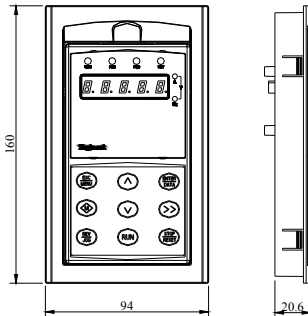


Fig.2-5 KB25 Mounting size of keypad

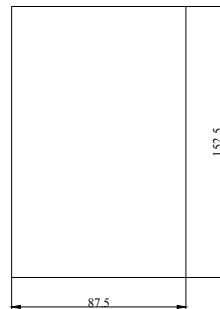


Fig.2-6 KB25 Hole size of keypad

2.8 Product technic index and spec

Item		Item description
Input	Rating volt., frequency	3 phase 380V Grade: 3 phase 380V, 50Hz/60Hz
	Allowed volt. range	320~460V
Output	Voltage	0~380V
	Frequency	0~600Hz
	Over loading capacity	150% of rated current for 1 minute
Control Performance	Control mode	vector control, open-loop V/F control
	Velocity control precision	$\pm 0.5\%$ rated synchronous speed (vector control); $\pm 1\%$ rated synchronous speed (V/F control);
	Speed regulation range	1: 100 (vector control); 1: 50 (V/F control);
	Start-up torque	1.0Hz: 150% rated torque (V/F control); 0.5Hz: 150% rated torque (vector control);
	Speed fluctuation	$\pm 0.3\%$ rated synchronous speed (vector control);
	Torque control precision	$\pm 10\%$ rated torque (vector control);
	Torque response	$\leq 20\text{ms}$ (vector control);
	Frequency precision	Digital setting: max. frequency $\times \pm 0.01\%$; Analog setting: max. frequency $\times \pm 0.5\%$
	Freq. resolution	Analog setting 0.1% of max. frequency
		Digital setting 0.01Hz
		Exterior impulse 0.1% of max. frequency
	Torque boost	Automatic torque boost; manual torque boost 0.1~12.0%
	V/F curve(volt. Frequency characteristic)	Setting rated frequency at the range of 0.5~650Hz, by choosing constant torque, degressive torque 1, degressive torque 2, degressive torque 3, self-defined V/F total 5 kinds of curve.
	Acceleration Deceleration curve	Two modes: straight line acceleration and deceleration; S curve acceleration and deceleration; 15 kinds of acceleration and deceleration time, time unit (0.01s, 0.1s, 1s) for option , max. time for 1000 minutes.
	DC brake	Start, stop action for option, action frequency 0~15Hz, action current 0~100% of rated current, action time 0~30.0s
	jog	Jog frequency range: 0Hz~up limit frequency; jog acceleration and deceleration time 0.1~6000.0 seconds for setting.

	Multi-section speed run	Realized by inbuilt PLC or control terminal; with 15 section speed, each section speed with separately acceleration and deceleration time; with inbuilt PLC can achieve reserve when power down.
	Inbuilt PID controller	Convenient to make closed-loop control system
	Automatic energy saving run	Optimize V/F curve automatically to achieve power saving run according to the load status.
	Automatic voltage regulate(AVR)	Automatically keep output voltage constant, when the power grid voltage fluctuation
	Automatic current limiting	Current limited automatically under run mode in avoid of cabinet over-current frequently to trip.
	carrier wave modulation	Modulate carrier wave automatically according to the load characteristic.
	Speed tracking restart	Make rotating motor smoothly start without shocking
Running function	running command specified channel	Keypad specified, control terminal specified, communication specified can switch through various means.
	Running frequency specified channel	Main & auxiliary specified to realize one main adjusting and one fine adjustment control. Digital specified, analog specified, pulse specified, pulse width specified, communication specified and others, which can be switched by many means at any time.
	Binding function	Run command channel and frequency specified channel can bind together randomly and switch synchronously
Input output characteristic	Digital input channel	8 Channels for universal digital input, max. Frequency 1KHz, channel 1 can be used as pulse input channel, max. Input 50KHz, which can be expanded to channel 14 .
	Analog input channel	2 channels for analog input , AI1 can choose 4~20mA or 0~10V input, AI2 is differential input channel, 4~20mA or -10~10V input for option, I1 or I2 :0~1A input, V1 or V2:0~10V input.
	Pulse output channel	0.1 ~ 20KHz pulse square signal output to achieve setting frequency, output frequency and other physical quantity output.
	Analog output channel	2 Channels for analog signal output, AO1 can choose 4~20mA or 0~10V, AO2 can choose 4~20mA or 0~10V to achieve setting frequency, output frequency and other physical quantity output, which can be expanded to 4 channels analog output.
Unique function	Rapid current limit	Limit cabinet over current to the greatest point, and make it run more stably
	Monopulse control	Suitable for working site where need one button to control cabinet start and stop, first press to start, then press to stop, and that cycle repeats. Its very simple and reliable.
	Fixed length control	Realize fixed length control
	Timing control	Timing control function: setting time range 0.1Min ~ 6500.0Min
	Virtual terminal	Five group virtual input & output IO can realize simply logical control

keypad	LED display	The parameters as setting frequency, output frequency, output voltage, output current can be displayed
	Button Locked	Lock all or part of the buttons
Protection function		Motor power on Shot circuit test, input & output phase loss protection, over-current protection, over voltage protection, under voltage protection, over heat protection, overload protection, under load protection, relay absorption protection, terminal protection and no stop protection under power off.
Environment	Application site	Indoor, not bare to sunlight, no dust, no corrosive gas, no flammable gas, no vapor, no water drop or salt etc.
	Altitude	Under 1000 meter. (above 1000 meter require to reduce volume to use, output current reduce about 10% of rated current per 1000 meter high)
	Environment temperature	-10℃~+40℃ (environment temperature between 40℃~50℃, need to reduce volume or strengthen heat sink)
	Environment	Smaller than 95%RH, no drop condenses
	Vibration	Smaller than 5.9 M/S ² (0.6g)
	Storage temperature	-40℃~+70℃
structure	Protection grade	IP20
	Cooling mode	Forced air cooling and natural
Installation mode		cabinet installation



Note

To get a perfect usage performance of the cabinet, Please check and select right type according to this chapter before wiring.



It is necessary to select right type, otherwise it may cause motor abnormal run or cabinet damage.

3 Installation and wiring of control cabinet

3.1 Installation ambient of control cabinet

- (1) Installed in drafty indoor place, the ambient temperature should be within $-10^{\circ}\text{C}\sim 40^{\circ}\text{C}$, it needs external compulsory heat sink or reduce the volume if temperature is over than 40°C , and preheat if the temperature is lower than -10°C .
- (2) Avoid installing in places with direct sunlight, much dust, floating fiber and metal powder.
- (3) Don't install in place with corrosive, explosive gas.
- (4) The humidity should be smaller than 95%RH, without condensation water.
- (5) Installed in place of plane fixing vibration smaller than 5.9m/s^2 (0.6g).
- (6) Keep away from electromagnetic disturbance source and other electronic apparatus sensible to electromagnetic disturbance.

3.2 Wiring notice points



- (1) Assure power be cut off completely for above 10 minutes before wiring, otherwise there is danger of getting electric shock.
- (2) Forbid connecting power wire to output U, V, W of the control cabinet.
- (3) There is current leakage inside the control cabinet. For safety, inverter and motor must be earthed safely, whose requirements can be seen in the No.8 of chapter 3.4.1
- (4) Before shipment compression resistance test of the control cabinet is passed, so users should not conduct compression resistance test again.
- (5) Do not assemble electromagnetic contactor and absorbing capacitance or other absorbing device. If magnetic control and other switching elements are needed, please make sure the control cabinet is suspended without output, see fig. 3-6.
- (6) To be convenient for over current protection of input side and power off maintenance, control cabinet should be connected to power supply through air switch and magnetic control.
- (6) Glued wire or shielding wire should be applied for the wire of control signal, one shielding layer end hung in the air, the other connected to ground, connecting wire shorter than 20m.



- (1) Before wiring, assure power supply is cut off completely for 10 minutes and all LED indicator light extinguished.
- (2) Wiring can only be done by professional person trained and qualified.
- (3) Before electrification, check if voltage grade of the inverter is in line with that of power supply voltage, otherwise will cause personnel injured and device damaged.

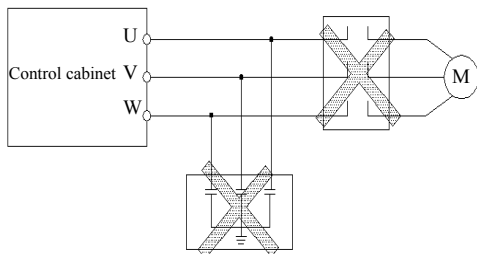


Fig. 3-1 Contactor and absorption capacitor are prohibited between control cabinet and motor

3.3 Main loop terminal wiring

3.3.1 Connection between control cabinet and Optional Components

- (1) Must assemble disjunction device such as isolation switch etc. between power source and the control cabinet to assure personal safety when repairing the inverter and compulsory power off.
- (2) To supply power for loop must have breaker or fuse with over current protection function to avoid malfunction expanding caused by failure of device after.

(3) AC input reactor

If high-order harmonics between control cabinet and power supply is strong which can't fulfill system requirement or need to improve input side power factor, AC input reactor is needed.

- (4) Contactor is only applied for power supply control, not for the On/Off control of control cabinet.

(5) Input side EMI filter

EMI filter can inhibit high-frequency conduction disturbance and emission disturbance from control cabinet power supply wire.

(6) Output side EMI filter

EMI filter can inhibit emission disturbance noise and wire leakage current from output side.

(7) AC output reactor

Installing AC output reactor is suggested to avoid motor insulation damage, oversize current leakage and control cabinet frequent protection when connecting wire between control cabinet and motor exceeds 50m.

(8) Complete ground wire

Control cabinet and motor must be earthed and grounding resistor should be smaller than 10Ω . Grounding wire should be short and thick enough. About 3.5mm^2 of copper wire is needed.

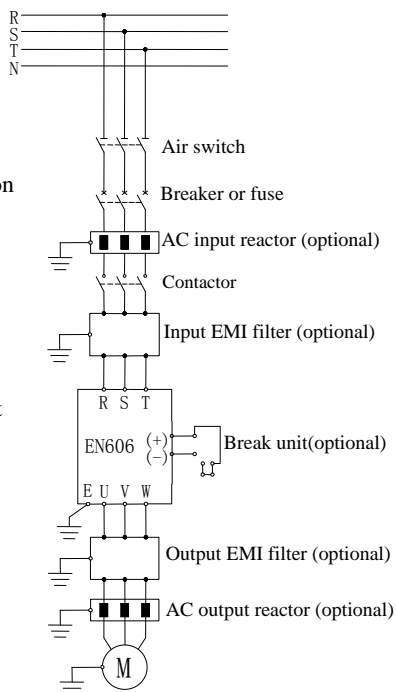
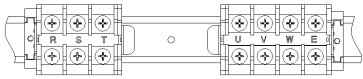


Fig 3-2 connection of control cabinet and fitting parts

3.3.2 Main loop terminal wiring

(1) For main loop input output terminal, see table 3-1.

Table 3-1 main loop input & output terminal description

Adapted type	Main loop terminal	Terminal name	Function description
EN606-4T0075 ~ EN606-4T0750		R、S、T U、V、W、 E	3 phase AC 380V input terminal 3 phase AC output terminal shield earthing terminal



The wiring of main loop must be right according to the description above.
Wrong wiring will cause device damage and people injured.

3.4 Basic running wiring diagram

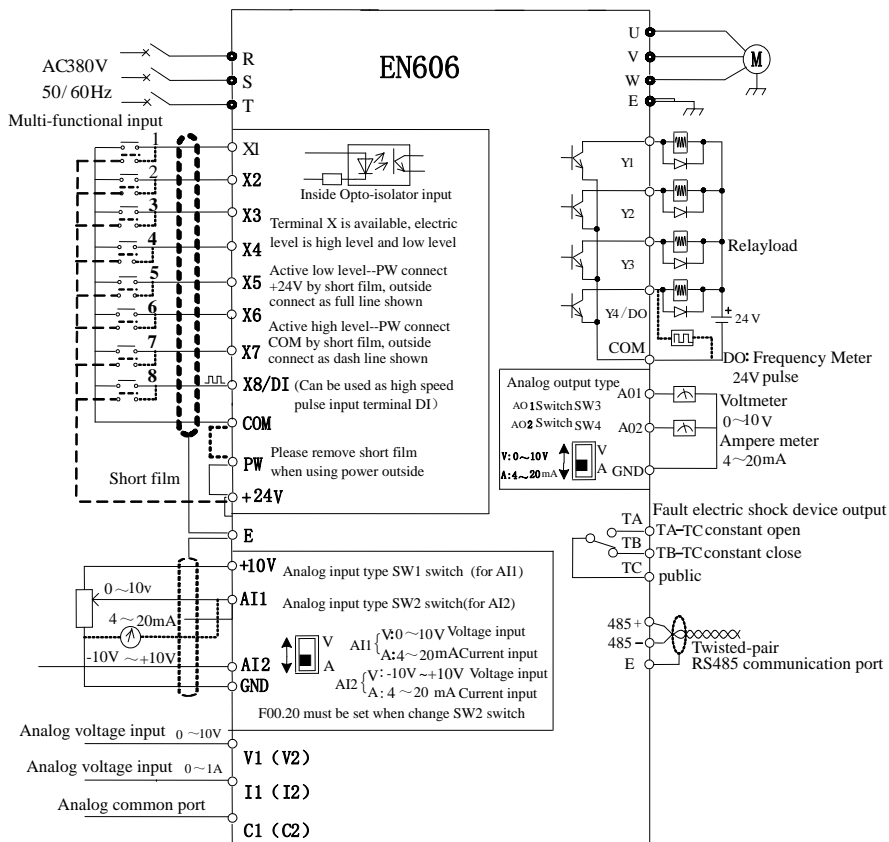


Fig.3-3 basic wiring diagram

3.5 Control loop collocation and wiring

3.5.1 Relative location & function of terminal and slide switch:

For location of terminal and slide switch on the control panel CPU board of control cabinet, please see Fig.3-10.

The terminal CN1 and CN7 are used by the manufacturers. CN2 is extended interface. CN5 is for keypad. The CN3, CN4 and CN6 for users can be seen in table 3-2. The description and function of slide switch consult table3-3. Please read the following descriptions carefully before using control cabinet.

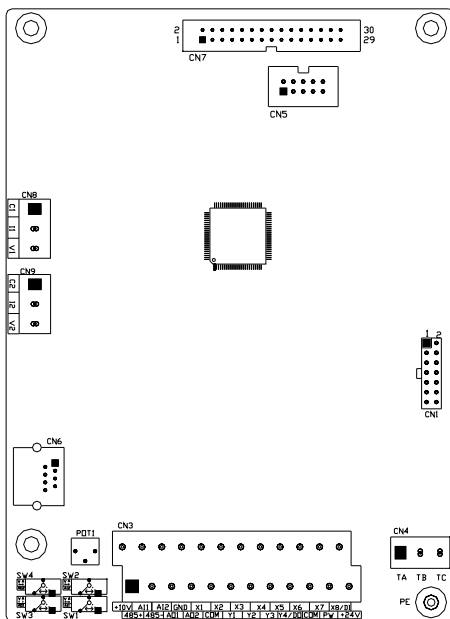








Fig.3-4 Sketch map of CPU board

Table 3-2 Function description of terminal provided for user

No.	Function	Description
CN3	Input and output control of external terminal	use when apply external terminal to control the control cabinet running, see 3.5.2
CN4	Signal output of relay	TA-TC is normally open contact ;TB-TC is normally close contact. See 3.5.2
CN6	crystal RS485 communication interface	When use 485 communication to realize control, please see Fig.3.6.2
CN8、CN9	Analog input channel of injection molding machine	Two channels of voltage input V1、C1 and V2、C2; Two channels of current input I1、C1 and I2、C2, see 3.5.2

Table 3-3 Slide switch function description for users

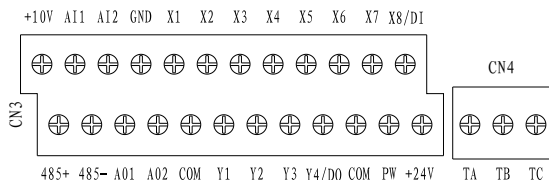
No.	Function	Setting	Default value
SW1	AI1 Analog input signal selection	 V: Set F00.20 as XXX0 0~+10V voltage signal input  I: Set F00.20 as XXX1 4~20mA current signal input	Set F00.20 as 0000 0~+10V
SW2	AI2 Analog input signal selection	 V: Set F00.20 as XX0X. -10V~+10V voltage signal input  I: Set F00.20 as XX1X. 4~20mA current signal input	Set F00.20 as 0000 -10V~+10V
SW3	AO1 Analog output signal selection	 V: Set F00.21 as XX00 0~+10V voltage signal output  I: F00.21 设为 XX11 4~20mA current signal output	Set F00.21 as 0000 0~+10V
SW4	AO2 Analog output signal selection		

**note**

In the graphic of the toggle switch, the black square shows the position of the toggle switch.

3.5.2 Descriptions for control panel terminals

(1) The terminal CN3 and CN4 on CPU board are arranged as follows:



(2) CN3 and CN4 terminal function description as Table 3-4.

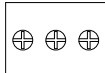
Table 3-4 Control panel terminal function table

Item	Symbol	Name	Function description and Spec of terminals
Multifunction input terminal	X1	Multifunction input terminal 1	Input voltage range: 15~30V; Optocoupler isolation, Compatible with bipolar input; Input impedance: 4.7KΩ The max input frequency: 1KHz
	X2	Multifunction input terminal 2	
	X3	Multifunction input terminal 3	
	X4	Multifunction input terminal 4	
	X5	Multifunction input terminal 5	
	X6	Multifunction input terminal 6	
	X7	Multifunction input terminal 7	

	X8/DI	Multifunction input terminal 8/ High speed impulse input terminal	Besides the function of X1~X7, can also be used as high-speed pulse input Input impedance: 2.2K Ω The max input frequency: 50KHz
Power supply	+24V	+24V Power supply	Provide power of +24V (24 \pm 4V) The max output current: 200mA
	PW	External power input terminal	Connecting to +24 is factory default ; connecting external power and cutting off +24V power terminal is needed when using external signal to drive X terminal.
	+10V	+10V Power supply	Provide +10V power (10 \pm 0.5V) The max output current:50mA
	COM	Common end	Reference ground of digital signal and +24V power
	GND	Common end	Reference ground of analog signal and +10V power
Analog value input	AI1	Analog value input 1	Input range: DC 0V~10V/4~20mA , decided by SW1 Input impedance : 20K Ω when voltage input; 250 Ω when current input. resolution: 1/4000
	AI2	Analog value input 2	Input range: DC-10V~10V/4~20mA , decided by second bit on LED of parameter F00.20 and slide switch of SW2 Input impedance : 20K Ω when voltage input; 250 Ω when current input. resolution: 1/2000
Analog value output	AO1	Analog value output 1	Output of voltage or current is decided by SW3(AO1) and SW4(AO2) Range of voltage output: 0~10V Range of current output: 4~20mA
	AO2	Analog value output 2	
Multifunctional output terminal	Y1	Open collector output terminal 1	Optocoupler isolation output, unipolar open collector output Max voltage output: 30V Max current output: 50mA
	Y2	Open collector output terminal 2	
	Y3	Open collector output terminal 3	
	Y4/DO	Open collector output terminal 4/High-speed impulse output	Decided by the output way of function code F00.22 terminal When select open collector output, the spec is the same as terminal Y When select high-speed impulse output, the max frequency is 20KHz.
Relay output	TB—TC	Normally closed terminal	Contact capacity: AC250V/2A ($\cos\phi=1$) AC250V/1A ($\cos\phi=0.4$) DC30V/1A
	TA—TC	Normally open terminal	
Communication interface	485+	485 differential signal interface	485 differential signal positive end
	485-		485 differential signal negative end

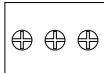
(3) Control panel terminal of CN8、CN9, arranged as follows:

CN8



C1 I1 V1

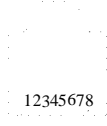
CN9



C2 I2 V2

Item	Symbol	Name	Function description and Spec of terminals
CN8	C1	Injection molding analog channel 1 reference ground	Current channel: 0~1A Voltage channel: 0~10V
	I1	Injection molding analog channel 1 current interface	
	V1	Injection molding analog channel 1 voltage interface	
CN9	C2	Injection molding analog channel 2 reference ground	Current channel: 0~1A Voltage channel: 0~10V
	I2	Injection molding analog channel 2 current interface	
	V2	Injection molding analog channel 2 voltage interface	

(4) RS485 crystal socket CN6, arranged as follows:



Arrangement of RS485 terminal CN6								
Order	1	2	3	4	5	6	7	8
Name	485+	485-	-	-	-	-	-	-

3.5.3 Wiring of analog input & output terminal

(1) AI1 terminal accepts analog voltage or current signal end input and switchover by SW1, wiring as follows:

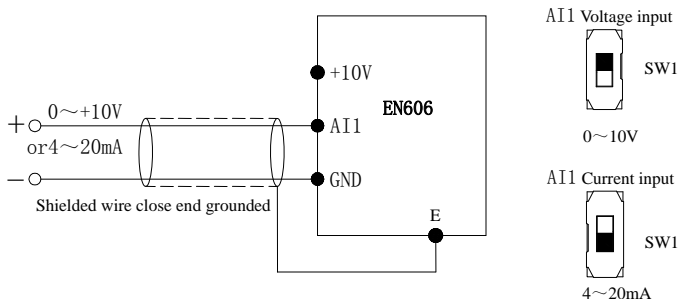
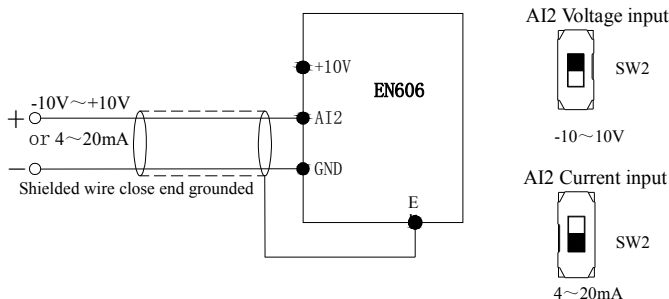
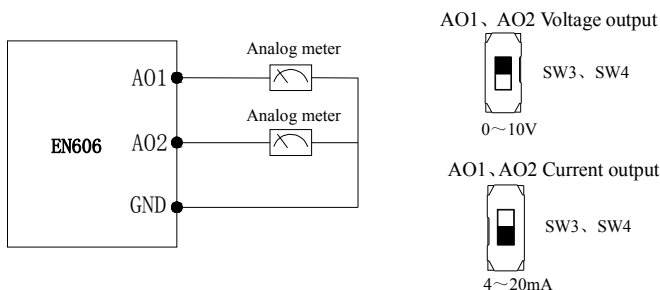


Fig.3-5 AI1 terminal wiring diagram

(2) AI2 terminal accepts analog voltage or current signal end input and switchover by SW2, which must be coordinated with the ten bit on LED when setting parameter F00.20, the wiring as follows:



(3) AO1, AO2 terminal can connect external analog meter, which can indicate several physical quantity, can select output analog voltage or current signal, switchover by SW3 and SW4. wiring mode as follows:



Note

1. when use analog input, filter electric or common mode choke can be installed between AI1 and GND or AI2 and GND
2. Analog input, output signal is easily disturbed by the external, Shielding electric cable must be used and earthed when wiring, and the wiring should be short enough.

3.5.4 Wiring of digital input terminal

- (1) When using the control cabinet inside power of +24V, the connect way of external controller is NPN source type.

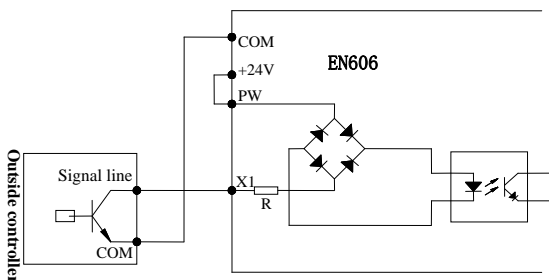


Fig.3-8 Source electrode connection way when using inside 24V

- (2) When using the control cabinet inside power of +24V, the connect way of external control is PNP drain electrode.

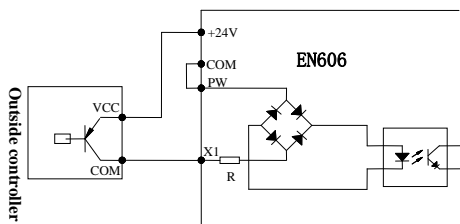


Fig.3-9 Drain electrode connection way when using 24V

- (3) The connection way when the external DC current is 15~30V and the external controller is NPN type.(please remove the short connection slice between PW and +24V)

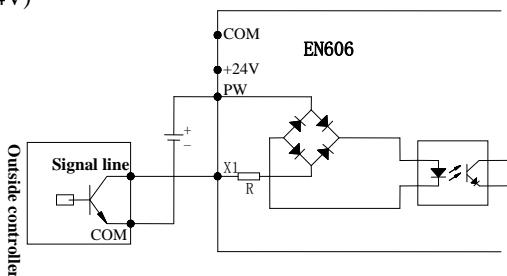


Fig.3-10 The source electrode connection way when using external power

- (4) The connection way when the external DC current is 15~30V and the external controller is PNP type.(please remove the short connection slice between PW and +24V)

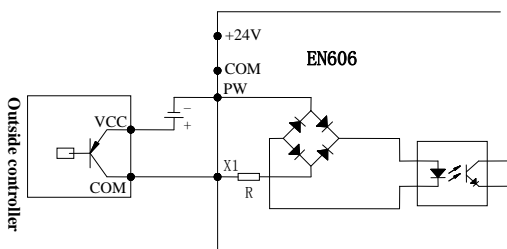


Fig.3-11 The drain electrode connection way when using external power.




4 Running and operation instruction of cabinet

4.1 Cabinet running

4.1.1 Command channel of cabinet running

The cabinet has START, STOP and JOG, etc. command channels.

0: Keyboard operation

Use the , ,  to control (factory settings)

1: Terminal control

Connect COM with two of the terminals among X1 and X8 to realize two line mode control, or use three of terminals among X1 and X8 to realize the tree line mode control.

2: Communication port

Use upper machine or other devices with communication to control the state of cabinet.

Command channel selection is realized by F01.15 setting or multifunction input terminal selection (F08.18~F08.25 choose 49,50,51,52,53), and you can also use



to realize command channel change.



Before change command channel, please test first to make sure that it can meet the system requirement, or danger will follow.

4.1.2 Given frequency channel of cabinet

EN606 is classified by principal frequency and auxiliary frequency.

principal frequency:

0: operating keyboard digital set

1: AI1 analog set

2: AI2 analog set

3: terminal UP/DOWN set

4: communication set (Modbus and external BUS share one principal frequency storage.)

5: reserved

6: reserved

7: high speed pulse set (X8 chooses related function)

8: terminal pulse width set(X8 chooses related function)

9: terminal encoder set(X1 and X2 are connected with the orthogonal input of encoder.)

10~14: reserved

Auxiliary set:

- 0: operating keyboard digital set
- 1: AI1 analog set
- 2: AI2 analog set
- 3: terminal UP/DOWN set
- 4: communication set (Modbus and external BUS share one principal frequency storage.)
- 5: reserved
- 6: reserved
- 7: terminal pulse set (X8 chooses related function)
- 8: terminal pulse width set (X8 chooses related function)
- 9: terminal encoder set(X3 and X4 are connected with the orthogonal input of encoder.)
- 10~20: reserved

4.1.3 working state of cabinet

EN606 working state is defined as standby state, running state and parameter auto-tuning state.

standby state: after connecting to power and without start or stop command, the cabinet will be in the standby state.

Running state: the cabinet will be in running state after receiving the command of running.

parameter auto-tuning state: the cabinet will be in the auto-tuning state after receiving the command of parameter identify, after which the cabinet will be in the stop state.

4.2 keyboard operation

4.2.1 layout of keyboard

Keyboard is the main unit to receive the command and display parameters. The layout of keyboard can be seen in Fig. 4-1

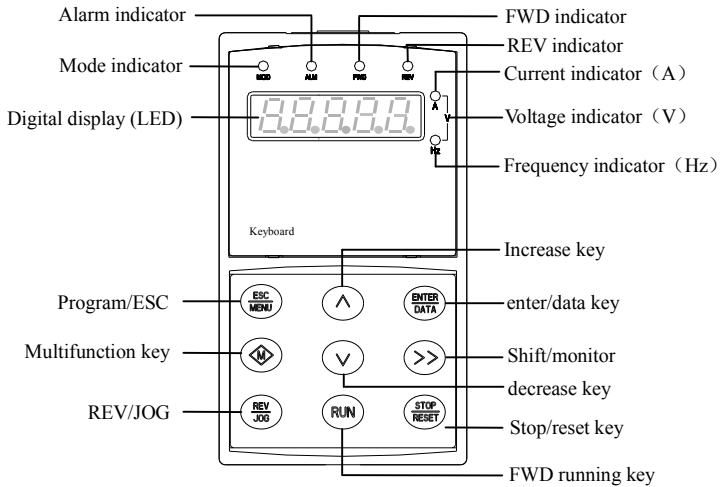






Fig. 4-1 keyboard layout

4.2.2 Keyboard function instruction

The keyboard is with 9 keys, and each function is defined as table 4-1.

Table 4-1 keyboard function instruction

key	name	Instruction
	Pro/ESC	Enter or ESE program state.
	Shift/monitor	Shift the data when edit, and shift parameter display.
	Enter/data	Enter next menu or data enter.
	REV/JOG	REV or JOG can be realized based on the F00.15 units setting.
	FWD running	Press the key to realize FWD running

	Stop/reset	When normal running, press the key to stop if the channel is available. When the malfunction, press the key to revert to normal stop state.
	Multifunction	The key is defined by the tens unit of F00.15, the details can be seen by F00.15.
	increase	Data or function code increase(speed up can be realized by constant press)
	decrease	Data or function code increase(speed adjust fast can be realized by constant press)

4.2.3 LED and its indicator instruction LED

Four running state indicator are displayed from left to right by MOD, ALM, FWD,REV. The details are seen in the table 4-2.

Table 4-2 state indicator

item		Function instruction	
Display function	LED display		Display the present parameter and parameter setting state.
	State indicator	A、Hz、V	Display the present physical quantity(current is A, voltage is V, frequency is Hz)unit
		MOD	The indicator is on when no monitor state. The indicator will be off and revert to monitor state when no key input within 1 series minute
		ALM	When the light is on, the cabinet is fault and alarm state
		FWD	FWD indicator refers to motor forwarder
		REV	REV indicator refers to reversal
		When the FWD and REV are both on, the cabinet is in the state of DC braking.	

4.2.4 Keyboard display state

EN606 keyboard displays five states, they are standby parameter display, functional code parameter edit state, faulty alarm state, running parameter state and alarm state. When power is on, all the LED are on, the standby parameter display state exits after running normally. See Fig.a of Fig 4-2.

(1) Standby parameter display state

The keyboard displays standby monitor parameter when the cabinet is in the standby. The primitive monitor parameter is decided by F00.13 after power on. See Fig.b in Fig.4-2. The indicator at the right side is for unit.

press $\langle \gg \rangle$, different monitor parameter can be displayed, the monitor parameter from C-0 to C-05 are decided by parameter from F00.07 to F00.12.

(2) Running parameter display state

The cabinet will run after receiving the valid command. The keyboard displays the monitor parameter that is decided by F00.13. See Fig C in 4-2. The indicator at the right side is for unit.

Press $\langle \gg \rangle$, different monitor parameter can be displayed, the monitor parameter from C-0 to C-05 are decided by parameter from F00.01 to F00.06.

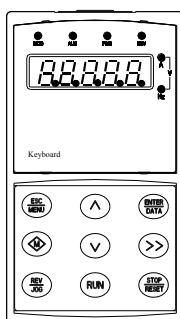


Fig.a Initialization
Display 8.8.8.8.8.

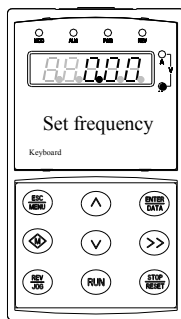


Fig.b Standby, display
standby parameter

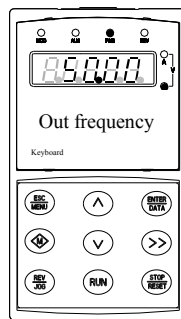


Fig.c Running state,
display running parameter

Fig.4-2 cabinet initialization, standby, running parameter display

(3) Faulty alarm state

The alarm will be displayed again with fault code after inspecting the fault signal seen Fig 4-3. Press $\langle \gg \rangle$ to see the fault parameter. To see the fault data after reset, press $\langle \text{ESC/MENU} \rangle$ to check F26 group.

After solving the fault, reset can be realized

By pressing $\langle \text{STOP/RESET} \rangle$, terminal or communication reset and power off. The fault code will continue if fault is not solved.

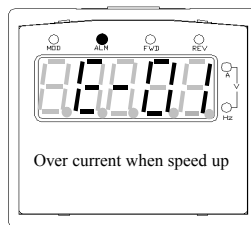






Fig.4-3



For serious fault like over current etc. Please not reset when the fault is not solved. Or the cabinet will be damaged.

(4) Function code edits display state

When the state is standby, running and fault alarm, press  for editing state.(if password is set, editing is available after typing password. See F27.00 and Fig. F4-10), editing mode is displayed by means of second level menu, seen Fig.4-4. Press  to enter next level. In the state of parameter displaying, press  to store parameter. Press  to go back to last menu.

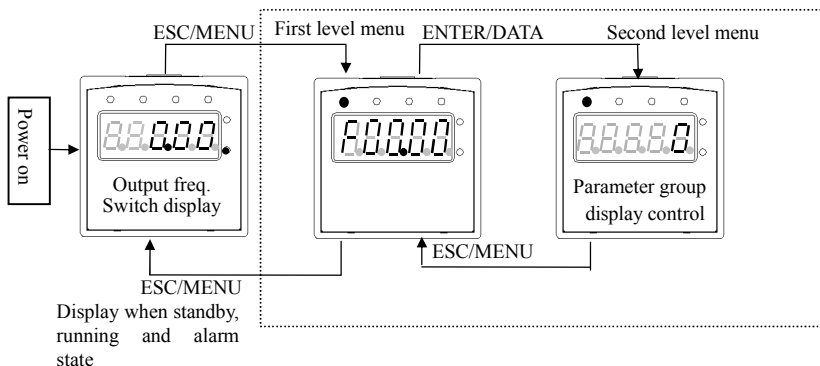


Fig.4-4 switch of keyboard display

(5) Alarm state display

In the condition of running and standby, the alarm displayed like Fig 4-5 when faulty occurs. Cabinet will keep current running state. The alarm can't be canceled until the reasons are found, then the cabinet will restore to be normal.

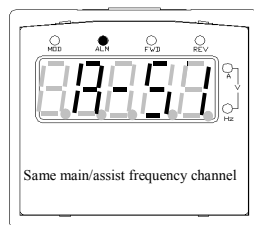


Fig.4-5

4.2.5 Management of user parameter

To make convenient for user parameter management, EN606 first level menu parameter group displays management with different mode. It can shield the unnecessary parameter.

(1) Set method of parameter mode.

By set F00.00=0,1,2,3, the parameter mode can be set as basic menu mode, intermediate menu, senior menu mode and user menu mode.

Basic menu	F00,F01,F02,F03,F26,F27
intermediate menu	Display the contents except expand, virtual and reserve parameter group

senior menu	F00,F01,F02,F03,F04,F05,F06,F07,F08,F09,F10,F11,F12,F13,F14, F15,F16,F17,F18,F19,F20,F21,F22,F23,F24,F25,F26,F27
User define	F25 group parameter define

4.2.6 Keyboard operation method

Using keyboard to control cabinet as followings:

(1) Display switch of state parameter:

After pressing **(>>)**, C group parameter will be displayed. The monitor parameter code will be displayed, after 1s the parameter value will be displayed automatically. Press **(ENTER)** to go back to C-00.

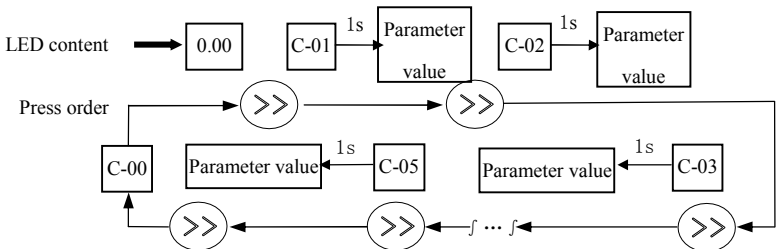


Fig. 4-6 operation example when standby

(2) setting of function parameter

Take the example that set F01.01 from 5.00Hz to 6.00Hz, the black bold number in Fig 4-7 is the flicker bit

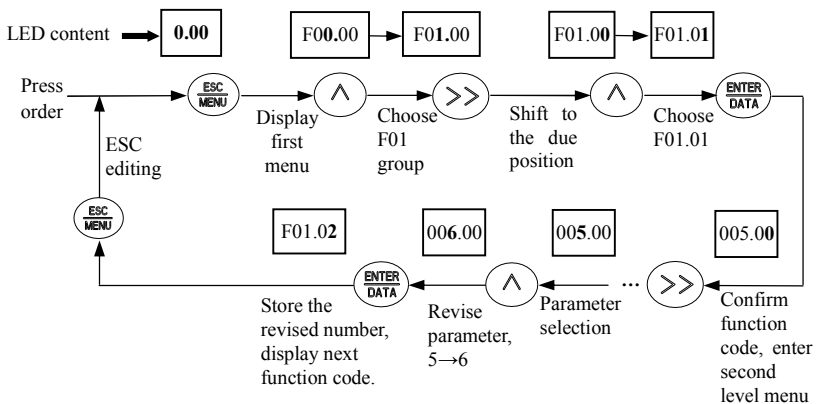


Fig.4-7 parameter setting and revision operation example

Explain: if there is no flicker bit in the second level menu, the function code can't be revised. The following reasons account for it.

1> this function code is not allowed to revise the parameter, like monitor function parameter group

2> the function code can't be revised when it is running, and it can be revised after stop.

3> the parameter is protected. When the unit digital of F00.14=1 OR 2, the function code can't be revised. To edit function parameter, the F00.14 should be set to 0

(3) Given frequency adjustment when normal running.

Take examples that change the given frequency from 50Hz to 60Hz when it is running and F01.06=1, F01.03=0

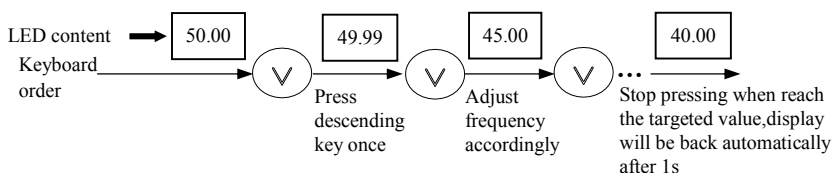


Fig.4-8 frequency adjustment setting instruction

(4) JOG running operation

Take the example that setting the current running demand channel as the keyboard, press JOG and run at 5Hz.

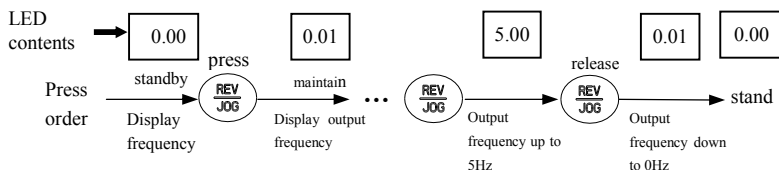


Fig.4-9 JOG running operation

(5) Enter function edit operation after setting user code.

For example: “user code”F27.00 is set as “12345”.the black bold number in the Fig 4-10 is the flicker bit

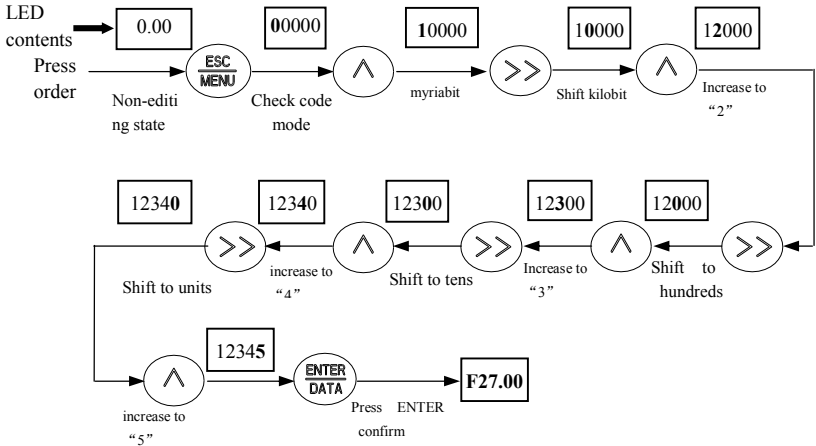


Fig.4-10 input code to enter the operation

(6) Malfunction checking parameter:

When meet malfunction, please press >> to F26 quickly, then press >> to check malfunction records with parameter from F26.06~26.10

(7) Lock the keyboard manual.

At the state of monitor, please press ENTER DATA for 2s to lock keyboard, the details please check the Hundreds of F00.14.

(8) Unlock keyboard manual

At the state of lock, press M for 2S to unlock the keyboard.

4.3 Power-on of the cabinet

4.3.1 Check before power on

Please refer to the chapter of cabinet installation and diagram.

4.3.2 Premiere operation after power on

After checking the connection the cables and power, cover the power switch at the side of input. It will display “8.8.8.8.8.” after power on. Then contactor will close and the running frequency will be displayed. The details are as followings:

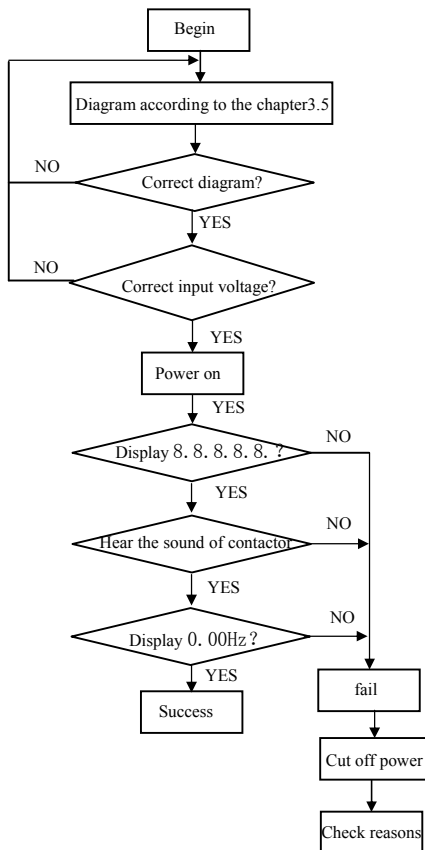


Fig.4-11 premiere operation process after power on

5 Debugging guidance

5.1 Debugging step

- ① Input motor parameters according to the nameplate of motor:
F15.01=Motor Rated Power F15.02=Motor Rated Voltage
F15.03=Motor Rated Current F15.04=Motor Rated Frequency
F15.05=Motor Rated Speed F15.06=Motor Pole Pairs
- ② Turn the key knob to the Energy saving side, making the motor connect to the inverter. After that Set P15.19=2 and Press“RUN”Button, the keyboard LED will display “TUNE”, at this time, it will start motor parameters auto-tuning. If without any alarms, it means auto-tuning successfully. Please turn the key knob to the Stop position.
- ③ Set frequency provision mode and curve in group F22 and F23.
- ④ Set Acceleration time in F01.17 and Deceleration time in F01.18, thereafter set F01.15=1, Turn the key knob to the energy saving side, at this time, the injection machine will operate well.

5.2 Notes

The frequency inverter should auto-tune the motor parameters first. During auto-tuning mode, keep the motor in non-load mode. If “E-32” alarm occur during auto-tuning, please check the motor parameters input correct or not and ensure that the motor connect to the output terminal of the control cabinet well.

6 Function parameter schedule graph















6.1 Symbol description

- × ---- Parameter can not be changed in process of running
- ---- Parameter can be changed in process of running
- * ---- Read-only parameter, unmodifiable

6.2 Function parameter schedule graph

F00—System parameter group					
Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F00.00	Display control for parameter group	0: Basic menu mode (Only display parameter groups from F00 to F03, and F26) 1: Intermediate menu mode (Display all the parameters except virtual parameters or reserved parameters group) 2: Senior menu mode (Display all the parameters) 3: User menu mode (Display user's customized parameters and monitoring parameters. F00.00 will be displayed at any time.)	1	2	○
F00.01	C-00 display parameter selection when operation	0: Main setting frequency (0.01Hz) 1: Auxiliary setting frequency (0.01Hz) 2: Setting frequency (0.01Hz) 3: Output synchronizing frequency (0.01Hz) 4: Output current (0.1A) (It is 0.01A when lower than 11KW) 5: Output voltage (1V) 6: Current busbar voltage (0.1V) 7: Rotate speed of load motor (1 r/min) 8: Linear velocity of load motor (1 r/min) 9: Control cabinet temperature (1℃) 10: run time already this time(0.1min) 11: current accumulate run time(1h) 12: current accumulate power-on time(1h) 13: Control cabinet status 14: Input terminal status 15: Output terminal status 16: Extended output terminal status 17: Extended input terminal status 18: communication virtual input terminal status 19: internal virtual input node status 20: Analog input AI1 (after checkout) (0.01V or 0.01mA) 21: Analog input AI2 (after checkout) (0.01V or 0.01mA) 22: Extended analog input EAI1 (after checkout) (0.01V or 0.01mA) 23: Extended analog input EAI2 (after checkout) (0.01V or 0.01mA) 24: Analog AO1 output (after checkout) (0.01V or 0.01mA) 25: Analog AO2 output (after checkout) (0.01V or 0.01mA) 26: Extended analog EAO1 output (0.01V or 0.01mA) 27: Extended analog EAO2 output (0.01V or 0.01mA) 28: external pulse input frequency(before checkout) (1Hz)	1	2	○

		29: Reserved 30: process PID provide (0.01V) 31: process PID feedback (0.01V) 32: process PID deviation (0.01V) 33: process PID output (0.01Hz) 34: simple PLC current segment No. 35: external multi-speed current segment No. 36: constant pressure water supply provide pressure (0.001Mpa) 37: constant pressure water supply feedback pressure (0.001Mpa) 38: constant pressure water supply relay status 39: Current length (1M) 40: accumulate length (1M) 41: current internal count value 42: current internal time value 43: Running command setting channel (0: Keypad 1; Terminal 2: Communication) 44: Main frequency given channel 45: Auxiliary frequency given channel 46: Rated current of control cabinet (0.1A) 47: Rated voltage of control cabinet (1V) 48: Rated power of control cabinet (0.1KW) 49: Reserved 50: Reserved 51: Frequency after Acce/Dece (0.01Hz) 52: Frequency of motor rotor (0.01Hz) 53: The present giving torque (percentage relative to rated torque, with direction) 54: The present output torque (percentage relative to rated torque, with direction) 55: The present torque current (0.1A) 56: The present flux current (0.1A) 57~65: Reserved			
F00.02	C-01 parameter display selection when running	The same as above	1	4	○
F00.03	C-02 parameter display selection when running	The same as above	1	9	○
F00.04	C-03 parameter display selection when running	The same as above	1	6	○
F00.05	C-04 parameter display selection when running	The same as above	1	15	○
F00.06	C-05 parameter display selection when running	The same as above	1	2	○
F00.07	C-00parameter display selection when stopping	The same as above	1	2	○
F00.08	C-01 parameter display selection when stopping	The same as above	1	4	○
F00.09	C-02 parameter display selection when stopping	The same as above	1	14	○

F00.10	C-03 parameter display selection when stopping	The same as above	1	6	○
F00.11	C-04 parameter display selection when stopping	The same as above	1	48	○
F00.12	C-05 parameter display selection when stopping	The same as above	1	3	○
F00.13	Power-on fault monitor parameter selection	0~5	1	0	○
F00.14	Parameter operation control	<p>LED first bit: Parameters modification operation</p> <p>0: All parameters are allowed to be modified.</p> <p>1: Except F00.14, all other parameters are not allowed to be modified.</p> <p>2: Except F01.01, F01.04 and F00.14, all other parameters are not allowed to be modified.</p> <p>LED second bit: Reset to factory default</p> <p>0: No action.</p> <p>1: All parameters return to default.(not include fault record parameter group(F26 group) parameter).</p> <p>2: Except for motor parameter: all parameters return to default.(not include F15 and F26 group parameter).</p> <p>3: Extension parameter return to default.(only F21~F24 group parameter return to default).</p> <p>4: Virtual parameter return to default.(only F20 group parameter return to default).</p> <p>5: Fault record return to default.(only fault record parameter group(F26 group)parameter return to default)</p> <p>LED third bit: Buttons operation.</p> <p>0: All buttons locked.</p> <p>1: Except , the other buttons are all locked.</p> <p>2: Except , , , the other buttons are all locked.</p> <p>3: Except , , the other buttons are all locked.</p> <p>4: Except , , the other buttons are all locked.</p>	1	000	×
F00.15	Button function selection	<p>LED 1st: Panel  button selection</p> <p>0: Reversal command action button</p> <p>1: Jog action button</p> <p>LED 2nd :  multi-function button function selection</p> <p>0: Disabled</p> <p>1: Jog run</p> <p>2: For/rev switching.</p> <p>3: Free stop.</p> <p>4: Switching to run command provide mode as the setup order of F00.16.</p> <p>5: Forward/Reverse Torque Switching</p> <p>6~9: Reserved</p> <p>LED 3rd : terminal run command control</p> <p>0: Keyboard  button invalid</p> <p>1: Keyboard  button valid</p> <p>LED 4th : communication run command control</p> <p>0: Keyboard  button invalid</p> <p>1: Keyboard  button valid</p>	1	0001	○

F00.16	Multi-function key Run command channel switching order selection	0:Keyboard control→ Terminal control→ Communication control 1: Keyboard control←→Terminal control 2: Keyboard control←→Communication control 3: Terminal control←→Communication control	1	0	○
F00.17	Motor speed display coefficient	0.1~999.9%	0.1%	100.0%	○
F00.18	Line velocity display coefficient	0.1~999.9%	0.1%	1.0%	○
F00.19	Reserved				
F00.20	Analog input interface configuration	LED 1st bit: AI1 configuration 0: 0~10V Voltage Input 1: 4~20mA Current Input LED 2nd bit: AI2 configuration 0: -10~10V Voltage Input 1: 4~20mA Current Input LED 3rd bit: EA11 configuration 0: 0~10V Input 1: -10~10V Input 2: 4~20mA Current Input LED 4th bit: EA12 configuration 0: 0~10V Input 1: -10~10V Input 2: 4~20mA Current Input	1	0000	×
F00.21	Analog output interface configuration	LED 1st bit: AO1 configuration 0: 0~10V Voltage Output 1: 4~20mA Current Output LED 2nd bit: AO2 configuration 0: 0~10V Voltage Output 1: 4~20mA Current Output LED 3rd bit: EAO1 configuration 0: 0~10V Voltage Output 1: 4~20mA Current Output LED 4th bit: EAO2 configuration 0: 0~10V Voltage Output 1: 4~20mA Current Output	1	0000	×
F00.22	Y output interface configuration	LED 1st bit ~LED 2nd bit: Reserved LED 3rd bit: Y4 output configuration 0: Open collector output 1: DO Output	1	0000	×
F00.23	Reserved				
F00.24	Motor control mode	0: V/F Control 1: Speedless sensor vector control 2: Reserved	1	1	×
F00.25	Reserved				
F00.26	Busbar voltage adjustment coefficient	0.500~2.000	1	1.000	○
F00.27	Reserved				

F01—Basic running functions parameters group					
Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F01.00	Main frequency input channel selection	0: Keypad digital setting 1: AI1 analog setting 2: AI2 analog setting 3: Terminal UP/DOWN adjustment setting 4: Communication provide. 5: EA11 analog setting (Extension is effective) 6: EA12 analog setting (Extension is effective) 7:High speed pulse setup X8 terminal need choose the suitable function) 8:Terminal pulse setup(X8 terminal need choose the suitable function) 9:Terminal encoder setup(X1:X2 connect the encoder punctuation input) 10~14: Reserved	1	0	○
F01.01	Main frequency digital setting	0.00Hz~Upper limiting frequency	0.01Hz	50.00Hz	○
F01.02	Main frequency digital control	Only when parameter F01.00=0:3:4 valid. Units digit: power down reserve setup 0:Main frequency power down reserve. 1:Main frequency power down no reserve. Tens digit: halt reserve setup 0:Halt main frequency hold 1:Halt main frequency recovery F01.01	1	11	○
F01.03	Auxiliary frequency input channel selection	0: Keypad digital setting 1: AI1 analog setting 2: AI2 analog setting 3: Terminal UP/DOWN adjustment setting 4: Communication provide. 5: EA11 analog setting (Extension is effective) 6: EA12 analog setting (Extension is effective) 7:High speed pulse setup X8 terminal need choose the suitable function) 8:Terminal pulse setup(X8 terminal need choose the suitable function) 9:Terminal encoder setup(X1:X2 connect the encoder punctuation input) 10~20: Reserved	1	1	○
F01.04	Auxiliary frequency digital setting	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	○
F01.05	Auxiliary frequency digital control	Units digit: power down reserve setup 0:Auxiliary frequency power down reserve. 1:Auxiliary frequency power down no reserve. Tens digit: halt reserve setup 0:Halt auxiliary frequency hold. 1:Halt auxiliary frequency recovery parameter F01.04	1	11	○
F01.06	Main and auxiliary provide calculating setup	0:Main frequency (complex frequency of current is main frequency). 1: Auxiliary frequency(complex frequency of current is auxiliary frequency.) 2: Plus(polarity oppose of complex and main frequency, complex frequency is zero). 3:Minus(polarity oppose of complex and auxiliary frequency, complex frequency is zero).	1	0	○

		4: Multiplication (polarity opposed of main and auxiliary frequency: complex frequency is zero). 5: Max (the max frequency of main and auxiliary absolute value). 6: Min (the min frequency of main and auxiliary absolute value). 7: Selection no-zero value (auxiliary is not negative, main frequency prior; auxiliary is negative, complex frequency is zero).			
F01.07	Auxiliary frequency provide coefficient	0.00~10.00	0.01	1.00	○
F01.08	Coefficient after complex of main and auxiliary frequency	0.00~10.00	0.01	1.00	○
F01.09	Auxiliary frequency range selection	0: Relative upper limit frequency. 1: Relative main frequency.	1	0	○
F01.10	Auxiliary frequency source scope	0.00~1.00	0.01	1.00	○
F01.11	Upper limiting frequency	Lower frequency~600.00Hz	0.01Hz	50.00Hz	×
F01.12	Lower frequency	0.00Hz~Upper limiting frequency	0.01Hz	0.50Hz	×
F01.13	Lower frequency running mode	0: As low limit frequency run. 1: As setting frequency run. 2: As zero frequency run. 3: Sleep: PWM clocked at sleep mode.	1	3	×
F01.14	Sleep run hysteresis frequency	0.01Hz~upper limit frequency (This function can be used to finish the sleep mode function, realizing energy-saving operation process, and the hysteresis width can avoid inverter starting frequently in threshold)	0.01Hz	0.01Hz	○
F01.15	Run command channel selection	0: Keypad run control 1: Terminal run command control 2: Communication run command control	1	0	○
F01.16	Run direction setting	Units digit: Keyboard command for/rev setup (only valid to keyboard inching command) 0: Forward 1: Reverse Tens digit: for/rev forbid (suitable for all command channel, not include inching function) 0: For/rev available. 1: Reverse not available (imposing on reverse, stop as the halt mode). 2: Forward not available (imposing on forward, stop as the halt mode)	1	00	○
F01.17	Acceleration time 1	1~60000 (Acceleration time is interval accelerate from zero frequency to upper limit frequency)	1	Base on machine type	○
F01.18	Deceleration time 1	1~60000 (deceleration time is the interval decelerate from upper limit frequency to zero frequency.)	1	Base on machine type	○
F01.19	Accelerate/Decelerate time Unit	0: 0.01s 1: 0.1s 2: 1s	1	1	×

Function parameter schedule graph

F01.20	Acce/dece mode selection	0: Straight line acce/dece mode 1: S curve acce/dece mode	1	0	×
F01.21	S curve acceleration initiation segment time	10.0%~50.0% ((Acceleration/deceleration time) S curve deceleration start time+ S curve deceleration raise time ≤90%)	0.1%	20.0%	○
F01.22	S curve acceleration up segment time	10.0%~70.0%(Acceleration/deceleration time) S curve acceleration start time+ S curve acceleration raise time ≤90%)	0.1%	60.0%	○
F01.23	S curve deceleration initiation segment time	10.0%~50.0%(Acceleration/deceleration time) S curve acceleration start time+ S curve acceleration raise time ≤90%)	0.1%	20.0%	○
F01.24	S curve deceleration up segment time	10.0%~70.0%(Acceleration/deceleration time) S curve acceleration start time+ S curve acceleration raise time ≤90%)	0.1%	60.0%	○
F01.25	Keyboard jog run frequency	0.00Hz~Upper limiting frequency	0.01Hz	5.00Hz	○
F01.26	Terminal jog run frequency	0.00Hz~Upper limiting frequency	0.01Hz	5.00Hz	○
F01.27	Jog interval time	0.0~100.0s	0.1s	0.0s	○
F01.28	Jog Acceleration time	0.1~6000.0s	0.1s	20.0s	○
F01.29	Jog Deceleration time	0.1~6000.0s	0.1s	20.0s	○

F02—Start, stop, forward/reverse, brake function parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F02.00	Start-up running mode	0: Start from starting frequency 1: First brake and then start from starting frequency 2: Start by revolving speed tracking	1	2	×
F02.01	Delay time for start up	0.0~60.0s	0.1s	0.0s	×
F02.02	Starting frequency	0.0~10.00Hz	0.01Hz	0.00Hz	×
F02.03	Duration time for starting frequency	0.0~60.0s	0.1s	0.0s	×
F02.04	DC braking current when starting	0.0~100.0% (G type inverter rated current)	0.1%	30.0%	×
F02.05	DC braking time when starting	0.0~30.0s	0.1s	0.0s	×
F02.06	Speed track starting frequency selection	0: Current setting frequency. 1: Running frequency before power down. 2:Speed track auxiliary starting frequency.	1	2	×
F02.07	Speed track auxiliary starting frequency	0.00Hz~Upper limiting frequency	0.01Hz	5.00Hz	×
F02.08	Speed track starting waiting time	0.00~10.00s	0.01s	0.10s	×
F02.09	Speed track current control coefficient	1~20	1	2	×
F02.10	Speed track searching speed time	0.1~30.0 (V/F control unit Unit1s; SVC control 0.1s)	0.1	4.00	×

F02.11	Stop mode	0: Decelerating stop 1: Free stop 2: Decelerating+DC brake stop	1	0	×
F02.12	Deceleration stop holding frequency	0.00~Upper limiting frequency (This parameter is only valid for stop mode 0.)	0.01Hz	0.00Hz	×
F02.13	Deceleration stop holding time Deceleration stop holding time	0.00~10.00s	0.01s	0.00s	×
F02.14	Stop DC braking starting frequency	0.00~15.00Hz	0.01Hz	0.00Hz	×
F02.15	stop DC braking waiting time	0.00~30.00s	0.01s	0.00s	×
F02.16	Stop DC braking current	0.0~100.0% (G type machine rated current)	0.1%	0.0%	×
F02.17	Stop DC braking time	0.0~30.0s	0.1s	0.0s	×
F02.18	Stop auxiliary braking current	0.0~100.0% (G type machine rated current)	0.1%	0.0%	×
F02.19	Stop auxiliary braking time	0.0~100.0s	0.1s	0.0s	×
F02.20	Forward/reverse dead zone time	0.0~3600.0s	0.1s	0.0s	×
F02.21	Forward/reverse switching mode	0: Over zero switchover 1: Over starting frequency switchover	1	0	×
F02.22	Dynamic braking selection	0: With dynamic braking 1: Without dynamic braking	1	Base on machine type	○
F02.23	Energy consumption braking voltage	115.0~145.0% (Rated busbar voltage)	0.1%	125.0%	○
F02.24	Energy consumption braking use rate	0.0~100.0%	0.1%	50.0%	○
F02.25	Reserved				
F02.26	Reserved				

F03—V/F control parameter group					
Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F03.00	V/F curve setting	0: Constant torque curve 1: Decreasing torque curve 1 (2 nd power) 2: Decreasing torque curve 2 (1.7 th power) 3: Decreasing torque curve 3 (1.2 nd power) 4: User's customized V/F curve(Please set parameters from F03.04 to F03.11)	1	0	×
F03.01	Torque boost mode	0: Manual operation 1: Automatic	1	0	○
F03.02	Torque boost	0.0~12.0%	0.1%	Every model differs	○
F03.03	Torque boost cut-off frequency	0.0~100.0% (Motor rated frequency)	0.1%	20.0%	○
F03.04	V/F frequency value 0	0.00~V/F frequency value 1	0.01Hz	10.00Hz	×
F03.05	V/F voltage value 0	0.00~V/F voltage value 1	0.01%	20.00%	×
F03.06	V/F frequency value 1	V/F frequency value 0~V/F frequency value 2	0.01Hz	20.00Hz	×
F03.07	V/F voltage value 1	V/F voltage value 0~V/F voltage value 2	0.01%	40.00%	×
F03.08	V/F frequency value 2	V/F frequency value 1~V/F frequency value 3	0.01Hz	25.00Hz	×
F03.09	V/F voltage value 2	V/F voltage value 1~V/F voltage value 3	0.01%	50.00%	×

Function parameter schedule graph

F03.10	V/F frequency value 3	V/F frequency value 2 ~ Upper limiting frequency	0.01Hz	40.00Hz	×
F03.11	V/F voltage value 3	V/F voltage value 2 ~ 100.00%(Motor rated voltage)	0.01%	80.00%	×
F03.12	V/F oscillation suppression coefficient	0~255	1	10	○

F04—Auxiliary running parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F04.00	Jumping frequency 1	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	×
F04.01	Range for Jumping frequency 1	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	×
F04.02	Jumping frequency 2	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	×
F04.03	Range for Jumping frequency 2	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	×
F04.04	Jumping frequency 3	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	×
F04.05	Range for Jumping frequency 3	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	×
F04.06	Slip frequency gain	0.0~300.0%	0.1%	0.0%	×
F04.07	Slip compensation limit	0.0~250.0%	0.1%	100.0%	×
F04.08	Slip compensation time constant	0.1~25.0s	0.1s	2.0s	×
F04.09	Carrier frequency	0.5~16.0K	0.1K	Every model differs	○
F04.10	PWM optimization and adjustment	Units digit: Carrier freq. is adjusted automatically according to temperature 0: Banned. 1: Allowed. Tens digit: low speed carrier freq. limit mode 0: No limit. 1: Limit. Hundreds digit: carrier wave modulation system 0: 3 phase modulation. 1: 2 phase and 3 phase modulation. Thousands digit: Asynchronous modulation: synchronization mode (valid under V/F control) 0:Asynchronous modulation. 1:Synchronous modulation (under 85Hz: Asynchronous modulation).	1	0110	×
F04.11	AVR Function	0: No action 1: Action all the time 2: Keep action EXCEPT during decreasing	1	0	×
F04.12	Reserved				
F04.13	Automatic energy saving operation	0: No action 1: Action	1	0	×
F04.14	Switch frequency between acceleration time 2 and 1	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	×
F04.15	Switch frequency between deceleration time 2 and 1	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	×
F04.16	Acceleration time 2	1~60000	1	200	○
F04.17	Deceleration time 2	1~60000	1	200	○
F04.18	Acceleration time 3	1~60000	1	200	○
F04.19	Deceleration time 3	1~60000	1	200	○

F04.20	Acceleration time 4	1~60000	1	200	○
F04.21	Deceleration time 4	1~60000	1	200	○
F04.22	Acceleration time 5	1~60000	1	200	○
F04.23	Deceleration time 5	1~60000	1	200	○
F04.24	Acceleration time 6	1~60000	1	200	○
F04.25	Deceleration time 6	1~60000	1	200	○
F04.26	Acceleration time 7	1~60000	1	200	○
F04.27	Deceleration time 7	1~60000	1	200	○
F04.28	Acceleration time 8	1~60000	1	200	○
F04.29	Deceleration time 8	1~60000	1	200	○
F04.30	Acceleration time 9	1~60000	1	200	○
F04.31	Deceleration time 9	1~60000	1	200	○
F04.32	Acceleration time 10	1~60000	1	200	○
F04.33	Deceleration time 10	1~60000	1	200	○
F04.34	Acceleration time 11	1~60000	1	200	○
F04.35	Deceleration time 11	1~60000	1	200	○
F04.36	Acceleration time 12	1~60000	1	200	○
F04.37	Deceleration time 12	1~60000	1	200	○
F04.38	Acceleration time 13	1~60000	1	200	○
F04.39	Deceleration time 13	1~60000	1	200	○
F04.40	Acceleration time 14	1~60000	1	200	○
F04.41	Deceleration time 14	1~60000	1	200	○
F04.42	Acceleration time 15	1~60000	1	200	○
F04.43	Deceleration time 15	1~60000	1	200	○

F05—Communication control parameters group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F05.00	Protocol selection	0: Modbus protocol 1: Reserved 2: Profibus protocol (Extension is effective) 3: CanLink protocol (Extension is effective) 4: CANopen protocol (Extension is effective) 5: Free protocol 1 (It can modify all the function parameters of EN606) 6: Free protocol 2 (It can only modify PART of the function parameters of EN606)	1	0	×
F05.01	Baud rate selection	LED 1 st bit: Free-protocol and Modbus baud rate selection 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS LED 2 nd bit: Profibus_DP baud rate selection 0: 115200BPS 1: 208300BPS 2: 256000BPS 3: 512000BPS LED 3 rd bit: CanLink and CANopen baud rate selection	1	005	×

		0: 20K 1: 50K 2: 100K 3: 125K 4: 250K 5: 500K 6: 1M			
F05.02	Data format	LED 1 st bit: Free-protocol and Modbus protocol data format 0: 1-8-1 format, No parity check, RTU 1: 1-8-1 format, Even-parity check, RTU 2: 1-8-1 format, Odd-parity check, RTU 3: 1-7-1 format, No parity check, ASCII 4: 1-7-1 format, Even-parity check, ASCII 5: 1-7-1 format, Odd-parity check, ASCII LED 2 nd bit: Profibus_DP protocol data format 0: PPO1 communication format 1: PPO2 communication format 2: PPO3 communication format 3: PPO5 communication format		00	×
F05.03	Local address	0~247, this function code is used to identify inverter's address: among which 0 is broadcast address. When setting broadcast address: it can only receive and execute upper computer broadcast command: while cannot respond to upper computer.	1	1	×
F05.04	Communication overtime checkout time	0.0~1000.0s	0.1s	0.0s	○
F05.05	Communication error checkout time	0.0~1000.0s	0.1s	0.0s	○
F05.06	Local response delay time	0~200ms (Modbus valid)	1ms	5ms	○
F05.07	Main & sub inverter communication frequency setting percentage	0~500%	1%	100%	○
F05.08	communication virtual input terminal enabled	00~FFH Bit0: CX1 analog input terminal enable 0: Prohibition 1: Enable Bit1: CX2 analog input terminal enable 0: Prohibition 1: Enable Bit2: CX3 analog input terminal enable 0: Prohibition 1: Enable Bit3: CX4 analog input terminal enable 0: Prohibition 1: Enable Bit4: CX5 analog input terminal enable 0: Prohibition 1: Enable Bit5: CX6 analog input terminal enable 0: Prohibition 1: Enable Bit6: CX7 analog input terminal enable 0: Prohibition 1: Enable	1	00H	○

		Bit7: CX8 analog input terminal enable 0: Prohibition 1: Enable			
F05.09	Communication virtual input terminal joining node	0: Independent node. 1: Terminal node.	1	0	○
F05.10	Communication analog terminal CX1 function	0~90	1	0	○
F05.11	Communication analog terminal CX2 function	0~90	1	0	○
F05.12	Communication analog terminal CX3 function	0~90	1	0	○
F05.13	Communication analog terminal CX4 function	0~90	1	0	○
F05.14	Communication analog terminal CX5 function	0~90	1	0	○
F05.15	Communication analog terminal CX6 function	0~90	1	0	○
F05.16	Communication analog terminal CX7 function	0~90	1	0	○
F05.17	Communication analog terminal CX8 function	0~90	1	0	○
F05.18	Input mapping application parameter 1	F00.00~F26.xx	0.01	25.00	○
F05.19	Input mapping application parameter 2	F00.00~F26.xx	0.01	25.00	○
F05.20	Input mapping application parameter 3	F00.00~F26.xx	0.01	25.00	○
F05.21	Input mapping application parameter 4	F00.00~F26.xx	0.01	25.00	○
F05.22	Input mapping application parameter 5	F00.00~F26.xx	0.01	25.00	○
F05.23	Input mapping application parameter 6	F00.00~F26.xx	0.01	25.00	○
F05.24	Input mapping application parameter 7	F00.00~F26.xx	0.01	25.00	○
F05.25	Input mapping application parameter 8	F00.00~F26.xx	0.01	25.00	○
F05.26	Input mapping application parameter 9	F00.00~F26.xx	0.01	25.00	○
F05.27	Input mapping application parameter 10	F00.00~F26.xx	0.01	25.00	○
F05.28	Reserved				
F05.29	Reserved				
F05.30	Reserved				
F05.31	Reserved				
F05.32	Reserved				
F05.33	Reserved				
F05.34	Reserved				
F05.35	Reserved				
F05.36	Reserved				
F05.37	Reserved				
F05.38	Reserved				
F05.39	Reserved				

F06—Setting curve parameter group					
Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F06.00	Setting curve selection	LED 1 st bit: AI1 Curve selection 0: Curve 1 1: Curve 2 2: Curve 3 LED 2 nd bit: AI2 curve selection: The same as 1 st bit. LED 3 rd bit: Rapid pulse curve selection: The same as 1 st bit. LED 4 th bit: Pulse width setting curve selection: The same as 1 st bit.	1	0000	○
F06.01	Curve 1 Min. setting	0.0%~Curve 1 inflexion setting	0.1%	0.0%	○
F06.02	Corresponding physical quantity of curve 1 min. setting	0.0~100.0%	0.1%	0.0%	○
F06.03	Curve 1 inflexion setting	Curve 1 Min. setting~Curve 1 Max. setting	0.1%	50.0%	○
F06.04	Corresponding physical quantity of curve 1 inflexion setting	0.0~100.0%	0.1%	50.0%	○
F06.05	Curve 1 Max. setting	Curve 1 inflexion setting ~ 100.0%, 100.0% is corresponding to 5V Input AD terminal	0.1%	100.0%	○
F06.06	Corresponding physical quantity of curve 1 Max. setting	0.0~100.0%	0.1%	100.0%	○
F06.07	Curve 2 Min. setting	0.0%~Curve 2 inflexion setting	0.1%	0.0%	○
F06.08	Corresponding physical quantity of curve 2 min. setting	0.0~100.0%	0.1%	0.0%	○
F06.09	Curve 2 inflexion setting	Curve 2 min. setting ~ curve 2 Max. setting	0.1%	50.0%	○
F06.10	Corresponding physical quantity of curve 2 inflexion setting	0.0~100.0%	0.1%	50.0%	○
F06.11	Curve 2 Max. setting	Curve 2 inflexion setting ~100.0%	0.1%	100.0%	○
F06.12	Corresponding physical quantity of curve 2 Max. setting	0.0~100.0%	0.1%	100.0%	○
F06.13	Curve 3 Min. setting	0.0%~curve 3 inflexion 1 setting	0.1%	0.0%	○
F06.14	Corresponding physical quantity of curve 3 min. setting	0.0~100.0%	0.1%	0.0%	○
F06.15	Curve 3 inflexion 1 setting	Curve 3 min. setting ~ curve 3 inflexion 2 setting	0.1%	30.0%	○
F06.16	Corresponding physical quantity of curve 3 inflexion 1 setting	0.0~100.0%	0.1%	30.0%	○
F06.17	Curve 2 inflexion setting	Curve 3 inflexion 1 setting ~ curve 3 Max. setting	0.1%	60.0%	○
F06.18	Corresponding physical quantity of curve 3 inflexion 2 setting	0.0~100.0%	0.1%	60.0%	○
F06.19	Curve 3 Max. setting	Curve 3 inflexion 1 setting~100.0%	0.1%	100.0%	○

F06.20	Corresponding physical quantity of curve 3 Max. setting	0.0~100.0%	0.1%	100.0%	○
F06.21	Curve lower than min. input corresponding selection	Units digit: curve 1 setting 0: Corresponds to min. setting corresponding physical quantity. 1: 0.0% of the corresponding physical quantity. Tens digit: curve 2 setting Same as units digit. Hundreds digit: curve 3 setting Same as units digit. Thousands digit: extended curve 1 Same as units digit. Ten thousands digit: extended curve 2 Same as units digit.	1	11111	○

F07—Analog, Pulse input function parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F07.00	A11 input filter time	0.000~9.999s	0.001s	0.050s	×
F07.01	A11 setting gain	0.000~9.999	0.001	1.004	○
F07.02	A11 setting bias	0.0~100.0%	0.1%	0.5%	○
F07.03	A12 input filter time	0.000~9.999s	0.001	0.050s	×
F07.04	A12 setting gain	0.000~9.999	0.001	1.003	○
F07.05	A12 setting bias	0.0~100.0%	0.1%	0.1%	○
F07.06	Analog setting bias polarity	Units digit: A11 setting bias polarity 0: Positive polarity. 1: Negative polarity. Tens digit: A12 setting bias polarity 0: Positive polarity. 1: Negative polarity.	1	01	○
F07.07	Pulse input filter time	0.000~9.999s	0.001	0.000s	×
F07.08	Pulse input gain	0.000~9.999	0.001	1.000	○
F07.09	Pulse input Max. frequency	0.01~50.00KHz	0.01KHz	10.00KHz	○
F07.10	Pulse width input filter time	0.000~9.999s	0.001s	0.000s	×
F07.11	Pulse width input gain	0.000~9.999	0.001	1.000	○
F07.12	Pulse width input logic setting	0: Positive logic 1: Negative logic	1	0	○
F07.13	Max pulse input width	0.1~999.9ms	0.1ms	100.0ms	○
F07.14	Reserved				
F07.15	Reserved				
F07.16	Reserved				
F07.17	Reserved				

F08—On-off input function parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F08.00	input terminal positive and negative logic setting	0000~FFFF (Include extended input terminal)	1	0000	○
F08.01	Input terminal filter time	0.000~1.000s (Include extended input terminal)	0.001s	0.010s	○
F08.02	X1 input terminal turn-on time	0.00~99.99s	0.01s	0.00s	○

F08.03	X1 input terminal turn-off time	0.00~99.99s	0.01s	0.00s	○
F08.04	X2 input terminal turn-on time	0.00~99.99s	0.01s	0.00s	○
F08.05	X2 input terminal turn-off time	0.00~99.99s	0.01s	0.00s	○
F08.06	X3 input terminal turn-on time	0.00~99.99s	0.01s	0.00s	○
F08.07	X3 input terminal turn-off time	0.00~99.99s	0.01s	0.00s	○
F08.08	X4 input terminal turn-on time	0.00~99.99s	0.01s	0.00s	○
F08.09	X4 input terminal turn-off time	0.00~99.99s	0.01s	0.00s	○
F08.10	X5 input terminal turn-on time	0.00~99.99s	0.01s	0.00s	○
F08.11	X5 input terminal turn-off time	0.00~99.99s	0.01s	0.00s	○
F08.12	X6 input terminal turn-on time	0.00~99.99s	0.01s	0.00s	○
F08.13	X6 input terminal turn-off time	0.00~99.99s	0.01s	0.00s	○
F08.14	X7 input terminal turn-on time	0.00~99.99s	0.01s	0.00s	○
F08.15	X7 input terminal turn-off time	0.00~99.99s	0.01s	0.00s	○
F08.16	X8 input terminal turn-on time	0.00~99.99s	0.01s	0.00s	○
F08.17	X8 input terminal turn-off time	0.00~99.99s	0.01s	0.00s	○
F08.18	Input terminal X1 function selection	0: Leave control terminal unused 1: Forward running FWD terminal 2: Reverse running REV terminal 3: External forward jogging control 4: External reverse jogging control 5: Multi-step speed control terminal 1 6: Multi-step speed control terminal 2 7: Multi-step speed control terminal 3 8: Multi-step speed control terminal 4 9: Accelerate/Decelerate time selection terminal 1 10: Accelerate/Decelerate time selection terminal 2 11: Accelerate/Decelerate time selection terminal 3 12: Accelerate/Decelerate time selection terminal 4 13: Main and auxiliary frequency operational rule selection terminal 1 14: Main and auxiliary frequency operational rule selection terminal 2 15: Main and auxiliary frequency operational rule selection terminal 3 16: Frequency ascending command (UP) 17: Frequency descending command (DOWN) 18: Frequency ascending/descending frequency resetting	1	0	×

		19: Multi-step closed loop terminal 1 20: Multi-step closed loop terminal 2 21: Multi-step closed loop terminal 3 22: External equipment failure input 23: External interruption input 24: External resetting input 25: Free stop input 26: External stop instruction—Stop according to the stop mode 27: stop DC braking input command DB 28: inverter running prohibited—Stop according to the stop mode 29: Acceleration/deceleration prohibited command 30: Three-wire running control 31: Process PID invalid 32: Process PID stop 33: Process PID integral holding 34: Process PID integral resetting 35: Process PID function negation(Closed loop adjustment feature negation) 36: simple PLC invalid 37: simple PLC halted 38: simple PLC stop state resetting 39: main frequency switchover to digit (keypad) 40: main frequency switchover to AI1 41: main frequency switchover to AI2 42: main frequency switchover to EAI1 43: main frequency switchover to EAI2 44: main frequency setting channel selection terminal 1 45: main frequency setting channel selection terminal 2 46: main frequency setting channel selection terminal 3 47: main frequency setting channel selection terminal 4 48: Auxiliary frequency reset 49: Command switchover to panel 50: Command switchover to terminal 51: Command switchover to communication 52: Running command Channel selection 1 53: Running command Channel selection 2 54: Forward prohibited command(Stop according to the stop mode: invalid for jogging command) 55: Reverse prohibited command (Stop according to the stop mode: invalid for jogging command) 56: Swinging frequency input 57: Resetting state of swinging frequency 58: Interior counter reset end 59: Interior counter input end 60: Internal timer resetting 61: Internal timer triggering 62: Length count input 63: Length reset 64: Reset this operation time 65: speed/torque control switching 66~90: Reserved			
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		91: Pulse frequency input (X8 Valid) 92: Pulse width PWM input (X8 Valid) 93~96: Reserved			
F08.19	Input terminal X2 function selection	The same as above	1	2	×
F08.20	Input terminal X3 function selection	The same as above	1	0	×
F08.21	Input terminal X4 function selection	The same as above	1	0	×
F08.22	Input terminal X5 function selection	The same as above	1	0	×
F08.23	Input terminal X6 function selection	The same as above	1	0	×
F08.24	Input terminal X7 function selection	The same as above	1	1	×
F08.25	Input terminal X8 function selection	The same as above	1	0	×
F08.26	FWD/REV running mode selection	0: 2-wire control mode 1 1: 2-wire control mode 2 2: 2-wire control mode 3 (Monopulse control mode) 3: 3-wire control mode 1 4: 3-wire control mode 2	1	0	×
F08.27	Set internal count value to setting	0~65535	1	0	○
F08.28	Specify internal count to setting	0~65535	1	0	○
F08.29	Internal timer timing setting	0.1~6000.0s	0.1s	60.0s	○
F08.30	Terminal pulse encoder frequency rate	0.01~10.00Hz(only be effective by given X1:X2 encoder)	0.01Hz	1.00Hz	○
F08.31	Reserved				

F09—On-off output function parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F09.00	Open collector output terminal Y1 output setup	0:terminal unused 1:operation(RUN) 2:CW run 3:CCW run 4:DC brake 5:run prepare finish(busbar voltage normal, fault free, no run forbid, receive of run command's status) 6:stop command indication 7:no current detected 8:overcurrent detected 9:current1 arrival 10:current2 arrival 11:no frequency output 12:frequency arrival signal(FAR) 13:frequency level detect signal 1(FDT1) 14:frequency level detect signal 2(FDT2) 15:output frequency arrival upper limit(FHL) 16:output frequency arrival low limit(FLL)	1	0	×

		17:frequency 1 arrival output 18:frequency 2 arrival output 19:overload pre-alarm signal(OL) 20:undervoltage lockout stop (LU) 21:external fault stop(EXT) 22:fault 23:alarm 24: simple PLC operation 25:simple PLC section operation finish 26:simple PLC circle operation finish 27:simple PLC operation stop 28:traverse frequency high and low limit 29:setup length arrival 30:internal counter final value arrival 31:internal counter designated value arrival 32:internal timer arrival---output 0.5s valid signal on arrival 33:operation stop time finish 34:operation arrival time finish 35:setup run time arrival 36:setup power on time arrival 37:1st pump variable frequency 38:1st pump power frequency 39:2nd pump variable frequency 40:2nd pump power frequency 41:communication provision 42: torque control speed limiting 43~60: Reserved			
F09.01	Open collector output terminal Y2 output setup	The same as above	1	0	×
F09.02	Open collector output terminal Y3 output setup	The same as above	1	0	×
F09.03	Open collector output terminal Y4 output setup	The same as above	1	0	×
F09.04	Programmable relay output setting	The same as above	1	22	×
F09.05	Detection amplitude of Frequency arrival(FAR)	0.00~50.00Hz	0.01Hz	5.00Hz	○
F09.06	FDT1(frequency level)level	0.00Hz~Upper limiting frequency	0.01Hz	10.00Hz	○
F09.07	FDT1 lag	0.00~50.00Hz	0.01Hz	1.00Hz	○
F09.08	FDT2(frequency level)level	0.00Hz~Upper limiting frequency	0.01Hz	10.00Hz	○
F09.09	FDT2 lag	0.00~50.00Hz	0.01Hz	1.00Hz	○
F09.10	Zero frequency signal detection value	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	○
F09.11	Zero frequency backlash	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	○
F09.12	Zero-current detection amplitude	0.0~50.0%	0.1%	0.0%	○
F09.13	Zero-current detection time	0.00~60.00s	0.01s	0.1s	○
F09.14	Over-current detection value	0.0~250.0%	0.1%	160.0%	○

F09.15	Over-current detection time	0.00~60.00s	0.01s	0.00s	○
F09.16	Current 1 arrival detection value	0.0~250.0%	0.1%	100.0%	○
F09.17	Current 1 width	0.0~100.0%	0.1%	0.0%	○
F09.18	Current 2 arriving the detection value	0.0~250.0%	0.1%	100.0%	○
F09.19	Current 2 width	0.0~100.0%	0.1%	0.0%	○
F09.20	Frequency 1 arriving the detection value	0.00Hz~Upper limiting frequency	0.01Hz	50.00Hz	○
F09.21	Frequency 1 arriving the detection width	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	○
F09.22	Frequency 2 arriving the detection value	0.00Hz~Upper limiting frequency	0.01Hz	50.00Hz	○
F09.23	Frequency 2 arriving the detection width	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	○
F09.24	positive and negative logic setup of Output terminal	0000~FFFF (Extend effective)	1	0000	○
F09.25	Y1 output closed delay time	0.000~50.000s	0.001s	0.000s	○
F09.26	Y1 output disconnected delay time	0.000~50.000s	0.001s	0.000s	○
F09.27	Y2 output closed delay time	0.000~50.000s	0.001s	0.000s	○
F09.28	Y2 output disconnected delay time	0.000~50.000s	0.001s	0.000s	○
F09.29	Y3 output closed delay time	0.000~50.000s	0.001s	0.000s	○
F09.30	Y3 output disconnected delay time	0.000~50.000s	0.001s	0.000s	○
F09.31	Y4 output closed delay time	0.000~50.000s	0.001s	0.000s	○
F09.32	Y4 output disconnected delay time	0.000~50.000s	0.001s	0.000s	○
F09.33	Relay output closed delay time	0.000~50.000s	0.001s	0.000s	○
F09.34	Relay output disconnected delay time	0.000~50.000s	0.001s	0.000s	○
F09.35	Analog output(AO1) selection	0: Frequency after Acce./Decel. (0.00Hz~Upper limiting frequency) 1: Output synchronous frequency (0.00Hz~Upper limiting frequency) 2: Setting frequency (0.00Hz~Upper limiting frequency) 3: Main setting frequency (0.00Hz~Upper limiting frequency) 4: Auxiliary setting frequency (0.00Hz~Upper limiting frequency) 5: Output current 1 (0~2×control cabinet rated current) 6: Output current 2 (0~3×motor rated current) 7: Output voltage (0~1.2×loading motor's rated voltage) 8: Busbar voltage (0~1.5×rated busbar voltage) 9: Motor rotate speed (0~3×rated rotate speed)	1	0	○

		10: PID provision (0.00~10.00V) 11: PID feedback (0.00~10.00V) 12: AI1 (0.00~10.00V or 4~20mA) 13: AI2 (-10.00~10.00V or 4~20mA) 14: communication provision 15: Motor rotor rotate speed (0.00Hz~Upper limiting frequency) 16: present setting torque (0~2×rated torque) 17: The present output torque (0~2×rated torque) 18: The present torque current(0~2×motor rated current) 19: The present flux current (0~1×motor rated flux current) 20~25: Reserved			
F09.36	Analog output (AO2) selection	The same as above	1	0	○
F09.37	DO function selection (with Y4 reuse)	The same as above	1	0	○
F09.38	Reserved				
F09.39	Analog output (AO1) filtering time	0.0~20.0s	0.1s	0.0s	○
F09.40	Analog output (AO1)gain	0.00~2.00	0.01	1.00	○
F09.41	Analog output (AO1)offset	0.0~100.0%	0.1%	0.0%	○
F09.42	Analog output (AO2) filtering time	0.0~20.0s	0.1s	0.0s	○
F09.43	Analog output (AO2)gain	0.00~2.00	0.01	1.00	○
F09.44	Analog output (AO2)offset	0.0~100.0% (AO2 output terminal with Y3 reuse)	0.1%	0.0%	○
F09.45	DO filtering time	0.0~20.0s	0.1s	0.0s	○
F09.46	DO output gain	0.00~2.00	0.01	1.00	○
F09.47	DO maximum pulse output frequency	0.1~20.0KHz	0.1KHz	10.0KHz	○
F09.48	Reserved				
F09.49	Reserved				
F09.50	Reserved				

F10—Simple PLC/Multi-speed Function Parameter Group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F10.00	Simple PLC running setting	LED 1st bit: running mode selection 0: no action 1: stop after single circulation 2: keep final value after single circulation 3: consecutive circulation LED 2nd bit: interrupt run restart mode selection 0: start from first step 1: continuous run from phase frequency at interruption 2: continuous run from run frequency at interruption LED 3rd bit: PLC run time unit	1	0000	×

		0: second 1: minute LED 4th bit: power-down memory selection 0: no memory 1: phase of reserve power down, frequency power down recording PLC run status: contain power down phase, run frequency, time have run.			
F10.01	Section 1 setting	000H~E22H LED first bit: Frequency setting 0: Multi-section frequency i (i=1~15) 1: frequency determined by complex frequency of main and auxiliary 2: Reserved LED second bit: Run direction options 0: Forward run 1: Reverse run 2: Determined by run command LED third bit: Accelerate/Decelerate time options 0: Accelerate/Decelerate time 1 1: Accelerate/Decelerate time 2 2: Accelerate/Decelerate time 3 3: Accelerate/Decelerate time 4 4: Accelerate/Decelerate time 5 5: Accelerate/Decelerate time 6 6: Accelerate/Decelerate time 7 7: Accelerate/Decelerate time 8 8: Accelerate/Decelerate time 9 9: Accelerate/Decelerate time 10 A: Accelerate/Decelerate time 11 B: Accelerate/Decelerate time 12 C: Accelerate/Decelerate time 13 D: Accelerate/Decelerate time 14 E: Accelerate/Decelerate time 15	1	000	○
F10.02	Section 2 setting	000H~E22H	1	000	○
F10.03	Section 3 setting	000H~E22H	1	000	○
F10.04	Section 4 setting	000H~E22H	1	000	○
F10.05	Section 5 setting	000H~E22H	1	000	○
F10.06	Section 6 setting	000H~E22H	1	000	○
F10.07	Section 7 setting	000H~E22H	1	000	○
F10.08	Section 8 setting	000H~E22H	1	000	○
F10.09	Section 9 setting	000H~E22H	1	000	○
F10.10	Section 10 setting	000H~E22H	1	000	○
F10.11	Section 11 setting	000H~E22H	1	000	○
F10.12	Section 12 setting	000H~E22H	1	000	○
F10.13	Section 13 setting	000H~E22H	1	000	○
F10.14	Section 14 setting	000H~E22H	1	000	○
F10.15	Section 15 setting	000H~E22H	1	000	○
F10.16	Section 1 running time	0~6000.0	0.1	10.0	○
F10.17	Section 2 running time	0~6000.0	0.1	10.0	○
F10.18	Section 3 running time	0~6000.0	0.1	10.0	○
F10.19	Section 4 running time	0~6000.0	0.1	10.0	○
F10.20	Section 5 running time	0~6000.0	0.1	10.0	○
F10.21	Section 6 running time	0~6000.0	0.1	10.0	○
F10.22	Section 7 running time	0~6000.0	0.1	10.0	○
F10.23	Section 8 running time	0~6000.0	0.1	10.0	○

F10.24	Section 9 running time	0~6000.0	0.1	10.0	○
F10.25	Section 10 running time	0~6000.0	0.1	10.0	○
F10.26	Section 11 running time	0~6000.0	0.1	10.0	○
F10.27	Section 12 running time	0~6000.0	0.1	10.0	○
F10.28	Section 13 running time	0~6000.0	0.1	10.0	○
F10.29	Section 14 running time	0~6000.0	0.1	10.0	○
F10.30	Section 15 running time	0~6000.0	0.1	10.0	○
F10.31	Multi-section frequency 1	0.00Hz~Upper limiting frequency	0.01Hz	5.00Hz	○
F10.32	Multi-section frequency 2	0.00Hz~Upper limiting frequency	0.01Hz	10.00Hz	○
F10.33	Multi-section frequency 3	0.00Hz~Upper limiting frequency	0.01Hz	20.00Hz	○
F10.34	Multi-section frequency 4	0.00Hz~Upper limiting frequency	0.01Hz	30.00Hz	○
F10.35	Multi-section frequency 5	0.00Hz~Upper limiting frequency	0.01Hz	40.00Hz	○
F10.36	Multi-section frequency 6	0.00Hz~Upper limiting frequency	0.01Hz	45.00Hz	○
F10.37	Multi-section frequency 7	0.00Hz~Upper limiting frequency	0.01Hz	50.00Hz	○
F10.38	Multi-section frequency 8	0.00Hz~Upper limiting frequency	0.01Hz	5.00Hz	○
F10.39	Multi-section frequency 9	0.00Hz~Upper limiting frequency	0.01Hz	10.00Hz	○
F10.40	Multi-section frequency 10	0.00Hz~Upper limiting frequency	0.01Hz	20.00Hz	○
F10.41	Multi-section frequency 11	0.00Hz~Upper limiting frequency	0.01Hz	30.00Hz	○
F10.42	Multi-section frequency 12	0.00Hz~Upper limiting frequency	0.01Hz	40.00Hz	○
F10.43	Multi-section frequency 13	0.00Hz~Upper limiting frequency	0.01Hz	45.00Hz	○
F10.44	Multi-section frequency 14	0.00Hz~Upper limiting frequency	0.01Hz	50.00Hz	○
F10.45	Multi-section frequency 15	0.00Hz~Upper limiting frequency	0.01Hz	50.00Hz	○

F14—Vector control parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F14.00	Speed/Torque control selection	0: Speed control 1: Torque control	1	0	×
F14.01	Speed loop high speed proportional gain	0.1~40.0	0.1	20.0	○
F14.02	Speed loop high speed integral time	0.001~10.000s	0.001s	0.040s	○
F14.03	Speed loop low speed proportional gain	0.1~80.0	0.1	20.0	○
F14.04	Speed loop low speed integral time	0.001~10.000s	0.001s	0.020s	○
F14.05	Speed loop parameter switching frequency	0.00Hz~20.00Hz	0.01Hz	5.00Hz	○
F14.06	Low frequency power generation stability coefficient	0~50 (Valid under open-loop control)	1	16	○
F14.07	Current loop proportional gain	0~500	1	70	○
F14.08	Current loop integral time	0.1~100.0ms	0.1ms	4.0ms	○
F14.09	Motor-driven torque current limit value	10.0~300.0%	0.1%	180.0%	×
F14.10	Braking torque current limit value	10.0~300.0%	0.1%	180.0%	×

F14.11	Asynchronous motor flux-weakening control coefficient	20.0~100.0%	0.1%	80.0%	○
F14.12	Asynchronous motor Min. flux coefficient	10.0~80.0% (Valid under closed-loop control)	0.1%	10.0%	○
F14.13	Torque provision channel selection	0: Digital setting 1: AI1 analog setting 2: AI2 analog setting 3: Terminal UP/DOWN adjustment setting 4: communication provision 5: EAI1 analog setting (Extend effective) 6: EAI2 analog setting (Extend effective) 7: High-speed pulse setting (X8 terminal needs to choose the corresponding function) 8: Terminal pulse width setting (X8 terminal needs to choose the corresponding function)	1	0	×
F14.14	Torque polarity setting	00~11 1st bit: torque setting polarity 0: Positive 1: Negative 2nd bit: torque compensation polarity 0: Positive 1: Negative	1	00	○
F14.15	Torque digital setting value	0.0~200.0%	0.1%	0.0%	○
F14.16	Forward speed limit channel selection in Torque control mode	0: Digital setting 1: AI1 analog setting 2: AI2 analog setting 3: Terminal UP/DOWN adjustment setting 4: communication provision 5: EAI1 analog setting (expansion effective) 6: EAI2 analog setting (expansion effective) 7: High-speed pulse setting (X8 terminal needs to choose the corresponding function) 8: Terminal pulse width setting (X8 terminal needs to choose the corresponding function)	1	0	×
F14.17	Reverse speed limit channel selection in Torque control mode	0: Digital setting 1: AI1 analog setting 2: AI2 analog setting 3: Terminal UP/DOWN adjustment setting 4: communication provision 5: EAI1 analog setting (expansion effective) 6: EAI2 analog setting (expansion effective) 7: High-speed pulse setting (X8 terminal needs to choose the corresponding function) 8: Terminal pulse width setting (X8 terminal needs to choose the corresponding function)	1	0	×
F14.18	Forward speed limit value in Torque control mode	0.00Hz~Upper limiting frequency	0.01Hz	50.00Hz	○
F14.19	Reverse speed limit value in Torque control mode	0.00Hz~Upper limiting frequency	0.01Hz	50.00Hz	○

F14.20	Torque Accelerate/Decelerate time setting	0.000~60.000s	0.001s	0.100s	○
F14.21	Torque compensation	0.0~100.0%	0.1%	0.0%	○
F14.22	Positive torque gain regulation coefficient	50.0~150.0%	0.1%	100.0%	○
F14.23	Negative torque gain regulation coefficient	50.0~150.0%	0.1%	100.0%	○
F14.24	Flux braking coefficient	0.0~300.0%	0.1%	0.0%	○
F14.25	Pre-excitation start-up time constant	0.1~3.0	0.1	0.5	×
F14.26	Reserved				
F14.27	Reserved				
F14.28	Reserved				
F14.29	Reserved				
F14.30	Reserved				

F15—Motor parameter group					
Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F15.00	Reserved				
F15.01	Asynchronous motor's rated power	0.1~999.9KW	0.1KW	Depend on machine type	×
F15.02	Asynchronous motor's rated voltage	1~690V	1V	Depend on machine type	×
F15.03	Asynchronous motor's rated current	0.1~6553.5A	0.1A	Depend on machine type	×
F15.04	Asynchronous motor's rated frequency	0.00~400.00Hz	0.01Hz	Depend on machine type	×
F15.05	Asynchronous motor's rated speed	0~60000r/min	1r/min	Depend on machine type	×
F15.06	Asynchronous motor's number of pole-pairs	1~7	1	2	×
F15.07	Asynchronous motor's stator resistance	0.0001~6.5535Ω	0.0001Ω	Depend on machine type	×
F15.08	Asynchronous motor's rotor resistance	0.0001~6.5535Ω	0.0001Ω	Depend on machine type	×
F15.09	Asynchronous motor's leakage inductance	0.001~65.535mH	0.001mH	Depend on machine type	×
F15.10	Asynchronous motor's mutual inductance	0.01~655.35mH	0.01mH	Depend on machine type	×
F15.11	Asynchronous motor's no-load current	0.01~655.35A	0.01A	Depend on machine type	×
F15.12	Reserved				

F15.13	Reserved				
F15.14	Reserved				
F15.15	Reserved				
F15.16	Reserved				
F15.17	Reserved				
F15.18	Reserved				
F15.19	Motor parameter self-tuning selection	0: Inaction 1: asynchronous motor stop to self-adjusting 2: asynchronous motor rotate no-load to self-adjusting 3: Reserved Note: ① Before adjustment, The nameplate data should be setting directly. ② Motor parameter group can have special default values, or can be modified by users, or can be self-adjusted. ③ when parameter F15.01 is modified, the other parameters of the motor will turn into default values automatically.	1	0	×
F15.20	Reserved				
F15.21	Reserved				
F15.22	Reserved				

F18—Enhance Control Parameter Group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F18.00	Operation panel control frequency binding	0:no binding 1:operation keyboard digital setup 2:A11 analog setup 3:A12 analog setup 4:terminal UP/DOWN adjusting setup 5:communication provide(Modbus and external bus use the same main frequency storage) 6:EAI1 analog setup(extension valid) 7:EAI2 analog setup(extension valid) 8:high speed pulse setup(X8 terminal need choose the relative function) 9:terminal pulse width setup(X8 terminal need choose the relative function) 10:terminal encoder provide(decide by X1, X2) 11~15: Reserved	1	0	○
F18.01	Terminal control frequency binding	The same as above	1	0	○
F18.02	Communication control frequency binding	The same as above	1	0	○
F18.03	Digital frequency integral function selection	Units digit: keyboard UP/DW integral control 0:integral function 1:no integral function Tens digit: terminal UP/DW integral control 0:integral function 1:no integral function	1	00	○
F18.04	Keyboard UP/DOWN integral rate	0.01~50.00Hz	0.01Hz	0.10Hz	○

F18.05	Keyboard no integral single step's size setup	0.01~10.00Hz	0.01Hz	0.01Hz	○
F18.06	Terminal UP/DOWN integral rate	0.01~50.00Hz	0.01Hz	0.20Hz	○
F18.07	Terminal no integral single step's size setup	0.01~10.00Hz	0.01Hz	0.10Hz	○
F18.08	Droop control decline frequency	0.00~10.00Hz	0.01Hz	0.00Hz	○
F18.09	Setup accumulate power on time	0~65535 hour	1	0	○
F18.10	Setup accumulate run time	0~65535 hour	1	0	○
F18.11	Timing run function enable	0: Invalid 1: Valid	1	0	○
F18.12	Timing run stop time	0.1~6500.0Min	0.1Min	2.0Min	○
F18.13	Currently run arrival time	0.0~6500.0Min	0.1Min	1.0Min	○
F18.14	Keyboard UP/DOWN selection under monitor mode	0: keyboard frequency provide value adjusting 1: PID digital provide value adjusting 2~6: Reserved	1	0	○
F18.15	Reserved				
F18.16	Reserved				
F18.17	Reserved				
F18.18	Reserved				
F18.19	Reserved				
F18.20	Reserved				
F18.21	Reserved				
F18.22	Reserved				
F18.23	Reserved				
F18.24	Reserved				

F19—Protective Relevant Function Parameter Group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F19.00	Power off restart waiting time	0.0~20.0s (0 means no start function)	0.1s	0.0s	×
F19.01	Fault self-recovery times	0~10 (0 means no automatic reset function)	1	0	×
F19.02	Fault self-recovery interval time	0.5~20.0s	0.1s	5.0s	×
F19.03	Motor overload protection action selection	0: Alarm, keep working 1: Alarm, stop run as halt mode 2: Failure, freely stopping	1	2	×
F19.04	Motor overload protection coefficient	20.0~200.0% (Motor rated current)	0.1%	180.0%	×
F19.05	Control cabinet overload pre-alarm detection selection	0: Keep detecting 1: detection as constant velocity	1	1	×
F19.06	Control cabinet overload pre-alarm detection level	20~180% (Control cabinet rated current)	1%	150%	○
F19.07	Control cabinet overload pre-alarm delay time	0.0~20.0s	0.1s	5.0s	○
F19.08	Motor underload alarm detection level	0.0~120.0% (Motor rated current)	0.1%	50.0%	○

F19.09	Motor underload alarm detection time	0.1~60.0s	0.1s	2.0s	○
F19.10	Motor underload alarm detection action	1 st bit: Detection selection 0: No detection 1: Keep detecting when working 2: detection only when constant velocity 2 nd bit: action selection 0: Alarm, keep working 1: Alarm, stop run as halt mode 2: Failure, freely stopping	1	00	○
F19.11	Input& output phase loss, short circuit detection action	1 st bit: Input phase loss 0: No detection 1: Failure, freely stopping 2 nd bit: Output phase loss 0: No detection 1: Failure, freely stopping 3 rd bit: power-on on earth short circuit protect detection enable 0: No detection 1: Failure, freely stopping 4 th bit: operation on earth short circuit protect detection enable 0: No detection 1: Failure, freely stopping	1	1101	○
F19.12	Over voltage stall selection	0: Prohibition 1: Allow	1	1	×
F19.13	Over voltage stall protection voltage	120~150%	1%	125%	×
F19.14	Automatic current limit level	110~200%, G type rated current	1%	220%	×
F19.15	Frequency decline rate of automatic current limit	0.00~99.99Hz/s	0.01Hz/s	10.00Hz/s	×
F19.16	Automatic current limit action selection	0:constant velocity invalid 1:constant velocity valid	1	0	×
F19.17	Reserved				
F19.18	Motor run section selection when instant power off	0: Prohibition 1: Allow	1	0	×
F19.19	Frequency droop rate when instant power off	0.00~99.99Hz/s	0.01Hz/s	10.00Hz/s	×
F19.20	Voltage rebound estimate time when instant power off	0.00~10.00s	0.01s	0.10s	×
F19.21	Action estimate voltage when instant power off	60~100% (Rated busbar voltage)	1%	80%	×
F19.22	Allowed the longest off time when instant power off	0.30~5.00s	0.01s	2.00s	×
F19.23	Terminal external device fault action selection	0: Alarm, keep working 1: Alarm, stop run as halt mode 2: Alarm, freely stopping	1	2	×
F19.24	Power on terminal protection selection	0: Invalid 1: Valid	1	0	×
F19.25	Provide lost detection value	0~100%	1%	0%	○
F19.26	Provide lost detection time	0.0~20.0s	0.1s	0.5s	○

F19.27	Feedback lost detection value	0~100%	1%	12%	○
F19.28	Feedback lost detection time	0.0~20.0s	0.1s	0.5s	○
F19.29	Deviation magnitude abnormal detection value	0~100%	1%	50%	○
F19.30	Deviation magnitude abnormal detection time	0.0~20.0s	0.1s	0.5s	○
F19.31	Protection action selection 1	Units digit: PID provide loss detection act 0:no detection 1:alarm, continue run 2:alarm, stop run as halt mode 3:fault, free halt Tens digit: PID feedback loss detection act 0:no detection 1:alarm, continue run 2:alarm, stop run as halt mode 3:fault, free halt Hundreds digit: PID error value abnormal detect action 0:no detection 1:alarm, continue run 2:alarm, stop run as halt mode 3:fault, free halt	1	000	○
F19.32	Protection action selection 2	Units digit: communication abnormal action: include communication time out and error 0:alarm, continue run 1:alarm, stop run as halt mode 2:fault, free halt Tens digit: E2PROM abnormal action selection 0:alarm, continue run 1:alarm, stop run as halt mode 2:fault, free halt Hundreds digit: contactor abnormal action 0:alarm, continue run 1:alarm, stop run as halt mode 2:fault, free halt Thousands digit: running lack-Voltage fault display action selection. 0:no detection 1:fault, free halt	1	1200	×
F19.33	Reserved				
F19.34	Reserved				
F19.35	Fault indication and clock during the period of recovery	Units digit: fault indication selection during the period of fault reset automatically 0:action 1:no action Tens digit: fault clock function selection: to achieve fault display before power down: etc. 0:forbid 1:open	1	00	×
F19.36	Continuous run frequency selection when alarm	Match up with protect action 0:run at the frequency setup by now 1:run at the frequency of upper limit	1	0	×

		2:run at the frequency of low limit 3:run at the frequency of abnormal for standby			
F19.37	Abnormal standby frequency	0.00Hz~Upper limiting frequency	0.01Hz	10.00Hz	×
F19.38	Reserved				
F19.39	Over speed (OS) detection value	0.0~120.0% (equals upper limit frequency)	0.1%	120.0%	○
F19.40	Over speed (OS) detection time	0.00~20.00s (No detection when value is 0)	0.01s	0.00s	○
F19.41	Detection value when speed deviation is too large	0.0~50.0% (equals upper limit frequency)	0.1%	10.0%	○
F19.42	Detection time when speed deviation is too large	0.00~20.00s (No detection when value is 0)	0.01s	0.00s	○
F19.43	Reserved				
F19.44	Reserved				

F21—Injection molding machine analog input parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F21.00	I1/V1 filter time	0.000~9.999s	0.001s	0.020s	○
F21.01	I1/V1 provision gain	0.000~9.999	0.001	1.000	○
F21.02	I1/V1 provision bias	0.0~100.0%	0.1%	0	○
F21.03	I2/V2 filter time	0.000~9.999s	0.001s	0.020s	○
F21.04	I2/V2 provision gain	0.000~9.999	0.001	1.000	○
F21.05	I2/V2 provision bias	0.0~100.0%	0.1%	0	○
F21.06	Analog provision bias polarity	LED 1 st bit: I1/V1 provision bias polarity 0: Positive polarity 1: Negative polarity LED 2 nd bit: I2/V2 provision bias polarity 0: Positive polarity 1: Negative polarity	1	00	○
F21.07 ~ F21.21	Reserved				

F22—Injection molding machine energy saving parameter group 1

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F22.00	Injection molding machine frequency provision mode	0: Nonuse machine frequency provision user customized mode 1: Choose machine frequency provision user customized mode 1 2: Choose machine frequency provision user customized mode 2 3: Choose machine frequency provision user customized mode 3	1	1	×
F22.01	Machine frequency provision user customized mode 1	LED 1 st bit: flow and pressure input selection 0: flow and pressure signal are all valid 1: only flow signal is valid 2: only pressure signal is valid LED 2 nd bit: Flow provision curve selection 0: Molding machine frequency curve 1	1	0001	×

		1: Molding machine frequency curve 2 2: Molding machine frequency curve 3 LED 3 rd bit: Pressure provision curve selection 0: Molding machine frequency curve 1 1: Molding machine frequency curve 2 2: Molding machine frequency curve 3 LED 4 th bit: selection of relationship between flow and pressure 0: $K1 \cdot \text{flow} + K2 \cdot \text{pressure}$ 1: Max (pressure, flow)			
F22.02	User 1 flow coefficient K1	0.0%~100.0%	0.1%	50.0%	○
F22.03	User 1 pressure coefficient K2	0.0%~100.0%	0.1%	50.0%	○
F22.04	Machine frequency provision user customized mode 2	Same as F22.01	1	0000	×
F22.05	User 2 flow coefficient K1	0.0%~100.0%	0.1%	50.0%	○
F22.06	User 2 pressure coefficient K2	0.0%~100.0%	0.1%	50.0%	○
F22.07	Machine frequency provision user customized mode 3	Same as F22.01	1	0000	×
F22.08	User 3 flow coefficient K1	0.0%~100.0%	0.1%	50.0%	○
F22.09	User 3 pressure coefficient K2	0.0%~100.0%	0.1%	50.0%	○
F22.10	Molding machine frequency curve 1 input point A0	0.0%~100.0%	0.1%	0.0%	○
F22.11	Molding machine frequency curve 1 input point A0's corresponding per unit value B0	0.0%~100.0%	0.1%	0.0%	○
F22.12	Molding machine frequency curve 1 input point A1	0.0%~100.0%	0.1%	25.0%	○
F22.13	Molding machine frequency curve 1 input point A1's corresponding per unit value B1	0.0%~100.0%	0.1%	25.0%	○
F22.14	Molding machine frequency curve 1 input point A2	0.0%~100.0%	0.1%	50.0%	○
F22.15	Molding machine frequency curve 1 input point A2's corresponding per unit value B2	0.0%~100.0%	0.1%	50.0%	○
F22.16	Molding machine frequency curve 1 input point A3	0.0%~100.0%	0.1%	100.0%	○
F22.17	Molding machine frequency curve 1 input point A3's corresponding per unit value B3	0.0%~100.0%	0.1%	100.0%	○

F23—Injection molding machine energy saving parameter group 2					
Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F23.00	Molding machine frequency curve 2 input point A0	0.0%~100.0%	0.1%	0.0%	○
F23.01	Molding machine frequency curve 2 input point A0's corresponding per unit value B0	0.0%~100.0%	0.1%	0.0%	○
F23.02	Molding machine frequency curve 2 input point A1	0.0%~100.0%	0.1%	25.0%	○
F23.03	Molding machine frequency curve 2 input point A1's corresponding per unit value B1	0.0%~100.0%	0.1%	25.0%	○
F23.04	Molding machine frequency curve 2 input point A2	0.0%~100.0%	0.1%	50.0%	○
F23.05	Molding machine frequency curve 2 input point A2's corresponding per unit value B2	0.0%~100.0%	0.1%	50.0%	○
F23.06	Molding machine frequency curve 2 input point A3	0.0%~100.0%	0.1%	100.0%	○
F23.07	Molding machine frequency curve 2 input point A3's corresponding per unit value B3	0.0%~100.0%	0.1%	100.0%	○
F23.08	Molding machine frequency curve 3 input point A0	0.0%~100.0%	0.1%	0.0%	○
F23.09	Molding machine frequency curve 3 input point A0's corresponding per unit value B0	0.0%~100.0%	0.1%	0.0%	○
F23.10	Molding machine frequency curve 3 input point A1	0.0%~100.0%	0.1%	25.0%	○
F23.11	Molding machine frequency curve 3 input point A1's corresponding per unit value B1	0.0%~100.0%	0.1%	25.0%	○
F23.12	Molding machine frequency curve 3 input point A2	0.0%~100.0%	0.1%	50.0%	○
F23.13	Molding machine frequency curve 3 input point A2's corresponding per unit value B2	0.0%~100.0%	0.1%	50.0%	○
F23.14	Molding machine frequency curve 3 input point A3	0.0%~100.0%	0.1%	100.0%	○

F23.15	Molding machine frequency curve 3 input point A3's corresponding per unit value B3	0.0%~100.0%	0.1%	100.0%	○
F23.16 ~ F23.17	Reserved				

F25—User's customized display parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F25.00	User's Function Code 1	F00.00~F25.xx	0.01	25.00	○
F25.01	User's Function Code 2	F00.00~F25.xx	0.01	25.00	○
F25.02	User's Function Code 3	F00.00~F25.xx	0.01	25.00	○
F25.03	User's Function Code 4	F00.00~F25.xx	0.01	25.00	○
F25.04	User's Function Code 5	F00.00~F25.xx	0.01	25.00	○
F25.05	User's Function Code 6	F00.00~F25.xx	0.01	25.00	○
F25.06	User's Function Code 7	F00.00~F25.xx	0.01	25.00	○
F25.07	User's Function Code 8	F00.00~F25.xx	0.01	25.00	○
F25.08	User's Function Code 9	F00.00~F25.xx	0.01	25.00	○
F25.09	User's Function Code 10	F00.00~F25.xx	0.01	25.00	○
F25.10	User's Function Code 11	F00.00~F25.xx	0.01	25.00	○
F25.11	User's Function Code 12	F00.00~F25.xx	0.01	25.00	○
F25.12	User's Function Code 13	F00.00~F25.xx	0.01	25.00	○
F25.13	User's Function Code 14	F00.00~F25.xx	0.01	25.00	○
F25.14	User's Function Code 15	F00.00~F25.xx	0.01	25.00	○
F25.15	User's Function Code 16	F00.00~F25.xx	0.01	25.00	○
F25.16	User's Function Code 17	F00.00~F25.xx	0.01	25.00	○
F25.17	User's Function Code 18	F00.00~F25.xx	0.01	25.00	○
F25.18	User's Function Code 19	F00.00~F25.xx	0.01	25.00	○
F25.19	User's Function Code 20	F00.00~F25.xx	0.01	25.00	○
F25.20	User's Function Code 21	F00.00~F25.xx	0.01	25.00	○
F25.21	User's Function Code 22	F00.00~F25.xx	0.01	25.00	○
F25.22	User's Function Code 23	F00.00~F25.xx	0.01	25.00	○
F25.23	User's Function Code 24	F00.00~F25.xx	0.01	25.00	○
F25.24	User's Function Code 25	F00.00~F25.xx	0.01	25.00	○
F25.25	User's Function Code 26	F00.00~F25.xx	0.01	25.00	○
F25.26	User's Function Code 27	F00.00~F25.xx	0.01	25.00	○
F25.27	User's Function Code 28	F00.00~F25.xx	0.01	25.00	○
F25.28	User's Function Code 29	F00.00~F25.xx	0.01	25.00	○
F25.29	User's Function Code 30	F00.00~F25.xx	0.01	25.00	○

F26—Failure record function parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F26.00	The last fault record	0:no fault 1:overcurrent at acceleration 2:overcurrent at deceleration 3:overcurrent at constant speed 4:overvoltage at acceleration	1	0	*

		5: overvoltage at deceleration 6: overvoltage at constant speed 7: overvoltage at motor halt 8: undervoltage at run 9: drive overload protection 10: motor overload protection 11: motor underload protection 12: input phase loss 13: output phase loss 14: inverter module protection 15: short circuit to earth at run 16: short circuit to earth when power on 17: drive overheat 18: external device fault 19: current detect circuit fault 20: external interference 21: internal interference—main clock etc 22: PID provide lost 23: PID feedback lost 24: PID error value abnormal 25: terminal protection activate 26: communication fault 27~29: reserve 30: EEROM read-write error 31: temperature detection disconnection 32: auto-tuning fault 33: contactor abnormal 34: factory fault 1 35: factory fault 2 36: capacitor overheat (few mode with overheat protection) 37: encoder disconnection 38: over-speed protection 39: protection when speed deviation is too large 40~50: Reserved			
F26.01	The last two fault records	The same as above	1	0	*
F26.02	The last three fault records	The same as above	1	0	*
F26.03	The last four fault records	The same as above	1	0	*
F26.04	Setup frequency at the last one fault	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	*
F26.05	Output frequency at the last one fault	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	*
F26.06	Output current at the last one fault	0.0~6553.5A	0.1A	0.0A	*
F26.07	DC busbar voltage at the last one fault	0.0~6553.5V	0.1V	0.0V	*
F26.08	Module temperature at the last one fault	0~125℃	1℃	0℃	*
F26.09	Input terminal status at the last one fault	0000~FFFF	1	0000	*
F26.10	Accumulated run time at the last one fault	0~65535h	1h	0h	*
F26.11	Setup frequency at the last two fault	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	*
F26.12	Output frequency at the last two fault	0.00Hz~Upper limiting frequency	0.01Hz	0.00Hz	*
F26.13	Output current at the last	0.0~6553.5A	0.1A	0.0A	*

	two fault				
F26.14	DC busbar voltage at the last two fault	0.0~6553.5V	0.1V	0.0V	*
F26.15	Module temperature at the last two fault	0~125℃	1℃	0℃	*
F26.16	Input terminal status at the last two fault	0000~FFFF	1	0000	*
F26.17	Accumulated run time at the last two fault	0~65535h	1h	0h	*

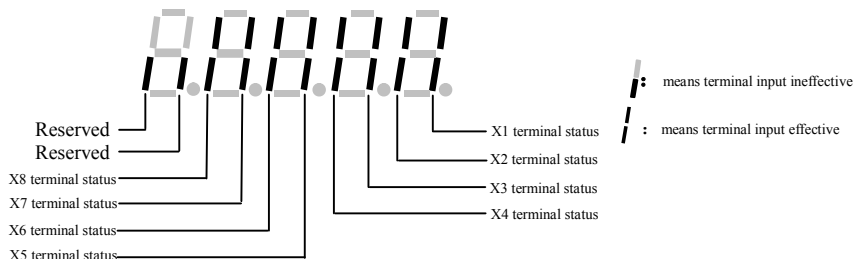
F27—Password and manufacturer function parameter group

Function Code	Name	Set Range	Min. Unit	Factory Default	Modification
F27.00	User password	00000~65535	1	00000	○
F27.01	Manufacturer password	00000~65535	1	00000	○

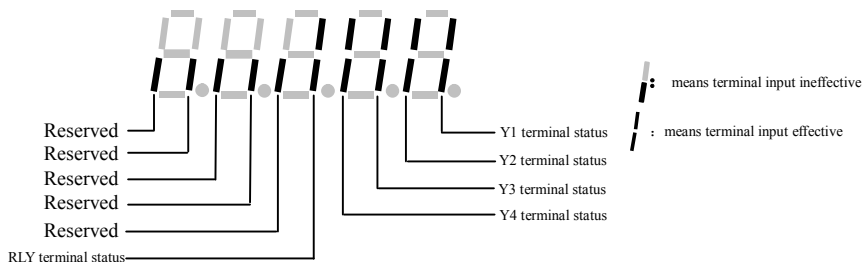
C—Monitor Function Parameter Group

Function Code	Name	Explanation	Min. Unit	Factory Default	Modification
C-00	Display the parameter of F00.01, F00.07 definition				
C-01	Display the parameter of F00.02, F00.08 definition				
C-02	Display the parameter of F00.03, F00.09 definition				
C-03	Display the parameter of F00.04, F00.10 definition				
C-04	Display the parameter of F00.05, F00.11 definition				
C-05	Display the parameter of F00.06, F00.12 definition				

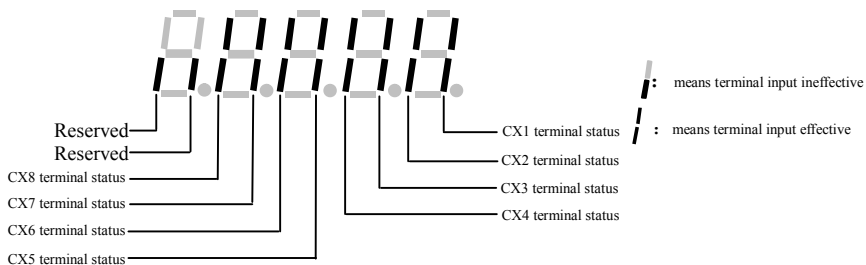
(1)corresponding relationship of input terminal status as below:



(2)Corresponding relationship of standard output terminal status as below:



(3)Corresponding relationship of communication virtual input terminal status as below:



(4) Control cabinet status:

- BIT0: 1= busbar voltage setup
- BIT1: 1= common run command valid
- BIT2: 1= jog run command valid
- BIT3: 1= control cabinet is running
- BIT4: 1= current run direction to reverse
- BIT5: 1= run command direction to reverse
- BIT6: 1= deceleration brake period
- BIT7: 1= motor acceleration period
- BIT8: 1= motor deceleration period
- BIT9: 1= control cabinet alarm
- BIT10: 1= control cabinet fault
- BIT11: 1= current limited period
- BIT12: 1= fault self-recovery period
- BIT13: 1= self-adjusting period
- BIT14: 1= free halt status
- BIT15: 1= speed tracking start

6.3 Detailed function specification for F22 and F23 group

6.3.1 Machine energy saving parameter group 1: F22

The parameter function code of this chapter listed content as below:

Code	Name	Set range or explanation	Factory Default
F22.00	Injection molding machine frequency provision mode	Range: 0~3	1

Please confirm the frequency provision mode under energy saving work-status, users can set different machine frequency-provision user customized mode according to different ambient or mould.

0: Nonuse machine frequency provision user customized mode

If the machine's flow or pressure signal is outputted by 0~10V or 0~20mA, using the ordinary AI terminal is OK, F06 group parameters can realize the function of frequency provision.

1: Choose machine frequency provision user customized mode 1

If the machine's flow or pressure signal is outputted by 0~10V or 0~1A, and is inputted by analog input terminal, then the machine frequency will be set by the definition of F22.01.

2: Choose machine frequency provision user customized mode 2

If the machine's flow or pressure signal is outputted by 0~10V or 0~1A, and is inputted by analog input terminal, then the machine frequency will be set by the definition of F22.04.

3: Choose machine frequency provision user customized mode 3

If the machine's flow or pressure signal is outputted by 0~10V 或 0~1A, and is inputted by analog input terminal, then the machine frequency will be set by the definition of F22.07.

F22.01	Machine frequency provision user customized mode 1	Range: LED units digit: 0~2 LED tens digit: 0~2 LED hundreds digit: 0~2 LED thousands digit: 0,1	0001
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LED units digit: flow and pressure input selection

0: flow and pressure signal are all valid

1: only flow signal is valid

2: only pressure signal is valid

The units digit of this parameter decides if the flow and pressure signals can be acted as frequency provision. When you choose either flow signal or pressure signal to act as frequency provision, the other signal will no more have effect on the frequency.

LED tens digit: Flow provision curve selection

0: Molding machine frequency curve 1

1: Molding machine frequency curve 2

2: Molding machine frequency curve 3

The tens digit of this parameter decides the frequency curve for amending flow signal. The frequency curve turns the flow signal into analog quantity inside the machine. The product by this per unit value and upper limiting frequency F01.11 decide the corresponding setting frequency component of flow signal.

LED hundreds digit: Pressure provision curve selection

0: Molding machine frequency curve 1

1: Molding machine frequency curve 2

2: Molding machine frequency curve 3

The hundreds digit of this parameter decides the frequency curve for amending pressure signal. The frequency curve turns the pressure signal into analog quantity inside the machine. The product by this per unit value and upper limiting frequency F01.11 decide the corresponding setting frequency component of pressure signal.

LED thousands digit: selection of relationship between flow and pressure

0: $K1 \times \text{flow} + K2 \times \text{pressure}$

1: Max (Pressure, Flow)

The thousands digit of this parameter chooses the flow signal and pressure signal to act as the frequency provision at the same time. If only choosing either flow signal or pressure signal to act as the frequency provision, this setting will be invalid.

F22.02	User 1 flow coefficient K1	Range: 0.0%~100.0%	50.0%
F22.03	User 1 pressure coefficient K2	Range: 0.0%~100.0%	50.0%

When set F22.00=1, and the units digit of F22.01 is 0, flow signal and pressure signal will act as the proportion coefficient of frequency provision.

F22.04	Machine frequency provision user customized mode 2	Range: LED tens digit: 0~2 LED tens digit: 0~2 LED hundreds digit: 0~2 LED thousands digit: 0、1	0000
F22.05	User 2 flow coefficient K1	Range: 0.0%~100.0%	50.0%
F22.06	User 2 pressure coefficient K2	Range: 0.0%~100.0%	50.0%

When set F22.00=2, and the units digit of F22.01 is 0, flow signal and pressure signal will act as the proportion coefficient of frequency provision.

F22.07	Machine frequency provision user customized mode 3	Range: LED units digit: 0~2 LED tens digit: 0~2 LED hundreds digit: 0~2 LED thousands digit: 0、1	0000
F22.08	User 3 flow coefficient K1	Range: 0.0%~100.0%	50.0%
F22.09	User 3 pressure coefficient K2	Range: 0.0%~100.0%	50.0%

When set F22.00=3, and the units digit of F22.01 is 0, flow signal and pressure signal will act as the proportion coefficient of frequency provision.

F22.10	Molding machine frequency curve 1 input point A0	Range: 0.0%~100.0%	0.0%
F22.11	Molding machine frequency curve 1 input point A0's corresponding per unit value B0	Range: 0.0%~100.0%	0.0%
F22.12	Molding machine frequency curve 1 input point A1	Range: 0.0%~100.0%	25.0%
F22.13	Molding machine frequency curve 1 input point A1's corresponding per unit value B1	Range: 0.0%~100.0%	25.0%
F22.14	Molding machine frequency curve 1 input point A2	Range: 0.0%~100.0%	50.0%
F22.15	Molding machine frequency curve 1 input point A2's corresponding per unit value B2	Range: 0.0%~100.0%	50.0%
F22.16	Molding machine frequency curve 1 input point A3	Range: 0.0%~100.0%	100.0%
F22.17	Molding machine frequency curve 1 input point A3's corresponding per unit value B3	Range: 0.0%~100.0%	100.0%

F22.10~F22.17 can define the frequency curve 1. Frequency curve turns the external analog signal into analog quantity inside the machine. The product by this per unit value and upper limiting frequency F01.11 decides the corresponding setting frequency component of signal.

6.3.2 Machine energy saving parameter group 2: F23

F23.00	Molding machine frequency curve 2 input point A0	Range: 0.0%~100.0%	0.0%
F23.01	Molding machine frequency curve 2 input point A0's corresponding per unit value B0	Range: 0.0%~100.0%	0.0%
F23.02	Molding machine frequency curve 2 input point A1	Range: 0.0%~100.0%	25.0%
F23.03	Molding machine frequency curve 2 input point A1's corresponding per unit value B1	Range: 0.0%~100.0%	25.0%
F23.04	Molding machine frequency curve 2 input point A2	Range: 0.0%~100.0%	50.0%
F23.05	Molding machine frequency curve 2 input point A2's corresponding per unit value B2	Range: 0.0%~100.0%	50.0%
F23.06	Molding machine frequency curve 2 input point A3	Range: 0.0%~100.0%	100.0%
F23.07	Molding machine frequency curve 2 input point A3's corresponding per unit value B3	Range: 0.0%~100.0%	100.0%

F23.00~F23.07 can define the frequency curve 2. Frequency curve turns the external analog signal into analog quantity inside the machine. The product by this per unit value and upper limiting frequency F01.11 decides the corresponding setting frequency component of signal.

F23.08	Molding machine frequency curve 3 input point A0	Range: 0.0%~100.0%	0.0%
F23.09	Molding machine frequency curve 3 input point A0's corresponding per unit value B0	Range: 0.0%~100.0%	0.0%
F23.10	Molding machine frequency curve 3 input point A1	Range: 0.0%~100.0%	25.0%

F23.11	Molding machine frequency curve 3 input point A1's corresponding per unit value B1	Range: 0.0%~100.0%	25.0%
F23.12	Molding machine frequency curve 3 input point A2	Range: 0.0%~100.0%	50.0%
F23.13	Molding machine frequency curve 3 input point A2's corresponding per unit value B2	Range: 0.0%~100.0%	50.0%
F23.14	Molding machine frequency curve 3 input point A3	Range: 0.0%~100.0%	100.0%
F23.15	Molding machine frequency curve 3 input point A3's corresponding per unit value B3	Range: 0.0%~100.0%	100.0%

F23.08~F23.15 can define the frequency curve 3. Frequency curve turns the external analog signal into analog quantity inside the machine. The product by this per unit value and upper limiting frequency F01.11 decides the corresponding setting frequency component of signal.

7 Troubleshooting

7.1 Fault Alarm and Troubleshooting

EN606 series control cabinet's fault contents and troubleshooting is shown in Table 7-1, including fault and alarm two main types. For example when fault occurs in the control cabinet, it will display E-XX. For alarm type, it will show A-XX. After fault occurs, fault type should be recorded in group F26 in detail, and if alarm occurs, alarm status will keep displaying until alarm cause solved, alarms status will not be stored to group F26. Some reserved fault codes are prepared for the continuous upgrading of intelligent automatic diagnosis function. Fault occurs during operating of the control cabinet, it should be processed according to Table 7-1. Fault phenomenon should be recorded in detail. For technical assistance, please contact our after-sale service and technical support Department or local agent.

Table 7-1 Fault Alarms and troubleshooting

Failure code	Failure type	Possible reasons	Troubleshooting
E-01	Acc overcurrent	Too short Acc time	Prolong accelerating time
		Improper V/F curve	Adjust V/F curve or torque boost
		Restart the motor in running when momentary stop occurs	Set up start mode as speed tracking restart
		Low power voltage	Check the input power supply
		Control cabinet capacity is too low	Select Control cabinet with proper capacity.
E-02	Dec overcurrent	Dec time is too short	Please prolong Dec time
		Potential load or load inertia is too big	Add suitable braking unit and increase the power of braking resistor
		Low power range of control cabinet	Select control cabinet with large capacity
E-03	Overcurrent at constant speed running	Load change suddenly or abnormal	Check or reduce the load
		Acc or Dec time are short	Prolong Acc or Dec time properly
		Low power voltage	Check the input power supply
		Low power range of control cabinet	Select control cabinet with large capacity
E-04	Acc over voltage	Input voltage abnormal	Check input power supply
		Acc time is too short	Prolong Acc time properly

		Restart the motor in running when momentary stop occurs	Set up start mode as speed tracking restart
E-05	Dec over voltage	Dec time is too short	Prolong Dec time
		Potential load or load inertia is too big	Add suitable braking unit and increase the power of braking resistor
E-06	Over voltage at constant speed running	Input voltage abnormal	Check input power supply
		Acc or Dec time are short	Prolong Acc or Dec time properly
		Abnormal change of input voltage	Add ac input reactor
		load inertia is too big	Add braking unit
E-07	Over voltage when stop	Input voltage abnormal	Check input power supply or ask for service
E-08	Low voltage when operating	Input voltage is too low	Check input power supply
E-09	Control cabinet overload	Too short Acc time	Prolong Acc time
		DC injection braking is too large	Reduce DC injection braking current, prolong braking time
		Improper V/F curve	Adjust V/F curve or torque boost
		Restart the motor in running when momentary stop occurs	Set up start mode as speed tracking restart
		Input voltage is too low	Check input power supply
		Load is too heavy	Select control cabinet with large capacity
E-10 (A-10)	Motor overload protection	Improper V/F curve	Adjust V/F curve or torque boost
		Input voltage is too low	Check input power supply
		General motor runs with heavy load at low speed for long term	Select special motors for long term low speed running
		Wrong setting of Motor overload protection factor	Setup motor overload protection factor right
		Motor choked or sudden change of load	Check load
E-11 (A-11)	Motor underload protection	Operating current of control cabinet less than underload threshold	Confirm whether the parameters F19.08 and F19.09 are reasonable or not
		Load divorced from motor	Check whether the load divorced from the motor or not
E-12	Phase losing at input side	The three phase input power abnormal	Check the three phase input power line are break or poor contact

		Power board abnormal	Ask for service from manufacturer or agent
		Control board abnormal	Ask for service from manufacturer or agent
E-13	Phase losing at output side	The cable between control cabinet and motor abnormal	Check the motor cable
		Three phase load are highly unsymmetric when operating	Check the three phase coil are symmetric or not
		Power board abnormal	Ask for service from manufacturer or agent
		Control board abnormal	Ask for service from manufacturer or agent
E-14	Inverting module protection	Instantaneous overcurrent inside	Refer to overcurrent solutions
		Short circuits in output 3 phase or earthing	Re-wiring
		Blocked air duct or broken fan	Clear air duct or replace fan
		Ambient temperature is too high	Lower the ambient temperature
		Connecting wire or insert on control board loose	Check and connect the wire again
		Abnormal current wave caused by missing phase at output etc.	Check wiring
		Assistant power supply damaged and drive voltage lacking	Ask for service from manufacturer or agent
		Control board abnormal	Ask for service from manufacturer or agent
E-15	Short circuit to earth when operation	Motor short circuit to earth	Replace cable or motor
E-16	Short circuit to earth when power on	Motor short circuit to earth	Replace cable or motor
		Wrong connection of control cabinet power supply and motor cable	Replace cable or motor
E-17 (A-17)	Control cabinet overheat	Alarm A-17 last over 30mins	Clear air doctor improve the ventilation conditions
		Air duct blocked	Clear air doctor improve the ventilation conditions
		Too high ambient temperature	Improving the ventilation conditions and decreasing the carrier frequency
		Fans broken	Replace fans
		External fault emergency stop terminal closed	Open the terminal after external fault solved

E-18 (A-18)	External device failure	External fault emergency stop terminal closed	Open the terminal after external fault solved
E-19	Current detecting circuit fault	Loose wiring or terminal connections on control board	Check and connect the wire again
		Damaged auxiliary power source	Ask for service from manufacturer or agent
		Damaged Hall component	Ask for service from manufacturer or agent
		Abnormal amplifier circuit	Ask for service from manufacturer or agent
E-20	External interference fault	External disturbance serious	Press“STOP/RESET”Button to reset or add external EMC filter
E-21	Internal interference fault	Internal disturbance serious	Ask for service from manufacturer or agent if the fault still occurs after power off and restart
E-22 (A-22)	PID provision loss	PID Provision loss threshold setting is	Reset relevant parameters
		PID provision disconnection	Check PID external provision wiring
		Abnormal control board	Ask for service from manufacturer or agent
E-23 (A-23)	PID feedback loss	PID Feedback loss threshold setting is	Reset relevant parameters
		PID feedback disconnection	Check PID external feedback wiring
		Abnormal control board	Ask for service from manufacturer or agent
E-24 (A-24)	PID error amount abnormal	PID error abnormal detection threshold setting is not reasonable	Reset relevant parameters
		Abnormal control board	Ask for service from manufacturer or agent
E-25	Start terminal protection	Terminal command effective when power on	Check the external input terminal
E-26 (A-26)	Communication failure	Baud rate set improperly	Set baud rate properly
		Serial port communication error	Press“STOP/RESET”Button to reset or ask for service
		Failure and Alarm parameters set improperly	Modify F05.04、F05.05
		Upper device doesn't work	Check whether upper device work and wiring is correct or not
E-27	Reserved		

E-28	Reserved		
E-29	Reserved		
E-30 (A-30)	E ² PROM read and write incorrect	Read and write control parameters mistake	Press“STOP/RESET”Button to reset or ask for service
E-31	Temperature detecting disconnection	Temperature sensor fault	Ask for service from manufacturer or agent
		Temperature detection circuit abnormal	Ask for service from manufacturer or agent
E-32	Auto-tuning error	Improper setting of motor rated parameters	Set rated parameters according to the motor's nameplate
		Current abnormal during auto-tuning	Choose proper control cabinet for motor
		Wrong motor wiring	Check motor three phase connection
E-33 (A-33)	Contactor abnormal	Power board abnormal	Ask for service from manufacturer or agent
		Contactor abnormal	Replace contactor
E-34	Internal fault1	Debugging use in factory	
E-35	Internal fault2	Debugging use in factory	
E-36 (A-36)	Bus capacitor overheating	Poor cooling environment	Improve the ventilation conditions
		Control cabinet capacity too low	Choose proper control cabinet for motor
		Bus capacitor cooling fan damaged	Replace Bus capacitor cooling fan
E-37	Encoder error	Encoder broken or signal line problem	Check encoder and wiring
E-38	Over speed protection	Acc time too short	Prolong Acc time
		Control cabinet power is too low	Select control cabinet with large capacity
E-39	Speed error too large protection	Acc time too short	Prolong Acc time
		Control cabinet power is too low	Select control cabinet with large capacity
E-40 ~ E-50	Reserved		
A-51	The main and auxiliary frequency provision channel exclusiveness alarm	Parameters setting error	F01.00 and F01.03cannot be set to choosing the same channel (9: Except for terminal encoder provision)
A-52	Terminal function exclusiveness alarm	Terminal function parameters setting repeatedly	Check the terminal function settings

7.2 Failure record lookup

This series control cabinet can record latest 4 failure codes and operating parameters of the latest two failures. Looking for these information can do good to finding out the failure reason.

Failure information store in Group F26. Please enter into F26 Group to look for information.


Code	Content	Code	Content
F26.00	Previous 1 failure record	F26.09	Input terminal state at Previous
F26.01	Previous 2 failure record	F26.10	Total running time at Previous 1
F26.02	Previous 3 failure record	F26.11	Set Freq. at Previous 2 failure
F26.03	Previous 4 failure record	F26.12	Output Freq. at Previous 2
F26.04	Set Freq. at Previous 1 failure	F26.13	Output current at Previous 2
F26.05	Output Freq. at Previous 1 failure	F26.14	DC Bus voltage at Previous 2 failure
F26.06	Output current at Previous 1 failure	F26.15	Module temperature at Previous 2 failure
F26.07	DC Bus voltage at Previous 1 failure	F26.16	Input terminal state at Previous 2 failure
F26.08	Module temperature at Previous 1 failure	F26.17	Total running time at Previous 2 failure

7.3 Fault Reset



- (1) Before reset you must find out reason of failure downright and eliminate it, otherwise may cause permanent damage to the control cabinet.
- (2) Please look for failure reason if it cannot be reset or occurs again after resetting, otherwise it will cause control cabinet damage due to continuous resetting.
- (3) Please delay 5mins to reset fault when overload and overheat fault occur.
- (4) For E-14 fault, Reset button is invalid. Please check the motor wiring after power off and restart the control cabinet.
- (5) E-16 occurs when power on, Please not operate it directly after resetting. Should confirm the input and output cable are in correct connection.

To resume normal operating when failure occurs in control cabinet, please choose the following operations:

- (1) Select one of X1~X8 terminals as External Reset terminal, Connect it to COM and disconnect.
- (2) When failure code occurs, Press  Button to reset after confirming that it can be reset.
- (3) Communication Reset. Please refer to annex communication descriptions.
- (4) Cut off power supply.

7.4 Alarm Reset

When alarm occurs, it should eliminate alarm causes firstly, otherwise the alarm cannot be eliminated or reset by Reset button.

8 Preservation and maintenance

8.1 Routine maintenance

Please assemble and operate the control cabinet according to instructions in the “Service Manual” strictly. Potential hazards exist due to aging, wear and tear of inverter internal components as well as environmental influences to the control cabinet, such as temperature, humidity, vibration etc. Therefore, daily inspection, periodic preservation and maintenance must be performed to the control cabinet which ensure that the stable operation with high performance for a long time.

Table 8-1 Daily inspections and maintenance items

Inspect period		Inspections
Daily	periodic	
√		Daily cleaning: (1) Inverter should be maintained in a clean state (2) Clean up the dust on the surface of the control cabinet, to prevent the dust into the control cabinet internal (especially metal dust).
	√	Check the air duct, and regularly clean.
	√	Check whether the screws is loose
	√	Check whether the control cabinet is corrode
√		Whether the control cabinet installation environment changes
√		Whether the control cabinet cooling fan is working properly
√		Whether the control cabinet is overheating
√		When running whether voice of motor abnormal change.
√		Whether occur abnormal vibration when motor running
	√	Check wiring terminals have arc trace
	√	The main circuit insulation test

Recommend to inspect with following instrument:

Input voltage: electric voltmeter; output voltage: rectifying voltmeter; input output current: pincers ammeter.

8.2 Replacement of control cabinet Consumable Parts

Some component parts in the Control cabinet will be abraded or wear descending performance for long-term usage, to assure that the Control cabinet can run stably and reliably, it is recommended to perform defending maintenance and replace corresponding parts if necessary.

(1) Cooling fan

Abnormal noise, even oscillation may take place if the fan has wearing and tearing of the bearing, aging of the fan vanes. Replacing cooling fan should be considered.

(2) Filter Electrolyte capacitors

High ambient temperature and aging of electrolyte due to large pulse current induced by frequent leaping changes of loads may cause electrolyte capacitors broken. At this time, please replace the electrolyte capacitors.

8.3 Warranty Of the Control Cabinet

(1) Free maintenance will be provided within warranty time if failure caused by control cabinet itself takes place under normal conservation and usage. Warranty time please check warranty card. Maintenance will be charged when exceeding warranty time.

(2) Even though within warranty time, maintenance will also be charged in the following situations:

1>If did not use the control cabinet according to 《service manual》 strictly or did not use it under ambient demanded in 《service manual》, which cause failure;

2>Failure caused by applying the inverter to non-normal function;

3> Failure caused by self-repair, refit which is not already allowed;

4> Damage caused by bad keeping, falling down from high place or other extrinsic factor after purchasing the inverter;

5> Failure caused by natural disaster or its reason such as unwonted voltage, thunderbolt, water fog, fire, salt corroding, gas corroding, earthquake and storm etc.;

6> Make bold to tear up product logo (such as: nameplate etc.); Body serial number don't accord with that in repair guarantee card.

(3)The service fee will be charged according to the actual costs. If there is any contract, the contract prevails.

(4) Any questions please feel free contact local agent or our company directly.



Note

Lifetime repair service with fee will be provided even though exceeds warranty time.

8.4 Storage of Control Cabinet

Please pay attention to following points for temporary storage and long-term storage after purchasing the control cabinet.

- (1) Avoid storing the inverter in high temperature, moist, dust and metal powder place, assuring in good ventilation condition.
- (2) Long term storage can result in performance deterioration of electrolyte capacitor. Electrolyte capacitor shall be energized once per year. Energized time of the control cabinet should not less than 1 hour. Input voltage shall be increased to rated value by voltage regulator slowly and gradually. 250W voltage regulator is enough.

The control cabinet can running without load.

Pursuing forever powerful technology

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