Preamble

Thank you for choosing A900 high-performance vector control inverter independently developed by our company.

A900 high-performance vector control inverter uses advanced flux vector control technology, the motor parameters are still not sensitive to the premise of the high-performance motor control. With full frequency, high torque output and fast response, excellent load compatibility, high speed control accuracy and good reliability, it is ideal for high performance general purpose inverters that truly meet the high field requirements。

A900 high-performance vector control inverter is the general needs of customers and industry needs an organic combination of products, to provide customers with a practical PID regulator and constant pressure water supply, simple PLC, programmable input and output terminal control, remote synchronization control , The pulse frequency given and other special inverter control and other powerful features for the equipment manufacturing and automation engineering to provide our customers with high integration of integrated solutions to reduce system costs and improve system reliability with high the value of.

This manual has some guidance for the user's equipment installation, operation parameter setting, abnormal diagnosis, routine maintenance and safe use. For proper installation and operation of this series of products, please read this manual thoroughly before using the A900 High Performance Vector Control Inverter. This brochure is sent with our products. Please keep it for later use.

If you still have problems that can not be solved during the operation of this inverter, please contact the distributors in our company or contact our customer service center directly.

The company focus on technological innovation, such as the contents of this manual are subject to change without notice.

catalogue

Chapter One Safety precautions and product type

1.1 Safety Precautions

▲ can not be installed in an atmosphere containing explosive gas, otherwise it may cause explosion hazard.

▲ must be qualified personnel to carry out wiring work, or there is the danger of electric shock. Make sure that the input power supply is completely disconnected. Otherwise, there is a danger of electric shock.

▲ After the device is powered on, do not touch the control terminals, internal circuit boards and their components, otherwise there is a risk of electric shock.

▲ When using the inverter grounding terminal, please according to the national electrical safety regulations and other relevant standards, correct and reliable grounding.

▲ Turn off the power, do not touch the circuit board and any components within 5 minutes after the keyboard display goes out, and you must confirm that the discharge has been completed in the instrument before performing the operation inside the machine. Otherwise, there is a risk of electric shock.

▲ AC power must never be connected to the inverter output terminals (U, V, W), the power line can only be connected to R, S, T (or single-phase power inverter L1, L2) terminals.

Human body static electricity may damage the internal MOS devices, if not take anti-static measures, do not touch the printed circuit board and IGBT and other devices.

▲ Do not drop screws, gaskets and other metal foreign objects into the inverter, otherwise there is danger of fire and damage to the inverter.

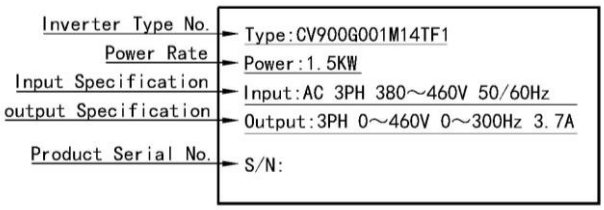
▲ AC 220V must never be connected to the inverter internal control terminals, otherwise it will seriously damage the inverter.

▲ If there is over-current protection after starting, please make sure the external wiring is correct, and then turn on the power.

▲ Do not shut down the way (power) shut down, wait for the motor to stop before turning off the power.

▲ Do not install the device in direct sunlight.

1.2 Inverter Model Description：



1.3 Frequency inverter series type:

A900 series inverter voltage level are 220V and 380V, adaptive motor power range: 0.75KW ~ 11KW. A900 series inverter models

As shown in Table 1-2。

Voltage level	Inverter model	Rated Capacity（KVA）	Rated output current（A）	Fit motor（KW）
220V single-phase	A900-2TR75G	0.75	2.4	0.75
	A900-2T0015G	1.5	7	1.5
	A900-2T0022G	2.2	10	2.2
380V three-phase	A900-4TR75G	0.75	2.5	0.75
	A900-4T0015G	1.5	3.7	1.5
	A900-4T0022G	2.2	5	2.2
	A900-4T0040G/0055P	4	9	4
	A900-4T0055G	5.5	13	5.5
	A900-4T0075G/0110P	7.5	17	7.5
	A900-4T0110G	11	24	11

1.4Product Specification

Table 1-2 Models of the A900 High Performance Vector

enter	Rated voltage, frequency	Three-phase (4T series) 380V; 50 / 60HZ Three-phase (2T series) 220V: 50 / 60HZ	
	Allowable voltage range	Three-phase (4T series) 320V ~ 460V single-phase (2T series) 160V ~ 260V	
Output	Voltage	4T series; 0 ~ 460V 2T series; 0 ~ 260V	
	frequency	Low frequency mode: 0 ~ 300HZ High frequency mode: 0 ~ 3000HZ	
	Overload capacity	G-type machine: 110% long-term 150% 1 minute 180% 5 seconds P-type machine: 105% long-term 120% 1 minute 150% 1 second	
control method		V / F control, advanced V / F control, V / F separation control, current vector control	
Control features	Frequency Set the resolution	Analog input	0.1% of the maximum output frequency
		Digital setting	0.01HZ
	Frequency accuracy	Analog input	Within 0.2% of the maximum output frequency
		Digital input	Set the output frequency within 0.01%
	V / F control	V / F curve (voltage frequency characteristics)	Reference frequency 5 ~ 600HZ arbitrarily set, multi-point V / F curve arbitrarily set, but also choose constant torque, low torque reduction 1, low torque reduction 2, square torque and other fixed curve
		Torque boost	Manual setting: 0.0 ~ 30.0% of rated output Automatic boost: According to the output current and motor parameters automatically determine the lifting torque
		Automatic current limiting and voltage limiting	The motor stator current and voltage are automatically detected during acceleration, deceleration or steady operation, and are suppressed to within the allowable range according to the unique algorithm to minimize the possibility of system fault tripping

Control features	No sense of vector control	Voltage and frequency characteristics	Output voltage to frequency ratio is automatically adjusted based on motor parameters and unique algorithms
		Torque characteristics	Starting torque: 150% of rated torque at 3.0Hz (VF control) 180% of rated torque at 0.5Hz (PG current vector control, flux vector control) 180% of rated torque at 0.05Hz (with PG current vector control) Running speed steady-state accuracy: ≤ ± 0.2% rated synchronous speed Speed fluctuation: ≤ ± 0.5% Rated synchronous speed Torque response: ≤ 50ms PG vector control, PG vector control, flux vector control ≤ 20ms
		Motor parameters self-test	Without any restrictions, the parameters of the motor can be automatically detected in the static and dynamic motor, in order to obtain the best control effect
		Current and voltage suppression	Full current closed-loop control, completely avoid the current impact, with a perfect over-current over-voltage suppression
	Undervoltage suppression during operation	Especially for users with low grid voltage and frequent grid voltage fluctuation, the system can maintain the longest possible running time according to the unique algorithm and residual energy distribution strategy even if the voltage is below the allowable voltage range	
Typical function	Multi-speed and swing frequency operation	16 programmable multi-speed control, a variety of operating modes are optional. Swing frequency operation: preset frequency, adjustable center frequency, state memory and recovery after power off	
	PID control RS485 communication	Built-in PID controller (presettable frequency) Standard configuration RS485 communication function, a variety of communication protocols optional, with linkage synchronization control function	
	Frequency setting	Analog input	DC voltage 0 ~ 10V, DC current 0 ~ 20mA (upper and lower limit optional)
		Digital input	Operation panel setting, RS485 interface setting, UP / DW terminal control, also can be combined with the analog input multiple settings
	output signal	Digital output	2 OC output and one fault relay output (TA, TB, TC), up to 16 meanings
		Analog output	2 analog signal output, the output range of 0 ~ 20mA or 0 ~ 10V flexible set to achieve the set frequency, the output frequency and other physical output
	Automatic voltage	According to the need to choose dynamic voltage regulator, static voltage	

	regulation		regulator, unregulated three ways to get the most stable operating results
	Increase, deceleration time setting		0.1S ~ 3600min can be set continuously, S-type, linear model optional
	brake	Energy consumption brake	Energy consumption braking starting voltage, hysteresis voltage and energy consumption braking rate continuously adjustable
		DC braking	Stop DC braking start frequency: 0.00 ~ 【F0.16】 upper limit frequency Braking time: 0.0 ~ 100.0s; Braking current: 0.0% ~ 150.0% of rated current
		Flux braking	0 ~ 100 0: invalid
	Low noise operation		Carrier frequency 1.0KHZ ~ 16.0KHZ continuously adjustable, to minimize motor noise
	Speed tracking speed restart function		It can realize the smooth restarting of the motor during operation and the restarting function of instantaneous stop
	counter		One internal counter to facilitate system integration
	Run the function		Upper and lower limit frequency setting, frequency jump operation, reverse run limit, slip frequency compensation, RS485 communication, frequency increment, decrement control, fault self-recovery operation

display	Operation panel display	Operating status	Output frequency, output current, output voltage, motor speed, set frequency, module temperature, PID setting, feedback amount, analog input and output, etc.
		Alarm content	Six recent fault records, the latest fault trip output frequency, set frequency, output current, output voltage, DC voltage, temperature and other six modules operating temperature records
Protective function			Overcurrent, over voltage, undervoltage, module fault, electronic thermal relay, overheating, short circuit, input and output phase loss, abnormal tuning of motor parameters, internal memory failure, etc.
surroundi	Ambient temperature		-10 ℃ ~ +40 ℃ (ambient temperature 40 ℃ ~ 50 ℃, please use derating)
	Ambient humidity		5% ~ 95% RH, no condensation of water beads
	surroundings		Indoor (no direct sunlight, no corrosion, flammable gas, no oil mist, dust, etc.)
	altitude		Derate the use of more than 1,000 meters, every 1000 meters derated 10%

ngs		
structure	Degree of protection	IP20
	cooling method	Air-cooled, with fan control
Installation method		Wall-mounted, cabinet type

Chapter II Installation and wiring of inverter

Danger

1. Before wiring, make sure the input power is off.
   Risk of electric shock and fire.
2. Please electrical engineering professionals for wiring operations.
   Risk of electric shock and fire.
3. Grounding terminal must be reliably grounded.
   (380V class: special third kind of grounding)
Risk of electric shock and fire.
4. Emergency stop terminal connected, be sure to check the action is valid.
   There is a risk of injury. (Wiring responsibility borne by the user)
5. Do not touch the output terminal directly. The inverter output terminal is connected directly with the motor. Do not short the output terminals.
Risk of electric shock and short circuit.
6. Before power on, be sure to install the terminal cover. When removing the cover, be sure to disconnect the power supply first.
   Risk of electric shock.
7. Cut off the power, and then wait for 5 to 8 minutes to let the machine basically left the net electricity, before inspection and maintenance.
Electrolytic capacitors on the risk of residual voltage.
8. non-professional and technical personnel, please do not carry out inspection and maintenance work.

Risk of electric shock.

note

1. Please confirm whether the line power supply voltage and the inverter's rated input voltage are the same.
Risk of injury and fire.
2. Connect the braking resistor or brake unit according to the wiring diagram.
Danger of fire.
3. It is best to use the specified torque screwdriver and wrench to tighten the terminal.
Danger of fire.
4. Do not connect the input power cable to the output U, V, W terminals.
Voltage applied to the output terminals can cause internal damage to the inverter
5. Do not disassemble the front cover, wiring only need to remove the terminal cover.
It may damage the inverter.

2.1 Use environment

1 No corrosive gases, vapors, dust and oily dust, direct sunlight。

2 No floating dust and metal particles place。

3 Ambient humidity 20% ~ 90% RH。

4 Vibration is less than 5.9m / s2 (0.6g)

5 No electromagnetic interference places。

6 Use the ambient temperature of -10 ℃~ 40 ℃, if the ambient temperature exceeds 40 ℃ above, please be placed in a well-ventilated place。

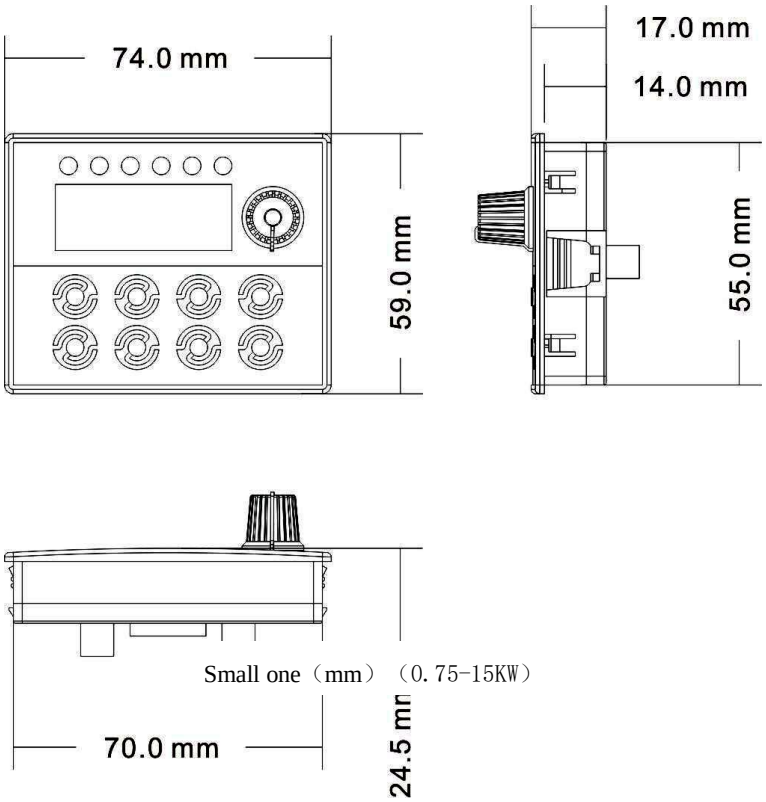
7 Non-standard environment, please use electric control box or remote control, must pay attention to ventilation and cooling. The life expectancy of the inverter is related to the installation environment and the use thereof. However, even if it meets the requirements of the installation environment for a long time, the life of the electrolytic capacitor does not exceed 5 years and the life of the cooling fan is about 3 years. We recommend that you

update or maintain the drive in advance.

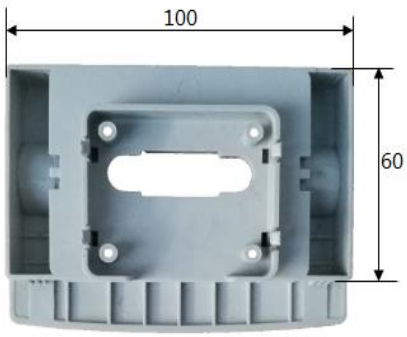
2.2 Installation direction and space

In order for the cooling cycle to work well, the drive must be mounted vertically with sufficient space left and right and adjacent objects or baffles (walls).

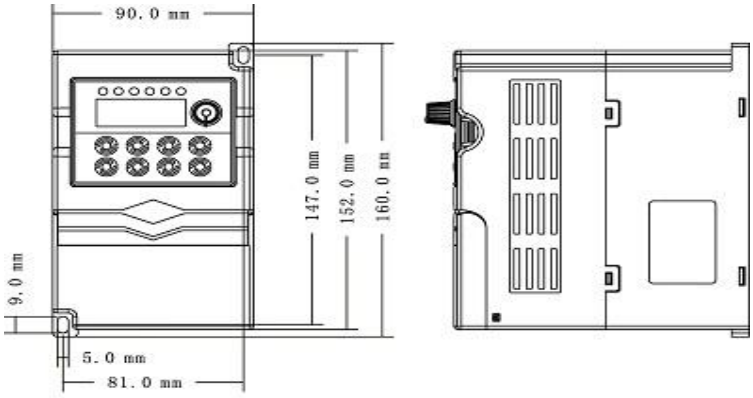
2.3.1 Keyboard dimensions

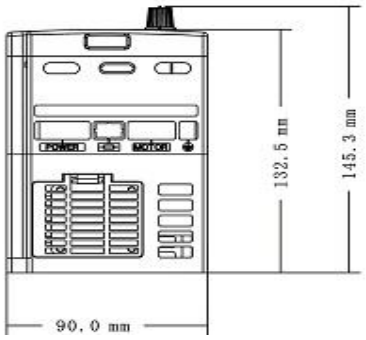


2.3.2 Keyboard hole size(Unit: mm)

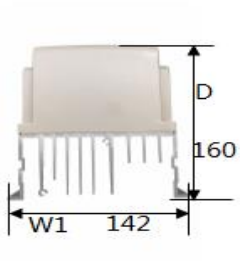


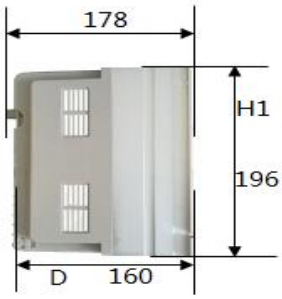
2.4.1 Machine structure and size(Unit: mm)

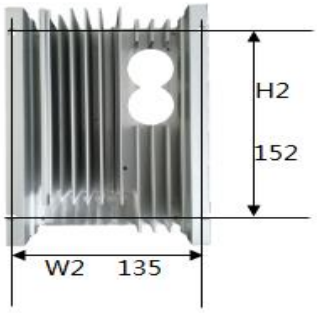




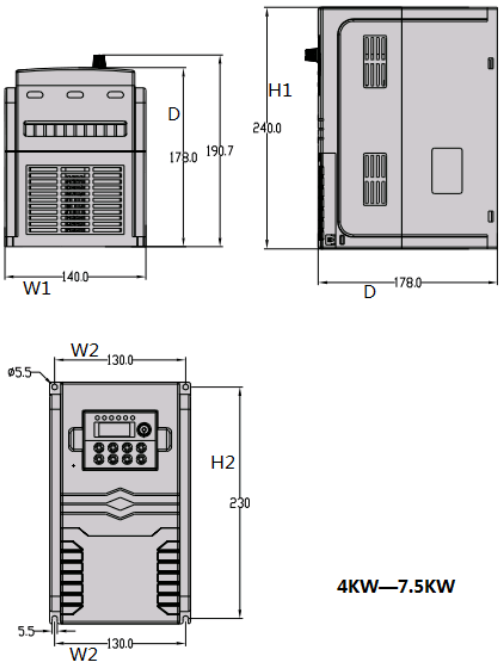
0.75—2.2KW







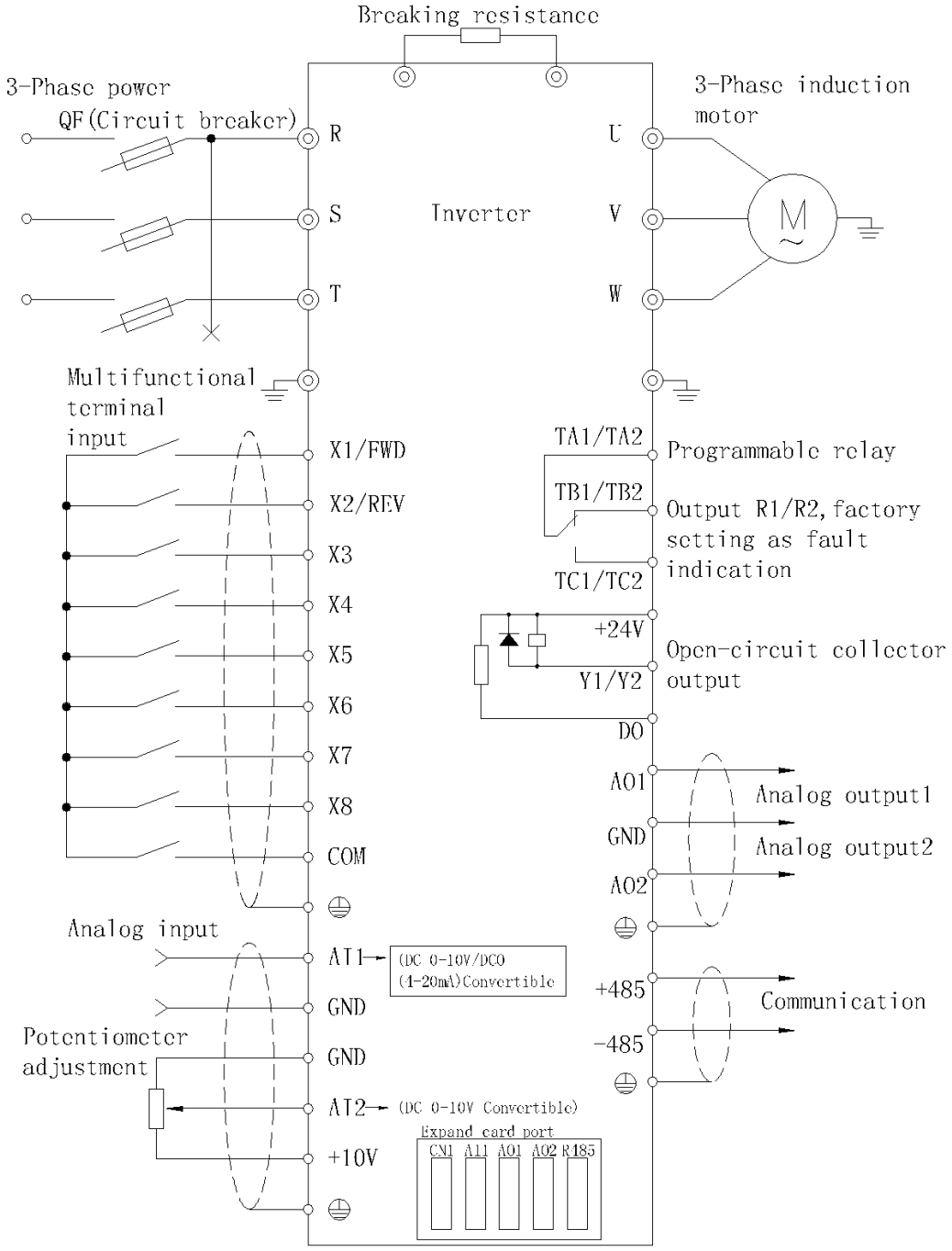
1.5KW—5.5KW



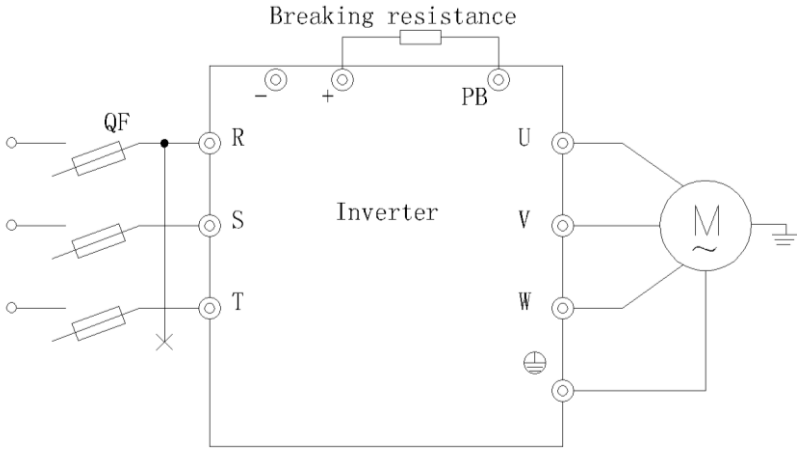
power（kw）	A(mm)	B(mm)	H(mm)	W(mm)	D(mm)	Install the aperture（mm）
A900-2TR75G	160	90	145.3	81	147	Φ 4
A900-2T0015G						
A900-2T0022G						
A900-4TR75G	160	90	145.3	81	147	Φ 4
A900-4T0015G						
A900-4T0022G						
A900-4T0040G	196	142	178	135	152	Φ 5
A900-4T0055G						
A900-4T0075G	240	140	190.7	130	230	Φ 5.5
A900-4T0110G						

2.5 Basic operation wiring

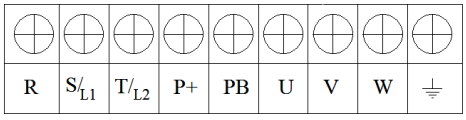
Inverter wiring part, divided into main circuit and control circuit. The user can lift the cover of the output / input terminal, at this time, the main circuit terminal and the control circuit terminal can be seen. The user must connect the circuit correctly according to the following figure.



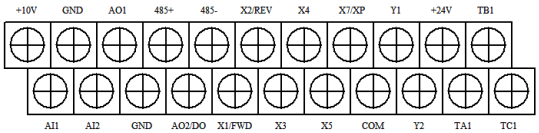
2.6 Main circuit terminal wiring



2.7 Main circuit terminal diagram

Main circuit terminal diagram


2.8 Control circuit terminal diagram



2.9 Control loop terminal menu

Control circuit terminal function description			
Category	Terminal label	Function Description	Specifications
Multi-function digital input	X1	The function of X (X1, X2, X3, X4, X5, X6, X7 and X8) ~ COM is valid when it is shorted. The function is set by F7.00 ~ F7.07 (COM: COM)	INPUT, 0 ~ 24V level signal, active low, 5mA.

terminal			
	X2		
	X3		
	X4		
	X5		
	X7		
	X6	X6 can be used as an ordinary multi-function terminal, but also can be programmed as a high-speed pulse input port, see F7.05 function description	
Digital signal output terminal	Y1	Multi-function programmable open-collector output 2-way, programmable as a variety of functions of the switch output terminals. (Common: COM)	OUTPUT, the maximum load current is not greater than 50mA.
	Y2		
	DO	Programmable as a variety of functions of the pulse signal output terminals, up to 13 kinds. See F6.23 output terminal function introduction. (Common: COM).	OUTPUT, the output frequency range from P6.32 ~ P6.35 set the maximum frequency up to 50KHz.
Analog input and output terminals	AI1	AI1 receives the analog voltage / current input. The voltage and current are selected by the jumper CN4 (AI1 jumper terminal). The factory default input voltage, if you want to input the current, just short the jumper cap to the middle and the other end. AI2 Receive voltage input. Range setting see function code F6.00 ~ F6.11 instructions. (Reference ground: GND)	INPUT, input voltage range: 0 ~ 10V (input impedance: 100K Ω), input current range: 0 ~ 20mA (input impedance: 500 Ω).
	AI2		
	AO1	AO1 provides analog voltage / current output, which can represent 13 physical quantities. The output voltage and current are selected by jumper CN3 (AO1 jumper terminal). The default output voltage is AO1. If you want to output current, just jumper cap short Middle and other end; AO2 can only provide analog voltage output. See the description of function code F6.21, F6.22. (Reference ground: GND)	OUTPUT, 0 ~ 10V DC voltage. AO1, AO2 terminal output voltage is from the central processing unit PWM waveform. The size of the output voltage is proportional to the width of the PWM waveform.
	AO2		
Relay output terminal	TA1/TA2	Two programmable relay output terminals, TA1 / TA2, TB1 / TB2, TC1 / TC2 up to 99 species. See P7.20 out terminal function introduction.	TA-TB: normally closed; TA-TC: normally open. Contact capacity: 250VAC / 2A (COS Φ = 1); 250VAC / 1A (COS Φ = 0.4),
	TB1/TB		

	2 TC1/TC2		30VDC / 1A.
Power connector	+24V	24V is the circuit common power supply for the digital signal input terminal	The maximum output current 200mA
Communication Interface	485+	RS485 signal + terminal	Standard RS485 communication interface, not isolated with GND, please use twisted pair or shielded cable.
	485-	RS485 signal - end	

▲ Control terminal AI1 can input voltage signal, but also input current signal, while AI2 can only input voltage signal; users should select jumper on the control board according to the signal type.

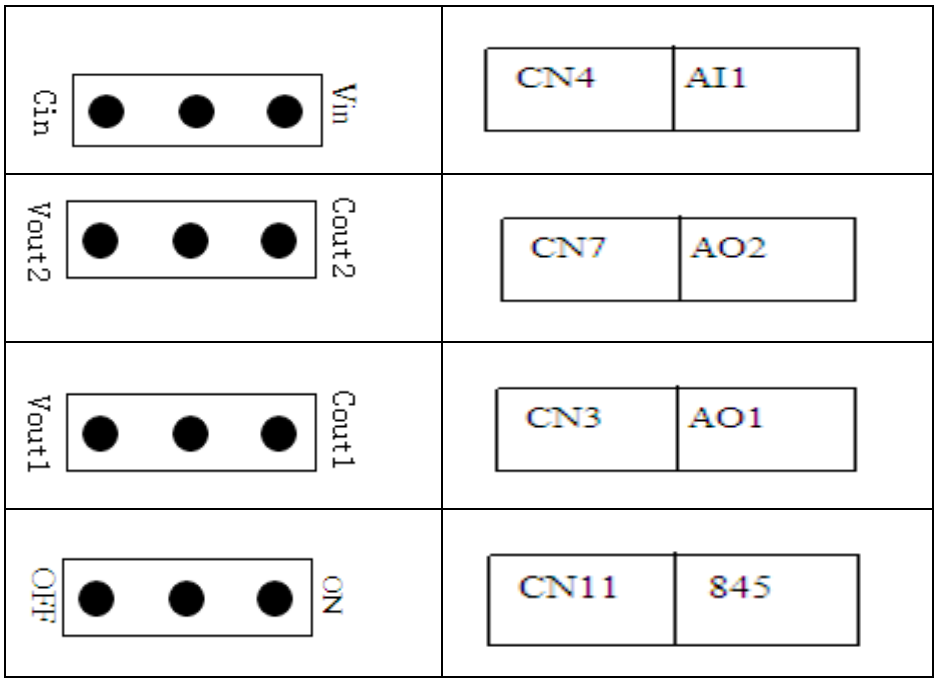
▲ connect weak analog signals, susceptible to external interference, so the wiring should be as short as possible. The external control line of the inverter needs to be equipped with isolation device or shielded wire and required to be grounded.

▲ input command signal line and frequency table and other connections in addition to shielding, but also separate alignment, the best away from the main circuit wiring.

▲ control circuit wiring should be greater than 0.75mm2, it is recommended to use shielded twisted pair. Control circuit terminal wiring should be tin or cold-pressed metal connector.

▲ When connecting an analog signal output device, the inverter may malfunction due to interference from the inverter. When this occurs, a capacitor or a ferrite core may be connected to the external analog output device.

2.10DIP switch and the corresponding relationship



CN4	
Cin blocked	AI1 input current signal
Vin block	AI1 input voltage signal

CN3	
Vout1 block	AO1 output voltage signal
Cout1 block	AO1 output current signal
CN7	
Vout2 block	AO2 output voltage signal
Cout2 block	AO2 output current signal
CN11	
OFF block	485 communications that match the resistance is not connected
ON block	Indicates a matching resistor on 485 communication

2.11 Wiring precautions

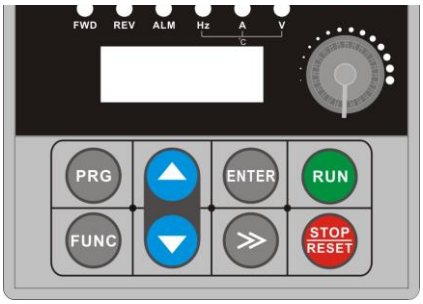
1 When changing the motor, the inverter input power must be cut off.
2 When the inverter stops output, it can switch the motor or switch the power frequency power.
3 To minimize the effects of electromagnetic interference, surge absorbers should be considered when using electromagnetic contactors and relays that are close to the drive.
4 Do not connect the AC input power to the inverter output terminals U, V, W.
5 The external control line of the inverter needs to be isolated or shielded.
6 Input command signal connection in addition to shielding should be a separate alignment, the best away from the main circuit wiring.
7 When the carrier frequency is less than 4KHz, the maximum distance between the inverter and the motor should be within 50m. When the carrier frequency is greater than 4KHz, the distance should be reduced properly. The wiring is best laid in the metal pipe.
8 When the inverter is equipped with peripheral equipment (filters, reactors, etc.), first measure the insulation resistance of the inverter to ground with a 1000-volt megohmmeter to ensure that it is not lower than 4 megohms.
9 In the inverter U, V, W output can not be installed into the phase capacitor or RC absorption device.
10 If the inverter needs to be started frequently, do not turn off the power. You must use the COM / RUN terminal of the control terminal to start and stop the operation to avoid damage to the rectifier bridge.
11 To prevent accidents, ground terminal G must be grounded (grounding impedance should be 100Ω or less), otherwise there will be leakage situation.
12 When the main circuit wiring, wire diameter specifications, please wire in accordance with the relevant provisions of national electrical regulations.

2.12 Spare circuit

In the event of a fault or trip of the frequency converter, a large loss of downtime or other unexpected faults may occur. In this case, it is recommended to add spare circuit to ensure safety. Note: The backup circuit must be confirmed in advance and test the operating characteristics to ensure that the phase sequence of frequency and frequency conversion.

Chapter III operation panel and operation method

3.1 Panel layout



There are 8 keys on the inverter operation panel, the function definition of each key is shown in Table 1-1:

Table 1-1 Operation Keyboard Menu

button	name	Function Description
PRG	Programming / Exit	Enter or exit programming status
≫	Shift / Monitor key	In the editing state, you can choose to set the data modification bit; in other states, you can switch the display monitoring parameters
ENTER	Enter	Keypad diagram (matching 0.75-11KW models) Enter the submenu or confirm the data
FUNC	Multi-function key	Under the operation keyboard mode, press this key to make forward / reverse switching or jog operation and frequency clear according to the setting of function parameter FE.01
RUN	Run the key	In the operation of the keyboard mode, press the key inverter into operation
STOP RESET	Stop / reset button	When the inverter is in normal running status, if the running command channel of the inverter is set as the keyboard stop valid mode, pressing this key will stop the inverter according to the set mode. When the inverter is in fault status, pressing this key will reset the inverter and return to the normal shutdown status
	Analog potentiometer	It is used for frequency reference. When F0.07 = 0, the encoder can be given frequency digital encoder and incremental / decrement key as interlocking control
	Increment key	Increment of data or function code (continuously on time, can increase the speed of increase)
	Decrement	Decrement of data or function code (when pressed continuously,

	key	increase the descending speed)

3.2 LED digital tube and light instructions：

The keypad has six LED indicators：Hz（frequency）、A（current）、V（voltage）、ALM（alarm），F/R（Operating status indication）。The keyboard has seven lights：Hz（frequency）、A（current）、V（voltage）、ALM（alarm），F/R（Operating status indication）REMOTE(Local / remote switch indicator）The meaning of the instructions as shown in Table 1-2:

project			Function Description
Display function	Digital display		Display the current running status parameters and setting parameters of the inverter
	LED indicator	Hz、A、V	Current digital display parameters corresponding to the physical quantity (current Ampere, voltage V, frequency Hz Hertz) units
		ALM	Warning light indicating that the inverter is currently in overcurrent or overvoltage suppression or fault alarm status
		FWD	When the inverter is running forward, the indicator will light green
		REV	When the inverter is in reverse running, the indicator light is red
		REMOTE	This indicator lights when remote control is in progress

Table 1-2 LED digital tube and light instructions

LED indicator	A	Current digital display unit for the current amperes, LED indicator A lit.
	V	Current digital display unit voltage volts parameter, LED indicator V light
	Hz	Current digital display unit frequency Hz Hertz, LED indicator Hz lit.
	Percent%	The current LED display parameters as a percentage, LED indicator Hz and V light
	Rotation speed r/min	Current digital display parameters for the speed, LED indicator Hz and A light
	Line speed m/s	Current digital display parameters for the linear speed, LED lights V and A light
	Temparature ℃	The current LED display parameters for temperature, LED V, A and Hz light

Table 1-3 Unit Indicators and Combination Description

3.3Monitoring parameters display status

A900 operating keyboard display state is divided into initialized display power, function code parameters and monitoring parameters display, fault alarm status display, operating status parameters display four states. After the unit is powered on, the digital tube (LED) will display "P.OFF" (LCD will display Robin Hood electrical) character, and then enter the

set frequency display state.

Inverter is in shutdown state, operation keyboard displays stop status monitoring parameters, factory default is digital setting frequency. As shown in Figure 1-3, the unit indicator shows the unit of this parameter in Hz.

Press key to cycle through different monitoring parameters of stop status (default settings are main setting frequency, bus voltage and two monitoring parameters). Other monitoring parameters can be set by the function codes FE.10 ~ FE.11. For details, please refer to Function Parameter List FE.10 ~ FE.11 Stop Condition Monitoring Parameters Selection Setting)；Can not press ≫ key，By setting the PE.12 ten bit to 1 (main and auxiliary alternately displayed), every 1S automatically cycle downtime monitoring parameters；Can also be passed PRG Key to enter the monitoring menu interface，by/ ▲，/ ▼ Key and ENTER Key combination，Check each monitoring parameter one by one。

3.4 Operating parameters display status

After the inverter receives a valid running command, it enters the running status. The operation keypad displays the running status monitoring parameters. The factory default is the output frequency. As shown in Figure 1-4, the unit indicator shows the unit of this parameter in Hz.

press ≫ key，The running status monitoring parameters can be cyclically displayed (default settings are output frequency, output current and two monitoring parameters). Other monitoring parameters can be set by the function codes FE.08 ~ FE.09. For details, please refer to function parameter list FE.08 ~ FE.09 Operation status monitoring parameter selection setting)；Can not press ≫ key，By setting the FE.12 ten bit to 1 (main and auxiliary alternately displayed), every 1S cycle automatically displays the running status monitoring parameters；Can also be passed PRG Key to enter the monitoring menu interface，by/ ▲，/ ▼ key and ENTER Key combination，Check each monitoring parameter one by one.

3.5 Fault alarm display status

Fault Alarm Display When the inverter detects a fault signal, it will enter the fault alarm display status and display the fault code (as shown in Figure 1-5)：

press ≫ keyCan see the relevant parameters after shutdown；To view the error

message，can press PRG key Into the programming state query D group parameters。After identifying and troubleshooting，You can operate the keyboard STOP RESET key、Control terminal or communication command for fault reset operation. If the fault persists, the fault code is displayed.

note：

For some serious faults, such as inverter module protection, over-current, over-voltage, etc., it is absolutely not allowed to reset the fault when the fault has not been confirmed and run again to avoid damaging the inverter.

3.6Function code edit display status

In the shutdown, operation or fault alarm state，press the PRG key，Can enter the editing state (if set the user password, enter the password before entering the edit state, see the password to unlock instructions), edit the state according to the second menu to display。press ENTER key can be entered step by step。In the function parameter display state，press ENTER key then parameter storage operation，press PRG keyThe modified parameters are not stored, only the previous menu can be returned.

3.7 Monitoring parameters to view

Example 1: Monitor parameter display switching

Monitoring interface，after press the ≫ key，According to FD group status monitoring parameter setting, it will automatically switch the display monitor parameter corresponding parameter value, at the same time, the unit corresponding indicator light.Such as: monitoring interface，press the ≫ Switch to the output frequency D-00, the unit "HZ" corresponds to the indicator light.

Example 2: View monitoring parameters d-05 (output current)

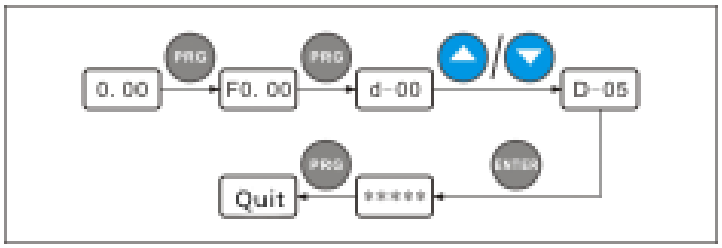
Act one：

1 press the PRG key enter the programming state，LED digital display function parameters F0.00,Press again PRG key，Digital tube display function parameters d- 00, flashing bits stay in a bit,adjust/ key or/ key，until the monitoring code item shows d-05.

2 press ENTER key,will see the data corresponding to d-05, at the same time, the indicator light corresponding to unit "A" will be on.

3 press PRG key，exit monitoring status.

ENTER



Act II：

In the specific monitoring mode interface press ENTER key，jump to the next monitoring parametersd-xx，press ≫ key adjust the flashing digit in the monitoring code，Adjust again / key or / key，Until the monitoring code shows d-05, then according to a law 2), 3) operation can be achieved.

Example 3: fault status query fault monitoring parameters

Description：

1 The user is in a fault conditionpress PRG key you can check the D group monitoring parameters, query range D-00～D-57

2 When the user queries the fault parameters, such as fault is not cleared, stop operating 5S, the direct automatic switch back to the fault alarm display status.

3 The error code is displayed in D-48 ~ D-57 (current and previous three times).

3.8 Function code parameter setting

The inverter's function parameter system includes function code F0 ~ FF, fault code E group and monitoring code D group. Each function group includes several function codes. The function code is identified by (function code group number + function code number). For example, "F5.08" is the eighth function code of the fifth group function.

Function code setting example：

Example 1: Change the forward jogging frequency setting from 5Hz to 10Hz (F1.20 changed from 5.00Hz to 10.00Hz)

1 Press the PRG key Into the programming state, LED digital display function parameters F0.00, flashing bits remain in the first place.

2 Press the ≫ key,can see the blinking bit in the function of the hundred, ten, a place to move.

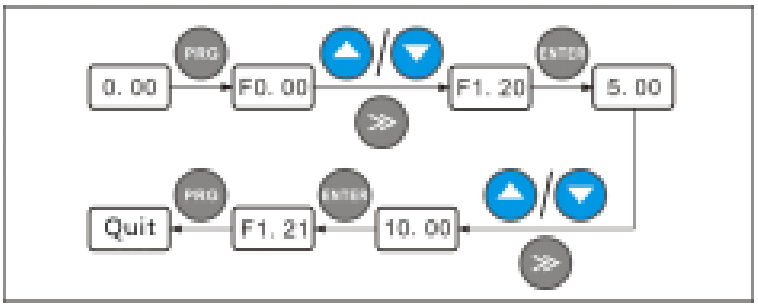
3 Press / key or / key the corresponding digit change. LED digital display F1.20.

4 Press the ENTER key,Will see the corresponding data F1.20 (5.00), at the same time, its unit HZ corresponding indicator light.

5 Press the ≫ key，blinks to the highest digit "5"，Press five times / key，change to10.00。

6 Press the ENTER key，Save the value of F1.20 and automatically display the next function code (F1.21).

7 Press the PRG key，Exit programming state.



3.9 Set the user password to enter the function code editing state operation

User password setting function is used to prohibit unauthorized personnel to access and modify function parameters.User password F0.00 The factory setting is "00000". The user can set the parameters under this interface (Note that the parameter setting here is not restricted by the password protection, but is limited by other conditions, including but not limited to the operation modifiable Can not be modified, monitor the contents of the parameters, etc.).

When setting user password, enter five digits,press to ENTER confirm，3 minutes or automatically power-down password automatically take effect. After the password is validated, if the password is incorrectly set, the keyboard will display "-Err-". At this time, check other function codes except the password item ("00000" Set the function code parameters. After the password is set successfully, the keyboard displays "-En--" to view and modify the function code.

Example 1: After changing the user password "22222" to "55555", check the function code F1.02

1 Press PRG key to enter the programming state, LED digital display function parameter F0.00, the flashing position stays in place.

2 Press » key, and you can see that the flashing bits are moving in the hundred, ten, or one place of the function item.

3 Press or ▲ or ▼ key to change the corresponding digit; LED digital display shows F1.02.

4 Press ENTER key, you will see the corresponding data "-----" of F1.02.

5 Press ENTER key to enter F1.03, repeat 2, 3 operation, view the data corresponding to F0.00 "00000".

6 Press ▲ or ▼ key to change the corresponding digit, LED digital display "22222", password is set.

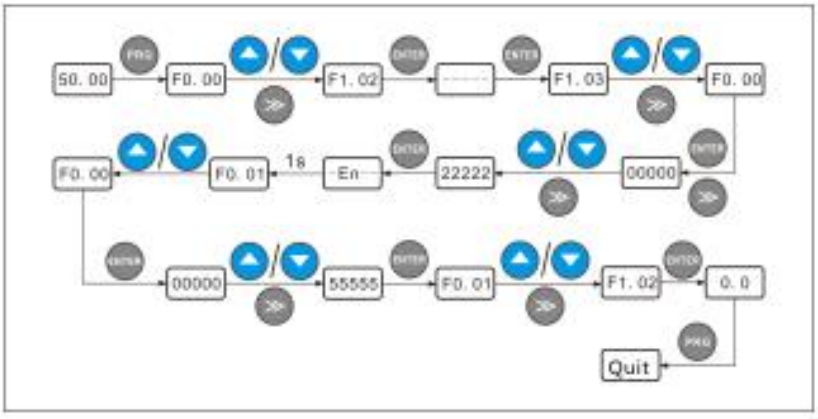
7 Press ENTER key, you will see the digital display "-En--", at the same time, function code display F0.01.

8 Repeat 2, 3 operations, view the data corresponding to F0.00 "00000", change it to "55555", after the key to complete the password change, enter the F0.01 item.

9 Repeat 2 and 3 operations to check the corresponding data "0.0" of F1.02 and change it with the / ▲ key or the / ▼ key.

10 Press PRG key to exit programming state

D



Chapter IV Monitoring Parameter Group and Fault Record and Parameter Profiles and Instructions for Use

4.0 Monitoring parameter group and fault records

D group - monitoring parameter group and fault record					
function code	**name**	**Predetermined area**	**Minimum unit**	**Factory setting**	**change**
d-00	Output frequency	0.00～Maximum output frequency【F0.15】	0.01Hz	0.00	◆
d-01	Setting frequency	0.00～Maximum output frequency【F0.15】	0.01Hz	0.00	◆
d-02	Moto estimation frequency	0.00～Maximum output frequency【F0.15】 Note: The motor operating frequency is calculated by the motor speed estimation	0.01Hz	0.00	◆
d-03	Main setting frequency	0.00～Maximum output frequency【F0.15】	0.01Hz	0.00	◆
d-04	Auxiliary setting frequency	0.00～Maximum output frequency【F0.15】	0.01Hz	0.00	◆
d-05	Output current	0.0～6553.5A	0.1A	0.0	◆
d-06	The output voltage	0～999V	1V	0	◆
d-07	Output torque	-200.0～+200.0%	0.1%	0.0%	◆
d-08	Motor speed (RPM/min)	0～36000（RPM/min）	1	0	◆
d-09	Motor power factor	0.00～1.00	0.01	0.00	◆
d-10	Running line speed (m/s)	0.01～655.35(m/s)	0.01 m/s	0.00	◆

d-11	Set line speed (m/s)	0.01～655.35(m/s)	0.01 m/s	0.00	◆
d-12	Bus voltage (V)	0～999V	1V	0	◆
d-13	Input voltage (V)	0～999V	1V	0	◆
d-14	PID setting (V)	0.00～10.00V	0.01V	0.00	◆
d-15	PID feedback value (V)	0.00～10.00V	0.01V	0.00	◆
d-16	Analog input AI1 (V/mA)	0.00～10.00V	0.01V	0.00	◆
d-17	Analog input AI2(V)	0.00～10.00V	0.01V	0.00	◆
d-18	Pulse frequency input (KHz)	0.00～50.00kHz	0.01kHz	0.00	◆
d-19	Analog Output AO1(V/mA)	0.00～10.00V	0.01V	0.00	◆
d-20	Analog Output AO2(V)	0.00～10.00V	0.01V	0.00	◆
d-21	Input terminal status	0～FFH Note: Expanding to binary means that the sequence from high to low is X8/X7/X6/X5/X4/X3/X2/X1	1	0	◆
d-22	Output terminal status	0~FH Note: Expanding to binary means R2/R1/Y2/Y1 from high to low	1	0	◆
d-23	Inverter operation status	0 to FFFFH BIT0: Run/Stop BIT1: Reverse/Forward BIT2: Zero Speed Operation BIT3: Reserved BIT4: Speeding up BIT5: Deceleration BIT6: Constant Speed Operation BIT7: Pre-excitation BIT8: Tuning of motor parameters BIT9: Overcurrent limit BIT10: Overvoltage limit BIT11: In the torque limit BIT12: Speed Limiter BIT13: Speed Control BIT14: Torque Control BIT15: Reserved	1	0	◆
d-24	Multi-speed current segment number	0～15	1	0	◆
d-25	Reserved	—	—	0	◆
d-26	Reserved	—	—	0	◆

d-27	Current count value	0～65535	1	0	◆
d-28	Current count value	0～65535	1	0	◆
d-29	Current timing value (S)	0～65535S	1S	0	◆
d-30	Current timing value (S)	0～65535S	1S	0	◆
d-31	Current length	0.000～65.535(KM)	0.001KM	0.000	◆
d-32	Set length	0.000～65.535(KM)	0.001KM	0.000	◆
d-33	Radiator temperature 1	0.0℃～+110.0℃	0.1℃	0.0	◆
d-34	Radiator temperature 2	0.0℃～+110.0℃	0.1℃	0.0	◆
d-35	Native cumulative running time (hours)	0～65535H	1H	0	◆
d-36	Local cumulative power-on time (hours)	0～65535H	1H	0	◆
d-37	Fan cumulative running time (hours)	0～65535H	1H	0	◆
d-38	Accumulated power consumption (low)	0～9999KWH	1KWH	0	◆
d-39	Accumulated power consumption (high)	0～9999KWH（*10000）	1KWH	0	◆
d-40	Special model monitoring parameters (reserved)	—	—	0	◆
d-41	Special model monitoring parameters (reserved)	—	—	0	◆
d-42	Special model monitoring parameters (reserved)	—	—	0	◆
d-43	Special model monitoring parameters (reserved)	—	—	0	◆
d-44	Special model monitoring parameters (reserved)	—	—	0	◆
d-45	Special model	—	—	0	◆

	monitoring parameters (reserved)				
d-46	Special model monitoring parameters (reserved)	—	—	0	◆
d-47	Special model monitoring parameters (reserved)	—	—	0	◆
d-48	The first three fault types	0～29	1	0	◆
d-49	The first secondary fault type	0～29	1	0	◆
d-50	Previous fault type	0～29	1	0	◆
d-51	Current fault type	0～29	1	0	◆
d-52	Current operating frequency	0.00～【F0.16】upper frequency limit	0.01Hz	0.00	◆
d-53	Current output current at fault	0.0～6553.5A	0.1A	0.0	◆
d-54	Bus voltage at current fault	0～999V	1V	0	◆
d-55	Input terminal status at current fault	0～FFH Note: Expanding to binary means that the sequence from high to low is X8/X7/X6/X5/X4/X3/X2/X1	1	0	◆
d-56	Output terminal status at current fault	0~FH Note: Expanding to binary means R1/Y2/Y1 from high to low	1	0	◆
d-57	Current inverter operating status at fault	0～FFFFH	1	0	◆

4.1 Function parameter table

○—Parameters that can be modified in any state ×—Parameters that cannot be modified in the operating state ◆—The actual detection parameters cannot be modified. ◇—The manufacturer's parameters are limited to the manufacturer's modification, and the user is prohibited from modifying it.

Group F0 - basic operating parameters					
function code	name	Predetermined area	Minimum unit	Factory setting	change
F0.00	user password	0～65535 Note 1:0~9: No password protection Note 2: After the password is set successfully, it takes 3 minutes for it to take effect. Note 3: Write protection is invalid for this	1	0	○

		parameter and cannot be initialized			
F0.01	Control software version number	1.00～99.99	0.01	1.00	◆
F0.02	Panel software version number	1.00～99.99	0.01	1.00	◆
F0.03	Inverter rated power	0.4～999.9KW（G/P)	0.1KW	Model settings	◆
F0.04	Inverter model selection	0: G type (constant torque load model) 1: P type (fan, pump type load model) Note 1: After setting as P-type machine, the motor parameters will be automatically refreshed, and it can be used as a large-scale fan and water pump special frequency converter without changing any parameters. Note 2: This parameter cannot be initialized, please manually modify	1	0	×
F0.05	control method	0: Normal V/F control (manual torque boost) 1: Advanced V/F control (automatic torque boost) 2: Open loop current vector control (SVC) 3: closed-loop current vector control (reserved) 4: Separate V/F control Note 1: When control mode 3 (closed-loop current vector control) is selected, the input terminal X6 function can only be used for normal terminals. It cannot be used for high-speed pulse input. Note 2: This parameter cannot be initialized, please manually modify	1	Model settings	×
F0.06	Run command channel selection	0: operation panel run command channel 1: terminal operation command channel 2: Communication operation command channel	1	0	○
F0.07	Primary frequency source A selection	0: Digital reference 1 (panel ▲/▼ keys, encoder + F0.12) 1: Digital reference 2 (terminal UP/DOWN adjustment + F0.13) 2: Digital setting 3 (communication setting) 3: AI1 analog reference (0 to 10V/20mA) 4: AI2 simulation given (0～10V)	1	0	○

		5: pulse given (0～50KHZ) 6: Simple PLC setting 7: Multi-speed operation setting 8: PID control setting			
F0.08	Auxiliary frequency source B selection	0: Digital reference 1 (panel ▲/▼ keys, encoder + F0.12) 1: Digital reference 2 (terminal UP/DOWN adjustment + F0.13) 2: Digital setting 3 (communication setting) 3: AI1 analog reference (0 to 10V/20mA) 4: AI2 simulation given (0～10V) 5: pulse given (0～50KHZ) 6: Simple PLC setting 7: Multi-speed operation setting 8: PID control setting	1	3	○
F0.09	Frequency source given method	0: main frequency source A 1: A+K*B 2: A-K*B 3:-A-K*B— 4:MAX(A,K*B) 5:MIN(A,K*B) 6: Switch from A to K*B (A over K*B) 7: Switch from A to (A+K*B) (A over A+K*B) 8: Switch from A to (A-K*B) (A over A-K*B) Note 1: Frequency switching needs to be achieved through terminal coordination Note 2: The wobble frequency control has higher priority than the frequency source given mode.	1	0	○
F0.10	Digital reference 1 control	LED bit: Power-off storage 0: storage 1: Do not store LED tens: Stop and keep 0: keep 1: Do not keep LED hundreds place: ▲/▼ key, UP/DOWN frequency negative adjustment 0: invalid 1: effective LED thousands: reserved	1	000	○
F0.11	Digital reference 2 control		1	000	○
F0.12	Frequency source digital 1 setting	0.00Hz～【F0.16】Maximum frequency	0.01Hz	50.00	○
F0.13	Frequency source digital 2 setting	0.00Hz～【F0.16】Maximum frequency	0.01Hz	50.00	○

F0.14	Auxiliary frequency source weight coefficient K setting	0.01～10.00	0.01	1.00	○
F0.15	Maximum output frequency	Low frequency band: MAX {50.00, [F0.16]} ~ 300.00 High frequency band: MAX{50.0, [F0.16]} ~ 3000.0	0.01Hz	50.00	×
F0.16	Maximum frequency	【F0.17】～【F0.15】	0.01Hz	50.00	×
F0.17	Lower limit frequency	0.00Hz～【P0.16】	0.01Hz	0.00	×
F0.18	Frequency output mode	0: Low frequency mode (0.00 to 300.00 Hz) 1: High-frequency mode (0.0 to 3000.0 Hz) Note: High-frequency mode is only valid for VF control	1	0	×
F0.19	Acceleration time 1	0.1 ～ 3600.0S 0.4 ～ 4.0KW 7.5S 5.5 ～ 30.0KW 15.0S 37.0 ～ 132.0KW 30.0S 160.0～ 630.0KW 60.0S	0.1S	Model settings	○
F0.20	Deceleration time 1		0.1S	Model settings	○
F0.21	Running direction setting	0: Forward 1: Reverse 2: Reverse prevention	1	0	×
F0.22	Carrier frequency setting	1.0～16.0KHz 0.4～4.0KW 6.0KHz 1.0～16.0KHz 5.5～30KW 4.5KHz 1.0～16.0KHz 37～132KW 3.0KHz 1.0～10.0KHz 160～630KW 1.8KHz 1.0～5.0 KHz	0.1KHz	Model settings	○
Group F1 - auxiliary operating parameters					
F1.00	Starting method	0: start frequency start 1: DC brake + starting frequency start 2: Speed tracking start	1	0	×
F1.01	Starting frequency	0.00～50.00Hz	0.01Hz	1.00	○
F1.02	Start frequency holding time	0.0～100.0s	0.1s	0.0	○
F1.03	Start DC braking current	0.0～150.0%*motor rated current	0.1%	0.0%	○
F1.04	Start DC braking time	0.0～100.0s	0.1s	0.0	○
F1.05	Acc	0: linear acceleration and deceleration 1:S curve acceleration and deceleration	1	0	×
F1.06	S-curve start time ratio	10.0～50.0%	0.1%	20.0%	○
P1.07	S-curve end time ratio	10.0～50.0%	0.1%	20.0%	○
P1.08	Downtime	0: deceleration stop 1: free stop	1	0	×

F1.09	Stop DC braking starting frequency	0.00～【F0.16】upper frequency limit	0.01Hz	0.00	○
F1.10	Shutdown DC braking waiting time	0.0～100.0s	0.1s	0.0	○
F1.11	DC brake current at shutdown	0.0～150.0%*motor rated current	0.1%	0.0%	○
F1.12	Shutdown DC braking time	0.0～100.0s	0.1s	0.0	○
F1.13	Acceleration time 2	0.1 ～ 3600.0S 0.4 ～ 4.0KW 7.5S 5.5 ～ 30.0KW 15.0S 37.0 ～ 132.0KW 40.0S 160.0～ 630.0KW 60.0S	0.1	Model settings	○
F1.14	Deceleration time 2		0.1	Model settings	○
F1.15	Acceleration time 3		0.1	Model settings	○
F1.16	Deceleration time 3		0.1	Model settings	○
F1.17	Acceleration time 4		0.1	Model settings	○
F1.18	Deceleration time 4		0.1	Model settings	○
F1.19	Acceleration and deceleration time unit selection	0: second 1: minute	1	0	○
F1.20	Jog forward running frequency setting	0.00～【F0.16】upper frequency limit	0.01Hz	5.00	○
F1.21	Jog reverse running frequency setting	0.00～【F0.16】upper frequency limit	0.01Hz	5.00	○
F1.22	Jog acceleration time setting	0.1 ～ 3600.0S 0.4 ～ 4.0KW 7.5S 5.5 ～ 30.0KW 15.0S 37.0 ～ 132.0KW 40.0S 160.0～ 630.0KW 60.0S	0.1s	Model settings	○
F1.23	Jog deceleration time setting		0.1s	Model settings	○
F1.24	Jog interval setting	0.0～100.0s	0.1s	0.1	○
F1.25	Jump frequency 1	0.00 to upper limit frequency	0.01Hz	0.00	○
F1.26	Jump frequency 1 range	0.00 to upper limit frequency	0.01Hz	0.00	○
F1.27	Jump frequency 2	0.00 to upper limit frequency	0.01Hz	0.00	○
F1.28	Jump frequency 2 range	0.00 to upper limit frequency	0.01Hz	0.00	○
F1.29	Jump frequency 3 range	0.00 to upper limit frequency	0.01Hz	0.00	○
F1.30	Jump frequency3 range	0.00 to upper limit frequency	0.01Hz	0.00	○

F1.31	When the set frequency is lower than the lower limit frequency	0: Run at the following frequency 1: Zero-frequency operation after delay time (no delay when starting) 2: Stop after delay time (no delay when starting)	1	0	×
F1.32	Stop delay time when the frequency is lower than the lower limit frequency (simple sleep)	0.0～3600.0s	0.1	10.0	○
F1.33	Zero frequency braking current	0.0～150.0%*motor rated current	0.1	0.0	×
F1.34	Reversal of dead time	0.0～100.0s	0.1s	0.0	○
F1.35	Forward and reverse switching mode	0: Zero frequency switching 1: over-start frequency switching	1	0	×
F1.36	Emergency stop	0.1～3600.0s	0.1s	1.0	○
Group F2 - Motor Parameters					
F2.00	Motor type selection	0: AC asynchronous motor 1: permanent magnet synchronous motor (reserved) Note 1: Synchronous motors temporarily only accept closed-loop vector control Note 2: This parameter cannot be initialized, please manually modify	1	0	×
F2.01	Rated power of motor	0.4～999.9KW	0.1KW	Model settings	×
F2.02	Rated power of motor	0.01Hz～【F0.15】Maximum frequency	0.01Hz	50.00	×
F2.03	Motor rated speed	0～60000RPM	1RPM	Model settings	×
F2.04	Motor rated voltage	0～999V	1V	Model settings	×
F2.05	Rated current of motor	0.1～6553.5A	0.1A	Model settings	×
F2.06	Induction motor stator resistance	0.001～20.000Ω	0.001Ω	Model settings	×
F2.07	Induction motor rotor resistance	0.001～20.000Ω	0.001Ω	Model settings	×
F2.08	Asynchronous motor stator and rotor inductance	0.1～6553.5mH	0.1mH	Model settings	×
F2.09	Asynchronous motor stator and rotor mutual inductance	0.1～6553.5mH	0.1mH	Model settings	×

F2.10	Asynchronous motor no-load current	0.01～655.35A	0.01A	Model settings	×
F2.11	Synchronous motor stator resistance	0.001～20.000Ω	0.001Ω	Model settings	×
F2.12	Synchronous motor D shaft inductance	0.1～6553.5mH	0.1mH	Model settings	×
F2.13	Synchronous motor Q-axis inductance	0.1～6553.5mH	0.1mH	Model settings	×
F2.14	Synchronous motor back-constant constant	1～1000V/1000rpm	1	150	×
F2.15	Synchronous motor identification current	0%～30%*motor rated current	1%	10%	×
F2.16	Motor tuning options	0: No action 1: Static tuning 2: No-load full tuning 3: Load complete tuning	1	0	×
F2.17	Induction motor pre-excitation holding time	0.00～10.00S 0.4～4.0KW 0.02S 5.5～30KW 0.05S 37～132KW 0.10S 160～630KW 0.20S Note: This parameter is invalid for VF control	0.01S	Model settings	×
F3 group - encoder and zero servo parameters					
F3.00	PG pulse per revolution (reserved)	1～9999	1	1024	×
F3.01	Motor and encoder speed ratio (reserved)	0.001～65.535	—	1.000	×
F3.02	PG rotation direction (reserved)	0: Forward (A Leading B) 1: Reverse (B advance A)	1	0	×
F3.03	PG signal filtering time (reserved)	0.00～10.00S	0.01S	0.10	○
F3.04	PG disconnection detection time (reserved)	0.1～10.0S	0.1S	2.0	○
F3.05	PG disconnection action (reserved)	0: fault and free stop (E-27) 1: Switch to open-loop operation (reserved)	1	0	×
F3.06	Zero speed detection (reserved)	0.0 (disconnection protection is prohibited) 0.1 to 999.9rpm	0.1	0.0	×
F3.07	Zero Servo Control Function Selection	0: Prohibited 1: effective	1	0	×

	(Reserved)	2: The condition is valid			
F3.08	Zero servo position loop proportional gain (reserved)	0.000～6.000	0.01	2.000	×
F4 Group - Speed Loop and Torque Control Parameters					
F4.00	Speed Loop (ASR1) Proportional Gain	0.000～6.000	0.001	1.000	○
F4.01	Speed Loop (ASR1) Integration Time	0.000～32.000S	0.001S	1.000	○
F4.02	ASR1 filter time constant	0.000～0.100S	0.001S	0.000	○
F4.03	Switch low frequency	0.00Hz～【F4.07】	0.01Hz	5.00	○
F4.04	Speed Ring (ASR2) Proportional Gain	0.000～6.000	0.001	1.500	○
F4.05	Speed Loop (ASR2) Integration Time	0.000～32.000S	0.001S	0.500	○
F4.06	ASR2 filter time constant	0.000～0.100S	0.001S	0.000	○
F4.07	Switch high point frequency	[F4.03] to [F0.16] upper limit frequency	0.01Hz	10.00	○
F4.08	Vector control positive slip compensation coefficient (motorized state)	50.0%～200.0%* rated slip frequency	0.1%	100.0%	○
F4.09	Vector Control Negative Slip Compensation Coefficient (Brake State)	50.0%～200.0%* rated slip frequency	0.1%	100.0%	○
F4.10	Speed and torque control options	0: Speed 1: Torque 2: Conditional (terminal switching)	1	0	×
F4.11	Speed and torque switching delay	0.01～1.00S	0.01S	0.05	×
F4.12	Torque command selection	0: Keyboard digital setting 1: AI1 2: AI2 3: Communication given	1	0	○
F4.13	Keyboard digital setting torque	-200.0%～200.0%* Rated motor current	0.1%	0.0%	○
F4.14	Torque Control Mode Speed Limit Channel	0: keyboard number given 1 1:AI1	1	0	○

	Selection 1 (Forward)	2: AI2			
F4.15	Speed-limiting channel selection 1 (reverse) in torque control mode	0: keyboard number given 2 1:AI1 2: AI2	1	0	○
F4.16	Keyboard digital limited speed 1	0.0～100.0%*【F0.15】Maximum frequency	0.1%	100.0%	○
F4.17	Keyboard digital limited speed 2	0.0～100.0%*【F0.15】Maximum frequency	0.1%	100.0%	○
F4.18	Torque rise time	0.0～10.0S	0.1S	0.1	○
F4.19	Torque fall time	0.0～10.0S	0.1S	0.1	○
F4.20	Vector mode electric torque limit	Type G: 0.0% to 200.0%* Motor rated current 180.0% P type: 0.0%～200.0%* Rated motor current 120.0%	0.1%	Model settings	○
F4.21	Vector Mode Braking Torque Limit	Type G: 0.0% to 200.0%* Motor rated current 180.0% P type: 0.0%～200.0%* Rated motor current 120.0%	0.1%	Model settings	○
F4.22	Torque detection action selection	0: invalid checkout 1: Continue to operate after detecting over-torque at constant speed 2: Continue to run after detecting over torque during operation 3: Cut off the output after detecting over-torque at constant speed 4: cut off the output after detecting over-torque during operation 5: Continuing operation after detecting insufficient torque at constant speed 6: Continue running after detecting insufficient torque during operation 7: Cut off output after detecting insufficient torque at constant speed 8: Cut off output after detecting insufficient torque during operation	1	0	×
F4.23	Torque detection level	Type G: 0.0% to 200.0%* Rated motor current 150.0% P type: 0.0%～200.0%* Rated motor current 110.0%	0.1%	Model settings	×
F4.24	Torque detection time	0.0～10.0S	0.1S	0.0	×
Group F5 - VF control parameters					

F5.00	V/F curve setting	0: linear curve 1: drop torque curve 1 (1.3 power) 2: drop torque curve 2 (1.5 power) 3: drop torque curve 3 (1.7th power) 4: Square curve 5: The user sets the V/F curve (determined by F5.01~F5.06)	1	0	×
F5.01	V/F frequency value F1	0.00 to frequency value F2	0.01Hz	12.50	×
F5.02	V/F voltage value V1	0.0 to voltage value V2	0.1%	25.0%	×
F5.03	V/F frequency value F2	Frequency value F1 to frequency value F3	0.01Hz	25.00	×
F5.04	V/F voltage value V2	Voltage value V1 to voltage value V3	0.1%	50.0%	×
F5.05	V/F frequency value F3	Frequency value F2～【F2.02】Rated motor frequency	0.01Hz	37.50	×
F5.06	V/F voltage value V3	Voltage value V2～100.0%*【F2.04】Motor rated voltage	0.1%	75.0%	×
F5.07	Torque boost setting	0.0～30.0%*motor rated voltage【F2.04】	0.1%	Model settings	×
F5.08	Torque boost cut-off frequency	0.00 to motor rated frequency	0.01Hz	50.00	×
F5.09	V/F control slip frequency compensation	0.0～200.0%*rated slip Note: The default is 100.0% in advanced VF control mode	0.1%	0.0%	○
F5.10	V/F control slip compensation filter coefficient	1～10	1	3	○
F5.11	V/F control torque compensation filter coefficient	0～10	1	0	○
F5.12	Separate V/F control options	0: VF semi-separation mode, voltage open-loop output 1: VF semi-separated mode, voltage closed-loop output 2: VF complete separation mode, voltage open-loop output 3: VF complete separation mode, voltage closed-loop output Note 1: When VF separation control is selected, please disable the dead-zone compensation function of the inverter. Note 2: The concept of semi-separation is that the frequency and voltage of the frequency converter are still kept in the	1	0	×

		relationship of frequency conversion during start-up. When the frequency reaches the set frequency, the voltage and frequency are separated.			
F5.13	Voltage given channel	0: Number given 1:AI1 2: AI2	1	0	○
F5.14	Voltage loop feedback output voltage feedback channel	0:AI1 1:AI2 Note: This parameter is only valid for closed-loop output mode	1	0	×
F5.15	Digital setting output voltage value	0.0～200.0%* Rated voltage of motor Note: In open-loop output mode, the maximum output voltage is 100.0% of rated motor voltage.	0.1%	100.0%	○
F5.16	Deviation limit of voltage closed-loop adjustment	0.0～5.0%*motor rated voltage	0.1％	2.0%	×
F5.17	Half-separated mode VF curve maximum voltage	0.0～100.0%* Rated motor voltage Note: This voltage represents the output voltage of the inverter.	0.1％	80.0%	×
F5.18	Controller closed cycle output voltage adjustment cycle	0.01～10.00s	0.01S	0.10	×
F5.19	Voltage rise time	0.1～3600.0S Note: This parameter is valid only for the fully separated voltage open-loop output mode.	0.1S	10.0	○
F5.20	Voltage drop time		0.1S	10.0	○
F5.21	Voltage feedback disconnection processing	0: Alarm and keep running with voltage at break 1: Alarm and reduce voltage to limiting voltage operation 2: protect the action and free parking	1	0	×
F5.22	Voltage feedback disconnection detection value	0.0～100.0%* Rated motor voltage	0.1%	2.0%	○
F5.23	Voltage feedback disconnection detection time	0.0～100.0S	0.1S	10.0	○
F5.24	Limit voltage of voltage feedback disconnection	0.0～100.0%* Rated motor voltage Note: This voltage represents the output voltage of the inverter. Reasonably setting this parameter	0.1％	80.0%	○

		can prevent damage to the equipment caused by voltage overshoot at the moment of disconnection.			
Group F6 - Analog and Pulse Input and Output Parameters					
F6.00	AI1 input corresponding physical quantity	0: Speed command (output frequency, -100.0% to 100.0%) 1: Torque command (output torque, -200.0% to 200.0%) 2: Voltage command (output voltage, 0.0% to 200.0%* rated motor voltage)	1	0	×
F6.01	AI1 input lower limit	0.00V/0.00mA～10.00V/20.00mA	0.01V	0.00	○
F6.02	AI1 lower limit corresponds to physical quantity setting	-200.0% to 200.0% Note: The scope is associated with F6.00	0.1%	0.0%	○
F6.03	AI1 input limit	0.00V/0.00mA～10.00V/20.00mA	0.01V	10.00	○
F6.04	AI1 upper limit corresponds to the physical quantity setting	-200.0% to 200.0% Note: The scope is associated with F6.00	0.1%	100.0%	○
F6.05	AI1 input filter time	0.00S～10.00S	0.01S	0.05	○
F6.06	AI2 input corresponding physical quantity	0: Speed command (output frequency, -100.0% to 100.0%) 1: Torque command (output torque, -200.0% to 200.0%) 2: Voltage command (output voltage, 0.0% to 200.0%* rated motor voltage)	1	0	×
F6.07	AI2 input lower limit	0.00V～10.00V	0.01V	0.00	○
F6.08	AI2 lower limit corresponds to physical quantity setting	-200.0% to 200.0% Note: The scope is associated with F6.00	0.1%	0.0%	○
F6.09	AI2 input limit	0.00V～10.00V	0.01V	10.00	○
F6.10	AI2 upper limit corresponds to the physical quantity setting	-200.0%～200.0% Note: The scope is associated with F6.00	0.1%	100.0%	○
F6.11	AI2 input filter time	0.00S～10.00S	0.01S	0.05	○
F6.12	Analog input anti-shake deviation limit	0.00V～10.00V	0.01V	0	○
F6.13	Zero-frequency operation threshold	Zero frequency difference -50.00Hz	0.01Hz	0.00	○
F6.14	Zero frequency	0.00 to zero frequency operating threshold	0.01Hz	0.00	○

	difference				
F6.15	External pulse input corresponding physical quantity	0: Speed command (output frequency, -100.0% to 100.0%) 1: Torque command (output torque, -200.0% to 200.0%)	1	0	×
F6.16	External pulse input lower limit	0.00～50.00kHz	0.01kHz	0.00	○
F6.17	External pulse lower limit corresponds to physical quantity setting	-200.0%～200.0% Note: Range is associated with F6.15	0.1%	0.0%	○
F6.18	External pulse input limit	0.00～50.00kHz	0.01kHz	50.00	○
F6.19	External pulse upper limit corresponds to physical quantity setting	-200.0%～200.0% Note: Range is associated with F6.15	0.1%	100.0%	○
F6.20	External pulse input filter time	0.00S～10.00S	0.01S	0.05	○
F6.21	AO1 multifunctional analog output terminal function selection	0: Output frequency (before slip compensation) 1: Output frequency (after slip compensation) 2: Set frequency 3: Motor speed (estimated value) 4: output current 5: output voltage 6: Bus voltage 7: PID given 8: PID feedback amount 9:AI1 10: AI2 11: Input pulse frequency 12: Torque current 13: Magnetic flux	1	0	○
F6.22	AO2 multi-function analog output terminal function selection		1	4	○
F6.23	DO multifunction pulse output terminal function selection		1	11	○
F6.24	AO1 output lower limit corresponding physical quantity	-200.0%～200.0%	0.1%	0.0%	○
F6.25	Lower limit of AO1 output	0.00～10.00V	0.01V	0.00	○
F6.26	AO1 output upper limit corresponding physical quantity	-200.0%～200.0%	0.1%	100.0%	○
F6.27	AO1 output limit	0.00～10.00V	0.01V	10.00	○
F6.28	AO2 output lower limit	-200.0%～200.0%	0.1%	0.0%	○

	corresponding physical quantity				
F6.29	AO2 output lower limit	0.00～10.00V	0.01V	0.00	○
F6.30	AO2 output upper limit corresponding physical quantity	-200.0%～200.0%	0.1%	100.0%	○
F6.31	AO2 output limit	0.00～10.00V	0.01V	10.00	○
F6.32	DO output lower limit corresponding physical quantity	-200.0%～200.0%	0.1%	0.0%	○
F6.33	DO output lower limit	0.00～50.00kHz	0.01kHz	0.00	○
F6.34	DO output upper limit corresponding physical quantity	-200.0%～200.0%	0.1%	100.0%	○
F6.35	DO output limit	0.00～50.00kHz	0.01kHz	50.00	○
F7 Group - Digital Input and Output Parameters					
F7.00	Input terminal X1 function	0: The controller is idle 1: Forward operation (FWD) 2: Reverse run (REV) 3: Three-wire operation control 4: Forward jog control 5: Reverse jog control 6: free stop control 7: External Reset Signal Input (RST) 8: External device fault normally open input 9: External device fault normally closed input 10: Emergency stop function (brakes at fastest speed) 11: Reserved 12: Frequency increase instruction 13: Frequency Decrement Instruction 14: UP/DOWN terminal frequency is cleared 15: Multi-speed selection 1 16: Multi-speed selection 2 17: Multispeed Select 3 18: Multi-speed selection 4 19: Select TT1 for acceleration/deceleration time 20: Select TT2 for acceleration/deceleration time 21: Run command channel selection 1 22: Run command channel selection 2 23: Inverter acceleration/deceleration prohibition command	1	1	×
F7.01	Input terminal X2 function		1	2	×
F7.02	Input terminal X3 function		1	4	×
F7.03	Input terminal X4function		1	6	×
F7.04	Input terminal X5function		1	7	×
F7.05	Input terminal X6 function (high-speed pulse input)		1	45	×
F7.06	Input terminal X7 function		1	0	×
F7.07	Input terminal X8 function		1	0	×

		24: Inverter operation prohibition instruction 25: Run command to switch to panel 26: Run command to switch to the terminal 27: Run command to switch to communication 28: Auxiliary frequency clear 29: Frequency Source A and K*B Switch 30: Frequency Source A and A+K*B Switch 31: Frequency Source A and A-K*B Switch 32: Reserved 33: PID control input 34: PID control suspended 35: Swing frequency control input 36: Wobble frequency control pause 37: Traverse state reset 38: PLC Control Input 39: PLC pause 40: PLC reset 41: counter clear signal input 42: Counter trigger signal input 43: timing trigger input 44: timing clear input 45: External Pulse Frequency Input (valid only for X6) 46: length clear 47: Length count input (valid only for X6) 48: Speed and Torque Control Switching 49: Torque control prohibited 50: Zero servo input 51~99: Reserved			
F7.08	Switching filter times	1 to 10 1: represents the 2MS scan time unit	1	5	○
F7.09	Terminal function detection selection at power on	0: The terminal run command is invalid at power on 1: Terminal run command is valid at power on	1	0	○
F7.10	Input terminal valid logic setting (X1~X8)	0～FFH 0 means positive logic, ie, the Xi terminal is connected to the common terminal, and disconnection is invalid. 1 indicates an inverse logic, ie, the Xi terminal and the common terminal are inactive and disconnected.	1	00	×

F7.11	FWD/REV terminal control mode	0: Two-line control mode 1 1: Two-wire control mode 2 2: Three-wire control mode 1 3: Three-wire control mode 2	1	0	×
F7.12	UP/DOWN terminal frequency modification rate	0.01～50.00Hz/S	0.01Hz/S	1.00	○
F7.13	Reserved	—	—	0	◆
F7.14	Y1 output delay time	0.0～100.0s	0.1S	0.0	×
F7.15	Y2 output delay time	0.0～100.0s	0.1S	0.0	×
F7.16	R1 output delay time	0.0～100.0s	0.1S	0.0	×
F7.17	R2 output delay time (reserved)	0.0～100.0s	0.1S	0.0	×
F7.18	Open collector output terminal Y1 setting	0: no output 1: The inverter is running 2: inverter reverse running 3: fault output 4: Frequency/speed level detection signal (FDT1) 5: Frequency/speed level detection signal (FDT2) 6: Frequency/speed arrival signal (FAR) 7: Indicated in the inverter zero speed operation 8: Output frequency reaches the upper limit 9: Output frequency reaches the lower limit 10: Set the frequency lower limit to arrive at runtime 11: Inverter overload alarm signal 12: Counter detection signal output 13: Counter reset signal output 14: The inverter is ready for operation 15: Programmable multi-speed operation is completed in one cycle 16: Programmable Multistage Speed Stage Operation Completed 17: Wobble frequency upper and lower limit 18: Current limiting action 19: Overvoltage stall action 20: Undervoltage lockout shutdown 21: Sleeping 22: Inverter alarm signal (PID disconnection, RS485 communication failure, panel communication failure, EEPROM read/write	1	0	×
F7.19	Open collector output terminal Y2 setting		1	0	×
F7.20	Programmable relay R1 output		1	3	×
F7.21	Programmable relay R2 output		1	0	×

		failure, encoder break alarm, etc.) 23: AI1>AI2 24: Length reached output 25: Timed arrival 26: Energy consumption braking action 27: DC braking action 28: Magnetic flux braking action 29: Torque limit 30: Over torque indication 31: Auxiliary motor 1 32: Auxiliary motor 2 33: Accumulated runtime arrival 34～49: Multi-speed or simple PLC operation segment indication 50: Reserved 51: High temperature output indication 52～99: Reserved			
F7.22	Output terminal effective logic setting (Y1~Y2)	0～3H 0: positive logic, ie Yi terminal and common terminal are valid, disconnection is invalid 1: Inverse logic means that the Yi terminal and the common terminal are invalid and disconnected.	1	0	×
F7.23	Frequency reaches FAR detection width	0.0～100.0%*【F0.15】Maximum frequency	0.1%	100.0%	○
F7.24	FDT1 detection method	0: speed setting value 1: speed detection value	1	0	○
F7.25	FDT1 level setting	0.00Hz～【F0.16】upper frequency	0.01Hz	50.00	○
F7.26	FDT1 hysteresis	0.0～100.0％*【F7.25】	0.1%	2.0%	○
F7.27	FDT2 detection method	0: speed setting value 1: speed detection value	1	0	○
F7.28	FDT2 level setting	0.00Hz～【F0.16】upper frequency	0.01Hz	25.00	○
F7.29	FDT2 hysteresis	0.0～100.0％*【F7.28】	0.1%	4.0%	○
F7.30	Count arrival processing	0: stop counting, stop output 1: stop counting and continue output 2: loop count, stop output 3: Loop count, continue output	1	3	×
F7.31	Counting start conditions	0: Always start when powered on 1: start when running, stop when stopped	1	1	×
F7.32	Counter reset value setting	【F7.33】～65535	1	0	○
F7.33	Counter detection value setting	0～【F7.32】	1	0	○

F7.34	Timed arrival processing	0: stop timing, stop output 1: stop timing, continue output 2: cycle timing, stop output 3: cycle timing, continue to output	1	3	×
F7.35	Timed start conditions	0: Always start when powered on 1: start when running, stop when stopped	1	1	×
F7.36	Scheduled time setting	0～65535S	1S	0	○
F8 group - PID control parameters					
F8.00	PID operation input method	0: Automatic 1: manual input through the defined multifunctional terminal	1	0	×
F8.01	PID given channel selection	0: Number given 1:AI1 2: AI2 3: pulse given 4: RS485 communication	1	0	○
F8.02	Given digital settings	0.0～100.0％	0.1%	50.0%	○
F8.03	PID feedback channel selection	0:AI1 1:AI2 2: AI1+AI2 3: AI1-AI 2 4: MAX{AI1, AI2} 5: MIN{AI1, AI2} 6: pulse given 7: RS485 communication	1	0	○
F8.04	PID Controller Advanced Features Settings	LED bits: PID polarity selection 0: Positive 1: Negative LED tens: proportional adjustment characteristic (reserved) 0: constant proportional integral adjustment 1:Automatic variable proportional adjustment LED hundreds place:Integral adjustment characteristic 0:When the frequency reaches the upper and lower limit, stop the adjustment 1: When the frequency reaches the upper and lower limits, continue to adjust the integration LED thousands: reserved	1	000	×
F8.05	Proportional gain KP	0.01～100.00	0.01	1.00	○
F8.06	Integration time Ti	0.01～10.00s	0.01s	0.10	○
F8.07	Differential time Td	0.01 to 10.00s	0.01s	0.00	○

		0.0: No differential			
F8.08	Sample period T	0.01 to 10.00s 0.00: Automatic	0.01s	0.10	○
F8.09	Deviation limit	0.0～100.0%	0.1%	0.0%	○
F8.10	Closed-loop preset frequency	0.00 to upper limit frequency	0.01Hz	0.00	○
F8.11	Preset frequency hold time	0.0～3600.0s	0.1s	0.0	×
F8.12	Sleep mode	0: invalid 1: Sleep when the feedback pressure exceeds or falls below the sleep threshold 2: Sleep when feedback pressure and output frequency are stable	1	1	×
F8.13	Sleep shutdown selection	0: deceleration stop 1: free stop	1.00	0	○
F8.14	The deviation of feedback and set pressure deviation when entering sleep	0.0～20.0% Note: This function parameter is only valid for the second sleep mode	0.1%	5.0%	○
F8.15	Sleep threshold	0.0～200.0% Note: The threshold is the percentage of the given pressure. This function parameter is only valid for the first sleep mode.	0.1%	100.0%	○
F8.16	Awake threshold	0.0～200.0% Note: The threshold is the percentage of the given pressure	0.1%	90.0%	○
F8.17	Sleep delay time	0.0～3600.0s	0.1S	100.0	○
F8.18	Wake up delay	0.0～3600.0s	0.1S	5.0	○
F8.19	Add pump delay time	0.0～3600.0s	0.1S	10.0	○
F8.20	Reduce pump delay time	0.0～3600.0s	0.1S	10.0	○
F9 Group - Multi-speed and PLC operation, swing frequency and fixed length control parameters					
F9.00	PLC operation mode selection	0: Stop after single cycle 1: Keep the final value running after a single cycle 2: a limited number of continuous cycles 3: Continuous circulation	1	0	×
F9.01	PLC operation input mode	0: Automatic 1: manual input through the defined multifunctional terminal	1	0	×
F9.02	PLC runs out of memory	0: No memory 1: Memorize the phase of power down time, frequency	1	0	×

F9.03	PLC start method	0: restart from the first paragraph 1: start from the stage of shutdown (failure) 2: Starting from the stage and frequency at the time of shutdown (failure)	1	0	×
F9.04	A limited number of consecutive cycles	1～65535	1	1	○
F9.05	PLC runtime unit selection	0：s 1: m	1	0	×
F9.06	Multi-speed frequency 0	- Upper limit frequency - upper limit frequency	0.01Hz	5.00	○
F9.07	Multi-speed frequency 1	- Upper limit frequency - upper limit frequency	0.01Hz	10.00	○
F9.08	Multi-speed frequency 2	- Upper limit frequency - upper limit frequency	0.01Hz	15.00	○
F9.09	Multi-speed frequency 3	- Upper limit frequency - upper limit frequency	0.01Hz	20.00	○
F9.10	Multi-speed frequency 4	- Upper limit frequency - upper limit frequency	0.01Hz	25.00	○
F9.11	Multi-speed frequency 5	- Upper limit frequency - upper limit frequency	0.01Hz	30.00	○
F9.12	Multi-speed frequency 6	--Upper limit frequency - upper limit frequency	0.01Hz	40.00	○
F9.13	Multi-speed frequency 7	- Upper limit frequency - upper limit frequency	0.01Hz	50.00	○
F9.14	Multi-speed frequency 8	- Upper limit frequency - upper limit frequency	0.01Hz	0.00	○
F9.15	Multi-speed frequency 9	- Upper limit frequency - upper limit frequency	0.01Hz	0.00	○
F9.16	Multi-speed frequency 10	- Upper limit frequency - upper limit frequency	0.01Hz	0.00	○
F9.17	Multi-speed frequency 11	- Upper limit frequency - upper limit frequency	0.01Hz	0.00	○
F9.18	Multi-speed frequency 12	- Upper limit frequency - upper limit frequency	0.01Hz	0.00	○
F9.19	Multi-speed frequency 13	- Upper limit frequency - upper limit frequency	0.01Hz	0.00	○
F9.20	Multi-speed frequency 14	- Upper limit frequency - upper limit frequency	0.01Hz	0.00	○
F9.21	Multi-speed frequency 15	- Upper limit frequency - upper limit frequency	0.01Hz	0.00	○
F9.22	0th speed acceleration and deceleration time	0～3	1	0	○

F9.23	0th speed running time	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.24	Phase 1 rapid acceleration and deceleration time	0～3	1	0	○
F9.25	Phase 1 speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.26	2nd speed acceleration and deceleration time	0～3	1	0	○
F9.27	Phase 2 speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.28	Phase 3 rapid acceleration and deceleration time	0～3	1	0	○
F9.29	Phase 3 speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.30	4th speed acceleration and deceleration time	0～3	1	0	○
F9.31	Phase 4 speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.32	Phase 5 rapid acceleration and deceleration time	0～3	1	0	○
F9.33	Phase 5 speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.34	6th speed acceleration and deceleration time	0～3	1	0	○
F9.35	Phase 6 speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.36	7th speed acceleration and deceleration time	0～3	1	0	○
F9.37	7th speed running time	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.38	Stage 8 rapid acceleration and deceleration time	0～3	1	0	○
F9.39	Phase 8 speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.40	Phase 9 rapid acceleration and deceleration time	0～3	1	0	○
F9.41	Ninth speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.42	The 10th speed acceleration and deceleration time	0～3	1	0	○

F9.43	10th speed running time	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.44	11th speed acceleration and deceleration time	0～3	1	0	○
F9.45	Phase 11 speed	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.46	Stage 12 rapid acceleration and deceleration time	0～3	1	0	○
F9.47	12th speed running time	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.48	Phase 13 rapid acceleration and deceleration time	0～3	1	0	○
F9.49	13th speed running time	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.50	14th speed acceleration and deceleration time	0～3	1	0	○
F9.51	14th speed running time	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.52	15th speed acceleration and deceleration time	0～3	1	0	○
F9.53	15th speed running time	0.0～6553.5S(M)	0.1S(M)	0.0	○
F9.54	Reserved	—	—	0	◆
F9.55	Swing frequency control	0: Prohibited 1: effective	1	0	×
F9.56	Swing frequency operation input method	0: Automatic 1: manual input through the defined multifunctional terminal	1	0	×
F9.57	Swing control	0: fixed swing 1: variable swing	1	0	×
F9.58	Swing frequency shutdown start mode selection	0: Start according to the memory state before shutdown 1: start again	1	0	×
F9.59	Swing frequency state power-down memory	0: storage 1: Do not store	1	0	×
F9.60	Swing frequency preset frequency	0.00Hz to upper limit frequency	0.01Hz	10.00	○
F9.61	Swing frequency preset frequency waiting time	0.0～3600.0s	0.1s	0.0	×

F9.62	Swing frequency amplitude	0.0～100.0％	0.1%	0.0%	○
F9.63	Jump frequency	0.0～50.0％(relative wobble amplitude)	0.1%	0.0%	○
F9.64	Swing frequency rise time	0.1～3600.0s	0.1s	5.0	○
F9.65	Swing frequency fall time	0.1～3600.0s	0.1s	5.0	○
F9.66	Reserved	—	—	0	◆
F9.67	Fixed length control	0: Prohibited 1: effective	1	0	×
F9.68	Set length	0.000～65.535(KM)	0.001KM	0.000	○
F9.69	Actual length	0.000～65.535(KM)	0.001KM	0.000	○
F9.70	Length magnification	0.100～30.000	0.001	1.000	○
F9.71	Length correction factor	0.001～1.000	0.001	1.000	○
F9.72	Measuring shaft circumference	0.10～100.00CM	0.01CM	10.00	○
F9.73	Number of pulses per revolution (X6)	1～65535	1	1024	○
FA Group - Protection Parameters					
FA.00	Motor overload protection options	0: Prohibited 1: Ordinary motor (electronic thermal relay mode, low speed belt compensation) 2: Variable frequency motor (electronic thermal relay mode, low speed without compensation)	1	1	×
FA.01	Motor overload protection factor	20.0％～120.0％	0.1%	100.0%	×
FA.02	Undervoltage protection action selection	0: Prohibited 1: Permissible (undervoltage as fault)	1	0	×
FA.03	Undervoltage protection level	220V：180～280V 200V 380V：330～480V 350V	1V	Model settings	×
FA.04	Over-pressure limit level	220V：350～390V 370V 380V：600～780V 660V	1V	Model settings	×
FA.05	Deceleration voltage limiting factor	0～100 0: Invalid overvoltage stall protection	1	Model settings	×
FA.06	Current limit level (valid in VF mode only)	G type: 80% to 200%* inverter rated current 160% P type: 80%~200%* Inverter rated current 120%	1%	Model settings	×
FA.07	Weak magnetic area current limit selection	0: Limited by the current limit level of FA.06 1: Limited by current limiting level of FA.06	1	0	×

FA.08	Accelerating current limiting factor	0～100 0: Invalid acceleration current limit	1	Model settings	×
FA.09	Constant speed current limit enable	0: invalid 1: effective	1	1	×
FA.10	Lost checkout time	0.1S～60.0S	0.1S	5.0	○
FA.11	Lost detection level	0～100%*rated current of inverter 0: Invalid offload detection	1%	0%	○
FA.12	Overload pre-alarm level	Type G: 20% to 200%* Inverter Rated Current 160% P type: 20%～200%* Inverter rated current 120%	1%	Model settings	○
FA.13	Overload pre-alarm delay	0.0～30.0s	0.1s	10.0	○
FA.14	Temperature detection threshold	0.0℃～90.0℃	0.1℃	65.0℃	×
FA.15	Input and output phase loss protection selection	0: Both are prohibited 1: Input prohibited, output allowed 2: Input allowed, output prohibited 3: Allowed	1	Model settings	×
FA.16	Input phase loss protection delay time	0.0～30.0s	0.1S	1.0	○
FA.17	Output phase loss protection detection reference	0%～100%*rated current of inverter	1%	50%	×
FA.18	Output current imbalance detection coefficient	1.00～10.00 1.00: Invalid imbalance detection Note: The output current unbalance detection and output phase loss detection share the common detection reference parameter FA.17 and fault code E-13	—	1.00	×
FA.19	Reserved	—	—	0	◆
FA.20	PID feedback disconnection processing	0: No action 1: Alarm and keep running at breakage frequency 2: protect the action and free parking 3: Alarm and decelerate to zero speed operation according to the set mode	1	0	×
FA.21	Feedback broken line detection value	0.0～100.0%	0.1%	0.0%	○
FA.22	Feedback disconnection detection time	0.0～3600.0S	0.1S	10.0	○
FA.23	Reserved	—	—	0	◆

FA.24	RS485 communication abnormal action selection	0: protection action and free stop 1: alert and maintain the status quo and continue to run 2: alarm and stop according to the set stop mode	1	1	×
FA.25	RS485 communication timeout detection time	0.0: indicates no detection 0.1 to 100.0s Note: No communication overtime detection during shutdown	0.1s	5.0	○
FA.26	Panel communication abnormal action selection	0: protection action and free stop 1: alert and maintain the status quo and continue to run 2: protection action and stop according to the set stop mode	1	1	×
FA.27	Panel communication timeout detection time	0.0～100.0s	0.1s	1.0	○
FA.28	EEFROM read and write error action selection	0: protection action and free stop 1: alert and continue to run	1	0	×
FA.29	Output ground protection option at power-up (reserved)	0: invalid 1: effective	1	0	×
FA.30	Overspeed protection action selection (reserved)	0: protection action and free stop 1: Alarm and deceleration stop 2: Alarm and continue to run	1	2	×
FA.31	Over speed detection (reserved)	0.0～50.0%*【F0.15】Maximum frequency	0.1%	0.0%	○
FA.32	Over-speed detection time (reserved)	0.0～100.0s	0.1s	5.0	○
FA.33	Speed deviation too large protection action selection (reserved)	0: protection action and free stop 1: Alarm and deceleration stop 2: Alarm and continue to run	1	0	×
FA.34	Excessive speed deviation detection value (reserved)	0.0～50.0%*【F0.15】Maximum frequency	0.1%	0.0%	○
FA.35	Excessive speed deviation detection time (reserved)	0.0～100.0s	0.1s	0.5	○
PB group - RS485 communication parameters					
FB.00	Agreement selection	0: MODBUS 1: custom	1	0	×
FB.01	Local address	0: Broadcast address 1 to 247: Slave station	1	1	×
FB.02	Communication baud	0：2400BPS	1	3	×

	rate setting	1：4800BPS 2：9600BPS 3：19200BPS 4：38400BPS 5：115200BPS			
FB.03	Data Format	0: No parity (N,8,1) for RTU 1: Even parity (E, 8, 1) for RTU 2: Odd parity (0,8,1) for RTU 3: No parity (N,8,2) for RTU 4: Even parity (E,8,2) for RTU 5: Odd parity (0,8,2) for RTU ASCII mode is temporarily reserved	1	0	×
FB.04	Native response delay	0～200ms	1ms	5	×
FB.05	Transmission response processing	0: Write operation has a response 1: Write operation does not respond	1	0	×
FB.06	Proportional linkage coefficient	0.01～10.00	0.01	1.00	○
FC Group - Advanced Features and Performance Parameters					
FC.00	Dynamic braking function setting	0: invalid 1: effective throughout 2: Only effective when decelerating	1	2	×
FC.01	Energy consumption braking initial voltage	220V：340～380V 360V 380V：660～760V 680V	1V	Model settings	○
FC.02	Energy consumption braking difference voltage	220V：10～100V 5V 380V：10～100V 10V	1V	Model settings	○
FC.03	Energy consumption braking ratio	10～100%	1%	100%	○
FC.04	Power failure restart settings	0: Prohibited 1: start from the starting frequency 2: Speed tracking start	1	0	×
FC.05	Power restart wait time	0.0～60.0s	0.1s	5.0	×
FC.06	Failure automatic reset times	0～100 A setting of 100 means that the number of times is unlimited, that is, countless times	1	0	×
FC.07	Fault automatic reset interval	0.1～60.0s	0.1	3.0	×
FC.08	Cooling fan control	0: automatic control mode 1: The power-on process has been running	1	0	○
FC.09	Run Limit Password	0～65535 Note 1: The password is set successfully	1	0	○

		and it takes 3 minutes to take effect. Note 2: This function parameter cannot be initialized.			
FC.10	Operation limit selection	0: Prohibited 1: Valid Note: This function parameter cannot be initialized	1	0	○
FC.11	limited time	0～65535(h) Note: This function parameter cannot be initialized	1	0	×
FC.12	Instant power down frequency	220V:180～330V 250V 380V:300～550V 450V	1V	Model settings	×
FC.13	Instantaneous power-down frequency reduction factor	0: Invalid instantaneous stop function 1 to 100	1	0	○
FC.14	Droop control	0.00～10.00Hz 0.00: Invalid droop control function	0.01Hz	0.00	×
FC.15	Speed tracking waiting time	0.1～5.0S	0.1S	1.0	×
FC.16	Speed tracking current limiting level	G type: 80% to 200%* inverter rated current 160% P type: 80%~200%* Inverter rated current 120%	1%	Model settings	×
FC.17	Speed tracking speed	1～100	1	10	×
FC.18	PWM mode	LED bits: PWM synthesis mode 0: Full frequency 7 segments 1: Seven to five segments LED tens: PWM temperature correlation 0: Invalid 1: Valid LED hundred bits: PWM frequency correlation 0: Invalid 1: low frequency adjustment, high frequency adjustment 2: Low frequency adjustment, high frequency adjustment 3: Low-frequency adjustment, high-frequency adjustment LED thousand bits: Flexible PWM function 0: invalid 1: effective	1	Model settings	×

FC.19	Voltage control function	LED bit: AVR function 0: Invalid 1: effective throughout 2: Invalid only during deceleration LED Tens: Overmodulation selection 0: Invalid 1: Valid LED hundred: Deadband compensation selection 0: Invalid 1: Valid LED thousands: harmonic optimization (reserved) 0: invalid 1: valid	1	0102	×
FC.20	Oscillation suppression coefficient	0: invalid 1 to 100 Note: This parameter is only valid for VF control	1	0	○
FC.21	Flux brake selection	0 to 100 0: invalid	1	0	○
FC.22	Energy-saving control coefficien	0 to 100 0: invalid	1	0	○
FC.23	Multi-speed priority enable	0: Invalid 1: Multi-step speed is given priority over P0.07	1	0	×
FC.24	Jog priority enable	0: invalid 1: When the inverter is running, the priority of jogging is the highest	1	0	×
FD group - retention parameters					
PE Group - Panel Function Settings and Parameter Management					
FE.00	LCD language selection (valid for LCD panels only)	0: Chinese 1: English 2: Reserved	1	0	○
FE.01	M-FUNC key function selection	0: JOG (jog control) 1: positive and negative switching 2: Clear the panel ▲/▼ keys to set the frequency 3: Local operation and remote operation switching (reserved) 4: Reverse	1	0	×
FE.02	STOP/RST key function selection	0: Only valid for panel control 1: effective for both panel and terminal control 2: effective for panel and communication control at the same time 3: Valid for all control modes	1	3	○
FE.03	STOP button + RUN emergency stop function	0: invalid 1: free parking	1	1	○
FE.04	Closed-loop display	0.01～100.00	0.01	1.00	○

	factor				
FE.05	Load speed display factor	0.01～100.00	0.01	1.00	○
FE.06	Linear velocity coefficient	0.01～100.00	0.01	1.00	○
FE.07	Encoder adjustment rate (reserved)	1～100	1	10	○
FE.08	Operating status monitoring parameter selection 1	0～57	1	0	○
FE.09	Operating status monitoring parameter selection 2	0～57	1	5	○
FE.10	Stop status monitoring parameter selection 1	0～57	1	1	○
FE.11	Stop status monitoring parameter selection 2	0～57	1	12	○
FE.12	Parameter display mode selection	LED Units: Function parameter display mode selection 0: Display all function parameters 1: Display only parameters different from the factory value 2: Display only the parameters that were modified after the last power-up (Reserved) LED Tens digit: Monitor parameter display mode selection 0 : Display only main monitoring parameters 1: alternate display of main and auxiliary (Interval 1S) LED hundred, LED thousands: Reserved	1	00	○
FE.13	Parameter initialization	0: No operation 1: Reset all user parameters except motor parameters to factory settings 2: Restore all user parameters to factory settings 3: Clear fault records	1	0	×
FE.14	Parameter write protection	0: Allow to modify all parameters (some parameters cannot be modified during operation) 1: Only modify frequency setting F0.12, F0.13 and this function code 2: All parameters except this function code are forbidden to modify Note: The above restrictions are invalid for this function code and F0.00	1	0	○
FE.15	Parameter copy	0: No operation	1	0	×

	function	1: Parameter upload to panel 2: All function code parameters are downloaded to the inverter 3: All function code parameters except motor parameters are downloaded to the inverter. Note: When selecting the parameter download, the software will judge whether the power specifications of the inverter are consistent. If not, the parameters related to the model will not be modified.			
FF group - factory parameters					
FF.00	Factory password	0～65535 Note: The password is set successfully and it takes 3 minutes for it to take effect	1	0	○

4.2 Parameter Detailed Instructions

F0 system management parameters

F0.00	user password	
	0～65535	0

The user password setting function is used to prohibit unauthorized persons from viewing and modifying function parameters.

In order to avoid misoperation, a user password less than 10 is invalid.

When setting the user password, enter any number that is not less than 10, press ENTER to confirm, and the password will take effect automatically after one minute. When you need to change the password, select F0.00 function code and press ENTER key to enter the password verification state. After the password verification is successful, enter the modification state, enter the new password, and press ENTER key to confirm, the password change is successful, after 3 minutes, the password is automatically Effective. Please keep your password safe and if it is forgotten, please seek the service from the manufacturer.

prompt:

The user should save the password. If there is something missing, consult the manufacturer.

F0.01	Control software version number	
	1.00～99.99	1.00
F0.02	Panel software version number	
	1.00～99.99	1.00
F0.03	Inverter rated power	
	0.4～999.9KW（G/P）	Model

		settings

The above function code is used to indicate the relevant information of the inverter. It can only be viewed and cannot be modified.。

F0.04	Inverter model selection	
	0～1	0

0: G type (constant torque load model)

1: P type (fan, pump type load model)

In this inverter, the G/P model combined processing, that is, the G-type machine with a lower power level can be used as a P-type machine with a higher power level. But the premise is that this function code must be set to the corresponding value.

F0.05	control method	
	0～4	Model settings

: Normal V/F control

When it is necessary to drive more than one motor with a single inverter, the control method is selected when the motor parameter cannot be self-learned or the controlled motor parameters cannot be obtained through other means. This control method is the most commonly used motor control method. This control method can be used in any application that does not require high motor control performance.

1: Advanced V/F control

This kind of control mode introduces the idea of magnetic flux closed-loop control, can greatly improve the torque response of the motor control in the whole frequency band, enhance the torque output capability of the motor at low frequency, and at the same time it will not be too inconsistent with the motor parameters as the field-oriented vector control. Sensitive, this control mode is particularly suitable in certain situations where there is a certain requirement for starting torque (such as wire drawing machine, ball mill, etc.)

2: open-loop current vector control (more sensitive motor parameters)

The real current vector control method, in addition to the high-torque output performance of the magnetic flux control method, also has the effect of flexible torque output, which can be described as rigid and soft, but this control method is more sensitive to motor parameters. It is better to enable the dynamic self-learning of the motor parameters before use, otherwise the effect is not good.

3: closed-loop current vector control

The current vector control method with PG has better dynamic characteristics and control accuracy than open-loop current vector control.

4: Separate V/F control

In this control mode, the output voltage and frequency of the inverter can be independently controlled, and it is no longer simply to satisfy the constant relationship of V/F. Generally, it can be used in fields such as variable frequency power supply and EPS.

F0.06	Run command channel selection	
	0～2	0

This function code selects the physical channel where the inverter accepts operation commands such as running and stopping.

0: operation panel run command channel

Operation control is performed by the buttons RUN, RUN, M-FUNC on the operation panel.

1: terminal operation command channel

The multi-function terminals, which are defined as functions such as FWD, REV, JOG forward, and JOG inversion, are operated and controlled.

2: Communication operation command channel

The upper computer controls the operation through communication.

⚠**note:**

Even during the operation, by modifying the set value of this function code, the operation command channel can also be changed. Please set carefully!

F0.07	Primary frequency source A selection	
	0～8	0

0: digital reference 1 (panel ▲/▼, encoder)

The initial value of the frequency setting is F0.12, which is adjusted by the operation panel ▲/▼ key or digital encoder. The modified frequency value will be stored in F0.12 after power down. (If you want to save this frequency, you can set it by setting F0.10 to 1.)

1: Digital reference 2 (UP/DOWN terminal adjustment)

The initial value of frequency setting is F0.13. It is defined by the external function as UP/DOWN function.

The on and off of the terminal is used to change the operating frequency (see the F7 group X terminal frequency increasing degressive item function number). When the UP terminal and the COM terminal are closed, the frequency increases; when the DOWN terminal and the COM terminal are closed, the frequency decreases; UP/DOWN When the terminal is closed or disconnected with the COM terminal at the same time, the frequency remains unchanged. If you set the frequency of power-down storage, the modified frequency value will be stored in F0.13 after power-down. The rate at which the UP/DOWN terminal modifies the operating frequency can be set by function code F7.12.

🕮prompt:

Whether it is the panel ▲/▼ key adjustment or the terminal UP/DOWN adjustment, its setting value is superimposed on F0.12 or F0.13 based on an adjustment, the final frequency output value is the lower limit frequency to the maximum output frequency, terminal UP/ The adjustment amount of DOWN adjustment can be cleared by selecting “UP/DOWN terminal frequency clearing 0” through X terminal. The adjustment amount of the panel can also be cleared by pressing the M-FUNC key to select “Clear ▲/▼ Key Frequency Setting”.

2: Digital setting 3 (communication setting)

Change the setting frequency through the serial port frequency setting command. For details, see the PB group communication parameters.

3: AI1 analog reference (0 to 10V/20mA)

The frequency setting is determined by the AI1 terminal analog voltage/current, input range:

DC 0 ~ 10V/20mA related settings see function F6.00 ~ F6.05 definition.

4: AI2 simulation given (0～10V)

The frequency setting is determined by the AI2 terminal analog voltage/current, input range:

DC 0 ~ 10V related settings see function code F6.06 ~ F6.11 definition.

5: pulse given

The frequency setting is determined by the terminal pulse frequency (can only be input by X6, see F7.05 definition), input pulse signal specification: High range 15~30V; frequency range 0~50kHz. Related settings are defined in function codes F6.15 to F6.20.

6: Simple PLC setting

Select simple PLC given frequency mode, need to set function code F9.00～F9.05; function code F9.06～F9.21 to determine PLC running frequency in each stage, function code F9.22～F9.53 define PLC respectively Stage acceleration and deceleration time and phase running time.

7: Multi-speed operation setting

Select this frequency setting mode, the inverter runs in multi-speed mode. Need to set F7 group "X terminal for multi-speed selection" and F9 group "multi-speed frequency" function code to determine the corresponding relationship between the number of multi-speed segments and the given frequency.

8: PID control setting

When this frequency setting mode is selected, the inverter operation mode is process PID control. At this point, you need to set P8 group "process PID parameters" and analog reference and pulse given related function codes. The inverter operating frequency is the frequency after the PID is applied. For detailed settings, please refer to the detailed description of the function of group F8.

F0.08	Auxiliary frequency source B selection	
	0 ～ 8(same as main frequency channel selection)	3

0: digital reference 1 (panel (▲/▼), encoder)

1: Digital reference 2 (UP/DOWN terminal adjustment)

2: Digital setting 3 (communication setting)

3: AI1 analog reference (0 to 10V/20mA)

4: AI2 simulation given (0～10V)

5: pulse given (0～50KHZ)

6: Simple PLC setting

7: Multi-speed operation setting

8: PID control setting

The meanings of the auxiliary frequency reference channels are the same as those of the main frequency reference channel. Refer to F0.07 for details.

F0.09	Frequency source combination algorithm	
	0～8	0

0: main frequency source A

1: A+K*B

The main frequency given channel A frequency and the auxiliary frequency given channel B frequency, multiplied by the weight coefficient K, and then add the two frequencies, as the final frequency given frequency converter.

2: A-K*B

The main frequency given channel A frequency and auxiliary frequency given channel B frequency, multiplied by the weight coefficient K, and then subtracted from the two frequencies, as the frequency converter's final given frequency.

3:-A-K*B—

The main frequency given channel A frequency and auxiliary frequency given channel B frequency, multiplied by the coefficient K, and then the two frequencies are subtracted, after taking the absolute value, as the final frequency of the frequency converter.

4:MAX(A,K*B)

The main frequency given channel A frequency and auxiliary frequency given channel B frequency multiplied by the weight coefficient K, then compare the two frequencies, whichever is greater as the final given frequency of the frequency converter.

5:MIN(A,K*B)

The main frequency given channel A frequency and auxiliary frequency given channel B frequency multiplied by the weight coefficient K, then compare the two frequencies, take the smaller one as the final given frequency of the frequency converter.

6: Switch from A to K*B

This function is used together with the No.29 function item of X1～X8 function in F7 group parameter. When F0.09 =6, and X terminal function selects 29, X terminal is valid, the frequency setting source is switched from A to K*B. When the X terminal is invalid, the frequency source returns to A.

7: A and (A+K*B) Switching

This function is used together with the No. 30 function item of terminal X1～X8 function in F7 group parameter. When F0.09 =7 and X terminal function selects 30, X terminal is valid, the frequency setting source is switched from A to (A +K*B); When the X terminal is invalid, the frequency source returns to A.

8: A and (A-K*B) Switching

This function is used with the No. 31 function item of terminals X1～X8 function in F7 group parameter. When F0.09 =8 and X terminal function selects 31, X terminal

Effective, the frequency reference source is switched from A to (A-K*B). When the X terminal is invalid, the frequency source returns to A.

⚠**note:**

The magnitude of the given frequency is still limited by the starting frequency, upper and lower limit frequency, etc. The positive and negative frequencies determine the running direction of the inverter.

Among them, K is the weight coefficient of auxiliary frequency source B. Please refer to F0.14 function code for detailed setting.

F0.10	Digital frequency given 1 control	
	000～111	000

LED bit: Power-off storage

0: storage

When the inverter is powered on, the panel and terminal frequency increments are initialized to the values saved in the EEPROM at the time of the last power down.

1: Do not store

When the inverter is powered on, the panel and terminal frequency increments are initialized to 0.

LED tens: Stop and keep

0: hold down

When the inverter is stopped, the frequency setting value is the final modified value.

1: Do not keep

When the inverter stops, the set frequency returns to F0.12

ED hundred place: ▲/▼UP/DOWN negative frequency adjustment

0: invalid

1: effective

When the selection is valid, operating the keyboard ▲/▼ key, terminal UP / DOWN can achieve positive and negative frequency adjustment.

LED thousands: reserved

F0.11	Digital frequency given 2 control	
	000～111	000

LED bit: Power-off storage

0: storage

When the inverter is powered on, the panel and terminal frequency increments are initialized to the values saved in the EEPROM at the time of the last power down.

1: Do not store

When the inverter is powered on, the panel and terminal frequency increments are initialized to 0.

LED tens: Stop and keep

0: hold down

When the inverter is stopped, the frequency setting value is the final modified value.

1: When the inverter is not stopped, the set frequency returns to F0.12.

LED hundred position: ▲/▼ key, UP / DOWN negative frequency adjustment

0: invalid

1: effective

When the selection is valid, operating the keyboard ▲/▼ key, terminal UP / DOWN can achieve positive and negative frequency adjustment.

LED thousands: reserved

F0.12	Frequency source digital setting 1 setting	
	0.00Hz～【P0.16】Maximum frequency	50.00

When the frequency channel is defined as digital reference 1 (main frequency source and auxiliary frequency source are 0), this function parameter is the initial setting frequency of the digital frequency given by the inverter panel.

F0.13	Frequency source digital reference 2

	setting	
	0.00Hz～【F0.16】Maximum frequency	50.00

When the frequency channel is defined as digital reference 2 (main frequency source and auxiliary frequency source are 1), this function parameter is the initial setting frequency of the frequency given by the inverter terminal.

F0.14	Auxiliary frequency source weight coefficient K setting	
	0.01～10.00	1.00

K is the auxiliary frequency source weight coefficient. It is valid when F0.09 is 1-8.

F0.15	Maximum output frequency	
	Low frequency band：MAX｛50.00, 【F0.16】｝～ 300.00 High frequency：MAX｛50.0, 【F0.16】｝～ 3000.0	50.00

F0.16	Maximum frequency	
	【F0.17】～【F0.15】	50.00
F0.17	Lower limit frequency	
	0.00Hz～【F0.16】	0.00

The maximum output frequency is the highest frequency allowed by the inverter, and is the reference for the acceleration and deceleration time settings. The fmax shown in the figure below is the basic operating frequency that corresponds to the minimum frequency when the inverter outputs the highest voltage, which is generally the rated frequency of the motor. The fb shown in the figure below is the maximum output voltage Vmax is the corresponding output voltage when the inverter output basic operating frequency, generally the rated voltage of the motor; Vmax shown in the figure below; fH, fL are defined as the upper limit frequency and the lower limit frequency respectively. , as shown in Figure F0-1:

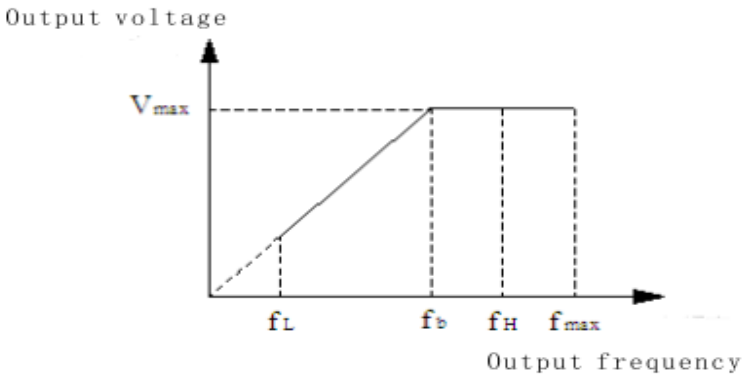


Figure F0-1 Voltage and Frequency Schematic

⚠**note:**

1. The maximum output frequency, upper limit frequency and lower limit frequency

should be set carefully according to the actual nameplate parameters of the motor being controlled and the operating conditions. Otherwise, the equipment may be damaged. .

2. The limit range of the upper limit frequency is valid for the JOG operation limit, and the limit range of the lower limit frequency is invalid for the JOG operation.

3. In addition to the limits of the upper limit frequency and the lower limit frequency, the output frequency of the inverter during operation is also limited by the setting values of the starting frequency, the starting frequency of the stop DC braking, and the skip frequency.

4. The relationship between the maximum output frequency, upper limit frequency and lower limit frequency is shown in Figure F0-1. Please pay attention to the order of the settings.

5. The upper and lower limit frequency is used to limit the actual output frequency of the motor. If the set frequency is higher than the upper limit frequency, it will run at the upper limit frequency; if the set frequency is lower than the lower limit frequency, the lower limit frequency will be run (the set frequency is lower than the lower limit The operating status at frequency is also related to the setting of function code F1.31. If the set frequency is less than the starting frequency, it will run at zero frequency when starting.

F0.18	Frequency output mode	
	0～1	0

0：Low frequency mode（0.00～300.00HZ）

1：High frequency mode（0.0～3000.0HZ）

High-frequency mode is only valid for V/F control

F0.19	Acceleration time 1	
	0.1～3600.0S	Model settings
F0.20	Deceleration time 1	
	0.1～3600.0S	Model settings

Acceleration time refers to the time required for the inverter to accelerate from zero frequency to the maximum output frequency, as shown in the following figure. The deceleration time refers to the time required for the inverter to decelerate from the maximum output frequency to zero frequency, as shown in the following figure.

There are four groups of acceleration/deceleration time parameters in this series of inverters. The other three groups of acceleration/deceleration time are defined in function codes F1.13~F1.18. The factory default acceleration/deceleration time is determined by the model, if you want to select other Deceleration time group, please select through the multi-function terminal (please refer to F7.00~F7.07 function code). The acceleration/deceleration time during jog operation is defined individually in F1.22 and F1.23.

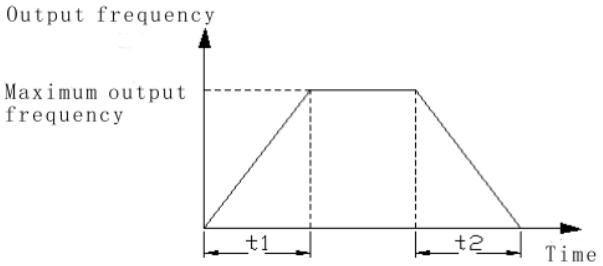


Figure F0-2 Acceleration time and deceleration time

F0.21	Running direction setting	
	0～2	0

0: Forward

When this method is selected, the phase sequence of the actual output of the inverter is the same as the default phase sequence of the system. At this point, the RUN key and FWD terminal function on the panel both become forward rotation control.

1: Reverse

When this method is selected, the actual output phase sequence of the inverter will be opposite to the default phase sequence of the system. At this point, both the RUN and FWD terminal functions on the panel become reversed.

2: Reverse prevention

In any case, the motor can only run in the forward direction. This function is suitable for occasions where reverse operation may cause danger or property damage. Given a reverse command, the drive runs at zero speed.

📖prompt:

This function code setting is valid for the running direction control of all running command channels.

F0.22	Carrier frequency setting	
	1.0～16.0KHz	Model settings
0.4～4.0KW	6.0KHz	1.0～16.0KHz
5.5～30KW	4.5KHz	1.0～16.0KHz

This function code is used to set the carrier frequency of the inverter output PWM wave. The carrier frequency will affect the noise during the operation of the motor. For applications requiring silent operation, the carrier frequency can be appropriately increased to meet the requirements. However, increasing the carrier frequency will increase the amount of heat generated by the inverter and increase the electromagnetic interference to the outside world.

When the carrier frequency exceeds the factory set value, the inverter must be derated. In general, when the download wave is increased by 1 KHz, the inverter current needs to be derated by about 5%.

⚠Note:

1: The carrier mode can be selected by function code F0.22.

F1 basic operating parameters

F1.00	Starting method	
	0～2	0

0: start frequency start

Start according to the set start frequency (F1.01) and start frequency hold time (F1.02).

1: DC brake + starting frequency start

Start with DC braking (see F1.03, F1.04) and then start with mode 0.

2: Speed tracking start

When the power is turned on after a power failure, if the start condition is satisfied, the inverter waits for the time defined by FC.15, and the inverter will automatically start and run with the speed tracking mode.

F1.01	Starting frequency	
	0.00～50.00Hz	1.00
F1.02	Start frequency holding time	
	0.0～10.0s	0.0

Starting frequency refers to the initial frequency when the inverter is started. fs shown in the figure below, for some systems with large starting torque, setting a reasonable starting frequency can effectively overcome the difficulty of starting. Start frequency holding time refers to the time during which the inverter keeps running at the starting frequency, as shown in the following figure. Startup frequency diagram is as follows:

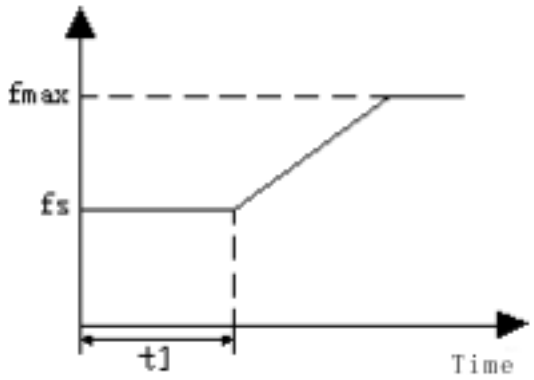


Figure F1-1 Startup frequency

📖prompt:

1. The starting frequency is not limited by the lower limit frequency. Jog frequency is not limited by the lower limit frequency but limited by the start frequency.

2. When F0.18=1 (high frequency mode), the upper limit of the starting frequency is 500.0Hz.

F1.03	Start DC braking current	
	0.0～150.0%*Rated current of motor	0.0%
F1.04	Start DC braking time	
	0.0～100.0s	0.0

The starting DC braking current is set as a percentage of the inverter's rated output current.

When the starting DC braking time is 0.0s, there is no DC braking process. Specific as shown below.

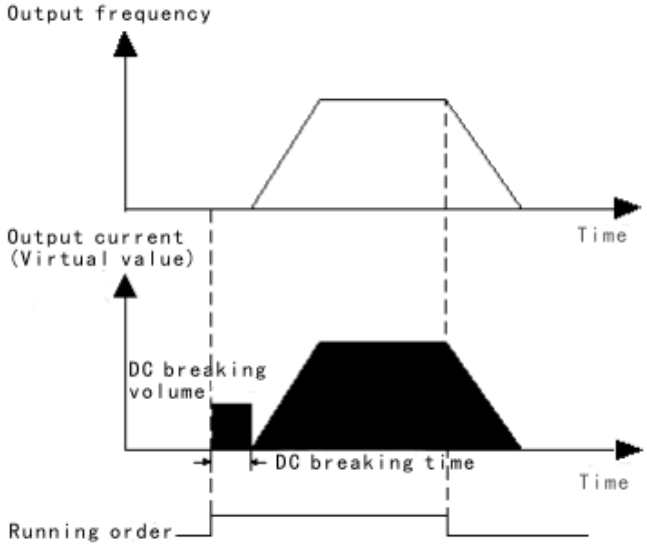


Figure F1-2 Starting DC braking

F1.05	Acc	
	0～1	0

0: linear acceleration and deceleration

The relationship between output frequency and time increases or decreases at a constant slope, as shown in the figure below.

1:S curve acceleration and deceleration

The relationship between the output frequency and time is increasing or decreasing according to the sigmoid curve. When the acceleration starts and the speed reaches, and when the deceleration starts and the speed reaches, the speed setting value is the S-curve state. This smoothes the acceleration and deceleration actions and reduces the impact on the load. The S-curve acceleration/deceleration mode is suitable for the start and stop of transfer load, such as elevators and conveyor belts. As shown below: t1 is the acceleration time, t2 is the deceleration time, ts is the initial period of the S-curve, te is the end of the S-curve, F1.06=ts/t1, F1.07=te/t2.

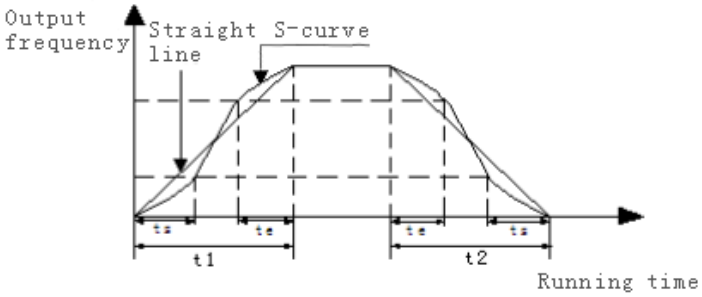


Figure F1-3 Acceleration and Deceleration of Straight Line and S Curve

F1.06	S-curve start time ratio	
	10.0～50.0%	20.0%
F1.07	S-curve end time ratio	
	10.0～50.0%	20.0%

See the description of S-curve acceleration and deceleration in F1.05.

F1.08	Downtime	
	0～1	0

0: deceleration stop

After receiving the stop command, the inverter gradually reduces the output frequency according to the deceleration time, and stops after the frequency drops to zero. If the stop DC braking function is valid, the DC braking process will be performed after stopping at the DC braking starting frequency of the stop (according to F1.09 setting, it may also wait for a waiting DC braking waiting time).

1: free stop

After receiving the stop command, the inverter immediately terminates the output and the load is free to stop according to mechanical inertia.

F1.09	Stop DC braking starting frequency	
	0.00～【F0.16】Maximum frequency	0.00
F1.10	Shutdown DC braking waiting time	
	0.0～100.0s	0.0
F1.11	DC brake current at shutdown	
	0.0 ～ 150.0%*motor rated current	0.0%
F1.12	Shutdown DC braking time	
	0.0: DC braking does not work 0.1～100.0s	0.0

The set value of the stop DC braking current is relative to the rated current of the inverter. When the stop braking time is 0.0s, there is no DC braking process. As shown below.

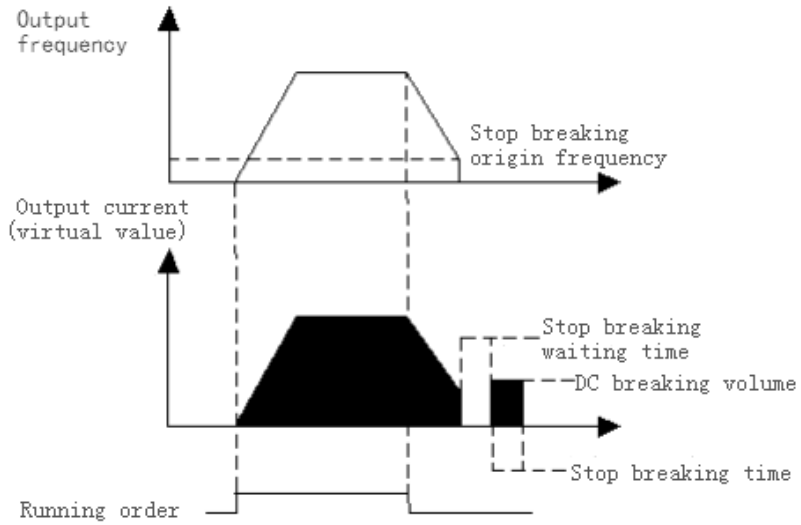


Figure F1-4 Shutdown DC Brake

F1.13	Acceleration time2	
	0.1～3600.0	Model settings
F1.14	deceleration time2	
	0.1～3600.0	Model settings
F1.15	Acceleration time3	
	0.1～3600.0	Model settings
F1.16	deceleration time3	
	0.1～3600.0	Model settings
F1.17	Acceleration time4	

Four deceleration times can be defined and can be controlled by different groups of terminals

In addition, select deceleration time 1 to 4 during inverter operation. See the definition of the deceleration time terminal function in F7.00 to F7.07.

🕮prompt:

Added deceleration time1 is defined in F0.19 and F0.20.

F1.19	Add deceleration time unit selection	
	0～1	0

0: second

1 point

This function code defines the dimension of adding deceleration time.

F1.20	Jog forward running frequency setting	
	0.00～【P0.16】Maximum frequency	5.00
F1.21	Jog reverse running frequency setting	

	0.00～【P0.16】Maximum frequency	5.00
F1.22	Jogging Acceleration time setting	
	0.1～3600.0s	Model settings
F1.23	Jog deceleration time setting	
	0.1～3600.0s	Model settings
F1.24	Jog interval setting	
	0.1～100.0s	0.1

F1.20~P1.24 define related parameters during jogging operation. As shown in Figure F1-5, t1 and t3 are the actual running jog acceleration and deceleration time; t2 is the jog time; t4 is the jog interval time (F1.24); f1 is the forward jog running frequency (F1). .20); f2 is the reverse jog running frequency (F1.21). The actual running jog Acceleration timet1 is determined according to the following formula:

T1=F1.20*F1.22/F0.15

Similarly, the actual running jog deceleration timet3 can also be determined as follows:

T3=F1.21*F1.23/F0.15

F0.15 is the maximum output frequency.

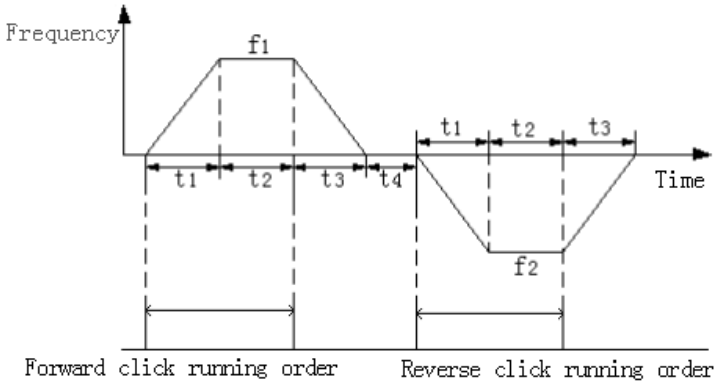


Figure P1-5 Jog operation diagram

F1.25	Jump frequency 1	
	0.00～Maximum frequency	0.00
F1.26	Jump frequency 1 range	
	0.00～Maximum frequency	0.00
F1.27	Jump frequency 2	
	0.00～Maximum frequency	0.00
F1.28	Jump frequency 2 range	
	0.00～Maximum frequency	0.00
F1.29	Jump frequency 3	
	0.00～Maximum frequency	0.00
F1.30	Jump frequency 3 range	
	0.00～Maximum frequency	0.00

The above function code is a function to set the inverter output frequency to avoid the resonance frequency point of the mechanical load. The setting frequency of the inverter

can be skipped around certain frequency points according to the following figure. Its specific meaning is that the frequency of the inverter will not be stable in the jumping frequency range, but it will be during acceleration and deceleration.
After this range.

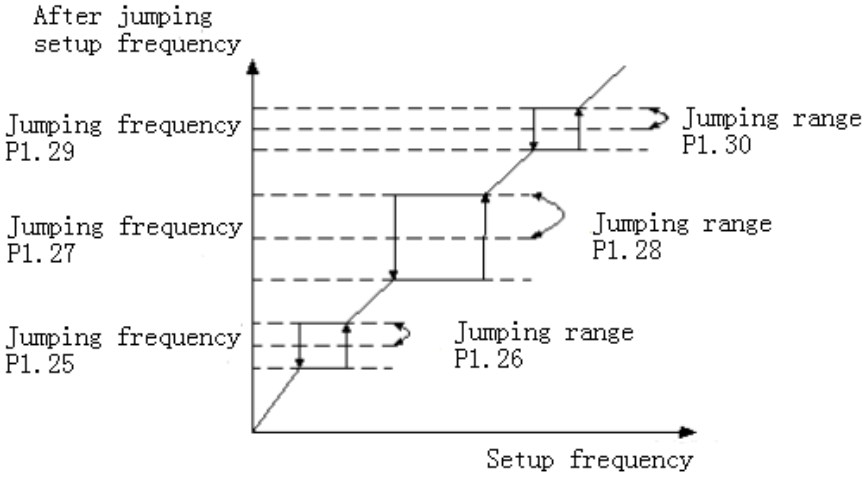


Figure F1-6 Jump frequency diagram

F1.31	When the set frequency is lower than the lower limit frequency	
	0～2	0

0: Run at the following frequency

When the set frequency is lower than the lower limit frequency setting (F0.17), the inverter runs at the lower limit frequency.

1: Zero-frequency operation after delay time

When the set frequency is lower than the lower limit frequency setting (F0.17), the inverter will run at zero frequency after the delay time (F1.32).

2: Stop after delay

When the set frequency is lower than the lower limit frequency setting (F0.17), the inverter will stop after the delay time (F1.32).

F1.32	Stop delay time when frequency is lower than lower limit frequency	
	0.0～3600.0s	10.0

See parameter description of F1.31 for details.

F1.33	Zero frequency braking current	
	0.0～150.0%	0.0

This parameter is the percentage of the rated motor current.

F1.34	Reversal of dead time	
	0.0～100.0s	0.0

The inverter transits from forward operation to reverse operation, or from reverse operation to forward operation, as shown in the following figure. The handover wait frequency is also related to the setting of F1.35.

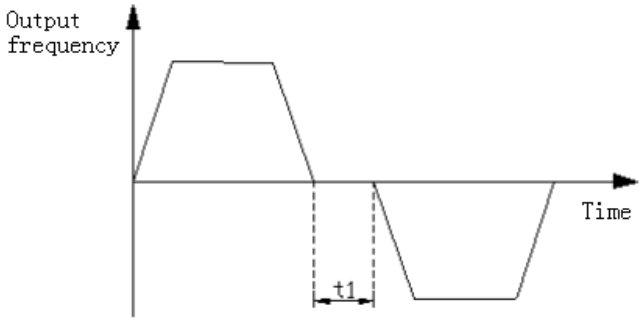


Figure F1-7 Positive and negative dead time

F1.35	Forward and reverse switching mode	
	0～1	0

0: Zero frequency switching

1: over-start frequency switching

F1.36	Emergency stop backup deceleration time	
	0.0～3600.0S	1.0

For details, see function description No. 10 in digital input terminals (F7.00 to F7.07).

F2 auxiliary operation parameters

F2.00	Motor type selection	
	0～1	0

0: AC asynchronous motor

1: permanent magnet synchronous motor (reserved)

Synchronous motors temporarily only accept closed-loop vector control.

F2.01	Rated power of motor	
	0.4～999.9KW	Model settings
F2.02	Rated frequency of motor	
	0.01Hz～【F0.15】Maximum output frequency	50.00
F2.03	Motor rated speed	
	0～60000RPM	Model settings
F2.04	Motor rated voltage	
	0～999V	Model settings
F2.05	Rated current of motor	
	0.1～6553.5A	Model settings

⚠**note:**

The above function code must be set according to the motor nameplate parameters. Please click the corresponding motor of the power configuration of the inverter. If the power difference is too large, the control performance of the inverter

will be significantly reduced.

F2.06	Induction motor stator resistance	
	0.001～20.000Ω	Model settings
F2.07	Induction motor rotor resistance	
	0.001～20.000Ω	Model settings
F2.08	Asynchronous motor stator and rotor inductance	
	0.1～6553.5mH	Model settings
F2.09	Asynchronous motor stator and rotor mutual inductance	
	0.1～6553.5mH	Model settings
F2.10	Asynchronous motor no-load current	
	0.01～655.35A	Model settings

The specific meanings of the above motor parameters are shown in Figure F2-1.

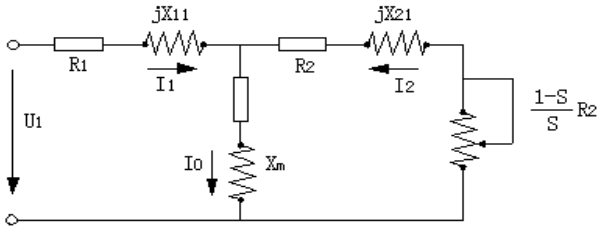


Fig. F2-1 Steady state equivalent circuit diagram of asynchronous motor

R1, X11, R2, X21, Xm, and Io in Figure F2-1 represent: stator resistance, stator leakage inductance, rotor resistance, rotor leakage inductance, mutual inductance, and no-load current.

If motor tuning is performed, the set values of F2.06 to F2.10 will be updated after the tuning is completed.

After changing the rated power of asynchronous motor F2.01, F2.03 ～ F2.10 parameters are automatically updated to the corresponding parameters of the asynchronous motor (F2.02 is the rated frequency of the motor, not belonging to the default range of the asynchronous motor, users are required to use the nameplate. Settings).

F2.11	Synchronous motor stator resistance	
	0.001～20.000Ω	Model settings

F2.12	Synchronous motor D shaft inductance	
	0.1～6553.5mH	Model settings
F2.13	Synchronous motor Q-axis inductance	
	0.1～6553.5mH	Model settings
F2.14	Synchronous motor back-constant constant	
	1～1000V/1000rpm	150
F2.15	Synchronous motor identification current	
	0%～30%Rated current of motor	10%

F2.16	Motor tuning options	
	0～3	0

0: No action

1: Static tuning

The parameter measurement mode in which the motor is at rest, this mode is suitable for applications where the motor and load cannot be disengaged.

2: Fully tuned

The complete parameter measurement mode of the motor adopts this method as far as possible when the motor and the load energy are separated.

📖prompt:

1: When F2.16 is set to 2, if there is overcurrent and tuning failure during tuning, check whether the missing phase is output and the model is matched.

2: When F2.16 is set to 2, when complete tuning, the motor shaft should be detached from the load, and the motor is prohibited from being fully tuned with the load;

3: Before starting the motor parameter tuning, make sure the motor is in the stop state, otherwise the tuning cannot be performed normally;

4: Static tuning can be performed in some cases (such as when the motor cannot be disconnected from the load, etc.) when the complete tuning is not convenient or the user does not require high motor control performance.

5: If tuning is not possible and the user already knows the exact motor parameters, then the user can directly input the motor nameplate parameters (F2.01~F2.14), which can still exert the superior performance of the inverter. Unsuccessful tuning, protection action and display E-21

F2.17	Induction motor pre-excitation holding time

	0.00～10.00S 0.4 ～ 4.0KW 0.02S 5.5～30KW 0.05S 37～132KW 0.10S 160～630KW 0.20S Note: This parameter is invalid for VF control	Model settings

F3 encoder and zero servo parameters

F3.00	PG pulse per revolution (reserved)	
	1～9999	1024
F3.01	Motor and encoder speed ratio (reserved)	
	0.001～65.535	1.000
F3.02	PG rotation direction (reserved)	
	0～1	0
F3.03	PG signal filtering time (reserved)	
	0.00～10.00S	0.10
F3.04	PG disconnection detection time (reserved)	
	0.1～10.0S	2.0
F3.05	PG disconnection action (reserved)	
	0～1	0
F3.06	Zero speed detection (reserved)	
	0.0(Disconnection protection is prohibited) 0.1～999.9rpm	0.0
F3.07	Zero Servo Control Function Selection (Reserved)	
	0～2	0
F3.08	Zero servo position loop proportional gain (reserved)	
	0.000～6.000	2.000

F4 speed loop and torque control parameters

F4.00	Speed Loop (ASR1) Proportional Gain	
	0.000～6.000	1.000
F4.01	Speed Loop (ASR1) Integration Time	
	0.000～32.000S	1.000
F4.02	ASR1 filter time constant	
	0.000～0.100S	0.000
F4.03	Switch low frequency	
	0.00Hz～【F4.07】	5.00
F4.04	Speed Ring (ASR2) Proportional Gain	

	0～6.000	1.500
F4.05	Speed Loop (ASR2) Integration Time	
	0.00～32.000S	0.500
F4.06	ASR2 filter time constant	
	0.000～0.100S	0.000
F4.07	Switch high point frequency	
	【 F4.03 】 ～ 【 F0.16 】 Maximum frequency	10.00

1. Function codes F4.00 to F4.07 are valid in FG vector control mode.

2. In the vector control mode, the speed control characteristic of the vector control is changed by setting the proportional gain P and the integral time I of the speed regulator.

3. 1. The structure of the speed regulator (ASR) is shown in Figure F4-1. In the figure, KP is the proportional gain P and TI is the integral time I.

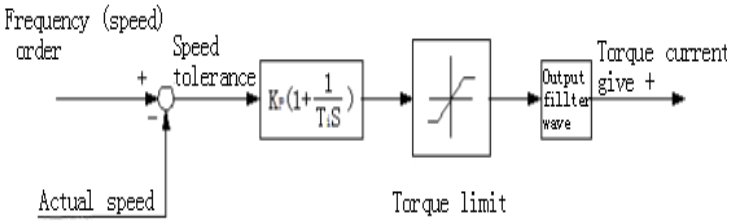


Fig. F4 - Simplified diagram of the speed regulator

F4.08	Vector control positive slip compensation coefficient (motorized state)	
	50.0%～200.0%	100.0%
F4.09	Vector Control Negative Slip Compensation Coefficient (Brake State）	
	50.0%～200.0%	100.0%

In the vector control mode, the above function code parameters are used to adjust the speed accuracy of the motor. When the motor is heavily loaded, the speed is low, increase the parameter, otherwise reduce the parameter.

The positive slip coefficient compensates the speed at which the motor slip rate is positive, whereas the negative slip coefficient compensates for the speed at which the motor slip rate is negative.

F4.10	Speed and torque control options	
	0～2	0

0: speed control

The control object in the absence of PG current vector control is speed control.

1: Torque control

The control object when no PG current vector control is used is the torque control. For

related parameter settings, please refer to F4.12~F4.24.

2: Conditional (terminal switching)

The control object for the current control without PG is controlled by the digital input terminal defined as speed and torque control switching. Please refer to the function description No. 48 of the function of the digital input terminal of the F7 group.

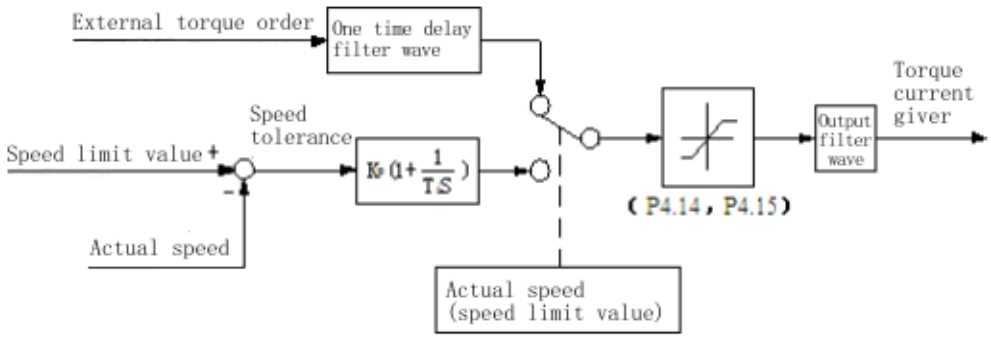


Fig. F4-2 Simplified block diagram of torque control

F4.11	Speed and torque switching delay	
	0.01～1.00S	0.05

This function code defines the delay time for torque and speed switching.

F4.12	Torque command selection	
	0～3	0

This function code sets the torque reference physical channel for torque control.

0: keyboard number given

The torque command is given by the keypad number. For details, see F4.13 settings.

1:AI1

The torque command is set by analog input AI1. The positive and negative input of AI1 correspond to the forward and reverse direction torque command value.

When using this function, the user needs to set the physical quantity corresponding to the AI1 input as the torque instruction, and also set the AI1 setting corresponding curve and the AI1 input filter time. Please refer to the description of function code F6.00~F6.05.

2: AI2

The torque command is set by analog input AI2. The positive and negative input of AI2 correspond to the forward and reverse direction torque command value.

When the user uses this function, it is necessary to set the physical quantity corresponding to AI2 input as the torque instruction, and also set the AI2 setting corresponding curve and the AI2 input filter time. Please refer to the description of function

code F6.06~F6.11.

3: RS485 communication given

Torque command is given by RS485 communication.

F4.13	Keyboard digital setting torque	
	-200.0% ～ 200.0%* Rated current of motor	0.0%

The set value of this function code corresponds to the torque command value selected by the digital command given by the keyboard.

F4.14	Torque Control Mode Speed Limit Channel Selection 1 (Forward)	
	0～2	0

This function code sets the positive speed limit channel during torque control.

0: keyboard number given 1

For details, see F4.16 settings.

1:AI1

The forward speed limit channel for torque control is given by AI1. Please refer to the description of function code F6.00~F6.05.

2: AI2

The forward speed limit channel for torque control is given by AI2. Please refer to the description of function code F6.06~F6.11.

F4.15	Speed-limiting channel selection 2 (reverse) in torque control mode	
	0～2	0

This function code sets the reverse speed limit channel for torque control.

0: keyboard number given 2

See F4.17 settings for details.

1:AI1

The reverse speed limit channel for torque control is given by AI1. Please refer to the description of function code F6.00~F6.05.

2: AI2

The reverse speed limit channel for torque control is given by AI2. Please refer to the description of function code F6.06~F6.11.

F4.16	Keyboard digital limited speed 1	
	0.0～100.0%	100.0%

The numeric limit of the keyboard digital limit speed 1 is relative to the maximum output frequency. This function code corresponds to the size of the positive speed limit value when F4.14=0.

F4.17	Keyboard digital limited speed 2	
	0.0～100.0%	100.0%

The numeric limit of the keyboard digital limit speed 2 is relative to the maximum output frequency. This function code corresponds to the size of the reverse speed limit value when F4.15=0.

F4.18	Torque rise time	
	0.0S～10.0S	0.1

F4.19	Torque fall time	
	0.0S～10.0S	0.1

The torque rise/fall time defines the time when the torque rises from 0 to the maximum value or from the maximum value to 0.

F4.20	Vector mode electric torque limit	
	Type G：180.0% 0.0%～200.0%* Rated current of motor Type P：120.0% 0.0%～200.0%*Rated current of motor	Model settings
F4.21	Vector Mode Braking Torque Limit	
	Type G：180.0% 0.0%～200.0%*Rated current of motorP type：120.0% 0.0%～200.0%*Rated current of motor	Model settings

The above function code defines the size of the torque limit value when vector control

F4.22	Torque detection action selection	
	0～8	0
F4.23	Torque detection level	
	Type G：150.0% 0.0%～200.0%*Rated current of motor Type P：110.0% 0.0%～200.0%*Rated current of motor	Model settings
F4.24	Torque detection time	
	0.0～10.0S	0.0

When the actual torque is greater than F4.23 (torque detection level) within F4.24 (torque detection time), the inverter will make corresponding actions according to the setting of F4.22. The setting value of the torque detection level is 100% corresponding to the rated torque of the motor.

0: invalid checkout

No torque detection.

1: Continue to operate after detecting over-torque at constant speed

The over-torque is detected only during constant-speed operation, and the inverter continues to operate after the over-torque is detected.

2: Continue to run after detecting over torque during operation

After the over-torque is detected during the entire operation, the inverter continues to run.

3: Cut off the output after detecting over-torque at constant speed

The over-torque is only detected during the constant-speed operation, and the inverter

stops output after the over-torque is detected, and the motor coasts to a stop.

4: cut off the output after detecting over-torque during operation

After over-torque is detected during the entire operation, the inverter stops output and the motor coasts to a stop.

5: Continuing operation after detecting insufficient torque at constant speed

Only during the constant speed operation is it detected whether there is insufficient torque, and after the insufficient torque is detected, the inverter continues to operate.

6: Continue running after detecting insufficient torque during operation

After detecting insufficient torque during the entire operation, the inverter continues to operate.

7: Cut off output after detecting insufficient torque at constant speed

Only during constant-speed operation is it detected whether there is insufficient torque, and the inverter will stop output after detecting insufficient torque and the motor coasts to a stop.

8: Cut off output after detecting insufficient torque during operation

After the insufficient torque is detected during the entire operation, the inverter stops output and the motor coasts to a stop.

F5 VF control parameters

F5.00	V/F curve setting	
	0～5	0

This set of function codes defines the motor V/F curve setting method to meet different load characteristics. According to the definition of F5.00, 5 kinds of fixed curves and one kind of custom curve can be selected.

0: linear curve

The linear curve is suitable for ordinary constant-torque loads, and the output voltage is linear with the output frequency. Line 0 in Figure F5-1.

1: drop torque curve 1 (1.3 power)

Deceleration torque curve 1, the output voltage and output frequency have a power of 1.3. Curve 1 in Figure F5-1.

2: drop torque curve 2 (1.5 power)

Deceleration torque curve 2, the output voltage and output frequency have a power of 1.5. Curve 2 in Figure F5-1.

3: drop torque curve 3 (1.7th power)

Decrease torque curve 3, output voltage and output frequency have a 1.7 power relationship. Curve 3 in Figure F5-1.

4: Square curve

The square curve is suitable for square torque type loads such as fans and pumps, so as to achieve the best energy saving effect, and the output voltage has a squared curve relationship with the output frequency. Curve 4 in Figure F5-1.

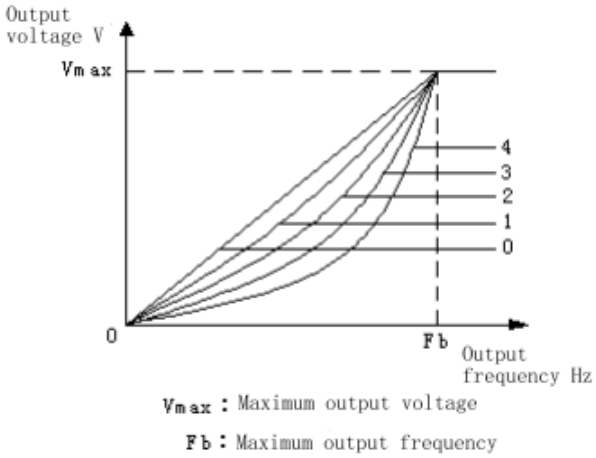


Figure F5-1 V/F curve diagram

5: The user sets the V/F curve (determined by F5.01~F5.06)

When F5.00 selects 5, user can customize V/F curve with F5.01~F5.06, increase (V1, F1), (V2, F2), (V3, F3), and the origin and maximum frequency. The point-folding method defines the V/F curve for special load characteristics. As shown in Figure F5-2.

F5.01	V/FFrequency valueF1	
	0.00～Frequency valueF2	12.50
F5.02	V/FVoltage valueV1	
	0.0～Voltage valueV2	25.0%
F5.03	V/FFrequency valueF2	
	Frequency valueF1 ～ Frequency valueF3	25.00
F5.04	V/FVoltage valueV2	
	Voltage valueV1 ～ Voltage valueV3	50.0%
F5.05	V/FFrequency valueF3	
	Frequency valueF2～Rated frequency of motor	37.50
F5.06	V/FVoltage valueV3	
	Voltage valueV2～100.0％ *Motor rated voltage	75.0%

The voltage and frequency diagrams are as follows:

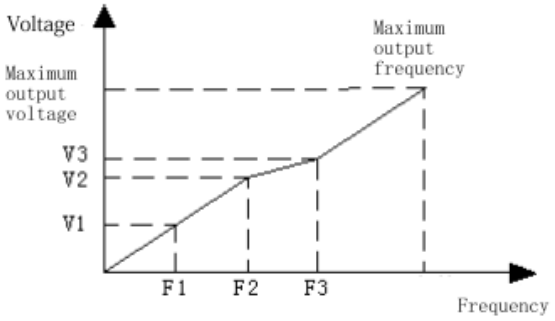
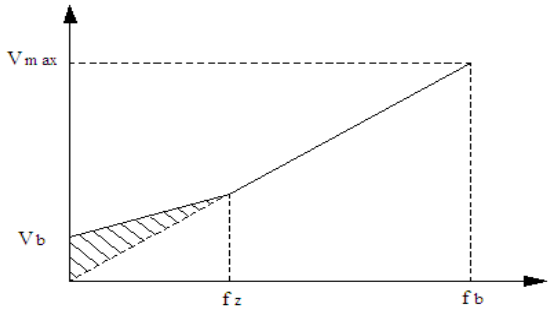


Figure F5-2 User set V/F curve

F5.07	Torque boost setting	
	0.0 ～ 30.0 ％ Motor rated voltage	Model settings
F5.08	Torque boost cut-off frequency	
	0.0～Rated power of motor	50.00

To compensate for the low frequency torque characteristics, some boost compensation can be made for the output voltage. When this function code is set to 0.0%, it is the automatic torque boost. If it is set to any value that is not 0.0%, it is the manual torque boost mode. P5.08 defines the liftoff frequency point fz when the manual torque is boosted, such as See Figure F5-3.



Vb-manual torque boost

Figure F5-3 Torque boost diagram

⚠**note:**

1: In the normal V/F mode, the automatic torque boost mode is invalid.

2: Automatic torque boost is only valid in advanced V/F mode.

F5.09	V/FControl slip frequency compensation	
	0.0～200.0％*Rated slip	0.0％

The asynchronous motor will cause the speed to drop after being loaded. Using the slip compensation can make the motor speed close to its synchronous speed, so that the motor speed control accuracy is higher; the default 100.0% of the rated slip is in the vector type V/F control mode.

F5.10	V/FControl slip frequency filter coefficient	
	1～10	3

This parameter is used to adjust the response speed of slip frequency compensation. The larger the value is set, the slower the response speed and the more stable the motor speed.

F5.11	V/FControl torque frequency compensation filter coefficient	
	0～10	0

When free torque is increased, this parameter is used to adjust the response speed of torque compensation. The larger the value is set, the slower the response speed is, and the more stable the motor speed is.

F5.12	Separate V/F control options	
	0～3	0

0: VF semi-separation mode, voltage open-loop output

In this control mode, the inverter starts with the normal V/F curve and reaches the set frequency and then adjusts the voltage to set the target Voltage value. In this mode, the voltage has no feedback and the target Voltage value is set for open loop. as the picture shows:

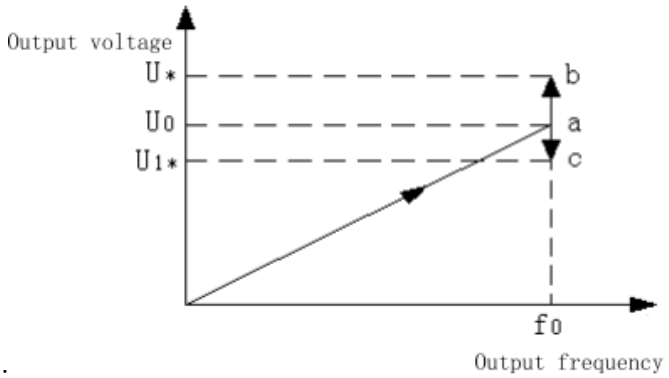


Figure F5-4 Voltage Control Mode 0

F0 - set frequency, V0 - set the rated voltage corresponding to the frequency, U * / U1 * - F5.13 given channel settings.

As shown in the figure above, after the frequency at point a is stable, the voltage is adjusted. According to the target voltage value and the input voltage, the voltage point may move to point b (increase) or point c (decrease) until the target value is reached.

1: VF semi-separated mode, voltage closed-loop output

The only difference between this mode and mode 0 is that it introduces a closed-loop voltage and PI adjustment by biasing the feedback voltage with a given voltage to function as a voltage regulator that compensates for the target voltage deviation due to load changes. , make the voltage control more accurate, faster response, as shown in the following figure

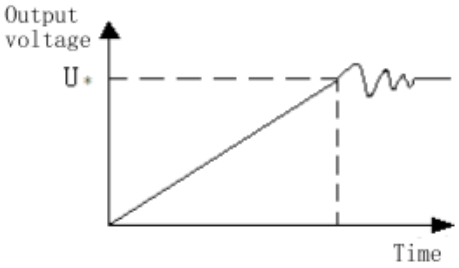
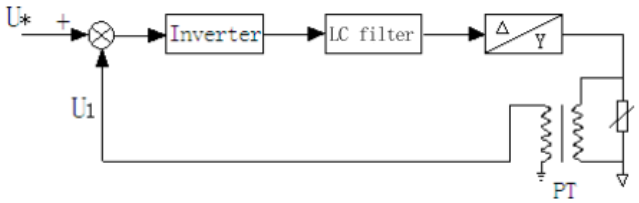


Figure F5-5 Voltage Control Mode 1

This control method is widely used in EPS power supply and other fields, and its control



block diagram is as follows

U* - F5.13 given channel settings

U1 - Analog Feedback Voltage value (PT)

PT - power transmitter

Figure F5-6 EPS control principle

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prompt:

The relationship between the analog feedback channel voltage and the actual voltage F6.06 to F6.11 is uniquely determined by the voltage transmitter (PT). The calculation method is as follows:

Assuming U*=120%*Ue=456V (AI1 given)

PT transformation ratio = 50 (input AC 0-500V, output DC 0-10V)

When the output reaches the target voltage of 456V, the feedback voltage of the PT output is

456/50V=9.12V

When the upper limit input of AI1 is 10V, the determined input voltage is 500V, and the ratio to the rated voltage is

500/380=132%

Therefore, F6.09 (AI2 input upper limit voltage) is set to 10.00V and F6.10 (AI2 upper limit corresponding setting) is set to 132%.

2: VF complete separation mode, voltage open-loop output

In this mode, the output frequency and voltage of the inverter are completely independent, the frequency is added or subtracted according to the defined deceleration time, and the voltage is adjusted to the target value according to the rise/fall times defined in F5.19 and F5.20. As shown in the figure, this control mode is mainly applied to the design of some variable frequency power supplies.

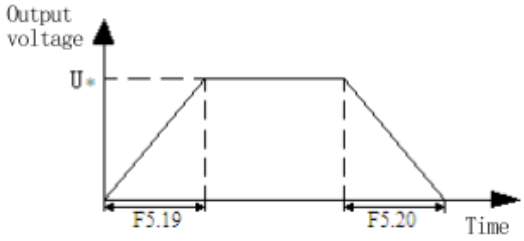


Figure F5-7 Voltage Control Mode 2

3: VF complete separation mode, voltage closed-loop output

The only difference between this mode and mode 2 is that it introduces a closed-loop voltage, PI regulation by setting the deviation of the feedback voltage from a given voltage, to function as a voltage regulator, which compensates for deviations in the target voltage due to load changes. The voltage control accuracy is higher and the

response is faster.

F5.13	Voltage given channel	
	0～2	0

0: Number given

The target Voltage value is set by function code F5.15.

1:AI1

The target Voltage value is given by analog AI1. Note that the corresponding physical quantity of AI1, F6.00, should be set to 2 (voltage command).

2: AI2

The target Voltage value is given by the analog quantity AI2. Note that the physical quantity corresponding to AI2, that is, F6.06 should be set to 2 (voltage instruction).

F5.14	Voltage loop feedback output voltage feedback channel	
	0～1	0

0:AI1

Analog AI1 is used as the voltage feedback input. Note that AI1 corresponds to the physical quantity and P6.00 should be set to 2 (voltage command).

1:AI2

Analog AI2 is used as the voltage feedback input. Note that AI2 corresponds to the physical quantity, and F6.06 should be set to 2 (voltage command).

F5.15	Digital setting output Voltage value	
	0.0 ～ 200.0%*Motor rated voltage	100%
F5.16	Deviation limit of motor closed-loop adjustment	
	0.0 ～ 5.0 ％ *Motor rated voltage	2.0%

It is used to limit the maximum deviation of voltage regulation in closed-loop mode, so as to limit the voltage within the safe range to ensure the reliable operation of the equipment.

F5.17	Half-separated mode VF curve maximum voltage	
	0.0 ～ 100.0 ％ *Motor rated voltage	80.0%

This function defines the maximum voltage point when starting the equipment according to the curve of voltage and frequency. Reasonably setting this function can effectively prevent the voltage overshoot during starting and ensure the reliable operation of the equipment.

F5.18	Controller closed cycle output voltage adjustment cycle	
	0.01～10.00s	0.10

This function code characterizes the speed of voltage adjustment. If the voltage

response is slower, this parameter value can be appropriately reduced.

F5.19	Voltage rise time	
	0.1～3600.0S	10.0
F5.20	Voltage drop time	
	0.1～3600.0S	10.0

This function code defines the time when the voltage rises and falls in mode 2 under the completely separated control mode of V and F.

F5.21	Voltage feedback disconnection processing	
	0～2	0

0:Alarms are maintained at the voltage at break

1: Alarm and reduce voltage to limiting voltage operation

2: protect the action and free parking

F5.22 voltage feedback disconnection detection value	F5.22 voltage feedback disconnection detection value	
	0.0 ～ 100.0 % *Motor rated voltage	2.0%

Take the maximum value of the voltage given as the upper limit value of the feedback disconnection detection value. In the feedback disconnection detection time, when the voltage feedback value continues to be less than the feedback disconnection detection value, the inverter will perform the corresponding protection action according to the setting of F5.21.

F5.23	Voltage feedback disconnection detection time	
	0. 0～100.0s	10.0

The duration of the protection action after the voltage feedback disconnection occurs

F5.24	Limit voltage of voltage feedback disconnection	
	0.0～100.0％* Motor rated voltage	80.0%

This function code defines the maximum amplitude of the voltage output by the inverter. The significance of this function is that even when the protection fails, the final output voltage can be limited to the allowable safety range when the output feedback disconnects and the voltage uncontrollably increases. Within this, it greatly guarantees the safety of subsequent load work.

F6 analog and pulse input and output parameters

F6.00	AI1Enter the corresponding physical quantity	
	0～2	0

0: Speed command (output frequency, -100.0% to 100.0%)

1: Torque command (output torque, -200.0% to 200.0%)

AI1 analog reference As a given value of the torque command, the given torque range can be -200.0% to 200.0%. For related settings, please refer to the detailed description of group F6 function.

2: Voltage command (output voltage, 0.0% to 200.0%* rated motor voltage)

F6.01	AI1Lower limit of input	
	0.00V/0.00mA ～ 10.00V/20.00mA	0.00
F6.02	AI1Lower limit corresponds to physical quantity setting	
	-200.0%～200.0%	0.0%
F6.03	AI1Enter the upper limit	
	0.00V/0.00mA ～ 10.00V/20.00mA	10.00
F6.04	AI1The upper limit corresponds to the physical quantity setting	
	-200.0%～200.0%	100.0%
F6.05	AI1Input filter time	
	0.00S～10.00S	0.05
F6.06	AI2Enter the corresponding physical quantity	
	0～2	0

0: Speed command (output frequency, -100.0% to 100.0%)

1: Torque command (output torque, -200.0% to 200.0%)

AI1 analog reference As a given value of the torque command, the given torque range can be -200.0% to 200.0%. For related settings, please refer to the detailed description of group F6 function.

2: Voltage command (output voltage, 0.0% to 200.0%* rated motor voltage)

F6.07	AI2Lower limit of input	
	0.00V～10.00V	0.00
F6.08	AI2Lower limit corresponds to physical quantity setting	
	-200.0%～200.0%	0.0%
F6.09	AI2Enter the upper limit	
	0.00V～10.00V	10.00
F6.10	AI2The upper limit corresponds to the physical quantity setting	
	-200.0%～200.0%	100.0%
F6.11	AI2Input filter time	
	0.00S～10.00S	0.05

The above function code defines the input range of the analog input voltage channels AI1, AI2 and the corresponding physical quantity percentage and filter time constant. Among them, AI2 can be selected as voltage/current input through J1 jumper, and its digital

setting can be set according to 0~20mA corresponding to 0~10V. The specific settings should be based on the actual situation of the input signal.

AI1, AI2 input filter time constant is mainly used for filtering the analog input signal to eliminate the influence of interference. The larger the time constant, the stronger the anti-interference ability, the more stable the control, but the slower the response; conversely, the smaller the time constant, the faster the response, but the weaker the anti-interference ability, the control may be unstable. In practice, if the best value cannot be determined, the value of this parameter should be properly adjusted according to whether the control is stable and the response delay.

F6.12	Analog input anti-shake deviation limit	
	0.00V～10.00V	0.10

When the analog input signal fluctuates frequently near a given value, the frequency fluctuation caused by this fluctuation can be suppressed by setting F6.12.

F6.13	Zero-frequency operation threshold	
	Zero frequency difference～50.00Hz	0.00

When F0.18=1 (high frequency mode), the upper limit of this function code is 500.0Hz.

F6.14	Zero frequency difference	
	0.00 ～ Zero-frequency operation threshold	0.00

These two function codes are used to set the zero-frequency hysteresis control function. Take analog AI1 current given channel as an example, see Figure F6-1.

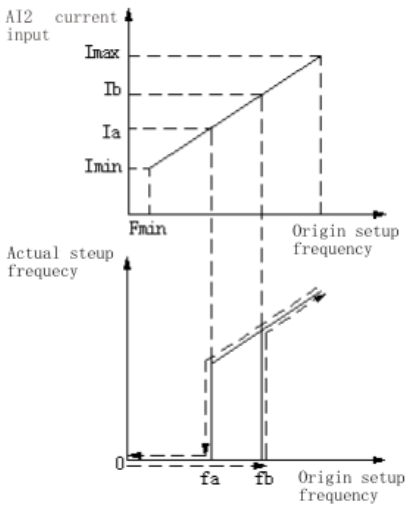
Start process:

After the running command is issued, the motor starts to start only when the analog AI1 current input reaches or exceeds a certain value Ib and its corresponding set frequency reaches fb, and Acceleration time is accelerated to the frequency corresponding to the analog AI1 current input.

Shutdown process:

When the current value of AI1 is reduced to Ib during operation, the inverter will not stop immediately. Only when the AI1 current continues to decrease to Ia and the corresponding set frequency is fa, the inverter will stop outputting. Here fb is defined as the zero-frequency operation threshold defined by F6.13. The value of fb-fa defines the zero frequency hysteresis, which is defined by function code F6.14.

This function can be used to complete the hibernation function, achieve energy-saving operation, and avoid frequent start-up of the frequency converter at the threshold



frequency through the width of the hysteresis.

Fb: Zero-frequency operation threshold
Fa:fb–zero frequency difference
Figure F6-1 Zero frequency function

F6.15	External pulse input corresponding physical quantity	
	0～1	0

0: Speed command (output frequency, -100.0% to 100.0%)

1: Torque command (output torque, -200.0% to 200.0%)

F6.16	External pulse input lower limit	
	0.00～50.00kHz	0.00
F6.17	External pulse lower limit corresponds to physical quantity setting	
	-200.0%～200.0%	0.0%
F6.18	External pulse input limit	
	0.00～50.00kHz	20.00
F6.19	External pulse upper limit corresponds to physical quantity setting	
	-200.0%～200.0%	100.0%
F6.20	External pulse input filter time	
	0.00S～10.00S	0.05

The above function code defines the input range of the pulse input channel and its corresponding physical quantity percentage. At this time, the multi-function terminal X6 must be defined as "pulse frequency input" function.

The pulse input filter time constant is mainly used for filtering the pulse signal. The principle is the same as the analog input filter time constant.

F6.21	AO1Multifunctional analog output terminal function selection	
	0-13	0
F6.22	AO2Multifunctional analog output terminal function selection	

	0-13	4
F6.23	DOMultifunction pulse output terminal function selection	
	0-13	11

The above function code determines the correspondence between the multifunctional analog output terminal AO and the pulse output terminal DO, and each physical quantity, as shown in the following table:

Item	AO1	Item range
Output frequency (before slip compensation)	0V/0mA ～ AOUpper limit	0 ～ Maximum output frequency
	2V/4mA ～ AOUpper limit	0 ～ Maximum output frequency
Output frequency (after slip compensation)	0V/0mA ～ AOUpper limit	0 ～ Maximum output frequency
	2V/4mA ～ AOUpper limit	0 ～ Maximum output frequency
Setting frequency	0V/0mA ～ AOUpper limit	0 ～ Maximum output frequency
	2V/4mA ～ AOUpper limit	0 ～ Maximum output frequency
Motor speed	0V/0mA ～ AOUpper limit	0 ～ Motor synchronous speed
	2V/4mA ～ AOUpper limit	0 ～ Motor synchronous speed
Output current	0V/0mA ～ AOUpper limit	0 ～ 2 times rated current
	2V/4mA ～ AOUpper limit	0 ～ 2 times rated current
The output voltage	0V/0mA ～ AOUpper limit	0 to 1.2 times rated output voltage
	2V/4mA ～ AOUpper limit	0 to 1.2 times rated output voltage
bus voltage	0V/0mA ～ AOUpper limit	0～800V

	2V/4mA ～ AOUpper limit	0～800V
PIDGiven	0V/0mA ～ AOUpper limit	0～100%*10V
	2V/4mA ～ AOUpper limit	0 ～ 100%*20mA
PIDFeedback amount	0V/0mA ～ AOUpper limit	0～100%*10V
	2V/4mA ～ AOUpper limit	0 ～ 100%*20mA
AI1	0V/0mA ～ AOUpper limit	0～10V
	2V/4mA ～ AOUpper limit	0～10V
AI2	0V/0mA ～ AOUpper limit	0～20mA
	2V/4mA ～ AOUpper limit	0～20mA
Input pulse frequency	0V/0mA ～ AOUpper limit	0～50KHZ
	2V/4mA ～ AOUpper limit	0～50KHZ
Torque current	0V/0mA～ AOUpper limit	0～2 times rated current
	2V/4mA～ AOUpper limit	0～2 times rated current
Flux current	0V/0mA～ AOUpper limit	0～2 times rated current
	2V/4mA～ AOUpper limit	0～2 times rated current

The DO range is DO lower limit to DO upper limit, which correspond to the lower and upper limits of each physical quantity in the above table.

F6.24	AO1Output lower limit corresponds to the physical quantity	
	-200.0%～200.0%	0.0%
F6.25	AO1Lower limit of output	
	0.00～10.00V	0.00
F6.26	AO1The output upper limit corresponds to the physical quantity	
	-200.0%～200.0%	100.0%
F6.27	AO1Output limit	
	0.00～10.00V	10.00
F6.28	AO2Output lower limit corresponds to	

	the physical quantity	
	-200.0%～200.0%	0.0%
F6.29	AO2Lower limit of output	
	0.00～10.00V	0.00
F6.30	AO2The output upper limit corresponds to the physical quantity	
	-200.0%～200.0%	100.0%
F6.31	AO2Output limit	
	0.00～10.00V	10.00
F6.32	DOOutput lower limit corresponds to the physical quantity	
	-200.0%～200.0%	0.0%
F6.33	DOLower limit of output	
	0.00～50.00kHz	0.00
F6.34	DOThe output upper limit corresponds to the physical quantity	
	-200.0%～200.0%	100.0%
F6.35	DOOutput limit	
	0.00～50.00kHz	50.00

F7 digital input and output

F7.00	Input terminal X1 function	
	0～99	1
F7.01	Input terminal X2 function	
	0～99	2
F7.02	Input terminal X3 function	
	0～99	4
F7.03	Input terminal X4 function	
	0～99	6
F7.04	Input terminal X5 function	
	0～99	7
F7.05	Input terminal X6function	
	0～99	45
F7.06	Input terminal X7function	
	0～99	0
F7.07	Input terminal X8 function	
	0～99	0

0: The controller is idle

1: Forward operation (FWD)

The terminal is short-circuited with COM and the inverter runs in forward rotation. It is valid only when F0.06=1.

2: Reverse run (REV)

The terminal is short-circuited with COM and the inverter runs in reverse. It is valid only when F0.06=1.

3: Three-wire operation control

Refer to the function descriptions of operation modes 2 and 3 (3-wire control mode 1, 2) in F7.11.

4: Forward jog control

The terminal is short-circuited with COM. The inverter runs in jog mode. It is valid only when F0.06=1.

5: Reverse jog control

The terminal is short-circuited with COM. The inverter runs in reverse rotation and is valid only when F0.06=1.

6: free stop control

This function has the same meaning as the free-running parking defined in F1.08, but here it is implemented with control terminals, which is convenient for remote control.

7: External Reset Signal Input (RST)

When the inverter fails, the fault can be reset through this terminal. Its function is the same as the STOP/RESET key function. This function is valid under any command channel.

8: External device fault normally open input

9: External device fault normally closed input

Through this terminal, the fault signal of the external device can be input to facilitate the inverter to monitor the fault of the external device. When the inverter receives a fault signal from an external device, it displays “E-19”, which is an external device fault alarm. The fault signal can use two input methods, normally open and normally closed.

10: Emergency stop function (brakes at fastest speed)

This function is used for emergency stop. The terminal is short-circuited with COM and decelerated to stop with emergency backup deceleration time (F1.36).

11: Reserved

12: Frequency increase instruction

The terminal is shorted to COM and the frequency is increased. It is only valid when the frequency reference channel is digital setting 2 (terminal UP/DOWN adjustment).

13: Frequency Decrement Instruction

The terminal is shorted to COM and the frequency is decremented. It is valid only when the frequency reference channel is digital reference 2 (terminal UP/DOWN adjustment). The

14: UP/DOWN terminal frequency is cleared

The digital frequency 2 (UP/DOWN terminal adjustment frequency) increment is cleared by the terminal.

15: Multi-speed selection 1

16: Multi-speed selection 2

17: Multispeed selection 3

18: Multi-speed selection 4

By selecting the ON/OFF combination of these function terminals, up to 16 speeds can be selected. Specifically as shown in the following table:

Multi-speed selection SS4	Multi-speed selectionSS3	Multi-speed selectionSS2	Multi-speed selectionSS1	Speed
OFF	OFF	OFF	OFF	0
OFF	OFF	OFF	ON	1
OFF	OFF	ON	OFF	2
OFF	OFF	ON	ON	3
OFF	ON	OFF	OFF	4
OFF	ON	OFF	ON	5
OFF	ON	ON	OFF	6

OFF	ON	ON	ON	7
ON	OFF	OFF	OFF	8
ON	OFF	OFF	ON	9
ON	OFF	ON	OFF	10
ON	OFF	ON	ON	11
ON	ON	OFF	OFF	12
ON	ON	OFF	ON	13
ON	ON	ON	OFF	14
ON	ON	ON	ON	15

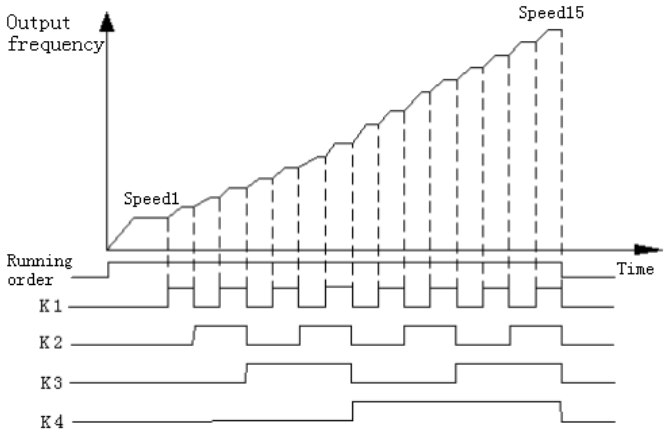


Figure F7-1 Multi-speed operation

19: Add deceleration time to select TT1

20: Add deceleration time to select TT2

By selecting the ON/OFF combination of these function terminals, up to 4 deceleration times can be selected. Specifically as shown in the following table:

Add deceleration time selection terminal 2	Add deceleration time selection terminal 21	Add deceleration time selection terminal 2
OFF	OFF	Acceleration time1/deceleration time1
OFF	ON	Acceleration time2/deceleration time2
ON	OFF	Acceleration time3/deceleration time3
ON	ON	Acceleration

		time4/deceleration time4

21: Run command channel selection 1

22: Run command channel selection 2

By selecting the ON/OFF combination of these function terminals, up to 3 kinds of operation command channels can be selected, in four ways. Specifically as shown in the following table:

Run command channel selection terminal2	Run command channel selection terminal1	Run the command channel
OFF	OFF	Determined by function code P0.06
OFF	ON	0：Operation panel run command channel
ON	OFF	1：Terminal operation command channel
ON	ON	2：Communication operation command channel

23: Inverter acceleration/deceleration prohibition command

When this terminal is valid, the inverter will not be affected by external signals (except the stop command), and maintain the current frequency operation.

24: Inverter operation prohibition instruction

When this terminal is valid, the running inverter is free to stop, and standby is disabled. Mainly used for occasions requiring safety linkage

25: Run command to switch to panel

When this terminal is valid, the run command is forcibly converted from the current channel to panel control, the terminal is disconnected, and the previous run command channel is returned.

26: Run command to switch to the terminal

When this terminal is valid, the run command is forcibly converted from the current channel to terminal control, the terminal is disconnected, and the previous run command channel is returned.

27: Run command to switch to communication

When this terminal is valid, the run command is forcibly converted from the current channel to the communication control, the terminal is disconnected, and the previous run command channel is returned.

28: Auxiliary frequency clear

Only valid for digital auxiliary frequency (F0.08=0, 1, 2). When this function terminal is

valid, the auxiliary frequency given value is cleared, and the setting frequency is completely determined by the main reference.

29: Frequency Source A and K*B Switch

This terminal is valid. If F0.09 (frequency combination algorithm) selects 6, the frequency given channel is forcibly switched to frequency source B. After the invalid frequency, the given channel returns to A.

30: Frequency Source A and A+K*B Switch This terminal is valid. If F0.09 (frequency combination algorithm) selects 7, the frequency given channel is forcibly switched to the frequency source (A+K*B), and the frequency given channel returns to A after being invalid.

31: Frequency Source A and A-K*B Switch

This terminal is valid. If F0.09 (frequency combination algorithm) selects 8, then the frequency reference channel will be forced to switch to the frequency source (A-K*B). When the frequency is invalid, the frequency reference channel will return to A.

32: Reserved

33: PID Control Input

When the frequency given channel is PID given, and the PID input mode is manual input, if this terminal is valid, it will enter PID operation. For detailed function code, please refer to F8 group parameter setting.

34: PID control suspended

It is used to implement pause control of the running PID. If the terminal is valid, PID adjustment stops and the inverter frequency stops at the current frequency. After the terminal is invalid, PID adjustment is continued, and the operating frequency changes with the adjustment amount.

35: Swing frequency control input

When the swing frequency start mode is manual input, if the terminal is valid, the swing frequency function is effective. Invalid is run at the wobble preset frequency. Please refer to F9.55-F9.65 group function description.

36: Pause control

When the terminal is short-circuited with COM, the inverter pauses the running mode of the swing frequency. The frequency of the inverter stops at the current frequency operation; after the terminal is invalid, the swing frequency operation continues.

37: Traverse State Reset

When this function is selected, whether it is the automatic or manual input mode, closing the terminal will clear the wobble frequency status information stored in the inverter. After the terminal is disconnected, the wobble frequency is restarted (the preset frequency runs the preset frequency first). Please refer to F9.55-F9.65 group function description

38: PLC Control Input

When the PLC input mode selection is manually input through the defined multi-function terminal, the terminal is valid, and when the running command arrives, the PLC runs normally; if the terminal is invalid, when the running command arrives, it runs with zero frequency.

39: PLC pause

It is used to implement pause control for the running PLC process. If the terminal is valid, the inverter runs at zero frequency and the PLC does not count. After the terminal is invalid, the inverter starts in the speed tracking mode and continues the PLC operation. Please refer to F9.00～F9.53 group function description.

40: PLC reset

In the stop state of the PLC operation mode, when this function terminal is valid, the information such as the PLC operation stage, running time, and operating frequency stored in the PLC shutdown will be cleared. After the function terminal is invalid, the operation will be resumed. See F9 group function code description

41: counter clear signal input

The terminal is short-circuited with the COM, and the internal counter is cleared to operate with the No. 42 function.

42: Counter trigger signal input

The count pulse input port of the internal counter receives a pulse, and the count value of the counter increases by 1 (if the counting mode is down counting, it decreases by 1), and the maximum frequency of the count pulse is 200 Hz. See the description of function code F7.31~F7.33 for details.

43 timing trigger input

Internal timer trigger port. See function code F7.35~F7.36 for details

44: timing clear input

The terminal is short-circuited with the COM and the internal timer is cleared to operate with the No. 43 function.

45: External Pulse Frequency Input (valid only for X6)

The main frequency channel A selects the pulse input port for pulse timing and is valid only for X6. It is set with F0.07.

46: length clear

When this function terminal is valid, F9.69 (actual length) data will be cleared to prepare for recalculating the length. Refer to F9.67 to F9.73 group function parameters.

47: Length count input (only valid for X6) Only valid for multi-function input terminal X6. This function terminal receives the pulse signal as the length given, the relationship between the number of input signal pulses and the length, refer to F9.67~F9.73 Group function parameter description.

48: Speed and Torque Control Switching

When the speed and torque control selection conditions are valid (terminal switching), if the terminal is valid, it is the torque control; if the terminal is invalid, it is the speed control. For the relevant function code settings, please refer to F4.10~F4.11. F4.11 is the delay time for speed and torque switching.

49: Torque control prohibited

Disable the inverter for torque control

50: Zero Servo Control Input (Reserved)

51 to 99: Reserved

F7.08	Switching filter times	
	1～10	5

Used to set the sensitivity of the input terminal. If the digital input terminal is

susceptible to malfunction due to interference, increase this parameter to increase the anti-interference ability. However, if the setting is too large, the sensitivity of the input terminal will be reduced.

F7.09	Terminal function detection selection at power on	
	0～1	0

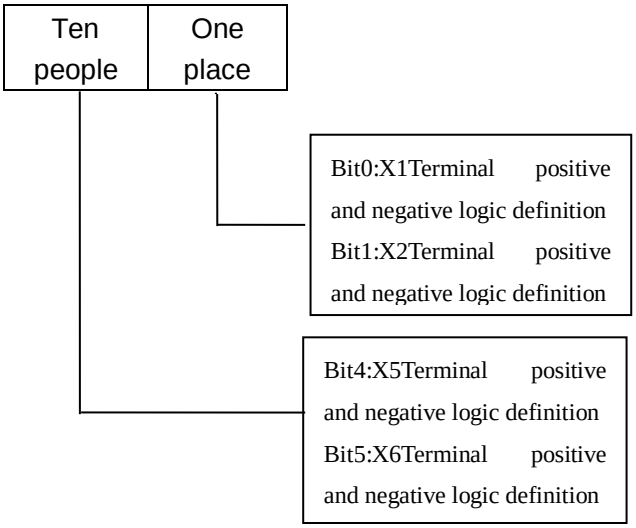
0: The terminal run command is invalid at power on

During power-on, even if the inverter detects that the run command terminal is valid (closed), the inverter will not start. Only when the terminal is closed but closed again, the inverter can start.

1: Terminal run command is valid at power on

During power-up, the inverter detects that the terminal operation command terminal is valid (closed), and the inverter can start.

F7.10	Input terminal valid logic setting (X1~X8)	
	0～FFH	00



0: indicates positive logic, that is, the Xi terminal and the common terminal are connected, and the disconnection is invalid.

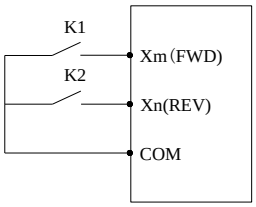
1: Inverse logic means that the Xi terminal and the common terminal are invalid and disconnected

F7.11	FWD/REV terminal control mode	
	0～3	0

This function code defines four different ways of controlling the operation of the frequency converter via external terminals.

0: Two-line control mode 1

Xm: forward command (FWD), Xn: reverse command (REV), and Xm, Xn represent any two terminals defined as FWD and REV functions in X1-X8, respectively. In this control mode, K1 and K2 can independently control the operation and direction of the inverter.

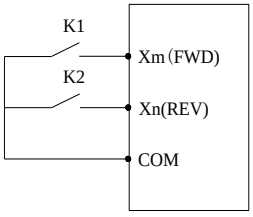


K2	K1	Run instructions
0	0	stop
0	1	Forward
1	0	Reversal
1	1	Downtime

Figure F7-2 Two Line control mode 1 schematic

1: Two-wire control mode 2

Xm: forward command (FWD), Xn: reverse command (REV), and Xm, Xn represent any two terminals defined as FWD and REV functions in X1-X8, respectively. In this control mode, K1 is the running and stopping switch, and K2 is the direction switching switch.



K2	K1	Run instructions
0	0	stop
0	1	Forward
1	0	stop
1	1	Reverse

Figure F7-3 Two-wire control mode 2

2: Three-wire control mode 1

Xm: forward command (FWD), Xn: reverse command (REV), Xx: stop command, Xm, Xn, and Xx represent any three terminals defined as FWD, REV, three-line operation control functions in X1-X8, respectively . Before K3 is not accessed, K1 and K2 that are accessed are invalid. When K3 is connected, K1 is triggered, the inverter is rotating forward; when K2 is triggered, the inverter is reversed; when K3 is disconnected, the inverter is stopped.

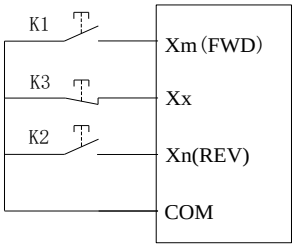


Figure F7-4 Three-wire control mode 1

3: Three-wire control mode 2

K2 K1 operation instruction

0 0 stop
0 1 Forward
1 0 stop
1 1 Reverse

Xm: Run command, Xn: Run direction select, Xx: Stop command, Xm, Xn, Xx represent any three terminals in X1-X8 defined as FWD, REV, and three-wire operation control functions respectively. Before K3 is not accessed, K1 and K2 that are accessed are invalid. When K3 is connected, it will trigger K1, the inverter will rotate forward; if it is triggered by K2 alone, it will be invalid; after K1 triggers the operation, it will trigger K2 again, and the direction of inverter will switch; when K3 is disconnected, the inverter will stop.

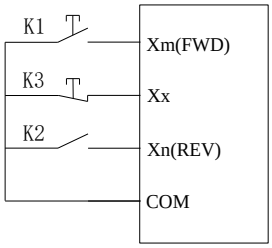


Figure F7-5 Three-wire control mode 2

⚠**note:**

When the three-line control mode 2 is running in forward direction, the terminal defined as the REV is closed for a long time, and the disconnection will return to a forward rotation.

F7.12	UP/DOWNTerminal frequency modification rate	
	0.01～50.00Hz/S	1.00

The function code is the frequency modification rate when the UP/DOWN terminal setting frequency is set, that is, the UP/DOWN terminal and the COM terminal are shorted for one second and the frequency change amount is

When F0.18=1 (high frequency mode), the upper limit of this function code is 500.0Hz/S.

F7.13	Reserved	
	—	0

F7.14	Y1Output delay time	
	0.0～100.0S	0.0
F7.15	Y2Output delay time	
	0.0～100.0S	0.0
F7.16	R1Output delay time	
	0.0～100.0S	0.0
F7.17	R2Output delay time	
	0.0～100.0S	0.0

This function code defines the time delay of the switching output terminal and the status change of the relay to the output.

F7.18	Open collector output terminal Y1 setting	
	0～99	0
F7.19	Open collector output terminal Y2 setting	
	0～99	0
F7.20	Programmable relay R1 output	
	0～99	3
F7.21	Programmable relay R2output	
	0～99	0

0: no output

1: The inverter is running

When the inverter is running in forward running status, the indication signal is output.

2: inverter reverse running

When the inverter is in reverse rotation, the output signal.

3: fault output

When the frequency converter fails, an indication signal is output.

4: Frequency/speed level detection signal (FDT1)

Refer to the parameter function description of F7.24~F7.26.

5: Frequency/speed level detection signal (FDT2)

Refer to the parameter function description of F7.27~F7.29.

6: Frequency/speed arrival signal (FAR)

Refer to F7.23 parameter function description.

7: Inverter zero speed running indication

Inverter output frequency is 0.00Hz, but it is still in the running state when the output signal.

8: Output frequency reaches the upper limit

When the inverter output frequency reaches the upper limit frequency, it outputs the indication signal.

9: Output frequency reaches the lower limit

When the inverter output frequency reaches the lower limit frequency, the output signal.

10: Set the frequency lower limit value to arrive at runtime

When the inverter is running, if the set frequency is less than or equal to the lower limit frequency, the indication signal will be output.

11: Inverter overload pre-alarm signal

When the output current of the inverter exceeds the overload pre-alarm level (FA.12), the indicating signal is output after the alarm delay time (FA.13). Often used for overload pre-alarms.

12: Counter detection signal output

When the counted detection value arrives, an indication signal is output until the count reset value is reached. Please refer to the description of function code F7.33.

13: Counter reset signal output

When the count reset value arrives, it will output the indication signal. Please refer to the description of function code F7.32.

14: The inverter is ready for operation

When the inverter is ready for power-on, that is, the inverter has no fault, the bus voltage is normal, the inverter is prohibited from running, the terminal is ineffective, and the inverter can directly start the operation command. Then the terminal outputs the indication signal.

15: Programmable multi-speed operation is completed in one cycle

After one cycle of programmable multi-speed (PLC) is completed, an effective pulse signal is output with a signal width of 500mS.

16: Programmable multi-stage speed phase completion After the current stage of programmable multi-stage speed (PLC) is completed, an effective pulse signal is output with a signal width of 500mS.

17: Wobble frequency upper and lower limit

After the wobble function is selected, an indication signal will be output when the frequency fluctuation range of the wobble frequency calculated from the center frequency exceeds the upper limit frequency F0.16 or is lower than the lower limit frequency F0.17. As shown below.

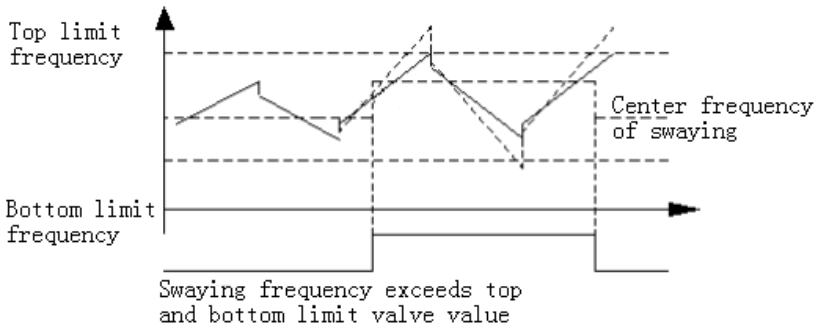


Figure F7-6 Wobble amplitude limitation

18: Current limiting action

The signal output when the inverter is in current limiting action. For current limit protection settings, please refer to the description of function codes FA.06~FA.08.

19: Overvoltage stall action

The indicating signal output when the frequency converter is in over pressure stall action. Overvoltage stall protection settings please refer to the description of function code PA.04.

20: Undervoltage lockout shutdown

When the DC bus voltage is lower than the undervoltage limit level, the output signal

---

⚠**note:**

Bus undervoltage when stop, digital display "PoFF"; bus undervoltage during operation, FA.02 = 0, the digital display "PoFF", if FA.02 = 1, the digital display shows "E-07" fault , At the same time warning light is on.

---

21 Sleeping

When the inverter is in dormant state, the indication signal is output.

22: Inverter alarm signal

When the inverter has alarms such as PID disconnection, RS485 communication failure, panel communication failure, EEPROM read/write failure, and encoder disconnection, an indication signal is output.

23: AI1>AI2

When the analog input AI1 > AI2, an indication signal is output. See the description of parameters in F6.05~F6.11 for the analog input.

24: Length reached output

When the actual length (F9.69) ≥ the set length (F9.68), the indication signal is output. The length count terminal X6 is set to No. 47 function.

25: Timed arrival

When the actual timing time is ≥ F7.36 (set timing time), an indication signal is output.

26: Energy consumption braking action

When the frequency converter's energy consumption brakes, an indication signal is output. Please refer to the description of function code FC.00～FC.03 for the setting of dynamic braking function.

27: DC braking action

When the inverter DC braking action, output indicating signal. Please refer to the description of function code F1.00～F1.12 for DC brake setting.

28: Magnetic flux braking action

When the inverter flux brake action, the output signal. Flux brake settings please refer to the function code FC.21 instructions.

29: Torque limit

When the control mode is torque control, an indication signal is output. For details of torque control, see F4.10~F4.23 group parameter description.

30: Over torque indication

The inverter outputs the corresponding indication signal according to the settings of F4.22 to F4.24.

31: Auxiliary motor 1

32: Auxiliary motor 2

Auxiliary motor 1 and 2-terminal function with process PID function module can realize simple one-to-three constant-pressure water supply function.

33: Accumulated runtime arrival

When the inverter operation limit time (FC.11) arrives, an indication signal is output.

34～49: Multi-speed or simple PLC operation segment indication

The 34 to 49 items of the output terminal function correspond to the multi-speed or 0 to 15 segments of the simple PLC respectively. When the corresponding number of segments set by the output terminal arrives, an indication signal is output.

50: Reserved

51: High temperature output indication

When the actual temperature (d-33 ~ d-34) is higher than the temperature detection threshold (FA.14), an indication signal is output.

52～99: Reserved

F7.22	Output terminal effective logic setting(Y1～Y2)	
	0～3H	0

Bit0: effective logic definition of Y1 terminal

Bit1: Active logic definition of Y2 terminal

0: positive logic, ie Yi terminal and common terminal are valid, disconnection is invalid

1: Inverse logic means that the Yi terminal and the common terminal are invalid and disconnected.

When F7.22=0, Y1 and Y2 terminals are connected to the common terminal and the disconnection is invalid.

When F7.22=1, the Y1 terminal and the common terminal are inactive and disconnected; the Y2 terminal and the common terminal are invalid and disconnected.

When F7.22=2, the Y1 terminal is connected to the common terminal and the disconnection is invalid. The Y2 terminal is connected to the common terminal and is invalid.

When F7.22=3, Y1, Y2 terminal and common terminal are invalid, disconnection is valid

F7.23	Frequency reaches FAR detection width	
	0.0 ～ 100.0 % * 【 F0.15 】 Maximum frequency	100.0%

This function is a supplementary explanation for function No. 6 of function code F7.18~F7.21. When the output frequency of the inverter is within the positive and negative detection width of the set frequency, the terminal outputs an effective signal (open collector signal, Resistive pull-up is low). As shown below.

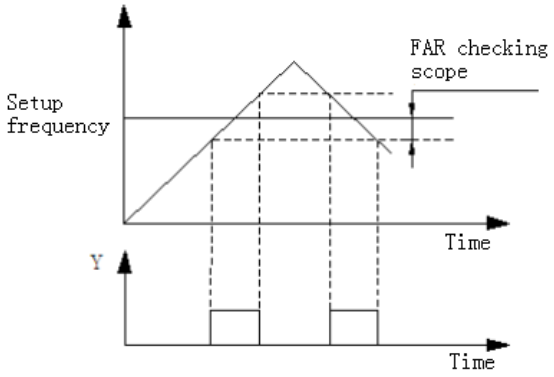


Figure F7-7 Frequency arrival

F7.24	FDT1Check out method	
	0～1	0

0: speed setting value

1: speed detection value

F7.25	FDT1Level setting	
	0.00Hz～【F0.16】Maximum frequency	50.00

F7.26	FDT1Lag value	
	0.0～100.0%*（FDT1Level）	2.0%
F7.27	FDT2Check out method	
	0～1	0

0: speed setting value

1: speed detection value

F7.28	FDT2Level setting	
	0.00Hz～【F0.16】Maximum frequency	25.00
F7.29	FDT2Lag value	
	0.0～100.0%*（FDT2Level）	4.0%

The above function codes (F7.24 to F7.29) are the supplementary explanations for function Nos. 4 and 5 of function codes F7.18 to F7.21. When the inverter output frequency rises above the FDT level setting setting When the value is valid, an active signal (open collector signal, low level after resistance pull-up) is output. When the output frequency drops below the FDT signal (set value - hysteresis), an invalid signal (high-impedance state) is output. As shown below.

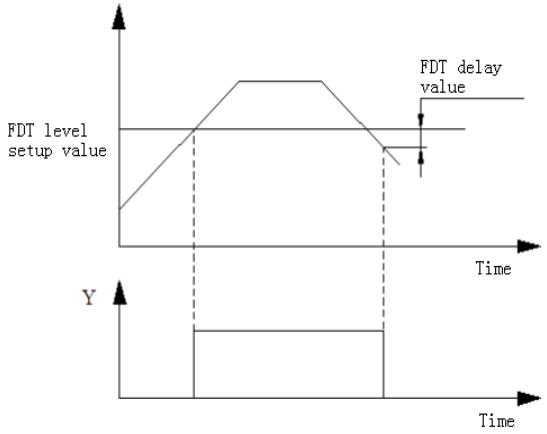


Figure F7-8 Frequency Level Detection

F7.30	Count arrival processing	
	0～3	3

0: stop counting, stop output

1: stop counting and continue output

2: loop count, stop output

3: Loop count, continue output

When the count value of the counter reaches the value set in function code F7.32, the inverter performs the corresponding action.

F7.31	Counting start conditions	
F7.31	Counting start conditions	
	0～1	1

0: Always start when powered on

1: start when running, stop when stopped

The above premise is count pulse input

F7.32	Counter reset value setting

	【F7.33】～65535	0
F7.33	Counter reset value setting	
	0～【F7.32】	0

This function code defines the count reset value and detection value of the counter. When the count value of the counter reaches the value set in function code F7.32, the corresponding multi-function output terminal (counter reset signal output) outputs a valid signal, and the counter is cleared.

When the count value of the counter reaches the value set in function code F7.33, the valid signal is output at the corresponding multi-function output terminal (counter detection signal output). If the counting continues and the value set by function code F7.32 is exceeded, the output valid signal is canceled when the counter is cleared.

As shown in the figure below: Set the programmable relay output as reset signal output. Open collector output Y1 is set to the counter detection output. F7.32 is set to 8 and F7.33 is set to 5. When the detection value is "5", Y1 outputs a valid signal and maintains it; when the reset value reaches "8", the relay outputs a valid signal of the pulse period and clears the counter, and at the same time Y1, the relay cancels the output signal.

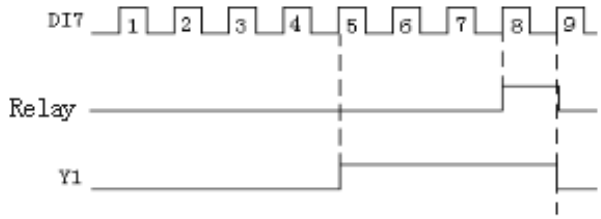


Figure F7-9 Counter Reset Setting and Counter Detection Setting

F7.34	Timed arrival processing	
	0～3	3

0：Stop timing, stop output

1: stop timing, continue output

2: cycle timing, stop output

3: cycle timing, continue to output

When the count value of the counter reaches the value set in function code F7.36, the inverter performs the corresponding action.

F7.35	Timed start conditions	
	0～1	1

0: Always start when powered on

1: start when running, stop when stopped

F7.36	Scheduled time setting	
	0～65535S	0

F8 process PID parameters

Through the setting of this parameter group, a complete analog feedback control system can be formed.

Analog feedback control system: Given AI1 input, converts the physical quantity of the controlled object into 4~20mA current through the AI2 input of the inverter, through the built-in PI regulator to form an analog closed-loop control system, as shown in the following figure:

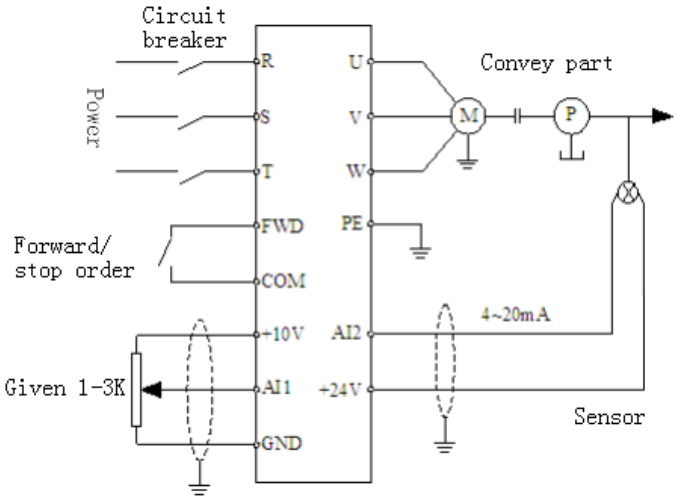


Figure F8-1 Analog Feedback Control System

The PID adjustment function is as follows:

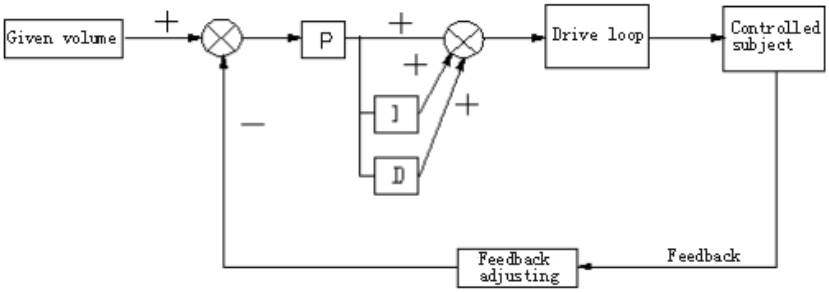


Figure F8-2 PID adjustment

F8.00	PIDOperation input method	
	0～1	0

0: Automatic

1: manual input through the defined multifunctional terminal

F8.01	PID given channel selection	
	0～4	0

0: Number given

The PID given value is given by the number and set by function code F8.02.

1:AI1

The PID given value is given by the external analog signal AI1 (0~10V/0-20mA).

2: AI2

The PID reference is given by the external analog signal AI2 (0~10V).

3: pulse given

The PID reference is given by the external pulse signal.

4: RS485 communication

PID given by communication.

F8.02	Given digital settings	
	0.0～100.0%	50.0%

When analog feedback is used, this function code realizes the setting of the closed loop control's given amount using the operation panel. This function is valid only when the closed loop given channel selects the digital reference (F8.01 is 0).

Example: In the constant pressure water supply closed-loop control system, the setting of this function code should fully consider the relationship between the range of the remote transmission pressure gauge and its output feedback signal, for example, the range of the pressure gauge is 0~10Mpa, corresponding to 0~10V voltage output, We need 6Mpa pressure, then we can set the given digital quantity to 6.00V, so when the PID regulation is stable, the required pressure is 6Mpa.

F8.03	PIDFeedback channel selection	
	0～7	0

0:AI1

The PID feedback amount is given by the external electrical analog signal AI1.

1:AI2

The PID feedback amount is given by the external analog signal AI2.

2: AI1+AI2

The PID feedback value is determined by the sum of AI1 and AI2.

3: AI1-AI 2

The PID feedback value is determined by the difference between AI1 and AI2. When the difference is negative, the PID feedback value defaults to 0.

4: MAX{AI1, AI2}

5: MIN{AI1, AI2}

6: pulse given

7: RS485 communication

F8.04	PIDController advanced feature settings	
	0000～1001	000

LED bits: PID regulation characteristics

0: positive effect

When the feedback signal is greater than the given amount of PID, the output frequency of the inverter is required to be decreased (ie, the feedback signal is decreased) so that the PID can reach the balance when it is balanced. Such as winding tension control, constant pressure water supply control.

1: Negative effect When the feedback signal is greater than the given amount of PID, the output frequency of the inverter is required to increase (that is, the feedback signal is decreased). In order to make the PID reach equilibrium, it is a negative characteristic. Such as unwinding tension control, central air conditioning control and so on.

LED bits: Proportional adjustment characteristics (reserved)

0: constant proportional integral adjustment

1: Automatic proportional integral adjustment

LED hundred: Integral adjustment characteristics

0: stop the integral adjustment when the frequency reaches the upper and lower limits

1: When the frequency reaches the upper and lower limits, continue to adjust the integration

For systems that require fast response, it is recommended to cancel the continuous integration adjustment

LED thousands: reserved

F8.05	Proportional gain KP	
	0.01～100.00s	1.00
F8.06	Integration time Ti	
	0.01～10.00s	0.10
F8.07	Differential time Td	
	0.01～10.00s	0.00

0.00: No differential adjustment

Proportional gain (Kp):

Determine the adjustment strength of the entire PID regulator. The larger P, the greater the adjustment intensity. However, if it is too large, it is prone to oscillation.

When there is a deviation between the feedback and the reference, the adjustment amount proportional to the deviation is output. If the deviation is constant, the adjustment amount is also constant. Proportional adjustment can quickly respond to changes in feedback, but simply using proportional adjustment can not do no difference control. The greater the proportional gain, the faster the system's regulation, but if there is excessive oscillation in the assembly. The adjustment method is to set the integration time to be long, the derivative time to zero, use the ratio adjustment to make the system run, change the size of the given amount, observe the feedback signal and the given amount of stable deviation (static error), if the static difference In the direction of the change of the given quantity (for example, increase the given quantity, the system feedback is always smaller than the given quantity after the system stabilizes), then continue to increase the proportional gain, otherwise, decrease the proportional gain and repeat the above process until the static difference is small (it is difficult Do not do a little bit of a dead difference on it.

Integration time (Ti):

Determines how fast the PID regulator can adjust the deviation.

When there is a deviation between the feedback and the reference, the output adjustment amount continuously accumulates. If the deviation persists, the adjustment amount continues to increase until there is no deviation. The integral regulator can effectively eliminate static errors. If the integral regulator is too strong, repeated overshoots will occur and the system will oscillate. The adjustment of the integral time parameter is generally from large to small, and the integral time is gradually adjusted. At the same time, the effect of system adjustment is observed until the system stable speed reaches the requirement.

Differential time (Td):

Determines how strongly the PID regulator adjusts the rate of change of the deviation. When the deviation between the feedback and the given deviation changes, an adjustment amount proportional to the variation rate of the deviation is output. The adjustment amount is only related to the direction and magnitude of the deviation change, and is independent of the direction and size of the deviation itself. The role of differential adjustment is to adjust according to the changing trend when the feedback signal changes so as to suppress the change of the feedback signal. Differential regulators should be used with caution because differential adjustments can easily amplify the system's interference, especially with large frequency variations.

F8.08	Sample period T	
	0.01～100.00s	0.10

0.00: Automatic

The sampling period is the sampling period of the feedback amount. The regulator operates once in each sampling period. The larger the sampling period, the slower the response, but the better the suppression effect on the interference signal, and the general situation does not need to be set.

F8.09	Deviation limit	
	0.0～100.0%	0.0%

The deviation limit is the ratio of the absolute value of the deviation between the system feedback quantity and the given quantity to the given quantity. When the feedback quantity is within the deviation limit range, the PID adjustment does not act. As shown in the figure below, setting a reasonable deviation limit can prevent the system from reaching the target. Frequent adjustments near the value help increase system stability.

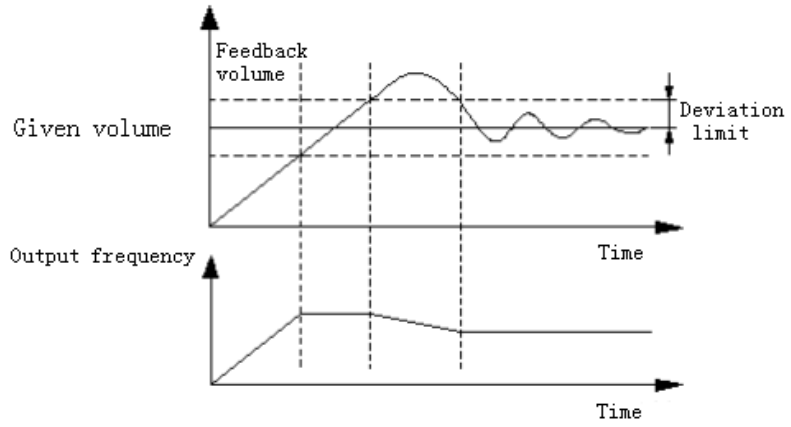


Figure F8-3 deviation limit diagram

F8.10	Closed-loop preset frequency	
	0.00～Maximum frequency	0.00
F8.11	Preset frequency hold time	
	0.0～3600.0s	0.0

This function code defines the frequency and running time of the inverter before the PID is put into operation when the PID control is valid. In some control systems, in order to make the controlled object reach the predetermined value quickly, the inverter sets according to this function code to forcibly output a Frequency value F8.10 and frequency

retention time F8.11. That is, when the control object is close to the control target, it is put into the PID controller to improve the response speed. As shown below:

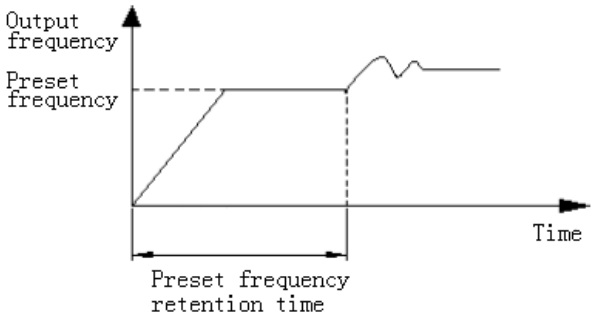


Figure F8-4 Closed-loop preset frequency operation diagram

F8.12	Sleep mode	
	0～2	1

0: invalid

1: Sleep when the feedback pressure exceeds or falls below the sleep threshold

This mode is the first sleep mode of PID, as shown in Figure F8-5.

2: Sleep when feedback pressure and output frequency are stable

This mode is the second sleep mode of PID. There are the following two cases (as shown in Figure F8-6):

1) If the feedback value is less than the given value and greater than the given value * (1 - set deviation [F8.14]), the change in the output frequency is within 6%, and after the sleep delay time [F8.17] is maintained Go to sleep.

2) If the feedback value rises above a given value, sleep is maintained after maintaining the sleep delay time [F8.17]. Conversely, if the feedback value falls below the wake threshold [F8.16], it immediately wakes up.

F8.13	Sleep shutdown selection	
	0～1	0

0: deceleration stop

1: free stop

F8.14	Feedback and set pressure deviations when entering sleep	
	0.0～20.0%	5.0%

This function parameter is only valid for the second sleep mode

F8.15	Sleep threshold	
	0.00～200.0%	100.0%

The threshold is the percentage of the given pressure. This function parameter is only valid for the first sleep mode with respect to the setting.

F8.16	Awake threshold	
	0.00～200.0%	90.0%

F8.15 defines the feedback limit when the frequency converter enters the sleep state from the operating state. If the actual feedback value is greater than the set value and the inverter output frequency reaches the lower limit frequency, the inverter enters the sleep state (ie, zero-speed operation) after the delay waiting time defined in F8.17.

F8.16 defines the feedback limit for the frequency converter to enter the operating state from the sleep state. When PID polarity selects positive characteristics, if the actual feedback value is less than the set value (or when the PID polarity selects negative characteristics, if the actual feedback value is greater than the set value), the inverter passes through F8.18. After the defined delay wait time, it leaves the sleep state and starts working.

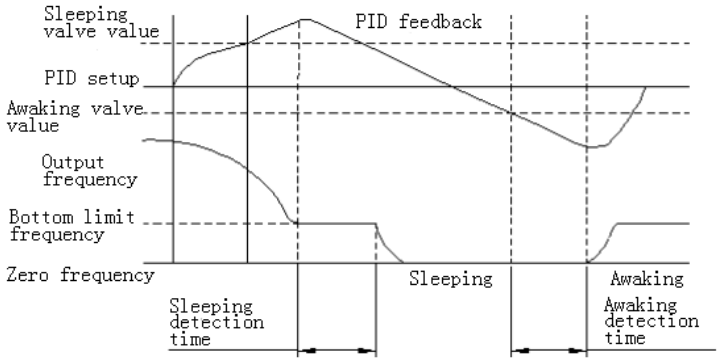


Figure F8-5 First sleep mode

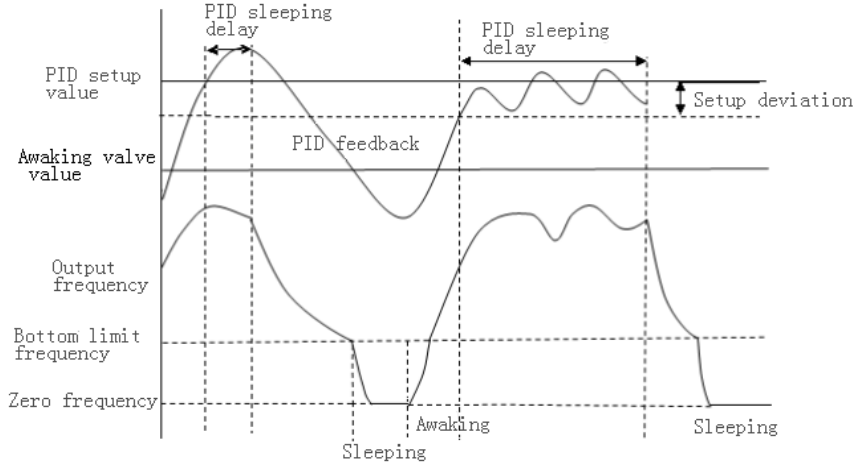


Figure F8-6 Second sleep mode

F8.17	Sleep delay time	
	0.0～6000.0S	100.0
F8.18	Wake up delay	
	0.0～6000.0S	5.0
F8.19	Add pump delay time	
	0.0～3600.0S	10.0
F8.20	Reduce pump delay time	
	0.0～3600.0S	10.0

F8.19~F8.20 are the addition and subtraction pump time in “One to Three Constant Pressure Water Supply”. For details, see the function of No. 31 and No. 32 in F7.18~F7.21.

F9 programmable operating parameters

F9.00	PLC operation mode selection	
	0～3	0

0: Stop after single cycle

The inverter will automatically stop after completing a single cycle. At this time, it is necessary to give the run command again to start. If the running time of a phase is 0, the runtime skips the phase and goes directly to the next phase. As shown below:

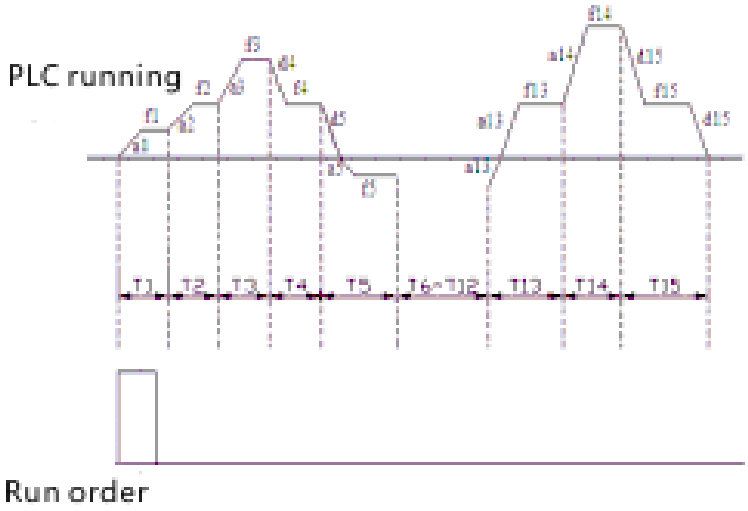


Figure F9-1 Stop after single-cycle PLC

1: Keep the final value running after a single cycle

After the inverter completes a single cycle, it will automatically maintain the last section's operating frequency and direction to maintain operation. As shown below:

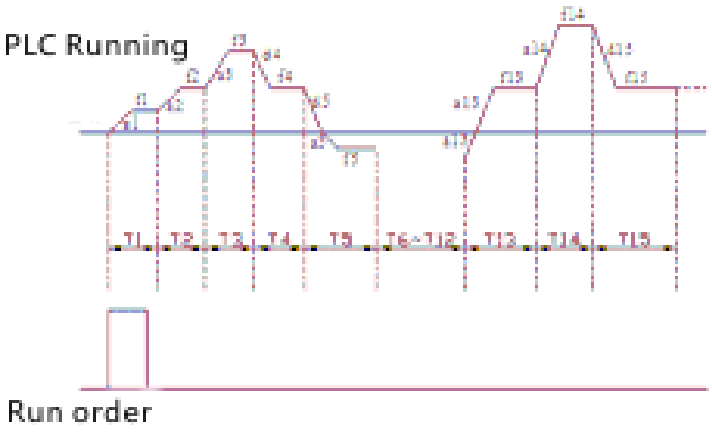


Figure F9-2 Maintaining the schematic after a single cycle of PLC

2: a limited number of continuous cycles

The frequency converter determines the number of cycles of PLC operation according to the limited number of consecutive cycles set by F9.04, and stops after reaching the number of cycles of operation. F9.04=0, the inverter does not operate.

3: Continuous circulation

The inverter will automatically start the next cycle after completing one cycle, and will not stop until there is a stop command. As shown below:

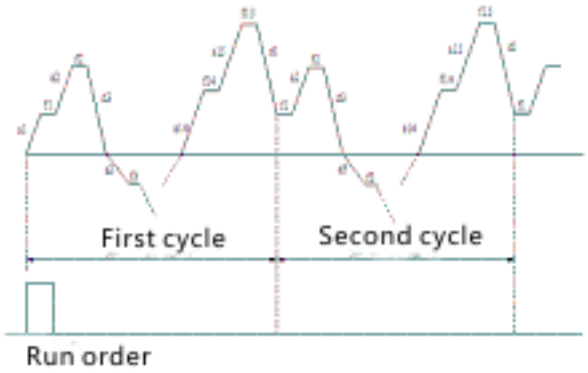


Figure F9-3 PLC Continuous Cycle Diagram

F9.01	PLC operation input mode	
	0～1	0

0: Automatic

1: manual input through the defined multifunctional terminal

F9.02	PLC runs out of memory	
	0～1	0

0: No memory

The PLC running status is not memorized when the power is turned off, and the operation starts from the first stage after the power is turned on.

1: Memorize the phases and frequencies of power-off time

The PLC operating status is remembered during power-down, including the power-off time phase, operating frequency, and elapsed time. Start after power-on, automatically enter this stage, and continue the operation of the remaining time at the frequency defined in this stage.

F9.03	PLC start method	
	0～2	0

0: restart from the first paragraph

Shutdown during operation (caused by a shutdown command, fault, or power failure), and restart from the first stage after restart.

1: start from the stage of shutdown (failure)

During the stop in operation (caused by the stop command, fault or power failure), the inverter automatically records the running time of the current stage. After it is started, it automatically enters this stage and continues to run for the remaining time at the frequency defined in this stage, as shown in the following figure:

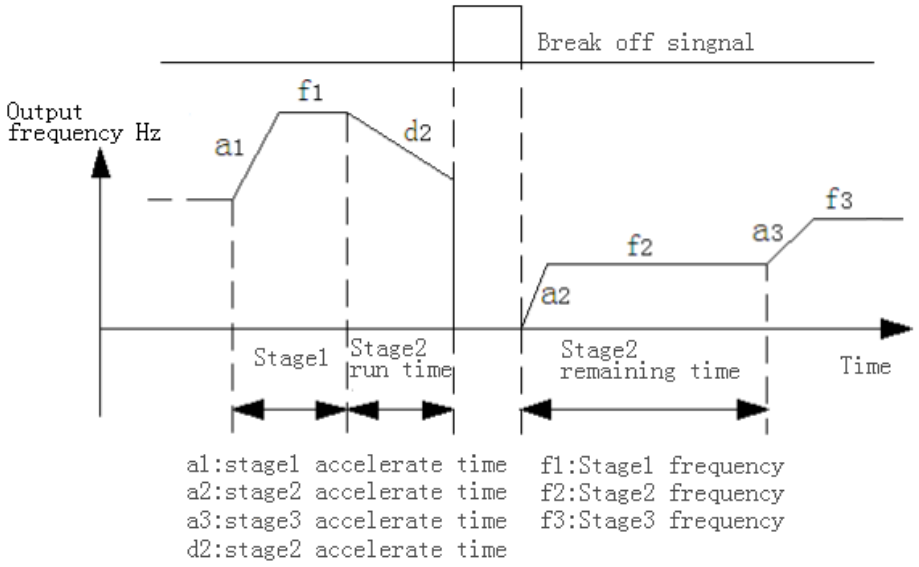


Figure F9-4 PLC starting method 1

2: Starting from the stage and frequency at the time of shutdown (failure)

During operation stoppage (caused by stop command, fault or power failure), the inverter not only automatically records the running time of the current stage but also records the operating frequency of the shutdown time. After the restart, it resumes to the operating frequency of the shutdown time, and the remaining frequency phase The operation is as follows:

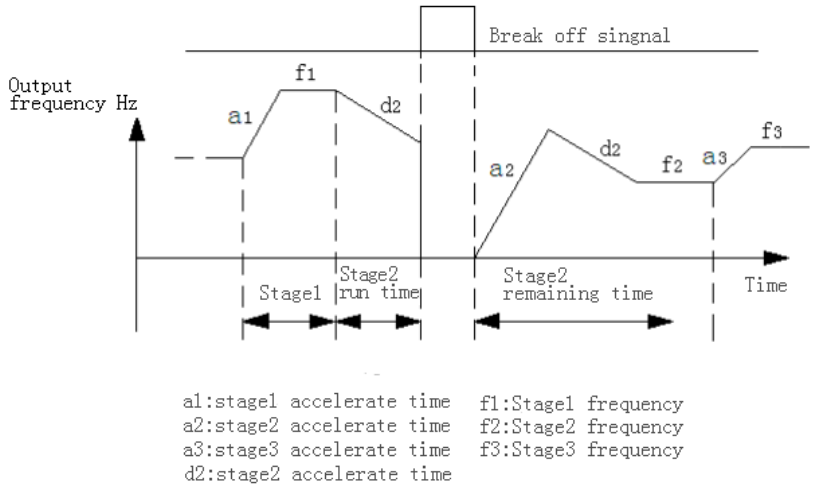


Figure F9-5 PLC starting method 2

📖note:

The difference between Modes 1 and 2 is that Mode 2 more than Mode 1 memorizes the operating frequency of a shutdown time, and continues to operate from this frequency after restart.

F9.04	A limited number of consecutive cycles

	1～65535	1

F9.05	PLC runtime unit selection	
	0～1	0

0：s

1：m

F9.06	Multi-speed frequency0	
	—Maximum frequency ～ Maximum frequency	5.00
F9.07	Multi-speed frequency1	
	—Maximum frequency ～ Maximum frequency	10.00
F9.08	Multi-speed frequency2	
	—Maximum frequency ～ Maximum frequency	15.00
F9.09	Multi-speed frequency3	
	—Maximum frequency ～ Maximum frequency	20.00
F9.10	Multi-speed frequency4	
	—Maximum frequency ～ Maximum frequency	25.00
F9.11	Multi-speed frequency5	
	—Maximum frequency ～ Maximum frequency	30.00
F9.12	Multi-speed frequency6	
	—Maximum frequency ～ Maximum frequency	40.00
F9.13	Multi-speed frequency7	
	—Maximum frequency ～ Maximum frequency	50.00
F9.14	Multi-speed frequency8	
	—Maximum frequency ～ Maximum frequency	0.00
F9.15	Multi-speed frequency9	
	—Maximum frequency ～ Maximum frequency	0.00
F9.16	Multi-speed frequency10	
	—Maximum frequency ～ Maximum frequency	0.00
F9.17	Multi-speed frequency11	
	—Maximum frequency ～ Maximum frequency	0.00
F9.18	Multi-speed frequency12	

	—Maximum frequency ～ Maximum frequency	0.00
F9.19	Multi-speed frequency13	
	—Maximum frequency ～ Maximum frequency	0.00
F9.20	Multi-speed frequency14	
	—Maximum frequency ～ Maximum frequency	0.00
F9.21	Multi-speed frequency15	
	—Maximum frequency ～ Maximum frequency	0.00

The multi-speed symbol determines the direction of operation, and negative indicates the opposite direction. The frequency input mode is set by F0.07=6, and the start-stop command is set by F0.06.

F9.22	0th deceleration time	
	0～3	0
F9.23	0th speed running time	
	0.0～6553.5S(M）	0.0
F9.24	The first paragraph deceleration time	
	0～3	0
F9.25	Phase 1 speed	
	0.0～6553.5S(M）	0.0
F9.26	Phase 2 deceleration time	
	0～3	0
F9.27	Phase 2 speed	
	0.0～6553.5S(M）	0.0
F9.28	Phase 3 deceleration time	
	0～3	0
F9.29	Phase 3 speed	
	0.0～6553.5S(M）	0.0
F9.30	The fourth paragraph speed deceleration time	
	0～3	0
F9.31	Phase 4 speed	
	0.0～6553.5S(M）	0.0
F9.32	The fifth paragraph deceleration time	
	0～3	0
F9.33	Phase 5 speed	
F9.33	Phase 5 speed	
	0.0～6553.5S(M）	0.0
F9.34	The sixth paragraph deceleration time	
	0～3	0
F9.35	Phase 6 speed	

	0.0～6553.5S(M）	0.0
F9.36	Paragraph 7 quick deceleration time	
	0～3	0
F9.37	7th speed running time	
	0.0～6553.5S(M）	0.0
F9.38	Paragraph 8 Deceleration time	
	0～3	0
F9.39	Phase 8 speed	
	0.0～6553.5S(M）	0.0
F9.40	Step 9 Deceleration time	
	0～3	0
F9.41	Ninth speed	
	0.0～6553.5S(M）	0.0
F9.42	Paragraph 10 Deceleration time	
	0～3	0
F9.43	10th speed running time	
	0.0～6553.5S(M）	0.0
F9.44	The 11th speed deceleration time	
	0～3	0
F9.45	Phase 11 speed	
	0.0～6553.5S(M）	0.0
F9.46	The 12th speed increase deceleration time	
	0～3	0
F9.47	12th speed running time	
	0.0～6553.5S(M）	0.0
F9.48	The thirteenth speed increase deceleration time	
	0～3	0
F9.49	13th speed running time	
	0.0～6553.5S(M）	0.0
F9.50	Paragraph 14: Deceleration time	
	0～3	0
F9.51	14th speed running time	
	0.0～6553.5S(M）	0.0
F9.52	Paragraph 15: Deceleration time	
	0～3	0
F9.53	15th speed running time	
	0.0～6553.5S(M）	0.0

The above function code is used to set programmable deceleration time and running time of multi-speed. The 16-segment deceleration time can be set separately from the 1st to 4th deceleration time; the 16-segment operation time can be set separately from the X-th run time.

16-speed deceleration time is set to 0, representing deceleration time1 (F0.19-F0.20); 1,2,3 is deceleration time2 (F1.13-F1.14), 3 (F1. 15 to F1.16) and 4 (F1.17 to F1.18). (X takes 0 to 15).

📖note:

1: When the running time of a PLC stage is set to 0, the segment is invalid.

2: The PLC process can be input, paused, reset, etc. through the terminals. Refer to F7 group terminal function definition.

3: PLC stage running direction is determined by the frequency plus and minus and the running command. The actual running direction of the motor can be changed in real time by an external direction command.

F9.54	Reserved	
	Reserved	0

F9.55	Swing frequency control	
	0～1	0

0: Prohibited

1: effective

F9.56	Swing frequency operation input method	
	0～1	0

0: Automatic

1: manual input through the defined multifunctional terminal

F9.56 selects 1, when the multi-function X terminal selects the 35th function, the pendulum frequency is input during the operation, otherwise the pendulum frequency is invalid.

F9.57	Swing control	
	0～1	0

0: fixed swing

The swing reference value is Maximum output frequency F0.15.

1: variable swing

Swing reference is the given channel frequency.

F9.58	Swing frequency shutdown start mode selection	
	0～1	0

0: Start according to the memory state before shutdown

1: start again

F9.59	Swing frequency state power-down memory	
	0～1	0

0: storage

1: Do not store

The wobble frequency status parameter is stored when the power is turned off. This

function is valid only when the “Start in memory state before stopping” mode is selected.

F9.60	Swing frequency preset frequency	
	0.00Hz ～ Maximum frequency	10.00
F9.61	Swing frequency preset frequency waiting time	
	0.0～3600.0s	0.0

The above function codes define the operating frequency and the time at which the frequency converter operates before or after it enters the wobble operation mode. If the function code F9.61≠0 (when wobble preset frequency wait time) is set, the inverter directly enters the wobble frequency preset frequency operation after starting, and enters the pendulum after the wobble frequency presetting waiting time. Frequency mode.

F9.62	Swing frequency amplitude	
	0.0～100.0％(relatively set frequency)	0.0%

The amplitude of the wobble frequency is determined by F9.57. If F9.57=0, then the swing amplitude

AW =Maximum output frequency*F9.62

If F9.57=1, then swing

AW = given channel frequency *F9.62.

prompt:

1: The pendulous frequency operation frequency is constrained by the upper and lower limit frequencies. If it is not set properly, the pendulous frequency operation is not normal.

2: Inching, PID control mode, pendulum frequency automatically fails.

F9.63	Jump frequency	
	0.0～50.0％(relative wobble amplitude)	0.0%

This function code refers to the frequency of rapid decrease after the frequency reaches the maximum frequency of the wobble frequency in the wobbling process, and of course, refers to the rate of rapid rise after the frequency reaches the wobble frequency.

Set to 0.0% without kick frequency.

F9.64	Swing frequency rise time	
	0.1～3600.0s	5.0
F9.65	Swing frequency fall time	
	0.1～3600.0s	5.0

This function code defines the running time from the lower limit frequency of the wobble frequency to the maximum frequency of the wobble frequency and the running time from the maximum frequency of the wobble frequency to the lower frequency of the wobble frequency when the wobble frequency is running.

The pendulum frequency control is applicable to textile, chemical fiber and other

industries and applications where traversing and winding functions are required. The typical operation is shown in Figure F9-6.

Usually the wobbling process is as follows: Accelerate to the wobble preset frequency (F9.60) according to Acceleration time, and wait for a period of time (F9.61). Then add the deceleration time to the wobble frequency and then set the frequency. Swing frequency amplitude (F9.62), kick frequency (F9.63), wobble frequency rise time (F9.64) and wobble fall time (F9.65) run cyclically, until there is a stop command deceleration stop by deceleration time until.

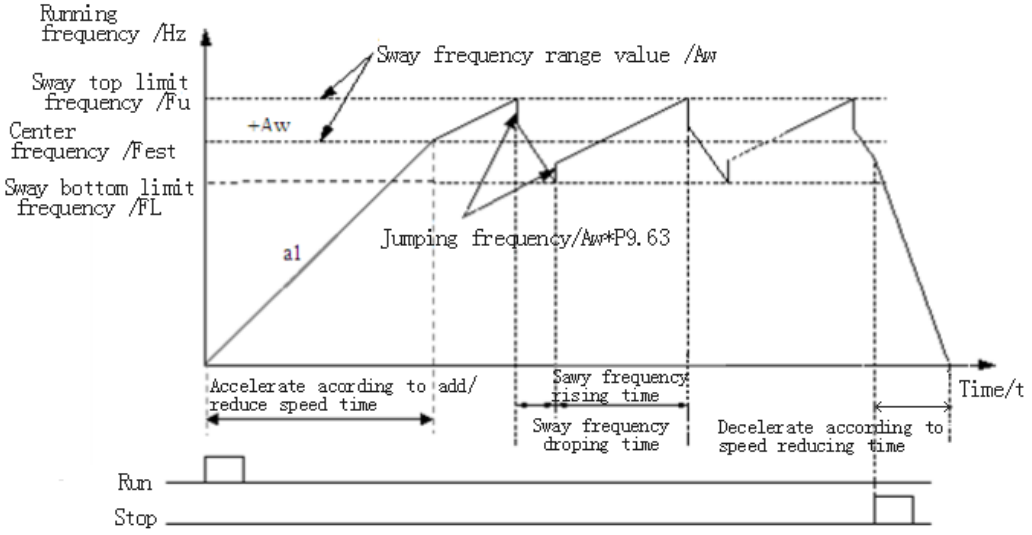


Figure F9-6 Swing Frequency

🕮prompt:

1: The center frequency can be given by digital given frequency, analog, pulse, PLC or multi-speed.

2: The swing frequency is automatically canceled when jogging and closed-loop operation.

3: PLC and pendulous frequency are running in the same way. When switching between PLC segments, the pendulum frequency will be invalid. After the PLC stage acceleration/deceleration setting, the frequency will begin swinging after setting the frequency to the PLC, and the stop will be decelerated according to the PLC phase deceleration time.

F9.66	Reserved	
	Reserved	0

F9.67	Fixed length control	
	0～1	0

0: Prohibited

1: effective

F9.68	Set length

	0.000～65.535(KM)	0.000
F9.69	Actual length	
	0.000～65.535(KM)	0.000
F9.70	Length magnification	
	0.100～30.000	1.000
F9.71	Length correction factor	
	0.001～1.000	1.000
F9.72	Measuring shaft circumference	
	0.10～100.00CM	10.00
F9.73	Number of pulses per revolution (X6)	
	1～65535	1000

This group of functions is used to achieve a fixed-length stop function.
The inverter inputs count pulses from the terminal (X6 is defined as function 53), based on the test
The calculated length is the number of pulses per revolution (F9.73) and the shaft circumference (F9.72).

Calculated length = number of count pulses number of pulses per revolution × measurement axis circumference

The calculated length is corrected by length override (F9.70) and length correction factor (F9.71) to obtain the actual length.

Actual length = calculated length × length multiplier ÷ length correction factor

When the actual length (F9.69) ≥ set length (F9.68), the inverter will automatically send a stop command to stop. Before re-operation, it is necessary to clear the actual length (F9.69) or modify the actual length (F9.69) <set length (F9.68), otherwise it cannot be started.

prompt:

The multi-function input terminal can be used to clear the actual length (the input terminal is defined as 46 function, the length count is cleared). If this terminal is valid, the previous length count value is cleared. After the terminal is disconnected, the actual length can be counted and calculated.

The actual length is F9.69, which is automatically stored when power is lost.

When the setting length F9.68 is 0, the fixed-length stop function is invalid, but the length calculation is still valid.

Fixed-length stop function application example:

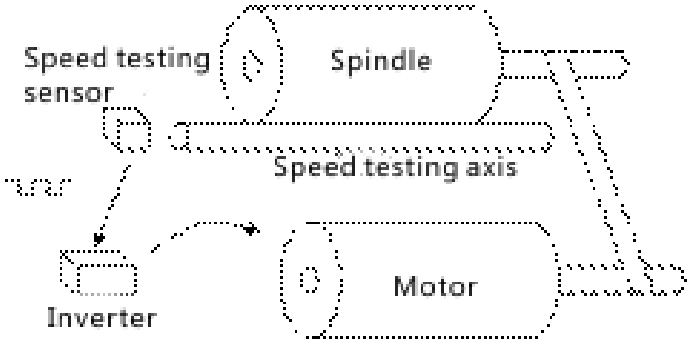


Figure F9-7 Example of long stop function

In Figure F9-7, the inverter drives the motor. The motor rotates the spindle through the conveyor belt. The speed measuring shaft touches the spindle, so the linear velocity of the spindle is detected and transmitted to the inverter through the counting terminal in the form of pulse. The inverter detects the pulse and calculates The actual length, when the actual length ≥ set length, the frequency converter will automatically stop

FA protection parameters

FA.00	Motor overload protection options	
	0～2	0

0: Prohibited

No motor overload protection (use with caution).

1: ordinary motor (electronic thermal relay mode, low speed compensation)

Due to the deterioration of the heat dissipation effect of ordinary motors at low speed, the corresponding power

The thermal protection value of the machine should also be properly adjusted. Here, with the low-speed compensation feature,

It is to reduce the motor overload protection threshold below 30Hz.

2: Variable frequency motor (electronic thermal relay mode, low speed without compensation)

Since the heat dissipation of the inverter-specific motor is not affected by the speed, the protection value adjustment at low speed operation is not required.

FA.01	Motor overload protection factor	
	20.0％～120.0％	100.0%

In order to implement effective overload protection for different types of load motors, it is necessary to set the motor's overload protection factor reasonably and limit the maximum current value allowed by the inverter. The motor overload protection factor is the percentage of the rated current of the motor to the rated output current of the inverter.

When the inverter drives a motor with a power level match, the motor overload protection factor can be set to 100%. As shown below:

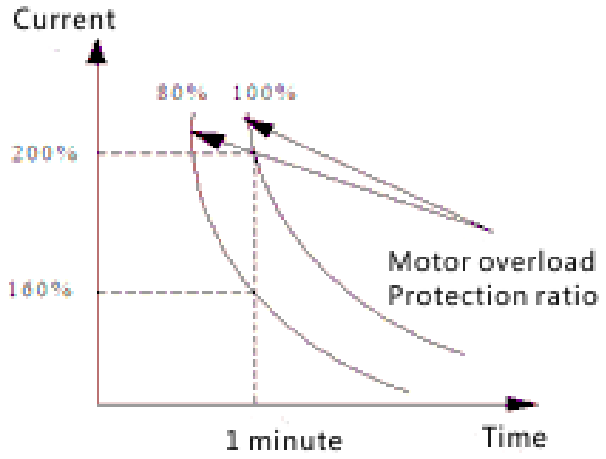


Figure FA-1 Motor overload protection curve

When the inverter capacity is greater than the motor capacity, in order to implement effective overload protection for different specifications of the load motor, a reasonable setting of the motor overload protection factor is as follows:

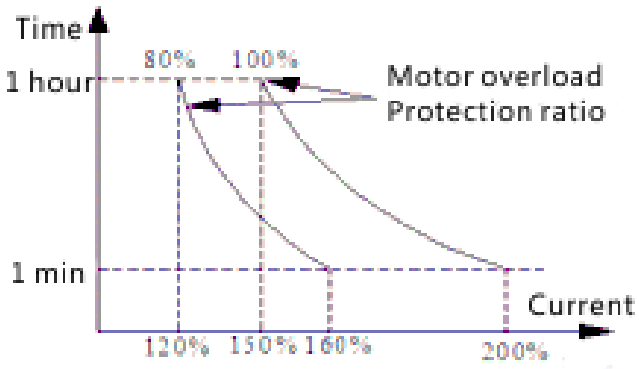


Figure FA-2 Motor overload protection coefficient setting

The motor overload protection factor can be determined by the following formula:

Motor overload protection factor = maximum allowable load current / inverter rated output current × 100%

In general, the maximum load current is the rated current of the load motor. Line protection value adjustment.

FA.02	Undervoltage protection action selection	
	0～1	0

0: Prohibited

1: Permissible (undervoltage as fault)

FA.03	Undervoltage protection level	
	220V ： 180 ～ 280V 200V 380V ： 330 ～ 480V	Model settings

	350V	

This function code specifies the allowable lower limit voltage of the DC bus when the inverter is working normally.

⚠**note:**

When the grid voltage is too low, the output torque of the motor will drop. For the case of constant power load and constant torque load, too low grid voltage will increase the input and output current of the inverter, thus reducing the reliability of the inverter operation. Therefore, when operating at low grid voltage for a long period of time, the inverter power must be derated.

FA.04	Over-pressure limit level	
	220V：350～390V 370V 380V：550～780V 660V	Model settings

The overvoltage limit level defines the operating voltage at voltage stall protection.

FA.05	Deceleration voltage limiting factor	
	0～1000 0：Overvoltage stall protection is invalid	Model settings

During deceleration, the greater the value, the stronger the suppression of overpressure.

FA.06	Current limit level (V/F mode only)	
	80%～200%*inverter rated current 160%	Model settings

The current limit level defines the current threshold for automatic current limit operation. The set value is the percentage of the rated current of the inverter.

⚠**note:**

In normal VF mode, FA.06 is used to limit acceleration and constant speed operation; in vectored VF mode, FA.06 is used to limit amplitude during acceleration operation, and is processed indefinitely at constant speed operation; in vector mode, constant speed operation Limiting is only relevant to F4.20 to F4.21

FA.07	Weak magnetic area current limit selection	
	0～1	0

0: Limited by the current limit level of FA.06

When the output frequency is within 50Hz, it is limited by FA.06.

1: Limited by current limiting level of FA.06

When the output frequency is greater than 50Hz, it is limited by the FA.06 converted current.

FA.08	Accelerating current limiting factor	
	0～100 0：Acceleration current limit is invalid	Model settings

During acceleration, the greater the value, the stronger the ability to suppress over-current.

FA.09	Constant speed current limit enable	
	0～1	1

0: invalid

1: effective

FA.10	Lost checkout time	
	0.1S～60.0S	5.0
FA.11	Lost detection level	
	0.0～100.0%*Inverter rated current	0.0%

0: Invalid offload detection

The load detection level (FA.11) defines the current threshold for the load removal action. The set value is the percentage of the rated current of the inverter.

Lost load detection time (FA.10) defines the output load signal after the inverter output current continues to be less than the overload detection level (FA.11) for a certain period of time.

The active state of the load off is that the operating current of the frequency converter is less than the level of the load detection and the time remaining exceeds the load detection time.

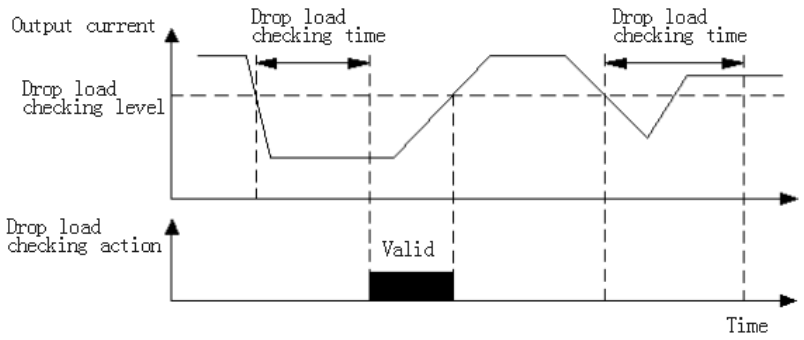


Figure FA-3 Load Drop Detection

FA.12	Overload pre-alarm level	
	20～200.％*Inverter rated current	Model settings

The overload pre-alarm mainly monitors the overload condition before the overload protection of the inverter. Overload pre-alarm level defines the current threshold for overload pre-alarm action. The set value is relative to the rated current of the inverter.

FA.13	Overload pre-alarm delay	
	0.0～15.0s	10.0

The overload pre-alarm delay defines the delay time between the output current of the inverter from being continuously greater than the overload pre-alarm level (FA.12) and the output overload pre-alarm signal.

⚠**Note:**

Through the setting of parameters FA.12 and FA.13, when the output current of the inverter is greater than the overload pre-alarm level (FA.12), the inverter will output the pre-alarm signal after the delay (FA.13) processing. The operation panel shows "A–09".

FA.14	Temperature detection threshold	
	0.0℃～90.0℃	65.0℃

For details, see function description No. 51 in parameters F7.18 to F7.21.

FA.15	Input and output phase loss protection selection	
	0～3	Model settings

0: Both are prohibited

1: Input prohibited, output allowed

2: Input allowed, output prohibited

3: Allowed

Factory default options within 7.5KW 1, 11KW above factory default options 3.

FA.16	Input phase loss protection delay time	
	0.0S～30.0S	1.0

When the input phase loss protection is selected to be valid, and the input phase loss fault occurs, the inverter passes the time defined by FA.16, and then the protection action “E-12” is protected and free to stop.

FA.17	Output phase loss protection detection reference	
	0％～100％*Inverter rated current	50%

When the actual output current of the motor is greater than the rated current*[FA.17], if the output phase loss protection is valid, after 5S delay time, the inverter protection action [E-13], and free stop.

FA.18	Output current imbalance detection coefficient	
	1.00～10.00	1.00

If the ratio between the maximum value and minimum value of the three-phase output current is greater than this factor, and the duration exceeds 10 seconds, the inverter reports output current unbalance error E-13. When FA.08 = 1.00, the output current imbalance detection is invalid.

Reserved Reserve	Reserved	
	Reserved	0

d		

FA.20	PIDFeedback disconnection processing	
	0～3	0

0: No action

1: Alarm and keep running at breakage frequency

2: protect the action and free parking

3: Alarm and decelerate to zero speed operation according to the set mode

FA.21	Feedback broken line detection value	
	0.0～100.0%	0.0%

The maximum value of the PID given amount is used as the upper limit of the feedback disconnection detection value. During feedback disconnection detection time, when the feedback value of PID continues to be less than the feedback disconnection detection value, the inverter will perform corresponding protection actions according to the setting of FA.20.

FA.22	Feedback disconnection detection time	
	0.0～3600.0S	10.0

The duration of the protection action after the feedback disconnection occurs.

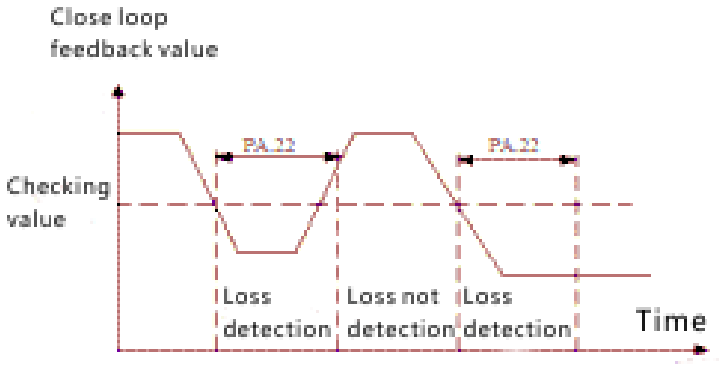


Figure FA-4 closed loop feedback loss detection timing diagram

FA.23	Reserved	
	Reserved	0

FA.24	RS485Communication abnormal action selection	
	0～2	1

0: protection action and free stop

1: alert and maintain the status and continue to run

2: Alarm and stop according to the set stop mode

FA.25	RS485 communication timeout detection time	
	0.0～100.0s	5.0

If RS485 communication does not receive the correct data signal within the time interval defined by this function code, it is considered that the RS485 communication is abnormal and the inverter will perform the corresponding action according to the setting of FA.24. When this value is set to 0.0, RS485 communication timeout detection is not performed.

FA.26	Panel communication abnormal action selection	
	0～2	1

0: protection action and free stop

1: protect the action and maintain the status and continue to operate

2: protection action and stop according to the set stop mode

FA.27	Panel communication timeout detection time	
	0.0～100.0s	1.0

If the panel communication does not receive the correct data signal within the time interval defined by this function code, then the panel communication is considered abnormal and the inverter will perform the corresponding action according to the setting of FA.26.

FA.28	EEPROM read/write error action selection	
	0～1	0

0: protection action and free stop

1: alert and continue to run

FA.29	Output ground protection option at power-up (reserved)	
	0～1	0

0: invalid

1: effective

FA.30	Overspeed protection action selection (reserved)	
	0～2	2

0: protection action and free stop

1: Alarm and deceleration stop

2: Alarm and continue to run

FA.31	Over speed detection value	
	0.0 ～ 50.0%* 【 F0.15 】 Maximum frequency	0.0%

FA.32	Over speed detection time	
	0.0～100.0S	5.0

FA.33	Speed deviation is too large to protect the choice of action	
	0～2	0

0: protection action and free stop

1: Alarm and deceleration stop

2: Alarm and continue to run

FA.34	Excessive speed deviation detection value (reserved)	
	0.0 ～ 50.0%* 【 F0.15 】 Maximum frequency	0.0%

FA.35	Excessive speed deviation detection time (reserved)	
	0.0～100.0S	0.5

FB communication parameters

FB.00	Agreement selection	
	0～1	0

Communication protocol selection

0: MODBUS

1: custom

FB.01	Local address	
	0～247	1

0: broadcast address

1 to 247: slave station

In 485 communication, this function code is used to identify the address of the inverter.

⚠**note:**

FB.01 sets 0 as the broadcast address. It can only receive and execute the command of the upper computer, but will not answer the upper computer.

FB.02	Communication baud rate setting	
	0～5	3

0：2400BPS

1：4800BPS

2：9600BPS

3：19200BPS

4：38400BPS

5：115200BPS

This function code is used to define the data transmission rate between the host computer and the inverter. The baud rate set by the host computer and the inverter should be the same, otherwise the communication cannot be performed. The bigger the baud rate is, the faster the data communication is. Setting up too much influences the stability of communications.

FB.03	Data Format	
	0～5	0

0: No parity (N,8,1) for RTU

1: Even parity (E, 8, 1) for RTU

2: Odd parity (0,8,1) for RTU

3: No parity (N,8,2) for RTU

4: Even parity (E,8,2) for RTU

5: Odd parity (0,8,2) for RTU

Note: ASCII mode is temporarily reserved

The data format set by the host computer and the inverter should be the same, otherwise it can not communicate normally.

FB.04	Native response delay	
	0～200ms	5

This function code defines the intermediate time interval when the frequency converter data frame reception ends and the upper computer sends a response data frame. If the response time is less than the system processing time, the system processing time shall prevail. If the delay is greater than the system processing time, the system waits for delay after processing the data until the response delay time expires before sending data to the upper computer.

FB.05	Transmission response processing	
	0～1	0

0: Write operation has a response

The frequency converter responds to the read and write commands of the upper computer.

1: Write operation does not respond

The frequency converter responds to the read command of the upper computer and does not respond to the write command to improve the communication efficiency.

FB.06	Proportional linkage coefficient	
	0.01～10.00	1.00

This function code is used to set the weight coefficient of the frequency command received by the inverter as a slave through the RS485 interface. The actual operating frequency of this unit is equal to this function code value multiplied by the frequency setting command value received through the RS485 interface. In linked control, this function code can set the proportion of the running frequency of multiple inverters.

FC advanced function parameters and performance parameters

FC.00	Dynamic braking function setting	
	0～2	2

0: invalid

1: effective throughout

2: Only effective when decelerating

FC.01	Energy consumption braking initial voltage	
	220V：340～380V 360V 380V：660～760V 680V	Model settings
FC.02	Energy consumption braking difference voltage	
	220V：10～100V 5V 380V：10～100V 10V	Model settings

FC.03	Energy consumption braking ratio	
	10～100%	100%

The above function code is used to set the voltage threshold of the built-in braking unit of the inverter, the value of the return voltage and the usage rate of the braking unit. If the internal DC side voltage of the inverter is higher than the energy consumption braking starting voltage, the built-in braking unit operates. If a braking resistor is connected at this time, the internal pump voltage energy of the inverter will be released through the braking resistor and the DC voltage will fall back. When the voltage on the DC side drops to a certain value (starting voltage - braking backlash), the built-in braking unit shuts down.

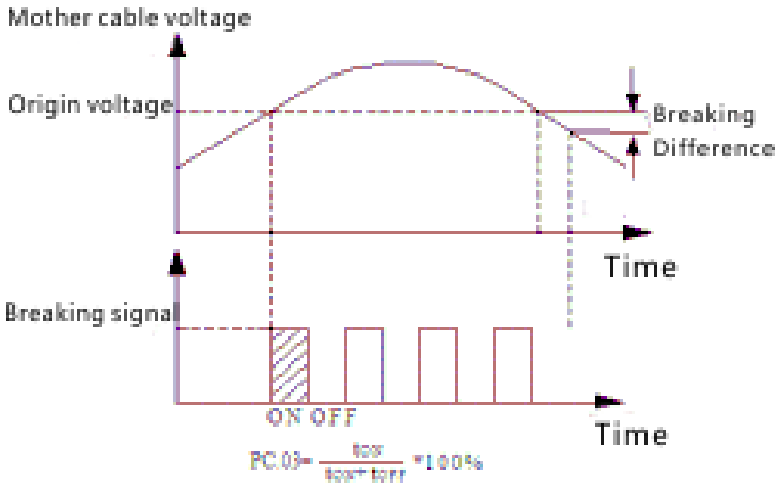


Figure FC-1 energy braking diagram

FC.04	Power failure restart settings	
	0～2	0

0: Prohibited

When power is turned on after a power failure, the inverter will not run automatically.

1: start from the starting frequency

When the power is turned on after power failure, if the start condition is satisfied, the inverter will wait for the time defined by FC.05, and the inverter will automatically start the operation from the starting frequency.

2: Speed tracking start

When the power is turned on after a power failure, if the start condition is satisfied and the inverter waits for the time defined by FC.05, the inverter will start running with the speed tracking mode.

FC.05	Power restart wait time	
	0.0～60.0S	5.0

In the restart waiting time, entering any run command is invalid. If the stop command is input, the inverter will automatically release the speed tracking restart status and return to the normal stop status.

⚠**note**

1: The restart after power failure is also related to the setting of FA.02. At this time, FA.02

must be set to 0.

2: This parameter can cause unintended motor start, which may cause potential damage to equipment and personnel. Please use caution.

FC.06	Failure automatic reset times	
	0～100	0
FC.07	Fault automatic reset interval	
	0.1～60.0S	3.0

100: indicates that the number of times is unlimited, that is, numerous times

When a fault occurs during operation, the inverter stops outputting and displays the fault code. After the reset interval set by FC.07, the inverter automatically resets the fault and restarts operation according to the set start mode.

The number of automatic fault resets is set by FC.06. When the number of fault resets is set to 0, there is no automatic reset function, and only manual reset. When FC.06 is set to 100, the number of times is not limited, that is, it is countless times.

For IPM faults, external device faults, etc., the inverter does not allow self-resetting operation.

FC.08	Cooling fan control	
	0～1	0

0: automatic control mode

1: The power-on process has been running

FC.09	Run Limit Password	
	0～65535	0

By default, the password is 0, FC.10 and FC.11 can be set. When there is a password, the FC.10 and FC.11 settings must be performed after the password verification is correct.

This function code is set to 0 when the password restriction function is not needed.

When setting the operation restriction password, enter five digits and press the ENTER key to confirm. The password will take effect automatically after one minute.

When you need to change the password, select FC.09 function code, and press the ENTER key to enter the password verification state. After the password verification is successful, enter the modification state, enter the new password, and press the ENTER key to confirm, the password change is successful, and after one minute, the password is automatically Effective; clear password, run limit password set to "00000"

FC.10	Operation limit selection	
	0～1	0

0: Prohibited

1: effective

During the limited operation, as long as the cumulative drive running time exceeds the time set by FC.11, the inverter will protect and stop freely, and the operation panel will display E-26 (RUNLT). To clear the fault, you can clear the operation limit fault by correctly verifying FC.09 (run limit password) and setting FC.10 (operation limit function selection) to "0" (invalid).

FC.11	limited time	
	0～65535h	0

Note: This function parameter cannot be initialized as described in FC.09

FC.12	Instant power down frequency	
	220V：180V～330V 250V 380V：300V～550V 450V	Model settings

If the bus voltage of the inverter drops below the FC.12* rated voltage value and the instantaneous stop control is in effect, the instantaneous stop will stop.

FC.13	Instantaneous power-down frequency reduction factor	
	1～100 0：Instantaneous stop function is invalid	0

FC.14	Droop control	
	0.00～10.00HZ	0.00

0.00: Droop control function is invalid.

When multiple inverters drive the same load, the load distribution is unbalanced due to different speeds, so that the inverter with a higher speed is subjected to heavier load. The droop control feature is to change the speed droop as the load increases, so that the load can be evenly distributed; this parameter adjusts the amount of frequency change of the drooping frequency converter.

When F0.18=1 (high frequency mode), the upper limit of this function code is 100.0Hz.

FC.15	Speed tracking waiting time	
	0.1～5.0S	1.0

Before the inverter speed tracking begins, the tracking starts after this delay.

FC.16	Speed tracking current limiting level	
	G type: 160% 80% ～ 200%*inverter rated current P type: 120% 80% ～ 200%*inverter rated current	Model settings

In the speed tracking process, this function code acts as an automatic current limiter. When the actual current reaches the threshold (FC.16), the inverter down-converts the current limit, and then continues to track the acceleration; the set value is Percentage of inverter rated current.

FC.17	Speed tracking speed	
	1～100	10

When the speed tracking is restarted, the speed of the speed tracking is selected. The smaller the parameter, the faster the tracking speed. But too fast may cause the tracking to be unreliable.

FC.18	PWM mode	
	0000～1311	Model settings

LED bits: PWM synthesis

0: 7-band full-range

The current output is stable, and the full-band power tube generates a large amount of heat.

1: Seven to five segments

The current output is stable, the power of the low-frequency power tube is larger, and the power of the high-frequency power tube is smaller.

LED tens: PWM temperature correlation

0: invalid

1: effective

This function selection is valid. If the radiator temperature reaches the warning value (50°C), the inverter will automatically reduce the carrier frequency until the radiator temperature no longer exceeds the warning value.

LED hundred position: PWM frequency correlation

0: Invalid

1: low frequency adjustment, high frequency adjustment

2: Low frequency adjustment, high frequency adjustment

3: Low-frequency adjustment, high-frequency adjustment

When the PWM temperature is related, if the temperature of the heat sink reaches the warning value (50°C), the carrier frequency will remain unchanged if the low frequency and high frequency are not adjusted; if the low frequency and high frequency are adjusted, the inverter will automatically reduce the carrier frequency.

LED thousand bits: Flexible PWM function

0: invalid

1: effective

When the function selection is effective, the electromagnetic interference is reduced and the motor noise is reduced by changing the implementation of the PWM.

FC.19	Voltage control function	
	0000～0112	0102

LED bit: AVR function

0: invalid

1: effective throughout

2: Invalid only when decelerating

AVR is the automatic voltage adjustment function. When the input voltage and the rated value of the inverter are deviated, this function keeps the inverter's output voltage constant to prevent the motor from operating in the over-voltage state. This function is ineffective when the output command voltage is greater than the input supply voltage. During the deceleration process, if the AVR does not operate, the deceleration time is short.

However, the operating current is large; AVR action, the motor decelerates smoothly, the operating current is small, but the deceleration time is longer.

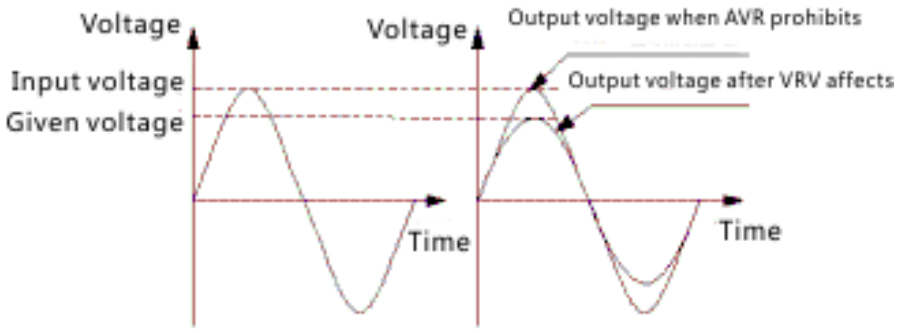


Figure FC-2 AVR Function

LED tens: Overmodulation selection
0: invalid
1: effective

The over-modulation function means that the inverter increases the output voltage by adjusting the utilization of the bus voltage. When the over-modulation is effective, the output harmonics will increase. If long-term low-voltage heavy-duty operation or high-frequency (more than 50HZ) operating torque is not enough, this function can be turned on.

LED hundred position: dead zone compensation selection
0: invalid
1: effective

If the selection is valid, full-frequency dead-time compensation is used in all control modes. This function is mainly used for factory debugging and does not recommend customer settings.

LED thousands: harmonic optimization (reserved)
0: invalid
1: effective

FC.20	Oscillation suppression coefficient	
	0～100	0

Reasonably setting this function code can effectively suppress the current oscillation of the motor in the middle frequency band, thus making the motor run more stable. Under the premise of ensuring the current stability, the smaller the set value of this function code is, the better. This function is valid only for V/F control. It is invalid when set to 0.

FC.21	Flux brake selection	
	0～100	0

This parameter is used to adjust the frequency converter's ability to brake during deceleration. The larger this value, the stronger the magnetic flux braking ability. To a certain extent, the shorter the deceleration time, the parameter generally does not need to be set. If this value is 0, the function is invalid.

When the over-pressure limit level is set lower, turning on this function can shorten the deceleration time appropriately. When the over pressure limit level is set high, this function does not need to be turned on.

FC.22	Energy-saving control coefficient	
	0～100	3

The larger the setting of this parameter, the more significant the energy saving effect, but it may cause unstable operation. This function is only valid for normal V/F control. It is invalid when set to 0.

FC.23	Multi-speed priority enable	
	0～1	0

0: Invalid

1: Multi-step speed is given priority over F0.07

FC.24	Jog priority enable	
	0～1	0

0: invalid

1: When the inverter is running, the priority of jogging is the highest

FE panel function setting and parameter management (FD group reservation)

FE.00	LCD language selection (LCD panel)	
	0～2	0

0: Chinese

1: English

2: Reserved

FE.01	M-FUNC keyboard function selection	
	0～4	0

0: JOG (jog control)

The M-FUNC key is a jog control and the default direction is determined by F0.21.

1: positive and negative switching

In the running state, the M-FUNC key is equivalent to the direction switching key. Pressing this key in the stop state is invalid. This switch is valid only for the panel operation command channel.

2: clear panel ▲/▼ key set frequency

FE.02	STOP/RST key function selection	
	0～3	3

0: Only valid for panel control

Only when F0.06=0, this key can control inverter stop.

1: effective for both panel and terminal control

This key can only stop the inverter when F0.06=0 or 1. In the communication control operation mode, this key is invalid.

2: effective for panel and communication control at the same time

This key can only control inverter stop when F0.06=0 or 2. In the terminal control operation mode, this key is invalid.

3: Valid for all control modes

In any operation command channel mode, this button can control inverter stop.

📖prompt:

The reset function is valid in any operating command channel mode.

FE.03	STOP button + RUN emergency stop function	
	0～1	1

0: invalid

1: free parking

Press the RUN and STOP/RESET keys at the same time and the inverter will coast to stop.

FE.04	Closed-loop display factor	
	0.01～100.00	1.00

This function code is used to correct the display error between the actual physical quantity (pressure, flow, etc.) and the given or feedback quantity (voltage, current) when used in closed-loop control, and has no effect on the closed-loop adjustment.

FE.05	Load speed display factor	
	0.01～100.00	1.00

This function code is used to correct the display error of the speed scale and has no effect on the actual speed.

FE.06	Linear velocity coefficient	
	0.01～100.00	1.00

This function code is used to correct the display error of the linear speed scale and has no effect on the actual speed.

FE.07	Encoder adjustment rate	
	1～100	10

FE.08	Operation status monitoring parameter selection 1	
	0～57	0
FE.09	Operation status monitoring parameter selection 2	
	0～57	5

By changing the setting value of the above function code, you can change the monitoring item on the main monitoring interface. For example: set FE.08=5, that is, select the output current d-05. Then, the default display item of the main monitoring interface is the current Output current value.

FE.10	Stop status monitoring parameter selection 1	
	0～57	1
FE.11	Stop status monitoring parameter selection 2	
	0～57	12

By changing the setting value of the above function code, the monitoring item on the main monitoring interface can be changed. For example, if FE.10=5 is set, that is, the output voltage d-06 is selected, the default display item of the main monitoring interface is Current output Voltage value.

FE.12	Parameter display mode selection	
	00～11	00

LED bits: Function parameter display mode selection

0: Display all function parameters

1: only display parameters different from the factory value

2: Only the parameters modified after the last power up are displayed (reserved)

LED tens: monitoring parameter display mode selection

0: Only main monitoring parameters are displayed

1: alternate display of main and auxiliary (Interval 1S)

LED hundred, LED thousands: reserved

FE.13	Parameter initialization	
	0～3	0

0: No operation

The inverter is in the normal parameter reading and writing state. Whether the set value of function code can be changed depends on the setting state of the user's password and the current working state of the inverter.

1: Reset all user parameters except motor parameters to factory settings

The motor parameters are not restored. Other user parameters are restored to the factory settings according to the model.

2: Restore all user parameters to factory settings

All user parameters are restored to the factory settings according to model.

3: Clear fault records

Clear the contents of the fault log (D-48 to D-57).

After the operation is completed, this function code is automatically cleared to 0.

FE.14	Parameter write protection	
	0～2	0

0: Allow to modify all parameters (some parameters cannot be modified during operation)

1: Only the frequency setting parameters F0.12, F0.13 and this function code can be modified

2: All parameters except this function code are forbidden to modify

FE.15	Parameter copy function	
	0～3	0

0: No operation

1: Parameter upload to panel

Set to 1, and after confirmation, the panel displays CP-1. The inverter uploads all the function code parameters in the control board to the EEPROM of the operation panel.

2: All function code parameters are downloaded to the inverter

After setting 2 and confirming, the panel displays CP-2. The inverter downloads all function code parameters except the factory parameters in the operation panel to the main control board memory, and refreshes the EEPROM.

3: All function code parameters except motor parameters are downloaded to the inverter

After setting 3, and confirming, the panel displays CP-3. The inverter downloads all the function code parameters in the operation panel to the main control board memory (except the motor parameter group and the factory parameter group), and refreshes the EEPROM.

FF factory parameters

FF.00	Factory password	
	0～65535	0

Chapter 5 Communication Protocol

5.1 RTU Mode and Format

When the controller communicates on the Modbus bus in RTU mode, each 8-bit byte in the message is divided into two 4-bit hexadecimal characters. The main advantage of this mode is the density of characters transmitted at the same baud rate. Higher than ASCII mode, each message must be transmitted continuously.

1 Format of each byte in RTU mode

Encoding system: 8-bit binary, hexadecimal 0-9, A-F.

Data bits: 1 start bit, 8 data bits (lowest first send), stop bits take 1 bit, and parity bits can be selected. (Refer to RTU data frame as sequence diagram)

Error check area: Cyclic Redundancy Check (CRC).

2 RTU data frame bitmap

With parity

Start	1	2	3	4	5	6	7	8	Par	Stop

No parity

Start	1	2	3	4	5	6	7	8	Stop

5.2 A900 register address and function code

1 Supported function codes

function code	Function Description

03	Reading multiple registers
06	Write a single register
10	Writing multiple registers in succession
13	Read single parameter

2 Register address

Register function	Address
Control command input	0x2000
Monitoring parameter reading	0xD000（0x1D00）～0xD039（0x1D39）
MODBUS frequency setting	0x2001
MODBUS torque setting	0x2002
MODBUS PID frequency given	0x2003
MODBUS PID feedback setting	0x2004
parameter settings	0x0000～0x0F15

3 03H read multiple parameters (up to read 8 items in succession)

Inquiry information frame format（Send frame）:

Address	01H
Function	03H
Starting data address	00H
	01H
Number of Data(Byte)	00H
	02H
CRC CHK High	95H
CRC CHK Low	CBH

This section of data analysis:

01H is the inverter address

03H is read function code

0001H is the starting address similar to the F0.01 entry of the control panel

0002H is the number of items to read the menu, and F0.01 and F0.02

95CBH is a 16-bit CRC test code

Response information frame format（Send frame）:

Address	01H
Function	03H
DataNum*2	04H
Data1[2Byte]	00H
	64H
Data2[2Byte]	00H

	64H
CRC CHK High	BAH
CRC CHK Low	07H

This section of data analysis:

01H is the inverter address

03H is read function code

04H is the product of read item *2

0064H is to read the data of F0.01 items

0064H is to read data of F0.02 item

BA07H is a 16-bit CRC

Examples:

Name	Frame format
Read the data of F0.01 and F0.02	Send frame：01H 03H 0001H 0002H 95CBH
	Return frame：01H 03H 04H 0064H 0064H BA07H
Read F2.01 data	Send frame：01H 03H 0201H 0001H D472H
	Return frame：01H 03H 02H 000FH F840H
Read the monitoring parameters of item d-00 (common for addresses D000H and 1D00H)	Send frame：01H 03H D000H 0001H BCCAH
	Return frame：01H 03H 02H 1388H B512H
	Send frame：01H 03H 1D00H 0001H 8266H
	Return frame：01H 03H 02H 1388H B512H
Read the status of the inverter when it is stopped (common for addresses A000H and 1A00H, refer to the description of the inverter's running status)	Send frame：01H 03H A000H 0001H A60AH
	Return frame：01H 03H 02H 0040H B9B4H
	Send frame：01H 03H 1A00H 0001H 8312H
	Return frame：01H 03H 02H 0040H B9B4H
Read fault code E-19 (common address E000H and 1E00H, refer to the following inverter fault code table)	Send frame：01H 03H E000H 0001H B3CAH
	Return frame：01H 03H 02H 0013H F989H
	Send frame：01H 03H 1E00H 0001H 8222H
	Return frame：01H 03H 02H 0013H F989H
Read the pre-alarm code A-18 (common for addresses E001H and 1E01, refer to the rear inverter pre-alarm code table)	Send frame：01H 03H E001H 0001H E20AH
	Return frame：01H 03H 02H 0012H 3849H
	Send frame：01H 03H 1E01H 0001H D3E2H
	Return frame：01H 03H 02H 0012H 3849H

4 06H Writing single parameter

Inquiry information frame format（Send frame）:

Address	01H
Function	06H
Starting data address	20H

	00H
Data(2Byte)	00H
	01H
CRC CHK Low	43H
CRC CHK High	CAH

This section of data analysis:

01H is the inverter address

06H is write function code

2000H is the control command address

0001H is a forward command

43A1H is a 16-bit CRC check code

Response information frame format（Return frame）:

Address	01H
Function	06H
Starting data address	20H
	00H
Number of Data(Byte)	00H
	01H
CRC CHK High	43H
CRC CHK Low	CAH

This section of data analysis: If the settings are correct, return the same input data

Examples:

Name	Frame format
Forward	Send frame：01H 06H 2000H 0001H 43CAH
	Return frame：01H 06H 2000H 0001H 43CAH
Reverse	Send frame：01H 06H 2000H 0009H 420CH
	Return frame：01H 06H 2000H 0009H 420CH
Stop	Send frame：01H 06H 2000H 0003H C20BH
	Return frame：01H 06H 2000H 0003H C20BH
Free stop	Send frame：01H 06H 2000H 0004H 83C9H
	Return frame：01H 06H 2000H 0004H 83C9H
Reset	Send frame：01H 06H 2000H 0010H 43CAH
	Return frame：01H 06H 2000H 0010H 43CAH
Forward rotation	Send frame：01H 06H 2000H 0002H 03CBH
	Return frame：01H 06H 2000H 0002H 03CBH
Reverse rotation	Send frame：01H 06H 2000H 000AH 020DH
	Return frame：01H 06H 2000H 000AH 020DH
Set the parameter of item F8.00 to 1	Send frame：01H 06H 0800H 0001H 4A6AH
	Return frame：01H 06H 0800H 0001H 4A6AH

MODBUS given frequency is 40HZ	Send frame：01H 06H 2001H 0FA0H D642H
	Return frame：01H 06H 2001H 0FA0H D642H
MODBUS PID reference 5V	Send frame：01H 06H 2003H 01F4H 721DH
	Return frame：01H 06H 2003H 01F4H 721DH
MODBUS PID feedback value is 4V	Send frame：01H 06H 2004H 0190H C237H
	Return frame：01H 06H 2004H 0190H C237H
MODBUS torque is set to 80%	Send frame：01H 06H 2002H 0320H 22E2H
	Return frame：01H 06H 2002H 0320H 22E2H
Validate user password (common for address AD00H and 1C00H)	Send frame：01H 06H AD00H 0001H 68A6H
	Return frame：01H 06H AD00H 0001H 68A6H
	Send frame：01H 06H 1C00H 0001H 4F9AH
	Return frame：01H 06H 1C00H 0001H 4F9AH
Validation operation limit function password (address AD01H and 1C01H common))	Send frame：01H 06H AD01H 0002H 7967H
	Return frame：01H 06H AD01H 0002H 7967H
	Send frame：01H 06H 1C01H 0002H 5E5BH
	Return frame：01H 06H 1C01H 0002H 5E5BH

5 10H continuously write multiple parameters

Inquiry information frame format（Send frame）:

Address	01H
Function	10H
Starting data address	01H
	00H
Number of Data(Byte)	00H
	02H
DataNum*2	04H
Data1(2Byte)	00H
	01H
Data2(2Byte)	00H
	02H
CRC CHK High	2EH
CRC CHK Low	3EH

This section of data analysis:

01H is the inverter address

10H is write function code

0100H is the starting address similar to the F1.00 item of the control panel

0002H is the number of registers

04H is the total number of bytes (the number of 2* registers)

0001H is the data of F1.00 item

0002H is data of F1.01 item

2E3EH is a 16-bit CRC check code

Response information frame format（Return frame）:

Address	01H
Function	10H
Starting data address	01H
	00H
Number of Data(Byte)	00H
	02H
CRC CHK High	40H
CRC CHK Low	34H

This section of data analysis:

01H is the inverter address

10H is write function code

0100H is the data for writing F1.00 item

0002H is the number of items to write the menu, and F1.00 and F1.01

4034H is a 16-bit CRC Example：

Name	Frame format
Set the parameters of F1.00 and F1.01 to 1 and 0.02	Send frame：01H 10H 0100H 0002H 04H 0001H 0002H 2E3EH
	Return frame：01H 10H 0100H 0002H 4034H
Forward and communication given frequency is 50HZ	Send frame：01H 10H 2000H 0002H 04H 0001H 1388H 36F8H
	Return frame：01H 10H 2000H 0002H 4A08H
Set the parameter of F1.00 to 1	Send frame：01H 10H 0100H 0001H 02H 0001H 7750H
	Return frame：01H 10H 0100H 0001H 0035H

6 13H reads a single parameter (including attributes, minimum, maximum)

Inquiry information frame format（Send frame）:

Address	01H
Function	13H
Starting data address	00H
	0CH
Number of Data(Byte)	00H
	04H
CRC CHK High	45H
CRC CHK Low	CBH

This section of data analysis:

01H is the inverter address

13H read function code

000CH is the starting address similar to the F0.12 entry of the control panel

0004H is the number of registers
45CBH is a 16-bit CRC test code

Inquiry information frame format（Return frame）:

Address	01H
Function	13H
Starting data address	00H
	12H
Data1(2Byte)	13H
	88H
Data2(2Byte)	03H
	22H
Data3(2Byte)	00H
	00H
Data4(2Byte)	13H
	88H
CRC CHK High	28H
CRC CHK Low	31H

This section of data analysis:

01H is the inverter address
13H write function code
000CH is the starting address similar to the F0.12 entry of the control panel
1388H is the parameter value
0322H is the attribute value
0000H is the minimum value
1388H is the maximum value
2831H is a 16-bit CRC

Examples:

Name	Frame format
Read the parameter value of F0.12	Send frame：01H 13H 000CH 0001H 85CAH
	Return frame：01H 13H 02H 1388H B1D2H
Read F0.12 parameter value + attribute value	Send frame：01H 13H 000CH 0002H C5CBH
	Return frame：01H 13H 04H 1388H 0322H FCE4H
Read parameter value of F0.12 + attribute value + minimum value	Send frame：01H 13H 000CH 0003H 040BH
	Return frame：01H 13H 06H 1388H 0322H 0000H 628BH

Read parameter value of F0.12 + attribute value + minimum value + maximum value	Send frame：01H 13H 000CH 0004H 45CBH
	Return frame：01H 13H 08H 1388H 0322H 0000H 1388H 2831H

5.3 Other register address function description:

Function Description	Address definition	Data Meaning		
		byte	Bit	meaning
Inverter operation status	A000H(1A00H)	Byte 1	Bit7	0: No action 1: overload pre-alarm
			Bit6～Bit5	0:INV_220V 1:INV_380V 2:INV_660V 3:INV_1140V
			Bit4	0: No action 1: Power-off storage
			Bit3	0: No action 1: Reset
			Bit2～Bit1	0: No action 1: Static tuning 2: Dynamic tuning
			Bit0	0: operation panel run command channel 1: terminal operation command channel 2: Communication operation command channel 3: Reserved
		Byte 0	Bit7	
Inverter operation status	A000H(1A00H)	Byte 0	Bit6	0: No action 1: The bus voltage is normal
			Bit5	0: No action 1: Undervoltage
			Bit4	0: No action 1: Inching
			Bit3	0: Forward 1: Reverse
			Bit2～Bit1	1: speed up operation 2: Slow running 3: Running at a constant

				speed
			Bit0	0: stop status 1: Operating status
Read frequency converter fault code	E000H(1E00H)	Addresses E000H and 1E00H are common (see fault code table, reading function code 03H example))		
Read inverter fault alarm code	E001H(1E01H)	Universal address E001H and 1E01H (see pre-alarm code table, reading function code 03H example)		
User password verification	AD00H(1C00H)	Address AD00H and 1C00H are common (see writing function code 06H example)		
Run limit password validation	AD01H(1C01H)	Address AD00H and 1C00H are common (see writing function code 06H example)		

5.4 Frequency Converter Fault Code Table:

error code	Keyboard display content	accident details
0000H	——	No failure
0001H	E-01	Overflow during acceleration
0002H	E-02	Overcurrent during deceleration
0003H	E-03	Overflow in constant speed operation
0004H	E-04	Overpressure in accelerated operation
0005H	E-05	Overpressure in deceleration operation
0006H	E-06	Overpressure in constant speed operation
0007H	E-07	Bus undervoltage
0008H	E-08	Motor overload
0009H	E-09	Inverter overload
000AH	E-10	Inverter loss
000BH	E-11	Power module failure
000CH	E-12	Input side lack of phase
000DH	E-13	Output phase loss or current imbalance
000EH	E-14	Output ground fault
000FH	E-15	Radiator overheat 1
0010H	E-16	Radiator overheat 2
0011H	E-17	RS485 communication failure
0012H	E-18	Keyboard communication failure
0013H	E-19	External device failure

0014H	E-20	Current detection error
0015H	E-21	Motor tuning failure
0016H	E-22	EEPROM read and write failure
0017H	E-23	Parameter copy error
0018H	E-24	PID feedback disconnection
0019H	E-25	Voltage feedback disconnection
001AH	E-26	Restricted arrival time
001BH	E-27	Coprocessor communication failure
001CH	E-28	Encoder breakage fault
001DH	E-29	Speed deviation is too large
001EH	E-30	Overspeed failure

5.5 Inverter pre-alarm code table:

Alarm code	Keyboard display content	accident details
0000H	——	No failure
0009H	A-09	Inverter overload pre-alarm
0011H	A-17	RS485 communication failure alarm
0012H	A-18	Keyboard communication failure alarm
0015H	A-21	Motor tuning alarm
0016H	A-22	EEPROM read/write failure alarm
0018H	A-24	PID feedback disconnection alarm

5.6 control command word format (see writing function code 06H example):

address	Bit	meaning
2000H	Bit7～Bit5	Reserved
	Bit4	0: No action 1: Reset
	Bit3	0: Forward 1: Reverse
	Bit2～Bit0	100: free stop 011: Downtime 010: Jog operation 001: Operation

5.7 Parameter Attribute Table:

Bit	meaning
Bit15	Reserved
Bit14	menu
Bit13	System
Bit12	Restore factory value override
Bit11	EEPROM
Bit10~Bit9	"○":01 "×":10

	"◆":11 "◇":00		
Bit8	symbol		
Bit7~Bit3	1: 00000 V:00001 A:00010 rpm:00011 HZ:00100 %:00110 S:01000	KHZ:01100 KW:01010 om:01110 ms:01001 MA:01011 KM:01101 CM:01111	us:10001 HZ/S:10000 mh:10010 C:10011 m/s:10100 H:10101 KWH:10110
Bit2~Bit0	Decimal point		

5.8 Error Code Meaning of Slave Response Error Information:

error code	Instructions
01H	Illegal function code
02H	Illegal address
03H	Illegal data
04H	Illegal register length
05H	CRC check error
06H	Cannot be modified during parameter operation
07H	Parameters cannot be modified
08H	The upper computer control command is invalid
09H	Parameter is password protected
0AH	wrong password

5.9 Corresponding communication address of all A900 parameters:

function code	mailing address
F0.00～P0.22	0000H～0016H
F1.00～P1.36	0100H～0124H
F2.00～P2.17	0200H～0211H
F3.00～P3.08	0300H～0308H
F4.00～P4.24	0400H～0418H
F5.00～P5.24	0500H～0518H
F6.00～P6.35	0600H～0623H
F7.00～P7.36	0700H～0724H
F8.00～P8.20	0800H～0814H
F9.00～P9.73	0900H～0949H

FA.00～PA.35	0A00H～0A23H
FB.00～PB.06	0B00H～0B06H
FC.00～PC.24	0C00H～0C18H
FE.00～PE.15	0E00H～0E0FH
FF.00～PF.21	0F00H～0F15H
d-00～d-57	D000H（1D00H）～D039H（1D39H）

note:

1 In the above example, the address of the inverter is set to 01 for convenience of explanation; when the inverter is a slave, the address is set in the range of 1 to 247. If any of the data in the frame format is changed, the check code is also To recalculate, you can download the CRC 16-bit checksum calculation tool on the Internet.

2 The monitoring item start address is D000, each item offsets the corresponding hexadecimal value based on this address, and then adds the starting address. For example, the monitoring starting item is d-00, and the corresponding starting address is D000H (1D00H). Now read the monitoring item d-18, 18-00=18, and 18 turns into hexadecimal 12H. Then d-18 The read address is D000H + 12H = D012H (1D00H + 12H = 1D12H), and addresses D000H and 1D00H are common.

3 Frame format when the slave responds to an error: Inverter address + (80H + function code) + error code + 16-bit CRC; if the slave Return frame is 01H + 83H + 04H + 40F3H; 01H is the slave address , 83H is 80H+03H, said read error, 04H represents illegal data length, 40F3H is 16-bit CRC checksum.

Chapter 6 Abnormal Diagnosis and Exclusion

6.1 Fault Information and Troubleshooting

During operation, if an abnormality occurs, the inverter immediately blocks the PWM output and enters the fault protection state. At the same time, the fault code on the keypad indicates the current fault information. At the same time, the fault indicator ALM lights up. At this time, you need to check the cause of the fault and the corresponding treatment according to the method in this section. If you still cannot solve the problem, please contact us directly. Refer to Table 6-1 Troubleshooting and Troubleshooting for the corresponding solution.

error code	Name	Possible cause of failure	Failure Countermeasures
E-01	Overflow during	Acceleration time is too	Extend

	acceleration	short (including tuning process)	Acceleration time
		Restart the rotating motor	Set to start after DC braking or speed tracking start
		Inverter power is too small	Select a power inverter
		Incorrect V/F curve or torque boost setting	Adjust V/F curve or torque boost
E-02	Overcurrent during deceleration	Deceleration time is too short (including tuning process)	Extend deceleration time
		Inverter power is too small	Select a power inverter
		Over load inertia	External braking resistor or braking unit
E-03	Overflow in constant speed operation	The grid voltage is low	Check input power
		Abrupt or abnormal load	Check load or reduce load mutation
		Inverter power is too small	Select a power inverter
E-04	Overpressure in accelerated operation	Abnormal input voltage (including tuning process)	Check input power
		Restart the rotating motor	Set to start after DC braking or speed tracking start
		Special potential energy load	External braking resistor or braking unit
E-05	Overpressure in deceleration operation	Deceleration time is too short (including tuning process)	Extend deceleration time
		Over load inertia	External braking resistor or braking unit
		Abnormal input voltage	Check input power
E-06	Overpressure in constant speed operation	Abnormal input voltage	Check input power
		Special potential energy load	External braking resistor or braking unit
E-07	Bus undervoltage	Abnormal input voltage or contactor (relay) is	Check the power supply voltage or

		not engaged	seek service from the manufacturer
E-08	Motor overload	Incorrect V/F curve or torque boost setting	Adjust V/F curve and torque boost
		The grid voltage is too low	Check the grid voltage
		Motor stall or load mutation is too large	Check the load
		Motor overload protection factor is set incorrectly	Correctly set the motor overload protection factor
E-09	Inverter overload	Incorrect V/F curve or torque boost setting	Adjust V/F curve and torque boost
		The grid voltage is too low	Check the grid voltage
		Acceleration time is too short	Extend Acceleration time
		Motor overloaded	Select more powerful inverter
E-10	Inverter loss	Output current is less than the load detection value	Check the load
E-11	Power module failure	Inverter output short circuit or ground	Check motor wiring
		Inverter instantaneous overcurrent	See Overflow Countermeasures
		The air duct is blocked or the fan is damaged	Drain the ventilation duct or replace the fan
		Abnormal control board or serious interference	Seek service from manufacturers
		Power device damage	Seek service from manufacturers
E-12	Input side lack of phase	Power input phase loss	Check power and connection
E-13	Output phase loss or current imbalance	Output U, V, W have phase loss	Check output wiring

E-14	Output ground fault	Reserved	Reserved
E-15 E-16	Radiator overheating 1 Radiator overheat 2	Excessive ambient temperature	Reduce the ambient temperature
		Broken fan	Replace fan
		Air duct blockage	Ventilation
E-17	RS485 communication failure	Does not match the baud rate of the upper computer	Adjust the baud rate
		RS485 channel interference	Check whether the communication connection is shielded and the wiring is reasonable. If necessary, consider and connect the filter capacitor.
		Communication timeout	Retry
E-18	Keyboard communication failure	Damaged keyboard and control board cable	Replace keyboard and control board connection
E-19	External device failure	External device fault input terminal closed	Disconnect the external device fault input terminal and clear the fault (check the cause)
E-20	Current detection error	Hall device or amplifier circuit failure	Seek service from manufacturers
		Auxiliary power failure	
		Hall or power board connection bad	
E-21	Motor tuning failure	Motor parameter setting error	Reset the motor parameters
		Serious mismatch between inverter and motor power specifications	Seek service from manufacturers
		Tuning timeout	Check motor

			connection
E-22	EEPROM read and write failure	EEPROM failure	Seek service from manufacturers
E-23	Parameter copy error	Incorrect data when inverter parameters are uploaded to operation panel	Check the operation panel cable connection
		Parameter error when downloading data from the operation panel to the inverter	Check the operation panel cable connection
		No parameter copy upload to directly download parameters	First upload parameters and then download
E-24	PID feedback disconnection	Loose PID feedback line	Check feedback connection
		The amount of feedback is less than the breakage detection value	Adjust the detection input threshold
E-25	Voltage feedback disconnection	The amount of feedback is less than the breakage detection value	Adjust the detection input threshold
E-26	Restricted arrival time	Restricted arrival time	Seek service from dealer
E-27	Coprocessor communication failure	Reserved	Reserved
E-28	Encoder breakage fault	Reserved	Reserved
E-29	Speed deviation is too large	Reserved	Reserved
E-30	Overspeed failure	Reserved	Reserved

Table 6-1 Troubleshooting and Troubleshooting

6.2 Exception Handling

During the operation of the inverter, common abnormal phenomena and countermeasures are shown in Table 6-2:

Anomalies		Possible causes and countermeasures
Motor does not turn	Keyboard no display	Check whether the power is off, whether the input power is missing, and whether the input power line is connected wrongly.

	No keyboard is displayed, but the internal charge indicator is on	Check whether there is any problem with the keyboard-related wiring, sockets, etc., and measure the power supply voltage in each control device to confirm whether the switching power supply is working properly. If the switching power supply is not working properly, check whether the switching power supply inlet (+, -) socket is connected. OK, if the starter is damaged or if the regulator is normal.
	Motor has a buzz	The motor is too heavy to try to reduce the load
	No abnormalities found	Check whether it is in the trip state or not reset after the trip, whether it is in the state of power-off and restart, whether the keyboard is reset, if it enters the program running state, multi-speed operation state, specific running state or non-operation state, you can try to restore the factory The method of value.
		Confirm whether the operation instruction is given
		Check whether the operating frequency is set to 0
The motor can't smooth acceleration and deceleration		Add deceleration time setting is not appropriate, increase deceleration time
		The current limit value is set too small to increase the limit
		Overvoltage protection during deceleration increases deceleration time
		Incorrect carrier frequency setting, overload or oscillation
		The load is too heavy and the moment is not enough. Increase the torque boost value in V/F mode. If it still can not meet the requirements, you can use the automatic torque boost mode (this is the default mode of the A880). At this time, note that the motor parameters must be consistent with the actual value, if you still can not To meet the requirements, it is recommended to use magnetic flux vector control instead. At this time, it is still necessary to pay attention to whether the motor parameters are consistent with the actual values, and it is better to tune the motor parameters.
		The motor power does not match the inverter power. Please set the motor parameter to the actual value
		One dragged more than one motor. Please change the torque boost mode to manual lift mode
Although the motor can rotate but not speed		The frequency upper and lower limit settings are not suitable
		The frequency setting is too low or the frequency gain setting is too small
		Check whether the speed control method used is consistent with the set frequency setting.
		Check if the load is too heavy, over-voltage stall or over-current limit
Motor speed change during operation		Loads fluctuate frequently, minimizing changes
		The frequency converter and the rated value of the motor do not match. Please set the motor parameter to actual value
		The frequency setting potentiometer is in poor contact or the frequency given signal fluctuates. Change to a digital frequency reference or increase the filter time constant of the analog input signal
The motor rotates in the opposite direction		Adjust the phase sequence of output terminals U, V, W
		Set the running direction (F0.21=1) to reverse
		The direction uncertainty caused by the output phase loss, please check the motor wiring immediately

Table 6-2 Common Abnormalities and Countermeasures

Chapter 7 Maintenance and Maintenance

7.1 Routine Maintenance and Maintenance

Changes in the operating environment of the inverter, such as the effects of temperature, humidity, smoke, and the aging of the internal components of the inverter, may cause the inverter to malfunction. Therefore, during the storage and use, the frequency converter must be inspected daily and regularly maintained.

When the inverter is operating normally, please confirm the following:

1 Whether the motor has abnormal sound and vibration.

2 Whether the inverter and motor have abnormal heating.

3 The ambient temperature is too high.

4 Is the load current the same as usual?

5 The cooling fan of the inverter is operating normally.

7.2 Regular maintenance and maintenance

1 Regular maintenance

In order to make the inverter work normally for a long time, maintenance and maintenance must be performed regularly for the service life of the internal electronic components of the inverter. The service life of the frequency converter electronic components differs depending on the conditions of use. As shown in the following table, the warranty period of the inverter is for users' reference only.

Device name	Standard replacement years
cooling fan	2 to 3 years
Electrolytic capacitor	4 to 5 years
A printed circuit board	5-8 years

2 Regular maintenance

According to the use situation, the user can perform a regular routine inspection on the inverter for a short time or 3 to 6 months to eliminate the hidden troubles and ensure long-term high-performance and stable operation.

Routine inspection content:

1) If the control terminal screws are loose, tighten them with a suitable size screwdriver.

2) Whether the main circuit terminal has poor contact, whether there are traces of overheating on the cable or copper row connection, screws, etc.

3) Whether the power cable or the control wire has any damage, especially whether the external insulation layer has cracks or cuts.

4) Whether the connection between the power cable and the cold-pressed connector is loose, and whether the insulation wrap around the connector is aging or falling off.

5) Clean the dust on printed circuit boards, air ducts, etc., and take precautions against static electricity when cleaning.

6) For the insulation test of the inverter, all wirings between the inverter and the power supply and between the inverter and the motor must be removed first, and all the main circuit input and output terminals must be reliably short-circuited after the conductors are tested, and then tested on the ground. Please use a qualified 500V megger (or corresponding voltage file of the insulation tester); do not use a faulty meter. It is forbidden to connect only a single main circuit terminal to conduct insulation test on the ground. Otherwise, there is a danger of damaging the inverter. Do not perform insulation tests on

the control terminals. Doing so will damage the inverter. After testing, it is important to remove all wires that are shorted to the main circuit terminals.

7) If the motor is tested for insulation, the wires connected between the motor and the frequency converter must be completely disconnected and the motor must be tested separately. Otherwise, there is a danger of damaging the inverter.