SSI2000 Inverter

series Compact Vector Control

SSI2000

User Manual - EN

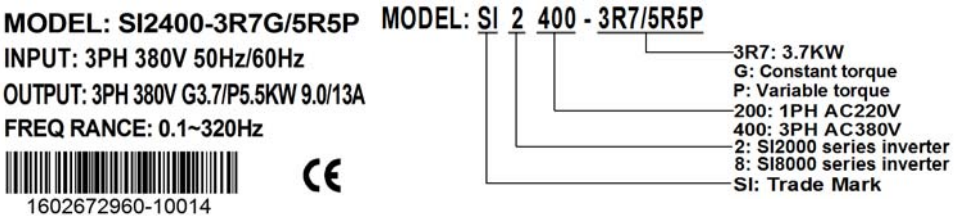
Chapter 1 Introduction

1.1 Technology Features

	Item	SI2000
Standard function	Control mode	Sensor less flux vector control (SFVC) Voltage/Frequency (V/F) control
	Maximum frequency	Vector control : 0-320 Hz V/F control : 0-3200 Hz
	Carrier frequency	1-16KHz The carrier frequency is automatically adjusted based on the load features.
	Input frequency e solution	Digital setting: 0.01 Hz Analog setting : maximum frequency x 0.025%
	Startup torque	G type: 0.5 Hz/150% (SFVC) P type : 0.5 Hz/100%
	Speed range	1:100(SFVC)
	Speed stability accuracy	±0.5% (SFVC)
	Overload capacity	G type : 60s for 150%of the rated current, 3s for 180% of the rated current. P type: 60s for 120% of the rated current, 3s for 150% of the rated current.
	Torque boost	Fixed boost Customized boost 0.1%-30.0%
	V/F curve	Straight-line V/F curve Multi-point V/F curve N-power V/F curve (1.2-power, 1.4-power, 1.6-power, 1.8-power, square)
	V/F separation	Two types : complete separation ; half separation
	Ramp mode	Straight-line ramp S-curve ramp Four groups of acceleration /deceleration time with the range of 0.0-6500.0s
	DC braking	DC braking frequency :0.00 Hz to maximum frequency Braking time : 0.0-100s Braking action current value : 0.0%-100.0%
	JOG control	JOG frequency range : 0.0-50.00 Hz JOG acceleration/deceleration time 0.0-6500.0s
	Onboard multiple preset speeds	It implements up to 16 speeds via the simple PLC function or combination of X terminal states
	Onboard PID	It realizes process-controlled closed loop control system easily.
	Auto voltage regulation (AVR)	It can keep constant output voltage automatically when the mains voltage changes.
	Overvoltage/Overcurrent stall control	The current and voltage are limited automatically during the running process so as to avoid frequency tripping due overvoltage/over current.
	Torque limit and control	It can limit the torque automatically and prevent frequent over current tripping during the running process.
	Instantaneous stop doesn't stop	The load feedback energy compensates the voltage reduction so that the AC drive can continue to run for a short time.
	Rapid current limit	It helps to avoid frequent over current faults of the AC drive.

	Item	SI2000
Standard function	High performance	Control of asynchronous motor is implemented through the high-performance current vector control technology.
	Timing control	Time rang : 0.0-6500.0 minutes
	Communication methods	RS485
	Running command channel	Given by the panel ,control terminals, Serial communication port, can be switched by many ways
	Frequency source	10 kinds of frequency source , given by Digital analog voltage ,analog current , pulse , serial port. Can be switch by many ways
	Auxiliary frequency source	10 kinds of frequency source, can easily realize Micro adjustment, frequency Synthesizer
Input and output	Input terminals	6 digital input terminals ,one of which supports up to 100kHz high-speed pulse input. 2analog input terminal, one of which only supports 0-10 V voltage input and the other supports 0-10 V voltage input or 4-20 mA current input.
	Output terminal	1 digital output terminal 1 relay output terminal 1 analog output terminal : that supports0-20 mA Current output or 0-10 V voltage output
Operation on the operation panel	LED display	It display the parameters.
	Key locking and function selection	It can lock the keys partially or completely and define the function range of some keys so as to prevent miss-function.
	Protection mode	Motor short-circuit detection at power-on , output phase loss protection, over–current protection, over-voltage protection, under voltage protection, overheat protection and overload protection.
Environment	Installation location	Indoor, avoid direct sunlight , dust , corrosive gas, combustible gas, oil smoke, vapour , drip or salt.
	Alttitude	Lower than 1000m(Lower the grades when using higher then 1000m)
	Ambient temoerature	-10˚C~40˚C (Lower the grades if the ambient temperature is between 40˚C and 50˚C) Less than 95%RH, without condensing
	Vibration	Less than 5.9 m/s^2 (0.6 g)
	Storage temperature	-20˚C ~60˚C

1.2 Description of Name Plate



1.3 Selection Guide

3PH AC380V±15% - 1PH AC220V±15%

Model No	Rated Output power (KW)	Rated input current (A)	Rated Output Current (A)	Motor Power (kW)
1PH/3PH AC 220V ± 15%				
SI2200-0R4G	0.4	5.4	2.4	0.4
SI2200-0R75G	0.75	7.2	4.5	0.75
SI2200-1R5G	1.5	10	7.0	1.5
SI2200-2R2G	2.2	16	10.0	2.2
SI2200-3R7G	3.7	23	16.0	3.7
3PHAC380±15%				
SI2400-0R75G	0.75	3.8	2.5	0.75
SI2400-1R5G	1.5	5	3.7	1.5
SI2400-2R2G	2.2	5.8	5.0	2.2
SI2400-3R7G/5R5P	3.7/5.5	10.0/15.0	9.0/13.0	3.7/5.5
SI2400-5R5G	5.5	15.0	13.0	5.5
SI2400-7R5G/11P	7.5/11	20.0/26.0	17.0/25.0	7.5/11
SI2400-11G/15P	11/15	26.0/35.0	25.0/32.0	11/15
SI2400-15G/18.5P	15/18.5	35.00/38.0	32.0/37.0	15/18
SI2400-18.5G/22P	18.5/22	38.0/46.0	37.0/45.0	18.5/22
SI2400-22G/30P	22/30	46.0/62.0	45.0/60.0	33/30
SI2400-22G/30P	22/30	46.0/62.0	45.0/60.0	22/30
SI2400-30G/37P	30/37	62.0/76.0	60.0/75.0	30/37
SI2400-37G/45P	37/45	76.0/90.0	75.0/90.0	37/45

Chapter 2 Installation and wiring

2.1 Environment and installation requirements

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Inverter's installation environment on the service life of inverter , and has direct influence on the normal function ,Inverter can't satisfy the specification of environment , protection or fault could lead to the Inverter .

SI2000 series inverter of wall hung inverter , please use the vertical installation so that the air convection and the heat dissipation effect can be better .

Inverter's installation environment , please make sure must comply with

(01) -10^{0}C to 40^{0}C ambient temperature

(02)Environment humidity 0~95% and no condensation

(03)Avoid direct sunlight

(04)Environment does not cotain corrosive gas and liquid

(05)Environment without dust, floating fiber, cotton and metal particles

(06) Away from the radioactive material and fuel

(07)Away from electromagnetic interference source (such as electric welding machine, big power machine)

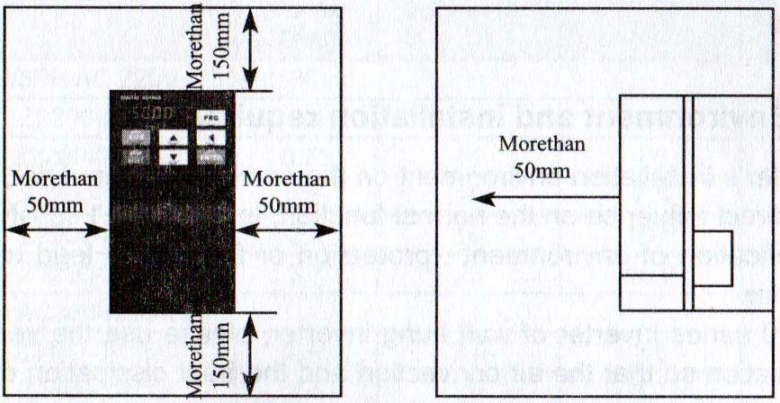
(08)Installed planar solid , no vibration , if it cannot avoid vibration , please add anti vibration pads to reduce the vibration

(09) Please install the inverter in the well ventilated place, easy to check and maintain , and install on the solid non-combustible material , away from the heating element (such as braking resistor ,etc)

(10)Inverter installation please reserve enough space , especially many inverter's installation , please pay attention to the placement of the frequency Inverter , and configure cooling fans, make the environment temperature lower than 45^{0}C

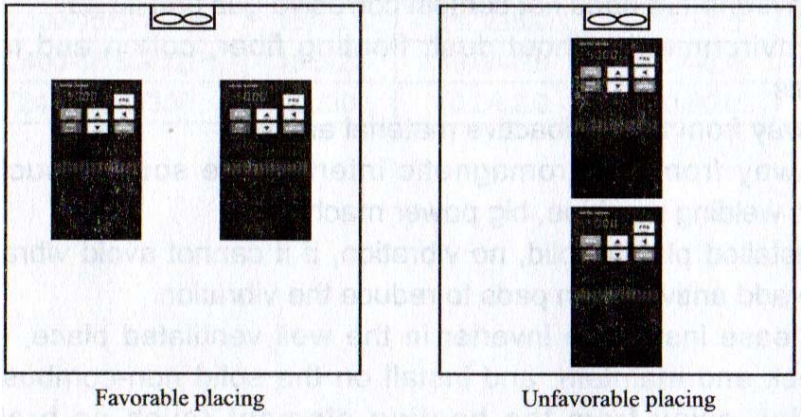
(11) Inverter can output the rated power when installed with altitude of lower than 1000m. It will be derated when the altitude is higher than 1000m.

(1)single inverter installation

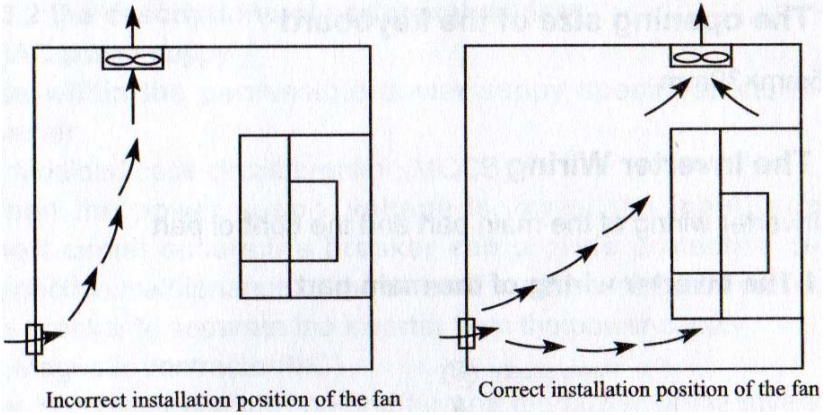


(2) Multiple inverters installed in one control cabinet.
Please pay attention:

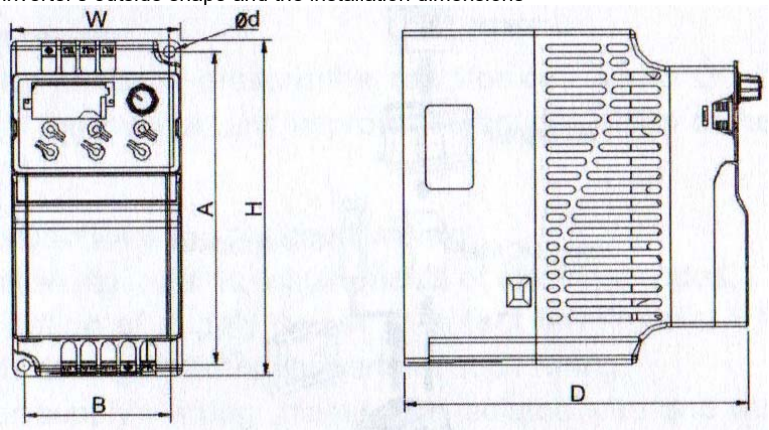
1.When encasing the multiple inverters , install them in paaralled as a ooling measure.



2.If multiple inverters are installed in one control cabinet, please leave enough clearances andtake cooling measure.



The inverter's outside shape and the installation dimensions



Model	Outline dimensiok(mm)			Installation size(mm)		
	W	H	D	A	B	ød
SI2200-0R4G~1R5G	72.0	142.0	146.0	132.7	62.7	5.2
SI2200-2R2G~3R7G	100.0	183.0	137.6	173.0	90.0	4.7
SI2400-0R4G~2R2G	72.0	142.0	146.0	132.7	62.7	5.2
SI2400-3R7G/5R5P~5R5G	100.0	183.0	137.6	173.0	90.0	4.7
SI2400-7R5P~11G/15P	130.0	260.0	178.0	246.5	116.0	5.5
SI2400-15G/18.5P~22G/30P	195.0	280.0	175.0	266.0	182.5	6.5

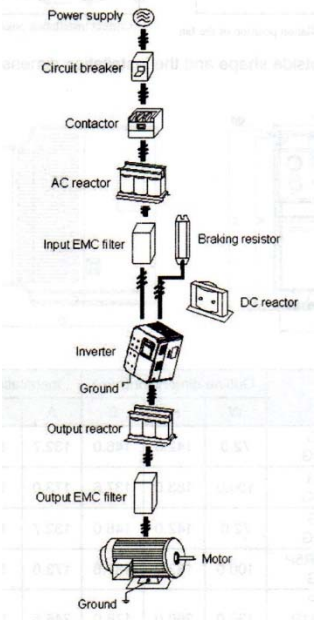
2.2.The opening size of the keyboard

68.5mm×39mm

2.3.The Inverter Wiring

The inverter wiring of the main part and the control part

2.3.1.The inverter wiring of the main part



2.3.2.the description of peripheral devices

(1) AC power suppy

Use with in the permissible power suppy specification of the inverter.

(2) Moulded case circuit breaker : (MCCB)

When the power supply voltage is low or the input terminal short circuit occurs,the breaker can provide protection , during inspection , maintenance or the inverter is not running , you can cut off the breaker to separate the inverter frome the power supply.

(3)Magnetic contractor (MC)

The contractor can turnon and turnoff the power of the inverter to ensure safety.

(4)AC current reactor

A suppress high harmonic to protect the inverter to ensue safety.

(5)Brake resistor

When the motor is braking , the resistor can avoid DC bus high voltage of the inverter , and improve the braking ability of the internal brake unit.

2.3.3.Precautions main circuit wiring

(1)circuit wiring , refer to requirement of electrical codes.

(2)Application of supply poer to output terminals (U,V,W) of the inverter will damage it, so never perform such wiring.

(3)Power supply's wiring , please use isolated wire and wire pipe if possible, and make isolated wire and wire pipe link to the earth.

(4)The inverter and welding device , high-power motor, high-power load can't use a earth cable.

(5)The ground terminal E, ground impedance is lower than 100Ω

(6)Use the shortest earth cable possible.

(7)Many inverters are earthed , pay attention not to cause ground loops.

(8)the power cables and the control cables must be separated in the main circuit. Keep the power cables more than 10 cm away from the paralleled control cables, when the power cables and the control cables are crossed , make them vertical . Don't make the power cables and control cables together, or the interference will cause.

(9)Under normal circumstances , the diatance between the inverters and the motor is less than 30m, the current produced by the parasitic capacitance may cause over-current protection , mis-action, inverter's fault and equipment operating faults. The maximum distance is 100m, when the is long , please select the output side filter , and reduce the carrier frequency.

(10)Don't install an absorbing capacitor or other capacitance-resistance absorbing devices.

(11)Ensure the terminals are all locked tightly ,the cables are connected well with the terminals ,present the looseness due to an action of shaking , cause sparks and the short circuit

To minimize the interference, it is recommended that the contactor and relay should be connected to the surge absorber.

- Noise filter installed at the input side of inverter;
- Install noise isolation for other equipment by means of isolation transformer or power filter.

2.3.4.Device recommended specifications

Applicable inverter type	Input voltage	Motor Output (kw)	Main Circuit Cable Type (mm^2)	Breaker Selection (A)	Input side Magnetic contractor
SI2200-0R4G	1PH 220V 50/60HZ	0.4	0.75	10	9
SI2200-0R75G		0.75	0.75	16	12
SI2200-1R5G		1.5	1.5	25	18
SI2200-2R2G		2.2	2.5	32	25
SI2200-3R7G		3.7	2.5	40	32

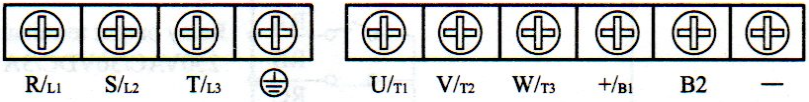
Applicable inverter type	Input voltage	Motor Output (kw)	Main Circuit Cable Type (mm^2)	Breaker Selection (A)	Input side Magnetic contractor
SI2400-0R4G	3PH 380V 50/60HZ	0.4	0.75	6	9
SI2400-0R75G		0.75	0.75	6	9
SI2400-1R5G		1.5	0.75	10	9
SI2400-2R2G		2.2	0.75	10	9
SI2400-3R7G/5R5P		3.7/5.5	1.5	16	12
SI2400-5R5G		5.5	2.5	20	18
SI2400-7R5G/11P		7.5/11	4	32	25
SI2400-11G/15P		11/15	4	40	32
SI2400-15G/18.5P		15/18.5	6	50	38
SI2400-18.5G/22P		18.5/22	10	50	40
SI2400-22G/30P		22/30	10	63	50

2.3.5.Main circuit terminals and description

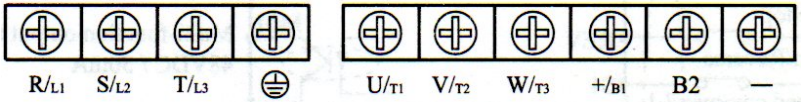
1.main circuit terminal arrangement SI2000 series inverter is as follows:

Type a:3PH 380V 0.2~2.2Kw & 1PH 220V 0.4~1.5Kw

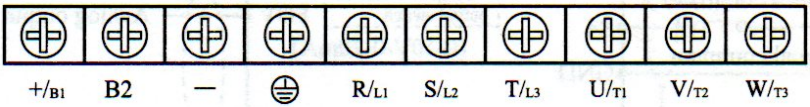
Type b:3PH 380V 3.7~5.5Kw & 1PH 220V 2.2~3.7KW



Type c:3PH 380V 7.5/11Kw~11/15Kw



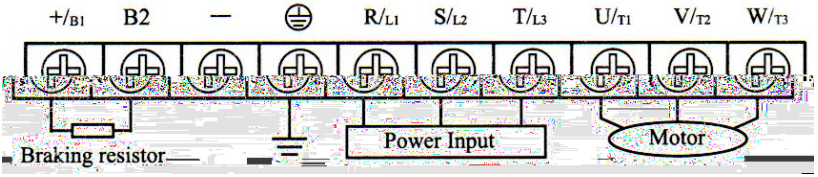
Type d:3PH 380V 15/18.5Kw~22/30Kw



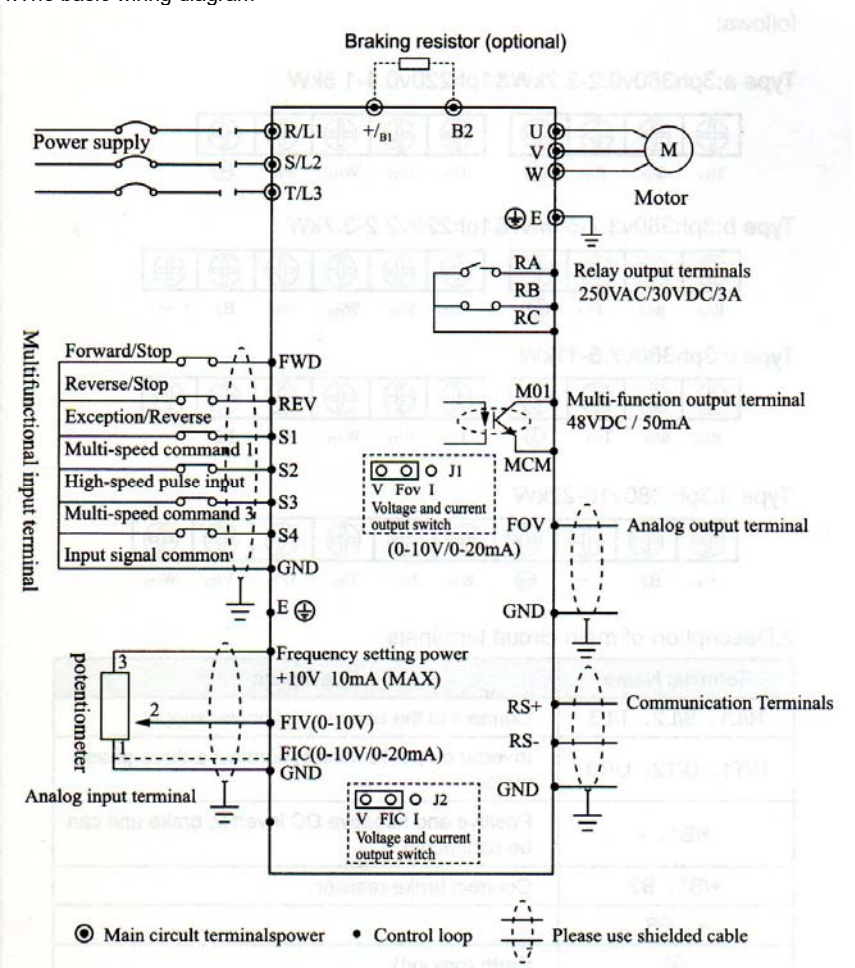
2.Description of main circuit terminals

Terminal Name	Description
R/L1,S/L2,T/L3	Connect to the commercial power supply.
U/T1,U/T2,U/T3	Inverter output terminals, connect a three-phase motor.
+/B,-	Positive and negative DC inverter, brake unit can be connected
+/B1,B2	Connect brake resistor.
+,PR	Connect brake resistor.
⏚	Earth (ground)

3.Wiring Example

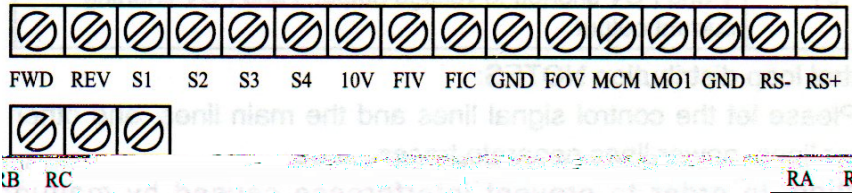


4.The basic wiring diagram



2.4Control Terminal

Control terminal arrangement



2.4.1.Control Terminal Description

(1)Input signals

Terminal Name	Function Description	Remarks
FWD	Forward command input (multi-function input terminal)	Multi-function input terminals S1~ S4 , FWD , REV terminals by reference number of specific settings, set the terminal and GND Closed effective
REV	Reverse command input (multi-function input terminal)	
S1	Multi-function input terminal	
S2	Multi-function input terminals	
S3	High-speed pulse input terminal	
S4	Multi-function input terminals	
FOV	Analog output terminal	0~10V/0~20mA
10V	Frequency setting power	
FIV	Analog voltage input terminal	0~10V
FIC	Analog input terminal	0~20mA/0~10V
GND	Input signal common	
MCM	Optically coupled output common	
M01	Multifunctional optical coupling output contacts	
RS+	RS485 positive	RS485 commnnication
RS-	RS485 negative	
RA	Relay output contacts (normally open)	
RB	Relay output contacts (normally closed)	
RC	Relay output contacts RA,RB common	

Control panel switch Description:

Switch name	Switch Description
J2	Voltage (0~10V)/current (0~20mA) input switch V, FIC short for voltage input ;FIC short for current input
J1	Voltage (0~10V)/current (0~20mA) output switch V FOV shorted to voltage output ; I and FOV shorting current output

Control loop distribution NOTES:

(1)Please let the control signal lines and the main lines, and other power lines, power lines separate traces.

(2) In order to prevent interference caused by malfunction use stranded or double-stranded shielded shielded wire line specifications for 0.5~2mm^2.

(3)Make sure that each using terminal to allow condition , such as power supply, the maximum current.

(4)correct ground terminal E, grounding resistance is less than100Ω.

(5)each terminal 's wiring requirements, the correct selection of accessories such as potentiometers, voltmeter , input powersupplies.

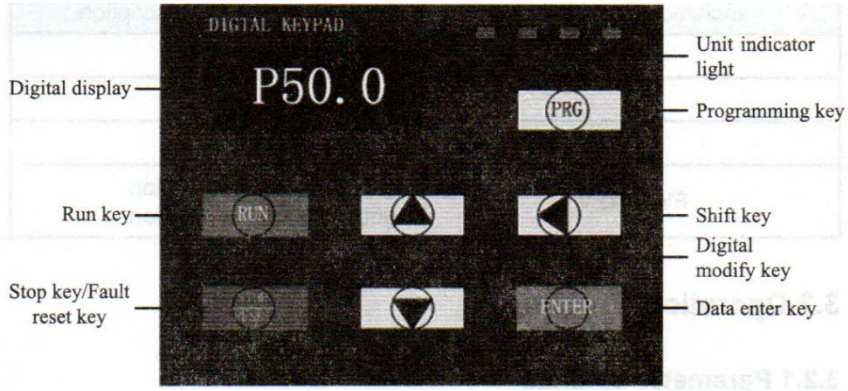
(6)After completing the wiring correctly and to make sure it is correct and then the power can be on.

Chapter 3 Operation

3.1 Digital Operator Description

Digital Operator can also called Panel

3.1.1 the picture of the panel



3.1.2 the descriptions of the key's function

Key	Name	Description
PRG	Programming key	Enter or escape of first-level menu
	Data enter key	Progressively enter menu and confirm parameters.
▲	UP Increment Key	Progressively increase data or function codes
▼	DOWN Decrement Key	Progressively decrease data or function codes.
◀	Right shift Key	In parameter setting mode, press this button to select the bit to be modified. Parameters by right shift
RUN	Run key	Start to run the inverter in keypad control mode.
STOP RESET	Stop key/fault reset key	In running status, restricted by P7.02, can be used to stop the inverter. When fault alarm , can be used to reset the inverter without any restriction.

3.1.3 Indicator light descriptions

Indicator Light Name	Indicator Light Description
Hz	Frequency unit
A	Current unit
V	Voltage unit
FWD/REV	Light off: forward operation. Light on :reverse operation

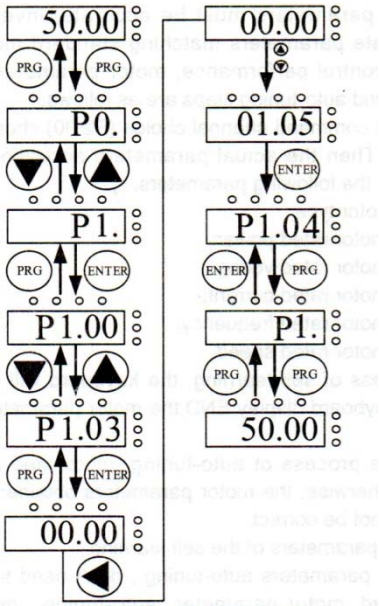
3.2 Operational process

3.2.1 Parameter Setting

Three-level menu:

1.The function code group (first menu);
2.Function code symbols (second menu);
3.Function code set value (third menu).

Explanation: the three-level menu operation , can press PRG or ENTER to return to the secondary menu. The difference between the two is : press ENTER to set parameters in control panel ,and then return to the secondary menu, and automatically move to the next function code : Press PRG directly to return to the secondary menu, don't store parameters , and keep staying in the current function code. Example : change the function code P1.03 From 00.00 Hz change the sample set to 50.00Hz.



Flow chart of parameter setting.

In three-level state , if the parameter is not flashing , said the function code cannot be modified , possible reasons are:
(1)The function code parameters can not be modified . such as the actual testing parameters, operation records, etc.;
(2)The function code in the running state cannot be modified , need to stop to modify;

3.2.2 Fault reset

After the failure of the inverter , the inverter will be prompted to related fault information. Users can press STOP key on the keyboard or terminal function to conduct the fault reset (P5), after fault reset , the inverter is in the standby state . if the inverter is in fault running to protect state, inverter can't run.

3.2.3 Motor parameter self learning

1: The dynamic parameter self learning
Choosing no PG vector control operation mode , input motor nameplate parameters must be accurate , inverter will based on nameplate parameters matching standard motor ; In order to get better control performance , motor parameter auto-tuning is suggested and auto-tuning steps are as follows:
First will run command channel choice (P2.00)choice for keyboard commands. Then the actual parameters according to the motor, please input the following parameters.

P2.00:the motor type ;
P2.01:the motor rated power ;
P2.02:the motor rated voltage ;
P2.03:the motor rated current;
P2.04: the motor rated frequency;
P2.05:the motor rated speed.

In the process of self learning, the keyboard will display 'study', when the keyboard display END , the motor parameter self learnings is end.

Note: in the process of auto-tuning , motor and load should be released , otherwise , the motor parameters obtained from the auto-tuning may not be correct.

2:the static parameters of the self learning
Motor static parameter auto-tuning , don't need to release motor with the load , motor parameter auto-tuning , must correct input parameters of motor nameplates (P2.01-P2.05),since auto-tuning will detect the motor stator resistance and rotor resistance and leakage inductance of the motor. And mutual inductance of the motor and no-load current will not be able to measure, the user can input the corresponding values according to the motor nameplates.

3.3 Running state

3.3.1 Power-on initialization

In the process of the Inverter's power-on , the system first initializes, LED display for "2000" , and seven lights all bright. After the initialization is complete , the drive is in standby mode.

3.3.2 Standby status

In the stopping or running status , can display a variety of state parameters, By Function Code P7.03(operating parameters). P7.05 (stop parameter) binary bits, Various definitions can refer to P7.03 and P7.05 function code.

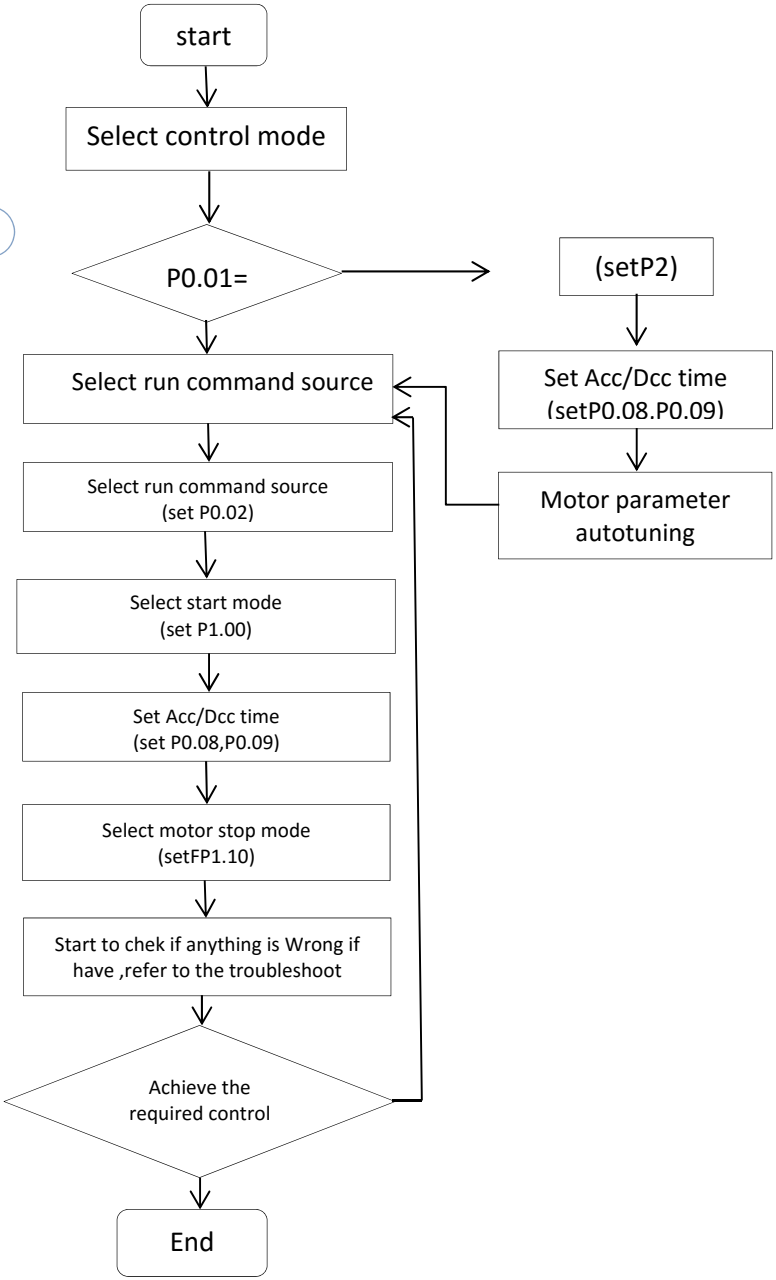
3.3.4 Running

In the running state , a total of sixteen can choose whether to display the statuse parameter are: operating frequency , set frequency , bus voltage ,output voltage , output current , operating speed , output power , output torque, PID setting , PID FIV analog input voltage ,analog input voltage FIC, the number of segments multi-speed, torque setpoint , whether to display the function code is decided by P7.03 and P7.04bit (converted into binary) choice ,press the key to switch the display order of the selected parameters, press the JOG key to left in order to switch the display selected parameters.

3.3.5 Failure

SI2000 series offers a variety of fault information , please refer SI2000 series inverter faults and their countermeasures.

3.4 Quick commissioning



Chapter 4 Description of Function Codes

Group P0: Basic Parameters

Function Code	Parameter Name	Setting Range	Default
P0.00	G/P type display	1:Gtype(constant torque load) 2:P type(variable torque load e.g. fan and pump)	Model dependent

This parameter is used to display the delivered model and cannot be modified.

- 1: Application to constant torque load with rated parameters specified
- 2:Application to variable torque load (fan and pump)with rated parameters specified

Function Code	Parameter Name	Setting Range	Default
P0.01	Motor control mode	0: Voltage/Frequency (V/F) control 1: Sensorless flux vector control (SFVC)	0

- 0: Voltage/Frequency (V/F) control

  It is applicable to applications with low load requirements or applications where one AC drive operates multiple motors, such as fan and pump

- 1: Sensorless flux vector control (SFVC)

It indicates open-loop vector control, and is applicable to high-performance control applications such as machine tool, centrifuge, wire drawing machine and injection moulding machine. One AC drive can operate only one motor.

Notes
• If vector control is used, motor auto-tuning must be performed because the advantages of vector control can only be utilized after correct motor parameters are obtained. Better performance can be achieved by adjusting the motor parameters.

Function Code	Parameter Name	Setting Range	Default
P0.02	Command source selection	0:Operation panel control 1:Terminal control 2:Communication control	0

It is used to determine the input channel of the AC drive control commands, such as run, stop, forward rotation, reverse rotation and jog operation. You can input the commands in the following three channels:

• 0: Operation Of panel control
Commands are given by pressing keys RUN and STOP/RESET on the operation panel.

- 1: Terminal control

Commands are given by means of multifunctional input terminals with functions such as FWD, REV, JOGF, and JOGR.

• 2: Communication control (Modbus RTU) Commands are given from host computer.

Function Code	Parameter Name	Setting Range	Default
P0.03	Frequency source	Unit's digit (Frequency source) 0: Main frequency source X 1:X and Y operation relationship determined by ten's digit) 2: switchover between X and Y 3: switchover between X and "X and Y operation " 4: Switchover between Y and "X and Y operation " Ten's digit (X and Y operation) 0:X+Y 1:X-Y 2:Maximum of X and Y 3:Minimum of X and Y	00

It is used to select the frequency setting channel. Through the main frequency source. You can set the main frequency source X and auxiliary frequency source Y compound to achieve a given frequency.

Unit's digit(Frequency source)

0: The main frequency X

The main frequency X as the target frequency.

1:Advocate complementary operation result as the target frequency , the operation relationship is decided by the function code "ten's digit".

2:Main frequency source X and auxiliary frequency source Y switch when the multifunctional input terminal 18 (frequency switch)is multifunctional input terminals function 18 (frequency source switch)is valid , auxiliary frequency Y as the target frequency. when the multifunction input terminals function 18 (frequency source switch) is valid ,auxiliary frequency Y as the target frequency.

3:The main switch frequency source X and advocate complementary operation result When the multi-function input terminals function 18 (frequency switch) is invalid , the main frequency X ass the target frequency . When the multi-function input terminals function 18 (frequency switch) is valid , advocate complementary computing result as the target frequency.

4:Auxiliary switch frequency source Y and advocate complementary operation result When the multi-function input terminals function 18 (frequency switch) is invalid , auxiliary frequency Y as the target frequency .When the multi-function input terminals function 18 (frequency switch) is valid , advocate main/auxiliary computing result as the target frequency.

Ten's digit: frequency source main/auxiliary relationship between operation :

0:The main frequency of X and Y auxiliary frequency and frequency as the target.

1:Main frequency X minus Y auxiliary frequency difference as the target frequency.

2:MAX (the main frequency source X, the auxiliary frequency source Y take the main frequency absolute value of the largest in the X and Y auxiliary frequency as the target frequency.

3:MIN (the main frequency source X , the auxiliary frequency source Y take the main frequency the least absolute value of X and Y auxiliary frequency as the target frequency. In addition ,when the frequency source selection of the advocate complementary computing , offset frequency ,can be set by P0.21 offset frequency , superimposed on the advocate complementary operation result in a flexible response to various needs.

Function Code	Parameter Name	Setting Range	Default
P0.04	Main frequency source X selection	0:Digital setting (P0.10 preset frequency, can modify the UP/DOWN , power lost don't memory) 1:Digital setting (P0.10 preset frequency , can modify the UP/DOWN , power lost memory) 2:FIV 3:FIC 4:Reserved 5:Pluse setting (S3) 6:Multistage instruction 7:PLC 8:PID 9:Communications given	0

Choose inverter main input channel of a given frequency. A total of 9 given frequency channels:

0:digital setting (power lost memory)

Set the initial value of frequency P0.10 (frequency preset) values. Can bring through a keyboard ▲ keys and ▼keys (or multi- function input terminal of the UP and DOWN) to change the set frequency value of the inverter. Inverter after the power is off and power is on again, set frequency values revert to P0.10(digital frequency setting preset) values.

1:digital setting (power lost memory)

Set the initial value of frequency P0.10 (frequency preset) values. Can be brought by a keyboard ▲ , ▼ keys (or multi-function input terminal of the UP and DOWN) to change the frequency value of the inverter.

Inverter after the power is of and the power is on agin , set frequency electric moment for the last set, through the keyboard bring ▲ , ▼ keys or terminal correction by the memory of UP and DOWN.

What need to remind is ,P0.23 set for "digital frequency setting down memory selection ",P0.23 is used to select the inverter when the inverter stops, P0.23 is used to select whether inverter memorizes the freq or is reset during stopping time, P0.23 is related to the stop , isn't related to the drop memory, pay attention in the application.

2:FIV

3:FIC

4:Reserved

SI2000 panel provide two analog input terminal (FIV , FIC). Among them ,the FIV is from 0Vto 10Vvoltage input , FIC is from 0Vto 10V voltage input voltage value, the corresponding relationship with the target frequency , users are free to choose. SI2000 provide linear relationship (2point correspondence), three group of curve , three group of curve for linear relationship (4 point correspondence), the user can set through the P4 group and C6 group function code.

P4.33 function code is used to set the FIV ~ the FIC two way analog input , respectively select which of the five group of curves , five specific corresponding relation curves, pleas refer to the descriptions of P4,C6 group function code.

5:Pulse frequency (S3) given is given by terminal pulse. Pulse signal given specifications: voltage range of 9b~30v and frequency range of from 0 kHZ to100 kHZ. Input pulse can only be given from multifunctional input terminals S3.

S3 terminal input pulse frequency and the corresponding set of relation ,through the P5.28~ P5.31 setting , the corresponding relations between for linear point corresponding relations between for 2 linear point correspondence . the linear relation between the corresponding set of input pulses100.0% , refer to the relative maximum frequency P0.12 percentage.

6:Motor instruction to choose and more instruction operation mode: select speed through the digital input X terminal state of different combinations, SI2000 can set up 4multispeed instruction terminals and select 16 state of those terminals. Through the function of the PC group code corresponding to any 16 Multistage instruction . The Multistage instruction is referred to the percentage of the maximum frequency P0.12

Digital input terminal function S terminal as multispeed selection terminal need to be done in group P5 corresponding settings , please refer to the specific content P5 group of related function parameters.

7:Simple PLC

When frequency source is in simple PLC mode , frequency source of inverter can run between any frequency source from 1 to 16 , the hold time from 1 to 16 frequency instruction and their respective acc./dec. time can also be set by the user . The specific content can refer to PC group.

8:PID

Select the process of PID control output as the operation frequency. Commonly used in the scene of the closed loop control technology, such as constant pressure closed loop control ,constant tension closed-loop control, etc. Application of PID as frequency source , you need to set up "PID" PA group related parameters.

9:Communication given

The main frequency source is given by upper machine through the way of communication SI2000 support communication methods:RS-485

Function Code	Parameter Name	Setting Range	Default
P0.05	Auxiliary frequency source Y selection	0:Digital setting (P0.10 preset frequency, can modify the UP/DOWN , power lost don't memory) 1:Digital setting (P0.10 preset frequency , can modify the UP/DOWN , power lost memory) 2:FIV 3:FIC 4:Reserved 5:Pluse setting (S3) 6:Multistage instruction 7:Simple PLC 8:PID 9:Communications given	0

Auxiliary frequency source with the frequency for a given channel as an independent (i.e frequency source selection of X to Y switch), its usage and the main frequency source with X , using the method can be refer to P0.03 related instructions.

When auxiliary frequency source used as a superposition of given(i.e. frequency source selection of X+Y,X to X +switch or Y to X+ Y), the need to pay attention to:

1)when the auxiliary frequency source for digital timing , preset frequency (P0..10) doesn't work , the user through the keyboard bring ▲ , ▼ button (or multi-function input terminal of UP and DOWN) on the frequency of adjustment , directly in the main on the basis of a given frequency adjustment.

2)when the auxiliary frequency source for analog input given (FIV, FIC)or to the input pulse given , 100%of the input set corresponding auxiliary frequency source range , can be set by P0.06 and P0.07.

3)When Frequency source is pulse input given similar to analog given . Tip: auxiliary frequency source selection and main frequency source X , Y can't set to the same channel ,namely P0.04 and P0.05 can't set to the same value, otherwise it will be easy to cause confusion.

Function Code	Parameter Name	Setting Range	Default
P0.06	Auxiliary frequency source superposition Y range	0:Relatative to the maximum frequency 1:Relative to the main frequency source X	0
P0.07	Auxiliary frequency source superposition Y rage selection	0%–150%	100%

When selecting frequency source for the superposition of "frequency"(P0.03 set to 1,3, or 4) , these two parameters are used to determine the adjusting range of auxiliary frequency source.

P0.5 is used to determine the scope of the auxiliary frequency source of the object, the choice of relative to the maximum frequency, can also be relative to the rate of frequency source X, if choice is relative to the main frequency source , the scope of the secondary frequency souse will change as the change of main frequency X .

Function Code	Parameter Name	Setting Range	Default
P0.08	Acceleration time 1	0.00s~65000s	Model dependent
P0.09	Deceleration time 1	0.00s~65000s	Model dependent

Acceleration time refers to the inverter from zero , the deceleration time needed for reference frequency (P0.24 determine).

Deceleration time refers to the inverter from benchmark frequency (P0.24 determine),deceleration down to zero frequency time required.

Function Code	Parameter Name	Setting Range	Default
P0.10	frequency Preset	0.00Hz~maximum frequency(P0.12)	50.00 Hz

When frequency source selection set for "digital" or " terminal UP/DOWN " , the function code value is the frequency of the inverter digital set initial value .

Function Code	Parameter Name	Setting Range	Default
P0.11	Rotation direction	0: Same direction 1: Reverse direction	0

By the changing the function code , need not to change the motor wiring for the purpose of the motor's direction, its effect is equivalent to adjust electric machine (U,V,W)any two lines for motor direction rotation transformation.

Tip: after initialization ,parameters will restore the original state of the motor running direction . Pay attention to the good debugging system which is forbidden to change the motor's running direction.

Function Code	Parameter Name	Setting Range	Default
P0.12	Maximum frequency	50.00Hz~320.00Hz	50.00 Hz

In SI2000 analog input and pulse input (S3), period of instruction ,etc .as a frequency source 100.0% of their relatively P0.10 calibration .

SI2000 maximum frequency output can reach 3200 Hz, instructions for both frequency resolution and the frequency range of input two refers to the standard, can choose frequency instruction through P0.22 decimal digits.

When P0.22 is selected to 1, the frequency resolution of 0.1 Hz, the P0.10 set range 50.0Hz~3200~3200.0Hz;

When P0.22 is selected to 2, the frequency resolution of 0.01 Hz, the P0.10 set range 50.00Hz~320.00 Hz;

Function Code	Parameter Name	Setting Range	Default
P0.13	Upper limit frequency source	0:P0.12 1:FIV 2:FIC 3:reserved 4:PULSE settings 5:communication settings	0

Define the upper limit frequency source the upper limit frequency can be from digital set (P0.12), also can from the analog input.

When was capped with analog input frequency , analog input corresponding set 100% is corresponding to P0.12.

For example at the scene of the winding control using torque control mode, in order to avoid material break appear "ride" phenomenon, can use analog frequency cap ,when the inverter runs to the upper limit frequency value, the inverter is in a maximum frequency operation.

Function Code	Parameter Name	Setting Range	Default
P0.14	Upper limit Frequency	Frequency lower limit P0.16 ~ maximum frequency P0.12	50.00 Hz
P0.15	upper limit Frequency offset	0.00 Hz ~ maximum frequency P0.12	0.00 Hz

When the upper limit set for analog or PULSE frequency , P0.13as the set point offset , superimpose the offset frequency and P012setting upper limit frequency values , as the final limit frequency value.

Function Code	Parameter Name	Setting Range	Default
P0.16	Frequency lower limit	0.00 Hz ~ upper limit frequency P0.14	0.00 Hz

Frequency instruction below P0.16set the lower limit of frequency , inverter can stop and run at the lower frequency or a ship at zero speed line, what operation mode can be P8.14(set frequency is lower than the lower limit frequency operation mode) Settings.

Function Code	Parameter Name	Setting Range	Default
P0.17	Carrier frequency	1kHz~16.0kHz	Model dependent

This function adjusting carrier inverter . By adjusting the carrier frequency can reduce electrical noise, to avoid the resonance and reducing interference caused by inverter .
When the carrier frequency is low , the output current of higher harmonic component increases, motor loss increases , the motor temperature increases .When the carrier frequency is higher, the motor loss is reduces , the motor temperature rise reduces , but the loss of the inverter increases , the temperature rise of the inverter increases, increased interference.
Adjusting the carrier frequency will affect the performance of the following:

Carrier frequency	Low	High
Motor noise	Large	Small
Output current waveform	Bad	Good
Motor temperature rise	High	Low
AC drive temperature rise	Low	High
Leakage current	Small	Large
External radiation interference	Small	Large

Different power inverter , the carrier frequency of the factory Settings is different.

Although the user can according to need to modify ,but need to pay attention : if the carrier frequency set to a higher value than the factory ,will lead to inverter radiator temperature increase , the user need to use of inverter derating , otherwise the inverter is in danger of overheating alarm.

Function Code	Parameter Name	Setting Range	Default
P0.18	Carrier frequency adjustment with temperature	0: No 1: Yes	1

Carrier frequency with the temperature adjustment , is refers to the inverter is detected its radiator at high temperature, reduce the carrier frequency automatically , for lowering the temperature rise of the inverter . When the radiator at low temperature , carrier frequency returning to the set value . This feature can reduce overheat alarm of inverter.

Function Code	Parameter Name	Setting Range	Default
P0.19	Acceleration/ Deceleration time unit	0:1s 1:0.1s 2:0.01s	1

To meet the needs of all kinds of scene, SI2000 provides three kinds of deceleration time units,1 seconds, 0.1 seconds, respectively , and 0.01 seconds.

Notes
Modify the function parameters , four groups of decimal digits, as suggested by the deceleration time will change , the corresponding deceleration time changes, also pay special attention to in the course of application.

Function Code	Parameter Name	Setting Range	Default
P0.21	Frequency offset of auxiliary frequency source for X and Y operation	0.00~Hz to maximum frequency P0.12	0.00 Hz

This function code is only valid at the time of frequency source selection of the advocate complementary computing .

When frequency source of the advocate complementary computing P0.21 as offset frequency , and advocate complementary computing results superposition frequency value , as the final frequency setting make frequency setting be more flexible.

Function Code	Parameter Name	Setting Range	Default
P0.22	Frequency reference	1: 0.1 Hz 2: 0.01 Hz	2

All the parameters used to determine the resolution of the function code associated with the frequency .

When the frequency resolution of 0.1 Hz, SI2000 maximum output frequency can reach 3200Hz , and the frequency resolution of 0.01 Hz, SI2000 maximum output frequency can reach 3200Hz , and the frequency resolution of 0.01Hz SI2000 maximum output frequency of 320.00Hz .

Notes
Modify the function parameters , all related to the frequency to the frequency parameters of decimal digits will change , the corresponding frequency values also produces change, pay special attention in the applications.

Function Code	Parameter Name	Setting Range	Default
P0.23	Retentive of digital setting frequency upon power	0: No memory 1: Memory	0

The function of frequency source for digital only effective when setting.

"No memory " refers to the inverter after downtime , digital frequency values revert to P0.10(frequency preset) value , the keyboard bring ▲, ▼ button or terminal is UP and DOWN to correct the frequency is reset.

"Memory "refers to the inverter after downtime , digital set frequency keep set for the last moment of downtime , bring about keyboard ▲ ▼ button or terminal is UP and DOWN to correct the frequency of remain valid.

Function Code	Parameter Name	Setting Range	Default
P0.24	Acceleration/ Deceleration time base frequency	0: Maximum frequency (P0.12) 1: Set frequency 2: 100 Hz	0

Acceleration/Deceleration time , refers to the frequency from zero to P0.24set frequency between the Acceleration/Deceleration time.

When the P0.24 is selected to 1, deceleration time is associated with a set frequency , if set frequency change frequently , the acceleration of the motor is variable , pay attention to the application

Function Code	Parameter Name	Setting Range	Default
P0.25	Base frequency for UP/DOWN modification during running	0: Running frequency 1: Set frequency	0

This parameter is only valid when frequency source for the digital setting.

Used to determine the bring ▲, ▼ button or terminal of the keyboard UP/DOWN action , adopt what way set frequency correction ,the target frequency is based on the operation frequency , increase or decease or based on a set frequency increase or decrease , Two set of distinction , evident when inverter in the deceleration process, namely , if the operation on the inverter frequency and setting frequency is not at the same time , the parameter of the different selection difference is very big.

Function Code	Parameter Name	Setting Range	Default
P0.26	Binding command source to frequency source	Unit's digit(Binding operation panel command to frequency source) 0: No binding 1: Frequency source by digital setting 2: FIV 3: FIC 4: Reserved 5: Pulse setting (S3) 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting Ten's digit (Binding terminal command to frequency source) 0~9, same as unit's digit) Hundred's digit (Binding terminal command to frequency source) 0~9, same as unit's digit)	000

It is used to bind the three running command source with the nine frequency sources, facilitate to implement synchronous switchover.

For detail on the frequency source , see the description of P0.03 (Main frequency source X selection).Different running command sources can be bound to the same frequency source.

If a command source has a bound frequency source, when the process of frequency source
is effective ,the command source set in P0.03 to P0.07 will no longer work .

Function Code	Parameter Name	Setting Range	Default
P0.27	Communication expansion card type	0:Modbus communication card	0

Group P1: Start/Stop Control

Function Code	Parameter Name	Setting Range	Default
P1.00	Start mode	0: Direct start 1: Rotational speed tracking restart 2: Pre-excited start (asynchronousmotor)	0

- 0: Direct start

— If the DC braking time is set to 0, the AC drive starts to run at the startup frequency.

— If the DC braking time is not 0, the AC drive performs DC braking first and then starts to run at the startup frequency. It is applicable to small-inertia load application where the motor is likely to rotate at startup.

- 1: Rotational speed tracking restart

The AC drive judges the rotational speed and direction of the motor first and then starts at the tracked frequency. Such smooth start has no impact on the rotating motor. It is applicable to the restart upon instantaneous power failure of large-inertia load. To ensure the performance of rotational speed tracking restart, set the motor parameters in group P2 correctly.

- 2: Pre-excited start (asynchronous motor)

It is valid only for asynchronous motor and used for building the magnetic field before the motor runs. For pre-excited current and pre-excited time, see parameters of P1.05 and P1.06.

— If the pre-excited time is 0, the AC drive cancels pre-excitation and starts to run at startup frequency.

— If the pre-excited time is not 0, the AC drive pre-excites first before startting, improving the dynamic response of the motor.

Function Code	Parameter Name	Setting Range	Default
P1.01	Rotational speed tracking mode	0: From frequency at stop 1: From zero speed 2: From maximum frequency	0

To complete the rotational speed tracking process within the shortest time, select the proper mode in which the shortest time , select the proper mode in which the AC rive tracks the motor rotational speed.

0:From frequency at stop to track down.

It is the commonly selected mode.

1:From zero frequency to track down.

It is applicable to restart after along time of power failure.

2:From the maximum frequency to track down.

It is applicable to the power-generating load.

Function Code	Parameter Name	Setting Range	Default
P1.02	Rotational speed tracking speed	1~100	20

In the rotational speed tracking restart mode , select the rotational speed tracking speed . The larger the value is , the faster the tracking is. However , too larger setting value may cause unreliable Tracking.

Function Code	Parameter Name	Setting Range	Default
P1.03	Startup frequency	0.00~10.00 Hz	0.00Hz
P1.04	Startup frequency holding time	0.0~100.0s	0.0s

To ensure the motor torque at AC drive startup , set proper startup frequency .In addition , to build excitation when the motor starts up, the startup frequency must be held for a certain time.

The startup frequency (P1.03) is not restricted by the frequency lower limit. If the set target frequency is lower than the startup lower limit. If the set target frequency is lower than the startup frequency , the AC drive will not start and stay in the standby state.

During switchover between forward rotation and reverse rotation, the startup frequency holding time is disabled . The holding time is not included in the acceleration time but in the running time of simple PLC.

Example 1:
P0.04=0 The frequency source is digital setting.
P0.10=2.00Hz The digital setting frequency is 2.00 Hz.
P1.03=5.00Hz The startup frequency is 5.00Hz.
P1.04=2.0s The startup frequency holding time is 2.0s.
In this example ,the AC drive stays in the standby state and the output frequency is 0.00Hz

Example 2:
P0.04=0 The frequency source is digital setting.
P0.10=10.00Hz The digital setting frequency is 10.00Hz.
P1.03=5.00 Hz The startup frequency holding time is 2.0s.
In this example , the AC drive accelerates to 5.00 Hz, and then accelerates to the set frequency10.00 Hz after 2s.

Function Code	Parameter Name	Setting Range	Default
P1.05	Startup DC braking current/Pre-excited current	0%~100%	0%
P1.06	Startup DC braking time/Pre-excited time	0.0~100.0s	0.0s

Startup DC braking is generally used during restart of the AC drive after the rotating motor stops. Pre-excitation is used to make the AC drive build magnetic field for the asynchronous motor before startup to improve the responsiveness.

Startup DC braking is valid only for direct start. In this case, the AC drive performs DC braking at the set startup DC braking current. After the startup DC braking time, the AC drive starts to run. If the startup DC braking time is 0, the AC drive starts directly without DC braking. The larger the startup DC braking current is, the larger the braking force is.

If the startup mode is pre-excited start, the AC drive builds magnetic field based on the set pre-excited current. After the pre-excited time, the AC drive starts to run. If the pre-excited time is 0, the AC drive starts directly without pre-excitation.

The startup DC braking current or pre-excited current is a percentage relative to the base value.

- If the rated motor current is less than or equal to 80% of the rated AC drive current, the base value is the rated motor current.
- If the rated motor current is greater than 80% of the rated AC drive current, the base value is 80% of the rated AC drive current.

Function Code	Parameter Name	Setting Range	Default
P1.07	Acceleration/Deceleration mode	0: Linear acceleration/ deceleration 1: S-curve acceleration/deceleration A 2: S-curve acceleration/deceleration B	0

It is used to set the frequency change mode during the AC drive start and stop process.

- 0: Linear acceleration/deceleration

The output frequency increases or decreases in linear mode. The SI2000 provides four group of acceleration/deceleration time, which can be selected by using P5.00 to P5.08.

- 1: S-curve acceleration/deceleration A

The output frequency is incremented or decremented according to the S curve. S curve requires gentle start or stop the use of venues, such as elevators, conveyor belts and so on. Function Code P1.08 and P1.09, respectively , define the proportion of S-curve acceleration and deceleration time of the initial segment and the end of the period.

2: S-curve acceleration/deceleration B

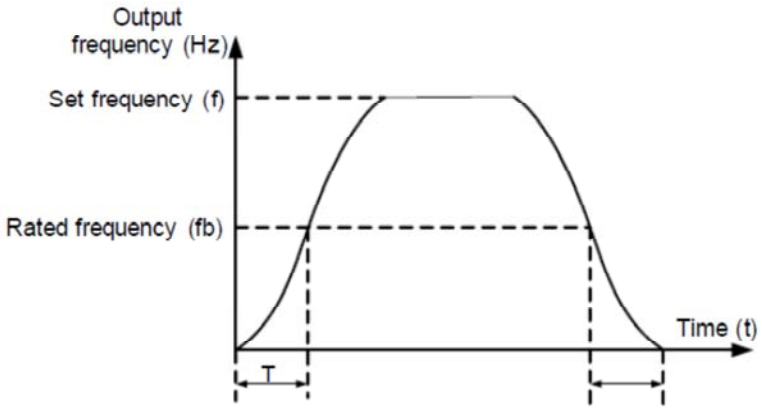
In this curve ,the rated motor frequency is always the inflexion point .This mode is fb usually used in applications where acceleration /deceleration is required at the speed higher than the rated frequency.

When the set frequency is higher than the rated frequency, the acceleration/ deceleration time is:

$$t=(\frac{4}{9}\times(\frac{f}{f_b})^2+\frac{5}{9})\times T$$

In the formula, *f* is the set frequency, *fb* is the rated motor frequency and *T* is the acceleration time from 0 Hz to *the rated frequency fb.*

Figure 4-1 S-curve acceleration/deceleration B

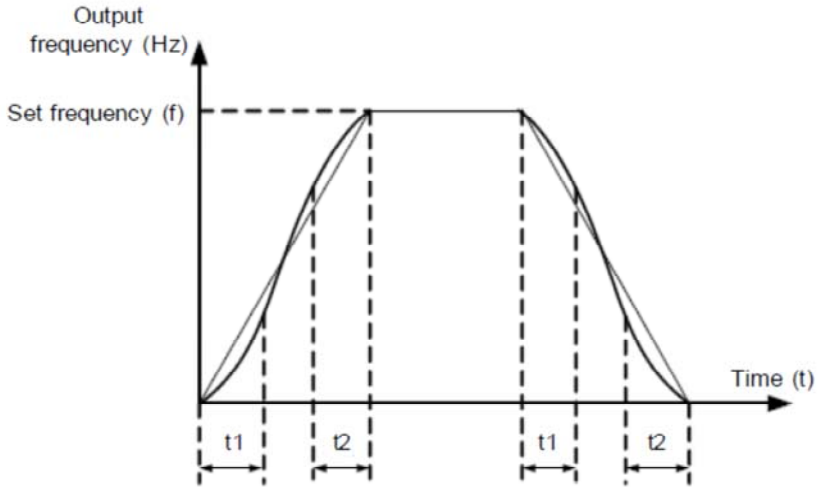


Function Code	Parameter Name	Setting Range	Default
P1.08	Time proportion of S-curve start segment	0.0% ~ (100.0% – P1.09)	30.0%
P1.09	Time proportion of S-curve end segment	0.0% ~ (100.0% – P1-08)	30.0%

These two parameters respectively define the time proportions of the start segment and the end segment of S-curve acceleration/deceleration. They must satisfy the requirement: P1.08 + P6.09 ≤ 100.0%.

In Figure 4-2, t1 is the time defined in P1.08, within which the slope of the output frequency change increases gradually. t2 is the time defined in P1.09, within which the slope of the output frequency change gradually decreases to 0. Within the time between t1 and t2, the slope of the output frequency change remains unchanged, that is, linear acceleration/deceleration.

Figure 6-12 S-curve acceleration/deceleration A



Function Code	Parameter Name	Setting Range	Default
P1.10	Stop mode	0: Decelerate to stop 1: Coast to stop	0

- 0: Decelerate to stop

After the stop command is enabled, the AC drive decreases the output frequency according to the deceleration time and stops when the frequency decreases to zero.

- 1: Coast to stop

After the stop command is enabled, the AC drive immediately stops the output. The motor will coast to stop based on the mechanical inertia.

Function Code	Parameter Name	Setting Range	Default
P1.11	Initial frequency of stop DC braking	0.00 Hz ~ maximum frequency	0.00 Hz
P1.12	Waiting time of stop DC braking	0.0s~36.0s	0.0s
P1.13	stop DC braking current	0%~100%	0.0s
P1.14	stop DC braking time	0.0s~100.0s	0.0s

- P1.11 (Initial frequency of stop DC braking)

During the process of decelerating to stop, the AC drive starts DC braking when the running frequency is lower than the value set in P1.11.

- P1.12 (Waiting time of stop DC braking)

When the running frequency decreases to the initial frequency of stop DC braking, the AC drive stops output for a certain period and then starts DC braking. This prevents faults such as overcurrent caused due to DC braking at high speed.

- P1.13 (Stop DC braking current)

This parameter specifies the output current at DC braking and is a percentage relative to the base value.

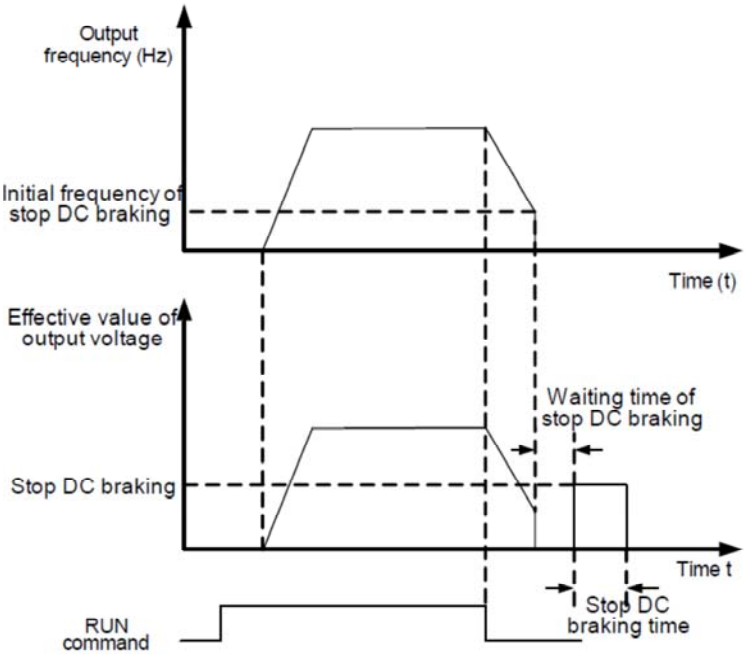
— If the rated motor current is less than or equal to 80% of the rated AC drive current, the base value is the rated motor current.

— If the rated motor current is greater than 80% of the rated AC drive current, the base value is 80% of the rated AC drive current.

- P1.14 (Stop DC braking time)

This parameter specifies the holding time of DC braking. If it is set to 0, DC braking is cancelled. The stop DC braking process is shown in the following figure.

Figure 6-14 Stop DC braking process



Function Code	Parameter Name	Setting Range	Default
P1.15	Brake use ratio	0%~100%	100%

It is valid only for the AC drive with internal braking unit and used to adjust the duty ratio of the braking unit. The larger the value of this parameter is, the better the braking result will be. However, too larger value causes great fluctuation of the AC drive bus voltage during the braking process.

Group P2: Motor Parameters

Function Code	Parameter Name	Setting Range	Default
P2.00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor	0
P2.01	Rated motor power	0.1~30.0 kW	Model Dependent
P2.02	Rated motor voltage	1V~2000 V	Model Dependent
P2.03	Rated motor current	0.01A~655.35A	Model Dependent
P2.04	Rated motor frequency	0.01 Hz ~maximum frequency	Model Dependent
P2.05	Rated motor rotational speed	1rpm~65535rpm	Model Dependent

Set the parameters according to the motor nameplate no matter whether V/F control or vector control is adopted.

To achieve better V/F or vector control performance, motor auto-tuning is required. The motor auto-tuning accuracy depends on the correct setting of motor nameplate parameters.

Function Code	Parameter Name	Setting Range	Default
P2.06	Stator resistance (asynchronous motor)	0.001 Ω~30.000 Ω	Model dependent
P2.07	Rotor resistance (asynchronous motor)	0.001Ω ~65.535 Ω	Model Dependent
P2-08	Leakage inductive reactance (asynchronous motor)	0.01mH~655.35mH	Model Dependent
P2.09	Mutual inductive reactance (asynchronous motor)	0.1mH~6553.5 mH	Model Dependent
P2.10	No-load current (asynchronous motor)	0.01A~P2.03	Model Dependent

The parameters in P2.06 to P1.10 are asynchronous motor parameters.
P2.06~P2.10 parameters are ordinary unavailable on the motor's nameplate and are obtained by means of inverter's auto-tuning can obtain only P2.06 to P2.08 three parameters . Asynchronous motor's dynamic auto-tuning can obtain besides all the parameters in P2.06to P2.10, and can also obtain encoder phase sequence and current loop PI.

Each time "Rated motor power" (P2.01) or "Rated motor voltage" (P2.02) is changed, the AC drive automatically restores values of P2.06 to P2.10 to the parameter setting for the common standard B series asynchronous motor.

If it is impossible to perform motor auto-tuning onsite, manually input the values of these parameters according to data provided by the motor manufacturer.
P2.11-P2.36 Reserved

Function Code	Parameter Name	Setting Range	Default
P2.37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning	Model dependent

- 0: No auto-tuning

Auto-tuning is prohibited.

- 1: Asynchronous motor static auto-tuning

It is applicable to scenarios where complete auto-tuning cannot be performed because the asynchronous motor cannot be disconnected from the load.

Before performing static auto-tuning, properly set the motor type and motor nameplate parameters of P2.00 to P2.05 first. The AC drive will obtain parameters of P2.06 to P2.08 by static auto-tuning. Action description :Set this parameter to 1, and press RUN. Then ,the AC drive starts static auto-tuning.

- 2: Asynchronous motor complete auto-tuning

To perform this type of auto-tuning, ensure that the motor is disconnected from the load. During the process of complete auto-tuning, the AC drive performs static auto-tuning first and then accelerates to 80% of the rated motor frequency within the acceleration time set in P0.08. The AC drive keeps running for a certain period and then decelerates to stop within deceleration time set in P0.09. Set this parameter to 2,and press RUN .Then ,the AC drive starts complete auto-tuning.

Notes
Motor auto-tuning can be perform only in operation panel mode.

Group P3: Vector Control Parameters

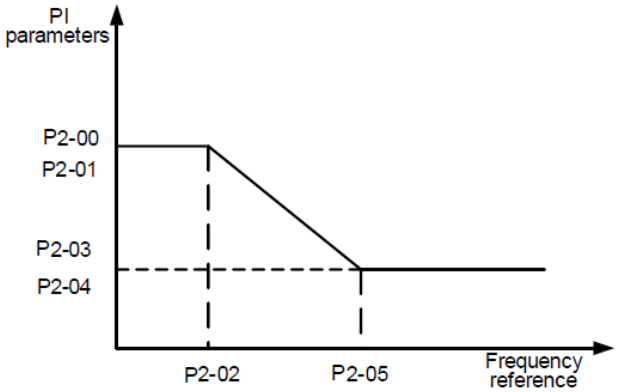
P3 group function code applies only to the vector control , control of V/F is invalid.

Function Code	Parameter Name	Setting Range	Default
P3.00	Speed loop proportional gain 1	1~100	30
P3.01	Speed loop integral time 1	0.01s~10.00s	0.50s
P3.02	Switchover frequency 1	0.00~ P3.05	5.00HZ
P3.03	Speed loop proportional gain 2	0~100	20
P3.04	Speed loop integral time 2	0.01~10.00s	1.00s
P3.05	Switchover frequency 2	P3-02 to maximum output frequency	10.0HZ

Speed loop PI parameters vary with running frequencies of the AC drive.

- If the running frequency is less than or equal to "Switchover frequency 1" (P3.02), the speed loop PI parameters are P3.00 and P3.01.
- If the running frequency is equal to or greater than "Switchover frequency 2" (P3.05),the speed loop PI parameters are P3.03 and P3.04.
- If the running frequency is between P3.02 and P3.05, the speed loop PI parameters are obtained from the linear switchover between the two groups of PI parameters, as shown in Figure 4-4.

Figure 4-4 Relationship between running frequencies and PI parameters



The speed dynamic response characteristics in vector control can be adjusted by setting the proportional gain and integral time of the speed regulator.

To achieve a faster system response, increase the proportional gain and reduce the integral time. Be aware that this may lead to system oscillation.

The recommended adjustment method is as follows:

If the factory setting cannot meet the requirements, make proper adjustment. Increase the proportional gain first to ensure that the system does not oscillate, and then reduce the integral time to ensure that the system has quick response and small overshoot.

Notes
Improper PI parameter setting may cause too large speed overshoot , and overvoltage fault may even occur when the overshoot drops.

Function Code	Parameter Name	Setting Range	Default
P3.06	Vector control slip gain	50%~200%	100%

For SFVC, it is used to adjust speed stability accuracy of the motor. When the motor with load runs at a very low speed, increase the value of this parameter; when the motor with load runs at a very large speed, decrease the value of this parameter.

Function Code	Parameter Name	Setting Range	Default
P3.07	Time constant of speed loop filter	0.000s~0.100s	0.000s

In the vector control mode, the output of the speed loop regulator is torque current reference. This parameter is used to filter the torque references. It need not be adjusted generally and can be increased in the case of large speed fluctuation. In the case of motor oscillation, decrease the value of this parameter properly.

If the value of this parameter is small, the output torque of the AC drive may fluctuate greatly, but the response is quick.

Function Code	Parameter Name	Setting Range	Default
P3.08	Vector control over-excitation gain	0~200	64

During deceleration of the AC drive, over-excitation control can restrain rise of the bus voltage to avoid the overvoltage fault. The larger the over-excitation gain is, the better the restraining effect is.

Increase the over-excitation gain if the AC drive is liable to overvoltage error during deceleration. Too large over-excitation gain, however, may lead to an increase in output current. Therefore, set this parameter to a proper value in actual applications.

Set the over-excitation gain to 0 in applications of small inertia (the bus voltage will not rise during deceleration) or where there is a braking resistor.

Function Code	Parameter Name	Setting Range	Default
P3.09	Torque upper limit source in speed control mode	0:P3.10 1: FIV 2: FIC 3: Reserved 4: Pulse setting 5: Communication setting	0
P3.10	Digital setting of torque upper limit in speed control mode	0.0%~200.0%	150.0%

In the speed control mode, the maximum output torque of the AC drive is restricted by P3.09. If the torque upper limit is analog, pulse or communication setting, 100% of the setting corresponds to the value of P2-10, and 100% of the value of P2-10 corresponds to the AC drive rated torque.

Function Code	Parameter Name	Setting Range	Default
P3.13	Excitation adjustment proportional gain	0~20000	2000
P3.14	Excitation adjustment integral gain	0~20000	1300
P3.15	Torque adjustment proportional gain	0~20000	2000
P3.16	Torque adjustment integral gain	0~20000	1300
P3.17	Speed loop integral property	0: Invalid 1: Valid	0

These are current loop PI parameters for vector control. These parameters are automatically obtained through "Asynchronous motor complete auto-tuning", and commonly need not be modified.

The dimension of the current loop integral regulator is integral gain rather than integral gain rather integral time.

Notes
that too large current loop PI gain may lead to oscillation of the entire control loop. Therefore, when current oscillation or torque fluctuation is great, manually decrease the proportional gain or integral gain here.

Group P4: V/F Control Parameters

The V/F control mode is applicable to low load applications (fan or pump) or applications where one AC drive operates multiple motors or there is a large difference between the AC drive power and the motor power.

Function Code	Parameter Name	Setting Range	Default
P4.00	V/F curve setting	0: Linear V/F 1: Multi-point V/F 2: Square V/F 3: 1.2-power V/F 4: 1.4-power V/F 6: 1.6-power V/F 8: 1.8-power V/F 9:Reserved 10:V/F complete separation 11:V/F half separation	0

- 0: Linear V/F

It is applicable to common constant torque load.

- 1: Multi-point V/F

It is applicable to special load such as dehydrator and centrifuge. Any such V/F curve can be obtained by setting parameters of P4-03 to P4-08.

- 2: Square V/F

It is applicable to centrifugal loads such as fan and pump.

- 3 to 8: V/F curve between linear V/F and square V/F
- 10:V/F complete separation mode

In this mode , the output frequency and output voltage of the AC drive are independent . The output frequency is determined by the frequency source , and the output voltage is determined by "voltage" source for V/F separation "(P4.13).

It is applicable to induction heating , inverse power supply and torque motor control.

11:V/F half separation mode

In this mode , V and F are proportional and the proportional relationship can be set in P4.13 The relationship between V and rated motor frequency in Group P2.

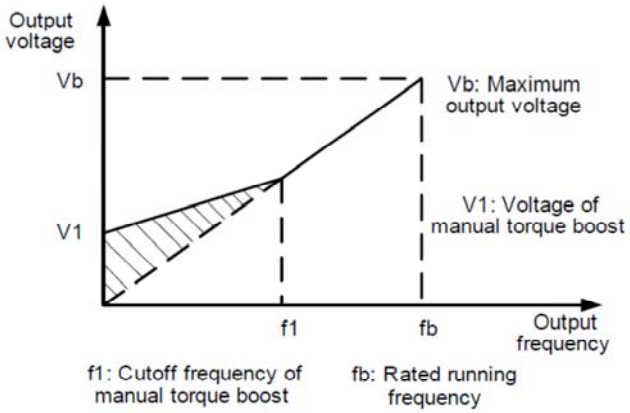
Assume that the voltage source input is X (0 to100%), the relationship between V and F is :V/F=2*X*(Rated motor voltage)/(Rated motor frequency)

Function Code	Parameter Name	Setting Range	Default
P4.01	Torque boost	0.0% ~30.0%	Model dependent
P4.02	Cut-off frequency of torque boost	0.00 Hz ~maximum output frequency	50.0HZ

To compensate the low frequency torque characteristics of V/F control, you can boost the output voltage of the AC drive at low frequency by modifying P4.01. If the torque boost is set to too large, the motor may overheat, and the AC drive may suffer overcurrent. If the load is large and the motor startup torque is insufficient, increase the value of P4.01. If the load is small, decrease the value of P4.01. If it is set to 0.0, the AC drive performs automatic torque boost. In this case, the AC drive automatically calculates the torque boost value based on motor parameters including the stator resistance.

P4.00 specifies the frequency under which torque boost is valid. Torque boost becomes invalid when this frequency is exceeded, as shown in the following figure.

Figure 4-5 Manual torque boost

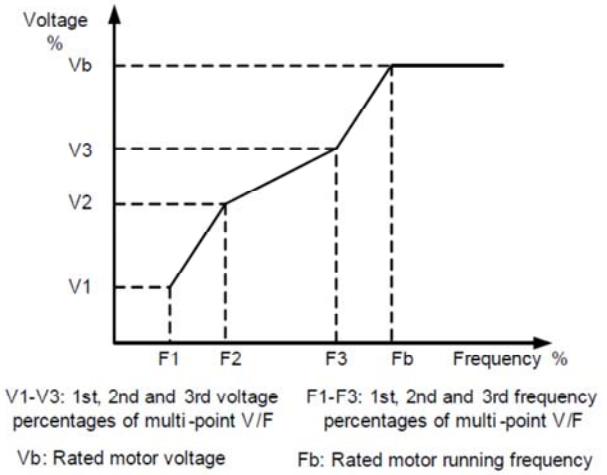


Function Code	Parameter Name	Setting Range	Default
P4.03	Multi-point V/F frequency 1(F1)	0.00 Hz~P4.05	0.00 Hz
P4.04	Multi-point V/F voltage 1(V1)	0.0%~100.0%	0.0%
P4.05	Multi-point V/F frequency 2(F2)	P4~03 to P4.07	0.00 Hz
P4.06	Multi-point V/F voltage 2(V2)	0.0%~100.0%	0.0%
P4.07	Multi-point V/F frequency 3(F3)	P4.05 to rated motor frequency (P2.04)	0.00 Hz
P4.08	Multi-point V/F voltage 3(V3)	0.0%~100.0%	0.0%

These six parameters are used to define the multi-point V/F curve.

The multi-point V/F curve is set based on the motor's load characteristic. The relationship between voltages and frequencies is:
V1 < V2 < V3, F1 < F2 < F3.At low frequency, higher voltage may cause overheat or even burnt out of the motor and overcurrent stall or overcurrent protection of the AC drive.

Figure 4-6 Setting of multi-point V/F curve



Function Code	Parameter Name	Setting Range	Default
P4.09	V/F slip compensation gain	0%~200.0%	0.0%

This parameter is valid only for the asynchronous motor.

It can compensate the rotational speed slip of the asynchronous motor when the load of the motor increases, stabilizing the motor speed in case of load change.

If this parameter is set to 100%, it indicates that the compensation when the motor bears rated load is the rated motor slip. The rated motor slip is automatically obtained by the AC drive through calculation based on the rated motor frequency and rated motor rotational speed in group F1.

Generally, if the motor rotational speed is different from the target speed, slightly adjust this parameter.

Function Code	Parameter Name	Setting Range	Default
P4.10	V/F over-excitation gain	0~200	64

During deceleration of the AC drive, over-excitation can restrain rise of the bus voltage, preventing the overvoltage fault. The larger the over-excitation is, the better the restraining result is.

Increase the over-excitation gain if the AC drive is liable to overvoltage error during deceleration. However, too large over-excitation gain may lead to an increase in the output current. Set P4.09 to a proper value in actual applications.

Set the over-excitation gain to 0 in the applications where the inertia is small and the bus voltage will not rise during motor deceleration or where there is a braking resistor.

Function Code	Parameter Name	Setting Range	Default
P4.11	V/F oscillation suppression gain	0~100	Model dependent

Set this parameter to a value as small as possible in the prerequisite of efficient oscillation suppression to avoid influence on V/F control.

Set this parameter to 0 if the motor has no oscillation. Increase the value properly only when the motor has obvious oscillation. The larger the value is, the better the oscillation suppression result will be.

When the oscillation suppression function is enabled, the rated motor current and no load current must be correct. Otherwise, the V/F oscillation suppression effect will not be satisfactory.

Function Code	Parameter Name	Setting Range	Default
P4.13	Voltage source for V/F separation	0:Digital setting (P4.14) 1:FIV 2:FIC 3:Reserved 4:PULSE setting 5:Multi-refrence 6:Simple PLC 7:PID 8:Communication setting 100.0% corresponds to the rate motor voltage(P2.02)	0
P4.14	Voltage digital setting for V/F separation	0V~rated motor voltage	0V

V/F separation is generally applicable to the occasions, such as induction heating ,inverse power supply and motor torque control.

If V/F separated control is enabled ,the output voltage can be set by function code P4.14 or by means of analog , multi-reference, simple PLC,PID or communication . if you set the output voltage by means of non-digital setting , 100%of the setting corresponds to the rated motor voltage. If a negative percentage is set , its absolute value is used as the effective value.

0:digital setting (P4.14)
The output voltage is set directly by P4.14

1:FIV;2:FIC
The output voltage is set by AI terminals.

3:Reserved

4:Pulse setting (S3)
The output voltage is set by pulses of the terminal S3.
Pulse setting specification :voltage range 9-30 V, frequency range 0-100 Hz

5:Multi-reference
If the voltage source is multi-reference, parameters in group P4 and PC must be set to determine the corresponding relationship between setting signal and setting voltage.
100.0%of the multi-reference setting in group FC corresponds to the rate motor voltage .

6:If the voltage source is simple PLC mode ,parameters in group FC must be set to determine the setting output voltage.

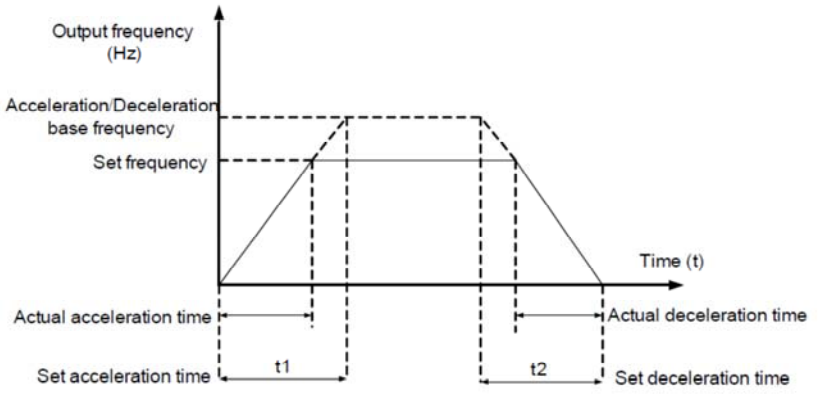
7:PID
The output voltage generates based on PID closed loop. For details, see the descriptions of PID in group PA.

8:Communication setting
The output voltage is set by the host computer by the means of communication given.
The voltage source for V/F separation is set in the same way as the frequency source . 100.0% of the setting in each mode corresponds to the rated motor voltage . If the corresponding value is negative , its absolute value is used.

Function Code	Parameter Name	Setting Range	Default
P4.15	Voltage rise time of V/F separation	0.0s~1000.0s	0.0s
P4.16	Voltage decline time of V/F separation	0.0~1000.0s	0.0s

P4.15 indicates the time required for output voltage to rise from 0V to the rated motor voltage shown as t1 in the following figure.

P4.16 indicates the time required for the output voltage to decline from the rated motor voltage to 0 V, shown as t2 in the following figure.



Group P5: Input Terminals

SI2000 series inverter with 6 multi-function digital inputs (S3 can be used as a high-speed pulse input terminal), two analog input terminals.

Function Code	Parameter Name	Default	Remark
Group P4: Input Terminals			
P5.00	FWD function selection	1: Forward RUN (FWD)	Standard
P5.01	REV function selection	2: Reverse RUN (REV)	Standard
P5.02	S1 function selection	9: Fault reset	Standard
P5.03	S2 function selection	12: (Multi-reference terminal 1)	Standard
P5.04	S3 function selection	13: (Multi-reference terminal 2)	Standard
P5.05	S4 function selection	0	Standard

The following table lists the functions available for the multi-function input terminals. Can choose the function in the table as follows:

Value	Function	Description
0	No function	Set 0 for reserved terminals to avoid malfunction.
1	Forward RUN (FWD)	The terminal is used to control forward or reverse RUN of the AC drive.
2	Reverse RUN (REV)	
3	Three-line control	The terminal determines three-line control of the AC drive. For details, see the description of P5.11.
4	Forward JOG (FJOG)	FJOG indicates forward JOG running, while RJOG indicates reverse JOG running. The JOG frequency, acceleration time and deceleration time are described respectively in P8.00, P8.01 and P8.02.
5	Reverse JOG (RJOG)	
6	Terminal UP	If the frequency is determined by external terminals, the terminals with the two functions are used as increment and decrement commands for frequency modification. When the frequency source is digital setting, they are used to adjust the frequency.
7	Terminal DOWN	
8	Coast to stop	The AC drive blocks its output, the motor coasts to rest and is not controlled by the AC drive. It is the same as coast to stop described in P1.10.
9	Fault reset (RESET)	The terminal is used for fault reset function, the same as the function of RESET key on the operation panel. Remote fault reset is implemented by this function.
10	RUN pause	The AC drive decelerates to stop, but the running parameters are all memorized, such as PLC, swing frequency and PID parameters. After this function is disabled, the AC drive resumes its status before stoping.
11	Normally open (NO) input of external fault	If this terminal becomes ON, the AC drive reports Err “EF” and performs the fault protection action. For more details, see the description of P9.47.
12	Multi-reference terminal 1	The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four terminals.
13	Multi-reference terminal 2	
14	Multi-reference terminal 3	
15	Multi-reference terminal 4	
16	Terminal1 for acceleration/ deceleration time selection	Totally four groups of acceleration/deceleration time can be selected through combinations of two states of these two terminals.
17	Terminal2 for acceleration/ deceleration time selection	
18	Frequency source switchover	The terminal is used to switch and choose different frequency sources. choose function code P0.03 setting according to the frequency source switchover as frequency source. The terminal is used to realize switching between the two frequency source.

Value	Function	Description
19	UP and DOWN setting clear (terminal, operation panel)	If the frequency source is digital setting, the terminal is used to clear the modification by using the UP/ DOWN function or the increment/decrement key on the operation panel, returning the set frequency to the value of P0.10.
20	Command source switchover terminal	If the command source is set to terminal control (P0.02=1), this terminal is used to perform switchover between terminal control and operation panel control. If the command source is set to communication control (P0.02=2), this terminal is used to perform switchover between communication control and operation panel control.
21	Acceleration/Deceleration prohibited	It enables the AC drive to maintain the current frequency output without being affected by external signals (except the STOP command).
22	PID pause	PID is invalid temporarily. The AC drive maintains the current frequency output without supporting PID adjustment of frequency source.
23	PLC status reset	The terminal is used to restore the original status of PLC control for the AC drive when PLC control is started again after a pause.
24	Swing pause	The AC drive outputs the central frequency, and the swing frequency function pauses.
25	Counter input	This terminal is used to count pulses.
26	Counter reset	This terminal is used to clear the counter status.
27	Length count input	This terminal is used to count the length.
28	Length reset	This terminal is used to clear the length.
29	Torque control prohibited	The AC drive is prohibited from torque control and enters the speed control mode.
30	Pulse input (enabled only for DI5)	DI5 is used for pulse input.
31	Reserved	Reserved.
32	Immediate DC braking	After this terminal becomes ON, the AC drive directly switches over to the DC braking state.
33	Normally closed (NC) input of external fault	After this terminal becomes ON, the AC drive reports Err "EF" and stops.
34	Frequency modification forbidden	After this terminal becomes ON, the AC drive does not respond to any frequency modification.
35	Reverse PID action direction	After this terminal becomes ON, the PID action direction is reversed to the direction set in PA.03.
36	External STOP terminal 1	In operation panel mode, this terminal can be used to stop the AC drive, equivalent to the function of the STOP key on the operation panel.
37	Command source switchover terminal 2	It is used to perform switchover between terminal control and communication control. If the command source is terminal control, the system will switch over to communication control after this terminal becomes ON.
38	PID integral pause	After this terminal becomes ON, the integral adjustment function pauses. However, the proportional and differentiation adjustment functions are still valid.
39	Switchover between main frequency source X and preset frequency	After this terminal becomes ON, the frequency source X is replaced by the preset frequency set in P0.10.
40	Switchover between auxiliary frequency source Y and preset frequency	After this terminal is enabled, the frequency source Y is replaced by the preset frequency set in P0.10.
41	Motor selection terminal 1	Switchover among the four groups of motor parameters can be implemented through the four state combinations of these two terminals.
42	Motor selection terminal 2	

Value	Function	Description
43	PID parameter switchover	If the PID parameters switchover performed by means of X terminal (PA.18=1), the PID parameters are PA.05 to PA.07 when the terminal becomes OFF; the PID parameters PA.15 to PA.17 are used when this terminal becomes effective.
44	Reserved	Reserved.
45	Reserved	Reserved.
46	Speed control/Torque control switchover	This terminal enables the AC drive to switch over between speed control and torque control. When this terminal becomes OFF, the AC drive runs in the mode set in C0.00. When this terminal becomes ON, the AC drive switches over to the other control mode.
47	Emergency stop	When this terminal becomes ON, the AC drive stops within the shortest time. During the stop process, the current remains at the set current upper limit. This function is used to satisfy the requirement of stopping the AC drive in emergency state.
48	External STOP terminal 2	In any control mode (operation panel, terminal or communication), it can be used to make the AC drive decelerate to stop. In this case, the deceleration time is deceleration time 4.
49	Deceleration DC braking	When this terminal becomes ON, the AC drive decelerates to the initial frequency of stop DC braking and then switches over to DC braking state.
50	Clear the current running time	When this terminal becomes ON, the AC drive's current running time is cleared. This function must be supported by P8.42 and P8.53.

Additionaltable1:The descriptions of multi-reference The four multi-reference terminals have 16 state combinations, corresponding to 16 reference values, as listed in the following table.

K4	K3	K2	K1	Reference Setting	Corresponding Parameter
OFF	OFF	OFF	OFF	Reference 0	PC.00
OFF	OFF	OFF	ON	Reference 1	PC.01
OFF	OFF	ON	OFF	Reference 2	PC.02
OFF	OFF	ON	ON	Reference 3	PC.03
OFF	ON	OFF	OFF	Reference 4	PC.04
OFF	ON	OFF	ON	Reference 5	PC.05
OFF	ON	ON	OFF	Reference 6	PC.06
OFF	ON	ON	ON	Reference 7	PC.07
ON	OFF	OFF	OFF	Reference 8	PC.08
ON	OFF	OFF	ON	Reference 9	PC.09
ON	OFF	ON	OFF	Reference 10	PC.10
ON	OFF	ON	ON	Reference 11	PC.11
ON	ON	OFF	OFF	Reference 12	PC.12
ON	ON	OFF	ON	Reference 13	PC.13
ON	ON	ON	OFF	Reference 14	PC.14
ON	ON	ON	ON	Reference 15	PC.15

If the frequency source is multi-reference, the value 100% of PC.00 to PC.15 corresponds to the Maximum frequency of P0.12.

Besides the multi-speed function, the multi-reference can be also used as the PID setting source or the voltage source for V/F separation, satisfying the requirement on switchover of different setting values.

Additional table2:Terminal function descriptions of acceleration/deceleration time selection

Terminal 2	Terminal 1	Acceleration/Deceleration Time Selection	Corresponding Parameters
OFF	OFF	Acceleration/Deceleration time 1	P0.08, P0.09
OFF	ON	Acceleration/Deceleration time 2	P8.03, P8.04
ON	OFF	Acceleration/Deceleration time 3	P8.05, P8.06
ON	ON	Acceleration/Deceleration time 4	P8.07, P8.08

Function Code	Parameter Name	Setting Range	Default
P5.10	X filter time	0.000~1.000s	0.010s

It is used to set the software filter time of S terminal status. If S terminals are liable to interference and may cause malfunction, increase the value of this parameter to enhance the anti-interference capability. However, increase of S filter time will reduce the response of S terminals.

Function Code	Parameter Name	Setting Range	Default
P5.11	Terminal command mode	0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2	0

This parameter defines the external terminals, control four diferent inverter running ways.

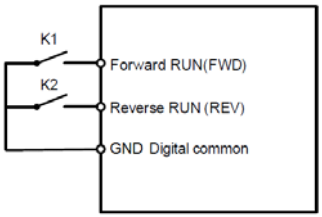
- 0: Two-line mode 1

this is the most commonly used two-line mode Positive and reverse operation of the motor is determined by terminal Xx, Xy ,The parameters are set as below:

Terminal	Set Value	Function Description
Sx	1	Forward RUN (FWD)
Sy	2	Reverse RUN (REV)

Among them ,Sx,Sy is S1~S4, FWD,REV multi-function input terminals , level effectively.

Figure 4-8 Setting of two-line mode 1



K1	K2	RUN command
1	0	Forward RUN
0	1	Reverse RUN
1	1	Stop
0	0	Stop

1: Two-line mode 2

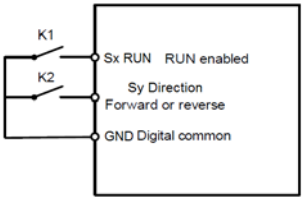
Use this pattern when Sx terminal function for operation can make terminal , and Sy terminal function determined to run.

The parameters are set as below:

Terminal	Set Value	Function Description
Sx	1	Forward RUN (FWD)
Sy	2	Reverse RUN (REV)

Among them ,Sx,Sy is S1~S4,FWD,REV multi-function input terminals, level effectively.

Figure 4-9 Setting of two-line mode 1



K1	K2	RUN command
1	0	Forward RUN
1	1	Reverse RUN
0	0	Stop
0	1	Stop

As shown in the preceding figure, if K1 is ON, the AC drive instructs forward rotation when K2 is OFF, and instructs reverse rotation when K2 is ON. If K1 is OFF, the AC drive stops.

2: Three-line mode 1

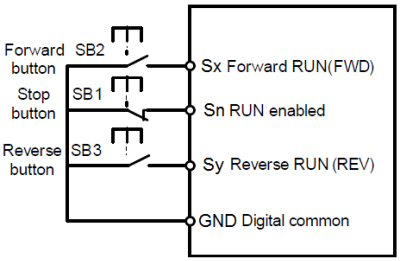
In this mode, Sn is RUN enabled terminal, and the direction is respective decided by Sx and Sy.

The parameters are set as below:

Terminal	Set Value	Function Description
Sx	1	Forward RUN (FWD)
Sy	2	Reverse RUN (REV)
Sn	3	Three-line control

Sn terminal must be closed when it need to run , to realize the forward and reverse control system of the motor by Sx or Sy pulse rising.

When it need to stop must be done by disconnecting Sn terminal signal .Among them , the Sx, Sy, Sn as S1~S4,FWD,REV multi-function input terminals , Sx, Sy is the pulse effective , Sn is the level effective.



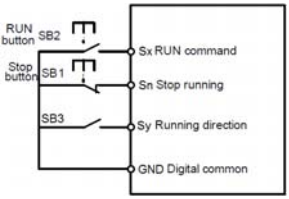
Among them, SB1:stop button SB2:forward button SB3:Reverse button

• 3: Three-line mode 2

In this mode, Sn is RUN enabled terminal. The RUN command is given by Sx and the direction is decided by Sy. The parameters are set as below:

Terminal	Set Value	Function Description
Sx	1	Forward RUN (FWD)
Sy	2	Reverse RUN (REV)
Sn	3	Three-line control

Sn terminal must be closed when it need to run , to realize the forward and reverse control system of the motor by Sx or Sy pulse rising.
When it need to stop , must be done disconnecting Sn terminal signal .Among them , the Sx, Sy, Sn as S1 ~S4 ,FWD,REV multi-function input terminal , Sx ,Sy is the pulse effective , Sn is the level effective.



K	RUN command
0	Forward RUN
1	Reverse RUN

Among them,SB1:stop button SB2: forward button SB3: Reverse button

Function Code	Parameter Name	Setting Range	Default
P5.12	Terminal UP/DOWN rate	0.001Hz/s~65.353Hz/s	1.00 Hz/s

When it is used to set terminal UP/DOWN to adjust the set frequency .Frequency changing rate is the frequency variation per second.

- If P0.22(Frequency reference resolution)is 2, the setting range is 0.001–65.535 Hz/s.
- If P0.22 (Frequency reference resolution) is 1, the setting range is 0.01–655.35 Hz/s.

Function Code	Parameter Name	Setting Range	Default
P5.13	FI1curve minimum input	0.00 V~ to P5.15	0.00 V
P5.14	Corresponding setting of AI curve 1 minimum input	-100.00%~+100.0%	0.0%
P5.15	FI curve 1 maximum input	P5-13~ 10.00 V	10.00V
P5.16	Corresponding setting of AI1curve maximum input	-100.00%+100.0%	100.0%
P5.17	FI curve1 filter time	0.00s~10.00s	0.10s

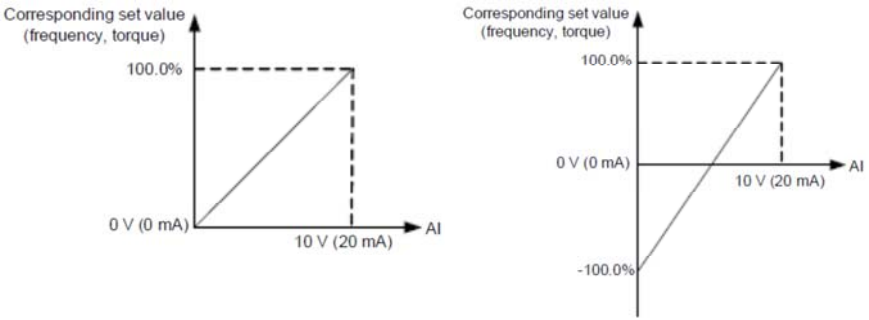
These parameters are used to define the relationship between the analog input voltage and the corresponding setting. When the analog input voltage exceeds the maximum value(P5.15), the maximum value is used. When the analog input voltage is less than the minimum value(P5.13), the value set in P5.34(Setting for AI less than minimum input) is used. When the analog input is current input, 1 mA current corresponds to 0.5 V voltage.

P5.17 (FIV filter time) is used to set the software filter time of FIV. If the analog input is liable to interference, increase the value of this parameter to stabilize the detected analog input. However, increase of the FI filter time will slow the response of analog detection. Set this parameter properly based on actual conditions.

In different applications, 100% of analog input corresponds to different nominal values. For details, refer to the description of different applications.

Two typical setting examples are shown in the following figure.

Figure 4-11 Corresponding relationship between analog input and set values



Function Code	Parameter Name	Setting Range	Default
P5.18	FI curve 2 minimum input	0.00 V~ P5-20	0.00 V
P5.19	Corresponding setting of FI curve 2 minimum input	-100.00%~+100.0%	0.0%
P5.20	FI curve 2 maximum input	P5-18~ 10.00 V	10.00V
P5.21	Corresponding setting of FI curve 2 maximum input	-100.00%~+100.0%	100.0%
P5.22	FI curve 2 filter time	0.00s~10.00s	0.10s
P5.23	FI curve 3 minimum input	0.00 V to P5-25	-10.0V
P5.24	Corresponding setting of FI curve 3 minimum input	-100.0%~+100.0%	-100.0%
P5.25	FI curve 3 maximum input	P5-23 ~+10.00 V	10.00V
P5.26	Corresponding setting of FI curve 3 maximum input	-100.00%~+100.0%	100.00%
P5.27	FI curve 3 filter time	0.00s~10.00s	0.10s

The method and function of setting FI curve 3 are are similarto that of setting FI curve 1 function.

Function Code	Parameter Name	Setting Range	Default
P5.28	PULSE minimum input	0.00 kHz~ P5.30	0.00 kHz
P5.29	Corresponding setting of pulse minimum input	-100.00%~100.0%	0.0%
P5.30	PULSE maximum input	P5.28~ 100.00 kHz	50.00 kHz
P5.31	Corresponding setting of pulse maximum input	-100.00%~100.0%	100.0%
P5.32	Pulse filter time	0.00~10.00s	0.10s

These parameters are used to set the relationship between S3 pulse input and corresponding settings. The pulses can only be input by S3. The method of setting this function is similar to that of setting FI1 curve 1.Refer to the descriptions of FI curve 1.

Function Code	Parameter Name	Setting Range	Default
P5.33	FI curve selection	Unit's digit : FIV curve selection 1:Curve 1 (2 points, see P5.13 ~ P5.16) 2:Curve 2 (2 points, see P5.18 ~P5.21) 3:Curve 3 (2 points, see P5.23~P5.26) 4:Curve 4(4 points,seeC6.00~C6.07) 5:Curve 5(4 points, see C6.8~C6.15) Ten's digit :FIC curve selection (1~5,same as FIV) Hundred's digit :FIA curve Selection (1~5,same as FIV)	321

The unit's digit, ten's digit and hundred's digit of this parameter are respectively used to select the corresponding curve of FIV, FIC Any one curves can be selected for 2 analog inputs.
Curve 1, curve 2 and curve 3 are all 2-point curves, need to set in group P5. Curve 4 and curve 5 are both 4-point curves. Set in group C6.

The SI2000 provides two FI terminals as standard.

Function Code	Parameter Name	Setting Range	Default
P5.34	Setting for AI less than minimum input	Unit's digit Setting for FIV less than minimum input 0: Minimum value1: 0.0% Ten's digit (Setting for FIC less than minimum input (0~1, same as FIV) Hundred's digit: Setting for FIV less than minimum input (0~1, same as FIV)	000

This function code is used to determine the corresponding setting when the analog input voltage is less than the minimum value .The unit's digit, ten's digit and hundred's digit of this function code respectively correspond to the setting for FIV,FIC and FIC.
If the value of acertain digit is selected to 0, when analog input voltage is less than the minimum input , the corresponding setting of the minimum input (P5.14,P5.19,P5.24) is used. If the value of a certain digit is selected to 1, when analog input voltage is less than the minimum input , the corresponding value of this analog input is 0.0%

Function Code	Parameter Name	Setting Range	Default
P5.35	FWD delay time	0.0~3600.0s	0.0s
P5.36	REV delay time	0.0~3600.0s	0.0s
P5.37	S1 delay time	0.0~3600.0s	0.0s

These parameters are used to set the delay time of the AC drive when the status of DI terminals changes.
Currently, only FWD, REV and S1 support the delay time function.

Function Code	Parameter Name	Setting Range	Default
P5.38	S valid mode selection1	0: High level valid 1: Low level valid Unit'sdigit:FWD Ten's digit :REV 0, 1 (same as DI1) Hundred's digit :S1 Thousand's digit:S2 Ten thousand's digit:S3	00000
P5.39	S valid mode Selection 2	0: High level valid 1: Low level valid Unit's digit:S4	00000

These parameters are used to set the digital input terminals' valid mode. The S terminal is valid when being connected with GND , and invalid when being disconnected from GND.

The S terminal is invalid when being disconnected with GND. , and valid when being disconnected from GND.

Group P6: Output Terminals

The SI2000 provides 1 multi-function analog output terminal FOV, 1 multi-function relay output terminal and a M0 terminal (used for high-speed pulse output or open-collector switch signal output) as standard.

Function Code	Parameter Name	Setting Range	Default
P6.00	M01 terminal output mode	1: Switch signal output	0
P6.01	M01 function		0
P6.02	Relay output function (RA-RB-RC)		2

These two parameters are used to select the function of five digital output terminals. RA-RB-RC are respectively the relays on the control board and the extension card. The functions of the output terminals are described in the following table.
Table 4-5 Functions of output terminals

Table 4-5 Functions of output terminals

Value	Function	Description
0	No output	The terminal has no function.
1	AC drive running	When the AC drive is running and has output frequency (can be zero), the terminal becomes ON.
2	Fault output (stop)	When the AC drive stops due to a fault, the terminal becomes ON.
3	Frequency-level detection BRAKE control 1 output	Refer to the descriptions of P8.19 and P8.20.
4	Frequency reached	Refer to the descriptions of P8.21.
5	Zero-speed running (no output at stop)	If the AC drive runs with the output frequency of 0, the terminal becomes ON. If the AC drive is in the stop state, the terminal becomes OFF.
6	Motor overload pre-warning	The AC drive judges whether the motor load exceeds the overload pre-warning threshold before performing the protection action. If the pre-warning threshold is exceeded, the terminal becomes ON. For motor overload parameters,see the descriptions of P9.00 to P9.02.
7	AC drive overload prewarning	The terminal becomes ON 10s before the AC drive overload protection action is performed.
8	Set count value reached	The terminal becomes ON when the count value reaches the value set in Pb.08.
9	Designated count value reached	The terminal becomes ON when the count value reaches the value set in Pb.09.
10	Length reached	The terminal becomes ON when the detected actual length exceeds the value set in Pb.05.
11	PLC cycle complete	When simple PLC completes one cycle, the terminal outputs a pulse signal with width of 250 ms.
12	Accumulative running time reached	If the accumulative running time of the AC drive exceeds the time set in Pb.17, the terminal becomes ON.
13	Frequency limited	If the set frequency exceeds the frequency upper limit or lower limit and the output frequency of the AC drive reaches the upper limit or lower limit, the terminal becomes ON.
14	Torque limited	In speed control mode, if the output torque reaches the torque limit, the AC drive enters the stall protection state and meanwhile the terminal becomes ON.
15	Ready for RUN	If the AC drive main circuit and control circuit become stable, and the AC drive detects no fault and is ready for RUN, the terminal becomes ON.
16	AI1 larger than AI2	When the input of AI1 is larger than the input of AI2, the terminal becomes ON.

Value	Function	Description
17	Frequency upper limit reached	If the running frequency reaches the upper limit, the terminal becomes ON.
18	Frequency lower limit reached (no output at stop)	If the running frequency reaches the lower limit, the terminal becomes ON. In the stop state, the terminal becomes OFF.
19	Undervoltage state output	If the AC drive is in undervoltage state, the terminal becomes ON.
20	Communication	setting Refer to the communication protocol.
21	Reserved	Reserved.
22	Reserved	Reserved.
23	Zero-speed running 2 (having output at stop)	If the output frequency of the AC drive is 0, the terminal becomes ON. In the state of stop, the signal is still ON.
24	Accumulative power on time reached	If the AC drive accumulative power-on time (P7.13) exceeds the value set in P8.16, the terminal becomes ON.
25	Frequency level detection FDT2 output	Refer to the descriptions of P8.28 and P8.29.
26	Frequency 1 reached	Refer to the descriptions of P8.30 and P8.31.
27	Frequency 2 reached	Refer to the descriptions of P8.32 and P8.33.
28	Current 1 reached	Refer to the descriptions of P8.38 and P8.39.
29	Current 2 reached	Refer to the descriptions of P8.40 and P8.41.
30	Timing reached	If the timing function (P8.42) is valid, the terminal becomes ON after the current running time of the AC drive reaches the set time.
31	AI1 input limit exceeded	If FIV input is larger than the value of P8.46 (AI1 input voltage upper limit) or lower than the value of P8.45 (AI1 input voltage lower limit), the terminal becomes ON.
32	Load becoming 0	If the load becomes 0, the terminal becomes ON.
33	Reverse running	If the AC drive is in the reverse running state, the terminal becomes ON.
34	Zero current state	Refer to the descriptions of P8.28 and P8.29.
35	Module temperature reached	If the heatsink temperature of the inverter module (P7.07) reaches the set module temperature threshold (P8.47), the terminal becomes ON.
36	Software current limit	exceeded Refer to the descriptions of P8.36 and P8.37.
37	Frequency lower limit reached (having output at stop)	If the running frequency reaches the lower limit, the terminal becomes ON. In the stop state, the signal is still ON.
38	Alarm output	If a fault occurs on the AC drive and the AC drive continues to run, the terminal outputs the alarm signal.
39	Reserved	Reserved.
40	Current running time reached	If the current running time of AC drive exceeds the value of P8.53, the terminal becomes ON.

Function Code	Parameter Name	Setting Range	Default
P6.07	FOV function Selection	0: Running frequency	0
P6.08	Reserved	Reserved	
P6.09	Reserved	Reserved	

The output range of FOV is 0-10 V or 0-20 mA. The relationship between pulse and analog output range and corresponding function is listed in the following table.

Table 4-6 Reationship between pulse and analog output ranges and corresponding function.

Value	Function	Range (Corresponding to Pulse or Analog Output Range 0.0%–100.0%)
0	Running frequency	0 to maximum output frequency
1	Set frequency	0 to maximum output frequency
2	Output current	0 to 2 times of rated motor current
3	Output torque (absolute value)	0 to 2 times of rated motor torque

Value	Function	Range (Corresponding to Pulse or Analog Output Range 0.0%–100.0%)
4	Output power	0 to 2 times of rated power
5	Output voltage	0 to 1.2 times of rated AC drive voltage
6	Pulse input	0.01–100.00 kHz
7	AI1	0–10 V
8	AI2	0–10 V (or 0–20 mA)
9	AI3	0–10 V
10	Length	0 to maximum set length
11	Count value	0 to maximum count value
12	Communication setting	0.0%–100.0%
13	Motor rotational speed	0 to rotational speed corresponding to maximum output frequency
14	Output current	0.0–1000.0 A
15	Output voltage	0.0–000.0 V

Function Code	Parameter Name	Setting Range	Default
P6.10	FOV zero offset coefficient	-100.0%~+100.0%	0.0%
P6.11	FOV gain	-10.00~+10.00	1.00
P6.12	Reserved	Reserved	
P6.13	Reserved	Reserved	

These function cods are used to correct the zero drift of analog output and the output amplitude deviation. They can also be used to define the desired FOV curve.

If "b" represents zero offset, "k" represents gain, "Y" represents actual output, and "X" represents standard output, the actual output is: Y = kX + b.

Among them the zero offset coefficient 100% of FOV corresponds to 10 V (or 20 mA). The standard output refers to the value corresponding to the analog output of 0 to 10 V (or 0 to 20 mA) with no zero offset or gain adjustment.

For example, if the analog output is used as the running frequency, and it is expected that the output is 8 V when the frequency at the maximum frequency is 3V, the gain shall be set to -0.50, and the zero offset shall be set to 80%.

Function Code	Parameter Name	Setting Range	Default
P6.17	M01 output delay time	0.0~3600.0s	0.0s
P6.18	RA-RB-RC output delay time	0.0~3600.0s	0.0s

These parameters are used to set the delay time of output terminals M01, from status change to actual output.

Function Code	Parameter Name	Setting Range	Default
P6.22	Output terminal valid mode selection	0: Positive logic 1: Negative logic Unit's digit : M01 Ten's digit : RA-RB-RC valid mod (0~1, the same as M01)	00000

It is used to set the logic of output terminals M01,RA,RB,RC.

- 0: Positive logic

The output terminal is valid when it is connected with GND, and invalid when it is disconnected from GND.

- 1: Negative logic

The output terminal is invalid when it is connected with GND, and valid when it is disconnected from GND.

Group P7: Operation Panel and Display

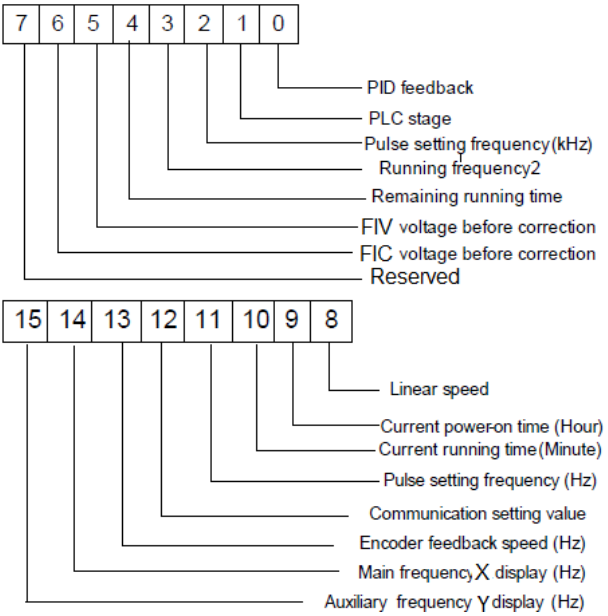
Function Code	Parameter Name	Setting Range	Default
P7.00	Output power correction factor	0.0~200.0	100.0

Can correct output power by modifying parameter P7.00 , (output power can be viewed through the parameter D0.05)

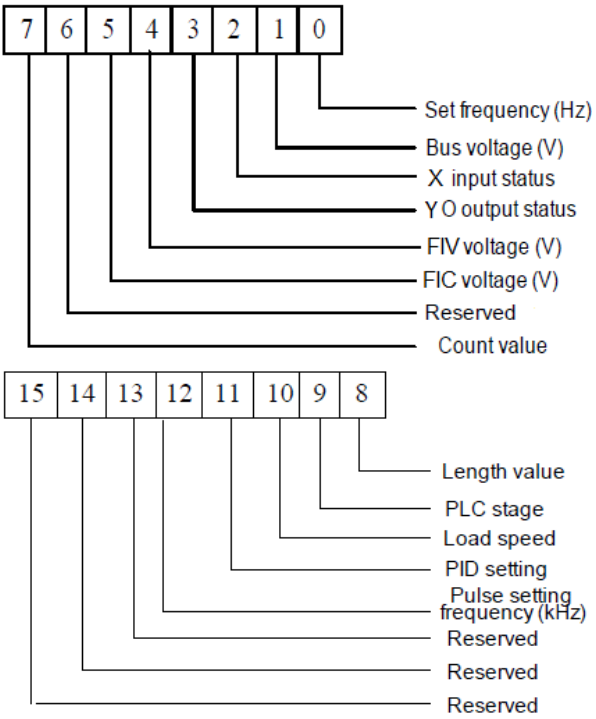
P7.01Reserved

Function Code	Parameter Name	Setting Range	Default
P7.02	STOP/RESET key function	0: STOP/RESET key enabled only in operation panel control 1: STOP/RESET key enabled in any operation mode	1

Function Code	Parameter Name	Setting Range	Default
Group P7: Operation Panel and Display			
P7.03	LED display running parameters 1	0000–FFFF 7 6 5 4 3 2 1 0 Running frequency1 (Hz) Set frequency (Hz) Bus voltage (V) Output voltage (V) Output current (A) Output power (kW) Output torque (%) DI input status (V) 15 14 13 12 11 10 9 8 DO output status AI1 voltage (V) AI2 voltage (V) AI3 voltage (V) Count value Length value Load speed display PID setting	1F

Function Code	Parameter Name	Setting Range	Default
Group P7: Operation Panel and Display			
P7-04	LED display running parameters 2	0000–FFFF  If a parameter needs to be displayed during the running, set the corresponding bit to 1, and set P7-03 to the hexadecimal equivalent of this binary number.	0

Run the display parameters, used to set the parameters that can be viewed when the AC drive is in any running state.

Function Code	Parameter Name	Setting Range	Default
P7.05	LED display stop parameters	0000–FFFF  If a parameter needs to be displayed during the running, set the corresponding bit to 1, and set P7-05 to the hexadecimal equivalent of this binary number.	0

Function Code	Parameter Name	Setting Range	Default
P7.06	Load speed display coefficient	0.0001~6.5000	1.0000

This parameter is used to adjust the relationship between the output frequency of the AC drive and the load speed. For details, see the description of P7.12.

Function Code	Parameter Name	Setting Range	Default
P7.07	Heatsink temperature of inverter	0.0°C ~150.0°C	--

It is used to display the insulated gate bipolar transistor (IGBT) temperature of the inverter. module, and the IGBT overheat protection value of the inverter module depends on the model.

Function Code	Parameter Name	Setting Range	Default
P7.08	Temporary software version	0.0°C ~150.0°C	--

It is used to display the temporary software version of the control board.

Function Code	Parameter Name	Setting Range	Default
P7.09	Accumulative running time	0h~65535 h	--

It is used to display the accumulative running time of the AC drive. After the accumulative running time reaches the value set in P8.17, the terminal with the digital output function 12 becomes ON.

Function Code	Parameter Name	Setting Range	Default
P7.10	Reserved	--	--
P7.11	Software version	--	--
P7.12	Number of decimal places for load speed display	0: 0 decimal place 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1

P7.12 is used to set the number of decimal places for load speed display. The following gives an example to explain how to calculate the load speed:

Assume that P7.06 (Load speed display coefficient) is 2.000 and P7.12 is 2 (2 decimal places). When the running frequency of the AC drive is 40.00 Hz, the load speed is 40.00x 2.000 = 80.00 (display of 2 decimal places).

If the AC drive is in the stop state, the load speed is the speed corresponding to the set frequency, namely, "set load speed". If the set frequency is 50.00 Hz, the load speed in the stop state is 50.00 x 2.000 = 100.00 (display of 2 decimal places).

Function Code	Parameter Name	Setting Range	Default
P7.13	Accumulative power-on time	0h~65535 h	--

It is used to display the accumulative power-on time of the AC drive since the delivery. If the time reaches the set power-on time (P8.17), the terminal with the digital output function 24 becomes ON.

Function Code	Parameter Name	Setting Range	Default
P7.14	Accumulative power consumption	0~65535 kWh	--

It is used to display the accumulative power consumption of the AC drive until now.

Group P8: Auxiliary Functions

Function Code	Parameter Name	Setting Range	Default
P8.00	JOG running frequency	0.00 Hz to maximum frequency	2.00 Hz
P8.01	JOG acceleration time	0.0s~6500.0s	20.0s
P8.02	JOG deceleration time	0.0s~6500.0s	20.0s

These parameters are used to define the set frequency and acceleration/deceleration time of the AC drive when jogging. The startup mode is "Direct start" (P1.00 = 0) and the stop mode is "Decelerate to stop" (P1.10 = 0) during jogging.

Function Code	Parameter Name	Setting Range	Default
P8.03	Acceleration time 2	0.0s~6500.0s	Model dependent
P8.04	Deceleration time 2	0.0s~6500.0s	
P8.05	Acceleration time 3	0.0s~6500.0s	
P8.06	Deceleration time 3	0.0s~6500.0s	
P8.07	Acceleration time 4	0.0s~6500.0s	
P8.08	Deceleration time 4	0.0s~6500.0s	

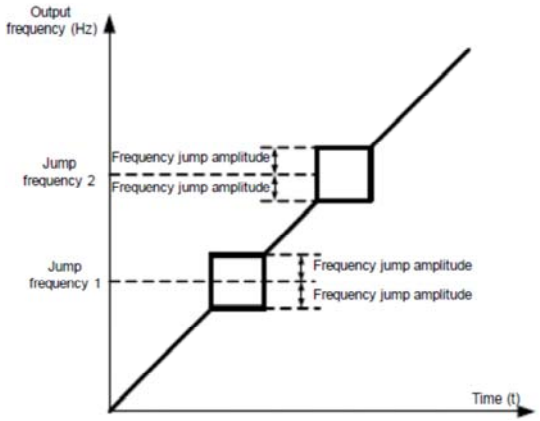
The SI2000 provides a total of four groups of acceleration/deceleration time, that is, the preceding three groups and the group defined by P0.08 and P0.09. Definitions of four groups are completely the same. You can switch over between the four groups of acceleration/deceleration time through different state combinations of DI terminals. For more details, see the descriptions of P5.01 to P5.05.

Function Code	Parameter Name	Setting Range	Default
P8.09	Jump frequency 1	0.00 Hz~maximum frequency	0.00Hz
P8.10	Jump frequency 2	0.00 Hz~maximum frequency	0.00Hz
P8.11	Frequency jump amplitude	0.00 Hz~ maximum frequency	0.00Hz

If the set frequency is within the frequency jump range, the actual running frequency is the jump frequency close to the set frequency. Setting the jump frequency helps to avoid the mechanical resonance point of the load.

The SI2000 supports two jump frequencies. If both are set to 0, the frequency jump function is disabled. The principle of the jump frequencies and jump amplitude is shown in the following figure.

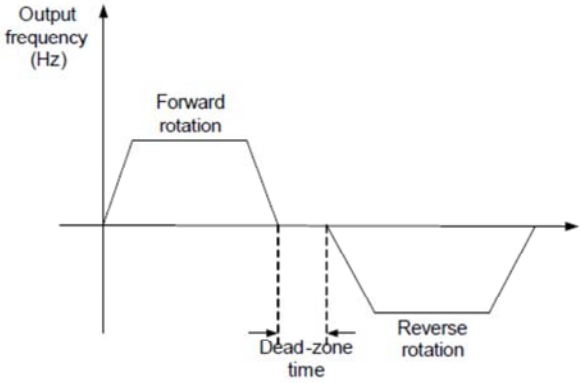
Figure 4-12 Principle of the jump frequencies and jump amplitude



Function Code	Parameter Name	Setting Range	Default
P8.12	Forward/Reverse rotation dead-zone time	0.0s~3000.0s	0.0s

It is used to set the time when the output is 0 Hz at transition of the AC drive forward rotation and reverse rotation, as shown in the following figure.

Figure 4.13 Forward/Reverse rotation dead-zone time



Function Code	Parameter Name	Setting Range	Default
P8.13	Reverse control	0: Enabled 1: Disabled	0

It is used to set whether the AC drive allows reverse rotation. In the applications where reverse rotation is prohibited, set this parameter to 1.

Function Code	Parameter Name	Setting Range	Default
P8.14	Running mode when set frequency lower than frequency lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0

It is used to set the AC drive running mode when the set frequency is lower than the frequency lower limit. The SI2000 provides three running modes to satisfy requirements of various applications.

Function Code	Parameter Name	Setting Range	Default
P8.15	Droop control	0.00Hz~10.00 Hz	0.00Hz

This function is used for balancing the workload allocation when multiple motors are used to drive the same load. The output frequency of the AC drives decreases as the load increases. You can reduce the workload of the motor under load by decreasing the output frequency for this motor, implementing workload balancing between multiple motors.

Function Code	Parameter Name	Setting Range	Default
P8.16	Accumulative power-on time threshold	0h~65000h	0h

If the accumulative power-on time (P7.13) reaches the value set in (P8.16) parameter, the corresponding M01 terminal outputs ON.(P6.01=24)

Function Code	Parameter Name	Setting Range	Default
P8.17	Accumulative running time threshold	0h~65000h	0h

It is used to set the accumulative running time threshold of the AC drive. If the accumulative running time (P7.09) reaches the value set in this parameter, the corresponding M01 terminal output ON(P6.01=40).

Function Code	Parameter Name	Setting Range	Default
P8.18	Startup protection	0: No 1: Yes	0

This parameter is used to set whether to enable the safety protection. If it is set to 1, the AC drive does not respond to the run command valid upon AC drive power-on (for example, an input terminal is ON before power-on). The AC drive responds only after the run command is cancelled and becomes valid again.

In addition, the AC drive does not respond to the run command valid upon fault reset of the AC drive. The run protection can be disabled only after the run command is cancelled.

In this way, the motor can be protected from responding to run commands upon power-on or fault reset in unexpected conditions.

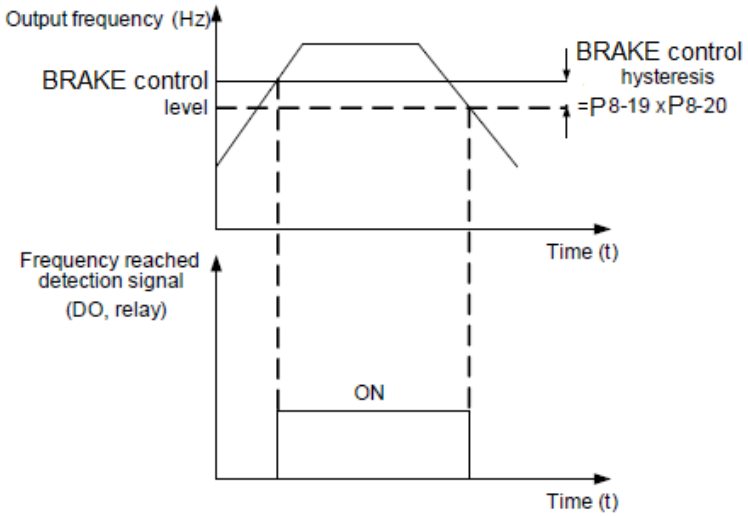
Function Code	Parameter Name	Setting Range	Default
P8.19	Frequency detection value (FDT1)	0.00 Hz~maximum frequency	50.00 Hz
P8.20	Frequency detection hysteresis (FDT1)	0.0%~100.0% (FDT 1 level)	5.0%

If the running frequency is higher than the value of frequency detention the corresponding M01 terminal becomes ON. If the running frequency is lower than value of P8.19, the M01 terminal output

These two parameters are respectively used to set the detection value of output frequency and hysteresis value upon cancellation of the output. The value of P8.20 is a percentage of the hysteresis frequency to the frequency detection value (P8.19).

The BRAKE control function is shown in the following figure.

Figure 4-14 FDT level

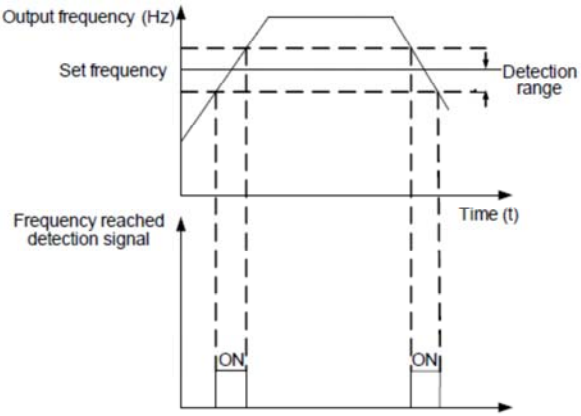


Function Code	Parameter Name	Setting Range	Default
P8.21	Detection range of frequency reached	0.00%~100.0% (maximum frequency)	0.0%

If the AC drive running frequency is within the certain range of the set frequency, the corresponding DO terminal becomes ON.

This parameter is used to set the range within which the output frequency is detected to reach the set frequency. The value of this parameter is a percentage relative to the maximum frequency. The detection range of frequency reached is shown in the following figure.

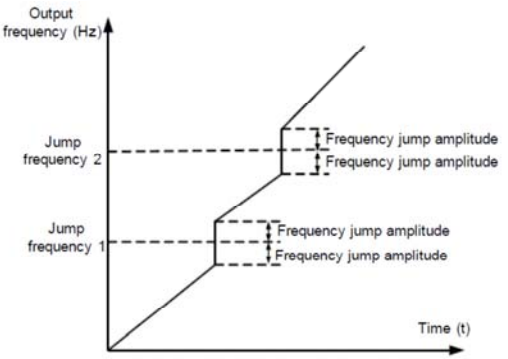
Figure 4-15 Detection range of frequency reached



Function Code	Parameter Name	Setting Range	Default
P8.22	Jump frequency during Acceleration / deceleration	0: Disabled 1: Enabled	0

It is used to set whether the jump frequencies are valid during acceleration/deceleration.
When the jump frequencies are valid during acceleration/deceleration, and the running frequency is within the frequency jump range, the actual running frequency will jump over the set frequency jump amplitude (rise directly from the lowest jump frequency to the highest jump frequency). The following figure shows the diagram when the jump frequencies are valid during acceleration/deceleration.

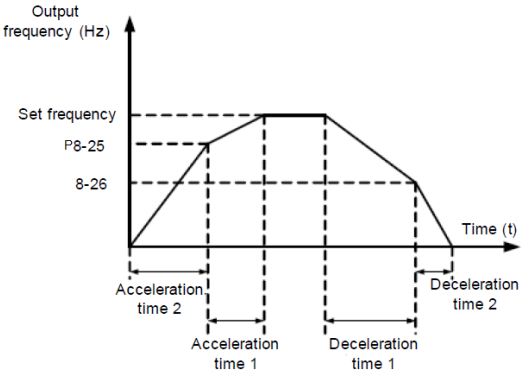
Figure 4-16 Diagram when the jump frequencies are valid during acceleration/deceleration



Function Code	Parameter Name	Setting Range	Default
P8.25	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00~maximum frequency	0.00 Hz
P8.26	Frequency switchover point between deceleration time 1 and deceleration time 2	0.00~ maximum frequency	0.00 Hz

This function is valid when motor selected acceleration/deceleration time switchover is not performed by means of X terminal. It is used to select different groups of acceleration/deceleration time based on the running frequency range rather than X terminal during the running process of the AC drive.

Figure 4-17 Acceleration/deceleration time switchover



During the process of acceleration, if the running frequency is smaller than the value of P8.25, acceleration time 2 is selected. If the running frequency is larger than the value of P8.25, acceleration time 1 is selected.

During the process of deceleration, if the running frequency is larger than the value of P8.26, deceleration time1 is selected. If the running frequency is smaller than the value of P8.26, deceleration time 2 is selected.

Function Code	Parameter Name	Setting Range	Default
P8.27	Terminal JOG preferred	0: Disabled 1: Enabled	0

It is used to set whether terminal JOG is preferred.

If terminal JOG is preferred, the AC drive switches to terminal JOG running state when there is a terminal JOG command during the running process of the AC drive.

Function Code	Parameter Name	Setting Range	Default
P8.28	Frequency detection value (FDT2)	0.00 Hz~maximum frequency	50.00 Hz
P8.29	Frequency detection hysteresis (FDT2)	0.0%~100.0% (FDT2 level)	5.0%

The frequency detection function is the same as BRAKE control 1 function. For details, refer to the descriptions of P8.19 and P8.20.

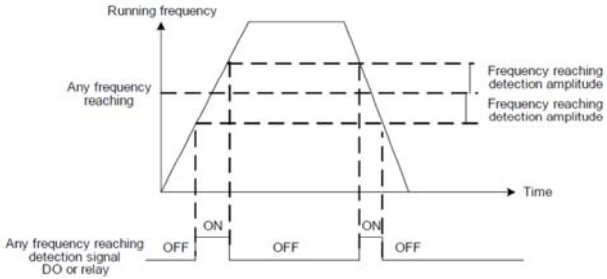
Function Code	Parameter Name	Setting Range	Default
P8.30	Any frequency reaching detection value 1	0.00 Hz~maximum frequency	50.00 Hz
P8.31	Any frequency reaching detection amplitude 1	0.0%~100.0% (maximum frequency)	0.0%

Function Code	Parameter Name	Setting Range	Default
P8.32	Any frequency reaching detection value 2	0.00 Hz~ maximum frequency	50.00 Hz
P8.33	Any frequency reaching detection amplitude 2	0.0%~100.0% (maximum frequency)	0.0%

If the output frequency of the AC drive is within the positive and negative amplitudes of the any frequency reaching detection value, the corresponding M01 output ON.(P6.01=26/27)

The SI2000 provides two groups of any frequency reaching detection parameters, including frequency detection value and detection amplitude, as shown in the following figure.

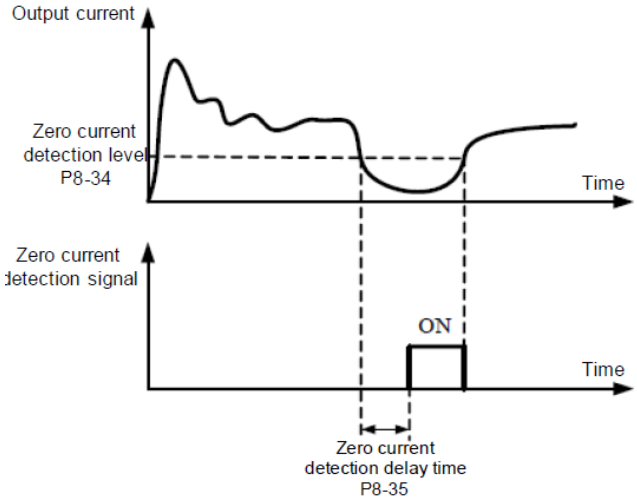
Figure 4-18 Any frequency reaching detection



Function Code	Parameter Name	Setting Range	Default
P8.34	Zero current detection level	0.0%~300.0% (rated motor current)	5.0%
P8.35	Zero current detection delay time	0.01s~600.00s	0.10s

If the output current of the AC drive is equal to or less than the zero current detection level and the duration exceeds the zero current detection delay time, the corresponding DO becomes ON. The zero current detection is shown in the following figure.

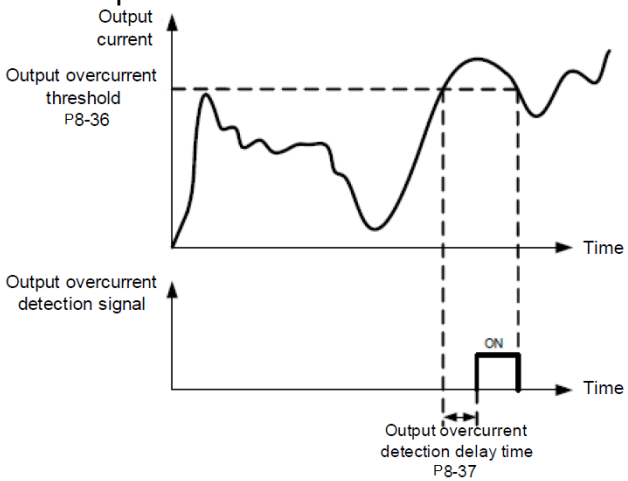
Figure 4-19 Zero current detection



Function Code	Parameter Name	Setting Range	Default
P8.36	Output overcurrent threshold	0.0% (no detection) 0.1%~300.0% (rated motor current)	200.0%
P8.37	Output overcurrent detection delay time	0.00s~600.00s	0.00s

If the output current of the AC drive is equal to or higher than the overcurrent threshold and the duration exceeds the detection delay time, the corresponding DO becomes ON. The output overcurrent detection function is shown in the following figure.

Figure 4-20 Output overcurrent detection

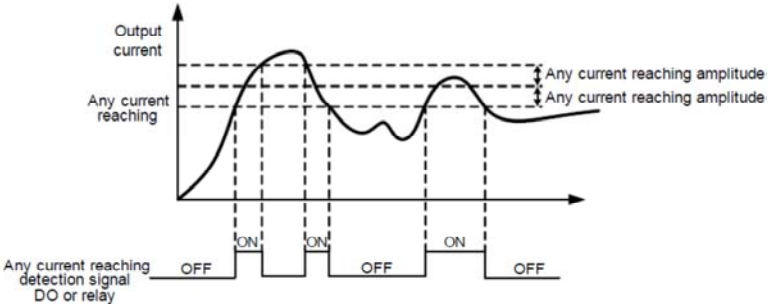


Function Code	Parameter Name	Setting Range	Default
P8.38	Any current reaching 1	0.0%~300.0% (rated motor current)	100.0%
P8.39	Any current reaching 1 amplitude	0.0%~300.0% (rated motor current)	0.0%
P8.40	Any current reaching 2	0.0%~300.0% (rated motor current)	100.0%
P8.41	Any current reaching 2 amplitude	0.0%~300.0% (rated motor current)	0.0%

If the output current of the AC drive is within the positive and negative amplitudes of any current reaching detection value, the corresponding DO becomes ON.

The SI2000 provides two groups of any current reaching detection parameters, including current detection value and detection amplitudes, as shown in the following figure.

Figure 4.21 Any current reaching detection



Function Code	Parameter Name	Setting Range	Default
P8.42	Timing function	0: Disabled 1: Enabled	0
P8.43	Timing duration source	0: P8.44 1: FIV 2: FIC 3: reserved 100%of analog input corresponds to the value of P8.44	0
P8.44	Timing duration	0.0Min~6500.0Min	0.0 min

These parameters are used to implement the AC drive timing function.

If P8.42 is set to 1, the AC drive starts to time at startup. When the set timing duration is reached, the AC drive stops automatically and meanwhile the corresponding M01 output ON.

The AC drive starts timing from 0 each time it starts up and the remaining timing duration can be queried by D0.20.

The timing duration is set in P8.43 and P8.44, in unit of minute.

Function Code	Parameter Name	Setting Range	Default
P8.45	FIV input voltage lower limit	0.00 V~P8.46	3.10V
P8.46	FIV input voltage upper limit	P8-45~10.00 V	6.80 V

These two parameters are used to set the limits of the input voltage to provide protection on the AC drive. When the FIV input is larger than the value of P8.46 or smaller than the value of P8.45, the corresponding M01 becomes ON, indicating that FIV input exceeds the limit.

Function Code	Parameter Name	Setting Range	Default
P8.47	Module temperature threshold	0°C~150°C	100°C

When the heatsink temperature of the AC drive reaches the value of this parameter, the corresponding M01 becomes ON, indicating that the module temperature reaches the threshold.

Function Code	Parameter Name	Setting Range	Default
P8.48	Cooling fan control	0: Fan working during running 1: Fan working continuously	0

It is used to set the working mode of the cooling fan. If this parameter is set to 0, the fan works when the AC drive is in running state. When the AC drive stops, the cooling fan

works if the heat sink temperature is higher than 40°C, and stops working if the heat sink temperature is lower than 40°C.

If this parameter is set to 1, the cooling fan keeps working after power-on.

Function Code	Parameter Name	Setting Range	Default
P8.49	Wakeup frequency	Dormant frequency (P8.51) ~ maximum frequency (P0.12)	0.00Hz
P8.50	Wakeup delay time	0.0~6500.0s	0.0s
P8.51	Dormant frequency	0.00 Hz~ wakeup frequency (P8.49)	0.00Hz
P8.52	Dormant delay time	0.0s~6500.0s	0.0s

These parameters are used to implement the dormant and wakeup functions in the water supply application.

When the AC drive is in running state, the AC drive enters the dormant state and stops automatically after the dormant delay time (P8.52) if the set frequency is lower than or equal to the dormant frequency (P8.51).

When the AC drive is in dormant state and the current running command is effective, the AC drives starts up after the wakeup delay time (P8.50) if the set frequency is higher than or equal to the wakeup frequency (P8.49).

Generally, set the wakeup frequency equal to or higher than the dormant frequency. If the wakeup frequency and dormant frequency are set to 0, the dormant and wakeup functions are disabled.

When the dormant function is enabled, if the frequency source is PID, whether PID operation is performed in the dormant state is determined by PA.26. In this case, select PID operation enabled in the stop state (PA.28=1).

Function Code	Parameter Name	Setting Range	Default
P8.53	Current running time reached	0.0Min~6500.0 min	0.0 min

If the current running time reaches the value set in this parameter, the corresponding M01 becomes ON, indicating that the current running time is reached.

Group F9: Fault and Protection

Function Code	Parameter Name	Setting Range	Default
P9.00	Motor overload protection selection	0: Disabled 1: Enabled	1
P9.01	Motor overload protection gain	0.20~10.00	1.00

- P9.00 = 0

The motor overload protective function is disabled. The motor is exposed to potential damage due to overheating. A thermal relay is suggested to be installed between the AC drive and the motor.

- P9.00 = 1

The AC drive judges whether the motor is overloaded according to the inverse time-lag curve of the motor overload protection.

The inverse time-lag curve of the motor overload protection is:

220% x P9.01 x rated motor current (if the load remains at this value for one minute, the AC drive reports motor overload fault), or

150% x P9.01 x rated motor current (if the load remains at this value for 60 minutes, the AC drive reports motor overload fault)

Set P9.01 properly based on the actual overload capacity. If the value of P9.01 is set too large, damage to the motor may result because the motor overheats but the AC drive does not report the alarm.

Function Code	Parameter Name	Setting Range	Default
P9.02	Motor overload warning coefficient	50%~100%	80%

This function is used to give a warning signal to the control system via M01 before motor overload protection. This parameter is used to determine the percentage, at which pre-warning is performed before motor overload. The larger the value is, the less advanced the pre-warning will be.

When the accumulative output current of the AC drive is greater than the value of the overload inverse time-lag curve multiplied by P9.02, the M01 terminal on the AC drive (Motor overload pre-warning) becomes ON.

Function Code	Parameter Name	Setting Range	Default
P9.03	Overvoltage stall gain	0 (no stall overvoltage)~100	0
P9.04	Overvoltage stall protective voltage	120%~150%(Three phase)	130%

When the DC bus voltage exceeds the value of P9.04 (Overvoltage stall protective voltage) during deceleration of the AC drive, the AC drive stops deceleration and keeps the present running frequency. After the bus voltage declines, the AC drive continues to decelerate.

P9.03 (Overvoltage stall gain) is used to adjust the overvoltage suppression capacity of the AC drive. The larger the value is, the greater the overvoltage suppression capacity will be.

In the prerequisite of no overvoltage occurrence, set P9.03 to a small value.

For small-inertia load, the value should be small. Otherwise, the system dynamic response will be slow. For large-inertia load, the value should be large. Otherwise, the suppression result will be poor and an overvoltage fault may occur. If the overvoltage stall gain is set to 0, the overvoltage stall function is disabled. The overvoltage stall protective voltage setting 100% corresponds to the base values in the following table:

Function Code	Parameter Name	Setting Range	Default
P9.05	Overcurrent stall gain	0~100	20
P9.06	Overcurrent stall protective current	100%~200%	150%

When the output current exceeds the overcurrent stall protective current during acceleration/deceleration of the AC drive, the AC drive stops acceleration/deceleration and keeps the present running frequency. After the output current declines, the AC drive continues to accelerate/decelerate.

P9.05 (Overcurrent stall gain) is used to adjust the overcurrent suppression capacity of the AC drive. The larger the value is, the greater the overcurrent suppression capacity will be. In the prerequisite of no overcurrent occurrence, set P9.05 to a small value.

For small-inertia load, the value should be small. Otherwise, the system dynamic response will be slow. For large-inertia load, the value should be large. Otherwise, the suppression result will be poor and overcurrent fault may occur.

If the overcurrent stall gain is set to 0, the overcurrent stall function is disabled.

Function Code	Parameter Name	Setting Range	Default
P9.07	Short-circuit to ground upon power-on	0: Disabled 1: Enabled	1

It is used to determine whether to check the motor is short-circuited to ground at power-on of the AC drive .If this function is enabled , the AC drive's UVW will have voltage output at while after power-on.

Function Code	Parameter Name	Setting Range	Default
P9.09	Fault auto reset times	0~20	0

It is used to set the times of fault auto resets if this function is used . After the value is exceeded , the AC drive will remain in the fault state.

Function Code	Parameter Name	Setting Range	Default
P9.10	M01 action during fault auto reset	0: Not act 1: Act	0

It is used to decide whether the M01 acts during the fault auto reset if the fault auto reset if the fault auto function is selected .

Function Code	Parameter Name	Setting Range	Default
P9.11	Time interval of fault auto reset	0.1s~100.0s	1.0s

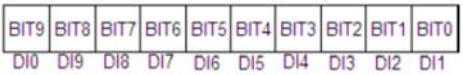
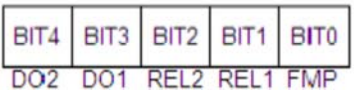
It is used to set the waiting time from the alarm of the AC drive to fault auto reset.
P9.12 Reserved

Function Code	Parameter Name	Setting Range	Default
P9.13	Output phase loss protection selection	0: Prohibited 1: Permitted	1

It is used to determine whether to perform output phase loss protection.

Function Code	Parameter Name	Setting Range	Default
P9.14	1st fault type	0~99	-
P9.15	2nd fault type		-
P9.16	3rd (latest) fault type		-

It is used to record the types of the most recent three faults of the AC drive. 0 indicates no fault. For possible causes and solution of each fault, refer to Chapter 5.

Function Code	Parameter Name	Description
P9.17	Frequency upon 3rd fault	It displays the frequency when the latest fault occurs.
P9.18	Current upon 3rd fault	It displays the current when the latest fault occurs.
P9.19	Bus voltage upon 3rd fault	It displays the bus voltage when the latest fault occurs
P9.20	Input terminal status upon 3rd fault	It displays the status of all DI terminals when the latest fault occurs. The sequence is as follows:  If a DI is ON, the setting is 1. If the DI is OFF, the setting is 0. The value is the equivalent decimal number converted from the DI status..
P9.21	Output terminal status upon 3rd fault	It displays the status of all output terminals when the latest fault occurs. The sequence is as follows:  If an output terminal is ON, the setting is 1. If the output terminal is OFF, the setting is 0. The value is the equivalent decimal number converted from the S statuses
P9.22	AC drive status upon 3rd fault	Reserved
P9.23	Power-on time upon 3rd fault	It displays the present power-on time when the latest fault occurs.
P9.24	Running time upon 3rd fault	It displays the present running time when the latest fault occurs.
P9.27	Frequency upon 2nd fault	Same as P9.17~P9.24.
P9.28	Current upon 2nd fault	
P9.29	Bus voltage upon 2nd fault	
P9.30	Input terminal status upon 2nd fault	
P9.31	Output terminal status upon 2nd fault	
P9.32	AC drive status upon 2rd fault	
P9.33	Power-on time upon 2rd fault	
P9.34	Running time upon 2rd fault	
P9.37	Frequency upon 2nd fault	Same as P9.17~P9.24.
P9.38	Current upon 1nd fault	
P9.39	Bus voltage upon 1st fault	
P9.40	Input terminal status upon 1st fault	
P9.41	Output terminal status upon 1st fault	
P9.42	AC drive status upon 1st fault	
P9.43	Power-on time upon 1st fault	
P9.44	Running time upon 1st fault	

Function Code	Parameter Name	Setting Range	Default
P9.47	Fault protection action selection 1	Unit's digit:Motor overload(OL1) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Ten's digit :Reserved Hundred's digit : Power output phase loss(LO)(the same as unit's digit) Thousand's digit (External equipment fault(EF)(Same as unit's digit) Ten thousand's digit: Digit :Communication fault(CE)(the same as unit's digit)	00000
P9.48	Fault protection action selection 2	Unit's digit :Reserved 0: Coast to stop Ten's digit :EEPROM read-wright fault(EEP) 0: Coast to stop 1: stop according to the stop mode Hundred's digit: Reserved Ten thousand's digit Accumulative running time Reached(END1)(the same as unit's digit in P9.47)	00000
P9.49	Fault protection action selection 3	Unit's digit :Reserved Ten's digit :Reserved Hundred's digit: Accumulative Power-on time reached(END2)(the same as unit's digit in P9.47) Thousand 's digit :Load becoming 0(LOAD) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run 0:stop according to the stop mod 2:Continue to run at 7%of rated motor frequency and resume to the set frequency if the load recovers Ten thousand's digit :PID feedback lost during running (PIDE)(the same as unit's in P9.47)	00000
P9.50	Reserved		

If "Coast to stop" is selected, the AC drive displays fault and directly stops.
• If "Stop according to the stop mode" is selected, the AC drive displays alarm code and stops according to the stop mode. After stopping , AC drive displays error code.
If "continue to run "is selected , the AC drive continues to run and displays alar code .The running frequency is set in P9.54.

Function Code	Parameter Name	Setting Range	Default
P9.54	Frequency selection for continuing to run upon fault	0: Current running frequency 1: Set frequency 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency upon abnormality	0
P9.55	Backup frequency upon abnormality	60.0%~100.0%	100.0%

If a fault occurs during the running of the AC drive and the handling of fault is set to "Continue to run", the AC drive displays alarm code and continues to run at the frequency set in P9.54.

The setting of P9.55 is a percentage relative to the maximum frequency.

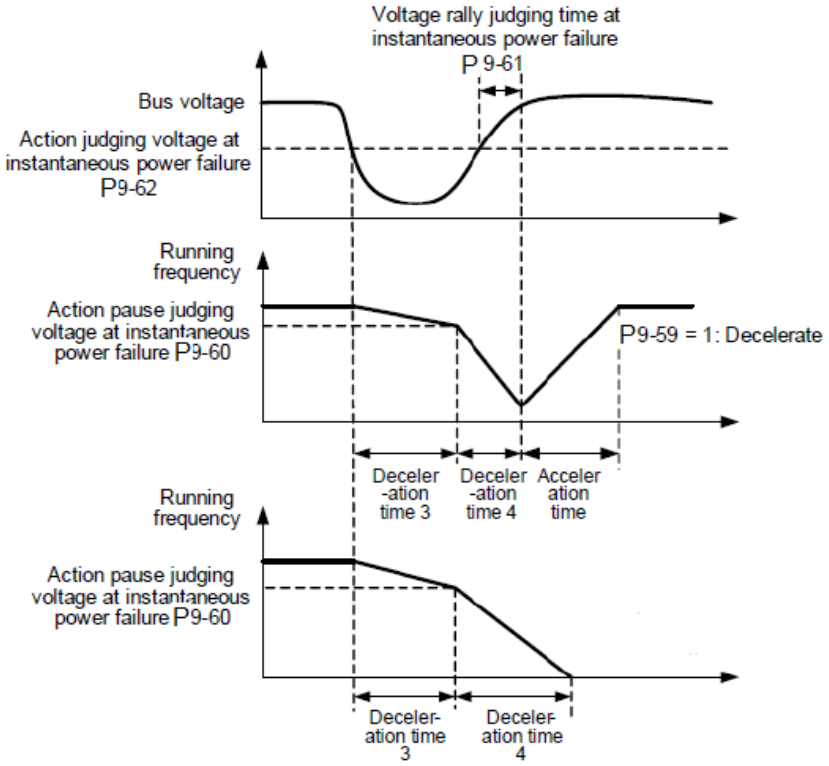
Function Code	Parameter Name	Setting Range	Default
P9.56~P9.58	reserved	reserved	
P9.59	Action selection at instantaneous power failure	0: Invalid 1: Decelerate 2: Decelerate to stop	0
P9.60	Action pause judging voltage at instantaneous power failure	0.0%~100.0%	100.0%
P9.61	Voltage rally judging time at instantaneous power failure	0.00~100.00s	0.50s
P9.62	Action judging voltage at instantaneous power failure	60.0%100.0%(standard bus voltage)	80.0%

Upon instantaneous power failure or sudden voltage dip, the DC bus voltage of the AC drive reduces. This function enables the AC drive to compensate the DC bus voltage reduction with the load feedback energy by reducing the output frequency so as to keep the AC drive running continuously.

- If P9.59 = 1, upon instantaneous power failure or sudden voltage dip, the AC drive decelerates. Once the bus voltage resumes to normal, the AC drive accelerates to the set frequency. If the bus voltage remains normal for the time exceeding the value set in P9.61, it is considered that the bus voltage resumes to normal.

- If P9.59 = 2, upon instantaneous power failure or sudden voltage dip, the AC drive decelerates to stop.

Figure 4-22 AC drive action diagram upon instantaneous power failure



Function Code	Parameter Name	Setting Range	Default
P9.63	Protection upon load becoming 0	0: Disabled 1: Enabled	0
P9.64	Detection level of load becoming 0	0.0%~100.0% (rated motor current)	10.0%
P9.65	Detection time of load becoming	0 0.0~60.0s	1.0s

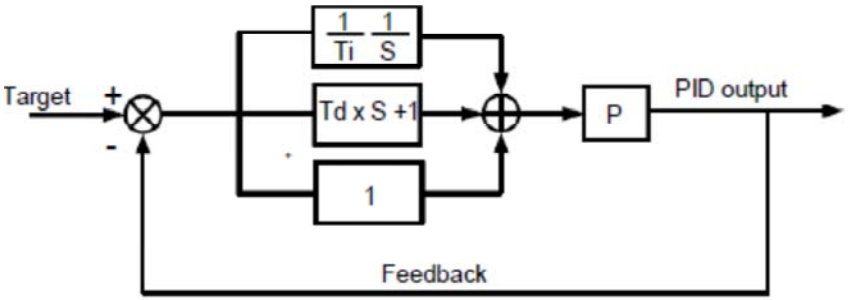
If protection upon load becoming 0 is enabled, when the output current of the AC drive is lower than the detection level (P9.64) and the continuous time exceeds the detection time (P9.65), the output frequency of the AC drive automatically declines to 7% of the rated frequency. During the protection, the AC drive automatically accelerates to the set frequency if the load resumes to normal.P9.67~70 Reserved

Group PA: Process Control PID Function

PID control is a general process control method. By performing proportional, integral and differential operations on the difference between the feedback signal and the target signal, it adjusts the output frequency and constitutes a feedback system to stabilize the controlled counter around the target value.

It is applied to process control such as flow control, pressure control and temperature control. The following figure shows the principle block diagram of PID control.

Figure 4-23 Principle block diagram of PID control



Function Code	Parameter Name	Setting Range	Default
PA.00	PID setting source	0: PA-01 1: FIV 2: FIC 3: Reserved 4: Pulse setting (S3) 5: Communication setting 6: Multi-reference	0
PA.01	PID digital setting	0.0%~100.0%	50.0%

PA.00 is used to select the channel of target process PID setting. The PID setting is a relative value and ranges from 0.0% to 100.0%. The PID feedback is also a relative value. The purpose of PID control is to make the PID setting and PID feedback the same.

Function Code	Parameter Name	Setting Range	Default
PA.02	PID feedback source	0: FIV 1: FIC 2: Reserved 3: FIV~ FIC 4: PULSE setting (S3) 5: Communication setting 6: FIV + FIC 7: MAX (|FIVI|, |FIC|) 8: MIN (|FIV|, | FIC |)	0

This parameter is used to select the feedback signal channel of process PID.

The PID feedback is a relative value and ranges from 0.0% to 100.0%.

Function Code	Parameter Name	Setting Range	Default
PA.03	PID action direction	0: Forward action 1: Reverse action	0

- 0: Forward action

When the feedback value is smaller than the PID setting, the AC drive's output frequency rises. For example, the winding tension control requires forward PID action.

- 1: Reverse action

When the feedback value is smaller than the PID setting, the AC drive's output frequency reduces. For example, the unwinding tension control requires reverse PID action.

Notes
that this function is influenced by reversing the multifunction terminal PID action. Pay attention in the application.

Function Code	Parameter Name	Setting Range	Default
PA.04	PID setting feedback range	0~65535	1000

This parameter is a non-dimensional unit. It is used for PID setting display (D0.15) and PID feedback display (D0.16).

Relative value 100% of PID setting feedback corresponds to the value of PA.04. If 10.04 is set to 2000 and PID setting is 100.0%, the PID setting display (D0.15) is 2000.

Function Code	Parameter Name	Setting Range	Default
PA.05	Proportional gain Kp1	0.0~100.0	20.0
PA.06	Integral time Ti1	0.01~10.00s	2.00s
PA.07	Differential time Td1	0.00~10.000	0.000s

- PA.05 (Proportional gain Kp1)

It decides the regulating intensity of the PID regulator. The higher the Kp1 is, the larger the regulating intensity is. The value 100.0 indicates when the deviation between PID feedback and PID setting is 100.0%, the adjustment amplitude of the PID regulator on the output frequency reference is the maximum frequency.

- PA.06 (Integral time Ti1)

It decides the integral regulating intensity. The shorter the integral time is, the larger the regulating intensity is. When the deviation between PID feedback and PID setting is 100.0%, the integral regulator performs continuous adjustment for the time set in 10-06. Then the adjustment amplitude reaches the maximum frequency.

- PA.07 (Differential time Td1)

It decides the regulating intensity of the PID regulator on the deviation change. The longer the differential time is, the larger the regulating intensity is. Differential time is the time within which the feedback value change reaches 100.0%, and then the adjustment amplitude reaches the maximum frequency.

Function Code	Parameter Name	Setting Range	Default
PA.08	Cut-off frequency of PID reverse rotation	0.00 ~maximum frequency	2.00 Hz

In some situations, only when the PID output frequency is a negative value (AC drive reverse rotation), PID setting and PID feedback can be equal. However, too high reverse rotation frequency is prohibited in some applications, and PA.08 is used to determine the reverse rotation frequency upper limit.

Function Code	Parameter Name	Setting Range	Default
PA.09	PID deviation limit	0.0%~100.0%	0.0%

If the deviation between PID feedback and PID setting is smaller than the value of PA.09, PID control stops. The small deviation between PID feedback and PID setting will make the output frequency stabilize, effective for some closed-loop control applications.

Function Code	Parameter Name	Setting Range	Default
PA.10	PID differential limit	0.00%~100.00%	0.10%

It is used to set the PID differential output range. In PID control, the differential operation may easily cause system oscillation. Thus, the PID differential regulation is restricted to a small range.PA.10 is used to set the range of PID differential output.

Function Code	Parameter Name	Setting Range	Default
PA.11	PID setting change time	0.00~650.00s	0.00s

The PID setting change time indicates the time required for PID setting changing from 0.0% to 100.0%. The PID setting changes linearly according to the change time, reducing the impact caused by sudden setting change on the system.

Function Code	Parameter Name	Setting Range	Default
PA.12	PID feedback filter time	0.00~60.00s	0.00s
PA.13	PID output filter time	0.00~60.00s	0.00s

PA.12 is used to filter the PID feedback, helping to reduce interference on the feedback but slowing the response of the process closed-loop system.

PA.13 is used to filter the PID output frequency, helping to weaken sudden change of the AC drive output frequency but slowing the response of the process closed-loop system.

Function Code	Parameter Name	Setting Range	Default
PA.15	Proportional gain Kp2	0.0~100.0	20.0
PA.16	Integral time Ti2	0.0~10.00	2.00
PA.17	Differential time Td2	0.000~10.000s	0.000s
PA.18	PID parameter switchover condition	0: No switchover 1: Switchover via DI 2: Automatic switchover based on deviation	0
PA.19	PID parameter switchover deviation 1	0.0%~ PA.20	20.0%
PA.20	PID parameter switchover deviation 2	PA.19 ~100.0%	80.0%

In some applications, PID parameters switchover is required when one group of PID parameters cannot satisfy the requirement of the whole running process.

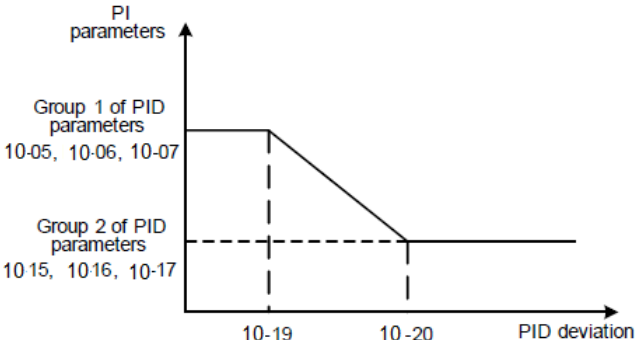
These parameters are used for switchover between two groups of PID parameters. Regulator parameters PA.15 to PA.17 are set in the similar way as PA.05 to PA.07.

The switchover can be implemented either via a S terminal or automatically implemented based on the deviation.

If you select switchover via a S terminal, the S must be allocated with function 43 "PID parameter switchover". If the S is OFF, group 1 (PA.05 to PA.07) is selected. If the S is ON, group 2 (PA.15 to PA.17) is selected.

If you select automatic switchover, when the absolute value of the deviation between PID feedback and PID setting is smaller than the value of PA.19, group1 is selected. When the absolute value of the deviation between PID feedback and PID setting is higher than the value of PA.20, group 2 is selected. When the deviation is between PA.19 and PA.20, the PID parameters are the linear interpolated value of the two groups of parameter values.

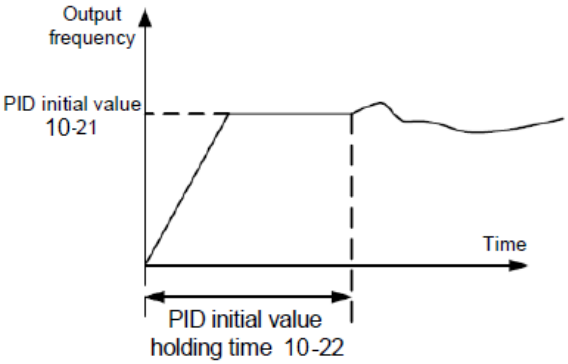
Figure 4-24 PID parameters switchover



Function Code	Parameter Name	Setting Range	Default
PA.21	PID initial value	0.0%~100.0%	0.0%
PA.22	PID initial value holding time	0.00~650.00s	0.00s

When the AC drive starts up, the PID starts closed-loop algorithm only after the PID output is fixed to the PID initial value (PA.21) and lasts the time set in PA.22.

Figure 4-25 PID initial value function



Function Code	Parameter Name	Setting Range	Default
PA.23	Maximum deviation between two PID outputs in forward direction	0.00%~100.00%	1.00%
PA.24	Maximum deviation between two PID outputs in reverse	0.00%~100.00%	1.00%

This function is used to limit the deviation between two PID outputs (2 ms per PID output) to suppress the rapid change of PID output and stabilize the running of the AC drive.

PA.23 and PA.24 respectively correspond to the maximum absolute value of the output deviation in forward direction and in reverse direction.

Function Code	Parameter Name	Setting Range	Default
PA.25	PID integral property	Unit's digit (Integral separated) 0: Invalid 1: Valid Ten's digit (Whether to stop integral operation when the output reaches the limit) 0: Continue integral operation 1: Stop integral operation	00

- Integral separated

If it is set to valid, , the PID integral operation stops when the DI allocated with function 38 "PID integral pause" is ON In this case, only proportional and differential operations take effect.

If it is set to invalid, integral separated remains invalid no matter whether the DI allocated with function 38 "PID integral pause" is ON or not.

- Whether to stop integral operation when the output reaches the limit

If "Stop integral operation" is selected, the PID integral operation stops, which may help to reduce the PID overshoot.

Function Code	Parameter Name	Setting Range	Default
PA.26	Detection value of PID feedback loss	00%: Not judging feedback loss 0.1%~100%	0
PA.27	Detection time of PID feedback loss	0.0~20.0s	0.0s

These parameters are used to judge whether PID feedback is lost.

If the PID feedback is smaller than the value of PA.26 and the lasting time exceeds the value of PA.27, the AC drive reports fault "PIDE" and acts according to the selected fault protection action.

Function Code	Parameter Name	Setting Range	Default
PA.28	PID operation stop	0:No PID operation at stop 1:PID operation at stop	0

These parameters are used to judge whether PID feedback is lost .if the PID feedbackis smaller than the value of PA.26 and the lasting time exceeds the value of PA.27, the AC drive reports PIDE and acts according to the selected fault protection action.

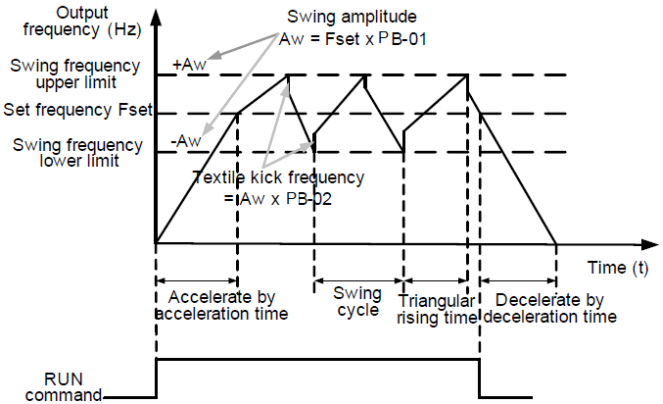
Group Pb: Swing Frequency, Fixed Length and Count

The swing frequency function is applied to the textile and chemical fiber fields and the applications where traversing and winding functions are required.

The swing frequency function indicates that the output frequency of the AC drive swings up and down with the set frequency as the center. The trace of running frequency at the time axis is shown in the following figure.

The swing amplitude is set in Pb.00 and PB.01. When Pb.01 is set to 0, the swing amplitude is 0 and the swing frequency does not take effect.

Figure 4-26 Swing frequency control



Function Code	Parameter Name	Setting Range	Default
Pb.00	Swing frequency setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	0

This parameter is used to select the base value of the swing amplitude.

- 0: Relative to the central frequency (P0.03 frequency source selection)

It is variable swing amplitude system. The swing amplitude varies with the central frequency (set frequency).

- 1: Relative to the maximum frequency (P0.10 maximum output frequency)

It is fixed swing amplitude system. The swing amplitude is fixed.

Function Code	Parameter Name	Setting Range	Default
Pb.01	Swing frequency amplitude	0.0%~100.0%	0.0%
Pb.02	Jump frequency amplitude	0.0%~50.0%	0.0%

This parameter is used to determine the swing amplitude and jump frequency amplitude. The swing frequency is limited by the frequency upper limit and frequency lower limit.

• If relative to the central frequency (Pb.00 = 0), the actual swing amplitude AW is the calculation result of P0.03 (Frequency source selection) multiplied by Pb.01.

• If relative to the maximum frequency (Pb.00 = 1), the actual swing amplitude AW is the calculation result of P0.12 (Maximum frequency) multiplied by Pb.1.

Jump frequency = Swing amplitude AW x Pb.02 (Jump frequency amplitude).

• If relative to the central frequency (Pb.00 = 0), the jump frequency is a variable value.

• If relative to the maximum frequency (Pb.00 = 1), the jump frequency is a fixed value.

The swing frequency is limited by the frequency upper limit and frequency lower limit.

Function Code	Parameter Name	Setting Range	Default
Pb.03	Swing frequency cycle	0.1s~3000.0s	10.0s
Pb.04	Triangular wave rising time coefficient	0.1%~100.0%	50.0%

Swing frequency cycle :the time of a complete swing frequency cycle.

Pb.04 specifies the time percentage of triangular wave rising time to Pb.03 (Swing frequency cycle).

• Triangular wave rising time = Pb.03 (Swing frequency cycle) x Pb.04 (Triangular wave rising time coefficient, unit: s)

• Triangular wave falling time = Pb.03 (Swing frequency cycle) x (1 – Pb.04 Triangular wave rising time coefficient ,unit: s)

Function Code	Parameter Name	Setting Range	Default
Pb.05	Set length	0m~65535 m	1000m
Pb-06	Actual length	0m~65535 m	0 m
Pb.07	Number of pulses per meter	0.1~6553.5	100.0

The preceding parameters are used for fixed length control.

The length information is collected by DI terminals. Pb.06 (Actual length) is calculated by dividing the number of pulses collected by the S terminal by Pb.07 (Number of pulses each meter).

When the actual length Pb.06 exceeds the set length in Pb-05, the M01 terminal allocated with function 10 (Length reached) becomes ON.

During the fixed length control, the length reset operation can be performed via the S terminal allocated with function 28. For details, see the descriptions of P5-00 to P5.09.

Allocate corresponding S terminal with function 27 (Length count input) in applications. If the pulse frequency is high, S3 must be used.

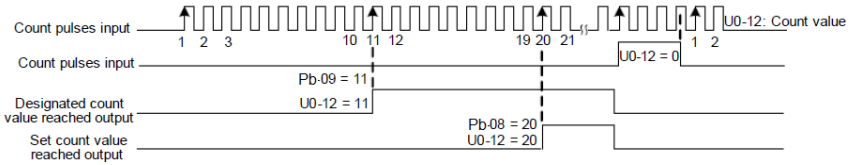
Function Code	Parameter Name	Setting Range	Default
Pb.08	Set count value	1~65535	1000
Pb-09	Designated count value	1~65535	1000

The count value needs to be collected by multi-function input terminals. Allocate the corresponding input terminal with function 25 (Counter input) in applications. If the pulse frequency is high, S3 must be used.
When the count value reaches the set count value (Pb.08), the M01 terminal allocated with function 8 (Set count value reached) becomes ON. Then the counter stops counting.

When the counting value reaches the designated counting value (Pb.09), the M01 terminal allocated with function 9 (Designated count value reached) becomes ON. Then the counter continues to count until the set count value is reached.

Pb.09 should be equal to or smaller than Pb.08.

Figure 4-27 Reaching the set count value and designated count value



Group PC: Multi-Reference and Simple PLC Function

The SI2000 multi-reference has more rich functions than multi-speed, it can be used as the setting source of the V/F separated voltage source and setting source of process PID. In addition, the multi-reference is relative value.

The simple PLC function is different from the SI2000 user programmable function. Simple PLC can only complete simple combination of multi-reference, while the user programmable function is more practical. For details , see the description of group PC.

Function Code	Parameter Name	Setting Range	Default
PC.00	Reference 0	-100.0%~100.0%	0.0%
PC .01	Reference 1	-100.0%~100.0%	0.0%
PC .02	Reference 2	-100.0%~100.0%	0.0%
PC .03	Reference 3	-100.0%~100.0%	0.0%
PC .04	Reference 4	-100.0%~100.0%	0.0%
PC .05	Reference 5	-100.0%~100.0%	0.0%
PC .06	Reference 6	-100.0%~100.0%	0.0%
PC.07	Reference 7	-100.0%~100.0%	0.0%
PC .08	Reference 8	-100.0%~100.0%	0.0%
PC .09	Reference 9	-100.0%~100.0%	0.0%
PC .10	Reference 10	-100.0%~100.0%	0.0%
PC .11	Reference 11	-100.0%~100.0%	0.0%
PC .12	Reference 12	-100.0%~100.0%	0.0%
PC .13	Reference 13	-100.0%~100.0%	0.0%
PC .14	Reference 14	-100.0%~100.0%	0.0%
PC .15	Reference 15	-100.0%~100.0%	0.0%

Multi-reference can be used in three occasions: as the setting source of frequency, V/F separated voltage and process PID. The multi-reference is relative value and ranges from -100.0% to 100.0%.

As frequency source, it is a percentage relative to the maximum frequency. As V/F separated voltage source, it is a percentage relative to the rated motor voltage. As process PID setting source, it does not require conversion.

Multi-reference can be switched over based on different states of S terminals. For details, see the descriptions of group P5.

Function Code	Parameter Name	Setting Range	Default
PC.16	Simple PLC running mode	0: Stop after the AC drive runs one cycle 1: Keep final values after the AC drive runs one cycle 2: Repeat after the AC drive runs one cycle	0

- 0: Stop after the AC drive runs one cycle

The AC drive stops after running one cycle, and will not start up until receiving another command.

- 1: Keep final values after the AC drive runs one cycle

The AC drive keeps the final running frequency and direction after running one cycle.

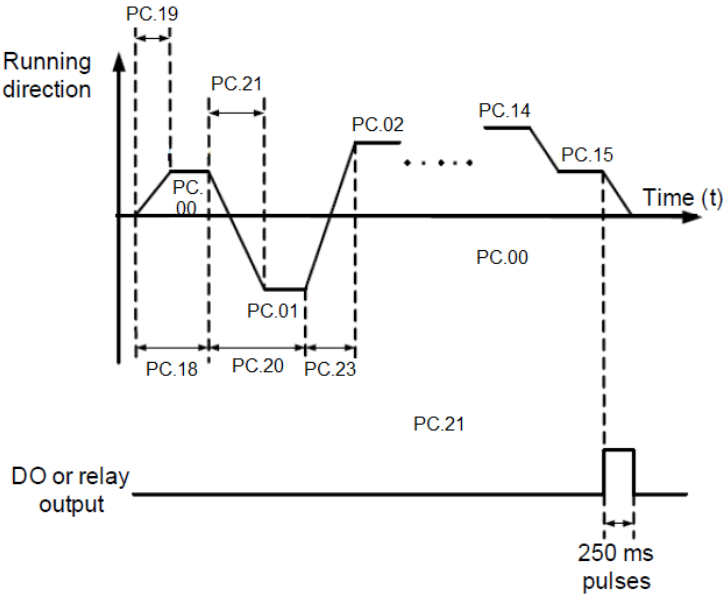
- 2: Repeat after the AC drive runs one cycle

The AC drive automatically starts another cycle after running one cycle, and will not stop until receiving the stop command.

Simple PLC can be either the frequency source or V/F separated voltage source.

When simple PLC is used as the frequency source, whether parameter values of PC.00 to PC.15 are positive or negative determines the running direction. If the parameter values are negative, it indicates that the AC drive runs in reverse direction.

Figure 4-28 Simple PLC when used as frequency source



As the frequency source ,PLC has three running modes , as V/F separated voltage source ,it doesn't have the three modes . Among them,

0:Stop after the AC drive runs one cycle
The AC drive stops after running on the cycle, and will not start up until receiving another command.

1:Keeps the final running frequency and direction after running one cycle.

2:Repeat after the AC drive runs one cycle

The AC drive automatically start another cycle after running one cycle , and will not stop until receiving the stopping command

Function Code	Parameter Name	Setting Range	Default
PC.17	Simple PLC retentive selection	Unit's digit :Retentive upon power failure 0: No 1: Yes Ten's digit :Retentive upon stop 0: No 1: Yes	00

PLC retentive upon power failure indicates that the AC drive memorizes the PLC running moment and running frequency before power failure and will continue to run from the memorized moment after it is powered on again. If the unit's digit is set to 0, the AC drive restarts the PLC process after it is powered on again.

PLC retentive upon stop indicates that the AC drive records the PLC running moment and running frequency upon stop and will continue to run from the recorded moment after it starts up again. If the ten's digit is set to 0, the AC drive restarts the PLC process after it starts up again.

Function Code	Parameter Name	Setting Range	Default
PC.18	Running time of simple PLC reference 0	0.0~6553.5s (h)	0.0s(h)
PC.19	Acceleration/deceleration time of simple PLC reference 0	0~3	0
PC.20	Running time of simple PLC reference 1	0.0s~6553.5s (h)	0.0s(h)
PC.21	Acceleration/deceleration time of simple PLC reference 1	0~3	0
PC.22	Running time of simple PLC reference 2	0.0s~6553.5s (h)	0.0s(h)
PC.23	Acceleration/deceleration time of simple PLC reference 2	0~3	0
PC.24	Running time of simple PLC reference 3	0.0~6553.5s (h)	0.0s(h)
PC.25	Acceleration/deceleration time of simple PLC reference 3	0~3	0
PC.26	Running time of simple PLC reference 4	0.0–6553.5s (h)	0.0s(h)
PC.27	Acceleration/deceleration time of simple PLC reference 4	0~3	0
PC.28	Running time of simple PLC reference 5	0.0s(h)~6553.5s (h)	0.0s(h)
PC.29	Acceleration/deceleration time of simple PLC reference 5	0~3	0
PC.30	Running time of simple PLC reference 6	0.0s(h)~6553.5s (h)	0.0s(h)
PC.31	Acceleration/deceleration time of simple PLC reference 6	0~3	0
PC.32	Running time of simple PLC reference 7	0.0s(h)~6553.5s (h)	0.0s(h)
PC.33	Acceleration/deceleration time of simple PLC reference 7	0~3	0
PC.34	Running time of simple PLC reference8	0.0s(h)~6553.5s (h)	0.0s(h)
PC.35	Acceleration/deceleration time of simple PLC reference 8	0~3	0
PC.36	Running time of simple PLC reference 9	0.0s(h)~6553.5s (h)	0.0s(h)
PC.37	Acceleration/deceleration time of simple PLC reference 9	0~3	0
PC.38	Running time of simple PLC reference 10	0.0s(h)~6553.5s (h)	0.0s(h)
PC.39	Acceleration/deceleration time of simple PLC reference 10	0~3	0
PC.40	Running time of simple PLC reference 11	0.0s~6500.0s (h)	0.0s(h)
PC.41	Acceleration/deceleration time of simple PLC reference 11	0~3	0
PC.42	Running time of simple PLC reference 12	0.0s~6500.0s (h)	0.0s(h)
PC.43	Acceleration/deceleration time of simple PLC reference 12	0~3	0
PC.44	Running time of simple PLC reference 13	0.0s~6500.0s (h)	0.0s(h)
PC.45	Acceleration/deceleration time of simple PLC reference 13	0~3	0
PC.46	Running time of simple PLC reference 14	0.0s~6500.0s (h)	0.0s(h)
PC.47	Acceleration/deceleration time of simple PLC reference 14	0~3	0
PC.48	Running time of simple PLC reference 15	0.0s~6500.0s (h)	0.0s(h)
PC.49	Acceleration/deceleration time of simple PLC reference 15	0~3	0
PC.50	Time unit of simple PLC running	0: s (second) 1:h (hour)	0

Function Code	Parameter Name	Setting Range	Default
PC.51	Reference 0 source	0: Set by PC-00 1: FIV 2: FIC 3: Reserved 4: Pulse setting 5: PID 6: Set by preset frequency (P0.10), modified via terminal UP/DOWN	0

It determines the setting channel of reference 0. You can perform convenient switchover between the setting channels. When multi-reference or simple PLC is used as frequency source, the switchover between two frequency sources can be realized easily.

Group PD: Communication Parameters

PLEASE refer to the "SI2000 communication protocol "

Group PP: user-Defined Function codes

Function Code	Parameter Name	Setting Range	Default
PP.00	User password	0~65535	0

If it set to any non-zero number , the password protection function is enabled . After a password has been set and taken effect, you must input the correct password in order to enter the menu. If the entered password is incorrect you cannot view or modify parameters .If PP.00 is set to 0000, the previously set user password is cleared, and the password protection function is disabled.

Function Code	Parameter Name	Setting Range	Default
PP.01	Restore default settings	0: No operation 01: Restore factory settings except motor parameters 02: Clear records 04: Restore user backup parameters 501: Back up current user parameters	0

1:Restor default settings except motor parameters If FP.01 is set to 1, most function codes are restored to the default setting except motor parameters, frequency reference decimal point (P0.22 , fault records , accumulative running time (P7.09) , accumulative power-on time (P7.13) and accumulative power consumption(P7.14).

2:Clear records
If PP.01 is set to 2, the fault records, accumulative running time (P7.09), accumulative power-on time (P7.13) and accumulative power consumption (P7.14) are cleared.

501:Back up current set user parameters
Back up current set user parameters , to back up all the current parameters setting are backed up , helping you to restore the setting if incorrect parameter setting is performed .

4:Restor user backup parameters
If PP.01 is set to 4, the previous backup user parameters are restored.

Group C0: Torque Control and Restricting Parameters

Function Code	Parameter Name	Setting Range	Default
C0.00	Speed/Torque control selection	0: Speed control 1: Torque control	0

It is used to select the AC drive's control mode: speed control or torque control.

The SI2000 provides S terminals with two torque related functions, function 29 (Torque control prohibited) and function 46 (Speed control/Torque control switchover). (function 46).The two S terminals need to be used together with C0.00 to implement speed control/torque control switchover.

If the S terminal allocated with function 46 (Speed control/Torque control switchover) is OFF, the control mode is determined by C0.00. If the S terminal allocated with function 46 is ON, the control mode is reverse to the value of C0.00.

However, if the torque control prohibited terminal is ON ,the AC drive is fixed to run in the speed control mode.

Function Code	Parameter Name	Setting Range	Default
C0.01	Torque setting source in torque control	0: Digital setting (C0.03) 1: FIV 2: FIC 3: reserved 4: Pulse setting 5: Communication setting 6: MIN (FIV, FIC) 7: MAX (FIV, FIC)	0
C0.03	Torque digital setting in	-200.0%~200.0%	150.0%

C0.01 is used to set the torque setting source. There are a total of eight torque setting sources.

The torque setting is a relative value. 100.0% corresponds to the AC drive's rated torque. The setting range is -200.0% to 200.0%, indicating the AC drive's maximum torque is twice of the AC drive's rated torque.

When the torque setting using 1~7 , communication , analog input and pulse input .The data format is -100.00% to 100.00%. 100%corresponds to the value of C0.03.

Function Code	Parameter Name	Setting Range	Default
C0.05	Forward maximum frequency in torque control	0.00 Hz ~maximum frequency	50.00 Hz
C0.06	Reverse maximum frequency in torque control	0.00 Hz~ maximum frequency	50.00 Hz

This two parameters are used to set the maximum frequency in forward or reverse rotation in torque control mode.

In torque control, if the load torque is smaller than the motor output torque, the motor's rotational speed will rise continuously. To avoid runaway of the mechanical system, the motor maximum rotating speed must be limited in torque control.

You can implement continuous change of the maximum frequency in torque control dynamically by controlling the frequency upper limit.

Function Code	Parameter Name	Setting Range	Default
C0.07	Acceleration time in torque control	0.00s~65000s	0.00s
C0.08	Deceleration time in torque control	0.00s~650.00s	0.00s

In torque control, the difference between the motor output torque and the load torque determines the speed change rate of the motor and load. The motor rotational speed may change quickly and this will result in noise or too large mechanical stress. The setting of acceleration/deceleration time in torque control makes the motor rotational speed change smoothly.

However, in applications requiring rapid torque response, set the acceleration/ deceleration time in torque control to 0.00s. For example, two AC drives are connected to drive the same load. To balance the load allocation, set one AC drive as master in speed control and the other as slave in torque control. The slave receives the master's output torque as the torque command and must follow the master rapidly. In this case, the acceleration/deceleration time of the slave in torque control is set to 0.0s.

Group C5: Control Optimization Parameters

Function Code	Parameter Name	Setting Range	Default
C5.00	PWM Switchover frequency upper limit	0.00Hz~15.00Hz	12.00Hz

This parameter is valid only for V/F control.
It is used to determine the wave modulation mode in V/F control of asynchronous motor.
If the frequency is lower than the value of this parameter, the wave is 7-segment continuous modulation . If the frequency is higher than the value of this parameter, the waveform is 5-segment intermittent modulation.

The 7-segment continuous modulation causes more loss to switches of the AC drive but smaller current ripple. The 5-segment intermittent modulation causes less loss to switch of the AC drive but larger current ripple .This may lead to motor running instability at high frequency . Do not modify this parameter genrrally.

For instability of V/F control , refer to parameter P4.11. For loss to AC drive and temperature rise , refer to parameter P0.17.

Function Code	Parameter Name	Setting Range	Default
C5.01	PWM Modulation mode	0:Asynchronous modulation 1:synchronous modulation	0

Only V/F control is effective. asynchronous modulation is used when the output frequency is high(over 100Hz),conducive to the quality of the output voltage .

Function Code	Parameter Name	Setting Range	Default
C5.02	Dead zone compensation mode selection	0:No compensation 1:Compensation mod 1 2:Compensation mode 2	1

It doesn't have to modify generally.

Function Code	Parameter Name	Setting Range	Default
C5.03	Random PWM depth	0:Random PWM invalid 1-10:PWM carrier frequency random depth	0

Random PWM depth is set to improve the motor's noise , reduce electromagnetic interference.

Function Code	Parameter Name	Setting Range	Default
C5.04	Rapid current limit	0:Disibled 1:Enabled	1

Opening fast current limiting can reduce overcurrent fault , make the inverter work normally. Opening fast current limiting for a long time , can make the inverter overheat, Report a fault CBC.CBC represents fast current limiting fault and need to stop.

Function Code	Parameter Name	Setting Range	Default
C5.05	Current detection compensation	0~100	5

Used to set current detection compensation ,don't recommend to modify.

Function Code	Parameter Name	Setting Range	Default
C5.06	Under voltage threshold	60.0%~140.0%	100.0%

Used to set the voltage of inverter's lack voltage fault LU, Different voltage levels of inverter's 100% ,corresponding to different voltages, Respectively single-phase 220V or three-phase 220V:three- phase 380V :350;three-phase 690V:650V.

Function Code	Parameter Name	Setting Range	Default
C5.07	SFVC optimization mode selection	0:No optimization 1:Optimization mode1 2:Optimization mod 2	1

1:Optimization mode 1

It is used when the requirement on torque control linearity is high.

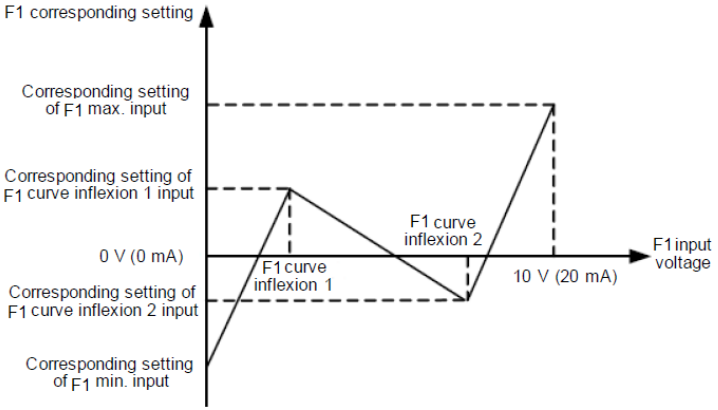
2:Optimization mode 2

It is for the requirement on speed stability is high.

Group C6: FI curve Setting (FI is FIV or FIC)

Function Code	Parameter Name	Setting Range	Default
C6.00	FI curve 4 minimum input	-10.00V~C6.02	0.00V
C6.01	Corresponding setting of FI curve 4minimum input	-100.0%~+100.0%	0.0%
C6.02	FI curve 4 inflexion 1input	C6.00~C6.04	3.00V
C6.03	Corresponding setting of FI curve 4 inflexion 1input	-100.0%~+100.0%	30.0%
C6.04	FI curve 4 inflexion 2 input	C6.02~C6.06	6.00V
C6.05	Corresponding setting of FI curve4 inflexion 2 input	-100.0%~+100.0%	60.0%
C6.06	FI curve 4 maximum input	C6.06~+10.00V	10.00V
C6.07	Corresponding setting of FI curve 4 maximum input	-100.0%~+100.0%	100.0%
C6.08	FI curve 5 minimum input	-10.00V~C6.10	0.00V
C6.09	Corresponding setting of FI curve 5minimum input	-100.0%~+100.0%	-100.0
C6.10	FI curve 5 inflexion 1input	C6.08~C6.12	3.00V
C6.11	Corresponding setting of FI curve 5 inflexion 1 input	-100.0%~+100.0%	-30.0%
C6.12	FI curve 5 inflexion 2 input	C6.10~C6.14	6.00
C6.13	Corresponding setting of FI curve 5 inflexion 2 input	0.0°–359.9°	0.0°
C6.14	FI curve 5 maximum input	C6.12~+1.00V	10.00V
C6.15	Corresponding setting of FI curve	-100.0%~+100.0%	100.0%

The function curve 4 and curve 5 is similar to that curve 1 to curve 3, but curve 1 to curve 3 are lines , and curve 4 and curve 5 are 4-point curves, implementing more flexible corresponding relationship . The schematic diagram of curve 4 and curve 5 is shown in the following figure.



When setting curve 4 and curve 5, note that curve's minimum input voltage , inflexion 1 voltage , inflexion 2 voltage and maximum voltage must be in increment order.

P5.33(FI curve selection) is used to determine how to select curve for FIV to FIC from the five curves.

Function Code	Parameter Name	Setting Range	Default
C6.16	Jump point of FIV	-100.0%~100.0%	0.0%
C6.17	Jump amplitude of FIV input	0.0%~100.0%	0.5%
C6.18	Jump point of FIC input	-100.0%~100.0%	0.0%
C6.19	Jump amplitude of FIC input	0.0%~100.0%	0.5%

The analog input terminal (FIV to FIC) of the SI2000 all support the corresponding setting jump function , which fixes the analog input corresponding setting jump point when analog input corresponding setting jumps around the jump range.
For example ,FIV input voltage jumps around 5.00 V corresponds to 0.0% and maximum input 10.00 V corresponds to 100.0% The detected FIV input corresponding setting varies between 49.0% and 51.0% if you set C6.16 to 50.0% and C6.17 to 1.0% then the obtained stable input FIV input corresponding setting is fixed to 50.0% after the jump function , eliminating the fluctuation effect.

Group CC: FI/FO Correction

Function Code	Parameter Name	Setting Range	Default
CC.00	FIV measured voltage 1	0.500V~4.000V	Factory corrected
CC.01	FIV displayed voltage 1	0.5000V~4.000V	Factory corrected
CC.02	FIV measured voltage 2	6.000V~9.999V	Factory corrected
CC.03	FIV displayed voltage 2	6.000V~9.999V	Factory corrected
CC.04	FIV measured voltage 2	0.500V~4.000V	Factory corrected
CC.05	FIC measured voltage 1	0.500V~4.000V	Factory corrected
CC.06	FIC measured voltage2	6.000V~9.999V	Factory corrected
CC.07	FIC displayed voltage 2	6.000~9.999V	Factory corrected

The parameters are used to correct the FI to eliminate the impact of FI zero offset and gain.

They have been corrected upon delivery . When you resume the factory values , these parameters will be restored to the factory-corrected values . Generally , you need not perform correction in the applications.

Measured voltage indicates the actual output voltage value measured by instruments such as the multimeter . Display voltage indicates the voltage display value sampled by the AC drive .For details, refer to D0.21, D0.22. During correction , send two voltage value to each FI terminal , and save the measured values and display values to the function codes CC.00 to CC.07 .Then the AC drive will automatically perform FI zero offset and gain correction.

Function Code	Parameter Name	Setting Range	Default
CC.12	FOV target voltage 1	0.500V~4.000V	Factory corrected
CC.13	FOV measured voltage1	0.500V~4.000V	Factory corrected
CC.14	FOV target voltage 2	6.000V~9.999V	Factory corrected
CC.15	FOV measured voltage2	6.000V~9.999	Factory corrected
CC.16~CC.19		Reserved	Factory corrected

These parameters are used to correct the FOV.

They have been corrected upon delivery ,. When you resume the factory-corrected values , these parameters will be restored to the factory-corrected values . You need perform correction in the applications.

Target voltage indicates the theoretical output voltage of the AC drive . Measured voltage indicates the actual output voltage value measured by instruments such as the multi meter.

Group D0: Monitoring Parameters

Group D0 is used to monitor the AC drive's running state. You can view the parameter values by using operation panel, convenient for on-site commissioning, or from the host computer by means of communication

D0.00 to D0.31 are the monitoring parameters in the running and stop state defined by P7.03 and P7.04. For more details, see Table
Parameters of Group D0:

Function Code	Parameter Name	Min. Unit
Group D0: Monitoring Parameters		
D0.00	Running frequency (Hz)	0.01 Hz
D0.01	Set frequency (Hz)	0.01 Hz
D0.02	Bus voltage	0.1 V
D0.03	Bus voltage(V)	1 V
D0.04	Output current	0.01 A
D0.05	Output power	0.1 kW
D0.06	Output torque(%)	0.1%
D0.07	S input state	1
D0.08	M01output state	1
D0.09	FIV voltage (V)	0.01 V
D0.10	FIC voltage (V)	0.01 V/0.01 mA
D0.11	Reserved	0.01 V
D0.12	Count value	1
D0.13	Length value	1
D0.14	Load speed	1
D0.15	PID setting	1
D0.16	PID feedback	1
D0-17	PLC stage	1
D0-18	Input pulse frequency	0.01 kHz
D0-19	Reserved	0.01 Hz
D0.20	Remaining running time	0.1 Min
D0.21	FIV voltage before correction	0.001 V
D0.22	FIC voltage before correction	0.01 V/0.01 mA
D0.23	Reserved	0.001 V
D0.24	Linear speed	1 m/Min
D0.25	On the current time	1 Min
D0.26	The current running time	0.1 Min
D0.27	Pulse input frequency	1 Hz
D0.28	Communication setting value	0.01%
D0.29	Reserved	0.01 Hz
D0.30	Main frequency X	0.01Hz
D0.31	Auxiliary frequency Y	0.01 Hz
D0.32	Viewing any register address value	1
D0.33~34	Reserved	0.1°
D0.35	Target torque	0.1%
D0.36	Reserved	1
D0.37	Power factor angle	0.1°
D0.38	Reserved	1
D0.39	Target voltage upon V/F separation	1 V
D0.40	Output voltage upon V/F separation	1 V
D0.41~44	Reserved	1
D0.45	Fault information	0

Chapter 5 Function Code Table

If PP-00 is set to a non-zero number, parameter protection is enabled. You must enter the correct user password to enter the menu.
To cancel the password protection function, enter with password and set PP-00 to 0.
Parameters menu the usercustomizes are not protected by password.
Group P is the basic function parameters, Grop D is to monitor the function parameter.

1

The symbols in the function code table are described as follows:
"☆": The parameter can be modified when the AC drive is in either stop or running state.
"★": The parameter cannot be modified when the AC drive is in the running state.
"●": The parameter is the actually measured value and cannot be modified.
"*": The parameter is factory parameter and can be set only by the manufacturer.

5.1 Standard Function Parameters

Function Code	Parameter Name	Setting Range	Default	Property
Group P0: Standard Function Parameters				
P0.00	G/P(Motor) type display	1:G type(constant torque load) 2: P type (variable torque load e.g. fan and pump)	Model dependent	★
P0.01	control mode selection	0: Voltage/Frequency (V/F) control 1:Sensorless flux vector control (SFVC)	0	★
P0.02	Command source selection	0:Operation panel control 1: Terminal control 2: Communication control	0	☆
P0.03	Frequency source superposition selection	Unit's digit (Frequency source) 0: Main frequency source X 1:X and Y operation relationship determined by ten's digit) 2: switchover between X and Y 3: switchover between X and "X and Y operation " 4: Switchover between Y and "X and Y operation " Ten's digit (X and Y operation) 0:X+Y 1:X-Y 2:Maximum 3:Minimum	00	☆
P0.04	Main frequency source X selection	0:Digital setting (P01.0 preset frequency, can modify the UP/DOWN , power lost don't memory) 1:Digital setting (P0.10 preset frequency , can modify the UP/DOWN , power lost memory) 2:FIV 3:FIC 4:Reserved 5:Pluse setting (S3) 6:Multistage instruction 7:Simple PLC 8:PID 9:Communications given	0	★

Function Code	Parameter Name	Setting Range	Default	Property
Group P0: Standard Function Parameters				
P0.05	Auxiliary frequency source Y selection	The same as P0.04 (Main frequency source X selection)	0	★
P0.06	Auxiliary frequency source superposition Y range	0:Relatative to the maximum frequency 1:Relative to the main frequency source X	0	☆
P0.07	Auxiliary frequency source superposition Y rage selection	0%–150%	100%	☆
P0.08	Acceleration time 1	0.00s~65000s	Model dependent	☆
P0.09	Deceleration time 1	0.00s~65000s	Model dependent	☆
P0.10	frequency Preset	0.00Hz~maximum frequency(P0.12)	50.00 Hz	☆
P0.11	Rotation direction	0: Same direction 1: Reverse direction	0	☆
P0.12	Maximum frequency	50.00Hz~320.00Hz	50.00 Hz	★
P0.13	Upper limit frequency source	0:P0.12 1:FIV 3:reserved 4:PULSE settings 5:communication settings	0	★
P0.14	Upper limit Frequency	Frequency lower limit P0-16 ~ maximum frequency P0-12	50.00 Hz	☆
P0.15	upper limit Frequency offset	0.00 Hz to maximum frequency P0.12	0.00 Hz	☆
P0.16	Frequency lower limit	0.00 Hz to frequency upper limit P0.14	0.00 Hz	☆
P0.17	Carrier frequency	1kHz~16.0kHz	Model dependent	☆
P0.18	Carrier frequency adjustment with temperature	0: No 1: Yes	1	☆
P0.19	Acceleration/Deceleration time unit	0:1s 0–65000s (P0-19 = 0) 1:0.1s 0.0–6500.0s (P0-19 = 1) 2:0.01s 0.00–650.00s(P0-19= 2)	1	★
P0.21	Frequency offset of auxiliary frequency source for X and Y operation	0.00~Hz to maximum frequency P0.12	0.00 Hz	☆
P0.22	Frequency reference	1: 0.1 Hz 2: 0.01 Hz	2	★
P0.23	Retentive of digital setting frequency upon power	0: Not retentive 1: Retentive	0	☆
P0.24	Acceleration/Deceleration time base frequency	0: Maximum frequency (P0.10) 1: Set frequency 2: 100 Hz	0	★
P0.25	Base frequency for UP/ DOWN modification during running	0: Running frequency 1: Set frequency	0	★

Function Code	Parameter Name	Setting Range	Default	Property
Group P0: Standard Function Parameters				
P0.26	Binding command source to frequency source	Unit's digit(Binding operation panel command to frequency source) 0: No binding 1: Frequency source by digital setting 2: AI1 3: AI2 4: AI3 5: Pulse setting (DI5) 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting Ten's digit (Binding terminal command to frequency source) 0–9, same as unit's digit)	000	★
P0.27	Communication expansion card type	0:Modbus communication card	0	★
Function Code	Parameter Name	Setting Range	Default	Property
Group P1: Start/Stop Control				
P1.00	Start mode	0: Direct start 1: Rotational speed tracking restart 2: Pre-excited start	0	☆
P1.01	Rotational speed tracking mode	0: From frequency at stop 1: From zero speed 2: From maximum frequency	0	★
P1.02	Rotational speed tracking speed	1–100	20	☆
P1.03	Startup frequency	0.00–10.00 Hz	0.00Hz	☆
P1.04	Startup frequency holding time	0.0–100.0s	0.0s	★
P1.05	Startup DC braking current/Pre-excited current	0%–100%	0%	★
P1.06	Startup DC braking time/Pre-excited time	0.0–100.0s	0.0s	★
P1.07	Acceleration/Deceleratin mode	0: Linear acceleration/ deceleration 1: S-curve acceleration/ deceleration A 2: S-curve acceleration/ deceleration B	0	★
P1.08	Time proportion of S-curve start segment	0.0% to (100.0% – P1-09)	30.0%	★
P1.09	Time proportion of S-curve end segment	0.0% to (100.0% – P1-08)	30.0%	★
P1.10	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆
P1.11	Initial frequency of stop DC braking	0.00 Hz to maximum frequency	0.00 Hz	☆
P1.12	Waiting time of stop DC braking	0.0–100.0s	0.0s	☆
P1.13	stop DC braking current	0%~100%	0.0s	☆
P1.14	stop DC braking time	0.0s~100.0s	0.0s	☆
P1.15	Brake use ratio	0%~100%	100%	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group P2: Motor Parameters				
P2.00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor	0	★
P2.01	Rated motor power	0.1~30.0 kW	Model Dependent	★
P2.02	Rated motor voltage	1V~2000 V	Model Dependent	★
P2.03	Rated motor current	0.01A~655.35A	Model Dependent	★
P2.04	Rated motor frequency	0.01 Hz to maximum frequency	Model Dependent	★
P2.05	Rated motor rotational speed	1rpm~65535rpm	Model Dependent	★
P2.06	Stator resistance	0.001~65.535 Ω	Model dependent	★
P2.07	Rotor resistance	0.001Ω ~65.535 Ω	Model Dependent	★
P2-08	Leakage inductive reactance	0.01mH~655.35mH	Model Dependent	★
P2.09	Mutual inductive reactance	0.1mH~6553.5 mH	Model Dependent	★
P2.10	No-load current	0.01A~P2.03	Model Dependent	★
P2.11-P2.36 Reserved				
P2.37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning	Model dependent	★
Function Code	Parameter Name	Setting Range	Default	Property
Group P3: Vector Control Parameters				
P3.00	Speed loop proportional gain 1	0~100	30	☆
P3.01	Speed loop integral time 1	0.01s~10.00s	0.50s	☆
P3.02	Switchover frequency 1	0.00~ P3.05	5.00HZ	☆
P3.03	Speed loop proportional gain 2	0~100	20	☆
P3.04	Speed loop integral time 2	0.01~10.00s	1.00s	☆
P3.05	Switchover frequency 2	P3-02 to maximum output frequency	10.0HZ	☆
P3.06	Vector control slip gain	0.000–0.100s	0.000s	☆
P3.07	Time constant of speed loop filter	50%~200%	150%	☆
P2.08	Vector control over-excitation gain	0~200	64	☆
P3.09	Torque upper limit source in speed control mode	0:P3-10 1: FIV 2: FIC 3: Reserved 4: Pulse setting 5: Communication setting 6: MIN(FIV ,FIC) 7: MAX(FIV ,FIC)	0	☆
P3-10	Digital setting of torque upper limit in speed control mode	0.0%–200.0%	150.0%	☆
P3.13	Excitation adjustment proportional gain	0~60000	2000	☆
P3.14	Excitation adjustment integral gain	0~60000	1300	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group P3: Vector Control Parameters				
P3.15	Torque adjustment proportional gain	0~60000	2000	☆
P3.16	Torque adjustment integral gain	0~60000	1300	☆
P3.17	Speed loop integral property	Unit's digit: integral separation 0: Disabled 1: Enabled	0	☆
P3.18~P3.22 Reserved				
Function Code	Parameter Name	Setting Range	Default	Property
Group P4: V/F Control Parameters				
P4.00	V/F curve setting	0: Linear V/F 1: Multi-point V/F 2: Square V/F 3: 1.2-power V/F 4: 1.4-power V/F 6: 1.6-power V/F 8: 1.8-power V/F 9:Reserved 10:V/F complete separation 11:V/F half separation	0	★
P4.01	Torque boost	0.0% (fixed torque boost) 0.1%–30.0%	Model dependent	☆
P4.02	Cut-off frequency of torque boost	0.00 Hz to maximum output frequency	50.0HZ	★
P4.03	Multi-point V/F frequency 1(F1)	0.00 Hz~ to P4-05	0.00 Hz	★
P4.04	Multi-point V/F voltage 1 (V1)	0.0%~100.0%	0.0%	★
P4.05	Multi-point V/F frequency 2(F2)	P4~03 to P4-07	0.00 Hz	★
P4.06	Multi-point V/F voltage 2 (V2)	0.0%~100.0%	0.0%	★
P4.07	Multi-point V/F frequency 3 (F3)	P4-05 to rated motor frequency (P1-04)	0.00 Hz	★
P4.08	Multi-point V/F voltage 3 (V3)	0.0%~100.0%	0.0%	★
P4.09	V/F slip compensation gain	0%~200.0%	0.0%	☆
P4.10	V/F over-excitation gain	0~200	64	☆
P4.11	V/F oscillation suppression gain	0~100	Model dependent	☆
P4.13	Voltage source for V/F separation	0:Digital setting (P4.14) 1:FIV 2:FIC 3:Reserved 4:PULSE setting 5:Multi-refrence 6:Simple PLC 7:PID 8:Communication setting 100.0% corresponds to the rate motor voltage	0	☆
P4.14	Voltage digital setting for V/F separation	0V~rated motor voltage	0V	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group P4: V/F Control Parameters				
P4.15	Voltage rise time of V/F separation	0.0s~1000.0s It indicated the time for the voltage rising from 0 V to rated motor voltage.	0.0s	☆
P4.16	Voltage decline time of V/F separation	0.0~1000.0s It indicates the time for the voltage to decline from rated motor voltage to 0 V	0.0s	☆
Function Code	Parameter Name	Setting Range	Default	Property
Group P5: Input Terminals				
P5.00	FWD function selection	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) 3: Three-line control 4: Forward JOG (FJOG) 5: Reverse JOG (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Coast to stop 9: Fault reset (RESET) 10: RUN pause 11: Normally open (NO) input of external fault 12: Multi-reference terminal 1 13: Multi-reference terminal 2 14: Multi-reference terminal 3 15: Multi-reference terminal 4 16: Terminal 1 for acceleration/ deceleration time selection 1 17: Terminal 2 for acceleration/ deceleration time selection 2 18:Frequency source switchover 19: UP and DOWN setting clear (terminal, operation panel) 20: Command source switchover terminal 1 21:Acceleration/Deceleration prohibited 22: PID pause 23: PLC status reset 24: Swing Frequency pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: Pulse input (enabled only for S3) 31:Reserved 32: Immediate DC braking 33: Normally closed (NC) input of external fault 34: Frequency modification forbidden 35: Reverse PID action direction 36: External STOP terminal 1	1	★
P5.01	REV function selection		2	★
P5.02	S1 function selection		9	★
P5.03	S2 function selection		12	★

Function Code	Parameter Name	Setting Range	Default	Property
Group P5: Input Terminals				
P5.04	S3 function selection	37: Command source switchover terminal 2 38: PID integral pause 39: Switchover between main frequency source X and preset frequency 40: Switchover between auxiliary frequency source Y and preset frequency 41: Motor selection terminal 1 42: Motor selection terminal 1 43: PID parameter switchover 44: reserved 45: reserved 46: Speed control/Torque control switchover 47: Emergency stop 48: External STOP terminal 2 49: Deceleration DC braking 50:Clear the current running time 51~59: Reserved	13	★
P5.05	S4 function selection		0	★
P5.10	S filter time	0.000–1.000s	0.010s	☆
P5.11	Terminal command mode	0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2	0	★
P5.12	Terminal UP/DOWN rate	0.001Hz/s~65.353Hz/s	1.00 Hz/s	☆
P5.13	FI1curve minimum input	0.00 V~ to P5-15	0.00 V	☆
P5.14	Corresponding setting of AI curve 1 minimum input	-100.00%~+100.0%	0.0%	☆
P5.15	FI curve 1 maximum input	P5-13~ 10.00 V	10.00V	☆
P5.16	Corresponding setting of AI1curve maximum input	-100.00%+100.0%	100.0%	☆
P5.17	FI curve1 filter time	0.00s~10.00s	0.10s	☆
P5.18	FI curve 2 minimum input	0.00 V~ P5-20	0.00 V	☆
P5.19	Corresponding setting of FI curve 2 minimum input	-100.00%~+100.0%	0.0%	☆
P5.20	FI curve 2 maximum input	P5-18~ 10.00 V	10.00V	☆
P5.21	Corresponding setting of FI curve 2 maximum input	-100.00%~+100.0%	100.0%	☆
P5.22	FI curve 2 filter time	0.00s~10.00s	0.10s	☆
P5.23	FI curve 3 minimum input	0.00 V to P5-25	-10.0V	☆
P5.24	Corresponding setting of FI curve 3 minimum input	-100.0%~+100.0%	-100.0%	☆
P5.25	FI curve 3 maximum input	P5-23 ~+10.00 V	10.00V	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group P5: Input Terminals				
P5.26	Corresponding setting of FI curve 3 maximum input	-100.00%~+100.0%	100.00%	☆
P5.27	FI curve 3 filter time	0.00s~10.00s	0.10s	☆
P5.28	PULSE minimum input	0.00 kHz~ P5-30	0.00 kHz	☆
P5.29	Corresponding setting of pulse minimum input	-100.00%~100.0%	0.0%	☆
P5.30	PULSE maximum input	P5-28~ 100.00 kHz	50.00 kHz	☆
P5.31	Corresponding setting of pulse maximum input	-100.00%~100.0%	100.0%	☆
P5.32	Pulse filter time	0.00~10.00s	0.10s	☆
P5.33	FI curve selection	Unit's digit : FIV curve selection 1:Curve 1 (2 points, see P5.13~P5.16) 2:Curve 2 (2 points, see P5.18~P5.21) 3:Curve 3 (2 points, see P5.23~P5.26) 4:Curve 4(4 points,seeC6.00~C6.07) 5:Curve 5(4 points, see C6.8~C6.15) Ten's digit :FIC curve selection (1~5,same as FIV) Hundred's digit :FIA curve Selection (1~5,same as FIV)	321	☆
P5.34	Setting for AI less than minimum input	Unit's digit Setting for FIV less than minimum input 0: Minimum value1: 0.0% Ten's digit (Setting for FIC less than minimum input (0~1, same as FIV) Hundred's digit: Setting for FIV less than minimum input (0~1, same as FIV)	000	☆
P5.35	FWD delay time	0.0~3600.0s	0.0s	★
P5.36	REV delay time	0.0~3600.0s	0.0s	★
P5.37	S1 delay time	0.0~3600.0s	0.0s	★
P5.38	S valid mode selection1	0: High level valid 1: Low level valid Unit'sdigit:FWD Ten's digit :REV 0, 1 (same as DI1) Hundred's digit :S1 Thousand's digit:S2 Ten thousand's digit:S3	00000	★
P5.39	S valid mode Selection 2	0: High level valid 1: Low level valid Unit's digit:S4	00000	★

Function Code	Parameter Name	Setting Range	Default	Property
Group P6: Output Terminals				
P6.00	M01 terminal output mode	1: Switch signal output (M01)	0	☆
P6.01	M01 function	0: No output 1: AC drive running 2: Fault output (stop) 3: Frequency-level detection FDT1 output 4: Frequency reached 5: Zero-speed running (no output at stop) 6: Motor overload pre-warning 7: AC drive overload pre-warning 8: Set count value reached 9: Designated count value reached 10: Length reached 11: PLC cycle complete 12: Accumulative running time reached 13: Frequency limited 14: Torque limited 15: Ready for RUN 16: FIV larger than FIC(FIV>FIC) 17: Frequency upper limit reached 18: Frequency lower limit reached (no output at stop) 19: Undervoltage state output 20: Communication setting	0	☆
P6.02	Relay output function (RA-RB-RC)	21: Reserved 22: Reserved 23: Zero-speed running 2 (having output at stop) 24: Accumulative power-on time reached 25: Frequency level detection FDT 2 output 26: Frequency 1 reached 27: Frequency 2 reached 28: Current 1 reached 29: Current 2 reached 30: Timing reached 31: FIV input limit exceeded 32: Load becoming 0 (Drop in) 33: Reverse running 34: Zero current state 35: Module temperature reached 36: Software current limit exceeded 37: Frequency lower limit reached (having output at stop) 38: Alarm output 39: Reserved 40:Current running time reached	2	☆

10

Function Code	Parameter Name	Setting Range	Default	Property
Group P6: Output Terminals				
P6.07	FOV function Selection	0: Running frequency 1: Set frequency 2: Output current 3: Output torque 4: Output power 5: Output voltage 6: Pulse input(100.0% for 100.0kHz) 7: FIV 8: FIC 9: Reserved 10: Length 11: Count value 12: Communication setting 13: Motor rotational speed 14: Output current(100.0% for 1000.0A) 15: Output voltage(100.0% for 1000.0V)	0	☆
P6.08	Reserved			☆
P6.09	Reserved	16: Reserved		☆
P6.10	FOV offset coefficient	-100.0%~+100.0%	0.0%	☆
P6.11	FOV gain	-10.00~+10.00	1.00	☆
P6.12	Reserved			☆
P6.13	Reserved			☆
P6.17	M01 output delay time	0.0~3600.0s	0.0s	☆
P6.18	RA-RB-RC output delay time	0.0–3600.0s	0.0s	☆
P6.19	RA-RB-RC output delay	0.0–3600.0s	0.0s	☆
P6.20	Reserved			
P6.21	Reserved			
P6.22	Output terminal valid mode selection	0: Positive logic 1: Negative logic Unit's digit : M01 Ten's digit : RA-RB-RC	00000	☆
Function Code	Parameter Name	Setting Range	Default	Property
Group P7: Operation Panel and Display				
P7.00	Output power correction factor	0.0-200.0	100.0	☆
P7.01	Reserved			
P7.02	STOP/RESET key function	0: STOP/RESET key enabled only in operation panel control 1: STOP/RESET key enabled in any operation mode	1	☆
P7.03	LED display running parameters 1	0000–FFFF Bit00: Running frequency 1 (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: S input status Bit08: M01 output status Bit09: FIV voltage (V) Bit10: FIC voltage (V)	1F	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group P7: Operation Panel and Display				
P7.03	LED display running parameters 1	Bit11: Reserved Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	1F	☆
P7.04	LED display running parameters 2	0000–FFFF Bit00: PID feedback Bit01: PLC stage Bit02: Pulse setting frequency (kHz) Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: FIV voltage before correction (V) Bit06: FIC voltage before correction (V) Bit07: Reserved Bit08: Linear speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: Pulse setting frequency (Hz) Bit12: Communication setting Value Bit13: Reserved Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	0	☆
P7.05	LED display stop parameters	0000–FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02:S input status Bit03: M01 output status Bit04: FIV voltage (V) Bit05: FIC voltage (V) Bit06: Reserved Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: Pulse setting frequency (kHz)	33	☆
P7.06	Load speed display coefficient	0.0001~6.5000	1.0000	☆
P7.07	Heatsink temperature of inverter	0.0°C ~150.0°C	--	●
P7.08	Temporary software version	0.0°C ~150.0°C	--	●
P7.09	Accumulative running time	0h~65535 h	--	●
P7.10	Reserved	--	--	●
P7.11	Software version	--	--	●

Function Code	Parameter Name	Setting Range	Default	Property
Group P7: Operation Panel and Display				
P7.12	Number of decimal places for load speed display	0: 0 decimal place 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1	☆
P7.13	Accumulative power-on time	0h~65535 h	--	●
P7.14	Accumulative power consumption	0kW~65535 kWh	--	●

12

Function Code	Parameter Name	Setting Range	Default	Property
Group P8: Auxiliary Functions				
P8.00	JOG running frequency	0.00 Hz to maximum frequency	2.00 Hz	☆
P8.01	JOG acceleration time	0.0s~6500.0s	20.0s	☆
P8.02	JOG deceleration time	0.0s~6500.0s	20.0s	☆
P8.03	Acceleration time 2	0.0s~6500.0s	Model dependent	☆
P8.04	Deceleration time 2	0.0s~6500.0s	Model dependent	☆
P8.05	Acceleration time 3	0.0s~6500.0s	Model dependent	☆
P8.06	Deceleration time 3	0.0s~6500.0s	Model dependent	☆
P8.07	Acceleration time 4	0.0s~6500.0s	Model dependent	☆
P8.08	Deceleration time 4	0.0s~6500.0s	Model dependent	☆
P8.09	Jump frequency 1	0.00 Hz~maximum frequency	0.00Hz	☆
P8.10	Jump frequency 2	0.00 Hz~maximum frequency	0.00Hz	☆
P8.11	Frequency jump amplitude	0.00 Hz~ maximum frequency	0.00Hz	☆
P8.12	Forward/Reverse rotation dead-zone time	0.0s~3000.0s	0.0s	☆
P8.13	Reverse control	0: Enabled 1: Disabled	0	☆
P8.14	Running mode when set frequency lower than frequency lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	☆
P8.15	Droop control	0.00Hz~10.00 Hz	0.00Hz	☆
P8.16	Accumulative power-on time threshold	0h~65000h	0h	☆
P8.17	Accumulative running time threshold	0h~65000h	0h	☆
P8.18	Startup protection	0: No 1: Yes	0	☆
P8.19	Frequency detection value (FDT1)	0.00 Hz~maximum frequency	50.00 Hz	☆
P8.20	Frequency detection hysteresis (FDT1)	0.0%~100.0% (FDT 1 level)	5.0%	☆
P8.21	Detection range of frequency reached	0.00%~100.0% (maximum frequency)	0.0%	☆
P8.22	Jump frequency during Acceleration / deceleration	0: Disabled 1: Enabled	0	☆
P8.25	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00~maximum frequency	0.00 Hz	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group P8: Auxiliary Functions				
P8.26	Frequency switchover point between deceleration time 1 and deceleration time 2	0.00~ maximum frequency	0.00 Hz	☆
P8.27	Terminal JOG preferred	0: Disabled 1: Enabled	0	☆
P8.28	Frequency detection value (FDT2)	0.00 Hz~maximum frequency	50.00 Hz	☆
P8.29	Frequency detection hysteresis (FDT2)	0.0%~100.0% (FDT2 level)	5.0%	☆
P8.30	Any frequency reaching detection value 1	0.00 Hz~maximum frequency	50.00 Hz	☆
P8.31	Any frequency reaching detection amplitude 1	0.0%~100.0% (maximum frequency)	0.0%	☆
P8.32	Any frequency reaching detection value 2	0.00 Hz~ maximum frequency	50.00 Hz	☆
P8.33	Any frequency reaching detection amplitude 2	0.0%~100.0% (maximum frequency)	0.0%	☆
P8-34	Zero current detection level	0.0%~300.0% 100.0% for rated motor current)	5.0%	☆
P8.35	Zero current detection delay time	0.01~600.00s	0.10s	☆
P8.36	Output overcurrent threshold	0.0% (no detection) 0.1%~300.0% (rated motor current)	200.0%	☆
P8.37	Output overcurrent detectiondelay time	0.00s~600.00s	0.00s	☆
P8.38	Any current reaching 1	0.0%~300.0% (rated motor current)	100.0%	☆
P8.39	Any current reaching 1 amplitude	0.0%~300.0% (rated motor current)	0.0%	☆
P8.40	Any current reaching 2	0.0%~300.0% (rated motor current)	100.0%	☆
P8.41	Any current reaching 2 amplitude	0.0%~300.0% (rated motor current)	0.0%	☆
P8.42	Timing function	0: Disabled 1: Enabled	0	☆
P8.43	Timing duration source	0: P8-44 1: FIV 2: FIC 3: reserved 100%of analog input corresponds to the value of P8.44	0	☆
P8.44	Timing duration	0.0Min~6500.0Min	0.0 min	☆
P8.45	FIV input voltage lower limit	0.00 V~P8.46	3.10V	☆
P8.46	FIV input voltage upper limit	P8-45~10.00 V	6.80 V	☆
P8.47	Module temperature threshold	0°C~150°C	100°C	☆
P8.48	Cooling fan control	0: Fan working during running 1: Fan working continuously	0	☆
P8.49	Wakeup frequency	Dormant frequency (P8-51) ~ maximum frequency (P0-12)	0.00Hz	☆
P8.50	Wakeup delay time	0.0~6500.0s	0.0s	☆
P8.51	Dormant frequency	0.00 Hz~ wakeup frequency (P8.49)	0.00Hz	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group P8: Auxiliary Functions				
P8.52	Dormant delay time	0.0s~6500.0s	0.0s	☆
P8.53	Current running time reached	0.0Min~6500.0 min	0.0 min	★
Function Code	Parameter Name	Setting Range	Default	Property
Group 9: Fault and Protection				
P9.00	Motor overload protection selection	0: Disabled 1: Enabled	1	☆
P9.01	Motor overload protection gain	0.20~10.00	1.00	☆
P9.02	Motor overload warning coefficient	50%~100%	80%	☆
P9.03	Overvoltage stall gain	0 ~100	0	☆
P9.04	Overvoltage stall protective voltage	120%~150%	130%	☆
P9.05	Overcurrent stall gain	0~100	20	☆
P9.06	Overcurrent stall protective current	100%~200%	150%	☆
P9.07	Short-circuit to ground upon power-on	0: Disabled 1: Enabled	1	☆
P9.09	Fault auto reset times	0~20	0	☆
P9.10	M01 action during fault auto reset	0: Not act 1: Act	0	☆
P9.11	Time interval of fault auto reset	0.1s~100.0s	1.0s	☆
P9.12	Reserved			
P9.13	Output phase loss protection selection	0: Disabled 1: Enabled	1	☆
P9.14	1st fault type	0: No fault 1: Inverter unit protection 2: Overcurrent during 3: Overcurrent during deceleration 4: Overcurrent at constant speed 5: Overvoltage during Acceleration 6: Overvoltage during Deceleration 7: Overvoltage at constant speed 8: Buffer resistance overload 9: Undervoltage 10: AC drive overload 11: Motor overload 12: Reserved 13: Power output phase loss 14:Module overheat 15:External equipment fault 16: Communication fault 17: Contactor fault 18: Current detection fault 19: Motor auto-tuning fault 20:Reserved 21:EEPROM read-write fault 22: AC drive hardware fault 23: Short circuit to ground	-	●
P9.15	2nd fault type		-	●
P9.16	3rd (latest) fault type		-	●

Function Code	Parameter Name	Setting Range	Default	Property
Group 9: Fault and Protection				
P9.17	Frequency upon 3rd fault	24-25:Reserved 26:Accumulative running time reached 27-28:Reserved 29: Accumulative power-on time Reached 30:Load becoming 0 31:PID feedback lost during running 40:Wit-wave current limit fault 41-51:Reserved	-	●
P9.18	Current upon 3rd fault	-	-	●
P9.19	Bus voltage upon 3rd fault	-	-	●
P9.20	DI status upon 3rd fault	-	-	●
P9.18	Current upon 3rd fault			
P9.19	Bus voltage upon 3rd fault			
P9.20	Input terminal status upon 3rdfault			
P9.21	Output terminal status upon 3rd fault	-	-	●
P9.22	AC drive status upon 3rd fault	-	-	●
P9.23	Power-on time upon 3rd fault	-	-	●
P9.24	Running time upon 3rd fault	-	-	●
P9.27	Frequency upon 2nd fault	-	-	●
P9.28	Current upon 2nd fault	-	-	●
P9.29	Bus voltage upon 2nd fault	-	-	●
P9.30	Input terminal status upon 2nd fault	-	-	●
P9.31	Output terminal status upon 2nd fault	-	-	●
P9.32	AC drive status upon 2rd fault	-	-	●
P9.33	Power-on time upon 2rd fault	-	-	●
P9.34	Running time upon 2rd fault	-	-	●
P9.37	Frequency upon 2nd fault	-	-	●
P9.38	Output terminal status Current upon 1st fault	-	-	●
P9.39	Current upon 1st fault	-	-	●
P9.40	Current upon 1st fault	-	-	●
P9.41	Bus voltage upon 3rdf fault	-	-	●
P9.42	Iutput terminal status upon 1st fault	-	-	●
P9.43	Output terminal status upon 1stfault	-	-	●
P9.44	Frequency upon 1st fault	-	-	●

Function Code	Parameter Name	Setting Range	Default	Property
Group 9: Fault and Protection				
P9.47	Fault protection action selection 1	Unit's digit:Motor overload(OL1) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Ten's digit :Reserved Hundred's digit : Power output phase loss(LO) Same as unit's digit Thousand's digit (External equipment fault(EF) Same as unit's digit Ten thousand's digit: Digit :Communication fault(CE)	00000	☆
P9.48	Fault protection action selection 2	Unit's digit :Reserved 0: Coast to stop Ten's digit :EEPROM read-wright fault(EEP) 0: Coast to stop 1: stop according to the stop mode Hundred's digit: Reserved Thousand's digit :Reserved Ten thousand's digit Accumulative running time Reached(END1)	00000	☆
P9.49	Fault protection action selection 3	Unit's digit :Reserved 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Ten's digit :Reserved 0:stop according to the stop mod 2:Continue to run Hundred's digit: Accumulative Power-on time reached(END2) 0:Coast to stop 1:stop according to the stop mode 2:Continue to run Thousand 's digit :Load becoming 0 0:stop according to the stop mode 2:continue to run at7%of rated motor frequency if the load recovers Ten thousand's digit :PID Feedback loss of running 0:Coast to stop 1:Stop according to the stop mode 2:Continue to run	00000	☆
P9.50	Reserved			☆

Function Code	Parameter Name	Setting Range	Default	Property
Group 9: Fault and Protection				
P9.54	Frequency selection for continuing to run upon fault	0: Current running frequency 1: Set frequency 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency upon abnormality	0	☆
P9.55	Backup frequency upon abnormality	60.0%~100.0%	100.0%	☆
P9.56	reserved			
P9.57	reserved			☆
P9.58	reserved			☆
P9.59	Action selection at instantaneous power failure	0: Invalid 1: Decelerate 2: Decelerate to stop	0	☆
P9.60	Action pause judging voltage at instantaneous power failure	0.0%~100.0%	100.0%	☆
P9.61	Voltage rally judging time at instantaneous power failure	0.00~100.00s	0.50s	☆
P9.62	Action judging voltage at instantaneous power failure	60.0%~100.0% (standard bus voltage)	80.0%	☆
P9.63	Protection upon load becoming 0	0: Disabled 1: Enabled	0	☆
P9.64	Detection level of load becoming 0	0.0%~100.0%	10.0%	☆
P9.65	Detection time of load becoming	0 0.0~60.0s	1.0s	☆
P9.67	reserved			
P9.68	reserved			
P9.69	reserved			
P9.70	reserved			

Function Code	Parameter Name	Setting Range	Default	Property
Group A: Process Control PID Function				
PA.00	PID setting source	0: PA-01 1: FIV 2: FIC 3: Reserved 4: Pulse setting (S3) 5: Communication setting 6: Multi-reference	0	☆
PA.01	PID digital setting	0.0%~100.0%	50.0%	☆
PA.02	PID feedback source	0: FIV 1: FIC 2: Reserved 3: FIV- FIC 4: PULSE setting (S3) 5: Communication setting 6: FIV + FIC 7: MAX (|FIVI|, |FIC|) 8: MIN (|FIV|, | FIC |)	0	☆
PA.03	PID action direction	0: Forward action 1: Reverse action	0	☆
PA.04	PID setting feedback range	0~65535	1000	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group A: Process Control PID Function				
PA.05	Proportional gain Kp1	0.0~100.0	20.0	☆
PA.06	Integral time Ti1	0.01~10.00s	2.00s	☆
PA.07	Differential time Td1	0.00~10.000	0.000s	☆
PA.08	Cut-off frequency of PID reverse rotation	0.00 ~maximum frequency	2.00 Hz	☆
PA.09	PID deviation limit	0.0%~100.0%	0.0%	☆
PA.10	PID differential limit	0.00%~100.00%	0.10%	☆
PA.11	PID setting change time	0.00~650.00s	0.00s	☆
PA.12	PID feedback filter time	0.00~60.00s	0.00s	☆
PA.13	PID output filter time	0.00~60.00s	0.00s	☆
PA.14	Reserved			
PA.15	Proportional gain Kp2	0.0~100.0	20.0	☆
PA.16	Integral time Ti2	0.0~10.00	2.00	☆
PA.17	Differential time Td2	0.000~10.000s	0.000s	☆
PA.18	PID parameter switchover condition	0: No switchover 1: Switchover via DI 2: Automatic switchover based on deviation	0	☆
PA.19	PID parameter switchover deviation 1	0.0%~ PA.20	20.0%	☆
PA.20	PID parameter switchover deviation 2	PA.19 ~100.0%	80.0%	☆
PA.21	PID initial value	0.0%~100.0%	0.0%	☆
PA.22	PID initial value holding time	0.00~650.00s	0.00s	☆
PA.23	Maximum deviation between two PID outputs in forward direction	0.00%~100.00%	1.00%	☆
PA.24	Maximum deviation between two PID outputs in reverse	0.00%~100.00%	1.00%	☆
PA.25	PID integral property	Unit's digit (Integral separated) 0: Invalid 1: Valid Ten's digit (Whether to stop integral operation when the output reaches the limit) 0: Continue integral operation 1: Stop integral operation	00	☆
PA.26	Detection value of PID feedback loss	00%: Not judging feedback loss 0.1%~100%	0	☆
PA.27	Detection time of PID feedback loss	0.0~20.0s	0.0s	☆
PA.28	PID operation stop	0:No PID operation at stop 1:PID operation at stop	0	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group Pb : Swing Frequency, Fixed Length and Count				
Pb.00	Swing frequency setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	0	☆
Pb.01	Swing frequency amplitude	0.0%~100.0%	0.0%	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group Pb : Swing Frequency, Fixed Length and Count				
Pb.02	Jump frequency amplitude	0.0%~50.0%	0.0%	☆
Pb.03	Swing frequency cycle	0.1s~3000.0s	10.0s	☆
Pb.04	Triangular wave rising time coefficient	0.1%~100.0%	50.0%	☆
Pb.05	Set length	0m~65535 m	1000m	☆
Pb-06	Actual length	0m~65535 m	0 m	☆
Pb.07	Number of pulses per meter	0.1~6553.5	100.0	☆
Pb.08	Set count value	1~65535	1000	☆
Pb-09	Designated count value	1~65535	1000	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group PC: Multi-Reference and Simple PLC Function				
PC.00	Reference 0	-100.0%~100.0%	0.0%	☆
PC .01	Reference 1	-100.0%~100.0%	0.0%	☆
PC .02	Reference 2	-100.0%~100.0%	0.0%	☆
PC .03	Reference 3	-100.0%~100.0%	0.0%	☆
PC .04	Reference 4	-100.0%~100.0%	0.0%	☆
PC .05	Reference 5	-100.0%~100.0%	0.0%	☆
PC .06	Reference 6	-100.0%~100.0%	0.0%	☆
PC.07	Reference 7	-100.0%~100.0%	0.0%	☆
PC .08	Reference 8	-100.0%~100.0%	0.0%	☆
PC .09	Reference 9	-100.0%~100.0%	0.0%	☆
PC .10	Reference 10	-100.0%~100.0%	0.0%	☆
PC .11	Reference 11	-100.0%~100.0%	0.0%	☆
PC .12	Reference 12	-100.0%~100.0%	0.0%	☆
PC .13	Reference 13	-100.0%~100.0%	0.0%	☆
PC .14	Reference 14	-100.0%~100.0%	0.0%	☆
PC .15	Reference 15	-100.0%~100.0%	0.0%	☆
PC.16	Simple PLC running mode	0: Stop after the AC drive runs one cycle 1: Keep final values after the AC drive runs one cycle 2: Repeat after the AC drive runs one cycle	0	☆
PC.17	Simple PLC retentive selection	Unit's digit :Retentive upon power failure 0: No 1: Yes Ten's digit :Retentive upon stop 0: No 1: Yes	00	☆
PC.18	Running time of simple PLC reference 0	0.0~6553.5s (h)	0.0s(h)	☆
PC.19	Acceleration/deceleration time of simple PLC reference 0	0~3	0	☆
PC.20	Running time of simple PLC reference 1	0.0s~6553.5s (h)	0.0s(h)	☆
PC.21	Acceleration/deceleration time of simple PLC reference 1	0~3	0	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group PC: Multi-Reference and Simple PLC Function				
PC.22	Running time of simple PLC reference 2	0.0s~6553.5s (h)	0.0s(h)	☆
PC.23	Acceleration/deceleration time of simple PLC reference 2	0~3	0	☆
PC.24	Running time of simple PLC reference 3	0.0~6553.5s (h)	0.0s(h)	☆
PC.25	Acceleration/deceleration time of simple PLC reference 3	0~3	0	☆
PC.26	Running time of simple PLC reference 4	0.0–6553.5s (h)	0.0s(h)	☆
PC.27	Acceleration/deceleration time of simple PLC reference 4	0~3	0	☆
PC.28	Running time of simple PLC reference 5	0.0s(h)~6553.5s (h)	0.0s(h)	☆
PC.29	Acceleration/deceleration time of simple PLC reference 5	0~3	0	☆
PC.30	Running time of simple PLC reference 6	0.0s(h)~6553.5s (h)	0.0s(h)	☆
PC.31	Acceleration/deceleration time of simple PLC reference 6	0~3	0	☆
PC.32	Running time of simple PLC reference 7	0.0s(h)~6553.5s (h)	0.0s(h)	☆
PC.33	Acceleration/deceleration time of simple PLC reference 7	0~3	0	☆
PC.34	Running time of simple PLC reference8	0.0s(h)~6553.5s (h)	0.0s(h)	☆
PC.35	Acceleration/deceleration time of simple PLC reference 8	0~3	0	☆
PC.36	Running time of simple PLC reference 9	0.0s(h)~6553.5s (h)	0.0s(h)	☆
PC.37	Acceleration/deceleration time of simple PLC reference 9	0~3	0	☆
PC.38	Running time of simple PLC reference 10	0.0s(h)~6553.5s (h)	0.0s(h)	☆
PC.39	Acceleration/deceleration time of simple PLC reference 10	0~3	0	☆
PC.40	Running time of simple PLC reference 11	0.0s~6500.0s (h)	0.0s(h)	☆
PC.41	Acceleration/deceleration time of simple PLC reference 11	0~3	0	☆
PC.42	Running time of simple PLC reference 12	0.0s~6500.0s (h)	0.0s(h)	☆
PC.43	Acceleration/deceleration time of simple PLC reference 12	0~3	0	☆
PC.44	Running time of simple PLC reference 13	0.0s~6500.0s (h)	0.0s(h)	☆
PC.45	Acceleration/deceleration time of simple PLC reference 13	0~3	0	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group PC: Multi-Reference and Simple PLC Function				
PC.46	Running time of simple PLC reference 14	0.0s~6500.0s (h)	0.0s(h)	☆
PC.47	Acceleration/deceleration time of simple PLC reference 14	0~3	0	☆
PC.48	Running time of simple PLC reference 15	0.0s~6500.0s (h)	0.0s(h)	☆
PC.49	Acceleration/deceleration time of simple PLC reference 15	0~3	0	☆
PC.50	Time unit of simple PLC running	0: s (second) 1:h (hour)	0	☆
PC.51	Reference 0 source	0: Set by 12-00 1: AI1 2: AI2 3: AI3 4: Pulse setting 5: PID 6: Set by preset frequency (P0-10), modified via terminal UP/ DOWN	0	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group PD: Communication Parameters				
PD.00	Baud rate	Unit's digit (Modbus baud rate) 0: 300 BPs 1: 600 BPs 2: 1200 BPs 3: 2400 BPs 4: 4800 BPs 5: 9600 BPs 6: 19200 BPs 7: 38400 BPs 8: 57600 BPs 9: 115200 BPs Ten's digit :Reserved Hundred's digit :Reserved Thousand's digit :Reserved	0	☆
PD.01	Data format	0: No check, data format <8,N,2> 1: Even parity check, data format <8,E,1> 2: Odd Parity check, data format <8,O,1> 3: No check, data format <8,N,1> Valid for Modbus		
PD.02	Local address	1~247,0:Broadcast address	1	☆
PD.03	Response delay	0ms~20ms	2	☆
PD.04	Communication timeout	0.0s (invalid) 0.1s~60.0s	0.0s	☆
PD.05	Modbus protocol selection	Unit's digit: Modbus protocol 0: Non-standard Modbus protocol 1: Standard Modbus protocol Ten's digit :reserved	1	☆
PD.06	Communication reading current resolution	0: 0.01A 1: 0.1A	0	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group PE :Reserved				
Group PP: User-Defined Function Codes				
PP-00	User password	0~65535	0	☆
PP.01	Restore default settings	0: No operation 01: Restore factory settings except motor parameters 02: Clear records 04: Restore user backup parameters 501: Back up current user parameters	0	★

Function Code	Parameter Name	Setting Range	Default	Property
Group C0: Torque Control and Restricting Parameters				
C0.00	Speed/Torque control selection	0: Speed control 1: Torque control	0	★
C0.01	Torque setting source in torque control	0: Digital setting (C0.03) 1: FIV 2: FIC 3: reserved 4: Pulse setting 5: Communication setting 6: MIN (FIV, FIC) 7: MAX (FIV, FIC) 8: Potentiometer key pad	0	★
C0.03	Torque digital setting in	-200.0%~200.0%	150.0%	☆
C0.05	Forward maximum frequency in torque control	0.00 Hz ~maximum frequency	50.00 Hz	☆
C0.06	Reverse maximum frequency in torque control	0.00 Hz~ maximum frequency	50.00 Hz	☆
C0.07	Acceleration time in torque control	0.00s~65000s	0.00s	☆
C0.08	Deceleration time in torque control	0.00s~650.00s	0.00s	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group C1-C4:reserved				
Group C5:Control Optimization Parameters				
C5.00	PWM Switchover frequency upper limit	0.00Hz~15.00Hz	12.00Hz	★
C5.01	PWM Modulation mode	0:Asynchronous modulation 1:synchronous modulation	0	☆
C5.02	Dead zone compensation mode selection	0:No compensation 1:Compensation mod 1 2:Compensation mode 2	1	☆
C5.03	Random PWM depth	0:Random PWM invalid 1-10:PWM carrier frequency random depth	0	☆
C5.04	Rapid current limit	0:Disibled 1:Enabled	1	☆
C5.05	Current detection compensation	0~100	5	☆
C5.06	Undervoltage threshold	60.0%~140.0%	100.0%	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group C5:Control Optimization Parameters				
C5.07	SFVC optimization mode selection	0:No optimization 1:Optimization mode1 2:Optimization mod 2	1	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group C6:FI Curve Setting (FI is FIV or FIC)				
C6.00	FI curve 4 minimum input	-10.00V~C6.02	0.00V	☆
C6.01	Corresponding setting of FI curve 4minimum input	-100.0%~+100.0%	0.0%	☆
C6.02	FI curve 4 inflexion 1input	C6.00~C6.04	3.00V	☆
C6.03	Corresponding setting of FI curve 4 inflexion 1input	-100.0%~+100.0%	30.0%	☆
C6.04	FI curve 4 inflexion 2 input	C6.02~C6.06	6.00V	☆
C6.05	Corresponding setting of FI curve4 inflexion 2 input	-100.0%~+100.0%	60.0%	☆
C6.06	FI curve 4 maximum input	C6.06~+10.00V	10.00V	☆
C6.07	Corresponding setting of FI curve 4 maximum input	-100.0%~+100.0%	100.0%	☆
C6.08	FI curve 5 minimum input	-10.00V~C6.10	0.00V	☆
C6.09	Corresponding setting of FI curve 5minimum input	-100.0%~+100.0%	-100.0	☆
C6.10	FI curve 5 inflexion 1input	C6.08~C6.12	3.00V	☆
C6.11	Corresponding setting of FI curve 5 inflexion 1 input	-100.0%~+100.0%	-30.0%	☆
C6.12	FI curve 5 inflexion 2 input	C6.10~C6.14	6.00	☆
C6.13	Corresponding setting of FI curve 5 inflexion 2 input	0.0°–359.9°	0.0°	☆
C6.14	FI curve 5 maximum input	C6.12~+1.00V	10.00V	☆
C6.15	Corresponding setting of FI curve	-100.0%~+100.0%	100.0%	☆
C6.16	Jump point of FIV	-100.0%~100.0%	0.0%	☆
C6.17	Jump amplitude of FIV input	0.0%~100.0%	0.5%	☆
C6.18	Jump point of FIC input	-100.0%~100.0%	0.0%	☆
C6.19	Jump amplitude of FIC input	0.0%~100.0%	0.5%	☆

Function Code	Parameter Name	Setting Range	Default	Property
Group CC:FI/FO Correction				
CC.00	FIV measured voltage 1	0.500V~4.000V	Factory-corrected	☆
CC.01	FIV displayed voltage 1	0.5000V~4.000V	Factory-corrected	☆
CC.02	FIV measured voltage 2	6.000V~9.999V	Factory-corrected	☆
CC.03	FIV displayed voltage 2	6.000V~9.999V	Factory-corrected	☆
CC.04	FIV measured voltage 2	0.500V~4.000V	Factory-corrected	☆
CC.05	FIC measured voltage 1	0.500V~4.000V	Factory-corrected	☆
CC.06	FIC measured voltage2	6.000V~9.999V	Factory-corrected	☆
CC.07	FIC displayed voltage 2	6.000~9.999V	Factory-corrected	☆
CC.08~CC.11		Reserved		
CC.12	FOV target voltage 1	0.500V~4.000V	Factory-corrected	☆
CC.13	FOV measured voltage1	0.500V~4.000V	Factory-corrected	☆
CC.14	FOV target voltage 2	6.000V~9.999V	Factory-corrected	☆
CC.15	FOV measured voltage2	6.000V~9.999	Factory-corrected	☆
CC.16~CC.19		Reserved	Factory-corrected	☆

5.2 Monitoring Parameters

Function Code	Parameter Name	Min. Unit
Group D0: Monitoring Parameters		
D0.00	Running frequency (Hz)	0.01 Hz
D0.01	Set frequency (Hz)	0.01 Hz
D0.02	Bus voltage	0.1 V
D0.03	Bus voltage(V)	1 V
D0.04	Output current	0.01 A
D0.05	Output power	0.1 kW
D0.06	Output torque(%)	0.1%
D0.07	S input state	1
D0.08	M01output state	1
D0.09	FIV voltage (V)	0.01 V
D0.10	FIC voltage (V)	0.01 V/0.01 mA
D0.11	Reserved	0.01 V
D0.12	Count value	1
D0.13	Length value	1
D0.14	Load speed	1
D0.15	PID setting	1
D0.16	PID feedback	1
D0-17	PLC stage	1
D0-18	Input pulse frequency	0.01 kHz
D0-19	Reserved	0.01 Hz
D0.20	Remaining running time	0.1 Min

Function Code	Parameter Name	Min. Unit
Group D0: Monitoring Parameters		
D0.21	FIV voltage before correction	0.001 V
D0.22	FIC voltage before correction	0.01 V/0.01 mA
D0.23	Reserved	0.001 V
D0.24	Linear speed	1 m/Min
D0.25	On the current time	1 Min
D0.26	The current running time	0.1 Min
D0.27	Pulse input frequency	1 Hz
D0.28	Communication setting value	0.01%
D0.29	Reserved	0.01 Hz
D0.30	Reserved	0.01 Hz
D0.31	Auxiliary frequency Y	0.01 Hz
D0.32	Viewing any register address value	1
D0.33	Reserved	0.1°
D0.34	Motor temperature	1°C
D0.35	Target torque	0.1%
D0.36	Reserved	1
D0.37	Power factor angle	0.1°
D0.38	Reserved	1
D0.39	Target voltage upon V/F separation	1 V
D0.40	Output voltage upon V/F separation	1 V
D0.41	Reserved	1
D0.42	Reserved	1
D0.43	Reserved	1
D0.44	Reserved	1
D0.45	Current Fault information	1