PROLINECNC

NG1000 Series Inverter
User Manual

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Preface

Thanks for using the NG1000 series compact vector inverter produced by Zhejiang New Folinn Electric Co., Ltd.

NG1000 series inverter is a new generation of adaptive vector inverter independently developed by our company based on the industry application requirements of high stability, small size and easy debugging. This product has V/F control, speed sensorless vector control, etc., suitable for asynchronous motors, permanent magnet synchronous motors, single-phase motors.

NG1000 series inverter have compact structure, convenient and flexible installation, reasonable heat dissipation design to ensure product reliability, rich keyboards and multi-function cards to choose, flexible functions, free programming, and can meet the needs of different industries.

The manual provides users with relevant precautions and guidance for the selection, installation, parameter setting, on-site debugging, fault diagnosis and daily maintenance. In order to ensure that the inverter can be used correctly, please read this manual carefully before installing it and keep it in a safe place for later use.

First time to use:

For the first time to use, please read this manual carefully. If you have any doubts about some functions and performance, please contact our technical staff for help.

The scope of application of this manual:

This manual applies to the series of products produced by Folinn.

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Attentions:

- Please power off when wiring.
- Electronic components inside AC drive are especially sensitive to static electricity, do not put anything into internal of AC drive. And do not touch main circuit board.
- After power cut, if indicator is still lamp, it still have high voltage in AC drive. It is very dangerous, please do not touch internal circuit and components
- Please ensure the grounding terminals of AC drive ⏚ is grounded correctly.
- Never connect input power supply with output terminal U, V, W of AC drive.

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SAFETY PRECAUTIONS

- Always observe safety precautions to prevent accidents and potential hazards.
- In this manual, the safety information is classified as below:

⚠ WARNING Fault operation may result in serious personal injury or death.

⚠ CAUTION Fault operation may result personal injury or property damage from minor to moderate class.

- In this manual, the following two signs are used as safety precautions:

⚠ 1) Under certain conditions, identify dangers that cause personal injury.Since dangerous voltages may exist, special attention should be paid.

⚠ 2) Under certain conditions, identify potential hazards. Read the information carefully and follow the instructions.

- For convenience, please save it nearby.
- Read this manual carefully to optimize the performance of NG1000 series inverter and ensure safe use.

⚠ WARNING

- Do not open the casing in case of electric shock when the power supply has been supplied or the inverter is in the running state.
- Do not operate the inverter when the front-cover of the inverter is opening. In case of shocked by high voltage or exposed charging capacitors.
- Do not open the inverter's casing except for periodic inspection or wiring, even if the inverter is not connected to input voltage.In case of get an electric shock from the charging circuit.
- Wiring and periodic maintain should be performed after removing the input power and using the instrument to discharge the DC voltage (below DC 30V) for at least 10 minutes.In case of electric shock.
- Start the switch with dry hands in case of get an electric shock.
- Do not use cables with damaged insulation in case of an electric shock.
- Do not make the cable to scratches, pinch, overvoltage or overload in case of an electric shock.

⚠ NOTES

- The inverter should be installed on a non-flammable surface, and do not place flammable materials nearby. Otherwise, a fire may occur.
- If the inverter is damaged, immediately disconnect the input power in case of causing secondary damage to the equipment or fire.
- After the input power is disconnected, the residual heat of the inverter will remain for several minutes. Do not touch it.Otherwise, you may be physically injured (for example: skin burns or injuries).
- Do not power on the inverter that is damaged or missing parts, even if the installation has been completed.Otherwise, electric shock may occur.
- Burlap, paper dust, wood dust, dust, metal fragments or other miscellaneous objects are not allowed to enter the inverter.Otherwise, fire or accident may occur.

OPERATIONAL PRECAUTIONS

(1) Maintenance and installation

- Handle according to the weight of the product.
- The number of stacked inverter packaging boxes should not exceed the specified number.
- Installation according to the instructions in this manual.
- Do not open the casing during delivery.
- Do not place heavy objects on the inverter.
- Check if the inverter's packing direction is correct.
- Do not drop or squeeze the inverter.
- For 200V inverters, use category 3 grounding method (grounding resistance <100Ω), For 400V inverters (grounding resistance <10Ω)
- NG1000 series contains ESD (electrostatic discharge) sensitive parts. When inspecting or installing, be careful to take protective measures (electrostatic discharge) before touching the printed circuit board.
- Use the inverter under the following environmental conditions.

Table 0-1: Environmental conditions

Environment	Environment Temperature	-10℃~+40℃(Ambient temperature is 40℃~50℃, please derating use;Downshift usage if the temperature is below -10℃)
	Humidity	5%~95%RH, No condensation
	Storage temperature	-40℃~+70℃
	Installation site	Indoor, no direct sunlight, no dust, corrosive gas, flammable gas, oil mist, water vapor, dripping water or salt etc.
	Vibration	For derating above 1000 meters, derate 10% for every 1000 meters
	Altitude	Less than 5.9 m / s^2 (0.6g)

(2) Wiring

- Do not install power capacitors, surge suppressors, or RFI filters on the output side of the inverter.
- The connection method of the output cables (U, V, W) connected to the motor will affect the rotation direction of the motor.
- Incorrect terminal wiring may cause damage to the device.
- If the positive and negative poles of the terminals are reversed, the inverter may be damaged.
- Only personnel who are familiar with the NG1000 inverter can wire and inspect the inverter.
- Install the inverter before wiring, otherwise, you may get an electric shock or personal injury.

(3) Trial operation

- Check all parameters before operation and modify the parameter values according to the load type.
- Always use within the voltage range in this manual, otherwise the inverter may be damaged.

(4) Operation prevention

- When the automatic restart function is selected, since the motor will restart suddenly after the fault stops, it should be away from the device.
- The "STOP" key on the operation keyboard is only effective when the corresponding function settings have been set, and special circumstances should be prepared for emergency stop switch.
- If the fault reset is set using external terminals, a sudden start will occur. Please check in advance whether the external terminal signal is in the off position, in case of an accident may occur.
- Do not modify or change anything inside the inverter.
- The electronic thermal protection function of the inverter may not protect the motor.
- Do not use electromagnetic AC contactor as the switch for frequent start and stop of the inverter on the input side of the inverter.
- Use a noise filter to reduce the influence of electromagnetic interference generated by the inverter, in case of nearby electronic equipment may be interfered.
- If the input voltage is unbalanced, an AC reactor needs to be installed. The potential higher harmonics from the inverter may cause the power capacitor and generator to become hot or damaged.
- After the parameters are initialized, the parameter values are restored to the factory settings, and the parameters need to be set again before running.
- The inverter can be easily set to high-speed operation. Check the capacity of the motor or mechanical equipment before operation.
- When the DC braking function is used, there will be no stopping torque. When it is necessary to stop the torque, install a separate device.
- When driving 380V inverters and motors, use insulated rectifiers and take measures to suppress surge voltage. The surge voltage caused by the wiring constant problem at the motor terminals may damage the insulation and damage the motor.

(5) Accident prevention

- Prepare a safety device such as an emergency braking device, to prevent the use of machinery and equipment in a more dangerous environment if the inverter has problems.

(6) Maintenance, inspection and parts replacement

- Do not test the control circuit of the inverter (insulation resistance measurement) with a high resistance meter.
- Regular inspection.

(7) Disposal

- Disposal as industrial waste after broken.

(8) General notes

- Most charts or drawings in this manual indicate that if the inverter is not equipped with a circuit breaker, enclosure or partial open circuit, the inverter must never be operated. When operating the inverter, always install the enclosure and circuit breaker, and observe the regulations in the installation manual.

NG1000 series nameplate

NG1000 00 S2 0007 B T 0

- 0: No built-in reactor
  1: Built-in DC reacttor
  2: Built-in AC reactor
  3: Built-in DC and AC reactors
- T: Built-in STO circuit X: No STO circuit
- B: Built-in brake unit X: No brake unit
- Power: kW
  First three digits: before the decimal point, one digit after the decimal point
  Example: 0007: 0.75kW
- S/T: Single-phase/Three-phase
  2/4: 220/380V
- Custom machine model
- Product model (NG1000 series)

NG1000 Series Specification

Frame NO.	Model	Input voltage	Input current(A)	Rated power (kW)	Output current(A)	Motor (kW)
F1	NG100000S20007BX0	Single-phase 220V	8.2	0.75	5.0	0.75
	NG100000S20015BX0	Single-phase 220V	14.0	1.5	7.0	1.5
F2	NG100000T20022BX0	Single-phase 220V	23.0	2.2	12.5	2.2
		Three-phase 220V	13.5			
F3	NG100000T20037BX0	Single-phase 220V	38.6	3.7	15.2	3.7
		Three-phase 220V	16.5			
	NG100000T20055BX0	Three-phase 220V	24	5.5	23	5.5
F4	NG100000T20075BX0	Three-phase 220V	37	7.5	31	7.5
	NG100000T20110BX0	Three-phase 220V	52	11	45	11
F1	NG100000T40007BX0	Three-phase 380V	4.0	0.75	3.0	0.75
	NG100000T40015BX0	Three-phase 380V	5.8	1.5	4.5	1.5
	NG100000T40022BX0	Three-phase 380V	6.5	2.2	5.6	2.2
F2	NG100000T40040BX0	Three-phase 380V	12.6	4.0	10.5	4.0
F3	NG100000T40055BX0	Three-phase 380V	16	5.5	14	5.5
	NG100000T40075BX0	Three-phase 380V	21	7.5	19	7.5
F4	NG100000T40110BX0	Three-phase 380V	28	11	26	11
	NG100000T40150BX0	Three-phase 380V	36	15	33	15
F5	NG100000T40185BX0	Three-phase 380V	42	18.5	40	18.5
	NG100000T40220BX0	Three-phase 380V	48	22	46	22
F6	NG100000T40300BX0	Three-phase 380V	62	30	58	30
	NG100000T40370BX0	Three-phase 380V	76	37	75	37
F7	NG100000T40450XX0	Three-phase 380V	92	45	90	45
	NG100000T40550XX0	Three-phase 380V	113	55	110	55
F8	NG100000T40750XX0	Three-phase 380V	157	75	150	75
	NG100000T40900XX0	Three-phase 380V	180	90	170	90
F9	NG100000T41100XX0	Three-phase 380V	214	110	210	110
	NG100000T41320XX0	Three-phase 380V	256	132	250	132
	NG100000T41600XX0	Three-phase 380V	307	160	300	160

CHAPTER 1 - Installation

1.1 Installation prevention

⚠ WARNING

- The inverter uses plastic parts, so be careful not to damage it.
  Do not grab the front keyboard to move the inverter in case of fall.
- The inverter is installed without vibration (5.9 m / s2 or less).
- Install the inverter within the allowable temperature range (-10 ~ 50C).
- The temperature of the inverter during operation is very high, and the inverter needs to be installed on a non-flammable surface.
- Install the inverter on smooth, vertical and horizontal surfaces. The direction of the inverter must be vertical for heat dissipation. At the same time, leave enough space around the inverter.

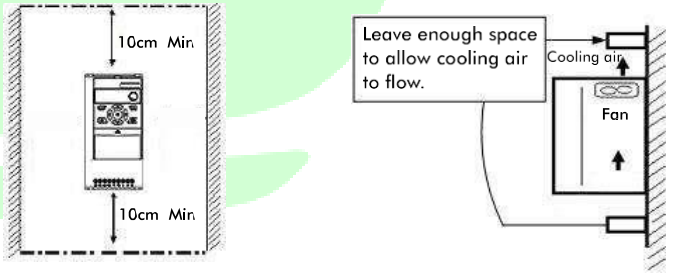


Chart 1-1 Installation instructions

Avoid moisture and direct sunlight.

Do not install the inverter in places with oil gas, flammable gas and dust. Install the inverter in a clean place or in a closed plate that isolates foreign materials.

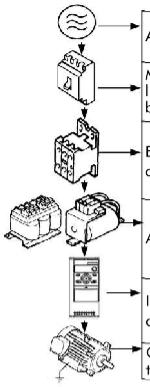
When two or more inverters are installed on one space, the inverter or cooling fan must be installed in a suitable location to ensure that the surrounding temperature is within the allowable range.

When installing the inverter, use screws for fixing to ensure that the inverter is firmly installed.

CHAPTER 2 - Basic Configuration

2.1 Peripheral device connection

The following equipment is required to operate the inverter. Select appropriate peripheral device and connect it correctly to ensure normal operation. Fault application or installation of the inverter may cause system failure or reduce product life and damage components. Before proceeding, you must read and fully understand the manual.



AC power	Please use the power supplywithin the allowable specifications of the inverter.
MCCB or earth leakage circuit breaker (ELB).	Choose an appropriate circuitbreaker. When the power is turned on, a large inrush current will flow into the inverter.
Electromagnetic contactor	Install it if necessary. After installation. do not use it for the purpose of starting or stopping. 0therwise, it may cause a reduction in product life.
AC/DC reactor	Choosing an appropriate reactor can suppress higher harmonics and improve power factor. Use it as close to the inverter as possible.
Installation and connection	Install the inverter in a suitable place and maintain a good ground. Incorrect connection may cause damage to the device.
Connect the motor	Please select inverter motor for long-term low-speed operation.

Chart 2-1 Diagram connection of outside equipments and inverter

2.2 List of main circuit applicable devices and their electrical specifications

Voltage class (V)	Inverter rated power (kW)	Motor (kW)	Inverter input		Recommended wiring size(mm²)			
			Air-switch model	Contactor model	Power line (input/output line)	DC reactor	Braking circuit	Control signal wire (external wiring)
220	0.75	0.75	DZ20-100(16A)	CJ20-16	2.5	4	2.5	0.5~0.75
	1.5	1.5						
	2.2	2.2	DZ20-100(32A)	CJ20-40	4	6	4	
	3.7	3.7						
	5.5	5.5	DZ20-100(32A)	CJ20-40	4	6	4	
	7.5	7.5	DZ20-100(50A)	CJ20-40	6	6	4	
	11	11	DZ20-100(63A)	CJ20-63	8	8	6	
380	0.75	0.75	DZ20-100(16A)	CJ20-16	1.5	4	1.5	
	1.5	1.5						
	2.2	2.2			2.5		2.5	
	4.0	4.0						
	5.5	5.5	DZ20-100(32A)	CJ20-25	4	6	4	
	7.5	7.5						
	11	11	DZ20-100(50A)	CJ20-40	6			
	15	15			8	8		
	18.5	18.5			10		6	
	22	22	DZ20-100(63A)	CJ20-63		16		
	30	30	DZ20-100(80A)	CJ20-63	10	16	6	
	37	37	DZ20-100(100A)	CJ20-100	16	16	6	
	45	45			25	25	8	
	55	55	DZ20-200(200A)	CJ20-160	35	25*2(50)		
	75	75			50	35*2(70)	10	
	90	90	DZ20-400(250A)	CJ20-250	70	50*2(95)	16	
	110	110			50*2(95)			
	132	132	DZ20-400(400A)	CJ20-400		70*2(150)	25	
	160	160						

CHAPTER 3 - Wiring

3.1 Main circuit and function card

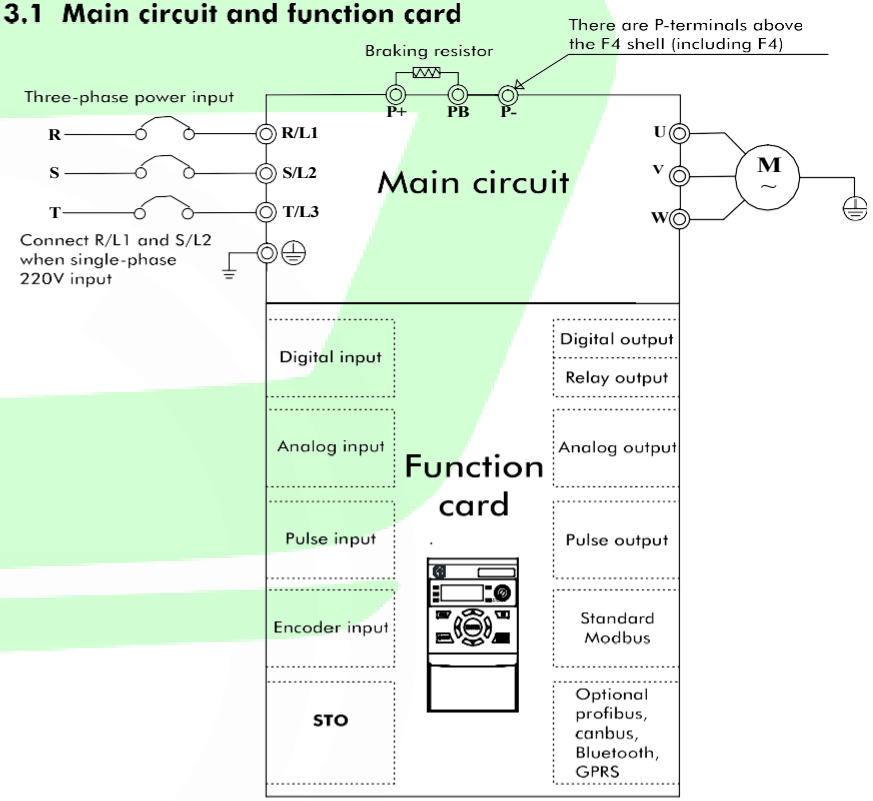


Chart 3-1 Main circuit and function card

Note: Different function cards connect to different terminals. In addition to standard function cards, any type of card can be customized.
When using different function cards, the parameters need to be reset.

⚠ Warning: It is strictly forbidden to plug and unplug the function card with power on!

3.2 Power terminal wiring instructions

⚠ Warning

- For 220V class inverter, use class 3 grounding method (grounding resistance: less than 100Ω).
- For 380V class inverter, use class 3 grounding method (grounding resistance: less than 10Ω).
- Use special grounding terminal for grounding. Do not use screws for grounding in the box.
- Note: Grounding steps
  (1) Determine the location of the ground terminal.
  (2) Connect the ground-wire to the ground terminal and make sure that the screws are tight.

3.3 Main circuit terminal description

Terminal symbol	Terminal name	Function description
⏚	Ground terminal	Inverter safety ground
R/L1、S/L2、T/L3	Main circuit power input terminal	Connect three-phase power, single-phase power to R / L1, S / L2
P+□PB	Brake terminal	Connect external braking resistor
P+、P−	DC bus terminal	when two or more inverters share a DC bus(There are P-terminals above the F4 shell (including F4))
U、V、W	Inverter output terminal	Connect a three-phase motor

- Please implement the wiring in accordance with the regulations of electrician regulations to ensure safety When selection of the wire diameter specification
- It is best to use isolated wires or conduits for power wiring, and ground the isolation layer or conduits at both ends.
- Be sure to install the air disconnect switch NFB between the power supply and the input terminals (R / L1, S / L2, T / L2)
- Do not connect the AC power supply to the output terminal (U V W) of the inverter.
- The output wiring must not touch the metal shell of the inverter, in case of a short circuit to ground.
- Do not use phase shift capacitors, LC / RC noise filters and other components at the output of the inverter.
- The main circuit wiring of the inverter must be far away from other control equipment.
- When the wiring between the inverter and the motor exceeds 15 meters (220V level),(380V level 30 meters), a high dV / dT will be generated inside the motor coil, which will produce interlayer insulation of the motor then damaged, please use a special motor for the inverter or install a reactor on the inverter side.

Ground wire:

- Please correctly ground the grounding wire terminal PE:
  220V level: The 3 class grounding (grounding resistance below 100Ω).
  380V level: Special 3 class grounding (grounding resistance below 10Ω).
- For the use of the ground wire, please follow the basic length and size of the electrical equipment technology.
- Use special grounding terminal for grounding. Do not use screws for grounding in the box.
- Absolutely avoid public grounding with large power equipment such as welding machines, power machinery, etc. The ground wire should be as far away as possible from the ground wire of large power equipment.
- The ground wiring must be as short as possible.
- Note: Grounding steps
  (1) Remove the front keyboard
  (2) Connect the ground wire to the ground terminal and ensure that the screws are tight.

3.4 Function card configuration table

H 0001
- Function configuration
- HOUSING: Sk10:1; SK20:2; Sk30:3; ……
- Reserve
- Built in function card

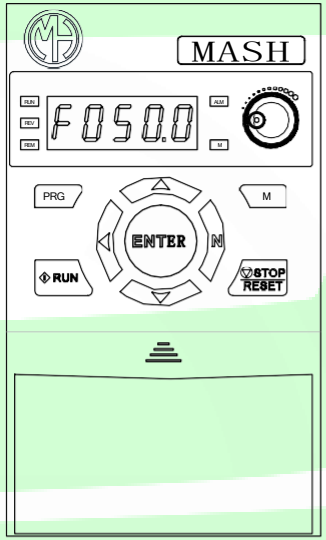
Board name	H0100	H0101	H0102	H0103	H0104	H0110	H0120	H0130	H0131	H0200	H0201	H0300	H0310	H0320	H0350
Shell model	SK10									SK20		SK30			
Appearance															

Physical characteristics \ Function card	H0100	H0101	H0102	H0103	H0104	H0110	H0120	H0130	H0131	Continuous update	H0200	H0201	Continuous update	H0300	H0310	H0320	H0350	Continuous update
Digital input	2	4	1	4	2	5	10	5	1	……	10	10	……		4	5	3	……
Digital output							1			……			……					……
Relay output	1	1		3	1	2	2	2	1	……	3	3	……		1	1	1	……
Analog input	1	1		1	1	1	1	1		……	2	2	……		2	1		……
Analog output						2	1	2		……	2	2	……		2	2		……
Pulse input										……			……					……
Pulse output										……			……					……
Encoder input										……			……					……
Modbus	1	1	1	1		1	optional	1	1	……	1	1	……		1	1	1	……
STO										……	1		……					……
Display	Digital tube	Digital tube	Digital tube	Digital tube	Digital tube	Digital tube	Digital tube	Digital tube	Digital tube	……	Digital tube	Digital tube	……		Digital tube	Digital tube	Digital tube	……
Potentiometer	Analog	Analog		Analog	Analog	Analog	Analog	Analog		……			……		Analog	Analog		……
Toggle switch										……			……	1	2	2		……
10V power supply		1		1	1	1	1	1		……	1	1	……		1			……
12V power supply				1			1	1	1	……	1	1	……		1			……

Note:
1. the built-in function card with STO function must be equipped with AC drive of STO circuit, for example: H0200 built-in function card is equipped with AC drive with model NG100000T40040BT0 (the second T represents built-in STO circuit).
2. If need other types and numbers of terminals, contact the company for bulk customization

CHAPTER 4 - Keyboard

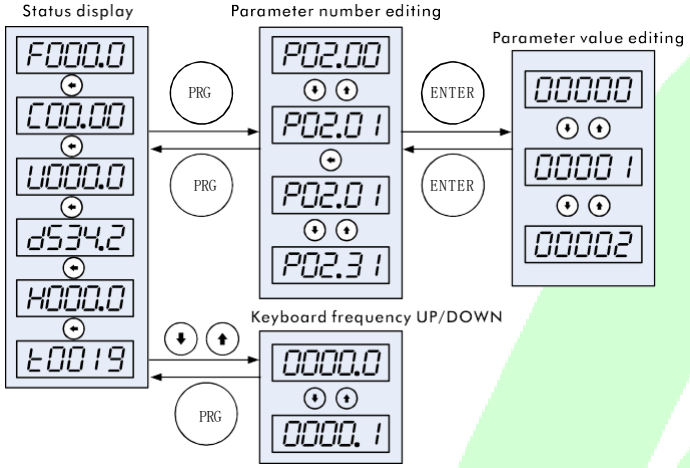
4.1 Keyboard Features



No.	Construction	Function explain
1	F050.0	Display
2	PRG	Programming/ Exit key
3		In the state display interface, it is the state switch key; in other interfaces, it is the left shift key
4	M	Reserved key
5	RUN	Run key
6		Potentiometer: see parameter P01.63
7		In programming mode, value change key; In non-programming mode, increasing and decreasing (UP / DOWN) selection key. See parameters P01.63, P02.03, P02.04
8		
9	ENTER	Enter
10	STOP RESET	Stop/reset
11	M	Customized key

Indicator light	State	Function Detail
RUN	Light / Flash	Running/Decelerate
REV	Light	Reversing
REM	Light	Remote operation
ALM	Light	Fault indication
M	Light	Customer customized instructions, fault alarm instructions, see parameters P01.66 and P01.67.

4.2 Keyboard operation



Item	Description	Item	Description
F	Output frequency	H	Display value 1 (selected by P01.68)
C	Output current	t	Display value 2 (selected by P01.69)
U	Output voltage	A	Alarm
d	DC bus voltage	E	Fault

4.3 Character display

0	0	A	A	K	K	U	U
1	1	b	B	L	L	v	V
2	2	C	C	n	M	w	W
3	3	d	D	n	N	y	X
4	4	E	E	o	O	y	Y
5	5	F	F	P	P	Z	Z
6	6	G	G	q	Q		
7	7	H	H	r	R		
8	8	I	I	S	S		
9	9	J	J	t	T		

CHAPTER 5 - Quick get start

Note:
Some parameters have been set at the factory (factory value), and do not be set for the first use.

5.1 Set the motor rated parameters

After power on, use the operation keyboard to set the parameters as the following table. According to the motor nameplate for motor parameters.

Parameter number	Function	Parameter number	Function
P06.11	Motor rated Power	P06.14	Motor rated current
P06.12	Motor rated Voltage	P06.15	Motor rated speed
P06.13	Motor rated frequency		

5.2 Use the keyboard to control the start-stop and use the keyboard potentiometer to set the operating frequency

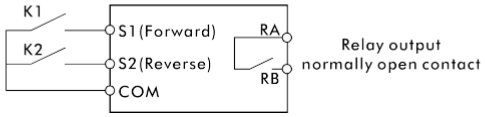
5.2.1 Power on. Use the operation keyboard to set the motor parameters (P06.11 ~ P06.15), keyboard potentiometer to control speed and acceleration / deceleration time (P02.50, P02.70).

Parameter number	Function	Set value	Detail
P01.63	Keyboard settings source	1 (Factory Value)	The operating frequency is set by the keyboard potentiometer
P02.10	Set value source 1	0 (Factory Value)	The operating frequency is set by the keyboard
P03.00	Start command source	1 (Factory Value)	Operation keyboard to run command channel
P02.50	Acceleration time 0	–	The acceleration time is adjusted according to actual needs
P02.70	Deceleration time 0	–	The deceleration time is adjusted according to actual needs

5.2.2 Press the RUN key on the operation keyboard to start the inverter, rotate the potentiometer on the keyboard to adjust the set frequency, and press the STOP key to stop the inverter.

5.3 Use the terminals to control start-stop and use the keyboard to set operating frequency

5.3.1 Terminal S1 is for forward signal input, and S2 is for reverse signal input. The wiring is as shown in the figure below.



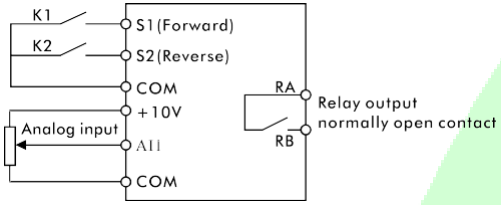
5.3.2 Power on, then set the function parameters according to the wiring diagram, see the table as below.

Parameter number	Function	Set value	Detail
P01.63	Keyboard settings source	0	Keyboard setting source is set by P02.92 number
P02.03	Source of incremental command (UP)	1	Increment command (UP) source keyboard
P02.04	Source of decrement command (DOWN)	1	Decrease command (DOWN) source keyboard
P02.10	Set value source 1	0 (Factory Value)	The operating frequency is set by the keyboard
P02.92	Keyboard set value	–	Operating frequency, relative to P02.18 percentage
P02.50	Acceleration time 0	–	Acceleration time is adjusted according to actual needs
P02.70	Deceleration time 0	–	Deceleration time is adjusted according to actual needs
P03.00	Start command source	3	Forward running function (terminal forward rotation signal input)
P03.01	Reverse start command source	4	Reverse running function (terminal reverse signal input)

5.3.3 When K1 in the wiring diagram is closed, the motor runs forward; when K1 is disconnected, the motor stops running. When K2 is closed, the motor runs in reverse; when K2 is disconnected, the motor stops running. When K1 and K2 are closed or opened at the same time, the motor stops running. You can increase / decrease the set frequency by set the value of P02.92 or pressing ▲ and on the operation keyboard.

5.4 Use the terminals to control start-stop and use analog to set operating frequency

5.4.1 Terminal S1 is for forward signal input, and S2 is for reverse signal input.
The wiring is shown in the figure below.



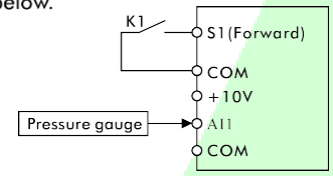
5.4.2 Power on, then set the function parameter table according to the wiring diagram, see the table below.

Parameter number	Function	Set value	Detail
P02.50			
P02.70			
P03.00		3	
P03.01	Set value source 1	2 4	The operating frequency is set by analog quantity AI1
P02.10	Acceleration time 0	–	The acceleration time is adjusted according to the actual demand
P02.50	Deceleration time 0	–	The deceleration time is adjusted according to the actual demand
P02.70	Start command source		Forward rotation function (terminal forward rotation signal input)
P03.00	Reverse start command source		Reverse function (terminal reverse signal input)
P03.01		4	

5.4.3 Set the operating frequency by adjusting the AI1 analog input.
5.4.4 When K1 in the wiring diagram is closed, the motor runs forward, when K1 is disconnected, the motor stops running. When K2 is closed, the motor runs in reverse; when K2 is disconnected, the motor stops running. When K1 and K2 are closed or opened at the same time, the motor stops running.

5.5 Process control PID: Multi-speed 0 is set value, AI1 is feedback value

5.5.1 Terminal S1 is the forward signal input, AI1 is the feedback signal input.
The wiring is shown below.



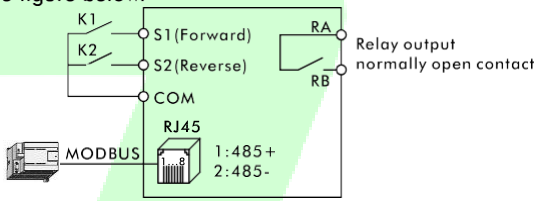
5.5.2 Power on, then set the function parameter table according to the wiring diagram, see the table below.

Parameter number	Function	Set value	Detail
P02.10	Set value source 1	1	PID set value selected multi-step speed 0: 100% of full scale
P02.11	Set value source 2	2	PID feedback selected analog AI1: 10V corresponds to full scale
P02.13	Set channel relationship	8	Activate PID control
P02.30	Multi-speed 0		PID set pressure
P03.00	Start command source	3	Select S1 as the source of the operation command
P04.00	PID proportional gain		Set as required, the greater the value, the faster the adjustment
P04.01	PID integration time		Set as required, the smaller the value, the faster the adjustment
P01.68	Keyboard H monitoring item selection	1090	Item H displays P10.90, which is the PID setting value
P01.69	Keyboard L monitoring item selection	1091	The L item shows P10.91, which is the PID feedback value

5.5.3 Adjust the P02.30 to get the desired pressure.
5.5.4 When K1 in the wiring diagram is closed, the system starts to run.

5.6 Use the terminals to control start-stop and use communication to set running frequency

5.6.1 Terminal S1 is for forward signal input and S2 is for reverse signal input.
The wiring is as shown in the figure below.



5.6.2 Power on, then set the function parameters according to the wiring diagram, see the table below.

Parameter number	Function	Set value	Detail
P01.40	Address	1 (Factory Value)	MODBUS RTU
P01.41	Communication Protocol	1 (Factory Value)	Slave address 1
P01.42		3 (Factory Value)	
P01.43	Baud rate	0 (Factory Value)	19200bps
P01.45	Parity check	1.0 (Factory Value)	No check
P02.10	Stop bit		MODBUS communication settings
P02.50	Acceleration time 0	5	1 bit
P02.70	Deceleration time 0	–	The acceleration time is adjusted according to actual needs
P03.00	Start command source		
P03.01	Reverse start command source	3	Deceleration time is adjusted according to actual needs
		4	Forward rotation function (terminal forward rotation signal input)

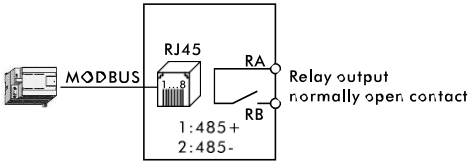
							Sum of Check
0x01	0x06						
	0x01	0x06		0xC3			

5.6.3 When K1 in the wiring diagram is closed, the motor runs forward, when K1 is disconnected, the motor stops running. When K2 is closed, the motor runs in reverse; when K2 is disconnected, the motor stops running. When K1 and K2 are closed or opened at the same time, the motor stops running
5.6.4 Modify the running frequency by writing register 0x0121 through MODBUS communication (function code 0x06). For example: modify the running frequency 25Hz of slave address 1, see the table below.

	Address	Function code	Register address		Register content			
Request frame			0x01	0x21	0xC3	0x50	0x88	0xF0
Reply frame			0x01	0x21		0x50	0x88	0xF0

5.7 Use communication to control start-stop and communication to set operating frequency

5.7.1 Connect the communication cable as shown below.



5.7.2 Power on, then set the function parameters according to the wiring diagram, see the table below.

Parameter number	Function	Set value	Detail
P01.40	Communication Protocol	1 (Factory Value)	MODBUS RTU
P01.41	Address	1 (Factory Value)	Slave address 1
P01.42	Baud rate	3 (Factory Value)	19200bps
P01.43	Parity check	0 (Factory Value)	No check
P01.45	Stop bit	1.0 (Factory Value)	1 bit
P02.10	Set value source 1	5	MODBUS communication settings
P02.50	Acceleration time 0	-	The acceleration time is adjusted according to actual needs
P02.70	Deceleration time 0	-	The deceleration time is adjusted according to actual needs
P03.00	Start command source	2	MODBUS communication start-stop

5.7.3 Start or stop the inverter whose slave address is 1 by writing register 0x0122 through MODBUS communication (function code 0x06).

Such as: start command, see the table below.

	Address	Function code	Register address		Register content		Sum of Check	
Request frame	0x01	0x06	0x01	0x22	0x00	0x01	0xE9	0xFC
Reply frame	0x01	0x06	0x01	0x22	0x00	0x01	0xE9	0xFC

Such as: stop command, see the table below.

	Address	Function code	Register address		Register content		Sum of Check	
Request frame	0x01	0x06	0x01	0x22	0x00	0x10	0x29	0xF0
Reply frame	0x01	0x06	0x01	0x22	0x00	0x10	0x29	0xF0

5.7.4 Modify the operating frequency by writing register 0x0121 through MODBUS communication (function code 0x06). For example: modify the running frequency 20Hz of slave address 1, see the table below.

	Address	Function code	Register address		Register content		Sum of Check	
Request frame	0x01	0x06	0x01	0x21	0x9C	0x40	0xB0	0xCC
Reply frame	0x01	0x06	0x01	0x21	0x9C	0x40	0xB0	0xCC

CHAPTER 6 - Function parameter list

Classify	Parameter number	Function	Setting range	Unit	Factory Value
01: System configuration	P01.11	Parameter operation	0: Normal Operation; 1: Parameter Initialization, initialization parameters other than P01.XX; 2: Initialize all parameters		0
	P01.13	Set keyword	0~9999		0
	P01.14	Set keyword confirmed	0~9999		0
	P01.15	Input keyword	0~9999		0
	P01.19	Parameter page number	0~4		0
	P01.20	Macro-program	0~9999		0
	P01.21	Recipe	0~10000		0
	P01.30	Set virtual terminal	0~199:Value setting; 200~9999:Address		0
	P01.32	Virtual address 1	0~4294967295		0
	P01.33	Virtual address 2	0~4294967295		0
	P01.34	Virtual address 3	0~4294967295		0
	P01.35	Virtual address 4	0~4294967295		0
	P01.36	Virtual address 5	0~4294967295		0
	P01.37	Virtual address 6	0~4294967295		0
	P01.38	Virtual address 7	0~4294967295		0
	P01.39	Command mode	0:Single Command source mode; 1:Multi-command source mode		0
	P01.40	Communication protocol	0:Reserved; 1:MODBUS RTU; 2~6:Reserved		1
	P01.41	Address	0~247		1
	P01.42	Baud rate	0: 2400; 1: 4800; 2: 9600; 3: 19200; 4: 38400; 5~10: Reserved	bps	3
	P01.43	Parity check	0:No Check; 1:Even check; 2:Odd check		0
	P01.44	Data bit	7~8	bit	8
	P01.45	Stop bit	0.0~2.0	bit	1.0
	P01.46	Communication delay time	0~100		3
	P01.47	Parameter decimal mode	0~123		0
	P01.63	Keyboard settings source	0: Keyboard numeric setting (P02.92); 1: Keyboard potentiometer setting		1

Classify	Parameter number	Function	Setting range	Unit	Factory Value
	P01.66	Keyboard M light source	0: Always 0; 1: Always 1; 2: Stopped; 3: Running; 4: Fault; 5: Warning; 6: Reversing; 7: Ready; 8: STO state; 100 ~ 9999: Address		5 0
	P01.68 P01.67 P01.69	Display value 1 source Keyboard M light source bit Display value 2 source	0~9999 0~9999		1011 1091
	P02.00		0~11111111 Units: S1; Tens: S2; Hundreds: S3; …		0
02: set channel	P02.01	Multi-speed source			0
	P02.02	Source of acceleration time			0
	P02.03	Source of deceleration time			0
	P02.04	Source of incremental command (UP)	Units: Keyboard; Tens: Communication; Hundreds: S1; Thousands: S2; 0: Keyboard; 1: Multi-speed; 2: AI1; 3: AI2; 5: Communication; 9: Pulse input; 200 ~ 9999: Address		0
	P02.10	Source of decrement command (DOWN)			0
	P02.11				0
		Set value source 1			
	P02.12	Set value source 2			0
		Set value source 3			0
	P02.13	Set channel 1 relationship selection	0:F1; 1:F2; 2:F1+F2; 3:F1-F2; 4:F1*F2/100; 5:Maximum value(F1,F2); 6:Minimum value(F1,F2) ; 7:Average value(F1,F2) ; 8:PID(F1,F2)		
	P02.14	Set channel 2 relationship selection			0
	P02.18	Minimum setting value			50.000
	P02.19	Maximum setting value			0.000
	P02.20	Avoid-frequency 1 start point	0.000~99999.000		
	P02.21	Avoid-frequency 1 stop point			
	P02.22	Avoid-frequency 2 start point		%	0.000
	P02.23	Avoid-frequency 2 stop point	-1000.000~1000.000		
	P02.24			%	10.000
		JOG frequency	-1000.000~1000.000		

Classify	Parameter number	Function	Setting range	Unit	Factory Value
02: set channel	P02.26	Increase and decrease (UP / DOWN) Step-frequency	-100.0~100.0	%	0.2
	P02.27	Increase and decrease (UP / DOWN) memory selection	0: No memory; 1: Only power down memory; 2: Only stop memory; 3: Both power down and stop memory		3
	P02.28	Speed up and down frequency	-1000.000~1000.000	%	0.000
	P02.30	Multi-speed 0	-1000.000~1000.000	%	0.000
	P02.31	Multi-speed 1			
	P02.32	Multi-speed 2			
	P02.33	Multi-speed 3			
	P02.34	Multi-speed 4			
	P02.35	Multi-speed 5			
	P02.36	Multi-speed 6			
	P02.37	Multi-speed 7			
	P02.38	Multi-speed 8			
	P02.39	Multi-speed 9			
	P02.40	Multi-speed 10			
	P02.41	Multi-speed 11			
	P02.42	Multi-speed 12			
	P02.43	Multi-speed 13			
	P02.44	Multi-speed 14			
	P02.45	Multi-speed 15			
	P02.50	Acceleration time 0	0.050~3600.000	s	*
	P02.51	Acceleration time 1			
	P02.52	Acceleration time 2			
	P02.53	Acceleration time 3			
	P02.54	Acceleration time 4			
	P02.55	Acceleration time 5			
	P02.56	Acceleration time 6			
	P02.57	Acceleration time 7			
	P02.58	Acceleration time 8			
	P02.59	Acceleration time 9			
	P02.60	Acceleration time 10			
	P02.61	Acceleration time 11			
	P02.62	Acceleration time 12			
	P02.63	Acceleration time 13			
	P02.64	Acceleration time 14			
	P02.65	Acceleration time 15			
	P02.66	JOG acceleration time	0.050~3600.000	s	5.000
	P02.68	S curve acceleration time 1	0.000~100.000	%	0.000
	P02.69	S curve acceleration time 2			

Function parameter list

Classify	Parameter number	Function	Setting range	Unit	Factory Value
02: set channel	P02.70	Deceleration time 0	0.050~3600.000	s	*
	P02.71	Deceleration time 1			
	P02.72	Deceleration time 2			
	P02.73	Deceleration time 3			
	P02.74	Deceleration time 4			
	P02.75	Deceleration time 5			
	P02.76	Deceleration time 6			
	P02.77	Deceleration time 7			
	P02.78	Deceleration time 8			
	P02.79	Deceleration time 9			
	P02.80	Deceleration time 10			
	P02.81	Deceleration time 11			
	P02.82	Deceleration time 12			
	P02.83	Deceleration time 13			
	P02.84	Deceleration time 14			
	P02.85	Deceleration time 15			
	P02.86	Jog deceleration time	0.050~3600.000	s	5.000
	P02.87	Safe deceleration time	0.050~3600.000	s	5.000
	P02.88	S curve deceleration time 1	0.000~100.000	%	0.000
	P02.89	S curve deceleration time 2			
	P02.90	Communication set value	-1000.000~1000.000	%	0.000
	P02.91	Communication command	0~4294967295		0
	P02.92	Keyboard set value	-1000.000~1000.000	%	100.000
	P02.93	Keyboard command	0~4294967295		0
03: Input and output	P03.00	Start command source	0 ~ 4294967295 Single command source mode (P01.39 = 0): 0: No effect; 1: Keyboard; 2: Communication; 3: S1; 4: S2; ... 17 ~ 32: The 0 ~ 15 bits of P01.30 Multi-command source mode (P01.39 = 1): bit0: Keyboard; bit1: Communication; bit2: S1; bit3: S2; ... bit16~bit31:The 0~15 bit of P01.30		1
	P03.01	Reverse start command source			0
	P03.02	Reverse command source			0
	P03.03	JOG command source			1
	P03.04	Stop command source			0
	P03.05	Free parking command source			0
	P03.06	Safe stop command source			0
	P03.07	Reset command source			1
	P03.08	Fault command source			0
	P03.09	Pause command source			0
	P03.20	S1 type	One place: 0: Positive logic; 1: Reverse logic; 2: Rising edge; 3: Falling edge Tens place: 1: Rising edge toggle; 2: Falling edge toggle Hundreds place: 1: The edge signal is not cleared by other edge signals Thousands place: 1: The edge signal is not cleared by the stop signal		0
	P03.21	S2 type			
	P03.22	S3 type			
	P03.23	S4 type			
	P03.24	S5 type			
	P03.25	S6 type			
	P03.26	S7 type			
	P03.27	S8 type			

Classify	Parameter number	Function	Setting range	Unit	Factory Value
03: Input and output	P03.28	S Input filtering	1~16		4
	P03.29	Start signal enable mode	0: Always enabled; 1: Need to re-enable after power on; 2: Need to re-enable after free stop or safe stop; 3: Need to re-enable after power-on, free stop or safe stop.		0
	P03.30	Y1 terminal source (RA、RB、RC or RA1、RB1、RC1)	0: Always 0; 1: Always 1; 2: Stopped; 3: Running; 4: Fault; 5: Warning; 6: Reversing; 7: Ready; 64: STO state; 100 ~ 9999: Address		3
	P03.31	Y1 terminal source bit	0~31		0
	P03.32	Y2 terminal source (RA2、RB2、RC2)	0: Always 0; 1: Always 1; 2: Stopped; 3: Running; 4: Fault; 5: Warning; 6: Reversing; 7: Ready; 64: STO state; 100 ~ 9999: Address		4
	P03.33	Y2 terminal source bit	0~31		0
	P03.34	Y3 terminal source (RA3、RB3、RC3)	0: Always 0; 1: Always 1; 2: Stopped; 3: Running; 4: Fault; 5: Warning; 6: Reversing; 7: Ready; 64: STO state; 100 ~ 9999: Address		5
	P03.35	Y3 terminal source bit	0~31		0
	P03.36	Y1 output delay time	0.000~6000.000	s	0.000
	P03.37	Y2 output delay time			
	P03.38	Y3 output delay time			
	P03.39	AI filter time	0.100~600.000	s	0.100
	P03.40	AI1 signal type	0: Voltage input; 1: Current input		0
	P03.41	AI1 low-end voltage (current)	-999999.000~999999.000	V(mA)	0.000
	P03.42	AI1 high-end voltage (current)			10.000
	P03.43	AI1 low-end setting	-999999.000~999999.000	%	0.000
	P03.44	AI1 high-end setting			100.000
	P03.45	AI2 signal type	0: Voltage input; 1: Current input		0
	P03.46	AI2 low-end voltage (current)	-999999.000~999999.000	V(mA)	0.000
	P03.47	AI2 high-end voltage (current)			10.000
	P03.48	AI2 low-end setting	-999999.000~999999.000	%	0.000
	P03.49	AI2 high-end setting			100.000

Classify	Parameter number	Function	Setting range	Unit	Factory Value
	P03.60				0
AO input and output		AO1 signal type	0: Voltage output; 1: Current output		
	P03.61	AO1 signal source	0: Always 0; 1: Always 10V / 20mA; 2: Output frequency; 3: Motor current; 4: Output voltage; 5: Motor torque; 6: Output power; 7: Set frequency; 100~999: Refer to the value of parameter numberr		2
	P03.62	AO1 low-end setting	-999999.000~999999.000		0.000
	P03.63	AO1 high-end setting			50.000
	P03.64	AO1 low-end voltage (current)			0.000
	P03.65	AO1 high-end voltage (current)		V(mA)	10.000
	P03.66	AO2 signal type	0: Voltage output; 1: Current output		0
	P03.67	AO2 signal source	0: Always 0; 1: Always 10V / 20mA; 2: Output frequency; 3: Motor current; 4: Output voltage; 5: Motor torque; 6: Output power; 7: Set frequency; 100~999: Refer to the value of parameter numberr		3
	P03.68	AO2 low-end setting	-999999.000~99999.000		0.000
	P03.69	AO2 high-end setting			50.000
	P03.70	AO2 low-end voltage (current)			0.000
	P03.71	AO2 high-end voltage (current)	-999999.000~999999.000	V(mA)	10.000
				%	0.010
PID control	P04.00	PID proportional gain	0.000~10.000	s	10.000
	P04.01	PID integration time	0.001~9999.000	%	0.000
	P04.02	PID differential time	0.000~9999.000	%	0.000
	P04.03	PID forward feedback coefficient	0~500	%	0
				s	0.004
	P04.05	PID sampling time	0.001~9999.000	%	100.000
	P04.06	PID output upper limit	-100.000~100.000	%	0.000
	P04.07	PID output lower limit		s	0.000
	P04.09	PID output filter time	0.000~60000.000		100.000
	P04.11			%	0.000
	P04.12	PID sleep frequency	0.000~500.000	s	0.000
	P04.13	PID enter sleep time	0.000~3600.000	%	0.000
	P04.14	PID wake-up deviation	0.000~100.000	s	0.000
		PID enter wake-up time	0.000~3600.000		
	P04.15	PID sleep action	0: Do not sleep; 1: PID stop; 2: Decelerate to stop; 3: Free to stop; 4: Pause; 5: Lowest frequency operation		0
	P04.90	PID status	0~4294967295		

Classify	Parameter number	Function	Setting range	Unit	Factory Value
05: System control I	P05.00	Control mode	0: VF; 1: Open loop vector 1		1
	P05.06	Forward and reverse switching time	0.000~6000.000	s	0.000
	P05.07	Forced change direction	0: No effect; 1: Forced change direction		0
	P05.08	Motor frequency upper limit	-1020.000~1020.000	Hz	55.000
	P05.10	start-up function	0: When the time of P05.11 is over, frequency start by pressing P05.12; 1: On speed start; 2: DC injection 3: Run at the frequency of P05.12 within the time of P05.11		0
	P05.11	Start time	0.000~60000.000	s	0.000
	P05.12	Start frequency	0.000~100.000	Hz	0.000
	P05.14	On speed start mode	0: All directional; 1: Set value direction; 2 ~ 3: Reserved		0
	P05.19	DC injection current	0.000~200.000	%	100.000
	P05.20	Stop function	Units: 0: Free parking; 1: DC braking; Ten: 1: Precise parking		0
	P05.21	Stop frequency	0.000~1000.000	Hz	0.000
	P05.22	DC braking	0.000~300.000	%	100.000
	P05.23	DC braking time	0.000~1000.000	s	0.000
	P05.24	Demagnetization time ratio	0.000~1000.000	%	10.000
	P05.26	Magnetic flux brake activation frequency	0.000~1000.000	Hz	0.000
	P05.27	Magnetic flux braking coefficient	100~200	%	100
	P05.28	Magnetic flux braking time	0.000~1000.000	s	0.000
	P05.30	Brake resistance mode	0: Invalid; 1: Maximum duty cycle		1
	P05.50	Auto reset mode	0~9999		0
	P05.51	Auto reset time	0.000~600.000	s	10.000
	P05.60	Auto energy saving minimum magnetic flux	30~100	%	100
	P05.61	Auto energy saving start frequency	0.000~200.000	Hz	5.000
	P05.63	Manual energy saving magnetic flux	30~90	%	70
	P05.71	Current upper limit	0~300	%	150
	P05.76	Upper limit of electric torque	0.000~900.00	%	150.000
	P05.77	Upper limit of regenerative torque	0.000~900.000	%	150.000
	P05.80	Over-voltage control	0: Invalid; 1: Valid at all times		1
	P05.82	Over-voltage control scale coefficient	0~200	%	100
	P05.83	Over-voltage control integral coefficient	1~10000	%	100

Classify	Parameter number	Function	Setting range	Unit	Factory Value
05: System control	P05.85	Under-voltage control	Units: grid power-down action mode 0: Invalid; 1: Instantaneous stop no stop; 2: Safe parking; 3 ~ 6: Reserved Tens: under-voltage action mode of power grid 0: Invalid; 1: Safe frequency reduction		0 *
	P05.86	Power grid voltage level	100~800	V	
	P05.90	AVR function selection	0: Invalid; 1: Valid; 2: Only invalid when decelerating		1
	P05.91	AVR function damping factor	0~100	%	100
06: Motor model	P06.00	Motor parameter self-learning	0: Invalid 1: Complete self-learning 2: Simple self-learning		0 *
	P06.05	Carrier frequency	2~16	kHz	
	P06.06	Over-modulation function	0: Invalid; 1: Valid		1
	P06.10	Motor type	0: Asynchronous motor; 1: Surface mount permanent magnet synchronization; 2: Salient pole permanent magnet synchronization 4: Single-phase motor		0 *
	P06.11	Motor rated Power	0.000~100000.000	kW	*
	P06.12	Motor rated voltage	0~1000	V	*
	P06.13	Motor rated frequency	1~3000	Hz	*
	P06.14	Motor rated current	0.00~1000.00	A	*
	P06.15	Motor rated speed	10~65535	rpm	*
	P06.16	Motor power factor	0.00~1.00		*
	P06.17	Number of motor poles	2~100		*
	P06.18	Motor rated torque	0.1~10000.0	N·m	*
	P06.19	Motor no-load current	0.00~1000.00	A	*
	P06.20	PM motor back EMF/rev	1.000~10000.000	mV/rpm	*
	P06.40	Stator impedance	0.000~99.990	Ω	*
	P06.41	Rotor impedance	0.000~99.990		*
	P06.42	Stator leakage reactance	0.000~999.990	mH	*
	P06.44	Motor main reactance	0.00~999.90	mH	*
	P06.50	PM d-axis reactance	0.000~1000.000	mH	*
	P06.51	PM q-axis reactance	0.001~9999.000	mH	*
	P06.52	PM d-axis reactance saturation coefficient	0.0~100.0	%	*
	P06.53	PM q-axis reactance saturation coefficient	0.0~100.0	%	
	P06.54	Maximum field weakening current d	10~400	%	100
	P06.55	Maximum field weakening current q	10~400	%	100
	P06.60	Single-phase motor turns ratio	0.200~1.800		1.000
	P06.70	Load type	0: Constant torque; 1: Fan water pump; 2: Promotion; 3: Reserved		0
	P06.80	Motor cable compensation strength	0~500		0

Classify	Parameter number	Function	Setting range	Unit	Factory Value
07: Control algorithm	P07.50	Slip compensation	-500~500	%	100
	P07.51	Slip compensation filter constant	1~10000	%	100
	P07.52	Resonance suppression coefficient	0~10000	%	100
	P07.53	Low-speed suppression filter constant	1~10000	%	100
	P07.54	High-speed suppression filter constant	1~10000	%	100
	P07.55	Automatic torque boost coefficient	0~300	%	100
	P07.57	Low speed minimum current	0~300	%	50
	P07.58	Static friction lift coefficient	0~10000	%	100
	P07.59	Static friction lift time	0.0~1000.0	s	0.0
	P07.71	VF curve-F1	0.0~3000.0	Hz	50.0
	P07.72	VF curve-F2			50.0
	P07.73	VF curve-F3			50.0
	P07.74	VF curve-F4			50.0
	P07.75	VF curve-V0	0~10000	V	0
	P07.76	VF curve-V1			*
	P07.77	VF curve-V2			*
	P07.78	VF curve-V3			*
	P07.79	VF curve-V4			
09: System protect	P09.00	Input phase loss action	0: Fault; 1: Alarm; 2: Invalid		2
	P09.04	Output phase loss detection	0: Invalid; 1: Valid		1
	P09.06	ETR selection	0: Invalid; 1: Alarm; 2: Fault		2
	P09.49	STO display selection	0: STO/STO1/STO2/STO3 state is not displayed; 1: Display alarm in STO state; 2: Display fault in STO state		0
10: System status	P10.05	Software version number			
	P10.10	Control word	0~4294967295		
	P10.11	Set value	-65535.0~65535.0		
	P10.15	Current state	0~4294967295		
	P10.16	Fault state word 1	0~4294967295		
	P10.17	Fault state word 2	0~4294967295		
	P10.18	Alarm state word	0~4294967295		
	P10.20	Output frequency absolute value	0.0~65535.0	Hz	
	P10.21	Output frequency	-65535.0~65535.0	Hz	
	P10.22	Output current	0.00~65535.00	A	
	P10.23	Output voltage	0.0~65535.0	V	
	P10.24	Output torque	0.000~65535.000	N·m	
	P10.25	DC voltage	0.0~65535.0	V	
	P10.26	Inverter temperature	0~65535	℃	
	P10.27	Inverter hot load	0~65535	%	

Function parameter list

Classify	Parameter number	Function	Setting range	Unit	Factory Value
10: System status	P10.28	Motor hot load	0~65535	%	
	P10.30	power	0.000~65535.000	kW	
	P10.31	Energy consumption	0.000~4294967.295	kW*h	
	P10.40	Hours of power on	0.000~4294967.295	h	
	P10.41	Number of power-on	0~4294967295		
	P10.44	Communication timeout	0.000~9999.000	s	
	P10.60	Current alarm number	0~4294967295		
	P10.61	Current fault number	0~4294967295		
	P10.62	Last fault number	0~4294967295		
	P10.63	The first two fault numbers	0~4294967295		
	P10.70	S input terminal state	0~4294967295		
	P10.71	AI1 terminal input value	-65535.000~65535.000	%	
	P10.72	AI2 terminal input value	-65535.000~65535.000	%	
	P10.74	Y terminal output state	0~4294967295		
	P10.75	AO1 terminal output value	-65535.000~65535.000	%	
	P10.76	AO2 terminal output value	-65535.000~65535.000	%	
	P10.78	Pulse input frequency	0.000~10000.000	kHz	
	P10.79	Pulse output frequency	0.000~10000.000	kHz	
	P10.80	Encoder count	0~4294967295		
	P10.81	Encoder speed	-9999.000~9999.000	Hz	
	P10.82	Encoder angle	0.0~359.9	deg	
	P10.90	Set value 1	-999999.000~999999.000	%	
	P10.91	Set value 2	-999999.000~999999.000	%	
	P10.92	Set value 3	-999999.000~999999.000	%	
	P10.98	Display value 1	-99999.000~99999.000		
	P10.99	Display value 2	-99999.000~99999.000		
11: Fault record	P11.10	Current fault output frequency	-999999.0~999999.0	Hz	0.0
	P11.11	Curerent fault output current	-999999.00~999999.00	A	0.00
	P11.12	Current fault bus voltage	-999999.0~999999.0	V	0.0
	P11.13	Current faulty inverter temperature	-999999~999999	℃	0
	P11.14	Current fault S terminal state	-999999~999999		0
	P11.15	Current fault Y terminal state	-999999~999999		0
	P11.16	Accumulated power-on time	0.000~4294967.295	h	0.000
	P11.20	Output frequency of last fault	-999999.0~999999.0	Hz	0.0
	P11.21	output current of last fault	-999999.00~999999.00	A	0.00
	P11.22	Bus voltage of last fault	-999999.0~999999.0	V	0.0
	P11.23	Inverter temperature of last fault	-999999~999999	℃	0
	P11.24	S-terminal state of last fault	-999999~999999		0
	P11.25	Y terminal state of last fault	-999999~999999		0
11: Fault record	P11.26	Accumulated power-on time of the last fault	0.000~4294967.295	h	0.000
	P11.30	Output frequency of the first two faults	-999999.0~999999.0	Hz	0.0
	P11.31	Output current of the first two faults	-999999.00~999999.00	A	0.00
	P11.32	Bus voltage of the first two faults	-999999.0~999999.0	V	0.0
	P11.33	Inverter temperature of the first two faults	-999999~999999	℃	0
	P11.34	S terminal state of the first two faults	-999999~999999		0
	P11.35	Y terminal state of th first two faults	-999999~999999		0
	P11.36	Accumulated power-on time of the first two faults	0.000~4294967.295	h	0.000
12: Free parameter	P12.00 ~ P12.19	Free parameter 1~ Free parameter 20	-999999.000~999999.000		0.000
	P12.90 ~ P12.99	Free parameter 91~ Free parameter 100	-999999.000~999999.000		0.000
13: Function output	P13.00	Comparator output	0~4294967295		0
	P13.01	Logic output	0~4294967295		0
	P13.02	Linear transformation 1 result	-999999.000~999999.000		0.000
	P13.03	Linear transformation 2 result	-999999.000~999999.000		0.000
	P13.10	Single arithmetic operation 1 output	-999999.000~999999.000		0.000
	P13.11	Single arithmetic operation 2 output	-999999.000~999999.000		0.000
	P13.12	Single arithmetic operation 3 output	-999999.000~999999.000		0.000
	P13.13	Single arithmetic operation 4 output	-999999.000~999999.000		0.000
	P13.14	Single arithmetic operation 5 output	-999999.000~999999.000		0.000
	P13.15	Math operation 1 output	-999999.000~999999.000		0.000
	P13.16	Math operation 2 output	-999999.000~999999.000		0.000
	P13.17	Math operation 3 output	-999999.000~999999.000		0.000
	P13.18	Math operation 4 output	-999999.000~999999.000		0.000
	P13.40	Comparator 1 output	0~1		0
	P13.41	Comparator 2 output	0~1		0
	P13.42	Comparator 3 output	0~1		0
	P13.43	Comparator 4 output	0~1		0
	P13.44	Comparator 5 output	0~1		0
	P13.45	Comparator 6 output	0~1		0
	P13.46	Comparator 7 output	0~1		0
	P13.47	Comparator 8 output	0~1		0
	P13.48	Comparator 9 output	0~1		0
	P13.50	Logic 1 output	0~1		0
	P13.51	Logic 2 output	0~1		0

Function parameter list

Classify	Parameter number	Function	Setting range	Unit	Factory Value
13: Function output	P13.60	Timer 1 current counting	0~4294967295		0
	P13.61	Timer 1 current value	0~65535		0
	P13.62	Timer 1 current stage	0~16		0
	P13.63	Timer 2 current counting	0~4294967295		0
	P13.64	Timer 2 current value	0~65535		0
	P13.65	Timer 2 current stage	0~16		0
	P13.92	virtual address current value 1	0~4294967295		0
	P13.93	virtual address current value 2	0~4294967295		0
	P13.94	virtual address current value 3	0~4294967295		0
	P13.95	virtual address current value 4	0~4294967295		0
	P13.96	virtual address current value 5	0~4294967295		0
	P13.97	virtual address current value 6	0~4294967295		0
	P13.98	virtual address current value 7	0~4294967295		0
14: encoder	P14.01	Encoder 1 resolution	1~2147483647		1024
	P14.02	Encoder 1 direction	0: Forward; 1:Reverse		0
16: logic unit	P16.00	Comparator 1 input parameter selection	0~65535		0
	P16.01	Comparator 1 comparison parameter selection	0~65535		0
	P16.02	Comparator 1 configuration	0: >; 1: <; 2: ⩾; 3: ⩽; 4: =; 5: ≈; 6: ≠		0
	P16.03	Comparator 1 delay time	0.000~99999.000	s	0.000
	P16.04	Comparator 2 input parameter selection	0~65535		0
	P16.05	Comparator 2 comparison parameter selection	0~65535		0
	P16.06	Comparator 2 configuration	0: >; 1: <; 2: ⩾; 3: ⩽; 4: =; 5: ≈; 6: ≠		0
	P16.07	Comparator 2 delay time	0.000~99999.000	s	0.000
	P16.08	Comparator 3 input parameter selection	0~65535		0
	P16.09	Comparator 3 comparison parameter selection	0~65535		0
	P16.10	Comparator 3 configuration	0: >; 1: <; 2: ⩾; 3: ⩽; 4: =; 5: ≈; 6: ≠		0
	P16.11	Comparator 3 delay time	0.000~99999.000	s	0.000

Classify	Parameter number	Function	Setting range	Unit	Factory Value
16: logic unit	P16.12	Comparator 4 input parameter selection	0~65535		0
	P16.13	Comparator 4 comparison parameter selection	0~65535		0
	P16.14	Comparator 4 configuration	0: >; 1: <; 2: ⩾; 3: ⩽; 4: =; 5: ≈; 6: ≠		0
	P16.15	Comparator 4 delay time	0.000~99999.000	s	0.000
	P16.16	Comparator 5 input parameter selection	0~65535		0
	P16.17	Comparator 5 comparison parameter selection	0~65535		0
	P16.18	Comparator 5 configuration	0: >; 1: <; 2: ⩾; 3: ⩽; 4: =; 5: ≈; 6: ≠		0
	P16.19	Comparator 5 delay time	0.000~99999.000	s	0.000
	P16.20	Comparator 6 input parameter selection	0~65535		0
	P16.21	Comparator 6 comparison parameter selection	0~65535		0
	P16.22	Comparator 6 configuration	0: >; 1: <; 2: ⩾; 3: ⩽; 4: =; 5: ≈; 6: ≠		0
	P16.23	Comparator 6 delay time	0.000~99999.000	s	0.000
	P16.24	Comparator 7 input parameter selection	0~65535		0
	P16.25	Comparator 7 comparison parameter selection	0~65535		0
	P16.26	Comparator 7 configuration	0: >; 1: <; 2: ⩾; 3: ⩽; 4: =; 5: ≈; 6: ≠		0
	P16.27	Comparator 7 delay time	0.000~99999.000	s	0.000
	P16.28	Comparator 8 input parameter selection	0~65535		0
	P16.29	Comparator 8 comparison parameter selection	0~65535		0
	P16.30	Comparator 8 configuration	0: >; 1: <; 2: ⩾; 3: ⩽; 4: =; 5: ≈; 6: ≠		0
	P16.31	Comparator 8 delay time	0.000~99999.000	s	0.000

Function parameter list

Classify	Parameter number	Function	Setting range	Unit	Factory Value
16: logic unit	P16.32	Comparator 9 input parameter selection	0~65535		0
	P16.33	Comparator 9 comparison parameter selection	0~65535		0
	P16.34	Comparator 9 configuration	0: >; 1: ≥; 2: ≤; 3: ; 4: ≈; 5: ≠; 6:		0
	P16.35	Comparator 9 delay time	0.000~99999.000	s	0.000
	P16.36	Logic unit 1 parameter selection 1	0~65535		0
	P16.37	Logic unit 1 input bit selection 1	0~32		0
	P16.38	Logic unit 1 parameter selection 2	0~65535		0
	P16.39	Logic unit 1 input bit selection 2	0~32		0
	P16.40	Logic unit 1 parameter selection 3	0~65535		0
	P16.41	Logic unit 1 input bit selection 3	0~32		0
	P16.42	Logical unit 1 configuration 1	0: No effect; 1: And; 2: OR; 3: NAND; 4: NOR; 5: XOR		0
	P16.43	Logical unit 1 configuration 2	0: No effect; 1: And; 2: OR; 3: NAND; 4: NOR; 5: XOR		0
	P16.44	Logic unit 2 parameter selection 1	0~65535		0
	P16.45	Logic unit 2 input bit selection 1	0~32		0
	P16.46	Logic unit 2 parameter selection 2	0~65535		0
	P16.47	Logic unit 2 input bit selection 2	0~32		0
	P16.48	Logic unit 2 parameter selection 3	0~65535		0
	P16.49	Logic unit 2 input bit selection 3	0~32		0
	P16.50	Logical unit 2 configuration 1	0: No effect; 1: And; 2: OR; 3: NAND; 4: NOR; 5: XOR		0
	P16.51	Logical unit 2 configuration 2	0: No effect; 1: And; 2: OR; 3: NAND; 4: NOR; 5: XOR		0
16: logic unit	P16.76	Selector 1 parameter source	0~65535		0
	P16.77	Selector 1 setting	0~16:numerical setting; 200~65535: address		0
	P16.78	Selector 1 destination parameters	0~65535		0
	P16.79	Selector 2 parameter source	0~65535		0
	P16.80	Selector 2 setting	0~16:numerical setting; 200~65535: address		0
	P16.81	Selector 2 destination parameters	0~65535		0
	P16.82	Selector 3 parameter source	0~65535		0
	P16.83	Selector 3 setting	0~16:numerical setting; 200~65535: address		0
	P16.84	Selector 3 destination parameters	0~65535		0
	P16.85	Selector 4 parameter source	0~65535		0
	P16.86	Selector 4 setting	0~16:numerical setting; 200~65535: address		0
	P16.87	Selector 4 destination parameters	0~65535		0
	P16.88	Selector 5 parameter source	0~65535		0
	P16.89	Selector 5 setting	0~16:numerical setting; 200~65535: address		0
	P16.90	Selector 5 destination parameters	0~65535		0
	P16.91	Selector 6 parameter source	0~65535		0
	P16.92	Selector 6 setting	0~16:numerical setting; 200~65535: address		0
	P16.93	Selector 6 destination parameters	0~65535		0
	P16.94	Selector 7 parameter source	0~65535		0
	P16.95	Selector 7 setting	0~16:numerical setting; 200~65535: address		0
	P16.96	Selector 7 destination parameters	0~65535		0
	P16.97	Selector 8 parameter source	0~65535		0
	P16.98	Selector 8 setting	0~16:numerical setting; 200~65535: address		0
	P16.99	Selector 8 destination parameters	0~65535		0
17: Mathematical operations	P17.00	Linear transformation 1 parameter source	0~65535		0
	P17.01	Linear transformation 1 X1	-999999.000~999999.000		0.000
	P17.02	Linear transformation 1 X2	-999999.000~999999.000		50.000
	P17.03	Linear transformation 1 Y1	999999.000~999999.000		0.000
	P17.04	Linear transformation 1 Y2	999999.000~999999.000		1500.000
	P17.05	Linear transformation 2 parameter source	0~65535		0

Classify	Parameter number	Function	Setting range	Unit	Factory Value
17: Mathematical operations	P17.06	Linear transformation 2 X1	-999999.000~999999.000		0.000
	P17.07	Linear transformation 2 X2	-999999.000~999999.000		0.000
	P17.08	Linear transformation 2 Y1	-999999.000~999999.000		0.000
	P17.09	Linear transformation 2 Y2	-999999.000~999999.000		0.000
	P17.16	Single arithmetic operation 1 parameter source	0~65535		0
	P17.17	Single arithmetic operation 1 operation setting	0: ABS; 1: Sqrt; 2: Sin; 3: Cos; 4: Power2; 5: Power3; 6: Random; 7: Bitwise NOT; 8: 2 to the n; 10: If less than 0, it means 0. If greater than 0, unchange; 11: If greater than 0, it means 0. If less than 0, unchange		0
	P17.18	Single arithmetic operation 2 parameter source	0~65535		0
	P17.19	Single arithmetic operation 2 operation setting	0: ABS; 1: Sqrt; 2: Sin; 3: Cos; 4: Power2; 5: Power3; 6: Random; 7: Bitwise NOT; 8: 2 to the n; 10: If less than 0, it means 0. If greater than 0, unchange; 11: If greater than 0, it means 0. If less than 0, unchange		0
	P17.20	Single arithmetic operation 3 parameter source	0~65535		0
	P17.21	Single arithmetic operation 3 operation setting	0: ABS; 1: Sqrt; 2: Sin; 3: Cos; 4: Power2; 5: Power3; 6: Random; 7: Bitwise NOT; 8: 2 to the n; 10: If less than 0, it means 0. If greater than 0, unchange; 11: If greater than 0, it means 0. If less than 0, unchange		0
	P17.22	Single arithmetic operation 4 parameter source	0~65535		0
	P17.23	Single arithmetic operation 4 operation setting	0: ABS; 1: Sqrt; 2: Sin; 3: Cos; 4: Power2; 5: Power3; 6: Random; 7: Bitwise NOT; 8: 2 to the n; 10: If less than 0, it means 0. If greater than 0, unchange; 11: If greater than 0, it means 0. If less than 0, unchange		0
	P17.24	Single arithmetic operation 5 parameter source	0~65535		0
	P17.25 . P17.26 P17.27 . P17.28	Single arithmetic operation 5 operation setting	0: ABS; 1: Sqrt; 2: Sin; 3: Cos; 4: Power2; 5: Power3; 6: Random; 7: Bitwise NOT; 8: 2 to the n; 10: If less than 0, it means 0. If greater than 0, unchange; 11: If greater than 0, it means 0. If less than 0, unchange		0 0 0
	.	Mathematical operation 1 parameter source 1	0~65535		
	P17.29 .	Mathematical operation 1 parameter source 2	0~65535		0
	.	Mathematical operation 1 parameter source 3	0~65535		
	. P17.30	Math operation 1 operation setting 1	0:No effect; 1:+; 2:-; 3:*; 4:/; 5:Max; 6:Min; 7:Mean; 9:Bitwise AND; 10:Bitwise OR; 11:ANDN; 15:Edge signal source; 16:Rearrange the values and increase 8 bits		0
	P17.31 P17.32 . P17.33	Math operation 1 operation setting 2	0:No effect; 1:+; 2:-; 3:*; 4:/; 5:Max; 6:Min; 7:Mean; 9:Bitwise AND; 10:Bitwise OR; 11:ANDN; 15:Edge signal reset; 16:Rearrange the values and decrease 8 bits		0 0 0
	.	Mathematical operation 2 parameter source 1	0~65535		
	.	Mathematical operation 2 parameter source 2	0~65535		
	.	Mathematical operation 2 parameter source 3	0~65535		

Classify	Parameter number	Function	Setting range	Unit	Factory Value
17: Mathematical operations	P17.34	Math operation 2 operation setting 1	0:No effect; 1:+; 2:-; 3:*; 4:/; 5:Max; 6:Min; 7:Mean; 9:Bitwise AND; 10:Bitwise OR; 11:ANDN; 15:Edge signal source; 16:Rearrange the values and increase 8 bits		0
	P17.35	Math operation 2 operation setting 2	0:No effect; 1:+; 2:-; 3:*; 4:/; 5:Max; 6:Min; 7:Mean; 9:Bitwise AND; 10:Bitwise OR; 11:ANDN; 15:Edge signal reset; 16:Rearrange the values and decrease 8 bits		0
	P17.36	Mathematical operation 3 parameter source 1	0~65535		0
	P17.37	Mathematical operation 3 parameter source 2	0~65535		0
	P17.38	Mathematical operation 3 parameter source 3	0~65535		0
	P17.39	Math operation 3 operation setting 1	0:No effect; 1:+; 2:-; 3:*; 4:/; 5:Max; 6:Min; 7:Mean; 9:Bitwise AND; 10:Bitwise OR; 11:ANDN; 15:Edge signal source; 16:Rearrange the values and increase 8 bits		0
	P17.40	Math operation 3 operation setting 2	0:No effect; 1:+; 2:-; 3:*; 4:/; 5:Max; 6:Min; 7:Mean; 9:Bitwise AND; 10:Bitwise OR; 11:ANDN; 15:Edge signal reset; 16:Rearrange the values and decrease 8 bits		0
	P17.41	Mathematical operation 4 parameter source 1	0~65535		0
	P17.42	Mathematical operation 4 parameter source 2	0~65535		0
	P17.43	Mathematical operation 4 parameter source 3	0~65535		0

Classify	Parameter number	Function	Setting range	Unit	Factory Value
17: Mathematical operations	P17.44	Math operation 4 operation setting 1	0:No effect; 1:+; 2:-; 3:*; 4:/; 5:Max; 6:Min; 7:Mean; 9:Bitwise AND; 10:Bitwise OR; 11:ANDN; 15:Edge signal source; 16:Rearrange the values and increase 8 bits		0
	P17.45	Math operation 4 operation setting 2	0:No effect; 1:+; 2:-; 3:*; 4:/; 5:Max; 6:Min; 7:Mean; 9:Bitwise AND; 10:Bitwise OR; 11:ANDN; 15:Edge signal reset; 16:Rearrange the values and decrease 8 bits		0
18: Timing control	P18.00	Timer 1 clock source	0:1ms; 2:100ms; 3:1s; 6:1h; 7:1day; 11~26: from S1 ~ S16, when S terminal is the rising edge, count plus 1; 27~42: from the 0~15 bits of virtual terminal P01.30, when the corresponding bit is the rising edge, count plus 1; 51~76: from S1~S16 when S terminal is the falling edge, count plus 1; 77~92: from the 0~15 bits of virtual terminal P01.30, when the corresponding bit is the falling edge, count plus 1; 200~3799: address		0
	P18.01	Timer 1 working mode	0: Stop at the end of a single run; 1 ~ 16: Set the start of the next cycle At the end of a single operation, the cycle starts automatically from the setting		0
	P18.02	Timer 1 control command	bit0: Enable; bit1: Start counting; bit2: Pause counting; bit3: Clear the counting		0
	P18.03	Timer 1 set value	0~4294967295 ~1~4294967295		1
	P18.04	Timer 1 phase 1 time	0~4294967295		0
	P18.05	Timer 1 phase 2 time	0~4294967295		0
	P18.06	Timer 1 phase 3 time	0~4294967295		0
	P18.07	Timer 1 phase 4 time	0~4294967295		0
	P18.08	Timer 1 phase 5 time	0~4294967295		0
	P18.09	Timer 1 phase 6 time	0~4294967295		0
	P18.10	Timer 1 phase 7 time	0~4294967295		0
	P18.11	Timer 1 phase 8 time	0~4294967295		0

Classify	Parameter number	Function	Setting range	Unit	Factory Value
18: Timing control	P18.12	Timer 1 phase 9 time	0~4294967295		0
	P18.13	Timer 1 phase 10 time	0~4294967295		0
	P18.14	Timer 1 phase 11 time	0~4294967295		0
	P18.15	Timer 1 phase 12 time	0~4294967295		0
	P18.16	Timer 1 phase 13 time	0~4294967295		0
	P18.17	Timer 1 phase 14 time	0~4294967295		0
	P18.18	Timer 1 phase 15 time	0~4294967295		0
	P18.19	Timer 1 phase 16 time	0~4294967295		0
	P18.20	Timer 2 clock source	0:1ms; 1:10ms; 2:100ms; 3:1s; 6:1h; 7:1day; 11~26: from S1 ~ S16, when S terminal is the rising edge, count plus 1; 27~42: from the 0~15 bits of virtual terminal P01.30, when the corresponding bit is the rising edge, count plus 1; 51~76: from S1~S16，when S terminal is the falling edge, count plus 1; 77~92: from the 0~15 bits of virtual terminal P01.30, when the corresponding bit is the falling edge, count plus 1; 200~3799: address		0
	P18.21	Timer 2 working mode	0: Stop at the end of a single run; 1 ~ 16: Set the start of the next cycle At the end of a single operation, the cycle starts automatically from the setting		0
	P18.22	Timer 2 control command	bit0: Enable; bit1: Start counting; bit2: Pause counting; bit3: Clear counting		0
	P18.23	Timer 2 set value	-1~4294967295		-1
	P18.24	Timer 2 phase 1 time	0~4294967295		0
	P18.25	Timer 2 phase 2 time	0~4294967295		0
	P18.26	Timer 2 phase 3 time	0~4294967295		0
	P18.27	Timer 2 phase 4 time	0~4294967295		0
	P18.28	Timer 2 phase 5 time	0~4294967295		0
	P18.29	Timer 2 phase 6 time	0~4294967295		0
	P18.30	Timer 2 phase 7 time	0~4294967295		0
	P18.31	Timer 2 phase 8 time	0~4294967295		0
	P18.32	Timer 2 phase 9 time	0~4294967295		0
	P18.33	Timer 2 phase 10 time	0~4294967295		0
	P18.34	Timer 2 phase 11 time	0~4294967295		0
	P18.35	Timer 2 phase 12 time	0~4294967295		0
	P18.36	Timer 2 phase 13 time	0~4294967295		0
	P18.37	Timer 2 phase 14 time	0~4294967295		0
	P18.38	Timer 2 phase 15 time	0~4294967295		0
	P18.39	Timer 2 phase 16 time	0~4294967295		0

6.1 Group 01 parameters: system configuration

Parameter number	Function	Setting range	Unit	Factory Value
P01.11	Parameter operation	0: Normal Operation; 1: Parameter Initialization, initialization parameters other than P01.XX; 2: Initialize all parameters		0
P01.13	Set keyword	0~9999		0
P01.14	Set keyword confirmed	0~9999		0
P01.15	Input keyword	0~9999		0

▪ Function:Parameter operation setting

➢ Principle explanation:
Set P01.13 and P01.14 to the same non-zero number, and the set password is valid.

Parameter number		Setting range		Factory Value
P01.19	Page of parameter	0~4		0

▪ Function: customize macro with upper computer

➢ Defining rules:
Modify P01.19 to complete page turning firstly
{parameter no. (even numbers), 4294967210}
{next parameter no. , 11(Application macro code to be set)},
{next parameter no. , 300(parameter no. To be modified P03.00)}
{next parameter no. , 3(setting value of P03.00)}

{parameter no. (even numbers), 4294967125,} end

Parameter number	Function	Setting range	Unit	Factory Value
P01.20	Macro-program	0~9999		0
P01.21	Recipe	0~10000		0

▪ Function: choose application macro, formula

➢ Principle explanation:
Application macro is a group of parameter. Activating the corresponding application macro is same to setting the macro parameter set.
Set P01.20 to select the corresponding macro, you can select 2 macros at the same time. Each two-digit number represents a macro, thousand bit and hundred bit form a macro, and ten bit and unit form another macro. When the corresponding macro setting value of P01.20 changes, the corresponding macro configuration action is applied, and any parameters can be manually modified after the configuration is completed. For specific macro information, please refer to the application macro detailed description.A formula is a set of parameter sets, and the corresponding formula configuration action is executed every time the power is turned on and switched.

Parameter number	Function	Setting range	Unit	Factory Value
P01.30	Set virtual terminal	0~199:Value setting; 200~9999:Address		0

▪ Function:set virtual terminal value

➢ Principle explanation:
The virtual terminal is used as a function extension. When set to 0 ~ 199, this value is the set value; when set to 200 ~ 9999, this setting is the address. The address is the selected parameter number, and the actual value is determined by the current value of the selected parameter number. For usage details, please refer to P03.00 ~ P03.09.

Parameter number	Function	Setting range	Unit	Factory Value
P01.32	Virtual address 1	0~4294967295		
P01.33	Virtual address 2	0~4294967295		0 0
P01.34	Virtual address 3	0~4294967295		0
P01.35	Virtual address 4	0~4294967295		0
P01.36	Virtual address 5	0~4294967295		0
P01.37	Virtual address 6	0~4294967295		0
P01.38	Virtual address 7	0~4294967295		0

■ Function: set virtual communication terminal address

➢ Principle explanation:
Virtual communication address is used as function expansion. When the 16 bit communication data other than the parameter number is sent or received through the upper computer, this value is the actual address of the upper computer (the upper computer address is converted to decimal, plus 1), and the corresponding value of the virtual address refers to P13.92 ~ P13.98.

➢ For example:using BD600 inverter communication address as the upper computer to control the start, stop, setting frequency and read output frequency of NG1000 inverter.

BD600 communication address and data

Communication address	Communication data
1000H	Control command, 0001H: forward operation; 0006H: deceleration stop
3000H	Setting frequency (0~10000 correspondence to 0~max. frequency)
3001H	Read output frequency

NG1000 parameter setting

Parameter number	Function	Set Value
P01.32	Virtual address 1	4097
P01.33	Virtual address 2	12289
P01.34	Virtual address 3	12290
P02.10	Set value source 1	5
P03.00	Start command source	2
P12.00	Free parameter 1	100.000
P12.02	Free parameter 3	1.000
P12.06	Free parameter 7	16.000
P12.07	Free parameter 8	100.000
P16.76	Selector 1 parameter source	1201
P16.77	Selector 1 setting	1392
P16.78	Selector 1 destination parameters	291
P16.79	Selector 2 parameter source	1315
P16.80	Selector 2 setting	0
P16.81	Selector 2 destination parameters	290
P16.82	Selector 3 parameter source	1316
P16.83	Selector 3 setting	0
P16.84	Selector 3 destination parameters	1394
P17.26	Mathematical operation 1 parameter source 1	1393
P17.27	Mathematical operation 1 parameter source 2	1200
P17.29	Math operation 1 operation setting 1	4
P17.31	Mathematical operation 2 parameter source 1	1020
P17.32	Mathematical operation 2 parameter source 2	127
P17.34	Math operation 2 operation setting 1	3

Parameter number	Function	Setting range	Unit	Factory Value
P01.39	Command Mode	0:Single Command source mode; 1:Multi-command source mode		0

■ Function:Select command mode

➢ Principle explanation:
The command mode determines the command source . The single-command source mode specifies one source with an index number, and the multi-command source mode can specify multiple sources in binary. For usage details, please refer to P03.00 ~ P03.09.

Parameter number	Function	Setting range	Unit	Factory Value
P01.40	Communication protocol	0:Reserved; 1:MODBUS RTU; 2~6:Reserved		1

■ Function:Select communication protocol (only supports MOUDBUS RTU)

Parameter number	Function	Setting range	Unit	Factory Value
P01.41	Address	0~247		1

■ Function:Set the local address of the inverter

Parameter number	Function	Setting range	Unit	Factory Value
P01.42	Baud rate	0: 2400; 1: 4800; 2: 9600; 3: 19200; 4: 38400; 5~10: Reserved	bps	3
P01.43	Parity check	0:No Check; 1:Even check; 2:Odd check		0
P01.44	Data bit	7~8	bits	8
P01.45	Stop bit	0.0~2.0	bit	1.0

■ Function:Functional port configuration

Parameter number	Function	Setting range	Unit	Factory Value
P01.46	Communication delay time	0~100	ms	3

■ Function:Set communication delay time, and suggest upper computer communication timeout setting range: 200ms-1000ms

Parameter number	Function	Setting range	Unit	Factory Value
P01.47	parameter decimal mode	0~123		0

■ Function:select command mode

➢ Principle explanation:
The parameter decimal point mode only affects communication, changes the parameter value during communication.

➢ P01.47's unit place are for the parameters of three decimal places:
0: the decimal place remains unchanged, 1: the decimal place becomes two,
2: the decimal place becomes one, 3: becomes no decimal place.

➢ The ten place of P01.47 are for the parameters of two decimal places:
0: the decimal place remains unchanged, 1: the decimal place becomes one,
2: becomes no decimal place.

➢ P01.47's hundred place are for one decimal place parameter:
0: decimal place remains unchanged, 1: becomes no decimal place.

➢ For example: P02.51=30.000s when P01.47=000 serial port read data=30000;
when P01.47=001 serial port read data=3000; when P01.47=002 serial port read data=300;
when P01.47=003 serial port reading data=30.

➢ For example: P06.44=43.66 when P01.47=000 serial port read data=4366;
when P01.47=010 serial port read data=436; when P01.47=020 serial port read data=43

Parameter number	Function	Setting range	Unit	Factory Value
P01.63	Keyboard settings source	0: Keyboard numeric setting (P02.92); 1: Keyboard potentiometer setting		1

■ Function:Set keyboard settings source

➢ Principle explanation:
Select the source of keyboard setting value, digital setting (P02.92) or keyboard potentiometer. When the keyboard potentiometer setting is selected, P02.92 will keep the current potentiometer setting data, then select the keyboard numeric setting, and set the frequency to the previous potentiometer setting data.

Parameter number	Function	Setting range	Unit	Factory Value
P01.66	keyboard M light source	0: Always 0; 1: Always 1; 2: Stopped; 3: Running; 4: Fault; 5: Warning; 6: Reversing; 7: Ready; 64: STO state; 100 ~ 9999: Address		5
P01.67	Keyboard M light source bit	0~31		0

■ Function: Select the signal source of the keyboard M light

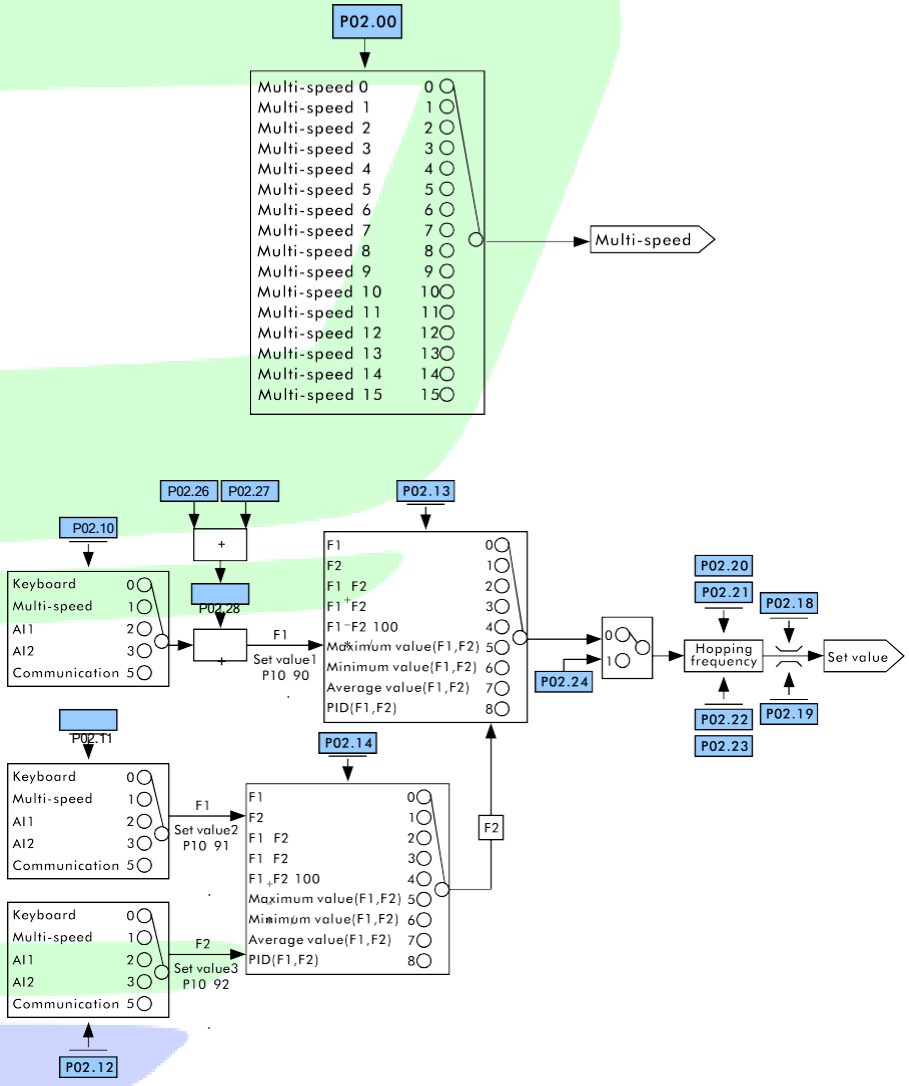
➢ Principle explanation:
The set value of keyboard M light source is bigger or equal to 100 (address mode), the address is the selected parameter number, the actual value is determined by the current value of the selected parameter number. The bit position of the keyboard M light source is set bit selection. When the terminal source is address 100 ~ 9999, the bit setting is valid. The keyboard M light source setting value is less than 100 (non-address mode), and the keyboard M light source bit does not need to be set. The function description of the terminal source is as follows:

Setting value	Function	Description
0	Always 0	Keyboard M light off
1	Always 1	Keyboard M light on
2	Stopped	In the stopped state, the keyboard M light is on
3	Running	In the running state, the keyboard M light is on
	Fault	In the fault state, the keyboard M light is on
4		
5	Alarm	In the alarm state, the keyboard M light is on
6	Reversing	In the reversing state, the keyboard M light is on
7	Ready	In the ready state, the keyboard M light is on
64	STO status	In the STO state, the keyboard M light is on
100~9999	Address	Select the parameter as the output source of keyboard M light

Parameter number	Function	Setting range	Unit	Factory Value
P01.68	Display value 1 source	0~9999		1011
P01.69	Display value 2 source	0~9999		1091

■ Function: Set display value source

6.2 Group 02 parameters: setting channel



Chapter 6

➢ Principle explanation:
Set the source of the display value, the source is the parameter number, and the value of the corresponding parameter number is put into P10.98 and P10.99 to be used as the corresponding monitoring display of the keyboard. See the keyboard description for details.
The keyboard display value 1 and display value 2 can be flexibly selected, and the factory value displays the set value and set value 2. If want to select other status data display, set P01.68 and P01.69 to the corresponding parameter number, for example: the keyboard displays acceleration time 0 and acceleration time 1, you need to set the parameters P01.68 = 250, P01.69 = 251, at this time, the data of the keyboard display value 1 is the acceleration time 0, and the data of the display value 2 is the acceleration time 1.

Figure 6-2-1 Set value source and channel setting

Parameter number	Function	Setting range	Unit	Factory Value
P02.00	Multi-speed source	0~11111111 Units: S1; Tens: S2; Hundreds: S3; …		0
P02.01	Source of acceleration time			0
P02.02	Source of deceleration time			0
P02.03	Source of incremental command (UP)	Units: Keyboard; Tens: Communication; Hundreds: S1; Thousands: S2; …		0
P02.04	Source of decrement command (DOWN)			0

▪ Function: Select command source

- P02.00: Multi-speed source, select the corresponding external terminal, see P02.30 ~ P02.45 for multispeed 0 ~ 15.
- P02.01: Source of acceleration time, select the corresponding external terminal. For acceleration time, please refer to P02.50 ~ P02.65.
- P02.02: source of deceleration time, select the corresponding external terminal, see P02.70 ~ P02.85 for deceleration time.
- P02.03: Source of incremental instruction (UP), select the corresponding source.
- P02.04: Decrease instruction (DOWN) source, select the corresponding source. See P02.26 ~ P02.28 for UP / DOWN parameters.
- Example: Select S2, S3, S4 as effective external terminals to control 8-stage speed:
  Step 1: Select S2, S3, S4 as multi-speed terminals, P02.00 is set to 1110;
  Step 2: Control S2, S3, S4 to switch multi-speed, the corresponding relationship between 8 multi-speed is as follows:

S4	S3	S2	Effective multi-speed
0	0	0	Multi-speed 0
0	0	1	Multi-speed 1
0	1	0	Multi-speed 2
0	1	1	Multi-speed 3
1	0	0	Multi-speed 4
1	0	1	Multi-speed 5
1	1	0	Multi-speed 6
1	1	1	Multi-speed 7

Parameter number	Function	Setting range	Unit	Factory Value
P02.10	Set value source 1	0: Keyboard; 1: Multi-speed; 2: AI1; 3: AI2; 5: Communication; 9: Pulse input; 200 ~ 9999: Address		0
P02.11	Set value source 2			0
P02.12	Set value source 3			0

▪ Function: Select the source of the set value

- See P01.63 for keyboard setting value
- The communication setting value is written into P02.90 through communication.
- When the setting is 200 ~ 9999, this setting is the address. The address is the selected parameter number, and the actual value is determined by the current value of the selected parameter number.

Parameter number	Function	Setting range	Unit	Factory Value
P02.13	Set channel 1 relationship selection	0:F1; 1:F2; 2:F1+F2; 3:F1-F2; 4:F1*F2/100; 5:Maximum value(F1,F2); 6:Minimum value(F1,F2) ; 7:Average value(F1,F2) ; 8:PID(F1,F2)		0
P02.14	Set channel 2 relationship selection			0

▪ Function: Select to set the channel relationship

- Principle explanation:
  In the setting channel relationship, set 0 to select the F1 channel set value; Set 1 to select the F2 channel set value; Set 2 to select the sum of the F1 and F2 channel set values; Set 3 to select the difference between the F1 and F2 channel set values ; Set 4 to select the product of F1 and F2 channel set value divided by 100; Set 5 to select the maximum value in F1 and F2; Set 6 to select the minimum value in F1 and F2; Set 7 to select the average value of F1 and F2; Set 8 to select PID Control (F1 is set, F2 is feedback).

Parameter number	Function	Setting range	Unit	Factory Value
P02.18	Maximum setting value	0.000~99999.000		50.000
P02.19	Minimum setting value			0.000

▪ Function: limit the set value range

- Principle explanation:
  Limit the setting range to [P02.19, P02.18]. When each setting source is in units of %, the maximum setting value (P02.18) represents 100%, which is based on the maximum setting value. The output frequency is less than or equal to P05.08 motor frequency upper limit.

Parameter number		Setting range		Factory Value
P02.20	Avoid-frequency 1 start point	-1000.000~1000.000	%	0.000
P02.21	Avoid-frequency 1 stop point			
P02.22	Avoid-frequency 2 start point			
P02.23	Avoid-frequency 2 stop point			

▪ Function: Set the avoidance frequency

- Principle explanation:
  The set frequency of the inverter is given in a skipped manner in the avoidance frequency range in the manner of Figure 6-2-2.

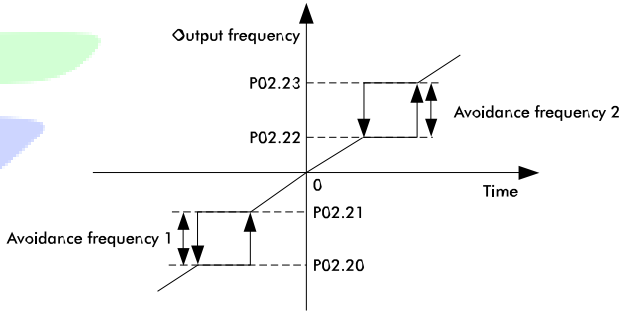


Figure 6-2-2 Avoidance frequency

Parameter number	Function	Setting range	Unit	Factory Value
P02.24	Jog Frequency	-1000.000~1000.000	%	10.000

■ Function: Set the Jog frequency as a percentage of the maximum set value of P02.18. Jog command see P03.03

Parameter number	Function	Setting range	Unit	Factory Value
P02.26	Increase and decrease (UP / DOWN) Step-frequency	-100.0~100.0	%	0.2
P02.27	Increase and decrease (UP / DOWN) memory selection	0: No memory; 1: Only power down memory; 2: Only stop memory; 3: Both power down and stop memory		3
P02.28	Speed up and down frequency	-1000.000~1000.000	%	0.000

■ Function: Select UP / DOWN function

➢ Principle explanation:

When the signal is activated, the frequency setting of the inverter increases or decreases by one unit. When the switch is held, the frequency will rapidly increase upward or downward to a certain time, and then increase or decrease uniformly. See P02.03 ~ P02.04 for the selection of UP / DOWN signal. P02.28 is only used for clearing UP / DOWN results. The data has no intuitive meaning after standardization.

Parameter number	Function	Setting range	Unit	Factory Value
			%	0.000

■ Function: Multi-stage speed setting

Parameter number	Function	Setting range	Unit	Factory Value
P02.50	Acceleration time 0	0.050~3600.000	s	*
P02.51	Acceleration time 1			
P02.52	Acceleration time 2			
P02.53	Acceleration time 3			
P02.54	Acceleration time 4			
P02.55	Acceleration time 5			
P02.56	Acceleration time 6			
P02.57	Acceleration time 7			
P02.58	Acceleration time 8			
P02.59	Acceleration time 9			
P02.60	Acceleration time 10			
P02.61	Acceleration time 11			
P02.62	Acceleration time 12			
P02.63	Acceleration time 13			
P02.64	Acceleration time 14			
P02.65	Acceleration time 15			

■ Function: acceleration time setting

➢ Principle explanation:

As shown in Figure 6-2-3, the acceleration time refers to the time required to accelerate from 0Hz to P06.13 motor frequency.

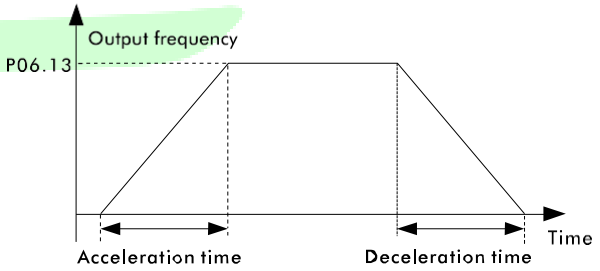


Figure 6-2-3 Acceleration and Deceleration

Parameter number	Function	Setting range	Unit	Factory Value
P02.66	JOG acceleration time	0.050~3600.000	s	5.000

■ Function: Set Jog acceleration time

Parameter number	Function	Setting range	Unit	Factory Value
P02.68	S curve acceleration time 1	0.000~100.000	%	0.000
P02.69	S curve acceleration time 2			

■ Function: Set S curve acceleration time

➢ Principle explanation:
S curve is used in places requiring gentle start or stop, such as elevators, conveyor belts, etc.
Note: When P02.68 and P02.89 are not 0, S curve acceleration and deceleration are effective.

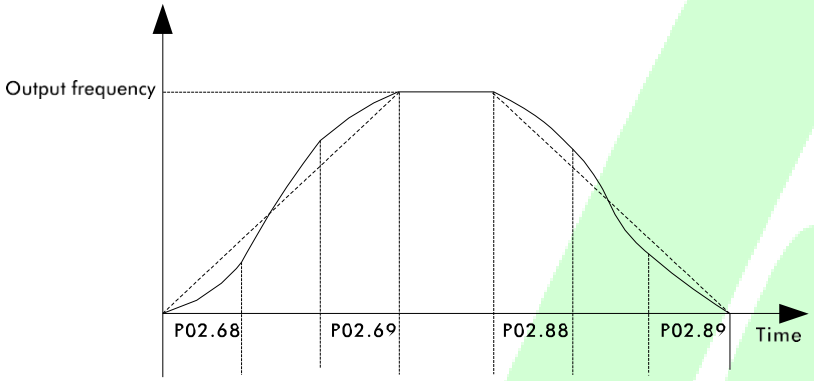


Figure 6-2-4 S curve acceleration and deceleration

Parameter number		Setting range		Factory Value
P02.70	Deceleration time 0	0.050~3600.000	s	*
P02.71	Deceleration time 1			
P02.72	Deceleration time 2			
P02.73	Deceleration time 3			
P02.74	Deceleration time 4			
P02.75	Deceleration time 5			
P02.76	Deceleration time 6			
P02.77	Deceleration time 7			
P02.78	Deceleration time 8			
P02.79	Deceleration time 9			
P02.80	Deceleration time 10			
P02.81	Deceleration time 11			
P02.82	Deceleration time 12			
P02.83	Deceleration time 13			
P02.84	Deceleration time 14			
P02.85	Deceleration time 15			

■ Function: Set deceleration time

➢ Principle explanation:
As shown in Figure 6-2-3, the deceleration time refers to the time required to decelerate from P06.13 motor frequency to 0Hz.

Parameter number	Function	Setting range	Unit	Factory Value
P02.86	Jog Deceleration time	0.050~3600.000	s	5.000
P02.87	Safe deceleration time	0.050~3600.000	s	5.000

■ Function: Set Jog deceleration time and safe deceleration time (Jog command see P03.03, safe stop command see P03.06)

Parameter number	Function	Setting range	Unit	Factory Value
P02.88	S curve deceleration time 1	0.000~100.000	%	0.000
P02.89	S curve deceleration time 2			

■ Function: Set S curve deceleration time (see P02.68, P02.69)

Parameter number	Function	Setting range	Unit	Factory Value
P02.90	Communication set value	-1000.000~1000.000	%	0.000
P02.91	Communication command	0~4294967295		0
P02.92	Keyboard set value	-1000.000~1000.000	%	100.000
P02.93	Keyboard command	0~4294967295		0

■ Function: port between control command and set value, no need to set under normal circumstances, can be used for viewing

Table 6-2-2 Command control word table

0	Start
1	Reverse
2	Start reverse
3	JOG
4	Stop
5	Emergency stop
6	Safe stop
7	Reset
9	Parameter self-learning
10	Tripping
11	Pause
13	UP (incremental)
14	DOWN (decreasing)

6.3 Group 03 parameters: input and output

Parameter number	Function	Setting range	Unit	Factory Value
P03.00	Start command source	0 ~ 4294967295 Single command source mode (P01.39 = 0): 0: No effect; 1: Keyboard; 2: communication; 3: S1; 4: S2 ... 17 ~ 32: The 0 ~ 15 bits of P01.30 Multi-command source mode (P01.39 = 1): bit0: Keyboard; bit1: Communication; bit2: S1; bit3: S2; ... bit16~bit31:The 0~15 bit of P01.30		1
P03.01	Reverse start command source			0
P03.02	Reverse command source			0
P03.03	JOG command source			1
P03.04	Stop command source			0
P03.05	Free parking command source			0
P03.06	Safe stop command source			0
P03.07	Reset command source			1
P03.08	Fault command source			0
P03.09	Pause command source			0

■ Function: Select the command source (when the corresponding command source is selected as the keyboard, the reverse command, Jog command, and free stop command are all derived from the custom key M)

- Reverse start command: set value is reversed, and send out start command.
- Reverse command: set value is reversed.
- Jog command: Jog function. The priority is greater than the start command and lower than the stop command.
- Safe stop: stop according to the safe deceleration time (P02.87). The priority is higher than the stop command and lower than the free stop command.
- Fault command: send out a fault signal and the inverter will stop freely.
- Pause command: The inverter stops freely, but the operating bit in the status word remains.
- Principle explanation:

P01.39 = 0 is single command source mode, P03.00 ~ P03.09 commands select a single source, index number 0: no effect; 1: keyboard; 2: communication,.... For example, when P03.00 = 3, he start command comes from S1. The operation of the host computer needs to select communication, and the single command function is effective.

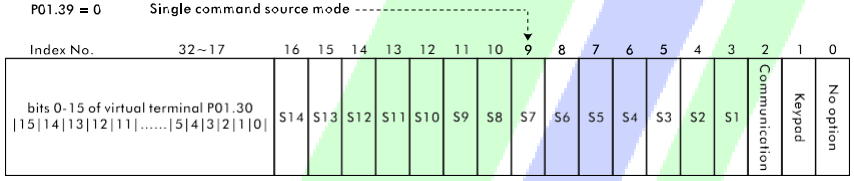


Figure 6-3-1 Single command source mode

P01.39 = 1 is multi-command source mode, P03.00 ~ P03.09 commands can select multiple sources, set bit selection bit0: keyboard, bit1: communication, ... For example, when P03.00 = 7 (binary 111), there are three ways to start the command source, which are keyboard, communication, and S1. The operation of the host computer needs to select communication, and the multi-command function is effective.

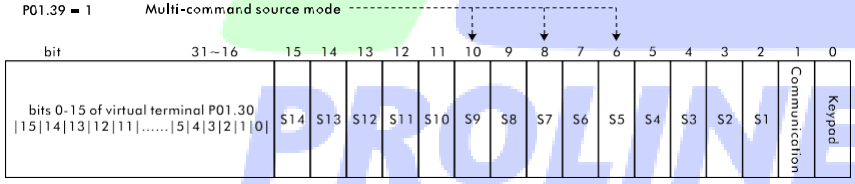


Figure 6-3-2 Multi-command source mode

Parameter number	Function	Setting range	Unit	Factory Value
P03.20	S1 type	One place: 0: Positive logic 1: Reverse logic 2: Rising edge 3: Falling edge Tens place: 1: Rising edge toggle 2: Falling edge toggle Hundreds place: 1: The edge signal is not cleared by other edge signals Thousands place: 1: The edge signal is not cleared by the stop signal		0
P03.21	S2 type			
P03.22	S3 type			
P03.23	S4 type			
P03.24	S5 type			
P03.25	S6 type			
P03.26	S7 type			
P03.27	S8 type			

■ Function: Set S curve acceleration time

- Principle explanation:

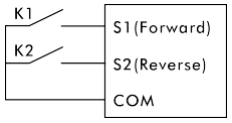
One place: 0: positive logic,High level is valid state, low level is invalid state;
1: Reverse logic,High level is invalid state, low level is valid state;
2: Rising edge, the rising edge is valid;
3: Falling edge, falling edge is valid.
Tens place: 1: Rising edge ping-pong key;
2: Toggle on the falling edge.
The tens position can control the edge signal and realize a reset button to control start and stop.
Hundreds place: 1: The edge signal is not cleared by other edge signals;
Thousands place: 1: The edge signal is not cleared by the stop signal.

- Two-wire mode 1:

This mode is the most commonly used two-wire mode with enable and direction in one. The switch signals K1 and K2 determine the forward and reverse rotation of the motor.

Table 6-3-1

Parameter number	Set value	Note
P03.00	3	The source of the start command is S1
P03.01	4	The source of the reverse start command is S2
P03.20	0	S1 type is positive logic
P03.21	0	S2 type is positive logic



K1	K2	Operate command
OFF	OFF	Stop
OFF	ON	Reverse
ON	OFF	Forward
ON	ON	Stop

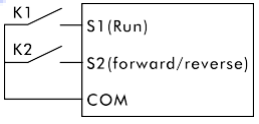
Chart 6-3-3

- Two-wire mode 2:

The enable is separated from the direction. In this mode, K1 is the running enable terminal, and the direction is determined by K2.

Table 6-3-2

Parameter number	Set value	Note
P03.00	3	The source of the start command is S1
P03.02	4	The source of the reverse command is S2
P03.20	0	S1 type is positive logic
P03.21	0	S2 type is positive logic



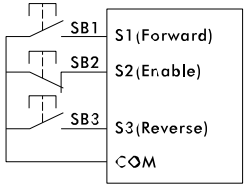
K1	K2	Operate command
OFF	OFF	Stop
OFF	ON	Stop
ON	OFF	Forward
ON	ON	Reverse

Chart 6-3-4

➢ Three-wire control mode 1:
This mode defines SB2 as an enable terminal, the running command is generated by SB1 or SB3, and controls the running direction at the same time. Inverter operation SB2 is in a closed state, and terminal SB1 or SB2 generates a rising edge signal to control the inverter operation and direction; when the inverter stops, it is necessary to disconnect terminal SB2 to complete the shutdown.

Table 6-3-3

Parameter number	Set value	Note
P03.00	3	The source of the start command is S1
P03.01	5	The source of the reverse start command is S3
P03.04	4	The source of the stop command is S2
P03.20	2	S1 type is rising edge
P03.21	1	S2 type is reverse logic
P03.22	2	S3 type is rising edge



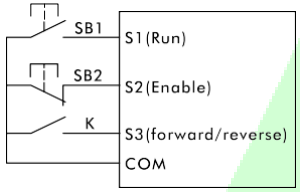
SB1	SB2	SB3	Operate command
——	0	——	Stop
↑	1	——	Forward
——	1	↑	Reverse

Chart 6-3-5

➢ Three-wire control mode 2:
This mode defines SB2 as an enable terminal, the run command is generated by button SB1, and the direction command is controlled by switch K. When the inverter is running, terminal SB2 needs to be in the closed state. Terminal SB1 generates a rising edge signal. The inverter starts to run. The state of switch K determines the running direction. When the inverter stops, terminal SB2 needs to be disconnected to complete the shutdown.

Table 6-3-4

Parameter number	Set value	Note
P03.00	3	The source of the start command is S1
P03.02	5	The source of the reverse command is S3
P03.04	4	The source of the stop command is S2
P03.20	2	S1 terminal command type is rising edge
P03.21	1	S2 terminal command type is reverse logic
P03.22	0	S3 terminal command type is positive logic



SB1	SB2	K	Operate command
——	0	——	Stop
↑	1	OFF	Forward
↑	1	ON	Reverse

Chart 6-3-6

Parameter number	Function	Setting range	Unit	Factory Value
P03.28	S Input filtering	1~16		4
P03.29	Start signal enable mode	0: Always enabled; 1: Need to re-enable after power on; 2: Need to re-enable after free stop or safe stop; 3: Need to re-enable after power-on, free stop or safe stop.		0

■ Function: Control S terminal input effect and enable mode

➢ S input filtering: S input signal is filtered, the larger the parameter value setting, the more obvious the filtering effect.

➢ Start signal enable mode: When the start command comes from the external terminal, the safety of the inverter is improved.

Set parameter P03.29 to 0. During power-up, the inverter detects that the start command terminalis valid, and the inverter starts immediately.

Set parameter P03.29 to 1. During power-up, even if the inverter detects that the start command terminal is valid, the inverter will not start. Only when the terminal is re-enabled, the inverter can start.

Set parameter P03.29 to 2. After free stop or safe stop, even if the inverter detects that the start command terminal is valid, the inverter will not start. Only the terminal is enabled again, the inverter can start.

Set parameter P03.29 to 3, the terminal needs to be re-enabled after power-on, free stop or safe stop before the inverter can start.

Parameter number	Function	Setting range	Unit	Factory Value
P03.30	Y1 terminal source (RA、RB、RC or RA1、RB1、RC1)	0: Always 0; 1: Always 1; 2: Stopped; 3: Running; 4: Fault; 5: Warning; 6: Reversing; 7: Ready; 64: STO state; 100 ~ 9999: Address		3
P03.31	Y1 terminal source bit	0~31		0
P03.32	Y2 terminal source (RA2、RB2、RC2)	0: Always 0; 1: Always 1; 2: Stopped; 3: Running; 4: Fault; 5: Warning; 6: Reversing; 7: Ready; 64: STO state; 100 ~ 9999: Address		4
P03.33	Y2 terminal source bit	0~31		0
P03.34	Y3 terminal source (RA3、RB3、RC3)	0: Always 0; 1: Always 1; 2: Stopped; 3: Running; 4: Fault; 5: Warning; 6: Reversing; 7: Ready; 64: STO state; 100 ~ 9999: Address		5
P03.35	Y3 terminal source bit	0~31		0

■ Function: Select the signal source of the digital output terminal

➢ Principle explanation:
The terminal source setting value is greater than or equal to 100 (address mode), the address is the selected parameter number, and the actual value is determined by the current value of the selected parameter number. bit source of terminal source is set bit selection. When terminal source is address 100 ~ 9999, the bit setting is valid. The terminal source setting value is less than 100 (non-address mode), and the terminal source bit need not be set The function description of the terminal source is as follows:

Table 6-3-5

Set value	Function	Description
0	Always 0	Y terminal output is always 0
1	Always 1	Y terminal output is always 1
2	Stopped	In the stopped state, Y terminal output is 1
3	Running	In the running state, Y terminal output is 1
4	Fault	In the fault state , Y terminal output is 1
5	Alarm	In the alarm state, Y terminal output is 1
6	Reversing	In reverse state,Y terminal output is 1
7	Ready	In the ready state, Y terminal output is 1
64	STO state	In STO state ,Y terminal output is 1
100~9999	Address	Select parameters as Y output source

Parameter number	Function	Setting range	Unit	Factory Value
P03.36	Y1 output delay time	0.000~6000.000	s	0.000
P03.37	Y2 output delay time			
P03.38	Y3 output delay time			

▪ Function: Set Y1, Y2, Y3 output delay time

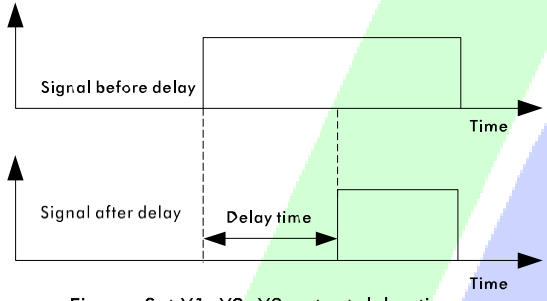


Figure: Set Y1, Y2, Y3 output delay time

Parameter operation		Setting range		Factory Value
P03.39	AI filter time	0.100~600.000	s	0.100

▪ Function: Set AI filter time

➢ Principle explanation:
Adjust the sensitivity of the analog input, and increase the value appropriately to enhance the anti-interference of the analog, but it will reduce the sensitivity of the analog input.

Parameter number	Function	Setting range	Unit	Factory Value
P03.40	AI1 signal type	0: Voltage input; 1: Current input		0
P03.41	AI1 low-end voltage (current)	-999999.000~999999.000	V(mA)	0.000
P03.42	AI1 high-end voltage (current)			10.000
P03.43	AI1 low-end setting	-999999.000~999999.000	%	0.000
P03.44	AI1 high-end setting			100.000

▪ Function: Analog input AI1 setting

➢ AI1 signal type: select input signal type, set value is 0, voltage signal input; set value is 1, current signal input.
➢ AI1 low-end voltage (current): set the minimum voltage (current) of the input signal.
➢ AI1 high-end voltage (current): set the maximum voltage (current) of the input signal.
➢ AI1 low-end setting: set the corresponding value of low-end voltage (current).
➢ AI1 high-end setting: set the corresponding value of high-end voltage (current).

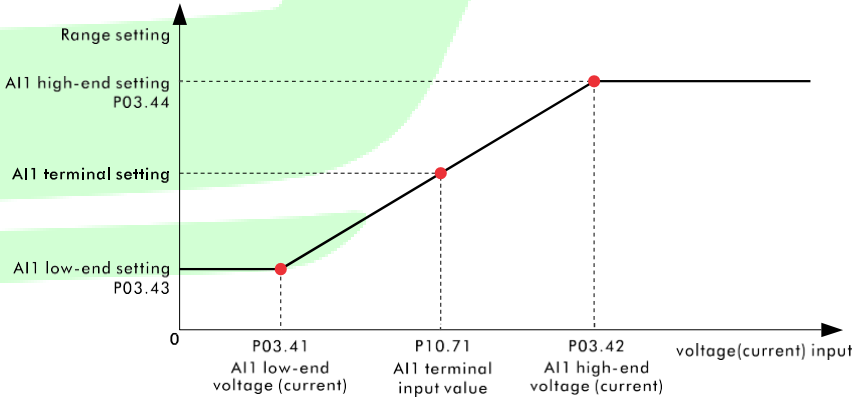


Figure 6-3-8 AI setting

Parameter number	Function	Setting range	Unit	Factory Value
P03.45	AI2 signal type	0: Voltage input; 1: Current input		0
P03.46	AI2 low-end voltage (current)	-999999.000~999999.000	V(mA)	0.000
P03.47	AI2 high-end voltage (current)			10.000
P03.48	AI2 low-end setting	-999999.000~999999.000	%	0.000
P03.49	AI2 high-end setting			100.000

▪ Function: Analog input AI2 setting

➢ For details, please refer to P03.40 ~ P03.44.

Parameter number	Function	Setting range	Unit	Factory Value
P03.60	AO1 signal type	0: Voltage output; 1: Current output		0
P03.61	AO1 signal source	0: Always 0; 1: Always 10V / 20mA; 2: Output frequency; 3: Motor current; 4: Output voltage; 5: Motor torque; 6: Output power; 7: Set frequency 100~ 9999: Refer to the value of parameter number		2
P03.62	AO1 low-end setting	-999999.000~999999.000		0.000
P03.63	AO1 high-end setting			50.000
P03.64	AO1 low-end voltage (current)	-999999.000~999999.000	V(mA)	0.000
P03.65	AO1 high-end voltage (current)			10.000

- Function: Analog output AO1 setting

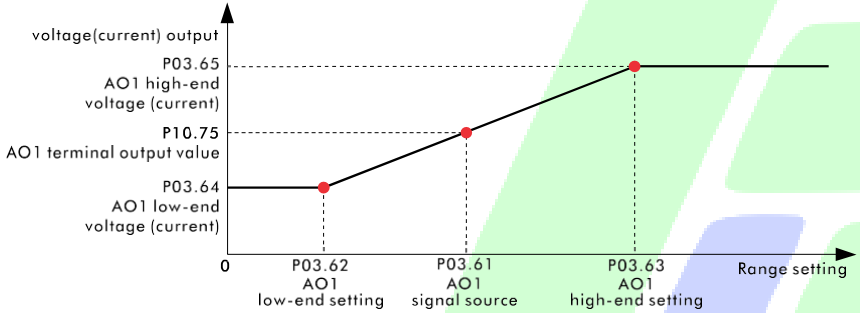


Figure 6-3-9 AO setting

- AO1 signal type: select the output signal type, set value is 0, voltage signal output; set value is 1, current signal output.
- AO1 signal source: select the signal source of AO1 output, 0: always 0; 1: always 10V / 20mA; 2: output frequency; ...
- AO1 low-end setting: set the minimum value of AO1 source.
- AO1 high-end setting: set the maximum value of AO1 source.
- AO1 low-end voltage (current): set the minimum voltage (current) of the output signal.
- AO1 high-end voltage (current): set the maximum voltage (current) of the output signal.
- Principle explanation:
  As shown in Fig. 6-3-9, set the AO1 signal source, check the P10.75 (AO1 terminal output value) of the AO1 terminal output value, or measure with a multimeter. The function description of AO1 signal source is as follows:

Table 6-3-6

Set value	Function	Description
0	Always 0	Analog AO1 output has been 0
1	Always 10V / 20mA	Analog AO1 output has been 10V / 20mA
2	Output frequency	Analog AO1 output is output frequency
3	Motor current	Analog AO1 output is motor current
4	Output voltage	Analog AO1 output is output voltage
5	Motor torque	Analog AO1 output is motor torque
6	Output power	Analog AO1 output is output power
7	Set frequency	Analog AO1 output is set frequency
100~9999	Parameter number	Select parameter as the source of analog AO1 signal

Parameter number	Function	Setting range	Unit	Factory Value
P03.66	AO2 signal type	0: Voltage output; 1: Current output		0
P03.67	AO2 signal source	0: Always 0; 1: Always 10V / 20mA; 2: Output frequency; 3: Motor current; 4: Output voltage; 5: Motor torque; 6: Output power; 7: Set frequency 100~ 9999: The value of the reference parameter number		3
P03.68	AO2 low-end setting	-999999.000~99999.000		0.000
P03.69	AO2 high-end setting			50.000
P03.70	AO2 low-end voltage (current)	-999999.000~999999.000	V(mA)	0.000
P03.71	AO2 high-end voltage (current)			10.000

- Function: Analog output AO2 setting

- For details, please refer to P03.60 ~ P03.65.

6.4 Group 04 parameters: PID control

Parameter number	Function	Setting range	Unit	Factory Value
P04.00	PID proportional gain	0.000~10.000	%	0.010
P04.01	PID integration time	0.001~9999.000	s	10.000
P04.02	PID differential gain	0.000~9999.000	%	0.000
P04.03	PID forward feedback coefficient	0~500	%	0
P04.04	PID sampling time	0.001~9999.000	s	0.004
P04.05	PID output upper limit	-1000.000~1000.000	%	100.000
P04.06	PID output lower limit		%	0.000
P04.07	PID output filter time	0.000~600.000	s	0.000
P04.09	PID range	0.001~99999.000		100.000

- Function: Simple PID control, enable PID control when P02.13 or P02.14 is set to 8

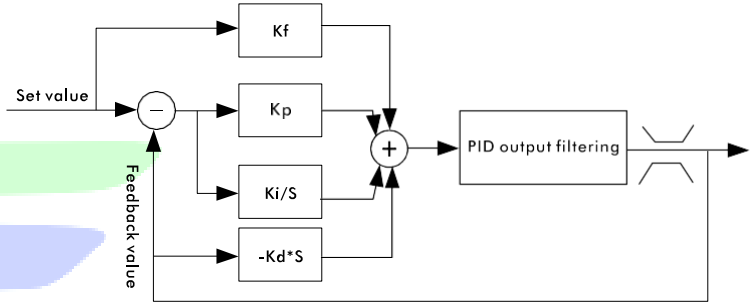


Figure 6-4-1 PID closed loop control

- PID proportional gain: Determine the adjustment intensity of the entire PID regulator. The greater the proportional gain, the greater the adjustment intensity.
- PID integration time: determine the speed of PID regulator to adjust the deviation of PID feedback and given amount. The smaller the integration time, the greater the adjustment intensity.
- PID differential gain: determine the strength of PID regulator to adjust the deviation rate of PID feedback and given amount. The greater the differential gain, the greater the adjustment intensity.

- PID feedforward coefficient: generally use a smaller feedforward coefficient; otherwise, use a larger feedforward coefficient to make feedforward adjustment play a major role.
- PID sampling time: generally set 5~10 times smaller than the response time of the controlled object.
- PID output upper limit: the maximum value of PID adjustment output, higher than the maximum value, PID output upper limit.
- PID output lower limit: the minimum value of PID adjustment output, below the minimum value, PID output lower limit.
- PID output filtering time: The filtering time increases, weakens the output signal mutation, and reduces the closed-loop system response performance.
- PID range: according to the actual feedback range setting, if the setting is less than the feedback range PID does not work.
- Method of adjusting proportional gain and integration time:
  First adjust the integration time to the minimum, set the differential gain to 0, observe the PID feedback value and adjust the PID proportional gain. Slowly increase the integration time, repeatedly adjust the two parameters of proportional gain and integration time according to the response of the PID feedback value, change the PID given value multiple times within the PID given range, and adjust the proportional gain and integration time until Achieve satisfactory performance within the entire working range. Differential gain can be adjusted according to the

Parameter number	Function	Setting range	Unit	Factory Value
P04.11	PID sleep frequency	0.000~500.000	%	0.000
P04.12	PID enter sleep time	0.000~3600.000	s	0.000
P04.13	PID wake-up deviation	0.000~100.000	%	0.000
P04.14	PID enter wake-up time	0.000~3600.000	s	0.000
P04.15	PID sleep action	0: Do not sleep; 1: PID stop; 2: Decelerate to stop; 3: Free to stop; 4: Pause; 5: Lowest frequency operation		0

-

Function: PID control function selection

- Principle explanation:
  As shown in Figure 6-4-2, the PID output value is less than the P04.11 sleep frequency. After the time set by the parameter P04.12 (PID enters sleep time), the PID enters sleep according to the sleep action; the PID wakeup value is greater than P04.13 wakeup Deviation (wake-up value = percentage of set value), after the time set by parameter P04.14 (PID enters wake-up time), PID restarts.
- PID sleep frequency: set the sleep quasi-frequency.
- PID wake up deviation: percentage based on setting. For example, when 10 kg is set and the wake-up deviation is 20%, the wake-up deviation is 2 kg (20% × 10). When the actual pressure is less than 8 kg, the wake-up state starts.
- PID enters sleep time: the inverter will enter sleep after reaching the sleep frequency and meeting the sleep time.
- PID enters the wake-up time: the inverter will restart after reaching the wake-up deviation and meeting the wake-up time.
- PID sleep action selection: PID enters sleep according to the set sleep action.
  0 Do not sleep: PID operation is not changed.
  1 PID stop: PID stops working.
  2 Deceleration stop: The inverter decelerates to stop.
  3 Free stop: The inverter freely stops.
  4 Pause: The inverter pauses.
  5 Lowest frequency operation: run at the lowest frequency, see parameter P04.06 (PID output lower limit frequency) for lowest frequency setting.

  Note: When the PID sleep action selects deceleration stop or free stop, sleep will cause the start signal to be cleared once. Therefore: when the start signal comes from the keyboard, the start signal will be cleared after sleep. If the automatic wake-up function is required, select PID to stop or pause or the lowest frequency operation for PID sleep action. When the start signal comes from the S terminal input or communication (the communication continues to send the start signal), the PID sleep action will not affect the PID wakeup.

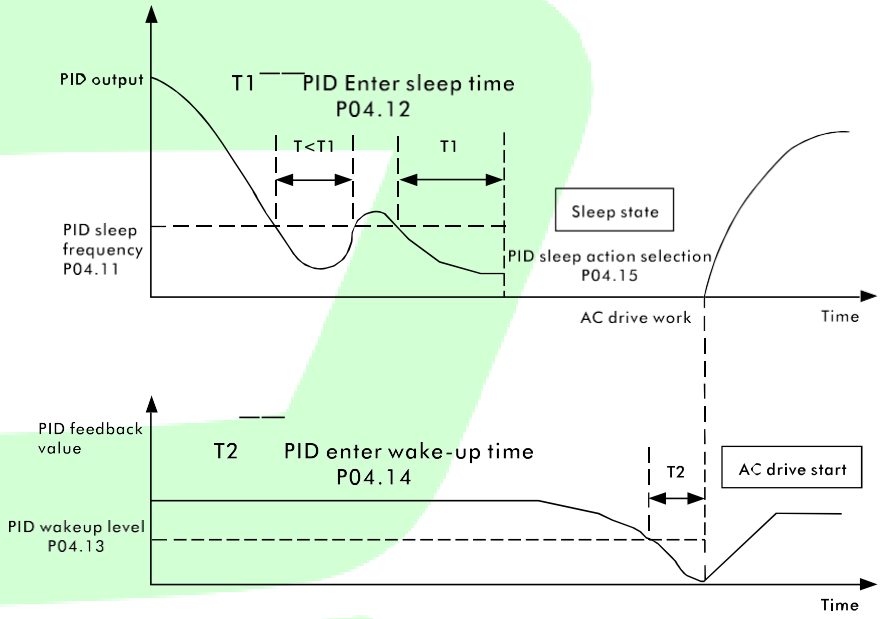


Figure 6-4-2 PID sleep wake up

Parameter number	Function	Setting range	Unit	Factory Value
P04.90	PID status	0~4294967295		

-

Function: indicates the PID status word (see the table below for the definition of each bit).

Status word (bit)	Definition
0	PID is stopped
1	PID is running
5	PID goes to sleep

6.5 Group 05 parameters: system control

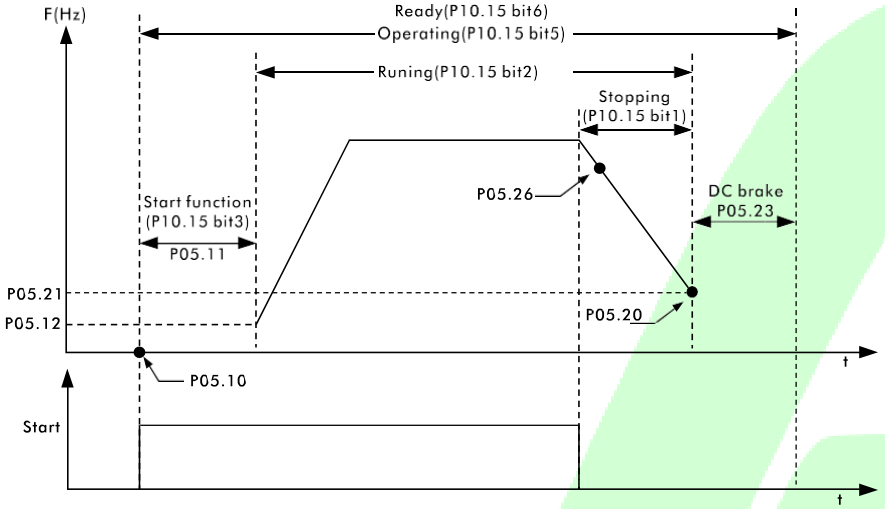


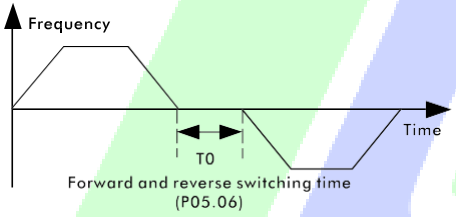
Figure 6-5-1 System control

Parameter number	Function	Setting range	Unit	Factory Value
P05.00	Control mode	0: VF; 1: Open loop vector 1		1

- Function: Select motor control algorithm

Parameter number	Function	Setting range	Unit	Factory Value
P05.06	Forward and reverse switching time	0.000~6000.000	s	0.000

- Function: control forward and reverse switching dead zone time



Parameter number	Function	Setting range	Unit	Factory Value
P05.07	Forced change direction	0: No effect; 1: Forced change direction		0

- Function: control the commutation function, when the parameter P05.07 is set to 1, change the current running direction

Parameter number	Function	Setting range	Unit	Factory Value
P05.08	Motor frequency upper limit	-1020.000~1020.000	Hz	55.000

- Function: Motor output frequency limit

➢ Motor frequency upper limit: define the motor operating frequency upper limit.

Parameter operation	Function	Setting range	Unit	Factory Value
P05.10	Start function	0: When the time of P05.11 is over, run according to the frequency of P05.12; 1: On speed start; 2: DC injection 3: Run at the frequency of P05.12 within the time of P05.11		0
P05.11	Start Time	0.000~60000.000	s	0.000
P05.12	Start frequency	0.000~100.000	Hz	0.000

- Function: Set Startup function

➢ Principle explanation:

When the system starts up, it will work according to the setting start function within the setting start time. When start function is end, if the setting frequency is greater than the start frequency, the system starts to run with the start frequency as the start frequency; If the setting frequency is less than the start frequency, the system starts to run at the setting frequency.

➢ Start function:

0: The starting mode without output frequency can meet the starting time setting of P05.11, and the starting frequency of P05.12 starts to run.

1: Speed start, search for motor speed in rotation, start smooth starting without impact from the speed searched.

2: DC injection, inverter starts in the mode of "DC injection before starting".

3: After receiving the start command, the inverter runs at the starting frequency of P05.12 firstly, and then runs at the setting frequency after meeting the time of P05.11.

Parameter number	Function	Setting range	Unit	Factory Value
P05.14	On speed start mode	0: All directional; 1: Set value direction; 2 ~ 3: reserved		0

- Function: Set the speed start function (set P05.10 to 1 speed start)

➢ Speed start mode:

0: Two-way, follow the forward or reverse direction for speed tracking judgment.

Parameter number	Function	Setting range	Unit	Factory Value
P05.19	DC injection current	0.000~200.000	%	100.000

- Function: Set the DC injection current size (set P05.10 to 2 DC injection)

➢ Principle explanation:

When the starting method is DC injection, the DC braking current needs to be set to 100% corresponding to the rated current of the inverter.

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