KOC550 series high performance vector inverter User Manual

CONTENTS

Forward word

Thank you for purchasing KOC550 series inverters!

KOC550 series inverter is a high-torque vector inverter, the motor control performance is significantly improved, and it can realize the control of asynchronous motor and permanent magnet synchronous machine. It supports a variety of PG cards and has more powerful functions. Can be used in textile, paper making, machine tools, packaging, food, lifting, lifting, petroleum machinery, chemical machinery, fans, water pumps and other electrical transmission equipment.

This manual introduces how to use the KOC550 series inverter correctly. Before use (installation, operation, maintenance, inspection, etc.), please read this instruction manual carefully. Also, please use this product after understanding the safety precautions of the product.

Precautions
◆When using this product, please be sure to install the shell or cover according to the regulations, and operate according to the contents of the manual. The illustrations in this instruction manual are for illustration only and may differ from the product you ordered. ◆Due to product upgrades or specification changes, and in order to improve the convenience and accuracy of the manual, the contents of this manual Subject to change without notice. ◆If you need to order the instruction manual due to damage or loss, please contact the company's regional agents, or directly contact the company Contact the company's customer service center.

Introduction

◆ Features

KOC550 the inverter has been significantly improved in the following aspects:

1) Smaller size and higher power density

2) Wide voltage range design Rated input three-phase AC 380~480v, wide voltage up to 323~528v.

3) Long life design The bus capacitor configuration is higher and the life is longer.

4) Fan drive circuit protection When the fan is accidentally short-circuited due to locked-rotor or damage, the fan drive circuit can effectively protect it.

5) The protection function of the whole machine is more perfect The whole series can realize the effective protection of the output short circuit to ground, and the buffer relay (contactor) pull-in fault protection.

6) EMC configuration scheme optimization for practical application requirements and certification requirements

◆ Unpacking inspection

When unpacking, please confirm carefully:

The machine and the rated value of the inverter are consistent with your order. The box contains the machine you ordered (with product certificate), user manual (with product warranty card).

The product is damaged during transportation; if any omission or damage is found, please contact the company or your supplier immediately solve.

Chapter 1 Safety information and precautions

1.1 Safety precautions

Safety markings:

⚠ Danger: Misuse may result in fire, serious personal injury, or even death.

Note: Misuse may result in moderate or minor personal injury, as well as equipment damage;

Please read this chapter carefully when installing, debugging and maintaining this system, and be sure to follow the safety precautions required in this chapter. Item to operate. The company has nothing to do with any damage or loss caused by illegal operations.

◆ Use

⚠ Danger	
◇	This series of inverters is used to control the variable speed operation of single-phase motors, and cannot be used for single-phase motors or other purposes, otherwise it may cause inverter failure or fire.
◇	This series of inverters cannot be simply applied to occasions directly related to personal safety, such as medical devices.
◇	This series of inverters is produced under a strict management system. If the failure of the inverter may cause major accidents or losses, safety measures such as redundancy or bypass need to be set up just in case.

◆ Arrival inspection

⚠ Notice
◇ Do not install the inverter if it is found to be damaged or missing parts, otherwise accidents may occur.

◆ Installation

⚠ Notice
◇When transporting and installing, please hold the bottom of the product, not just the shell, in case you hurt your feet or break the inverter. ◇The inverter should be installed on metal and other flame retardant materials, away from flammable objects and fire sources. ◇When the inverter is installed in the cabinet, the electric control cabinet should be equipped with cooling fans and vents, and an air duct that is conducive to heat dissipation should be built in the cabinet. ◇During installation, do not drop drilling residues into the inverter, otherwise it may cause inverter failure.

◆ Wiring

⚠ Danger

◇Wiring work must be done by qualified electrical engineering personnel, otherwise there is a risk of electric shock or damage to the inverter.

◇Make sure the power supply is disconnected before wiring, otherwise there may be a risk of electric shock or fire.

◇The grounding terminal must be reliably grounded, otherwise the inverter shell may be charged.

◇Do not touch the main circuit terminals, and the wiring of the main circuit terminals of the inverter should not be in contact with the casing, otherwise there is a risk of electric shock.

◇The leakage current of the inverter is greater than 3.5mA, and the specific resin of the leakage current is determined by the conditions of use. In order to ensure safety, the frequency conversion

The inverter and motor must be reliably grounded.

◆ Wiring

⚠ Notice

◇Do not carry out withstand voltage test on the inverter without authorization, otherwise the inverter may be damaged.

◇Please confirm whether the number of phases and rated voltage of the power supply are consistent with the nameplate of the product, otherwise the inverter may be damaged.

◇The three-phase power supply cannot be connected to the output terminals U,V,W otherwise the inverter will be damaged.

◇For the selection of inverter input and output cables, please select cables with suitable cross-sections according to the power of the inverter.
◇It is absolutely forbidden to connect capacitors or phase-leading LC/RC noise filters to the output of the inverter, otherwise it will cause frequency conversion

The internal components of the device are damaged.

◇The main circuit terminal wiring and control circuit terminal wiring of the inverter should be wired separately or vertically crossed, otherwise it will cause control

The signal is disturbed.

◇When the length of the cable between the inverter and the motor exceeds 100 meters, it is recommended to use an output reactor to avoid excessive

The overcurrent generated by the distributed capacitance causes the inverter to malfunction.

◇The p and (+) terminals of the inverter with standard DC reactor must be connected with a DC reactor, otherwise the inverter will have no display when it is powered on.

◆ Run

⚠ Danger

◇The inverter can only be powered on after the wiring of the inverter is completed and the cover is installed. It is strictly forbidden to remove the cover when it is charged, otherwise there is a risk of electric shock.

◇When the function of automatic fault reset or restart after power failure is set, safety isolation measures should be taken for mechanical equipment, otherwise it may cause personal injury.

◇After the inverter is powered on, even if it is in the stop state, the terminals of the inverter are charged and cannot be touched, otherwise it may cause electric shock.

◇After confirming that the running command is cut off, the fault and alarm signal can be reset, otherwise it may cause personal injury.

⚠ Notice
◇Do not start or stop the inverter by connecting or disconnecting the power supply, otherwise the inverter may be damaged. ◇Used on the hoist equipment, please configure a mechanical brake device. ◇Before operation, please confirm whether the motor and machinery are within the allowable range of use, otherwise the equipment may be damaged. ◇The radiator and brake resistor are very hot, please do not touch them, otherwise there is a risk of burns. ◇Do not change the parameters of the inverter at will. Most of the factory-set parameters of the inverter can meet the operation requirements. Just set some necessary parameters, any modification of parameters may cause damage to mechanical equipment. ◇In the case of power frequency and variable frequency switching, the two contactors that control power frequency and variable frequency switching should be interlocked.

◆ Maintenance and inspection

⚠ Danger
◇ If you want to remove the cover, do not cut off the power. ◇ In the power-on state, please do not touch the terminals of the inverter, otherwise there is a risk of electric shock. ◇ At least 10 minutes or more after power failure, to confirm that the internal capacitor voltage is below 36v, before maintenance and inspection can be performed to prevent personal injury caused by the residual voltage of the electrolytic capacitor in the main circuit. ◇ Please designate qualified electrical engineering personnel for maintenance, inspection or replacement of parts.

⚠ Notice
◇ There is a CMOS large-scale integrated circuit on the PCB circuit board, please do not touch it with your hands, in order to discharge static electricity and damage the circuit board.

◆Other

⚠ Danger
◇ It is forbidden to modify the inverter by yourself, otherwise it will cause personal injury.

Chapter 2 Product information

2.1 Product model description

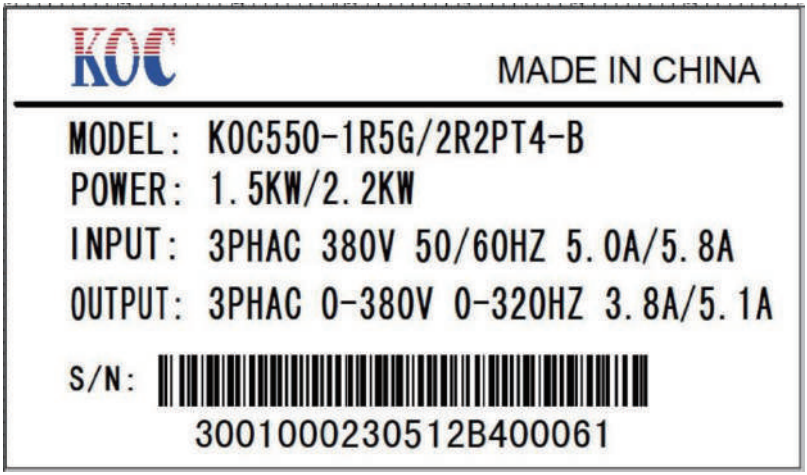
The inverter model on the nameplate uses numbers and itself to indicate the product series, power fan, power level and other information.

KOC550-1R5G/2R2P T 4 B

A B C D E F

A	KOC 550 Vector Inverter
B C	1R5:1.5KW, 2R2: 2.2KW
B C	G:universal type P:light load type
D	S:1 Phase T: 3 Phase
E	4: 380V 2:220V
F	B:brake units

2.2 Product nameplate



2.3 Product series specifications

KOC550 series high-performance vector inverter Three-phase 380V

Inverter model	Power capacity (KVA)	Input current (A)	Output current (A)	Adapted motor (KW)
KOC550-R75G/1R5PT4-B	1.5	3.4	2.1	0.75
KOC550-1R5G/2R2PT4-B	3.0	5.0	3.8	1.5
KOC550-2R2G/004PT4-B	4.0	5.8	5.1	2.2
KOC550-004G/5R5PT4-B	5.9	10.5	9/13	4.0
KOC550-5R5G/7R5PT4-B	8.9	14.6	13/17	5.5
KOC550-7R5G/011PT4-B	11.0	20.5	17/25	7.5
KOC550-011G/015PT4-B	17.0	26.0	25/32	11
KOC550-015G/018PT4-B	21.0	35.0	32/37	15
KOC550-018G/022PT4-B	24.0	38.5	37/45	18.5
KOC550-022G/030PT4-B	30.0	46.5	45/60	22
KOC550-030G/037PT4-B	40.0	62.0	60/75	30
KOC550-037G/045PT4-B	57.0	76.0	75/91	37
KOC550-045G/055PT4	69.0	92.0	91/112	45
KOC550-055G/075PT4	85.0	113.0	112/150	55
KOC550-075G/090PT4	114.0	157.0	150/176	75
KOC550-090G/110PT4	134.0	180.0	176/210	90
KOC550-110G/132PT4	160.0	214.0	210/253	110
KOC550-132G/160PT4	192.0	265.0	253/304	132
KOC550-160G/185PT4	231.0	307.0	304/340	160
KOC550-185G/200PT4	242.0	350.0	340/377	185
KOC550-200G/220PT4	250.0	385.0	377/426	200
KOC550-220G/250PT4	280.0	430.0	426/465	220
KOC550-250G/280PT4	355.0	468.0	465/520	250
KOC550-280G/315PT4	396.0	525.0	520/585	280
KOC550-315G/355PT4	445.0	590.0	585/650	315
KOC550-355G/400PT4	500.0	665.0	650/725	355
KOC550-400G/450PT4	565.0	785.0	725/820	400
KOC550-450G/500PT4	625	820	820/860	450
KOC550-500GPT4	690	860	860	500

2.4 Technical specifications

Table KOC550 series inverter technical specification

The project		Specification	
Basic skills	Highest frequency	Vector control: 0~320 Hz V/F control: 0~3200 Hz	
	Carrier frequency	0.5khz ~ 16khz According to the load characteristics, the carrier frequency can be automatically adjusted.	
	Input frequency resolution	Digital setting: 0.01hz Analog setting : Maximum frequency × 0.025%	
	Control method	Open loop vector control (SVC) Closed loop vector control (FVC) VF control	
	Starting torque	Model G: 0.5hz /180% (SVC); 0hz /200% (FVC) P- type machine: 0. 5hz /100%	
	Speed range	1:100 (SVC)	1:1000 (FVC)
	Steady speed accuracy	±0.5%(SVC)	± 0.02%(FVC)
	Torque control response and accuracy	Response time 5ms , accuracy ±5% (FVC)	
	Overload capacity	G model: 150% rated current for 60s; 180% rated current for 3s. P model: 120% rated current for 60s; 150% rated current for 3s.	
	Torque boost	Automatic torque boost; manual torque boost 0.1%~30.0%	
	V/F curve	Three ways : Linear type; multi-point type; nth power type V/F curve (1.2, 1.4, 1.6, 1.8, 2)	
	V/F separation	2 two ways: Full separation, half separation	
	And deceleration curve	Linear or s-curve acceleration and deceleration mode Four kinds of acceleration and deceleration time, the acceleration and deceleration time range is 0. 0~6500.0s	
	DC braking	DC braking frequency: 0.00hz ~ maximum frequency Braking time: 0.0 s ~36.0 s Braking action current value: 0.0%~100.0 %	
	Jog control	Jog frequency range: 0.00hz ~50.00hz Jog acceleration and deceleration time 0.0 s ~6500.0 s	
	Simple plc , multi-speed operation	Through built-in plc or control terminals	
	Built-in PID	It is convenient to realize the process control closed-loop control system	
	Automatic voltage regulation (AVR)	When the grid voltage changes, it can automatically keep the output voltage constant	
	Overvoltage and overflow stall control	The current and voltage during operation to prevent frequent over-current and over-voltage trips	
	Fast current limiting function	Minimize the overcurrent fault and protect the normal operation of the inverter	

	Torque limitation and control	Current- limiting feature, which automatically limits the torque during operation to prevent frequent over-current tripping; closed-loop vector mode for torque control
	Protection function	Power-on motor short-circuit detection, input and output phase loss protection, over-current protection, over-voltage protection, under voltage protection, overheat protection, overload protection, etc
The project		Regulation Grid
Personalization	Excellent performance	Realize asynchronous motor and synchronous motor control with high-performance current vector control technology
	Momentary stop	In the case of instantaneous power failure, the load feedback energy is used to compensate for the drop in voltage, so as to keep the inverter running in a short time.
	Fast current limiting	Avoid frequent inverter overcurrent faults
	Timing control	Timing control function : Set time range 0.0 min ~6500.0 min
	Communication support	Standard RS-485 (Modbus protocol)
	Motor overheat protection	Optional expansion card, analog input AI 3 can accept motor temperature sensor input (PT100).
	Multi-encoder support	Supports differential, open collector, or push-pull output encoders
To run	Command source	Operation panel setting, control terminal setting, and serial communication port setting can be done in various ways. Mode switching.
	Frequency source	10 kinds of frequency sources: Digital given, analog voltage given, analog current given, PULSE given setting , serial port setting, etc., can be switched in various ways.
	Auxiliary frequency source	10 kinds of auxiliary frequency sources can flexibly realize auxiliary frequency fine-tuning and frequency synthesis.
	Input terminal	8 digital input terminals (S1-S8), of which the S5 terminal supports up to 100khz high-speed PULSE input; 2 analog input terminals, of which AI 1 only supports 0~10 v voltage input; AI 2 supports 0~10 v voltage input or 4~20 mA current input.
	Output terminal	1 output terminal (SP 1), selectable as open collector output or high-speed PULSE output (0 ~ 100khz); 1 standard relay output terminal (TA - TB - TC); 1 optional relay output terminal (TA3-TC3); 1 analog output terminal (A01), supporting 0~20 mA current output or 0 ~ 10 v voltage output.
Keyplateholddoand matchpieces	LED show	5- digit display parameter
	Key lock and function selection	Realize the locking of some or all of the keys, and define the scope of action of some keys to prevent misuse.
	Isolated 485 communication cards	Support more 485 communication nodes, enable by setting 1 in bP-02 .
	Parameter copy function	Need to JP5A, JP5B short-circuit the lower end The normal interface, first press the PRG key, and then press the PRG+▲ key at the same time: Upload the parameters from the control board to the keyboard, and the A light will flash when copying; in the normal interface, first press the PRG key, and then press the PRG+▼ key at the same time:

		Download the parameters from the keyboard to the control board, and the V light will flash when copying;
	Differential PG card 1	PG1- DIFF, adapted to 5 v power supply, used for closed-loop vector control, enabled by setting 1 of BP -03 .
	OC/ push-pull PG card 2	PG2- OC, suitable for 12v power supply, with 1:1 frequency division TTL level output, It is used for closed-loop vector control, and it can be enabled by setting bP-03 to 1.
	OC/push-pull PG card 3	PG3- OC, suitable for 12v power supply, with 1:1 frequency division OC open collector Output, used for closed-loop vector control, enabled by setting BP -03 to 1 .
	LCD keyboard	External LCD display keyboard.
The project		Specification
Environment	Place of use	Indoors, free from direct sunlight, free from dust, corrosive gas, flammable gas, oil mist, water vapor, dripping water or salt, etc.
	Altitude	Below 1000m; for each 1000m rise, use with a 10% derating.
	Ambient temperature	- 10°c~+40°c (the ambient temperature is 40°c~50°c, please use with derating).
	Humidity	Less than 95%RH, no condensation of water droplets.
	Vibration	Less than 5.9m/s 2 (0.6 g)
	Storage temperature	– 20℃ ~ + 60℃
The project		Specification
Environment	Place of use	Indoors, free from direct sunlight, free from dust, corrosive gas, flammable gas, oil mist, water vapor, dripping water or salt, etc.
	Altitude	Below 1000m; for each 1000m rise, use with a 10% derating.
	Ambient temperature	- 10°c~+40°c (the ambient temperature is 40°c~50°c, please use with derating).
	Humidity	Less than 95%RH, no condensation of water droplets.
	Vibration	Less than 5.9m/s 2 (0.6 g)
	Storage temperature	– 20℃ ~ + 60℃

2.5 Product shape, installation hole size

2.5.1 KOC550 series high-performance vector inverter product appearance and installation hole size

1. G0.75~ G18.5 kw wall-mounted plastic structure outline and size diagram

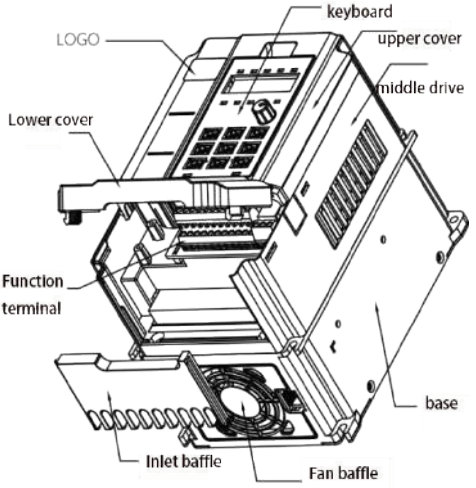


Figure KOC550 series high-performance vector inverter G 0.75~ G18.5 kw plastic structure diagram

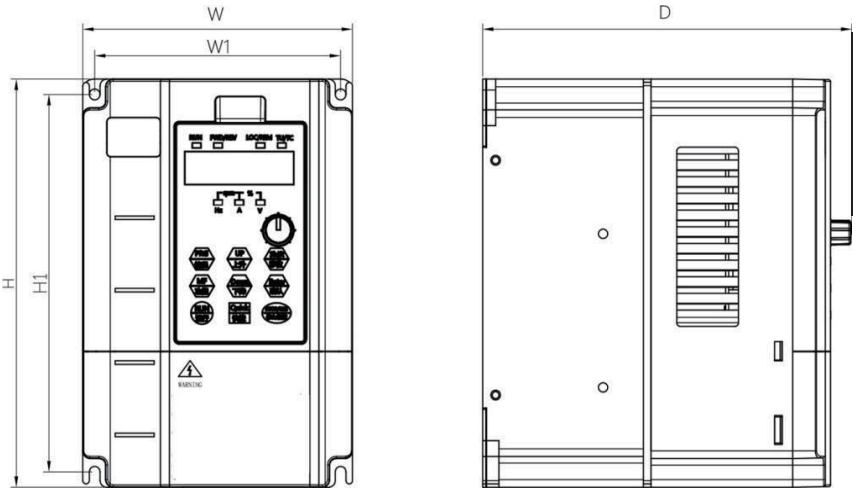


Figure KOC550 series high-performance vector inverter G 0.75~ G18.5 kw plastic structure appearance and installation dimensions

2. KOC550-22~400 kw wall-mounted metal case inverter shape and size diagram

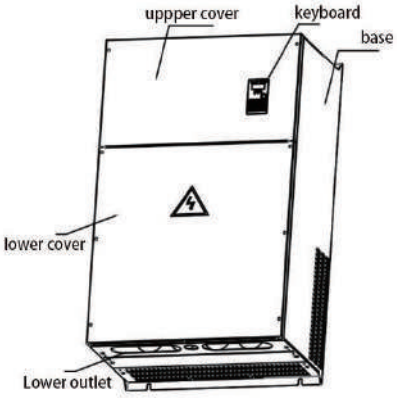


Figure KOC550 series high-performance vector inverter G22~ G400 kw sheet metal structure diagram

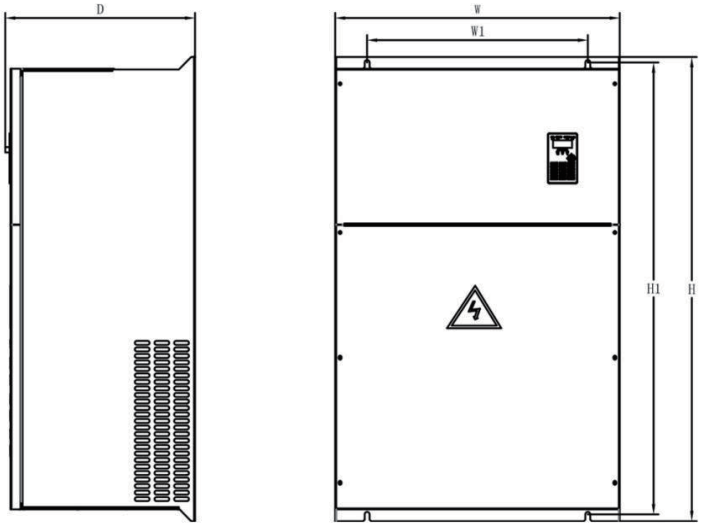


Figure KOC550 series high-performance vector inverter G22~ G 400 kw sheet metal structure appearance and installation dimension drawing

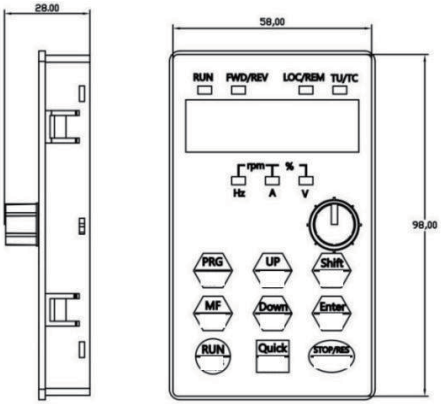
Table KOC550 series high performance vector inverter outline and mounting hole dimensions

Inverter specifications	H 1	W 1	H	W	D	Mounting aperture	Remark
0.75kw ~ 5. 5kw	172	114	185.6	125	171.1	5	Type B
7.5kw ~ 11kw	237	149	248	161	192	6	Type B
15 kw ~ 22 kw	304	190	322	208	202	6	Type B
30kw ~ 37kw	342	206.0	360	225	235	6.8	Type B
45kw~55kw	546.0	175	560	290	304	7	Type B
75kw ~ 110kw	630.0	300.0	650	380	295	10.0	Type B
132kw~160kw	681.5	250	700	400	337.0	10.5	Type B
185kw	902.5	449	928.5	579	386	10.5	Without base
200kw~ 280kw	1030	420	1060	650	386	12	Without base
315kw~ 450kw	1300	520	1359	800	403	16	Without base
500kw~ 550kw	1063.5	700	1100	850	358	16	Without base

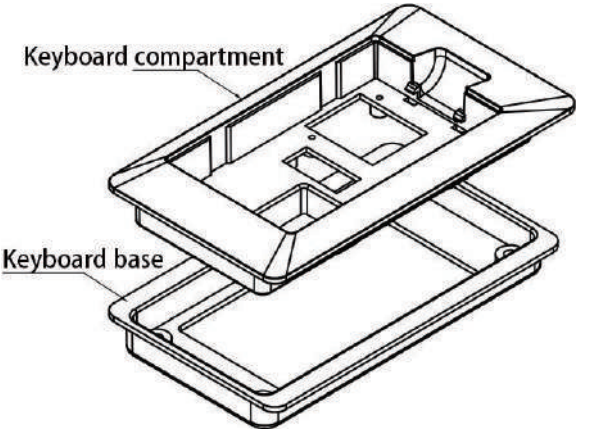
2.5.2 Keyboard and keyboard tray dimensions

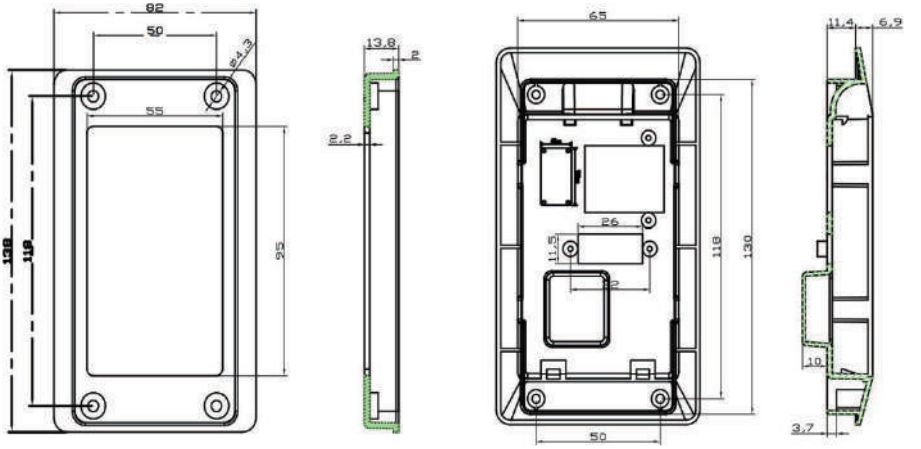
1. Keyboard dimensions

External dimensions of the keyboard cited in the figure (unit: Mm)



2. Keyboard tray dimensions



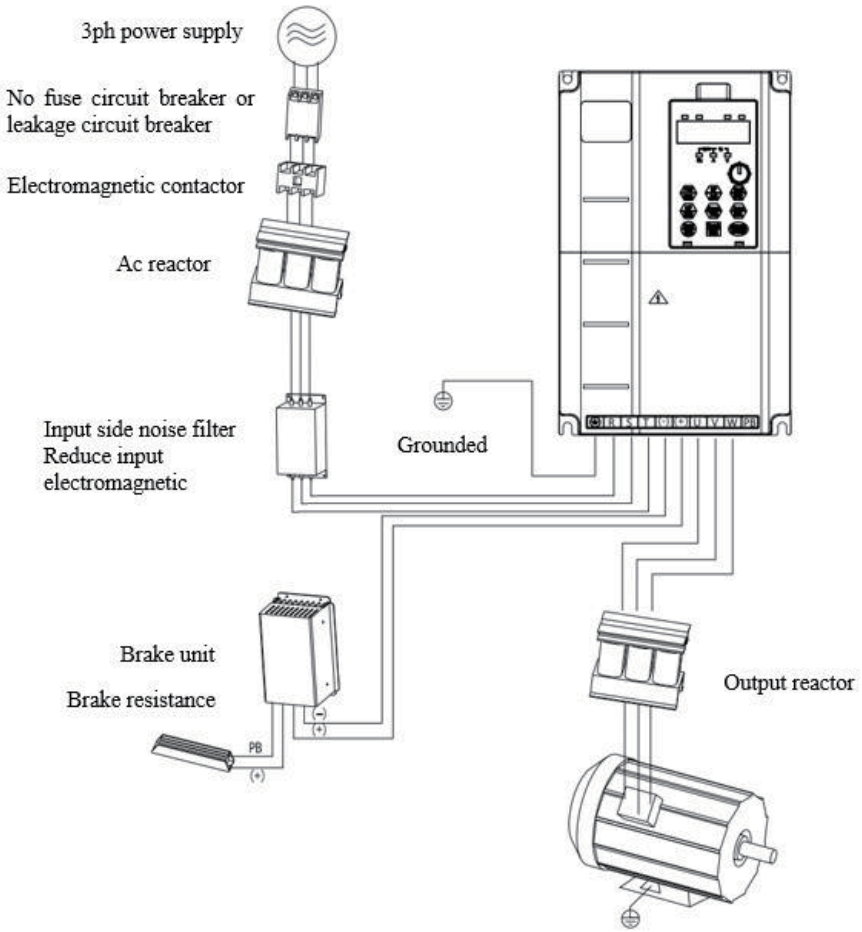


Outline dimensions of the keyboard tray quoted outside the figure (unit: Mm)

2.6 Peripheral electrical components and system composition

Using the KOC550 series inverter to control the motor, it is necessary to install various electrical components on the input and output sides of the inverter to ensure the safety and stability of the system.

1. Composition of frequency conversion system



Inverter system configuration diagram

3. Instructions for use of peripheral electrical components of the inverter

table Instructions for the use of peripheral electrical components of the inverter

Parts name	Installation location	Function description
AIR switch	Input loop front	When the downstream equipment is over-current
Contactor	Circuit breaker and inverter input Between sides	Inverter power on and off operation, should avoid inverter through the contactor complex power-on and power-off operations (less than twice per minute) or direct start-up operations.
Ac input reactor	Inverter input side	Improve the power factor on the input side; effectively eliminate high-order harmonics on the input side , prevent other equipment from being damaged due to voltage waveform distortion; eliminate phase-to-phase input current unbalance caused by unbalance .
EMC input filter	Inverter input side	Reduce the external conduction and radiation interference of the inverter ; reduce the flow from the power supply end to the conduction interference of the inverter improves the anti-interference ability of the inverter.
DC reactor	G160kw and above frequency conversion external DC reactor	Improve the power factor of the input side; improve the overall efficiency and thermal stability of the inverter performance, effectively eliminate the impact of high-order harmonics on the input side on the inverter, and reduce the impact on conducted and radiated disturbances.
Ac output reactor	On the inverter output side and between the motors , close to the frequency conversion installer	The output side of the inverter generally contains more high-order harmonics. When the distance between the motor and the inverter is far away, there is a large distributed capacitance in the line. One of the harmonics may generate resonance in the circuit, which will bring two effects: Damage the motor insulation performance, the motor will be damaged for a long time; a large leakage current will be generated, causing frequent frequency protection. Generally, the distance between the inverter and the motor is more than 100m, it is recommended install an output ac reactor.

For detailed specifications of peripheral equipment, please refer to chapter 3 3.2.1 selection guide for peripheral electrical components.

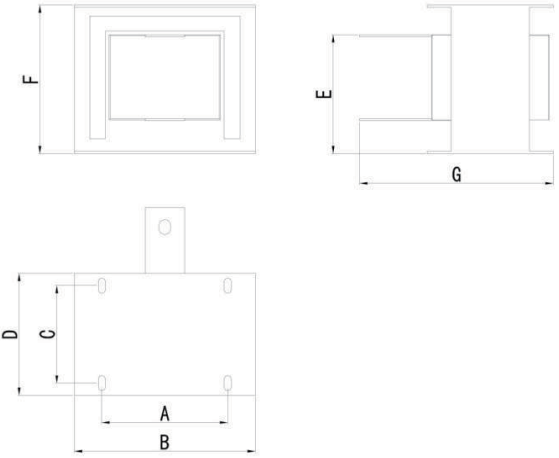
2.7 Inverter options

If you need the following optional accessories, please specify when ordering.

Table inverter options

Name	Model	Function	Remark
Built-in braking unit	B " After the product model number		
External braking unit	-CBU		
DC reactor	-DCL		

2.8 Selection and size of external DC reactor.



Applicable inverter model	A	B	C	D	E	F	G	Fixing hole	Bronze medal even aperture	Reactor Model
G37T4~G45T4	100	153	118	143	106	132	176	Ø9	Ø9	DCL150
G55T4~G75T4	130	191	128	157	135	165	200	Ø9	Ø11	DCL250
G90T4~G110T4										
G132T4~G160T4	160	190	128	154	170	185	227	Ø9	Ø15	DCL400
G185T4~G280T4	160	230	128	160	156	195	225	Ø9	Ø15	DCL600
G315T4~G355T4	160	230	128	160	156	195	246	Ø9	Ø15	DCL800
G400T4	160	230	128	1 60	156	195	256	Ø9	Ø15	DCL900

KOC550 series inverter, G0.4~ G37 kw without external DC reactor terminal, G45~ G132 kw optional external DC reactor;

G160kw and above power, all are equipped with external DC reactors as standard, and are shipped together with the machine in a separate wooden box. Installation method of external DC reactor: The user needs to connect the short-circuit copper bar between the main circuit terminal P and (+) of the inverter during installation. Remove the DC reactor, and then connect the DC reactor between P and (+). There is no polarity in the connection between the reactor terminal and the inverter terminals P and (+). After installing the DC reactor, P the shorting bar between and (+) is no longer used

2.9 Brake component selection guide

1. Resistance selection of braking resistor

Braking, almost all the regenerative energy of the motor is consumed on the braking resistor.
According to the formula: U*U/R=Pb;

Formula u----braking voltage for stable braking of the system (different systems are different, generally 700v for 380VAC systems), Pb ---- braking power.

2. Power selection of braking resistor

Theoretically, the power of the braking resistor is the same as the braking power, but considering the derating is 70%.

According to the formula: 0.7* Pr = Pb * D;

In the formula ---- the power of the resistance;

D ---- braking frequency (the ratio of the regeneration process to the entire working process);

Elevator, pumping unit -----20%~30%; uncoiling and uncoiling---20~30%

Centrifuge ------- 50%~60%; occasional braking load ----5%

Generally take 10%.

Selection of inverter brake components

The following table is the guide data, the user can choose different resistance value and power according to the actual situation (but the resistance value must not be less than the recommended value in the table, the power can be large). The selection of the braking resistor needs to be determined according to the power generated by the motor in the actual application system. System inertia, deceleration time, energy of potential energy load, etc. Are all related, and the customer needs to choose according to the actual situation. The greater the inertia of the system, the shorter the required deceleration time and the more frequent the braking, the larger the power and the smaller the resistance value of the braking resistor should be selected.

Table KOC550 series inverter braking component selection table

Inverter model	Braking resistor recommended power (kw)	Braking resistor recommended resistance (Ω)	Braking unit	Remark
G0.4T4	0.2	≥300Ω	Standard built-in	Brake resistor wiring see chapter 3 for details
G0.75T4				
G1.5T4	0.5	≥220Ω		
G2.2T4	0.5	≥200Ω		
G3.7T4	1	≥130Ω		
G5.5T4	1	≥ 90Ω		
G7.5T4	2	≥ 65Ω		

G11T4	2	≥ 43Ω		
G15T4	2	≥ 32Ω		
G18.5T4	3	≥ 25Ω	Optional built-in	
G22T4	3	≥ 22Ω		
G30T4	6	≥ 16Ω		
G37T4	6	≥ 12.6Ω		
G45T4~ G500T4	According to the requirements of the braking unit and recommended to choose	Choose according to the requirements and recommendations of the braking unit	Outsourced	Optional Braking unit

4. KOC550 inverter braking resistor selection

Three-phase 380V brake components

Inverter model	Recommended power of braking resistor	Braking resistor recommended resistor	Braking unit
0.7kw	150w	≥ 300Ω	Standard built-in
1.5kw	150w	≥ 220Ω	
2.2kw	250w	≥ 200Ω	
4kw	300w	≥ 130Ω	
5.5kw	400w	≥ 90Ω	
7.5kw	500w	≥ 65Ω	
11kw	800w	≥ 43Ω	
15kw	1000w	≥ 32Ω	
18.5kw	1300w	≥ 25Ω	
22kw	1500w	≥ 22Ω	Built-in optional
30kw	2500w	≥ 16Ω	
37kw	3.7kw	≥12.6Ω	
45kw	4.5kw	≥9.4Ω	
55kw	5.5kw	≥9.4Ω	
75kw	7.5kw	≥ 6.3Ω	
90kw	4.5kw x 2	≥9.4Ωx 2	
110kw	5.5kw x 2	≥9.4Ωx 2	

132kw	7.5kw x 2	≥6.3Ω x 2	External
160kw	16kw	≥6.3Ω x 2	
200kw	20kw	≥2.5Ω	
220kw	22kw	≥2.5Ω	
250kw	12.5kw x 2	≥2.5Ω x 2	
280kw	14kw x 2	≥2.5Ωx 2	
315kw	16kw x 2	≥2.5Ωx 2	
355kw	17kw x 2	≥2.5Ωx 2	
400kw	14kw x 3	≥2.5Ωx 3	

The resistance connected to each CBU 90T4 brake unit must be greater than 7.2Ω.

2.10 Daily maintenance and maintenance of inverter

1. Daily maintenance

Due to the influence of ambient temperature, humidity, dust and vibration, the components inside the inverter will age, resulting in potential faults occur or reduce the service life of the inverter. Therefore, it is necessary to carry out daily and regular maintenance and maintenance on the inverter.

Daily inspection items:

A) whether the sound changes abnormally during the operation of the motor

B) whether there is vibration during the operation of the motor

C) whether the installation environment of the inverter has changed

D) whether the cooling fan of the inverter works normally)

E) whether the inverter is overheated

Daily cleaning:

A) always keep the inverter clean.

B) effectively remove the dust accumulated on the upper surface of the inverter and prevent the accumulated dust from entering the interior of the inverter. Especially metal dust.

C) effectively remove the grease from the cooling fan of the inverter.

2. Periodic inspection

Check the places that are difficult during the operating, Check the items regularly:

A) check the air duct and clean it regularly

B) check if the screws are loose

C) check the inverter for corrosion

D) check whether there is arc trace on the terminal

E) main circuit insulation test

Reminder: When measuring the insulation resistance with a megohmmeter (please use a DC 500 v megohmmeter), disconnect the main circuit line from the inverter. Do not test the control circuit insulation with an insulation resistance meter. High voltage testing is not necessary (done at the factory).

3. Replacement of vulnerable parts of the inverter

Vulnerable parts of the inverter mainly include cooling fan and filter electrolytic capacitor, and their service life is closely related to the operating environment and maintenance status. Close. Users can determine the replacement period according to the running time, and the general life time is:

Device name	Life time
Fan	2~3 years
Electrolytic capacitor	4~5 years

A) Cooling fan

Possible causes of damage: Bearing wear, blade aging.

Judgment criteria: Whether there are cracks in the fan blades, etc., and whether there is abnormal vibration sound when the machine is turned on.

B) Filter electrolytic capacitor

Possible causes of damage: Poor quality input power, high ambient temperature, frequent load jumps, and aging electrolyte.

Judgment criteria: Whether there is liquid leakage, whether the safety valve has protruded, the measurement of electrostatic capacitance, and the measurement of insulation resistance.

4. Storage of inverter

Purchasing the inverter, the user must pay attention to the following points for temporary storage and long-term storage: In the packing box.

Long-term storage will lead to deterioration of electrolytic capacitors. It must be powered on once within 2 years, and the power-on time should be at least 5 hours. The input voltage must be gradually increased to the rated value with a voltage regulator.

Chapter 3 Mechanical and electrical installation

3.1 Mechanical installation

3.1.1 Installation environment

1. Ambient temperature: The ambient temperature has a great influence on the life of the inverter, and the operating environment temperature of the inverter is not allowed to exceed the allowable temperature. Permissible temperature range (-10℃~50℃).

2. Install the inverter on the surface of the flame-retardant object, and there should be enough space around it for heat dissipation. The inverter will easily generate a lot of heat when it is working, and install it vertically on the mounting support with screws.

3. Please install it in a place that is not easy to vibrate, the vibration should not exceed 0.6G, and pay special attention to keep away from punching machines and other equipment.

4. Avoid placing in direct sunlight, humidity, and water droplets.

5. Avoid installing in places with corrosive, flammable and explosive gases in the air.

6. Avoid installing in places with oil, dust, and metal dust.

7. KOC550 series inverter products need to be installed on a fireproof board.

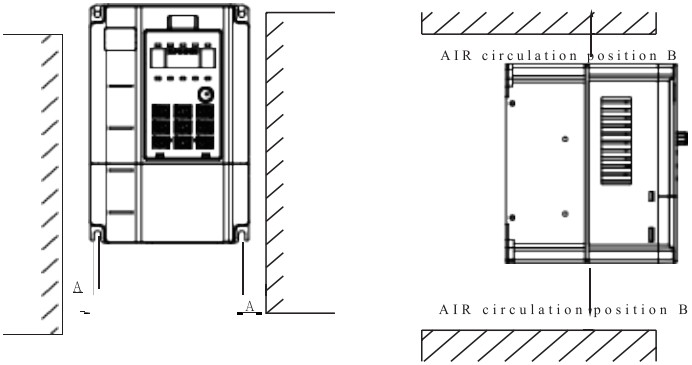


Figure 3-1 schematic diagram of inverter installation

Single installation: When the inverter power is not greater than 22kw, size A can be ignored. when it is greater than 22kw, A should be greater than 50mm. when installing up and down: When the inverter is installed up and down, please install the heat insulation deflector shown in the figure.

Power level	Installation size	
	B	A
≤15kw	≥100mm	No requirement
18.5kw - 30kw	≥200mm	≥50mm
≥37kw	≥300mm	≥50mm

3.1.2 Installation attention

So please note the following points:

1. Please install the inverter vertically so that the heat can be dissipated upwards, but not upside down. If there are many inverters in the cabinet, it is better to row installation. If vertical installation is required, please refer to figure 3 -1 to install the heat insulation deflector.

2. The installation space shall be as shown in figure 3-1 to ensure the heat dissipation space of the inverter, but please consider the heat dissipation of other parts in the cabinet when arranging.

3. The mounting bracket must be made of flame retardant material.

4. For applications with metal dust, it is recommended to install the radiator outside the cabinet. At this time, the space in the fully sealed cabinet should be as far as possible.

Can be big.

3.2 Electrical installation

3.2.1 Selection guide for peripheral electrical components

Table 3-1 selection guide for peripheral electrical components of KOC550 series 380v inverter

Inverter power (kw)	Open (MCCB)	Recommend contactor A	Recommended input side main circuit wire mm 2	Recommended output side master loop wire mm 2	Recommended control loop wire mm 2
0.4	6	9	0.7 5	0.7 5	0.5
0.7 5	6	9	0.7 5	0.7 5	0.5
1 .5	1 0	9	0.7 5	0.7 5	0.5
2 .2	10	9	0.75	0.75	0.5
3.0	16	12	1.5	1.5	0.5
3.7	16	12	1.5	1.5	0.5
5.5	20	18	2.5	2.5	0.75
7.5	32	25	4.0	4.0	0.75
11	40	32	4.0	4.0	0.75
15	50	38	6.0	6.0	0.75
18.5	50	40	10	10	1.0
22	63	50	10	10	1.0
30	100	65	16	16	1.0
37	100	80	25	25	1.0
45	123	95	35	35	1.0
55	160	115	50	50	1.0
75	225	170	70	70	1.0
90	250	205	95	95	1.0
110	315	245	120	120	1.0
132	350	300	120	120	1.0
160	400	300	150	150	1.0

185	500	410	180	180	1.0
200	500	410	185	185	1.0
220	630	475	240	240	1.0
250	630	475	2*120	2*120	1.0
280	700	620	2*120	2*120	1.0
315	800	620	2*150	2*150	1.0
355	1000	800	2*185	2*185	1.0
400	1250	800	2*240	2*240	1.0
450	1250	1000	2*240	2*240	1.0

Table 3-2 Selection guide for peripheral electrical components of KOC550 series 690v inverter

Inverter power (kw)	Open (MCCB)	Recommended contactor a	Recommended input side main circuit wire mm 2	Recommended output side master loop wire mm 2	Recommended control back line wire mm 2
22	50	3 8	6.0	6.0	1.0
30	63	4 0	10	10	1.0
37	63	50	10	10	1.0
45	100	50	16	16	1.0
55	100	80	16	16	1.0
75	125	115	25	25	1.0
90	160	125	35	35	1.0
110	180	185	50	50	1.0
132	250	200	70	70	1.0
160	315	225	95	95	1.0
185	350	250	120	120	1.0
200	350	250	120	120	1.0
220	350	315	120	120	1.0
250	350	315	150	150	1.0
280	400	400	150	150	1.0
315	500	400	185	185	1.0
355	500	400	185	185	1.0
400	630	500	240	240	1.0
500	800	630	2*150	2*150	1.0

630	1000	1000	3*150	3*150	1.0
800	1200	1200	3*150	3*150	1.0

3.2.2 Wiring

1. KOC550 series control board diagram

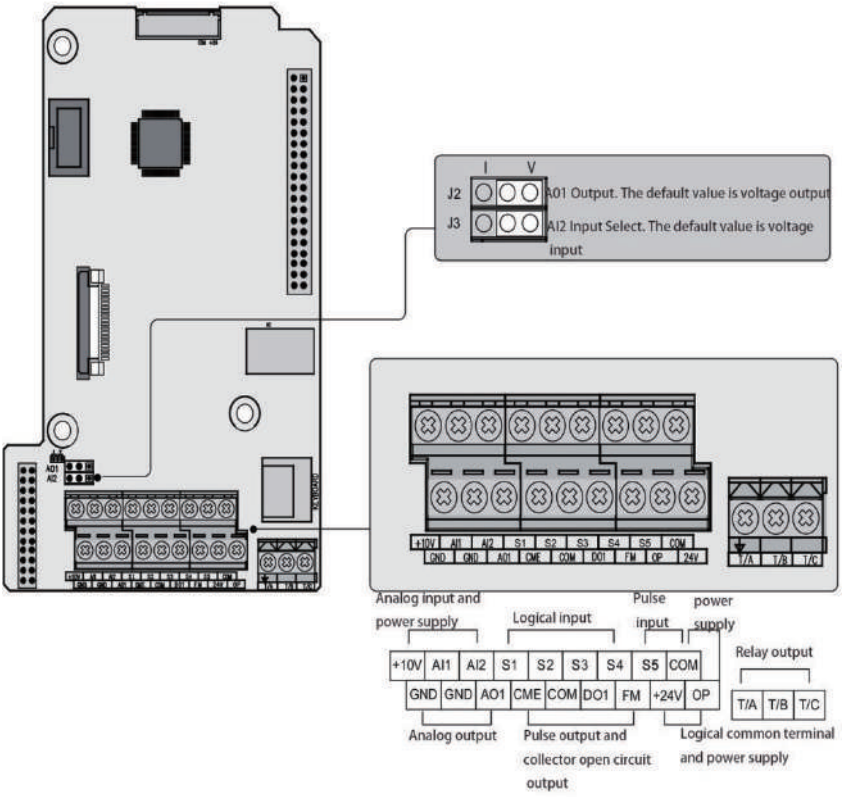
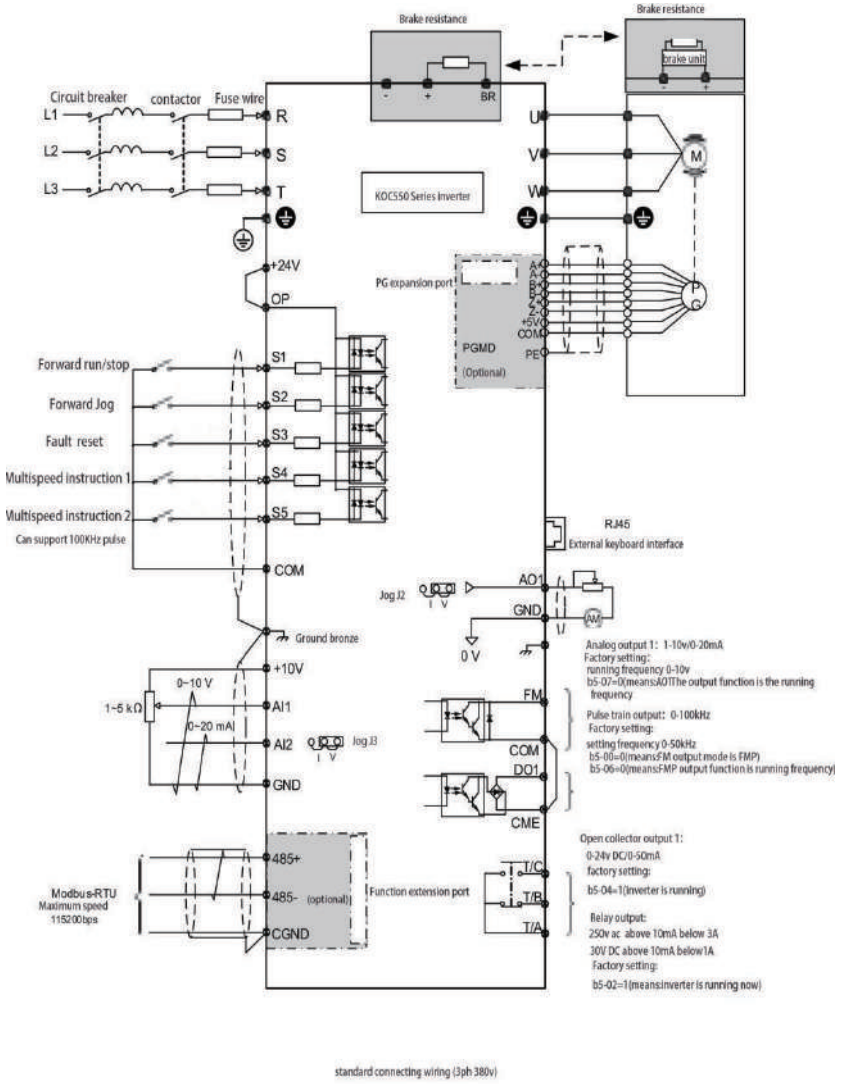


Figure 3- 2 KOC550 series control board diagram

Schematic diagram of inverter wiring



standard connecting wiring (3ph 380v)

Wiring diagram (three-phase 380)

Note:

A) Terminal ◎ means main circuit terminal, ○ means control circuit terminal.

B) KOC550 series G0.75~ G18.5 kw is equipped with a built-in brake unit as standard, no additional installation is required, and G22~ G37 kw is equipped with an optional brake unit Built in.

C) G160 kw and above are equipped with an external DC reactor as standard. (high protection level inverters do not have DC reactors as standard)

D) The braking resistor is selected according to the needs of the user. For details, refer to chapter 2 braking resistor selection guide.

3.2.3 Main circuit terminals and wiring

⚠ Danger

- Confirm that the power switch is in the OFF state, and the wiring operation can only be performed when the bus voltage is lower than 36v measured by a multimeter, no electric shock accidents may occur!
- Wiring personnel must be professionally trained personnel, otherwise equipment and personal injury may be caused!
- Must be reliably grounded, otherwise there may be electric shock or fire hazard!

⚠ Pay attention

- Confirm that the input power is consistent with the rated value of the inverter, otherwise the inverter will be damaged!
- Make sure the motor is compatible with the inverter, otherwise the motor may be damaged or the inverter may be protected!
- It is impossible to connect the power supply to U, V, W terminals, otherwise the inverter will be damaged!
- Do not directly connect the braking resistor to the dc bus (+), (-), otherwise it will cause a fire!

Main circuit terminals of the three-phase inverter:

Terminal marking	Name	Description
R , S, T	Three-phase power input terminal	Ac input three-phase power connection point
(+), (-)	Dc bus positive and negative terminals	Common dc bus input point (G37 kw and above power inverter with external braking unit connection point)
(+) , PB	Brake resistor connection terminal	G 30 kw and below braking resistor connection point
P 、 (+)	External reactor connection terminal	G37k w and above power inverter external reactor connection point
U, V, W	Inverter output terminal	Connecting a three-phase motor
⏚	Ground terminal	Ground terminal

Wiring precautions:

A) Input power supply R, S, T: The input side wiring of the inverter has no phase sequence requirement.

B) DC bus (+), (-) terminals:

Note that DC bus (+) and (-) terminals still have residual voltage immediately after power failure, wait for 10 minutes and use a multimeter to measure and confirm that it is less than 36 v before touching, otherwise there is a risk of electric shock.

KOC550 series G37 kw and above power inverters use external braking unit, pay attention to the polarity of (+) and (-) cannot be reversed, otherwise, the inverter will be damaged or even fire.

The wiring length of the braking unit should not exceed 10 m, and twisted-pair wiring or tight double-wire parallel wiring should be used. Do not directly connect the braking resistor to the dc bus, which may cause damage to the inverter or even fire.

C) Braking resistor connection terminal (+), PB:

KOC550 series G30 kw and below power inverters need to confirm the model with built-in braking unit, the braking resistor connection terminal efficient. Refer to the recommended value for the selection of the braking resistor and the wiring distance should be less than 5m, otherwise the inverter may be damaged.

D) External reactor connection terminals P, (+):

G 37 kw and above power inverter DC reactor external connection terminal, remove the connecting piece between P and (+) terminals when assembling, the reactor is connected between the two terminals.

E) U, V, W at the output side of the inverter:

Do not connect capacitors or surge absorbers to the output side of the inverter, otherwise it will cause frequent protection or even damage to the inverter. Motor cable when it is too long, due to the influence of distributed capacitance, it is easy to generate electrical resonance, which will cause damage to the motor insulation or generate a large leakage current to make the frequency conversion tor overcurrent protection. When the motor cable length is greater than 50m, it is recommended to install an output reactor or output filter, and the motor cable length is greater than 100m, an ac output reactor must be installed.

F) Ground terminal  :

The terminal must be reliably grounded, and the resistance of the grounding wire must be less than 10Ω. Otherwise, it will cause the equipment to work abnormally or even be damaged. Do not share the ground terminal with the N terminal of the neutral wire of the power supply.

3.2.4 Control terminals and wiring

1. The KOC550 control circuit terminal layout diagram is as follows:

(note: KOC550 there is no shorting piece between CME and COM, OP and 24V, and the user selects CME and OP through J7 and J8 respectively. Wiring method

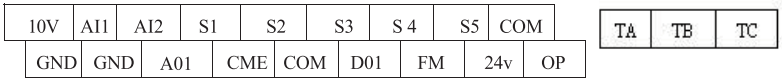


Figure 3-4 Layout of control circuit terminals

2. Control terminal function description:

Table 3-3 inverter control terminal function description

Category	Terminal symbol	Terminal name	Function description
Power supply	+10v, GND	External 10v power supply	Provide +10v power supply to the outside, the maximum output current is 10mA Generally used as an external potentiometer power supply, the potentiometer range is 1-5kΩ
	+24v, COM	External 24v power supply	Provide + 24v power supply to the outside, generally used as digital input and output terminal working power supply and external connection sensor power supply; maximum output current 200mA
	0P	External power input terminal	The factory default is connected with +24V When using an external signal to drive S1-S5, the 0P needs to be connected to the external power supply and connected to the +24V power supply source terminal disconnected
Analog input	AI1 , GND	Analog input terminal 1	Input voltage range: DV 0v- 10v Input impedance : 22kΩ
	AI2 , GND	Analog input terminal 2	Input range: DC 0v-10v/0mA-20mA, determined by the J3 jumper selection on the control board. Input impedance: Voltage input 22kΩ, current input through impedance 500Ω.
Digital input	S1,COM	Digital input 1	Optocoupler isolation, compatible with bipolar input Input impedance: 2.2kΩ Effective level input voltage range: 9-30v
	S2,COM	Digital input 2	
	S3,COM	Digital input 3	
	S4,COM	Digital input 4	
	S5,COM	Digital input 5, High speed PULSE input	With the characteristics of S1 - S5, it can also be used as a high-speed PULSE input channel. Maximum input frequency: 100khz Input impedance: 1.2kΩ
Analog output	A01, GND	Analog output 1	By the J2 jumper selection on the main control board. Output voltage range: 0-10v Output current range: 0mA-20mA
Digital output	D01, CME	Digital output 1	Optocoupler isolation, bipolar open collector output Output voltage range: 0-24v Output current range: 0mA-50mA The digital output ground CME is internally isolated from the output and input ground COM, but CME is shipped from the factory it has been short-circuited with COM through the jumper J8. When D01 wants to be driven by an external power supply, jumper J8 choose external connections.
	FM, CME	High speed PULSE output	To parameter b5-00: When used as a high-speed PULSE output, the maximum frequency is 100khz; When used as an open collector output, it is the same specification as D01.
Relay output	TA , TC	Normally open terminal	Contact drive capability: 250 v /3A, cosø0.4 30v DC/1A
	TA , TB	Normally closed terminal	
Jumper	J2	A01	Voltage and current output selection, default voltage output
	J3	AI2	Voltage and current input selection, default voltage input

3. Control terminal wiring instructions:

A) Analog input terminal:

Because the weak analog voltage signal is particularly susceptible to external interference, it is generally necessary to use shielded cables, and the wiring distance should be as far as possible. Short, no more than 20m, as shown in figure 3-5. In some occasions where the analog signal is severely interfered, a filter capacitor or a ferrite core should be added to the analog signal source side, as shown in figure 3-6.

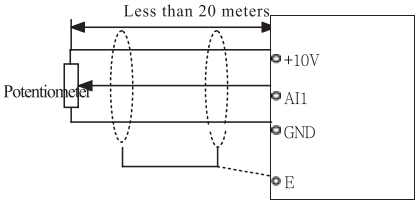


Figure 3-5 wiring diagram of analog input terminals

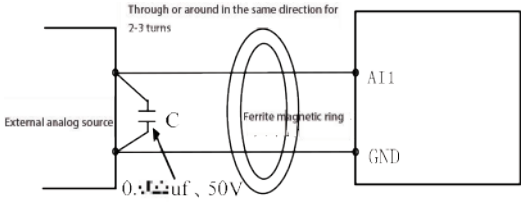
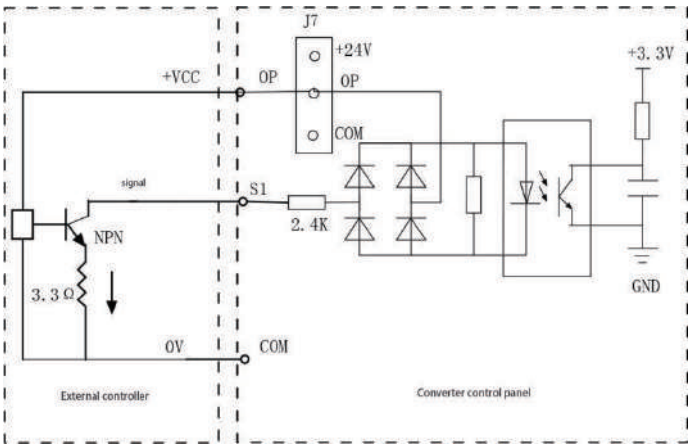


Figure 3-6 analog input terminal processing wiring diagram

B) Digital input terminal:

Generally, shielded cables are required, and the wiring distance should be as short as possible, not exceeding 20m. When using active drive mode, it is necessary to the crosstalk of the source takes necessary filtering measures. It is recommended to use the contact control method.

◆ Sink connection mode (terminal conduction at low level given)



In this mode, the terminal is connected with a given low level (the optocoupler is turned on).

Powered by the internal power supply, J7 jumps to the 24v terminal;

When powered by an external power supply, J7 does not jump to any terminal, and terminal op needs an external power supply positive (+VCC).

When the terminal input is on:

If the corresponding attribute set by b4-38 and b4-39 is positive logic, the function set by the corresponding terminal is enabled;

If the corresponding attribute set by b4-38 and b4-39 is negative logic, the function set by the corresponding terminal will not be enabled. When the terminal input is not connected:
If the corresponding attribute set by b 4-38 and b 4-39 is positive logic, the function set by the corresponding terminal will not be enabled; if the corresponding attribute set by b 4-38 and b 4-39 is inverse logic, the function set by the corresponding terminal will be enabled.

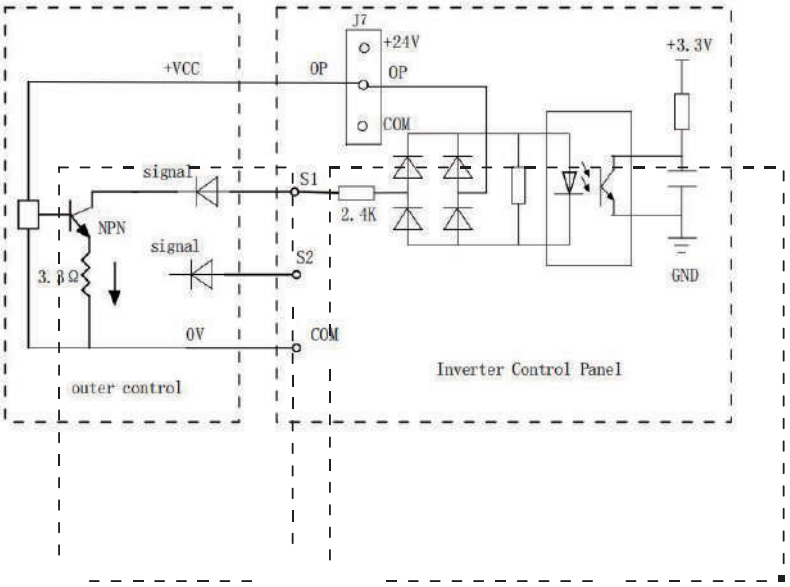


Figure 3-8 S -terminals of multiple inverters connected in parallel to leakage type wiring

Sink connection mode, the S terminals of different inverters cannot be used in parallel, otherwise it may cause malfunction of the s terminal; if the s terminal is required sub-parallel connection (between different inverters), it needs to be connected in S the terminal is connected in series with a diode (anode connected to the s terminal), and the diode needs to meet: 1F>10mA, UF < 1v, as shown in the figure above.

◆ Source type wiring mode (terminal given high level conduction)

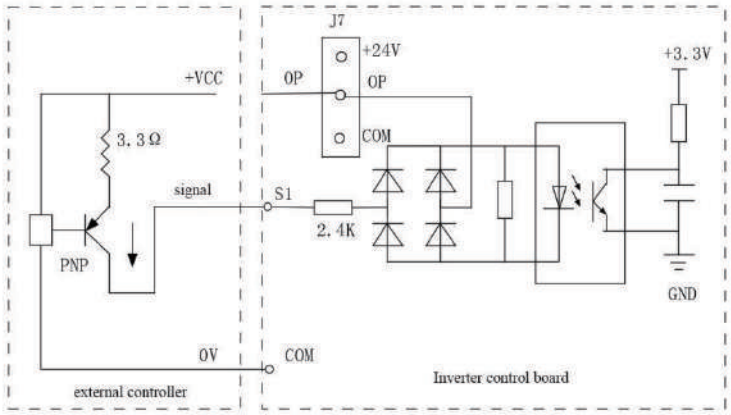


Figure 3-9 source connection mode

In this mode, the terminal is connected with a given high level (the optocoupler is turned on).

Powered by the internal power supply, J7 jumps to the com terminal;

When powered by an external power supply, J7 does not jump to any terminal, and terminal 0P needs to be connected to the ground of the external power supply.

When the terminal input is on:

If the corresponding attribute set by b4-38 and b4-39 is positive logic, the function set by the corresponding terminal is enabled;

If the corresponding attribute set by b4-38 and b4-39 is negative logic, the function Set by the corresponding terminal will not be enabled. When the terminal input is not connected:

If the corresponding attribute set by b4-38 and b4-39 is positive logic, the function Set by the corresponding terminal will not be enabled; if the corresponding attribute Set by b4-38 and b4-39 is inverse logic, the function set by the corresponding terminal will be enabled.

C) Digital output terminal

When the digital output terminal needs to drive the relay, an absorption diode should be installed on both sides of the relay coil, otherwise it will easily cause damage to the DC 2 4 v power supply, and the driving capacity should not exceed 50mA.

Note: Be sure to install the polarity of the absorption diode correctly, as shown in figure 3-10, otherwise when the digital output terminal has output, the DC 24v power supply will be burned out immediately.

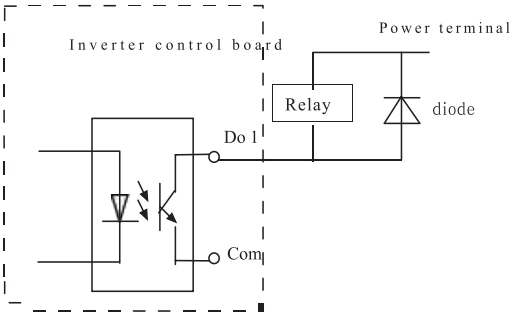


Figure 3-10 wiring diagram of digital output terminals

Chapter 4 Operation and display

4.1 Operation and display interface introduction

Through the keyboard operation panel, you can modify the function parameters of the inverter, monitor the working status of the inverter and control the operation of the inverter (starting, stop) and other operations, its shape and function area are shown in the figure below:

1. Button identification:

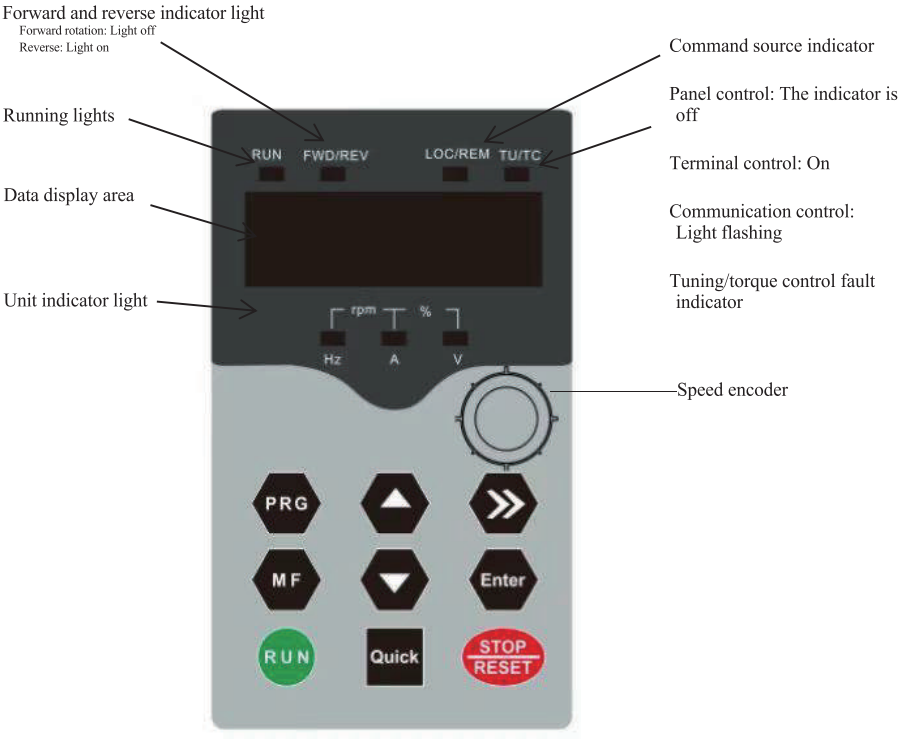


Figure 4-1 schematic diagram of the operation panel

2. Description of function indicator light:

Run: When the light is off, it means the inverter is in stop state, and when the light is on, it means the inverter is in running state.

LOC / REM: Keyboard operation, terminal operation and remote operation (communication control) indicator light, the light is off to indicate the keyboard operation control state, the light is on to represent the terminal operation control state, and the light is flashing to represent the remote communication operation control state.

FWD/REV: Forward and reverse indicator light, when the light is on, it means that it is in the reverse state.

TU/TC: Tuning/torque control/fault indicator light, the light on means it is in the torque control mode, and the light flashes slowly means it is in the tuning state, the light flashes quickly to indicate a fault state.

3. Unit indicator light:

Hz: Unit of frequency

A: Current unit

V: Voltage unit

RMP (Hz + A): Unit of rotational speed

%(A + V): Percentage

4. Digital display area:

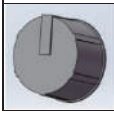
5-digit led display, which can display the set frequency, output frequency various monitoring data and alarm codes, etc.

Table 4- 1 actual correspondence and led display correspondence table

Led show	Actual correspondence	Led show	Actual correspondence	Led show	Actual correspondence	Led show	Actual correspondence
0	0	6	6	C	C	n	N
1	1	7	7	c	C	P	P
2	2	8	8	d	D.	r	R
3	3	9	9	E	E.	t	T
4	4	A	A	F	F	U	U
5	5. S	b	B	L	L	u	U

5. Keyboard key description table:

Table 4- 2 button function table

Button	Name	Function
PRG	Programming key	First-level menu entry or exit
ENTER	Confirmation key	Enter the menu screen step by step , confirm the setting parameters
UP	Up key	Increment of data or function code
DOWN	Down key	Decrement of data or function code
SHIFT	Right shift key	When modifying parameters , you can select the modification position of the parameter; in the stop display interface and running display interface , you can select the display parameters cyclically.
RUN	Run key	In the keyboard operation mode, it is used to run the operation.
STOP RESET	Stop/reset	In the running state, press this key to stop the running operation; in the fault alarm state, use this key to reset faults, and the characteristics of this key are restricted by function code b 7-02.
M F	Multi-function Selection key	According to b7-01 for function switching selection, it can be defined as command source or direction fast switching
RUN + STOP	Free stop shortcut key	When the inverter is running, press these two keys at the same time to realize free stop.
PRG+▲	Parameter upload	In the normal interface, press the PRG key first, and then press the PRG+ ▲ key at the same time: Upload the parameters from the control panel to the keyboard, and the a light flashes when uploading;
PRG +▼	Parameter download	In the normal interface, press the PRG key first, and then press the PRG+▼ key at the same time : Download the parameters from the keyboard to the control panel, and the v light flashes when downloading;
	Speed encoder	Set frequency value

4.2 Instructions for viewing and modifying basic function codes

The basic function code group is all the function codes of the inverter, and it is the I-level menu after entering.

The KOC550 series inverter adopts a three-level menu structure for parameter setting and other operations. The three-level menus are: Function parameter group (first-level menu) → function code (second-level menu) → function code setting value (third-level menu). The operation process is shown in figure 4-2.

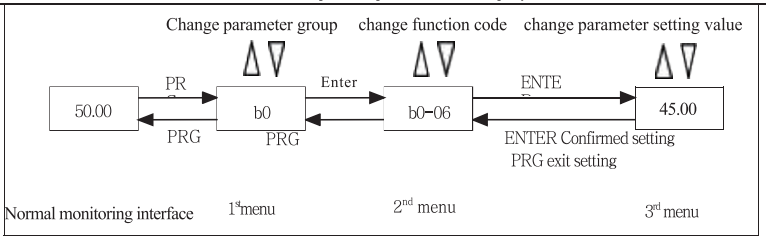
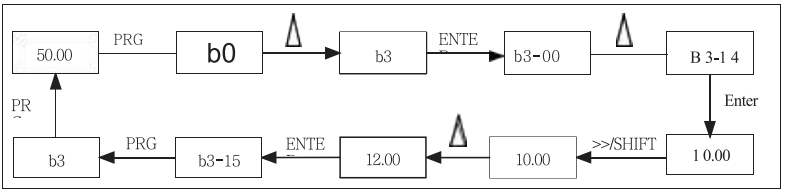


Figure 4-2 three-level menu operation flow chart

Note: When operating in the third-level menu, you can press the PRG or ENTER key to return to the second-level menu. The difference between the two is that pressing the enter key will save the set parameters and return to the second-level menu, and automatically transfer to the next function code, while pressing the PRG key returns directly to the secondary menu.

Do not store parameters, and return to the current function code.

Example: Example of changing function code b3-14 from 10.00hz to 12.00hz.



In the third-level menu state, if the parameter has no flashing bit, it means that the function code cannot be modified, and the possible reasons are as follows:

1. This function code is an unmodifiable parameter. Such as actual detection parameters, operation record parameters, etc.
2. This function code cannot be modified in the running state, and can only be modified after the machine is stopped.

4.3 Definition and operation of multi-function keys

The MF.K key can be defined by b7-01 function code, which is used to switch the command source or the rotation direction of the inverter. Please refer to the explanation of b7-01 function code for the specific setting method.

4.4 How to view state parameters

In the stop or running state, various state parameters can be displayed respectively through the shift key ">>/ SHIFT ". By function code b7-03 (operation row parameter 1), b7-04 (operation parameter 2) setting. Press the key sequence to switch and display the selected parameter.

In running state, five running state parameters: Running frequency, set frequency, bus voltage, output voltage, output current are it is displayed by default, and whether other parameters are displayed is set by b7-03 and b7-04 function codes:

b7 -03	Run display parameter 1	Bit 00: Operating frequency 1(hz) Bit 01: Set frequency (hz) Bit 02: Bus voltage (v) Bit 03: Output voltage (v) Bit 04: Output current (a) Bit 05: Output power (kw) Bit 06: Output torque (%) Bit 07: S input state Bit 08: Do output status Bit 09: AI1 voltage (v) Bit 10: AI2 voltage (v) Bit 11: AI3 voltage (v) Bit 12: Count value Bit 13: Length value Bit 14: Load speed display Bit 15: PID setting	Bit 00: PID feedback Bit 01: PLC stage Bit 02: PULSE input PULSE frequency Bit 03: Operating frequency 2 (hz) Bit 04: Remaining running time Bit 05: AI1 voltage before correction (v) Bit 06: AI2 voltage before correction (v) Bit 07: AI3 voltage before correction (v) Bit 08: Motor speed Bit 09: Current power-on time (hour) Bit 10: Current running time (min) Bit 11: PULSE input PULSE frequency Bit 12: Communication setting value Bit 13: Encoder feedback speed (hz) Bit 14: Main frequency x display (hz) Bit 15: Auxiliary frequency Y display (hz)	1F
b7 -04	Run display parameter 2			0

4.5 Inverter start-stop control

4.5.1 Source selection of start-stop signal

There are 3 sources for the start and stop control commands of the inverter, which are panel control terminal control, and communication control, which are selected by function parameter b0-02.

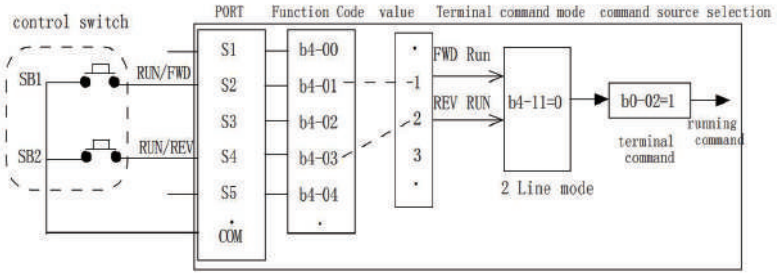
b0 -02	Command source selection		Factory value: 0	Illustrate
	Setting range	0	Operation panel command channel (LED off)	According to RUN, STOP key start and stop
		1	Terminal command channel (LED on)	Need S to be defined as the start-stop command terminal
		2	Communication command channel (LED flashing)	Using MODBUS- RTU protocol

1. Panel start and stop control

Through keyboard operation, make function code b0-02=0, that is, the panel start-stop control mode, press the RUN key on the keyboard, and the inverter will start running (the RUN indicator light is on); when the inverter is running, press the STOP key on the keyboard, the inverter will stop running (RUN indicator light goes off).

2. Terminal start and stop control

The terminal start-stop control mode is suitable for sampling toggle switches and electromagnetic switch buttons as the application system start-stop occasions, and is also suitable for controllers the electrical design for controlling the operation of the inverter with dry contact signals.



KOC550 series inverters provide a variety of terminal control methods, and the switch signal mode and function code can be determined through function code b4-11 b4-00~ b4-07 determine the input port of start -stop control signal. For specific setting methods, please refer to b4-11, b4-00~ b4-07, etc. A detailed explanation of energy codes.

Example 1: It is required to use the toggle switch for the inverter as the start-stop switch of the inverter, connect the forward running switch signal to the S2 port, reverse the running switch signal is connected to the S4 port. The method of use and setting is as follows:

Figure 4 - Example of 3-terminal start-stop control mode

The above control mode, when the SB1 command switch is closed, the inverter runs forward, and when the sb1 command switch is disconnected, the inverter stops; and when the SB2 command switch is closed, the inverter runs reversely; when the SB2 command switch is disconnected, the inverter stops; SB1 and SB 2 are closed at the same time together, or disconnected at the same time, the inverter will stop running.

Example 2: It is required to use the button for the inverter as the start-stop switch of the inverter, connect the signal of the start button to the S2 port, and the signal of the stop button catch S3 port, the reverse run button signal is connected to S4 port, the method of use and setting is as follows:

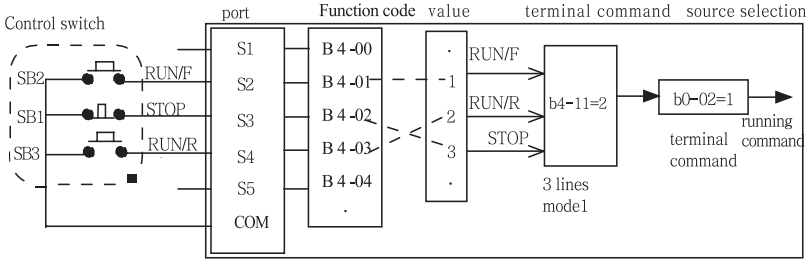


Figure 4-4 example of terminal start-stop control mode

In the above control mode, during normal startup and operation, the SB1 button must be kept closed, and the inverter will stop immediately when it is disconnected; the commands of the SB2 and SB3 buttons will take effect at the edge of the closing action, and the running state of the inverter will be the last key action of the 3 buttons is accurate.

3. Communication start and stop control

The upper computer to control the operation of the inverter through communication. For example, through RS485, can link and other networks, it can to communicate with KOC550 series inverters. Insert the corresponding communication interface card into the multi-function extension port of the inverter, and select the control command source as the communication mode (b0-02=2), then the start-stop operation of the inverter can be controlled by communication mode. The function codes related to communication settings are as follows:

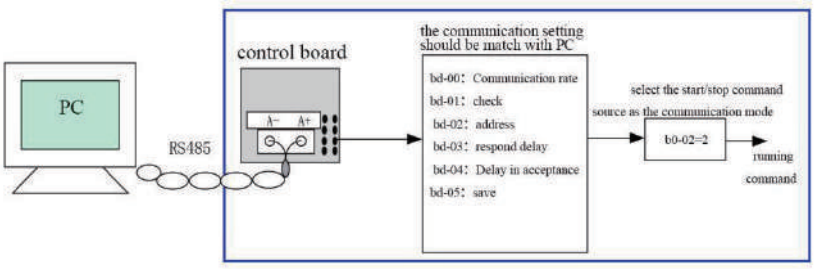


Figure 4-5 example of communication start-stop control mode

Set the function code of the communication timeout time (bd -04) to a value other than 0, that is, the function of automatic shutdown of the inverter after the communication timeout fault is activated, which can avoid failure of the communication line or the host computer. Resulting in uncontrolled operation of the inverter. In some applications this feature can be enabled in.

The built-in communication port of the inverter is the MODBUS-RTU slave station protocol, and the upper computer must use the MODBUS-RTU master station protocol to communicate with it. Communication, for the definition of the specific communication protocol, please refer to the appendix of the manual.

4.5.2 Start mode

There are 3 starting modes of the inverter, which are direct start, speed tracking restart and asynchronous machine pre-excitation start. b6-00 =0.

The direct start method is suitable for most small inertia loads, and the frequency curve of the start process is as shown in the figure below. "DC braking" Before its start the function is suitable for the drive of elevators and heavy loads; the starting frequency is suitable for the drive of equipment that requires starting torque impact starting, such as cement blender equipment.

b6-00=1, speed tracking restart mode, suitable for the drive of large inertia mechanical loads, the frequency curve of the starting process is as shown in the figure below. When the inverter starts running, the load motor is still running by inertia, and the speed tracking is used to restart to avoid the occurrence of overcurrent at startup.

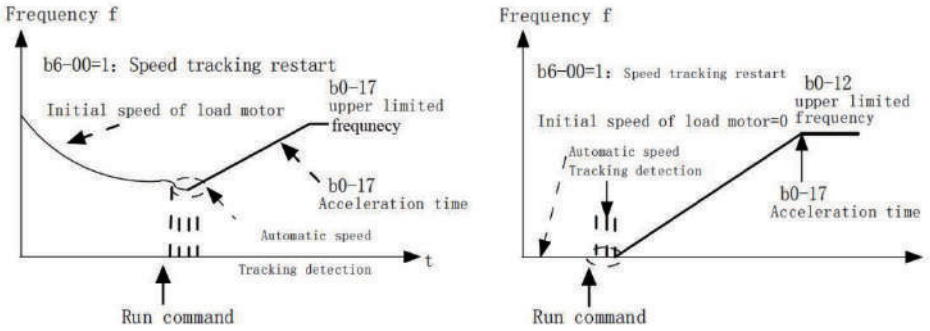
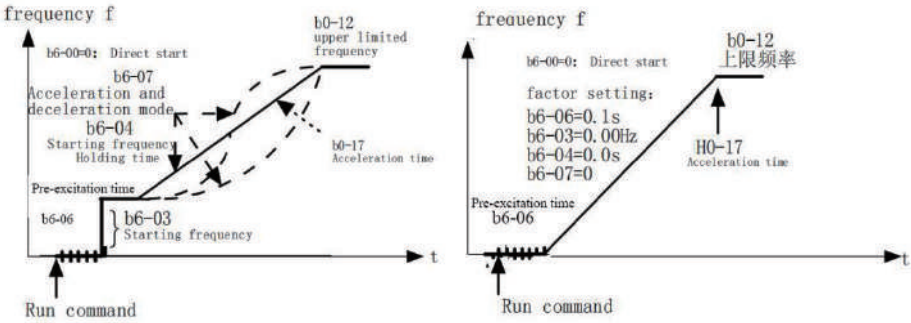


Figure 4-7 speed tracking restart mode

b6-00=2, pre-excitation starting method, this method is only applicable to induction asynchronous motor load. Pre -excitation of the motor before starting can improve the quick response characteristics of the asynchronous motor and meet the application requirements of relatively short acceleration time. The frequency curve of the starting process as follows:



4.5.3 Shutdown mode

There are 2 stop modes of the inverter, deceleration stop and free stop, selected by function code b6-10.

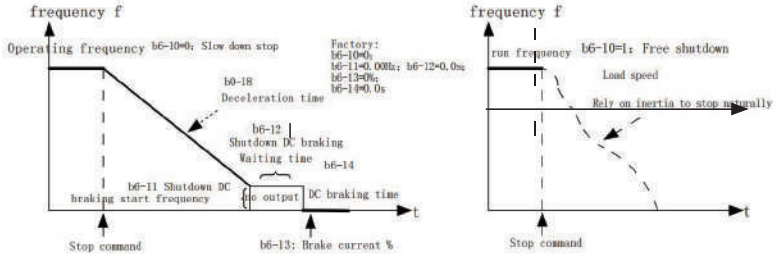
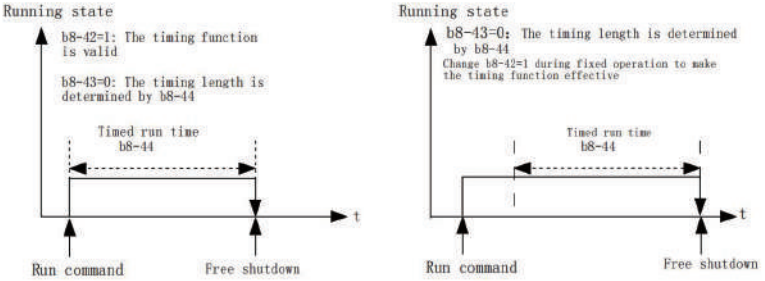


Figure 4-9 stop mode

4.5.4 Timing stop function

The timing function is enabled through b8-42, and the timing time is determined by b8-43 and b8-44.



For the length of the timing time, the user is also provided with an available analog quantity (such as a potentiometer signal) for setting, please refer to b8-43 detailed description of the function code.

4.5.5 Jog run

In many applications, the inverter needs to run at a low speed for a short time, which is convenient for testing the condition of the equipment or other debugging actions. At this time, it is used it is more convenient to run with jog

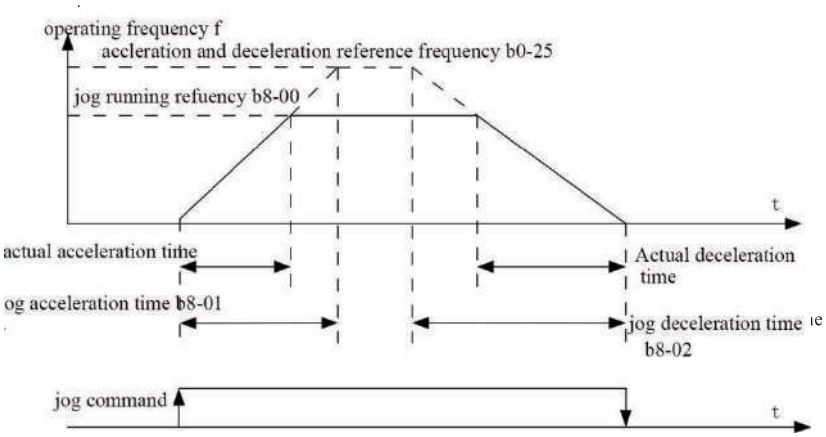


Figure 4-11 jog operation mode

1. Parameter setting and operation of jog operation via the operation panel

MF the button is defined as "Jog forward" Command key
Jog command key panel command mode jog running parameters

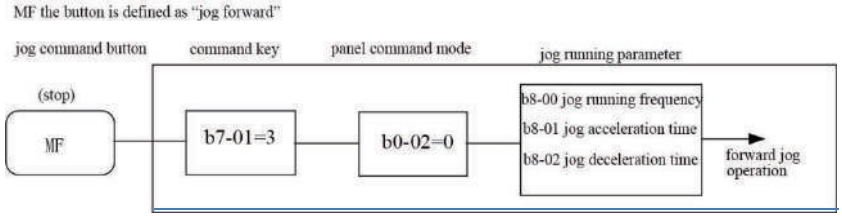


Figure 4-12 jog operation on the operation panel

After setting the relevant function code parameters as shown in the figure above, when the inverter is stopped, press the MF.K, release the MF.L key, the inverter will decelerate and stop.

If you want to jog reverse running, you need to set b7-01=4, and set b8-13=0, which means reverse running is allowed, and then press the MF.K key to operate.

2. Parameter setting and operation of jogging operation via s input terminal

On some production equipment that requires frequent jogging operations, such as textile machinery, it is more convenient to use buttons to control jogging. The energy code setting is as shown in the figure below:

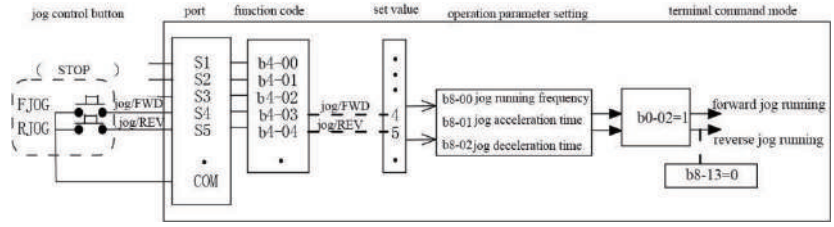


Figure 4-13 S input terminal jog operation

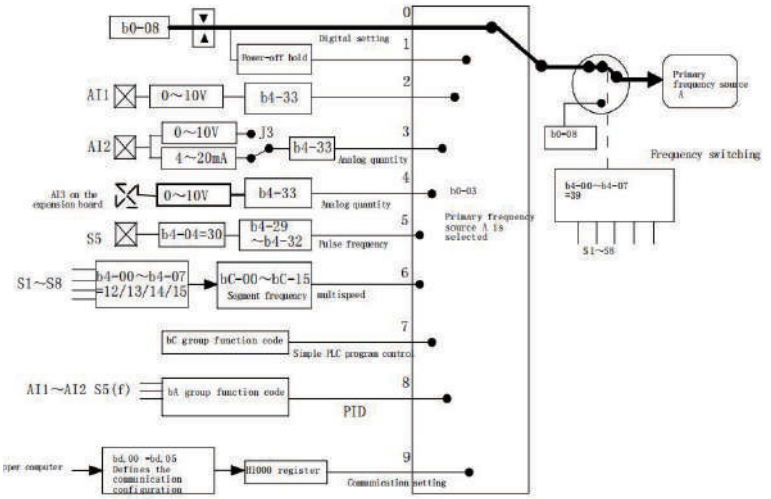
After setting the relevant function code parameters as shown in the figure above, when the inverter is stopped, press the FJOG button, and the inverter will start to rotate forward at low speed running, release the FJOG button, the inverter will decelerate and stop. Similarly, press the RJOG button to perform reverse jog operation.

4.6 Inverter operating frequency control

The inverter is equipped with 2 frequency reference channels, which are respectively named as the main frequency source A and the auxiliary frequency source B, which can work on a single channel or switch at any time, and can even set the calculation method for superimposed combination to meet the requirements of the application site. Different control requirements.

4.6.1 source selection of given main frequency

There are 10 kinds of main frequency sources of the inverter, which are digital setting (UP / DN power failure without memory), digital setting (UP/DN power failure memory), AI1, AI2, AI3, FM high-speed PULSE input, multi-segment instructions, simple PLC, PID, communication setting, etc., can be selected through b0-03 setting.



From the different frequency sources in the figure, it can be seen that the operating frequency of the inverter can be determined by the function code, and can also be adjusted manually in real time. It can also be set by analog quantity, or by multi-speed terminal command, or by external feedback signal, by the built-in PID the regulator is used for closed-loop adjustment; it can also be controlled by the host computer communication
The above figure shows the relevant function code numbers for the given setting of each frequency source, and you can refer to the detailed description of the corresponding function codes when setting.

4.6.2 Use method with auxiliary frequency given

Auxiliary frequency source B is the same as the main frequency source, and it can be selected by setting b0-04.

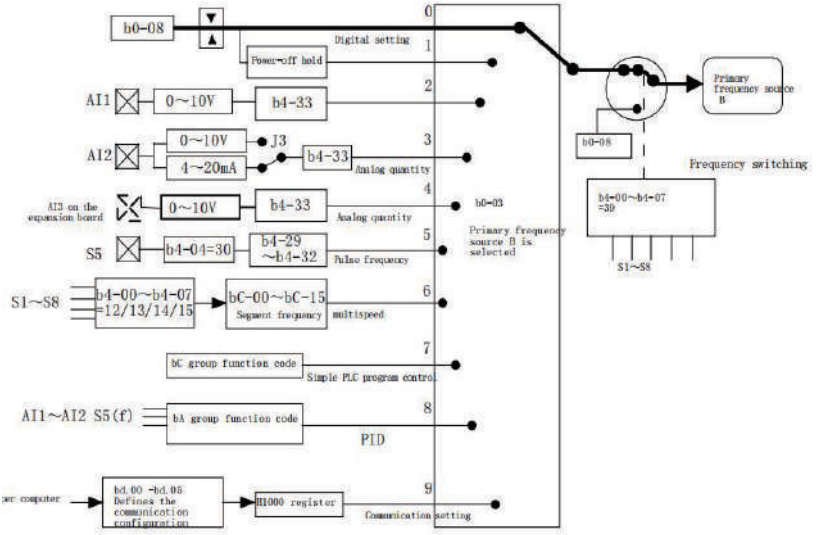


Figure 4-15 auxiliary frequency given source selection

In actual use, set the relationship between the target frequency and the main and auxiliary frequency sources through b0-07.

There are three types of relationships:

1. Main frequency source A: The main frequency source is directly given as the target frequency

2. Auxiliary frequency source B: The auxiliary frequency source is directly given as the target frequency

3. Main and auxiliary calculation AB: There are 4 situations for main and auxiliary calculation, namely main frequency + auxiliary frequency, main frequency - auxiliary frequency, main frequency and the larger value of the auxiliary frequency, the smaller value of the main frequency and the auxiliary frequency.

4. Frequency switching: The above three frequencies can be selected or switched through the S input terminal. The selection and switching of the above frequency sources are defined by the function code b0-07, as shown in the figure below, the thick line in the figure represents the factory parameter setting, the specific setting method can be found in the detailed description of the function code marked in the figure:

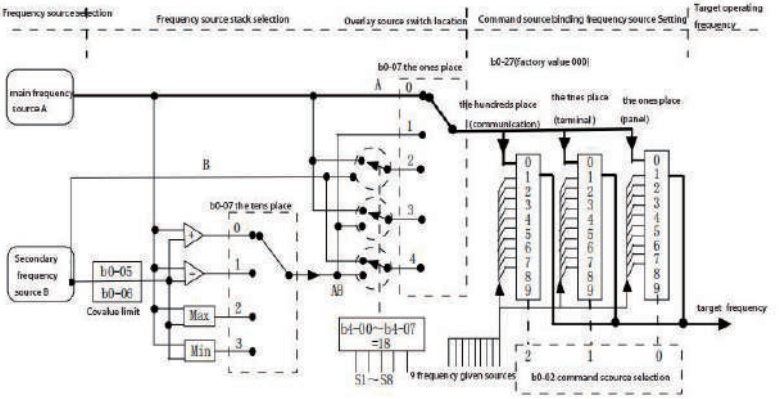


Figure 4-16 The source selection of the main and auxiliary frequency mixed reference

The superposition function of the main and auxiliary frequency sources can be used in occasions with speed closed-loop control, for example, the main frequency channel is the main channel, and the auxiliary frequency is used to signal, the required closed -loop control purpose can be achieved.

4.6.3 Running command switching and frequency given binding

By setting b0-27, the three command sources of the inverter can set their respective frequency sources, see the figure above. When the specified command channel (b0-02) is set to the frequency binding channel (b0-27 corresponding bit), at this time the main and auxiliary frequency sources a and b will not work, but by b 0-27 the specified frequency is determined by the given channel.

4.6.4 The frequency source is AI the use of analog given

KOC550 series inverter can be given by the analog input terminal, the control board provides 2 analog input terminals (AI1, AI 2), and the optional I/O expansion card can provide another analog input terminal (AI3). The following example illustrates how to use it:

1. AI1 voltage type input connected to potentiometer as frequency source (2 v-10v corresponds to 10hz-40hz)

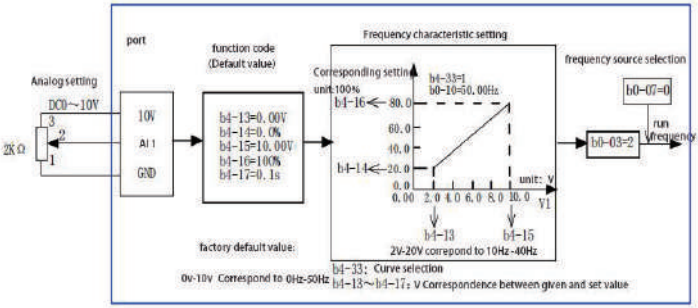


Figure 4-17 AI1 voltage type input given frequency function code setting

2. The AI2 current type input is connected to the DA module of the PLC as the frequency source (4-20 mA corresponds to 0hz -50hz)

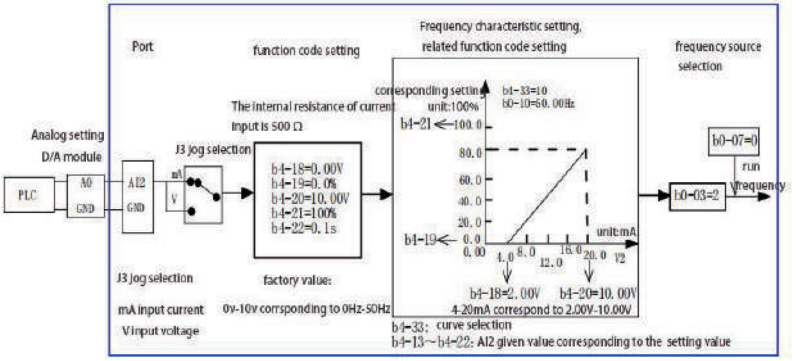


Figure 4-18 AI 2 current type input given frequency function code setting

the control board of the KOC550 series inverter provides 2 analog input terminals (AI1, AI2).

B) AI1 is 0 v ~ 10 v voltage input; AI2 can be 0 v ~ 10 v voltage input, or 4 mA ~ 20 mA current input, controlled by the control J3 jumper selection on the board.

C) when AI is used as frequency setting, the voltage/current input corresponds to 100.0% of the setting, which refers to the percentage relative to the maximum frequency b0-10.

D) KOC550 series inverters can preset 5 sets of corresponding relationship curves, which can be freely selected through b4-33. The input value of each set of curves and the target the corresponding setting of standard frequency is set through b4-13~ b4-27 function codes.

4.6.5 The frequency source is the use of PULSE given

In many applications, the frequency setting is given through the terminal PULSE signal. PULSE given signal specification: Voltage range 9v~30v, frequency range 0khz ~ 100khz. PULSE reference can only be input from multi-function input terminal s5. The relationship between s5 terminal input PULSE frequency and corresponding setting can be set through b 4-28~ b 4 -31. 100.0% refers to the percentage relative to the maximum frequency b0-10. The specific settings are as follows:

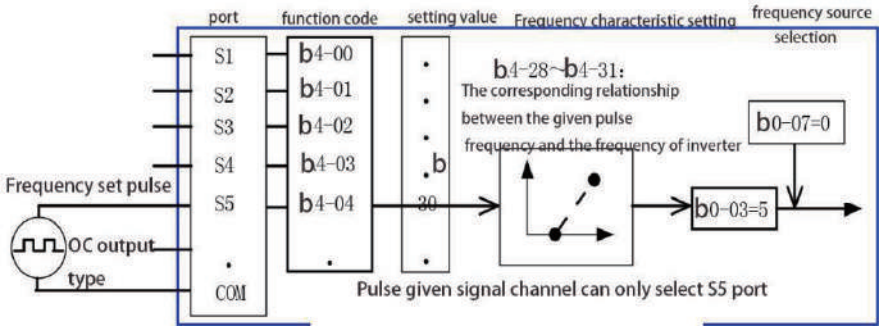


Figure 4-19 PULSE given frequency function code setting

4.6.6 Wobble frequency working mode setting

In textile and chemical fiber processing equipment, using the swing frequency function can improve the uniformity and density of the spindle winding, as shown in the figure below. Pass it can be realized by setting the function codes bb-00 to bb-04. For specific methods, refer to the detailed description of the corresponding function codes.

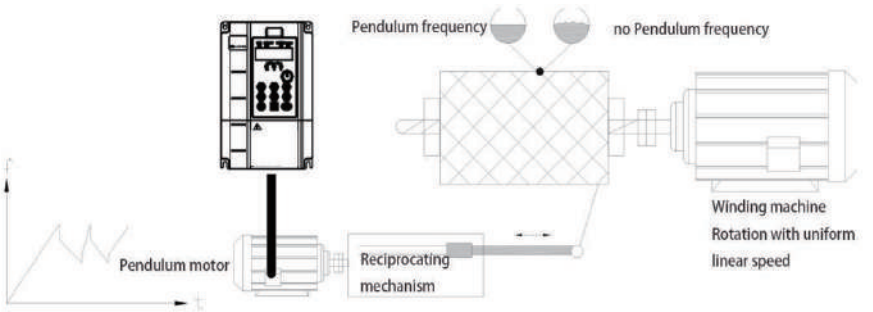


Figure 4-20 wobble frequency working mode

4.6.7 Setting of multi-speed mode

For applications that do not need to continuously adjust the operating frequency of the inverter and only need to use several frequency values, multi-stage speed control can be used , the KOC550 series inverter can set a maximum of 16 operating frequencies, which can be selected through the combination of 5 s-terminal input signals, and the function code corresponding to the s-terminal input is set to a function value of 12~ 15 , that is , it is designated as multi-segment frequency command input port, and the required multi-segment frequency it is set through the multi-segment frequency table of the hc group, and the "Frequency source selection" Is designated as the multi-segment frequency setting method, as shown in the figure below :

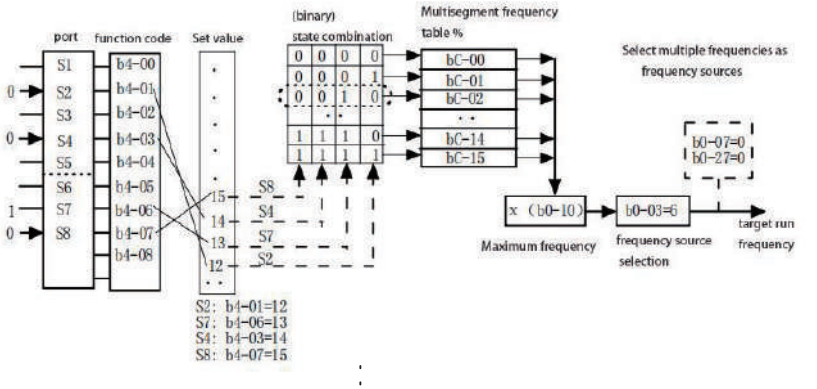


Figure 4-21 setting of multi-speed mode

In the figure above, S8, S4, S7, and S2 are selected as the signal input terminals for multi-segment frequency designation, and a 4-bit binary number is sequentially formed from them, and the multi-segment frequency is selected by combining the values according to the state. When (S8, S4, S7, S2) = (0, 0, 1, 0), the number of state

combinations formed is 2, and the frequency value set by the bc-02 function code will be selected, which is determined by (bC-02)*(b0-10) automatically calculates the target operating frequency.

KOC550 series inverters can set up to 4 s ports as multi-segment frequency command input terminals, and also allow less than 4 s ports for multi-segment frequency setting. For the missing setting bits, they are always calculated according to state 0.

4.6.8 Motor running direction setting

After the inverter restores the factory parameters, press the RUN key, the direction of the motor driven by the inverter is called forward direction, if the direction of rotation at this time is opposite to the direction required by the equipment, please cut off the power (note that the charge of the main capacitor of the inverter after the discharge is completed), exchange any two connections in the UVW output line of the inverter to eliminate the problem of the direction of rotation.

In some drive systems, if there is a need for forward running and reverse running, it is necessary to enable the "Reverse control enable", that is, the function code b8-13=0, and also need to set the "Running direction "Setting" Is set to reverse, that is, b0-09=1, and then press the RUN key to make the motor rotate in reverse. As shown in the logic below

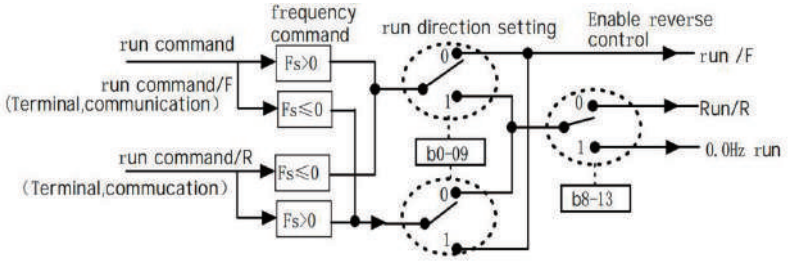


Figure 4-22 Setting the motor running direction

When controlled by terminal operation commands, if reverse operation is required, function code b8-13=0 must be used to enable the reverse control function

From the above figure, in the case of the inverter given by the communication method (b0-03=9), if the reverse operation is allowed (b8-13=0), when the given frequency fs is a negative value, the inverter can run in reverse; when the external given is a reverse running command, or the given frequency is negative value, but the inverter is set to prohibit reverse operation (b8-13=1), at this time the inverter will run at 0hz without output. For not allowed for applications with reverse rotation of the motor, please do not use the method of modifying the function code to change the direction of rotation, because the above two functions will be reset after the factory value is restored Can cod

4.6.9 Setting of fixed length control mode

KOC550 series inverter has fixed-length control function, the length PULSE is collected through S input (S function is selected as 27) terminal, and the terminal divide the number of PULSEs per meter bb-07 by the number of PULSEs per meter, and the actual length bb-06 can be calculated. When the actual length is greater than the set length bb-05, the multifunctional digital D0 outputs the ON signal of "Length reached".

The fixed- length control process, the length reset operation can be performed through the multi-functional S terminal (select the S function as 28), and the setting is as shown in the figure below:

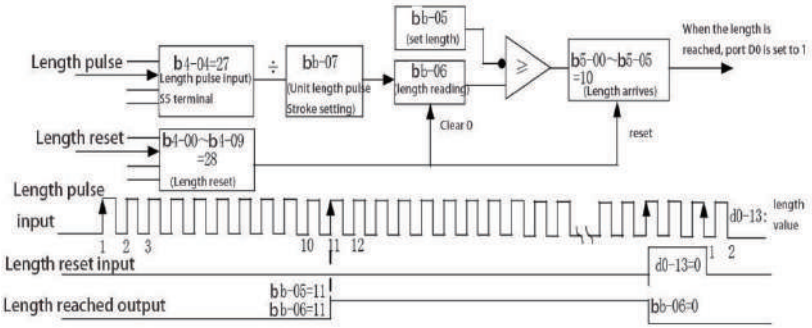


Figure 4-2 3 function code setting of fixed length control mod

Notice:

1) in the fixed-length control mode, the direction cannot be identified, and the length can only be calculated according to the number of PULSEs.

2) only terminal S5 can be used as "Length counting input" Terminal.

3) feedback the D0 output signal of the reached length to the stop input terminal of the inverter, which can be made into an automatic stop system.

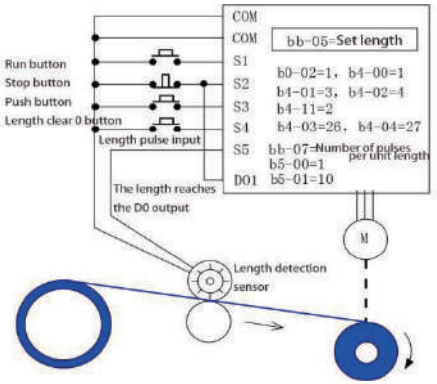


Figure 4- 24 Examples of common applications of the fixed-length control function

4.6.10 How to use the counting function of the inverter

The count value needs to be collected through the S (S function selection is 25) terminal, when the count value reaches the set count value bb -08, the multi-function digital the word D0 outputs the ON signal of "Set count value arrival", and then the counter stops counting.

When the count value reaches the specified count bb-09, the multi-functional digital DO outputs the "Specified count value arrival" ON signal, at this time the count the counter continues to count until the counter stops when the "Set count value" Is reached.

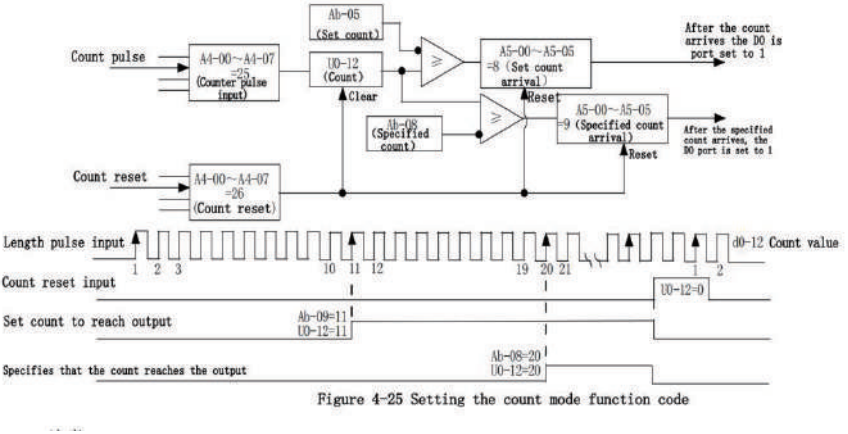


Figure 4-25 Setting the count mode function code

Figure 4-25 Setting the count mode function code

Notice:

1. The specified count value bb-09 should not be greater than the set count value bb-08.
2. When the PULSE frequency is high, the S5 port must be used.
3. The D0 ports of "Set count arrival" And "Specified count arrival " Cannot be reused.
4. In the RUN / STOP state of the inverter, the counter will keep counting until the "Set count value" Will stop counting
5. The count value can be kept when power off.
6. Feedback the counting arrival D0 output signal to the stop input terminal of the inverter, which can be made into an automatic stop system.

4.7 Motor characteristic parameter setting and automatic tuning

4.7.1 Motor parameters that need to be set

The inverter runs in the mode of "Vector control" (b0-01=0 or 1), it is very dependent on the exact motor parameters, which is the same as "VF one of the important differences of the "Control" (b0-01=2) mode, to make the inverter have good driving performance and operating efficiency, the inverter must accurate parameters of the controlled motor are obtained.

The required motor parameters are:

Motor parameters	Parameter description	Illustrate
b1-00	Motor type	Asynchronous, variable frequency asynchronous , synchronous
b1-01~ b1-05	Motor rated power/ voltage/current/frequency/speed	Model parameters, manual input
b1-06~ b1-20	Inside the motor	Tuning parameters
b1-27~ b1-34	Encoder parameters, vector mode with sensor needs to be set	Encoder parameters

4.7.2 Automatic tuning and identification of motor parameters

The methods for the inverter to obtain the internal electrical parameters of the controlled motor include: Dynamic identification, static identification, manual input of motor parameters, etc. Formula

Identification method	Applicable instructions	Discrimination effect
No-load dynamic discrimination	Suitable for synchronous motors and asynchronous motors. The occasion where the motor and the application system are easily separated	Optimal
Load dynamic discrimination	Suitable for synchronous motors and asynchronous motors. Occasions where it is inconvenient to separate the motor from the application system	Can
Static identification	Only applicable to asynchronous motors , where it is difficult to separate the motor from the load, and dynamic identification operation is not allowed	Poor
Enter parameters manually	Only applicable to asynchronous motors , where it is difficult to separate the motor from the application system, copy and input the parameters of the same type of motor that the inverter has successfully identified before to h 1-00~ h 1-10 corresponding function code	Can

The steps of automatic tuning of motor parameters are as follows:

Step 1: If the motor can be completely disconnected from the load, in the case of power failure, mechanically separate the motor from the load, so that the motor can rotate freely without load.

After power on, first select the inverter command source (b0-02) as the operation panel command channel.

Step 3: Input the nameplate parameters of the motor accurately (such as b1-00~ b1-05), please input the following parameters according to the actual parameters of the motor (root according to the current motor selection):

Motor selection	Parameter description	
Motor	b1- 00: Motor type selection b1- 02: Motor rated voltage b 1- 04: Motor rated power	b1-01: Motor rated power b1-03: Motor rated current b1-05: Motor rated speed

Step 4: If it is an asynchronous motor, then b1-37 (tuning selection), please select 2 (full tuning of asynchronous motor), press ENTER to confirm, at this time, the keyboard displays:

Then press the RUN key on the keyboard panel, the inverter will drive the motor to accelerate and decelerate, and run in forward and reverse directions. The running lasts for about 2 minutes. When the above display information disappears, it will return to the normal parameter display state, indicating that the tuning is completed.

After this complete tuning, the inverter automatically calculates the following parameters of the motor:

Motor selection	Parameter description	
Motor	b1-0 6: Asynchronous motor stator resistance b1 -0 8: Asynchronous motor leakage inductance b1- 10: Asynchronous motor no-load current	b1-07 : Asynchronous motor rotor resistance b1- 09 : Asynchronous motor mutual inductance reactance

If the motor cannot be completely disconnected from the load, please select 1 (static tuning of asynchronous machine) in b1-37, and then press the RUN key on the keyboard panel to start the identification operation of the motor parameters.

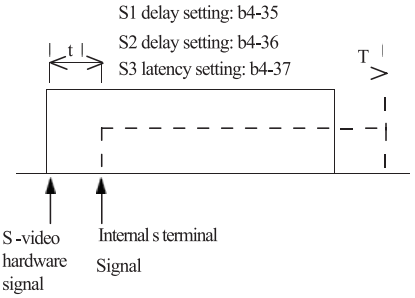
4.8 How to use the s port of the inverter

The control board comes with 5 S ports, numbered S1 ~ S5. If an IO expansion card is added, 3 S ports can be added. At this time, the numbers of the ports are S6 ~ S8 respectively.

S port is equipped with a 24v dc detection power supply. The user only needs to short-circuit the s port and the com port to power the inverter. Input the signal of this s.

In the factory default state, b4 - 38=0000, b4-39=0000, it is an effective (logic 1) signal when the s port is short-circuited; when the s port is suspended if it is empty, the s is an invalid (logic 0) signal; the user can also change the valid mode of the s port, that is, when the s port is short-circuited, it is invalid (logic 0). When the s port is suspended, the s is an effective (logic 1) signal. At this time, the corresponding bits of b4-38 and b4-39 need to be set as just change it to 1. These two function codes correspond to the effective mode settings of S1~ S5 and S6~ S8 respectively.

b4-10) for the input signal of s port, which can improve the anti-interference level. For S1 ~ S3 the input port also provides a port signal delay function, which is convenient for some applications that require delay processing:



The above 8 S ports can be defined in b4-00~ b4-07 function codes, and each S can be selected from 50 functions according to requirements certainly. For details, refer to b4-00~ b4-07 function code description.

For the design of hardware features, only S5 can accept high-frequency PULSE signals. For applications that require high-speed PULSE counting, please arrange it in S5 port.

4.9 How to use the digital output do port of the inverter

The control board comes with four D0 outputs, namely FM, TA 1- TB 1- TC1, TA 2- TC 2 (optional), TA 3- TC 3 (optional). That the middle FM is a transistor output, which can drive a 24 v DC low-voltage signal circuit; TA1- TB 1- TC 1, TA 2- TC 2, TA 3- TC3 are relays the converter output can drive 250v AC control loop.

By setting the values of function parameters b5-01 to b5-05, you can define the do output functions of each channel, which can be used to indicate various working conditions of the inverter. There are about 40 function settings in total, so that users can realize specific automatic control requirements. Please refer to the specific setting value H5 groups of function code parameters in detail.

Port name	Applicable instructions	Discrimination effect
FM- COM	b5-00=0, high-speed PULSE input, b5-06 selection	Transistor: Can output high frequency PULSE 10hz ~ 100khz; drive capacity: 24vdc , 50mA
	b5 -00=1, open collector output out, b5-01 select	Transistor : Drive capability: 24vdc, 50mA
TA1-TB1-TC1	b5-02	Relay 1: Drive capacity: 250vac, 3A
TA2- TC2	b5-03	Relay 2: Drive capacity: 250vac, 3A
TA3- TC3	b5-05	Relay 3, drive capacity: 250vac, 3A

When b5-00=0, the SP1 port is in the high-speed PULSE output mode, and the frequency of the output PULSE is used to indicate the value of the internal operating parameters. The larger the reading, the higher the output PULSE frequency. When the reading is 100%, the corresponding 100khz. as for the attribute of the internal parameter to be indicated, it is defined by the b5-06 function code.

4.10 AI input signal characteristics and preprocessing

The inverter supports 3 channels of AI resources in total, among which AI1 and AI2 are built-in on the control board, and AI3 needs external expansion.

Port	Input signal characteristics
AI1 - GND	Accept 0 ~10vdc signal
AI 2 -GND	Jumper J3 is at the position marked " V ", which can accept 0~10vdc signal; Jumper J3 is in the " Ma " Marked position, then it can accept 4~20mA current signal
AI 3 -GND	This port is provided on the expansion board and can accept 0~10 VDC signal

AI can be used as a inverter to use external voltage and current signals as frequency source setting, torque setting, voltage setting when VF is separated, PID used when giving or giving feedback etc. The relationship between the voltage or current value and the actual given or feedback physical quantity is set through b4-13~ b4 -27.

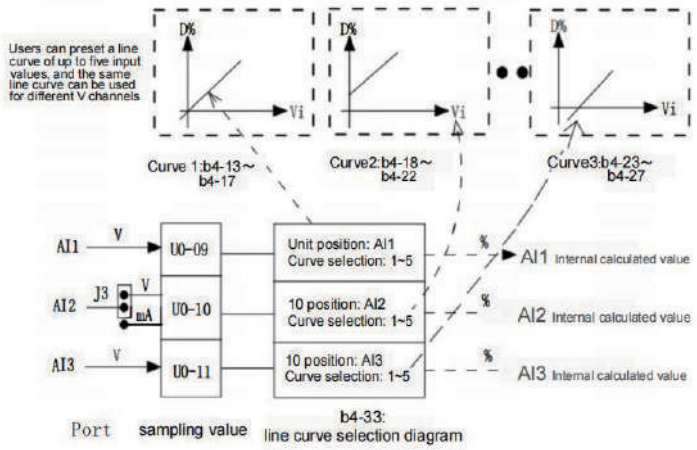


Figure 4-26 The AI signals correspond to the actual given

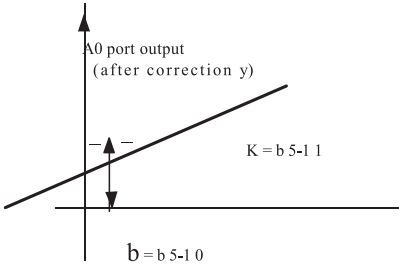
The AI port can be read in the U0-09~U0-11 function code; the calculated value after conversion is used for internal subsequent calculations. It cannot be read directly by the user.

4.11 How to use the FM port of the inverter

The inverter supports a total of 2 A0 outputs:

Port	Input signal characteristics
A01 - GND	J2 short circuit "V", can output 0~10v d c signal
	J2 short circuit " mA ", can output 0~20 mA current signal
A02- GND(expansion card)	J12 short-circuit " V ", can output 0~10 VDC signal
	J12 short circuit " mA ", can output 0~20 mA current signal

A01 and A02 can be used to indicate internal operating parameters in analog mode, and the indicated parameter properties can be passed through function code b5-07, b5-08 to choose. The specified operating parameters can also be corrected before being output. The corrected characteristic curve is shown as the oblique line in the figure below, Y=KX+ b, where x is the operating parameter to be output. The k and b of A0 1 can be determined by the function code b 5-10, b5-11 settings.



4.12 Communication control

For the hardware communication parameter configuration of the communication port, refer to the function of group bd. Set the communication rate and data format to be consistent with the host computer. Prerequisite for regular communication. The serial port of the KOC550 series inverter has a built-in MODBUS-RTU slave station communication protocol, and the upper computer can query or modify the inverter function code, various operating status parameters, send operating commands and operating frequency to the inverter, etc.

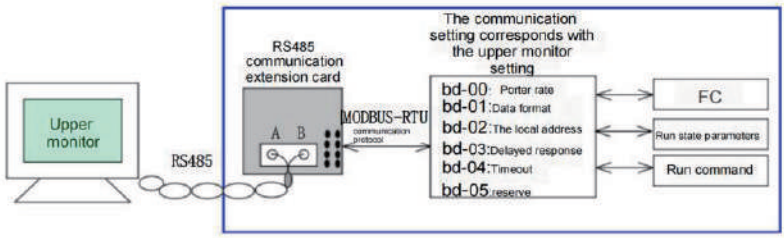


Figure 4-27 the use of inverter serial communication

The KOC550 series inverter internally organizes information such as function codes, various operating status parameters, and various operating instructions in the form of " Register parameter addresses", and defines the protocol for communication data exchange between the host computer.

4.13 Password setting

The inverter provides the user password protection function. When bp-00 is set to non-zero, it is the user password, and the password protection will take effect after exiting the function code editing state. Press the PRG key again, and "---- " Will be displayed, the user password must be entered correctly to enter the normal menu, otherwise you cannot enter.

To cancel the password protection function, only enter through the password and set bp -00 to 0.

4.14 Parameter saving feature and factory parameter recovery

Modifying the function code of the inverter through the panel, the modified setting will be saved in the memory of the inverter, and it will it is valid until it is manually modified again.

The inverter provides backup, save and restore functions of user-set parameters, which is convenient for debugging and testing.

The inverter also has the power-off saving function for information such as alarm information and accumulated running time.

To restore the backup value of the function code of the inverter, or the factory setting value, or to clear the running data, it can be done by operating bp-01, please refer to the detailed description of bp-01 function code.

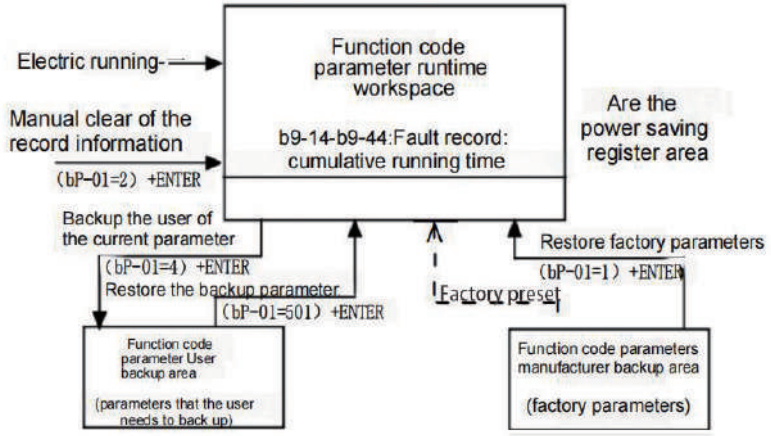


Figure 4-28 Parameter backup and recovery settings.

Chapter 5 EMC electromagnetic Compatibility

5.1 Definition

Electromagnetic compatibility means that electrical equipment operates in an environment of electromagnetic interference, does not interfere with the electromagnetic environment and can stably realize its functions. Able ability.

5.2 EMC standard introduction

According to the requirements of the national standard GB/T12668.3, the inverter needs to meet the requirements of electromagnetic interference and anti-electromagnetic interference.

Our existing products implement the latest international standards: IEC / EN 61800-3:2004 (adjustable speed electrical power drive systems part 3: EMC requirements and specific test methods), equivalent to the national standard GB / T12668.3.

IEC / EN 61800-3 mainly investigates the inverter from two aspects of electromagnetic interference and anti-electromagnetic interference. The radiated interference, conduction interference and harmonic interference of the inverter are tested (there is a requirement for the inverter used in civilian use). Anti-electromagnetic interference mainly affects the conduction immunity, radiation immunity, surge immunity, fast mutation burst immunity and ESD immunity of the inverter. And immunity to low-frequency end of the power supply (specific test items include:

1. Immunity test for input voltage sags, interruptions and changes;
2. Commutation loss
3. Harmonic input immunity test;
4. Input frequency change test;
5. Input voltage unbalance test;
6. Input voltage fluctuation test for testing. Tested in accordance with the strict requirements of IEC/ EN 61800-3 above, our products are tested in accordance with 7.3 it will have good electromagnetic compatibility in general industrial environment.

5.3 EMC guidance

5.3.1 Effect of harmonics

The high-order harmonics of the power supply will cause damage to the inverter, so in some places where the quality of the power grid is relatively poor, it is recommended to install an ac input reactor.

5.3.2 Electromagnetic interference and installation precautions

There are two kinds of electromagnetic interference, one is the interference of the electromagnetic noise in the surrounding environment on the inverter, and the other is the interference generated by the inverter interference to surrounding equipment.

Notes on installation:

1. The grounding wires of motor cables and other electrical products should be well grounded;
2. The power input and output lines of the inverter and weak current signal lines (such as: Control lines) should not be arranged in parallel as far as possible, but vertically if possible;
3. It is recommended to use a shielded cable for the output power line of the inverter, or use a steel pipe to shield the power line, and the shielding layer must be grounded reliably. It is recommended to use twisted-pair shielded control wires for the leads of the disturbed equipment, and ground the shielding layer reliably;
4. For motor cables longer than 100 m, it is required to install an output filter or reactor.

5.3.3 How to deal with the interference of the surrounding electromagnetic equipment on the inverter

Generally, the reason for the electromagnetic impact on the inverter is that there are a large number of relays, contactors or electromagnetic brakes installed near the inverter. Device. When the inverter is disturbed and malfunctions, it is recommended to adopt the following solutions:

1. Install a surge suppressor on the device that generates interference;

2. Install a filter at the input end of the inverter;

3. Use shielded cables for the lead wires of inverter control signal lines and detection lines, and ground the shielding layer reliably.

5.3.4 How to deal with the interference caused by inverter to peripheral equipment

The noise in this part is divided into two types: One is the radiation interference of the inverter, and the other is the conduction interference of the inverter. These two dry interference causes the surrounding electrical equipment to be subjected to electromagnetic or electrostatic induction, which in turn causes the equipment to malfunction. For several different interference situations, refer to the following methods to solve:

1. The instruments, receivers and sensors used for measurement generally have relatively weak signals. When inside a control cabinet, it is easy to be disturbed and cause malfunction. The following solutions are suggested: Keep away from the source of interference as far as possible; do not connect the signal line arrange in parallel with the power lines, especially do not bundle them together in parallel; use shielded wires for signal lines and power lines, and have good grounding; add a ferrite magnetic ring to the output side (choose the suppression frequency in the range of 30~1000mhz), and wind 2~3 turns in the same direction. For bad conditions, you can choose to install an EMC output filter;

2. When the disturbed equipment and the inverter use the same power supply, it will cause conduction interference. If the above methods cannot eliminate the interference, then an EMC filter should be installed between the inverter and the power supply (refer to 7.3.6 for model selection);

The interference caused by the leakage current of the ground wire of the inverter when the ground is shared.

5.3.5 Leakage current and treatment

There are two forms of leakage current when using a inverter: One is leakage current to ground; the other is leakage current between lines.

1. Factors and solutions of earth leakage current:

There is distributed capacitance between the wire and the ground, the larger the distributed capacitance, the larger the leakage current; effectively reduce the distance between the inverter and the motor to reduce the less distributed capacitance. The greater the carrier frequency, the greater the leakage current; the carrier frequency can be reduced to reduce the leakage current. But lowering the carrier frequency will result in the noise of the motor increases, please note that installing a reactor is also an effective way to solve the leakage current. The leakage current will increase with the increase of the loop current, so when the motor power is large, the corresponding leakage current is large.

2. Factors and solutions for leakage current between lines:

There is distributed capacitance between the output wiring of the inverter, if the current passing through the line contains high-order harmonics, it may cause resonance and cause leakage current. At this time, if a thermal relay is used, it may malfunction.

The solution is to reduce the carrier frequency or install an output reactor. When using a inverter, it is recommended that no install a thermal relay and use the electronic overcurrent protection function of the inverter.

5.3.6 Precautions for installing an EMC input filter at the power input terminal

1. Note: When using the filter, please use it strictly according to the rated value; since the filter belongs to class I electrical appliances, the metal shell of the filter the ground should be in good contact with the metal ground of the installation cabinet in a large area, and it is required to have good electrical continuity, otherwise there will be danger of electric shock and serious impact. Affect the EMC effect;

2. Through the EMC test, it is found that the ground of the filter must be connected to the same common ground as the PE terminal of the inverter, otherwise it will seriously affect EMC effect.

3. The filter should be installed as close as possible to the power input end of the inverter.

Chapter 6 Fault diagnosis and countermeasures

6.1 Countermeasures for trial operation under different control modes.

Open-loop vector control mode (b0-01=0, factory default)
This control mode is to control the speed and torque of the motor in the application where the motor has no encoder speed feedback. System. In this control mode, it is necessary to self-study the motor parameters to complete the automatic tuning of the motor parameters.

Table 6-1 Countermeasures in open-loop vector control mode

Problems and failures	Countermeasures
The motor reports overload or over	Motor parameters (b1-01~ b1-05) are set according to the nameplate of the motor. Carry out motor parameter tuning (b1 -37), it is best to carry out dynamic complete tuning of the motor if conditions permit .
Slow torque or speed response below 5hz, motor vibration	To improve the response of torque and speed, it is necessary to strengthen the proportional adjustment of the speed loop (increase the setting value in units of 10 for b 2- 00) or reduce the integral time of the speed loop (decrease in units of 0.05 for b2- 01); if vibration occurs, it is necessary to weaken b2-00 and increase b2 -01 parameter value.
The torque or speed response above 5hz is slow, and the motor vibrates.	To improve the response of torque and speed, it is necessary to strengthen the proportional adjustment of the speed loop (increase the setting value of b2 -03 in units of 10) or reduce the integral time of the speed loop (decrease in units of 0.05 in b2 -04); if vibration occurs, it is necessary weaken b2 -03 and increase b2 -04 parameter value.
Low speed accuracy	When the motor load speed deviation is too large, it is necessary to increase the vector slip compensation gain (b2 -06), and increase or decrease by 10%.
Large speed fluctuations	When the motor speed fluctuates abnormally, the speed filter time (b2 -07) can be increased appropriately, and the unit is 0.001s.
Motor noise	Appropriately increase the carrier frequency value (b0 -15), and increase by 1.0khz. (note : The leakage current of the motor will increase when the carrier frequency is increased)
Insufficient motor torque or insufficient output	Whether the torque upper limit is limited, increase the torque upper limit in speed mode (b2 -10); increase the torque command in torque mode.

Closed-loop vector control mode (b0-01=1)
This mode is used in applications where the motor has encoder speed feedback. It is necessary to correctly set the number of encoder lines, encoder type and signal direction to complete the automatic tuning of motor parameters.

Table 6–2 Processing countermeasures in closed-loop vector control mode

Problems and failures	Countermeasures
Starter reports overcurrent or overload fault	Correctly set the number of encoder lines, type, and encoder direction.
An overload or overcurrent	Motor parameters (b1 -01~ b1 -05) are set according to the nameplate of

fault is reported during the motor rotation	the motor. Carry out motor parameter tuning (b1 -37), it is best to carry out dynamic complete tuning of the motor if conditions permit .
Slow torque or speed response below 5hz, motor vibration	To improve the response of torque and speed, it is necessary to strengthen the proportional adjustment of the speed loop (increase the setting value in units of 10 for b2 -00) or reduce the integral time of the speed loop (decrease in units of 0.05 for b2 -01); if vibration occurs, it is necessary to weaken the b2 -00, b2 -01 parameter values.
The torque or speed response above 5Hz is slow, and the motor vibrates.	To improve the response of torque and speed, it is necessary to strengthen the proportional adjustment of the speed loop (increase the setting value of b2 -03 in units of 10) or reduce the integral time of the speed loop (decrease in units of 0.05 in b2- 04); if vibration occurs, it is necessary weaken the b2 -03, b2 -04 parameter values.
Large speed fluctuations	When the motor speed fluctuates abnormally, the speed filter time (b2 -07) can be increased appropriately, and the unit is 0.001s.
Motor noise	Appropriately increase the carrier frequency value (b0 -15), and increase by 1.0khz. (note : The leakage current of the motor will increase when the carrier frequency is increased)
Insufficient motor torque or insufficient output	Whether the torque upper limit is limited, increase the torque upper limit in speed mode (b2 -10); increase the torque command in torque mode.

V/F control mode (b0-01=2)
This mode is used in applications where the motor has no encoder speed feedback, and it is not sensitive to the motor parameters.
Correctly set the rated voltage and rated frequency of the motor.

Table 6–3 countermeasures under V/F control mode

Problems and failures	Countermeasures
Motor vibration during operation	Reduce the V/F oscillation suppression gain (b3 -11) in units of 5 (minimum reduction to 5)
High-power starting report overcurrent	Reduce torque boost (b3 -01), adjust in units of 0.5%.
The current is too high during operation	Correctly set the rated voltage (b1 -02) and rated frequency (b1 -04) of the motor; Reduce torque boost (b3 -01), adjust in units of 0.5%.
Motor noise	Appropriately increase the carrier frequency value (b0 -15), and increase by 1.0khz. Note: The leakage current of the motor will increase when the carrier frequency is increased
Sudden unloading of heavy load reports overvoltage, deceleration reports overvoltage	Confirm that the overvoltage stall enable (b3 -23) is set to the enabled state; increase the overvoltage stall gain (b3 -24/ b3 -25, 30 from the factory), and increase it in units of 10 (the maximum adjustment is 100) ; reduce the overvoltage stall action voltage (b3 -22 factory 770v), and reduce it in units of 10v (minimum adjustment to 700v).

Sudden load overload report over-current, acceleration report over- current	Increase the overcurrent stall gain (b3 -20 factory 20), increase by 10 (maximum adjustment to 100); reduce the overcurrent stall action current (b3 -18 factory 150%), reduce by 10% small (minimum adjustment to 50%).

6.2 List of fault codes

The product, please refer to the following methods for troubleshooting and handling Table 6-4 dtc list

Fault name	Operation panel display	Troubleshooting	Troubleshooting
Acceleration overcurrent	Err02	There is a grounding or short circuit in the output circuit of the inverter	Detect whether there is a short circuit in the motor or interrupt contactor.
		The control mode is FVC or SVC and no Parameter identification	Set the motor parameters according to the motor nameplate and tune the motor parameters.
		Under PID acceleration conditions, the acceleration time is set too short	Increase acceleration time (b0–17).
		Inappropriate overflow stall suppression setting	Confirm that the overcurrent stall suppression function (b3 -19) has been enabled; the setting value of the overflow stall action current (b3-18) is too large, and it is recommended -to adjust it within 120% to 160%; the overflow stall suppression gain (b3 -20) the setting is too small, it is recommended to adjust it within 20 to 40.
		Manual torque boost or V/F curve is inappropriate	Adjust manual boost torque or V/F curve
		Start a spinning motor	Select speed tracking start or wait for the motor to stop before starting
		Subject to external interference	Through the historical fault records, check whether the current value reaches the overcurrent (b3–18) at the time of the fault. If not, it is judged to be external interference. It is necessary to check the external interference source and eliminate the fault. If there is no external interference source after checking, it may be that the driver board or hall device is damaged, and you need to contact the manufacturer for replacement.
Deceleration overcurrent	Err03	There is a grounding or short circuit in the output circuit of the inverter	Detect whether the motor has a short circuit or an open circuit.
		The control mode is FVC or SVC and parameter identification is not performed	Set the motor parameters according to the motor nameplate and tune the motor parameters.
		In the case of PID deceleration, the deceleration time is set too short	Increase deceleration time (b0–18).
		Inappropriate overflow stall suppression setting	Confirm that the overcurrent stall suppression function (b3 -19) has been enabled; the setting value of overcurrent stall action current (b3 -18) is too large, and it is recommended -to adjust it within 120% to 150%;

			the overflow stall suppression gain (b3 -20) the setting is too small, it is recommended to adjust it within 20 to 40.
		No braking unit and braking resistor installed	Install braking unit and resistor.
		Subject to external interference	Through the historical fault records, check whether the current value reaches the overcurrent (b3–18) at the time of the fault. If not, it is judged to be external interference. It is necessary to check the external interference source and eliminate the fault. If there is no external interference source after checking, it may be that the driver board or hall device is damaged, and you need to contact the manufacturer for replacement.

Fault name	Operation panel display	Troubleshooting	Troubleshooting
Constant speed overcurrent	Err04	There is a grounding or short circuit in the output circuit of the inverter	Detect whether the motor has a short circuit or an open circuit.
		The control mode is FVC or SVC and no Parameter identification	Set the motor parameters according to the motor nameplate and tune the motor parameters.
		Inappropriate overflow stall suppression setting	Confirm that the overcurrent stall suppression function (b3 -19) has been enabled; the setting value of overcurrent stall action current (b3 18) is too large, and it is recommended -to adjust it within 120% to 150%; the overflow stall suppression gain (b3 -20) the setting is too small, it is recommended to adjust it within 20 to 40.
		Inverter selection is too small	In a stable running state, if the running current has exceeded the rated current of the motor or the rated output current of the inverter, please choose an inverter with a higher power rating.
		Subject to external interference	Through the historical fault records, check whether the current value reaches the overcurrent (b3–18) at the time of the fault. If not, it is judged to be external interference. It is necessary to check the external interference source and eliminate the fault. If there is no external interference source after checking, it may be that the driver board or hall device is damaged, and you need to contact the manufacturer for replacement.
Accelerated overvoltage	Err05	Input voltage is too high	Adjust voltage to normal range.
		During the acceleration process, there is an external force to drive the motor to run	Cancel the external power or install braking resistor.
		Inappropriate overvoltage suppression setting	Confirm that the overvoltage suppression function (b3 -23) has been enabled; the setting value of the overvoltage suppression action voltage (b3-22) is too large, and it is recommended -to adjust it within 770v~700v; the overvoltage suppression gain (b3 -24) is set too small, it is recommended to adjust within 30 to 50 .
		No braking unit and braking resistor installed	Install braking unit and resistor.
		Acceleration time is too short	Increase acceleration time.
Deceleration overvoltage	Err06	Inappropriate overvoltage suppression setting	Confirm that the overvoltage suppression function (b3 -23) has been enabled; the setting value of the overvoltage suppression action voltage (b3-22) is too large, and it is recommended -to adjust it within 770v~700v; the overvoltage suppression gain (b3 -24) is set too small, it is recommended to adjust within 30 to 50 .
			Cancel the external power or install braking resistor.

		During the deceleration process, there is an external force to drive the motor to run	
		Deceleration time is too short	Increase deceleration time.
		No braking unit and braking resistor installed	Install braking unit and resistor.
Constant speed overvoltage	Err07	Inappropriate overvoltage suppression setting	Confirm that the overvoltage suppression function (b3 -23) has been enabled; the setting value of the overvoltage suppression action voltage (b3-22) is too large, and it is recommended -to adjust it within 770v~700v; the overvoltage suppression frequency gain (b3 -24) is set to if the setting is too small, it is recommended to adjust it within 30 to 50; if the setting of the maximum rising frequency of overvoltage suppression (b3 -26) is too small, it is recommended to adjust it within 5~20hz.
		During the operation, there is an external force to drive the motor to run	Cancel the external power or install braking resistor.
Buffer power failure	Err08	The bus voltage fluctuates up and down at the under voltage point	Seek technical support.
Under voltage fault	Err09	Momentary power failure	Enable the non-stop function at instantaneous power failure (b9 -59), which can prevent instantaneous power failure and under voltage faults.
		The range required by the specification	Adjust voltage to normal range.
		Bus voltage is abnormal	Seek technical support.
		The rectifier bridge, snubber resistor, drive board, and control board are abnormal	Seek technical support.
Inverter overload	Err10	Whether the load is too large or the motor is blocked	Reduce load and check motor and mechanical condition.
		Inverter selection is too small	Choose a inverter with a higher power rating.
Motor overload	Err11	Motor protection parameter b9 -01 is appropriate	Correctly set this parameter and increase b 9 -01 to prolong the motor overload time .
		Whether the load is too large or the motor is blocked	Reduce load and check motor and mechanical condition.
Input phase loss	Err12	Three-phase input power is abnormal	Check the input RST wiring and whether the three-phase input voltage is normal.
		The drive board, lightning protection board, main control board, and rectifier bridge are abnormal	Seek technical support.
Output phase loss	Err13	Motor failure	Check if the motor is broken.
		The lead wire from the inverter to the motor is abnormal	Troubleshoot peripheral problems.
		The three-phase output of the inverter is unbalanced when the motor is running	Check whether the three-phase winding of the motor is normal and eliminate the fault.
		The driver board and IGBT module are abnormal	Seek technical support.
Module overheating	Err14	Ambient temperature is too high	Lower the ambient temperature.
		Duct blockage	Clean up the AIR duct.
		Fan damage	Replace the fan.
		The module thermistor is damaged	Seek technical support.
		The inverter module is damaged	Seek technical support.
External device failure	Err15	Input external fault signal through multi-function terminal s	Check the peripheral faults, confirm that the machine is allowed to restart (b8 -18), and reset to run.

		Input external fault signal by virtual io function	Confirm that the parameters of the virtual io group of group a1 are set correctly, and reset the operation.
Communication fail	Err16	The upper computer is not working properly	Check the upper computer wiring.
		The communication line is abnormal	Check the communication cable.
		Communication expansion card b0 -28 is incorrect	Correctly set the communication expansion card type.
		Communication parameter b group d is incorrect	Correctly set the communication parameters.
		-	After the above tests are completed, the fault still cannot be eliminated, you can try to restore the factory settings.
Contactor failure	Err17	Abnormal drive board and power supply	Seek technical support.
		Abnormal contactor	Seek technical support.
		Abnormal lightning protection board	Seek technical support.
Current sense failure	Err18	Check hall device abnormality	Seek technical support.
		Abnormal drive board	Seek technical support.
Motor tuning failure	Err19	The motor parameters are not set according to the nameplate	Correctly set the motor parameters according to the nameplate.
		Parameter identification process timed out	Check the leads from the inverter to the motor;
		Encoder exception	Check whether the number of encoder wires is set correctly b1 -27. Check whether the signal wires of the encoder are connected correctly and firmly.
Fault name	Operation panel display show	Troubleshooting	Troubleshooting
Encoder failure	Err20	Encoder model does not match	Correctly set the encoder type according to the actual situation.
		Encoder connection Error	Detect PG card power supply and phase sequence.
		Encoder damaged	Replace encoder.
		PG card abnormality	Replace the PG card.
Eeprom read and write failure	Err21	Eeprom chip damage	Seek technical support.
Short circuit fault to ground	Err23	Motor short circuit to ground	Replace cable or motor.
Rectifier failure	Err25	The input grid voltage is abnormal	Check if the input power is too high or too low
		Abnormal rectification unit	Seek manufacturer service
Cumulative running time reached failure	Err26	The cumulative running time reaches the set value	Use the parameter initialization function to clear the log information.
User-defined fault 1	Err27	Input the signal of user-defined fault 1 through the multi-function terminal s	Reset operation.
		Input the signal of user-defined fault 1 through the virtual IO function	Reset operation.
User-defined fault 2	Err28	Input the signal of user-defined fault 2 through the multi-function terminal s	Reset operation.
		Input the signal of user-defined fault 2 through the virtual IO function	Reset operation.

Cumulative power-on time reached fault	Err29	Accumulated power-on time reaches the set value	Use the parameter initialization function to clear the log information.
Load drop fault	Err30	The running current of the inverter is less than b9 -64	Confirm whether the load is off or whether the parameter setting of b 9 -64 and b9 -65 conforms to the actual operating conditions.
Runtime PID feedback lost fault	Err31	PID feedback is less than bA-26 set value	Check the PID feedback signal or set bA-26 to a suitable value.
Wave-by-wave current limiting fault	Err40	Whether the load is too large or the motor is blocked	Reduce load and check motor and mechanical condition.
		Inverter selection is too small	Choose a inverter with a higher power rating.
Switching motor failure while running	Err41	The current motor selection through the terminals during the operation of the inverter	After the inverter stops, the motor switching operation is performed.
Excessive speed deviation fault	Err42	Encoder parameter setting is incorrect	Correctly set the encoder parameters.
		No parameter identification	Carry out motor parameter identification.
		b9 -69 and b9 -70 for excessive speed deviation	Set the detection parameters reasonably according to the actual situation.
Motor over speed fault	Err43	Encoder parameter setting is incorrect	Correctly set the encoder parameters.
		No parameter identification	Carry out motor parameter identification.
		Motor over speed detection parameters b9 -67, b9 -68 settings are unreasonable	Set the detection parameters reasonably according to the actual situation.
Motor over temperature fault	Err45	Temperature sensor wiring is loose	Inspect temperature sensor wiring and troubleshoot.
		Motor temperature is too high	Increase the carrier frequency or take other heat dissipation measures to dissipate heat from the motor .
Master-slave control slave failure	Err55	The slave machine fails, check the slave machine	Check according to the fault code of the slave machine.
Brake unit overload	Err61	The value of braking resistor is too small	Please refer to the brake component selection table.
Brake circuit short circuit	Err62	Abnormal braking module	Seek technical support.

Chapter 7 Communication protocol

7.1 Parameter communication address

7.1.1 Introduction to parameters

KOC550 inverter supports Modbus-RTU, CANopen, CANlink, Profibus-DP, Profinet, EtherCAT six communication protocols, user programmable cards and point-to-point communication are derivatives of the CANlink protocol. Through these communication protocols, the upper computer can realize the control, monitoring and function parameter modification and viewing operations of the inverter. Communication data can be divided into parameter data and non-parameter data, the latter includes running commands, running status, running parameters, alarm information, etc.

Parameter data

KOC550 parameter data	B (readable and writable)	B0 , B1 , B2 , B3 , B4 , B5 , B6 , B7 , B8 , B9 , BA, BB , BC, BD , BE , BF
	C (readable and writable)	C0, C1, C2, C3, C4, C5, C6, C7,C8, C9, CA , CB, CB , AC, AD, AE, AF

The parameter data communication address is defined as follows:

When reading parameter data for communication

For b0~ bf, C0~CF group parameter data, the upper 8 bits of the communication address are directly the function group number, and the lower 8 bits are directly the parameter number.

The function group, for example as follows:

b0- 16 function parameter, its communication address is b010h, where b0H represents the function parameter of group b0, and 10H represents the parameter in the hexadecimal data format of number 16 in the function group.

CC-08 function parameter, its communication address is CC08, where ACH represents the function parameter of bC group, 08H represents the parameter in

The hexadecimal data format of number 8 in the function group.

2. When writing parameter data for communication

For b0~ bF group f parameter data, the upper 8 bits of the communication address are divided into 00~0F or b0~ bf, the lower 8 bits are directly the serial number of the parameter in the function group, for example as follows:

Write function parameter b0-16:

It is not necessary to write to EEPROM, its communication address is 0010H.

When writing to EEPROM, its communication address is b A010 H.

For C0~ CF group parameter data, its communication address is high 8 bits, according to whether it needs to be written into EEPROM, it is divided into 40~4F.

Or C0~ CF, the lower 8 bits are directly the serial number of the parameter in the function group, for example as follows:

Write function parameter CC-08:

No need to write to EEPROM, its communication address is 4C08H.

Writing to EEPROM, its communication address is CC08H.

Nonparametric data

KOC550 non-parametric data	Status data (read only)	U group monitoring parameters, inverter fault description, inverter running status
	Control parameters (write only)	Control command, communication setting value, digital output terminal control, analog output out A0 1 control, analog output A0 2 control, high-speed PULSE (FMP) output control, parameter initialization

1. Status data

State data is divided into u group monitoring parameters, inverter fault description, and inverter running status.

Group U parameter monitoring parameters

U0 ~ Uf, the upper 8 bits of the communication address are 70~7 F, and the lower 8 bits are the serial numbers of the monitoring parameters in the group, examples are as

Follows: U0-11, whose communication address is 700BH.

Inverter fault description

Communication, the communication address is fixed at 8000 H, and the upper computer reads the address data, the fault code of the current inverter can be obtained, and the description of the fault code is defined in b9-14 parameter.

Inverter running status

The communication reads the running state of the inverter, the communication address is fixed at 3000 H, and the upper computer reads the address data, the current inverter running status information can be obtained, which is defined as follows:

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

2. Control parameters

The control parameters are divided into: Control command, communication setting value, digital output terminal control, analog output A01 and A0 2 control system, parameter initialization.

Control commands

When F0-02 (command source) is selected as 2: communication control, the upper computer can realize the start-stop and other related command control of the inverter through the communication address. The control command is defined as follows:

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

- Communication settings

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

Digital output terminal control

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

Digital output terminal control communication ground site	Command content
2001H	Bit 0: D0 1 output control Bit 1: D02 output control Bit 2: Relay 1 output control Bit 3: Relay 2 output control Bit 4: FMR output control

- Analog output A0 1, A0 2, high-speed PULSE output FMP control

  When the analog output A0 1, A0 2, high-speed PULSE output FMP output function is selected as 12: Communication setting, the upper through this communication address, the machine can realize the control of the analog quantity and high-speed PULSE output of the inverter, which is defined as follows:

Output control communication address		Command content
A01	2002H	0 ~ 7 FFF means 0% ~ 100%
A02	2003H	
FMP	2004H	

- Parameter initialization

  This function needs to be used when it is necessary to realize the parameter initialization operation of the inverter through the host computer.

  If bP-00 (user password) is not 0, firstly, it needs to verify the password through communication. After the verification is passed, within 30s, the upper computer will initialize the parameters.

  The communication address for user password verification by communication is 1F00H. Write the correct user password directly to this address, then the password verification can be completed. The address for parameter initialization by communication is 1F01H, and its data content is defined as follows:

Parameter initialization communication address	Command function
1F01H	0: No operation 1: Restore factory parameter mode 1 2: Clear record information 4: Back up the user's current parameters 501: Restore user backup parameters 503: Restore factory parameters mode 2

7.1.2 Modbus communication protocol

KOC550 provides RS485 communication interface and supports Modbus-RTU slave station communication protocol. The user can realize centralized control through a computer or PLC, set the inverter running command, modify or read parameters, and read the working status and fault information of the inverter through this communication protocol.

The serial communication protocol defines the content and format of information transmitted in serial communication. These include: Host polling (or broadcast) format; the encoding method of the host, including: The parameters required for action, transmission data and Error checking, etc. From the machine's response also adopts the same structure, including: Action confirmation, return data and Error checking, etc. If the slave when an Error occurs when receiving information, or the action required by the host cannot be completed, it will organize a fault message as a response feed to the host.

Application method

The inverter is connected to the "Single master and multiple slaves" PC / PLC Control network with RS 485 bus as a communication slave.

Hardware interface

Need to insert RS485 expansion card hardware on the inverter.

Topology

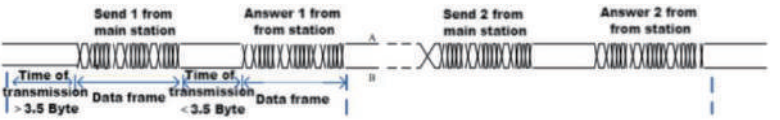
Single- master multi-slave system. Each communication device in the network has a unique slave station address, and one of them acts as the communication master (usually a PC upper computer, PLC, HMI, etc.), it initiates communication actively, and performs parameter reading or writing operations on the slave other devices are communication slaves, responding to inquiries or communication operations from the host to the machine. There can only be one at a time a device is sending data while other devices are receiving.

Slave address is 1~247, and 0 is broadcast communication address. The slave address must be unique in the network.

Communication transmission method

Asynchronous serial, half-duplex transmission mode. In the process of serial asynchronous communication, the data is sent in the form of a message, one frame of data at a time. According to the Modbus-RTU protocol, when the idle time on the communication data line is greater than 3.5Byte transmission, it means a new communication frame. start.

Indicates the start of a new communication frame.

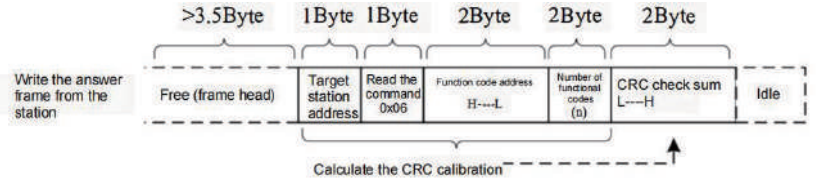


KOC550 is the MODBUS-RTU slave communication protocol, which can respond to the "Query/command" Of the host, or make corresponding actions according to the "Query/command" Of the host, and respond with communication data.

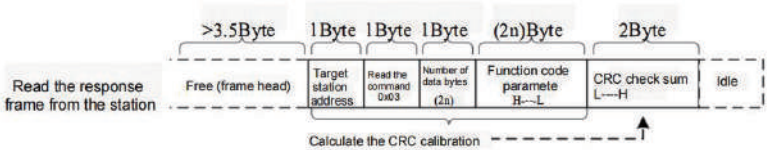
The host can refer to personal computer (PC), industrial control equipment or programmable logic controller (PLC), etc. The host can not only communicate with a slave, but also issue broadcast information to all slaves. For the independent access "query/command" of the host, the accessed slave must return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

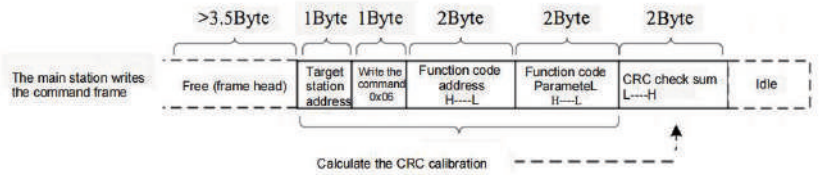
7.1.3 Communication data frame structure

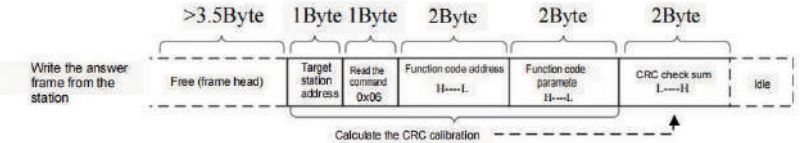
The communication data format of Modbus-RTU protocol is as follows. The inverter only supports reading or writing of Word type parameters, and the corresponding communication read operation command is 0x03; Read and write operations:

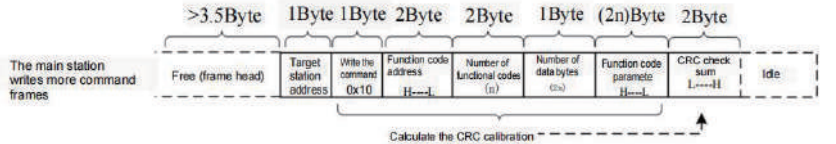


Theoretically, the host computer can read multiple consecutive parameters at one time (that is, n can reach up to 12), but be careful not to skip the last parameter of this parameter group, otherwise an Error will be returned.

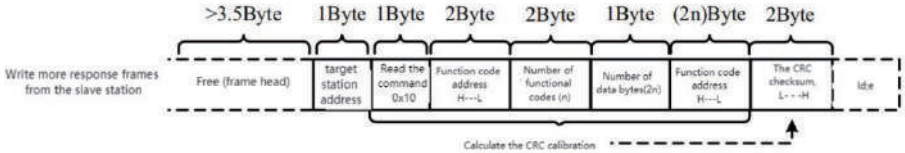








Multi-write is the same as multi-read, it can only operate up to 12 parameters continuously



If the slave detects a communication frame Error, or the read and write fails due to other reasons, it will reply with an Error frame.

Description

CRC check Errors will not be answered.

The read response Error command of the slave station is 0 x 83, the write response Error command is 0 x 86, and the multi-write response Error command is 0 x 90:

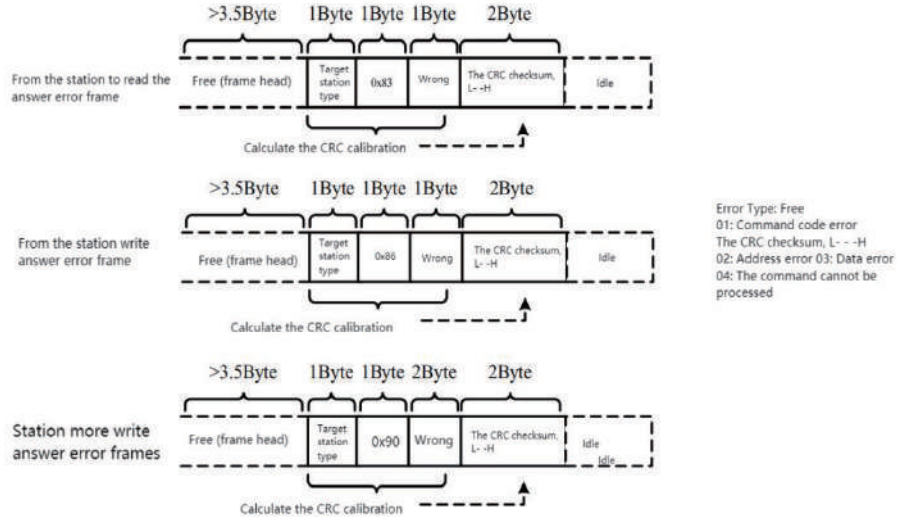


Table 1 2– 1 data frame field description table

Frame header START	Idle for more than 3.5 character transfer times
Slave address ADR	Communication address range: 1~247; 0=broadcast address
Command code CMD	03: Read slave parameters; 06: Write slave parameters; 10: Write multiple slave parameters
Parameter address H	The parameter address inside the inverter, expressed in hexadecimal; divided into parameter type and non-parameter type (such as operation line status parameters, running commands, etc.) parameters, etc., see address definition for details. When transmitting, the high byte comes first and the low byte follows.
Parameter address L	
Number of parameters H	The number of parameters read in this frame, if it is 1, it means read 1 parameter. When transmitting, the high byte comes first, the low byte follows. This protocol can only rewrite one parameter at a time, without this field.
The number of parameters L	
Data bytes	The length of the data is twice the number of parameters
Data H	When the response data, or the data to be written, is transmitted, the high byte comes first and the low byte follows.
Data L	
CRC low	Detection value: CRC16 check value. When transmitting, the low byte comes first and the high byte follows. For the calculation method, see the description of the CRC check in this section .
CRC high	
END	3 .5 characters

CRC Check method:

CRC (cyclical redundancy check) using RTU frame format, modbus message includes CRC based method Error detection domain. The CRC field checks the content of the entire message. The CRC field is two bytes and contains a 16-bit binary value. It is calculated by the transmitting device and added to the message. The receiving device recalculates the CRC of the received message and compares it with the value in the received CRC field. If the two CRC values are not equal, it means that there is an Error in the transmission. The CRC is to store 0xffff first, and then call a process to process the continuous 8-bit bytes in the message with the value in the current register. Only the 8bit data in each character is valid for CRC, and the start and stop bits and parity bits are all invalid. CRC generation, each 8-bit character is individually exclusive or (XOR) with the contents of the register, and the result is shifted to the least significant bit. Shifted towards, the most significant bits are filled with 0. The LSB is extracted for detection, and if the LSB is 1, the register is individually and preset with the value exclusive or, if the LSB is 0, it will not be performed. The whole process is repeated 8 times. After the last digit (8th digit) is completed.

Inverter fault address	Inverter fault information	
8000h	0000: No fault 0001: Reserved 0002: Acceleration overcurrent 0003: Deceleration overcurrent 0004: Constant speed overcurrent 0005: Acceleration overvoltage 0006: Deceleration overvoltage 0007: Constant speed overvoltage 0008: Snubber resistor overload fault 0009: Under voltage fault 000a: Inverter overload 000b: Motor overload 000c: Input phase loss 000d: Output phase loss 000e: Module overheating 000f: External fault 0010: Communication abnormal 0011: Abnormal contactor 0012: Current detection fault 0013: Motor tuning failure 0014: Encoder/ PG card failure	0015: Abnormal reading and writing of parameters 0016: Inverter hardware failure 0017: Motor to ground short circuit fault 0018: Reserved 0019: Reserved 001a: Run time reached 001b: User-defined fault 1 001c: User-defined fault 2 001d: Power-on time is reached 001e: Load drop 001f: PID feedback lost during operation 0028: Fast current limit timeout fault 0029: Switching motor failure while running 002a: Excessive speed deviation 002b: Motor over speed 002d: Motor over temperature 005a: Encoder line number setting Error 005b: No encoder connected 005c: Initial position Error 005e: Speed feedback Error

Command address	Command content
2001H	Bit 0: D01 output control Bit 1: D02 output control Bit 2: Relay 1 output control Bit 3: Relay 2 output control Bit 4: FMR output control Bi t 5: VDO 1 Bi t 6: VDO 2 Bi t 7: VDO 3 Bi t 8: VDO4 Bi t 9: VDO 5

Analog output A01 control: (write only)

Command address	Command content
2002H	0~7 FFF means 0%~100 %

Analog output A0 2 control: (write only)

Command address	Command content
2003H	0~7 FFF means 0%~100 %

PULSE output control: (Write only)

Command address	Command content
2004H	0~7 FFF means 0%~100 %

Inverter fault description:

Parameter address	Parameter description	Parameter address	Parameter description
100FH	Load speed	101FH	Main frequency X display
		1020F	Auxiliary frequency Y display

(Torque upper limit digital setting, respectively corresponding to the first and second motors).

Description

The communication setting value is the percentage of the relative value, 10000 corresponds to 100.00%, -10000 corresponds to - 100.00% to the data of the frequency dimension, and the percentage is the percentage relative to the maximum frequency (b0-10). For data in the dimension of torque, the percentage is b2-10, b2-48

Control command input to the inverter: (write only)

Command word address	Command function
2000H	0001: Forward running
	0002: Reverse operation
	0003: Forward jog
	0004: Reverse jog
	0005: Coast to stop
	0006: Deceleration to stop
	0007: Fault reset

Read inverter status: (read only)

Status word address	Status word function
3000H	0001: Forward running
	0002: Reverse operation
	0003: Shutdown

Parameter lock password verification: If the actual password value is returned, it means that the password verification is passed. (if there is no password, the secret the code is 0, and the verification returns 0000H)

Password address	Enter the content of the password
1F00H	*****

Digital output terminal control: (write only)

Parameter group number	Newsletter access address	Communication modify parameter address in RAM
b0 ~ bE	0XF 000 ~ 0XFEFF	0X0000 ~ 0X0EFF
C0~ CC	0XA 000 ~ 0XACFF	0X4000 ~ 0X4CFF
U0	0X7000 ~ 0X70FF	

Description

Since the EEPROM is frequently stored, it will reduce the service life of the EEPROM. Therefore, some parameters do not need to be used in the communication mode. Storage, just change the value in RAM.

If it is an f group parameter, to realize this function, just change the high bit f of the parameter address to 0. If group b parameter, to realize this function, as long as the high bit a of the parameter address is changed to 4, it can be realized.

The corresponding parameter address is expressed as follows:

High byte: 00~0 F (group b), 40~4 F (group C)

Low byte: 00~ FF

For example:

Parameter b3-12 is not stored in EEPROM, and the address is represented as 030C; parameter C0-05 is not stored in EEPROM, and the address is represented as 4005. This address indicates that it can only be used for writing to RAM, and cannot be used for reading. When reading, it is an invalid address. See the table below for the shutdown/running parameters section.

Parameter address	Parameter description	Parameter address	Parameter description
1000H	* communication setting value (decimal) – 10000~10000	1010H	PID setting
1001H	Operating frequency	1011H	PID feedback
1002H	Bus voltage	1012H	PLC steps
1003H	Output voltage	1013H	PULSE input PULSE frequency, single bit 0.01khz
1004H	Output current	1014H	Feedback speed, unit 0.1hz
1005H	Output power	1015H	Remaining run time
1006H	Output torque	1016H	Voltage before AI1 correction
1007H	Running speed	1017H	Voltage before AI 2 correction
1008H	S input flag	1018H	Voltage before AI 3 correction
1009H	Do output flag	1019H	Linear speed
100AH	AI 1 voltage	101AH	Current power-on time
100BH	AI 2 voltage	101BH	Current running time
100CH	AI 3 voltage	101CH	PULSE input PULSE frequency, single bit 1hz
100DH	Count value input	101DH	Current communication setting value (read only)
100 EH	Length value input	101 EH	Actual feedback speed

An 8 -bit byte is individually xored with the current value of the register. The value in the final register is that all the bytes in the message are CRC value after execution.

When CRC is added to a message, the low byte is added first, followed by the high byte. The simple function of CRC is as follows: Unsigned int CRC_chk_value (unsigned char * data_value , unsigned char length) {

```
Unsigned int crc value = 0xffff ;
    Int i;
    While( length– )
      {
          Crc_value^=*data_value++;
           For(i=0;i<8;i++)
           {
                If(crc_value&0x0001)
                     {
                       Crc_value=(crc_value>>1)^0xa001;
                }
                Else
                {
                       Crc_value = crc_value >> 1 ;
                }
          }
    }
Return ( C R C _value ) ;
}
```

Address definition of communication parameters:

Read and write parameters (some parameters cannot be changed, only for factory use or monitoring)

7.1.4 Parameter address marking rules

Use the parameter group number and label as the parameter address to express the rule:

High byte: A 0~AF (group f), b0~bF(group b), 70~7fF(group u)

Low byte: 00~FF

For example: If you want to access parameter b3-12, the access address of the parameter is expressed as 0xf30c;

AF: Can neither read parameters nor change parameters; group u: Can only read parameters but cannotchange parameters.

Some parameters cannot be changed when the inverter is running; some parameters cannot be changed no matter what state the inverter is in. Can be changed. When changing parameter parameters, pay attention to the range, unit and related instructions of the parameters.

Chapter8 Function code parameter table

8.1 Brief table of basic function parameters

You must enter the correct password before you can enter. To cancel the password, you need to set bP-00 to 0.

The inverter user password is only used to lock the panel operation. After setting the password, when reading and writing through the keyboard operation parameters, every time after exiting the operation, password verification is required when re-entering; during communication operations, you can directly read and write without using the password. Write operation (except bP, bF group).

In user-defined parameter mode is not password protected.

Group b and group c are basic function parameters, and group u is monitoring function parameters. The symbols in the parameter table are explained as follows:

- "☆": Indicates that the setting value of this parameter can be changed when the
- inverter is in stop or running state; "★": Indicates that the set value of this
- parameter cannot be changed when the inverter is running;
- "●": Indicates that the value of this parameter is the actual detection record value and cannot be changed;

"*": Indicates that the parameter is a "Manufacturer's parameter", which is limited to the setting of the manufacturer, and the user is prohibited from operating it.

Parameter	Name	Predetermined area	Factory default	Change
B0 group basic function group				
b0-00	GP type display	1: G type (constant torque load model) 2: P type (fan, water pump type load model)	Model confirmed	★
b0-01	1st motor control method	0: Speed sensorless vector control (SVC) 1: Speed sensor vector control (FVC) 2: V/F control	2	★
b0-02	Run command selection	0: Operation panel 1: Terminal 2: Communication	0	☆
b0-03	Main frequency command input selection	0: Digital setting (no memory at power failure) 1: Digital setting (memory at power failure) 2: AI1 3: AI2 4: AI3 5: PULSE setting (S5) 6: Multi-segment instruction 7: Simple PLC 8: PID 9 : Communication setting	1	★
b0 -04	Auxiliary frequency command input selection	Same as b0 -03 (main frequency command input selection)	0	★
b0 -05	Auxiliary frequency command range selection during superimposition	0: Relative to the maximum frequency 1: Relative to the main frequency command	0	☆
b0 -06	Auxiliary frequency command range during superimposition	0%~150%	100%	☆

Table 8– 1 Brief table of basic function parameters

Parameter	Name	Setting range	Factory default	Change
b0.07	Frequency command superposition selection	Units: Frequency command selection 0: Main frequency command 1: The main and auxiliary operation results (the operation relationship is determined by the tens digit) 2: Switching between main frequency command and auxiliary frequency command 3: Switching between main frequency command and main and auxiliary calculation results 4: Switching between auxiliary frequency command and main and auxiliary calculation results 0: Main + auxiliary 1: Main - auxiliary 2: The maximum value of both 3: The minimum of both	0	☆
b0-08	Preset frequency	0.00hz ~ maximum frequency (b0-10)	5 0 .00hz	☆
b0-09	Running direction	0: Run in the default direction 1: Run in the opposite direction from the default direction	0	☆
b0-10	Maximum frequency	50.00Hz~320.00Hz, 50.0~3200.0Hz	5 0 .00hz	★
b0-11	Upper limit frequency command selection	0: b0-12 setting 1: AI1 2: AI2 3: AI3 4: PULSE setting	0	★
b0-12	Upper limit frequency	Lower limit frequency b0-14~maximum frequency b0-10	5 0 .00hz	☆
b0-13	Upper limit frequency offset	0.00hz~maximum frequency b0-10	0. 00hz	☆
b0-14	Lower limit frequency	0.00hz~ upper limit frequency b0-12	0. 00hz	☆
b0-15	Carrier frequency	Model confirmed	Model confirmed	☆
b0-16	Carrier frequency adjusted with temperature	0: No 1 : Yes	1	☆
b0-17	Acceleration time 1	0.00s~650.00s (b0-19=2) 0.0s~6500.0s (b0-19=1) 0s~65000s (b0-19=0)	Model confirmed	☆
b0-18	Deceleration time 1	0.00s~650.00s (b0-19=2) 0.0s~6500.0s (b0-19=1) 0s~65000s (b0-19=0)	Model confirmed	☆
b0-19	Acceleration and deceleration time unit	0: 1 second 1: 0.1 seconds 2: 0.01 seconds	1	★
b0-21	Superimposed auxiliary frequency command bias frequency	0.00Hz~MAX b0-10	0. 00hz	☆
b0-22	Frequency command resolution	1: 0.1hz (50.0~3200.0hz) if mode 2: 0.01hz (50.00~320.00hz) low frequency mode	2	★
b0-23	Digital setting frequency stop memory selection	0: No memory 1: Memory	1	☆
b0-24	Motor parameter group selection	0: Motor parameter group 1 1 : Motor parameter group 2	0	★

b0-25	Acceleration and deceleration time base frequency	0: Maximum frequency (b0-10) 1: Set frequency 2. 100hz	0	★
b0-26	Command up/down reference during operation	0: Operating frequency 1 : Set frequency	0	★

Parameter	Name	Setting range	Factory default	Change
b0-27	Running command binding main frequency command selection	Units: Operation panel binding frequency source selection 0: No binding 1: Digital setting frequency 2: AI1 3: AI2 4: AI3 5: PULSE setting (S 5) 6: Multi-stage speed 7: Simple PLC 8: PID 9: Communication setting Tens digit: Terminal binding frequency source selection Hundreds place: Communication binding frequency source selection	0	☆
b0-28	Communication protocol selection	0: Modbus protocol 1: Profibus-DP, CANopen	0	★
b1 group of first motor parameters				
b1-00	Motor type selection	0: Ordinary asynchronous motor 1: Frequency conversion asynchronous motor	0	★
b1-01	Motor rated power	0.1kw~1000.0kw	Model confirmed	★
b1-02	Motor rated voltage	1v~2000v	Model confirmed	★
b1-03	Motor rated current	0.01 A ~655.35 A (inverter power ≤55kw) 0.1 A~65 5 3.5A (inverter power>55kw)	Model confirmed	★
b1-04	Motor rated frequency	0.01hz ~ maximum frequency	Model confirmed	★
b1-05	Motor rated speed	1rpm~ 65535rpm	Model confirmed	★
b1-06	Asynchronous motor stator resistance	0.001Ω ~65.535Ω (inverter power ≤55kw) 0.0001Ω~6.5535Ω (inverter power>5 5kw)	Tuning parameters	★
b1-07	Asynchronous motor rotor resistance	0.001Ω ~65.535Ω (inverter power ≤55kw) 0.0001Ω~6.5535Ω (inverter power>5 5kw)	Tuning parameters	★
b1-08	Asynchronous motor leakage inductance	0.01mh ~ 655.35mh (inverter power ≤55 kw) 0.001mh~65.535mh (inverter power>55k w)	Tuning parameters	★
b1-09	Mutual inductance reactance of asynchronous motor	0.1mh ~6553.5mh (inverter power ≤55 kw) 0.01mh~655.35m h (inverter power>55 kw)	Tuning parameters	★
b1-10	Asynchronous motor no-load current	0.01A~ b 1-03 (inverter power ≤55kw) 0.1A~ b 1-03 (inverter power>55kw)	Tuning parameters	★
b1-27	Encoder lines	1~65535	1024	★
b1-28	Encoder type	0: ABZ incremental encoder 2 : Resolver	0	★
b1-30	Abz incremental encoder ab phase sequence	0: Forward 1: Reverse	0	★
b1-34	Resolver pole pairs	1~65535	1	★
b1-36	Speed feedback PG disconnection detection time	0.0 s: No action 0.1s ~10.0s	0.0s	★
b1-37	Tuning selection	0: No operation 1: Parameter tuning of the static part of the asynchronous machine 2: Dynamic and complete tuning of the asynchronous machine 3: Asynchronous machine static complete tuning	0	★

Parameter	Name	Setting range	Factory default	Change
b2 groups of vector control parameters of the first motor				
b2-00	Speed loop proportional gain 1	1~100	30	☆
b2-01	Speed loop integration time 1	0.01s~10.00s	0.50s	☆
b2-02	Switching frequency 1	0.00~b2-05	5.00hz	☆
b2-03	Speed loop proportional gain 2	1~100	20	☆
b2-04	Speed loop integration time 2	0.01s~10.00s	1.00s	☆
b2-05	Switching frequency 2	b2-02~max	10.00hz	☆
b2-06	Vector control slip gain	50%~200%	100%	☆
b2-07	Svc speed feedback filter time	0.000s~0.100s	0.050s	☆
b2-09	Command selection in speed control mode	1: AI1 0: Parameter b2-10 setting 2: AI2 3: AI3 4: PULSE (S5) 5: Communication setting 6: Min (AI1, AI2) 7: Max (AI1, AI2) The full scale of the 1-7 option corresponds to C2-10	0	☆
b2-10	Digital setting in speed control mode	0.0%~200.0%	150.00%	☆
b2-11	Command selection in speed control mode (power generation)	0: Parameter b2-10 setting (no distinction between motoring and power generation) 1: AI1 2: AI2 3: AI3 4: PULSE setting 5: Communication setting 6: Min (AI1, AI2) 7: Max (AI1, AI2) The full scale of the 1-7 option corresponds to C2-12 8: Parameter b2-12 setting	0	☆
b2-12	Torque upper limit digital setting (power generation) in speed control mode	0.0%~200.0%	150.00%	☆
b2-13	Excitation regulation proportional gain	0~60000	2000	☆
b2-14	Excitation regulation integral gain	0~60000	1300	☆
b2-15	Torque regulation proportional gain	0~60000	2000	☆
b2-16	Torque adjustment integral gain	0~60000	1300	☆
b2-17	Speed loop integral properties	Units: Integral separation 0: Invalid 1: Valid	0	☆
b2-21	Maximum torque coefficient in field weakening area	50~200%	100%	☆
b2-22	Generation power limit enable	0: Invalid 1: Full effect 2: Constant speed takes effect 3 : Deceleration takes effect b 3 groups of V/F control parameters	0	☆

Parameter	Name	Setting range	Factory default	Change
Group b3 V/F control parameters				
b3-00	V/F curve setting	0: Straight line V/F 1: Multi-point V/F 2～9: Reserved 10: V/F complete separation mode 11: V/F semi-separated mode	0	★
b3-01	Torque boost	0.0 %: (automatic torque boost) 0.1 %~30.0%	Model confirmed	☆
b3-02	Torque boost cut-off frequency	0.00hz ~ maximum frequency	5 0 .00hz	★
b3-03	Multi-point V/F frequency point 1	0.00Hz~b3-05	0. 00hz	★
b3-04	Multi-point V/F voltage point 1	0.0%～100.0%	0.00%	★
b3-05	Multi-point V/F frequency point 2	b3-03~b3-07	0. 00hz	★
b3-06	Multi-point V/F voltage point 2	0.0%～100.0%	0.00%	★
b3-07	Multi-point V/F frequency point 3	b3-05~motor rated frequency (b1-04	0. 00hz	★
b3-08	Multi-point V/F voltage point 3	0.0%～100.0%	0.00%	★
b3-10	V/F over excitation gain	0~200	6 4	☆
b3-11	V/F oscillation suppression gain	0~100	4 0	☆
b3-13	V/F separate voltage source	Digital setting (b3-14) 1: AI1 2: AI2 3: AI3 4: PULSE setting (S5) 5: Multi-segment instruction 6: Simple plc 7: PID 8: Communication setting Note: 100.0% corresponds to the rated voltage of the motor	0	☆
b3-14	V/F separated voltage digital setting	0 V ~ motor rated voltage	0v	☆
b3-15	V/F separation	0.0s～1000.0s Note : Indicates the time from 0v to the rated voltage of the motor	0.0s	☆
b3-16	V/F separation voltage deceleration time	0.0s～1000.0s Note : Indicates the time from 0v to the rated voltage of the motor	0.0s	☆
b3-17	V/F separation stop mode selection	0: Frequency/ voltage independently reduced to 0 1: After the voltage is reduced to 0, the frequency will be reduced again	0	☆
b3-18	Over run stall action current	5 0~200%	150 %	★
b3-19	Over run stall enable	0: Invalid 1: Valid	1 (valid)	★
b3-20	Overflow stall suppression gain	0~100	20	☆
b3-21	Double speed flow stall action current compensation coefficient	5 0~200%	50 %	★
b3-22	Overvoltage stall action voltage	Three-phase 380~480v model: 330.0v~800.0v Three-phase 200~240v model: 330.0v~800.0v		★
b3-23	Overvoltage stall enable	0: Invalid 1: Valid	1 (valid)	★
b3-24	Overvoltage stall suppression frequency gain	0~100	3 0	☆
b3-25	Overvoltage stall suppression voltage gain	0~100	3 0	☆
b3-26	Overvoltage stall maximum rise frequency limit	0~50hz	5hz	★

Parameter	Name	Setting range	Factory default	Change
b4 sets of input terminals				
b4-00	S1 terminal function selection	0: No function 1: Forward run FWD or run command 2: Reverse running rev or forward and reverse running direction (Note: When set to 1 or 2, it needs to be used with b4-11, see parameter description for details Parameter description) 3: Three-wire operation control 4 : Forward jogging (FJOG) 5: Reverse jog (RJOG) 6: Terminal up 7: Terminal down 8: Free Stop 9: Fault reset (RESET) 10: Running pause 11: External fault normally open input 12: Multi-segment command terminal 1 13: Multi-segment command terminal 2 14: Multi-segment command terminal 3 15: Multi-segment command terminal 4 16: Acceleration and deceleration time selection terminal 1 17: Acceleration and deceleration time selection terminal 2 18: Frequency command switching 19: UP / DOWN setting reset (terminal, keyboard) 20: Control command switching terminal 1 21: Acceleration and deceleration prohibited 22: PID pause 2 3: Simple plc state reset 24: Wobble pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: PULSE frequency input (only valid for S5) 31: Reserved 32: Immediate DC braking 33: External fault normally closed input 34: Frequency modification enable 35: The direction of PID action is reversed 36: External stop terminal 1 37: Control command switching terminal 2 38: PID points suspended 39: Switch between main frequency and preset frequency 40: Switching between auxiliary frequency and preset frequency 4 1: Motor terminal selection function 42: Reserved 43: P id parameter switching 44: User-defined fault 1 45: User-defined fault 2 46: Speed control/torque control switching 47: Emergency stop 48: External stop terminal 2 4 9: Deceleration dc braking 50: The current running time is cleared 51: Two-wire/three-wire switching 52: Reverse frequency forbidden 53-59: Reserved.	1	★

Parameter	Name	Setting range	Factory default	Change
b4-01	S2 terminal function selection	Same as b 4-00	4	★
b4-02	S3 terminal function selection	Same as b 4-00	9	★
b4-03	S4 terminal function selection	Same as b 4-00	1 2	★
b4-04	S5 terminal function selection	Same as b 4-00	1 3	★
b4-05	S6 terminal function selection	Same as b 4-00	0	★
b4-06	S7 terminal function selection	Same as b 4-00	0	★
b4-07	S8 terminal function selection	Same as b 4-00	0	★
b4-08	S9 terminal function selection	Same as b 4-00	0	★
b4-09	S10 terminal function selection	Same as b 4-00	0	★
b4-10	S filter time	0.000s~1.000s	0.010s	☆
b4-11	Terminal command mode	0: Two-wire type 1 1: Two-line type 2 2: Three-wire type 1 3: Three-wire type 2	0	★
b4-12	Terminal up/down change rate	0. 0 01hz/s~65.535hz/s	1.00hz/s	☆
b4-13	AI curve 1 minimum input	0.00v~ b 4-15	0.00v	☆
b4-14	AI curve 1 minimum input corresponding setting	-10 0.0 %~+100.0%	0.00%	☆
b4-15	AI curve 1 maximum input	b 4-13 ~+10.00v	10.00v	☆

Parameter	Name	Setting range	Factory default	Change
b4-16	AI curve 1 maximum input corresponding setting	-100.0% ~ +100.0%	1 0 0.00%	☆
b4-17	AI 1 filter time	0 .00s~10.00s	0.1 0s	☆
b4-18	AI curve 2 minimum input	0.00V ~ b4-20	0.00v	☆
b4-19	AI curve 2 minimum input corresponding setting	-100.0% ~ +100.0%	0.00%	☆
b4-20	AI curve 2 maximum input	B4-18 ~ +100.0%	10.00v	☆
b4-21	AI curve 2 maximum input corresponding setting	-100.0% ~ +100.0%	1 0 0.00%	☆
b4-22	AI 2 filter time	0 .00s~10.00s	0.1 0s	☆
b4-23	AI curve 3 minimum input	-10.00V ~ b4-25	0.00v	☆
b4-24	AI curve 3 minimum input corresponding setting	-100.0% ~ +100.0%	0.00%	☆
b4-25	AI curve 3 maximum input	B4-23 ~ 10.00V	10.00v	☆
b4-26	AI curve 3 maximum input corresponding setting	-100.0% ~ +100.0%	1 0 0.00%	☆
b4-27	AI 3 filter time	0 .00s~10.00s	0.1 0s	☆
b4-28	PULSE input minimum frequency	0.00kHZ ~ b4-30	0.00khz	☆
b4-29	PULSE minimum input frequency corresponding setting	-100.0% ~ +100.0%	0.00%	☆
b4-30	PULSE maximum input frequency	B4-28 ~ 100.00kHZ	5 0.00khz	☆
b4-31	Corresponding setting of PULSE maximum input frequency	-100.0% ~ +100.0%	1 0 0.00%	☆
b4-32	PULSE filter time	0 .00s~10.00s	0.1 0s	☆
b4-33	AI curve selection	Units: AI1 curve selection 1: Curve 1 (2 points, see b4-13~b4-16) 2: Curve 2 (2 points, see b4-18~b4-21) 3: Curve 3 (2 points, see b4-23~b4-26) 4: Curve 4 (4 points, see b6-00~b6-07) 5: Curve 5 (4 points, see b6-08~b6-15) Tens digit: AI2 curve selection, same as above Hundreds place: AI3 curve selection, same as above	3 21	☆

b4-34	AI below minimum input setting selection	Units: AI 1 is lower than the minimum input setting selection 0: Corresponding to the minimum input setting 1: 0.0 % Tens: AI2 is lower than the minimum input setting selection, the same as above Hundreds place: AI3 is lower than the minimum input setting selection, same as above	0	☆
b4-35	S1 delay time	0.0s ~3600.0s	0.0s	★
b4-36	S2 delay time	0.0s ~3600.0s	0.0s	★
b4-37	S 3 delay time	0.0s ~3600.0s	0.0s	★
b4-38	S terminal effective mode selection 1	0: Active high 1: Active low Units: S1 Tens place: S 2 Hundreds: S3 Thousands place: S 4 Ten thousand digits : S5	0	★
b4-39	S terminal effective mode selection 2	0: Active high 1: Active low Units: S6 Tens place: S7 Hundreds: S8 Thousands: S9 Ten thousand digits: S10	0	★

Parameter	Name	Setting range	Factory default	Change
b5 sets of output terminals				
b5-00	FM terminal output mode selection	0: PULSE output (FMP) 1: Switch output (FMR)	0	☆
b5-01	FMR function selection (open collector output terminal)	0: No output 1: The inverter is running 2: Fault output (fault for free stop) 3: Frequency level detection 1 4: Frequency arrival 5: Running at zero speed (no output when stopped) 6: Motor overload pre-alarm 7: Inverter overload pre-alarm 8: The set count value has reached 9: The specified count value arrives 10: Length reached 11: Simple PLC cycle completed 12: Accumulated running time is reached 1 3: Frequency limited 1 4: Torque limited 15: Ready to run 16: AI1>AI2 17: Upper limit frequency reached 18: The lower limit frequency is reached (no output when stopped) 19: Under voltage state 20: Communication setting 21: Reserved 22: Reserved 23: Running at zero speed 2 (also output when stopped) 24: The accumulative power-on time is reached	0	☆

Continued	Continued	25: Frequency level detection 2 26: Frequency 1 arrives 27: Frequency 2 arrives 28: Current 1 arrives 29: Current 2 arrives 30: Arrive on time 31: AI1 input over limit 32: Loading 33: Reverse running 34: Zero current state 35: Module temperature reaches 36: The output current exceeds the limit 37: The lower limit frequency is reached (the output is also output when the machine stops) 38: Alarm (all faults) 39: Motor over temperature 40: The current running time is reached 41: Fault (it is a fault of free stop and no output under voltage)	Continued	Continued
b5-02	Control Board Relay Function T/B-T/C	Same as b 5–01	1	☆
b5-03	Expansion card relay output function selection P/A-P/B-P/C	Same as b 5–01	0	☆

Parameter	Name	Setting range	Factory default	Change
b5-04	D01 output function selection	Same as b 5–01	1	☆
b5-05	Expansion card d02 output function selection	Same as b 5–01	4	☆
b5-06	FMP output function selection	0: Operating frequency 1: Set frequency 2: Output current 3: Motor output torque (absolute value, relative to the percentage of the motor) 4: Output power 5: Output voltage 6: PULSE input (100.0% corresponds to 100.0khz) 7: AI1 8: AI2 9: AI 3 (expansion card) 1 0: Length 11: Counter value 12: Communication setting 13: Motor speed 14: Output current (100.0 % corresponds to 1000.0a) 15: Output voltage (100.0 % corresponds to 1000.0v) 16: Motor output torque (actual value, relative to the percentage of the motor)	0	☆
b5-07	A01 output function selection	Same as b 5–06	0	☆
b5-08	A02 output function selection	Same as b 5–06	1	☆
b5-09	FMP output maximum frequency	0. 01khz~100.00khz	5 0.00khz	☆
b5-10	A01 bias coefficient	-100.0% ~ +100.0%	0.00%	☆
b5-11	A01 gain	-10.00~+10.00	1.00	☆
b5-12	A02 bias coefficient	-100.0% ~ +100.0%	0.00%	☆
b5-13	A02 gain	-10.00~+10.00	1.00	☆
b5-17	FMR output delay time	0.0s ~3600.0s	0.0s	☆
b5-18	Relay 1 output delay time	0.0s ~3600.0s	0.0s	☆
b5-19	Relay 2 output delay time	0.0s ~3600.0s	0.0s	☆
b5-20	D0 1 output delay time	0.0s ~3600.0s	0.0s	☆
b5-21	D0 2 output delay time	0.0s ~3600.0s	0.0s	☆

b5-22	D0 output terminal active state selection	0: Positive logic 1: Anti-logic Units: FMR Tens: Relay1 Hundreds place: Relay2 Thousands: D01 Ten thousand digits: D02	0	☆
b6 groups of start-stop control				
b6-00	Start method	0: Direct start 1: Speed tracking and restart 2: Pre-excitation start (ac asynchronous machine)	0	☆
b6-01	Speed tracking method	0: Start from stop frequency 1: Start from power frequency 2 : Start from the maximum frequency	0	★
b6-02	Speed tracking speed	1~100	20	☆

Parameter	Name	Setting range	Factory default	Change
b6-03	Start frequency	0.00hz~10.00hz	0. 00hz	☆
b6-04	Starting frequency hold time	0.0s~100.0s	0.0s	★
b6-05	Starting dc braking current/pre-excitation current	0%~100%	0.0 %	★
b6-06	Start dc braking time/pre-excitation time	0.0s~100.0s	0.0s	★
b6-07	Acceleration and deceleration mode	0: Linear acceleration and deceleration 1, 2: Dynamic s-curve acceleration and deceleration	0	★
b6-08	S- curve start period time ratio	0.0%~(100.0%-b 6-09)	30.0 %	★
b6-09	S- curve end time ratio	0.0%~(100.0%-b 6-08)	30.0 %	★
b6-10	Shutdown mode	0: Decelerate to stop 1 : Free stop	0	☆
b6-11	Start frequency of dc braking at stop	0.00hz ~ maximum frequency	0. 00hz	☆
b6-12	Stop dc braking waiting time	0.0s~100.0s	0.0s	☆
b6-13	Stop dc brake current	0%~100%	0.0 %	☆
b6-14	Stop dc braking time	0.0s~100.0s	0.0s	☆
b6-15	brake usage	0%~100%	1 0 0%	☆
b6-18	Speed tracking current size	3 0 %~200%	Model confirmed	★
b6-21	Demagnetization time (svc valid)	0. 00~5.00s	Model confirmed	☆
b 7 groups of keyboard and display				
b7-01	M F.K key function selection	0: M F. K is invalid 1: Switch between operation panel command channel and remote command channel (terminal command channel or communication command channel) 2: Forward and reverse switching 3: Forward jogging 4: Reverse jog	0	★
b7-02	STOP / RESET key function	0: Only in the keyboard operation mode, the stop function of the STOP / RESET key is valid 1: In any operation mode , the stop function of STOP / RESET key is valid	1	☆

Parameter	Name	Setting range	Factory default	Change
b7-03	Run display parameter 1	0 000~FFFF Bit 00: Operating frequency 1(hz) Bit 01: Set frequency(hz) Bit 02: Bus voltage (v) Bit 03: Output voltage (v) Bit 04: Output current (A) Bit 05: Output power (kw) Bit 06: Output torque (%) Bit 07: S input status B it 08: Do output status Bit 09: AI1 voltage (v) Bit 10: AI2 voltage (v) Bit 11: AI3 voltage (v) Bit 1 2: Count value Bit 1 3: Length value Bit 14: Load speed display Bit 15: PID setting	1f	☆
b7-04	Run display parameter 2	0 000~FFFF Bit 00: PID feedback Bit01: PLC stage Bit 0 2: PULSE input PULSE frequency (khz) Bit 0 3: Operating frequency 2(hz) Bit 04: Remaining running time Bit05: AI1 voltage before correction (v) Bit06: AI2 voltage before correction (v) Bit07: AI3 voltage before correction (v) B it 08: Motor speed Bit09: Current power-on time (hour) Bit 10: Current running time (min) Bit 1 1: PULSE input PULSE frequency (hz) Bit 12: Communication setting value Bit 13: Encoder feedback speed (hz) Bit 14: Main frequency x display (hz) Bit 15: Auxiliary frequency y display (hz)	0	☆
b7-05	Shutdown display parameters	0 000~FFFF Bit 00: Set frequency (hz) Bit 0 1: Bus voltage (v) Bit 02: S input status Bit03: D0 output status Bit 04: AI 1 voltage (v) Bit 05: AI 2 voltage (v) Bit 06: AI 3 voltage (v) Bit 07: Count value Bit 08: Length value Bit09: PLC stage B it 10: Load speed Bit 11: PID setting Bit 1 2: PULSE input PULSE frequency (khz)	3 3	☆
b7-06	Load transmission ratio	0.0 01~65.000	1.0000	☆

Parameter	Name	Setting range	Factory default	Change
b7-07	Inverter module heat sink temperature	-20℃~120℃	-	●
b7-08	Product number		-	●
b7-09	Cumulative running time	0h~65535h	-	●
b7-10	Performance version number	-	-	●
b7-11	Feature version number	-		●
b7-12	Load speed display decimal point	ones place: U0-14 number of decimal points 0: 0 decimal places 1: 1 decimal place 2: 2 decimal places ten: U0-19/U0-29 number of decimal points 1: 1 decimal place 2: 2 decimal places	Twenty one -	☆
b7-13	Cumulative power-on time	0~65535 hours	-	●
b7-14	Cumulative power consumption	0~65535 degrees		●
b 8 groups of auxiliary functions				
b8-00	Jog running frequency	0.00hz ~ maximum frequency	2.00hz	☆
b8-01	Jog acceleration time	0.0s~6500.0s	20. 0s	☆
b8-02	Jog deceleration time	0.0s~6500.0s	20. 0s	☆
b8-03	Acceleration time 2	0.00s~650.00s(b0-19=2) 0.0s~6500.0s(b0-19=1) 0s~65000s(b0-19=0)	Model confirmed	☆
b8-04	Deceleration time 2	0.00s~650.00s(b0-19=2) 0.0s~6500.0s(b0-19=1) 0s~65000s(b0-19=0)	Model confirmed	☆
b8-05	Acceleration time 3	0.00s~650.00s(b0-19=2) 0.0s~6500.0s(b0-19=1) 0s~65000s(b0-19=0)	Model confirmed	☆
b8-06	Deceleration time 3	0.00s~650.00s(b0-19=2) 0.0s~6500.0s(b0-19=1) 0s~65000s(b0-19=0)	Model confirmed	☆
b8-07	Acceleration time 4	0.00s~650.00s(b0-19=2) 0.0s~6500.0s(b0-19=1) 0s~65000s(b0-19=0)	0.0s	☆
b8-08	Deceleration time 4	0.00s~650.00s(b0-19=2) 0.0s~6500.0s(b0-19=1) 0s~65000s(b0-19=0)	0.0s	☆
b8-09	Jump frequency 1	0.00hz ~ maximum frequency	0. 00hz	☆
b8-10	Jump frequency 2	0.00hz ~ maximum frequency	0. 00hz	☆
b8-11	Hop frequency amplitude	0.00hz ~ maximum frequency	0. 00hz	☆
b8-12	Forward and reverse dead time	0.0s~3000.0s	0.0s	☆
b8-13	Reverse frequency prohibited	0: Invalid 1: Valid	0	☆
b8-14	The set frequency is lower than the lower limit frequency operation mode	0: Run at the lower limit frequency 1: Shutdown 2: Running at zero speed	0	☆
b8-15	Sag rate	0.00%~100.00%	0.00%	☆

Parameter	Name	Setting range	Factory default	Change
b8-16	Set the cumulative power-on arrival time	0h～65000h	0 hours	☆
b8-17	Set the cumulative running arrival time	0h～65000h	0 hours	☆
b8-18	Boot protection selection	0: No protection 1: Protect	0	☆
b8-19	Frequency detection value 1	0.00hz～maximum frequency	5 0 .00hz	☆
b8-20	Frequency detection hysteresis rate 1	0.0 %~100.0% (FDT1 level)	5.0 0%	☆
b8-21	Frequency arrival detection range	0.0% ~ 100.0% (maximum frequency)	0.00%	☆
b8-22	Is valid during acceleration and deceleration	0: Invalid 1: Valid	0	☆
b8-25	Acceleration time 1 and acceleration time 2 switching frequency points	0.00hz～maximum frequency	0.00hz	☆
b8-26	Deceleration time 1 and deceleration time 2 switching frequency point	0.00hz～maximum frequency	0.00hz	☆
b8-27	Jog priority	0: Invalid 1: Valid	0	☆
b8-28	Frequency detection value 2	0.00hz～maximum frequency	50.00hz	☆
b8-29	Frequency detection hysteresis rate 2	0.0 %~100.0% (FDT 2 level)	5.00%	☆
b8-30	Arbitrary arrival frequency detection value 1	0.00hz～maximum frequency	50.00hz	☆
b8-31	Arbitrary arrival frequency detection range 1	0.0% ~ 100.0% (maximum frequency)	0.00%	☆
b8-32	Arbitrary arrival frequency detection value 2	0.00hz～maximum frequency	50.00hz	☆
b8-33	Arbitrary arrival frequency detection range 2	0.0% ~ 100.0% (maximum frequency)	0.00%	☆
b8-34	Zero current detection level	0.0%～300.0% 100.0% corresponds to the rated current of the motor	5.00%	☆
b8-35	Zero current detection delay time	0.01s~600.00s	0.10s	☆
b8-36	Output current exceeds limit	0 .0% (not detected) 0.1 % ~300.0% (motor rated current)	200.00%	☆
b8-37	Output current over run detection delay time	0.00s~600.00s	0.00s	☆
b8-38	Arbitrary arrival current 1	0.0%~30 0.0% (motor rated current)	100.00%	☆
b8-39	Arbitrary reaching current 1 amplitude	0.0%~30 0.0% (motor rated current)	0.00%	☆
b8-40	Arbitrary arrival current 2	0.0%~30 0.0% (motor rated current)	100.00%	☆
b8-41	Arbitrary reaching current 2 amplitude	0.0%~30 0.0% (motor rated current)	0.00%	☆
b8-42	Timing function selection	0: Invalid 1: Valid	0	★
b8-43	Timing run time selection	0: b8-44 1: AI1 2: AI2 3: AI3 Corresponding to analog input range b 8-4 4	0	★
b8-44	Timing run time	0.0min～6500.0min	0.0min	★
b8-45	AI 1 input voltage protection value lower limit	0.00V~b8-46	3.10v	☆
b8-46	AI 1 input voltage protection upper limit	b8-45~10.00V	6.80v	☆
b8-47	Module temperature reaches	0℃～100℃	75°c	☆
b8-48	Cooling fan control	0: The fan runs while running 1: The fan runs all the time	0	☆

b8-49	Wakeup frequency	Sleep frequency (b8-51) ~ maximum frequency (b0-10)	0. 00hz	☆
Parameter	Name	Setting range	Factory default	Change
b8-50	Wake up delay time	0.0s ~6500.0s	0.0s	☆
b8-51	Sleep frequency	0.00Hz~wake-up frequency (b8-49)	0. 00hz	☆
b8-52	Sleep delay time	0.0s ~6500.0s	0.0s	☆
b8-53	Arrival time for this run	0 .0~6500.0 minutes	0.0min	☆
b8-54	Output power correction factor	0.00 % ~200.0%	1 0 0.00%	☆
b9 groups of faults and protection				
b9-00	Motor overload protection selection	0: Disabled 1: Allow	1	☆
b9-01	Motor overload protection gain	0. 2 0~10.00	1	☆
b9-02	Motor overload warning coefficient	50 %~100%	80 %	☆
b9-03	Overvoltage stall gain	0~100	3 0	☆
b9-04	Overvoltage stall protection voltage	650v~ 800v	760v	☆
b9-07	Short-to-ground protection option	Units: Power-on short-circuit protection selection 0: Invalid 1: Valid Selection of short-circuit protection to ground before operation 0: Invalid 1: Valid	1	☆
b9-08	Starting voltage of brake unit action	Three-phase 380~480v model: 330.0v~800.0v Three-phase 200~240v model: 330.0v~800.0v	6 90v	★
b9-09	Fault automatic reset times	0~20	0	☆
b9-10	Fault do action selection during fault automatic reset	0: No action 1: Action	0	☆
b9-11	Fault automatic reset waiting time	0 .1s~100.0s	1.0s	☆
b9-12	Input phase loss/ contactor pick-up protection selection	Units: Input phase loss protection selection 0: Disable input phase loss protection 1: Protection when both software and hardware input phase loss conditions are met 2: As long as the software input phase loss condition is met, it will be protected 3: As long as the hardware input phase loss condition is met, it will be protected Tens place: Contactor pick-up protection selection 0: Disabled 1: Allow	1 1	☆
b9-13	Output phase loss protection selection	Units: Output phase loss protection selection 0: Disabled 1: Allow Tens place: Output phase loss protection selection before operation 0: Disabled 1: Allow	1	☆

Parameter	Name	Setting range	Factory default	Change
b9-14	First failure type	0: No fault 1: Reserved 2: Acceleration overcurrent 3: Deceleration overcurrent 4: Constant speed overcurrent 5: Acceleration overvoltage 6: Deceleration overvoltage 7: Constant speed overvoltage 8: The snubber resistor is overloaded 9: Under voltage 1 0: Inverter overload 11: Motor overload 12: Input phase loss 13: Output phase loss 14: Module overheating 15: External fault 16: Abnormal communication 1 7: Abnormal contactor 18: Abnormal current detection 19: Abnormal motor tuning 20: Encoder/ PG card abnormal 21: Abnormal reading and writing of parameters 22: Inverter hardware abnormality 23: The motor is short-circuited to the ground 24: Reserved 25: Reserved	-	●
Continued	Continued	26: Run time reached 27: User-defined fault 1 28: User-defined fault 2 29: Power-on time arrives 3 0: Load off PID feedback lost during runtime 4 0: Fast current limit timeout 41: Switch motors while running 42: The speed deviation is too large 43: Motor over speed 45: Motor over temperature 51: Initial position Error 55: Slave machine failure during master-slave control	Continued -	Continued
b9-15	Second failure type	Same as b9–14	-	●
b9-16	Third (most recent) failure type	Same as b9–14		●
b9-17	The third (most recent) failure	0.00hz~ 655.35hz	0. 00hz	●
b9-18	The third (latest) fault	0. 0 0a~655.35a	0.00a	●
b9-19	Voltage at the third (latest) fault	0.0v~ 6553.5v	0.0v	●
b9-20	Input terminal status at the third (latest) fault	0~9999	0	●

Parameter	Name	Setting range	Factory default	Change
b9-21	Terminal status at the third (latest) fault	0~9999	0	●
b9-22	Status at the third (latest) fault	0~65535	0	●
b9-23	Time at the third (most recent) failure	0s~65535s	0 s	●
b9-24	Uptime on third (most recent) failure	0.0s~6553.5s	0.0s	●
b9-27	Second failure	0.00hz~655.35hz	0. 00hz	●
b9-28	Second fault	0. 0 0a~655.35a	0.00a	●
b9-29	Bus voltage at second fault	0.0v~6553.5v	0.0v	●
b9-30	Terminal status at the second fault	0~9999	0	●
b9-31	Terminal status at the second fault	0~9999	0	●
b9-32	Inverter status at the time of the second fault	0~65535	0	●
b9-33	Power-on time at the second fault	0s~65535s	0 s	●
b9-34	Run time on second failure	0.0s~6553.5s	0.0s	●
b9-37	First failure	0.00hz~655.35hz	0.00hz	●
b9-38	Current at the first fault	0. 00a~655.35a	0.00a	●
b9-39	Bus voltage at first fault	0.0v~6553.5v	0.0v	●
b9-40	Terminal status at the first fault	0~9999	0	●
b9-41	Terminal status at the first fault	0~9999	0	●
b9-42	Inverter status at the first fault	0~65535	0	●
b9-43	Power-on time at first failure	0s~65535s	0 s	●
b9-44	Uptime to first failure	0.0s~6553.5s	0.0s	●
b9-47	Failsafe action selection 1	Units: Motor overload (Err11) 0: Free stop 1: Shut down according to the shutdown mode 2: Keep running Tens digit: Input phase loss (Err12) Hundreds place: Output phase loss (Err13) Thousands digit: External fault (Err15) Ten thousand digit: Communication Error (Err16)	0	☆
b9-48	Failsafe action selection 2	Units: Encoder/PG card abnormal (Err20) 0: Free stop Tens place: Parameter reading and writing exception (Err21) 0: Free stop 1: Shut down according to the shutdown mode Hundreds place: Inverter overload fault action selection (Err10) 0: Coast to stop 1: Derating operation Thousands digit: Motor overheating (Err45) Tens of thousands: The running time is reached (Err26)	0	☆

Parameter	Name	Setting range	Factory default	Change
b9-49	Failsafe action selection 3	Units: User-defined fault 1 (27) 0: Free stop 1: Shut down according to the shutdown mode 2: Keep running Tens: User -defined fault 2 (28) 0: Free stop 1: Shut down according to the shutdown mode 2: Keep running Hundreds digit: Power-on time arrival (29) 0: Free stop 1: Shut down according to the shutdown mode 2: Keep running Thousands place: Load drop (3 0) 0: Free stop 1: Decelerate to stop 2: Jump directly to 7% of the rated frequency of the motor to continue running, and automatically return to the set frequency when the load is not lost Loss of PID feedback while running (31) 0: Free stop 1: Shut down according to the shutdown mode 2: Keep running	0	☆
b9-50	Failsafe action selection 4	Units: Speed deviation is too large (42) 0: Free stop 1: Shut down according to the shutdown mode 2: Keep running Tens place: Motor over speed (43) Hundreds place: Initial position Error (51)	0	☆
b9-54	Frequency selection in case of failure	0: Run at the current running frequency 1: Run at the set frequency 2: Run at the upper limit frequency 3: Run at the lower limit frequency 4: Running at abnormal standby frequency	0	☆
b9-55	Abnormal standby frequency	0.0%～100.0% (100.0% corresponds to the maximum frequency b 0-10)	1 0 0.00%	☆
b9-56	Motor temperature sensor type	0: No temperature sensor 1: Pt100 2 : Pt1000	0	☆
b9-57	Motor overheat protection threshold	0℃～200℃	1 10°c	☆
b9-58	Motor overheating pre-alarm threshold	0℃～200℃	90°c	☆
b9-59	Instantaneous stop non-stop function selection	0~3 0: Invalid 1: bus voltage constant control 2: Deceleration to stop 3 : Shaking electricity suppression	0	★
b9-60	Instantaneous power failure non-stop recovery voltage	80％~100%	85 %	★
b9-61	Instantaneous power failure and non-stop voltage recovery	0. 0~100.0s	0.5 s	★
b9-62	Momentary stop non-stop action voltage	60%~100％	80 %	★

Parameter	Name	Setting range	Factory default	Change
b9-63	Load loss protection selection	0: Invalid 1: Valid	0	☆
b9-64	Load drop detection level	0. 0～100.0%	10.0%	☆
b9-65	Load drop detection time	0. 0~60.0s	1.0s	☆

b9-67	Over speed detection value	0.0%~50.0% (maximum frequency)	20.0%	☆
b9-68	Over speed detection time	0.0 s: No detection 0. 1~60.0s	1.0s	☆
b9-69	Speed deviation detection value	0.0%~50.0% (maximum frequency)	20 .00%	☆
b9-70	Excessive speed deviation detection time	0.0 s: No detection 0. 1~60.0s	5.0 s	☆
b9-71	Instantaneous stop non-stop gain kp	0~100	4 0	☆
b9-72	Instantaneous stop non-stop integral coefficient ki	0~100	3 0	☆
b9-73	Momentary stop non-stop action deceleration time	0~300.0s	20. 0s	★
b9–74	Shaking suppression time	0. 1~600.0s	1.0s	★
bA group PID function				
bA-00	PID given source	0: bA -01 setting 1: AI1 2: AI2 3: AI3 4: PULSE setting (s 5) 5: Communication setting 6: Multi-segment instruction given	0	☆
bA -01	PID value given	0.0% ~100.0%	50.00%	☆
bA -02	PID feedback source	0: AI1 1: AI2 2: AI3 3: AI1-AI2 4: PULSE setting (S5) 5: Communication setting 6: AI1+AI2 7: Max (|AI1|, |AI2|) 8: Min (| AI1|, |AI2|)	0	☆
bA -03	PID action direction	0: Positive effect 1: Reaction	0	☆
bA -04	PID given feedback range	0~ 65535	1 000	☆
bA -05	Proportional gain KP1	0.0~1000.0	25.0	☆
bA -06	Integration time TI1	0.01s~10.00s	1.50s	☆
bA -07	Derivative time TD1	0.000s~10.000s	0.000s	☆
bA -08	PID inversion cut-off frequency	0.00~maximum frequency	0. 00hz	☆
bA -09	PID deviation limit	0.0% ~100.0%	0.00%	☆
bA -10	PID differential limiter	0.00% ~100.00%	0.10 %	☆
bA -11	PID given change time	0.00~650.00s	0.00s	☆
bA -12	PID feedback filter time	0.00~60.00s	0.00s	☆
bA -13	PID output filter time	0. 0 0~60.00s	0.00s	☆
bA -14	Reserve	-	-	☆
bA -15	Proportional gain KP2	0~1000.0	20	☆

Parameter	Name	Setting range	Factory default	Change
bA-16	Integration time ti2	0 .01s~10.00s	2.0 0s	☆
bA-17	Derivative time t d 2	0.000s~10.000s	0.000s	☆
bA-18	PID parameter switching condition	0: Do not switch 1: Switch via s terminal 2: Automatic switching according to the deviation 3: Automatic switching according to the operating frequency	0	☆
bA-19	PID parameter switching deviation 1	0.0%~bA-20	20 .00%	☆
bA-20	PID parameter switching deviation 2	bA-19~100.0%	80 .00%	☆
bA-21	PID initial value	0.0%~100.0%	0.00%	☆
bA-22	PID initial value hold time	0. 0 0~650.00s	0.00s	☆
bA-23	Reserve	-	-	-
bA-24	Reserve	-	-	-
bA-25	PID integral attribute	Units: Integral separation 0: Invalid 1: Valid To stop integration after the output reaches the limit 0: Continue scoring 1 : Stop integration	0	☆
bA-26	P id feedback loss detection value	0.0%: No judgment on feedback loss 0.1 %~100.0%	0.00%	☆
bA-27	PID feedback loss detection time	0.0s~20.0s	0.0s	☆
bA-28	PID stop operation	0: No operation when stopped 1: Computing at shutdown	0	☆
bB group b fixed length and counting				
bB-05	Set length	0m~65535m	1 000m	☆
bB-06	Actual length	0m~65535m	0m	☆
bB-07	PULSE per meter	0.1~6553.5	1 00	☆
bB-08	Set count value	1~65535	1 000	☆
bB-09	Specify the count value	1~65535	1 000	☆
bC group c multi-segment instructions, simple plc				
bC-00	Multi-segment instruction 0	-10 0.0 %~100.0%	0.00%	☆
bC-01	Multi-segment instruction 1	-10 0.0 %~100.0%	0.00%	☆
bC-02	Multi-segment instruction 2	-10 0.0 %~100.0%	0.00%	☆
bC-03	Multi-stage instruction 3	-10 0.0 %~100.0%	0.00%	☆
bC-04	Multi-segment instruction 4	-10 0.0 %~100.0%	0.00%	☆
bC-05	Multi-segment instruction 5	-10 0.0 %~100.0%	0.00%	☆
bC-06	Multi-segment instruction 6	-10 0.0 %~100.0%	0.00%	☆
bC-07	Multi-segment instruction 7	-10 0.0 %~100.0%	0.00%	☆
bC-08	Multi-segment instructions 8	-10 0.0 %~100.0%	0.00%	☆
bC-09	Multi-segment instructions 9	-10 0.0 %~100.0%	0.00%	☆
bC-10	Multi-segment instruction 1 0	-10 0.0 %~100.0%	0.00%	☆
bC-11	Multi-segment instruction 1 1	-10 0.0 %~100.0%	0.00%	☆
bC-12	Multi-segment instructions 1 2	-10 0.0 %~100.0%	0.00%	☆
bC-13	Multi-segment instructions 1 3	-10 0.0 %~100.0%	0.00%	☆
bC-14	Multi-segment instructions 1 4	-10 0.0 %~100.0%	0.00%	☆

Parameter	Name	Setting range	Factory default	Change
bC-15	Multi-segment instructions 15	100.0%~100.0%	0.00%	☆
bC-16	Simple plc operation mode	0: Stop after a single run 1: Keep the final value at the end of a single run 2: Keep looping	0	☆
bC-17	Simple plc power-down memory selection	Units: Power-off memory selection 0: No memory when power off 1: Power-down memory Tens place: Stop memory selection 0: Stop without memory 1 : Shutdown memory	0	☆
bC-18	Simple plc section 0 running time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-19	Simple plc step 0 acceleration and deceleration time selection	0~3	0	☆
bC-20	Simple plc 1st run time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-21	Simple plc step 1 acceleration and deceleration time selection	0~3	0	☆
bC-22	Simple plc 2nd run time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-23	Simple plc step 2 acceleration and deceleration time selection	0~3	0	☆
bC-24	Simple plc section 3 running time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-25	Simple plc step 3 acceleration and deceleration time selection	0~3	0	☆
bC-26	Simple plc section 4 running time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-27	Simple plc step 4 acceleration and deceleration time selection	0~3	0	☆
bC-28	Simple plc section 5 running time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-29	Simple plc step 5 acceleration and deceleration time selection	0~3	0	☆
bC-30	Simple plc section 6 running time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-31	Simple plc step 6 acceleration and deceleration time selection	0~3	0	☆
bC-32	Simple plc section 7 running time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-33	Simple plc step 7 acceleration and deceleration time selection	0~3	0	☆
bC-34	Simple plc section 8 running time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-35	Simple plc step 8 acceleration and deceleration time selection	0~3	0	☆
bC-36	Simple plc section 9 running time	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-37	Simple plc step 9 acceleration and deceleration time selection	0~3	0	☆
bC-38	Running time of the 10th stage of simple plc	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-39	Simple plc step 10 acceleration and deceleration time selection	0~3	0	☆
bC-40	Running time of the 11th stage of simple plc	0.0s (h)~6553.5s(h)	0 .0s(h)	☆

Parameter	Name	Setting range	Factory default	Change
bC-41	Simple plc step 11 acceleration and deceleration time selection	0~3	0	☆
bC-42	Running time of the 12th stage of simple plc	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-43	Simple plc step 12 acceleration and deceleration time selection	0~3	0	☆
bC-44	Running time of the 13th stage of simple plc	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-45	Simple plc step 13 acceleration and deceleration time selection	0~3	0	☆
bC-46	Running time of the 14th stage of simple plc	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-47	Simple plc step 14 acceleration and deceleration time selection	0~3	0	☆
bC-48	Running time of the 15th stage of simple plc	0.0s (h)~6553.5s(h)	0 .0s(h)	☆
bC-49	Simple plc step 15 acceleration and deceleration time selection	0~3	0	☆
bC-50	Simple plc running time unit	0: S(seconds) 1: H(hour)	0	☆
bC-51	Multi-segment instruction 0 given mode	0: Given by parameter bC-00 1: AI1 2: AI2 3: AI3 4: PULSE 6: Preset frequency (b0-08) given, up / down can be modified	0	☆

bD group d communication parameters				
Parameter	Name	Setting range	Factory default	Change
bD-00	Communication baud rate	Units: Modbus 0: 300bps 1: 600 bps 2: 1200bps 3: 2400bps 4: 4800bps 5: 9600bps 6: 19200 bps 7: 3840 0bps 8:576 00bps 9: 115200bps Tens: Profibus-DP 0: 115200bps 1: 208300bps 2: 256000bps 3: 512000bps Hundreds place: Reserved Thousands: Canlink baud rate 0:20 1:50 2:100 3: 125 4: 250 5: 500 6 : 1m	5 005	☆
bD-01	Modbus data format	1: Even parity (8-E-1) 2: odd parity (8-O-1) 3: No parity (8-N-1) (valid for MODBUS)	0	☆
bD-02	Local address	0: broadcast address 1 ~ 247 (Modbus、 Profibus- DP, CANlink, Profinet, EtherCAT efficient)	1	☆
bD-03	Modbus response delay	0~20ms (modbus valid)	2	☆
bD-04	Serial communication timeout	0.0 invalid 0. 1 ~ 60.0 s (modbus , profibus - dp , canopen , Profinet, ethercat valid)	0.0	☆
bD-05	Data transfer format selection	Units: Modbus 0: Non-standard modbus protocol 1: Standard modbus protocol Profibus-DP, CANOPEN, Profinet, Ethernet 0: PP01 format 1: PP02 format 2: PP03 format 3: PP05 format	3 0	☆
bD-06	Communication reading current resolution	0: 0.01A (effective when ≤55 kw) 1 : 0.1A	0	☆

Parameter	Name	Setting range	Factory default	Change
bD-08	In profinet and ethercat communication break detection time	0.0s: Invalid 0. 1~60.0s	0	☆
bE group e user-defined parameters				
bE-00	User parameter 0	b0-00~bP-xx B0-00~Bx-xx U0-00~U0-xx U3-00~U3-xx	U3-17	☆
bE-01	User parameter 1	Same to bE-00	U3-18	☆
bE-02	User parameter 2	Same to bE-00	A 0 .00	☆
bE-03	User parameter 3	Same to bE-00	A 0 .00	☆
bE-04	User parameter 4	Same to bE-00	A 0 .00	☆
bE-05	User parameter 5	Same to bE-00	A 0 .00	☆
bE-06	User parameter 6	Same to bE-00	A 0 .00	☆
bE-07	User parameter 7	Same to bE-00	A 0 .00	☆
bE-08	User parameter 8	Same to bE-00	A 0 .00	☆
bE-09	User parameter 9	Same to bE-00	A 0 .00	☆
bE-10	User parameter 10	Same to bE-00	A 0 .00	☆
bE-11	User parameter 11	Same to bE-00	A 0 .00	☆
bE-12	User parameter 12	Same to bE-00	A 0 .00	☆
bE-13	User parameter 13	Same to bE-00	A 0 .00	☆
bE-14	User parameter 14	Same to bE-00	A 0 .00	☆
bE-15	User parameter 15	Same to bE-00	A 0 .00	☆
bE-16	User parameter 16	Same to bE-00	A 0 .00	☆
bE-17	User parameter 17	Same to bE-00	A 0 .00	☆
bE-18	User parameter 18	Same to bE-00	A 0 .00	☆
bE-19	User parameter 19	Same to bE-00	A 0 .00	☆
bE-20	User parameter 20	Same to bE-00	U0-68	☆
bE-21	User parameter 21	Same to bE-00	U0-69	☆
bE-22	User parameter 22	Same to bE-00	A 0 .00	☆
bE-23	User parameter 23	Same to bE-00	A 0 .00	☆
bE-24	User parameter 24	Same to bE-00	A 0 .00	☆
bE-25	User parameter 25	Same to bE-00	A 0 .00	☆
bE-26	User parameter 26	Same to bE-00	A 0 .00	☆
bE-27	User parameter 27	Same to bE-00	A 0 .00	☆
bE-28	User parameter 28	Same to bE-00	A 0 .00	☆
bE-29	User parameter 29	Same to bE-00	A 0 .00	☆
bP group p parameter management				
bP-00	User password	0~ 65535	0	☆
bP-01	Parameter initialization	0: No operation 01: Restore factory parameters, excluding motor parameters 02: Clear record information 04: Backup user's current parameters 501 : Restore user backup parameters	0	★

Parameter	Name	Setting range	Factory default	Change
bP-02	Function parameter group display selection	Units: U group display selection 0: No display 1: Display Tens place: Group c display selection 0: No display 1: Display	1 1	★
bP-03	Personality parameter group display selection	Units: User-defined parameter group display selection 0: No display 1: Display Tens place: User change parameter group display selection 0: No display 1: Display	0	☆
bP-04	Parameter modification properties	0: Modifiable 1: Unmodifiable	0	☆
C group torque control parameters				
C0-00	Speed/ torque control mode selection	0: Speed control 1 : Torque control	0	★
C0-01	Setting selection in torque control mode	0: Digital setting 1 (C0-03) 1: AI1 2: AI2 3: AI3 4: PULSE 5: Communication setting 6: Min (AI1, AI2) 7: Max (AI1, AI2) (Full scale of option 1-7, corresponding to C0-03 digital setting)	0	★
C0-03	Torque digital setting in torque control mode		150.00%	☆
C0-05	Torque control forward maximum frequency	0.00hz ~ maximum frequency	50.00hz	☆
C0-06	Torque control reverse maximum frequency	0.00hz ~ maximum frequency	50.00hz	☆
C0-07	Torque rise filter time	0.00s~650.00s	0.00s	☆
C0-08	Torque drop filter time	0.00s~650.00s	0.00s	☆
C 1 group virtual IO				
C1-00	Virtual VDI 1 terminal function selection	0~59	0	★
C1-01	Virtual VDI 2 terminal function selection	0~59	0	★
C1-02	Virtual VDI 3 terminal function selection	0~59	0	★
C1-03	Virtual VDI 4 terminal function selection	0~59	0	★
C1-04	Virtual VDI 5 terminal function selection	0~59	0	★
C1-05	Virtual v di terminal effective state setting mode	Ones place: Virtual VDI1 Tens: Virtual VDI2 Hundreds place: Virtual VDI3 Thousands: Virtual VDI4 Ten thousand digits: Virtual VDI5 0: Whether the VDI is valid is determined by the state of the virtual VDOx 1: Whether VDI is valid or not is set by parameter C1-06	0	★

Parameter	Name	Setting range	Factory default	Change
C1-06	Virtual VDI terminal status setting	0: Invalid 1: Valid Ones place: Virtual VDI1 Tens: Virtual VDI2 Hundreds place: Virtual VDI3 Thousands: Virtual VDI4 Ten thousand digits: Virtual VDI5	0	★
C1-07	Function selection when AI 1 terminal is used as di	0~59	0	★
C1-08	Function selection when AI 2 terminal is used as di	0~59	0	★
C1-09	Function selection when AI 3 terminal is used as di	0~59	0	★
C1-10	Effective mode selection when AI terminal is used as di	0: Active high 1: Active low Units: AI1 Tens: AI2 Hundreds : AI3	0	★
C1-11	Virtual vdo1 output function selection	0: Shorted internally with the physical dix 1～41: See A5 group physical do output selection	0	☆
C1-12	Virtual vdo2 output function selection	0: Shorted internally with the physical dix 1～41: See A5 group physical do output selection	0	☆
C1-13	Virtual vdo3 output function selection	0: Shorted internally with the physical dix 1～41: See A5 group physical do output selection	0	☆
C1-14	Virtual vdo4 output function selection	0: Shorted internally with the physical dix 1～41: See A5 group physical do output selection	0	☆
C1-15	Virtual vdo5 output function selection	0: Shorted internally with the physical dix 1～41: See A5 group physical do output selection	0	☆
C1-16	VDO 1 output delay time	0.0s～3600.0s	0.0s	☆
C1-17	VDO 2 output delay time	0.0s～3600.0s	0.0s	☆
C1-18	VDO 3 output delay time	0.0s～3600.0s	0.0s	☆
C1-19	VDO 4 output delay time	0.0s～3600.0s	0.0s	☆
C1-20	VDO 5 output delay time	0.0s～3600.0s	0.0s	☆
C1-21	Valid state selection of VDO output terminal	0: Positive logic 1: Anti-logic Units: VDO1 Tens: VDO2 Hundreds place: VDO3 Thousands: VDO4 Ten thousand digits: VDO5	0	☆
C2 group of second motor parameters				
C2-00	Motor type selection	0: Ordinary asynchronous motor 1: Frequency conversion asynchronous motor	0	★
C2-01	Motor rated power	0.1kw~1000.0kw	Model confirmed	★
C2-02	Motor rated voltage	1v~2000v	Model confirmed	★
C2-03	Motor rated current	0. 01a~655.35a (inverter power ≤55kw) 0 .1a~6553.5a (inverter power>55kw)	Model confirmed	★
C2-04	Motor rated frequency	0.01hz ~ maximum frequency	Model confirmed	★
C2-05	Motor rated speed	1rpm~ 65535rpm	Model confirmed	★

Parameter	Name	Setting range	Factory default	Change

C2-06	Asynchronous motor stator resistance	0.001Ω ~65.535Ω (inverter power ≤55kw) 0.0001Ω~6.5535Ω (inverter power >55kw)	Model confirmed	★
C2-07	Asynchronous motor rotor resistance	0.001Ω ~65.535Ω (inverter power ≤55kw) 0.0001Ω~6.5535Ω (inverter power >55kw)	Model confirmed	★
C2-08	Asynchronous motor leakage inductance	0.01mh ~655.35mh (inverter power ≤55kw) 0.00 1 mh~65.535mh (inverter power>55kw)	Model confirmed	★
C2-09	Mutual inductance reactance of asynchronous motor	0.1mh ~6553.5mh (inverter power ≤55kw) 0.01 mh~655.35mh (inverter power>55kw)	Model confirmed	★
C2-10	Asynchronous motor no-load current	0.01 a ~ c 2-03 (inverter power ≤55kw) 0.1 a ~ c 2 -03 (inverter power>55kw)	Model confirmed	★
C2-27	Encoder lines	1 ~65535	1 024	★
C2-28	Encoder type	0: Abz incremental encoder 2 : Resolver	0	★
C2-29	Speed feedback PG selection	0: Local PG 1: Extend PG 2 : PULSE input (s 5)	0	★
C2-30	Abz incremental encoder ab phase sequence	0: Forward 1: Reverse	0	★
C2-31	Encoder mounting angle	0.0~359.9 °	0.0°	★
C2-34	Resolver pole pairs	1 ~65535	1	★
C2-36	Speed feedback PG disconnection detection time	0.0: No action 0.1s ~10.0s	0	★
C2-37	Tuning selection	0: No operation 1: Parameter tuning of the static part of the asynchronous machine 2: Dynamic and complete tuning of the asynchronous machine 3: Asynchronous machine static complete tuning	0	★
C2-38	Speed loop proportional gain 1	1 ~100	3 0	☆
C2-39	Speed loop integration time 1	0 .01s~10.00s	0.50s	☆
C2-40	Switching frequency 1	0.00~ c 2-43	5.00hz	☆
C2-41	Speed loop proportional gain 2	1 ~100	20	☆
C2-42	Speed loop integration time 2	0 .01s~10.00s	1. 00s	☆
C2-43	Switching frequency 2	C 2-40~maximum frequency	1 0.00hz	☆
C2-44	Vector control slip gain	5 0 %~200%	1 0 0%	☆
C2-45	Svc torque filter constant	0.000s ~0.100s	0.000s	☆
C2-47	Torque upper limit source in speed control mode	0: C 2-48 setting 1: AI1 2: AI2 3: AI3 4: PULSE 5: Communication setting 6: Min (AI1, AI2) 7: Max (AI1, AI2) 1-7 option full scale, corresponding to c 2-48 digital setting	0	☆
C2-48	Digital setting in speed control mode	0.0% ~200.0%	150.00%	☆

Parameter	Name	Setting range	Factory default	Change
C2-49	Command selection in speed control mode (power generation)	0: set by parameter C2-48 1: AI1 2: AI2 3: AI3 4: PULSE setting 5: Communication setting 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Setting of parameter C2-50 The full scale of option 1-7 corresponds to C2-50	0	☆
C2-50	Torque upper limit digital setting (power generation) in speed control mode	0.0%～200.0%	150.00%	☆
C2-51	Excitation regulation proportional gain	0～60000	2000	☆
C2-52	Excitation regulation integral gain	0～60000	1300	☆
C2-53	Torque regulation proportional gain	0～60000	2000	☆
C2-54	Torque adjustment integral gain	0～60000	1300	☆
C2-55	Speed loop integral properties	Units: Integral separation 0: Invalid 1: Valid	0	☆
C2-58	Maximum torque coefficient in field weakening area	50~200%	100%	☆
C2-59	Generation power limit enable	0: Invalid 1: Full effect 2: Constant speed takes effect 3 : Deceleration takes effect	0	☆
C2-60	Generating power upper limit	0 .0~200.0%	Model confirmed	☆
C2-61	2nd motor control method	0: Sensorless vector control (SVC) 1: With speed sensor vector control (FVC) 2: V/F control	0	★
C2-62	Acceleration and deceleration time selection of the second motor	0: Same as the 1st motor 2: Acceleration and deceleration time 2 3: Acceleration and deceleration time 3 4: Acceleration and deceleration time 4	0	☆
C2-63	2nd motor torque boost	0.0 %: Automatic torque boost 0.1 %~30.0%	Model confirmed	☆
C2-65	2nd motor oscillation suppression gain	0~100	4 0	☆
C5 groups of control optimization parameters				
C5-00	Dpwm switching upper limit frequency	5.0 0hz~maximum frequency	8.00hz	☆
C5-01	PWM modulation method	0: Asynchronous modulation 1 : Synchronous modulation	0	☆
C5-02	Dead zone compensation mode selection	0: No compensation 1: Compensation mode 1	1	☆
C5-03	Random PWM depth	0: Random PWM is invalid 1~10: PWM carrier frequency random depth	0	☆
C5-04	Fast current limit enable	0: Disable 1: Enable	1	☆
C5-05	Current sense compensation	0~100	0	★

Parameter	Name	Setting range	Factory default	Change
C5-06	Under voltage point setting	Three-phase 380~480v model: 210.0v~420.0v Three-phase 200~240v models: 140.0v~420.0v		☆
C5-07	Svc optimization mode	1: Optimization mode 1, 2: Optimization mode 2	2	☆
C5-08	Dead time adjustment	1 00%~200%	150 %	★
C5-09	Overvoltage point setting	Three-phase 380~480v model: 650.0v~820.0v Three-phase 200~240v model: 330.0v~820.0v		★
C 6 groups of curve settings				
C6-00	AI curve 4 minimum input	-10.00V ~ C6-02	0.00v	☆
C6-01	AI curve 4 minimum input corresponding setting	-100.0%~+100.0%	0.00%	☆
C6-02	AI curve 4 inflection points 1 input	C6-00~C6-04	3.00v	☆
C6-03	AI curve 4 inflection point 1 input corresponding setting	-100.0%~+100.0%	3 0.00%	☆
C6-04	AI curve 4 inflection point 2 input	C6-02~C6-06	6.00v	☆
C6-05	AI curve 4 inflection point 2 input corresponding setting	-100.0%~+100.0%	60.0 0%	☆
C6-07	AI curve 4 maximum input	C6-04~+10.00V	10.00v	☆
C6-08	AI curve 4 maximum input corresponding setting	-100.0%~+100.0%	100.00%	☆
C6-09	AI curve 5 minimum input	-10.00V~C6-10	-10.00V	☆
C6-10	AI curve 5 minimum input corresponding setting	-100.0%~+100.0%	-100.00%	☆
C6-11	AI curve 5 inflection points 1 input	C6-08~C6-12	-3.00V	☆
C6-12	AI curve 5 inflection point 1 input corresponding setting	-100.0%~+100.0%	-30.00%	☆
C6-13	AI curve 5 inflection points 2 inputs	C6-10~C6-14	3.00v	☆
C6-14	AI curve 5 inflection point 2 input corresponding setting	-100.0%~+100.0%	30.00%	☆
C6-15	AI curve 5 maximum input	C6-12~+10.00V	10.00v	☆
C6-16	AI curve 5 maximum input corresponding setting	-100.0%~+100.0%	100.00%	☆
C6-17	AI1 sets the jump point	-100.0%~+100.0%	0.00%	☆
C6-18	AI 1 sets the jump range	0.0%~100.0%	0.50%	☆
C6-19	AI2 set jump point	-100.0%~+100.0%	0.00%	☆
C6-20	AI 2 sets the jump range	0.0%~100.0%	0.50%	☆
C6-21	AI3 set jump point	-100.0%~100.0%	0.00%	☆
C6-22	AI 3 sets the jump range	0.0%~100.0%	0.50%	☆
C7 user programmable card parameters				
	User programmable function selection	0: Invalid 1: Valid	0	★
	Control board output terminal control mode selection	0: Inverter control 1: User programmable control card control Units: FMR (FM terminal as switch output) Tens place: Relay (T/A-T/B-T/C) Hundreds: DO1 Thousands: FMP (FM terminal as PULSE output) Ten thousand digits: AO1	0	★

Parameter	Name	Setting range	Factory default	Change
C7-02	Programmable card to expand a iao terminal function configuration	0: AI3 voltage input, A02 voltage output 1: AI3 voltage input, A02 current output 2: AI3 current input, Ao02 voltage output 3: AI3 current input, A02 current output 4: AI3 ptc input, A02 voltage output 5: AI3 ptc input, A02 current output 6 : AI3 pt100 input, A02 voltage output 7 : AI3 pt100 input, A02 current output	0	★
C7-03	FMP output	0.0%~100.0%	0.00%	☆
C7-04	A01 output	0.0%~100.0%	0.00%	☆
C7-05	Switch output	Binary setting Units: FMR Tens place: Relay 1 Hundreds : D0	0	☆
C7-06	Programmable card frequency given	-100.00%~100.00%	0.00%	☆
C7-07	Programmable card torque given	-200.0 %~200.0%	0.00%	☆
C7-08	Programmable card command given	0: No command 1: Forward rotation command 2: Reverse command 3: Forward jogging 4: Reverse jog 5: Free stop 6: Deceleration to stop 7: Fault reset	0	☆
C7-09	Programmable card given fault	0: No fault 80~89: Fault code	0	☆
C8 group point-to-point communication				
C8-00	Point-to-point communication function selection	0: Invalid 1: Valid	0	☆
C8-01	Master-slave selection	0: Host 1: Slave	0	☆
C8-02	Slave commands follow the master-slave information interaction	Units: Slave command follow 0: The slave does not follow the master to run commands 1: The slave follows the command of the master to run Tens place: Slave fault information transmission 0: Slave fault information is not transmitted 1: Slave fault information transmission Hundreds place: The master shows that the slave is offline 0: The master does not report a fault when the slave is disconnected 1 : The slave machine disconnects and the master reports a fault (Err 16)	1 1	★
C8-03	Slave receives data role selection	0: Operating frequency 1 : Target frequency	0	☆
C8-04	Receive data zero offset	-100.00%~100.00%	0.00%	★
C8-05	Receive data gain	- 1 0.00~100.00	1	★
C8-06	Point-to-point communication interruption detection time	0. 0~10.0s	1.0s	☆
C8-07	Point-to-point communication host data sending cycle	0. 0 01~10.000s	0 .001s	☆

Parameter	Name	Setting range	Factory default	Change
C8-11	Windows	0.20~10.00hz	0. 5 0hz	☆
CC group AIA0 correction				
CC-00	AI1 measured voltage 1	- 1 0.00v~10.000v	Factory calibration	☆

CC-01	AI1 display voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-02	AI1 measured voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-03	AI1 display voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-04	AI2 measured voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-05	AI2 shows voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-06	AI2 measured voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-07	AI2 display voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-08	AI3 measured voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-09	AI3 shows voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-10	AI3 measured voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-11	AI3 display voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-12	AO1 target voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-13	AO1 measured voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-14	AO1 target voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-15	AO1 measured voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-16	AO2 target voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-17	AO2 measured voltage 1	-10.00v~10.000v	Factory calibration	☆
CC-18	AO2 target voltage 2	-10.00v~10.000v	Factory calibration	☆
CC-19	AO2 measured voltage 2	-10.00v~10.000v	Factory calibration	☆

8 .2 Brief list of monitoring parameters

Table-8–2 Summary of monitoring parameters

Parameter	Name	Smallest unit	Mailing address
U0 group of basic monitoring parameters			
U0-00	Operating frequency (h z)	0. 0 1hz	7000h
U0-01	Set frequency(h z)	0. 0 1hz	7001h
U0-02	Bus voltage (v)	0.1v	7002h
U0-03	Output voltage (v)	1v	7003h
U0-04	Output current (a)	0.01a	7004h
U0-05	Output power(kw)	0.1kw	7005h
U0-06	Output torque (%)	0.1 0%	7006h
U0-07	S input state	1	7007h
U0-08	Do output state	1	7008h
U0-09	AI 1 voltage (v)	0.01v	7009h
U0-10	AI 2 voltage (v) / current (ma)	0.01v / 0.01ma	700ah
U0-11	AI 3 voltage (v)	0.01v	700bh
U0-12	Count value	1	700ch

Parameter	Name	Smallest unit	Mailing address
U0-13	Length value	1	700dh
U0-14	Load speed	1 rpm	700eh
U0-15	PID setting	1	700fh
U0-16	PID feedback	1	7010h
U0-17	Plc stage	1	7011h
U0-18	Input PULSE frequency (hz)	0.01khz	7012h
U0-19	Feedback speed (hz)	0. 01hz	7013h
U0-20	Remaining run time	0.1min	7014h
U0-21	AI1 voltage before correction	0.001v	7015h
U0-22	Voltage (v)/current (ma) before AI 2 correction	0.001v / 0.01ma	7016h
U0-23	AI3 voltage before correction	0.001v	7017h
U0-24	Motor speed	1 rpm	7018h
U0-25	Current power-on time	1min	7019h
U0-26	Current running time	0.1min	701ah
U0-27	Input PULSE frequency	1hz	701bh
U0-28	Communication settings	0.01%	701ch
U0-29	Encoder feedback speed	0. 01hz	701dh
U0-30	Main frequency display	0. 01hz	701eh
U0-31	Auxiliary frequency display	0. 01hz	701fh
U0-32	View any memory address value	1	7020h
U0-34	Motor temperature value	1 ℃	7022h
U0-35	Target torque (%)	0.10 %	7023h
U0-36	Resolver position	1	7024h
U0-37	Power factor angle	0.1 °	7025h
U0-38	Abz position	1	7026h
U0-39	V/F separation target voltage	1v	7027h
U0-40	V/F separation output voltage	1v	7028h
U0-41	Display of s input status	1	7029h
U0-42	Display of do output status	1	702ah
U0-43	Visual display of S function status 1 (function 01-40)	1	702bh
U0-44	Visual display of S function status 2 (Function 41-80)	1	702ch
U0-45	Fault information	1	702dh
U0-58	Z signal counter	1	703ah
U0-59	Set frequency (%)	0.01%	703bh
U0-60	Operating frequency (%)	0.01%	703ch
U0-61	Inverter status	1	703dh
U0-62	Current fault code	1	703eh
U0-63	Point-to-point host communication to send torque value	0.01%	703fh
U0-64	Number of slaves	1	7040h
U0-65	Torque upper limit	0.10 %	7041h

Parameter	Name	Smallest unit	Mailing address
U0-66	Communication expansion card model	Displays the model of the communication expansion card. The corresponding relationship between the displayed value and the expansion card model: 100: CANopen 200: Profibus-DP 300: CANlink 400: Profinet 500: EtherCAT	7042h
U0-67	Communication expansion card software version number	Displays the version number of the communication expansion card.	7043h
U0-68	Inverter status of communication expansion card	Displays the inverter status of the communication expansion card. Bit and status state corresponding relationship. Bit1: Running direction Bit 2: Whether the inverter is faulty Bit 3: The target frequency is reached Bit 4~ bit 7: Reserved Bit 8~ bit 1 5: Fault code	7044h
U0-69	Frequency transmitted to the communication expansion card	0. 01hz The frequency that the inverter transmits to the communication expansion card , and the communication expansion card feeds back the information to the host computer.	7045h
U0-70	Speed transmitted to the communication expansion card	1 rpm The inverter transmits the speed to the communication expansion card , and the communication expansion card feeds back the information to the host computer.	7046h
U0-71	Special current display for communication expansion card (a)	Dedicated current display for communication cards .	7047h
U0-72	Communication card Error status	Error status of the communication expansion card .	7048h
U0-73	Motor serial number	0: Motor 1 1 : Motor 2	7049h
U0-74	Inverter output torque	0.10 %	704ah
U0-76	Accumulative power consumption	0.1 degrees	704ch
U0-77	Cumulative power consumption high	1 degree	704dh
U0-78	Linear speed	1m/min	704eh

Warranty agreement

1. From the date of purchase by the user from the manufacturer, this product shall be implemented for a period of 24 months under normal use environment (without water, gas and dust). Warranty (except for exporting foreign/non-standard machine products).

2. The user enjoys paid lifetime service from the date of purchase of this product from the manufacturer.

3. During the warranty period, if the damage is caused by the following reasons, a certain maintenance fee will be charged:

A. Machine damage caused by mistakes in use and unauthorized maintenance and modification;

B. Do not operate correctly in accordance with the procedures listed in the product manual provided by our company;

C. Product damage caused by force majeure such as earthquake, fire Storm, flood disaster, lightning strike, abnormal voltage or other natural disasters;

D. During the transportation process after the user purchases the product, the product is damaged due to the improper selection of the transportation method or other external force input;

E. Failure and damage caused by failures other than the machine (such as external equipment factors);

4. The manufacturer has the right not to provide warranty service under the following circumstances:

A. When the user fails to pay off the payment according to the purchase contract signed by both parties;

B. The user intentionally bad use of the product during installation, wiring, operation, maintenance or other processes to the after-sales service provider of the manufacturer.

5. All products of our company enjoy paid lifetime service.

6. If you have any questions during use, please contact our agent or our company in time.