Samkoon®

SK300 series

vector frequency converter User 's manual

Shenzhen Samkoon Technology Corporation Ltd.

Preface

Thank you very much for choosing the SK300 VFD from Samkoon Tech.

The SK300 VFD adopts a concept of modular functional design, which specifically for industry needs.

Please read this manual carefully before using the SK300 VFD to ensure proper use. This manual contains operating instructions and precautions Incorrect use may lead to unexpected accidents. This manual is a randomly sent along with goods, please keep it properly for future maintenance and repair request.We have reviewed the consistency between the content of the manual and the description of software and hardware. However, there may still be contradictions and errors, that we will make corrections into future manuals. Welcome to share with your suggestions for improvement.

Instructions for use

The safe operation of this product depends on proper installation, operation, transportation, and maintenance. Please carefully read and pay attention to the safety instructions in this manual.

●Oneself with the knowledge, safety information, and all precautions of frequency converters,use them after familiarizing.

●This manual should be kept in the hands of the actual user.

●This manual divides safety levels into "Danger" and "Caution", and uses the following markings respectively:

危险 DANGER Failure to operate as required may result in significant casualties.

注意 WARNING Failure to operate as required may result in moderate or minor injury to personnel, or property damage.

Please be sure to comply with the content with safety labels attached. Due to different circumstances, matters of "attention" level may also be considered causing serious consequences, please follow two levels of precautions.

Note: This manual is applicable to SK300 series frequency converters

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Contents

Unboxing inspection

All products has undergone strict QC inspections before the manufacturing and packaging. If any omissions are found,Please contact our company, our office or agent will resolve the issue as soon as possible. We will committed to continuous optimization and improvement of our products. If necessary changes must be made to the provided new data, we will provide updated manuals or errata in proper way.

Please confirm the following items before unpacking the product upon arrival:

* Is there any damage to the product packaging box；
* Is the nameplate of this VFD consistent with the ordering requirements；
* Is the inventory time too long.

Chapter 1 Safety Precautions

Before installing, wiring, operating, and maintaining the product, it is necessary to carefully read the following content and strictly follow the precautions.

1.1 Installing

危 险
DANGER

● Please install the frequency converter on non combustible objects such as metal to avoid the risk of fire.

● It is strictly prohibited to install in environments with flammable materials or explosive gases, otherwise there is a risk of explosion.

注 意
WARNING

● Firmly install the frequency converter on an object that can withstand the weight of the frequency converter, otherwise there is a risk of injury or damage to the equipment when dropped.

● Do not let metal foreign objects fall into the interior of the frequency converter, otherwise accidents may occur.

● Damaged frequency converters should not be installed or operated, otherwise accidents may occur .

1.2 Wiring

危 险
DANGER

● Install a circuit breaker on the input side of the inverter power supply that matches the inverter capacity, otherwise it may cause personal injury, equipment damage, or other accidents.

● The PE end of the frequency converter must be reliably grounded, otherwise electric shock or fire accidents may occur.

● Tighten the screws of the power input terminal and the motor output terminal, otherwise it may cause a fire accident.

● Wiring must be carried out by professionally qualified personnel.

● The wiring operation must be carried out after confirming that the power supply is turned off and the charging indicator light of the inverter power supply is off.

● It is necessary to ensure that the input power supply matches the nameplate data of the frequency converter, otherwise it may damage the frequency converter.

● The power input line must never be connected to the output terminal (U.V.W) of the frequency converter, otherwise it will damage the frequency converter.

1.3 Operation

● Before covering the front cover of the frequency converter, do not connect the power supply, otherwise there is a risk of electric shock.

● After the frequency converter is powered on, even if it is in a stopped state, do not touch the main circuit terminal of the frequency converter, otherwise there is a risk of electric shock.

● The frequency converter should be stopped using the "STOP/RESET" button on the operation panel or the external control terminal. Do not use the method of directly disconnecting the main power supply of the frequency converter, otherwise it may damage the frequency converter.

1.4 maintaining

● The internal charging indicator light of the frequency converter must be turned off or the power supply must be cut off for 10 minutes before the frequency converter can

be inspected or repaired, otherwise electric shock may occur.

● Only professionally trained personnel can maintain the frequency converter, otherwise electric shock or personal injury accidents may occur.

注 意
WARNING

● Do not leave conductive objects such as metals inside the frequency converter after repairing it, otherwise it may cause damage.

● Before reusing a frequency converter that has not been used for a long time, it is necessary to charge the internal capacitors of the frequency converter. A voltage regulator should be used to slowly increase the input voltage of the frequency converter (which should not exceed the rated input voltage of the frequency converter), otherwise accidents may occur.

1.5 Scrap

注 意
WARNING

● When the product is scrapped, it should be treated as industrial waste, otherwise it may cause accidents.

1.6 Scope of product application

注 意
WARNING

● Not applicable to machines or systems that may put people in a life-threatening state.

● If major accidents or losses are expected to occur due to abnormalities in this product, please be sure to install safety devices.

Chapter 2 Product Information

2.1 Inspection of product received

When opening the packaging box of the frequency converter for the first time, please carefully check the following items.

◆ Is there any damage to the frequency converter during transportation.

◆ Read the nameplate data of the frequency converter and verify whether the product model and specifications are consistent with your ordering requirements.

◆ Check the completeness of the items sent with the frequency converter against the packing list.

Our company strictly develops and manufactures frequency converter products in accordance with ISO9001. If any abnormalities are found, please contact your agent or distributor as soon as possible.

2.2 Samkoon VFD model description

SK300 - 3T 5.5GB/7.5PB

① ② ③

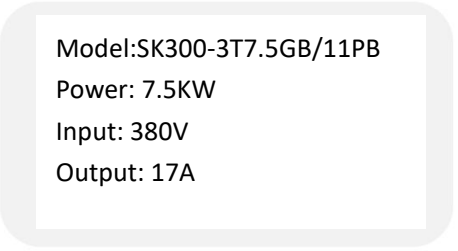
Name	NO.	description	Details
SK300	①	Product series	
3T	②	Power range	3T:3phase 380V 2S:single phase220V
5.5GB/7.5PB	③	Power+load type	5.5: 5.5KW G:G-type (constant torque load) P: P-type machine (fan pump load) B: Standard brake unit (B): optional built-in brake unit.

Figure 2-1 Explanation of VFD model

2.3 nameplate description

Under the right side panel of the frequency converter box, there is a nameplate indicating the frequency converter model and rated value,

as shown in Figure 2-2.



2-2 nameplate

2.4 SK300 series VFD

power	product mode	G-type		P-type	
		motor(KW)	rated output(A)	Motor(KW)	rated output(A)
3 phase 380V	SK300-3T0.75GB/1.5PB	0.75	2.1	1.5	3.8
	SK300-3T1.5GB/2.2PB	1.5	3.8	2.2	5.1
	SK300-3T2.2GB/4.0PB	2.2	5.1	4	9
	SK300-3T4.0GB/5.5PB	4	9	5.5	13
	SK300-3T5.5GB/7.5PB	5.5	13	7.5	17
	SK300-3T7.5GB/11PB	7.5	17	11	25
	SK300-3T11GB/15PB	11	25	15	32
	SK300-3T15GB/18.5PB	15	32	18.5	37
	SK300-3T18.5GB/22PB	18.5	37	22	45
	SK300-3T22GB/30PB	22	45	30	60

	SK300-3T30G (B)/37P(B)	30	60	37	75
	SK300-3T37G(B)/45P(B)	37	75	45	90
	SK300-3T45G(B)/55P(B)	45	90	55	110
	SK300-3T55G(B)/75P(B)	55	110	75	152
	SK300-3T75G(B)/90P(B)	75	152	90	176
	SK300-3T90G/110P	90	176	110	210
	SK300-3T110G/132P	110	210	132	253
	SK300-3T132G/160P	132	253	160	304
	SK300-3T160G/185P	160	304	185	340
	SK300-3T185G/200P	185	340	200	380
	SK300-3T200G/220P	200	380	220	426
	SK300-3T220G/250P	220	426	250	465
	SK300-3T250G/280P	250	465	280	520
	SK300-3T280G/315P	280	520	315	585
	SK300-3T315G/355P	315	585	355	650
	SK300-3T355G/400P	355	650	400	725
	SK300-3T400G/450P	400	725	450	820
1phase 220V	SK300-2S0.4GB	0.4	2.1		
	SK300-2S0.75GB	0.75	4		
	SK300-2S1.5GB	1.5	7		
	SK300-2S2.2GB	2.2	9.6		

table 2-1 SK300 series VFD mode

2.5 Dimensions of the VFD

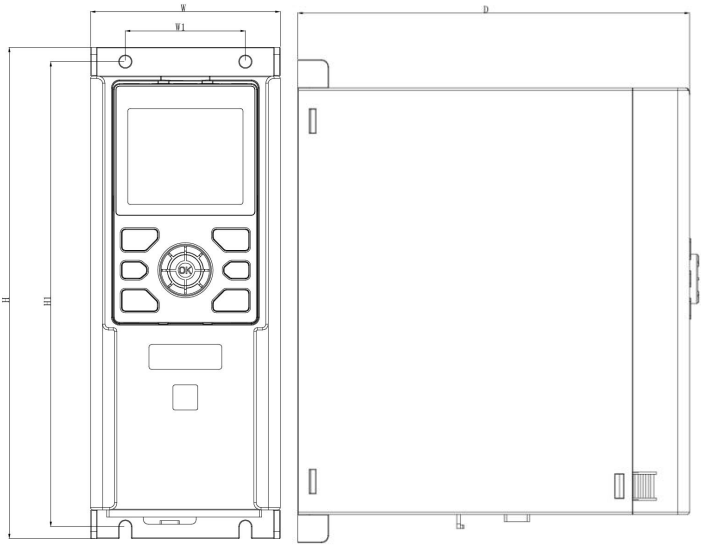


table 2-2 size of VFD

Voltage level	Product mode	W (mm)	W1 (mm)	H (mm)	H1 (mm)	D (mm)	Mounting bolts
3phase 380V	SK300-3T0.75GB/1.5PB	79	50	205	194	166	M4
	SK300-3T1.5GB/2.2PB						
	SK300-3T2.2GB/4.0PB						
	SK300-3T4.0GB/5.5PB	93	64	235	224	166	M4
	SK300-3T5.5GB/7.5PB						
	SK300-3T7.5GB/11PB	107	76	275	262.5	217	M5
	SK300-3T11GB/15PB						

	SK300-3T15GB/18.5PB	141.5	110	358	345	240	M5
	SK300-3T18.5GB/22PB						
	SK300-3T22GB/30PB						
	SK300-3T30G (B)/37P(B)	200	414	235	435	210	M6
	SK300-3T37G(B)/45P(B)						
	SK300-3T45G(B)/55P(B)	230	538	278	550	264	M6
	SK300-3T55G(B)/75P(B)						
	SK300-3T75G(B)/90P(B)						
	SK300-3T90G/110P	225	581	265	605	350	M8
	SK300-3T110G/132P						
	SK300-3T132G/160P	256	632	325	645	424	M8
	SK300-3T160G/185P						
	SK300-3T185G/200P	230	875	300	945	520	M12
	SK300-3T200G/220P						
	SK300-3T220G/250P						
	SK300-3T250G/280P						
	SK300-3T280G/315P	230	1175	320	1245	520	M12
	SK300-3T315G/355P						
	SK300-3T355G/400P						
	SK300-3T400G/450P						
1phase 220V	SK300-2S0.4GB	79	50	205	194	166	M4
	SK300-2S0.75GB						
	SK300-2S1.5GB	93	64	235	224	166	M4
	SK300-2S2.2GB						

This table is our standard product size, If there are any product updates that cause size changes, we will notify you in proper way.And please contact us for detailed information when needed.

2.6 Product Features

1、We can provide solutions to industry professional needs, and provide conduct secondary development according to requirements；

2、Using motor specific control chips and advanced optimized magnetic flux vector control algorithms, the operating characteristics are better than others；

3、Multi functional LED keyboard with flexible setting of parameters；

4、Five programmable multifunctional input terminals, 1 programmable multifunctional open collector output, and 1 programmable relay output；

5、Two analog signals (0~+10V, 0~20mA)input, and one analog signals (0~+10V, 0~20mA) output；

6、External terminals X(0,1,2) can be selected for 7-speed and programmable；

7、PID controller inside with standard configuration facilitates closed-loop control of temperature, pressure, flow rate, etc. by users；

8、Built-in braking unit, energy consumption, braking starting voltage and braking action ratio can be flexibly adjusted according to needs；

9、Equipped with RS485 , it is easy to connect other industrial control equipment such as PLC and industrial computer, and can also achieve the operation of multiple frequency converters in linkage；

10、There are about 20 types of protection functions, including input phase loss, output phase loss, over current, overload, over voltage, output short circuit, etc., which can achieve fast and effective protection for frequency converters and motors.

2.7 Technical specifications

Table 2-3 technical specification

function	Specification indicators	
Power Input	Rated input voltage	1 phase 220V±20% 3 phase 220V±20% 3 phase 380V±20%
	Rated input frequency	50~60Hz(±5%)
Power Output	Rated output voltage	≤ input voltage
	Rated output current	VFD Rated output current
	Overload capacity	G-type VFD: 150% rated current for 1 minute, 180% rated current for 10 seconds P-type VFD: 120% rated current for 1 minute, 150% rated current for 10 seconds
Control function	Control method	Open loop vector control (SVC); V/F control
	Maximum frequency	500Hz
	frequency resolution	digital given: 0.1Hz analog given: maximum frequency x0.1%
	Speed range	1:100(SVC)
	speed accuracy	±0.5%
	Torque increase	Fixed torque increase, arbitrary torque increase
	Acc/ dec curve	Straight line, S-curve
	Acc/ dec time	0.01S~600.00S
	voltage adjustment	When the voltage of the power changes, it can automatically maintain a constant output voltage

	Overcurrent and voltage stall	Automatically limit the current and voltage during operation to prevent frequent overvoltage tripping
	DC braking	DC braking frequency: 0.00Hz~maximum frequency Braking time: 0.0S~36.0S Braking action current value: 0.0%~100.0%
Peripheral interface	External power supply	10V/10mA 24V/150mA
	Digital input	5 DI terminals, one of which supports high-speed pulse input up to 100KHz
	Digital output	1 DO terminal 1 relay output terminal
	Analog input	AI1:0~10V voltage input AI2:0~10V/0~20mA input
	Analog output	AO1：0~10V/0~20mA output
	RS485	Standard Modbus protocol
operation keyboard	LED display	Multifunctional digital tube display
	button	6 buttons
Protection	Fault protection function	Input phase loss, output phase loss, over current protection, over voltage protection, under voltage protection, overheating protection, overload protection, etc
environment	Installation site	indoor, not exposed to direct sunlight, without dust, corrosive gases, flammable gases, oil mist, water vapor, dripping water or salt, etc
	Altitude	＜1000M
	temperature	-10℃~+40℃

Chapter 3 Mechanical and Electrical Installation

3.1 Mechanical Installation

3.1.1 Installation environment requirements

The operating temperature range of the frequency converter is -10 ℃ to 40 ℃. When the ambient temperature is above 40 ℃, a fan should be added to enhance ventilation, for every 5 ℃ increase when over 40℃, the rated power of VFD should be reduced by 10%.

3.1.2 Installation site

◆ Places without corrosive, flammable and explosive gases and liquids；

◆The humidity at the installation site is below 90%, and there is no condensation of water droplets；

◆ Installed in places with vibration less than 5.9m/s2 (0.6g)；

◆ Do not install in dusty or metal powder areas；

If the user has special installation requirements, please consult the manufacturer in advance and confirm.

3.1.3 Installation precautions

During installation work, please take effective protective measures for the frequency converter to prevent metal fragments or dust generated by drilling from falling into the interior of the frequency converter. After installation, please remove the protective equipment.

3.1.4 Installation interval and heat dissipation

The installation method of the frequency converter is wall mounted. The installation interval and distance requirements for a single frequency converter are shown in Figure 3-1,When two frequency converters are installed up and down, a guide baffle should be used in the middle, as shown in Figure 3-2.

image 3-1 interval

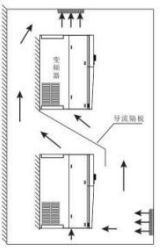


image 3-2 two VFD

注 意
WARNING

◆ The higher the ambient temperature, the shorter the life of the frequency converter.

◆ If there is a heating device near the frequency converter, please move it as far away as possible. In addition, when the frequency converter is installed inside the box,take consideration of space size, which is beneficial for heat dissipation.

3.1.5 Screw installation method

Our VFD adopts a diagonal two hole installation method, and the installation hole size refers to the external and installation dimensions of the product. Drill two holes on the installation surface, and then install and tighten the screws from the holes. As shown in image 3-3.

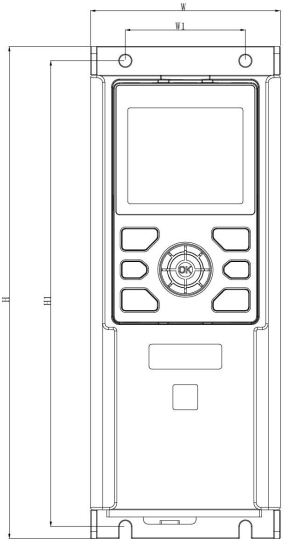


image 3-3 Screw installation method

3.1.6 Removing and installing the keyboard

A. Disassemble the keyboard, as shown in image 3-4: First press the keyboard elastic buckle in direction 1, and then lift the keyboard in direction 2.

B. Install the keyboard, as shown in image 3-5: Place the keyboard flush into the keyboard slot, press the keyboard in direction 1 until you hear a "click" sound that is flush with the front surface of the VFD.

image 3-4 Disassemble

image 3-5 install

3.1.7 Disassembly and installation of terminal cover

A．Remove the terminal cover, as shown in image 3-6. Press the terminal cover in direction 1 and then remove it in direction.

B．Install the terminal cover, as shown in image 3-7. In direction 1, install the upper buckle of the terminal cover into the corresponding joint of the upper shell until a "click" sound is heard at the joint.

image 3-6 remove

image 3-7 install

3.2 Electrical wiring

After opening the terminal sliding cover, expose the wiring terminal block and check if the terminals of each main circuit and control circuit are clearly indicated. Pay attention to the following instructions when wiring：

1. The R/L1, S/L2, and T/L3 are the input power terminals. If the power supply is incorrectly connected to other terminals, it will damage the frequency converter. Additionally, it should be confirmed that the power supply should be within the allowable voltage/current range indicated on the nameplate.

2. The grounding terminal must be well grounded, which can prevent electric shock or fire accidents and reduce noise interference.

3. Please ensure that the screws connecting the terminals and wires are locked tightly

to prevent vibration loosening and sparks.

4. Wiring when power on is prohibited.

危 险 DANGER	1. Before wiring, please confirm that the input power has been cut off. There is a risk of electric shock and fire. 2. Please let electrical engineering technicians perform wiring operations. 3. he grounding terminal must be reliably grounded. 4. After the emergency stop button is turned on, be sure to check if its action is effective. (Wiring responsibility is borne by the user). 5. Do not touch the terminals directly, do not connect the terminals of the frequency converter to the shell, and do not short circuit between the terminals. There is a risk of electric shock and short circuit.
注 意 WARNING	1. Please confirm if the rated voltage of the AC power supply and the frequency converter are consistent. There is a risk of injury and fire. 2. Do not perform voltage withstand tests on the frequency converter. Will cause damage to the internal semiconductor components of the frequency converter. 3. Please connect the braking resistor or braking unit according to the wiring diagram. 4. Please tighten the terminals with a screwdriver of the specified torque. 5. Do not connect the input power cable to the U, V, W terminals. That can cause internal damage to the frequency converter. 6. Do not connect phase-shifting capacitors and LC/RC noise filters to the output circuit. Will cause internal damage to the frequency converter. 7. Do not connect any switches or contactors to the output circuit. When the frequency converter operates under load, the action of switches and contactors will generate surge current and surge voltage, leading to damage to the frequency converter. 8.Do not disassemble the internal connection cables of the frequency converter. May cause damage to the frequency converter.

3.2.1 Connection configuration of peripheral devices

The connection diagram between SK300 series frequency converters and peripheral devices is shown in image 3-8；

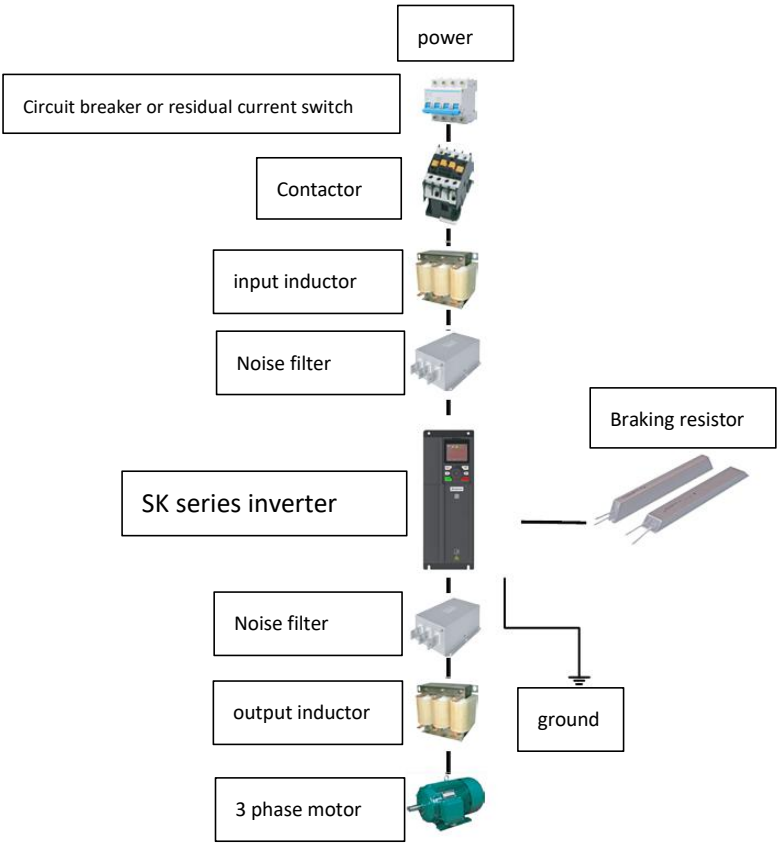


image 3-8 SK300 wiring method

3.2.2 Schematic diagram of main circuit terminal and control circuit terminal wiring.

The standard wiring for the main circuit and control circuit of the SK300 series frequency converter is shown in image 3-9:

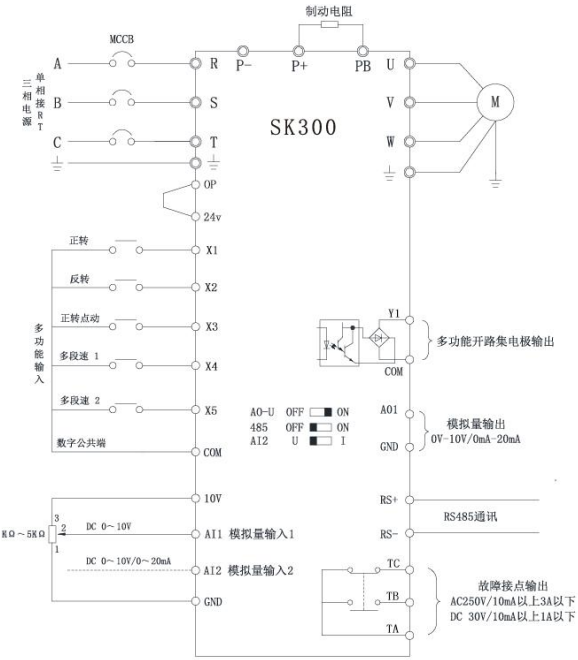


image 3-9 Standard wiring for main and control circuits

●If the load connected to the multifunctional output terminal is an inductive load (such as a relay coil), it is necessary to parallel freewheeling diodes at both ends of the load.

●The control cable inside the frequency converter or control cabinet should be at least 100mm away from the power cable and should not be placed in the same wire duct; If the signal cable must pass through the power cable, the two should be orthogonal

(90°angle). The control cable must use shielded twisted pair cables, and the GND of the shielding layer terminals should be connected. It is best to use power shielded cables also.

● Due to the inevitable presence of strong electromagnetic interference in frequency converters, it can have adverse effects on various electrical equipment and instruments located in the same environment. To suppress interference, the output cable of the frequency converter can be sheathed in a grounded metal pipeline, or an armored shielded cable can be used, and the armored shielding layer can be grounded. In addition, adding a magnetic ring on the output cable can effectively suppress interference.

3.2.3 The function of the main circuit terminal

The main circuit terminals of SK300 series frequency converters are shown in the following figures.

<table>
<tr><td colspan="3">R</td><td colspan="3">S</td><td>T</td><td rowspan="2">P+</td><td rowspan="2">P-</td><td rowspan="2">PB</td><td colspan="3">U</td><td>V</td><td>W</td><td rowspan="2">PE</td></tr>
<tr><td colspan="7">POWER</td><td colspan="4">MOTOR</td></tr>
</table>

SK300 0.75KW-2.2KW Main circuit terminal diagram

<table>
<tr><td colspan="3">R</td><td colspan="3">S</td><td>T</td><td rowspan="2">P+</td><td rowspan="2">P-</td><td rowspan="2">PB</td><td colspan="3">U</td><td>V</td><td>W</td><td rowspan="2">PE</td></tr>
<tr><td colspan="7">POWER</td><td colspan="4">MOTOR</td></tr>
</table>

SK300 4.0KW-5.5KW Main circuit terminal diagram

Teminal mark	Function description
R、S、T	AC power input terminal, three-phase R/S/T Or single-phase to R/T
U、V、W	The output terminal of the frequency converter is connected to a three-phase AC asynchronous motor.
P+、P-	Connect the positive and negative terminals of the DC bus
PB	External braking resistor connection terminal, with one end connected to P+and the other end connected to PB.
PE	Ground connection

- It is strictly prohibited to connect terminals other than R, S, and T in the control terminals to an AC 380V power supply, otherwise there is a risk of damaging the frequency converter.
- Verify whether the rated input voltage of VFD is consistent with the voltage of the AC power supply. If the input voltage level is inconsistent, it may cause damage to the frequency converter.
- Be sure to connect the grounding terminal of VFD and the motor shell to the grounding wire. The grounding wire should use copper core wire with a cross-sectional area of 4cm ² or more, and the grounding resistance must be less than 10 Ω.
- A fuse free circuit breaker must be connected between the power supply and the VFD to prevent accidents caused by frequency converter faults from expanding, damaging the power supply device, or causing fires.

3.2.4 Main circuit wiring

The main circuit wiring of SK300 series frequency converters is shown in image 3-10

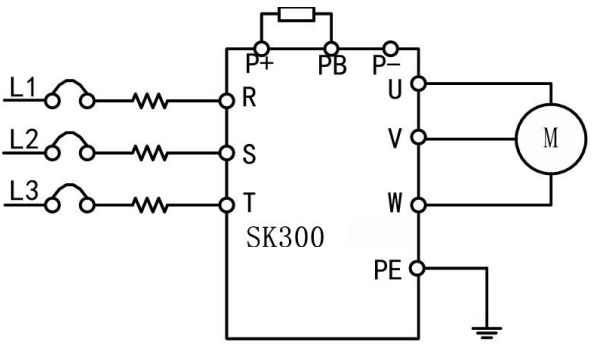


image 3-10

3.2.5 Main circuit input side wiring

◆ Circuit breaker installation

Please be sure to install the corresponding air circuit breaker (MCCB) for the VFD between the power supply and input terminals.

Please select the capacity of MCCB as 1.5-2 times the rated current of the VFD.

The time characteristics of MCCB should meet the time of the VFD overheating protection (150% rated current/1 minute).

When MCCB is shared with multiple VFD or other devices, please connect the fault relay output of the VFD in series with the power contactor coil, as shown in Figure 3-11, when receive fault signal can disconnect the power supply.

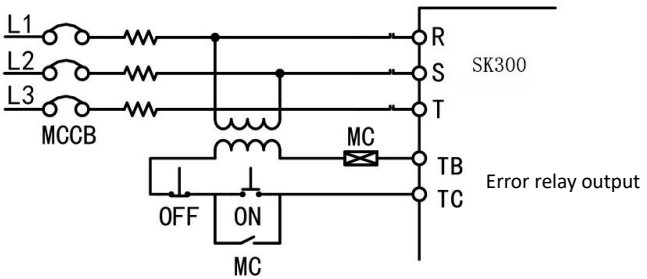


image 3-11

◆ Installation of leakage switch

As the output of the frequency converter is a high-frequency PWM signal, it will generate high-frequency leakage current. Please choose a frequency converter specific leakage circuit breaker with a current sensitivity of 30mA or above; If using a regular leakage circuit breaker, please choose a leakage circuit breaker with a current sensitivity of 200mA or above and an operating time of 0.1 seconds or more.

◆ Installation of electromagnetic contactors

Connect the electromagnetic contactor that matches the power of the frequency converter as shown in Figure 3-11. Do not frequently use the incoming electromagnetic contactor to control the operation and stop of the frequency converter. Frequent use of this method is an important cause of damage to the frequency converter. If it is necessary to use the incoming electromagnetic contactor for control, the frequency of operation for running and stopping should not be less than 30 minutes per time.

◆ Installation of AC reactor

When the input power is connected to a capacitive load, a large surge current will be generated, which may damage the frequency converter. If this situation occurs, please connect a three-phase/single-phase AC reactor (optional) on the input side of the frequency converter. This not only suppresses peak currents and voltages, but

also improves the power factor of the system.

◆ Installation of noise filter

To suppress power grid side noise entering the frequency converter and suppress the impact of noise generated by the frequency converter on the power grid. The frequency converter requires the use of dedicated noise filters, while ordinary noise filters have poor performance and are generally not used. The correct and incorrect installation methods for noise filters are shown in Images 3-12 and 3-13.

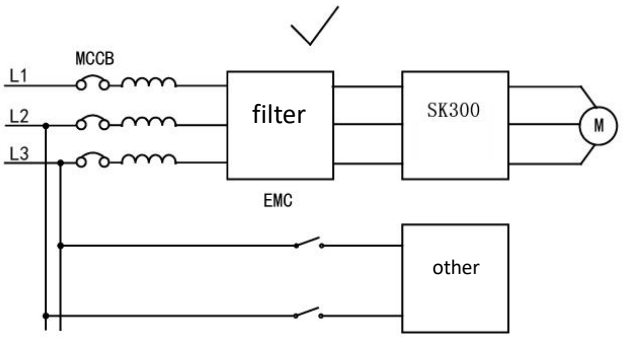


image 3-12 filter correct

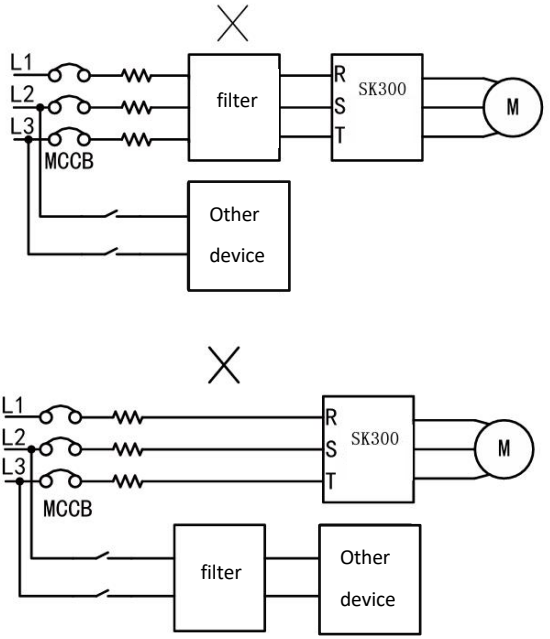


image 3-13 filter incorrect

3.2.6 Main circuit output side wiring

◆ Motor wiring installation

For VFD ,simply connect the output terminals U, V, W to the input terminals U, V, W of the motor. During operation, please confirm whether the motor is rotating forward during the forward command. If it is necessary to change the direction of the motor, swap any two wires of the output terminals U, V,W of VFD.

◆ Do not connect the power input to the output terminal

Do not connect the power to the output terminal,that will damage the internal components of the VFD.

◆ prohibited to short circuit or ground the output terminals

Do not directly touch the output terminals or short-circuit the output wiring to the VFD shell, otherwise there is a risk of electric shock and short circuit. Also, do not short-circuit the output line.

◆ Prohibit the use of phase-shifting capacitors

Do not connect phase-shift electrolytic capacitors or LC/RC filters in the output circuit, otherwise it will damage the VFD.

◆ Prohibit the use of electromagnetic switches

Do not connect electromagnetic switches or contactors in the output circuit. Otherwise, the operation of such devices will cause over current and over voltage protection actions, and in severe cases, it may even damage the internal components of the frequency converter.

◆ Installation of noise filter

Connecting a noise filter on the output side of the frequency converter can reduce induced interference and radio interference. Inductive interference: Electromagnetic induction causes noise on the signal line, cause to misoperation of control equipment.

Radio interference：

The high-frequency electromagnetic waves emitted by the frequency converter itself and cables can interfere with nearby equipment, causing noise during signal reception. Install a noise filter as shown in image 3-14.

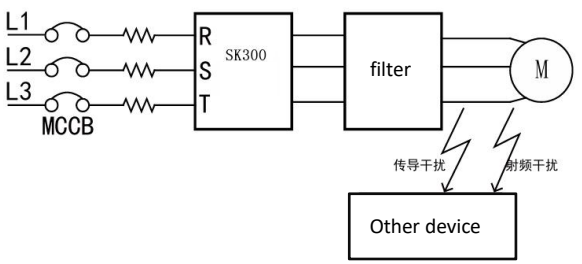


image 3-14 wiring of output side noise filter

◆ Example of anti-interference installation

To suppress interference on the output side, except installing a noise filter as mentioned earlier, grounded metal tube can also be used. The distance between the output cable and the signal cable is greater than 30cm, interference will significantly reduced; Input and output connections, as well as the VFD itself, can generate radio frequency interference. Installing noise filters on both sides of the input and output, and shielding the frequency converter body with an iron box, can reduce radio frequency interference, as shown in image 3-15. When multiple VFD are used simultaneously, grounding method shown in image 3-16.

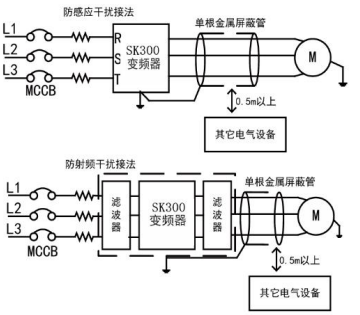


image 3-15 Anti interference wiring

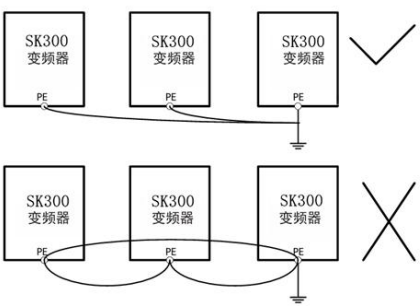


image 3-16 ground

3.2.7 Function of control circuit terminals

The control circuit terminals of SK300 series frequency converters are shown in the following image.

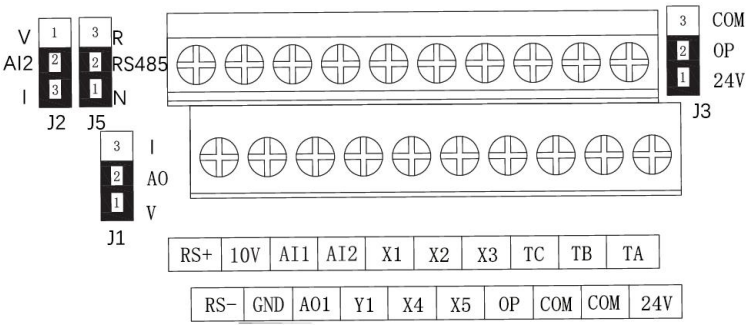
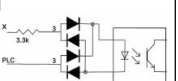
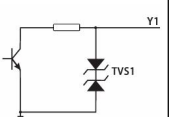
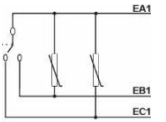
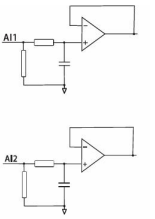
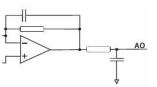


image 3-17 control circuit terminal

Function Description of Control Circuit Terminals:

Category	Terminal Number	Function Description	Electrical Specifications	Internal Circuits
Digital input terminals	X1 X2 X3 X4 X5	VFD could be programmed with function codes, as start,stop,forward or reverse rotation.	Input impedance:3.3K Input voltage:0~24V Input frequency：<1KHz Default low-level active	
Digital output terminal	Y1	Programmable digital output	Open collector output	

	TA/TB/TC	Programmable relay output	TA is the common terminal of normally open and closed	
Analog input	AI1	0~10V input	voltage:0~10V impedance：1M	
	AI2	0~10V/0~20mA input	current：0~20mA impedance：250Ω	
Analog output	AO1	Programmable analog output	voltage:0~10V current:0~20mA	
RA485 com	RS+/RS-	RS485 port		
10V power	10V	10V External power	10mA	
24V power	24V	24V External power	150mA	

Chapter 4 Keyboard Operations

4.1 Keyboard Introduction

The keyboard of the SK300 series VFD consists of four parts: a multifunctional display digital tube, six buttons, and one rotary encoder. Users can complete functions such as startup,stop,status monitoring, fault inquiry, parameter modification, and speed regulation through the keyboard. The appearance of the keyboard is shown in image 4-1:

keyboard is suitable for all models

image 4-1

Description of the functions of each part of the keyboard

button	name	function
ESC	return	Return to the previous state or cancel the current parameter modification
ENT	confirm	Enter the parameter menu or confirm the current parameter modification
<<	Left shift	data switching, data left shift
MK	Multiple function	Multifunctional buttons that can be set to invalid, jog, forward or reverse
RUN	run	Run Command
STOP	stop	Stop command, or fault reset
Knob	UP/DN	Parameter UP/DN setting knob

Indicator	status	function
F	bright	The current operating frequency direction is forward rotation
R	bright	The current operating frequency direction is reverse rotation
	Off/On/Flashing	Off: Keyboard control command is valid On: External terminal command is valid Flash: RS485 control command valid
	Bright/Flashing	On: Currently in a faulty state Flash: Currently in motor parameter self-learning state
	Bright/Flashing	On: Currently in the output state of the VFD running Flash: Currently in the deceleration and slowdown state of VFD
Hz	bright	display parameter unit is Hz
V	bright	display parameter unit is V
A	bright	display parameter unit is A
%	bright	display parameter unit is%

Chapter 5 Functional Parameter Table

"○": parameters cannot be changed while the VFD is in operation;

"●": parameters cann be changed while the VFD is in operation;

"×": parameters can only be read and cannot be changed.

F00 group. Basic functional group

Code	Code name	setting range	value	attribute
F00.00	Motor 1 control mode	0: Speed sensorless vector control (SVC) 2: V/F control	2	○
F00.01	Command source selection	0：Operation panel (LED off) 1：Terminal (LED on) 2：Com (LED flashing)	0	●
F00.02	Frequency source selection	0：Digital setting (no memory after power failure) 1：Digital setting (power failure memory) 2：AI1 3：AI2 4：Reserved 5：Pulse setting (X5) 6：Multi segment instruction 7：Simple PLC 8：PID 9：Communication given	1	○
F00.03	Auxiliary frequency source selection	The same as F00.02	0	○
F00.04	Selection of auxiliary frequency source range	0：Relative to maximum frequency 1：Relative to the main frequency command	0	●

	during stacking			
F00.05	Range of auxiliary frequency source during stacking	0%～150%	100%	●
F00.06	Frequency source selection	0: Main frequency source 1: Auxiliary frequency source 2: Main and auxiliary calculate results 3: Switching between main frequency source and auxiliary frequency source 4: Switching between main frequency source and main/auxiliary calculate results 5: Switching between auxiliary frequency source and main/auxiliary calculate results	0	●
F00.07	Choice of main/auxiliary	0：main + auxiliary 1：main - auxiliary 2：the value bigger 3：the value smaller	0	●
F00.08	Set frequency	0.00Hz～max frequency	0.00Hz	●
F00.09	Main frequency source gain	0.0～300.0%	100.0%	●
F00.10	Auxiliary frequency source gain	0.0～300.0%	100.0%	●
F00.11	Main and auxiliary frequency calculate gain	0.0～300.0%	100.0%	●

F00.12	Synthetic frequency control	0：Synthetic output frequency 1: AI1*output frequency 2: AI2*output frequency	0	●
F00.13	direction	0：Same direction 1：opposite direction	0	●
F00.14	Acceleration and deceleration time reference frequency	0: Maximum frequency 1: Set frequency 2: 100Hz	0	○
F00.15	Acceleration time 1	0.0s～6500.0s	Mode confirm	●
F00.16	Deceleration time 1	0.0s～6500.0s	Mode confirm	●
F00.17	Acceleration and deceleration time units	0：1 sec 1：0.1 sec 2：0.01 sec	1	○
F00.18	Max frequency	50.00Hz～500.00Hz	50.00Hz	○
F00.19	Upper limit frequency	Lower limit～Max frequency	50.00Hz	●
F00.20	Upper limit frequency selection	0：F00.19 set 1：AI1 2：AI2 3：reserve 4：pulse set 5：communication give	0	○
F00.21	Upper limit frequency bias	0.00Hz～max frequency	0.00Hz	●
F00.22	Lower limit frequency	0.00Hz～upper limit frequency	0.00Hz	●
F00.23	carrier frequency	0.5kHz～16.0kHz	Mode confirm	●
F00.24	Random carrier	0：no 1：yes	1	●

F00.25	Auxiliary frequency instruction bias during stacking	0.00HZ～max frequency	0.00Hz	●
F00.26	Frequency resolution	0: 1Hz 1: 0.1Hz 2: 0.01Hz	2	○
F00.27	Digital setting frequency power off memory selection	0：NO Memory 1：Memory	1	●
F00.28	Motor parameter selection	0：Motor parameter group 1 1：Motor parameter group 2	0	○
F00.29	operation frequency UP/DOWN	0：Operating frequency 1：Set frequency	1	○
F00.30	Operation bundle main frequency instruction selection	Bit: Operation panel binding frequency source selection Ten digit: Terminal binding frequency source selection Hundred digits: Communication binding frequency source selection 0: Unbound 1: Digital frequency 2：AI1 3：AI2 4: Reserved 5: Pulse setting (X5) 6: Multi stage speed 7: Simple PLC 8：PID 9: Communication settings	000	●

F00.31	Modbus selection	0：MODBUS protocol	0	○
F00.32	GP mode set	1：G mode 2：P mode	0	○

F01 group．Motor 1 data:

Code	Code name	Setting range	value	attribute
F01.00	Motor type selection	0：asynchronous motor 1：frequency motor	0	O
F01.01	Rated power of motor	0.1kW～1000.0kW	Mode confirm	O
F01.02	Rated voltage of motor	1V～2000V	Mode confirm	O
F01.03	Motor rated current	0.01A～655.35A	Mode confirm	O
F01.04	Rated frequency of motor	0.01Hz～max frequency	Mode confirm	○
F01.05	Rated motor speed	1rpm～65535rpm	Mode confirm	O
F01.06	Asynchronous motor stator resistance	0.001Ω～65.535Ω	Tuning parameter	O
F01.07	Asynchronous motor rotor resistance	0.001Ω～65.535Ω	Tuning parameter	O
F01.08	Asynchronous motor leakage reactance	0.01mH～655.35Mh	Tuning parameter	O
F01.09	Asynchronous motor mutual inductance reactance	0.1mH～6553.5mH	Tuning parameter	O
F01.10	Asynchronous motor no-load current	0.01A～F01-03	Tuning parameter	O

F01.27	Number of encoder lines	1～65535	1024	O
F01.28	Encoder type	0:ABZ incremental encoder 1: UVW incremental encoder 2：Rotating Transformer 3：Sine cosine encoder 4：Line saving UVW encoder	0	O
F01.29	Speed feedback PG card selection	0: QEP1 1: QEP2（extend）	0	O
F01.30	ABZ incremental encoder AB phase sequence	0：Forward 1：reverse	0	O
F01.31	Encoder installation angle	0.0～359.9°	0.0°	O
F01.32	UVW encoder UVW phase sequence	0：Forward 1：reverse	0	O
F01.33	UVW encoder bias angle	0.0～359.9°	0.0°	O
F01.34	Number of pole pairs for transformer	1～65535	1	O
F01.35	Number of UVW poles	1～65535	4	O
F01.36	Speed feedback PG disconnection detection time	0.0s：no operation 0.1s～10.0s	0.0s	O
F01.37	Motor parameter tuning	0：No operation 1：motor static tuning 1 2：Dynamic tuning 3： motor static tuning 2	0	O

F02 group. Vector control parameters for motor 1

Code	Code name	Set range	value	attribute
F02.00	Speed loop proportional gain 1	1～100	30	●
F02.01	Speed loop integration time 1	0.01s～10.00s	0.50s	●
F02.02	Switching frequency 1	0.00～F02.05	5.00Hz	●
F02.03	Speed loop proportional gain 2	1～100	20	●
F02.04	Speed loop integration time 2	0.01s～10.00s	1.00s	●
F02.05	Switching frequency 2	F02.02～Maximum frequency	10.00Hz	●
F02.06	Vector control slip gain	50%～200%	100%	●
F02.07	SVC speed feedback filtering time	0.000s～1.000s	0.050s	●
F02.08	Vector control overexcitation gain	0～200	64	●
F02.09	torque upper limit command under speed control mode (electric)	0：code F02.10 set 1：AI1 2：AI2 3：reserved 4：pulse set (X5) 5：communication give 6：MIN(AI1,AI2) 7：MAX(AI1,AI2) The full range of options 1-7 corresponds to F02.10	0	●

F02.10	Torque upper limit digital setting under speed control mode (electric)	0.0% ～ 200.0%	150.0%	●
F02.11	Speed control mode torque upper limit source (braking)	0：code F02.12 setting (no distinguish between electric and power generation) 1：AI1 2：AI2 3：reserved 4：pulse set (X5) 5：communication give 6：MIN(AI1,AI2) 7：MAX(AI1,AI2) The full range of options 1-7 corresponds to F02.12	0	●
F02.12	Speed control method, torque upper limit digital setting (braking)	0.0%～200.0%	150.0%	●
F02.13	Excitation regulation proportional gain	0～60000	2000	●
F02.14	Excitation regulation integral gain	0～60000	1300	●
F02.15	Torque regulation proportional gain	0～60000	2000	●
F02.16	Torque regulation integral gain	0～60000	1300	●
F02.17	Speed loop integral attribute	0：Invalid 1：valid	0	●
F02.18	weak magnetic mode in vector mode	0:Not enabled 1:Only deceleration enable 2:Constant speed and	0	●

		deceleration enable		
F02.19	Overmodulation enable	0:invalid 1:valid	0	●
F02.20	Overmodulation coefficient	100% ～ 110%	105%	○
F02.21	Maximum torque coefficient in weak magnetic zone	50～200%	100%	●
F02.22	Speed mode power generation torque enable	0：invalid 1：valid	0	○

F03 group．V/F control

Code	Code name	Set range	value	attribute
F03.00	V/F Curve set	0：line V/F 1：multi point V/F 2：square V/F 3：1.2^ V/F 4：1.4^ V/F 6：1.6^ V/F 8：1.8^ V/F 9：reserve 10：VF total Separation mode 11：VF half Separation mode	0	○
F03.01	Torque increase	0.%:(automatic Torque increase） 0.1% ～ 30.0%	Mode confirm	●
F03.02	Torque increase limit frequency	0.00Hz~max frequency	50.00Hz	○
F03.03	Multi point V/F frequency point 1	0.00Hz～F03.05	0.00Hz	○
F03.04	Multi point V/F voltage point 1	0.0%～100.0%	0.0%	○

F03.05	Multi point V/F frequency point 2	F03.03～F03.07	0.00Hz	○
F03.06	Multi point V/F voltage point 2	0.0%～100.0%	0.0%	○
F03.07	Multi point V/F frequency point 3	F03.05~rated frequency of motor	0.00Hz	○
F03.08	Multi point V/F voltage point 3	0.0%～100.0%	0.0%	○
F03.09	V/F slip compensation gain	0.0%～200.0%	0.0%	●
F03.10	V/F overexcitation gain	0～200	64	●
F03.11	VF oscillation suppression gain	0～100	Mode confirm	●
F03.12	oscillation suppression mode	0～4	3	○
F03.13	V/F separated voltage source	0：Digital setting (F03.14) 1：AI1 2：AI2 3：reserve 4：pulse set（X5） 5：Multi segment instruction 6：simple PLC 7：PID 8：communication give Note:100.0% corresponds to the rated voltage of the motor	0	●
F03.14	Voltage digital setting for V/F separation	0V～rated voltage of motor	0V	●
F03.15	Voltage acceleration time for V/F	0.0s～1000.0s	0.0s	●

	separation			
F03.16	Voltage deceleration time for V/F separation	0.0s～1000.0s	0.0s	●
F03.17	Select V/F separation shutdown mode	0:Frequency/voltage independently reduced to 0 1:Frequency reduce After the voltage drops to 0	0	O
F03.18	Overcurrent stall action current	50%～ 200%	130%	O
F03.19	Overcurrent stall enable	0:invalid 1:valid	1	O
F03.20	Overcurrent stall suppression gain	0～100	20	●
F03.21	Compensation coefficient for current of overcurrent stall action	50～200%	50%	O
F03.22	Overvoltage stall action voltage	3 phase 380～480V mode：330.0～800.0V 3 phase 220～240V mode :330.0～800.0V	680.0V	O
F03.23	Overpressure stall enable	0：invalid 1：valid	1	O
F03.24	Overvoltage stall suppression frequency gain	0～100	30	●
F03.25	Overvoltage stall suppression voltage gain	0～100	30	●
F03.26	Maximum rise frequency limit when overvoltage stall	0～50Hz	5Hz	O

F03.27	Rotate slip compensation time constant	0.1s ～ 10.0s	0.5s	●
F03.28	Automatic frequency raise up enable	0～1	0	●
F03.29	Minimum electric torque current	10～100	50	●
F03.30	Maximum power generation torque current	10～100	20	●
F03.31	Automatic frequency raise up KP	0～100	50	●
F03.32	Automatic frequency raise up KI	0～100	50	●
F03.33	Online torque compensation gain	08～150	100	●

F04 group．Start/stop control

Code	Code name	Set range	value	attribute
F04.00	Starting method	0：Start directly 1：restart after Speed tracking 2：Pre excitation start	0	●
F04.01	Speed tracking method	0：Starting from shutdown frequency 1：Starting from power frequency 2：Starting from maximum frequency	0	○
F04.02	Speed tracking response	1～100	20	●
F04.03	Start frequency	0.00Hz～10.00Hz	0.00Hz	●
F04.04	Start frequency holding time	0.0s～100.0s	0.0s	○

F04.05	Starting DC braking current/pre excitation current	0%～100%	0%	○
F04.06	Start DC braking time/pre excitation time	0.0S～100.0S	0.0S	○
F04.07	Acceleration and deceleration methods	0：Linear acceleration and deceleration 1:Static S-curve acceleration and deceleration 2：Dynamic S-curve acceleration and deceleration	0	○
F04.08	The proportion of time at the beginning of the S-curve	0.0%～(100.0%- F04.09)	30.0%	○
F04.09	The proportion of time at the end of the S-curve	0.0%～(100.0%- F04.08)	30.0%	○
F04.10	Stop method	0：slow down to stop 1：free stop	0	●
F04.11	Starting frequency of DC brake to stop	0.00HZ～max frequency	0.00HZ	●
F04.12	Stop DC brake waiting time	0.0S～100.0S	0.0S	●
F04.13	Stopping DC braking current	0%～100%	0%	●
F04.14	Stop dc braking time	0.0S～100.0S	0.0S	●
F04.15	Brake utilization rate	0% ～ 100%	100%	●
F04.16	Speed tracking closed-loop current KP	0～1000	500	●
F04.17	Speed tracking closed-loop current KI	0～1000	800	●

F04.18	Speed tracking current power	30% ～ 200%	Mode confirm	○
F04.19	Speed tracking closed-loop current lower limit value	10～100	30	●
F04.20	Speed tracking voltage rise time	0.5～3.0	1.1	●
F04.21	Demagnetization time	0.00～ 5.00s	Mode confirm	○

F05 group．Input terminals

Code	Code name	Set range	value	attribute
F05.00	X1 terminal function	0: No function 1: Forward running FWD or operation commands 2: Reverse running REV or reverse running directions 3: Three lines operation control 4: Forward Jog 5: Reverse Jog 6: Terminal UP 7: Terminal Down 8: Free stop 9: Fault reset (RESET) 10: operation Pause 11: External fault open input 12: Multi segment instruction terminal 1 13: Multi segment instruction terminal 2 14: Multi segment instruction terminal 3	1	○
F05.01	X2 terminal function		2	○
F05.02	X3 terminal function		9	○
F05.03	X4 terminal function		12	○
F05.04	X5 terminal function		13	○

		15: Multi segment instruction 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 reset (terminals, keyboard) 20: Control command switching terminal 1 21: Acceleration and deceleration prohibited 22: PID pause 23: PLC status reset 24: Swinging frequency 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 X5) 31: Reserved 32: Immediate DC braking 33: External fault closed input 34: Frequency modification enable 35: Reverse direction of PID action		

		36: External stop terminal 1 37: Control command switching terminal 2 38: PID integral pause 39: Switching between main frequency and preset frequency 40: Switching between auxiliary frequency and preset frequency 41: Motor selection function 42: Reserved 43: PID 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 49: Deceleration DC braking 50: Zero running time this time 51: Two line/three line switching 52: Reverse operation prohibited 53-59: Reserved		
F05.10	DI filter time	0.000s～1.000s	0.010s	●
F05.11	Terminal command mode	0：two lines 1 1：two lines 2 2：three lines 1 3：three lines 2	0	○

F05.12	Terminal UP/DOWN change rate	0.001Hz/s～ 65.535Hz/s	1.000Hz/s	●
F05.13	AI curve 1 minimum input	0.00V～F05.15	0.00V	●
F05.14	AI curve 1 minimum input setting	-100.0%～+100.0%	0.0%	●
F05.15	AI curve 1 maximum input	F05.13～+10.00V	10.00V	●
F05.16	AI curve 1 maximum input setting	-100.0%～+100.0%	100.0%	●
F05.17	AI1 filter time	0.00s～10.00s	0.10s	●
F05.18	AI curve 2 minimum input	0.00V F05.20	0.00V	●
F05.19	AI curve 2 minimum input setting	-100.0%～+100.0%	0.0%	●
F05.20	AI curve 2 minimum input	F05.18 ～ +10.00V	10.00V	●
F05.21	AI curve 2 minimum input setting	-100.0% ～ +100.0%	100.0%	●
F05.22	AI2 filter time	0.00s ～ 10.00s	0.10s	●
F05.23	AI curve 3 minimum input	-10.00V ～ F05.25	0.10V	●
F05.24	AI curve 3 minimum input setting	-100.0%～+100.0%	0.0%	●
F05.25	AI curve 3 minimum input	F05.23～+10.00V	4.60V	●
F05.26	AI curve 3 minimum input setting	-100.0%～+100.0%	100.0%	●
F05.27	Keyboard potentiometer filtering time	0.00s～10.00s	0.10s	●

F05.28	Minimum pulse input of frequency	0.00kHz～F05.30	0.00kHz	●
F05.29	Minimum pulse input of frequency setting	-100.0%～100.0%	0.0%	●
F05.30	Max pulse input of frequency	F05.28～100.00kHz	50.00kHz	●
F05.31	Max pulse input of frequency setting	-100.0% ～ 100.0%	100.0%	●
F05.32	Pulse filter time	0.00s ～ 10.00s	0.10s	●
F05.33	AI curve selection	One digit:AI1 curve select 1：curve 1（2 point） 2：curve 2（2 point） 3：curve 3（2 point） 4：curve 4（4 point） 5：curve 5（4 point） Ten digits:AI2 curve select Hundred digits：reserve	321	●
F05.34	AI selection below minimum input setting	One digit :below minimum input setting 0:：minimum input setting 1：0.0% Ten digit: the same Hundred digits：reserve	000	●
F05.35	X1 effective delay time	0.0s～3600.0s	0.0s	●
F05.36	X1 invalid delay time	0.0s～3600.0s	0.0s	●
F05.37	X2 effective delay time	0.0s～3600.0s	0.0s	●
F05.38	X2 invalid delay time	0.0s～3600.0s	0.0s	●
F05.39	X3 effective delay time	0.0s～3600.0s	0.0s	●

F05.40	X3 invalid delay time	0.0s～3600.0s	0.0s	●
F05.41	X terminal effective mode selection 1	0：High current effective 1：Low current effective One digitt: X1 Ten digitis: X2 Hundred digit: X3 Thousand digit: X4 10000 digits: X5	00000	○

F06 group,output terminal

Code	Code name	Set range	value	attribute
F06.00	reserve			●
F06.01	reserve	0: No output	0	●
F06.02	Relay R1 function	1: Inverter in operation	2	●
F06.03	reserve	2: Fault output	0	●
F06.04	Y1 output function	3: Frequency level detection FDT1 output	1	●
F06.05	reserve	4: Frequency arrival 5: Zero speed operation (no output when stop) 6: Motor overload warning 7: Frequency converter overload warning 8: Set the count value to reach 9: Specified count value has reached 10: Length reached 11: Simple PLC program circle 12: total running time has reached 13: In frequency limit (in swing frequency limit) 14: In torque limit	0	●

		15: Ready for operation 16：AI1>AI2 17: Upper limit frequency reached 18: Lower limit frequency reached (no output when stop) 19: Under voltage state 20: Communication settings 21: Reserved 22: Reserved 23: zero speed operation 2 (still output when stop) 24: total power on time has reached 25: Frequency level detection FDT2 output 26: Frequency 1 arrival 27: Frequency 2 arrival 28: Current 1 arrival 29: Current 2 arrival 30: Timed arrival 31: AI1 input exceeded limit 32: losing load 33:Reverse operation 34: no current state 35: Module temperature reached 36: Output current exceeds limit 37: Lower limit frequency reached (go on output when stopped) 38: Alarm 39: Motor over temperature 40: The running time has reached		

		41: Fault output		
F06.06	reserve	0: Operating frequency	0	●
F06.07	AO1 output function	1: Set frequency	0	●
F06.08	reserve	2: Output current 3: Motor output torque 4: Output power 5: Output voltage 6: Pulse input 7：AI1 8：AI2 9: Reserved 10: Length 11: Record data values 12: Communication settings 13: Motor speed 14: Output current 15: Main cable voltage 16: Motor output torque 17:frequency output torque	1	●
F06.09				
F06.10	AO1 offset coefficient	-100.0%～+100.0%	0.0%	●
F06.11	AO1 gain	-10.00～+10.00	1.00	●
F06.12	reserve			
F06.13	reserve			
F06.14	reserve			
F06.15	AO1 output filter time	0.00～10.00s	0.00	X
F06.16	reserve			
F06.17	reserve			
F06.18	reserve			
F06.19	R1 output valid delay time	0.0s～3600.0s	0.0s	●
F06.20	R1 output invalid delay time	0.0s～3600.0s	0.0s	●
F06.21	reserve			
F06.22	reserve			
F06.23	Y1 output valid delay time	0.0s～3600.0s	0.0s	●
F06.24	Y1utput invalid delay time	0.0s～3600.0s	0.0s	●
F06.25	reserve			

F06.26	reserve			
F06.27	Y Output terminal effective status	0: Positive logic 1: Anti logic One digit: Y1 Ten digit: R1 Hundred digits: reserved Thousand digits: reserved 10000 digits: reserved	00000	●
F06.28	Y output terminal signal type	0：current level 1：single pulse One digit：Y1 Ten digit：R1 Hundred digit：reserve Thousand digit：reserve 10000 digit：reserve	00000	●
F06.29	Y1 output single pulse time	0.0s～3600.0s	0.1s	●
F06.30	R1 output single pulse time	0.0s～3600.0s	0.1s	●

F07 group. Multi segment instructions, simple PLC function

Code	Code name	Set range	value	attribute
F07.00	Multi segment instruction 0	-100.0%～100.0%	0.0%	●
F07.01	Multi segment instruction 1	-100.0%～100.0%	0.0%	●
F07.02	Multi segment instruction 2	-100.0%～100.0%	0.0%	●
F07.03	Multi segment instruction 3	-100.0%～100.0%	0.0%	●
F07.04	Multi segment instruction 4	-100.0%～100.0%	0.0%	●
F07.05	Multi segment instruction 5	-100.0%～100.0%	0.0%	●
F07.06	Multi segment instruction 6	-100.0%～100.0%	0.0%	●
F07.07	Multi segment instruction 7	-100.0%～100.0%	0.0%	●
F07.08	Multi segment instruction 8	-100.0%～100.0%	0.0%	●
F07.09	Multi segment instruction 9	-100.0%～100.0%	0.0%	●
F07.10	Multi segment instruction10	-100.0%～100.0%	0.0%	●

F07.11	Multi segment instruction11	-100.0%～100.0%	0.0%	●
F07.12	Multi segment instruction12	-100.0%～100.0%	0.0%	●
F07.13	Multi segment instruction13	-100.0%～100.0%	0.0%	●
F07.14	Multi segment instruction14	-100.0%～100.0%	0.0%	●
F07.15	Multi segment instruction15	-100.0%～100.0%	0.0%	●
F07.16	simple PLC operation mode	0: Stop at the end of a single circle 1: Maintain final value at the end of a single run 2: Always circle	0	●
F07.17	Simple PLC power-off memory selection	One digit: Power failure memory selection 0: No memory when power failure 1: memory when power failure Ten digits: stop memory selection 0: No memory when stop 1: memory when stop	00	●
F07.18	Simple PLC segment 0 operation time	0.0s(h) ～ 6500.0s(h)	0.0s(h)	●
F07.19	Simple PLC Section 0 Acc/ Dec Time Selection	0～3	0	●

F07.20	Simple PLC segment 1 operation time	0.0s(h) ～ 6500.0s(h)	0.0s(h)	●
F07.21	Simple PLC Section 1 Acc/ Dec Time Selection	0～3	0	●
F07.22	Simple PLC segment 2 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.23	Simple PLC Section 2 Acc/ Dec Time Selection	0～3	0	●
F07.24	Simple PLC segment 3operation time	0.0s(h) 6500.0s(h)	0.0s(h)	●
F07.25	Simple PLC Section 3Acc/ Dec Time Selection	0～3	0	●
F07.26	Simple PLC segment 4 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.27	Simple PLC Section 4 Acc/ Dec Time Selection	0～3	0	●
F07.28	Simple PLC segment 5 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.29	Simple PLC Section 5 Acc/ Dec Time Selection	0～3	0	●
F07.30	Simple PLC segment 6 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.31	Simple PLC Section 6 Acc/ Dec Time Selection	0～3	0	●
F07.32	Simple PLC segment 7 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.33	Simple PLC Section 7 Acc/ Dec Time Selection	0～3	0	●
F07.34	Simple PLC segment 8 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.35	Simple PLC Section 8 Acc/ Dec Time Selection	0～3	0	●

F07.36	Simple PLC segment 9 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.37	Simple PLC Section 9 Acc/ Dec Time Selection	0～3	0	●
F07.38	Simple PLC segment 10 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.39	Simple PLC Section 10 Acc/ Dec Time Selection	0～3	0	●
F07.40	Simple PLC segment 11 operation time	0.0s(h) 6500.0s(h)	0.0s(h)	●
F07.41	Simple PLC Section 11 Acc/ Dec Time Selection	0～3	0	●
F07.42	Simple PLC segment 12 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.43	Simple PLC Section 12 Acc/ Dec Time Selection	0～3	0	●
F07.44	Simple PLC segment 13 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.45	Simple PLC Section 13 Acc/ Dec Time Selection	0～3	0	●
F07.46	Simple PLC segment 14 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.47	Simple PLC Section 14 Acc/ Dec Time Selection	0～3	0	●
F07.48	Simple PLC segment 15 operation time	0.0s(h)～6500.0s(h)	0.0s(h)	●
F07.49	Simple PLC Section 15 Acc/ Dec Time Selection	0～3	0	●
F07.50	Simple PLC running time unit	0：s（second） 1：h（hour）	0	●
F07.51	Multiple segment	0：code F07.00 given	0	●

	instruction 0 given method	1：AI1 2：AI2 3：reserve 4：pulse 5：PID 6：F00.08		

F08 group. PID function

Code	Code name	Set range	value	attribute
F08.00	PID given source	0：F08.01 set 1：AI1 2：AI2 3：reserve 4：pulse set（X5） 5：communication give 6：Multi segment instruction given	0	●
F08.01	PID value given	0.0% ～ 100.0%	50.0%	●
F08.02	PID feedback source	0：AI1 1：AI2 2：reserve 3：AI1-AI2 4：pulse set（X5） 5：communication given 6：AI1+AI2 7：MAX(|AI1|, |AI2|) 8：MIN(|AI1|, |AI2|)	0	●
F08.03	PID direction	0：Positive effect 1：reverse effect	0	●
F08.04	PID given feedback range	0～65535	1000	●

F08.05	Proportional gain KP1	0.0～1000.0	20.0	●
F08.06	Integration time TI1	0.00s～10.00s (0.00s Integration invalid)	0.20s	●
F08.07	Differentiation time TD1	0.000s～10.000s	0.000s	●
F08.08	PID reverse cutoff frequency	0.00～Maximum frequency	0.00Hz	●
F08.09	PID deviation limit	0.0%～100.0%	0.0%	●
F08.10	PID Differentiation limit	0.00%～100.00%	0.10%	●
F08.11	PID given change time	0.00～650.00s	0.00s	●
F08.12	PID feedback filter\ time	0.00～60.00s	0.00s	●
F08.13	PID output filter time	0.00～60.00s	0.00s	●
F08.14	reserve	-		●
F08.15	Proportional gain KP2	0.0～1000.0	20.0	●
F08.16	Integration time TI2	0.00s～10.00s (0.00s Integration invalid)	0.20s	●
F08.17	Differentiation time TD2	0.000s～10.000s	0.000s	●

F08.18	PID parameter switching condition	0: Do not switch 1: Switching through DI terminals 2: Automatically switch based on deviation 3: Automatically switch based on operating frequency	0	●
F08.19	PID parameter switching deviation 1	0.0% F08.20	20.0%	●
F08.20	PID parameter switching deviation 2	F08.19～100.0%	80.0%	●
F08.21	PID initial value	0.0%～100.0%	0.0%	●
F08.22	PID initial value holding time	0.00～650.00s	0.00s	●
F08.23	Maximum positive deviation between two outputs	0.00%～100.00%	1.00%	●
F08.24	Maximum reverse deviation between two outputs	0.00%～100.00%	1.00%	●
F08.25	PID integral attribute	One digit：Integration divide 0：invalid 1：valid Ten digit：whether stop the integration output reaches the limit value 0：keep integration 1：stop integration	00	●

F08.26	PID feedback loss detection value	0.0%：No judge feedback loss 0.1% ～ 100.0%	0.0%	●
F08.27	PID feedback loss detection time	0.0s ～ 20.0s	0.0s	●
F08.28	PID stop operation	0：stop and no calculate 1：stop but keep calculate	0	●

F09 group．Communication data

Code	Code name	Set range	value	attribute
F09.00	Baud rate	0：300bps 1：600bps 2：1200bps 3：2400bps 4：4800bps 5：9600bps 6：19200bps 7：38400bps 8：57600bps 9：115200bps	5	●
F09.01	MODBUS data format	0：No verification (8-N-2) 1：Even parity(8-E-1) 2：Odd parity (8-O-1) 3：No verification (8-N-1)	3	●
F09.02	Local address	0：Broadcast address 1～247	1	●
F09.03	MODBUS response delay	0～20ms	2	●
F09.04	communication interrupt detection time	0.0：invalid 0.1 ～ 60.0s	0.0	●

F09.05	MODBUS Data protocol	0：Non standard MODBUS 1：Standard MODBUS	1	●
F09.06	reading current resolution	0：0.01A	0	●
F09.07	Master or slave communication	0：slave 1：master	0	●
F09.08	master communication sending data	0：set frequency（P13.00） 1：output frequency（P13.01）	1	●
F09.09	Slave receiving ratio coefficient	0.00 ～ 300.00%	100.00	●

F10 group．Auxiliary functions

Code	Code name	Set range	value	attribute
F10.00	Jogging frequency	0.00Hz ~max frequency	2.00Hz	●
F10.01	Jog acceleration time	0.0s～6500.0s	20.0s	●
F10.02	Jog deceleration time	0.0s～6500.0s	20.0s	●
F10.03	Acceleration time 2	0.0s～6500.0s	Mode confirm	●
F10.04	Deceleration time 2	0.0s～6500.0s	Mode confirm	●
F10.05	Acceleration time 3	0.0s～6500.0s	Mode confirm	●
F10.06	Deceleration time 3	0.0s～6500.0s	Mode confirm	●
F10.07	Acceleration time 4	0.0s～6500.0s	Mode confirm	●
F10.08	Deceleration time 4	0.0s～6500.0s	Mode confirm	●
F10.09	Jump frequency 1	0.00Hz～max frequency	0.00Hz	●
F10.10	Jump frequency 2	0.00Hz～max frequency	0.00Hz	●
F10.11	Jump frequency range	0.00Hz～max frequency	0.01Hz	●

F10.12	Deadband time for forward and reverse rotation	0.0s～3000.0s	0.0s	●
F10.13	Reverse prohibition	0：invalid 1：valid	0	●
F10.14	Set the mode of frequency lower than limited	0：run as limit frequency 1：stop 2：run at “0” speed	0	●
F10.15	Droop frequency	0.00Hz～10.00Hz	0.00Hz	●
F10.16	Set cumulative power on arrival time	0h～65000h	0h	●
F10.17	Set cumulative operation arrival time	0h～65000h	0h	●
F10.18	Activate protection selection	0：no protection 1：protection	0	●
F10.19	Frequency detection value (FDT1)	0.00Hz～max frequency	50.00Hz	●
F10.20	Frequency detection lag rate 1	0.0%～100.0%（FDT1 current level）	5.0%	●
F10.21	Frequency reaches range	0.0% ~ 100.0% max frequency	0.0%	●
F10.22	Whether jump frequency valid when acceleration and deceleration	0：invalid 1：valid	0	●
F10.23	Set power on time to reach operation selection	0：no operation 1：operation	0	●
F10.24	Set running time to reach operation selection	0：no operation 1：operation	0	●
F10.25	Switching frequency points between acceleration time 1 and acceleration time 2	0.00Hz ~ max frequency	0.00Hz	●

F10.26	Switching frequency points between deceleration time 1 and deceleration time 2	0.00Hz ~ max frequency	0.00Hz	●
F10.27	Jog priority	0：invalid 1：valid	0	●
F10.28	Frequency detection value 2 (FDT2)	0.00Hz ~ max frequency	50.00Hz	●
F10.29	Frequency detection lag rate 2	0.0%～100.0%（FDT2 current level）	5.0%	●
F10.30	Any Arrival frequency detection value 1	0.00Hz ~ max frequency	50.00Hz	●
F10.31	Any arrival frequency detection range 1	0.0%～100.0% （max frequency）	0.0%	●
F10.32	Any Arrival frequency detection value 2	0.00Hz ~ max frequency	50.00Hz	●
F10.33	Any arrival frequency detection range 2	0.0%～100.0% （max frequency）	0.0%	●
F10.34	Zero current detection level	0.0%～300.0% （100.0% Corresponding motor rated current）	5.0%	●
F10.35	Zero current detection delay time	0.01s 600.00s	0.10s	●
F10.36	Output current exceeds the limit value	0.0%（no detection） 0.1% ～ 300.0% （motor rated current）	200.0%	●
F10.37	Delay time for detecting output current exceeding limit	0.00s～600.00s	0.00s	●
F10.38	Any Arrived at current 1	0.0%～300.0% (motor rated current)	100.0%	●
F10.39	Any Arrived at current 1 range	0.0%～300.0% (motor rated current)	0.0%	●

F10.40	Any Arrived at current 2	0.0%～300.0% (motor rated current)	100.0%	●
F10.41	Any Arrived at current 2 range	0.0%～300.0% (motor rated current)	0.0%	●
F10.42	Timing function selection	0: invalid 1: valid	0	○
F10.43	Timed running time selection	0：F10.44 set 1：AI1 2：AI2 3：reserve Analog input according to F10.44	0	○
F10.44	Timed running time	0.0Min～6500.0Min	0.0Min	○
F10.45	AI1 input voltage protection value lower limit	0.00V～F10.46	3.10V	●
F10.46	AI1 input voltage protection value upper limit	F10.45～11.00V	6.80V	●
F10.47	Module temperature reached	0℃～100℃	75℃	●
F10.48	Heat dissipation control	0：Fan running when operation 1：Fan running all the time	0	○
F10.49	Wake up frequency	Sleep frequency(F10.51) ~max frequency（F00.18)	0.00Hz	●
F10.50	Wake up delay time	0.0s～6500.0s	0.0s	●
F10.51	Sleep frequency	0.00Hz~wake up frequency（F10.49)	0.00Hz	●
F10.52	Sleep delay time	0.0s～6500.0s	0.0s	●

F10.53	arrival time of this operate	0.0～6500.0Min	0.0Min	○
F10.54	Output power correction factor	0.00%～200.0%	100.0%	●

F11 group．Fault and protection

Code	Code name	Set range	value	attribute
F11.00	Motor overload protection selection	0：Forbidden 1：Allow	0	●
F11.01	Motor overload protection gain	0.20～10.00	1.00	●
F11.02	Motor overload warning coefficient	50%～100%	80%	●
F11.03	Over voltage stall gain	0～100	30	●
F11.04	Over voltage stall protection voltage	200V~2000V	680V	○
F11.05	Over current stall gain	0～100	20	●
F11.06	Over current stall protection current	50%～200%	130%	●
F11.07	Selection of power on ground short circuit protection	0:invalid 1:valid	0	●
F11.08	Starting voltage of braking action	200.0～2000.0	690.0V	●
F11.09	amount of automatic fault resets	0～20	0	●
F11.10	Fault DO action selection during automatic fault reset	0：Action 1：No action	0	●
F11.11	Waiting time for automatic fault reset	0.1s～ 00.0s	1.0s	●

F11.12	Input phase loss /contactor protection selection	One digit: Input phase loss protection selection Ten digits: contactor protection selection 0: Forbidden 1: Allow	00	●
F11.13	Output phase loss protection selection	0: Forbidden 1: Allow	1	●
F11.14	Fault protection selection 1	One digit: Motor overload Ten digits: Input phase loss Hundred digit: Output phase loss Thousand digit: External fault Ten thousand digits: Communication abnormal 0: Free stop 1: Stop according to stop mode 2: Continue running	00000	●
F11.15	Fault protection selection 2	One digit: Encoder/PG card abnormal 0: Free stop Ten digit: abnormal reading and writing of function code 0: Free stop 1: Stop according to stop mod Hundred digits: reserved Thousand digits: motor overheating 10000 units: running time has reached	00000	●

F11.16	Fault protection selection 3	One digit: User defined fault 1 Ten digit: User defined fault 2 Hundreds digit: Power on time has arrived 0: Free stop 1: Stop according to stop mode 2: Continue running Thousand digit: Load drop 0: Free stop 1: Slow down to stop 2: Jump directly to 7% of the rated frequency of the motor to continue running, and automatically restore to the set frequency when there is no load shedding 10000 digit: PID feedback lost during runtime 0: Free stop 1: Stop according to stop mode 2: Continue running	00000	●
F11.17	Fault protection selection 4	One digit: Excessive speed deviation Ten digits: Motor Over speed Hundred digit: initial position error 0: Free stop 1: Stop according to stop mode	000	●

		2: Continue running		
F11.21	Frequency selection for continued operation in fault	0: Run at current frequency 1: Run at set frequency 2: Run at upper-limit frequency 3: Run at low-limit frequency 4: Run at abnormal standby frequency	0	●
F11.22	Abnormal standby frequency	0.0%～100.0%	100.0%	●
F11.23	Motor temperature sensor type	0：no temperature sensor 1：PT100 2：PT1000	0	●
F11.24	Motor overheat protection threshold	0℃～ 200℃	110℃	●
F11.25	Motor overheating warning threshold	0℃～ 200℃	90℃	●
F11.26	Instant power off and keep running function selection	0 :invalid 1: main cable voltage constant control 2 :slow down to stop	0	○
F11.27	Instant power off and voltage recovery range	80%～100%	85%	○
F11.28	judgment time of Instant power off till voltage recovery	0.0～100.0s	0.5s	○
F11.29	Instant power off and keep running voltage	60%～100%（main cable voltage）	80%	○
F11.30	Load drop protection selection	0：invalid 1：valid	0	●
F11.31	Load drop detection level	0.0～100.0%	10.0%	●
F11.32	Load drop detection time	0.0 60.0s	1.0s	●

F11.33	reserve			
F11.34	Over speed detection value	0.0%～ 50.0%	20.0%	●
F11.35	Over speed detection time	0.0s：no detection 0.1～60.0s	1.0s	●
F11.36	Excessive speed deviation detection value	0.0%～ 50.0%	20.0%	●
F11.37	Detection time for excessive speed deviation	0.0s：no detection 0.1～60.0s	5.0s	●
F11.38	Instant power off and keep running kp	0～100	40	●
F11.39	IInstant power off and keep running integration coefficient ki	0～00	30	●
F11.40	Instant power off and keep running deceleration time	0～300.0s	20.0s	●

F12 group．Keyboard and display

Code	Code name	Set range	value	attribute
F12.00	Digital tube missing picture inspection enable	0～1	0	**X**
F12.01	M. K-key function selection	0：M. K is invalid 1: Switching between keyboard and remote command channels 2: Forward and reverse switching 3: Forward jog 4: Reverse Jog	3	○
F12.02	STOP/RESET key	0: Only valid in keyboard operation mode	1	●

		1: Effective in any mode of operation		
F12.03	Run display Parameters 1	0000 ～ FFFF Bit00: operation frequency (Hz) Bit01: set frequency(Hz) Bit02: main cable voltage (V) Bit03: output voltage (V) Bit04: output current (A) Bit05: output power (kW) Bit06: output torque (%) Bit07: DI input status Bit08: DO output status Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: reserve Bit12: count value Bit13: length value Bit14: Load speed display Bit15: PID set	1F	●
F12.04	Run display Parameters 2	0000 ～ FFFF Bit00: PID feed back Bit01: PLC stage Bit02: PULSE input pulse frequency（kHz） Bit03: operation frequency 2（Hz） Bit04: operation time left Bit05: AI1 calibration front voltage(V) Bit06: AI2 calibration front voltage(V) Bit07: reserve Bit08: line speed Bit09: Current power on time (Hour) Bit10: Current running	0	●

		time (Min) Bit11: PULSE input pulse frequency (Hz) Bit12: Communication setting value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display		
F12.05	Stop display data	0000 ～ FFFF Bit00: set frequency（Hz） Bit01: main cable voltage (V) Bit02: DI input status Bit03: DO output status Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: reserve Bit07: count value Bit08: length value Bit09: PLC stage Bit10: load speed Bit11: PID set Bit12: PULSE input pulse frequency（kHz） Bit13: reserve Bit14: reserve Bit15: reserve	1	●
F12.06	Load speed display coefficient	0.0001～6.5000	3.0000	●
F12.07	Temperature of inverter radiator	-20℃～120℃	-	X

F12.08	Keyboard second line monitoring parameters	0～78（F13.00～F13.78）	4	●
F12.09	Total operation time	0h ～ 65535h	-	**X**
F12.10	Product name	S300A/S300b	-	**X**
F12.11	Software version	V1.00	-	**X**
F12.12	Load speed display decimal digit	One digit :F13.12 decimal point 0:0 decimal digit 1: 1 decimal digit 2: 2 decimal digit 3: 3 decimal digit Ten digits: F13.19/F13.29 Decimal point count 1: 1 decimal digit 2: 2 decimal digit	21	●
F12.13	Total power on time	0～65535 hours	-	**X**
F12.14	Total power usage	0～65535 degrees	-	**X**
F12.15	Performance temporary software version number			**X**
F12.16	Temporary software version number for functions			**X**

F13 group. Basic monitoring data

Code	Code name	Minimum unit
F13.00	Set frequency (Hz)	0.01Hz
F13.01	Operation frequency (Hz)	0.01Hz
F13.02	Main cable voltage (V)	0.1V
F13.03	Output voltage(V)	0.1V

F13.04	Output current(A)	0.01A
F13.05	Output current(%)	0.1%
F13.06	Output power (kW)	0.1kW
F13.07	Count value	1
F13.08	Length value	1
F13.09	AI1 voltage (V)	0.01V
F13.10	AI2 voltage（V）/ current（mA）	0.01V/0.01mA
F13.11	reserve	0.01V
F13.12	Load speed	1RPM
F13.13	DI input status	X5/X4/X3/X2/X1
F13.14	DO output status	R2/Y2/R1/Y1
F13.15	PID set	1
F13.16	PID feed back	1
F13.17	PLC stage	1
F13.18	Input pulse frequency (Hz)	0.01kHz
F13.19	Feedback speed (Hz)	0.01Hz
F13.20	Operation time left	0.1min
F13.21	AI1 calibration front voltage	0.001V
F13.22	AI2 calibration front voltage（V）/ current（mA）	0.001V/0.01mA
F13.23	Keyboard potentiometer calibration front voltage	0.001V
F13.24	Motor speed	1RPM
F13.25	Current power on time	1min
F13.26	Current operation time	0.1min
F13.27	input pulse frequency	1Hz
F13.28	Communication set value	0.01%
F13.29	Encoder feedback speed	0.01Hz
F13.30	Main frequency display	0.01Hz
F13.31	Auxiliary frequency display	0.01Hz
F13.32	View any memory address value	1

F13.33	reserve	
F13.34	Motor temperature value	1℃
F13.35	Target torque (%)	0.1%
F13.36	Rotation position	1
F13.37	Power factor angle	0.1°
F13.38	ABZ position	1
F13.39	V/F Separate target voltage	1V
F13.40	V/F Separate output voltage	1V
F13.41	DI display of input status	1
F13.42	DO display of output status	1
F13.43	DI display of functional status 1 (Function 01- Function 40)	1
F13.44	DI display of functional status 2 (Function 41- Function 80)	1
F13.45	Fault information	1
F13.46 ~F13.57	reserve	
F13.58	Z signal counter	1
F13.59	Set frequency (%)	0.01%
F13.60	Operation frequency (%)	0.01%
F13.61	Frequency status	1
F13.62	Current fault code	1
F13.63	Point to point master communication sends torque value	0.01%
F13.64	Amount of slave station	1
F13.65	Torque upper limit	0.1%
F13.66	Communication expansion card mode	reserve
F13.67	Communication expansion card version	Display range
F13.68	reserve	
F13.69	reserve	
F13.70	reserve	

F13.71	Communication card specific current display	Display range
F13.72	Communication card fault status	Display range
F13.73	Motor SN	0：motor 1 1：motor 2
F13.74	Motor actual output torque	-100.0%～100.0%

F14 group. Fault record

Code	Code name	Set range	value	attribute
F14.00	First fault type	0: No fault 1: Reserved 2: Accelerated over current 3: Deceleration over current 4: Constant speed over current 5: Accelerated over voltage 6: Deceleration over voltage 7:Constant speed over voltage 8: Buffer resistor overload 9: Lack voltage 10: Inverter overload 11: Motor overload 12: Input phase loss 13: Output phase loss 14: Module overheating 15: External faults 16:Communication abnormal 17:Contactor Abnormal 18:current detection abnormal 19: motor tuning abnormal 20: Encoder/PG card abnormal 21:parameter reading and	0	**X**
F14.01	Second fault type		0	**X**
F14.02	Third (recent) fault type		0	**X**

		writing abnormal 22:Inverter hardware abnormal 23: Motor short circuit to ground 24: Reserved 25: Reserved (motor Over heated) 26: Operation time arrived 27: User defined fault 1 28: User defined fault 2 29: Power on time has arrived 30: Load drop 31: PID feedback lost during runtime 40:current limit timeout 41:Switching motors during operation 42:Excessive speed deviation 43: Motor over speed 45:Motor over temperature 51: Initial position error 55:Slave fault during master slave control 60: Brake unit overload 63: SVC speed control stall		
F14.03	the third (recent) fault frequency	0.00HZ～655.35HZ	0.00HZ	**X**
F14.04	the third (recent) fault current	0.00A～655.35A	0.00A	**X**
F14.05	the third (recent) fault main cable voltage	0.0V～6553.5V	0.0V	**X**

F14.06	the third (recent) fault input terminal status	0～9999	0	X
F14.07	the third (recent) fault output terminal status	0～9999	0	X
F14.08	the third (recent) fault frequency status	0～65535	0	X
F14.09	the third (recent) fault power on time	0s～65535s	0s	X
F14.10	the third (recent) fault operation time	0.0s～6553.5s	0.0s	X
F14.11	Back electromotive force during the third (recent) fault	0.0V～6553.5V	0.0V	X
F14.12	the third fault temperature	0～200	℃	X
F14.13	the second fault frequency	0.00HZ～655.35HZ	0.00HZ	X
F14.14	the second fault current	0.00A～655.35A	0.00A	X
F14.15	the second fault main cable voltage	0.0V～6553.5V	0.0V	X
F14.16	the second fault input terminal status	0～9999	0	X
F14.17	the second fault output terminal status	0～9999	0	X

F14.18	the second fault input frequency status	0～65535	0	X
F14.19	the second fault power on time	0s～65535s	0s	X
F14.20	the second fault operation time	0.0s～6553.5s	0.0s	X
F14.21	Back electromotive force during the second fault	0.0V～6553.5V	0.0V	X
F14.22	the second fault temperature	0～200	℃	X
F14.23	the first fault frequency	0.00HZ～655.35HZ	0.00HZ	X
F14.24	The first fault current	0.00A～655.35A	0.00A	X
F14.25	the first fault main cable voltage	0.0V～6553.5V	0.0V	X
F14.26	the first fault input terminal status	0～9999	0	X
F14.27	the first fault output terminal status	0～9999	0	X
F14.28	the first fault input frequency status	0～65535	0	X
F14.29	the first fault power on time	0s～65535s	0s	X
F14.30	the first fault operation time	0.0s～6553.5s	0.0s	X

F14.31	Back electromotive force during the first fault	0.0V～6553.5V	0.0V	X
F14.32	the first fault temperature	0～200	℃	X

F16 group. Function code management

Code	Code name	Set range	value	attribute
F16.00	User password	0～65535	0	●
F16.01	Parameter initialization	0: No operation 01: Restore factory parameters, excluding motor parameters 02: Clearing Record Information 04: Backup user's current parameters 501: Restore user backup parameters	0	○
F16.04	Function code modification attributes	0：modify 1：no modify	0	●

F18 group. Swinging frequency, fixed length, and counting

Code	Code name	Set range	value	attribute
F18.00	Swing frequency setting method	0:Relative to center frequency 1:Relative to maximum frequency	0	●
F18.01	Swing frequency range	0.0%～100.0%	0.0%	●

F18.02	Jump frequency range	0.0%～50.0%	0.0%	●
F18.03	Swing frequency circle	0.1s～3000.0s	10.0s	●
F18.04	Swing frequency triangular wave rise time	0.1%～100.0%	50.0%	●
F18.05	Set length	0m～65535m	1000m	●
F18.06	Actual length	0m～65535m	0m	●
F18.07	Pulse count per meter	0.1～6553.5	100.0	●
F18.08	Set Count Values	1～65535	1000	●
F18.09	Specify the count value	1～65535	1000	●

F19 group．Torque control data

Code	Code name	Set range	value	attribute
F19.00	speed/torque control methods	0：speed control 1：torque control	0	○
F19.01	Selection of torque setting in torque control mode	0：value setting (F19.03) 1：AI1 2：AI2 3：reserve 4：PULSE 5：communication give 6：MIN(AI1,AI2) 7：MAX(AI1,AI2) （full range of options 1-7 corresponds to the F19.03 value setting）	0	○
F19.02	reserve			
F19.03	torque value setting in torque control mode	-200.0%～200.0%	150.0%	●
F19.04	Torque filtering	0.00s～10.00s	0.00	●
F19.05	Torque control	0.00Hz～max frequency	50.00Hz	●

	forward maximum frequency			
F19.06	Torque control reverse maximum frequency	0.00Hz～max frequency	50.00Hz	●
F19.07	Torque acceleration time	0.00s～650.00s	0.00s	●
F19.08	Torque deceleration time	0.00s 650.00s	0.00s	●

F20 group．Fictitious IO

Code	Code name	Set range	Value	attribute
F20.00	Fictitious VDI1 terminal function selection	0～59	0	○
F20.01	Fictitious VDI2 terminal function selection	0～59	0	○
F20.02	Fictitious VDI3 terminal function selection	0～59	0	○
F20.03	Fictitious VDI4 terminal function selection	0～59	0	○
F20.04	Fictitious VDI5 terminal function selection	0～59	0	○
F20.05	Fictitious VDI terminal status setting mode	One digit：fictitious VDI1 Ten digit：fictitious VDI2 Hundred digit：fictitious VDI3 1000 digit：Fictitious VDI4	00000	○

		10000 digit：Fictitious VDI5 0: Whether VDI is valid is determined by the VDOx status 1: Set VDI validity by F20.06		
F20.06	Fictitious VDI terminal status setting	One digit：fictitious VDI1 Ten digit：fictitious VDI2 Hundred digit：fictitious VDI3 1000 digit：Fictitious VDI4 10000 digit：Fictitious VDI5 0：invalid 1：valid	00000	●
F20.07	AI1 input terminal play as DI function	0～59	0	○
F20.08	AI2 input terminal play as DI function	0～59	0	○
F20.09	reserve	0～59	0	○
F20.10	Enable AI1 input terminal play as DI function	One digit：AI1 Ten digit：AI2 hundred：reserve 0：high current level valid 1：low current level valid	000	○
F20.11	Fictitious VDO1 output function selection	0：short circuit to DIx 1~41:See F06 group physical DO function	0	●
F20.12	Fictitious VDO2 output function selection	0：short circuit to DIx 1~41:See F06 group physical DO function	0	●

F20.13	Fictitious VDO3 output function selection	0：short circuit to DIx 1~41:See F06 group physical DO function	0	●
F20.14	Fictitious VDO4 output function selection	0：short circuit to DIx 1~41:See F06 group physical DO function	0	●
F20.15	Fictitious VDO5 output function selection	0：short circuit to DIx 1~41:See F06 group physical DO function	0	●
F20.16	VDO1 output delay time	0.0s～3600.0s	0.0s	●
F20.17	VDO2 output delay time	0.0s～3600.0s	0.0s	●
F20.18	VDO3 output delay time	0.0s～3600.0s	0.0s	●
F20.19	VDO4 output delay time	0.0s～3600.0s	0.0s	●
F20.20	VDO5 output delay time	0.0s～3600.0s	0.0s	●
F20.21	Enable VDO output terminal	One digit：VDO1 Ten digit：VDO2 Hundred digit：VDO3 1000 digit：VDO4 10000 digit：VDO5 0: Positive logic 1: Anti logic	00000	●

F21 group. The second motor data

Code	Code name	Set range	Value	attribute
F21.00	Motor type selection	0: Ordinary asynchronous motor 1: Variable frequency asynchronous motor	0	O
F21.01	Rated power of motor	0.1kW～1000.0kW	Mode confirm	O
F21.02	Rated voltage of motor	1V～2000V	Mode confirm	O
F21.03	Motor rated current	0.01A～655.35A	Mode confirm	O
F21.04	Rated frequency of motor	0.01Hz～max frequency	Mode confirm	O
F21.05	Rated motor speed	1rpm～65535rpm	Mode confirm	O
F21.06	Asynchronous motor stator resistance	0.001Ω～65.535Ω	Mode confirm	O
F21.07	Asynchronous motor rotor resistance	0.001Ω～65.535Ω	Mode confirm	O
F21.08	Asynchronous motor leakage reactance	0.01mH～655.35mH	Mode confirm	O
F21.09	Asynchronous motor mutual inductance reactance	0.1mH～6553.5mH	Mode confirm	O
F21.10	Asynchronous motor no-load current	0.01A～P21.03	Mode confirm	O
F21.27	Number of encoder lines	1～65535	1024	O

F21.28	Encoder type	0: ABZ incremental encoder 1: UVW incremental encoder 2: Rotating Transformer 3: Sine cosine encoder 4: save line UVW encoder	0	O
F21.29	Speed feedback PG selection	0：local PG 1：expansion PG 2：input pulse（X5）	0	O
F21.30	ABZ encoder AB phase sequence	0：forward 1：reverse	0	O
F21.31	Encoder installation angle	0.0～359.9°	0.0°	O
F21.32	UVW encoder UVW phase sequence	0：forward 1：reverse	0	O
F21.33	UVW encoder bias angle	0.0～359.9°	0.0°	O
F21.34	Number of pole pairs for rotary transformers	1～65535	1	O
F21.35	reserve			○
F21.36	Speed feedback PG disconnection detection time	0.0s：no operation 0.1s～10.0s	0.0s	O
F21.37	Tune selection	0: No operation 1: Asynchronous machine static tuning 1 2: Asynchronous machine dynamic tuning 3: Asynchronous machine	0	O

		static tuning 2		
F21.38	Speed loop proportional gain 1	1～100	30	●
F21.39	Speed loop integration time 1	0.01s～10.00s	0.50s	●
F21.40	Switching frequency 1	0.00Hz～F21.43	5.00Hz	●
F21.41	Speed loop proportional gain 2	1～100	20	●
F21.42	Speed loop integration time 2	0.01s～10.00s	1.00s	●
F21.43	Switching frequency 2	F21.40～max frequecny F00.18	10.00Hz	●
F21.44	Vector control rotation deviation gain	50%～200%	100%	●
F21.45	Speed loop filtering time constant	0.000～1.000s	0.050	●
F21.46	Vector control Over excitation gain	0～200	64	●
F21.47	Torque upper limit source under speed control mode (electric)	0：F21.48 set 1：AI1 2：AI2 3：reserve 4：PULSE 5：communication give 6：MIN(AI1,AI2) 7：MAX(AI1,AI2) The full range of options 1-7 corresponds to the F21.48 digital setting	0	●

F21.48	Torque upper limit digital setting under speed control mode (electric)	0.0%～200.0%	150%	●
F21.49	Torque upper limit source under speed control mode (power generation)	0：F21.50 set 1：AI1 2：AI2 3：reserve 4：PULSE 5：communication give 6：MIN(AI1,AI2) 7：MAX(AI1,AI2) The full range of options 1-7 corresponds to the F21.50 digital setting	0	●
F21.50	Torque upper limit digital setting under speed control mode (power generation)	0.0%～200.0%	150%	●
F21.51	Excitation regulation proportional gain	0～60000	2000	●
F21.52	Excitation regulation integral gain	0～60000	1300	●
F21.53	Torque regulation proportional gain	0～60000	2000	●
F21.54	Torque regulation integral gain	0～60000	1300	●
F21.55	Speed loop integral attribute	0：invalid 1：valid	0	●

F21.56	weak magnetic mode in vector mode	0：no enable 1：deceleration enable 2：Constant speed and deceleration enable	0	●
F21.57	Over modulation enable selection	0：invalid 1：valid	0	●
F21.58	Over modulation coefficient	100～110	105	●
F21.59	Maximum torque coefficient in weak magnetic zone	50～200%	100%	●
F21.60	Power generation torque enable under speed mode	0：invalid 1：valid	0	●
F21.61	Motor 2 control mode	0：peed sensorless vector control (SVC) 2: VF control	2	○
F21.62	Motor 2 acceleration and deceleration time selection	0: Same as the first motor 1: Acceleration and deceleration time 1 2: Acceleration and deceleration time 2 3: Acceleration and deceleration time 3 4: Acceleration and deceleration time 4	0	●

F21.63	Motor 2 torque increase	0.0%：Automatic torque increase 0.1%～30.0%	Mode confirm	●
F21.64	reserve			
F21.65	Motor 2 oscillation suppression gain	0～100	Mode confirm	●

F22 group．Control optimization parameters

Code	Code name	Set range	value	attribute
F22.00	DPWM switching upper limit frequency	5.00Hz～max frequency	8.00Hz	●
F22.01	PWM modulation method	0: Asynchronous modulation 1: Synchronous modulation	0	●
F22.02	Deadband compensation mode selection	0: No compensation 1: Compensation mode 1	1	●
F22.03	Random PWM depth	0: Random PWM invalid 1-10: PWM carrier frequency random depth	0	●
F22.04	Fast current limiting enable	0: No enabled 1: Enable	1	●
F22.05	Current detection compensation	0～100	0	×
F22.06	Undervoltage point setting	200.0V～2000.0V	350.0V	●
F22.07	SVC optimization selection mode	1: Optimization Mode 1 2: Optimization Mode 2	2	●

F22.08	Deadband time adjustment	100%～200%	150%	○
F22.09	Overvoltage point setting	200.0V～2200.0V	810.0V	○

F23 group. AI curve setting

Code	Code name	Set range	value	attribute
F23.00	AI curve 4 minimum input	-10.00V ～ F23.02	0.00V	●
F23.01	AI curve 4 minimum input corresponding setting	-100.0% ～ +100.0%	0.0%	●
F23.02	AI curve 4 inflection point 1 input	F23.00 ～ F23.04	3.00V	●
F23.03	AI curve 4 inflection point 1 input corresponding setting	-100.0% ～ +100.0%	30.0%	●
F23.04	AI curve 4 inflection point 2 input	F23.02 ～ F23.06	6.00V	●
F23.05	AI curve 4 inflection point 2 input corresponding setting	-100.0% ～ +100.0%	60.0%	●
F23.06	AI curve 4 maximum input	F23.04～+10.00V	10.00V	●
F23.07	AI curve 4 maximum input corresponding setting	-100.0%～+100.0%	100.0%	●
F23.08	AI curve 5 minimum input	-10.00V～F23.10	-10.00V	●

F23.09	AI curve 5 minimum input corresponding setting	-100.0%～+100.0%	-100.0%	●
F23.10	AI curve 5 inflection point 1 input	F23.08～F23.12	-3.00V	●
F23.11	AI curve 5 inflection point 1 input corresponding setting	-100.0%～+100.0%	-30.0%	●
F23.12	AI curve 5 inflection point 2 input	F23.10～F23.14	3.00V	●
F23.13	AI curve 5 inflection point 2 input corresponding setting	-100.0%～+100.0%	30.0%	●
F23.14	AI curve 5 maximum input	F23.12～+10.00V	10.00V	●
F23.15	AI curve 5 maximum input corresponding setting	-100.0%～+100.0%	100.0%	●
F23.24	AI1 Setting Jump Points	-100.0% ～ 100.0%	0.0%	●
F23.25	AI1 Set Jump Range	0.0% ～ 100.0%	0.5%	●
F23.26	AI2 Setting Jump Points	-100.0% ～ 100.0%	0.0%	●
F23.27	AI2 Set Jump Range	0.0% ～ 100.0%	0.5%	●
F23.28	reserve			
F23.29	reserve			

Chapter 6 Fault Diagnosis and Troubleshooting

6.1 Fault alarm and countermeasures

The SK300 series VFD provides dozens of alarm information and protection functions. Once a fault occurs, the protection function will acts, stop output, fault relay R1 acts, fault code is displayed on the panel. When users encounter malfunctions ,we can first refer to Table 6-1 for self inspection, analyze the cause of the malfunction, and quickly find a solution. If the problem still cannot be solved, please contact the agent of the frequency converter or our company.

Attention: If a malfunction occurs and the motor is rotating, it will slowdown freely until it stop.

table 6-1 VFD self inspection

Fault code	Fault description	Fault reason	Solution measures
-E.02-	Accelerated overcurrent	There is grounding or short circuit in the output circuit of the VFD	Eliminate peripheral faults and check if there is a short circuit in motor or contactor.
		Control method set FVC or SVC without parameter identification first	Set motor parameters according to the motor nameplate for motor parameter identification
		Under rapid acceleration mode, acceleration time set too short	Increase acceleration time
		Inappropriate setting for over current stall	Confirm that the overcurrent stall

		suppression	suppression function is enabled; The current setting value for overcurrent stall action is too high, adjust it within 120% to 150%; The gain setting for overcurrent stall suppression is too small,adjust within 20-40
		Manual torque increase or unsuitable V/F curve	Adjust manual torque increase or V/F curve
		Start again to a motor that have rotated already	Select speed tracking to start or wait for the motor to stop before starting again
		Affected by external interference	Check the historical fault records. If the current value did not reach the overcurrent point value at the time of the fault, it is necessary to search for the interference source. If there are no other interference sources, it may be a problem with the driver board or Hall device

-E.03-	Deceleration overcurrent	There is grounding or short circuit in the output circuit of the VFD	Eliminate peripheral faults and check if there is a short circuit in motor or contactor.
		Control method set FVC or SVC without parameter identification first	Set motor parameters according to the motor nameplate for motor parameter identification
		Under rapid Deceleration mode, acceleration time set too short	Increase Deceleration time
		Inappropriate setting for over current stall suppression	Confirm that the overcurrent stall suppression function is enabled; The current setting value for overcurrent stall action is too high, adjust it within 120% to 150%; The gain setting for overcurrent stall suppression is too small,adjust within 20-40
		No brake unit or brake resistor installed	Installing brake units and resistors
		Affected by external interference	Check the historical fault records. If the current value did not reach the

			overcurrent point value at the time of the fault, it is necessary to search for the interference source. If there are no other interference sources, it may be a problem with the driver board or Hall device
-E.04-	Constant speed overcurrent	There is grounding or short circuit in the output circuit of the VFD	Eliminate peripheral faults and check if there is a short circuit in motor or contactor.
		Control method set FVC or SVC without parameter identification first	Set motor parameters according to the motor nameplate for motor parameter identification
		Under rapid Deceleration mode, acceleration time set too short	Increase Deceleration time
		Inappropriate setting for overcurrent stall suppression	Confirm that the overcurrent stall suppression function is enabled; The current setting value for overcurrent stall action is too high, adjust it within 120% to 150%;

			The gain setting for overcurrent stall suppression is too small,adjust within 20-40
		The selection of VFD power mode is too small	Eliminate peripheral faults and check if there is a short circuit in motor or contactor
		Affected by external interference	Check the historical fault records. If the current value did not reach the overcurrent point value at the time of the fault, it is necessary to search for the interference source. If there are no other interference sources, it may be a problem with the driver board or Hall device
-E.05-	Accelerated overvoltage	Input voltage is too high	Adjust the voltage to the normal range
		During the acceleration process, there is an external force that drives the motor to run	Cancel additional power or install brake resistors
		Inappropriate overvoltage suppression setting	Confirm that the overvoltage suppression

			function is enabled; The overvoltage suppression action voltage setting value is too large, adjust within 770V-700V; The overvoltage suppression gain setting is too small, adjust within 30-50
		No brake unit or brake resistor installed	Installing brake units and resistors
		The acceleration time is too short	Increase acceleration time
-E.06-	Deceleration overvoltage	During the deceleration process, there is an external force that drives the motor to run	Cancel additional power or install brake resistors
		Inappropriate overvoltage suppression setting	Confirm that the overvoltage suppression function is enabled; The overvoltage suppression action voltage setting value is too large, adjust within 770V-700V; The overvoltage suppression gain setting is too small, adjust within 30-50
		The deceleration time is too short	Increase deceleration time

		No brake unit or brake resistor installed	Installing brake units and resistors
-E.07-	Constant speed overvoltage	Inappropriate overvoltage suppression setting	Confirm that the overvoltage suppression function is enabled; The overvoltage suppression action voltage setting value is too large, it is recommended to adjust within 770V-700V; The overvoltage suppression gain setting is too small, adjust within 30-50; The maximum rise frequency setting for overvoltage suppression is too small, and adjust within 5-20Hz
		During the process, there is an external force that drives the motor to run	Cancel additional power or install brake resistors
-E.08-	Buffer resistor overload	The main cables voltage fluctuates up and down at the undervoltage point	Seeking technical support
-E.09-	Under voltage	Instant power off	Enable the function of Instant power off and keep running to prevent fault of under voltage

		The input voltage of the frequency converter is not within the specification requirements	Adjust the voltage to the normal range
		Abnormal main cable voltage	Seeking technical support
		Rectifier bridge Buffer resistor Power supply board Control board abnormality	Seeking technical support
-E.10-	Inverter overload	load too large or motor blockage	Reduce the load and check the motor and mechanical condition
		frequency converters power is too small	Choice bigger VFD
-E.11-	Motor overload	Check if motor protection parameters appropriate	Set this parameter correctly
		load too large or motor blockage	Reduce the load and check the motor and mechanical condition
-E.12-	Input phase loss	Abnormal three-phase input power supply	Check and troubleshoot issues in peripheral circuits
		Power board lightning protection board main control board abnormal	Seeking technical support

-E.13-	Output phase loss	Motor malfunction	Check if the motor is open circuit
		The cable from VFD to the motor is abnormal	Troubleshooting peripheral faults
		The three-phase output of VFD is unbalanced during motor running	Check if the three-phase winding of the motor is normal and troubleshoot
		Driver board IGBT abnormal	Seeking technical support
-E.14-	Module overheating	Excessive ambient temperature	Reduce ambient temperature
		Air duct blockage	Cleaning the air duct
		Fan damage	Replace fan
		Damaged thermistor	Replace the thermistor
-E.15-	External faults	Input external fault signals through multifunctional terminal D	Troubleshooting peripheral faults, confirming mechanical restart allowed, resetting operation
		Input external fault signals through virtual IO function	Confirm that the virtual IO group parameters are set correctly, reset and run
-E.16-	Communication abnormal	The upper controller is not working properly	Check the wiring of upper controller
		communication cable incorrect	Check communicate cable
		Incorrect communication	Correctly set the

		expansion card settings	communication expansion card type
		Incorrect communication parameter group settings	Set communication parameters correctly
		After the above tests, you can try to restore the factory settings	
-E.17-	Contactor abnormal	Abnormal power board and driver board	Replacing the power or driver board
		Abnormal contactor	Replace the contactor
-E.18-	Abnormal current detection	Check for abnormalities in Hall devices	Replace new hall .
		Abnormal power or driver board	Replace new board
-E.19-	Abnormal motor tuning	Motor parameters not set according to nameplate	Adjust as nameplate
		Parameter identification process timeout	Check the cable between VFD and motor
		Encoder abnormality	Check if the number of encoder lines is set correctly; Check if the signal cable connection of the encoder is correct and secure
-E.20-	Encoder/PG abnormal	Encoder model mismatch	Set the encoder type correctly according to the actual situation

		Encoder connection error	Detecting PG card power supply and phase sequence
		Encoder damaged	Replacing the encoder
		PG card abnormality	Replace PG card
-E.21-	Abnormal parameter reading and writing	EEPRROM chip damaged	Replace the main control board
-E.22-	Inverter hardware abnormal	Over voltage present	Handle as over voltage fault
		Over current present	Handle according to over current fault
-E.23-	Motor short circuit to ground	Motor short circuit to ground	Replacing cables or motors
-E.24-	reserve		Seeking technical support
-E.25-	reserve		Reset operation
-E.26-	Operation time arrived	Total running time reaches the set value	Reset operation
-E.27-	User defined fault 1	Input user-defined fault 1 signal through multifunctional terminal DI	Reset operation
		Input user-defined fault 1 signal through virtual IO function	Reset operation
-E.28-	User defined fault 2	Input user-defined fault 2 signal through	Replacing cables or motors

		multifunctional segment DI	
		Input user-defined fault 2 signal through virtual IO function	Seeking technical support
-E.29-	Power on time has arrived	Total power on time reaches the set value	Seeking technical support
-E.30-	Load drop	The operating current of the frequency converter is less than the load drop detection	Confirm whether the load is detached or whether the parameter settings comply with the actual operating conditions
-E.31-	Lost PID feedback during runtime	PID feedback is smaller than the set value	Detect PID feedback signal or set it to an appropriate value
-E.40-	Fast current limited timeout	load too large or motor blockage	Reduce the load and check the motor and mechanical condition
		The selection of frequency converters is too small	Choose a frequency converter with a higher power level
-E.41-	Switching motors during operation	Change the current motor selection through terminals during the operation of the frequency converter	Perform motor switching operation after the frequency converter is shut down
-E.42-	Excessive speed deviation	Encoder parameter settings incorrect	Correctly setting encoder parameters
		No parameter self	Perform self

		identification	identification of motor parameters
		The speed deviation is too large, and the detection parameter settings are unreasonable	Reasonably set detection parameters based on actual situations
-E.43-	Motor overspeed	Encoder parameter settings incorrect	Correctly setting encoder parameters
		No parameter self identification was performed	Perform self identification of motor parameters
		The speed deviation is too large, and the detection parameter settings are unreasonable	Reasonably set detection parameters based on actual situations
-E.45-	Motor over temperature	Loose wiring of temperature sensor	Check the wiring of the temperature sensor and troubleshoot the issue
		Motor temperature too high	Improve the carrier wave or take other heat dissipation measures to dissipate heat from the motor
-E.51-	Initial position error	Frequency converter output phase loss	Check motor wires and troubleshoot
		Frequency converter current detection fault or Hall damage	Check Hall and troubleshoot

		The motor inductance value is too high	Mask this fault through function code P11.17
-E.55-	Slave fault during master slave control	The slave has malfunctioned, check the slave	Troubleshooting according to slave fault codes

6.2 Fault Record Query

The SK300 series VFD provides the function of recording the latest three fault record. You can query the latest fault code, the second to last fault code, the third to last fault code, output frequency, output current, and main cable voltage of the VFD by checking the parameters in group P14.xx. It can provide reference record for users to diagnose and solve faults.

6.3 Fault reset

When a fault occurs in the SK300 series VFD, if you want to exit the fault alarm status, you can reset the fault by pressing the STOP button after troubleshooting the cause of the fault; If the fault is not cleared, the VFD will continue remain in the fault status, and the keyboard and digital display will continue to display fault codes.

Chapter 7 Explanation of Optional

7.1 Selection instructions for brake resistors

The SK300 series VFD with a power output of 22KW or less all provides a built-in brake unit. Users can choose different braking resistance values and power according to their actual situation, but the resistance value cannot be less than the recommended value in the table. The braking resistance power can be selected larger. The selection of braking resistor needs to be determined based on the power generated by the motor in the actual application system, which is related to system inertia, deceleration time, load energy, etc. Users should choose according to their actual situation. The larger the system inertia, the shorter the required deceleration time, and the more frequent the braking, the greater the power and lower the resistance value that the braking resistor needs to choose.

VFD mode	Power braking resistor	resistance value for braking resistor	brake unit
SK300-3T0.75GB/1.5PB	150W	≥300Ω	Standard built-in
SK300-3T1.5GB/2.2PB	150W	≥220Ω	Standard built-in
SK300-3T2.2GB/4.0PB	250W	≥200Ω	Standard built-in
SK300-3T4.0GB/5.5PB	300W	≥130Ω	Standard built-in
SK300-3T5.5GB/7.5PB	400W	≥90Ω	Standard built-in
SK300-3T7.5GB/11PB	500W	≥65Ω	Standard built-in
SK300-3T11GB/15PB	800W	≥43Ω	Standard built-in
SK300-3T15GB/18.5PB	1000W	≥32Ω	Standard built-in
SK300-3T18.5GB/22PB	1300W	≥25Ω	Standard built-in
SK300-3T22GB/30PB	1500W	≥22Ω	Standard built-in

SK300-3T30(B)/37P(B)	2500W	≥16Ω	Built in optional
SK300-3T37G(B)/45P(B)	3.7KW	≥12.6Ω	Built in optional
SK300-3T45G(B)/55P(B)	4.5KW	≥9.4Ω	External
SK300-3T55G(B)/75P(B)	5.5KW	≥9.4Ω	External
SK300-3T75G(B)/90P(B)	7.5KW	≥6.3Ω	External
SK300-3T90G/110P	4.5KW*2	≥9.4Ω*2	External
SK300-3T110G/132P	5.5KW*2	≥9.4Ω*2	External
SK300-3T132G/160P	6.5KW*2	≥6.3Ω*2	External
SK300-3T160G/185P	16KW	≥6.3Ω*2	External
SK300-3T185G/200P	20KW	≥2.5Ω	External
SK300-3T200G/220P	20KW	≥2.5Ω	External
SK300-3T220G/250P	22KW	≥2.5Ω	External
SK300-3T250G/280P	12.5KW*2	≥2.5Ω*2	External
SK300-3T280G/315P	14KW*2	≥2.5Ω*2	External
SK300-3T315G/355P	16KW*2	≥2.5Ω*2	External
SK300-3T355G/400P	17KW*2	≥2.5Ω*2	External
SK300-3T400G/450P	14KW*3	≥2.5Ω*3	External

Appendix A ModBus Communication Protocol

1 Overview

The SK300 series VFD provides RS485 serial communication port that adopts MODBUS protocol. Users can achieve centralized control through computers or PLC, set operating commands , modify or read function code parameters, read the working status and fault data of SK300 VFD. And it can serve as a master, facilitating users to synchronize the operation of multiple frequency converters.。

2 Serial Port Data Format

Users can set parameters through the communication function group parameters.

Local address: can be set to 1-247 (cannot conflict with other devices in the communication network), when adress station = O, it is the broadcast address

Communication baud rate: can be selected as 4800, 9600, 19200, or 38400bps.

Communication format: can be selected as 1+8+1 without verification;

Even check 1+8+1+1;

Odd check 1+8+1+1;

Master slave communication method: we can choice master or slave.

3 Protocol frame format

Frame start ≥ 3.5 Character time interval	Slave address (1byte)	Code (1byte)	data (Nbyte)	CRC16 (2byte)	Frame end ≥ 3.5 Character time interval

4 Communication register address range

name	adress	description
Read code	0000H～1FFFH（F00～F26）	Read address，F00.10： 000AH
Write code	0000H~1FFFH(F00~F26)	Write and save ROM address，00~1FH
	2000H~3FFFH	Write or not save RAM address，

		+2000H
Control command	4000H	00H: Invalid instruction 01H: Forward rotation instruction 02H: Reverse instruction 03H: JOG forward rotation 04H: JOG reversal 05H: Slave stop 06H: Slow down stop 07H: Free stop 08H: Fault reset
	4001H	BIT0:DO1 output control BIT1:reserve BIT2:R1 output control BIT3:reserve BIT4:reserve BIT5:VDO1 BIT6:VDO2 BIT7:VDO3 BIT8:VDO4 BIT9:VDO5
	4002H	Analog output A01 control: 0-7FFF represents 0-100%
	4003H	Analog output AO2 control: 0-7FFF represents 0-100%
	4004H	reserve
Operation status	4100H	0000H: Frequency converter stop 0002H: Forward running 0003H: Reverse running
Communication settings	5000H	Communication setting value (decimal) -10000~10000
	5001H	Operation frequency
	5002H	Main cable voltage
	5003H	Output voltage
	5004H	Output current
	5005H	Output power
	5006H	Output torque

	5007H	Operation speed
	5008H	DI input status
	5009H	DO output status
	500AH	AI1 voltage
	500BH	AI2 voltage
	500CH	reserve
	500DH	Counting value input
	500EH	Length value input
	500FH	Load speed
	5010H	PID set
	5011H	PID feedback
	5012H	PLC step
	5013H	PULSE input pulse frequency，unit: 0.01kHZ
	5014H	Feedback speed，unit 0.1Hz
	5015H	Operation time left
	5016H	AI1 calibration front voltage
	5017H	AI2 calibration front voltage
	5018H	reserve
	5019H	Line speed
	501AH	Current power on time
	501BH	Current running time
	501CH	PULSE input pulse frequency, unit: 1Hz
	501DH	Communication settings
	501EH	Actual feedback speed
	501FH	Main frequency X display
	5020H	Auxiliary frequency Y display
Fault data	8000H	0000: No fault 0001: Reserved 0002: Acceleration over current 0003: Deceleration over current 0004: Constant speed over current 0005: Acceleration over voltage 0006: Deceleration over voltage 0007: Constant speed over voltage

		0008: Buffer resistor overload 0009: main cable lack voltage fault 000A: Inverter overload 000B: Motor overload 000C: Input side phase loss 000D: Output side phase loss 000E: Module overheating fault 000F: External fault 0010: Communication fault 0011: Contactor malfunction 0012: Current detection fault 0013: Motor self-learning fault 0014: Reserved 0015: EEPROM operation fault 0016: Inverter hardware fault 0017: Motor short circuit to ground fault 0018: Reserved 0019: Reserved 001A: Run time arrived 001B: User defined fault 1 001C: User defined fault 2 001D: Power on time has arrived 001E: Load drop 001F: PID feedback lost during runtime 0028: Fast current limiting timeout fault 0029: running cut-off due to motor fault 002A: Excessive speed deviation 002B: Motor over speed 002D: Motor over temperature 005A: Reserved 005B: Reserved 005C: Initial position error 005E: Speed feedback error

	8001H	0000: No fault 0001: Password error 0002: Command code error 0003: CRC verification error 0004: Invalid address 0005: Invalid parameter 0006: Invalid parameter modify 0007: System lock 0008: EEPROM operation in progress

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