Simphoenix

DX100 Series

Vector Control Universal Inverter

User Manual

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✧ Forward

Thank you for selecting DX100 series open-loop vector inverters manufactured by Simphoenix.

This manual is simple version of the user manual of DX100 series open-loop vector inverters. It provides you with relevant details and precautions concerning installation, wiring, functional parameters, routine maintenance and troubleshooting of DX100 series inverter.

In order to use this series of inverters correctly, give full play to the excellent performance of the product and ensure the safety of users and equipment, please read this manual carefully before using the DX100 series inverters. Improper use may cause abnormal operation, failure or reduced service life of the inverter and even cause equipment damage, personal injury and other accidents.

This user manual is a random attachment. Please keep it properly for future overhauling and maintaining of the inverter.

Due to our commitment to continuous product improvement, the information provided by our company is subject to change without notice.

Simphoenix

User Manual of DX100 Series Open-Loop Vector Inverters (simple version)

Version: V1.2

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Contents

Chapter 1 Product Confirmation And Operation Precautions

1.1. Product confirmation

Check the outer packing carefully to see if there is any damage after the arrival of the goods. if there is a label on the outer packing, please confirm the model and specification of it to see if they are in accordance with your order. If any damage or discrepancy is found, please contact the supplier promptly for solution.

1.1.1. Precautions of unpacking inspection

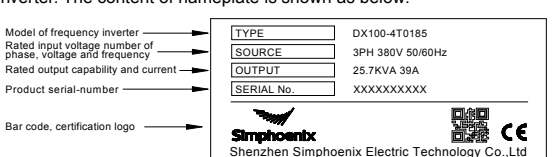
Confirm the frequency inverter body and accessories carefully when unpacking, to see if there is any damage during the transit, and if the parts and components are damaged or dropped, and if there is the frequency inverter entity and the following accessories:

1) Operation instruction;
2) Certification;
3) Product list;
4) Other ordered accessories.

If there is any omission or damage, please contract the supplier promptly for solution.

- Nameplate of Frequency Inverter

On the frequency inverter, there is a nameplate marked with model, rated parameters, product serial-number and bar code of frequency inverter. The content of nameplate is shown as below:



1.2. Safety precautions

Read this instruction carefully prior to installation, wiring, operation and maintenance, to ensure proper operation of this product. "Tip", "Attention", "Danger" and "Warning" in this operation manual are defined as follows:

"Tip" : Tips for some useful information.

"Attention" : Matter requires attention during operation.

"Warning": Without operation according to the requirements, moderate injuries or minor injuries of personnel and material loss may be caused.

"Danger" : Without operation according to the requirements, serious damage to the equipment or personnel injuries may be caused.

1.2.1. Installation precautions

1. The frequency inverter shall not be installed on combustibles, in case of the risk of fire.
2. The frequency inverter shall not be installed at places with direct sunlight, in case of danger.
3. The frequency inverter of this series shall not be installed in the environment of explosive gases, in case of the danger of explosion.
4. Frequency inverter with damage or lack of components shall not be applied; otherwise it may cause personal injury or fire and other accidents.
5. It is not allowed to dismount or modified the frequency inverter without authorization.
6. No foreign matter is allowed to be dropped into the frequency inverter, in case of breakdown of the frequency inverter.
7. During installation, the frequency inverter shall be installed at the place able to bear its weight; otherwise, it may fall down.

1.2.2. Safety precautions for wiring

1. Please authorize the professional staff to conduct wiring. If the wiring operation is not proper, it may damage to the equipment and the individuals.
2. Please start to wire after the panel digital tube of frequency inverter is out for ten minutes, otherwise, there can be electric shock risk.
3. The grounding terminal of frequency inverter must be reliably grounded; otherwise, there can be electric shock risk.
4. It is forbidden to reversely connect the live wire and the neutral wire, otherwise there will be hidden dangers in electricity safety.

5. No alternating current power supply is allowed to be connected onto the U, V, W of frequency inverter, otherwise, the frequency inverter can be damaged.
6. Confirm that the input voltage and frequency converter are in consistent with rated voltage value; otherwise, the frequency inverter may be damaged.
7. Confirm that the motor and frequency converter are adaptive with each other, otherwise, the motor can be damaged or frequency converter protection can be caused.
8. Brake resistor can not be connected onto the (+), (-) of DC bus directly; otherwise, there can be fire risk.
9. Inverter leakage current may be greater than 3.5 mA. Make sure that the the inverter is firmly grounded and the grounding resistance is less than 0.1Ω. Improper grounding of the inverter may cause death or serious injury.
10. This inverter is suitable for circuits with short-circuit current below 100kA.

1.2.3. Safety precautions for running operation

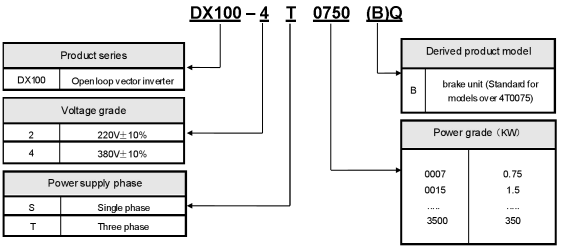
1. Please do not operate the switch with wet hand; otherwise, there can be electric shock.
2. Please install the front cover prior to plugging in, and shall not demount the cover while power is on, otherwise, here can be electric shock.
3. During the frequency converter is with power on, even the motor is stopped, do not touch the terminals of frequency converter, otherwise, here can be electric shock.
4. If you apply the function of restart, do not approach the load equipment, for it may restart suddenly after alarm removed, otherwise, personal injuries may caused.
5. Please set the system as ensuring personal and property safety even when restarting.
6. Please set additional emergency stop switch, otherwise, personal injuries may be caused.
7. The temperature of cooling fin and direct current reactor can be very high, therefore, do not touch them, in case of the danger of burns.

1.2.4. Safety caution for maintenance check

1. Maintenance operations of overhaul and device replacement only can be done by trained professional maintenance staff. During operation, insulation protection tools shall be applied. It is strictly prohibited to leave thrum and metal in the machine. Otherwise, there can be dangers of electric shock, fire, and personal and property damage.
2. After replacement of control board, corresponding parameters must be set before operation, otherwise, there can be danger of property damage.

Chapter 2 Product Introduction

2.1. Model description



2.2. Model table

Voltage grade	Model	Rated capacity (KVA)	Suitable motor (KW)	Rated current (A)	Note
Single-phase 220V	DX100-2S0007(B)Q	1.9	0.75	5.0	
	DX100-2S0015(B)Q	2.9	1.5	7.5	
	DX100-2S0022(B)Q	3.8	2.2	10.0	
	DX100-2S0030(B)Q	5.3	3.0	14.0	
	DX100-2S0040(B)Q	6.3	4.0	16.5	
Three-phase 380V	DX100-4T0011(B)Q	2.0	1.1	3.0	
	DX100-4T0015(B)Q	2.4	1.5	3.7	
	DX100-4T0022(B)Q	3.6	2.2	5.5	
	DX100-4T0040(B)Q	6.3	4.0	9.5	
	DX100-4T0055(B)Q	8.6	5.5	13.0	
	DX100-4T0075(B)Q	11.2	7.5	17.0	
	DX100-4T0110Q	16.5	11	25	
	DX100-4T0150Q	21.7	15	33	
	DX100-4T0185Q	25.7	18.5	39	
	DX100-4T0220Q	29.6	22	45	
	DX100-4T0300Q	39.5	30	60	
	DX100-4T0370Q	49.4	37	75	
	DX100-4T0450Q	62.5	45	95	

	DX100-4T0550Q	75.7	55	115	
	DX100-4T0750Q	98.7	75	150	
	DX100-4T0900Q	116	90	176	
	DX100-4T1100Q	138	110	210	
	DX100-4T1320Q	171	132	260	
	DX100-4T1600Q	204	160	310	
	DX100-4T1850Q	237	185	360	
	DX100-4T2000Q	253	200	385	
	DX100-4T2200Q	276	220	420	
	DX100-4T2500Q	313	250	475	
	DX100-4T2800Q	352	280	535	
	DX100-4T3150Q	395	315	600	
	DX100-4T3500Q	428	350	650	

2.3. Product technical index and specifications

Input Output	Rated voltage	Single phase (2S# series) 220V(±10%)	Three phase (4T# series) 380~415V(±10%)
	Frequency	50/60Hz(±5%)	
	Output voltage	0~Input voltage	
	Output frequency	Low-frequency running mode: 0.00~300.00Hz; High-frequency running mode: 0.00~400.00Hz	
	Digital input	Models DX100-2S0040(B)/4T0075(B) and below: standard configuration of 5-circuit digital input (DI) Models DX100-4T0110 and above: 6-circuit digital input (DI), extensible to 16-circuit (optional extension components)	
	Digital output	All models of DX100 series: standard configuration of 2 digital outputs (DO)	
	Pulse input	Models DX100-4T0110 and above:0 ~ 100.0KHz pulse input, to connect NPN type OC output (optional)	
	Pulse output	Models DX100-4T0110 and above:0 ~ 100.0KHz pulse NPN type OC output (optional); I PWM output mode can be selected to extend analog output terminal.	
	Analog input	Standard configuration: 0-10V voltage input / 0 - 20mA current input Optional configuration: -10V - 10V input(Models DX100-4T0110 and above)	

	Analog output	Models DX100-2S0040(B)/4T0075(B) and below: 1-circuit 0-10V analog output signal(can be set to 0-20VmA current output mode) Models DX100-4T0110 and above: 2-circuit 0-10V analog output signal(can be set to 0-20VmA current output mode)	
	Contact output	Standard one group of AC 250V/2A normally open and closed contacts, extensible to 1-6 groups of normally open and closed contacts.	
	RS485	Standard configuration for models of 7.5kW and below	11kW and above models optional
Control Characteristics	Control Mode	Open-loop vector control	V/F control
	Starting torque	0 speed 180%	0 speed 180%
	Speed adjusting range	1：200	1：100
	Steady speed precision	±0.2%	±0.5%
	Torque control precision	±5%	--
	Torque response time	≦25ms	--
	Frequency resolution	Low-frequency running mode: 0.01Hz High-frequency running mode:0.1Hz	
	Frequency precision	• Low-frequency running mode: digital setting—0.01Hz, analog setting—maximum frequency ×0.1% • High-frequency running mode: digital setting—0.1Hz, analog setting—maximum frequency ×0.1%	
	Load capacity	110%-- long term ；150%--60s；180%--2.5s	
	Carrier frequency	• three-phase voltage vector composition mode:1.5~8KHz; • two-phase voltage vector composition mode: 1.5~12KHz. The specific carrier frequency is related to the power level.	
	Deceleration and acceleration time	0.01~600.00Sec. / 0.01~600.0Min.	
	Magnetic flux brake	Achieve rapid retarding brake of the motor by increasing the motor's magnetic flux (30-120% allowed).	

	DC brake/ band-type rake	DC brake/band-type brake initial frequency: 0.0 - upper limiting frequency, brake/band-type brake injection current 0.0 - 100.0%.
	Strike frequency	0.0~50.0Hz
Typical Function	Multi-segment running	16-segment frequency/speed running, independent setting of the running direction, time and acceleration & deceleration of each segment; 7-segment process PID setting.
	Built-in PID	Built-in PID controller, can be used independently by external equipment.
	Wakening and sleeping	Built-in PID, with simple sleeping and wakening functions.
	MODBUS communication	Standard MODBUS communication protocol allowing for flexible parameter reading and mapping.
	Dynamic braking	Actuating voltage: 340~400/650~800V; braking ratio: 50 - 100%.
	General Functions	Power-off restart, fault self-recovery, motor parameter dynamic/static self-identification. Start enabling, operation enabling, start delay, overcurrent suppression, overvoltage/undervoltage suppression, V/F custom curve, analog input curve correction, line brake detection, textile machinery disturbance (frequency swing) operation.
Special Function	Virtual IO terminal	8-circuit one-to-one virtual output and input terminals, allowing for complicated engineering onsite application in an easy way without external wiring.
	Communication linkage synchronization	Easily allows for synchronized drive of multiple motors, and free selection of linkage balance of multiple motors based on current, torque and power.
	Load dynamic balance	Also allows for dynamic balance of multi-motor load (not limited to communication linkage) and able to achieve torque motor characteristics.
	Strong starting torque	For load featuring high inertia and high static friction, super strong starting torque for certain period can be set.
	Setting priority	Users can freely select the priority of various frequency/revolution setting channels; suitable for combined application for various occasions.
	Setting combinations	Up to hundreds of setting combinations of frequency, revolution and torque.

	Timer	3 built-in timers: 5 kinds of clock, 5 kinds of trigger modes, multiple door access signals and working modes, and 7 kinds of output signals.
	Counter	2 built-in counters: clock margin selection, 4 kinds of trigger modes and 7 kinds of output signal.
	Macro parameter	Application macro: Allowing for conveniently setting and partially curing multiple common group parameters and simplifying parameter setting for common applications.
		System macro: Allowing for conveniently switching equipment's working mode (e.g. switching between high and low frequency running modes), and automatically redefining local parameters.
	Parameter adjusting	Any un-stored parameter adjusted on site can be stored or abandoned and restored to original value with one key.
	Parameter display	Allowing for automatically shielding parameters of unused functional modules or selectively displaying modified, stored or changed parameters.
Protection Function	Equipment abnormity	Current detected abnormity, EEPROM memory abnormity, abnormal control unit, motor overtempera ture and temperature acquisition loop fault.
	Power supply	Undervoltage protection and three-phase power supply unbalancing protection.
	Running protection	Overcurrent protection, overvoltage protection, inverter overtemperature protection, inverter overload protection, motor overload protection, output phase lack protection, and IGBT drive protection.
	Equipment abnormity	Current detected abnormity, EEPROM memory abnormity, abnormal control unit, motor overtempera- ture and temperature acquisition loop fault.
	Motor connection	Motor not connected, motor's three-phased parameters unbalanced and parameter misidentification.
	Extension card	Detect and protect the extension card for compatibility or conflict.

Environment	Installation environment	Indoor vertical installation, not subjecting to direct sunshine, free of dust, corrosive and flammable gas, oil mist, vapor and free of drips or salt.
	Altitude	0-1000 m. derating is recommended for 1000 - 3000 meters, the output current capability drops by 10% for every rise of 1000m.
	Ambient temperature	Working ambient temperature: -10℃ - +45℃ (Derating at 45℃~50℃)
	Storage ambient temperature	-20℃ ~ +60 ℃
	Humidity	95% below, no condensed water
	Ventilation	< 6m/s^2
	Environment pollution level	2
	Degree of protection	IP20

Chapter 3 Installation Of Frequency Inverter

3.1. Installation of frequency inverter

This series of frequency inverters are wall-mounted frequency inverters, which should be installed vertically. In order to be in favor of circulation and heat dissipation, please install the frequency inverter at indoor place with good ventilation. Please refer to 1.3.3 for installation environment. If there is special installation requirement from customer, please contact the manufacturer in advance.

3.1.1. Mounting surface

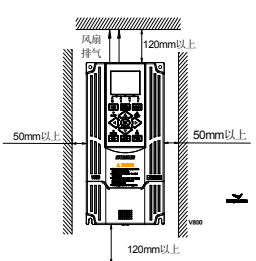
The temperature of cooling fin may rise to around 90℃, so please install the mounting surface at the place which can stand for this temperature rise.

DANGER

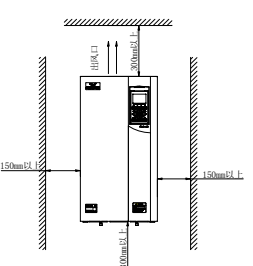
Please install it on flame-retardant object such as metal, otherwise may cause fire.

3.1.2. Installation space

Requirements for installation spacing distance of single frequency inverter are as shown in figure 3-1A and 3-1B. Reserve enough space around the frequency inverter.



3-1A Installation distance (30KW below)



3-1B Installation distance (30KW below)

3.1.3. Installation space

If install more than 2 sets of frequency inverters in device or control cabinet, please conduct parallel installation in principle as shown in figure 3-2. If there is no choice but vertical installation, please consider setting partition plate as shown in figure 3-3, to ensure no influence on upper frequency inverter from lower frequency inverter.

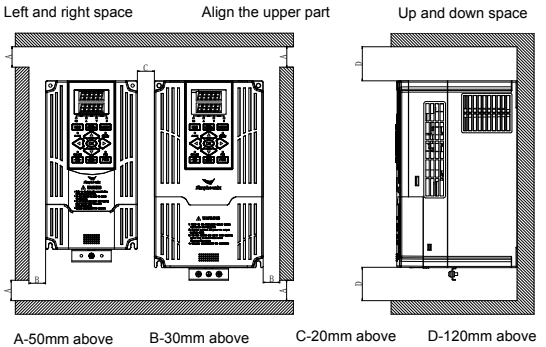


Figure 3-2 Left and right installation size of two inverters (5.5KW above)

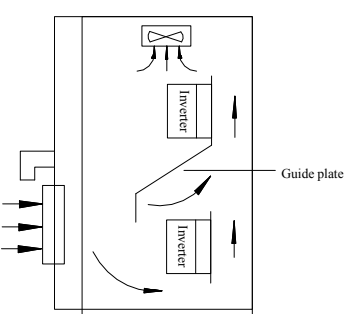
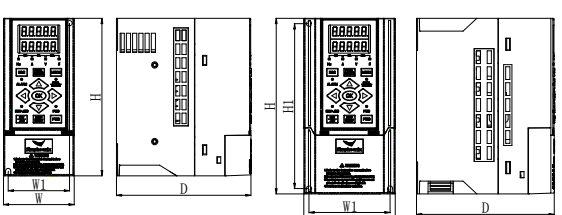


Figure 3-3 Spacing is leaved for the upper and lower two inverters

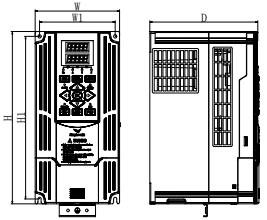
- Horizontal close installation is only allowed at 1.5KW and under the ambient temperature from -10°C to 45 °C (derating for 45 °C - 50 °C).
- When horizontally and closely installed under 4.0KW, the ambient temperature is -10℃ - 45℃.
- Horizontally close installation is only for 4.0KW below, and -10℃ - 45℃ environmental temperature.
- For parallel installation of frequency inverters with different sizes, please carry out installation after aligning the upper parts of all the frequency inverters, thus to be in favor of changing cooling fan.
- Please don't install frequency inverter in the environment with tattered cotton yarn and damp dust which may cause blockage of cooling fin. If necessary to operate in such environment, please install in the control cabinet which can keep tattered cotton yarn out.
- If necessary to install at the place with more than 1000m height above sea level, please derate operation. See 2.4 product technical indexes and specifications for details.

3.2. Installation size of inverters

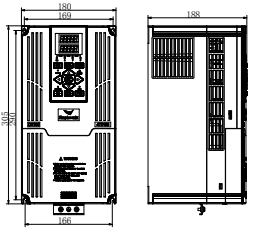


Category Ⅰ inverters
DX100-2S0007(B)Q~DX100-2S0015(B)Q
DX100-4T0011(B)Q~DX100-4T0015(B)Q

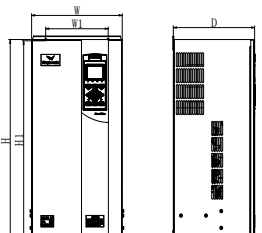
Category Ⅱ inverters
DX100-2S0022(B)Q~DX100-2S0040(B)Q
DX100-4T0022(B)Q~DX100-4T0075(B)Q



Category Ⅲ inverters
DX100-4T0110Q~DX100-4T0450Q



Two special models:
DX100-4T0185Q~DX100-4T0220Q



Category Ⅳ inverters
DX100-4T0550Q~DX100-4T3500Q

The inverter's installation size is shown as below:

Inverter Model	W1 mm	W mm	H1 mm	H mm	D mm	Screw specification
DX100-2S0007(B)Q	59	68	139	148	130	M4
DX100-2S0015(B)Q						
DX100-4T0011(B)Q						
DX100-4T0015(B)Q						
DX100-2S0022(B)Q	78	88	155	165	133	M4
DX100-2S0030(B)Q						
DX100-4T0022(B)Q						
DX100-4T0040(B)Q						
DX100-2S0040(B)Q	99	109	199	209	155	M4
DX100-4T0055(B)Q						
DX100-4T0075(B)Q						
DX100-4T0110Q	121	135	234	248	175	M4
DX100-4T0150Q	146	160	261	275	179	M5
DX100-4T0185Q	169	180	290	305	188	M5
DX100-4T0220Q	166					
DX100-4T0300Q	160	210	387	405	211	M6
DX100-4T0370Q	160	250	428	445	216	M8
DX100-4T0450Q						
DX100-4T0550Q	200	290	525	545	260	M8
DX100-4T0750Q						
DX100-4T0900Q	230	330	603	625	280	M10
DX100-4T1100Q						
DX100-4T1320Q	280	380	760	785	300	M10
DX100-4T1600Q						
DX100-4T1850Q	320	450	919	945	300	M10
DX100-4T2000Q						
DX100-4T2200Q						
DX100-4T2500Q	350	480	1022	1050	300	M12
DX100-4T2800Q	480	550	1116	1145	300	M12
DX100-4T3150Q						
DX100-4T3500Q						

Chapter 4 Wiring Of Frequency Inverter

4.1. Wiring precautions

- Make sure intermediate circuit breaker is connected between the frequency inverter and power supply to avoid expanded accident when the frequency inverter is faulty.
- In order to reduce electromagnetic interference, please connect surge absorber on the coil of electromagnetic contactor, relay and etc. in the surrounding circuit of the
frequency inverter.
- Please use shielded wire of above 0.3mm^2 for the wiring of such analog signals as frequency setting terminal and instrument loop, etc. The shielding layer shall be connected on the grounding terminal of the frequency inverter (keep the shielding layer earthed at single end) with wiring length less than 30m.
- The stranded wire or shielded wire of above 0.75mm^2 shall be selected for the wiring of input and output loop of relay.
- The control wire shall be separated from the power line of major loop; it shall be at a distance of above 10cm for parallel wiring and vertical for cross wiring.
- All the leading wires shall be completely fastened with the terminal to ensure good contact. The leading wires of major loop shall be adopted cables or copper bar. When using cables, wiring must not be carried out until they are cold pressed or welded well by lug plate with corresponding section.
- The pressurization of all the leading wires shall be in compliance with the voltage class of the frequency inverter.
- Please reliably ground the frequency inverter and motor locally.

Absorption capacitor or other RC absorbers shall not be installed at U, V and W output end of the frequency inverter, as shown in figure 4-1.

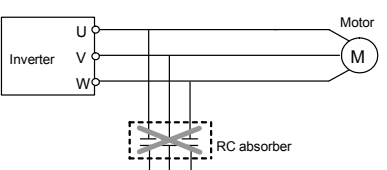


Figure 4-1 The ketch of forbidding connecting a RC absorber at the output terminal

4.2. Connection of optional fittings and frequency inverter

- **Power supply**

The power supply shall be in accordance with the specification of input power supply designated by this operating manual.

- **Air switch**

1）When the frequency inverter is maintained or not in use for a long time, the air switch will separate the frequency inverter from the power supply;
2） When the input side of the frequency inverter has failures like short circuit, the air switch can protect.

- **AC input reactor**

When the interaction of higher harmonic between the frequency inverter and power supply can not meet the requirements after serious wave form distortion of power grid or the frequency inverter is equipped with DC reactor, the AC input reactor can be added. The AC input reactor can improve the power factors at input side of the inverter and reduce the influence caused by unbalanced voltage of three-phase power supply.

- **Filter at input side**

EMI filter can be selected to restrict the high-frequency noise interference from the power cord of the frequency inverter.

- **Contactor**

It can cut off the power supply when the system protective function acts to prevent failure expanding.

- **Filter at output side**

DU/DT filter can be selected to restrict the interference noise generated at the output side of the inverter and wire leakage current.

- **AC output reactor**

When the wiring from the frequency inverter to the motor is longer (exceeding 20m), it can restrict radio interference and leakage current.

- **Braking resistor**

Improve the braking capacity of frequency inverter to avoid overvoltage failure when slowing down.

The specification of recommended electric appliances is as follows:

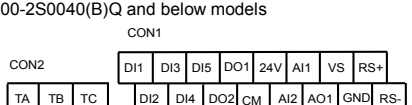
Model of frequency inverter	Adaptive motor (KW)	Wire gauge (major loop) (mm2)	Air circuit breaker (A)	Electromagnetic contactor (A)
DX100-2S0007(B)Q	0.75	2.5	20	12
DX100-2S0015(B)Q	1.5	2.5	32	18
DX100-2S0022(B)Q	2.2	4.0	32	18
DX100-2S0030(B)Q	3.0	6.0	40	32
DX100-2S0040(B)Q	4.0	6.0	40	32
DX100-4T0011(B)Q	1.1	1.0	10	6
DX100-4T0015(B)Q	1.5	1.5	16	12
DX100-4T0022(B)Q	2.2	2.5	16	12

DX100-4T0040(B)Q	4.0	4.0	32	18
DX100-4T0055(B)Q	5.5	6.0	32	22
DX100-4T0075(B)Q	7.5	6.0	40	32
DX100-4T0110Q	11	10	63	32
DX100-4T0150Q	15	10	63	38
DX100-4T0185Q	18.5	16	80	45
DX100-4T0220Q	22	16	100	63
DX100-4T0300Q	30	25	125	75
DX100-4T0370Q	37	25	160	85
DX100-4T0450Q	45	35	200	110
DX100-4T0550Q	55	50	225	140
DX100-4T0750Q	75	50	250	170
DX100-4T0900Q	90	70	315	205
DX100-4T1100Q	110	95	400	250
DX100-4T1320Q	132	95	400	330
DX100-4T1600Q	160	150	630	330
DX100-4T1850Q	185	150	630	400
DX100-4T2000Q	200	185	630	400
DX100-4T2200Q	220	185	800	500
DX100-4T2500Q	250	240	800	500
DX100-4T2800Q	280	240	1000	630
DX100-4T3150Q	315	2*150	1250	630
DX100-4T3500Q	350	2*185	1250	780

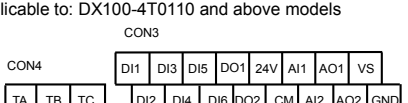
4.3. Wiring of control terminals

4. 3. 1. Wiring of standard terminals of control panel

Category I: CON1 and CON2 terminals
Applicable to: DX100-4T0075(B)Qand below models
DX100-2S0040(B)Q and below models



Category II: CON3 and CON4 terminals
Applicable to: DX100-4T0110 and above models



4.3.2. Function description of control terminal

Type	Label of terminal	Name	Function description of terminals	Specification
Control terminal	DI1-CM	Multifunctional output terminal DI1	6-circuit programmable switching value input terminal, allowing for selection of 98 kinds of operational control commands via programming of function codes in F3.0 group. See Comparison Table of Multifunctional Output Terminal Functions for details (chapter 6).	Opto-isolated inputs: 24Vdc/5mA
	DI2-CM	Multifunctional output terminal DI2		
	DI3-CM	Multifunctional output terminal DI3		
	DI4-CM	Multifunctional output terminal DI4		
	DI5-CM	Multifunctional output terminal DI5		
	DI6-CM	Multifunctional output terminal DI6		
Operating status output	CM	Input/output terminal common port	2-circuit programmable open-circuit collector output and 1-circuit programmable relay output terminal; 71 kinds of operating status output can be selected by the function code in F3.1 group by programming. See Comparison Table for Variables of Multifunctional Output Terminal for detail (chapter 6).	Maximum load 50mA when using inverter 24V power supply
	DO1-CM	Multifunctional output terminal DO1		
	DO2-CM	Multifunctional output terminal DO2		
	TA	Multifunctional relay output RO1 TA-TB normally closed TA-TC normally open		Contact capacity: AC 250V/2A
	TB			
	TC			
Power supply	CM	+24V power supply reference place	Power supply of switching value terminal	Maximum output current: 100mA
	24V	+24V power supply		
Analog input	AI1-GND	Analog input AI1	Select input voltage range, polarity and other functions with function code in F4 group.	Input voltage: 0~10V Input current: 0~20mA input impedance: 100K
	AI2-GND	Analog input AI2		
Analog output	AO1-GND	Multifunctional analog outputAO1	The programmable voltage/current signal output terminal has 45 kinds of monitoring status to be selected by programming. See Comparison Table for	Current input: 0~20mA voltage input : 0~10V output current capacity impedance
	AO2-GND	Multifunctional analog outputAO2		
Power supply	GND	Common terminal of analog signal		

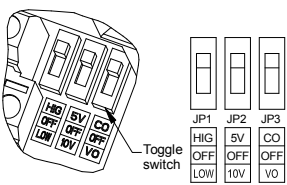
	VS-GND	+10V/5V power supply	Provide externally +10V/10mA power supply or +5V/50mA power supply.	JP3 (see DIP Switch Jumper Selection in 4.3.3 for detail) selection
Commun-ication	RS+/RS-	Positive or negative port of the 485 communication port	485 communication port	-

4. 3. 3. Description of dial switch on the control panel

1. There are 3 shifts for Type I toggle switches.
Applicable model:
DX100-2S0007(B)Q~DX100-2S0040(B)Q
DX100-4T0011(B)Q~DX100-4T0075(B)Q

JP1

HIG: Indicates that the DI terminal and 24V are effectively mated.
OFF: Indicates that the DI terminal is at floating state.
LOW: Indicates that the DI terminal and CM are effectively mated.



JP2

5 V: Indicates that the VS terminal provides a 5V voltage signal externally.
OFF: Indicates that the VS terminal is at floating state.
10V: Indicates that the VS terminal provides a 10V voltage signal externally.

JP3

VO: Indicates that the A01 terminal outputs a voltage signal.
OFF: Indicates that the A01 terminal is at floating state.
CO: Indicates that the A01 terminal outputs a current signal.

2. There are 3 shifts for Type II toggle switches.
Applicable model:
Models DX100-4T0110Q and above

JP1

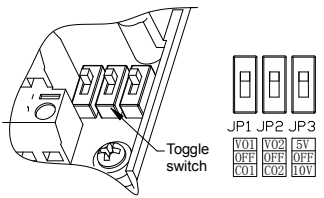
VO1: Indicates that the A01 terminal outputs a voltage signal.
OFF: Indicates that the A01 terminal is at floating state.
CO1: Indicates that the A01 terminal outputs a current signal.

JP2

VO2：Indicates that the A02 terminal outputs a voltage signal.
OFF：Indicates that the A02 terminal is at floating state.
CO2：Indicates that the A02 terminal outputs a current signal.

JP3

5 V：Indicates that the VS terminal provides a 5V voltage signal externally.
OFF：Indicates that the VS terminal is at floating state.
10V：Indicates that the VS terminal provides a 10V voltage signal externally.



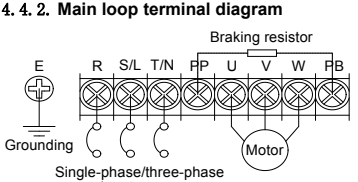
4.4. Wiring of major loop terminal

4.4.1. Terminal Functions

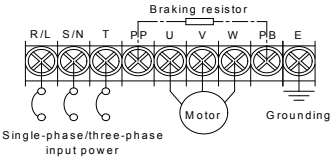
Symbol	Function description	Symbol	Function description
P+	DC side voltage positive terminal	PB	Power consumption braking resistor can be connected between P+ and PB
P-	DC side voltage negative terminal,Bus voltage input terminal of DC braking unit can be connected between P+ and P-.	E	Earthing terminal
R/S/T	Connect three-phase AC power supply of grid	U/V/W	Connect three-phase AC motor
L/N	The single-phase AC power supply of the grid can be connected. L indicates the live wire and N indicates the neutral wire.	⏚	Grounding

Note: It is forbidden to reversely connect the live wire and the neutral wire.

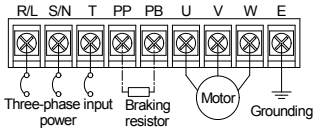
4.4.2. Main loop terminal diagram



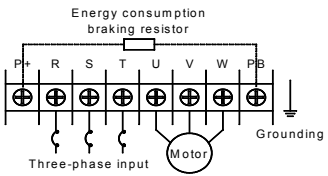
Applicable model:
DX100-2S0007(B)Q ~
DX100-2S0015(B)Q
DX100-4T0011(B)Q ~
DX100-4T0015(B)Q



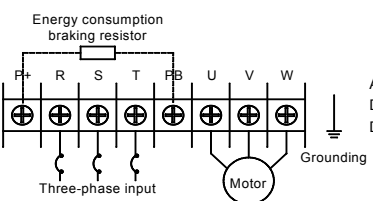
Applicable model:
DX100-2S0022(B)Q ~
DX100-2S0030(B)Q
DX100-4T0022(B)Q ~
DX100-4T0040(B)Q



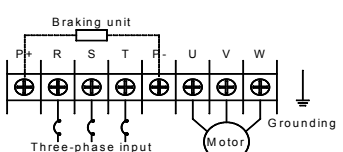
Applicable model:
DX100-2S0040(B)Q
DX100-4T0055(B)Q ~
DX100-4T0075(B)Q



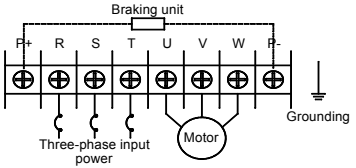
Applicable model:
DX100-4T0110Q



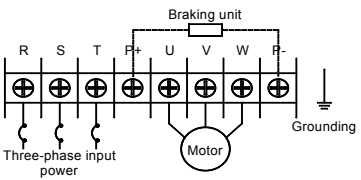
Applicable model:
DX100-4T0150(B)Q ~
DX100-4T0220(B)Q



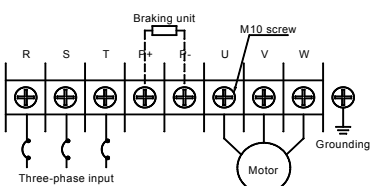
Applicable model:
DX100-4T0300Q



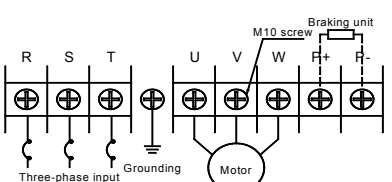
Applicable model:
DX100-4T0370Q ~
DX100-4T0450Q



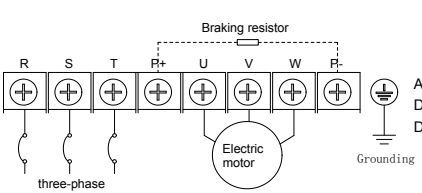
Applicable model:
DX100-4T0550Q ~
DX100-4T0750Q



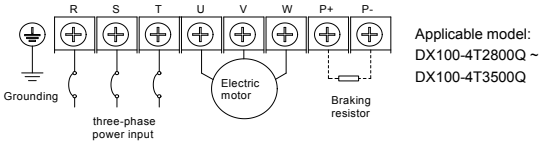
Applicable model:
DX100-4T0900Q ~
DX100-4T1100Q



Applicable model:
DX100-4T1320Q ~
DX100-4T1600Q



Applicable model:
DX100-4T1850Q ~
DX100-4T2500Q



4.5. Wiring for basic operation of inverters

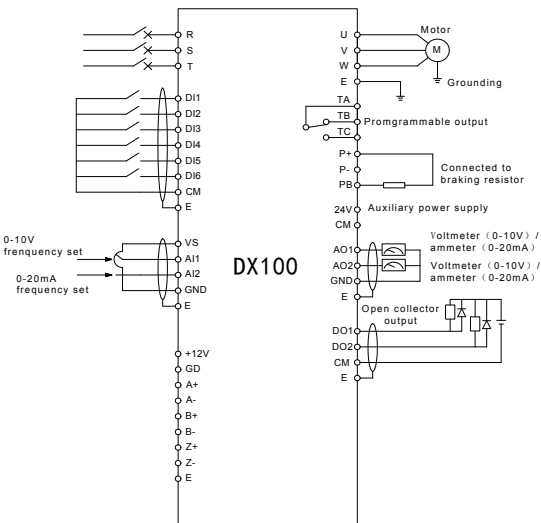
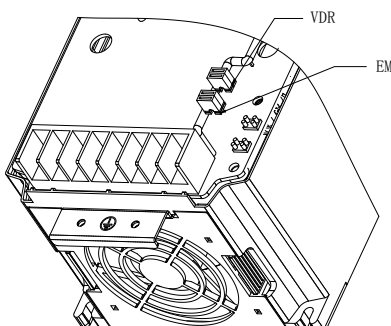


Figure 4-2 Basic Wiring Diagram of DX100 Series Inverters

4.6. Grid System Requirements

- This product is suitable for the power grid system with neural grounding. If it is used in IT power grid system, it is required to remove all VDR and EMC grounded short-circuited caps or screws for the power grid system with ungrounded neutral point. For example, the VDR and EMC short-circuited caps as shown in the figure of DX100-4T0150. In addition, filters cannot be installed, otherwise it may cause injuries or damage to the inverter.
- In the case where the residual-current circuit breaker is configured, if there is a phenomenon of tripping and leakage protection, it is applicable to remove the safety capacitor (EMC) grounded jumper cap or short-circuit screws, for example, the EMC as shown in the figure for DX100-4T0150. Due to the different design of each machine, please consult the manufacturer for specific operations.



Chapter 5 Operation And Simple Running Of Frequency Inverter

5.1. Basic function of the panel

The panel of the frequency inverter mainly has two functions apart of basic starting and stopping control: monitoring of parameters for operating status and query and modification of internal parameters. Accordingly, the operation panel is divided into two operating modes: monitoring mode and parameter modification/query mode.

At the beginning of power-on, the abbreviated characters of our company's logo are moved out of the main display bar from right to left, and the display returns to normal after about 1 second. The auxiliary display column statically displays the inverter model information, such as "4.0040", with the inverter model “T, S” not displayed, and will return to normal display after 1 second. At this time, the operating parameters displayed on the operation panel are determined by the inverter's internal parameters [F0.0.12] and [F0.0.13]. If there is no key operation within 1 minute, the operating panel at any state will return to the normal monitoring mode. (See Chapter 3 for the outline drawing of the operation panel.)

5.1.1. Panel description

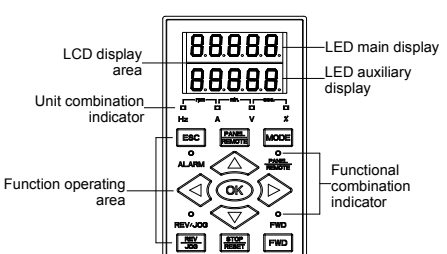


Figure 5-1-A Two-Line LED Small Panel Standard configuration for DX100-4T0075(B)Q and below models

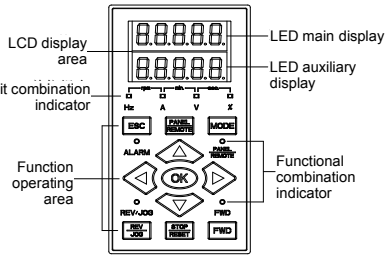


Figure 5-1-B Two-Line LED Standard Operating Panel
Standard Configuration for DX100-4T0110Q and above models

Table 5-1 Functions of keys

Item	Functions
Main digital display	Display the current operating status parameters and setting parameters of the frequency inverter.
Auxiliary digital display	Display the current operating status parameters and setting parameters of the frequency inverter
A, Hz, V, %	A, HZ, V displays the corresponding measurement unit of the data of the main digital display. % displays compound unit . The **compound unit indicator** is defined as follows: Hz+A = RPM； V+% = Sec. ； A + V = Min
FWD, REV	**Indicator for operating status**, its flicker shows the frequency inverter is in F/R operation and has voltage output.
PANEL/ REMOTE	The indicator is off: the external terminal command is valid; the indicator is on: the operation panel command is valid. The indicator is flashing: the communication interface (or expanded communication board or expanded function board) command is valid.
ALARM	**Alarm indicator:** The indicator is on: the frequency inverter is in warning status. It shall check up and eliminate abnormalities; otherwise, the frequency inverter may be faulty and shut down.

Item	Functions
FWD	**Forward operation command key** Press this key to send forward operation command when the operation command channel of the frequency inverter is set as operation panel control ([F0.3.33] or [F0.3.34]=0)
REV JOG	**Reverse/inching operation command key** Press this key to send reverse operation command when the reverse function ([FF.4.42=# # # 0]) is selected and the operation command channel of the frequency inverter is set as operation panel control ([F0.3.33] or [F0.3.34]=0); and press this key to send inching operation command when inching function ([FF.4.42=# # # 1]) is selected.
STOP RESET	**Stop/reset key** When this key is pressed in operating status, the frequency inverter will shut down as per set mode; and when pressing this key in fault conditions, the frequency inverter will reset and return to normal stopped status. The key can be locked or functions can be changed by users (refer to Functional Parameter F0.011).
ESC	**Return key** At any status, it will return to the status of last level till normal monitoring mode by pressing this key.
MODE	**Mode key** Switch display function parameter set and monitoring parameter set in parameter modification status. The corresponding “EROM stored value”, “value at this time of energizing” and “panel backup value” of the current function code will be displayed at auxiliary display column in turn by pressing this key.
◀	**Left shift key** The modified data bit can be selected from right to left by pressing this key and the modified bit has flicker display.
▶	**Right shift key** The modified data bit can be selected from left to right by pressing this key and the modified bit has flicker display.
▲ ▼	**Data modification key** Used to mofidy function code or parameter. If digital setting mode is set currently, the digital setting value can be modified directly by using this key in normal monitoring mode.

Item	Functions
PANEL REMOTE	**Local, terminal and communication control function switch key** The keyboard control, external terminal control and communication control functinos can be swithced with each other through setting [F0.0.11]=##1## (the switch status is not stored and lost after power down).
OK	**Ok key** Confirm the current status and parameters (the parameters are stored in the internal memory) and enter into next-level function menu.

5.2. Basic functions and operating methods of panel

5.2.1. Basic functions of panel

The operation panel also has the following special functions aside from such basic functions as forward operation, reverse operation, inching operation, shut down, fault reset, parameter modification and inquiry and operating status parameter monitoring, etc.

☐ **Parameter copy and read/backup (parameter upload)**

This operation panel allows for copying the internal parameters of the frequency inverter to the operation panel (only the internal parameters opened to users) and storing permanently. Therefore, users can backup their typical setting parameters to the operation panel for emergency. The backup parameters in the operation panel do not influence the operation of the frequency inverter and can be checked and modified separately.

When [F0.0.08]=####1, the keyboard will begin to read the internal parameters of the frequency inverter and the operation panel will display the process of reading parameters in real time. After the completion of parameter backup, the display mode will recover to normal monitoring automatically. During parameter backup, the operation can be stopped at any time by pressing **STOP/RESET** key and the display will switch to normal monitoring mode.If alarm information is occurred, please refer to Chapter 8.

☐ **Parameter copy/write in (parameter download)**

This operation panel allows for copying the backup parameters to the internal memory of the frequency inverter (only the internal parameters opened to users) and users can write in their typical setting parameters backed up in the operation panel into the frequency inverter at one time without separate modification.

When the frequency inverter set F0.0.08 as # # 1 2 or # # 1 3 in stopped mode, the keyboard will begin to copy the backup parameters to frequency inverter and the operation panel will display the process in real

time. After the completion of copying, the display mode will recover to normal monitoring automatically.

During parameter copying, the operation can be stopped at any time to abandon the copied parameters by pressing **STOP/RESET** key and the display mode will switch to normal monitoring mode. If alarm information is occurred, please refer to Chapter 8.

☐ **Check and modification of internal parameters**

In normal monitoring mode, the internal parameters of the frequency inverter can be checked and modified as per general methods by pressing **MODE** key.

☐ **Check and modification of panel backup parameters**

In normal monitoring mode, the backup parameters in the operation panel can be checked and modified by pressing **ESC** and **MODE** key simultaneously (double key compound use) and the high-order code "F" will display flickeringly when function code is displayed. The modification methods of backup parameters are the same as that of internal parameters.

☐ **Locking and unlocking of panel**

1) Locking: part of or all the keying functions of the panel can be locked through setting the application parameter F0.0.11. If the parameter is set as panel locking mode, the panel will be locked immediately after the frequency inverter is energized.

2) Unlocking: the panel will be unlocked for 5 minutes temporarily by pressing **OK** and maintaining and pressing **SHIFT KEYS** twice in order within 5 seconds and it will automatically recover to locking if there's no keying within 5 minutes.

To unlock the panel thoroughly, the panel locking parameter [F0.0.11] should be modified into "unlocked" status during the temporary unlock of the panel.

☐ **PANEL/REMOTE Key function**

The key function is limited by the application parameter F0.0.11. In function enabling and "normal monitoring mode", press this key to switch the operation command channel in order "operation panel ⟶ local terminal ⟶ communication interface ⟶ operation panel". The key indicator displays the selected command channel which will be valid by pressing **OK** within 3 seconds. It will abandon the switch and return to original status by pressing **ESC** or without pressing **OK** within 3 seconds.

When switching command channel, if the original setting is "operation panel" or "local terminal", the "communication interface" will be defaulted as local MODBUS field bus.

The operation command channel switched by this function is not stored permanently. It will recover to original setting after the frequency inverter is power down and restarted. Relevant application parameters of the frequency inverter should be modified to permanently change the command channel.

5.2.2. Operating methods of panel

1) Query for status parameters (e.g.)

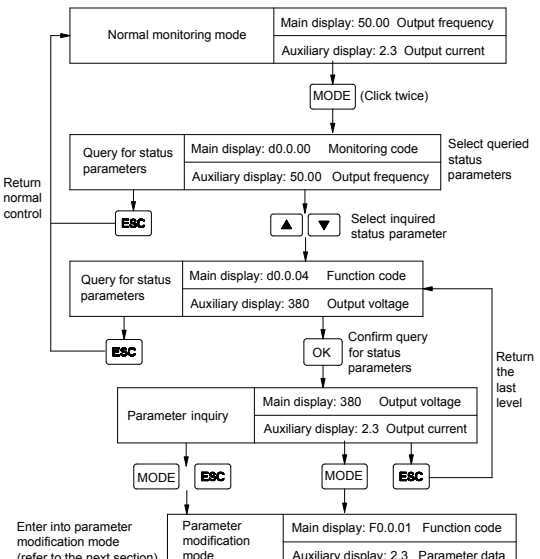


Figure 5-2 Query for status parameters

2) Parameter query and modification (e.g.)

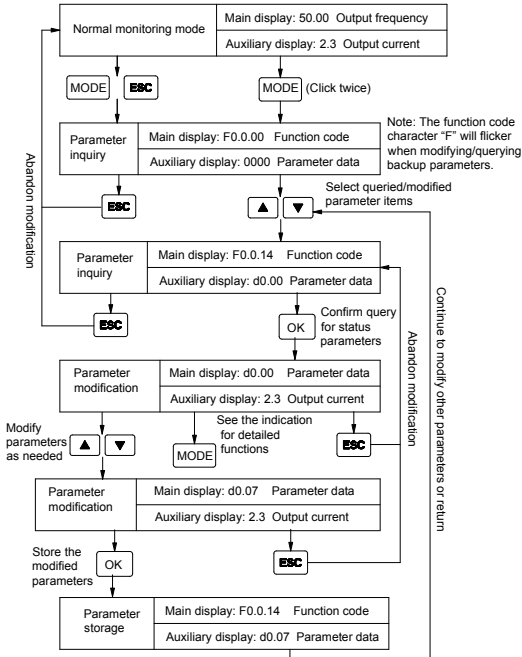


Figure 5-3 Parameter check and modification

Remark: in this status, the auxiliary display column will display the following in turn by pressing MODE key repeatedly. Default auxiliary monitoring parameters (original state) ⟶ EROM regional numerical value ⟶ parameter values at initial energizing ⟶ backup parameters in operation panel, the numerical value will flicker when "EROM regional numerical value", "parameter values at initial energizing" and "backup parameters in operation panel" are displayed.

5.3. Simple running of frequency inverter

5.3.1. Initial settings

● Selection of control mode

DX100 frequency inverter has three control modes: vector control without PG, vector control with PG and V/F control. The operation control mode is selected by the application parameter F0.0.09.

Mode 0: vector control without PG, i.e. vector control without velocity sensor, also called open loop vector control. It is applicable to the place where encoder is not installed, has higher requirement to starting torque and speed control precision and the normal V/F control mode can not satisfied.

Mode 1: vector control with PG, i.e. vector control with velocity sensor, also called closed loop vector control. It is applicable to the place where faster response of torque and higher control precision is required.

Mode 2: V/F control mode. Except normal V/F control application, it can also be applied to the place where the frequency inverter drives more than one motor.

The control modes of frequency inverter vary from the type and control requirements of motor and set by parameter F0.0.09=####. For instance, the field where three-phase asynchronous motor is used can be selected through setting F0.0.09=###0 and the field where the control precision is highly required with velocity sensor can be set to F0.0.09=##1# speed closed loop vector control mode.

● Selection of frequency input channel (F0.2.25)

DX100 frequency inverter has 29 frequency setting modes for each of the channel.

● Operation command input channel [F0.3.33]

5.3.2. Simple operation

It is absolutely forbidden to connect the power cord to the output U, V, W of the frequency inverter.

☐ Simple wiring diagram

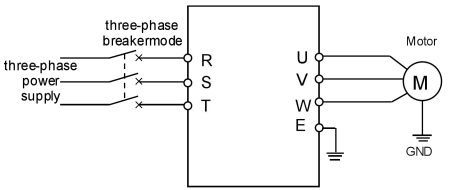


Figure 5-4 Wiring for the operation of SVC mode

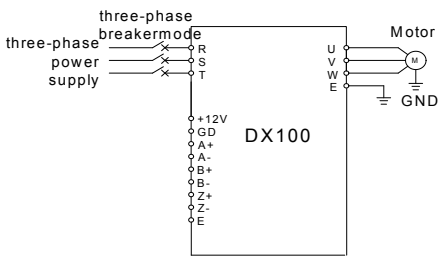


Figure 5-5 Wiring for the operation of VC mode

☐ SVC (non-inductive vector) operation

Take 7.5KW frequency inverter which drives 7.5KW three-phase AC asynchronous motor as the example to indicate the operation process. The nameplate parameters of the motor are:

Rated power:：7.5KW	rated voltage：380
rated current：15.4A	Rated frequency：50.00Hz
rated speed：1440rpm	pulse of encoder：1000PPR

Use operation panel to conduct digital frequency setting and start-stop control.

1. Connect as per Figure 5-4;
2. Power on after making sure the wiring is correct;

3. Set parameters as follows:

[F0.0.09]=0000 (noninductive vector control)
[F0.2.25]=2 (frequency setting channel)
[F0.3.33]=0 (control command)
[F2.0.00]=7.5 (rated power of motor)
[F2.0.01]=380 (rated voltage of motor)
[F2.0.02]=15.4 (rated current of motor)
[F2.0.03]=50.00 (rated frequency of motor)
[F2.0.04]=1440 (rated speed of motor)

4. Press **FWD** key to start frequency inverter. If the name plate parameters （F2.0.00 ~ F2.0.04) of the motor are modified in ③, the primary static parameter identification will be started automatically, the frequency inverter will output 0 frequency and the auxiliary display column will display the current output current (not limited by F0.0.13 at this time). When the display current is stable as 0.0, the automatic learning is finished and operation is started;

5. During operation, press the data modification key to modify the output frequency of the inverter and adjust the motor's rotating speed.

6. Observe the operation of motor, if there are abnormalities, stop it immediately and power off and re-operate it after finding out the causes;

7. Press **STOP/RESET** key to stop operation and cut off the power supply.

☐ VC (inductive vector) operation

The following parameters also need to be set except the above set parameters required by SVC operation. The wiring diagram is as shown in figure 5-5.

[F0.0.09]=0010 (inductive vector control)
[F8.0.04]=0 (speed feedback channel)
[F8.0.05]=1000 (pulse of encoder per revolution)
[F8.0.06] If F/R periodic vibration is occurred in starting, this parameter shall be set as 1 (or exchange the wiring of A, B pulse); other operations are the same as that of SVC operation.

If the motor is completely empty-load, slight oscillation may occur sometimes in the operation under high carrier frequency. At this time, please reduce the setting value of the carrier frequency. (Parameter [F1.1.13]).

Chapter 6 Functional Parameter Table

Note:

"×": indicates that the set value of the parameter cannot be changed when the inverter is running.

"☆": indicates the parameter is relevant with the model of the inverter.

"R": indicates the parameter is just for reading and cannot be changed;

"R/I": indicates the parameter is just for reading and cannot be changed, but can be cleared by initialization.

"—": indicates the parameter is relevant with the type or status of connected accessories.

Variables: (H)-hexadecimal number; only bitwise data change is permitted (carry bit is not allowed), and the upper and lower limit for bitwise change.

6.1.System management parameter

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F0.0.00	Macro parameter (H)	**The unit: Application macro (0~F)** 0: void (customized setting) 1: setting of panel operation digit (factory default) 2: setting of panel operation shuttle 3: Two-line control 1 (AT1 setting) 4: Two-line control 2 (AT1 setting) 5: Three-line control 1 (AT1 setting) 6: Tool device spindle drive (AT1 setting) **Tens: reserved** **Hundreds: dedicated macro** **Kilobit: system macro (0~F)** 0: standard operation 1: void(standard mode by default) 2: high-frequency output (0.0 ~ 1000.0Hz)	0000	1	×
F0.0.01	Parameter display and modification (H)	**The unit: parameter display mode** 0: Display all parameters 1: Display effective configuration parameters 2: Display parameters different from factory default 3: Display modified and stored parameters after power-on this time 4: Display modified and un-stored parameters after power-on this time **Tens: parameter modification mode** 0: Effective and permanently stored after modification 1: Effective after modification but not stored, and getting lost after power-off **Hundreds: Reserved** Kilobit: batch restoring and batch saving of parameters 2: Giving up modification of all unsaved parameters (restore to original value) 5: Batch saving of all modified and unsaved parameters 9: Restoring all parameters to initial values at the time of power-on this time.	0001	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F0.0.02	Modification key for macro call parameters (system macro)	0~65535(1580)	0	1	×
F0.0.03	Reserve		-	-	-
F0.0.04	LCD display setting (H)	**The unit: contrast 0~7** **Tens: normal display mode** 0: Steady mode 1: Single parameter display 2: Dual parameter display 3: Three parameter display	0023	1	-
F0.0.05	Parameter locking (H)	**The unit: parameter modification permission** 0: All parameters are permitted to be modified 1: Except for this parameter, frequency digital setting, PID digital setting, revolution digital setting, torque digital setting, locking password parameter (F0.0.06), other parameters are forbidden to be modified. 2: All parameters are forbidden to be modified except for this parameter and the locking password. **Tens: Coded lock** 0: Void 1: Effective – once the password is set, this parameter cannot be modified unless correct password is entered.	0000	1	
F0.0.06	Parameter locking password	0~65535	0	1	
F0.0.07	Parameter initialization	0: No action 1: Parameters of F0~F9 groups are restored to the factory default. 2: Parameters of F0~FA groups are restored to the factory default. 3: Parameters of F0~Fb groups are restored to the factory default. 4: Parameters of F0~Fc groups are restored to the factory default. 5: Parameters of F0~Fd groups are restored to the factory default. 6: Parameters of F0~FE groups are restored to the factory default. 7: Parameters of F0~FF groups are restored to the factory default. 8: Clear away fault records	0	1	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F0.0.08	Parameter copying (H)	**The unit: Upload and download** 0: No action 1: Parameter upload (inverter——> panel) 2: Parameter download (panel ——> inverter) 3: Parameter download (except for motor parameter F2 group) **Tens: Local download permitted** 0: Parameter download forbidden 1: Parameter download permitted	0000	1	×
F0.0.09	Control mode selection	**The unit:: Motor 1 type selection** 0: Induction asynchronous motor 1: Conical motor **Tens: Control 1 mode** 0: SVC mode/open-loop vector control 1: VC mode/closed-loop vector control 2: V/F control **Hundreds: Motor 2 type selection** 0: Induction asynchronous motor 1: Conical motor **Kilobit: Control 2mode** 0: SVC mode/open-loop vector control 1: VC mode/closed-loop vector control 2: V/F control	2020	1	×
F0.0.10	Reserved parameter				
F0.0.11	Selection of panel key functions (H)	**The unit: Panel key locking** 0: No locking 1: All keys are locked except for UP/DW (Shuttle), Stop and RUN. 2: All keys are locked except for STOP and RUN 3: All keys are locked except for STOP. 4: Lock all keys **Tens: STOP key function**	0000	1	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		0: Non-panel control mode void 1: Press STOP key in any control mode to stop the device slowly 2: Press STOP key in any control mode to stop the device freely **Hundreds: Function of PANEL/ REMOTE keys** 0: Void 1: Stop effective 2: Continuously effective **Kilobit: Reserved**			
F0.0.12	Principal monitoring parameter (H)	d0.0~d0.55 / d1.0~d1.55	d0.00	1	
F0.0.13	Auxiliary monitoring parameter 1 (H)	d0.0~d0.55 / d1.0~d1.55	d0.02	1	
F0.0.14	Auxiliary monitoring parameter 2 (H)	d0.0~d0.55 / d1.0~d1.55	d0.04	1	

6.2.Running command selection

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F0.1.17	Running direction (H)	**The unit: direction switch** 0: Void 1: Negate **Tens: direction locking** 0: Void (determined by the direction command) 1: FWD locking 2: REV locking	0000	1	
F0.1.18	Reserved				
F0.1.19	Reserved				
F0.1.20	Maximum output frequency	10.00~320.00Hz/100.0~400.0Hz	60.00	0.01	
F0.1.21	Upper limiting frequency	[F0.1.22]~Min. (300.00Hz,[F0.1.20])	50.00	0.01	
F0.1.22	Lower limiting frequency	0.0Hz~[F0.1.21]	0.0	0.01	
F0.1.23	FWD jog frequency	0.0Hz~[F0.1.21]	10.00	0.01	
F0.1.24	REV jog frequency	0.0Hz~[F0.1.21]	10.00	0.01	

6.3.Frequency setting

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F0.2.25	Frequency setting channel	0: Panel digital setting (maintained after stop) 1: Panel digital setting (zero clearing after stop) 2: Panel digital setting (maintained after stop and saved after power-off) 3: Setting of panel shuttle potentiometer 4: Terminal UP/DW setting (maintained after stop) 5: Terminal UP/DW setting (zero clearing after stop) 6: Terminal UP/DW setting (maintained after stop and saved after power-off) 7: Terminal UP/DW two-way setting (maintained in bipolar mode after stop) 8: Terminal UP/DW two-way setting (maintained in bipolar mode after stop and saved after power-off) 9: Analog input AI1 10: Analog input AI2 11: Analog input AI3 12: Given by the analog input AI1bipolarity 13: Given by the analog input AI3 bipolarity 14: Pulse input Fin 15: Given by the pulse input bipolarity 16: MODBUS fieldbus set value 1 17: MODBUS fieldbus set value 2 18: AI1+AI2 19: AI2+AI3 20: AI2+pulse input Fin 21: AI1*AI2/rail-to-rail input (10V) 22: AI1/AI2 23: Process PID output 24: Reserved 25: Disturbance running frequency 26: Automatic multi-sage running frequency 27: Terminal selection multi-stage frequency 28: Virtual analog input SAI1 29: Virtual mode input SAI2	0	1	
F0.2.26	Reserved				
F0.2.27	Minimum value of frequency setting	0.0Hz~[F0.2.28]	0.0	0.01	
F0.2.28	Maximum	[F0.2.27]~[F0.1.20]	50.0	0.01	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
	value of frequency setting				
F0.2.29	Panel digital set value of frequency setting panel	0.0Hz ~[F0.2.28]	0.0	0.01	

6.4.Control command source

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F0.3.33	Control command	0: Operating panel 1: External control terminal 2: MODBUS fieldbus/standard expansion card configuration	0	1	
F0.3.34	Reserved parameter				
F0.3.35	External control terminal action mode (H)	**The unit: Control command action mode** 0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2 **Tens: control command power-on first starting mode** 0: Running signal level starting 1: Running signal rising edge starting (two-line mode 1 and 2) **Hundreds: reserved** **Kilobit: reserved**	0000	1	
F0.3.36	Reserved				

6.5.Start and stop

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F0.4.37	Start/Running permission (H)	**The unit: Start permission** 0: Function closed 1: Permitted when the multifunctional terminal is effective 2: Command word from standard fieldbus (standard expansion card) **Tens: Reserved** **Hundreds: Running permission** 0: Function closed 1: Permitted when the	0000	1	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		multifunctional terminal is effective 2: Command word from standard fieldbus (standard expansion card) **Kilobit: The action mode when the running permission signal is void** 0: Free stop 1: Deceleration stop			
F0.4.38	Start/Stop Mode (H)	**The unit: start mode** 0: Normal start 1: Revolution tracking start **Tens: Reserved** **Hundreds: Stop mode** 0: Deceleration stop 1: Free stop	0000	1	×
F0.4.39	Start frequency	0.0Hz~50.00Hz	0.50	0.01	
F0.4.40	Start frequency holding time	0.00~10.00Sec.	0.0	0.01	
F0.4.41	Start pre-excitation current	0.0~100.0(%).	35.0	0.1	
F0.4.42	Start pre-excitation time	0.00~10.00Sec.	0.10	0.01	
F0.4.43	Start delay	0.00~10.00Sec.	0.0	0.01	
F0.4.44	DC band-type brake control (H)	**The unit: DC band-type brake function (effective when running commands)** 0: Closed 1: Open **Tens: Reserved**	0000	1	
F0.4.45	DC band type brake/ brake initial frequency/ speed	0.0~[F0.1.21]	2.00	0.01	
F0.4.46	DC brake action time	0.0~10.00Sec.	0.0	0.01	
F0.4.47	DC band-type brake/brake injection current	0.0~100.0(%)	50.0	0.1	
F0.4.48	Restart after power-off	0: Forbidden 1: Effective	0	1	
F0.4.49	Restart after power-off/ Standby time for restart after free stop	0.10~10.00Sec.	0.5	0.1	
F0.4.50	FWD and	0.00~5.00Sec.	0.0	0.01	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
	REV transition dead time				
F0.4.51	FWD and REV switch mode	0: Switch at zero point 1: Start frequency switch	0	1	
F0.4.52	Zero speed (frequency) detection level	0.0~100.00Hz	0.1	0.01	
F0.4.53	Zero speed delay time	0.0~10.00Sec.	0.05	0.1	
F0.4.54	Emergency stop mode (EMS)	0: The inverter will stop in deceleration mode according to the emergency stop and deceleration time. 1: The inverter will immediately stop in free sliding mode.	0	1	

6.6.Acceleration and deceleration characteristics parameters

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F1.0.00	Acceleration and deceleration characteristics parameters	**The unit: Acceleration and deceleration mode** 0: Liner acceleration and deceleration 1: S curve acceleration and deceleration **Tens: Unit of acceleration and deceleration time** 0: Sec. (Second) 1: Min. (Minute)	0001	1	×
F1.0.01	Time ratio of S curve acceleration starting/deceleration ending period	5.0~100.0-[F1.0.02]	15.0	0.1	
F1.0.02	Time ratio of S curve acceleration rising/deceleration decreasing period	20.0~100.0-[F1.0.01]	70.0	0.1	
F1.0.03	Acceleration time 1	0.01~ 600.00(Sec./Min.)	☆	0.01	
F1.0.04	Deceleration time 1	0.01~ 600.00(Sec./Min.)	☆	0.01	
F1.0.05	Acceleration time 2	0.01~ 600.00(Sec./Min.)	☆	0.01	
F1.0.06	Deceleration time 2	0.01~ 600.00(Sec./Min.)	☆	0.01	
F1.0.07	Acceleration time 3	0.01~ 600.00(Sec./Min.)	☆	0.01	
F1.0.08	Deceleration time 3	0.01~ 600.00(Sec./Min.)	☆	0.01	
F1.0.09	Acceleration 4/jog acceleration time	0.01~600.00 (Sec./Min.)	☆	0.01	

F1.0.10	Deceleration 4/jog deceleration time	0.01~600.00 (Sec./Min.)	☆	0.01	
F1.0.11	EMS emergency stop and deceleration time	0.01~600.00 (Sec./Min.)	☆	0.01	

6.7.Carrier frequency

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F1.1.13	Carrier frequency	Three-phase voltage vector composition mode (FF.4.43 = ##0#) : 1.5~10.0KHz Two-phase voltage vector composition mode (FF.4.43 = ##1#) : 1.5~12.5KHz	☆	0.1	
F1.1.14	Carrier characteristics	**The unit: Load linkage adjustment** 0: Void 1: Effective **Tens: Temperature linkage adjustment** 0: Void 1: Effective **Hundreds: Reference frequency linkage adjustment** 0: Void 1: Effective **Kilobit: Modulation mode** 0: Asynchronous modulation 1: Synchronous modulation 2: Sound smooth	2011	1	

6.8.V/F parameters and overload protection

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F1.2.15	Motor reference frequency	5.00~300.00Hz/ 50.0~400.0Hz	50.00	0.01	×
F1.2.16	Motor reference voltage	50~500V / 25 ~ 250V	380/220	1	
F1.2.17	Reserved	-	-	-	×
F1.2.18	Torque increasing voltage for motor	0.0~20.0%	☆	0.1	
F1.2.19	Frequency point 1 of motor V/F curve	0.0~[F0.1.21]	0.0	0.01	×
F1.2.20	Voltage point 1 of Motor V/F curve	0~500V	0.0	0.1	
F1.2.21	Frequency point 2 of motor 1 V/F curve	0.0~[F0.1.21]	0.0	0.01	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F1.2.22	Voltage point 2 of Motor V/F curve	0~500V	0.0	0.1	
F1.2.23	Frequency point 3 of motor V/F curve	0.0~[F0.1.21]	0.0	0.01	×
F1.2.24	Voltage point 3 of Motor V/F curve	0~500V	0.0	0.1	
F1.2.25	Motor slip frequency compensation	0~150(%)	0	1	
F1.2.26 ～ F1.3.38	Reserve	-	-	-	×

6.9.Steady running

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F1.4.39	Acceleration/deceleration current limiting level	120~180(%)	150	1	
F1.4.40	Strong start current limiting level	120~200(%)	150	1	
F1.4.41	Strong start current holding time	0.00~5.00Sec.	0.0	0.01	
F1.4.42	Trip Suppression Selection	**The unit: Overvoltage suppression adjustor** 0: Closed 1: Effective (Frequency increasing suppression) 2：Terminal Inputs **Tens: Undervoltage suppression adjustor** 0: Closed 1: Effective (frequency decreasing suppression) **Hundreds: Frequency decreasing and current limiting adjustor** 0: Closed 1: Effective **Kilobit: Failure Auto Recovery Mode** 0：Speed tracking start 1：Normal Start	0110	1	
F1.4.43	Action level of the overvoltage adjustor	660~800 V	740	1	
F1.4.44	Overvoltage adjusting gain	0.10~10.00	1.00	0.01	
F1.4.45	Action level of the undervoltage	[FF.2.35]~480V	330V	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
	adjustor				
F1.4.46	Undervoltage adjusting gain	0.10~10.00	1.00	0.01	
F1.4.47	Action level of the frequency decreasing and current limiting adjustor	20~200(%)	180	1	
F1.4.48	Adjusting gain of the frequency decreasing and current limiting adjustor	0.10~10.00	1.00	0.01	
F1.4.49	Recovery times of fault self resetting	0~5(the self-recovery function is deactivated when it is set to 0)	0	1	
F1.4.50	The recovery waiting time of fault self resetting	0.2~100.0Sec.（Real waiting time progressive increase with recovery times）	1.0	0.1	
F1.4.51	Time period for self resetting timing	900~36000Sec.	3600	1	
F1.4.52	Selection of self resetting fault	**The unit: overcurrent** 0: Self resetting forbidden 1: Self resetting permitted **The tens: overvoltage** 0: Self resetting forbidden 1: Self resetting permitted **The hundreds: Output grounding** 0: Self resetting forbidden 1: Self resetting permitted **Kilobit: Running undervoltage** 0: Self resetting forbidden 1: Self resetting permitted	0000	1	F1.4.52
F1.4.53	Display coefficient	0.001 ~ 60.000	1.000	0.001	F1.4.53

6.10.Motor parameters

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F2.0.00	Rated power(tested from start static status after modification)	0.1~1000.0KW	☆	0.1KW	×
F2.0.01	Rated voltage (tested from start static status after modification)	30~480V	380/220	1V	×
F2.0.02	Rated current(tested from start static status after modification)	0.01~650.00A	☆	0.01A	×
F2.0.03	Rated frequency (tested from start static status after modification)	Max{5.00,[F2.0.04]/60} ~300.00Hz	50.00	0.01Hz	×
F2.0.04	Rated revolution (tested from start static status after modification)	10~Min.{30000,60* [F2.0.03]}rpm	☆	1rpm	×
F2.0.05	Idling current	0.15*[F2.0.02]~0.8* [F2.0.02]	☆	0.01A	×
F2.0.06	Stator resistance	0.01~65000mΩ	☆	Hint	×
F2.0.07	Stator inductance	0.001~6500.0mH	☆	Hint	×
F2.0.08	Total leakage inductance	0.001~6500.0mH	☆	Hint	×
F2.0.09	Rotator time constant	5.0~6500.0ms	☆	0.1ms	×
F2.0.10	Slip compensation coefficient	0.50~1.50	1.00	0.01	
F2.0.11 ~ F2.0.23	Retention parameter				×
F2.0.24	Z pulse initial angle	0.0 ~359.9	0.0	0.1	×
F2.0.25	Motor overload protection coefficient (131 closed)	50.0~131.0(%) (131--closed)	110.0	0.1	
F2.1.26 ~ F2.1.51	Reserved				×

6.11.Parameter measurement and pre-excitation

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F2.2.52	Start excitation time in vector mode	0.02 ~ 2.50Sec.	☆	0.01	
F2.2.53	Motor parameter measurement	0: Closed 1: Static identification 2: Static + operating parameter identification	0	1	×

The minimum unit of stator resistance, stator inductance and total leakage inductance o asynchronous machines is relevant with models.

6.12.Multifunctional input terminal

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F3.0.00	Multifunctional input terminal DI1	0~96	0	1	×
F3.0.01	Multifunctional input terminal DI2	0~96	0	1	×
F3.0.02	Multifunctional input terminal DI3	0~96	7	1	×
F3.0.03	Multifunctional input terminal DI4	0~96	8	1	×
F3.0.04	Multifunctional input terminal DI5	0~96	13	1	×
F3.0.05	Multifunctional input terminal DI6	0~96	0	1	×
F3.0.06	Multifunctional input terminal DI7/ expansion function	0~96	0	1	×
F3.0.07	Multifunctional input terminal DI8/ expansion function	0~96	0	1	×
F3.0.08	Multifunctional input terminal DI9/Fin/ standard expansion card	0~98	97	1	×
F3.0.09	Multifunctional terminal filtering time (DI1~DI5)	1~50ms	5ms	1	
F3.0.10	Multifunctional terminal filtering time (DI6~DI9)/ standard expansion card	1~50ms	5ms	1	
F3.0.11	Input terminal effective level (H)	**The unit: DI1~DI4 terminal** 0~F: 4-bit binary, bit=0 power-on effective, 1 disconnection effective **Tens: DI5~DI8 terminal** The same as above **Hundreds: DI9 terminal** The same as above **Kilobit: Reserved**	0000	1	×

6.13.Multifunctional output terminal multifunctional output terminal

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F3.1.12	Multifunctional output terminal DO1	0~62	1	1	
F3.1.13	Multifunctional output terminal DO2	0~62	2	1	
F3.1.14	Multifunctional output terminal DO3/Fout/ expansion function	0~63	63	1	
F3.1.15	DO1 terminal effective signal output delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.16	DO1 terminal void signal output delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.17	DO2 terminal effective signal output delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.18	DO2 terminal void signal output delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.19	DO3 terminal effective signal output delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.20	DO3 terminal void signal output delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.21	Multifunctional relay output (RO1A/B/C)	0~62	4	1	
F3.1.22	Multifunctional relay output (RO2A/B/C)/standard expansion card	0~62	5	1	
F3.1.23	RO1 power-on delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.24	RO1 disconnection delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.25	RO2 power-on delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.26	RO2 disconnection delay time	0.0~10.00Sec.	0.0	0.01	
F3.1.27	Input variable of monitor 1	0~44 (referring to the monitor variable comparison table)	0	1	
F3.1.28	Input variables of monitor 2		1	1	
F3.1.29	Input variables of monitor 3		2	1	
F3.1.30	Lower limiting value of monitor 1 variables (relative to full scale value	0.0~100.0 (%)	0.0	0.1	
F3.1.31	Upper limiting value of monitor 1 variables (relative to full scale value	0.0~100.0 (%)	100.0	0.1	
F3.1.32	Lower limiting value of monitor 2 variables (relative to full scale value	0.0~100.0 (%)	0.0	0.1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F3.1.33	Upper limiting value of monitor 2 variables (relative to full scale value	0.0~100.0 (%)	100.0	0.1	
F3.1.34	Lower limiting value of monitor 3 variables (relative to full scale value	0.0~100.0 (%)	0.0	0.1	
F3.1.35	Upper limiting value of monitor 3 variables (relative to full scale value	0.0~100.0 (%)	100.0	0.1	

6.14.Pulse input (Configured with standard expansion I/O board, and this group of parameters are effective when D19 selects the frequency input function)

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F3.2.36	Minimum pulse input frequency DI9/Fin	0.0~100.00KHz	0.0	0.01	
F3.2.37	Maximum pulse input frequency DI9/Fin	0.01~100.00KHz	10.0	0.01	
F3.2.38	Pulse detection cycle	1ms~20ms	10	1	
F3.2.39	Number of single-loop pulse	1~4096	1024	1	
F3.2.40	Mechanical transmission ratio (=pulse shaft revolution: motor shaft revolution)	0.010 ~ 10.000	1.000	0.001	
F3.2.41	Driving wheel diameter (for liner speed calculation)	0.1~2000.0mm	100.0	0.1	
F3.2.42	Maximum accumulative length value	10m~50000m	50000	1m	
F3.2.43	Maximum liner speed	0.01~500.00m/sec.	10.00	0.01	
F3.2.44	Current accumulative length value	0~50000m	—	1	R
F3.2.45	Current liner speed	0.0~500.00m/sec.	—	0.01	R

6.15.Pulse output (Equipped with standard expansion I/O board, and this group of parameters are effective when DO3 terminal selects the frequency output function)

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F3.3.46	Type of output pulse signal DO3/Fout	0: 0.25~100.00KHz frequency signal 1: 10.0~1000.0Hz frequency signal 2: Pulse width modulation (PWM) signal	0	1	
F3.3.47	Minimum output frequency DO3/Fout	0.25~100.00KHz	0.25	0.01	
F3.3.48	Maximum output frequency DO3/Fout	0.25~100.00KHz (PWM signal reference frequency)	10.0	0.01	
F3.3.49	Pulse output mapping variable	0~45 (monitor variable comparison table)	0	1	
F3.3.50	DO3/Fout assignment lower limit	0.0~[F3.3.51]	0.0	0.1	
F3.3.51	DO3/Fout assignment upper limit	[F3.3.50]~100.0 (%)	100.0	0.1	

6.16.Analog input

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F4.0.00	Analog input AI1 min. (0~10V)	0.00~[F4.0.01]	0.0	0.01	
F4.0.01	Analog input AI1 max. (0~10V)	[F4.0.00]~10.00V	10.00	0.01	
F4.0.02	Analog input AI2 min. (4~20mA)	0.00~[F4.0.03]	4.00	0.01	
F4.0.03	Analog input AI2 max. (4~20mA)	[F4.0.02]~20.00mA	20.00	0.01	
F4.0.04	Analog input AI3 min. (-10V~10V)/standard expansion card	-10.00~[F4.0.05]	0.00	0.01	
F4.0.05	Analog input AI3 max.(-10V~10V)/standard expansion card	[F4.0.04]~10.00V	10.00	0.01	
F4.0.06	Analog input AI1 filtering time coefficient	1~1000ms	10	1	
F4.0.07	Analog input AI2 filtering time coefficient	1~1000ms	10	1	
F4.0.08	Analog input AI3 filtering time coefficient/standard expansion card	1~1000ms	10	1	

6.17.Analog input curve correction

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F4.1.09	Analog input AI1 curve correction point 1	[F4.0.00]~[F4.0.01]	0.0	0.01	
F4.1.10	Analog input AI1 curve correction value 1	[F4.0.00]~[F4.0.01]	0.0	0.01	
F4.1.11	Analog input AI1 curve correction point 2	[F4.0.00]~[F4.0.01]	10.00	0.01	
F4.1.12	Analog input AI1 curve correction value 2	[F4.0.00]~[F4.0.01]	10.00	0.01	
F4.1.13	Analog input AI2 curve correction point 1	[F4.0.02]~[F4.0.03]	4.00	0.01	
F4.1.14	Analog input AI2 curve correction value 1	[F4.0.02]~[F4.0.03]	4.00	0.01	
F4.1.15	Analog input AI2 curve correction point 2	[F4.0.02]~[F4.0.03]	20.00	0.01	
F4.1.16	Analog input AI2 curve correction value 2	[F4.0.02]~[F4.0.03]	20.00	0.01	
F4.1.17	Analog input AI3 zero hysteresis/ standard expansion card	0.0~2.00	0.10	0.01	
F4.1.18	Analog input AI3 curve correction point 1/ standard expansion card	[F4.0.04]~[F4.0.05]	0.0	0.01	
F4.1.19	Analog input AI3 curve correction value 1/ standard expansion card	[F4.0.04]~[F4.0.05]	0.0	0.01	
F4.1.20	Analog input AI3 curve correction point 2/ standard expansion card	[F4.0.04]~[F4.0.05]	10.00	0.01	
F4.1.21	Analog input AI3 curve correction value 2/ standard expansion card	[F4.0.04]~[F4.0.05]	10.00	0.01	

6.18.Analog output

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F4.2.22	Mapping variable of multifunctional analog output AO1 (subjecting to F5.4.44 exceeding function)	0~45 (monitor variable comparison table)	0	1	
F4.2.23	Mapping variable of multifunctional analog output AO2/standard expansion card	0~45 (monitor variable comparison table)	2	1	
F4.2.24	AO1 minimum	0.00~10.00V	0.0	0.01	
F4.2.25	AO1 maximum	0.00~10.00V	10.00	0.01	
F4.2.26	AO1 lower limiting value	0.0~[F4.2.27]	0.0	0.1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F4.2.27	AO1 upper limiting value	[F4.2.26]~100.0(%)	100.0	0.1	
F4.2.28	AO1 filtering time coefficient	0.01~10.00Sec.	0.10	0.01	
F4.2.29	AO1 fixed output value (at the time of fixed output value)	0.0~20.00mA (0.0~10.00V)	0.0	0.01	
F4.2.30	AO2 minimum value/standard expansion card	0.00~10.00V	0.0	0.01	
F4.2.31	AO2 maximum value/ standard expansion card	0.00~10.00V	10.00	0.01	
F4.2.32	AO2 lower limiting value /standard expansion card	0.0~[F4.2.33]	0.0	0.1	
F4.2.33	AO2 upper limiting value / standard expansion card	[F4.2.32]~100.0(%)	100.0	0.1	
F4.2.34	AO2 filtering time coefficient/ standard expansion card	0.01~10.00Sec.	0.10	0.01	
F4.2.35	AO2 fixed output value (at the time of fixed output value)/ standard expansion card	0.0~20.00mA (0.0~10.00V)	0.0	0.01	

6.19.Analog input wire breakage detection

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F4.3.36	Analog input wire breakage detection function	**The unit: AI1 wire breakage detection** 0: Void 1: Effective **Tens: AI2 wire breakage detection** 0: Void 1: Effective **Hundreds: AI3 wire breakage detection** 0: Void 1: Effective	0000	1	×
F4.3.37	AI1 wire breakage detection threshold value (the value before correction)	0.00~10.00V	0.25	0.01	
F4.3.38	AI1 wire breakage detection delay action time	0.01~50.00Sec.	2.00	0.01	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F4.3.39	Action selection after AI1 wire-break	0: No action (for non-stop alarm) 1: Forcedly set to the minimum 2: Forcedly set to the maximum 3: Forcedly set to the defaults value (F4.3.40) 4: Inverter forced trip stop	0	1	×
F4.3.40	Default input value after AI1 wire-break	0.00~10.00V	0.0	0.01	
F4.3.41	AI2 wire breakage detection threshold value (the value before correction)	0.00~20.00mA	4.00	0.01	
F4.3.42	AI2 wire breakage detection delay action time	0.01~50.00Sec.	2.00	0.01	
F4.3.43	Action selection after AI2 wire-break	0: No action (for non-stop alarm) 1: Forcedly set to the minimum 2: Forcedly set to the maximum 3: Forcedly set to the defaults value (F4.3.44) 4: Inverter forced trip stop	0	1	×
F4.3.44	Default input value after AI2 wire breakage	0.00~20.00mA	4.00	0.01	
F4.3.45	AI3 wire breakage detection upper threshold value (the value before correction)	-10.00~10.00V	0.25	0.01	
F4.3.46	AI3 wire breakage detection lower threshold value (the value before correction)	-10.00~10.00V	-0.25	0.01	
F4.3.47	AI3 wire breakage detection delay action time	0.01~50.00Sec.	2.00	0.01	
F4.3.48	Action selection after AI3 wire-break	0: No action (for non-stop alarm) 1: Forcedly set to the minimum 2: Forcedly set to the maximum 3:Forcedly set to the defaults value (F4.3.49) 4: Inverter forced trip stop	0	1	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F4.3.49	Default input value after AI3 wire breakage	-10.00~10.00V	0.0	0.01	

6.20.Virtual analog input

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F4.4.50	Virtual analog input SAI1	0: void (0 value) 1: SAI_CF1*AI1 2: SAI_CF1*AI2 3: SAI_CF1*AI3 4: SAI_CF1*AO1 5: SAI_CF1*AO2 6: SAI_CF1*AI1+SAI_CF2*AI2+SAI_CST 7: SAI_CF1*AI1+SAI_CF2*AI3+SAI_CST 8:SAI_CF1*AO1+SAI_CF2*AO2+SAI_CST 9: SAI_CF1*AI1+SAI_CF2*AO1+SAI_CST 10:SAI_CF1*AI2+SAI_CF2*AO2+SAI_CST 11: SAI_CF1*AI1+SAI_CF2*AO1 12: SAI_CF1*AI3+SAI_CF2*AO2 13: SAI1_CF1*AI1/AI2+SAI_CST 14: SAI2_CF2*AI2/AI3+SAI_CST 15: SAI1_CF1*AI1/AI3+SAI_CST	0	1	×
F4.4.51	Virtual analog input SAI2		0	1	×
F4.4.52	Virtual input combination coefficient 1 (SAI_CF1)	0.01 ~ 500.00	1.00	0.01	×
F4.4.53	Virtual input combination coefficient 2(SAI_CF2)	0.01 ~ 500.00	1.00	0.01	×
F4.4.54	Virtual input combination constant (SAI_CST)	-4080 ~ 4080	0	1	×

6.21.Hopping frequency

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F5.0.00	Hopping frequency1	0.0~[F0.1.21]	0.0	0.01	×
F5.0.01	Range of hopping frequency 1	0.0~10.00Hz	0.0	0.01	×
F5.0.02	Hopping frequency 2	0.0~[F0.1.21]	0.0	0.01	×
F5.0.03	Range of hopping frequency 2	0.0~10.00Hz	0.0	0.01	×

F5.0.04	Hopping frequency3	0.0~[F0.1.21]	0.0	0.01	×
F5.0.05	Range of hopping frequency 3	0.0~10.00Hz	0.0	0.01	×

6.22.Built-in auxiliary timer

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F5.1.06	Timer 1 (UT1) operating mode (H)	**The unit: Clock selection** 0: 1ms 1: 1Sec. 2: 1min. 3: Timer 1 cycle reaching pulse (effective for UT2, UT3) 4: Timer 2 cycle reach pulse (only effective for UT3) **Tens: Start and stop** 0: Multifunctional terminal triggering start(Edge triggering function No. 52~54) 1: Stop-->Run status change triggering (edge triggering) 2: Run-->Stop status change triggering (edge triggering) 3: Synchronously started with timer 1 (effective for UT2, UT3) 4: Timer 1 cycle reach pulse (effective for UT2, UT3) 5: Timer 2 cycle reach pulse (effective for UT3) **Hundreds: Timer status resetting (timer value and status)** 0: Multifunctional terminal (Function No. 55~57) 1: Automatic resetting when the cycle is reached 2: Automatic resetting when timer is stopped **Kilobit: timing cycle** 0: Single-cycle timing (resetting and re-triggering required) 1: Multi-cycle timing (start again after auto clearing)	0000	1	×
F5.1.07	Timer 2 (UT2) operating mode (H)				
F5.1.08	Timer 3 (UT3) operating mode (H)				
F5.1.09	Timer 1 timing cycle	0~65535 (clock cycle)	30000	1	
F5.1.10	Timer 1 comparative threshold value	0~[F5.1.09]	10000	1	
F5.1.11	Timer 2 timing cycle	0~65535 (clock cycle)	30000	1	
F5.1.12	Timer 2 comparative threshold value	0~[F5.1.11]	10000	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F5.1.13	Timer 3 timing cycle	0~65535 (clock cycle)	30000	1	
F5.1.14	Timer 3 comparative threshold value	0~[F5.1.13]	10000	1	
F5.1.15	Timer door control signal selection (H)	**The unit: timer 1 (UT1) gated signal** 0: No gating function 1: Multifunctional terminal (Function No. 58) 2: timer 1 comparative value reached (effective for UT2, UT3) 3: Timer 1 cycle reached (effective for UT2, UT3) 4: Timer 2 comparative value reached (effective for UT3) 5: Timer 2 cycle reached (effective for UT3) **Tens: Timer 2 (UT2) gated signal selection** The same as above **Hundreds: Timer 3 (UT3) gated signal selection** The same as above	0000	1	
F5.1.16	Timer 1 output signal (H)	**The unit: output signal1** 0: Comparative value reached (0.5s pulse) 1: Comparative value reached (level) 2: Comparative value reached and reversed 3: Cycle reached (0.5s pulse) 4: Cycle reached (level) 5: Cycle reached and reversed 6: Comparative value or cycle reached and reversed **Tens: Output signal 2** The same as above **Hundreds: Reserved**	0041	1	
F5.1.17	Timer 2 output signal (H)		0041	1	
F5.1.18	Timer 3 output signal (H)		0041	1	
F5.1.19	Timer value display unit (H)	**The unit: timer 1** 0: Clock unit (original value) 1: Sec. 2: Min. 3: H. **Tens: timer 2** The same as above **Hundreds: timer 3** The same as above	0000	1	

6.23.Built-in auxiliary counter

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F5.2.20	Counter 1 operating mode (H)	**The unit: Counter pulse selection (Function No. 44, 45)** 0: Multifunctional terminal "void→effective" 1: Multifunctional terminal "effective→void" 2: Aforesaid two conditions are both effective **Tens: Starting mode** 0: Start immediately after power-on (no trigger start) 1: Multifunctional terminal trigger (Function No. 46, 47) 2: Stop-->Run status change triggering (edge triggering) 3: Run-->Stop Status change triggering (edge triggering) 4: Running status (gated triggering) 5: Stop status (gated triggering) **Hundreds: Counter resetting source** 0: Multifunctional terminal (Function No.48, 49) 1: Set value 1 reaches auto resetting 2: Set value 2 reaches auto resetting **Kilobit：Counter save data when power off** 0：Counter not save data when power off 1：Counter save data when power off	0000	1	
F5.2.21	Counter 2 operating mode (H)		0000	1	
F5.2.22	Set value 1 of counter 1	0~65535	1000	1	
F5.2.23	Set value 2 of counter 1	0~65535	2000	1	
F5.2.24	Set value 1 of counter 2	0~65535	1000	1	
F5.2.25	Set value 2 of counter 2	0~65535	2000	1	
F5.2.26	Counter 1 output signal (H)	**The unit: output signal1** 0: Reach set value 1 (0.5Sec.pulse) 1: Reach set value 1 (level) 2: Set value 1 reached and reversed 3: Reach set value 2 (0.5Sec.pulse)	0000	1	
F5.2.27	Counter 2 output signal (H)		0000	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		4: Reach set value 2 (level) 5: Set value 1reached and reversed 6: Set value 1 or set value 2 reached and reversed **Tens: output signal 2** The same as above **Hundreds: Reserved** **Kilobit: Reserved**			

6.24.Auxiliary functions

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F5.3.28	Priority selection of frequency (revolution) command source (H)	**The unit: 1st priority (highest)** 0: No definition 1: Process PID output 2: Reserved 3: Swing frequency running command 4: Automatic multi-stage frequency running command 5: Multi-stage operating frequency selected by external terminals 6: Revolution setting channel (F8.0.00) 7: Frequency setting channel (F0.2.25) **Tens: 2nd priority** The same as above **Hundreds: 3rd priority** The same as above **Kilobit: 4th priority** The same as above	0000	1	×
F5.3.29	Lower limiting frequency action mode	0: Output 0 frequency when it is below the lower limiting frequency 1: Output the lower limiting frequency when it is below the lower limiting frequency	0	1	
F5.3.30	Automatic voltage regulation (effective in VVV control mode)	0: Closed 1: Effective 2: Deceleration process void	0	1	
F5.3.31	Automatic energy-saving operation (effective for asynchronous motors)	0: Void 1: Effective	0	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F5.3.32	Magnetic flux brake	0: Void 1: Effective 2: Multifunctional terminal effective (Function No. 65)	0	1	
F5.3.33	Magnetic flux braking strength (brake exciting current)	30~120%	☆	1	
F5.3.34	Voltage over modulation	0: Void 1: Effective	1	1	
F5.3.35	Use ratio of dynamic braking (for some models)	50~100(%)	100	1	
F5.3.36	Level of dynamic braking starting action	650~760V	690	1	
F5.3.37	Vibration suppression coefficient (only effective in VF control mode)	0.0, 0.01~10.00	0.0	0.01	
F5.3.38	Load dynamic balance	1: Effective 2: Multifunctional terminal effective (Function No. 38)	0	1	
F5.3.39	Reference source for dynamic balance load	0: Digital setting (F5.3.40) 1: AI1 input 2: AI2 input 3: AI3 input 4: Fieldbus set value 1	0	1	
F5.3.40	Reference value for dynamic balance load	0.0~ 200.0 (%)	100.0	0.1	
F5.3.41	Dynamic balance adjustment gain	0.0~100.00	50.00	0.01	
F5.3.42	Dynamic balance adjustment limit	0.0~100.00 (%)	1.00	0.01	
F5.4.43 ~ F5.4.47	Reserved				

6.25.Multi-stage frequency setting

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F6.0.00	1st operating frequency	[F0.1.22]~[F0.1.21]	5.00	0.01	
F6.0.01	2nd operating frequency	[F0.1.22]~[F0.1.21]	10.00	0.01	
F6.0.02	3rd operating frequency	[F0.1.22]~[F0.1.21]	15.00	0.01	
F6.0.03	4th operating frequency	[F0.1.22]~[F0.1.21]	20.00	0.01	
F6.0.04	5th operating frequency	[F0.1.22]~[F0.1.21]	25.00	0.01	
F6.0.05	6th operating frequency	[F0.1.22]~[F0.1.21]	30.00	0.01	
F6.0.06	7th operating frequency	[F0.1.22]~[F0.1.21]	35.00	0.01	
F6.0.07	8th operating frequency	[F0.1.22]~[F0.1.21]	40.00	0.01	
F6.0.08	9th operating frequency	[F0.1.22]~[F0.1.21]	45.00	0.01	
F6.0.09	10th operating frequency	[F0.1.22]~[F0.1.21]	50.00	0.01	
F6.0.10	11th operating frequency	[F0.1.22]~[F0.1.21]	25.00	0.01	
F6.0.11	12th operating frequency	[F0.1.22]~[F0.1.21]	5.00	0.01	
F6.0.12	13th operating frequency	[F0.1.22]~[F0.1.21]	15.00	0.01	
F6.0.13	14th operating frequency	[F0.1.22]~[F0.1.21]	35.00	0.01	
F6.0.14	15th operating frequency	[F0.1.22]~[F0.1.21]	50.00	0.01	

6.26.Simple programmable multi-stage operation

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F6.1.15	Selection of programmable multi-stage speed operation mode (H)	**The unit: Function selection** 0: Function closed 1: Multi-stage frequency/revolution operation effective 2: Multi-stage frequency/revolution operation condition effective (Function No. 23) 3: Multi-stage PID setting operation effective 4: Multi-stage PID setting operation condition effective (Function No. 23) **Tens: Operation mode** 0: Single cycle 1: Single cycle stop mode 2: Continuous cycle 3: Continuous cycle stop mode 4: Keeping the final value 5: Keeping the final value stop mode **Hundreds: Selection of breakpoint/stop recovery mode**	0000	1	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		0: Restore running at the first stage 1: Start running at the interruption time (effective for multi-stage frequency/revolution operation) 2: Start running at the stage of interruption **Kilobit: Power-off status storage** 0: Not stored 1: Stored			
F6.1.16	Stage 1 setting (H)	**The unit: Operating frequency source/setting source at each stage** 0: multi-stage frequency setting 1~15/Process PID multi-stage setting 1~7 1: Frequency command (F0.1.16)/Process PID setting (F7.0.01) **Tens: Setting direction of each stage** 0: FWD 1: REV 2: Determined by the running command channel **Hundreds: Selection of acceleration and deceleration time at each stage** 0: Acceleration and deceleration time 1 1: Acceleration and deceleration time 2 2: Acceleration and deceleration time 3 3: Acceleration and deceleration time 4 **Kilobit: Running time unit of each stage** 0: Sec. 1: Min.	0000	1	
F6.1.17	Stage 2 setting (H)		0000	1	
F6.1.18	Stage 3 setting (H)		0000	1	
F6.1.19	Stage 4 setting (H)		0000	1	
F6.1.20	Stage 5 setting (H)		0000	1	
F6.1.21	Stage 6 setting (H)		0000	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F6.1.22	Stage 7 setting (H)		0000	1	
F6.1.23	Stage 8 setting (H)		0000	1	
F6.1.24	Stage 9 setting (H)		0000	1	
F6.1.25	Stage 10 setting (H)		0000	1	
F6.1.26	Stage 11 setting (H)		0000	1	
F6.1.27	Stage 12 setting (H)		0000	1	
F6.1.28	Stage 13 setting (H)		0000	1	
F6.1.29	Stage 14 setting (H)		0000	1	
F6.1.30	Stage 15 setting (H)		0000	1	
F6.1.31	Stage 1 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.32	Stage 2 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.33	Stage 3 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.34	Stage 4 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.35	Stage 5 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.36	Stage 6 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.37	Stage 7 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.38	Stage 8 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.39	Stage 9 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.40	Stage 10 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.41	Stage 11 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.42	Stage 12 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.43	Stage 13 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.44	Stage 14 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	
F6.1.45	Stage 15 running time	0.0~6500.0(Sec./Min.)	0.0	0.1	

6.27.Swing frequency operation

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F6.2.46	Function selection (H)	**The unit: Function Setting** 0: Function closed 1: Function effective 2: Terminal selectivity effective (Function No. 24) **Tens: Stop restart mode** 0: Start with the memory status before stop 1: Restart **Hundreds: Swing control** 0: Fixed swing (relative maximum frequency) 1: Variable swing (relative central frequency) **Kilobit: Status storage** 0: Not saved after power-off, and run again after restart 1: Save the status after power-off, and run again from the saved status.	0000	1	×
F6.2.47	Swing frequency preset frequency	0.0~[F0.1.21]	10.00	0.01	
F6.2.48	Preset frequency waiting time	0.0~6000.0Sec.	0.0	0.1	
F6.2.49	Swing frequency amplitude	0.0~50.0(%)	10.0	0.1	
F6.2.50	Sudden jump frequency	0.0~50.0(%)	10.0	0.1	
F6.2.51	Triangular wave rising time	0.1~1000.0Sec.	10.0	0.1	
F6.2.52	Triangular wave decreasing time	0.1~1000.0Sec.	10.0	0.1	
F6.2.53	Frequency setting in the center of the swing frequency	0.0~[F0.1.21]	10.00	0.01	

6.28.Process PID (4ms control cycle)

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F7.0.00	Process PID function selection	**The unit: Process PID controller selection** 0: Process PID closed 1: Unconditionally effective 2: External multifunctional terminal selectivity effective (Function No. 22) **Tens: Reserved** **Hundreds: Process PID controller output** 0: frequency /revolution set value 1: Independent PID (can be set by AO terminal output or as torque)	0000	1	×
F7.0.01	Process PID set value selection	0: Setting channel 1 independently effective 1: Setting channel 2 independently effective 2: Multifunctional terminal selection (Function No. 31) 3: Setting channel 1+ Setting channel 2 4: Setting channel 1- Setting channel 2 5: Setting channel 1* (1+Setting channel 2/100.0) 6: Setting channel 1* 1-Setting channel 2/100.0) 7: Setting channel 1* Setting channel 2/100.0	0	1	
F7.0.02	Process PID setting channel 1	0: Internal digital setting (F7.0.08) (power-off auto save) 1: Panel shuttle potentiometer preset 2: Analog input AI1 3: Analog input AI2 4: Analog input AI3 5: UP/DW terminal single polarity adjustment (clear after stop) 6: UP/DW terminal single polarity adjustment (maintained after stop and saved after power-off) 7: Analog input AI3 dual polarity setting 8: UP/DW terminal dual polarity adjustment (clear after stop)	0	1	×
F7.0.03	Process PID setting channel 2		0	1	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		9: UP/DW terminal dual polarity adjustment (maintained after stop and saved after power-off) 10: MODBUS Fieldbus set value 1 11: MODBUS Fieldbus set value 2			
F7.0.04	Analog input quantity corresponding to 0% setting (Channel 1)	0.0V~ [F7.0.05]/AI2: 0.0mA ~[F7.0.05]	0.0	0.01	
F7.0.05	Analog input quantity corresponding to 100% setting (Channel 1)	[F7.0.04]~10.00 /AI2:[F7.0.04]~20.00mA	10.00	0.01	
F7.0.06	Analog input quantity corresponding to 0% setting (Channel 2)	0.0V~[F7.0.07]/AI2: 0.0mA ~[F7.0.07]	0.0	0.01	
F7.0.07	Analog input quantity corresponding to 100% setting (Channel 2)	[F7.0.06]~10.00 /AI2:[F7.0.06]~20.00mA	10.00	0.01	
F7.0.08	Process PID internal digital preset	-100.0~100.0 (%)	0.0	0.1	
F7.0.09	Process PID feedback value selection	0: Feedback channel 1 independently effective 1: Feedback channel 2 independently effective 2: Multifunctional terminal selection (Function No. 32) 3: Feedback channel 1+ feedback channel 2 4: Feedback channel 1- feedback channel 2 5: Feedback channel 1* feedback channel 2/100.0 6: 100.0* feedback channel 1/ feedback channel 2 7: Min.{ feedback channel 1, feedback channel 2} 8: Max{ feedback channel 1, feedback channel 2} 9: sqrt (|feedback channel 1-feedback channel 2|)	0	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		10: sqrt (|feedback channel 1|)+sqrt (|feedback channel 2|)			
F7.0.10	Process PID feedback channel 1	0: Analog input AI1 1: Analog input AI2 2: Analog input AI3 3: Analog input AI3 dual polarity PID feedback 4: Fin pulse input	0	1	
F7.0.11	Process PID feedback channel 2		0	1	
F7.0.12	Analog feedback quantity corresponding to 0% feedback (feedback channel 1)	0.0~[F7.0.13]/AI2: 0.0mA~[F7.0.13]	0.0	0.01	
F7.0.13	Analog feedback quantity corresponding to 100% feedback (feedback channel 1)	[F7.0.12]~10.00V /AI2: [F7.0.12]~20.00mA	5.00	0.01	
F7.0.14	Analog feedback quantity corresponding to 0% feedback (feedback channel 2)	0.0~[F7.0.15]/AI2: 0.0mA~[F7.0.15]	0.0	0.01	
F7.0.15	Analog feedback quantity corresponding to 100% feedback (feedback channel 2)	[F7.0.14]~10.00V/AI2: [F7.0.14]~20.00mA	5.00	0.01	
F7.0.16	Feedback multiplication factor(e.g. calculate flow rate with differential voltage)	0.01~100.00	1.00	0.01	
F7.0.17	Proportional gain	0.0~100.00	2.00	0.01	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F7.0.18	Integration time	0.0, 0.1~1000.0Sec.	20.0	0.1	
F7.0.19	Differential coefficient	0.0, 0.01~10.00	0.0	0.01	
F7.0.20	Differential inertia filtering time	0.01~100.00Sec.	10.00	0.01	
F7.0.21	PID controller characteristics configuration (H)	**The unit: deviation polarity** 0: Positive deviation 1: Negative deviation (negation) **Tens: output polarity** 0: Single polarity 1: Dual polarity (the symbol can be reversed) **Hundreds: Action selection after the controller conditions is canceled.** 0: PID control closed (automatically switch to next level of priority setting) 1: PID output held up and current setting status is maintained.	0000	1	
F7.0.22	Permitted static deviation (relative 100% setting)	0.0~20.0%	5.0	0.1	
F7.0.23	PID output preset (at the time of output frequency as compared to the upper limiting frequency)	0.0~100.0 (%)	0.0	0.01	
F7.0.24	Preset hold time before PID starting	0.0~3600.0Sec.	0.0	0.1	
F7.0.25	Actual sensor value (range) corresponding to 100% feedback	0.01~100.00	1.00	0.01	
F7.0.26	Actual sensor value corresponding to 0% feedback	-100.00~100.00	0.0	0.01	

6.29.Process PID multi-stage setting

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F7.1.27	Process PID multi-stage preset 1	-100.0~100.0 (%)	0.0	0.1	
F7.1.28	Process PID multi-stage preset 2	-100.0~100.0 (%)	0.0	0.1	
F7.1.29	Process PID multi-stage preset 3	-100.0~100.0 (%)	0.0	0.1	
F7.1.30	Process PID multi-stage preset 4	-100.0~100.0 (%)	0.0	0.1	
F7.1.31	Process PID multi-stage preset 5	-100.0~100.0 (%)	0.0	0.1	
F7.1.32	Process PID multi-stage preset 6	-100.0~100.0 (%)	0.0	0.1	
F7.1.33	Process PID multi-stage preset 7	-100.0~100.0 (%)	0.0	0.1	

6.30.Process PID sleep function (Effective when PID output is used as the frequency command)

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F7.2.34	Sleep function	0: Closed 1: Activated Activated when the multifunctional input selection is valid (Function No. 33)	0	1	
F7.2.35	Sleep frequency	0.0~[F0.1.21]	0.0	0.01	
F7.2.36	Sleep delay	0.1~3600.0Sec.	60.0	0.1	
F7.2.37	Awakening deviation (compared with the 100% set value)	0.0~100.0 (%)	25.0	0.1	
F7.2.38	Awakening delay	0.1~3600.0Sec.	60.0	0.1	

6.31.Revolution setting and feedback

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F8.0.00	Revolution setting channel (only applicable to VC and SVC mode)	0: Set by frequency setting parameter (F0.2.25) 1: Digital setting (F8.0.03) (maintained after stop and saved after power-off) 2: Panel shuttle potentiometer setting 3: Analog inputAI1 4: Analog inputAI2 5: Analog inputAI3 (dual polarity) 6: Frequency signal input (Fin) 7: MODBUS Fieldbus set value 1 8: MODBUS Fieldbus set value 2 9: Virtual analog input SAI1 10: Virtual mode input SAI2	0	1	
F8.0.01	Minimum set signal corresponding revolution	0~60*[F0.1.21]/pairs of motor poles (rpm)	0	1	
F8.0.02	Maximum set signal corresponding revolution (limited upper limit frequency)	0~60*[F0.1.21]/pairs of motor poles (rpm)	1500	1	
F8.0.03	Revolution Digital setting (limited upper limit frequency)	0~60*[F0.1.21]/pairs of motor poles (rpm)	0	1	
F8.0.04	Revolution feedback channel	0: Decoder (PG card needs to be equipped) 1: Single pulse input (Fin port) 2: Analog input AI1 3: Analog input AI2 4: Analog input AI3 (dual polarity)	0	1	×
F8.0.05	Pulse of decoder per revolution (PG)	1~8192	1024	1	×
F8.0.06	PG rotation direction (Effective for PG card)	0: Phase A is leading 1: Phase B is leading	0	1	×
F8.0.07	PG zero pulse (Z pulse)	0: Void 1: Effective	0	1	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F8.0.08	Decoder type	0: ABZ incremental decoder 1: ABZUVW incremental type 2: SINCOS 3: Rotary transformer	0	1	×
F8.0.09	PG revolution check/control cycle	**The Unit: PG revolution check cycle 1~5ms** **Tens: Reserve** **Hundreds: Revolution closed-loop control cycle (*0.25ms) 1~8**	0402	1	
F8.0.10	Missing detection and action of speed detection signal	**The unit: Detection of speed measuring signal detection** 0: Not detect 1: Detect and treat **Tens: Act after missing of the speed detection signal** 0: Fault alarm and free stop 1: Reserved	0001	1	×
F8.0.11	Judging time for speed detection signal missing	0.01~5.00Sec.	2.00	0.01	
F8.0.12	Wire breakage zero speed signal level(as compared to the maximum set speed)	0~20.0 (%)	0.0	0.1	
F8.0.13	Speed measuring loop wire breakage detection flexibility (as compared to the maximum set speed)	0.1~100.0	5.0	0.1	
F8.0.14	Detection revolution filtering time coefficient	0 (closed) , 1~50ms	1	1	
F8.0.15	The minimum revolution corresponding to the feedback signal (not PG)	0~30000rpm	0	1	
F8.0.16	The maximum revolution corresponding to the feedback signal (not PG)	0~30000rpm	1500	1	

6.32.Revolution closed-loop parameters

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F8.1.18	Controller parameter selection	0: Single PID parameter (the second group of parameters are effective separately) 1: Dual PID parameter (hysteresis switching) 2: Dual PID parameter (continuous switching)	2	1	
F8.1.19	PID parameter switching lower limiting revolution (ASR1 group parameter low revolution effective)	0~[F8.1.20]	100	1	
F8.1.20	PID parameter switching upper limiting revolution (ASR2group parameter high revolution effective)	[F8.1.19]~60*[F0.1.21]/ pairs of motor poles (rpm)	300	1	
F8.1.21	Proportional gain 1 (ASR-P1)	0.10~2.00	1.00	0.01	
F8.1.22	Integration time 1 (ASR-I1)	0.0, 0.01~50.00 Sec.	1.50	0.01	
F8.1.23	Differential coefficient 1 (ASR-D1)	0.0, 0.01~10.00	0.0	0.01	
F8.1.24	Differential output filtering constant 1 (ASR-DT1)	0.10~5.00 Sec.	1.00	0.01	
F8.1.25	Proportional gain 2 (ASR-P2)	0.10~2.00	1.00	0.01	
F8.1.26	Integration time 2 (ASR-I2)	0.0, 0.01~50.00 Sec.	5.00	0.01	
F8.1.27	Differential coefficient 2 (ASR-D2)	0.0, 0.01~10.00	0.0	0.01	
F8.1.28	Differential output filtering constant 2 (ASR-DT2)	0.10~10.00 Sec.	1.00	0.01	
F8.1.29	Adjustor output upper limit amplitude (limited by transient positive torque)	0.0~250.0 (%)	180.0	0.1	
F8.1.30	Adjuster output lower limit amplitude (limited by transient	-250.0~0.0 (%)	-180.0	0.1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
	negative torque)				
F8.1.31	Adjustor output filter time coefficient	0.0, 0.1 ~ 50.0mS	0.0	0.1	

6.33.Protection parameter

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F8.2.32	Excessive action of revolution deviation (DEV)	0: No action 1: Alarm free stop 2: Alarm deceleration stop 3: Alarm continuing running	0	1	×
F8.2.33	Over speed (OS) detection action		1	1	×
F8.2.34	Detected value of excessive revolution deviation (DEV)	0.0~50.0% (as compared to upper limiting frequency)	20.0%	0.1	
F8.2.35	Detection time of excessive revolution deviation (DEV)	0.0~10.00Sec.	10.00	0.01	
F8.2.36	Detected value of over speed (OS)	0.0~150.0% (as compared to upper limiting frequency)	120.0%	0.1	
F8.2.37	Detection time of over speed (OS)	0.0~2.00Sec.	0.10	0.01	
F8.2.38	SVC revolution estimated gain coefficient	0.10 ~ 10.00	1.00	0.01	

6.34.Torque control

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
F8.3.39	Selection of torque control mode	0: Void 1: Effective 2: Multifunctional terminal selection effective (Function No. 34)	0	1	×
F8.3.40	Selection of torque command channel (selecting the command direction)	0: Digital setting(F8.3.41) 1: Panel shuttle potentiometer setting 2: Analog input AI1 3: Analog input AI2 4: Analog input AI3 5: Analog input AI3 (dual polarity) 6: Frequency signal input (Fin) 7: Process PID output 8: Reserved (0 by default) 9: MODBUS Fieldbus set value 1	0	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		10: MODBUS Fieldbus set value 2 11: Virtual analog input SAI1 12: Virtual mode input SAI2			
F8.3.41	Torque digital setting	-250.0~250.0 (%)	0.0	0.1	
F8.3.42	Torque value rising time (relative to rated torque)	0.0~50.000Sec.	0.01	0	
F8.3.43	Torque value decreasing time (relative to rated torque)	0.0~50.000Sec.	0.01	0	
F8.3.44	Revolution limiting setting (H)	**The unit: FWD revolution (frequency) limiting setting source** 0: Setting of FWD revolution limiting value (F8.3.45) 1: Determination of frequency Setting channel 1 (F0.2.25) **Tens: Reserved** **Hundreds: REV revolution (frequency) limiting setting source** 0: Setting of REV revolution limiting value (F8.3.46) 1: Reserved	0000	1	
F8.3.45	FWD revolution limiting value	0~60*[F0.1.21]/pairs of motor poles (rpm)	1500	1	
F8.3.46	REV revolution limiting value	0~60*[F0.1.21]/pairs of motor poles (rpm)	1500	1	
F8.3.47	Setting of torque set value limit (H)	**The unit: Minimum torque selection source (negative torque limit)** 0: Minimum torque set value 1 (F8.3.48) 1: Minimum torque set value 2 (F8.3.49) 2: Multifunctional selection terminal setting 1 or 2 3: AI1 set value 4: AI2 set value 5: MODBUS Fieldbus set value 1 6: MODBUS Fieldbus set value 2 **Tens: Reserved** **Hundreds: Maximum torque selection source** 0: Maximum torque set value 1 (F8.3.50)		1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		1: Maximum torque set value 2 (F8.3.51) 2: Multifunctional selection terminal setting 1 or 2 3: AI1 set value 4: AI2 set value 5: MODBUS Fieldbus set value 1 6: MODBUS Fieldbus set value 2			
F8.3.48	Minimum torque limit 1	-250.0~0.0 (%)	-200.0	0.1	
F8.3.49	Minimum torque limit 2	-250.0~0.0 (%)	-200.0	0.1	
F8.3.50	Maximum torque limit 1	0.0~250.0 (%)	200.0	0.1	
F8.3.51	Maximum torque limit 2	0.0~250.0 (%)	200.0	0.1	
F8.3.52	Torque zero offset	-25.0 ~ 25.0 (%)	0.0	0.1	
F8.3.53	Shock suppression coefficient	0~100	0	0.1	

6.35.MODBUS fieldbus (Standard expansion card configuration)

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FA.0.00	Communication card connection and bus status	0: The communication card not connected 1: Standard MODBUS communication card connected 2: listen only status 3: Communication interrupted	0000	1	**R**
FA.0.01	Configuration parameter	**The unit: Baud rate selection** 0: 1200 kbit/s 1: 2400 kbit/s 2: 4800 kbit/s 3: 9600 kbit/s 4: 19200 kbit/s 5: 38400 kbit/s 6: 76800 kbit/s **Tens: Data format** 0: 1-8-1-N, RTU 1: 1-8-1-E, RTU 2: 1-8-1-O, RTU 3: 1-8-2-N, RTU	0003	1	×

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FA.0.02	Local device station address	0~247(0 stands for broadcasting address)	1	1	×
FA.0.03	Local device response delay	0~1000ms	5ms	1	
FA.0.04	Communication failure judging time	0.01~10.00Sec.	1.00	0.01	×
FA.0.05	Communication failure action	0: Deceleration stop 1: Run as per last received command	0	1	

6.36.Mapping access parameter

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FA.1.08	Mapping application parameter 1 (H)	F0.00 ~ FF.55	F0.29	1	
FA.1.09	Mapping application parameter 2 (H)	F0.00 ~ FF.55	F0.29	1	
FA.1.10	Mapping application parameter 3 (H)	F0.00 ~ FF.55	F0.29	1	
FA.1.11	Mapping application parameter 4 (H)	F0.00 ~ FF.55	F0.32	1	
FA.1.12	Mapping application parameter 5 (H)	F0.00 ~ FF.55	F0.32	1	
FA.1.13	Mapping application parameter 6 (H)	F0.00 ~ FF.55	F0.32	1	
FA.1.14	Mapping status parameter 1 (H)	d0.00 ~ d1.49	d0.00	1	
FA.1.15	Mapping status parameter 2 (H)	d0.00 ~ d1.49	d0.01	1	
FA.1.16	Mapping status parameter 3 (H)	d0.00 ~ d1.49	d0.02	1	
FA.1.17	Mapping status parameter 4 (H)	d0.00 ~ d1.49	d0.03	1	
FA.1.18	Mapping status parameter 5 (H)	d0.00 ~ d1.49	d0.04	1	×
FA.1.19	Mapping status parameter 6 (H)	d0.00 ~ d1.49	d0.05	1	×
FA.1.20	Mapping status parameter 7 (H)	d0.00 ~ d1.49	d0.06	1	×
FA.1.21	Mapping status parameter 8 (H)	d0.00 ~ d1.49	d0.07	1	×
FA.1.22	Mapping status parameter 9 (H)	d0.00 ~ d1.49	d0.08	1	×
FA.1.23	Mapping status parameter 10 (H)	d0.00 ~ d1.49	d0.09	1	×

6.37.Communication linkage synchronous control

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FA.2.25	Linkage synchronous control options (H)	**The unit: Selection of linkage function** 0: Void 1: The device is the salve device 2: The device is the master device **Tens: Linkage target value** 0: Proportional linkage of frequency /revolution set value 1: Proportional linkage of frequency /revolution integrator output value **Hundreds: linkage command(slave device parameter)** 0: Independent control of slave device (start and stop not linked) 1: Start and stop command linked 2: Start-stop/jog linked 3: Start-stop/jog/excitation linked 4: Start-stop/jog/excitation /DC bind-type brake/DC braking linked **Kilobit: Linkage setting selection** 0: The unit option of the parameter is effective 1: External terminal switching (Function No. 39)	0310	1	×
FA.2.26	Correction coefficient of communication setting for this device.	0.010~10.000	1.000	0.001	
FA.2.27	Fine adjustment source for linkage proportion coefficient	0: No fine adjustment 1: Analog input AI1 2: Analog input AI2 3: Analog input AI3	0	1	
FA.2.28	Slave device offset frequency/ Revolution	0: No offset 1: Determined by frequency setting source 1 2: Determined by frequency setting source 2	0	1	
FA.2.29	Linkage	0: Void	0	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
	balancing function	1: Current balancing 2: Torque balancing 3: Power balancing			
FA.2.30	Linkage balancing gain	0.001~10.000	1.000	0.001	

6.38.Expansion multifunctional input terminal

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
Fb.0.00 ~ Fb.0.07	Expand multifunctional input terminal EDI1~ED8 (effective when expansion components are inserted)	0~96	0	1	×
Fb.0.08	Multifunctional Terminals Filter time	1ms~50ms			
Fb.0.09	Effective level of expansion multifunctional input terminal (H)	**The unit: EDI1~EDI4 terminal** 0~F: 4-bit binary system, bit=0 power-on effective, 1 Disconnection effective **Tens: EDI5~EDI8 terminal** The same as above **Hundreds: Reserved** **Kilobit: Reserved**	0000	1	×

6.39.Expansion multifunctional output terminal

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
Fb.1.10 ~ Fb.1.17	Expand multifunctional input terminal EDO1~EDO8 (effective when corresponding expansion I/O components are connected)	0~62	0	1	

6.40.Zero-speed torque and position control

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
Fb.2.18	Automatic shift frequency	0.0 ~ 5.00Hz	1.00	0.01	
Fb.2.19	Automatic shift switching cycle	0.10 ~ 2.00Sec.	0.30	0.01	
Fb.2.20	Zero frequency torque holdup (DC bind-type brake preferred)	0: Void 1: Bind-type brake torque effective 2: Position locking (PG feedback VC mode)	0	1	×
Fb.2.21	Position locking gain	0.01 ~ 10.00	1.00	0.01	
Fb.2.22	PG speed shaft propulsion distance per revolution	0.001 ~ 50.000mm	0.500	0.001	

6.41.Virtual input and output

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FF.0.00	FF configuration parameter locking function (H)	**The unit: FF parameter group modification forbidden** 0: Forbidden (effective for no display) 1: Permitted **Tens**: **Reserved** **Hundreds: Reserved** **Kilobit: Initialization of FF parameter group** 0: Forbidden 1: Permitted	0000	1	
FF.0.01	Definition of virtual output node (SDO1)	0~62	0	1	
FF.0.02	Definition of virtual output node (SDO2)	0~62	0	1	
FF.0.03	Definition of virtual output node (SDO3)	0~62	0	1	
FF.0.04	Definition of virtual output node (SDO4)	0~62	0	1	
FF.0.05	Definition of virtual output node (SDO5)	0~62	0	1	
FF.0.06	Definition of virtual output node (SDO6)	0~62	0	1	
FF.0.07	Definition of virtual output node (SDO7)	0~62	0	1	
FF.0.08	Definition of virtual	0~62	0	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
	output node (SDO8)				
FF.0.09	Definition of virtual input function (SDI1)	0~96	0	1	×
FF.0.10	Definition of virtual input function (SDI2)	0~96	0	1	×
FF.0.11	Definition of virtual input function (SDI3)	0~96	0	1	×
FF.0.12	Definition of virtual input function (SDI4)	0~96	0	1	×
FF.0.13	Definition of virtual input function (SDI5)	0~96	0	1	×
FF.0.14	Definition of virtual input function (SDI6)	0~96	0	1	×
FF.0.15	Definition of virtual input function (SDI7)	0~96	0	1	×
FF.0.16	Definition of virtual input function (SDI8)	0~96	0	1	×
FF.0.17	Virtual output- input connection polarity (H)	**The unit:** SDO1-SDI1 0: Homopolar connection 1: Antipolar connection **Tens:** SDO2-SDI2 0: Homopolar connection 1: Antipolar connection **Hundreds:** SDO3-SDI3 0: Homopolar connection 1: Antipolar connection **Kilobit:** SDO4-SDI4 0: Homopolar connection 1: Antipolar connection	0000	1	×
FF.0.18	Virtual output- input connection polarity (H)	**The unit:** SDO5-SDI5 0: Homopolar connection 1: Antipolar connection **Tens:** SDO6-SDI6 0: Homopolar connection 1: Antipolar connection **Hundreds:** SDO7-SDI7 0: Homopolar connection 1: Antipolar connection **Kilobit:** SDO8-SDI8 0: Homopolar connection 1: Antipolar connection	0000	1	×

6.42.Protection function configuration parameters

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FF.1.19	Protection action configuration 1 (H)	**The unit: Operation undervoltage protection** 0: No action 1: Act **Tens: Output grounding protection** 0: No action 1: Act **Hundreds: Output voltage phase shortage protection (Void for single camera)** 0: No action 1: Trip and stop 2: Nonstop alarm **Kilobit: Output current phase shortage or unbalancing protection** 0: No action 1: Trip and stop 2: Nonstop alarm	1111	1	
FF.1.20	Protection action configuration 2 (H)	**The unit: Temperature sensor fault** 0: No action 1: Trip and stop 2: Nonstop alarm **Tens: Inverter overheat alarm** 0: Closed 1: Act **Hundreds: Input voltage unbalancing protection (Void for single camera)** 0: No action 1: Trip and stop 2: Nonstop alarm **Kilobit: Motor overtemperature protection** 0: No action 1: Trip and stop 2: Nonstop alarm	1111	1	
FF.1.21	Protection action configuration 3 (H)	**The unit: Relay action fault protection** 0: No action 1: Act **Tens: Internal data memory abnormity protection** 0: No action 1: Act **Hundreds: Inverter undervoltage operation alarm** 0: Closed 1: Act	0111	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
		Kilobit: Reserved			
FF.1.22	Protection action configuration 4 (H)	**The unit: Drive protection action** 0: Closed 1: Act **Tens: Reserved** **Hundreds: A and B pulse reverse connection protection of PG card** 0: Closed 1: Act	0101	1	
FF.1.24	Protection action configuration 6 （H）	**The unit:Ground protection switch before operation** 0: Closed 1: Act **Tens:Oscillation suppression switch (premise F0.00=2000)** 0: Closed 1: Act **Hundreds:Dead zone compensation switch (F0.00=2000 premise)** 0: Closed 1: Act **Kilobit: Reserve**	0001	1	

6.43.Correction parameter

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FF.2.25	AI1 zero offset adjustment	-0.500~0.500V	0.0	0.001	
FF.2.26	AI1 gain correction	0.950~1.050	1.000	0.001	
FF.2.27	4mA offset adjustement for AI2	-0.500~0.500mA	0.0	0.001	
FF.2.28	AI2 gain correction	0.950~1.050	1.000	0.001	
FF.2.29	AI3 zero offset adjustment	-0.500~0.500V	0.0	0.001	
FF.2.30	AI3 gain correction	0.950~1.050	1.000	0.001	
FF.2.31	AO1 zero offset correction	-0.500~0.500V	0.0	0.001	
FF.2.32	AO1 gain correction	0.950~1.050	1.000	0.001	
FF.2.33	AO2 zero offset correction	-0.500~0.500V	0.0	0.001	
FF.2.34	AO2 gain correction	0.950~1.050	1.000	0.001	
FF.2.35	Undervoltage action level	320~450V	320	1	×
FF.2.36	Correction coefficient of DC side voltage detection value	0.950~1.050	1.000	0.001	

6.44.Special functional parameters

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FF.3.37	Setting of torque ultimate limiting mode (H)	**The unit: Constant torque area torque limitation** 0: Only limited by torque limiting parameter (including Revolution PID output limit) 1: Also limited by acceleration and deceleration current level and maximum permitted current. **Tens: Reserved** **Hundreds: Constant power area torque limitation** 0: Treated the same as the constant torque area 1: Simultaneously adjusted as per constant power algorithm	0111	1	
FF.3.38	Current closed-loop proportional gain	0.10 ~ 10.00	1.00	0.01	
FF.3.39	Current closed-loop integration time constant	0.10 ~ 10.00 (Sec.)	1.00	0.01	
FF.3.40	Total leakage inductance compensation coefficient	0.10 ~ 10.00	1.00	0.01	

6.45.Other configuration parameters

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FF.4.41	Cooling fan control (H)	**The unit: Soft start function (effective for model 4T0370 and below)** 0: No action 1: Act **Tens: Air volume auto adjustment (effective for model 4T0370 and below)** 0: No action 1: Act **Hundreds: Start time** 0: Start immediately after power-on 1: Start after running **Kilobit: Reserved**	0101	1	
FF.4.42	Operating panel control options	**The unit: Panel REV/JOG key function selection** 0: REV (REV running key) 1: JOG (FWD jog key) **Tens: Reserved** **Hundreds: Reserved** **Kilobit**: **Panel control selection (except STOP key)** 0: Standard panel interface control (can be connected to monitoring panel via RS485) 1: RS485 port external panel control(standard panel, only for monitoring) 2: Multifunctional terminal switching (Function No. 40)	0000	1	×
FF.4.43	Special function configuration (H)	**The unit: Motor parameter identification auto-start** 0: Forbidden 1: Permitted **Tens: Voltage vector composition mode** 0: Three-phase composition 1: Two-phase composition **Hundreds: Voltage small pulse shielding** 0: Void 1: Effective **Kilobit: Current suppression mode selection** 0: Void 1: Effective	1001	1	

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
FF.4.44	Asynchronous motor parameter adaptive correction	**The unit: Stator resistance** 0: Forbidden 1: Permitted **Tens: Total leakage inductance** 0: Forbidden 1: Permitted **Hundreds: Rotor time constant** 0: Void 1: Effective **LED Kilobit: Torque increasing function** 0: Void 1: Effective (gradually increasing)	1011	1	
FF.4.45	Random reference value	0~65535		1	R
FF.5.46 ~ FF.5.55	Reserved				

6.46.Historical fault recording

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
dE.0.00	Last time fault recording	-	-	-	R/I
dE.0.01	Historical fault 1	-	-	-	R/I
dE.0.02	Historical fault 2	-	-	-	R/I
dE.0.03	Historical fault 3	-	-	-	R/I
dE.0.04	Historical fault 4	-	-	-	R/I
dE.0.05	Historical fault 5	-	-	-	R/I
dE.0.06	Historical fault 6	-	-	-	R/I
dE.0.07	Historical fault 7	-	-	-	R/I

6.47.Operation status at the last fault

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
dE.0.08	Operating frequency (rotor synchronous frequency)	-3000.0~300.00Hz	0	0.01	R/I
dE.0.09	Output current	0.0~3000.0A	0	0.1	R/I
dE.0.10	Output voltage	0~1000V	0	1	R/I
dE.0.11	Detection motor revolution (when revolution sensor is equipped)	0~30000rpm	0	1	R/I
dE.0.12	Voltage at the DC side	0~1000V	0	1	R/I

Function Code	Name	Setting Range and Description	Factory Default	Minimum Unit	Change Limit
dE.0.13	Output torque	-300.0~ 300.0%	0	0.1%	R/I
dE.0.14	Target frequency	0.0~300.00Hz	0	0.01	R/I
dE.0.15	Equipment maximum temperature	0.0~150.0	0	0.1℃	R/I
dE.0.16	Command status	**The unit:** 0: Stop command 1: Running command **Tens: Reserved** **Hundreds: Reserved** **Kilobit: Reserved**	0000	1	R/I
dE.0.17	Inverter operation status	**The unit: Operation mode** 0: VF mode 1: Open-loop vector speed 2: Closed-loop vector speed 3: Open-loop torque control 4: Closed-loop torque control **Tens: Operation status** 0: Stop 1: Start acceleration 2: Stop deceleration 3: Decreasing frequency and deceleration 4: Steady operation **Hundreds: Electric/braking status** 0: Electric operation 1: Power generation operation **Kilobit: Limit suppression** 0: No action 1: Overcurrent suppression action 2: Overvoltage suppressor action 3: Undervoltage suppression action	0000	1	R/I
dE.0.18	Accumulative startup running time at the last fault	0~65535	65535	1H	R/I
dE.0.19	Startup running interval between the last two faults	0~65535	65535	1H	R/I
dE.0.20	Synchronous output frequency	-300.00~300.00Hz	0	0.01	R/I

6.48.Basic status parameter

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change Limit
d0.0.00	Output frequency and direction (rotor synchronous frequency)	-300.0Hz ~ 300.00Hz		0.01Hz	**R**
d0.0.01	Motor revolution and direction	-30000~30000rpm		1rpm	**R**
d0.0.02	Output current	0.0~ 6000.0A		0.1A	**R**
d0.0.03	Output torque	-300.0~300.0%		0.1%	**R**
d0.0.04	Output voltage	0~500V		1V	**R**
d0.0.05	Output power	-1000.0~1000.0KW		0.1KW	**R**
d0.0.06	Device body maximum temperature	0~150.0℃		0.1℃	**R**
d0.0.07	Voltage at DC side	0~1000V		1V	**R**
d0.0.08	Inverter running status	**The unit: Operation mode** 0: VF mode 1: Open-loop vector speed 2: Closed-loop vector speed 3: Open-loop torque control 4: Closed-loop torque control 5: V-F separated control **Tens: Operation status** 0: Stop 1: Start acceleration 2: Stop deceleration 3: Decreasing frequency and deceleration 4: Steady operation **Hundreds: Electric/braking status** 0: Electric operation 1: Power generation operation **Kilobit: Limit suppression** 0: No action 1: Overcurrent suppression action 2: Overvoltage suppressor action 3: Undervoltage suppression action		1	**R**

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change Limit
d0.0.09	Frequency setting channel command value (frequency)	-300.00Hz ~ 300.00Hz		0.01Hz	**R**
d0.0.10	Revolution Setting channel command value (Revolution)	-30000~30000rpm		1rpm	**R**
d0.0.11	Torque command value (set input)	-300.0~300.0%		0.1%	**R**
d0.0.12	Target operating frequency (integrator input)	-300.0Hz ~ 300.00Hz		0.01Hz	**R**
d0.0.13	Target running revolution (integrator input)	-30000~30000rpm		1rpm	
d0.0.14	Speed adjuster deviation	-3200~3200rpm		1rpm	
d0.0.15	Speed adjuster output	-300.0~300.0(%)		0.1%	
d0.0.16	Process PID setting	-100.0~100.0(%)		0.1%	
d0.0.17	Process PID feedback	-100.0~100.0(%)		0.1%	
d0.0.18	Process PID deviation	-100.0~100.0(%)		0.1%	
d0.0.19	Process PID output	-100.0~100.0(%)		0.1%	
d0.0.20 ~ d0.0.23	Reserve				
d0.0.24	Accumulative running time (H)	0~65535h		1h	
d0.0.25	Accumulative power-on time (H)	0~65535h		1h	
d0.0.26	Power-on (hh.mm.s) cycling timing	00.00.0~23.59.9		1	
d0.0.27	Kilowatt-hour counter (low)	0~1000.0KWh		0.1KWh	
d0.0.28	Kilowatt-hour counter (high)	0~60000KKWh		1KKWh	
d0.0.29	Megawatt hour counter	0~60000MW		1MW	

6.49.Auxiliary status parameter

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change Limit
d0.1.30	Frequency setting source 1 set value	0.0~300.00Hz	-	0.01Hz	**R**
d0.1.31	Frequency setting source 2 set value	0.0~300.00Hz	-	0.01Hz	**R**
d0.1.32	Frequency/revolution integrator output	-300.0~300.00Hz	-	0.01Hz	**R**
d0.1.33	Stator synchronous frequency	-300.0Hz ~ 300.00Hz	-	0.01Hz	**R**
d0.1.34	Actually measured revolution value	-30000~30000rpm	-	1rpm	**R**
d0.1.35	Inverter overload integrator value	0~1020	_	1	**R**
d0.1.36	Process PID set variable (physical quantity)	0.01~60000	-	0.01	**R**
d0.1.37	Process PID feedback variable(physical quantity)	0.01~60000	-	0.01	**R**
d0.1.38	Reserve		-		**--**
d0.1.39	Reserve		-		**--**
d0.1.40	Torque current	-3000.0~3000.0A	-	0.1A	**R**
d0.1.41	Excitation current	0.0~3000.0A	-	0.1A	**R**
d0.1.42	Device body temperature detection 1	0~150.0℃	-	0.1℃	**R**

6.50.MODBUS fieldbus status parameter (Standard expansion I/O board)

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change Limit
d0.2.46	Bus communication set value 1	-10000~10000		1	**R**
d0.2.47	Bus communication set value 2	-30000~30000		1	**R**
d0.2.48	Bus command word 1 (HEX)	0~0FFFFH		1	**R**
d0.2.49	Bus command word 2 (HEX)	0~0FFFFH		1	**R**
d0.2.50	Bus command word 1 (HEX)	0~0FFFFH		1	**R**
d0.2.51	Bus command word 2 (HEX)	0~0FFFFH		1	**R**

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change Limit
d0.2.52	Total quantity of bus information	0~65535		1	R
d0.2.53	Number of bus CRC check errors	0~65535		1	R
d0.2.54	Number of error data accepted by bus	0~65535		1	R
d0.2.55	Number of effective data of bus	0~65535		1	R

6.51.Terminal status and variable

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change Limit
d1.0.00	Terminal input (DI1~DI10)	Segment identifier (see Figure 6-1)	-	-	R
d1.0.01	Terminal input (EDI1~EDI10)	Segment identifier	-	-	R
d1.0.02	Pulse input (Fin)	0.0~100.00KHz		0.01	R
d1.0.03	Analog input AI1	0.00~10.00V		0.01	R
d1.0.04	Analog input AI2	0.00~20.00mA		0.01	R
d1.0.05	Analog input AI3	-10.00~10.00V		0.01	R
d1.0.06	Digital signal output (DO1~DO4/EDO1~EDO6)	Segment identifier	-	-	R
d1.0.07	Relay contact output (RO1~RO4/ERO1~ERO6)	Segment identifier	-	-	R
d1.0.08	Frequency output Fout (indicating the duty ratio in the case of PWM signal output)	0.0~100.0KHz		0.01	R
d1.0.09	Analog output AO1	0.00~10.00V		0.01	R
d1.0.10	Analog output AO2	0.00~10.00V		0.01	R

Figure 6-1 Terminal Effective Sketch

As shown in figure 6-1, DI2, DI3, DI7, DI9 terminal input is in effective status, and other terminals are at void status.

6.52.Counter timer value

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change Limit
d1.1.11	Counter 1 current value	0~65535		1	**R**
d1.1.12	Counter 2 current value	0~65535		1	**R**
d1.1.13	Timer 1 current value	0~65535		1	**R**
d1.1.14	Timer 2 current value	0~65535		1	**R**
d1.1.15	Timer 3 current value	0~65535		1	**R**

6.53.Positioning status parameter

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change Limit
d1.2.16	Spindle (PG installation shaft) position angle	0~359.9		0.1	**R**
d1.2.17	Spindle (PG installation shaft) travelling circle number	0~65536		1	**R**
d1.2.18	Accumulative number of position pulse (low)	0~65535		1	**R**
d1.2.19	Accumulative number of position pulse (middle)	0~65535		1	**R**
d1.2.20	Progressive distance	0.0~5000.0mm		0.1	**R**

6.54.Equipment information

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change limit
d1.4.40	Expansion module connection information	**The unit: Reserved** **Tens: Standard expansion board** 0: Not connected 1: Connected **Hundreds: Functional expansion board 1** 0: Not connected 1~F: Connected (the value stands for the type of expansion board) **Kilobit: Functional expansion board 2** 0: Not connected 1~F: Connected (the value stands for the type of expansion board)		1	**R**
d1.4.41	Total quantity	0~65535		1	**R**

Function Code	Name	Value Range and Description	Factory Default	Minimum Unit	Change limit
	of panel communication information				
d1.4.42	Number of panel communication CRC check errors + number of errors accepted	0~65535		1	**R**
d1.4.43	Number of effective data of panel communication	0~65535		1	**R**
d1.4.44	Reserve				--
d1.4.45	Equipment capacity	0.1~1000.0KW		0.1KW	**R**
d1.4.46	Motherboard program version (H)	5100~5999		1	**R**
d1.4.47	Reserve				--
d1.4.48	Motherboard check date (H)	2009~2100		1	**R**
d1.4.49	Motherboard check date (H)	0101~1231		1	**R**
d1.4.50	Motherboard check serial number	0 ~ 50000		1	**R**

Exhibit 1 Comparison table of multifunctional ter minal (DI/EDI/SDI) functions

S/N	Function	S/N	Function
0	No function	1	Multi-speed control 1
2	Multi-speed control 2	3	Multi-speed control 3
4	Multi-speed control 4	5	FWD jog
6	REV jog	7	Forward (FWD) running command terminal
8	Reverse (REV) running command terminal	9	Acceleration and deceleration time selection 1
10	Acceleration and deceleration time selection 2	11	Running command switching
12	Frequency command switching	13	Fault resetting input (RESET)
14	Emergency stop (EMS)	15	Frequency or Process PID set value ascending (UP)
16	Frequency or Process PID set value descending (DW)	17	UP/DW set frequency clear
18	External equipment fault	19	Three-line running control

S/N	Function	S/N	Function
20	Stop DC braking command	21	Acceleration and deceleration forbidden
22	Process PID effective	23	Simple PLC multi-stage running effective
24	Swing frequency running effective	25	Reserve
26	Simple PLC multi-stage running status (when stopping) resetting	27	Swing frequency status resetting (effective when stopping)
28	Multi-stage process PID giving terminal 1	29	Multi-stage Process PID giving terminal 2
30	Multi-stage process PID giving terminal 3	31	Process PID setting selection (switching)
32	Process PID feedback selection (switching)	33	Process PID sleep activation
34	Torque/speed control mode switching	35	Minimum torque limiting set value selection
36	Maximum torque limiting set value selection	37	Overvoltage suppression input
38	Load dynamic balancing effective	39	Linkage setting conditions effective
40	RS485 external/Standard operation panel control switching	41	Reserved
42	Start permission	43	Running permission
44	Counter 1 clock terminal	45	Counter 2 clock terminal
46	Counter 1 trigger signal	47	Counter 2 trigger signal
48	Counter 1 resetting terminal	49	Counter 2 resetting terminal
50	Counter 1 gated signal	51	Counter 2 gated signal
52	Timer 1 trigger signal	53	Timer 2 trigger signal
54	Timer 3 trigger signal	55	Timer 1 resetting
56	Timer 2 resetting	57	Timer 3 resetting
58	Timer 1 gated signal	59	Timer 2 gated signal
60	Timer 3 gated signal	61	Single pulse accumulative length value resetting
62	Motor temperature detection contact input	63	Reserved
64	Reserved	65	Magnetic flux brake
66	Position pulse counting (PG pulse counting accumulation) resetting	67	Automatic shifting (Spindle shifting jog running)
68 ~ 80	Reserved	81 ~ 96	Reserve (for function expansion card)
97	0.10~100.00KHz pulse input port (Fin effective)	98	1.0~1000.0Hz pulse input port (Fin effective)

Exhibit 2 Comparison table of multifunctional output terminal (DO/EDO/SDO)

S/N	Function	S/N	Function
0	No definition	1	Inverter running ready (normal voltage, no emergency stop input)
2	Inverter is running	3	Equipment normal (fault-free running)
4	Equipment fault (trip)	5	Equipment alarm
6	Equipment fault or alarm	7	REV running
8	Running command input (irrelevant with start or running signal)	9	Running with zero frequency
10	Speed not at zero	11	Inverter undervoltage stop
12	Terminal control effective	13	In the process of acceleration running
14	In the process of deceleration running	15	Braking power generation running status
16	Determined by standard MODBUS Fieldbus	17	Determined by extended communication module
18	Reserved	19	Completion of current stage of multi-stage running (0.5s pulse)
20	Multi-stage running completed (0.5S pulse)	21	Multi-stage running completed (continuous level output)
22	Multi-stage running cycle completed (0.5Spulse)	23	Swing frequency upper and lower limit
24	Decoder direction positive (A pulse surpassing B pulse)	25	Decoder direction negative (A behind B)
26	Monitor 1 input variable below the lower limit (Void when above the upper limit)	27	Monitor 1 input variable above the upper limit (void when below the lower limit)
28	Monitor 1 input variable between the upper limit and the lower limit	29	Monitor 2 variable below the lower limit (void when above the upper limit)
30	Monitor 2 input variable above the upper limit (void when below the lower limit)	31	Monitor 2 input variable between the upper limit and the lower limit
32	Monitor 3 input variable below the lower limit (void when above the upper limit)	33	Monitor 3 input variable above the upper limit(void when below the lower limit)
34	Monitor 3 input variable between the upper limit and the lower limit	35	Reserved
36	Analog input AI1 wire breakage detection effective	37	Analog input AI2 wire breakage detection effective
38	Analog input AI3 wire breakage detection effective	39	Reserved

S/N	Function	S/N	Function
40	Counter 1 output signal 1	41	Counter 1 output signal 2
42	Counter 2 output model 1	43	Counter 2 output signal 2
44	Timer 1 output signal 1	45	Timer 1 output signal 2
46	Timer 2 output signal 1	47	Timer 2 output signal 2
48	Timer 3 output signal 1	49	Timer 3 output signal 2
50 ~ 54	Retained for extension modules	55	DI1 terminal status effective
56	DI2 terminal status effective	57	DI3 terminal status effective
58	DI4 terminal status effective	59	DI5 terminal status effective
60	DI6 terminal status effective	61	DI7 terminal status effective
62	DI8 terminal status effective	63	Terminal as frequency output (only applicable to DO3/Fo terminal)

Direction will not be considered for comparison of monitor variables.

Exhibit 3 Monitor variable comparison table

S/N	Monitoring Parameter Variable	100% full-scale output
0	Output frequency(rotorsynchronous frequency)	Upper limiting frequency
1	Motor Revolution	Upper limiting frequency *60/pairs of motor poles
2	Output current	250%* Inverter rated current
3	Output torque	300% rated torque
4	Output voltage	Motor rated voltage (reference voltage in VF mode)
5	Output power	2* motor rated power
6	Maximum temperature of the equipment	150.0℃
7	Voltage at the DC side	1000V (single phase 500V)
8	Motor temperature/ PTC resistance	500.0℃/5000 Ohm
9	Frequency setting channel set value	Upper limiting frequency
10	Speed command	Upper limiting frequency *60/pairs of motor poles
11	Torque command	300% rated torque
12	Target operating frequency	Upper limiting frequency
13	Difference between frequency (revolution) output and set value	Upper limiting frequency (revolution)
14	Speed adjuster deviation	Upper limiting frequency *60/pairs of motor poles
15	Speed adjuster output	300.0%
16	Process PID setting	100.0%
17	Process PID feedback	100.0%
18	Process PID deviation value	200.0%
19	Process PID output	100.0%
20~23	Reserved	--
24	AI1 input (0.00~10.00)	10.00V
25	AI2 input (0.00~20.00)	20.00mA
26	AI3 input (-10.00~10.00)	10.00V
27	Fin input	Maximum input frequency
28	Current liner speed (Fin calculation)	Maximum permitted liner speed
29	Accumulative counted length (liner speed accumulation)	Maximum counted length
30	Counter 1 value	Counter 1 set value 2
31	Counter 2 value	Counter 2 set value 2
32	Timer 1 value	Timer 1 timing cycle
33	Timer 2 value	Timer 2 timing cycle
34	Timer 3 value	Timer 3 timing cycle
35	Built-in Fieldbus set value 1	10000
36	Extended communication module set value 1	10000
37	Built-in Fieldbus set value 2	30000
38	Extended communication module set value 2	30000
39~44	Reserved	
45	Fixed output (current or voltage)	20.00mA (10.00V)

Chapter 7 Warning, Alarm Diagnosis And Countermeasures

When the frequency inverter sends warning signals, the auxiliary display column displays warning code. Some warnings have no influence on the operation of the inverter. Those warnings which may influence the operation of the frequency inverter should be eliminated as much as possible; otherwise, more serious faults may be caused. When the frequency inverter fails to alarm, its protective function will act and display fault code and the inverter will stop outputting with the motor freely sliding and shutting down.

7.1. Alarm display and troubleshooting

Display	Fault description	Possible causes	Solutions
Fu.001	Over current during acceleration	1. The acceleration time is too short. 2. V/F curve or torque boosting is set improperly. 3. After transient stop, the rotating motor is restarted. 4. The frequency inverter has smaller capacity. 5. The encoder is faulty or disconnected during the operation and acceleration with PG.	1. Adjust acceleration time 2. Adjust V/F curve or torque boosting parameters. 3. Set the start/stop mode [F0.4.38] to the revolution tracking restart mode. 4. Select frequency inverter with matched capacity level. 5. Check encoder and its connection.
Fu.002	Over current during deceleration	1. The deceleration time is too short. 2. The potential energy load or load inertia is too large. 3. The frequency inverter has smaller capacity. 4. The encoder is faulty or disconnected during the operation and deceleration with PG.	1. Adjust deceleration time. 2. Connect braking resistor or unit externally. 3. Select frequency inverter with matched capacity level. 4. Check encoder and its connection.
Fu.003	Over current during operation	1. The load changes suddenly. 2. The grid has over-low voltage. 3. The frequency inverter has smaller capacity. 4. The load is overweight. 5. After transient stop, the rotating motor is restarted (at the time of start). 6. The three-phase output line of the frequency inverter has interphase short circuit or phase line short circuit to ground. 7. The encoder is suddenly	1. Reduce load sudden change. 2. Check voltage of power supply. 3. Select frequency inverter with matched capacity leve.l. 4. Check load or replace with a frequency inverter with larger capacity . 5. Set the start/stop mode [F0.4.38] to the revolution tracking restart mode. 6. Eliminate short circuit fault.

Display	Fault description	Possible causes	Solutions
		disconnected during closed-loop high-speed operation.	7. Check the encoder's wiring.
Fu.004	Over voltage during acceleration	1. The input voltage is abnormal. 2. The revolution closed loop parameters are set improperly during vector control operation. 3. The rotating motor is started (without revolution tracking).	1. Check input power supply. 2. Adjust revolution closed loop parameters, please refer to the description of F8.1 parameter set. 3. Set the start/stop mode [F0.4.38] to the revolution tracking restart mode.
Fu.005	Over voltage during deceleration	1. The deceleration period is too short. 2. The load potential energy or inertia is too large. 3. The input voltage is abnormal.	1. Adjust deceleration time. 2. Connect braking resistor or unit externally. 3. Check input power supply.
Fu.006	Over voltage during operation	1. The input voltage is abnormal. 2. The parameters of regulator are set improperly during vector control operation.	1. Install input reactor 2. Adjust parameters of regulator; please refer to the description of parameter set in F8.1
Fu.007	Over voltage when shutting down	The voltage of the power supply is abnormal	Check voltage of power supply
Fu.008	Under voltage during operation (can be shielded)	1. The voltage of the power supply is abnormal 2. Large load is started in the grid.	1. Check voltage of power supply 2. Supply power separately
Fu.009	Drive protection action (can be shielded)	Main loop fault or interruption	1. Check the main loop. 2. Shield this protection. 3. Please consult the manufacturer before operation.
Fu.011	Electromagnetic interference	False operation caused by the surrounding electromagnetic interference.	Seek for technical service
Fu.012	Inverter overload	1. The load is excessively high. 2. The acceleration period is too short. 3.The booster voltage of torque is too high or the V/F curve is set improperly. 4. The grid voltage is too low. 5. The rotating motor is directly started when the function of revolution tracking restart is no activated. 6. In closed loop vector mode, the encoder is reversed.	1. Reduce load or replace with a frequency inverter with larger capacity. 2. Prolong acceleration time. 3. Reduce torque lifting voltage and adjust V/F curve. 4. Check the voltage of grid. 5. Set the start/stop mode [F0.4.38] to the revolution tracking restart mode. 6. Check whether the encoder is reverse.

Display	Fault description	Possible causes	Solutions
Fu.013	Overload protection action of motor	1. V/F curve is set improperly 2. The grid voltage is too low. 3. The motor has run for a long time with low speed and large load. 4. The overload protection coefficient of the motor is too small. 5. Locked-rotor operation of motor or overlarge load. 6. In closed loop vector mode, the encoder is reversed.	1. Adjust V/F curve. 2. Check the input grid voltage. 3. Select special frequency-variable /for long-term low speed operation. 4. Increase the overload protection coefficient of the motor ([F2.0.25]). 5. Adjust the working conditions of the load or select frequency inverter with matched capacity level. 6. Adjust the connection of encoder or change the function setting for direction of the encoder.
Fu.014	Overheating of frequency inverter	1. The air duct is blocked. 2. The ambient temperature is over high. 3. The fan is abnormal. 4. The temperature detecting circuit or power module is abnormal.	1. Clean the air duct or improve ventilation conditions. 2. Improve ventilation conditions and reduce carrier frequency. 3. Replace the fan. 4. Seek for the manufacturer's support.
Fu.017	External equipment is faulty or the panel has forced stoppage	The external equipment of the frequency inverter is faulty, the input terminal has signal input.	Check signal source and relevant equipment and find the root leading to the stoppage of the panel.
Fu.018	Excessive protection of revolution deviation (DEV)	1. The load is too large. 2. The acceleration time is too short. 3. The load is locked. 4. The detection value ([F8.2.34]) and time ([F8.2.35]) for DEV is set improperly.	1. Reduce load 2. Prolong acceleration and deceleration time. 3. Confirm the mechanical system of the load . 4. Reset the detection value ([F8.2.34]) and time ([F8.2.35]) for DEV.
Fu.019	Over speed fault (OS)	1. Overshoot or undershoot. 2. The frequency is too high. 3. The over speed detection value ([F8.2.36]) and the over speed time ([F8.2.37]) is set improperly.	1. Adjust the gain 2. Adjust the set value of frequency. 3. Reset the set value of the detection value ([F8.2.36]) and time ([F8.2.37]) of OS.
Fu.020	Reverse connection of A, B pulse	The A-phase and B-phase pulses on PG card are connected in wrong sequence.	1. Change the connection order of A, B pulse. 2. Modify the setting of parameter F8.0.06. 3. Adjust phase sequence of output U, V, W.

Display	Fault description	Possible causes	Solutions
Fu.021	The main loop contactor does not act properly.	The main loop contactor does not contact well.	Replace the main loop contactor.
Fu.022	Internal data memory is faulty	1. There is intense noise around in the process of writing in function code data. 2. The internal memory is damaged.	1. Retry after reset 2. Seek for manufacturer's service
Fu.026 **Fu.027** **Fu.028**	The output current of U phase is deficient/ smaller. The output current of V phase is deficient/ smaller. The output current of W phase is deficient/ smaller	1. The lead from frequency inverter to motor is disconnected. 2. The driving or control panel of the frequency inverter is faulty. 3. The three-phase winding of the motor is faulty.	1. Eliminate peripheral faults. 2. Seek for manufacturer's support. 3. Eliminate motor faults.
Fu.032	The three-phase input voltage is unbalanced (can be shielded)	The imbalance rate of three-phase volta0ge is larger.	1. Add AC or DC reactor. 2. Increase the capacity of frequency inverter.
Fu.036 **Fu.037** **Fu.038**	AI1 input disconnection. AI2 input disconnection. AI3 input disconnection.	1. The wiring of input analog signal is disconnected or analog input signal source is inexistent. 2. Parameters related to disconnection detection are configured improperly.	1. Check the wiring of analog input signal and the analog input signal source. 2.Modify the configuration parameters.
Fu.039	Fin input is disconnected	1. The wiring of pulse input signal is disconnected or analog input signal source is inexistent. 2. Parameters related to disconnection detection are configured improperly.	1. Check the wiring of pulse input signal and analog input signal source. 2.Modify the configuration parameters.
Fu.040	The revolution detection loop is disconnected	1. The speed measuring module is incorrectly connected. 2. The wiring of speed measuring module is disconnected. 3. The output of speed measuring module is abnormal. 4. Relevant function codes are set improperly.	1. Check the connection of speed measuring module. 2. Seek for manufacturer's support.

Display	Fault description	Possible causes	Solutions
Fu. 041	The motor fails to be connected when the motor parameters are identified.	The motor fails to be connected when the motor parameters are identified.	Connect the motor.
Fu.042	U phase output is disconnected or the parameters are seriously unbalanced	1. The lead from frequency inverter to motor is disconnected. 2. The driving or control panel of the frequency inverter is faulty. 3. The three-phase winding of the motor is faulty.	1. Eliminate peripheral faults 2. Seek for manufacturer's support. 3. Eliminate motor faults.
Fu.043	V phase output is disconnected or the parameters are seriously unbalanced	1. The lead from frequency inverter to motor is disconnected. 2. The driving or control panel of the frequency inverter is faulty. 3. The three-phase winding of the motor is faulty.	1. Eliminate peripheral faults. 2. Seek for manufacturer's support 3. Eliminate the fault of motor.
Fu.044	W phase output is disconnected or the parameters are seriously unbalanced	1. The lead from frequency inverter to motor is disconnected. 2. The driving or control panel of the frequency inverter is faulty. 3. The three-phase winding of the motor is faulty.	1. Eliminate peripheral faults. 2. Seek for manufacturer's support 3. Eliminate the fault of motor.
Fu.051	U phase current is detected faulty (sensor or circuit)	1.The current sensor or circuit is damaged. 2. The auxiliary power supply is faulty. 3. The control and driving panel are improperly connected.	Seek for manufacturer's support.
Fu.052	V phase current is detected faulty (sensor or circuit)	1.The current sensor or circuit is damaged. 2. The auxiliary power supply is faulty. 3. The control and driving panel are Improperly connected.	Seek for manufacturer's support.
Fu.054	The temperature sensor 1 is faulty (can be shielded)	The temperature detecting circuit is abnormal.	Seek for manufacturer's support
Fu.067	The communication linkage of functional expansion unit 1 is abnormally disconnected.	1. The expansion board is not well contacted with the main control board. 2. The expansion board is damaged.	1. Reinstall the expansion board. 2. Replace with a new expansion board.

Display	Fault description	Possible causes	Solutions
Fu.068	The communication linkage of functional expansion unit 2 is abnormally disconnected.	1. The expansion board is not well contacted with the main control board. 2. The expansion board is damaged.	1. Reinstall the expansion board. 2. Replace with a new expansion board.
Fu.072	The connection of accessories is abnormal		
Fu.201	Conflicting parameter setting		Please contact the direct supplier.
Fu.301 ~ Fu.311	Control panel is faulty		Seek for manufacturer's support.

7.2. Warning display and troubleshooting

Display	Warnings	Can be shielded or not	Solutions other than shielding
aL.003	Over high power supply voltage.		Check input power supply
aL.008	Lower input voltage (under voltage early warning)		Check input power supply
aL.011	Bad electromagnetic environment		Improve working environment or seek for manufacturer's support.
aL.012	The load is excessively high and protection maybe occurred.		Reduce load, or replace a frequency inverter with larger power.
aL.014	INV overheating early warning		Improve ventilation conditions and reduce carrier.
aL.018	Overlarge DEV		1. Reduce load 2. Prolong acceleration and deceleration time. 3. Confirm mechanical system of load. 4. Confirm the detection value ([F8.2.34]) and time ([F8.2.35]) for DEV.
aL.019	Over speed (OS)		1. Adjust frequency setting loop 2. Check the setting value of detection value [F8.2.36]) and time ([F8.2.37]) for OS.
aL.026 **aL.027** **aL.028**	The output current of U phase is deficient/smaller. The output current of V phase is deficient/smaller. The output current of W phase is deficient/smaller.	Can be shielded	Check the connecting wire between frequency inverter and motor or the winding of motor.

Display	Warnings	Can be shielded or not	Solutions other than shielding
aL.031	The starting enabling signal is deficient		1. Check the enabling connection (42) in multifunctional input terminal and the status of the terminal (ON/OFF). 2. Check whether the starting enabling signal in bus command word is effective or not.
aL.032	Early warning of unbalanced three-phase input voltage	Can be shielded	Measure the input voltage of all the phases, install ACR and reduce imbalance rate among phases.
aL.036 aL.037 aL.038	AI1 input is disconnected AI2 input is disconnected AI3 input is disconnected	Can be shielded	1. Check the connection of analog input signal. 2. Check whether there're signals in the signal source .
aL.039	Fin input is disconnected (retained)		
aL.040	The revolution detecting loop is disconnected		1. Check the connection of speed measuring module. 2. Seek for manufacturer's support.
aL.041	No-load operation fails to identify the parameters of motor		
aL.042 aL.043 aL.044	The parameters of U phase of motor is abnormal The parameters of V phase of motor is abnormal The parameters of W phase of motor is abnormal		Check whether the winding of motor is faulty.
aL.045	Over temperature of motor		Select special motor for frequency conversion for long-term low speed operation.
aL.049	The driving circuit is abnormal and unbalanced		
aL.054	The temperature sensor is faulty	Can be shielded	Replace the temperature sensor.
aL.058	The parameters can not be recovered in batch during operation		
aL.059	The numerical value when energized can not be recovered during operation		
aL.061	The connection between expanded communication module and master control board is interrupted abnormally		
aL.062	The function expansion unit 1 has a hardware conflict		1. The expansion unit selected is inappropriate and can not be used with such type of frequency inverter. 2. The function expansion unit has a internal fault.

Display	Warnings	Can be shielded or not	Solutions other than shielding
aL.063	The function expansion unit 2 has a hardware conflict		1. The expansion unit selected is inappropriate and can not be used with such type of frequency inverter. 2. The function expansion unit has a internal fault.
aL.064	The function expansion unit has a resource conflict		This expansion unit can not be used with other expansion units.
aL.065	Fail to establish communications with function expansion unit 1		
aL.066	Fail to establish communications with function expansion unit 2		
aL.067	The communication links of function expansion unit 1 is interrupted abnormally		
aL.068	The communication links of function expansion unit 2 is interrupted abnormally		
aL.071	The parameter download is failed (note: download is from operation panel to control panel of frequency inverter; upload is from control panel to operation panel)		Check whether the communication interface between operation panel and control panel is normal or not.
aL.072	The memory of panel fails to be operated		
aL.073	The memory of panel inhibits write and can not download parameters		
aL.074	The upload of parameters is failed (automatically recover to the numerical value before uploading)		1. Check whether the communication interface between panel and control panel is normal or not. 2. In the parameter F0.0.08, parameter upload is forbidden in terms of local upload.
aL.075	The version of panel parameters is different from that of equipment parameters; it can not be uploaded		Re-upload panel parameters same as the version of equipment parameters.
aL.076	The panel has no effective parameters and can not be uploaded		The panel parameters are not modified effectively and need not to be uploaded.
aL.077	The panel parameters exceed the setting scope INV allowed and fail to be uploaded		Confirm the allowed parameter scope, reset and upload.
aL.099	The operation panel is abnormally connected		After power off, reinsert and pull out of the panel or replace the panel.

Display	Warnings	Can be shielded or not	Solutions other than shielding
aL.100	The control program is failed resulted from electromagnetic interference		Improve electromagnetic environment.
aL.103	The setting motor parameters are conflicted (rated frequency, revolution conflict)		Reset the motor parameters
aL.104	The setting motor parameters are conflicted (no-load current, rated current, rated revolution, rated frequency and rotor time constant)		Reset the motor parameters
aL.105	The inductance parameters of motor stator overflow (the motor parameter is incorrectly set)		Reset the inductance parameters of motors stator.
aL.201	The setting parameters are conflicted and it's about to shut down		Immediately contact the direct supplier

Chapter 8 Care And Maintenance

Subjecting to influence of many factors such as temperature, humidity, dust, vibration as well as internal components aging, the inverter has potential risk of faults. In order to ensure long and steady operation of the system, regular care and maintenance must be conducted.

After long-distance transportation of the frequency inverter, users should check whether the components are in good condition, or the screws are fastened before use them. During the normal use period, users shall regularly clean the internal dust of frequency inverter and check whether the screws are loose.

- The inspection must be carried out by professional technicians, and the power supply of the inverter should be cut off.
- For inverters that have been stored for more than half a year, the power supply should be slowly boosted through the voltage regulator when the inverter is powered on, otherwise there is a risk of electric shock and explosion (internal electrolytic capacitors).

8.1. Routine care and maintenance

Through routine maintenance, all kinds of abnormal condition and abnormal cause can be found promptly, and the faults and hidden dangers can be eliminated as soon as possible. Thus, the normal operation of equipment can be warrantyd and also the service life of the frequency inverter can be prolonged. Refer to the following table for routine maintenance.

Object checked	Inspection cycle	Scope of inspection	Assessment criterion
Operation environment	Irregularly	● Humidity, temperature ● Dust,moisture ● Gas	1. Open the frequency inverter when the temperature is above 45℃. 2. Keep humidity below 95%, without frost deposit. 3. Free from peculiar odor, inflammable and explosive gas.
Cooling system	Regularly	● Installation environment ● Frequency inverter fan	1. The installation environment shall be well ventilated and the duct has no block. 2. Fan is in well operation and without abnormal noise.

Frequency inverter	Irregularly	● Vibration, temperature rise ● Noise ● Wire, terminal	1. Vibration is smooth and outlet temperature is normal. 2. No abnormal noise and no peculiar smell. 3. No loose for fastening screw.
Generator	Irregularly	● Vibration, temperature rise ● Noise	1. Smooth operation and normal temperature. 2. No abnormalities and inconsistent noise
Input or output parameter	Irregularly	● Input voltage ● Output current	1. The input voltage is in the specified scope. 2. Output current is below the rated value.

➢ The inverter has been tested for electrical insulation before leaving the factory, and the user does not need to perform the withstand voltage test, otherwise the internal components may be damaged.

➢ If the inverter must be tested for insulation, all input and output terminals must be short-circuited reliably. It is strictly forbidden to perform insulation test on a single terminal; please use a 500V megohmmeter for the test.

➢ The control loop cannot be measured with a megohmmeter. There are electrostatic sensitive components inside the inverter, hence direct touch is prohibited.

➢ When conducting insulation test on the inverter, the connection between the inverter and the motor must be removed.

8.2. Inspection and displacement of the vulnerable components

8.2.1. Filtercapacitor

Replace electrolytic capacitors of frequency inverter every three to four years under normal conditions.

8.2.2. Cooling fan

Service life of the entire cooling fan in frequency converter is about 15000 hours (i.e. frequency inverter use continuously for about two years), if the fan has unusual voice or vibration, it should be replaced immediately.

Warranty Card

Maintenance Company：_____ User：_____

Model No.：_____ Purchase Date：_____

Invoice No.：_____ Purchased From：_____

Add：Building A,Huichao Industrial Pack,Gushu 2nd Rd.,Xixiang,Bao'an District,Shenzhen,China.

Post Code：401336 Tel：0086-0755-26607756

Service：0086-0755-26910928 Fax：0086-0755-26919882

Note：

1. Please keep this card properly, please contact service center with this card and invoice when need maintenance.
2. The warranty period is 18 months.

Shenzhen Simphoenix Electric Technology Co.,Ltd

Cut along the dotted line

Certificate of Approval

This product is approved to delivery according to the standard

Inspector：_____

Shenzhen Simphoenix Electric Technology Co.,Ltd

If the frequency inverter body has the following cases, the company will provide warranty service:

- If faults or damages occur in normal use condition within the warranty period (within 18 months from the date of purchase), our company will provide free maintenance. Our company will charge a reasonable cost of maintenance when the warranty period has expired (more than 18 months).
- Even in the warranty period, if any fault is caused by the following cases, our company will charge certain amount of maintenance cost:

① Fault due to that the users do not operate the device according to the operation manual or beyond the standard;

② Fault due to random repair and modification without permission;

③ Fault caused by poor preservation;

④ Fault caused by improper use of the inverter for unintended purposes;

⑤ Damage to the machine due to fire, corrosive salt, gas corrosion, earthquake, storms, floods, thunder, abnormal voltage or other force majeure.

- The company will provide lifelong paid maintenance services even the warranty period expires.