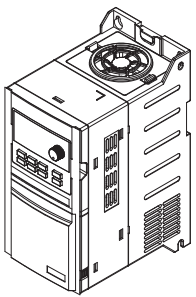
Canroon

CV900G 系列通用型矢量变频器
CV900G Series Vector Control General Inverter

使 用 手 册
Instruction Manual



使用前请务必仔细阅读此手册
Please read this manual before use

Contents

1. Technical Index and Specification 3
2. Safety and Installation Precautions of Frequency Converter 6
  2.1 Safety, Installation Precautions, Use Environmen and Space 6
    2.1.1 Safety Precautions 6
    2.1.2 Installation Precautions 7
    2.1.3 Operation Environment 8
    2.1.4 Installing Direction and Space 8
  2.2 Nameplate Introduction and VFD Series Type 8
    2.2.1 Nameplate Introduction 8
    2.2.2 VFD Series Type 9
  2.3 Overall Dimensions and Installation Dimensions....11
    2.3.1 Appearance and Dimension of Keypad 11
    2.3.2 Product Overall Dimension and Installation Dimension 12
  2.4 Basic Running Wiring 17
  2.5 DiagramTerminal Diagram and Function Description....18
    2.5.1 Function Description of Main Circuit Terminal 18
    2.5.2 Control Loop Terminal Diagram 18
    2.5.3 Control Loop Terminal Function Table 19
  2.6 Jumpers And Corresponding Relationships 20
  2.7 Wiring Notices 21
  2.8 Spare Circuit 21
3. Operation Panel and Operation Method....22
  3.1 Operation Panel Keys Description 22
  3.2 LED and Indicator Light Description 23
  3.3 Unit Indicator Light Description 23
  3.4 Monitoring Parameter Display 24
  3.5 Run Status Parameter Display 25
  3.6 Malfunction Alarm Display 25
  3.7 Function Code Editing Display 26
  3.8 Monitoring Parameter 26

3.9 Function Code Setting 27
3.10 User Password Setting and Function Code Edit 28
4. Function Parameter Table and Description 30
4.1 Monitoring Parameter Group and Fault Record 30
4.2 Function Code 34
5. Communication Protocol 78
5.1 RTU Mode and Format 78
5.1.1 Each Byte Format in RTU Mode 78
5.1.2 Bit Sequence of RTU Data Frame 78
5.2 Register Address and Function Code 78
5.2.1 Supported Function Code 78
5.2.2 Register Address 78
5.2.3 03H Read Multiple Parameters (8 Items Continuously at Most) 79
5.2.4 06H Write Single Parameter 81
5.2.5 10H Write Multiple Parameters Continuously 84
5.2.6 13H Read Single Parameter (Including Attribute, Min.value, Max.value) 85
5.3 Functions of Other Register Address 86
5.4 Fault Code 87
5.5 Pre-alarm Code of the Driver 88
5.6 Control Command Format (See Function Code 06H Example) 88
5.7 Parameter Attribute 89
5.8 Error Code from Slave Response of Abnormal Information 90
5.9 Communication Address of all Parameters 90
5.10 Read Inverter Running Status Parameter Address 91
6. Troubleshooting 92
6.1 Fault information and Troubleshooting 92
6.2 Abnormal Phenomena Solution 96
7. Maintenance 98
7.1 Routine Maintenance 98
7.2 Periodic Maintenance 98
Appendix A : Selection of Braking Resisto 99

1. Technical Index and Specification

Input	Rated Voltage, Frequency	3-phase (4T) 380V ; 47 ~ 63Hz 1-phase (2S) 220V ; 47 ~ 63Hz	
	Allowed Voltage Range	3-phase (4T) 320V ~ 480V 1-phase (2S) 160V ~ 260V	
Output	Voltage	4T ; 0 ~ 480V 2S ; 0 ~ 260V	
	Frequency	Low frequency mode: 0 ~ 300Hz ; High frequency mode: 0 ~ 3000Hz	
	Overload Capacity	G type: 110% for long-term, 150% for 1 min, 180% for 5s P type: 105% for long-term, 120% for 1 min, 150% for 1s	
Control Mode		V/F control, advanced V/F control, V/F separation control, electric current vector control	
Control Character	Frequency Setting Resolution	Analog Input	0.1% of maximum output frequency
		Digital Setting	0.01Hz
	Frequency Precision	Analog Input	Within 0.2% of maximum output frequency
		Digital Setting	Within 0.01% of set output frequency
	V/F Control	V/F Curve (voltage frequency character)	Reference frequency setting 5~600Hz, multipoint V/F curve setting, or fixed curve of constant torque, low decreasing torque 1, low decreasing torque 2, square torque
		Torque Compensation	Manual setting: 0.0~30% of rated output Automatic compensation: according to output current and motor parameter
		Automatic Current-limiting and Voltage-limiting	During acceleration, deceleration or steady running, detect automatically the current and voltage of motor stator, and control it within boundsbased on unique algorithm, minimize fault-trip chance
	Senseless Vector Control	Voltage Frequency Character	Adjust pressure/frequency ratio according to motor parameter and unique algorithm

Control Character	Senseless Vector Control	Torque Character	Starting torque: 3.0Hz 150% rated torque (VF control) 0.5Hz 180% rated torque (SVC) Operating speed precision in steady state: ≤±0.5% rated synchronous speed Torque response: SVC≤20ms
		Motor Parameter Self-measurement	Being able to detect parameter automatically under static state and dynamic state of motor, thus guarantee an optimum control.
		Current and Voltage Restrain	Current closed-loop control, free from current impact, perfect restrain function of overcurrent and overvoltage
	Undervoltage Restrain during Running	Specially for users with a low or unsteady voltage power grid: even lower than the allowable voltage range, the system can maintain the longest possible operating time based on its unique algorithm and residual energy allocation strategy	
Typical Function	Multi-velocity and Traverse Operation	16 segments programmable multi-velocity control, multiple operation mode. Traverse operation: preset frequency and center frequency adjustable, parameter memory and recovery after power cut.	
	PID Control RS485 Communication	Built-in PID controller (able to preset frequency). Standard configuration RS485 communication function, synchronizing control function.	
	Frequency Setting	Analog Input	Direct voltage 0 ~ 10V, direct current 0 ~ 20mA (optional up limit and lower limit)
		Digital Input	Operation panel setting, RS485 port setting, UP/DW terminal control, or combined with analog input
	Output Signal	Digital Output	2 channel OC output and one channel relay output (TA, TB, TC), up to 16 choices
		Analog Output	2 channel analog signal output, output ranging within 0 ~ 20mA or 0 ~ 10V with flexibly setting, achievable output of physical quantities like set frequency, output frequency
	Automatic Steady-voltage Operation	Dynamic steady state, static steady state, and unsteady voltage for choices to obtain the steadiest operation	
	Acceleration and Deceleration Time Setting	0.1s ~ 3600min continuous setting, S type and linear type mode for choice	
	Brake	Dynamic Braking	Dynamic braking initial voltage, backlash voltage and dynamic braking continuous adjustable

Typical Function	Brake	DC Braking	Halt DC braking initial frequency: 0.00 ~ [F0.16] upper limit frequency Braking time: 0.0 ~ 100.0s; Braking current: 0.0% ~ 150.0% of rated current
		Flux Restraint	0 ~ 100 0: invalid
	Low Noise Running	Carrier frequency 1.0kHz ~ 16.0kHz continuous adjustable, minimize motor noise	
	Speed Tracking and Restart Function	Smooth restart during operation, instantaneous stop and restart	
	Counter	A built-in counter, facilitate system integration	
	Operation Function	Upper limit and lower limit frequency setting, frequency hopping operation, reversal running restraint, slip frequency compensation, RS485 communication, frequency control of progressive increase and decrease, failure recovery automatically, etc.	
Display	Operation Panel Display	Running State	Output frequency, output current, output voltage, motor speed, set frequency, module temperature, PID setting, feedback, analog input and output.
		Alarm	The latest 6 faults record; running parameters record when the latest fault tripping happens including output frequency, set frequency, output current, output voltage, DC voltage 4 and module temperature.
Protective Function		Overcurrent, overvoltage, undervoltage, module fault, electric thermal relay, overheat, short circuit, default phase of input and output, motor parameter adjustment abnormality, internal memory fault, etc.	
Environment	Ambient Temperature	-10°C ~ +40°C (please run the VFD in derated capacity when ambient temperature is 40°C ~ 50°C)	
	Ambient Humidity	5% ~ 95%RH, without condensing drops	
	Surroundings	Indoors (without direct sunlight, corrosive or flammable gas, oil fog and dust)	
	Altitude	Running in derated capacity above 1000m, derate 10% for every 1000m rise.	
Structure	Protection Level	IP20	
	Cooling Method	Air cooling with fan control	
Installation Method		Wall-hanging type, cabinet type	

2. Safety and Installation Precautions of Frequency Converter

2.1 Safety, Installation Precautions, Use Environment, Installation Direction and Space

2.1.1 Safety Precautions

▲ Do not install this equipment in an explosive gas atmosphere, or there will be explosion hazards.

▲ Only qualified individuals should proceed with wiring, or there will be electric shock hazards. Do not conduct any wiring during the system power on to avoid the electric shock.

▲ Do not touch control terminals, internal circuit board and its components, or there will be electric shock hazard.

▲ Earth terminal must be exactly grounded when using inverter. Grounding must be confirmed with the national electric safety regulation and other electric code.

▲ After power off, do not touch internal circuit board or any parts inside within 5 minutes after keypad display went off. Any internal operation must be after making sure of discharge off with instrument checking to avoid the electric shock.

▲ Do not connect AC power to output terminal (U, V, W) of inverter. The only terminal the AC power allowed to be connected is R, S, T (or L1, L2 single--phrase source inverter).

▲ Static electricity on human body can damage MOS device. Do not touch PCB and IGBT without anti-static measure.

▲ Do not lose screws, spacers and other metallic foreign bodies inside the driver to avoid fire hazard and driver damage.

▲ Do not connect 220V AC power to internal control terminal of the driver, or there will be serious damage to the driver.

▲ If overcurrent protection occurs after start the driver, confirm again the external wiring and then power on and run the driver.

▲ Do not switch off the power to stop the driver. Cut off power source after the motor stops running.

▲ Do not install the driver in places with direct sunlight.

2.1.2 Installation Precautions

DANGER

1. Ensure the power has been cut off before wiring.
Electric chock and fire hazard.
2. Ask electric engineering professionals to conduct wiring.
Electric chock and fire hazard.
3. Earth terminals must be reliable grounded.
(380V class: especially the third grounding)
Electric shock and fire hazard.
4. Check if its action is effective after emergency brake terminal is connected.
Injury risk (wiring responsibility should be beard by users).
5. Do not touch output terminals directly. The output terminal is connected directly to motor.
There should be no short circuit between output terminals.
Electric shock and short circuit hazard.
6. Install the terminal cover before power on, and ensure power off when dismantling the terminal cover.
Electric shock hazard.



Conduct check and maintenance after 10 minutes after power off when internal residual electricity is discharged completely.
Hazard of residual voltage in electrolytic capacitor.

CAUTION

1. Check if the voltage of power inlet wire agrees with rated input voltage of VFD.
Injury and fire hazard.
2. Connect brake resistor or brake unit according to wiring diagram.
Fire hazard.
3. Choose screw driver and wrench with specified torque to fasten terminals.
Fire hazard.
4. Do not connect the power input wire to output U, V, W terminals.
It will cause internal damage to VFD if load the voltage on output terminals.
5. Do not dismantle the front panel cover, only the terminal cover needs to be dismantled when wiring.
It may cause internal damage to VFD.

2.1.3 Operation Environment

① No corrosive gases, vapors, dust or oily dust, no direct sunlight.
② No floating dust and metal particle.
③ Ambient humidity 20% ~ 90% RH.
④ Vibration less than 5.9m/s ^{2} (0.6g).
⑤ No electromagnetic interference.
⑥ Ambient temperature -10°C ~ 40°C. Ensure good ventilation when ambient temperature exceeds 40°C.
⑦ Use electric cabinet or remote control method in non-standard operation environment and ensure good ventilation and heat dissipation. The service life of VFD lies in installing environment and operation condition. But even in standard environment, a long-term continuous running can guarantee a life of no more than 5 years for electrolytic capacitor and about 3 years for cooling fan. An update or a thorough maintenance in advance is recommended.

2.1.4 Installing Direction and Space

To ensure a good cooling cycle, the VFD must be installed vertically, and keep enough space from surroundings.

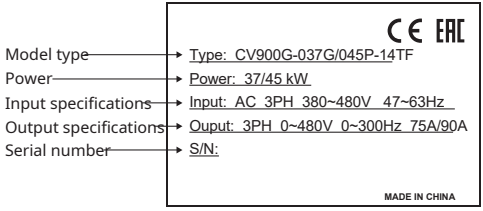
2.2 Nameplate Introduction and VFD Series Type

2.2.1 Nameplate Introduction

CV900G - 037 G/P -1 4 T F _ _ _

① ② ③ ④ ⑤ ⑥ ⑦

①	Product Series	CV900G General vector model		
②	Model Power	00A: 0.4KW ~ 500: 500KW		
③	Load Type	G: constant torque	P: variable torque	
④	Output	1: 3-phase	2: 1-phase	
⑤	Voltage Grade	1: 110V	2: 220V	4: 380V
⑥	Input	S: 1-phase	T: 3-phase	
⑦	Cooling Method	F: air cooling	W: water cooling	



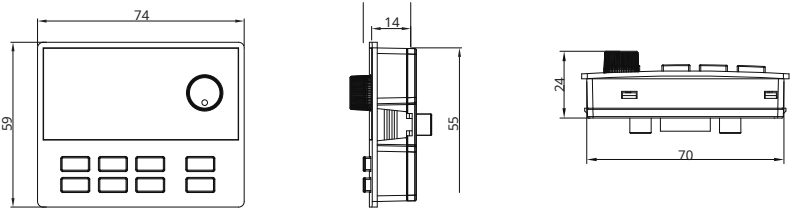
2.2.2 VFD Series Type

Voltage Classes	Model No.	Rated Power (KW)	Rated Output Current (A)
220V 1-phase	CV900G-00AG-12SF	0.4	2.4
220V 1-phase	CV900G-00BG-12SF	0.75	4.5
220V 1-phase	CV900G-001G-12SF	1.5	7
220V 1-phase	CV900G-002G-12SF	2.2	10
220V 1-phase	CV900G-003G-12SF	3	13
220V 1-phase	CV900G-004G-12SF	3.7	16
220V 1-phase	CV900G-005G-12SF	5.5	20
220V 1-phase	CV900G-007G-12SF	7.5	30
220V 1-phase	CV900G-011G-12SF	11	42
380V 3-phase	CV900G-00BG-14TF	0.75	2.5
380V 3-phase	CV900G-001G-14TF	1.5	3.7
380V 3-phase	CV900G-002G-14TF	2.2	5
380V 3-phase	CV900G-003G/004P-14TF	3/3.7	6.8/9
380V 3-phase	CV900G-004G/005P-14TF	3.7/5.5	9/13
380V 3-phase	CV900G-005G/007P-14TF	5.5/7.5	13/17
380V 3-phase	CV900G-007G/011P-14TF	7.5/11	17/25
380V 3-phase	CV900G-011G/015P-14TF	11/15	25/32
380V 3-phase	CV900G-015G/018P-14TF	15/18.5	32/37
380V 3-phase	CV900G-018G/022P-14TF	18.5/22	37/45
380V 3-phase	CV900G-022G/030P-14TF	22/30	45/60

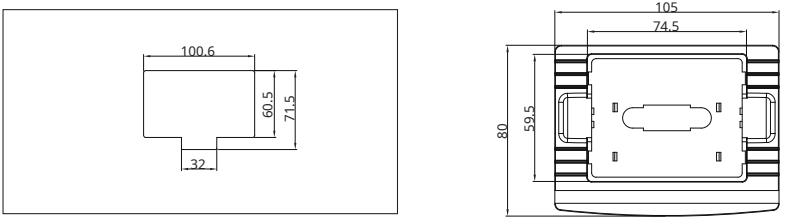
Voltage Classes	Model No.	Rated Power (KW)	Rated Output Current (A)
380V 3-phase	CV900G-030G/037P-14TF	30/37	60/75
380V 3-phase	CV900G-037G/045P-14TF	37/45	75/90
380V 3-phase	CV900G-045G/055P-14TF	45/55	90/110
380V 3-phase	CV900G-055G/075P-14TF	55/75	110/150
380V 3-phase	CV900G-075G/090P-14TF	75/90	150/176
380V 3-phase	CV900G-090G/110P-14TF	90/110	176/210
380V 3-phase	CV900G-110G/132P-14TF	110/132	210/253
380V 3-phase	CV900G-132G/160P-14TF	132/160	253/300
380V 3-phase	CV900G-160G/185P-14TF	160/185	300/340
380V 3-phase	CV900G-185G/200P-14TF	185/200	340/380
380V 3-phase	CV900G-200G/220P-14TF	200/220	380/420
380V 3-phase	CV900G-220G-14TF	220	420
380V 3-phase	CV900G-250G-14TF	250	470
380V 3-phase	CV900G-280G-14TF	280	520
380V 3-phase	CV900G-315G-14TF	315	600
380V 3-phase	CV900G-355G-14TF	355	640
380V 3-phase	CV900G-400G-14TF	400	750
380V 3-phase	CV900G-450G-14TF	450	830
380V 3-phase	CV900G-500G-14TF	500	930

2.3 Overall Dimensions and Installation Dimensions

2.3.1 Appearance and Dimension of Keypad

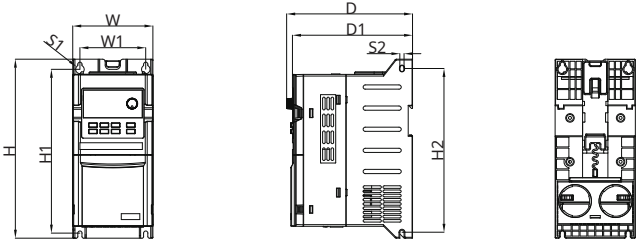


Keyboard (Unit : mm)

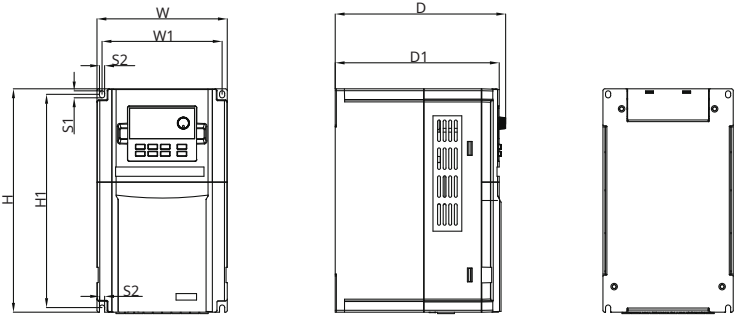


Keyboard base and Installation dimension (Unit : mm)

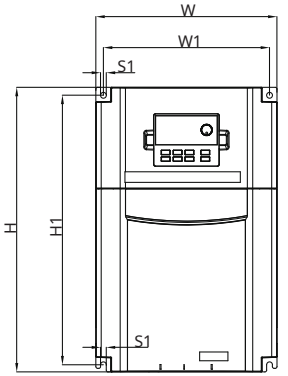
2.3.2 Product Overall Dimension and Installation Dimension

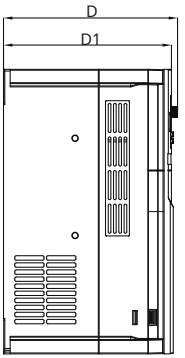


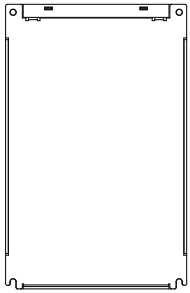
Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	H1(mm)	H2(mm)	D1(mm)	S1(mm)	S2(mm)
CV900G-00AG-12SF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-00BG-12SF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-001G-12SF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-002G-12SF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-003G-12SF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-00BG-14TF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-001G-14TF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-002G-14TF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-003G/004P-14TF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-004G/005P-14TF	95	212	149	78	194	194	142	Ø10	Ø5
CV900G-005G/007P-14TF	95	212	149	78	194	194	142	Ø10	Ø5



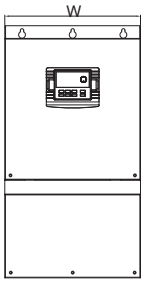
Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	H1(mm)	D1(mm)	S1(mm)	S2(mm)
CV900G-004G-12SF	140	240	183	129	229	176	Ø8	Ø6
CV900G-005G-12SF	140	240	183	129	229	176	Ø8	Ø6
CV900G-007G/011P-14TF	140	240	183	129	229	176	Ø8	Ø6
CV900G-011G/015P-14TF	140	240	183	129	229	176	Ø8	Ø6

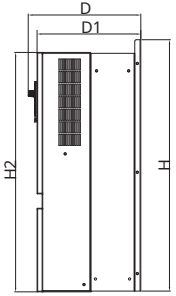


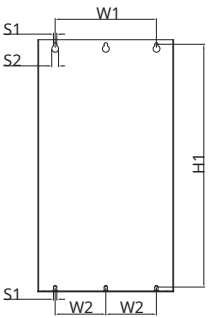




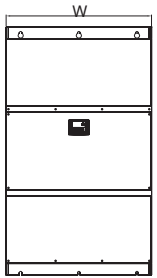
Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	H1(mm)	D1(mm)	S1(mm)
CV900G-007G-12SF	205	322	197	188	305	190	Ø7
CV900G-011G-12SF	205	322	197	188	305	190	Ø7
CV900G-015G/018P-14TF	205	322	197	188	305	190	Ø7
CV900G-018G/022P-14TF	205	322	197	188	305	190	Ø7
CV900G-022G/030P-14TF	205	322	197	188	305	190	Ø7

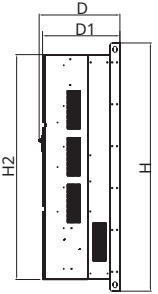


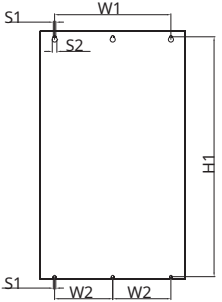




Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	W2(mm)	H1(mm)	H2(mm)	D1(mm)	S1(mm)	S2(mm)
CV900G-030G/037P-14TF	270	463	223.9	201.5		444.5	437.7	206.3	Ø6.5	Ø13.5
CV900G-037G/045P-14TF	270	463	223.9	201.5		444.5	437.7	206.3	Ø6.5	Ø13.5
CV900G-045G/055P-14TF	320	522	257.6	200	100	499	489	240	Ø9	Ø16.5
CV900G-055G/075P-14TF	320	522	257.6	200	100	499	489	240	Ø9	Ø16.5
CV900G-075G/090P-14TF	340	720	305.6	260	130	700.5	663	288	Ø9	Ø16.5
CV900G-090G/110P-14TF	340	720	305.6	260	130	700.5	663	288	Ø9	Ø16.5
CV900G-110G/132P-14TF	340	720	305.6	260	130	700.5	663	288	Ø9	Ø16.5
CV900G-132G/160P-14TF	380	720	305.6	260	130	700.5	663	288	Ø9	Ø16.5
CV900G-160G/185P-14TF	380	720	305.6	260	130	700.5	663	288	Ø9	Ø16.5



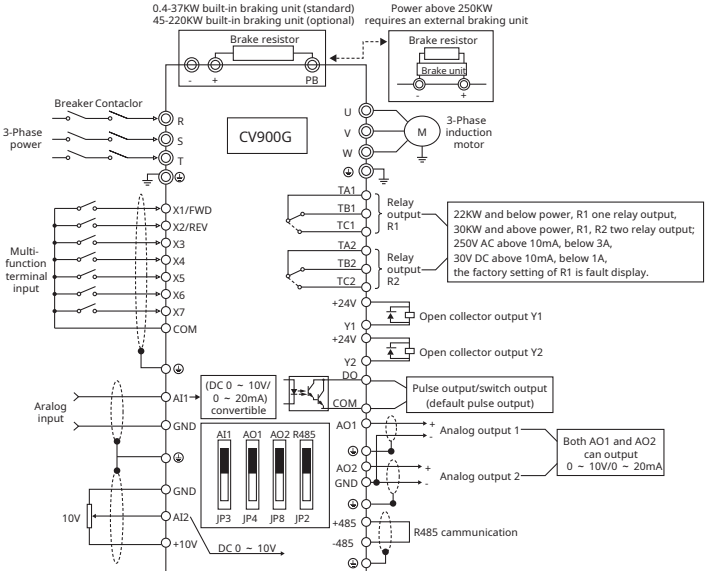




Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	W2(mm)	H1(mm)	H2(mm)	D1(mm)	S1(mm)	S2(mm)
CV900G-185G/200P-14TF	470	830	347.1	343	171.5	791	743	329.5	Ø11	Ø24
CV900G-200G/220P-14TF	470	830	347.1	343	171.5	791	743	329.5	Ø11	Ø24
CV900G-220G-14TF	470	830	347.1	343	171.5	791	743	329.5	Ø11	Ø24
CV900G-250G-14TF	540	1060	416.6	420	210	1031.5	970	399	Ø13	Ø26
CV900G-280G-14TF	540	1060	416.6	420	210	1031.5	970	399	Ø13	Ø26
CV900G-315G-14TF	540	1060	416.6	420	210	1031.5	970	399	Ø13	Ø26
CV900G-355G-14TF	650	1090	416.6	420	210	1061.5	1000	399	Ø13	Ø26
CV900G-400G-14TF	650	1090	416.6	420	210	1061.5	1000	399	Ø13	Ø26
CV900G-450G-14TF	750	1280	416.6	600	300	1237	1160	399	Ø13	Ø26
CV900G-500G-14TF	750	1280	416.6	600	300	1237	1160	399	Ø13	Ø26

2.4 Basic Running Wiring

The wiring parts of VFD include major loop and control loop. Open the cover of I/O terminals, users can see the major loop terminal and control loop terminal, and must conduct the wiring according to the following diagram.



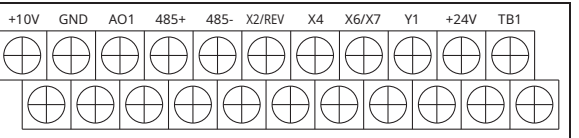
2.5 DiagramTerminal Diagram and Function Description

2.5.1 Function Description of Main Circuit Terminal

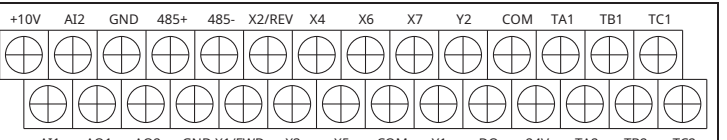
Terminal	Name	Function
R 、 S 、 T	AC input	3PH 380/220V AC input terminals, connected to the grid
L1 、 L2	AC input	1PH 220V AC input terminals, connected to the grid
(+) 、 (-)	DC bus terminals	Connected to external braking unit (MDBUN) with AC drive units of 45kW (G) and above.
(+) 、 PB	Braking resistor connection	Connected to external braking resistor for AC drive units of 37kW (G) and below.
U 、 V 、 W	Inverter output	3PH AC output terminals, connected to motor.
⏚	Safety grounding	Safety grounding terminal. Each inverter must be grounded properly. Note: It is at the bottom of the chassis.

2.5.2 Control Loop Terminal Diagram

CV900G-00AG-12SF
CV900G-022G/030P-14TF



CV900G-030G/037P-14TF
CV900G-500G-14TF



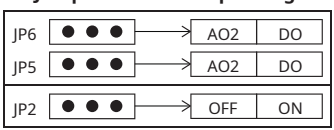
2.5.3 Control Loop Terminal Function Table

Functional Specification of Control Loop Terminal			
Category	**Terminal Number**	**Functions**	**Specification**
Multi-functional Digital Input Terminal	X1	Effective when short circuit between (X1 、 X2 、 X3 、 X4 、 X5 、 X6 、 X7 、 X8) ~ COM, and the functions are set by parameters F7.00 ~ F7.07 (common port: COM)	INPUT, 0 ~ 24V level signal, low level effective, 5mA.
	X2		
	X3		
	X4		
	X5		
	X6		
	X7	X7 can work as one of the multi-functional terminals, also as high-speed pulse input terminal with programming, see F7.06.	
Digital Output Terminal	Y1	Multi-functional programmable collector open circuit output channel 2, can be programmed as DO terminal of various functions (common port: COM)	OUTPUT, maximum load current ≤ 50mA.
	Y2		
	DO	Can be programmed as impulse output terminal of various functions as many as 13 kinds (common port: COM). See F6.23.	OUTPUT, output frequency range F6.32 ~ F6.35, set maximum frequency as high as 50KHz.
Analog Input / Output Terminal	AI1	AI1 receives voltage/current input. Jumper CN4 (for jumper terminal AI1) can select voltage or current input mode, and voltage input is the default one. For current input, just short the middle and another pin with the jumper cap. AI 2 only receives voltage input. Measuring range setting is function code F6.00 ~ F6.11 (reference ground: GND)	INPUT, input voltage range: 0 ~ 10V (input impedance: 100KΩ), input current range 0 ~ 20mA (input impedance: 500Ω).
	AI2		

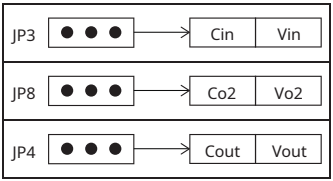
Category	Terminal Number	Functions	Specification
Analog Input / Output Terminal	AO1	AO1/AO2 is able to output analog voltage/current (total 13 kinds of signals). Jumper JP4/JP8 (for jumper terminal AO1/AO2) can select voltage or current output mode, and voltage output is the default one. For current output, just short the middle and another pin with the jumper cap. See F6.21, F6.22. (Reference ground: GND)	OUTPUT, 0 ~ 10V DC voltage. Output voltage of AO1, AO2 came from PMW waveform of CPU. Output voltage is in direct proportion to the width of PWM waveform.
	AO2		
Relay Output Terminal	TA1/TA2	Multi-functional programmable collector open circuit output channel 2, can be programmed as DO terminal of various functions (common port: COM)	TA-TB: normal close; TA-TC: normal open. Contact compacity: 250VAC/2A (COSΦ=1); 250VAC/1A (COSΦ=0.4), 30VDC/1A.
	TB1/TB2		
	TC1/TC2		
Power Port	+24V	24V is the common power for circuits of all digital signal input terminals (COM is the ground).	Maximum output current 200mA

▲ Control terminal AI1 can input both voltage and current signal, while AI2 can only input voltage signal; users can conduct corresponding jumper on master control board according to signal type.
▲ Connecting week analog signal is easily affected by external disturbance. So wiring should be as short as possible. The external control line should be set with isolating device or shielding line, and should be grounded.
▲ Input order signal line and frequency meter should be wired separately with shielding, and away from major loop wiring.
▲ Control loop wiring should be over 0.75 mm^2, and STP (shielded twisted pair) is recommended. The connecting part of control loop terminals should be enameled with tin, or process metal joint with cold pressing.
▲ While connecting analog signal output devices, malfunction may occur because of interference from VFD, which can be solved by fixing with capacitor or ferrite bead to the analog signal output device.

2.6 Jumpers And Corresponding Relationships



JP5 & JP6	AO2	AO2 of AO2/DO is effective, output voltage signal
	DO	DO of AO2/DO is effective, output pulse signal
JP2	OFF	Non-connecting for matched resistance of 485 communication
	ON	Connecting for matched resistance of 485 communication



JP3	Cin	AI1 input current signal
	Vin	AI1 input voltage signal
JP8	VO2	AO2 output voltage signal
	CO2	AO2 output current signal
JP4	Vout	AO1 output voltage signal
	Cout	AO1 output current signal

2.7 Wiring Notices

▲ Cut off the input power of VFD while dismantling and changing the motor.
▲ Switching of motor or work frequency power supply should only be conducted when the VFD stops output.
▲ To reduce the effect of EMI (electromagnetic interference), add a surge absorber when electromagnetic connector and relay are close to VFD.
▲ Do not connect AC input power to output terminal U, V, W of VFD.
▲ Add an isolating device to the external control line or use shield line.
▲ Input order signal line should be wired separately with shielding, and away from major loop wiring.
▲ When carrier frequency is less than 4kHz, keep the distance between VFD and motor within 50m; when carrier frequency exceeds 4kHz, make an appropriate reduction of the distance, and better lay the wire in metal tube.
▲ When adding peripherals (filters, reactors, etc.) to the VFD, check the ground resistance with 1000V tramegger and ensure the value is above 4 MΩ.
▲ Do not add phase advance capacitor or RC snubber to the U, V, W terminal of VFD.
▲ If the VFD starts frequently, do not cut off the power, use the COM/RUN of control terminal to conduct start and stop so as not to damage the rectifier bridge.
▲ The earth terminal must be grounded reliably (grounding impedance should be under 10 Ω) to avoid accidents, or there might be electric leakage.
▲ Choose the wire diameter according to national electrical code while conducting major loop wiring.

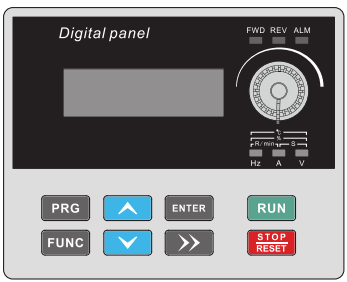
2.8 Spare Circuit

It may cause big downtime loss or other accidental failure during VFD failure or tripping. Adding spare circuit is recommended under this circumstance to ensure safety.

Note: confirm and test the operation characteristic of thespare circuit in advance to ensure the working frequency and the phase sequence of converted frequency are agreed.

3. Operation Panel and Operation Method

3.1 Operation Panel Keys Description



Key	Name	Function Description
PRG	programming /escape key	Enter or escape from programming
∧	Increase key	Data or function code increase (speed up the increasing rate by keeping pressing the key)
∨	Decrease key	Data or function code decrease (speed up the decreasing rate by keeping pressing the key)
ENTER	Enter key	Enter into sub-menu items or confirm data.
RUN	Run key	Enter into run mode under keypad model.
FUNC	Function key	According to the setting of function parameter FE.01, jog or reverse run, and frequency clearance is available when pressing this key under keypad mode.
>>	shift / monitor key	Choose the bit of the data which is to be set and modified when the VFD is in edit status; switch monitor parameter to be shown when the VFD is in other modes.
STOP RESET	stop / reset key	In common run status the VFD will be stopped according to set mode after press this key if run command channel is set as keyboard stop effective mode. The VFD will be reset and resume normal stop status after pressing this key when the VFD is in malfunction status.
	Analog potentiometer knob	Set the frequency; when F0.07=0, digital encoder can set the frequency as linkage control with increase/decrease key.

3.2 LED and Indicator Light Description

Item			Function Description
Display Function	Digital Display		Display current run status parameter and set parameter.
	LED Indicator	Hz 、 A 、 V	Displayed physical quantity unit (current A, voltage V, frequency Hz)
		ALM	Alarm indicator light, indicate that the VFD is in over current or over voltage suppressing status or failure alarm status currently.
		FWD	This indicator light turns green when the VFD is in forward running status.
		REV	This indicator light turns red when the VFD is in reverse running status.

3.3 Unit Indicator Light Description

Item			Function Description
Unit indicator	LED Indicator	A	Current displayed parameter is current with unit of A, LED indicator light A is on
		V	Current displayed parameter is voltage with unit of V, LED indicator light V is on
		Hz	Current displayed parameter is frequency with unit of Hz, LED indicator light Hz is on
		%	Current displayed parameter is percentage, LED indicator light Hz and V are on
		r/min	Current displayed parameter is rotational speed, LED indicator light Hz and A are on
		m/s	Current displayed parameter is linear velocity, LED indicator light V and A are on
		℃	Current displayed parameter is temperature, LED indicator light V, A and Hz are on

3.4 Monitoring Parameter Display

Keypad display status is classified as power-on initialization display, functioncode and monitoring parameters display, malfunction alarm status display, run status parameters display. After power-on, LED will display “P.OFF”, As shown in the right figure, then enter setting frequency display status.



Power-on Parameter Display
(Initialization Display “P.OFF”)

When the VFD is stopped, the keypad displays stopped state monitoring parameters, factory setting is digital setting frequency. As shown in the right figure, unit indicator light reminds that the unit of current displayed parameter is Hz.

Press [>>] key, different monitoring parameters in stopped state can be displayed circularly (default setting in sequence is main setting frequency, bus voltage. Other monitoring parameters can be set to display by function code FE.10 ~ FE.11, for details see function code table FE.10 ~ FE.11); or without pressing [>>] but set tens place of FE.12 as 1 (alternate display of main and secondary parameters), and the stopped state monitoring parameters will display circularly every other second automatically; also enter monitoring menu by pressing [PRG] and check each monitoring parameter by [∧], [∨] and [ENTER]



Stop Status Parameter Display
(Display Set Frequency “50.00”)

3.5 Run Status Parameter Display

The VFD enters into run status when receiving effective run command and run status monitoring parameters normally output frequency is displayed on the keypad. As shown in the right figure, unit is displayed as Hz.

Press [>>] the current run status parameter will display circularly (default set is output frequency, output current, two monitoring parameters in sequence. Other parameters display can be set by FE.08 ~ FE.09, for details see parameter codes table FE.08 ~ FE.09); or without pressing [>>] , but set tens place of FE.12 as 1 (alternate display of main and secondary parameters), and the stopped state monitoring parameters will display circularly every other second automatically; also enter monitoring menu by pressing [PRG] , and check each monitoring parameter by [^] [v] and [ENTER]



Run Status Parameter Display
(Display Current Output Frequency “20.00”)

3.6 Malfunction Alarm Display

The VFD enters into malfunction alarm display status upon detecting failure signal and display failure code (as shown in the right figuer); Press [>>] to check relative parameters of stopped inverter; to check failure information, press [PRG] and enter into program mode to check D group parameter. After troubleshooting, conduct fault resetting by [STOP RESET] key on the keypad, by control terminal or communication command. Keep displaying fault code if fault exist continuously.

Warning: For some serious fault, such as inverse module protect, over current, over voltage, etc., do not conduct fault reset forcibly to make the inverter run again without fault elimination confirmed, or might cause damage to the inverter.



Fault Alarm Display of
Over current during Accelerating

3.7 Function Code Editing Display

Under stop, run or fault alarm status, press PRG key to enter editing status which is displayed as two classes menu (input the password first if it is preset, see password unlock instruction). Press ENTER key to enter items one class by one class. Under function parameter display status, press ENTER to conduct storage operation, press PRG to return to the upper class menu without storing modified parameter.

3.8 Monitoring Parameter

Example 1: status parameter display switching

Under monitoring status, press >> key, the display will switch automatically to according value of monitoring parameter according to FD group status monitoring parameter setting, and meanwhile the corresponding unit indicator light will be on. For example, press >> to switch to output frequency d-00, and the indicator light of unit “Hz” is on.



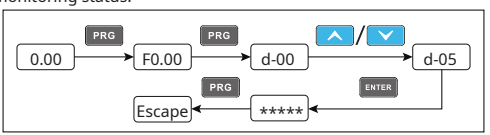
Example 2: check monitoring parameter item d-05 (output current)

Method 1:

① Press PRG key to enter programming status, LED displays function code F0.00, press again PRG, LED displays function code d-00, flicker bit stays in ones place, adjust ∧ key or ∨ key until the monitoring code turns d-05.

② Press ENTER key, the according value of d-05 displays and the indicator light of unit “A” is on.

③ Press PRG key, escape from monitoring status.



Method 2:

Under monitoring mode interface, press ENTER key, switch to next monitoring parameter item d-xx, press >> key to move flicker bit to ones digit of the monitoring code, then adjust ^ key or v key until the monitoring code displays d-05, then operate according to step ② and step ③ of method 1.

Example 3: check fault monitoring parameter in fault status

Note:

① Under fault status press PRG key and check D group monitoring parameter ranging from d-00 to d-57.

② If the fault wasn't eliminated during checking the fault parameter, the interface will automatically switch to fault alarm display 5s later after stopping operation.

③ The fault code displays ranging from d-48 to d-57 (the current status and latest 3 times).

3.9 Function Code Setting

The function parameter system of this inverter includes function code F0 ~ FF, fault code E group and monitoring code D group. Each function group is consisted of several function code, which is marked as (function group code + function code). For example, "F5.08" means eighth function code in the fifth function group.

Function code setting example:

Example 1: change frequency setting of forward jogging form 5Hz to 10Hz (F1.20 modified from 5.00Hz to 10.00Hz)

① Press PRG key to enter programming status, LED displays function code F0.00, flicker bit stays in the ones digit.

② Press >> key, move the flicker bit among the hundreds place, tens place and ones place.

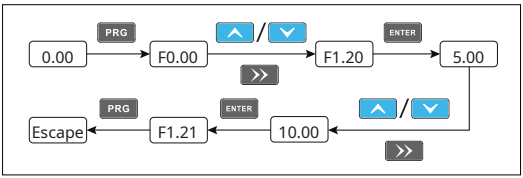
③ Press ^ key or v key to modify the digit in the according digit place. LED displays F1.20.

④ Press ENTER key, it displays the according value (5.00) of F1.20, meanwhile the indicator light of unit Hz is on.

⑤ Press >> key, move the flicker bit to the highest place "5", press ^ v times to change it to 10.00.

⑥ Press ENTER key, save the value of F1.20 and displays next function code F1.21.

⑦ Press PRG key, escape from programming status.



3.10 User Password Setting and Function Code Edit

User password setting is used for preventing unauthorized people form checking and modifying function parameter. Factory set of user password F0.00 is "00000", user can conduct parameter setting in this interface (parameter set here is only not restricted by password protection, but is restricted by conditions like whether is revisable during running, the monitoring parameters, etc.).

When setting the user password, press five-digit number and press ENTER to confirm, the password will take effect automatically 3 minutes later, or just power down to make it effective. After that, if the password is not set right, keypad will display "-Err-", and when checking function codes, all will display "-----" except the password item (displays "00000"). These function codes parameters can't be checked and modified until the password is set right and the keypad displays "-En--".

When password modifying is required, choose function code F0.00, and press ENTER to enter password authentication status. Move to modifying status after password verified successfully. Input a new password and press ENTER to confirm. Power-down or wait for 3 minutes, the new password will take effect.

Example 1: change user password "22222" to "55555", check function code F1.02.

① Press PRG to enter programming status, LED displays function code F0.00, flicker bit stays in the ones place.

② Press >> move flicker bit among hundreds place, tens place and ones place of function items.

③ Press ey or y to modify the digit in the according digit place. LED displays F1.20.

④ Press the according data "-----" of F1.20 is displayed.

⑤ Press o enter F1.03, repeat step 2 and step 3, check according data "00000" of F0.00.

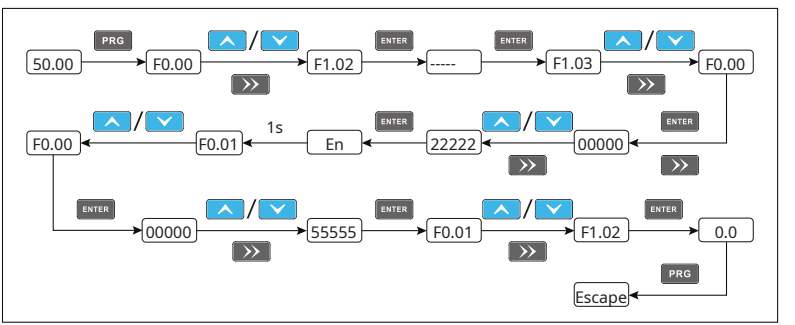
⑥ Press ey or y to modify the digit in the according digit place, LED displays "22222", and the password is set up.

⑦ Press it displays "-En--", meanwhile function code displays F0.01.

⑧ Repeat step 2 and step 3, check the according data "00000" of F0.00 and modify it to "55555", press end the password changing, enter F0.01 item.

⑨ Repeat step 2 and step 3, check the according data "0.0" of F1.02, conduct modifying by or

⑩ Press escape from edit status.



4. Function Parameter Table and Description

4.1 Monitoring Parameter Group and Fault Record

NOTE: "◆"——the actual detected parameter, not modifiable.

D Group - Monitoring Parameter Group and Fault Record					
Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
d-00	Output frequency	0.00 ~ maximum output frequency 【F0.15】	0.01Hz	0.00	◆
d-01	Set frequency	0.00 ~ maximum output frequency 【F0.15】	0.01Hz	0.00	◆
d-02	Estimated motor frequency	0.00 ~ maximum output frequency 【F0.15】 Note: motor running frequency converted from estimated motor speed	0.01Hz	0.00	◆
d-03	Main set frequency	0.00 ~ maximum output frequency 【F0.15】	0.01Hz	0.00	◆
d-04	Auxiliary set frequency	0.00 ~ maximum output frequency 【F0.15】	0.01Hz	0.00	◆
d-05	Output current	0.0 ~ 6553.5A	0.1A	0.0	◆
d-06	Output voltage	0 ~ 999V	1V	0	◆
d-07	Output torque	-200.0 ~ +200.0%	0.1%	0.0%	◆
d-08	Motor revolving speed (RPM/min)	0 ~ 36000 (RPM/min)	1	0	◆
d-09	Motor power factor	0.00 ~ 1.00	0.01	0.00	◆
d-10	Run linear velocity (m/s)	0.01 ~ 655.35(m/s)	0.01m/s	0.00	◆
d-11	Set linear velocity (m/s)	0.01 ~ 655.35(m/s)	0.01m/s	0.00	◆
d-12	Bus voltage (V)	0 ~ 999V	1V	0	◆
d-13	Input voltage (V)	0 ~ 999V	1V	0	◆

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
d-14	PID set value (V)	0.00 ~ 10.00V	0.01V	0.00	◆
d-15	PID feedback (V)	0.00 ~ 10.00V	0.01V	0.00	◆
d-16	Analog input AI1 (V/mA)	0.00V/0.00mA ~ 10.00V/20.00mA	0.01V	0.00	◆
d-17	Analog input AI2 (V)	0.00 ~ 10.00V	0.01V	0.00	◆
d-18	Impulse frequency input (KHz)	0.00 ~ 50.00KHz	0.01KHz	0.00	◆
d-19	Analog output AO1 (V/mA)	0.00 ~ 10.00V/20mA	0.01V	0.00	◆
d-20	Analog output AO2 (V)	0.00 ~ 10.00V	0.01V	0.00	◆
d-21	Input terminal status	0 ~ 7FH Note: the sequence from high to low order digit in binary system X8/X7/X6/X5 /X4/X3/X2/X1	1	0	◆
d-22	Output terminal status	0 ~ FH Note: the sequence from high to low order digit in binary system R2/R1/Y2/Y1	1	0	◆
d-23	VFD running status	0 ~ FFFFH BIT0: run/stop BIT1: reverse/forward BIT2: zero-speed running BIT3: reserved BIT4: accelerating BIT5: decelerating BIT6: constant speed running BIT7: pre-excitation BIT8: tuning of inverter parameter BIT9: overcurrent limit BIT10: overvoltage limit BIT11: amplitude limiting of torque	1	0	◆

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
d-23	VFD running status	BIT12: amplitude limiting of speed BIT13: speed control BIT14: torque control BIT15: reserved	1	0	◆
d-24	Current stage of multistage Speed	0 ~ 15	1	0	◆
d-25	Pluse frequency output (Hz)	0 ~ 50000Hz	1Hz	0	◆
d-26	Reserved	——	——	0	◆
d-27	Current count value	0 ~ 65535	1	0	◆
d-28	Set count value	0 ~ 65535	1	0	◆
d-29	Current timing value (s)	0 ~ 65535s	1s	0	◆
d-30	Set timing value (s)	0 ~ 65535s	1s	0	◆
d-31	Current length	0.000 ~ 65.535(KM)	0.001KM	0.000	◆
d-32	Set length	0.000 ~ 65.535(KM)	0.001KM	0.000	◆
d-33	Radiator temperature 1	0.0℃ ~ +110.0℃	0.1℃	0.0	◆
d-34	Radiator temperature 2	0.0℃ ~ +110.0℃	0.1℃	0.0	◆
d-35	Accumulative run time of VFD (hour)	0 ~ 65535H	1H	0	◆
d-36	Accumulative power-on time of VFD (hour)	0 ~ 65535H	1H	0	◆
d-37	Accumulative run time of fan (hour)	0 ~ 65535H	1H	0	◆
d-38	Accumulative electricity consumption (low order digit)	0 ~ 9999KWH	1KWH	0	◆
d-39	Accumulative electricity Consumption (high order digit)	0 ~ 9999KWH (*10000)	1KWH	0	◆
d-40	Pid pressure feedback	0.00 ~ 60.00 (MPa 、 Kg)	0.01	0.00	◆

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
d-41	Output power	0.0 ~ 6553.5KW	0.1KW	0.0	◆
d-42	PID Pressure Set up	0.00 ~ 60.00 （ MPa 、 Kg ）	0.01	0	◆
d-43	Special model monitoring parameter (reserved)	——	——	0	◆
d-44	Special model monitoring parameter (reserved)	——	——	0	◆
d-45	Special model monitoring parameter (reserved)	——	——	0	◆
d-46	Special model monitoring parameter (reserved)	——	——	0	◆
d-47	Special model monitoring parameter (reserved)	——	——	0	◆
d-48	The third to last fault type	0 ~ 27	1	0	◆
d-49	The second to last fault type	0 ~ 27	1	0	◆
d-50	Last fault type	0 ~ 27	1	0	◆
d-51	Current fault type	0 ~ 27	1	0	◆
d-52	Run frequency of current fault	0.00 ~【 F0.16 】 upper limit of frequency	0.01Hz	0.00	◆
d-53	Output current of current fault	0.0 ~ 6553.5A	0.1A	0.0	◆
d-54	Busbar voltage of current fault	0 ~ 999V	1V	0	◆
d-55	Input terminal status of current fault	0 ~ 7FH Note: sequence from high to low order digitin binary system X8/X7/X6/X5/X4/ X3/X2/X1	1	0	◆
d-56	Output terminal status of current fault	0 ~ FH Note:sequence from high to low order digit in binary system R2/R1/Y2/Y1	1	0	◆
d-57	Run state of current fault	0 ~ FFFFH	1	0	◆

4.2 Function Code

NOTE: ○—— Modifiable parameter under any condition
×—— Not modifiable parameter under run status
◆ —— The actual detected parameter, not modifiable
◇ —— Factory parameter, only modifiable for factory, not allowed for users modifying

F0 Group - Basic Run Parameters					
Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F0.00	User password	0 ~ 65535 Note 1: 0 ~ 9; without password protect Note 2: it takes 3 minutes to take effect of the successfully set password Note 3: invalid for write-protect, and can not be initialized	1	0	○
F0.01	Control software version	1.00 ~ 99.99	0.01	1.12	◆
F0.02	Operation panel software version	1.00 ~ 99.99	0.01	1.00	◆
F0.03	VFD rated power	0.4 ~ 999.9KW (G/P)	0.1KW	Depending on model	◆
F0.04	VFD type	0: G type (constant torque load type) 1: P type (fan, water pump load type) Note 1: set as F type, and the Inverter parameters will refresh automatically, without modifying any parameter the Inverter can be used as inverter of higher grade for application of fan and water pump. Note 2: can not be initialized, please modify it manually.	1	0	×
F0.05	Control mode	0: common V/F control (manually torque boost) 1: advanced V/F control (automatically torque boost) 2: open loop current vector control (SVC) 3: closed loop current vector control (reserved) 4: separated type V/F control Note: this parameter can not be initialized, please modify it manually.	1	Depending on model	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F0.06	Operation command Channel	0: operation panel run command channel 1: terminal run command channel 2: communication run command channel	1	0	○
F0.07	Main frequency source A	0: digital set 1 (keypad ▲/▼ key, encoder+F0.12) 1: digital set 2 (terminal UP/DOWN adjust+F0.13) 2: digital set 3 (communication set) 3: AI1 analog set (0 ~ 10V/20mA) 4: AI2 analog set (0 ~ 10V) 5: pulse set (0 ~ 50KHZ) 6: easy PLC set 7: multistage speed run set 8: PID control set 9: panel potentiometer (compatible encoder) 10: panel potentiometer	1	9	○
F0.08	Auxiliary frequency source B	0: digital set 1 (keypad ▲/▼ key, encoder+F0.12) 1: digital set 2 (terminal UP/DOWN adjust+F0.13) 2: digital set 3 (communication set) 3: AI1 analog set (0 ~ 10V/20mA) 4: AI2 analog set (0 ~ 10V) 5: pulse set (0 ~ 50KHZ) 6: easy PLC set 7: multistage speed run set 8: PID control set 9: panel potentiometer (compatible encoder) 10: panel potentiometer	1	3	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F0.09	Frequency source	0: main frequency source A 1: A+K*B 2: A-K*B 3: | A-K*B | 4: MAX (A , K*B) 5: MIN (A , K*B) 6: switch from A to K*B (A prior to K*B) 7: switch form A to (A+K*B) (A prior to A+K*B) 8: switch form A to (A-K*B) (A prior to A-K*B) Note 1: frequency switch needs Note 2: compared with frequency source set method, traverse operation has a higher priority.	1	0	○
F0.10	Digital set 1 control	LED ones digit: power down storage 0: storage 1: not storage LED tens digit: hold when stop 0: hold 1: not hold LED hundred digit: ▲/▼ key, UP/DOWN frequency 0: invalid 1: valid LED thousands digit: reserved	1	000	○
F0.11	Digital set 2 control		1	000	○
F0.12	Frequency source digital setting 1	0.00Hz ~【F0.16】upper limit of frequency	0.01Hz	50.00	○
F0.13	Frequency source digital setting 2	0.00Hz ~【F0.16】upper limit of frequency	0.01Hz	50.00	○
F0.14	Auxiliary frequency source weight coefficient K setting	0.01 ~ 10.00	0.01	1.00	○
F0.15	Maximum output frequency	Low frequency range: MAX { 50.00, 【F0.16】} ~ 300.00 High frequency range: MAX { 50.00, 【F0.16】} ~ 3000.0	0.01Hz	50.00	×
F0.16	Upper limit frequency	【F0.17】~【F0.15】	0.01Hz	50.00	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F0.17	Lower limit frequency	0.00Hz ~【F0.16】	0.01Hz	0.00	○
F0.18	Frequency output mode selection	LED ones place: high and low frequency mode selection 0: Low frequency mode (0.00 to 300.00 Hz) 1: High frequency mode (0.0 to 3000.0 Hz) LED ten: acceleration and deceleration reference selection 0: based on the maximum output frequency 1: based on the target output frequency LED Hundreds: Reserved LED Thousands: Reserved Note: High frequency mode is only valid for VF control	1	00	×
F0.19	Acceleration time 1	0.1 ~ 3600.0s 0.4 ~ 4.0KW 7.5s 5.5 ~ 30.0KW 5.0s 37.0 ~ 132.0KW 30.0s 160.0 ~ 630.0KW 60.0s	0.1s	Depending on model	○
F0.20	Deceleration time 1		0.1s	Depending on model	○
F0.21	Running direction	0: forward 1: reverse 2: prevent rever	1	0	×
F0.22	Carrier frequency	1.0 ~ 16.0KHz 0.4 ~ 4.0KW 6.0KHz 1.0 ~ 16.0KHz 5.5 ~ 30KW 4.5KHz 1.0 ~ 16.0KHz 37 ~ 132KW 3.0KHz 1.0 ~ 10.0KHz 160 ~ 630KW 1.8KHz 1.0 ~ 5.0KHz	0.1KHz	Depending on model	○
F1 Group - Auxiliary Operating Parameters					
F1.00	Start mode	0: start at start frequency 1: DC braking + start at start frequency 2: start with speed tracking	1	0	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F1.01	Start frequency	0.00 ~ 50.00Hz Note: when F0.18=1 (high frequency mode), upper limit of start frequency is 500.0Hz.	0.01Hz	1.00	○
F1.02	Start frequency hold time	0.0 ~ 6000.0s	0.1s	0.0	○
F1.03	Dc brake current at startup	0.0 ~ 150.0%*rated current of motor	0.1%	0.0%	○
F1.04	Dc brake time at startup	0.0 ~ 100.0s	0.1s	0.0	○
F1.05	Accelerating and decelerating mode	0: linear Acc / Dec mode 1: S curve Acc / Dec mode	1	0	×
F1.06	Time ratio of Initial segment in S curve	10.0 ~ 50.0 %	0.1%	20.0%	○
F1.07	Time ratio of ending segment in S curve	10.0 ~ 50.0 %	0.1%	20.0%	○
F1.08	Stop mode	0: Decelerate to stop 1: coast to stop	1	0	×
F1.09	Frequency threshold of DC brake	0.00 ~【F0.16】upper limit frequency	0.01Hz	0.00	○
F1.10	DC brake delay time	0.0 ~ 100.0s	0.1s	0.0	○
F1.11	DC brake current	0.0 ~ 150.0%*rated current of motor	0.1%	0.0%	○
F1.12	DC brake time at stop	0.0 ~ 100.0s	0.1s	0.0	○
F1.13	Acc time 2	0.1 ~ 3600.0s 0.4 ~ 4.0KW 7.5s 5.5 ~ 30.0KW 15.0s 37.0 ~ 132.0KW 40.0s 160.0 ~ 630.0KW 60.0s	0.1	Depending on model	○
F1.14	Dec time 2		0.1	Depending on model	○
F1.15	Acc time 3		0.1	Depending on model	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F1.16	Dec time 3	0.1 ~ 3600.0s 0.4 ~ 4.0KW 7.5s 5.5 ~ 30.0KW 15.0s 37.0 ~ 132.0KW 40.0s 160.0 ~ 630.0KW 60.0s	0.1	Depending on model	○
F1.17	Acc time 4		0.1	Depending on model	○
F1.18	Dec time 4		0.1	Depending on model	○
F1.19	Acc/Dec time unit	0: second 1: minute 2: 0.1s	1	0	○
F1.20	Frequency setting of forward jog operation	0.00 ~ 【F0.16】 upper limit frequency	0.01Hz	5.00	○
F1.21	Frequency setting of reverse jog operation	0.00 ~ 【F0.16】 upper limit frequency	0.01Hz	5.00	○
F1.22	Jog Acc time	0.1 ~ 3600.0s 0.4 ~ 4.0KW 7.5s 5.5 ~ 30.0KW 15.0s 37.0 ~ 132.0KW 40.0s 160.0 ~ 630.0KW 60.0s	0.1s	Depending on model	○
F1.23	Jog Dec time		0.1s	Depending on model	○
F1.24	Jog interval time	0.0 ~ 100.0s	0.1s	0.1	○
F1.25	Hopping frequency 1	0.00 ~ upper limit frequency	0.01Hz	0.00	○
F1.26	Hopping frequency 1 rang	0.00 ~ upper limit frequency	0.01Hz	0.00	○
F1.27	Hopping frequency 2	0.00 ~ upper limit frequency	0.01Hz	0.00	○
F1.28	Hopping frequency 2 rang	0.00 ~ upper limit frequency	0.01Hz	0.00	○
F1.29	Hopping frequency 3	0.00 ~ upper limit frequency	0.01Hz	0.00	○
F1.30	Hopping frequency 3 rang	0.00 ~ upper limit frequency	0.01Hz	0.00	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F1.31	Action when set frequency is lower than lower limit frequency	0: run at lower limit frequency 1: run at zero frequency after delay time (start without delay) 2: stop after delay time (start without delay)	1	0	×
F1.32	Delay time of stopping when frequency is lower than limit (simple sleep)	0.0 ~ 3600.0s	0.1s	0.0	○
F1.33	Zero frequency brake current	0.0 ~ 150.0%*rated current of motor	0.1	0.0	×
F1.34	FWD/REV transition time	0.0 ~ 100.0s	0.1s	0.0	○
F1.35	FWD/REV switch mode	0: over zero frequency switch 1: over start frequency switch	1	0	×
F1.36	Standby deceleration time when emergency brake	0.1 ~ 3600.0s	0.1s	1.0	○
F1.37	Stop DC braking current maintenance time	0.0 ~ 100.0s	0.1s	0.0	○
F2 Group - Motor Parameters					
F2.00	Motor type	0: AC asynchronous motor 1: PMSM (reserved) Note 1: this parameter can not be initialized, please modify it manually.	1	0	×
F2.01	Motor's rated power	0.4 ~ 999.9KW	0.1KW	Depending on model	×
F2.02	Motor's rated frequency	0.01Hz ~【F0.15】maximum frequency	0.01Hz	50.00	×
F2.03	Motor's rated speed	0 ~ 60000RPM	1RPM	Depending on model	×
F2.04	Motor's rated voltage	0 ~ 999V	1V	Depending on model	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F2.05	Motor's rated current	0.1 ~ 6553.5A	0.1A	Depending on model	×
F2.06	Stator resistance of asynchronous motor	0.001 ~ 20.000Ω	0.001Ω	Depending on model	×
F2.07	Rotor resistance of asynchronous motor	0.001 ~ 20.000Ω	0.001Ω	Depending on model	×
F2.08	Stator and rotor inductance of asynchronous motor	0.1 ~ 6553.5mH	0.1mH	Depending on model	×
F2.09	Stator and rotor mutual inductance of asynchronous motor	0.1 ~ 6553.5mH	0.1mH	Depending on model	×
F2.10	No-load current of asynchronous motor	0.01 ~ 655.35A	0.01A	Depending on model	×
F2.11 ~ F2.15	Reserved	——	——	0	◆
F2.16	Motor tuning	0: no action 1: static tuning 2: no-load complete tuning	1	0	×
F2.17	Pre-excitation time of asynchronous motor	0.00 ~ 10.00s 0.4 ~ 4.0KW 0.02s 5.5 ~ 30KW 0.05s 37 ~ 132KW 0.10s 160 ~ 630KW 0.20s Note: invalid for VF control	0.01s	Depending on model	×
F3 Group – Crane parameters					
F3.00	Brake release frequency	0.00 ~ 50.00Hz	0.01Hz	2.00Hz	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F3.01	Brake release current	0.0 ~ 200.0% Note: The setting value is the percentage of the motor rated current	0.1%	30.0%	○
F3.02	Brake release time	0.0 ~ 6000.0s	0.1s	5.0	○
F3.03	Brake frequency	0.00 ~ 50.00Hz	0.01Hz	2.00Hz	○
F3.04	Brake time	0.0 ~ 6000.0s	0.1s	5.0	○
F3.05	Reserved	——	0	Reserved	○
F3.06	Accurate stop shutdown frequency	0.00 ~ 50.00Hz	0.01Hz	8.00	○
F3.07	Accurate stop shutdown frequency maintenance time	0.0 ~ 6000.0s	0.1s	12.0	○
F3.08	Accurate stop shutdown signal retrieval time	0.0 ~ 6000.0s	0.1s	12.0	○
F3.09	Accurate stop frequency deceleration time	0.0 ~ 6000.0s	0.1s	0.5	○
F3.10	Accurate stop shutdown function	0: invalid 1: valid	1	0	○
F4 Group - Speed Loop, Torque and Flux Control Parameters					
F4.00	Speed loop (ASR1) proportional gain	0.0 ~ 12.5	0.1	3.0	○
F4.01	Speed loop (ASR1) integral time	0.00 ~ 25.00s	0.001s	0.50	○
F4.02	ASR1 filter time constant	0.000 ~ 0.100s	0.001s	0.000	○
F4.03	Switch low point frequency	0.00Hz ~【F4.07】	0.01Hz	5.00	○
F4.04	Speed loop (ASR2) proportional gain	0.0 ~ 12.5	0.1	2.0	○
F4.05	Speed loop (ASR2) integral time	0.00 ~ 25.00s	0.001s	1.00	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F4.06	ASR2 filter time constant	0.000 ~ 0.100s	0.001s	0.000	○
F4.07	Switch high point frequency	【F4.03】~【F0.16】upper limit frequency	0.01Hz	10.00	○
F4.08	Vector control of positive slip compensation factor (electromotion state)	50.0% ~ 200.0%*rated slip frequency	0.1%	100%	○
F4.09	Vector control of negative slip compensation factor (braking state)	50.0% ~ 200.0%*rated slip frequency	0.1%	100%	○
F4.10	Speed and torque control	0: speed 1: torque 2: valid conditionally (terminal switch)	1	0	×
F4.11	Speed and torque switching delay	0.01 ~ 1.00s	0.01s	0.05	×
F4.12	Torque command	0: keypad set 1: AI1 2: AI2 3: communication set	1	0	○
F4.13	Torque set by keypad	-200.0% ~ 200.0%*rated current of motor	0.1%	0.0%	○
F4.14	Speed limit channel 1of torque control mode (forward)	0: keypad set 1 1: AI1 2: AI2	1	0	○
F4.15	Speed limit channel 1of torque control mode (reverse)	0: keypad set 2 1: AI1 2: AI2	1	0	○
F4.16	Keypad limit speed 1	0.0 ~ 100.0%*【F0.15】maximum frequency	0.1%	100.0%	○
F4.17	Keypad limit speed 2	0.0 ~ 100.0%*【F0.15】maximum frequency	0.1%	100.0%	○
F4.18	Torque rise time	0.0 ~ 10.0s	0.1s	0.1	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F4.19	Torque decline time	0.0 ~ 10.0s	0.1s	0.1	○
F4.20	Electromotion torque limit of vector mode	G type: 0.0% ~ 200.0%*rated current of motor 180.0% P type: 0.0% ~ 200.0%*rated current of motor 120.0%	0.1%	Depending on model	○
F4.21	Braking torque limit of vector mode	G type: 0.0% ~ 200.0%*rated current of motor 180.0% P type: 0.0% ~ 200.0%*rated current of motor 120.0%	0.1%	Depending on model	○
F4.22	Torque detection action	0: detect invalid 1: keep running after over torque detected during constant speed 2: keep running after over torque detected during running 3: cut off output after over torque detected during constant speed 4: cut off output after over torque detected during running 5: keep running after torque shortage detected during constant speed 6: keep running after torque shortage detected during running 7: cut off output after torque shortage detected during constant speed 8: cut off output after torque shortage detected during running	1	0	×
F4.23	Torque detection level	G type: 0.0% ~ 200.0%*rated current of motor 150.0% P type: 0.0% ~ 200.0%*rated current of motor 110.0%	0.1%	Depending on model	×
F4.24	Torque detection time	0.0 ~ 10.0s	0.1s	0.0	×
F4.25	Cut off frequency of static friction coefficient	0.00 ~ 300.00Hz	0.01Hz	10.00	○
F4.26	Static friction coefficient set	0.0 ~ 200.0	0.1	0.0	○
F4.27	Hold time of static friction coefficient	0.00 ~ 600.00s	0.01s	0.00	×

F5 Group - VF Control Parameters					
Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F5.00	Torque detection level	0: linear curve 1: decreasing torque curve 1 (1.3 power) 2: decreasing torque curve 2 (1.5 power) 3: decreasing torque curve 3 (1.7 power) 4: square curve 5: user set V/F curve (determined by F5.01 ~ F5.06) 6: elevator special curve (elevator upward curve is determined by F5.01 ~ F5.06, elevator downward curve is determined by F5.27 ~ F5.32)	1	0	×
F5.01	V/F curve 1 frequency value F1	0.00 ~ 【 F5.03 】	0.01Hz	12.50	×
F5.02	V/F curve 1 voltage value V1	0.00 ~ 【 F5.04 】	0.1%	25.0%	×
F5.03	V/F curve 1 frequency value F2	【 F5.01 】 ~ 【 F5.05 】	0.01Hz	25.00	×
F5.04	V/F curve 1 voltage value V2	【 F5.02 】 ~ 【 F5.06 】	0.1%	50.0%	×
F5.05	V/F curve 1 frequency value F3	【 F5.03 】 ~ 【 F2.02 】 motor rated frequency	0.01Hz	37.50	×
F5.06	V/F curve 1 voltage value V3	【 F5.30 】 ~ 100.0 % * 【 F2.04 】 motor rated voltage	0.1%	75.0%	×
F5.07	Torque boost setting	0.0 ~ 30.0%*rated voltage of motor 【 F2.04 】 Note: 0.0 means the torque boost value is 0, not automatic boost	0.1%	Depending on model	×
F5.08	Torque boost cutoff point	0.00 ~ rated frequency of motor	0.01Hz	15.00	×
F5.09	V/F control slip frequency compensation	0.0 ~ 200.0%*rated slip	0.1%	0.0%	○
F5.10	V/F control slip compensation filtering coefficients	1 ~ 10	1	3	○
F5.11	V/F control torque compensation filtering coefficients	0 ~ 10	1	Depending on model	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F5.12	Separated type V/F control	0: VF half separated mode, voltage open-loop output 1: VF half separated mode, voltage closed-loop output 2: VF complete separated mode, voltage open-loop output 3: VF complete separated mode, voltage closed-loop output Note 1: when choose VF separated control, please close the dead-time compensation function Note 2: half separated concept is based on that during start-up the frequency and voltage of VFD remains the VVVF relation, but get separated after the reaching of set frequency	1	0	×
F5.13	Voltage setting channel	0: digital setting 1: AI1 2: AI2	1	0	○
F5.14	Voltage feedback method of voltage close-loop output	0: AI1 1: AI2 Note: only valid for closed loop output mode	1	0	×
F5.15	Output voltage of digital setting	0.0 ~ 200.0%*rated voltage of motor Note: in open loop output mode, the maximum output voltage is 100.0% of rated voltage of motor	0.1%	100.0%	○
F5.16	Deviation limit of voltage closed loop regulation	0.0 ~ 5.0%*rated voltage of motor	0.1%	2.0%	×
F5.17	VF curve max. voltage of half separation mode	0.0 ~ 100.0%*rated voltage of motor Note: this voltage represents output voltage of VFD	0.1 %	80.0%	×
F5.18	Controller adjustment cycle of voltage closed loop output	0.01 ~ 10.00s	0.01s	0.10	×
F5.19	Voltage rising time	0.1 ~ 3600.0s Note: this parameter is only valid for open loop output mode of complete separated voltage	0.1s	10.0	○
F5.20	Voltage declining time		0.1s	10.0	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F5.21	Voltage feedback disconnection treatment	0: alarm and keep running with the voltage of disconnection moment 1: alarm and keep running with decreased voltage of amplitude limiting value 2: protection action and free stop	1	0	×
F5.22	Detection value of voltage feedback disconnection	0.0 ~ 100.0%*rated voltage of motor	0.1%	2.0%	○
F5.23	Detection time of voltage feedback disconnection	0.0 ~ 100.0s	0.1s	10.0	○
F5.24	Limit voltage of voltage feedback disconnection	0.0 ~ 100.0%*rated voltage of motor Note: this voltage represents the output voltage of VFD, and reasonable setting of this parameter could prevent machine damage resulting from voltage overshoot at disconnection moment.	0.1%	80.0%	○
F5.25	Busbar voltage undervoltage detection value	Note: 0 is invalid, and the busbar voltage is lower than the value of this parameter, will report “E-34".	1V	0	○
F5.26	Busbar undervoltage fault reset value	Note: If the busbar voltage reaches this set value, the undervoltage fault "E-34" will automatically reset and start.	1V	0	○
F5.27	V/F curve 2 frequency value F1	0.00 ~ 【 F5.29 】	0.01Hz	12.50	×
F5.28	V/F curve 2 voltage value V1	0.00 ~ 【 F5.30 】	0.1%	25.0%	×
F5.29	V/F curve 2 frequency value F2	【 F5.27 】 ~ 【 F5.31 】	0.01Hz	25.00	×
F5.30	V/F curve 2 voltage value V2	【 F5.28 】 ~ 【 F5.32 】	0.1%	50.0%	×
F5.31	V/F curve 2 frequency value F3	【 F5.29 】 ~ 【 F2.02 】 motor rated frequency	0.01Hz	37.50	×
F5.32	V/F curve 2 voltage value V3	【 F5.30 】 ~ 100.0 % * 【 F2.04 】 motor rated voltage	0.1%	75.0%	×

F6 Group - Analog Quantity and Pulse Input and Output Parameters					
Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F6.00	AI1 input corresponding physical quantity	0: speed command (output frequency, -100.0% ~ 100.0%) 1: torque command (output torque, -200.0% ~ 200.0%) 2: voltage command (output voltage, 0.0% ~ 200.0% *rated voltage of motor)	1	0	×
F6.01	AI1 input lower-limit	0.00V/0.00mA ~ 10.00V/20.00mA	0.01V	0.00	○
F6.02	AI1 lower limit corresponding physical quantity set	-200.0% ~ 200.0% Note: range is relevant to F6.00	0.1%	0.0%	○
F6.03	AI1 input upper limit	0.00V/0.00mA ~ 10.00V/20.00mA	0.01V	10.00	○
F6.04	AI1 upper limit corresponding physical quantity setting	-200.0% ~ 200.0% Note: range is relevant to F6.00	0.1%	100.0%	○
F6.05	AI1 input smoothing time	0.00s ~ 10.00s	0.01s	0.05	○
F6.06	AI2 input corresponding physical quantity	0: speed command (output frequency, -100.0% ~ 100.0%) 1: torque command (output torque, -200.0% ~ 200.0%) 2: voltage command (output voltage, 0.0% ~ 200.0% *rated voltage of motor)	1	0	×
F6.07	AI2 input lower limit	0.00V ~ 10.00V	0.01V	0.00	○
F6.08	AI2 lower limit corresponding physical quantity setting	-200.0% ~ 200.0% Note: range is relevant to F6.06	0.1%	0.0%	○
F6.09	AI2 input upper limit	0.00V ~ 10.00V	0.01V	10.00	○
F6.10	AI2 upper limit corresponding physical quantity setting	-200.0% ~ 200.0% Note: range is relevant to F6.06	0.1%	100.0%	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F6.11	AI2 input filtering time	0.00s ~ 10.00s	0.01s	0.05	○
F6.12	Error limit of analog input	0.00V ~ 10.00V	0.01V	0.00	○
F6.13	Threshold of zero frequency operation	Zero frequency hysteresis ~ 50.00Hz Note: when F0.18=1 (high frequency mode), upper limit of this parameter is 500.0Hz.	0.01Hz	0.00	○
F6.14	Zero frequency hysteresis	0.00 ~ zero frequency threshold value	0.1%	0.0%	○
F6.15	External impulse input corresponding physical quantity	0: speed command (output frequency, -100.0% ~ 100.0%) 1: torque command (output torque, -200.0% ~ 200.0%)	1	0	×
F6.16	External impulse input lower limit	0.00 ~ 50.00KHz	0.01Hz	0.00	○
F6.17	External impulse lower limit corresponding physical quantity set	-200.0% ~ 200.0% Note: range is relevant to P6.15	0.1%	0.0%	○
F6.18	External impulse input upper limit	0.00 ~ 50.00KHz	0.01Hz	50.00	○
F6.19	External impulse upper limit corresponding physical quantity set	-200.0% ~ 200.0% Note: range is relevant to P6.15	0.1%	100.0%	○
F6.20	External impulse input filtering time	0.00 ~ 10.00s	0.01s	0.05	○
F6.21	AO1 multi-function analog output terminal	0: output frequency (before slip compensation) 1: output frequency (after slip compensation) 2: set frequency 3: motor speed (estimated value) 4: output current 5: output voltage 6: but voltage 7: PID specified value 8: PID feedback value 9: AI1	1	0	○
F6.22	AO2 multi-function analog output terminal		1	4	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F6.23	DO multi-function impulse output terminal	10: AI2 11: input pulse frequency 12: torque current 13: flux current 14: communication setting	1	11	○
F6.24	Physical quantity correspond to AO1 output lower limit	-200.0% ~ 200.0%	0.1%	0.0%	○
F6.25	AO1 output lower limit	0.00 ~ 10.00V	0.01V	0.00	○
F6.26	Physical quantity correspond to AO1 output upper limit	-200.0% ~ 200.0%	0.1%	100.0%	○
F6.27	AO1 output upper limit	0.00 ~ 10.00V	0.01V	10.00	○
F6.28	Physical quantity correspond to AO2 output lower limit	-200.0% ~ 200.0%	0.1%	0.0%	○
F6.29	AO2 output lower limit	0.00 ~ 10.00V	0.01V	0.00	○
F6.30	Physical quantity correspond to AO2 output upper limit	-200.0% ~ 200.0%	0.1%	100.0%	○
F6.31	AO2 output upper limit	0.00 ~ 10.00V	0.01V	10.00	○
F6.32	Physical quantity correspond to DO output lower limit	-200.0% ~ 200.0%	0.1%	0.0%	○
F6.33	DO output lower limit	0.00 ~ 50.00KHz	0.01KHz	0.00	○
F6.34	Physical quantity correspond to DO output lower limit	-200.0% ~ 200.0%	0.1%	100.0%	○
F6.35	DO output upper limit	0.00 ~ 50.00KHz	0.01KHz	50.00	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F6.36	AI multi-point curve selection	LED ones digit: AI1 multi-point curve selection 0: Disable 1: Valid LED ten: AI2 multi-point curve selection 0: Disable 1: Valid LED hundred digits: analog input signal selection 0: AI1 and AI2 input signal 0 ~ 10V 1: AI1 input signal 4 ~ 20mA, AI2 input signal 0 ~ 10V 2: AI2 input signal 4 ~ 20mA, AI1 input signal 0 ~ 10V 3: AI1 and AI2 input signals 4 ~ 20mA LED Thousands: Reserved	1	00	×
F6.37	AI1 curve minimum input	0.00 ~ 【F6.39】	0.01V	0.00	○
F6.38	AI1 curve minimum input corresponding setting	-200.0% ~ 200.0% Note: The scope is associated with F6.00	0.1%	0.0%	○
F6.39	AI1 curve inflection point 1 input	【F6.37】~ 【F6.41】	0.01V	3.00	○
F6.40	AI1 curve inflection point 1 input corresponding setting	-200.0% ~ 200.0% Note: The scope is associated with F6.00	0.1%	30.0%	○
F6.41	AI1 curve inflection point 2 input	【F6.39】~ 【F6.43】	0.01V	6.00	○
F6.42	AI1 curve inflection point 2 input corresponding setting	-200.0% ~ 200.0% Note: The scope is associated with F6.00	0.1%	60.0%	○
F6.43	AI1 curve maximum input	【F6.41】~ 10.00	0.01V	10.00	○
F6.44	AI1 curve maximum input corresponding setting	-200.0% ~ 200.0% Note: The scope is associated with F6.00	0.1%	100.0%	○
F6.45	AI2 curve minimum input	0.00 ~ 【F6.47】	0.01V	0.00	○
F6.46	AI2 curve minimum input corresponding setting	-200.0% ~ 200.0% Note: The scope is associated with F6.06	0.1%	0.0%	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F6.47	AI2 curve inflection point 1 input	【F6.45】~【F6.49】	0.01V	3.00	○
F6.48	AI2 curve inflection point 1 input corresponding setting	-200.0% ~ 200.0% Note: The scope is associated with F6.06	0.10%	30.0%	○
F6.49	AI2 curve inflection point 2 input	【F6.47】~【F6.51】	0.01V	6.00	○
F6.50	AI2 curve inflection point 2 input corresponding setting	-200.0% ~ 200.0% Note: The scope is associated with F6.06	0.10%	60.0%	○
F6.51	AI2 curve maximum input	【F6.49】~ 10.00	0.01V	10.00	○
F6.52	AI2 curve maximum input corresponding setting	-200.0% ~ 200.0% Note: The scope is associated with F6.06	0.10%	100.0%	○
F6.53	AI1 input voltage protection upper limit	【F6.54】~ 10.00V	0.01V	6.80	○
F6.54	AI1 input voltage protection lower limit	0.00 ~【F6.53】	0.01V	3.10	○
F7 Group - Digital Input and Output Parameters					
F7.00	Input X1 function (when F8.21 is non-zero, default as function NO.58)	0: control terminal idle 1: forward run (FWD) 2: reverse run (REV) 3: three-wire running control 4: forward jog control 5: reverse jog control 6: free shutdown control 7: external reset signal input (RST) 8: external fault normally-open input 9: external fault normally-close input 10: emergency stop function (brake with) 11: External stop control 12: frequency increase 13: frequency decrease 14: UP/DOWN terminal frequency zero clearing 15: multi-speed 1	1	1	×
F7.01	Input X2 function (when F8.21 is non-zero, default as function NO.59)		1	2	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F7.02	Input X3 function (when F8.21 is non-zero, default as function NO.60)	16: multi-speed 2 17: multi-speed 3 18: multi-speed 4 19: ACC/DEC time TT1 20: ACC/DEC time TT2 21: run command channel 1 22: run command channel 2 23: VFD ACC/DEC prohibit 24: VFD operation prohibiting 25: run command switch to keypad 26: run command switch to terminal 27: run command switch to communication 28: auxiliary frequency zero clearing 29: frequency source A and K*B switch 30: frequency source A and A+K*B switch 31: frequency source A and A-K*B switch 32: reserved 33: PID control input 34: PID control pause 35: start traverse operation 36: pause traverse operation 37: traverse status reset 38: PLC control input 39: PLC pause 40: PLC reset 41: clear the counter to zero 42: input signal to trigger the counter 43: timing triggering input 44: timing clearing input 45: input external impulse frequency (only valid for X7) 46: clear the length information 47: input the signal of length (only valid for X7) 48: switch speed and torque control 49: prohibit torque control	1	4	×
F7.03	Input X4 function (when F8.21 is non-zero, default as function NO.61)		1	7	×
F7.04	Input X5 function (when F8.21 is non-zero, default as function NO.62)		1	8	×
F7.05	Input X6 function (when F8.21 is non-zero, default as function NO.63)		1	0	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F7.06	Input X7 function (high speed pulse input)	50 ~ 57: reserved 58: start/stop 59: running allowed 60: interlock1 61: interlock2 62: interlock3 63: PFC start/stop 64: A frequency switch B and run 65: The first group PID is switched to the second group PID 66: Accurate Stop shutdown signal input	1	45	×
F7.07	Reserved	——	——	0	◆
F7.08	Digital filtering times	1 ~ 10 1: 2MS unit of scanning time	1	5	○
F7.09	Terminal function detection when power on	0: terminal operation command invalid when power on 1: terminal operation command valid when power on	1	0	○
F7.10	Effective logic setting of input terminal (X1 ~ X7)	0 ~ 7FH 0 is positive logic, i.e. terminal Xi is enabled when it connects with common terminal and disabled if disconnected. 1 is negative logic, i.e. terminal Xi is disabled when it connects with common terminal and enabled when disconnected.	1	00	×
F7.11	FWD/REV terminal control mode	0: two-wire control mode 1 1: two-wire control mode 2 2: three-wire control mode 1 3: three-wire control mode 2	1	0	×
F7.12	UP/DOWN terminal frequency modifying rate	0.01 ~ 50.00Hz/s Note: when F0.18=1 (high frequency mode), upper limit of this parameter is 500.0Hz/s.	0.01Hz/s	1.00	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F7.13	Reserved	——	——	0	◆
F7.14	Y1 output delay time	0.0 ~ 100.0s	0.1s	0.0	×
F7.15	Y2 output delay time	0.0 ~ 100.0s	0.1s	0.0	×
F7.16	R1 output delay time	0.0 ~ 100.0s	0.1s	0.0	×
F7.17	R2 output delay time	0.0 ~ 100.0s	0.1s	0.0	×
F7.18	Open collector output terminal Y1	0: no output 1: VFD forward running 2: VFD reverse running 3: fault output 4: frequency/speed level detection signal (FDT1) 5: frequency/speed level detection signal (FDT2) 6: frequency/speed arrival signal (FAR) 7: VFD zero-speed running 8: upper limit arrival of output frequency 9: lower limit arrival of output frequency 10: lower limit arrival of preset frequency during running 11: pre-alarm signal of overload 12: counter detection signal output 13: couner detection reset signal output 14: driver ready 15: one cycle finished of programmable MS running 16: stage finished of pogrammable MS running 17: upper and lower limit of traverse frequency 18: current limiting action 19: stall over voltage 20: low voltage lock-up 21: dormancy state 22: VFD alarm signal (PID disconnection, RS485 communication failure, panel communication failure, EEPROM read-writefailure, encoder disconnection, etc) 23: AI1 > AI2 24: preset length arrival	1	0	×
F7.19	Open collector output terminal Y2		1	0	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F7.20	Programmable relay R1 output	25: preset operation time out 26: dynamic braking action 27: DC braking action 28: flux braking action 29: torque limiting 30: over torque signal 31: auxiliary motor 1 32: auxiliary motor 2 33: accumulated operation time out 34 ~ 49: segment of MS or simple PLC operation 50: running indication signal 51: temperature arrival Indication 52: indication when VFD stops or during zero-speed running 53: reserved 54: reserved 55: Communication settings 56: The inverter is ready for operation 2 57: AI1 input over pressure 58: Output current overrun 59: Interlock 1 output 60: Interlock 2 output 61: Interlock 3 output 62: Frequency and current detection level reach the output at the same time 63: Brake signal output 64: Output signal when the frequency inverter runs to the accurate stop shutdown frequency	1	3	×
F7.21	Programmable relay R2 output		1	0	×
F7.22	Logic setting of output terminal (Y1 ~ Y2)	0 ~ 3H 0: positive logic, i.e. terminal Yi is enabled when it connects with common terminal, and disabled if disconnected. 1: negative logic, i.e. terminal Yi is disabled when it connects with common terminal, and enabled if disconnected.	1	0	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F7.23	Frequency arrival detection range (FAR)	0.0 ~ 100.0%* 【 F0.15 】 max. frequency	0.1%	10.0%	○
F7.24	FDT1 detection method	0: speed set value 1: speed detected value	1	0	○
F7.25	FDT1 level	0.00Hz ~【 F0.16 】 upper limit frequency	0.01Hz	50.00	○
F7.26	FDT1 lag	0.0 ~ 100.0 % *【 F7.25 】	0.1%	2.0%	○
F7.27	FDT2 detection method	0: speed set value 1: speed detected value	1	0	○
F7.28	FDT2 level	0.00Hz ~【 F0.16 】 upper limit frequency	0.01Hz	25.00	○
F7.29	FDT2 lag	0.0 ~ 100.0 % *【 F7.28 】	0.1%	4.0%	○
F7.30	Counting value arrival processing	0: stop counting, stop output 1: stop counting, resume output 2: cycle count, stop output 3: cycle count, resume output	1	3	×
F7.31	Counting start condition	0: always count since power on 1: count in operation status, stop counting in stop status	1	1	×
F7.32	Counter reset value	【 F7.33 】 ~ 65535	1	0	○
F7.33	Counter detection value	0 ~【 F7.32 】	1	0	○
F7.34	Time out processing	0: stop timing, stop output 1: stop timing, resume output 2: cycle timing, stop output 3: cycle timing, resume output	1	3	×
F7.35	Timing start condition	0: timing starts since power on 1: timing starts in operation status, and stops in stop status	1	1	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F7.36	Timing setting	0 ~ 65535s	1s	0	○
F7.37	Y1 turn off delay time	0.0 ~ 100.0s	0.1s	0.0	×
F7.38	Y2 turn off delay time	0.0 ~ 100.0s	0.1s	0.0	×
F7.39	R1 turn off delay time	0.0 ~ 100.0s	0.1s	0.0	×
F7.40	R2 turn off delay time	0.0 ~ 100.0s	0.1s	0.0	×
F8 Group – PID Control Parameters					
F8.00	PID operation input mode	0: auto 1: manually input via defined multi-function terminal	1	0	×
F8.01	PID input channel	0: digital setting 1: AI1 2: AI2 3: pulse setting 4: RS485 communication 5:Pressure given (MPa 、 Kg) 6: Panel potentiometer given	1	0	○
F8.02	Digital reference input setting	0.0 ~ 100.0 %	0.1%	50.0%	○
F8.03	PID feedback channel	0: AI1 1: AI2 2: AI1+AI2 3: AI1-AI2 4: MAX { AI1 , AI2 } 5: MIN { AI1 , AI2 } 6: pulse setting 7: RS485 communication	1	0	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F8.04	PID controller advanced setting	LED one's place: PID sign 0: positive 1: negative LED ten's place: proportion regulation (reserved) 0: integral regulation of constant proportion 1: integral regulation of auto changing proportion LED hundred's place: integral regulation 0: stop integral regulation when the frequency reaches the upper or lower limits 1: continue the integral regulation when the frequency reaches the upper or lower limits LED thousand's place: reserved	1	000	×
F8.05	Proportional gain KP1	0.01 ~ 100.00	0.01	5.00	○
F8.06	Integral time Ti1	0.01 ~ 10.00s	0.01s	0.05	○
F8.07	Derivative time Td1	0.01 ~ 10.00s 0.0: no derivation	0.01s	0.00	○
F8.08	Sampling cycle T	0.01 ~ 10.00s 0.00: auto	0.01s	0.10	○
F8.09	Error limit	0.0 ~ 100.0 %	0.1%	0.0%	○
F8.10	Close-loop preset frequency	0.00 ~ upper limit frequency	0.01Hz	0.00	○
F8.11	Preset frequency hold time	0.0 ~ 3600.0s	0.1s	0.0	×
F8.12	Sleep mode	0: disabled 1: sleep when feedback pressure exceeding or lower than sleep threshold 2: sleep when feedback pressure and output frequency are stable 3: Sleep when feedback pressure higher than frequency reduction lower limit threshold	1	1	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F8.13	Stop method of sleep mode	0: decelerate to stop 1: coast to stop	1.00	0	○
F8.14	Deviation limit of feedback when entering sleep state compared with set pressure	0.0 ~ 10.0% Note: this parameter is only valid to the second sleep mode.	0.1%	0.5%	○
F8.15	Threshold value of sleeping	0.0 ~ 200.0% Note: this threshold value is the percentage of given pressure, and it is only valid for the first sleep mode.	0.1%	100.0%	○
F8.16	Threshold value of awaking	0.0 ~ 200.0% Note: this threshold value is the percentage of given pressure.	0.1%	90.0%	○
F8.17	Delay time of sleep	0.0 ~ 3600.0s	0.1s	100.0	○
F8.18	Delay time of awaking	0.0 ~ 3600.0s	0.1s	5.0	○
F8.19	Delay time of adding pump	0.0 ~ 3600.0s	0.1s	10.0	○
F8.20	Delay time of reducing pump	0.0 ~ 3600.0s	0.1s	10.0	○
F8.21	Water supply enabling (F8.21-F8.24 External expansion hardware support required)	0: disabled 1: PFC enabled 2: SPFC enabled	1	0	×
F8.22	Delay time of terminal disconnect and connect	0.0 ~ 6000.0s	0.1s	0.1	○
F8.23	Polling time	0.0 ~ 6000.0h	0.1h	48.0	○
F8.24	Lower limit frequency of reducing pump	0.0 ~ 600.00Hz	0.01Hz	35.00	×
F8.25	Sensor range	0.00 ~ 60.00（MPa、Kg）	0.01	10.00	○
F8.26	Pressure setting	0.00 ~【F8.25】（MPa、Kg）	0.01	5.00	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F8.27	Main pump start delay	0.0 ~ 3600.0s	0.1s	0.3	○
F8.28	Auxiliary pump start mode selection	0 : Direct start 1 : soft start	1	0	×
F8.29	Proportional gain KP2	0.01 ~ 100.00	0.01	1.00	○
F8.30	Integration time Ti2	0.01 ~ 10.00s	0.01s	0.10	○
F8.31	Derivative time Td2	0.01 ~ 10.00s 0.0 : no differentiation	0.01s	0.00	○
F8.32	PID upper limit cutoff frequency	【F8.33】~ 300.00Hz	0.01Hz	50.00	×
F8.33	PID lower limit cutoff frequency	-300.00Hz ~【F8.32】 Note: When the frequency is lower than -99.99Hz, you need to set F0.18 bits to 1	0.01Hz	0.00	×
F8.34	Frequency reduction time	0.1-100.0s Note: Only useful when F8.12=3	0.1s	2.0	○
F8.35	Frequency reduction detection time	0.1-100.0s Note: Only useful when F8.12=3	0.1s	0.0	○
F8.36	Waiting time before frequency reduction	0.1-100.0s Note: Only useful when F8.12=3	0.1s	10.0	○
F8.37	Frequency reduction lower limit threshold	【F8.38】-100% Note: Only useful when F8.12=3	0.1%	95.0%	○
F8.38	Sleep lower limit threshold	【F8.37】-【F8.16】 Note: Only useful when F8.12=3	0.1%	90.0%	○
F8.39	Frequency reduction amplitude	0.00-50.00 Note: Only useful when F8.12=3	0.01	2.00	○
F8.40	Sleep frequency	0.00Hz ~【F0.16】	0.01Hz	20.00	×

F9 Group – MS and PLC Running, Traverse and Fixed Length Control					
Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F9.00	PLC running mode	0: stop after single cycle 1: retain value after single cycle 2: continuous cycle of limited times 3: continuous cycle	1	0	×
F9.01	Input mode of PLC running	0: auto 1: manually input via defined multi-function terminal	1	0	×
F9.02	PLC running state saving after power off	0: not save 1: save the stage and frequency when power off	1	0	×
F9.03	PLC restart mode	0: restart from the first stage 1: start from the stage where the driver stops (fault) 2: start from the stage where the driver stops (fault) at the recorded frequency	1	0	×
F9.04	Limited times of continuous cycle	1 ~ 65535	1	1	○
F9.05	Unit of PLC running time	0: s 1: m	1	0	×
F9.06	MS frequency 0	-upper limit frequency ~ upper limit frequency	0.01Hz	5.00	○
F9.07	MS frequency 1	-upper limit frequency ~ upper limit frequency	0.01Hz	10.00	○
F9.08	MS frequency 2	-upper limit frequency ~ upper limit frequency	0.01Hz	15.00	○
F9.09	MS frequency 3	-upper limit frequency ~ upper limit frequency	0.01Hz	20.00	○
F9.10	MS frequency 4	-upper limit frequency ~ upper limit frequency	0.01Hz	25.00	○
F9.11	MS frequency 5	-upper limit frequency ~ upper limit frequency	0.01Hz	30.00	○
F9.12	MS frequency 6	-upper limit frequency ~ upper limit frequency	0.01Hz	40.00	○
F9.13	MS frequency 7	-upper limit frequency ~ upper limit frequency	0.01Hz	50.00	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F9.14	MS frequency 8	-upper limit frequency ~ upper limit frequency	0.01Hz	0.00	○
F9.15	MS frequency 9	-upper limit frequency ~ upper limit frequency	0.01Hz	0.00	○
F9.16	MS frequency 10	-upper limit frequency ~ upper limit frequency	0.01Hz	0.00	○
F9.17	MS frequency 11	-upper limit frequency ~ upper limit frequency	0.01Hz	0.00	○
F9.18	MS frequency 12	-upper limit frequency ~ upper limit frequency	0.01Hz	0.00	○
F9.19	MS frequency 13	-upper limit frequency ~ upper limit frequency	0.01Hz	0.00	○
F9.20	MS frequency 14	-upper limit frequency ~ upper limit frequency	0.01Hz	0.00	○
F9.21	MS frequency 15	-upper limit frequency ~ upper limit frequency	0.01Hz	0.00	○
F9.22	Acc/Dec time of stage 0	0 ~ 3	1	0	○
F9.23	Run time of segment 0	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.24	Acc/Dec time of stage 1	0 ~ 3	1	0	○
F9.25	Run time of segment 1	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.26	Acc/Dec time of stage 2	0 ~ 3	1	0	○
F9.27	Run time of segment 2	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.28	Acc/Dec time of stage 3	0 ~ 3	1	0	○
F9.29	Run time of segment 3	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.30	Acc/Dec time of stage 4	0 ~ 3	1	0	○
F9.31	Run time of segment 4	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.32	Acc/Dec time of stage 5	0 ~ 3	1	0	○
F9.33	Run time of segment 5	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F9.34	Acc/Dec time of stage 6	0 ~ 3	1	0	○
F9.35	Run time of segment 6	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.36	Acc/Dec time of stage 7	0 ~ 3	1	0	○
F9.37	Run time of segment 7	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.38	Acc/Dec time of stage 8	0 ~ 3	1	0	○
F9.39	Run time of segment 8	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.40	Acc/Dec time of stage 9	0 ~ 3	1	0	○
F9.41	Run time of segment 9	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.42	Acc/Dec time of stage 10	0 ~ 3	1	0	○
F9.43	Run time of segment 10	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.44	Acc/Dec time of stage 11	0 ~ 3	1	0	○
F9.45	Run time of segment 11	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.46	Acc/Dec time of stage 12	0 ~ 3	1	0	○
F9.47	Run time of segment 12	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.48	Acc/Dec time of stage 13	0 ~ 3	1	0	○
F9.49	Run time of segment 13	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.50	Acc/Dec time of stage 14	0 ~ 3	1	0	○
F9.51	Run time of segment 14	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○
F9.52	Acc/Dec time of stage 15	0 ~ 3	1	0	○
F9.53	Run time of segment 15	0.0 ~ 6553.5s (M)	0.1s (M)	0.0	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F9.54	Reserved	——	——	0	◆
F9.55	Traverse control	0: disabled 1: enabled	1	0	×
F9.56	Input method of traverse mode	0: auto 1: manually input via defined multi-function terminal	1	0	×
F9.57	Amplitude control	0: fixed amplitude 1: varied amplitude	1	0	×
F9.58	Restart method of traverse mode	0: start to the state before stop 1: restart without other requirement	1	0	×
F9.59	Save traverse state upon power failure	0: save 1: not save	1	0	×
F9.60	Preset traverse frequency	0.00Hz ~ upper limit frequency	0.01Hz	10.00	○
F9.61	Preset traverse frequency hold time	0.0 ~ 3600.0s	0.1s	0.0	×
F9.62	Traverse amplitude	0.0 ~ 100.0 %	0.1%	0.0%	○
F9.63	Step frequency	0.0 ~ 50.0% (of amplitude)	0.1%	0.0%	○
F9.64	Traverse rising time	0.1 ~ 3600.0s	0.1s	5.0	○
F9.65	Traverse falling time	0.1 ~ 3600.0s	0.1s	5.0	○
F9.66	Reserved	——	——	0	◆
F9.67	Length control	0: disabled 1: enabled	1	0	×
F9.68	Preset length	0.000 ~ 65.535 (KM)	0.001KM	0.000	○
F9.69	Actual length	0.000 ~ 65.535 (KM)	0.001KM	0.000	○
F9.70	Length factor	0.100 ~ 30.000	0.001	1.000	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
F9.71	Length calibration	0.001 ~ 1.000	0.001	1.000	○
F9.72	Shaft circumference	0.10 ~ 100.00CM	0.01CM	10.00	○
F9.73	Pulse per revolution (X7)	1 ~ 65535	1	1024	○
FA Group – Protective Parameters					
FA.00	Motor overload protection	LED units: motor overload protection selection 0: prohibited 1: Ordinary motor (Electronic thermal relay mode, low speed with compensation) 2: Frequency conversion motor (Electronic thermal relay mode, no compensation for low speed) 3: Self-defined motor overload protection LED ten bits: inverter overload protection selection 0: prohibited 1: General inverter overload protection 2: Self-defined inverter overload protection LED Hundreds bits: Overload pre-alarm selection 0: prohibited 1: Effective LEDs Thousands bits: reserved	1	11	×
FA.01	Motor overload protection factor	20.0 % ~ 120.0 %	0.1%	100.0%	×
FA.02	Undervoltage protection	0: disabled 1: enabled (undervoltage is seen as fault)	1	0	×
FA.03	Undervoltage protection level	220V: 180 ~ 280V 200V 380V: 330 ~ 480V 350V	1V	Depending on model	×
FA.04	Overvoltage limit level	220V: 350 ~ 390V 370V 380V: 600 ~ 780V 660V	1V	Depending on model	×
FA.05	Voltage limit factor in decelerating	0 ~ 100 0: protection invalid of stall over voltage	1	Depending on model	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FA.06	Current limiting threshold (only valid for VF mode)	G type: 80% ~ 200%*VFD rated current 160% P type: 80% ~ 200%*VFD rated current 120%	1%	Depending on model	×
FA.07	Current limiting in the field weakening region	0: limited by FA.06 1: limited by conversion value of PA.06	1	0	×
FA.08	Current limiting factor in accelerating	0 ~ 100 0: acceleration current limiting is disabled	1	Depending on model	×
FA.09	Current limiting in constant speed running	0 ~ 100	1	40	×
FA.10	Off load detection time	0.1s ~ 60.0s	0.1s	5.0	○
FA.11	Off load detection level	0 ~ 100%*VFD rated current 0: off load detection is disabled	1%	0%	○
FA.12	Overload pre-alarm level	G type: 20% ~ 200%*VFD rated current 160% P type: 20% ~ 200%*VFD rated current 120%	1%	Depending on model	○
FA.13	Overload pre-alarm delay time	0.0 ~ 30.0s	0.1s	10.0	○
FA.14	Temperature detection threshold	0.0℃ ~ 90.0℃	0.1℃	65.0℃	×
FA.15	Phase loss protection of input and output	0: disabled 1: disabled for input, enabled for output 2: enabled for input, disabled for output 3: enabled	1	Depending on model	×
FA.16	Delay time of input phase loss protection	0.0 ~ 30.0s	0.1s	1.0	○
FA.17	Detection reference of output phase loss protection	0% ~ 100%*VFD rated current	1%	50%	×
FA.18	Detection factor of output current imbalance	1.00 ~ 10.00 1.00: imbalance detection is disabled Note: detection of output current imbalance and output phase loss share the same reference parameter FA.17 and fault code E-13.	——	1.00	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FA.19	Reserved	——	——	0	◆
FA.20	PID feedback disconnection processing	0: disabled 1: alarm and maintain the operation at the frequency of disconnection moment 2: protection action and coast to stop 3: alarm and decelerate to zero-speed operation according to preset mode	1	0	×
FA.21	Feedback disconnection detection value	0.0 ~ 100.0%	0.1%	0.0%	○
FA.22	Feedback disconnection detection time	0.0 ~ 3600.0s	0.1s	10.0	○
FA.23	Reserved	——	——	0	◆
FA.24	Action of RS485 communication error	0: protection action and coast to stop 1: alarm and maintain the current operation 2: alarm and stop according to the preset mode	1	1	×
FA.25	RS485 communication timeout detect	0.0: no detect 0.1 ~ 100.0s note: communication time out detection is disabled in stop status	0.1s	5.0	○
FA.26	Action of operation panel communication error	0: protection action and coast to stop 1: alarm and maintain the current operation 2: protection action and stop according to the preset stop mode	1	1	×
FA.27	Operation panel communication timeout detect	0.0 ~ 100.0s	0.1s	1.0	○
FA.28	Action of EEFROM read-write error	0: protection action and coast to stop 1: alarm and maintain the current operation	1	0	×
FA.29	Motor overload protection threshold	0 ~ 200%*motor rated current	1%	150%	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FA.30	Motor overload protection detection time	0 ~ 60000s	1s	100	○
FA.31	Inverter overload protection threshold	0 ~ 200%*inverter rated current	1%	150%	○
FA.32	Inverter overload protection detection time	0 ~ 60000s	1s	60	○
FA.33 FA.35	Reserved	——	——	0	◆
FB Group - RS485 Communication Parameters					
FB.00	Protocol	0: MODBUS 1: user-defined	1	0	×
FB.01	Local address	0: broadcast address 1 ~ 247: slave	1	1	×
FB.02	Baud rate setting	0: 2400BPS 1: 4800BPS 2: 9600BPS 3: 19200BPS 4: 38400BPS 5: 115200BPS	1	3	×
FB.03	Data format	0: no parity (N, 8, 1) for RTU 1: even parity (E, 8, 1) for RTU 2: odd parity (0, 8, 1) for RTU 3: no parity (N, 8, 2) for RTU 4: even parity (E, 8, 2) for RTU 5: odd parity (0, 8, 2) for RTU ASCII mode is reserved at present	1	1	×
FB.04	Response delay	0 ~ 200ms	1ms	5	×
FB.05	Transmission response	0: response for write operation 1: no response for write operation	1	0	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FB.06	Ratio correlation coefficient	0.01 ~ 10.00	0.01	1.00	○
FB.07	Communication mode selection	LED ones digit: communication mode selection 0: General mode 1: MD380 mode 2: BD600 mode 3: CHF100A mode 4: GD20 mode LED ten digits: broadcast frequency source selection 0: Host setting frequency 1: Host frequency source A 2: Host frequency source B LED hundred bits: Reserved LED Thousands: Reserved	1	00	×
FB.08	Communication display selection	LED ones digit: communication bus voltage display selection 0: normal display 1: 10 times magnification 2: Magnification 100 times 3: 10 times smaller 4: Reduce 100 times LED ten digits: communication current display selection 0: normal display 1: 10 times magnification 2: Magnification 100 times 3: 10 times smaller 4: Reduce 100 times LED Hundreds: Run frequency display selection 0: Normal display 1: 10 times magnification 2: Magnification 100 times 3: 10 times smaller 4: Reduce 100 times LED Thousands: Reserved	1	000	×

FC Group – Advanced Function and Performance Parameters					
Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FC.00	Dynamic braking	0: disabled 1: always enabled 2: only enabled when decelerating	1	1	×
FC.01	Initial voltage of dynamic braking	220V: 340 ~ 380V 360V 380V: 660 ~ 760V 680V	1V	Depending on model	○
FC.02	Hysteresis voltage of dynamic braking	220V: 10 ~ 100V 5V 380V: 10 ~ 100V 10V	1V	Depending on model	○
FC.03	Action ratio of dynamic braking	10 ~ 100 %	1%	100%	○
FC.04	Restart after power failure	0: disabled 1: start at start frequency 2: start in speed tracking mode	1	0	×
FC.05	Restart delay after power failure	0.0 ~ 60.0s	0.1s	5.0	×
FC.06	Auto reset times	0 ~ 100 (the setting value of 100 means unlimited times)	1	0	×
FC.07	Auto reset interval	0.0 ~ 60.0s	0.1	3.0	×
FC.08	Cooling fan control	0: auto control mode 1: always running when power on 2: The fan is operated at a temperature higher than 50 °C, and the fan does not operate below 45 °C. 3: fan works when starting, not work after stop	1	0	○
FC.09	Password of operation limiting function	0 ~ 65535 Note 1: the password will take into effect 3 minutes later after set successfully Note 2: this parameter cannot be initialized.	1	0	○
FC.10	Operation limiting function	0: disabled 1: enabled Note: this parameter cannot be initialized	1	0	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FC.11	Limiting time	0 ~ 65535 (h) Note: this parameter cannot be initialized	1	0	×
FC.12	Frequency decreasing point of instantaneous power failure	220V: 180 ~ 330V 250V 380V: 300 ~ 550V 450V	1V	Depending on model	×
FC.13	Frequency decreasing factor of instantaneous power failure	0: the function of immunity to transient power failure is disabled 1 ~ 100	1	0	○
FC.14	Droop control	0.00 ~ 10.00Hz Note: disabled when value is 0.00; when F0.18=1 (high frequency mode, upper limit of this parameter is 100.0Hz)	0.01Hz	0.00	×
FC.15	Delay time of rotating speed tracking	0.1 ~ 5.0s	0.1s	1.0	×
FC.16	Current amplitude limiting of rotating speed tracking	80% ~ 200%* VFD rated current	1%	100%	×
FC.17	Speed of rotating speed tracking	1 ~ 125	1	25	×
FC.18	PWM mode	LED one's place: PWM synthesize method 0: seven segments of full band 1: switch from 7 segment to five segments LED ten's place: PWM temperature correlation 0: disabled 1: enabled LED hundred's place: PWM frequency correlation 0: disabled 1: low frequency adjustment, high frequency adjustment 2: no adjustment for low frequency, high frequency adjustment 3: low frequency adjustment, no adjustment for high frequency LED thousand's place: flexible PWM function 0: disabled 1: enabled	1	0001	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FC.19	AVR function	LED one's place: AVR function 0: disabled 1: always enabled 2: only disabled when decelerating LED ten's place: overmodulation 0: disabled 1: enabled LED hundred's place: dead-time compensation 0: disabled 1: enabled LED thousand's place: harmonic components optimizing (reserved) 0: disabled 1: oscillation suppressing mode 1 2: oscillation suppressing mode 2 3: oscillation suppressing mode 3	1	1102	×
FC.20	Oscillation suppressing initial frequency	0.00 ~ 300.00Hz	0.01	Depending on model	○
FC.21	Flux braking	0 ~ 100 0: disabled	1	0	○
FC.22	Energy saving control factor	0 ~ 100 0: disabled 1: automatic energy-saving running Note: energy saving is only valid to V/F control	1	0	○
FC.23	MS priority	0: disabled 1: MS prior to F0.07 setting	1	0	×
FC.24	Jog priority	0: disabled 1: the jog has the highest priority during the driver operation	1	0	×

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FC.25	Special function	LED one's place: A02 and D0 output selection 0: A02 enabled 1: D0 enabled LED ten: IPM fault setting 0: Shield the fault 1: The fault is valid LED hundred digits: Input phase loss fault reset selection 0: Cannot reset 1: Can be reset after the power is normal LED thousand's place: reserved	1	010	×
FC.26	Oscillation suppression upper limit frequency	0.00 ~ 300.00Hz	0.01	50.00	○
FC.27	Oscillation suppressing coefficient	1 ~ 500	1	50.00	○
FC.28	Oscillation suppressing voltage	0.0 ~ 25.0%*rated voltage of motor	0.1%	5.0%	○
FC.29	Wave-by-wave current limiting and anti-overvoltage action selection	LED ones: selection by wave-by-wave current limiting acceleration 0: Invalid 1: Valid LED tens: Wave-by-wave current-limit deceleration selection 0: Invalid 1: Valid LED Hundreds: Selection by Wave-by-wave Current Limiting and Constant Speed 0: Invalid 1: Valid LED Thousand: Anti-overvoltage action selection 0: Invalid 1: Valid	1	0011	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FC.30	Dedicated function selection	LED one's place: straight up function selection 0: invalid 1: valid LED ten's place: over torque alarm "A-05" display selection 0: display 1: not display LED hundred's place: reserved LED thousand's place: reserved	1	00	○
FD Group – Reserved Parameter					
FE Group – Panel Function Setting and Parameter Management					
FE.00	LCD language option (only for LCD panel)	0: Chinese 1: English 2: reserved	1	0	○
FE.01	Key M-FUNC function	0: JOG (jog control) 1: FWD/REV switch 2: clear frequency set by ▲/▼ 3: switch between local operation and remote control (reserved) 4: reverse	1	0	×
FE.02	Key STOP/RST function	0: only effective to panel control 1: effective to both panel and terminal control 2: effective to both panel and communication control 3: effective to all control modes	1	3	○
FE.03	STOP+RUN emergency stop	0: disabled 1: coast to stop	1	1	○
FE.04	Close-loop display factor	0.01 ~ 100.00	0.01	1.00	○
FE.05	Display factor of load rotating speed	0.01 ~ 100.00	0.01	1.00	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FE.06	Line speed factor	0.01 ~ 100.00	0.01	1.00	○
FE.07	Encoder regulation speed (served)	1 ~ 100	1	70	○
FE.08	Monitoring parameters selection 1 in operation status	0 ~ 57	1	0	○
FE.09	Monitoring parameters selection 2 in operation status	0 ~ 57	1	5	○
FE.10	Monitoring parameters selection 1 in stop status	0 ~ 57	1	1	○
FE.11	Monitoring parameters selection 2 in stop status	0 ~ 57	1	13	○
FE.12	Parameter display mode	LED one's place: function parameters display mode 0: display all function parameters 1: only display parameters different from default value 2: only display parameters modified after power on of the last time (reserved) LED ten's place: monitoring parameters display mode 0: only display main monitoring parameters 1: alternate display of main and auxiliary parameters (interval time 1s) LED hundred's place: frequency display 0: display frequency 1: only display monitoring parameters LED Thousands: Panel ▲/▼ button adjustment enable 0: Valid 1: invalid	1	0000	○

Function Code	Name	Set Range	Minimum Unit	Factory Default	Modification
FE.13	Parameter initialization	0: disabled 1: restore to factory defaults (all user parameters except motor parameters) 2: restore to factory defaults (all user parameters) 3: clear fault record	1	0	×
FE.14	Write-protect	0: allow all parameters to be modified (some are not during operation) 1: only allow F0.12, F0.13 and F0.14 to be modified 2: only allow FE.14 to be modified Note: these above limitations are invalid to this function code and F0.00	1	0	○
FE.15	Parameter copy function	0: disabled 1: parameters upload to operation panel 2: all function code parameters download to the driver 3: download all function code parameters except motor parameters to the driver Note1: when selecting parameters to download, the software will check if it is in accordance with the driver power specification; if not, all the parameters relevant to model will not be changed. Note2: only keyboard KB2 has copy function, copy with normal keyboard will increase fault.	1	0	×
FE.16	Encoder FM start bit selection	0: LED one's place 1: LED ten's place 2: LED hundred's place 3: LED thousand's place: reserved	1	1	○
FE.17	Dedicated function selection	——	——	0	◇

5. Communication Protocol

5.1 RTU Mode and Format

When controller communicates via Modbus in RTU mode, each byte is divided into 2 hexadecimal characters of 4 bits. The main advantage of this mode is that it can transfer characters with higher density compared with ASCII mode given the condition of the same baud rate, and each information must be transported continuously.

5.1.1 Each Byte Format in RTU Mode

Encoding system: 8 bits binary, hexadecimal 0-9, A-F.
Data bits: 1 bit of start bit, 8 bits of data (send from the lower bit), 1 bit of stop bit, optional parity check bit (refer to bit sequence of RTU data frame).
Error check zone: cyclic redundancy check (CRC)

5.1.2 Bit Sequence of RTU Data Frame

With parity check:

Start	1	2	3	4	5	6	7	8	Far	Stop

Without parity check:

Start	1	2	3	4	5	6	7	8	Stop

5.2 Register Address and Function Code

5.2.1 Supported Function Code

Function Code	Function Description
03	Read multiple registers
06	Write single register
10	Write multiple registers continuously
13	Read single parameter

5.2.2 Register Address

Register Function	Address
Control command input	0x2000

Register Function	Address
Read monitor parameter	0xD000 (0x1D00) ~ 0xD039 (0x1D39)
MODBUS frequency setting	0x2001
MODBUS torque setting	0x2002
MODBUS PID frequency given	0x2003
MODBUS PID feedback setting	0x2004
MODBUS analog output AO1 control	0x2005 (0 ~ 7FFF represent 0% ~ 100%)
MODBUS analog output AO2 control	0x2006 (0 ~ 7FFF represent 0% ~ 100%)
MODBUS pulse DO output control	0x2007 (0 ~ 7FFF represent 0% ~ 100%)
MODBUS digital output terminal control	0x2008
Parameter setting	0x0000 ~ 0x0F15

5.2.3 03H Read Multiple Parameters (8 Items Continuously at Most)

Inquiry information frame format (send frame) :

Address	01H
Function	03H
Starting data address	00H
	01H
Number of Data (Byte)	00H
	02H
CRC CHK Low	95H
CRC CHK High	CBH

Analysis of this segment data:

01H is the address of the driver
03H is read function code
0001H is start address, equivalent to F0.01 of control panel
0002H is item count of menu, i.e. the two items of F0.01 and F0.02
95CBH is 16 bits of CRC check code

Response information frame format (return frame) :

Address	01H
Function	03H
DataNum*2	04H
Data1[2Byte]	00H
	64H
Data2[2Byte]	00H
	64H
CRC CHK Low	BAH
CRC CHK High	07H

Analysis of this segment data:

01H is the address of the driver
03H is read function code
04H is the product of (read item)*2
0064H is read the data of F0.01
0064H is read the data of F0.02
BA07H is 16 bits of CRC check code

Example:

Name	Frame Format
Read data of F0.01 and F0.02	Send frame: 01H 03H 0001H 0002H 95CBH
	Return frame: 01H 03H 04H 0064H 0064H BA07H
Read data of F2.01	Send frame: 01H 03H 0201H 0001H D472H
	Return frame: 01H 03H 02H 000FH F840H
Read monitor parameter of d-00 (address D000H and 1D00H interchangeable)	Send frame: 01H 03H D000H 0001H BCCAH
	Return frame: 01H 03H 02H 1388H B512H
	Send frame: 01H 03H 1D00H 0001H 8266H
	Return frame: 01H 03H 02H 1388H B512H
Read the status when the driver stops (address A000H and 1A00H interchangeable, refer to the run status description of the driver)	Send frame: 01H 03H A000H 0001H A60AH
	Return frame: 01H 03H 02H 0040H B9B4H
	Send frame: 01H 03H 1A00H 0001H 8312H
	Return frame: 01H 03H 02H 0040H B9B4H
Read fault code E-19 (address E000H and 1E00H interchangeable, refer to the fault code table)	Send frame: 01H 03H E000H 0001H B3CAH
	Return frame: 01H 03H 02H 0013H F989H
	Send frame: 01H 03H 1E00H 0001H 8222H
	Return frame: 01H 03H 02H 0013H F989H
Read pre-alarm code A-18 (address E001H and 1E01 interchangeable, refer to the pre-alarm code table)	Send frame: 01H 03H E001H 0001H E20AH
	Return frame: 01H 03H 02H 0012H 3849H
	Send frame: 01H 03H 1E01H 0001H D3E2H
	Return frame: 01H 03H 02H 0012H 3849H

5.2.4 06H Write Single Parameter

Inquiry information frame format (send frame) :

Address	01H
Function	06H
Starting data address	20H
	00H
Data (2Byte)	00H
	01H
CRC CHK Low	43H
CRC CHK High	CAH

Analysis of this segment data:

01H is the address of the driver
06H is write function code
2000H is the address of control command
0001H is forward command
43A1H is 16 bits of CRC check code

Response information frame format (return frame) :

Address	01H
Function	06H
Starting data address	20H
	00H
Number of Data (Byte)	00H
	01H
CRC CHK Low	43H
CRC CHK High	CAH

Analysis of this segment data:

If set right, return the same input data

Example:

Name	Frame Format
Forward	Send frame: 01H 06H 2000H 0001H 43CAH
	Return frame: 01H 06H 2000H 0001H 43CAH
Reverse	Send frame: 01H 06H 2000H 0009H 420CH
	Return frame: 01H 06H 2000H 0009H 420CH
Stop	Send frame: 01H 06H 2000H 0003H C20BH
	Return frame: 01H 06H 2000H 0003H C20BH
Free stop	Send frame: 01H 06H 2000H 0004H 83C9H
	Return frame: 01H 06H 2000H 0004H 83C9H
Reset	Send frame: 01H 06H 2000H 0010H 43CAH
	Return frame: 01H 06H 2000H 0010H 43CAH

Name	Frame Format
Forward jog	Send frame: 01H 06H 2000H 0002H 03CBH
	Return frame: 01H 06H 2000H 0002H 03CBH
Reverse jog	Send frame: 01H 06H 2000H 000AH 020DH
	Return frame: 01H 06H 2000H 000AH 020DH
Set F8.00 parameter at 1	Send frame: 01H 06H 0800H 0001H 4A6AH
	Return frame: 01H 06H 0800H 0001H 4A6AH
MODBUS reference frequency 40Hz	Send frame: 01H 06H 2001H 0FA0H D642H
	Return frame: 01H 06H 2001H 0FA0H D642H
MODBUS PID reference 5V	Send frame: 01H 06H 2003H 01F4H 721DH
	Return frame: 01H 06H 2003H 01F4H 721DH
MODBUS PID feedback 4V	Send frame: 01H 06H 2004H 0190H C237H
	Return frame: 01H 06H 2004H 0190H C237H
MODBUS torque set at 80%	Send frame: 01H 06H 2002H 0320H 22E2H
	Return frame: 01H 06H 2002H 0320H 22E2H
User password check (address AD00H and 1C00H interchangeable)	Send frame: 01H 06H AD00H 0001H 68A6H
	Return frame: 01H 06H AD00H 0001H 68A6H
	Send frame: 01H 06H 1C00H 0001H 4F9AH
	Return frame: 01H 06H 1C00H 0001H 4F9AH

Name	Frame Format
Check operation limit password (address AD01H and 1C01H interchangeable)	Send frame: 01H 06H AD01H 0002H 7967H
	Return frame: 01H 06H AD01H 0002H 7967H
	Send frame: 01H 06H 1C01H 0002H 5E5BH
	Return frame: 01H 06H 1C01H 0002H 5E5BH
MODBUS analog output AO1 control output 5V	Send frame: 01H 06H 2005H 3FFFH C3BBH
	Return frame: 01H 06H 2005H 3FFFH C3BBH
MODBUS analog output AO2 control output 10V	Send frame: 01H 06H 2006H 7FFFH 027BH
	Return frame: 01H 06H 2006H 7FFFH 027BH
MODBUS pulse DO output control output 25KHz	Send frame: 01H 06H 2007H 3FFFH 627BH
	Return frame: 01H 06H 2007H 3FFFH 627BH
MODBUS digital output terminal Y1 control output	Send frame: 01H 06H 2008H 0001H C208H
	Return frame: 01H 06H 2008H 0001H C208H

5.2.5 10H Write Multiple Parameters Continuously

Inquiry information frame format (send frame) :

Analysis of this segment data:

01H is the address of the driver
10H is write function code
0100H is start address, equivalent to F1.00 of control panel
0002H is amount of registers
04H is bytes sum (2*register amount)
0100H is data of F1.00
0002H is data of F1.01
2E3EH is 16 bits of CRC check code

Address	01H
Function	10H
Starting data address	01H
	00H
Number of Data (Byte)	00H
	02H
DataNum*2	04H
Data1 (2Byte)	00H
	01H
Data2 (2Byte)	00H
	02H
CRC CHK Low	2EH
CRC CHK High	3EH

Response information frame format (return frame) :

Analysis of this segment data:

01H is address of the driver
10H is write function code
0100H is write data of F1.00
0002H is item count of write menu, i.e.two items of F1.00 and F1.01
4034H is 16 bits of CRC check code

Address	01H
Function	10H
Starting data address	01H
	00H
Number of Data (Byte)	00H
	02H
CRC CHK Low	40H
CRC CHK High	34H

Example:

Name	Frame Format
Set F1.00, F1.01 at 1 and 0.02 respectively	Send frame: 01H 10H 0100H 0002H 04H 0001H 0002H 2E3EH
	Return frame: 01H 10H 0100H 0002H 4034H
Forward and communicate reference frequency at 50HZ	Send frame: 01H 10H 2000H 0002H 04H 0001H 1388H 36F8H
	Return frame: 01H 10H 2000H 0002H 4A08H
Set F1.00 at 1	Send frame: 01H 10H 0100H 0001H 02H 0001H 7750H
	Return frame: 01H 10H 0100H 0001H 0035H

5.2.6 13H Read Single Parameter (Including Attribute, Min.value, Max.value)

Inquiry information frame format (send frame) :

Address	01H
Function	13H
Starting data address	00H
	0CH
Number of Data (Byte)	00H
	04H
CRC CHK Low	45H
CRC CHK High	CBH

Analysis of this segment data:

01H is address of the driver
13H is read function code
000CH is start address, equivalent to F0.12 of control panel
0004H is register amount
45CBH is 16 bits of CRC check code

Response information frame format (return frame) :

Address	01H
Function	13H
Starting data address	00H
	12H
Data1 (2Byte)	13H
	88H
Data2 (2Byte)	03H
	22H
Data3 (2Byte)	00H
	00H
Data4 (2Byte)	13H
	88H
CRC CHK Low	28H
CRC CHK High	31H

Analysis of this segment data:

01H is address of the driver
13H is write function code
000CH is start address, equivalent to F0.12 of control panel
1388H is parameter value
0322H is attribute value
0000H is min.value
1388H is max.value
2381H is 16 bits of CRC check code

Example:

Name	Frame Format
Read parameter value of F0.12	Send frame: 01H 13H 000CH 0001H 85CAH
	Return frame: 01H 13H 02H 1388H B1D2H
Read parameter value + attribute value of F0.12	Send frame: 01H 13H 000CH 0002H C5CBH
	Return frame: 01H 13H 04H 1388H 0322H FCE4H
Read parameter value + attribute value + min.value of F0.12	Send frame: 01H 13H 000CH 0003H 040BH
	Return frame: 01H 13H 06H 1388H 0322H 0000H 628BH

Name	Frame Format
Read parameter value + min.value + max.value of F0.12	Send frame: 01H 13H 000CH 0004H 45CBH
	Return frame: 01H 13H 08H 1388H 0322H 0000H 1388H 2831H

5.3 Functions of Other Register Address

Function	Address	Description			
		byte	bit	meaning	
VFD operation status	A000H (1A00H)	Byte1	Bit7	0: no action	1: overload pre-alarm
			Bit6 ~ Bit5	0: INV_220V	1: INV_380V
				2: INV_660V	3: INV_1140V
			Bit4	0: no action	1: power off save
			Bit3	0: no action	1: reset
			Bit2 ~ Bit1	0: no action	1: static tuning
				2: dynamic tuning	
			Bit0	0: control panel mode 2: communication control mode	1: terminal control mode 3: reserved
VFD operation status	A000H (1A00H)	Byte0	Bit7		
		Byte0	Bit6	0: no action	1: bus voltage is normal
			Bit5	0: no action	1: undervoltage
			Bit4	0: no action	1: jog run
			Bit3	0: forward	1: reverse
			Bit2 ~ Bit1	1: Acc	2: Dec
				3: constant speed	

Function	Address	Description			
VFD operation status	A000H (1A00H)	byte	bit	meaning	
		Byte0	Bit0	0: stop status	1: run status
Read VFD fault code	E000H (1E00H)	Address E000H and 1E00H interchangeable (refer to fault code table and example of read function code 03H)			
Read VFD fault pre-alarm code	E001H (1E01H)	Address E001H and 1E01H interchangeable (refer to example of pre-alarm code, read function code 03H)			
User password check	AD00H (1C00H)	Address AD00H and 1C00H interchangeable (refer to example of write function code 06H)			
Operation limit password check	AD01H (1C01H)	Address AD00H and 1C00H interchangeable (refer to example of write function code 06H)			

5.4 Fault Code

Fault Code	Displayed Code	Fault Information
0000H	——	No fault
0001H	E-01	Overcurrent when accelerating
0002H	E-02	Overcurrent when decelerating
0003H	E-03	Overcurrent at constant speed
0004H	E-04	Overvoltage when accelerating
0005H	E-05	Overvoltage when decelerating
0006H	E-06	Overvoltage at constant speed
0007H	E-07	Bus undervoltage
0008H	E-08	Motor overload

Fault Code	Displayed Code	Fault Information
0009H	E-09	Driver overload
000AH	E-10	Driver off load
000BH	E-11	Function module fault
000CH	E-12	Input phase loss
000DH	E-13	Output phase loss or current unbalance
000EH	E-14	Short circuit of output to earth
000FH	E-15	Heatsink overheat 1
0010H	E-16	Heatsink overheat 2
0011H	E-17	RS485 communication fault

Fault Code	Displayed Code	Fault Information
0012H	E-18	Keypad communication fault
0013H	E-19	External device fault
0014H	E-20	Current detection fault
0015H	E-21	Motor tuning fault
0016H	E-22	EEPROM read-write fault
0017H	E-23	Parameters copy fault
0018H	E-24	PID feedback disconnection

Fault Code	Displayed Code	Fault Information
0019H	E-25	Voltage feedback disconnection
001AH	E-26	Arrival of operation limit time
001BH	E-27	Coprocessor communication fault
001CH	E-28	Encoder disconnection fault
001DH	E-29	Speed deviation too much
001EH	E-30	Over-speed fault
——	——	——

5.5 Pre-alarm Code of the Driver

Alarm Code	Displayed Code	Fault Information
0000H	——	No fault
0009H	A-09	Driver overload alarm
0011H	A-17	RS485 communication fault alarm
0012H	A-18	Keypad communication fault alarm

Alarm Code	Displayed Code	Fault Information
0015H	A-21	Motor tuning alarm
0016H	A-22	EEPROM read-write fault alarm
0018H	A-24	PID feedback disconnection alarm
——	——	——

5.6 Control Command Format (See Function Code 06H Example)

Address	Bit	Meaning	
2000H	Bit7 ~ Bit5	Reserved	
	Bit4	0: no action	1: reset
	Bit3	0: forward	1: reverse

Address	Bit	Meaning			
2000H	Bit2 ~ Bit0	100: free stop	010: jog run	011: stop	001: run
2008H (output by position 1, closed by position 0)	Bit7 ~ Bit4	Reserved			
	Bit3	Programmable relay R2 output			
	Bit2	Programmable relay R1 output			
	Bit1	Open collector output terminal Y2			
	Bit0	Open collector output terminal Y1			

5.7 Parameter Attribute

Bit	Meaning			
Bit15	Reserved			
Bit14	Menu			
Bit13	System			
Bit12	Reset to factory defaults			
Bit11	EEPROM			
Bit10 ~ Bit9	"○" : 01	"×" : 10	"◆" : 11	"◇" : 00
Bit8	Sign			
Bit7 ~ Bit3	1 : 00000 V : 00001 A : 00010 rpm : 00011 Hz : 00100 % : 00110 S : 01000	KHz : 01100 KW : 01010 om : 01110 ms : 01001 MA : 01011 KM : 01101 CM : 01111	us : 10001 Hz/S : 10000 mh : 10010 C : 10011 m/s : 10100 H : 10101 KWH : 10110	
Bit2 ~ Bit0	Decimal point			

5.8 Error Code from Slave Response of Abnormal Information

Error code	Description
01H	Invalid function code
02H	Invalid address
03H	Invalid data
04H	Invalid register length
05H	CRC validation error

Error code	Description
06H	Parameters can't be changed during running
07H	The changes of parameters are invalid
08H	Control command of host is invalid
09H	Parameter protected by password
0AH	Password error

5.9 Communication Address of all Parameters

Function Code	Communication Address
F0.00 ~ F0.22	0000H ~ 0016H
F1.00 ~ F1.36	0100H ~ 0124H
F2.00 ~ F2.17	0200H ~ 0211H
F3.00 ~ F3.08	0300H ~ 0308H
F4.00 ~ F4.27	0400H ~ 041BH
F5.00 ~ F5.24	0500H ~ 0518H

Function Code	Communication Address
F6.00 ~ F6.52	0600H ~ 0634H
F7.00 ~ F7.40	0700H ~ 0728H
F8.00 ~ F8.33	0800H ~ 0821H
F9.00 ~ F9.73	0900H ~ 0949H
FA.00 ~ FA.35	0A00H ~ 0A23H
FB.00 ~ FB.08	0B00H ~ 0B08H

Function Code	Communication Address
FC.00 ~ FC.28	0C00H ~ 0C1CH
FE.00 ~ FE.15	0E00H ~ 0E0FH
FF.00 ~ FF.22	0F00H ~ 0F16H
d-00 ~ d-57	D000H (1D00H) ~ D039H (1D39H)
——	——

Notice:

(1) In the above examples, the driver address is 01, which makes it better for illustration; when the driver is slave, the address setting range is 1 ~ 247, and if any data of frame format is changed, the check code needs to be recalculated. The calculating tools of 16bit CRC check code can be download from internet.
(2) Initial address of monitor item is D000, each item offset corresponding hexadecimal value based on this address, then plus it with the initial address. For example: the monitor initial item is d—00, the corresponding initial address is D000H (1D00H), now read monitor item d—18, 18-00=18, the corresponding hexadecimal of 18 is 12H, then the read address of d—18 is D000H+12H = D012H (1D00H+12H = 1D12H). Address D000H and 1D00H are interchangeable.

(3) Frame format when the slave response information is abnormal: driver address + (80H+function code) + 16bit CRC check code; if the salve return frame is 01H + 83H + 04H + 40F3H, then 01H is slave address, 83H is 80H+03H indicating read error, 04H is invalid data length, 40F3H is 16bit CRC check code.

5.10 Read Inverter Running Status Parameter Address

Function Code	Address (hexadecimal)	Address (decimal)	Function description
d-00	1d00	7424	Output frequency
d-01	1d01	7425	Set frequency
d-02	1d02	7426	Motor estimated frequency
d-03	1d03	7427	Main set frequency
d-04	1d04	7428	Auxiliary setting frequency
d-05	1d05	7429	Output current
d-06	1d06	7430	Output voltage
d-07	1d07	7431	Output torque
d-08	1d08	7432	Motor speed (RPM/min)
d-09	1d09	7433	Motor power factor
d-10	1d0a	7434	Running line speed (m/s)
d-11	1d0b	7435	Set line speed (m/s)
d-12	1d0c	7436	Busbar voltage (V)
d-13	1d0d	7437	Input voltage (V)
d-14	1d0e	7438	PID set value (V)
d-15	1d0f	7439	PID Feedback value (V)
d-16	1d10	7440	Analog input AI1 (V/mA)

Function Code	Address (hexadecimal)	Address (decimal)	Function description
d-17	1d11	7441	Analog input AI2 (V)
d-18	1d12	7442	Pulse frequency input (KHz)
d-19	1d13	7443	Analog output AO1 (V/mA)
d-20	1d14	7444	Analog output AO2 (V)
d-21	1d15	7445	Input terminal status
d-22	1d16	7446	Output terminal status
d-23	1d17	7447	Inverter running status
d-24	1d18	7448	Multi segment speed current segment number
d-25	1d19	7449	Pulse frequency output (Hz)
d-26	1d1a	7450	Reservation
d-27	1d1b	7451	Current count value
d-28	1d1c	7452	Set count value
d-29	1d1d	7453	Current timing value (s)
d-30	1d1e	7454	Set timer value (s)
d-31	1d1f	7455	Current length
d-32	1d20	7456	Set length

6. Troubleshooting

6.1 Fault information and Troubleshooting

Any abnormity occurs during operation, the inverter will lock PWM output immediately and enter the fault protection status. Meanwhile,the flashing fault code on the keyboard indicates the current fault information.At the same time, the fault indicator ALM lights up. At this time, you need to check the cause of the fault and the corresponding treatment method according to the methods in this section. If the problem still cannot be solved, please contact our company directly. For the corresponding solutions, see Table (A) and Table (B) for fault diagnosis and troubleshooting.

Fault code	Fault Descriptions	Possible Reasons	Actions
E-01	Over-current in Acc process	Too short Acc time (including tuning process)	Prolong the Acc time
		Restart the rotating motor	Start after setting as DC brake, or rotational speed tracking start
		Drive power is too small	Select a higher power drive
		V/F curve is not suitable	Adjust V/F curve or torque boost
E-02	Over-current in Dec process	Too short Dec time (including tuning process)	Prolong the Dec time
		Too low driver's power	Select the drive with large capacity
		The load inertia is too high	Connect suitable braking resistor or braking unit
E-03	Over-current in constant speed operation	Low network voltage	Check the power supply
		Sudden change or abnormal of load	Check the load or reduce the change of the load
		Too low driver's power	Select the driver with larger capacity
E-04	Over voltage in Acc process	Abnormal supply voltage (including tuning process)	Check the power supply
		The driver is restarted with a rotating motor	Start after setting as DC brake, or rotational speed tracking start
		Special potential energy load	Connect suitable braking resistor or braking unit

Fault code	Fault Descriptions	Possible Reasons	Actions
E-05	Over voltage in Dec process	Too short Dec time (including tuning process)	Prolong the Dec time
		The load inertia is too high	Connect suitable braking resistor or braking unit
		Abnormal of supply voltage	Check the power supply
E-06	Over voltage in constant-speed operating	Abnormal of supply voltage	Check the power supply
		Special potential energy load	Connect suitable braking resistor or braking unit
E-07	Bus undervoltage	Abnormal of supply voltage or disconnecting of contactor (relay)	Check supply voltage or seek help from manufacturer
E-08	Motor overload	Improper setting of V/F curve or torque boost	Adjust V/F curve and torque boost value
		Low network voltage	Check network voltage
		Motor blocked or load sudden change	Check load
		Incorrect setting of motor overload protection factor	Correct the setting
E-09	Driver overload	Improper setting of V/F curve or torque boost	Adjust V/F curve and torque boost value
		Low network voltage	Check network voltage
		Too short Acc time	Prolong Acc time
		Too heavy load	Select the driver with larger power
E-10	Off load	Output current lower than off-load detection	Check load
E-11	Function module fault	Short circuit or grounded of driver output	Check motor wiring
		Instantaneous over current of driver	Refer to actions of over current
		Obstruction of damage of ventilation channel	Clear the ventilation channel or replace the fan
		Control board abnormal or interference serious	Seek help from manufacturer

Fault code	Fault Descriptions	Possible Reasons	Actions
E-11	Function module fault	Power device damage	Seek help from manufacturer
E-12	Input phase loss	Phase loss of power supply	Check power supply and wiring
E-13	Output phase loss or current imbalance	Output phase failure among phase U, V, W	Check the driver's output wiring
E-14	Short trouble of output to ground	Reserved	Reserved
E-15	Heatsink overheat 1	Ambient over-temperature	Lower the ambient temperature
		Fan damage	Replace the fan
E-16	Heatsink overheat 2	Obstruction of ventilation channel	Clear the ventilation channel
E-17	RS485 communication failure	Mismatching with baud rate of host PC	Adjust the baud rate
		RS485 channel interference	Check whether the communication wiring is shield, whether the wiring is correct; consider connecting filter capacitor if necessary.
		Communication timeout	Retry
E-18	Keypad communication fault	Connecting line between keypad and control board is damaged.	Replace the connecting line.
E-19	External device fault	Input terminal of external device fault is closed	Disconnect the terminal and clear the faults (check the fault cause)
E-20	Current detection fault	Hall device or amplification circuit fault	Seek help from manufacturer
		Auxiliary power supply is damaged	
		Hall or power board wiring is bad contact	
E-21	Motor tuning fault	Wrong setting of motor parameters	Reset the motor parameter

Fault code	Fault Descriptions	Possible Reasons	Actions
E-21	Motor tuning fault	Mismatching of power specification between driver and motor	Seek help from manufacturer
		Tuning timeout	Check motor wiring
E-22	EEPROM R/W fault	EEPROM fault	Seek help from manufacturer
E-23	Parameter copy fault	Upload fault of the driver parameter to operation panel	Check wiring of operation panel
		Mismatching of power specification between driver and motor	Check wiring of operation panel
		Parameter download without upload in advance	Upload parameters first, then download
E-24	PID feedback disconnecting	PID feedback wire is loosen	Check feedback wiring
		Feedback value lower than disconnection detection value	Adjust detection input threshold
E-25	Voltage feedback disconnecting	Feedback value lower than disconnection detection value	Adjust detection input threshold
E-26	Arrival of operation limit time	Arrival of operation limit time	Seek help from agent
E-27	Co-processor communication fault	Reserved	Reserved
E-28	Encoder disconnecting	Reserved	Reserved
E-29	Large deviation of speed	Reserved	Reserved
E-30	Overspeed fault	Reserved	Reserved

Table 6-1 (A) Fault Diagnosis and Troubleshooting

Pre-alarm Fault Code	Name (Pre-alarm)	Possible Cause of Fault	Fault Countermeasures
A-05	Overtorque pre-alarm	Restart the rotating motor The load mutated or abnormal Inverter power is low	FC.30 ten bits setting 1
A-09	Inverter overload pre-alarm	Same E-09	Same E-09
A-17	RS485 Communication failure alarm	Same E-17	Same E-17
A-18	Keyboard communication fault alarm	Same E-18	Same E-18
A-21	Motor Tuning Alarm	Same E-21	Same E-21
A-22	EEPROM Read/write fault alarm	Same E-22	Same E-22
A-24	PID Feedback disconnection alarm	Same E-24	Same E-24
A-00	Indicates no alarm	Reservation	Reservation

Table 6-1 (B) Fault Diagnosis and Troubleshooting

6.2 Abnormal Phenomena Solution

During the driver operation, the common abnormal phenomena and solving actions are as showed in following table.

Phenomena		Possible Reasons of Fault and Actions to Take
Motor not running	LED no display	Check whether there is power failure, or phase loss of input power, check if the power line is connected correctly.
	LED no display, but the internal charging indicator is on	Check if there is problems with wiring or socket related to keypad. Measure the voltage of internal control source to check if the switching power supply is functioning well. If not, check its inlet wire, start oscillation and stabilivolt to see if they works well.
	Motor droning	The motor load is too much. Reduce the load.
	No abnormal phenomena	Check if it is in trip status or hasn't reset after tripping, check whether it is in restart status after power down, whether the keypad is reset, whether it is in program running status, multi-speed operation status, some specific operation status or non-operation status. Try recovering factory set.

Phenomena		Possible Reasons of Fault and Actions to Take
Motor not running	No abnormal phenomena	Check whether the running command is sent.
		Check whether the operation frequency is set at 0.
The motor can not Acc / Dec successfully		Improper setting of Acc/Dec time. Increase the value of Acc/Dec time.
		The current limit is set too low. Increase the value.
		Over-voltage protection action during decelerating. Increase the decelerating time.
		Improper setting of carrier frequency, too much load may cause oscillation.
		The load is too heavy, and the torque is not enough. Increase torque boost value in V/F mode. If not working, switch to auto torque boost mode, and the motor parameters should be in consistent with the actual value. If still not working, switch to flux vector control mode, and check the motor parameters and actual values to see if they are matched, meanwhile tune the motor parameters.
		Mismaching of motor power and driver power. Set the motor parameters at actual value.
		One driver for several motor. Please change the torque boost mode to manual mode.
The motor can rotate, but speed regulation can't be realized.		Improper setting of upper and lower limit of frequency.
		The frequency is set too low, or the frequency gain is set too low.
		Check whether the speed adjustment mode is in consistent with frequency setting.
		Check whether the load is too heavy, whether it is in overvoltage stalled state or overcurrent limiting state.
Speed changing during motor running		Frequent fluctuation of load. Decrease the changing.
		Serious mismatching of rated value of the driver and motor. Set the motor parameters as actual value.
		Frequency setting potentiometer is in bad connect or the frequency setting signal is in fluctuation. Switch to digit setting mode or increase filter time constant of analog input signal.
The rotation direction of motor is in reverse		Adjust phase sequence of output terminal U, V, W.
		Set the running direction as reverse (F0.21=1).
		Caused by phase loss of output. Check the motor wiring immediately.

7. Maintenance

7.1 Routine Maintenance

Many factors such as ambient temperature, humidity, smog, internal component aging will give rise to the occurrence of potential faults. Therefore, it is necessary to conduct routine and periodic maintenance during storage or using of the driver.
When the driver operates normally, please check if there are the following items:
① Abnormal sound or vibration of the motor;
② Abnormal heat producing from the driver or motor;
③ High ambient temperature;
④ Whether the load current is as usual;
⑤ Whether the cooling fan of the driver runs normally.

7.2 Periodic Maintenance

1. Regular maintenance:
To maintain a long-term normal operation, it is necessary to conduct periodic maintenance according to the working life of internal electronic components. The working life varies with the operation condition. The following table is for reference

Part	Normal Working Life
Cooling fan	2 ~ 3 years
Electrolytic capacitor	4 ~ 5 years
PCB	5 ~ 8 years

2. Regular inspection:
You should check the driver every 3 months or 6 months according to the actual environment, thus could lower fault risks and maintain a long-term stable operation.

General Inspection:

① Whether screws of control terminals are loose. If so, tighten them with a screwdriver;
② Whether the main circuit terminals are properly connected; whether the cable or copper bar joints and screws are over heated;
③ Whether the power cables and control cables are damaged, check especially for any wear on the cable insulation;
④ Whether the connecting of power cable and cold pressing joint is loose, whether the insulating tapes around the joint are aged or stripped;
⑤ Clear the dust on PCBs and air ducts, and take anti-static measure;
⑥ Before performing insulation tests to the driver, dismantle the wiring between the driver and the power supply, the driver and motor, and all main circuit input/output terminals should be short-circuited with conductors. Then proceed insulation test to the ground. Please use qualified 500V Mega-Ohm-Meter (or with corresponding voltage shift of insulation tester); please do not use faulted meter. Insulation test of single main circuit terminal to ground is prohibited, or the driver can be damaged. After testing, remember to dismantle all the wire that short-circuit main circuit terminals.
⑦ If performing insulation test to the motor, be sure to disconnect the cables between the driver and it. Otherwise, the driver might be damaged.

Appendix A : Selection of Braking Resistor

Voltage Class (V)	Rated Power (KW)	Braking Resistor (Ω)	Power of Resistor (KW)
220	0.4	≥200	0.04
220	0.75	≥120	0.08
220	1.5	≥75	0.15
220	2.2	≥50	0.2
220	3	≥40	0.3
220	4	≥30	0.3
220	5.5	≥20	0.4
220	7.5	≥15	0.5
220	11	≥10	0.8
380	0.4	≥800	0.04
380	0.75	≥400	0.08
380	1.5	≥200	0.15
380	2.2	≥150	0.2
380	3	≥120	0.3

Voltage Class (V)	Rated Power (KW)	Braking Resistor (Ω)	Power of Resistor (KW)
380	4	≥110	0.3
380	5.5	≥90	0.4
380	7.5	≥65	0.5
380	11	≥43	0.8
380	15	≥32	1
380	18.5	≥25	1.3
380	22	≥22	1.5
380	30	≥16	2.5
380	37	≥16	4
380	45	≥16	4.5
380	55	≥8	5.5
380	75	≥8	7.5
380	90	≥8*2	4.5*2
380	110	≥8*2	5.5*2

Voltage Class (V)	Rated Power (KW)	Braking Resistor (Ω)	Power of Resistor (KW)
380	132	≥8*2	6.5*2
380	160	≥2.5	16
380	185	≥2.5	20
380	200	≥2.5	20
380	220	≥2.5	22
380	250	≥2.5*2	12.5*2
380	280	≥2.5*2	14*2
380	315	≥2.5*2	16*2
380	355	≥2.5*2	17*2
380	400	≥2.5*3	14*3
380	450	≥2.5*3	15*3
380	500	≥2.5*3	17*3
——	——	——	——
——	——	——	——

Warranty Card

Product Information :

Product Name : _____ Customer Name : _____

Model Type : _____ Customer Address : _____

Purchase Date : _____ Contact Number : _____

Warranty Terms :

1. From the date of original shipment, we guarantee warranty of 12 months for free, and paid service for a lifetime;
2. Product failure caused by the following reasons are not included in 12 months warranty guarantee:
   (1) Users didn't conduct right operation according to user's manual;
   (2) Eguipment has been repaired or modified by user's without consent of manufacturer;
   (3) Fault caused by operation outside standard scope of application;
   (4) Abnormal aging or fault result from bad operating environment;
   (5) Damage caused by force majeure lie earthquke, fire, flood, thunderstrike, abnormal voltage, or other naturtal disasters;
   (6) Damage caused by improper delivery or extermal force.
3. Manufacturer preserves the right to refuse warranty service for the following conditon:
   (1) Damage of beyond recognition of brand, trade mark, serial number, nameplate, and other manufacturer marks;
   (2) Payment is not finished according to contrace;
   (3) Intenional concealment to our after-sale service provider of wrong operation during setting, wirting, operation, maintenance or other process.
4. For failing products, Canroon preserve the right to entrust others for warranty issues.

Certificate

Inspector : QC 001

The product is inspected according to the standard.

保修卡

产品信息：

产品名称：_____　　客户名称：_____

产品型号：_____　　客户地址：_____

购买日期：_____　　联系电话：_____

保修说明：

1. 本产品自出厂日起，实行为期 12 个月的免费保修服务，终身有偿服务。
2. 免责条款：因下列原因造成的产品故障不在厂家 12 个月免费保修服务承诺的范围之内：
   （1）用户不依照《使用手册》中所列程序进行正确的操作；
   （2）用户未经与厂家沟通自行修理产品或擅自改造产品造成产品故障；
   （3）用户超过产品的标准使用范围使用产品引发的故障；
   （4）因用户使用环境不良导致产品器件异常老化或引发故障；
   （5）由于地震、火灾、风水灾害、雷击、异常电压或其他自然灾害等不可抗力的原因造成的产品损坏；
   （6）用户购买产品后在运输过程中因运输方式选择不当发生跌损或其他外力侵入导致的产品损坏；
3. 在下列情况下，厂家有权不予提供保修服务：
   （1）厂家在产品中标示的品牌、商标、序号、铭牌等标识损毁或无法辨认时；
   （2）用户未按双方签订的《购销合同》付清货款时；
   （3）用户对厂家的售后服务提供单位故意隐瞒产品在安装、配线、操作、维护或其他过程中的不当使用情况时。
4. 对于发生故障的产品，本公司有权委托他人负责保修事宜。

合格证

质检员　QC 001

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Shenzhen Canroon Electrical Appliances Co., Ltd

Canroon

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