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Chapter 1 Overview

1.1 Safety requirement and cautions

Please do totally understand this part before using the inverter.

Warning signs and meanings

This manual has used following signs which means there is an important part of security. While observing against the rules, there is a danger of injury even death or machine system damage.

 DANGER	Danger: Wrong operation may cause death or large accident.
 CAUTION	Caution: Wrong operation may cause minor wound.

Operation requirement

Only professionally trained persons can be allowed to operate the equipment. "Professional trained persons" means the workers must have experience professional trained skill, and must be familiar with installation, wiring, running and maintain and can rightly deal with emergency cases in use.

Safety guidance

Warning signs come for your security. They are measures to prevent the operator and machine system from damage. Please carefully read this manual before using and strictly observe the regulations and warning signs while operating.

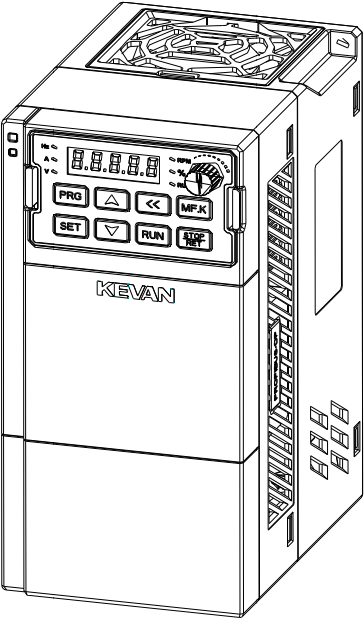
- Correct transportation, store, installation, careful operation and maintenance are important for inverter safe operation. In transport and store process, make sure the inverter is free from impact and vibration. It must be stored where is dry without corrosive air and conductive dust, and the temperature must be lower than 60°C ;
- This product carries dangerous voltage and controls driver machine with potential danger. If you don't abide by the regulations or requirements in this manual, there is danger of body injury even death and machine system damage;
- Do not wire while the power is connected. Otherwise, there is danger of death for electric shock. Before wiring, inspection and maintenance, please cut off power supply of all related equipment's and ensure main DC voltage in safe range. And please operate it after 5 mins;
- Power wire, motor wire and control wire should be all connected firmly. Earth must be reliable and earth resistance must be lower than 10Ω;
- Human body electrostatic will damage inner sensitive components seriously. Before operation, please follow ESD measures. Otherwise, there is danger of inverter damage;
- Inverter output voltage is pulse wave. If components such as capacitor which improves power factor and pressure-sensitive resistance for anti-thunder and so on are installed at the output side, please dismantle them or change to input side;
- No switch components such as breaker and contactor at the output side (If there must be one, please make sure the output current is 0 while the switch acting);
- No matter where the fault is, there is danger of serious accident. So there must be additional external prevent measures or other safety devices;
- Only used in application fields as maker stated. No use in equipments related to special fields such as emergency, succor, ship, medical treatment, aviation, nuclear and etc;
- Only Kevan Electric co., Ltd service department or its authorized service center can maintain the products. It may cause product fault while using accessories not authorized or permitted. Any defective components must be changed in time in maintenance.

1.2 Before Use

On receiving your order, please check the package and confirm intact before opening, and check if there’s any damage, scratch or dirt (damages caused during transportation are not within the company's warranty). If there’s any damage caused during transportation, please contact us or the transport company immediately. After confirming the receipt of the goods intact, please re-confirm if the product and your order are consistent.

1.3 Specification parameters

1.3.1 Nameplate model description and rated parameters



Invertor model

Input power specifications

G type machine output

P type machine output


Serial No.

MODEL :KV600-T3-5R5G/7R5P

SOURCE:3PH AC380V 50/60HZ

OUTPUT1:5.5KW 13A 0.00-600.00HZ

OUTPUT2:7.5KW 17A 0.00-600.00HZ

S/N: 

Manufacturer: Shenzhen K-easy Electric Technology Co., Ltd.

KV600 - T 3 - 5R5 G - 7R5 P
① ② ③ ④ ⑤ ④ ⑤

Field	Identification	Label description	
Inverter type	①	KV600 series vector control inverter	
Voltage classification	②	S: single-phase T: three-phase	
Voltage level	③	2: 220V 6: 660V	3: 380V 11: 1140V
Adaptive motor power	④	1R5: 1.5KW 5R5: 5.5KW	2R2: 2.2KW 4: 4KW 7R5: 7.5KW 11: 11KW
Inverter type	⑤	G: General purpose	P: Fan pump type

1.3.2 Specification and rated parameters

Three phase power supply: 380V, 50/60Hz					
Inverter specification	Current (A)	Inverter specification	Current (A)	Inverter specification	Current (A)
KV600-T3-R75G/1R5P-B	3/4	KV600-T3-075G/090P	150/180	KV600-T3-500G/560P-L	860/990
KV600-T3-1R5G/2R2P-B	4/6	KV600-T3-090G/110P	180/210	KV600-T3-560G/630P-L	990/1100
KV600-T3-2R2G/004P-B	6/10	KV600-T3-110G/132P	210/250	KV600-T3-630G/710P-L	1100/1260
KV600-T3-004G/5R5P-B	10/13	KV600-T3-132G/160P	250/310	KV600-T3-710G/800P-L	1260/1450
KV600-T3-5R5G/7R5P-B	13/17	KV600-T3-160G/185P	310/340	KV600-T3-800G/900P-L	1450/1650
KV600-T3-7R5G/011P-B	17/25	KV600-T3-185G/200P	340/380	KV600-T3-900G/1000P-L	1650/1800
KV600-T3-011G/015P-B	25/32	KV600-T3-200G/220P	380/415	Single phase power supply: 220V, 50/60Hz	
KV600-T3-015G/018P-B	32/38	KV600-T3-220G/250P	415/470		
KV600-T3-018G/022P-B	38/45	KV600-T3-250G/280P	470/510	KV600-S2-R75G	4
KV600-T3-022G/030P-B	45/60	KV600-T3-280G/315P	510/600	KV600-S2-1R5G	7
KV600-T3-030G/037P	60/75	KV600-T3-315G/355P	600/670	KV600-S2-2R2G	10
KV600-T3-037G/045P	75/90	KV600-T3-355G/400P	670/750	KV600-S2-3R7G	16
KV600-T3-045G/055P	90/110	KV600-T3-400G/450P	750/810	KV600-S2-5R5G	20
KV600-T3-055G/075P	110/150	KV600-T3-450G/500P-L	810/860	KV600-S2-7R5G	30

1.4 Technical specifications

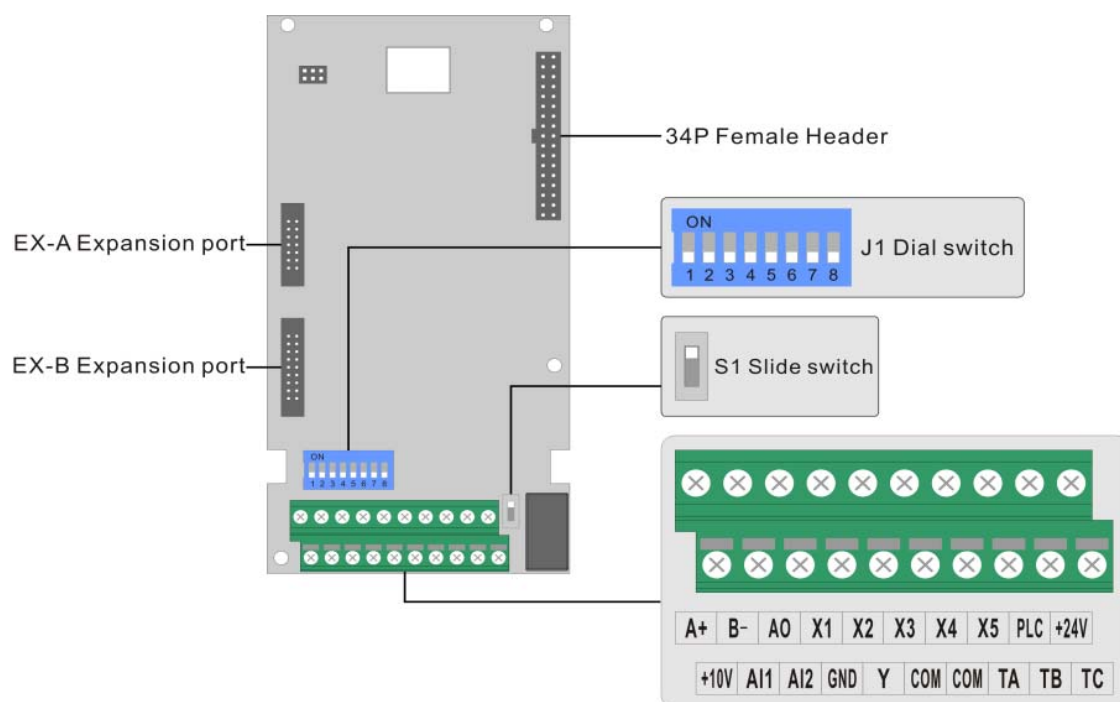
Item		Specification
Power input	Voltage, frequency	Single-phase 220V 50/60Hz ; Three phase 380V 50/60Hz ,
	Allowable fluctuations	voltage unbalance rate:<3%; Frequency:±5%; aberration rate: as IEC61800-2
	Power factor	≥0.94(with DC reactor)
	Efficiency	≥96%
Output	Output voltage	Output under rated condition: 3 phase, 0~input voltage, inaccuracy<5%
	Output frequency	G type:0~600Hz
	Output frequency	Max frequency ±0.5%
	Overload capacity	G type: 150% rated current/1 min, 180% rated current/10s, 200% rated
Main control performance	Motor control mode	V/F without PG , VC without PG , VC with PG
	Speed control range	Vector control without PG, rated load 1:100; Vector control with PG, rated load 1:1000;
	Steady speed accuracy	VC without PG: ≤2% rated synchronized speed; VC with PG: ≤0.05% rated synchronized speed
	Starting torque	VC without PG: when 0.5Hz, 150% rated torque; VC with PG: when 0Hz, 200% rated torque
	Torque response	VC without PG: ≤20ms; VC with PG: ≤10ms.
	Frequency accuracy	Digit setting: max frequency×±0.01%; Analog setting: max frequency×±0.2%
	Frequency resolution	Digital setting: 0.01Hz; Analog setting: maximum frequency × 0.05%
Product basic functions	DC braking capacity	Starting frequency:0.00~50.00Hz; Braking time:0.0~60.0s; Braking current:0.0~150.0% rated current
	Torque boost capacity	Auto torque upgrade 0.0%~100.0%; Manual torque upgrade 0.0%~30.0%
	V/F curve	4 modes: one linearity torque characteristic curve ,one self-setting V/F curve mode, one drop torque characteristic curve (1.1- 2.0 powers),and square V/F curve mode.

Item		Specification
	Acceleration/Deceleration curve	2 modes: linear Acceleration/Deceleration and S curve Acceleration/Deceleration. 4 sets of ACC/DEC, time unit 0.01s selectable, longest time: 650.00s.
	Rated output voltage	Rely on power supply voltage compensate function, while motor rated voltage is 100%, set it at the range of 50-100%(output can not over input voltage).
	Voltage auto-adjustment	While power supply voltage fluctuates, it can auto-keep constant output voltage.
	Auto energy-saving running	While under V/F control mode, according to load situation, auto-optimize output voltage to save energy.
	Standard functions	PID control, speed track, power off restart, jump frequency, upper/lower frequency limit control, program operation, multi-speed, RS485, analog output, frequency impulse output.
	Frequency setting channels	Keyboard digital setting, keyboard potentiometer, Analog voltage/current terminal AI1、AI2, Communication given and multi-channel terminal selection, Main and auxiliary channel combination, expansion card, supporting different modes switch.
	Feedback input channel	Voltage/Current Terminal AI1, Voltage/Current Terminal AI12, Communication given, pulse input X5.
	Running command channel	Operation panel given、external terminal given, communication given, expansion card given.
	Input command signal	Start, stop, FWD/REV, JOG, multi-step speed, reset, ACC/DEC time selection, frequency given channel selection, exterior fault alarm.
Protective function		Overvoltage, under-voltage, current limit, over-current, overload, electric thermal relay, overheat, overvoltage stall, data protection, rapid speed protection, input/output phase failure protection.
Environment	Install place	altitude $\leq 1000\text{m}$, above 1000m down the rated amount, each increase of 100m down the rated amount of 1%; no condensation, ice, rain, snow, hail; solar radiation below $700\text{W}/\text{m}^2$, air pressure 70-106 kPa.
	Temperature, humidity	$-10 \sim +50\text{ }^{\circ}\text{C}$, derating above $40\text{ }^{\circ}\text{C}$, maximum temperature $60\text{ }^{\circ}\text{C}$ (no-load operation) 5% to 95% RH (non-condensing)
	Vibration	When $9 \sim 200\text{Hz}$, $5.9\text{m}/\text{s}^2$ (0.6g)
	Storage temperature	$-30 \sim +60\text{ }^{\circ}\text{C}$
	Protection grade	IP20
	Cooling method	Forced air cooling

Chapter 2 Installation

In order to ensure the safe use of the product by the user, maximize the performance of the inverter, and ensure the reliable operation of the inverter, please use this product strictly in accordance with the environmental, wiring, and ventilation requirements described in this chapter





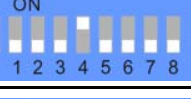




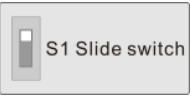


2.1 Control terminal



Type	Terminal	Terminal name	Terminal function definition
Power	+10V-GND	External + 10V power supply	10V auxiliary power supply output, constitutes loop with GND, Maximum output 10VDC / 50mA
	+24V-COM	External 24V power supply	Provide + 24 V power supply to the outside, and the maximum output is 100mA
Analog input	AI1-GND	Analog terminal 1	Input range: DC 0V-10V/4mA-20mA, It is determined by the AI-1 dial switch on the control board; Input impedance: 100k Ω for voltage input and 500 Ω for current input.
	AI2-GND	Analog terminal 2	Input range: DC 0V-10V/4mA-20mA, It is determined by the AI-2 dial switch on the control board; Input impedance: 100k Ω for voltage input and 500 Ω for current input.
Digital input	(X1-X4) -COM	Digital input 1-4	Internal photoelectric converter, programmable action, input conditions: maximum dc30v / 8mA
	X5-COM	High speed pulse terminal	With x1-x4 function and high-speed pulse input function, the maximum input frequency is 100kHz
Analog output	AO1-GND	Analog output1	The output voltage, current and frequency are selected by AO1 dial switch on the control board; Voltage type: 0-10V; current mode: 0-20mA / 4-20mA; frequency type (Collector open circuit): 0-50khz
Relay output	TB1-TC1	Normally closed	Can be programmed to set the action object, the maximum contact capacity: 3A/240VAC5A/30VDC
	TA1-TC1	Normally open terminal	

Type	Terminal	Terminal name	Terminal function definition
Y terminal	Y-COM	Digital output terminal	Open collector output, programmable action object, maximum output DC24V / 50mA
Communication	A+	Communication terminal A+	RS485 communication interface
	B-	Communication terminal B-	

2.2 Description of connection function of conversion terminal

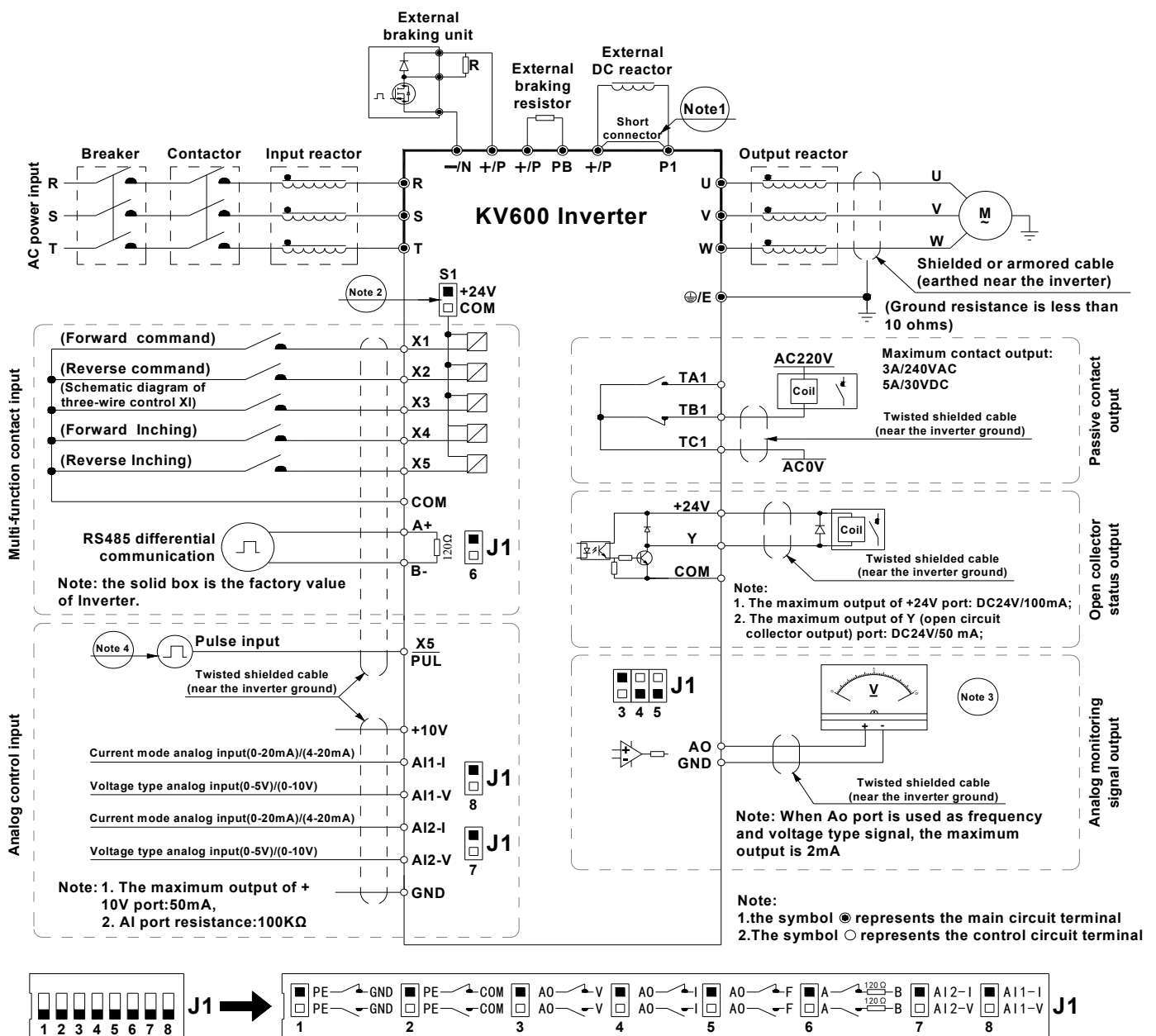
Type	Switch position number	Terminal function	Choice position	Legend	Function description
Dial switch  Dial to the "on" side is valid, otherwise it is invalid.	1	GND-PE	PE		GND and PE are connected to the earth
	2	COM-PE	PE		COM and PE are connected to the earth
	3	AO1	AO1-U		(AO1)0~10V Voltage output
	4		AO1-I		(AO1)0~20mA/4~20mA Current output
	5		AO1-F		(AO1)FM Frequency output (open collector output) 0-50kHz
	6	485 communication matching resistance	Access		485 communication access 120 Ω matching resistance
	7	AI2	I		(AI2) 0~20mA/4~20mA Current input
			U		(AI2)0~10V Voltage input
	UP DOWN	PLC common terminal selection	+24V		PLC common terminal connected with + 24 V
			COM		PLC common terminal connected with COM

2.3 Wiring mode of Electrical circuit

2.3.1 The wiring mode of the control circuit of the frequency converter is shown in the figure on the following page:

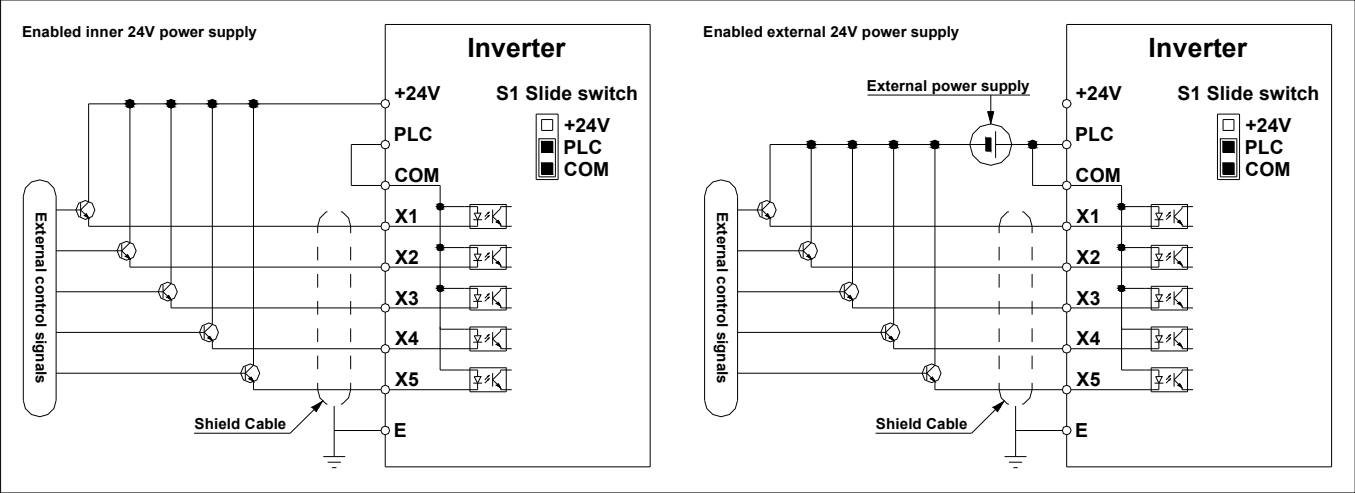
Be careful:

- When installing DC reactor, be sure to remove the short connector between P1 and (+);
- NPN or PNP transistor signal can be selected as the input of multifunction input terminal (X1-X5), and internal power supply (+ 24 V terminal) or external power supply (24 V) can be selected for bias voltage;
- Analog monitoring output is the output of ammeter, voltmeter and other indicators, which can not be used for feedback control and other control operations;
- High speed pulse input terminal X5, the default input is 24 V open collector input, without external connection of 24 V. X5 supports open collector signal amplitude > 18V; pulse signal amplitude > 9V input; X5 can receive the highest pulse of 100kHz.

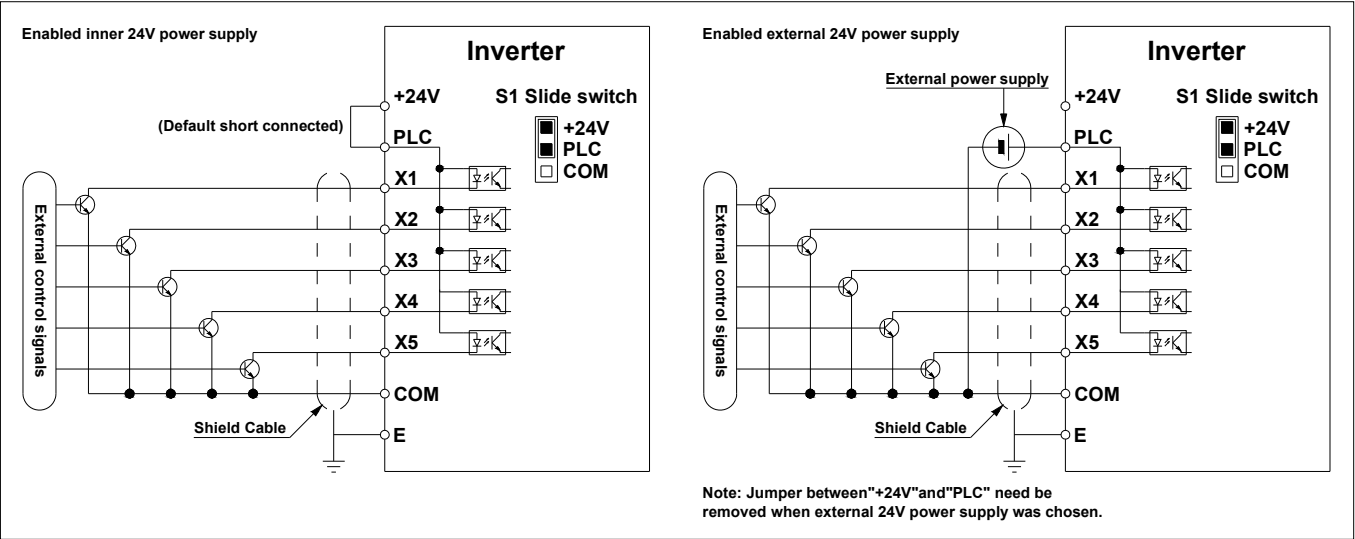


2.3.2 Multi function contact input connection

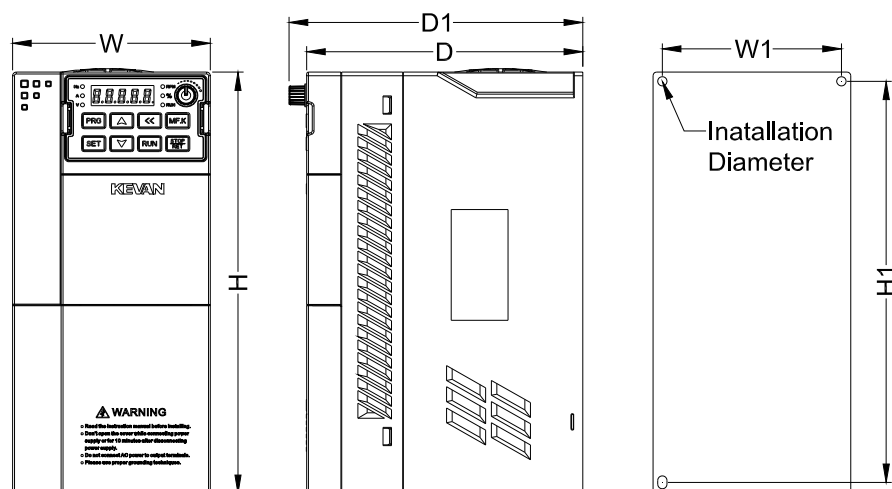
Connection mode of PNP characteristic transistor:



Connection mode of NPN characteristic transistor:

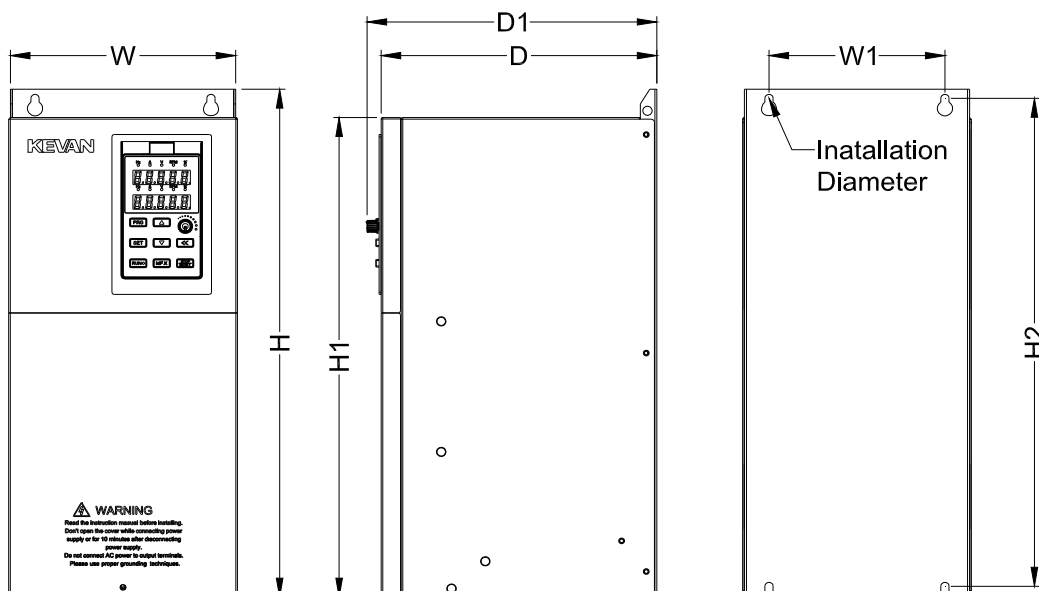


2.4 Product dimensions



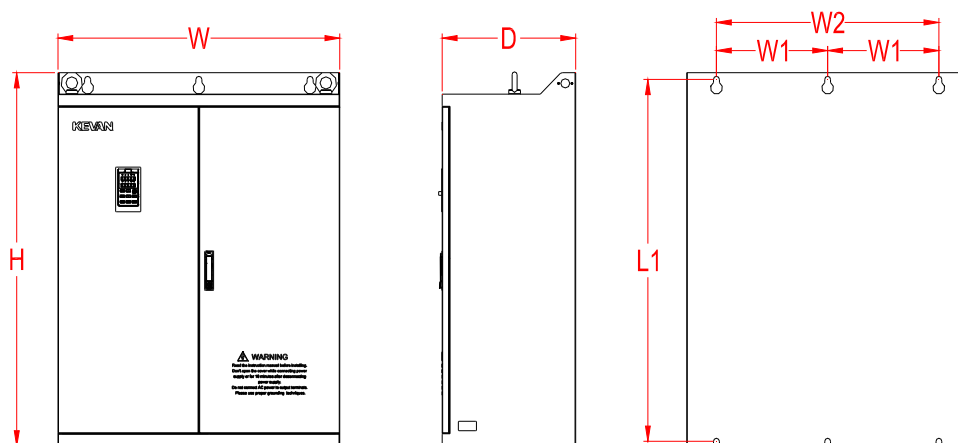
KV600 0.75G-22G Product dimensions

Inverter model	Dimensions (mm)				Installation (mm)		Mounting aperture
	W	H	D	D1	W1	H1	
KV600-T3-R75G/1R5P-B	89	190	135	144	79	180	M4×2
KV600-T3-1R5G/2R2P-B							
KV600-T3-2R2G/004P-B							
KV600-S2-R75G-B							
KV600-S2-1R5G-B							
KV600-T3-004G/5R5P-B	106	230	148	157	96	219	M4×3
KV600-T3-5R5G/7R5P-B							
KV600-T3-7R5G/11P-B-E							
KV600-S2-2R2G-B							
KV600-S2-004G-B							
KV600-T3-11G/15P-B	130	275	160	169	115	260	M5×3
KV600-T3-15G/22P-B							
KV600-S2-5R5G-B							
KV600-S2-7R5G-B							
KV600-T3-18G/22P-B	155	335	191	200	141.5	320	M5×4
KV600-T3-22G/30P-B							



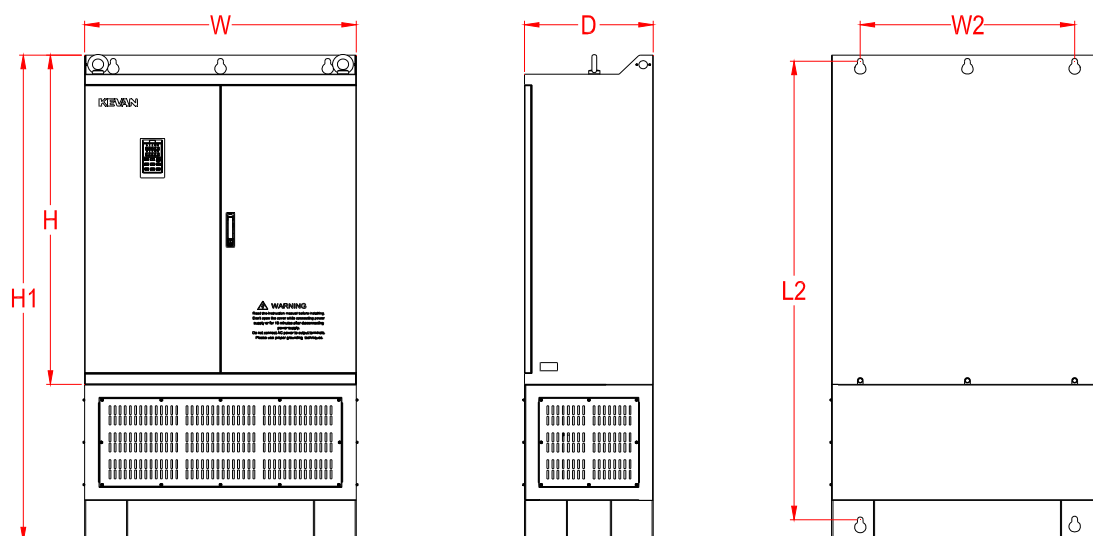
KV600 30G-400G Product dimensions

Inverter model	Dimensions (mm)					Installation (mm)		Mounting aperture
	W	H	H1	D	D1	W1	H2	
KV600-T3-030G/037P	195	445	420	235	244	150	430	4-M6
KV600-T3-037G/045P								
KV600-T3-045G/055P	240	560	520	310	319	176	544	4-M6
KV600-T3-055G/075P								
KV600-T3-075G/090P								
KV600-T3-090G/110P	270	640	582	350	359	200	620	4-M8
KV600-T3-110G/132P								
KV600-T3-132G/160P	350	738	680	405	414	220	715	4-M8
KV600-T3-160G/185P								
KV600-T3-185G/200P	360	940	850	480	489	200	910	4-M16
KV600-T3-200G/220P								
KV600-T3-220G/250P								
KV600-T3-250G/280P	370	1140	1050	545	554	200	1110	4-M16
KV600-T3-280G/315P								
KV600-T3-315G/355P	400	1250	1140	545	554	240	1213	4-M16
KV600-T3-355G/400P								
KV600-T3-400G/450P								



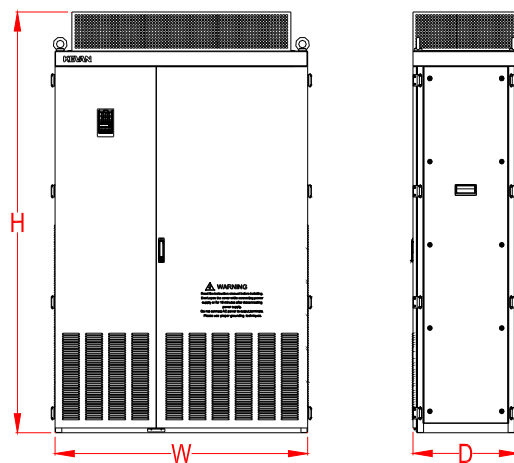
KV600 450G-630G Product dimensions

Inverter model	Dimensions (mm)			Installation (mm)			Mounting aperture
	W	H	D	W1	W2	L1	
KV600-T3-450G/500P	800	1000	370	300	600	963	M16×6
KV600-T3-500G/560P							
KV600-T3-560G/630P	950	1220	450	375	750	1185	M16×6
KV600-T3-630G/710P							



KV600 450G-630G Product dimensions

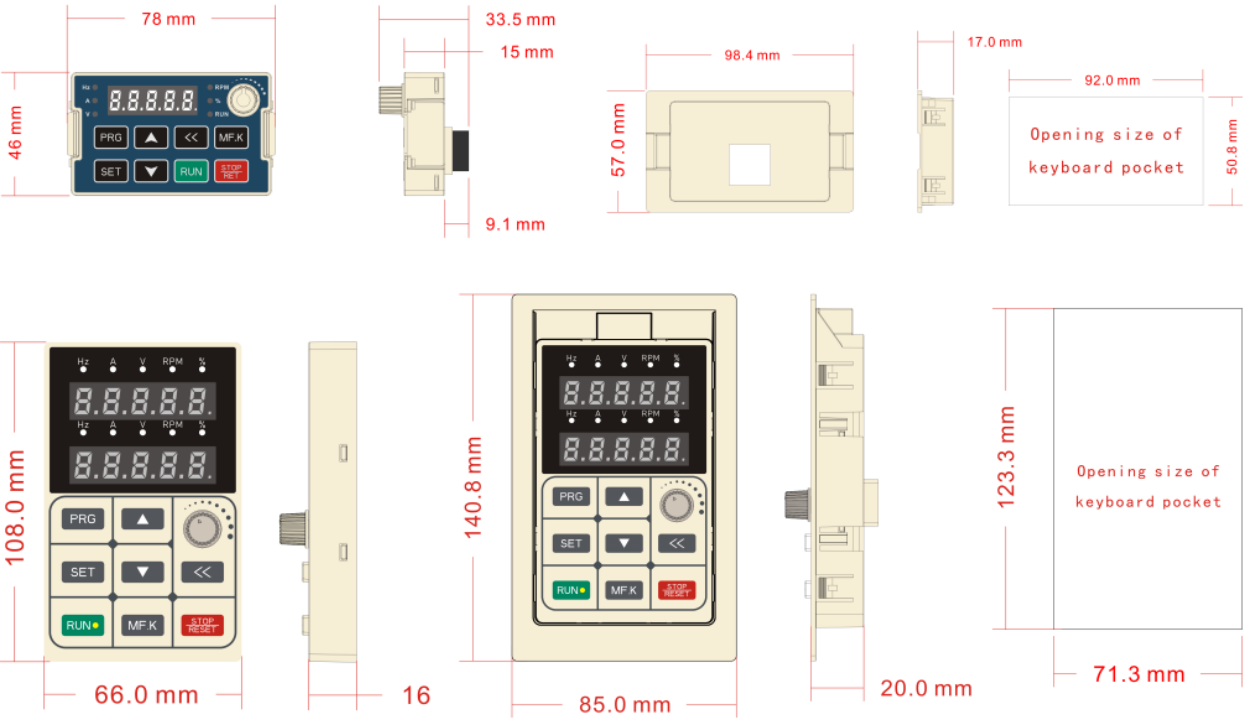
Inverter model	Dimensions (mm)				Installation (mm)		Mounting aperture
	W	H	H1	D	W1	L2	
KV600-T3-450G/500P-L	800	1000	1530	370	600	1400	M16×5
KV600-T3-500G/560P-L							
KV600-T3-560G/630P-L	950	1220	1800	450	750	1700	M16×5
KV600-T3-630G/710P-L							



KV600 710G-900G Product dimensions

Inverter model	Dimensions (mm)		
	W	H	D
KV600-T3-710G/800P-L	1315	2200	550
KV600-T3-800G/900P-L			
KV600-T3-900G/1000P-L			

2.5 Keyboard size












Chapter 3 Keyboard Layout and Operation Instructions

3.1 Keyboard appearance



3.2 Key function

symbols	Key name	Function description
	Menu	First level menu ,entry or exit
	Confirm / modify key	Enter the menu screen step by step and confirm the setting parameters
	Increasing key	Data or function code increment
	Decrement key	Data or function code decrement
	Run key	In keyboard operation mode, used for running operation
	Multi-function key	According to F4-07 parameter, the function switch can be selected, and the command source or running direction can be quickly switched.
	Stop / Reset button	In the running state, pressing this key is used to stop the operation; in case of fault alarm, it is used for reset operation. The characteristics of this key are restricted by F4-08 parameters.
	Shift key	In the display interface, cycle to select the display parameters; when modifying the parameters, it is used to switch the modification bits.
	Keyboard potentiometer	It can be used to set the input value of given frequency, given torque, PID given, PID feedback, etc.

3.3Indicator light description

Name	State	Meaning
Unit indicator	Hz	Flashing / On
	A	On
	V	Flashing / On
	S	On
	RPM	On
	%	Flashing / On
Status Indicator	RUN	On
	RUN	Flashing
	RUN	Off

Chapter 4 Function Parameter Table

4.1 This chapter just provides function parameter table. Specifications refer to KV600 technical manual or inquiry the company.

“●” : Parameter can be changed in the running state.

“○” : Parameter can't be changed in the running state.

“×” : Parameter can be read only.

“ – ” : Factory setting parameter, only factory can set.

“※” : Parameter is related to the model.

4.2 Basic parameters

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
F0-00	G/P Model Setting	Model set	0:G Type 1:P Type	○	0x000
F0-01	Motor control mode	0	Asynchronous motor control mode: 0: V/F control 1: High-performance VC without PG 2: High-performance VC with PG Synchronous motor control mode: 3: High-performance VC without PG 4: VC with PG Other control: 5: Voltage frequency separation output	○	0x001
F0-02	Run command channel	0	0: Keyboard control 1: Terminal control 2: RS485 communication control 3: Optional card	○	0x002
F0-03	Main Frequency reference source A	0	0: Keyboard number given 1: potentiometer of keyboard given 2: Voltage/Current analog AI1 given 3: Voltage/Current analog AI2 given	●	0x003
F0-04	Auxiliary Frequency reference source B	1	4: Terminal pulse X5 given 5: RS485 communication given 6: Terminal UP/DW control 7: PID control given 8: Program control (PLC) given 9: Multi-steps speed given 10: Optional card	●	0x004
F0-05	The reference source selection of auxiliary frequency source B	0	0: Max. output frequency as reference source 1: Set frequency of channel A as reference source	●	0x005
F0-06	Frequency given source selection	0	0: Main Frequency reference source A 1: Auxiliary Frequency reference source B 2: A+B 3: A-B 4: Max. value of A and B 5: Min. value of A and B	●	0x006

F0-07	Running Command Binding	0000	Unit: keyboard command instruction binding Tens place: terminal command instruction binding Hundreds: communication command instruction binding Thousands: optional card command instruction binding 0: no binding 1: keyboard number given frequency 2: Potentiometer of keyboard given 3: Voltage/Current analog AI1 given 4 : Voltage/Current analog AI2 given 5 : Terminal pulse X5 given 6 : RS485 communication given 7: Terminal UP/DW control 8 : PID control given 9 : Program control (PLC) given A: Multi-steps speed given B: Optional card	●	0x007
F0-08	Keyboard digital setting frequency	50.00Hz	0~upper limit	●	0x008
F0-09	Max frequency output	50.00Hz	upper limit~600.00Hz	○	0x009
F0-10	Upper limit frequency source selection	0	0: Upper limit frequency digital given 1: potentiometer of keyboard given 2: Voltage/Current analog AI1 given 3: Voltage/Current analog AI2 given 4: Terminal pulse X5 given 5: RS485 communication given 6: Optional card	●	0x00A
F0-11	Upper frequency limit digital setting	50.00Hz	Lower limit frequency~max frequency`	●	0x00B
F0-12	Lower limit frequency	0.00Hz	0.00~upper limit frequency	●	0x00C
F0-13	Lower limit frequency running mode	1	0: Stop output 1: Run at lower limit frequency	○	0x00D
F0-14	ACC time 0	Model set	0.01~650.00s	※	0x00E
F0-15	DEC time 0	Model set		※	0x00F
F0-16	Rotary direction selection	0000	Unit: running direction takes the opposite 0: Direction unchanged 1: Direction takes the opposite Tens : running direction prohibited 0:Forward and reverse commands are allowed 1: Only FWD command allowed 2: Only REV command allowed Hundreds:frequency control direction selection 0: Invalid 1: Valid Thousands: torque control direction selection 0: Invalid 1: Valid	○	0x010
F0-17	PWM carrier frequency	Model set	0.7~16.0kHz	※	0x011
F0-18	PWM control mode	1111	Unit: carrier associated with temperature 0: Temperature independent 1: Temperature dependent Tens : carrier associated with outputfrequency 0:not associated 1: associated Hundreds: random PWM valid 0: Prohibited 1: Valid Thousands: PWM modulation mode 0: Only use three-phase modulation 1: Two-phase and three-phase modulation	●	0x012

			automatically switched		
F0-19	Parameter initialization	0	0: No action 1: Restore factory default (not restoring motor parameters) 2: Restore factory default (restoring motor parameters) 3: Clear malfunction records		0x013

F1 Start-stop control parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
F1-00	Start-up running mode	0	0: Start by start-up frequency 1: DC Braking at first then start by start-up frequency 2: Speed tracking, and judge the direction then start	○	0x100
F1-01	Start pre-excitation time	0.00s	0.00~60.00s	○	0x101
F1-02	Start-up frequency	0.50Hz	0.00~60.00Hz	○	0x102
F1-03	Start-up frequency holding time	0.0s	0.0~50.0s	○	0x103
F1-04	Braking current before start	60.0%	0.0~150.0%	○	0x104
F1-05	Braking time before start	0.0s	0.0~60.0s	○	0x105
F1-06	Speed tracking time	0.50s	0.00~60.00s	○	0x106
F1-07	Speed tracking delay when stop	1.00s	0.00~60.00s	○	0x107
F1-08	Speed tracking Mode	0010	Unit: The frequency selection of Speed tracking 0: Speed tracking from Max.Output frequency 1: Speed tracking from stop Output frequency Tens :The direction selection of Speed tracking 0: bidirectional 1: Unidirectional	○	0x108
F1-09	Reserved	---	---	---	0x109
F1-10	Stop mode	0	0:DEC stop 1:Free stop	●	0x10A
F1-11	DC braking initial frequency when stop	1.00Hz	0.00~50.00Hz	○	0x10B
F1-12	DC braking current	60.0%	0.0~150.0%	●	0x10C
F1-13	DC braking hold time when stop	0.0s	0.0~60.0s	○	0x10D
F1-14	Stop detection frequency	0.50Hz	0.00~50.00Hz	●	0x10E
F1-15	Reserved	---	---	---	0x10F

F1-16	ACC/DEC selection	0010	Unit: time base selection 0: max frequency 1: fixed frequency 50Hz 2: set frequency Tens : S ACC/DEC selection 0: Beeline ACC/DEC 1: S Curve ACC/DEC Hundreds & Thousands: reserved	○	0x110
F1-17	ACC start time for S curve	0.10s	0.00~10.00	○	0x111
F1-18	ACC end time for S curve	0.10s	0.00~10.00	○	0x112
F1-19	DEC start time for S curve	0.10s	0.00~10.00	○	0x113
F1-20	DEC end time for S curve	0.10s	0.00~10.00	○	0x114
F1-21	ACC time 1	10.00s	0.01~650.00s	●	0x115
F1-22	DEC time 1	10.00s	0.01~650.00s	●	0x116
F1-23	ACC time 2	10.00s	0.01~650.00s	●	0x117
F1-24	DEC time 2	10.00s	0.01~650.00s	●	0x118
F1-25	ACC time 3	10.00s	0.01~650.00s	●	0x119
F1-26	DEC time 3	10.00s	0.01~650.00s	●	0x11A
F1-27	DEC time at emergency stop	1.00s	0.01~650.00s	●	0x11B
F1-28	FWD&REV dead time	0.0s	0.0~120.0s	○	0x11C
F1-29	Zero speed torque frequency threshold	0.50Hz	0.00~10.00Hz	●	0x11D
F1-30	Zero speed torque coefficient	60.0%	0.0~150.0%	●	0x11E
F1-31	Zero speed torque holding time	0	0.0~6000.0s If set 6000.0S,always hold without time limit	●	0x11F
F1-32~F1-34		Reserved			
F1-35	Power off restart action selection	0	0:Invalid1:Valid	○	0x123
F1-36	Power off restart waiting time	0.50s	0.00~60.00s	○	0x124
F1-37	JOG running curvesetting	1	0:S curve 1:Beeline	○	0x125
F1-38	JOG running frequency setting	5.00Hz	0.00~Max frequency	●	0x126
F1-39	JOG ACC time	10.00s	0.01~650.00s	●	0x127
F1-40	JOG DEC time	10.00s	0.01~650.00s	●	0x128

F2 Multi-function terminal parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
F2-00	X1 terminal function selection	1	Refer to attached list 4.3	○	0x200
F2-01	X2 terminal function selection	2	Refer to attached list 4.3	○	0x201
F2-02	X3 terminal function selection	3	Refer to attached list 4.3	○	0x202
F2-03	X4 terminal function selection	4	Refer to attached list 4.3	○	0x203
F2-04	X5 terminal function selection	5	Refer to attached list 4.3	○	0x204
F2-05	X6 terminal function selection	6	Refer to attached list 4.3(X6 expand)	○	0x205

F2-06	X7 terminal function selection	7	Refer to attached list 4.3(X7 expand)	○	0x206
F2-07	X8 terminal function selection	8	Refer to attached list 4.3(X8 expand)	○	0x207
F2-08	X1~X4 terminal characteristics selection	0000	0: closed effective 1: open effective Unit: X1 Tens : X2 Hundreds: X3 Thousands: X4	●	0x208
F2-09	X5~X8 terminal characteristics selection	0000	0: closed effective 1: open effective Unit: X5 Tens : X6 Hundreds: X7 Thousands: X8	●	0x209
F2-10	X1 valid detection delay	0.010	0.000~6.000s	●	0x20A
F2-11	X1 invalid detection delay	0.010	0.000~6.000s	●	0x20B
F2-12	X2 valid detection delay	0.010	0.000~6.000s	●	0x20C
F2-13	X2 invalid detection delay	0.010	0.000~6.000s	●	0x20D
F2-14	X3 valid detection delay	0.010	0.000~6.000s	●	0x20E
F2-15	X3 invalid detection delay	0.010	0.000~6.000s	●	0x20F
F2-16	X4 valid detection delay	0.010	0.000~6.000s	●	0x210
F2-17	X4 invalid detection delay	0.010	0.000~6.000s	●	0x211
F2-18	X5 valid detection delay	0.010	0.000~6.000s	●	0x212
F2-19	X5 invalid detection delay	0.010	0.000~6.000s	●	0x213
F2-20	X6 valid detection delay	0.010	0.000~6.000s	●	0x214
F2-21	X6 invalid detection delay	0.010	0.000~6.000s	●	0x215
F2-22	X7 valid detection delay	0.010	0.000~6.000s	●	0x216
F2-23	X7 invalid detection delay	0.010	0.000~6.000s	●	0x217
F2-24	X8 valid detection delay	0.010	0.000~6.000s	●	0x218
F2-25	X8 invalid detection delay	0.010	0.000~6.000s	●	0x219
F2-26	Terminal control running mode	0	0: two-wire system 1 1: two-wire system 2 2: Three-wire system 1 3: three-wire system 2	●	0x21A
F2-27	Terminal operate protection	0111	0: off1: open Unit : terminal start protection when exiting abnormally Tens : Jog terminal start protection when abnormal exit Hundreds : start protection when command channel is switched to terminal Thousands: reserved	○	0x21B
F2-28	X5 input minimum frequency	0.00kHz	0.00~50.00kHz	●	0x21C
F2-29	X5 min frequency corresponding setting	0.00%	0.00~100.00%	●	0x21D
F2-30	X5 input max frequency	50.00kHz	0.00~50.00kHz	●	0x21E
F2-31	X5 max frequency corresponding setting	100.00%	0.00~100.00%	●	0x21F
F2-32	X5 filter time	0.100s	0.000~9.000s	●	0x220
F2-33	X5 cutoff frequency	0.010kHz	0.000~1.000kHz	●	0x221

F2-34	UP/DW terminal control mode	0	0: Frequency power-down storage 1: Frequency is not stored when power is off 2: Adjustable during operation, reset when shutdown	○	0x222
F2-35	Terminal UP / DW control frequency rate	0.50Hz/s	0.01~50.00Hz/s	●	0x223
F2-36	Reserved	---	---	---	0x224
F2-37	Timer time unit	0	0:Second 1:Minute 2:Hour	●	0x225
F2-38	Timer setting value	0	0~65000	●	0x226
F2-39	Reserved	---	---	---	0x227
F2-40	Counter input frequency	0	0~6000		0x228
F2-41	Counter max value	1000	0~65000	●	0x229
F2-42	Counter setting value	500	0~65000	●	0x22A
F2-43	Reserved	---	---	---	0x22B
F2-44	Output terminal polarity selection	0000	0: positive polarity1: negative polarity Unit: Y terminal Tens : Relay 1 Hundreds: Relay 2 Thousands: Reserved		0x22C
F2-45	Y output terminal	1	Refer to attached list 4.4	●	0x22D
F2-46	Relay 1 output	4	Refer to attached list 4.4	●	0x23E
F2-47	Relay 2 output	11	Refer to attached list 4.4	●	0x23F
F2-48	Y output delay time	0.010s	0.000~6.000s	●	0x230
F2-49	Relay 1 output delay	0.010s	0.000~6.000s	●	0x231
F2-50	Relay 2 output delay	0.010s	0.000~6.000s	●	0x232
F2-51	Output frequency level 1(FDT1)	30.00Hz	0.00~Max. frequency	●	0x233
F2-52	FDT1 lag	1.00Hz	0.00~Max. frequency	●	0x234
F2-53	Output frequency level 1(FDT2)	50.00Hz	0.00~Max. frequency	●	0x235
F2-54	FDT2 lag	1.00Hz	0.00~Max. frequency	●	0x236
F2-55	Detected value reaches the given frequency	2.00Hz	0.00~50.00Hz	●	0x237

F3 Analog terminal parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
F3-00	AI1 Lower limit	0.00V	0.00~10.00V	●	0x300
F3-01	AI1 Lower limit	0.00%	-100.00~100.00%	●	0x301
F3-02	AI1 Lower limit corresponding setting	10.00V	0.00~10.00V	●	0x302
F3-03	AI1 upper limit	100.00%	-100.00~100.00%	●	0x303
F3-04	AI1 upper limit corresponding setting	0.010s	0.000~6.000s	●	0x304
F3-05	AI1 voltage / current selection	0	0: voltage1: current	●	0x305
F3-06	AI2 Lower limit	0.00V	-10.00V~10.00V	●	0x306
F3-07	AI2 Lower limit corresponding setting	0.00%	-100.00~100.00%	●	0x307
F3-08	AI2 upper limit	10.00V	-10.00V~10.00V	●	0x308

F3-09	AI2 upper limit corresponding setting	100.00%	-100.00~100.00%	●	0x309
F3-10	AI2 filter time	0.010s	0.000~6.000s	●	0x30A
F3-11	AI2 voltage / current selection	0	0: voltage1: current	●	0x30B
F3-12	AI1 terminal function	0	Refer to attached list 4.3	○	0x30C
F3-13	AI1 high level setting	70.00%	0.00~100.00%	●	0x30D
F3-14	AI1 low level setting	30.00%	0.00~100.00%	●	0x30E
F3-15	AI2 terminal function	0	Refer to attached list 4.3	○	0x30F
F3-16	AI2 high level setting	70.00%	0.00~100.00%	●	0x310
F3-17	AI2 low level setting	30.00%	0.00~100.00%	●	0x311
F3-18	Valid state setting when analog used as terminal	0000	0: low level 1: high level Unit: AI1 Tens: AI2	●	0x312
F3-19	Analog input curve selection	0000	0: Beeline (default) 1: curve 1 2: curve 2 Unit: AI1 Tens : AI2	●	0x313
F3-20	Reserved	---	---	---	0x314
F3-21	Curve 1 lower limit	0.00V	0.00~10.00V	●	0x315
F3-22	Curve 1 lower limit	0.0%	0.00~100.00%	●	0x316
F3-23	Curve 1 inflection point 1 input voltage	3.00V	0.00~10.00V	●	0x317
F3-24	Curve 1 inflection point 1	30.00%	0.00~100.00%	●	0x318
F3-25	Curve 1 inflection point 2	6.00V	0.00~10.00V	●	0x319
F3-26	Curve 1 inflection point 2 corresponding setting	60.00%	0.00~100.00%	●	0x31A
F3-27	Curve 1 upper limit	10.0V	0.00~10.00V	●	0x31B
F3-28	Curve 1 upper limit corresponding setting	100.00%	0.00~100.00%	●	0x31C
F3-29	Curve 2 lower limit	0.00V	0.00~10.00V	●	0x31D
F3-30	Curve 2 lower limit	0.00%	0.00~100.00%	●	0x31E
F3-31	Curve 2 inflection point 1 input voltage	3.00V	0.00~10.00V	●	0x31F
F3-32	Curve 2 inflection point 1 corresponding setting	30.00%	0.00~100.00%	●	0x320
F3-33	Curve 2 inflection point 2 input voltage	6.00V	0.00~10.00V	●	0x321
F3-34	Curve 2 inflection point 2 corresponding setting	60.00%	0.00~100.00%	●	0x322
F3-35	Curve 2 upper limit	10.00V	0.00~10.00V	●	0x323
F3-36	Curve 2 upper limit corresponding setting	100.00%	0.00~100.00%	●	0x324
F3-37	A0 output signal selection	0000	Unit: AO 0: 0~10V 1: 4.00~20.00mA 2: 0.00~20.00mA 3: FM frequency pulse output Tens : AO (extended card) 0: 0~10V 1: 4.00~20.00mA 2: 0.00~20.00mA	●	0x325

F3-38	A0 output selection	0	0:Given frequency 1:Output frequency 2:Output current 3:Input voltage 4:Output voltage	●	0x326
F3-39	A0(extended card) output selection	1	5:Machine speed 6:Given torque 7:Output torque 8:PID given value 9:PID feedback value 10:Output power 11:Bus voltage 12:AI1 13:AI2 14:X5 input value 15,16:IGBT temperature 1,2 17:RS485 given	●	0x327
F3-40	A0output gain	100.0%	25.0~200.0%	●	0x328
F3-41	A0 analog output signal bias	0.0%	-10.0~10.0%	●	0x329
F3-42	A0output filter	0.010s	0.000~6.000s	●	0x32A
F3-43	A0(extended card) output gain	100.0%	25.0~200.0%	●	0x32B
F3-44	A0(extended card) analog output signal bias	0.0%	-10.0%~10.0%	●	0x32C
F3-45	A0(extended card) output filter	0.010s	0.000~6.000s	●	0x32D
F3-46	A0 FM frequency output lower limit	0.20kHz	0.00~100.00kHz	●	0x32E
F3-47	A0FM frequency output upper limit	50.00kHz	0.00~100.00kHz	●	0x32F

F4 System parameters

NO.	Function description	Factory default	Range of settings and definition	Feature	Addresses
F4-00	Parameter and key lock selections	0	0: Not locked 1: Function parameter locked 2: Function parameter and key locked (except for RUN/STOP/JOG) 3: All function parameter and key locked	●	0x400
F4-01	User password	0	0~9999	●	0x401
F4-07	Keyboard MF.K selection	0	0: REV 1: JOG	○	0x407
F4-08	STOP key setting	1	0: Non-keyboard control mode is invalid 1: Non-keyboard control mode stops according to stop mode 2: Non-keyboard control mode stop according to free stop mode	○	0x408

F4-09	UP/DOWN key selection	0011	Unit: keyboard UN/DOWN key modify selection 0: Invalid 1: Modify frequency setting by key board numbers F0-08 2: Modify PID give setting by key board numbers FB-01 Tens :power off storage selection 0: No save frequency after power off 1: Save frequency after power off Hundreds : action limit 0: Operation stop for adjusting 1: Adjusting only in operation, stop for holding 2: Adjusting in operation, stop for clearing	○	0x409
F4-10	Keyboard potentiometer lower limit	0.50V	0.00~5.00V	●	0x40A
F4-11	Corresponds to the lower limit of the keyboard	0.00	0.00~100.00%	●	0x40B
F4-12	Keyboard potentiometer upper limit	4.50V	0.00~5.00V	●	0x40C
F4-13	Keyboard potentiometer upper limit correspondence	100.00	0.00~100.00%	●	0x40D
F4-14	The display content of the first line in running state	1101	Unit and Tens: display the first group 00~63 Hundreds and Thousands: display the second group 00~63	●	0x40E
F4-15	The display content of the first line in running state	0402	Same as F4-14	●	0x40F
F4-16	The display content of the first line in stop state	1100	Same as F4-14	●	0x410
F4-17	The display content of the first line in stop state	0402	Same as F4-14	●	0x411
F4-18	The display content of the second line in running state	0402	Same as F4-14	●	0x412
F4-19	The display content of the second line in running state	1210	Same as F4-14	●	0x413
F4-20	The display content of the second line in stop state	0402	Same as F4-14	●	0x414
F4-21	The display content of the second line in stop state	1210	Same as F4-14	●	0x415
F4-22	Keyboard display item setting	0000	Unit: output frequency selection 0: Aim frequency 1: Running frequency Hundreds: power display dimension 0: Power display percentage (%) 1: Power display kilowatt (KW)	●	0x416
F4-24	Rotate speed display	100.0%	0.0~500.0%	●	0x418
F4-25	Power display coefficient	100.0%	0.0~500.0%	●	0x419

F5 Motor parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
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F5-00	Motor mode	0	0: Asynchronous motors (AM) 1: Permanent magnet synchronous motors (PM)	×	0x500
F5-01	Number of motor poles	4	2~98	○	0x501
F5-02	Motor rated power	Model set	0.1~1000.0kW	※	0x502
F5-03	Motor rated frequency	Model set	0.01~max frequency	※	0x503
F5-04	Motor rated speed	Model set	1~65000rpm	※	0x504
F5-05	Motor rated voltage	Model set	0~1500V	※	0x505
F5-06	Motor rated current	Model set	0.1~2000.0A	※	0x506
F5-07	Asynchronous motor no-load current	Model set	0.1~650.0A	※	0x507
F5-08	Asynchronous motor stator resistance	Model set	0.01~50.00%	※	0x508
F5-09	Asynchronous motor rotor resistance	Model set	0.01~50.00%	※	0x509
F5-10	Asynchronous motor stator inductance	Model set	0.01~50.00%	※	0x50A
F5-11	synchronous motor stator resistance	Model set	0.1~2000.0%	※	0x50B
F5-12	Synchronous machine d axis inductance	Model set	0.01~50.00%	※	0x50C
F5-13	Synchronous machine q axis inductance	Model set	0.01~200.00%	※	0x50D
F5-14	Synchronous machine back EMF	Model set	0.01~200.00%	※	0x50E
F5-15	Synchronous machine encoder installation angle	Model set	1~1500V	※	0x50F
F5-16	Asynchronous motor stator inductance	Model set	0.00~360.00	※	0x510
F5-20	Motor parameters self-adjustment selections	0	0: No operation 1: Rotary type self-tuning 2: Static type self-tuning 3: Stator resistance self-tuning	○	0x514
F5-21	Synchronous machine poles searching function	0010	Unit: closed-loop vector 0: OFF 1: ON 2: On, only operate firstly when electrify Tens: open-loop vector 0: OFF 1: ON 2: ON, only operate firstly when electrify	○	0x515
F5-30	Speed feedback or encoder mode-	0000	Unit: encoder mode 0: Common ABZ encoder 1: Resolver encoder Tens: encoder direction 0: same direction 1: reverse direction Hundreds: wire break inspection 0: OFF 1: ON Thousands:Z pulse correction enabled 0: OFF 1: ON	○	0x51E
F5-31	ABZ encoder lines	1024	1	○	0x51F
F5-32	wire break inspection time	2.000s	0.100~60.000s	●	0x520
F5-33	Resolver encoder poles	2	2~128	○	0x521

F5-36	First-order filter of encoder speed inspection	1.0ms	0.0~100.0ms	●	0x524
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F6 Vector control parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
F6-00	ASR(speed loop) proportional gain 1	10.00	0.01~100.00	●	0x600
F6-01	ASR integral time 1	0.200s	0.000~6.000s	●	0x601
F6-02	ASR filter time1	0.0ms	0.0~100.0ms	●	0x602
F6-03	ASR switch frequency 1	0.00Hz	[F6-07]~Max frequency	●	0x603
F6-04	ASR (speed loop) proportional gain 2	10.00	0.01~100.00	●	0x604
F6-05	ASR (speed loop) integral time 2	0.200s	0.000~6.000s	●	0x605
F6-06	ASR filter time 2	0.0ms	0.0~100.0ms	●	0x606
F6-07	ASR switch frequency 2	0.00Hz	0.00~[F6-03]	●	0x607
F6-08	Electric motor torque limit	250.0%	0.0~400.0%	●	0x608
F6-09	Power generation torque limit	250.0%	0.0~400.0%	●	0x609
F6-10	Current loop D-axis proportional gain	1.000	0.001~4.000	●	0x60A
F6-11	Current loop D-axis integral gain	1.000	0.001~4.000	●	0x60B
F6-12	Current loop Q-axis proportional gain	1.000	0.001~4.000	●	0x60C
F6-13	Current loop Q-axis integral gain	1.000	0.001~4.000	●	0x60D
F6-15	Vector control motor slip compensation	100.0%	0.0~250.0%	●	0x60F
F6-16	Vector control start torque	0.0%	0.0~250.0%	●	0x610
F6-17	Reserved	---	---	---	0x611
F6-18	Over excitation braking gain	100.0%	0.0~500.0%	●	0x612
F6-19	Over excitation braking	100.0%	0.0~250.0%	●	0x613
F6-20	Motor constant power area power limit	250.0%	0.0~400.0%	●	0x614
F6-21	Motor weak magnetic current upper limit	60.0%	0.0~250.0%	●	0x615
F6-22	Motor weak magnetic feed forward gain	10.0%	0.0~200.0%	●	0x616
F6-23	Motor weak magnetic gain	10.0%	0.0~500.0%	●	0x617
F6-24	Motor weak magnetic voltage coefficient	97.0%	0.0~120.0%	●	0x618
F6-25	Low frequency pull in current	10.0%	0.0~50.0%	●	0x619
F6-26	High frequency pull in current	10.0%	0.0~50.0%	●	0x61A
F6-27	Frequency of current pulled in	10.0%	0.0~100.0%	●	0x61B
F6-28	Vector control energy saving function	0	0:OFF 1:ON	●	0x61C
F6-29	Energy saving control gain	50.0%	0.0~80.0%	●	0x61D

F6-30	Energy saving control low-pass filter	0.010s	0.000~6.000s	●	0x61E
F6-32	MTPA gain	100.0%	0.0~400.0%	●	0x620
F6-33	MTPA filter time	1.0ms	0.0~100.0ms	●	0x621

F7 Torque Control Parameters

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
F7-00	Torque/Speed control	0	0:Speed control 1:Torque control Torque/Speed control	●	0x700
F7-01	Torque given channels selection	0	0: keyboard number setting 1: potentiometer of keyboard given 2: Voltage/Current analog AI1 give 3: Voltage/Current analog AI2 given 4: Terminal pulse X5 given 5: RS485 communication given	●	0x701
F7-02	Torque keyboard number setting	0.0%	0~100.0%	●	0x702
F7-03	Torque input lower limit	0.00%	0.00~100.00%	●	0x703
F7-04	Lower limit corresponding setting	0.00%	-200.00~200.00%	●	0x704
F7-05	Torque input upper limit	100.00%	0.00~100.00%	●	0x705
F7-06	Upper limit corresponding setting	100.00%	-200.00~200.00%	●	0x706
F7-07	Given first-order filter time	0.100s	0.000~6.000s	●	0x707
F7-08	Output torque upper limit	150.0%	0~200.0%	●	0x708
F7-09	Output torque lower limit	0%	0~200.0%	●	0x709
F7-10	Torque control FWD speed limit selection	0	0: function code F7-12setting 1: potentiometer of keyboard × F7-12; 2: AI1 × F7-12; 3: AI2 × F7-12; 4: X5 × F7-12; 5: RS485 communicationgiven × F7-12	●	0x70A
F7-11	Torque control REV speed limit selection	0	0: function code F7-13setting 1: potentiometer of keyboard × F7-13; 2: AI1 × F7-13; 3: AI2 × F7-13; 4: X5 × F7-13; 5: RS485 communicationgiven × F7-13	●	0x70B
F7-12	Torque control FWD max speed limit	100.0%	0.0~100.0%	●	0x70C
F7-13	Torque control REV max speed limit	100.0%	0.0 ~ 100.0%	●	0x70D

F8 V/F control parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
F8-00	Linear V/F curve selection	0	0: Beeline VF curve 1-9: 1.1-1.9 power VF curve 10: square VF curve 11: Multi-point V / F (F8-01~F8-10);	○	0x080

F8-01	V / F voltage V1	3.0%	0.0~100.0%	○	0x0801
F8-02	V / F frequency F1	1.00Hz	0.00~max frequency	○	0x0802
F8-03	V / F voltage V2	28.0%	0.0~100.0%	○	0x0803
F8-04	V / F frequency F2	10.00Hz	0.00~max frequency	○	0x0804
F8-05	V / F voltage V3	55.0%	0.0~100.0%	○	0x0805
F8-06	V / F frequency F3	25.00Hz	0.00~max frequency	○	0x0806
F8-07	V / F voltage V4	78.0%	0.0~100.0%	○	0x0807
F8-08	V / F frequency F4	37.50Hz	0.00~max frequency	○	0x0808
F8-09	V / F voltage V5	100.0%	0.0~100.0%	○	0x0809
F8-10	V / F frequency F5	50.00Hz	0.00~max frequency	○	0x080A
F8-11	Output voltage percentage	100.0%	25.0~120.0%	○	0x080B
F8-12	Torque boost	0.0%	0.0~30.0%	●	0x080C
F8-13	Torque boost cut-off frequency	50.0%	0.0~100.0%	●	0x080D
F8-14	V / F slip compensation gain	100.0%	0.0~200.0%	●	0x080E
F8-15	V / F slip compensation limit	100.0%	0.0~300.0%	●	0x080F
F8-16	V / F slip compensation	0.200s	0.000~6.000s	●	0x0810
F8-17	Oscillation suppression gain	100.0%	0.0~900.0%	●	0x0811
F8-18	Reserved	---	---	--	0x0812
F8-19	V / F automatic energy saving control	0	0: off 1:on	○	0x0813
F8-20	Lower limit of energy-saving step-down frequency	15.00Hz	0.0~50.00Hz	○	0x0814
F8-21	Energy-saving step-down voltage lower limit	50.0%	20.0~100.0%	○	0x0815
F8-22	Energy-saving buck voltage regulation rate	0.010V/MS	0.000~0.200V/MS	●	0x0816
F8-23	Energy saving buck voltage pick-up rate	0.200V/MS	0.000~2.000V/MS	●	0x0817
F8-24~F8-29		Reserved			
F8-30	Output voltage source of voltage-frequency separation	0	0: function code F8-31 setting 1: potentiometer of keyboard given 2: AI1 3: AI2 4:X5 5: PID output 6: RS485	●	0x081E
F8-31	Output voltage source of voltage-frequency separation number setting	0.0%	0.0%~100.0%	●	0x081F
F8-32	Output voltage source of voltage-frequency separation ACC time	10.00s	0.0~100.00s	●	0x0820
F8-33	Output voltage source of voltage-frequency separation DEC time	10.00s	0.0~100.00s	●	0x0821
F8-34	voltage-frequency separation stop time	0	0:Output voltage and frequency ACC/DEC no interaction 1: Output voltage down to 0V, then output frequency start to decrease	●	0x0822

F9 Enhanced Function Parameter Group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
F9-00	Jump frequency 1	0.00Hz	0.00～max frequency	●	0x0900
F9-01	Jump frequency amplitude 1	0.00Hz	0.00～max frequency	●	0x0901
F9-02	Jump frequency 2	0.00Hz	0.00～max frequency	●	0x0902
F9-03	Jump frequency amplitude 2	0.00Hz	0.00～max frequency	●	0x0903
F9-04～F9-07		Reserved			
F9-08	Swing frequency control	0	0: invalid 1: valid	●	0x0908
F9-09	Swing frequency amplitude control	0	0: relative center frequency 1: Relative maximum frequency	●	0x0909
F9-10	Reserved				
F9-11	Swing frequency amplitude	10.0%	0.0～100.0%	●	0x090B
F9-12	Kick frequency amplitude	10.0%	0.0～50.0%	●	0x090C
F9-13	Swing frequency ACC time	5.00s	0.00～650.00s	●	0x090D
F9-14	Swing frequency DEC time	5.00s	0.00～650.00s	●	0x090E
F9-15	Fan control	1	0: Fan runs after inverter is powered on 1: Shutdown is related to temperature, and running is running 2: The shutdown fan stops, and the operation is related to temperature	●	0x090F
F9-16	Energy consumption braking enabled	0	0: OFF 1: ON	●	0x0910
F9-17	Energy consumption braking action voltage	135.0%	115.0%～150.0%	●	0x0911
F9-18	Energy use brake usage	10.0%	0.0～100.0%	●	0x0912
F9-19～F9-20		Reserved			

FA Protection and Malfunction Parameter Group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
FA-00	OC suppression function	0	0: Suppression valid 1: ACC/DEC valid, constant speed invalid	○	0xA00
FA-01	OC suppression point	160.0%	0.0 ～ 300.0%	●	0xA01
FA-02	OC suppression gain	100.0%	0.0 ～ 500.0%	●	0xA02
FA-03	Current hardware protection settings	0001	Unit: CBC(cycle by cycle, limit current according to its waveform) 0: off 1: on Tens: OC protection interference suppression 0: off 1: First grade 2: Second grade Hundreds: SC protection interference suppression 0: off 1: First grade 2: Second grade Thousands: Reserved	○	0xA03
FA-04～FA-05		Reserved			

FA-06	Bus over voltage suppression function	0012	Unit: Over voltage suppression 0: Invalid 1: Valid in DEC 2: Valid both in ACC/DEC Tens: Over-excitation control 0: off 1: on Hundreds and Thousands: Reserved	○	0xA06
FA-07	Bus over voltage suppression	130.0%	110.0 ~ 150.0%	※	0xA07
FA-08	Bus over voltage suppression gain	100.0%	0.0 ~ 500.0%	●	0xA08
FA-09	Bus under voltage suppression function	0	0: Invalid 1: Valid	○	0xA09
FA-10	Bus under voltage suppression point	80.0%	60.0 ~ 90.0%	※	0xA0A
FA-11	Bus under voltage suppression gain	100.0%	0.0 ~ 500.0%	●	0xA0B
FA-12	Bus under voltage protection point	60.0%	60.0 ~ 90.0%	※	0xA0C
FA-13	Reserved	---	---	---	0xA0D
FA-14	Short-circuit detection after power on	0	0: off 1: on	○	0xA0E
FA-15	phase missing protection	0011	Unit: Output phase missing protection 0: off 1: on Tens: Input phase missing protection 0: off 1: Open Alarm 2: Open Fault(STOP VFD) Hundreds and Thousands: Reserved	●	0xA0F
FA-16	Motor overload protection curve coefficient	100.0%	0.0~250.0%	●	0xA10
FA-17	Load warning checkout setting	0000	Unit: checkout selection (protection 1) 0: No detection 1: detection load is too large 2: Only at constant speed detects excessive load 3: detection of insufficient load 4: Detects insufficient load only at constant speed Tens: Alarm selection 0: Alarm, continue running 1: fault protection action and free stop Hundreds: Check Out Selection (Protection 2) 0: No detection 1: detection load is too large 2: Only at constant speed detects excessive load 3: detection of insufficient load 4: Detects insufficient load only at constant speed Thousands: Alarm selection 0: Alarm, continue running 1: fault protection action and free stop	○	0xA11
FA-18	Load early detection level 1	130.0%	0.0~200.0%	○	0xA12
FA-19	Load warning detection time 1	5.0s	0.0~60.0s	○	0xA13
FA-20	Load early detection level 2	30.0%	0.0~200.0%	○	0xA14

FA-21	Load warning detection time 2	5.0s	0.0~60.0s	○	0xA15
FA-22	Reserved	---	---	---	0xA16
FA-23	Protection action of speed bias excess	0000	Unit: Detection selection 0: Not detected 1: Detected only at constant speed 2: Detecting Tens: Alarm selection 0: Free stop and report fault 1: Alarm and continue operation Hundreds and Thousands: Reserved	○	0xA17
FA-24	Detection threshold when speed bias excess	10.0%	0.0~60.0%	○	0xA18
FA-25	Detection time when speed bias excess	2.0s	0.0~60.0s	○	0xA19
FA-26	Rapid protection action	0000	Unit : checkout selection 0: No detection 1: only at constant speed 2: Always detect Tens : Alarm selection 0: Free stop and report fault 1: Alarm and continue operation Hundreds and thousands: reserved	○	0xA1A
FA-27	Fast detection threshold	110.0%	0.0~150.0%	○	0xA1B
FA-28	Fast detection time	0.010s	0.000~2.000s	○	0xA1C
FA-29~FA-36		Reserved			
FA-37	Failure self-recovery times	0	0~5	○	0xA25
FA-38	Failure self-recovery interval	1.0s	0.1~100.0s	○	0xA26
FA-39	Troubleshooting information	--	See fault message code table for details	×	0xA27
FA-40	Fault type	--	See fault message code table for details	×	0xA28
FA-41	Fault operating frequency	--	0.00~Max frequency	×	0xA29
FA-42	Fault output voltage	--	0~1500V	×	0xA2A
FA-43	Fault output current	--	0.1~2000.0A	×	0xA2B
FA-44	Fault bus voltage	--	0~3000V	×	0xA2C
FA-45	Failure module temperature	--	0~100℃	×	0xA2D
FA-46	Fault inverter status	--	Unit : running direction 0: forward1: reverse Tens : running status 0: shutdown1: speed up 2: slowdown3: constant speed Hundreds and thousands: reserved	×	0xA2E
FA-47	Fault input terminal status	--	See input terminal state diagram	×	0xA2F
FA-48	Fault output terminal status	--	See output terminal state diagram	×	0xA30
FA-49	Previous failure type	--	See fault message code table for details	×	0xA31
FA-50	Frequency of previous fault	--	0.00~Max frequency	×	0xA32
FA-51	Last fault output voltage	--	0~1500V	×	0xA33
FA-52	Last fault output current	--	0.1~2000.0A	×	0xA34
FA-53	Last faulted bus voltage	--	0~3000V	×	0xA35
FA-54	Last failed module	--	0~100℃	×	0xA36

FA-55	Status of the previous fault inverter	--	Unit : running direction 0: forward1: reverse Tens : running status 0: shutdown1: steady speed 2: speed up3: slow down Hundreds and thousands: reserved	×	0xA37
FA-56	Last fault input terminal status	--	See input terminal state diagram	×	0xA38
FA-57	Last fault output terminal status	--	See output terminal state diagram	×	0xA39
FA-58	First two failure types	--	See fault message code table for details	×	0xA3A
FA-59	First three failure types	--	See fault message code table for details	×	0xA3B

Fb PID control parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
Fb-00	PID controller given signal source	0	0: Keyboard numeric PID given 1: keyboard potentiometer given 2: AI1 given 3: AI2 4: Pulse X5 given 5: RS485 communication given 6: Optional card 7: terminal selection	●	0xB00
Fb-01	Keyboard digit PID given / feedback	50.0%	0.00~100.0%	●	0xB01
Fb-02	PID given changing time	1.00s	0.00~60.00s	●	0xB02
Fb-03	PID controller feedback signal source	2	0: Keyboard numeric PID given 1: keyboard potentiometer given 2: AI1 given 3: AI2 4: Pulse X5 given 5: RS485 communication given 6: Optional card 7: terminal selection	●	0xB03
Fb-04	Feedback signal filter time	0.010s	0.000~6.000s	●	0xB04
Fb-05	Feedback signal gain	1.00	0.00~10.00	●	0xB05
Fb-06	Maximum feedback signal	100.0	0~100.0	●	0xB06
Fb-07	PID control selection	0100	Unit : feedback characteristic selection 0: Positive characteristic 1: negative characteristics Tens : closed-loop bypass hold output 0: Output is cleared when closed loop bypass 1: Output hold when closed loop bypass Hundreds: alignment selection 0: non-center aligned 1: center-aligned Thousands: Differential Adjustment Properties 0: Differentiate the deviation 1: Differentiate feedback	○	0xB07
Fb-08	PID preset output	100.0%	0.0~100.0%	●	0xB08

Fb-09	PID preset output running	0.0s	0.0~6500.0s	●	0xB09
Fb-10	PID control deviation limit	0.0%	0.0~100.0%	●	0xB0A
Fb-11	Proportional gain P1	0.100	0.000~8.000	●	0xB0B
Fb-12	Integration time I1	1.0s	0.0~600.0s	●	0xB0C
Fb-13	Differential time D1	0.000s	0.000~6.000s	●	0xB0D
Fb-14	Proportional gain P2	0.100	0.000~8.000	●	0xB0E
Fb-15	Integration time I2	1.0s	0.0~600.0s	●	0xB0F
Fb-16	Differential time D2	0.000s	0.000~6.000s	●	0xB10
Fb-17	PID Parameter switching condition	0	0: No switch 1: X terminal switching 2: switch based on deviation	●	0xB11
Fb-18	Low value of switching deviation	20.0%	0.0~100.0%	●	0xB12
Fb-19	High value of switching deviation	80.0%	0.0~100.0%	●	0xB13
Fb-21	Differential limit	5.0%	0.0~100.0%	●	0xB15
Fb-22	PID output upper limit	100.0%	0.0~100.0%	●	0xB16
Fb-23	PID output lower limit	0.0%	0.0~[Fb-22]	●	0xB17
Fb-24	PID output filter time	0.0s	0.000~6.000s	●	0xB18
Fb-25	Feedback wire break detection time	1.0s	0.0~120.0s	●	0xB19
Fb-26	Feedback wire break action selection	0	0: Continue without failure 1: Stop and report failure 2: keep running, output alarm 3: Run at current frequency and alarm	●	0xB1A
Fb-27	Wire break alarm upper limit	100.0%	0.0~100.0%	●	0xB1B
Fb-28	Wire break alarm lower limit	0.0%	0.0~100.0%	●	0xB1C
Fb-29	Dormancyselection	0	0:OFF 1:ON	●	0xB1D
Fb-30	Dormant frequency	30.00Hz	0.00~50.00Hz	●	0xB1E
Fb-31	Dormant delay time	3.0S	0.0~3600.0S	●	0xB1F
Fb-32	Wake-up bias	5.0%	0.0~50.0%	●	0xB20
Fb-33	Wake-up delay	0.0S	0.0~60.0S	●	0xB21

FC Multi-speed, PLC function parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
FC-00	Multi-speed frequency 1	10.00Hz	0.00~Max frequency	●	0xC00
FC-01	Multi-speed frequency 2	20.00Hz	0.00~Max frequency	●	0xC01
FC-02	Multi-speed frequency 3	30.00Hz	0.00~Max frequency	●	0xC02
FC-03	Multi-speed frequency 4	40.00Hz	0.00~Max frequency	●	0xC03
FC-04	Multi-speed frequency 5	50.00Hz	0.00~Max frequency	●	0xC04
FC-05	Multi-speed frequency 6	40.00Hz	0.00~Max frequency	●	0xC05
FC-06	Multi-speed frequency 7	30.00Hz	0.00~Max frequency	●	0xC06
FC-07	Multi-speed frequency 8	20.00Hz	0.00~Max frequency	●	0xC07
FC-08	Multi-speed frequency 9	10.00Hz	0.00~Max frequency	●	0xC08
FC-09	Multi-speed frequency 10	20.00Hz	0.00~Max frequency	●	0xC09
FC-10	Multi-speed frequency 11	30.00Hz	0.00~Max frequency	●	0xC0A
FC-11	Multi-speed frequency 12	40.00Hz	0.00~Max frequency	●	0xC0B

FC-12	Multi-speed frequency 13	50.00Hz	0.00～Max frequency	●	0xC0C
FC-13	Multi-speed frequency 14	40.00Hz	0.00～Max frequency	●	0xC0D
FC-14	Multi-speed frequency 15	30.00Hz	0.00～Max frequency	●	0xC0E
FC-15	Multi-speed frequency running mode selection	0000	Unit : cycle mode 0: Stop after single cycle 1: Continuous cycles 2: Keep final value after single cycle Tens : Time unit 0: second 1: minute 2:hour Hundreds: Power down memory 0: Not save 1: save Thousands: Start mode 0: Restart from the 1st stage 1: Restart from the stop stage 2: Continue running from the time when stop	●	0xC0F
FC-16	Multi-speed 1 running time	10.0	0.0～6500.0(s/m/h)	●	0xC10
FC-17	Multi-speed2running time	10.0	0.0～6500.0(s/m/h)	●	0xC11
FC-18	Multi-speed 3running time	10.0	0.0～6500.0(s/m/h)	●	0xC12
FC-19	Multi-speed4running time	10.0	0.0～6500.0(s/m/h)	●	0xC13
FC-20	Multi-speed5running time	10.0	0.0～6500.0(s/m/h)	●	0xC14
FC-21	Multi-speed6running time	10.0	0.0～6500.0(s/m/h)	●	0xC15
FC-22	Multi-speed7running time	10.0	0.0～6500.0(s/m/h)	●	0xC16
FC-23	Multi-speed 8running time	10.0	0.0～6500.0(s/m/h)	●	0xC17
FC-24	Multi-speed9running time	10.0	0.0～6500.0(s/m/h)	●	0xC18
FC-25	Multi-speed10running time	10.0	0.0～6500.0(s/m/h)	●	0xC19
FC-26	Multi-speed 11running time	10.0	0.0～6500.0(s/m/h)	●	0xC1A
FC-27	Multi-speed12running time	10.0	0.0～6500.0(s/m/h)	●	0xC1B
FC-28	Multi-speed 13running time	10.0	0.0～6500.0(s/m/h)	●	0xC1C
FC-29	Multi-speed14running time	10.0	0.0～6500.0(s/m/h)	●	0xC1D
FC-30	Multi-speed15running time	10.0	0.0～6500.0(s/m/h)	●	0xC1E
FC-31	Multi- speed frequency 1-15 direction and ACC/DEC time	0000	Unit : the running direction of this paragraph 0: forward1: reverse Tens : ACC / DEC time of this speed 0: acceleration / deceleration time 0 1: acceleration / deceleration time 1 2: acceleration / deceleration time 2 3: acceleration / deceleration time 3 Hundreds and thousands: Reserved	●	0xC1F
FC-32		0000		●	0xC20
FC-33		0000		●	0xC21
FC-34		0000		●	0xC22
FC-35		0000		●	0xC23
FC-36		0000		●	0xC24
FC-37		0000		●	0xC25
FC-38		0000		●	0xC26
FC-39		0000		●	0xC27
FC-40		0000		●	0xC28
FC-41		0000		●	0xC29
FC-42		0000		●	0xC2A
FC-43		0000		●	0xC2B
FC-44		0000		●	0xC2C
FC-45		0000		●	0xC2D

Fd Communication control function parameter group

NO.	Function description	Factory default	Range of settings and definition	Feature	Address
Fd-00	Master-slave machine selection	0	0: Slave machine1: Main machine	○	0xD00
Fd-01	485 communication address	1	1~247	○	0xD01
Fd-02	485 communication baud rate selection	3	0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 38400 bps	○	0xD02
Fd-03	Modbus data format	0	0: (N, 8, 1) 1: (E, 8, 1) 2: (O, 8, 1) 3: (N, 8, 2) 4: (E, 8, 2) 5: (O, 8, 2)	○	0xD03
Fd-04	Communication ratio setting	1.00	0.00~5.00	●	0xD04
Fd-05	Modbus communication answer delay	0ms	0~500ms	●	0xD05
Fd-06	Communication timeout failure time	1.0s	0.1~100.0s	●	0xD06
Fd-07	Modbus communication fault action mode selection	0	0: No detection 1: Alarm and free stop 2: Alarm and continue running 3: Forced stop	●	0xD07
Fd-08	Modbus Responds dispose	0	0: Have response1: No response	●	0xD08
Fd-09	Main machine sending selection	0031	Unit : the first group of transmission frame selection 0: Invalid 1: Main machine run command 2: Main machine given frequency 3: Main machine output frequency 4: Main machine upper limit frequency 5: Main machine given torque 6: Main machine output torque 7, 8: Reserved 9: Main machine given PID A: Main machine feedback PID Tens : the second group transmitting frame selection Hundreds : the third group transmitting frame selection Thousands : the fourth group transmitting frame selection same as above	●	0xD09
Fd-10	RS485 Communication port configuration	0	0: Modbus communication 1: serial port communication	●	0xD0A

4.3 Terminal input function selection

0: No function	1: FWD	2: REV	3: 3-line running(Xi)
4: FWD JOG	5: REV JOG	6: Free stop	7: Emergency stop
8: Fault reset	9: External Fault input	10: Frequency UP	11: Frequency DW
12: UP/DW clear	13: Channel A to Channel B	14: Frequency channel switched to A	15: Frequency channel switched to B

16: Multi-speed terminal 1	17: Multi-speed terminal2	18: Multi-speed terminal3	19: Multi-speed terminal4
20: PID control cancel	21: PID control pause	22: PID trait switch	23: PID gain switch
24: PID given switch 1	25: PID given switch2	26: PID given switch3	27: PID feedback switch1
28: PID feedback switch2	29: PID feedback switch3	30: PLC pause	31: PLC restart
32: ACC/DEC time selection terminal 1	33: ACC/DEC time selection terminal 2	34: ACC/DEC pause	35: Swing frequency input
36: Swing frequency pause	37: Swing frequency reset	38: Speed torque control switch	39:Run pause
40: Timer trigger terminal	41: Timer clear terminal	42: Counter input terminal	43: Counter clear terminal
44: DC braking command	45: Pre-excitation command terminal	46: Command channel switch to keyboard	47: Command channel switch to terminal
48: Command channel switch to RS485	49: Command channel switch to expansion card	50: Operation banned	51: FWD banned
52: REV banned	Reserved		

4.4 Terminal output function selection

0: No output	1: Inverter running	2: REV running	3: FWD running
4: Fault warning 1,enable output including fault reset auto period	5: Fault trip alarm 2(no alarm whenfault self-recovery)	6: External fault stop	7: External fault stop Under voltage
8: Ready for running	9: Output frequency level detection 1(FDT1)	10: Output frequency level detection 2(FDT2)	11: Reach given frequency
12: 0 speed running	13: Reach upper limit frequency	14: Reach lower frequency limit	15: Program run cycle completed
16: Program running segment completed	17: PID feedback exceeds upper limit	18: PID feedback under lower limit	19: PID feedback sensor wires break
20: Timer time arrived	21: Counter reaching max value	22: Counter reach set value	23: Braking
24: PG feedback wire break	25: Emergency stopping	26: Load pre-alarm output 1	27: Load pre-alarm output 2
28: RS485 given	Reserved		

4.5Monitoring code

Access 'C' parameter group by pressing 'PRG' for more than 2s; check the current state of inverter.

Function code number	Function name	Unit and definition	Address
C-00	Given frequency	0.01Hz	2100H
C-01	Output frequency	0.01Hz	2101H
C-02	Output current	0.1A	2102H
C-03	Bus voltage	0.1V	2103H
C-04	Output voltage	0.1V	2104H
C-05	Machine speed	1RPM	2105H
C-06	Input voltage	0.1V	2106H
C-07	Output power	0.1%	2107H
C-08	Given torque	0.1%	2108H
C-09	Output torque	0.1%	2109H
C-10	PID given value	0.1%	210AH
C-11	PID feedback value	0.1%	210BH
C-12	Module temperature 1	0.1℃	210CH
C-13	Module temperature 2	0.1℃	210DH
C-14	Input terminal X on state	See input terminaldiagram	210EH
C-15	Output terminal Y on state	See output terminaldiagram	210FH
C-16	Analog AI1 input value	0.001V	2110H
C-17	Analog AI2 input value	0.001V/0.001mA	2111H
C-18	Pulse input value of X5 port	0.001kHz	2112H
C-19	Analog output AO	0.01V	2113H
C-20	Analog output AO(extend)	0.01V/0.01mA/0.01kHz	2114H
C-21	Counting value of counter		2115H
C-22	Running time after power on	0.1h	2116H
C-23	Local accumulative running time	1h	2117H
C-24	Power factor angle	1°	2118H

Function code number	Function name	Unit and definition	Address
C-25	Inverter power level	kW	2119H
C-26	Inverter rated voltage	V	211AH
C-27	Inverter rated current	A	211BH
C-28	Software version		211CH
C-29	PG feedback frequency	0.01Hz	211DH

4.6 Fault code table

Communication code	Fault display	Fault name	Troubleshooting	Solution
1	E. SC	System abnormal	<ul style="list-style-type: none"> ● The acceleration time is set too short; ● The output of the inverter is short-circuited between phases or to ground; ● The module is damaged; ● Electromagnetic interference. 	<ul style="list-style-type: none"> ● Prolong the acceleration time appropriately; ● Check peripheral equipment and restart after troubleshooting; ● Seek technical support from manufacturers; ● Check the wiring, grounding, and shielding.
4	E.oC1	ACC over current	<ul style="list-style-type: none"> ● The acceleration time is set too short; ● Start the rotating motor; ● The capacity of the inverter is too small. 	<ul style="list-style-type: none"> ● Prolong the acceleration time appropriately; ● The motor stops or restarts after speed tracking; ● Use inverters with matching capacity levels
5	E.oC2	DEC over current	<ul style="list-style-type: none"> ● The deceleration time is set too short; ● Large potential energy load or load inertia; ● The capacity of the inverter is too small. 	<ul style="list-style-type: none"> ● Prolong the deceleration time appropriately; ● External braking resistor or braking unit; ● Select the inverter with matching capacity level.
6	E.oC3	Overcurrent at constant speed	<ul style="list-style-type: none"> ● Sudden load change; ● The grid voltage is low. 	<ul style="list-style-type: none"> ● Check the change of load and eliminate it; ● Check the input power and remove the fault.
7	E.oU1	ACC over voltage	<ul style="list-style-type: none"> ● Power supply voltage fluctuation exceeds the limit; ● Start the rotating motor. 	<ul style="list-style-type: none"> ● Detect the grid voltage and remove the fault; ● The motor stops or restarts after speed tracking;
8	E.oU2	DEC over voltage	<ul style="list-style-type: none"> ● The DEC time is set too short; ● Load potential energy or inertia is too large; ● The power supply voltage has exceeded the limit. 	<ul style="list-style-type: none"> ● Prolong the DEC time appropriately; ● Increase the capacity of the inverter or add a braking unit; ● Check the input power and remove the fault.
9	E.oU3	Overvoltage at constant speed	<ul style="list-style-type: none"> ● The power supply voltage has exceeded the limit. 	<ul style="list-style-type: none"> ● Check the input power and remove the fault.

10	E.LU2	Under voltage when running	<ul style="list-style-type: none"> ● The power supply voltage is too low; ● There is a large inrush current in the power grid; ● The internal DC main contactor is not closed. 	<ul style="list-style-type: none"> ● Check the input power and remove the fault; ● Improve the power supply system; ● Seek technical support from the manufacturer.
11	E.oL1	Motor overload	<ul style="list-style-type: none"> ● The grid voltage is low; ● Motor overload protection coefficient is not set properly; ● The motor is stalled or the load is too heavy; ● Low speed running. 	<ul style="list-style-type: none"> ● Check the input power; ● Use inverters with matching capacity levels; ● For long-term low-speed operation, select a dedicated motor. ● Speed regulation overload coefficient
12	E.oL2	Inverter overload	<ul style="list-style-type: none"> ● The load is too heavy ● The acceleration time is set too short; ● Start the rotating motor; 	<ul style="list-style-type: none"> ● Use inverters with matching capacity levels; ● Prolong the acceleration time appropriately; ● The motor stops or restarts after speed tracking;
13	E.ILF	Input phase loss	<ul style="list-style-type: none"> ● The input power is abnormal; ● The internal circuit is abnormal; 	<ul style="list-style-type: none"> ● Check the input power; ● Seek technical support from the manufacturer.
14	E.oLF	Output phase loss	<ul style="list-style-type: none"> ● The three-phase output of the inverter is lacking. 	<ul style="list-style-type: none"> ● Check the output voltage, current and motor wiring;
15	E.oH2	Rectifier overheat	<ul style="list-style-type: none"> ● The ambient temperature is too high; ● The air duct is blocked or the fan is abnormal; ● The temperature detection circuit is faulty. 	<ul style="list-style-type: none"> ● Make the operating environment of the inverter meet the specifications; ● Drain the air duct or replace the fan of the same model; ● Seek technical support from the manufacturer.
16	E.oH1	Inverter overheat	<ul style="list-style-type: none"> ● The ambient temperature is too high; ● The air duct is blocked or the fan is abnormal; ● The temperature detection circuit is faulty. 	<ul style="list-style-type: none"> ● Make the operating environment of the inverter meet the specifications; ● Drain the air duct or replace the fan of the same model; ● Seek technical support from the manufacturer.
17	E. EF	External fault	<ul style="list-style-type: none"> ● External equipment failure protection action. 	<ul style="list-style-type: none"> ● Check external equipment.
18	E.SE1	RS485 communication fault	<ul style="list-style-type: none"> ● The baud rate is set incorrectly; ● Communication connection is broken; ● The communication format does not match the host computer. 	<ul style="list-style-type: none"> ● Set the matching baud rate; ● Check communication connections; ● Set the matching communication format.
19	E.HAL	Current detection fault	<ul style="list-style-type: none"> ● Detection circuit failure; ● Motor phase imbalance. 	<ul style="list-style-type: none"> ● Seek technical support; ● Check the motor and wiring.

20	E.AT1	Motor static self-learning fault	<ul style="list-style-type: none"> ● Motor detection timeout; ● Start static detection while the motor is rotating; ● The difference between the capacity of the motor and the inverter is too large; ● The motor parameters are set incorrectly. 	<ul style="list-style-type: none"> ● Check the motor wiring; ● Test after the motor stops steady; ● Replace the inverter model; ● Reset according to the motor nameplate.
21	E.EEP	Storage fault	<ul style="list-style-type: none"> ● Electromagnetic interference during storage; ● EEPROM is damaged. 	<ul style="list-style-type: none"> ● Re-enter and save; ● Seek technical support from the manufacturer.
25	E.AT2	Motor dynamic self-learning fault	<ul style="list-style-type: none"> ● Start detection while the motor is rotating; ● Motor with load detection; ● Motor detection timeout; ● The difference between the capacity of the motor and the inverter is too large; ● The motor parameters are set incorrectly. 	<ul style="list-style-type: none"> ● Test after the motor stops steady; ● Disconnect the motor load and re-test; ● Check the motor wiring; ● Replace the inverter model; ● Reset according to the motor nameplate.
27	E. PG	PG card connection fault	<ul style="list-style-type: none"> ● PG card connect the inverter fault 	<ul style="list-style-type: none"> ● check the PG wiring
28	E.OU4	Over voltage at stop	<ul style="list-style-type: none"> ● The power supply voltage has exceeded the limit. 	<ul style="list-style-type: none"> ● Check the input power and remove the fault. ● Seek technical support from the manufacturer.
29	E.PID	PID feedback fault	<ul style="list-style-type: none"> ● PID feedback disconnect alarm upper limit ● PID feedback disconnection alarm lower limit ● The feedback sensor is faulty or badly wired 	<ul style="list-style-type: none"> ● Check the sensor status ● Correct wiring ● Confirm the setting values of Fb-27 and Fb-28
30	E.Rsv	Reserved	---	---
31	E.IAE	Learning fault of Initial position angle	<ul style="list-style-type: none"> ● The parameters set fault; ● Detection circuit fault; 	<ul style="list-style-type: none"> ● Replacement of inverter type; ● Reset according to motor nameplate. ● Seek technical support from the manufacturer.
32	E.DEV	Speed deviation excess	<ul style="list-style-type: none"> ● The Speed over the max frequency. ● Detection circuit fault; 	<ul style="list-style-type: none"> ● Change the Max frequency and Upper frequency. ● Seek technical support from the manufacturer.
33	E.SPD	Stall protection	<ul style="list-style-type: none"> ● Inverter over voltage; ● Detection circuit fault; 	<ul style="list-style-type: none"> ● Change the over voltage set. ● Seek technical support from the manufacturer.
34	E.LD1	Load protection ₁	<ul style="list-style-type: none"> ● The motor is stalled over the set value. ● Detection circuit fault; 	<ul style="list-style-type: none"> ● Change the set value. ● Seek technical support from the manufacturer.

35	E.LD2	Load protection 2	<ul style="list-style-type: none"> ● The motor is stalled over the set value. ● Detection circuit failure; 	<ul style="list-style-type: none"> ● Change the set value. ● Seek technical support from the manufacturer.
36	E.CPU	CPU over time	<ul style="list-style-type: none"> ● CPU calc over load. 	<ul style="list-style-type: none"> ● Seek technical support from the manufacturer.
37	E.LOC	CPU verification fault	<ul style="list-style-type: none"> ● CPU is Locked. 	<ul style="list-style-type: none"> ● Seek technical support from the manufacturer.
38	E.PST1	Synchronous motor out-of step	<ul style="list-style-type: none"> ● The motor is stalled or the load is too heavy; ● Detection circuit failure; 	<ul style="list-style-type: none"> ● Change the Power of inverter; ● Seek technical support from the manufacturer.

Alarm code table

Commu nication code	Alarm display	Alarm name	Communic ation code	Alarm display	Alarm name
64	A.LU1	Main Relay fault	70	A.DEF	Speed deviation excess alarm
66	A.PID	PID feedback wires brake alarm	71	A.SPD	Stall protection alarm
67	A.LD1	Load protection alarm 1	74	A.CE	RS485 Communication alarm
68	A.LD2	Load protection alarm 1	76	A.ILF	Input phase loss alarm
69	A.EEP	Storage alarm	77	A.OLF	Output phase loss alarm

Chapter 5 Regular Inspection and Maintenance

5.1 Inspection

Frequency inverter is composed by semi-conductive components, passive electronic component and motive component. All of these components have useful life. Even under normal working environment, some of the components cannot work after the life time. To avoid malfunction, daily checking, periodic overhaul, component changing and other maintenance should be carried out to prevent.

●Daily checking:To avoid machine damage and to prolong life time, please check the following items every day.

Check item	Check content	Standard of criterion
Input and output voltage	Check whether the power supply voltage meets the requirements and whether there is phase failure	Refer to the requirements of the name plate
Operating environment	Confirm whether the installation environment meets the requirements	Identify the source and deal with it properly
Cooling system	Working condition of cooling fan of frequency converter	There is no dirt and debris blocking the air duct
Motor	Check if there is abnormal vibration or noise	Whether there is abnormal heating, abnormal noise and vibration
Load condition	Whether the output current of frequency converter is higher than the rated value of motor or frequency converter and lasts for a certain time	Confirm whether there is overload and whether the inverter selection is correct

●Periodic inspection: According to the operating environment and working conditions, the frequency converter shall be inspected regularly every 3-6 months.

Check item	Check content	Strategy adopted
Motor	<ul style="list-style-type: none"> ● Insulation resistance inspection; ● Check if there is abnormal vibration or noise. 	<ul style="list-style-type: none"> ● Tighten machine and electric connection and lubricate the machine components.
Electric connection	<ul style="list-style-type: none"> ● Whether there is any discoloration of the wires and connection parts, whether the insulation layer is damaged, cracked, discolored, and aged; ● Whether the connection terminals are worn, damaged, or loose; 	<ul style="list-style-type: none"> ● Replace damaged wires; ● Tighten loose terminals and replace damaged terminals; ● Measure the ground resistance and tighten the corresponding ground terminal.
Mechanical connection	<ul style="list-style-type: none"> ● Whether there is abnormal vibration and noise, and whether there is loosening. 	<ul style="list-style-type: none"> ● Tighten, lubricate, and replace defective parts.
semi-conductive component	<ul style="list-style-type: none"> ● Whether it is stained with garbage and dust; ● Whether there is a noticeable change in appearance. 	<ul style="list-style-type: none"> ● Clean operating environment; ● Replace damaged parts.
Electrolytic capacitor	<ul style="list-style-type: none"> ● Check for leaks, discoloration, cracks, and exposed, swollen, cracked, or leaking safety valves. 	<ul style="list-style-type: none"> ● Replace damaged parts.

Check item	Check content	Strategy adopted
PCB	<ul style="list-style-type: none"> ● Check if there is any odor, discoloration, severe rust, and whether the connector is correct and reliable. 	<ul style="list-style-type: none"> ● Fastening connection ● Clean the printed circuit board; ● Replace damaged printed circuit boards;
Cooling system	<ul style="list-style-type: none"> ● Whether the cooling fan is damaged or blocked; ● Whether the heat sink is stained with garbage, dust, or dirt; ● Whether the air intake or exhaust is blocked or contaminated with foreign objects. 	<ul style="list-style-type: none"> ● Clean operating environment; ● Replace damaged parts.
Keyboard	<ul style="list-style-type: none"> ● Whether it is damaged. Check whether display is complete. 	<ul style="list-style-type: none"> ● Change damaged component

Attention:

Do not perform related operations with the power on, otherwise there is a danger of death due to electric shock. When carrying out related work, please cut off the power and confirm that the DC voltage of the main circuit has dropped to a safe level. Wait 5 minutes before carrying out related work.

- Component replacement: Different kinds of parts have different service life. The service life of parts is closely related to the service environment and maintenance condition. Cooling fan and electrolytic capacitor are vulnerable parts. Carry out daily inspection according to the table below. If there is any abnormality, please replace it in time.

Part name	life cycle	Cause of damage
Fan	2~3 years	Bearing wear and blade aging
Electrolytic capacitor	4~5 years	The environment temperature is high and the electrolyte volatilizes

The replacement of other components requires very strict maintenance technology and product familiarity, and after replacement, it must be strictly tested before it can be used. Therefore, it is not recommended that users replace other internal components by themselves. If it really needs to be replaced, please contact the agent where you purchased the product or our sales department.

5.2 Product storage

After purchasing the frequency converter, the temporary storage and long-term storage must pay attention to:

- When storing, try to put them into the packing box of our company according to the original package;
- The long-term storage will lead to the deterioration of the electrolytic capacitor. It must be ensured that the electrolytic capacitor is powered on once within 2 years for at least 5 hours, and the input voltage must be slowly raised to the rated value with a voltage regulator.

Appendix1:Modbus Communication Protocol

● Communication Frame Structure

Communication data format is as follows:The byte composition: Including initiation bit, 8 data bit, check bit and stop bit.

Initiation Bit	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8	Check bit	Stop bit
----------------	------	------	------	------	------	------	------	------	-----------	----------

One frame message must be transmitted as a continued data flow, and if there is a interval over 1.5 byte before ending, the receiving equipment will clear the half-baked information. And the next byte will be considered as the address field of a new frame. Similarly, if the interval between a new frame start-up and the former frame is smaller than 3.5 byte time, the receiving equipment will consider that it is the continuation of former one frame. Since the jumbled frame, the final CRC checking value is incorrect, which would lead to the communication mistake.

● Communication command and examples

Read command: 03H,Read N words.Up to 20 words read in succession.

Example: The slave machine address is 01H,read 3 successive words of start address 2100H(C-00), The structure of the frame is described as follows:

RTU Main machine command		RTU slave machine return message(normal)		RTU slave machine return message(abnormal)	
START	3.5 bytes	START	3.5 bytes	START	3.5 bytes
Slave address	01H	Slave address	01H	Slave address	01H
Command code	03H	Command code	03H	Command code	83H
start address high bits	21H	Return data numbers	06H	error code	04H
start address low bits	00H	high bit of 2100H	13H	CRC CHK low bits	40H
Data numbers high bits	00H	low bit of 2100H	88H	CRC CHK high bits	F3H
Data numbers low bits	03H	high bit of 2101H	00H	END	3.5 bytes
CRC CHK low bits	0FH	low bit of 2101H	00H		
CRC CHK high bits	F7H	high bit of 2102H	00H		
END	3.5 bytes	low bit of 2102H	00H		
		CRC CHK low bits	90H		
		CRC CHK high bits	A6H		
		END	3.5 bytes		

Write command: 06H, Write a word data to the specified data address, this command can change the parameter of inverter.

Example: Write 5000(1388 H) to the address 3000 H of the slave controller. The structure of the frame is described as follows:

RTU Main machine command		RTU slave machine return message(normal)		RTU slave machine return message(abnormal)	
START	3.5 bytes	START	3.5 bytes	START	3.5 bytes
Slave address	01H	Slave address	01H	Slave address	01H
Command code	06H	Command code	06H	Command code	86H
start address high bits	30H	Data address high bits	30H	Fault code	01H
start address low bits	00H	Data address low bits	00H	CRC CHK low bits	83H
Data high bits	13H	Data high bits	13H	CRC CHK high bits	A0H
Data low bits	88H	Data low bits	88H	END	3.5 bytes

CRC CHK low bits	8BH	CRC CHK low bits	8BH		
CRC CHK high bits	9CH	CRC CHK high bits	9CH		
END	3.5 bytes	END	3.5 bytes		

● **Communication Control Parameter Group Address Specification:**

Function Specification	Address	Data Meaning Specification			R/W
Communication Given Frequency	0x3000 or 0x2000	0~60,000 is corresponding to 0.00Hz~600.00Hz			W/R
Communication Command Setting	0x3001 or 0x2001	0000H: No order 0001H: FWD running 0002H: REV running 0003H: FWD jog 0004H: REV jog	0005H: DEC stop 0006H: free stop 0007H: Fault reset 0008H: Running banned command 0009H: Running allowed command		W/R
State of Inverter	0x3002 or 0x2002	Bit0	0: stop	1: running	R
		Bit1	0: non-acc state	1: ACC	
		Bit2	0: non-dec state	1: DEC	
		Bit3	0: Forward	1: REV	
		Bit4	0: normal	1: fault	
Frequency Inverter Fault Code	0x3003 or 0x2003	current inverter fault code(refer to fault code table)			R
Communication Given Upper Frequency	0x3004 or 0x2004	0~32000 is corresponding to 0.00Hz~320.00Hz			W/R
Communication Torque Setting	0x3005 or 0x2005	0~1000 is corresponding to 0.0~100.0%			W/R
The FWD Max Frequency limit in Torque Control	0x3006 or 0x2006	0~1000 is corresponding to 0.0~100.0%			W/R
The REV Max Frequency limit in Torque Control	0x3007 or 0x2007	0~1000 is corresponding to 0.0~100.0%			W/R
Communication Given PID Setting	0x3008 or 0x2008	0~1000 is corresponding to 0.0~100.0%			W/R
Communication Given PID Feedback	0x3009 or 0x2009	0~1000 is corresponding to 0.0~100.0%			W/R
AO output	0x3021 or 0x2021	0-10000 corresponds output 0-10V, 0-20mA			R

Note: The other function code addresses refer to “Communication Address “of function code table. While using writing command (06 H), if the highest digit of parameter function code address domain is 0, it only write in the RAM of inverter, and on storage when power off; if the high half digit of parameter function code address is 1, it write in EEPROM, which means power off storage. For instance, F0 parameter group: 0X00XX (RAM); 0X10XX (EEPROM)

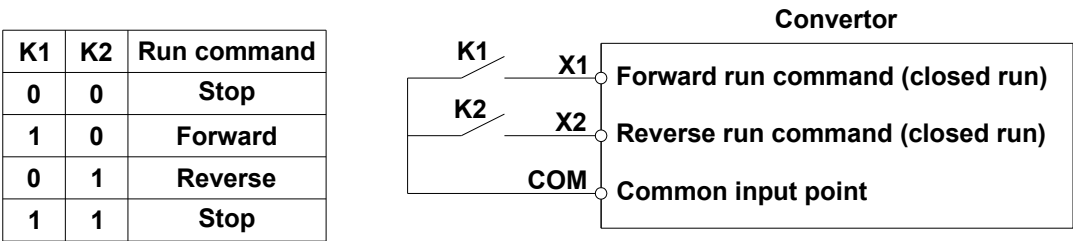
● **List of fault code meanings for abnormal response information from slave machine:**

Fault Code	Meanings	Fault Code	Meanings
1	Order code fault	7	Reserved
3	CRC checking fault	8	Inverter busy(EEPROM is storing)
4	Illegal address	9	Value over limit
5	Illegal data	10	Reserved parameters can't be modify
6	Unable to modify when running	11	Number of Bytes wrong when reading

Appendix 2:terminal connection mode

0: Two wire control 1

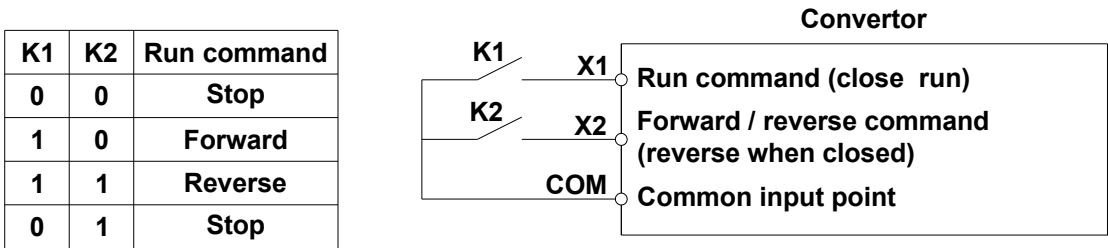
Operation and direction are integrated. This mode is the most commonly used two-wire mode. The factory default is X1 (forward running) and X2 (reverse running) terminal commands to determine the forward and reverse operation of the motor. As shown in the figure below:



Schematic diagram of two-wire control 1

1: Two wire control2

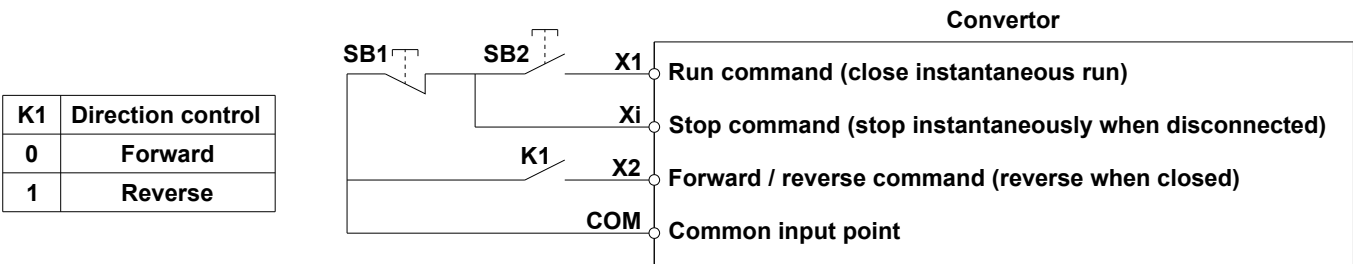
Operation is separated from direction. When using this mode, the forward running Terminal X1 (forward running) defined is the operation enabling terminal. The definition of the direction is determined by the state of the reverse operation terminal X2 (reverse operation). As shown in the figure below:



Schematic diagram of two-wire control 2

2: Three wire control1

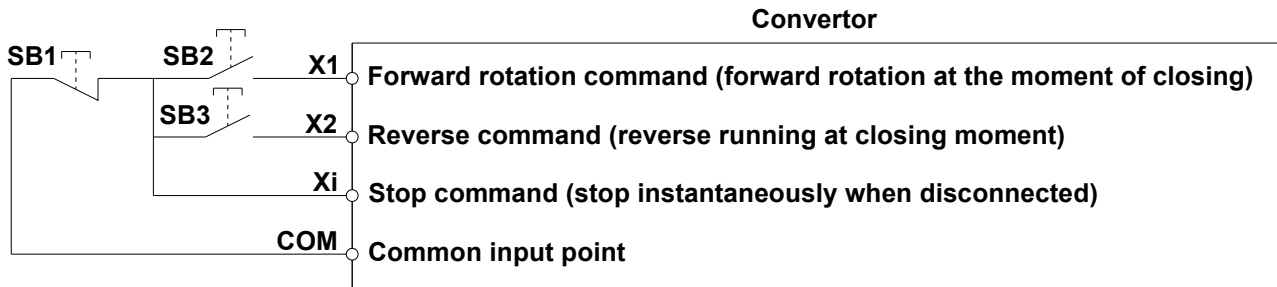
In this mode, the three wire operation control terminal (XI) is the stop operation terminal, the operation command is generated by the forward rotation operation terminal X1 (forward rotation operation), and the direction is controlled by the reverse operation terminal X2 (reverse operation). The three wire operation control terminal (XI) is the effectiveinput.



Schematic diagram of three-wire control 1

3: Three wire control2

In this mode, in three wire system, the operation control terminal (Xi) is the stop operation terminal, and the operation command is generated by the forward rotation operation terminal X1 (forward rotation operation) or the reverse operation terminal X2 (reverse operation), and both control the operation direction at the same time.



Schematic diagram of three-wire control 2

Tips:

SB1: stop button; SB2: forward rotation operation button; SB3: reverse operation button; Xi is the multi-function input terminal set as "3" [three wire operation control (Xi)].

Appendix 3: Brake Resistance selection

3-phase 380 v voltage rating			
Motor power	Resistance value	Resistance power	Brake ratio
0.75KW	750 Ω	150W	100%
1.5KW	400 Ω	300W	100%
2.2KW	250 Ω	400W	100%
3.7KW	150 Ω	500W	100%
5.5KW	100 Ω	600W	100%
7.5KW	75 Ω	780W	100%
11KW	50 Ω	1.2KW	100%
15KW	40 Ω	1.5KW	100%
18.5KW	32 Ω	2KW	100%
22KW	32 Ω	2KW	100%
30KW	24 Ω	3KW	100%
37KW	20 Ω	3.7KW	100%
45KW	16 Ω	4.5KW	100%
55KW	13 Ω	5.5KW	100%
75KW	9 Ω	7.5KW	100%
90KW	6.8 Ω	9.3KW	100%
110KW	6.2 Ω	11KW	100%
132KW	4.7 Ω	13KW	100%
160KW	3.9 Ω	15KW	100%
185KW	3.3 Ω	17KW	100%
200KW	3 Ω	18.5KW	100%
220KW	2.7 Ω	20KW	100%
250KW	2.4 Ω	22.5KW	100%
280KW	2 Ω	25.5KW	100%
315KW	1.8 Ω	30KW	100%
355KW	1.5 Ω	33KW	100%
400KW	1.2 Ω	42KW	100%
450KW	1.2 Ω	42KW	100%
500KW	1 Ω	42KW	100%
560KW	1 Ω	50KW	100%