

# VEICHI

# Manual

## AC80T Tower Crane Purpose VFD

## VEICHI

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# Chapter 1 Overview





Thanks for using AC80T high-performance VC frequency inverter produced by Veichi Electric Co., Ltd. This manual tells you how to use it perfectly. Please read this manual carefully and fully understand the safety requirement and cautions before use (installation, wiring, operation, maintain, checking, and etc...).

## 1.1 Safety requirements and cautions

Pls do totally understand this part before using the inverter.

### Warning signs and meanings

This manual has used belowing signs that mean there is an important part of security. While observing against the rules, there is danger of injury even death or machine system damage.

	<b>Danger:</b> Wrong operation may cause death or large accident.
	<b>Warning:</b> Wrong operation may cause death or large accident.
	<b>Caution:</b> Wrong operation may cause minor wound.
	<b>Important:</b> Wrong operation may cause the inverter and other machine system damage


### Operation requirement



Only Professional trained person are allowed to operate the equipment such as installation, wiring, running, maintain and etc. "Professional trained person" in this manual means the workers on this product must experience professional skill train, must be familiar with installation, wiring, running and maintain and can rightly deal with emergency cases in use.

### Safety guidance



Safety regulations and warning signs come for your security. They are measures to prevent the operator and machine system from damage. Pls carefully read this manual before using and strictly observe the regulations and warning signs while operating. Safety regulations and warning signs are classified into: routine regulation, transport and store regulation, installation and wiring regulation, running regulation, maintenance regulation, dismantlement and disposal regulation.

#### • Routine regulation


	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Only qualified personnels are allowed to operate the equipment.this product. Before using, the operator must be familiar with all safety specifications and operation regulatons in this manual. Safe and stable work of the product is based on right operation and maintenance.</li> <li>• Do not wire while the power is conneted. Otherwise, there is danger of death for electric shock. Before wiring, inspection, maintenance, please cut power</li> </ul>
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	supply of all related equipments and ensure mains DC voltage in safe range. And please operate it after 5 mins.
	<ul style="list-style-type: none"> <li>• Away from children and public.</li> <li>• 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.</li> <li>• Unauthorized alteration or use of accessories which are not sold or recommended by the maker may cause faults.</li> </ul>
	<ul style="list-style-type: none"> <li>• Please make sure this manual is in the final user's hand before using.</li> <li>• Before installation and debugging pls carefully read and totally understand these safety regulation and warning signs.</li> </ul>


#### • Transport and store regulation

	<ul style="list-style-type: none"> <li>• Correct transport, store, installation and careful operation and maintenance are important for inverter safe operation.</li> </ul>
	<ul style="list-style-type: none"> <li>• 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.</li> </ul>


#### • Installation and wiring regulation

	<ul style="list-style-type: none"> <li>• Only professional trained person can operate it.</li> <li>• Power wire, motor wire and control wire should be all connected firmly. Earth must be reliable and earth resistance must be lower than 10Ω.</li> <li>• Before opening the inverter, please disconnect all related equipment power supply and make sure the mains DC voltage is in safe range and operate after 5mins.</li> <li>• Human body electrostatic will damage inner sensitive components seriously. Before operation, please follow ESD measures. Otherwise, there is danger of inverter damage.</li> <li>• 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.</li> <li>• 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).</li> </ul>
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#### • Run regulation

	<ul style="list-style-type: none"> <li>• Inverter runs at high voltage. So dangerous voltage is in some components inevitably.</li> <li>• No matter where the fault is, there is danger of serious accident, even human body injury what means dangerous malfunction possibility. So there must be additional external prevent measures or other safety devices, such as independent current limiting switch, machinery fense and so on.</li> <li>• In order to guarantee the right action of the motor's overload protection, the input parameters of motor to the inverter must be must be in full compliance with the actual used motor.</li> </ul>
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### • Maintenance regulation

	<ul style="list-style-type: none"> <li>• Only Shenzhen Veichi Electric co., ltd service department or its authorized service center or professional person trained and authorized by Veichi can maintain the products. They should be very familiar with the safety warning and operation gist in this manual.</li> <li>• Any defective components must be changed in time.</li> <li>• Before opening the inverter to repair please cut power supply of all related equipments and ensure mains DC voltage in safe range. And please do operation after 5 mins.</li> </ul>
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### • Dismantlement and disposal regulation

	<ul style="list-style-type: none"> <li>• Packing case can be reused. Please keep them and reuse or send back to maker.</li> <li>• Dismantled metal components are retractable and can be reused.</li> <li>• Some components such as electrolytic capacitor are harmful to environment. Please dispose according to environmental protection departments.</li> </ul>
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## 1.2 Technical Specification

	Items	Description
Power Input	Voltage, frequency	Three phase 380V 50/60Hz
	Allowable fluctuations	Voltage: 320V~440V; voltage unbalance rate: <3%; Frequency: $\pm 5\%$ ; distortion rate: confirm to IEC61800-2.
	Power factor	$\geq 0.94$ (with DC reactor)
	Efficiency	$\geq 96\%$
Output	Output voltage	3 phase, 0~input voltage, tolerance less than 5%, in standard
	Output frequency	0-320Hz
	Output frequency accuracy	$\pm 0.5\%$ of maximum frequency
	Overload tolerance	150% rated current: 1min, 180% rated current: 10s, 200% rated current: 0.5s
Key Control Performance	Carrier frequency	0.6~15.0kHz
	Steady speed control accuracy	VC without PG: $\leq 1\%$ rated synchronized speed
	Starting torque	Flux VC without PG: 180% rated torque at 0.5Hz
	Frequency accuracy	Digital input: maximum $\times \pm 0.01\%$ Analog input: maximum $\times \pm 0.2\%$
	Frequency resolution	Digital input: 0.01Hz Analog input: maximum $\times 0.05\%$
Basic Functions	DC braking	Starting frequency: 0.00~60.00Hz Braking time: 0.0~60.0s Braking current: 0.0~150.0% rated current

	ACC/ DEC curve	Two modes: line ACC/ DEC, S curve ACC/ DEC.; Four sets ACC/ DEC, time unit: 0.01s, maximum: 650.00s.	
	AVR (Auto Voltage Regulation)	Auto voltage regulation for keeping output voltage stable when grid voltage fluctuation.	
	Auto current limit	Auto current limit during running mode to avoid trip occurs frequently.	
	Momentary power loss with no stop running function	Achieve continuous running through bus voltage control, when momentary power loss.	
	Frequency setting methods	Keypad digital setting, potentiometer of keypad, analog voltage terminal VS1, analog voltage terminal VS2, analog current terminal AS, communication given and multiple terminal, main and auxiliary composition setting.	
	Feedback input channel	Voltage terminal VS1, VS2, current terminal AS, communication given and pulse input PUL.	
	Running command channel	Keypad given, external terminal given, communication given.	
	Input command signal	Start, stop, FEW/REV, JOG, multiple speed, free stop, reset, ACC/ DEC. Time selection, frequency setting channel selection, external fault alarm.	
External output signal	1 relay output, 2 collector output, 0~10V output, 4~20mA output, frequency pulse output.		
Protection function		Overvoltage, undervoltage, current limit, overcurrent, overload, electric thermal relay, overheat, overvoltage stall, data protection.	
Keyboard display	LED display	Double line 4 digital tube display	Can monitor the status of 2 VFD.
	Parameter copy	Upload & download parameter code of inverter to achieve easy & fast parameter copy.	
	Monitor function	Output frequency, given frequency, output current, input voltage, output voltage, motor speed, PID feedback value, PID given value, module temperature, input/output terminal status.	
	Alarm	Overvoltage, undervoltage, overcurrent, short circuit, phase loss, overload, overheat, overvoltage stall, current limit, parameter lock damage; Fault running state at present; Fault history.	
Environment	Installation site	Indoor, altitude $\leq 1000\text{m}$ , no corrosive gases and direct sunshine	
	Temperature, humidity	-10 ~ +40℃ (wall-mounted type) 20%~90%RH (no condensation)	
	Vibration	$\leq 0.5\text{g}$ under 20Hz	
	Store temperature	-25~+65℃	
	Installation type	Wall-mounted type	
	Protection degress	IP20	
	Cooling method	Forced air-cooling	

## 1.3 Product Features

- **Tower crane lifting purpose frequency inverter: high working efficiency, fast response, good speed performance, smooth operation, no impact and high safety factor.**
  1. Stall protection function (closed-loop mode)
 

When the actual speed exceeds 115% of the rated speed, the frequency inverter sends brake signal to realize emergency braking.
  2. Anti-slip hook protection
 

In closed-loop mode, when the frequency inverter is power on in the standby mode, activate the function immediately if the motor rotation is detected at this time. Frequency inverter, locked to zero speed output, has provided the greatest safeguard for the system safe movement.
  3. Light load automatic speed up function (weak magnetic speed)
 

Automatic high-speed lifting when tower crane is under light load (below 30% of rated load) or empty hook, greatly improves the work efficiency.
  4. Special logic brake control function
 

Through the brake frequency, release current, brake release time, brake closing time, to achieve special logic brake control, to ensure system safety and reliability.
- **Tower crane slewing purpose frequency inverter: strong load capacity, smooth start without shaking, fast and efficient in-place, more reliable performance.**
  1. One-way PWM pulse output signal provided to the eddy current controller, so that the arm is smooth and reliable without shaking when braking.
  2. Built-in anti-swing function: easy hook, effectively improves working efficiency.
  3. Strong jog, stable arm without shaking, high-speed shutdown, accurate in place.
- **Tower crane luffing purpose frequency inverter: high efficiency, smooth running, good speed performance, accurate positioning, reliable performance.**

Built-in anti-swing function: by adjusting the speed and dynamic adjustment in acceleration and deceleration time to limit objects' swing.
- **The braking unit of traditional frequency inverter has no short-circuit protection while Veichi tower crane purpose frequency inverter has built-in braking unit with braking resistor short-circuit protection.**
- **Special GPS/GPRS communication port.**

GPS/GPRS communication port for satellite positioning and remote monitoring (construction machinery information management platform). Remote lock and unlock function, easy for installment customer management (with special GPS module).

## Chapter 2 Before Use

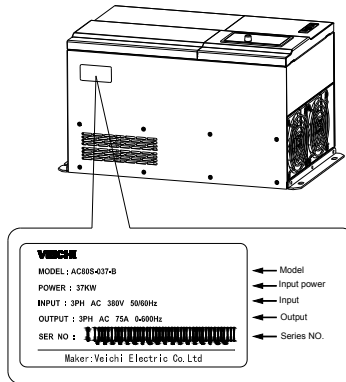
### 2.1 Purchase inspection

When you receive the product, please check if there is any damage on the outer packing before you open it. If the package is ok, pls open it and check the inverter. Note: any damage caused in transport will not be duty of our company, but pls contact us and the transport company immediately.

After checking the product, pls also check if the model is the one you ordered. The model of the product is on the nameplate "MODEL" column. If the model is not in accordance with your need, please contact the agent of the sales department in our company.

### 2.2 Nameplate

#### Nameplate position and content



#### Model explanation

# AC80T - 037 Q

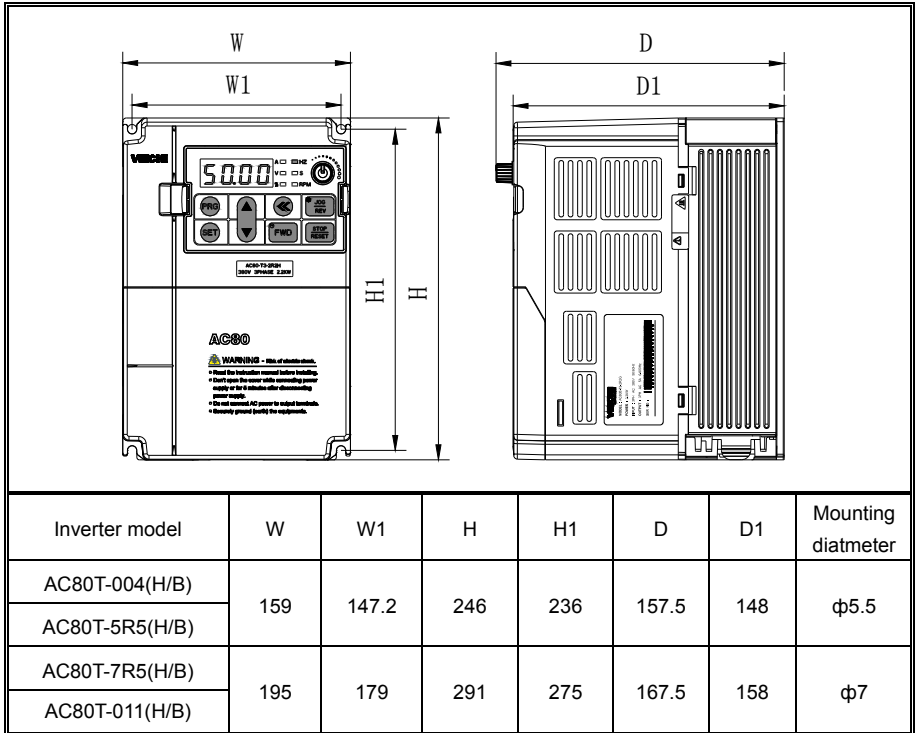
AC80T series					
Tower crane special purpose driver					
Code name	Power	Code name	Inverter type	Q	Lifting
030	30KW			H	Slewing
037	37KW			B	Luffing
045	45KW				
055	55KW				
075	75KW				

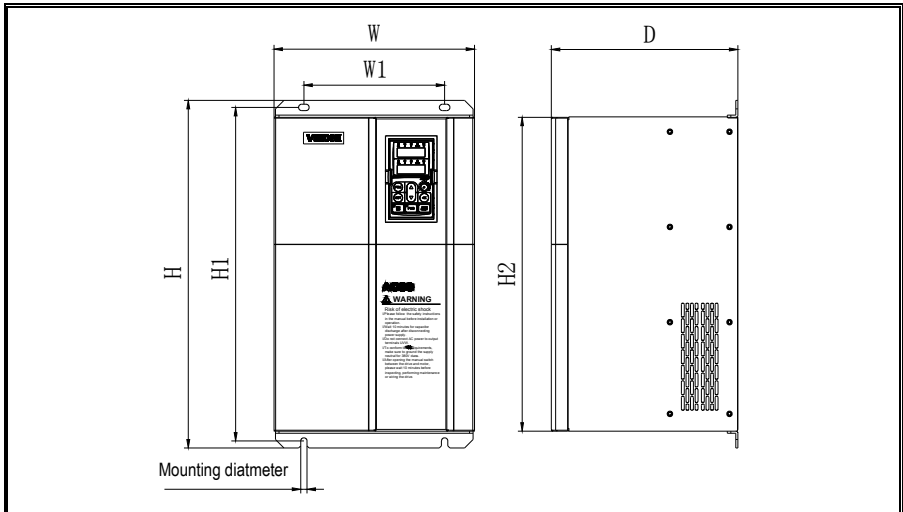
## 2.3 Model and rated output current

Model	Adaptive motor power	Rated input voltage	Rated current
AC80T-O04(H/B)	4KW	3PH 380VAC	10A
AC80T-5R5(H/B)	5.5KW		13A
AC80T-7R5(H/B)	7.5KW		17A
AC80T-011(H/B)	11KW		25A
AC80T-015(H/B)	15KW		32A
AC80T-018(Q/H/B)	18KW		38A
AC80T-022Q	22KW		45A
AC80T-O30Q	30KW		60A
AC80T-O37Q	37KW		75A
AC80T-O45Q	45KW		90A
AC80T-O55Q	55KW		120A
AC80T-O75Q	75KW		150A
AC80T-O90Q	90KW		180A
AC80T-110Q	110KW		210A
AC80T-132Q	132KW		250A
AC80T-160Q	160KW		310A



## 2.4 Dimension








Inverter model	W	W1	H	H1	H2	D	Mounting diameter
AC80T-015(H/B)	255	160	434	418	390	224	φ7
AC80T-018(Q/H/B)							
AC80T-022Q	285	200	493	473	445	265	φ9
AC80T-030Q							
AC80T-037Q							
AC80T-045Q	375	200	620	597	567	286	φ11
AC80T-055Q							
AC80T-075Q							

## 2.5 Electrical installation

This section is to ensure the safe use of this product, maximize give play to the performance of inverter, the reliable running of inverter, the users must comply with the below considerations and requirements.

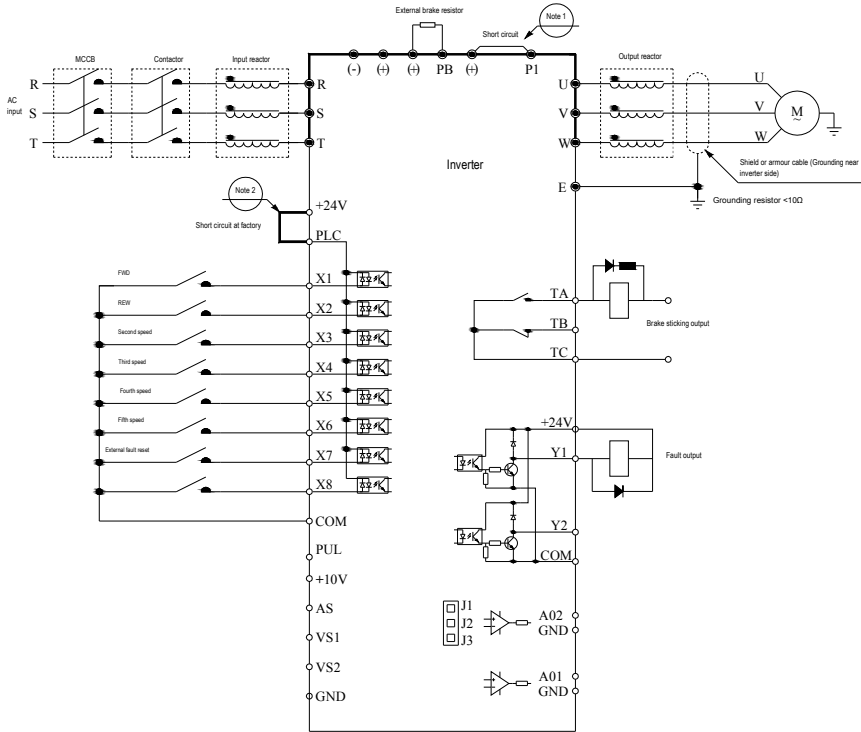
### Safety Precautions

	<ul style="list-style-type: none"> <li>• In the operation, inverter must be reliable ground connection, otherwise it may cause personal injury and equipment working failed.</li> <li>• To insure the safety running of inverter, installation and wiring must be done by professional electrical engineering personnel only.</li> <li>• Do the relevant operation only under the state of power off, otherwise there is the risk of electric shock and death.</li> <li>• Before doing the relevant operation, pls power-off all the related equipments, and confirm that the major loop DC voltage has fallen to safe level. After that, pls wait for 5mins and then continue the relevant operation.</li> </ul>
	<ul style="list-style-type: none"> <li>• The inverter's control cable, power cable and the connecting cable of the motor must be isolated to each other, do not put them all in the same cable slot or on the cable rack.</li> <li>• This equipment can only be used in the application which prescribed by the manufacturer. If you need to use it in other special purpose, please consult the sales department of our company.</li> </ul>
	<ul style="list-style-type: none"> <li>• Testing the insulation of inverter and its connecting wires by the high voltage insulation test equipment is forbidden.</li> <li>• When doing the insulation test to the inverter and its peripherals (filter, reactor, etc.), please first use the 500V megohmmeter to measure its insulation resistance to earth, the insulation resistance is not less than 4MΩ</li> </ul>

#### Special considerations for field installation and debugging:

**When the GPS remote control is locked, the inverter will show "LIFE" default, cannot be reset, but can run 10Hz at low speed.**

## 2.6 Standard connecting diagram



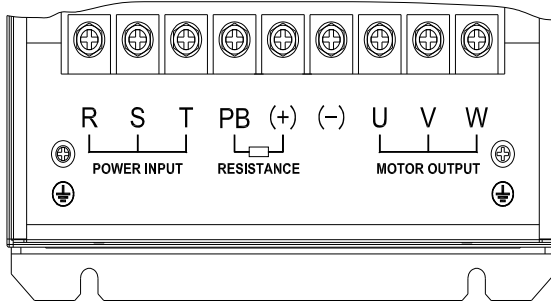
### Precautions:

1. Multi-functional input terminal (X1~X8) can choose NPN or PNP transistor signal as the input, the bias voltage can choose the inverter internal power supply (+24V terminal) or external power supply (PLC terminal), factory value "+24V" and "PLC" are short connected.
2. Analog monitoring output is for the specialized output of frequency meter, ammeter, voltmeter, etc. Cannot be used for the control operations, like feedback control.
3. Due to the variety of pulse type in the actual use, the specific connecting mode should refer to the detailed description.

## 2.7 Main circuit terminal

- The permutation and definition of main circuit terminal

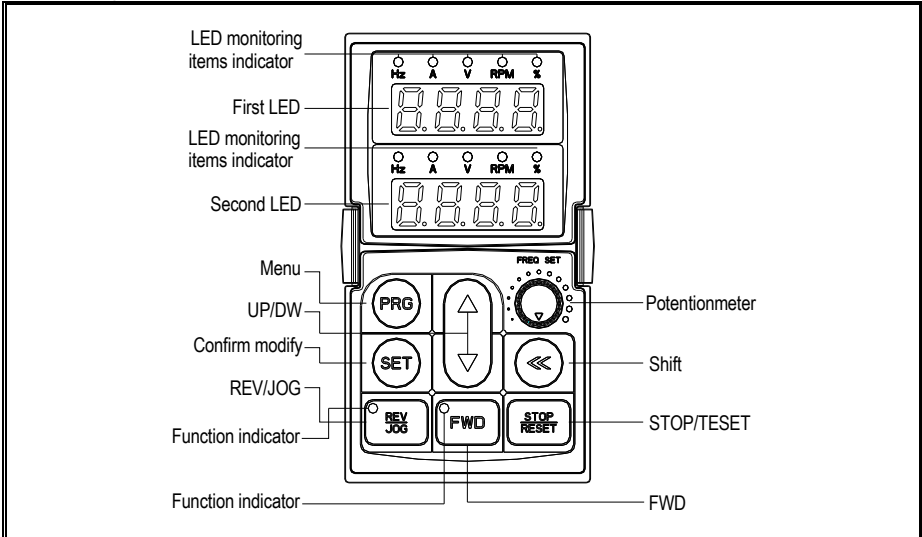
The displaying order of Power main circuit terminal:










Terminal	Terminal Name	Terminal Function Definition
(-)	DC power supply	(-) as DC bus negative pole
(+)	Braking resistor terminal	Used for external braking resistor, achieve to rapid downtime. (+) as DC bus positive pole.
PB		
R	Inverter input terminal	Used for connecting 3PH AC power supply.
S		
T		
U	Inverter output terminal	Used for connecting motor.
V		
W		
⊕	Ground connection	Ground terminal, ground resistance <math><10\Omega</math>
E		

## Chapter 3 Keyboard and Operation

### 3.1 Keyboard appearance and function



Key	Name	Function
	Menu key	Enter menu while standby or running, Press this key to return while modify parameter. While standby or running, press for 1 sec to enter condition monitoring interface.
	Confirm/modify key	Press to modify parameter while in menu interface. Press again to confirm after modifying. While standby or running, press to change LED monitoring items at stop.
	Up/down key	Select parameter group in menu interface. Modify parameter while in modify interface.(If need set the given frequency or torque by keyboard, pls set parameter F4.03 )
	Shift key	Used for select the function no.( changed by up/down key) when in menu interface. Used for select the parameter no.(changed by up/down key) when in modify parameter interface.
	Forward run key	While run/stop is controlled by keyboard, press this key, inverter forward rotate and the indicator is always on. While reverse, the indicator sparks.

	Jog/reverse key	This key function can be defined by parameter F4.01. Press it, machine reverse and indicator is off if this key is defined as REVERSE. Machine will Jog-indicator on if defined as JOG.
	Stop/reset key	Machine stop if press it while run/stop is controlled by key board. Its efficiency range is defined via function no.F4.02. Inverter reset if press it in fault state (no set if fault is not solved)

### 3.2 Indicator light meanings

Name		State	Meaning
Unit indicator light	Hz	Spark	Digital display the given frequency.
	Hz	On	Digital display the output frequency.
	A	On	Digital display the actual output current.
	V	On	Digital display the input voltage.
	V	Spark	Digital display the output voltage.
	S	On	Time unit is second.
	S	Spark	Time unit is ms,min,or h.
	RPM	On	Digital display motor speed.
State indicator light	FWD	On	Inverter running in FORWARD
	FWD	Spark	Inverter running in REVERSE
	FWD	Off	Inverter stops.
Function indicator light	REV/JOG	On	JOG.
	REV/JOG	Off	Reverse.

## Chapter 4 Function Parameter Table

“●”: Means that the parameter can be revised during frequency inverter in a running state;

“○”: Means that the parameter can not be revised when in a running state

“×”: Means that the parameter can be read but not revised;

“—”: Means that the parameter is “manufacturer parameter” and only set by the manufacturer;

### Basic parameter

No.	Function description	Range of setting and definition	Factory default	Property
F0.00	Control mode	1: VC without PG 1 2: VC with PG 1	1	○
F0.01	Application type	0: Hositing mechanism 1: Slewing mechanism 2: Trolley travelling mechanism	0	○
F0.02	Run command channel	0: Keyboard control 1: Terminal control 2: RS485 communication control	1	○
F0.03	Frequency given main channel selection	0: Keyboard no. given 6:RS485communication port given	0	○
F0.04	Main channel gain	0.00~5.000	1.000	○
F0.05	Frequency given auxiliary channel selection	0: Keyboard no. given 1: Keyboard potentiometer given 6:RS485 communication port given	1	○
F0.06	Auxiliary channel gain	0.00~5.000	1.000	○
F0.07	Combination of main channel and auxiliary channel	LED “0” digit: Combination mode selection 0: Main channel efficiency 1: Auxiliary channel efficiency 2: Main + auxiliary 3: Main – auxiliary 4: MAX{main, auxiliary} 5: MIN{ main, auxiliary } 6: Main×auxiliary LED “10” digit: Frequency control direction selection 0: Frequency control direction invalid 1: Frequency control direction valid LED “100” digit: Reserve LED “1000” digit: Reserve	0000	○



F0.08	Keyboard numbers set the frequency	0.00~Upper limit	10.00Hz	●
F0.09	Max. frequency	0.00~320.00Hz	90.00Hz	○
F0.10	Upper limit frequency source selection	0:Upper limit frequency number given	0	○
F0.11	Upper limit frequency number setting	Lower frequency~Max. frequency output	90.00Hz	○
F0.12	Lower frequency	0.00~Upper limit frequency	0.00Hz	○
F0.13	Lower frequency operation mode	0: Stop 1: According to lower frequency operation	1	○
F0.14	ACC time 1	0.01~650.00s	6.0	●
F0.15	DEC time 1	0.01~650.00s	3.0	●
F0.17	Carrier frequency	0.6~15.0kHz	1.0	●
F0.18	Carrier frequency PWM characteristic selection	LED "0" digit: 0: Unrelated to temperature 1: Related to temperature LED "10" digit: 0: Unrelated to output frequency 1: Related to output frequency LED "100" digit: 0: Fixed carrier 1: Random carrier LED "1000": PWM 0: PWM mode 1 1: PWM mode 2 2: PWM mode 3	0000	●
F0.19	Parameter initialization	0: No action 1: Recovery factory setting 2: Clear malfunction records	0	○
F0.20	AVR function selection	0: Invalid 1: All valid 2: Invalid in DEC only	1	●

## Operational parameter control

No.	Function description	Range of setting and definition	Factory default	Property	Communication add.
F1.00	Start operational mode	0: Start by start frequency 1: Start from DC brake to start frequency 2: Start after speed tracking and direction judging	0	○	
F1.01	Start pre-excitation time	0.00~60.00s	0.05	●	
F1.02	Start frequency	0.00~60.00Hz	0.50Hz	●	
F1.03	Start frequency hold time	0.0~50.0s	0.0s	●	
F1.04	Braking current before start	0.0~150.0%	0.0%	●	
F1.05	Braking time before start	0.0~30.0s	0.0s	●	
F1.06	Speed tracking and waiting time	0.00~60.00s	Model setting	●	
F1.07	Stop method	0: DEC stop 1: Free stop	1/0	●	
F1.08	DC braking start frequency when stopped	0.00~50.00Hz	3.50Hz	●	
F1.09	DC braking current when stopped	0.0~150.0%	120.0%	●	
F1.10	DC braking waiting time when stopped	0.0~60.0s	0.0s	●	
F1.11	DC braking hold time when stopped	0.0~60.0s	1.0s	●	
F1.12	Reserve				
F1.13	ACC or DEC selection	LED "0" digit: 0: Max. frequency 1: Fixed frequency LED "10" digit: 0: Straight line 1: S curve line LED "100" digit: Reserve LED "1000": Reserve	0000	○	
F1.14	S curve line initial acceleration rate	20.0%~100.0%	50.0%	●	
F1.15	S curve line acceleration slope delta	0.0~500.0%	100.0%	●	
F1.16	S curve line initial DECeleration rate	20.0%~100.0%	50.0%	●	
F1.17	S curve line DECeleration slope delta	0.0~500.0%	100.0%	●	
F1.18	ACC time 2	0.01~650.00s	2.00s	●	
F1.19	DEC time 2	0.01~650.00s	2.00s	●	

F1.20	ACC time 3	0.01~650.00s	12.00s	●	
F1.21	DEC time 3	0.01~650.00s	4.00s	●	
F1.22	ACC time 4	0.01~650.00s	12.00s	●	
F1.23	DEC time 4	0.01~650.00s	4.00s	●	
F1.24	Emergency stop DEC time	0.01~650.00s	10.00s	●	
F1.25	FWD/REV dead time	0.0~120.0s	0.0s	●	
F1.26	Min. output frequency	0.00~60.00Hz	3.00Hz	●	
F1.27	0 speed hold torque	0.0~150.0%	100.0%	●	
F1.28	0 speed torque hold time	0.0~120.0s	120.0s		
F1.29	Power failure restart action selection	0:Invalid 1:Valid	0	●	
F1.30	Power failure restart waiting time	0.00~120.00s	0.50s	●	
F1.31	Terminal operation protection selection	LED "0" digit: 0:Terminal operation command is invalid at power-on 1:Terminal operation command is valid at power-on LED "10" digit: 0:Terminal operation command is invalid when cut in 1:Terminal operation command is valid when cut in	0011	●	
F1.32	Inching running frequency set	0.00~Max. frequency	5.00Hz	●	
F1.33	Inching running ACC time	0.01~650.00s	10.00s	●	
F1.34	Inching running ACC time	0.01~650.00s	10.00s	●	
F1.35	Hopping frequency	0.00~Max. frequency	0.00Hz	●	
F1.36	Hopping frequency range	0.00~Max. frequency	0.00Hz	●	

## Switch terminal parameter set

No.	Function description	Range of setting and definition	Factory default	Property	Communication add.
F2.00	Multifunction input terminal 1(X1)	0: No function 1: FWD 2: REV 3: Three lines operation control 4: FWD inching running 5: REV inching running 6: Free stop 7: Emergency stop 8: Fault reset 9: External fault input 15: Multistage speed terminal 1 16: Multistage speed terminal 2 17: Multistage speed terminal 3 18: Multistage speed terminal 4 46: Brake failure detection	1	•	
F2.01	Multifunction input terminal 2(X2)		2	•	
F2.02	Multifunction input terminal 3(X3)		15	•	
F2.03	Multifunction input terminal 4(X4)		16	•	
F2.04	Multifunction input terminal 5(X5)		17	•	
F2.05	Multifunction input terminal 6(X6)		18	•	
F2.06	Multifunction input terminal 7(X7)		8	•	
F2.07	Multifunction input terminal 8(X8)		46	•	
F2.09	X1~X4 input terminal filter time	0.000~60.000s	0.030s	•	
F2.11	X5~X8 input terminal filter time	0.000~60.000s	0.010s	•	
F2.29	Output terminal 1 (Y1)	0: No output 3: Fault trip alarm 1(alarm while fault self-recover) 9: FDT function output 20: Hoist band-brake logic control 29: Phase fault output 30: Brake failure maintenance	3	•	
F2.30	Output terminal 2 (Y2)		30	•	
F2.31	Relay output terminal (TA-TB-TC)		20	•	
F2.32	Upward start frequency	0.00~50.00Hz	4.00Hz	•	
F2.33	Upward start frequency delay time	0.00~10.00s	0.6	•	
F2.34	Upward brake-releasing current value	0.00~500.0%	50.0%	•	
F2.35	Upward brake-releasing current value hold time	0.00~10.00s	0.10	•	
F2.36	Downward start frequency	0.00~50.00Hz	3.50Hz	•	
F2.37	Downward start frequency delay time	0.00~10.00s	0.7	•	
F2.38	Downward loose-brake current value	0.00~500.0%	50.0%	•	
F2.39	Downward loose-brake current value hold time	0.00~10.00s	0.10	•	
F2.40	Upward stop-band brake frequency	0.00~50.00Hz	3.50Hz	•	

F2.41	Upward stop-band brake delay time	0.00~10.00s	0.60	•	
F2.42	Downward stop-band brake frequency	0.00~50.00Hz	3.50Hz	•	
F2.43	Downward stop-band brake delay time	0.00~10.00s	0.80	•	
F2.44	Valid signal output delay time	0.000~10.000s	0.050	•	
F2.45	Invalid signal output delay time	0.000~10.000s	0.0	•	
F2.46	Reserve				
F2.47	Brake fault detection selection	LED "0" digit: Brake fault handling 0:Invalid 1: Valid LED "10"digit::Brake detection direction selecting 0: Only FWD detection 1:FWD/RVS detection LED "100" digit:Brake valid time alarm revocating condition 0:Terminal fault reset 1:Terminal fault reset and operation command	0000	•	
F2.48	Brake invalid frequency threshold value	0.00~50.00Hz	1.00	•	
F2.49	Brake invalid judging delay time	0.000~65.000s	0.100	•	
F2.50	Band brake detection frequency set	0.00~50.00Hz	10.00	•	
F2.51	Band brake detection torque set	0.0~200.0%	100.0	•	
F2.52	Band brake detection hold time	0.0~6500.0s	4.0	•	
F2.53	Band brake detection frequency feedback threshold value	0.00~50.00Hz	10.00	•	
F2.54	Band brake detection frequency feedback hold time	0.000~65.000s	2.000	•	
F2.55	Zero-crossing function selection	LED "0" digit: Zero-crossing hold frequency function selection 0:Invalid 1: Zero-crossing upward hold frequency 2: Zero-crossing hold frequency LED "10"digit: Zero-crossing band brake function selection 0:Invalid 1: Valid LED "100" digit:Reserve	0010	•	

F2.56	Zero-crossing upward hold frequency	0.00~50.00Hz	2.50	●	
F2.57	Zero-crossing upward hold frequency and time	0.00~10.00S	0.30	●	
F2.58	Zero-crossing downward hold frequency	0.00~50.00Hz	2.50	●	
F2.59	Zero-crossing downward hold frequency and time	0.00~10.00S	0.30	●	
F2.60	Zero-crossing upward loose-brake frequency	0.00~50.00Hz	8.00	●	
F2.61	Zero-crossing upward band brake frequency	0.00~50.00Hz	8.00	●	
F2.62	Zero-crossing downward loose-brake frequency	0.00~50.00Hz	8.00	●	
F2.63	Zero-crossing downward band brake frequency	0.00~50.00Hz	8.00	●	

#### Simulation terminal parameter set

No.	Function description	Range of setting and definition	Factory default	Property	Communication add.
F3.00	VS1 lower value	0.00~10.00V	0.00V	●	
F3.01	VS1 lower limit setting	0.00~100.00%	0.00%	●	
F3.02	VS1 upper value	0.00~10.00V	10.00V	●	
F3.03	VS1 upper limit setting	0.00~100.00%	100.00%	●	
F3.04	VS1 filter time	0.00~10.00s	0.10s	●	
F3.05	VS2 lower value	0.00~10.00V	0.00V	●	
F3.06	VS2 lower limit setting	0.00~100.00%	0.00%	●	
F3.07	VS2 upper value	0.00~10.00V	10.00V	●	
F3.08	VS2 upper limit setting	0.00~100.00%	100.00%	●	
F3.09	VS2 filter time	0.00~10.00s	0.10s	●	
F3.10	AS lower value	0.00~20.00mA	4.00mA	●	
F3.11	AS lower limit setting	0.00~100.00%	0.00%	●	
F3.12	AS upper value	0.00~20.00mA	20.00mA	●	
F3.13	AS upper limit setting	0.00~100.00%	100.00%	●	
F3.14	AS filter time	0.00~10.00s	0.10s	●	
F3.15	Reserve			○	
F3.16	Reserve			○	
F3.17	Reserve			○	
F3.18	Reserve			○	
F3.19	Reserve			○	
F3.20	Reserve			○	

F3.21	Reserve			○	
F3.22	A01 output selection	0: Given frequency 1: Output frequency 2: Output current 3: Input voltage 4: Output voltage 5: Mechanical speed 6: Reserve 7: Output torque 8: PID given volume 9: PID feedback volume 10: Output power 11: Bus voltage	0	●	
F3.23	A02 input selection	12: VS1 input value 13: VS2 input value 14: AS input value 15: PUL input value 16: Module temperature 1 17: Module temperature 2	1	●	
F3.24	A01 input gain	25.0~200.0%	100.0%	●	
F3.25	A01 output signal bias	-10.0~10.0%	0.0%	●	
F3.26	A02 signal selection	0: 0~10V 1: 4.00~20.00mA 2: 0.00~20.00mA 3: FM frequency pulse output	0	●	
F3.27	A02 input gain	25.0~200.0%	100.0%	●	
F3.28	A02 simulation output signal bias	-10.0%~10.0%	0.0%	●	
F3.29	A02FM frequency output lower limit	0.00~50.00kHz	0.20kHz	●	
F3.30	A02FM frequency output upper limit	0.00~50.00kHz	50.00kHz	●	

#### Keyboard and display parameter set

No.	Function description	Range of setting and definition	Factory default	Property	Communication add.
F4.11	The display content of the first line at the running state	LED "0" digit: display the first group 0: Given frequency 1: Output frequency 2: Output current 3: Input voltage 4: Output voltage 5: Mechanical speed 6: Reserve 7: Output torque 8: PID given volume 9: PID feedback volume A: Output power B: DC bus voltage	3210	●	

		<p>C: Module temperature 1  D: Module temperature 2  E: ON/OFF state of input terminal X  F: ON/OFF state of output terminal Y  LED "10" digit: display the second group  LED "100" digit: display the third group  LED "1000": display the fourth group</p>			
F4.12	The display content of the first line at the stop-state	<p>LED "0" digit: display the first group  LED "10" digit: display the second group  LED "100" digit: display the third group  LED "1000": display the fourth group</p>	3210	•	
F4.13	The display content of the second line at the running state	<p>LED "0" digit: display the first group  LED "10" digit: display the second group  LED "100" digit: display the third group  LED "1000": display the fourth group</p>	3210	•	
F4.14	The display content of the second line at the stop-state	<p>LED "0" digit: display the first group  LED "10" digit: display the second group  LED "100" digit: display the third group  LED "1000": display the fourth group</p>	3210	•	
F4.15	Vector 1 gain	0.0~5000.0%	50.0%	•	

### Motor parameter set

No.	Function description	Range of setting and definition	Factory default	Property	Communication add.
F5.00	Reserve			○	
F5.01	Motor poles	2~48	4	○	
F5.02	Motor rated power	0.4~1000.0kW	Model set	○	
F5.03	Motor rated frequency	0.01~Max. frequency	Model set	○	
F5.04	Motor rated torque	0~65000rpm	Model set	○	
F5.05	Motor rated voltage	0~1500V	Model set	○	
F5.06	Motor rated current	0.1~2000.0A	Model set	○	
F5.07	Motor no-load current	0.01~650.00A	Model set	○	



F5.08	Motor stator resistance	0.001~65.000	Model set	○	
F5.09	Motor Rotor resistance	0.001~65.000	Model set	●	
F5.10	Motor stator-rotor inductance	0.1~6500.0mH	Model set	●	
F5.11	Motor stator-rotor mutual inductance	0.1~6500.0mH	Model set	●	
F5.12	Motor parameter self-adjustment selections	0: No operation 1: Rotary self learning 2: Static self learning	0	●	
F5.13	Rated field component	0~1000	190	○	
F5.14	Torque component	0~2000	800	○	
F5.15	PG selection	LED "0"digit: Sensor phase 0: Single phase input 1:Two phase input LED "10"digit: Sensor phase adjustment 0:Same direction 1:Opposite direction LED "100"digit: Sensor wire breakage detection 0: Wire breakage detection off 1: Wire breakage detection on LED"1000"digit:PG feedback channel 0:PG interface 1:PUL interface	0001	○	
F5.16	PG weekly pluse time	0~60000	1024	○	
F5.17	PG wire breakage detection time	0.100~60.000s	2.000s	●	

#### Vector control parameter set

No.	Function description	Range of setting and definition	Factory default	Property	Communication add.
F6.00	ASR (velocity loop) proportional gain 1	0.00~1.00	0.10	●	
F6.01	ASR (velocity loop) integral time 1	0.01~10.00s	0.50	●	
F6.02	ASR (velocity loop) derivative time 1	0.0~100.0	0.0	●	
F6.03	ASR filter time 1	0.000~0.100s	0.005s	●	
F6.04	ASR switch frequency 1	0.00~50.00Hz	5.00Hz	●	
F6.05	ASR (velocity loop) proportional gain 2	0.00~1.00	0.10	●	
F6.06	ASR (velocity loop) integral time 2	0.01~10.00s	0.50	●	
F6.07	ASR (velocity loop) derivative time 2	0.0~100.0s	0.0s	●	

F6.08	ASR filter time 2	0.000~0.100s	0.010	●	
F6.09	ASR switch frequency 2	0.00~50.00Hz	10.00Hz	●	
F6.10	Vector slip compensation coefficient	0~250%	120%	●	
F6.11	Max. input torque	20.0~250.0%	200.0%	●	
F6.12	Constant power area torque compensation starting frequency	100.0%~500.0%	120.0%	●	
F6.13	Constant power area torque compensation coefficient	0~100%	30%	●	
F6.14	Constant power area torque limiting starting frequency	100.0%~500.0%	200.0%	●	
F6.15	Constant power area torque limiting value	50~200%	150%	●	

#### Fault and protection parameter set

No.	Function description	Range of setting and definition	Factory default	Property	Communication add.
FA.00	Protection function selection 1	LED“0”digit:ACC overcurrent suppression selection 0: Invalid 1: Valid LED“10”digit:DEC overcurrent suppression selection 0: Invalid 1: Valid LED“100”digit:Current limiting selection in operation 0: Invalid 1: Valid LED “1000”digit:Reserve	0001	●	
FA.01	Protection function selection 2	LED “0”digit: DEC over-voltage suppression protection 0: Invalid 1: Rating 1 over-voltage suppression 2: Rating 2 over-voltage suppression LED “10”digit: Over-voltage suppression protection in operation 0: Invalid 1: Valid LED “100”digit: Motor overload action selection	0000	●	

		0: Emergency stop and alarm 1: Emergency stop and alarm 2: Limiting current and run LED"1000"digit: Motor overload action selection 0: Emergency stop and alarm 1: Emergency stop and alarm 2: Limiting current and run 3: Motor overload protection off			
FA.02	Protection function selection 3	LED "0"digit: Inverter OH action selection 0: Emergency stop and alarm 1: Emergency stop and alarm 2: Limiting current and run LED "10"digit: Input lack phase protection selection 0: Invalid 1: Valid LED"100"digit: Output lack phase protection selection 0: Invalid 1: Lack phase detection valid, no open brake signal 2: Lack phase detection valid, associated with open brake LED"0000"digi: Reserved	0210	•	
FA.08	Energy consumption braking action voltage	115.0~140.0%	120.0%	•	
FA.09	Reserve				
FA.10	Busbar undervoltage protection value	50.0~100.0%	60.0%	•	
FA.11	Instantaneous power-down deceleration action voltage threshold	0~200%	20%	•	
FA.12	Instantaneous power-down main circuit target voltage	0~200%	90%	•	

FA.13	Instantaneous power-down deceleration gain	0.01~10.00	2.00	●	
FA.14	Instantaneous power-down speed recovery waiting time	0.0~100.0s	2.0s	●	
FA.15	Acceleration overcurrent suppression point	100~250%	160%	●	
FA.16	Deceleration overcurrent suppression point	100~250%	160%	●	
FA.17	Current limit in operation	100~250%	160%	●	
FA.18	Current limiting frequency ACC/DEC time	0.01~650.00s	10.00s	●	
FA.19	Acceleration and constant speed overvoltage suppression response gain	0.1~10.0	0.2	○	
FA.20	Reserve				
FA.21	Motor overload protection coefficient	20.0~250.0%	100.0%	●	
FA.22	Malfunction recovery times	0~5	0	●	
FA.23	Malfunction auto-reset interval	0.1~100.0s	2.0	●	
FA.24	Reserve				
FA.25	Malfunction types	Pls see malfunction code table	--	×	
FA.26	Malfunction running frequency	0.00~Max. frequency	--	×	
FA.27	Malfunction output voltage	0~1500V	--	×	
FA.28	Malfunction output current	0.1~2000.0A	--	×	
FA.29	Malfunction bus voltage	0~3000V	--	×	
FA.30	Malfunction module temperature	0~100℃	--	×	
FA.31	Malfunction inverter state	LED "0"digit: Running direction 0: FWD 1: REV	--	×	

		LED "10"digit: Running state 0: Stop 1: Steady speed 2: ACC 3: DEC LED "100"digit: Reserved LED "1000"digit:Reserved			
FA.32	Malfunction input terminal state	See input terminal chart	--	×	
FA.33	Malfunction output terminal state	See output terminal chart	--	×	
FA.34	The last malfunction type	Pls see malfunction code table	--	×	
FA.35	The last malfunction running frequency	0.00~Max. frequency	--	×	
FA.36	The last malfunction output voltage	0~1500V	--	×	
FA.37	The last malfunction output current	0.1~2000.0A	--	×	
FA.38	The last malfunction bus voltage	0~3000V	--	×	
FA.39	The last malfunction module temperature	0~100℃	--	×	
FA.40	The last malfunction inverter state	LED "0"digit: Running direction 0: FWD 1: REV LED "10"digit: Running state 0: Stop 1: Steady speed 2: ACC 3: DEC LED "100"digit: Reserved LED "1000"digit:Reserved	--	×	
FA.41	The last malfunction input terminal state	See input terminal chart	--	×	
FA.42	The last malfunction output terminal state	See input terminal chart	--	×	
FA.43	The last two malfunction types	Pls see malfunction code table	--	×	
FA.44	The last three malfunction types	Pls see malfunction code table	--	×	

**Multistage speed, PLC function and swing frequency parameter set**

No.	Function description	Range of setting and definition	Factory default	Property	Communication add.
FC.00	PLC multistage speed 1	0.00~320.00Hz	25.00Hz	●	
FC.01	PLC multistage speed 2	0.00~320.00Hz	20.00Hz	●	
FC.02	PLC multistage speed 3	0.00~320.00Hz	35.00Hz	●	
FC.03	PLC multistage speed 4	0.00~320.00Hz	40.00Hz	●	
FC.04	PLC multistage speed 5	0.00~320.00Hz	50.00Hz	●	
FC.05	PLC multistage speed 6	0.00~320.00Hz	40.00Hz	●	
FC.06	PLC multistage speed 7	0.00~320.00Hz	50.00Hz	●	
FC.07	PLC multistage speed 8	0.00~320.00Hz	40.00Hz	●	
FC.08	PLC multistage speed 9	0.00~320.00Hz	10.00Hz	●	
FC.09	PLC multistage speed 10	0.00~320.00Hz	20.00Hz	●	
FC.10	PLC multistage speed 11	0.00~320.00Hz	30.00Hz	●	
FC.11	PLC multistage speed 12	0.00~320.00Hz	40.00Hz	●	
FC.12	PLC multistage speed 13	0.00~320.00Hz	50.00Hz	●	
FC.13	PLC multistage speed 14	0.00~320.00Hz	40.00Hz	●	
FC.14	PLC multistage speed 15	0.00~320.00Hz	55.00Hz	●	

**Communication control function parameter set**

No.	Function description	Range of setting and definition	Factory default	Property	Communication Add
Fd.00	Master-slave selection	0: Slave 1: Host	0	○	
Fd.01	Native address	1~247	1	○	
Fd.02	Communication baud rate selection	3: 9600 bps	3	○	
Fd.03	Data format	0: (N, 8, 1) No parity,	0	○	
Fd.07	RS485 communication fault action mode selection	0: Alarm and freewheel stop 1: Don't alarm and continue running 2: Stop, no alarm (run command given by the communication) 3: Stop, no alarm (run command given by all channels)	1	●	

## Lifting purpose parameter set

No.	Function description	Range of setting and definition	Factory default	Property	Communication Add
F9.00	Tower crane control mode selection	LED single digit: Tower crane downward overspeed protection switch 0: Off 1: On LED tens digit: Tower crane overlocking running selection 0: Off 1: On	0000	•	
F9.01	Over-speed threshold coefficient	0.0~500.0%	120.0%	•	
F9.02	Overclocking running high speed dwell time	0.0~60.000s	5.000	•	
F9.03	Gate frequency Output frequency level 1(FDT1)	0.00~50.00Hz	2.50	•	
F9.04	Gate frequency Output frequency level 2(FDT2)	0.00~50.00Hz	7.50	•	
F9.05	X1terminal invalid delay time (F1.07 is valid when freewheel stop is selected)	0~10.000s	0.120	•	
F9.06	X2 terminal invalid delay time (F1.07 is valid when freewheel stop is selected)	0~10.000s	0.120	•	
F9.07	Reserved				
F9.08	Reserved				

## Tower crane slewing purpose parameter set

No.	Function description	Range of setting and definition	Factory default	Property	Communication Add
F9.09	Flexible control variable frequency 1	0.00~20.00Hz	2.50	•	
F9.10	Flexible control variable frequency 2	0.00~20.00Hz	5.00	•	
F9.11	Slewing control function selection	LED single digit: Reserved LED tens digit: Slewing flexible control 0: Off 1: On LED hundreds digit: Flexible control acceleration/deceleration time	0010	•	

		0: Off 1: On LED thousands digit: Slewing load frequency reduction function 0: Off 1: On			
F9.12	Flexible control deviation frequency	0.00~20.00Hz	2.00	●	
F9.13	Flexible control acceleration time	0~650.00s	20.00	●	
F9.14	Flexible control deceleration time	0~650.00s	20.00	●	
F9.15	Reserved				
F9.16	Reserved				
F9.17	Reserved				
F9.18	Slewing acceleration/deceleration time 1 determines the frequency	0.00~100.00Hz	7.50	●	
F9.19	Slewing acceleration/deceleration time 2 determines the frequency	0.00~100.00Hz	50.00	●	
F9.20	Slewing acceleration/deceleration time 3 determines the frequency	0.00~100.00Hz	50.00	●	
F9.21	Reserved				

**Slewing eddy current control parameter set:**

No.	Function description	Range of setting and definition	Factory default	Property	Communication Add
FB.00	Reserved				
FB.01	Reserved				
FB.02	Reserved				
FB.03	Start-up duty ratio increases the frequency range	0.00~320.00Hz	1.00Hz	●	
FB.04	Eddy current frequency segment 1	0.00~320.00Hz	4.00Hz	●	
FB.05	Eddy current frequency segment 2	0.00~320.00Hz	20.00Hz	●	



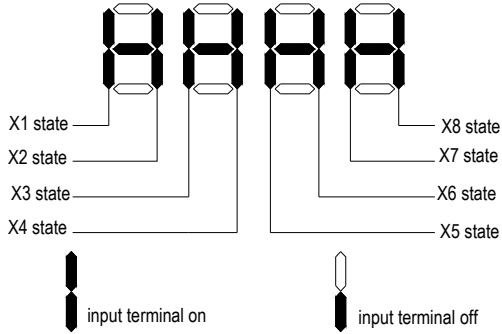
FB.06	Eddy current frequency segment 3	0.00~320.00Hz	23.00Hz	●	
FB.07	Start duty ratio	0.0~100.0%	60.0	●	
FB.08	Eddy current duty ratio 1	0.0~100.0%	50.0	●	
FB.09	Eddy current duty ratio 2	0.0~100.0%	50.0	●	
FB.10	Eddy current control carrier	0.00~10.00KHz	0.50KHz	●	
FB.11	Reserved				
FB.12	Slewing frequency reduction starting torque	0~10000	400	●	
FB.13	Frequency variation limit value	0.00~320.00Hz	3.00Hz	●	
FB.14	Reserved			●	
FB.15	Reserved				
FB.16	Oscillation suppression function selection	0~2	2	●	
FB.17	Oscillation suppression proportional coefficient	0.0~500.0%	100.0	●	
FB.18	Excitation current filter coefficient	10~250	50	●	
FB.19	The speed tracking output voltage increase factor	0~30000	400	●	
FB.20	Frequency integration time	0~65.000S	0.040	●	

**Note: Except the special definition function, more details for the rest functions pls refer to the <AC80B series frequency inverter manual>.**

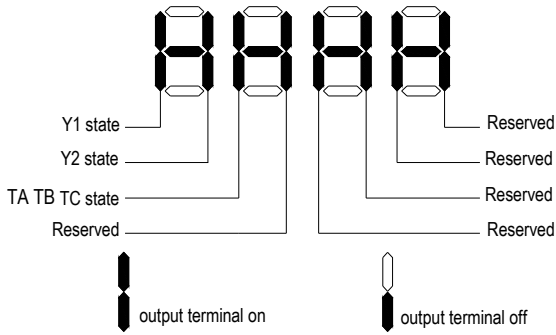
Press "PRG" key more than 2 seconds, enter "C" parameter group.

No.	Function name	Unit of setting and definition
C-00	Given frequency	0.01Hz
C-01	Output frequency	0.01Hz
C-03	Output current	0.1A
C-03	Input voltage	0.1V
C-04	Output voltage	0.1V
C-05	Machinery speed	1RPM
C-06	Setting torque	0.1%
C-07	Output torque	0.1%
C-08	Reserve	
C-09	Reserve	
C-10	Output power	0.1%
C-11	Bus voltage	0.1V
C-12	Module temperature 1	0.1°C
C-13	Module temperature 2	0.1°C
C-14	Input terminal X on- state	See input terminal state chart
C-15	Output terminal Y on- state	See output terminal state chart
C-25	Inverter power level	kW
C-26	Inverter rated voltage	V
C-27	Inverter rated current	A
C-28	Software edition	
C-29	PG feedback frequency	0.01Hz

**Input terminal on/off state diagram:**



**Output terminal on/off show diagram**






## Chapter 5 Fault Diagnoses and Processing

This chapter explains the display constant and process of the inverter fault, alarm and operation fault. It also simply explains the bad situation caused by inverter or motor fault and how to solve it. For the adjustment guide in trial run, please refer to this chapter too.

### 5.1 Fault types

Type	Inverter action while fault happens
Equipment fault	<p>While inverter detect fault, the state likes this:</p> <ul style="list-style-type: none"> <li>• Keyboard display character showing fault content.</li> <li>• Inverter stops output. Motor free slide stops.</li> <li>• While function F2.29/F2.30 is set as 3(output fault), Y1/Y2 terminals output valid open-collector digital output.</li> <li>• While function F2.31 is 3(fault output), TA-TC terminals output open passive digital output.</li> <li>• While there is fault as OL, OC, SC, OV, UL2, if FA.22 is not 0, the inverter will restart automatically after FA.23 setting time.</li> </ul>
External fault	<p>In certain application occasions, external related equipments fault signals are considered in the inverter control system as usage of monitoring, protection or switch control. At this time, if one multi function terminal is defined as "external fault", the inverter stops output alarm signal.</p>

### 5.2 Fault information and details

Keyboard display	Fault code	Fault type	Possible causes	Treatment
	L.U.1	Too low while stop	<ul style="list-style-type: none"> <li>• Power supply is too low</li> <li>• Voltage detection circuit is abnormal</li> </ul>	<ul style="list-style-type: none"> <li>• Check input power, eliminate fault.</li> <li>• Seek support from factory.</li> </ul>
	E.LU2	Too low voltage in run	<ul style="list-style-type: none"> <li>• Power supply is too low</li> <li>• Power capacitance is too small, or there is big impact current in the power grid.</li> <li>• Inner DC main contactor is not closed.</li> </ul>	<ul style="list-style-type: none"> <li>• Check input power, eliminate fault.</li> <li>• Improve power-supply system.</li> <li>• Seek support from factory.</li> </ul>
	E.oU1	Acc over-voltage	<ul style="list-style-type: none"> <li>• Power voltage fluctuation over limit.</li> <li>• Start running motor.</li> </ul>	<ul style="list-style-type: none"> <li>• Detect power voltage and eliminate fault.</li> <li>• Restart motor until it totally stop.Set F1.00 as 1or 2.</li> </ul>

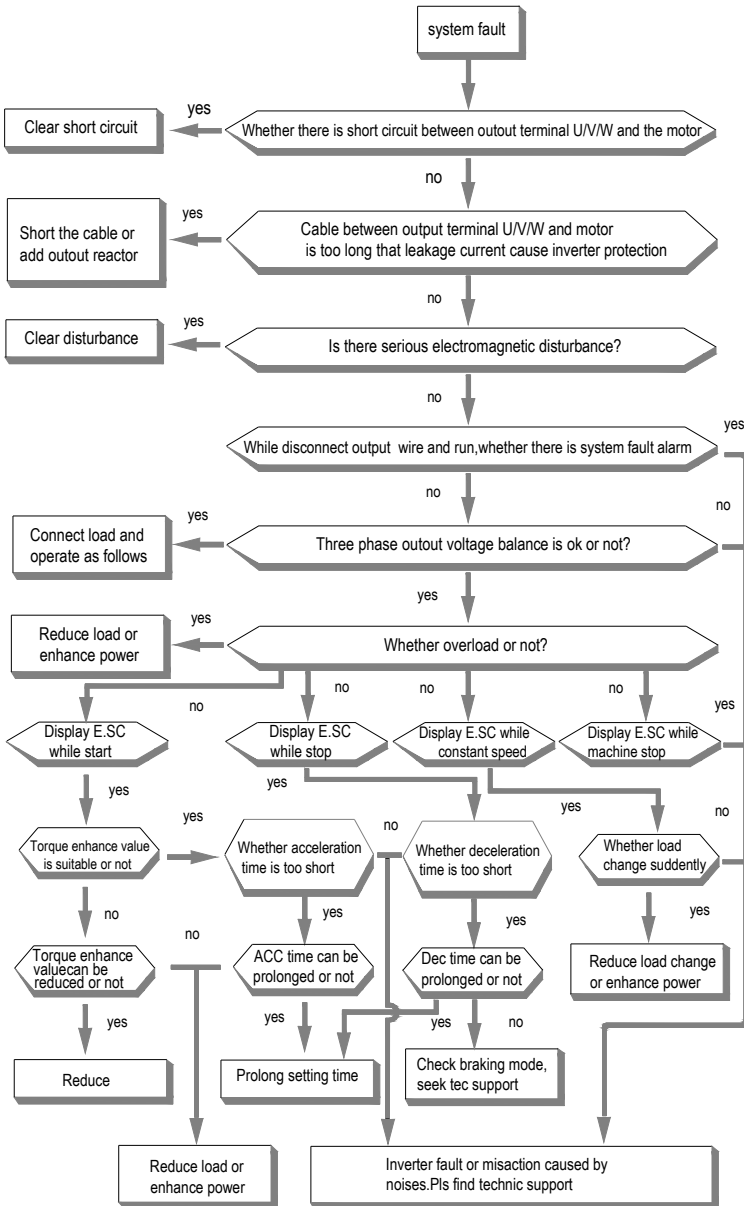
E.oU2	E.oU2	Dec over-voltage	<ul style="list-style-type: none"> <li>Deceleration time is too short.</li> <li>Load potential energy or inertia is too large.</li> <li>Power voltage fluctuation over limit.</li> </ul>	<ul style="list-style-type: none"> <li>Prolong deceleration time properly.</li> <li>Reduce load inertia or improve inverter capacitance or add braking unit.</li> <li>Detect input power and clear fault.</li> </ul>
E.oU3	E.oU3	Constant speed over-voltage	<ul style="list-style-type: none"> <li>Power voltage fluctuation over limit.</li> </ul>	<ul style="list-style-type: none"> <li>Detect input power voltage and eliminate fault.</li> <li>Install input reactor.</li> </ul>
E.oU4	E.oU4	Over-voltage while stop	<ul style="list-style-type: none"> <li>Power voltage fluctuation over limit.</li> </ul>	<ul style="list-style-type: none"> <li>Check input power, eliminate fault.</li> <li>Seek support from factory.</li> </ul>
E.oC1	E.oC1	Acc over-current	<ul style="list-style-type: none"> <li>Acceleration time is too short.</li> <li>Start running motor.</li> <li>V/F curve setting is not suitable. Or torque boost too high.</li> <li>Inverter capacitance is too small.</li> </ul>	<ul style="list-style-type: none"> <li>Prolong acc time.</li> <li>Restart motor until it totally stops. Set F1.00 as 1 or 2.</li> <li>Reset V/F curve or torque boost value.</li> <li>Select inverter with right capacitance.</li> </ul>
E.oC2	E.oC2	Dec over-current	<ul style="list-style-type: none"> <li>Deceleration time is too short.</li> <li>Load potential energy or inertia is too large.</li> <li>Power voltage fluctuation over limit.</li> </ul>	<ul style="list-style-type: none"> <li>Prolong deceleration time.</li> <li>Connect external braking resistance or braking unit.</li> <li>Select inverter with right capacitance.</li> </ul>
E.oC3	E.oC3	Constant speed over-current	<ul style="list-style-type: none"> <li>Sudden load change.</li> <li>Power grid voltage is too low.</li> </ul>	<ul style="list-style-type: none"> <li>Check load change and eliminate it.</li> <li>Check input power, eliminate fault.</li> </ul>
E.oL1	E.oL1	Motor over-load	<ul style="list-style-type: none"> <li>V/F curve setting is not suitable. Or torque boost too high.</li> <li>Power grid voltage is too low.</li> <li>Unright overload protection setting.</li> <li>Locked-rotor run or too heavy load.</li> <li>Universal motor long time low speed run.</li> </ul>	<ul style="list-style-type: none"> <li>Reset V/F curve or torque boost value.</li> <li>Check input power, eliminate fault.</li> <li>Unreasonable F5.06 setting.</li> <li>Adjust load or select inverter with right capacitance.</li> <li>If need long low-speed operation, please choose special motor for inverter.</li> </ul>

E.oL2	E.oL2	Inverter over-load	<ul style="list-style-type: none"> <li>• Load is too heavy.</li> <li>• Acceleration time is too short.</li> <li>• Start running motor.</li> <li>• V/F curve setting is not suitable. Or torque boost too high.</li> </ul>	<ul style="list-style-type: none"> <li>• Select inverter with right capacitance.</li> <li>• Prolong acceleration time</li> <li>• Restart motor until it totally stops. Set F1.00 as 1or2.</li> <li>• Reset V/F curve or torque boost value.</li> </ul>
E.SC	E.SC	System abnormality	<ul style="list-style-type: none"> <li>• Acceleration time is too short.</li> <li>• Short circuit between inverter output phases or earth.</li> <li>• Module is damaged.</li> <li>• Electromagnetic disturb.</li> </ul>	<ul style="list-style-type: none"> <li>• Prolong acceleration time properly.</li> <li>• Check periphery equipments and restart after fault eliminating.</li> <li>• Seek support from factory.</li> <li>• Check system wiring, earth, shield and deal as required.</li> </ul>
E.oH1	E.oH1	Inverter over-heat	<ul style="list-style-type: none"> <li>• Temperature is too high.</li> <li>• Air channel is blocked.</li> <li>• Fan connection parts are loose.</li> <li>• Fan is damaged.</li> <li>• Temperature detection circuit fault</li> </ul>	<ul style="list-style-type: none"> <li>• Make the environment meet the requirement.</li> <li>• Clear the air channel.</li> <li>• Check and reconnect the wire</li> <li>• Change the same new fan.</li> <li>• Seek support from factory.</li> </ul>
E.oH2	E.oH2	Rectifier over-heat	<ul style="list-style-type: none"> <li>• Temperature is too high.</li> <li>• Air channel is blocked.</li> <li>• Fan connection parts are loose.</li> <li>• Fan is damaged.</li> <li>• Temperature detection circuit fault</li> </ul>	<ul style="list-style-type: none"> <li>• Make the environment meeting the requirement.</li> <li>• Clear the air channel.</li> <li>• Check and reconnect the wire.</li> <li>• Change the same new fan.</li> <li>• Seek support from factory.</li> </ul>
E.TE1	E.TE1	Motor static detection fault	<ul style="list-style-type: none"> <li>• Detection overtime</li> <li>• Start static detection while motor is running.</li> <li>• Capacitance difference is too big between motor and inverter.</li> <li>• Motor parameter setting mistake.</li> </ul>	<ul style="list-style-type: none"> <li>• Check motor connection wire.</li> <li>• Detect after motor stopping totally.</li> <li>• Change inverter model.</li> <li>• Reset parameter according to nameplate.</li> </ul>
E.TE2	E.TE2	Motor rotation detection	<ul style="list-style-type: none"> <li>• Detect while motor is running.</li> <li>• Detect with load.</li> </ul>	<ul style="list-style-type: none"> <li>• Detect after motor stop totally.</li> <li>• Re-detect without load.</li> </ul>

		fault	<ul style="list-style-type: none"> <li>• Detection overtime</li> <li>• Capacitance difference is too big between motor and inverter.</li> <li>• Motor parameter setting mistake.</li> </ul>	<ul style="list-style-type: none"> <li>• Check motor connection wire.</li> <li>• Change inverter model.</li> <li>• Reset parameter according to nameplate.</li> </ul>
E.EEP	E.EEP	Memory fault	<ul style="list-style-type: none"> <li>• Electromagnetic disturb in memory period.</li> <li>• EEPROM damage.</li> </ul>	<ul style="list-style-type: none"> <li>• resume load and save.</li> <li>• Seek support from factory.</li> </ul>
LIFE	LIFE	Reserved	•	<ul style="list-style-type: none"> <li>• Seek support from factory.</li> </ul>
E.ILF	E.ILF	Input side open phase	<ul style="list-style-type: none"> <li>• 3-phase input power open phase.</li> </ul>	<ul style="list-style-type: none"> <li>• Check 3-phase power supply and the phase.</li> <li>• Check 3-phase power supply wiring.</li> </ul>
E.oLF	E.oLF	Output side open phase	<ul style="list-style-type: none"> <li>• 3-phase output power open phase</li> </ul>	<ul style="list-style-type: none"> <li>• Check 3-phase output voltage and current.</li> <li>• Check wiring.</li> </ul>
E.HAL	E.HAL	Current detection fault	<ul style="list-style-type: none"> <li>• Detect circuit fault.</li> <li>• Phase imbalance</li> </ul>	<ul style="list-style-type: none"> <li>• Seek for technical support.</li> <li>• Check motor and wiring.</li> </ul>
E.EF	E.EF	Inverter external fault	<ul style="list-style-type: none"> <li>• Peripheral equipment fault protection.</li> </ul>	<ul style="list-style-type: none"> <li>• Check peripheral equipment.</li> </ul>
E.PAn	E.PAn	Keyboard connect fault	<ul style="list-style-type: none"> <li>• Keyboard wire fault.</li> <li>• Keyboard component damage.</li> </ul>	<ul style="list-style-type: none"> <li>• Check keyboard wire.</li> <li>• Seek support from factory.</li> </ul>
E.CE	E.CE	Rs485communication fault	<ul style="list-style-type: none"> <li>• Unsuitable baud rate setting.</li> <li>• Communication wire breaks.</li> <li>• Communication format does not match upper machine.</li> </ul>	<ul style="list-style-type: none"> <li>• Set suitable baud rate setting.</li> <li>• Check communication wire.</li> <li>• Set right communication format.</li> </ul>
E.CPE	E.CPE	Parameter copy fault	<ul style="list-style-type: none"> <li>• Parameter copy communication is fault.</li> <li>• Copy keyboard is not match the inverter.</li> </ul>	<ul style="list-style-type: none"> <li>• Check wire.</li> <li>• Select the specified external keyboard model.</li> </ul>

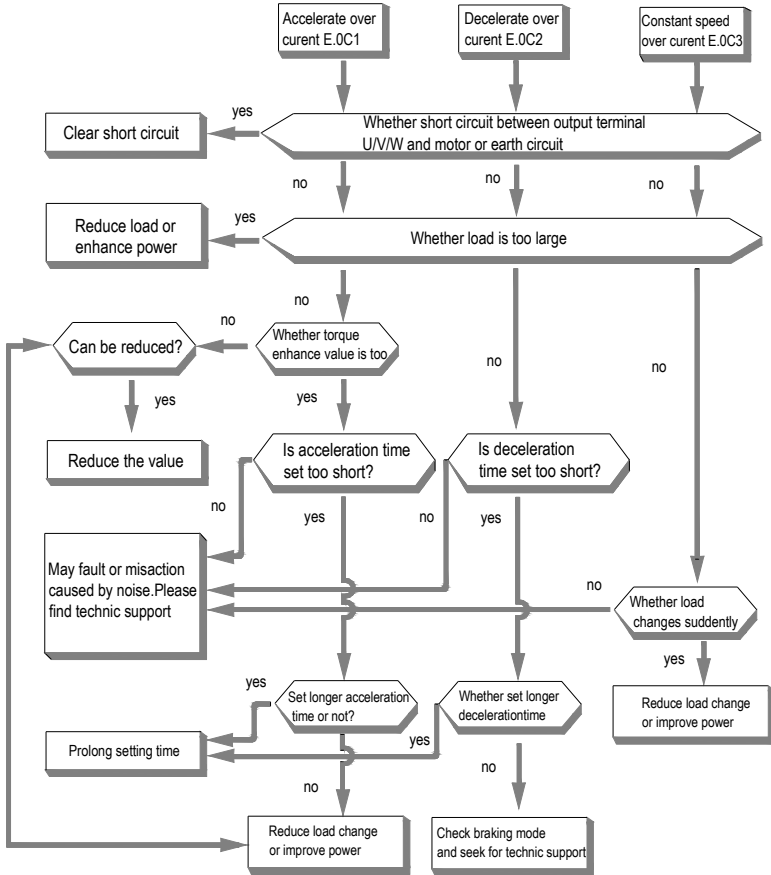
### 5.3 Fault diagnoses process

#### System fault diagnoses process

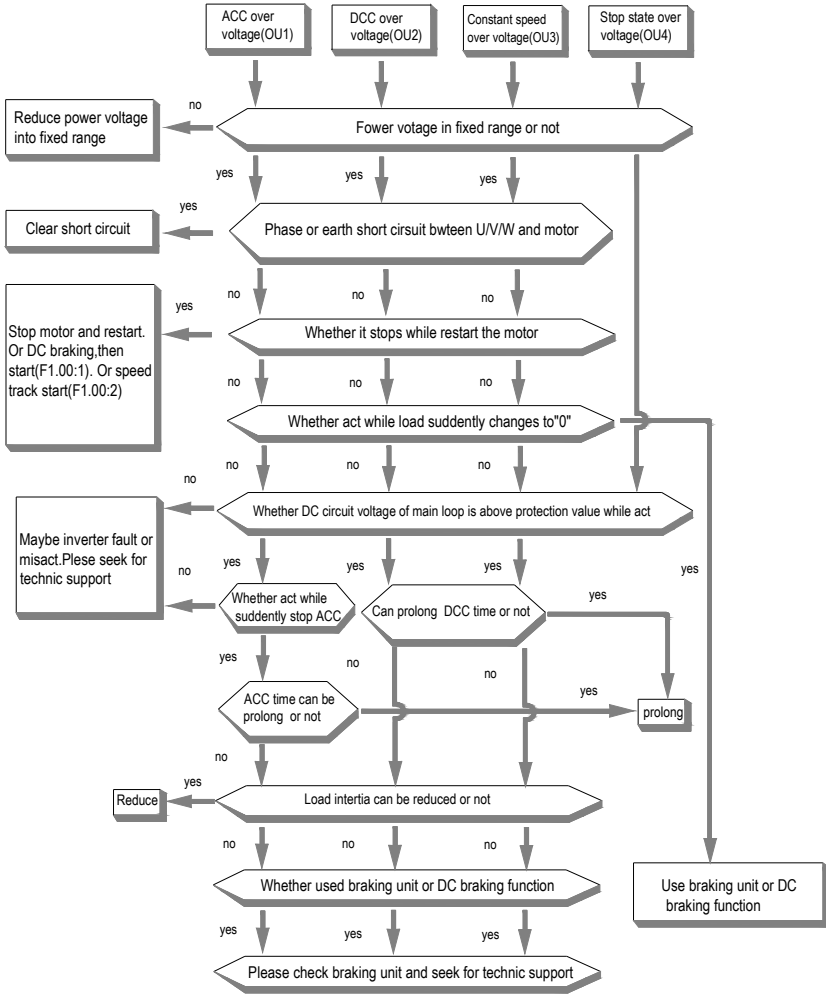




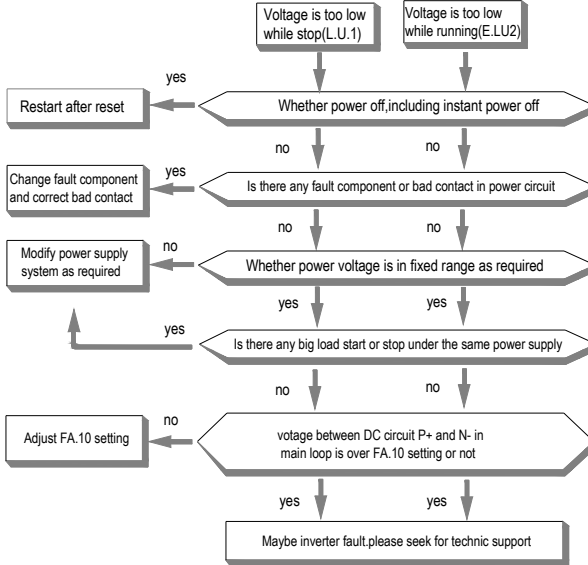
### Over current diagnoses process



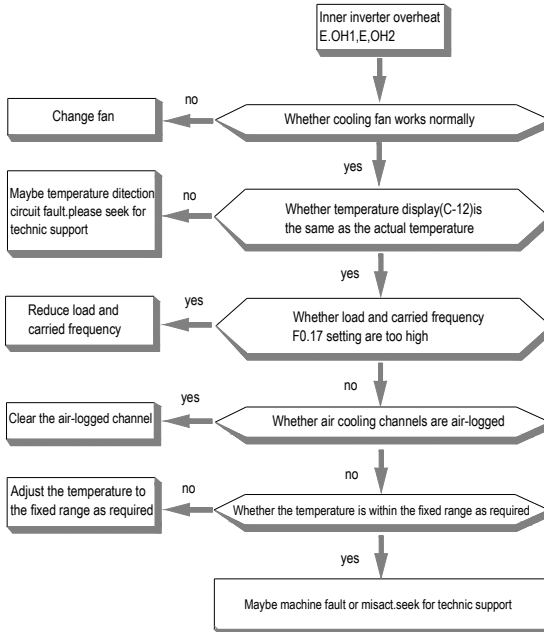
### Over voltage diagnoses process



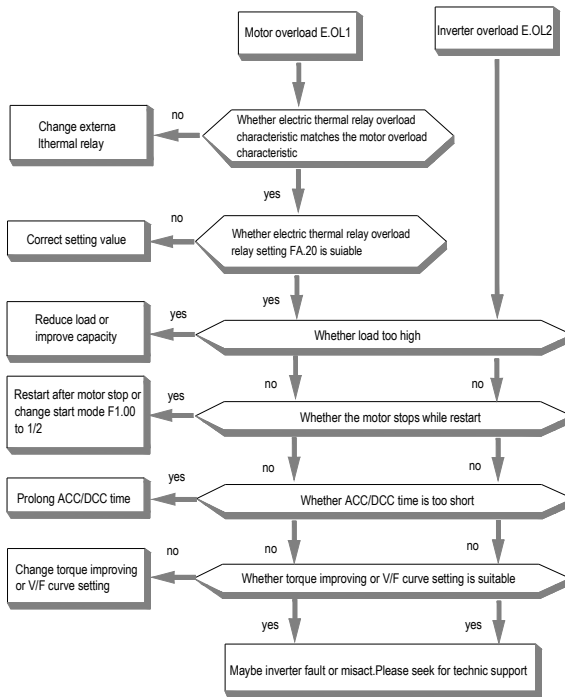
### Supply voltage is too low



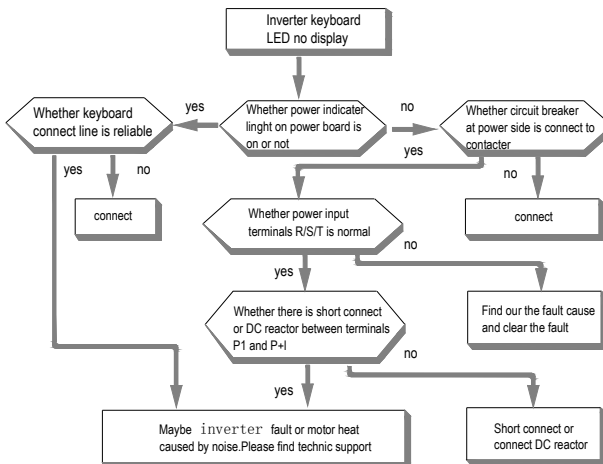
### Inner inverter over heat



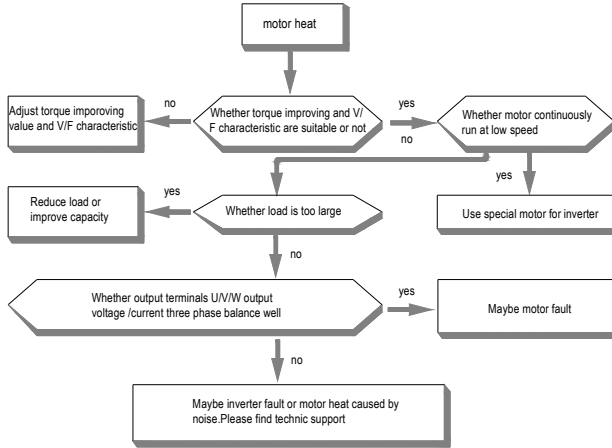
### Over load diagnoses process



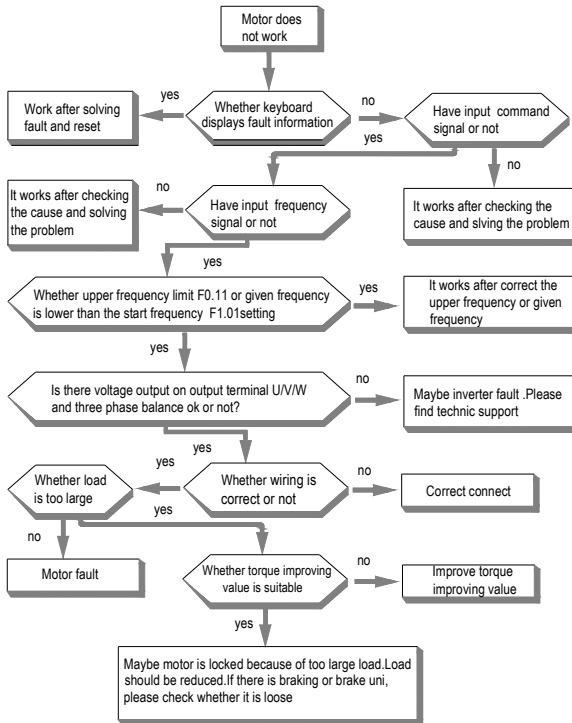
### No display diagnoses process



### Motor heat diagnoses process



### Motor does not rotate diagnoses process



## Chapter 6 Quality Guarantee

This product's quality guarantee shall be dealt with in accordance with the following terms and conditions:

Users can enjoy the following "three guarantee" service from the day of purchasing products if meeting products quality problem:

- We guarantee for return, repair and replacement for one month after delivery;
- We guarantee for repair and replacement for two months after delivery;
- We guarantee for repair for eighteen months after delivery;
- The articles above do not apply to export.

All the products of our company, no matter where you buy, can enjoy the life-long paid service.

All our offices, distributors and supporting enterprises located in all over the country, are authorized by our company to provide warranty service.

Our company will only take on the liability (return, repair & replacement) according to our guarantee time and range. If the user needs more liability guarantee, the user should buy proper commercial insurance from insurance company in advance.

Cases as following, whether it is within guarantee time or not, are not within our guarantee range. If the user needs service, he has to pay for it.

- The malfunction caused by not according to this user manual.
- The malfunction caused by unauthorized transform or over-range operation.
- User has not paid off the payment according to the contract.
- The malfunction caused by the natural disasters, such as earthquake, fire, flood, lightning or abnormal voltage, etc.

For return, replacement and repair services, the products can only be returned or repaired after it has been returned to our company for liability confirmation.

## Warranty Card

**Profile**

User Name : \_\_\_\_\_

Address : \_\_\_\_\_

Contacts : \_\_\_\_\_ Phone : \_\_\_\_\_ Fax : \_\_\_\_\_

Model : \_\_\_\_\_ Machine Code : \_\_\_\_\_

**Agent/Distributor Profile**

Delivery Company : \_\_\_\_\_

Contacts : \_\_\_\_\_ Phone : \_\_\_\_\_ Delivery Date : \_\_\_\_\_

## Warranty Clauses

The Company solemnly states that since the day users purchase from my company (hereinafter referred to as manufacturer),they can enjoy the following warranty services;

- 1.Since the date of purchase, users can enjoy the following warranty services of the product:
  - 1) Within 30 days after shipment,the company promises returning,replacement and maintenance of the product.
  - 2) Within 90 days after shipment,the company promises replacement and maintenance of the product.
  - 3) Within 18 months after shipment,the company promises only maintenance of the product.
  - 4) Products exported to countries except China shall not enjoy the warranties mentioned above.
2. Since the date of purchase, users can enjoy the service of the company when they pay for the service.
3. Exception Clauses: Product failures caused by the following reasons would not enjoy the free warranty services of the manufacturer:
  - 1) Failures caused by operations of users that is not operated in accordance with the requirements of the product manual;
  - 2) Failures caused when users repair or renovate the product without communicating with the manufacturer in advance;
  - 3) Failures caused by abnormal aging of the product resulted from poor using environment;
  - 4) Failures caused by earthquake, fire or other natural disasters or abnormal voltage;
  - 5) Failures caused by damage during transportation(mode of transportation is decided by users and the company only helps to handle cargo shipment procedures).
4. In the following conditions, the manufacturer have the right not to provide warranty services:
  - 1) When the marks,trademarks or nameplates of the products are destroyed or can not be identified;
  - 2) When users do not pay for the product according to signed contract;
  - 3) When users intentionally hiding the improper operations during installation, wiring and maintenance;
5. For products that enjoy all returning,replacement and maintenance services, first the product should be returned to the company and after responsibility confirmation,the product can be replaced or repaired.

## Certificate of Approval

QC check : \_\_\_\_\_



The product has been checked and proved to be qualified for delivery in conformity with standard.