

CONTENT

1 OVERVIEW	3
1.1 SAFETY PRECAUTIONS.....	3
1.2 SPECIFICATIONS.....	6
1.3 FEATURES	9
2 BEFORE USE	11
2.1 PRODUCT ARRIVAL INSPECTION	11
2.2 NAMEPLATE	11
2.3 MODEL AND RATED OUTPUT CURRENT.....	11
2.4 PRODUCT DIMENSION	13
2.5 ELECTRICAL INSTALLATION	15
2.6 FUNCTION LEGEND AND DESCRIPTION OF CONTROL BOARD TRANSFER SWITCH.....	16
2.7 MAIN CIRCUIT TERMINAL ARRANGEMENT AND DEFINITION.....	17
2.8 SCHEMATIC DIAGRAM OF EXTERNAL LIMIT TERMINAL AND AVIATION PLUG IN WIRING	18
3 KEYBOARD AND OPERATION	19
3.1 KEYBOARD APPEARANCE AND KEY FUNCTIONS	19
3.2 KEYBOARD INDICATOR MEANING.....	20
4 FUNCTION PARAMETER TABLE.....	21
4.1 FACTORY PARAMETERS CORRESPONDING TO THE TOWER CRANE APPLICATION MACRO... 21	21
4.2 BASIC PARAMETER GROUP	31
4.3 OPERATION CONTROL PARAMETER GROUP	35
4.4 SWITCH TERMINAL PARAMETER GROUP	40
4.5 ANALOG TERMINAL PARAMETER GROUP.....	43
4.6 SYSTEM PARAMETER GROUP	50
4.7 MOTOR PARAMETER GROUP	55
4.8 MOTOR VECTOR CONTROL GROUP	57
4.9 MOTOR V/F CONTROL PARAMETERS	59
4.10 PROTECTION AND FAULT PARAMETER GROUP.....	60
4.11 MULTI-SPEED, PLC FUNCTION PARAMETER GROUP	66
4.12 COMMUNICATION CONTROL FUNCTION PARAMETER GROUP	69
4.13 LIGHT LOAD SPEED UP FUNCTION	72
4.14 DESCRIPTION OF MULTI-SEGMENT SPEED SETTING.....	73
4.15 MONITORING CODE.....	74
5 FAULT INFORMATION	77
5.1 FAULT TYPE	77

5.2 FAULT INFORMATION AND DETAILS.....	77
5.3 FAULT WARNING	83
6 RECOMMENDED ACCESSORIES.....	84
6.1 PG CARD SELECTION.....	84
6.2 DESCRIPTION OF CLOSED-LOOP VECTOR CONTROL.....	84
6.3 ENCODER SELECTION AND INSTALLATION GUIDE	85
7 ELECTRICAL SCHEMATIC DIAGRAM.....	86

1 Overview




Thank you for using the QT02 series tower crane integrated controller designed and manufactured by Wei Chuang Electric Co., Ltd. This manual describes how to use this product correctly to obtain good returns. Please read this manual carefully before using the product (installation, wiring, operation, maintenance, inspection, etc.).

1.1 Safety Precautions

To ensure safe, reliable, and reasonable use of this product, please use this product after fully understanding the safety precautions described in this manual.

Warning signs and their meaning

The following marks are used in this manual to indicate that the place is important to safety. Failure to observe these precautions may result in personal injury or death, damage to the product and related systems.

 Danger	<p>Danger: If the operation is wrong, it may cause death or major safety accident.</p>
 Warn	<p>Warning: If the operation is wrong, it may cause death or major safety accident.</p>
 Caution	<p>Caution: If the operation is wrong, it may cause minor injuries.</p>
Important	<p>Important: If the operation is wrong, this product and related systems may be damaged.</p>

Operation qualification




This product must be installed, wired, operated, and maintained by trained professionals. The so-called "trained professionals" in this manual means that the personnel working on this equipment must undergo professional skills training, be familiar with the installation, wiring, operation and maintenance of the equipment, and correctly respond to various emergencies during use. Happening.

Safety guidance


The safety rules and warning signs are proposed for your safety, and are measures taken to prevent the operator from personal injury and damage to the product and related systems. Please read this manual carefully before use, and operate strictly in accordance with the safety rules and

warning signs in this manual. Safety rules and warning signs are divided into the following categories: general instructions, transportation and storage instructions, installation wiring instructions, operation instructions, maintenance instructions, and disassembly and waste disposal instructions.

● Regular guidance

	<ul style="list-style-type: none"> ● This product carries dangerous voltage, and it controls a potentially dangerous movement mechanism. Failure to comply with the regulations or operation in accordance with the requirements of this manual may result in personal injury or death, damage to this product and related systems. ● Only trained professionals are allowed to operate this product, and before using this product, be familiar with all the safety instructions and operating regulations in this manual; correct operation and maintenance are a reliable guarantee for the safe and stable operation of this product . ● Do not carry out wiring work when the power is on, otherwise there is a danger of electric shock and death; during wiring, inspection, maintenance, etc., please cut off the power supply of all related equipment and confirm that the main circuit DC voltage has dropped to a safe level Level, wait 5 minutes before doing related tasks.
	<ul style="list-style-type: none"> ● Prevent children and the public from touching or approaching this product. ● This product can only be used in accordance with the purpose specified by the manufacturer, and cannot be used in special fields such as emergency, rescue, shipping, medical, aviation, and nuclear facilities without permission. ● Unauthorized modification and use of parts and accessories not sold or recommended by the manufacturer of this product may cause malfunctions.
	<ul style="list-style-type: none"> ● Please be sure to deliver this manual to actual users to ensure that actual users can read this manual carefully before use. ● Before installing and debugging the inverter, please read carefully and fully understand these safety rules and warning signs.

● Transportation and storage guidance

	<ul style="list-style-type: none"> ● Correct transportation, storage, installation, as well as careful operation and maintenance are essential for the safe operation of the inverter.
---	---



- During transportation and storage, ensure that the inverter is not subject to shock and vibration. It must also be stored in a dry, free of corrosive gas, no conductive dust, and an ambient temperature of less than 60°C.

● Installation and wiring instructions



- Only trained professionals can operate this product.
- The power cables, motor cables, and control cables must be tightly connected. The grounding terminal must be reliably grounded, and the grounding resistance must be less than 10Ω.
- Before opening the inverter panel, please cut off the power supply of all related equipment and confirm that the main circuit DC voltage has dropped to a safe level. Wait 5 minutes before proceeding with related operations.
- Human body static electricity can seriously damage internal sensitive components. Before performing related operations, please follow the measures and methods specified in ESD prevention measures, otherwise the inverter may be damaged.
- Since the output voltage of the inverter is a pulse waveform, if a capacitor or a varistor for lightning protection is installed on the output side, it must be removed or modified on the input side of the inverter
- Do not add switching devices such as circuit breakers and contactors on the output side of the inverter (if switching devices must be connected to the output side, it is necessary to ensure that the output current of the inverter is zero when the switching is activated).

● Operational guidance



- The inverter runs under high voltage, and dangerous voltages inevitably exist on some parts of this product.
- No matter where the fault occurs in the control equipment, it may cause major accidents or even personal injury, that is, potentially dangerous faults; therefore, additional external preventive measures or other devices used to ensure safe operation must be taken, such as: Install independent current-limiting switches, mechanical protection and other devices.
- In order to ensure that the motor overload protection can operate correctly, the motor parameters input to the frequency converter must be completely

consistent with the actual motor used.

● **Maintenance guidance**



- The maintenance of this product can only be performed by the service department of Wei Chuang Electric Co., Ltd., the maintenance center authorized by Wei Chuang Electric Co., Ltd., or professionals trained and authorized by Wei Chuang Electric Co., Ltd. These personnel should be very familiar with this Safety warnings and operation essentials proposed in the manual.
- Any defective devices must be replaced in time.
- Before opening the equipment for maintenance, be sure to disconnect the power supply and confirm that the DC voltage of the main circuit has dropped to a safe level. Wait 5 minutes before performing related operations.

● **Guidance on disassembly and waste disposal**



- The packaging box of the inverter is reusable. Please keep the packaging box for future use or return it to the manufacturer.
- The disassembled metal parts can be recycled and reused.
- Some devices will have adverse effects on the environment, such as electrolytic capacitors. Please dispose of these devices in accordance with the requirements of the environmental protection department.

1.2 specifications

Items		Specifications
power input	Voltage frequency	Three-phase 380V 50/60Hz
	Allow fluctuation	Voltage: 320V~440V; Voltage imbalance rate: <3%; Frequency: ±5%
	Power factor	≥0.94(With DC reactor)
	Inverter efficiency	≥96%

Output	The output voltage	Output under rated conditions: 3-phase, 0~input voltage, error less than 5%
	Output frequency range	0-320Hz
	Output frequency accuracy	$\pm 0.5\%$ of maximum frequency value
	Overload capacity	150% rated current for 1 minute, 180% rated current for 10 seconds, 200% rated current for 0.5 seconds
Main control performance	Carrier frequency	0.6~15.0kHz
	Steady-state speed accuracy	Vector control without PG: $\leq 1\%$ of rated synchronous speed
	Starting torque	Magnetic flux vector control without PG: 180% rated torque at 0.5Hz
	Frequency accuracy	Digital setting: maximum frequency $\times\pm 0.01\%$ Analog setting: maximum frequency $\times\pm 0.2\%$
	Frequency resolution	Digital setting: 0.01Hz, analog setting: maximum frequency $\times 0.05\%$
Basic product function	DC braking capability	Starting frequency: 0.00~60.00Hz Braking time: 0.0~60.0s Braking current: 0.0~150.0% of rated current
	Acceleration and deceleration curve	Two methods: linear acceleration and deceleration, S-curve acceleration and deceleration; Four sets of acceleration and deceleration time, the time unit is 0.01s, the longest is 650.00s
	Automatic voltage adjustment	When the grid voltage fluctuates, it can automatically keep the output voltage constant

	Automatic current limit	Automatically limit the current during operation to prevent frequent over-current fault trips	
	Instantaneous power failure processing	In case of instantaneous power failure, uninterrupted operation is realized through bus voltage control	
	Frequency setting channel	Keyboard digital setting, keyboard potentiometer, analog voltage terminal VS1, analog voltage terminal VS2, analog current terminal AS, communication setting and multi-channel terminal selection, combination of main and auxiliary channels	
	Feedback input channel	Voltage terminal VS1, voltage terminal VS2, current terminal AS, communication setting, pulse input PUL	
	Run command channel	Operation panel setting, external terminal setting, communication setting	
	Input command signal	Start, stop, forward and reverse rotation, jog, multi-speed, free stop, reset, acceleration and deceleration time selection, frequency setting channel selection, external fault alarm	
	External output signal	2 relay outputs, 1 collector output, 0~10V output, 4~20mA output, frequency pulse output	
Protective function		Overvoltage, undervoltage, current limiting, overcurrent, overload, electronic thermal relay, overheating, overvoltage stall, data protection	
Keyboard display	Keyboard display	Dual-line 4-digit digital tube display	Can monitor the status of 2 inverters
	Parameter copy	The function code information of the inverter can be uploaded and downloaded to realize fast parameter copying	

	Status monitoring	Output frequency, given frequency, output current, input voltage, output voltage, motor speed, PID feedback amount, PID given amount, module temperature, input and output terminal status, etc.
	error alarm	Overvoltage, undervoltage, overcurrent, short circuit, phase loss, overload, overheating, overvoltage stall, current limit, data protection damaged, current fault operating status, historical fault
Environment	Installation site	Indoor, the altitude is not more than 1000m, no corrosive gas and direct sunlight
	temperature humidity	-10~+40°C (wall-mounted type), 20%~90%RH (no condensation)
	vibration	Less than 0.5g below 20Hz
	Storage temperature	-25~+65°C
	Installation method	Wall-mounted
	Protection level	IP20
	cooling method	Forced air cooling

1.3 Features

Special frequency converter for lifting: High working efficiency, fast response, good speed regulation performance, stable operation, no impact, and high safety factor.

Stall protection function (closed loop mode): When it is detected that the actual speed exceeds 115% of the rated speed during operation, the inverter will send out a brake signal to realize emergency braking.

Anti-slip hook protection function (closed loop mode): In closed-loop mode, when the inverter is energized and is in the standby state, this function is immediately activated when the motor is detected to rotate at this time, and the inverter is locked at zero speed output, which provides the greatest safety guarantee for system operation.

Zero servo hovering function (closed loop mode): That is, in the zero-speed state, keep the brake open and keep the lifting mechanism hovering still in the air.

Full torque monitoring function: The torque is monitored during operation, and when the torque output is detected to be constant, the output is immediately blocked to realize an emergency stop.

Remote monitoring module (extended): Realize the functions of mechanical equipment remote positioning, online monitoring, remote fault diagnosis, etc.; provide customers with a larger range of value-added services.

Light load high speed function: When running under light load or empty hook state, it is calculated by the built-in load measurement mode, and the frequency is automatically increased (constant power zone), which effectively improves the working efficiency of the lifting machinery by 10% to 50%.

Output abnormal protection: Monitor the torque during operation. When the torque output is detected to be normal or no load, the output is immediately blocked to realize an emergency stop.

Stable rotation operation: The low-speed operation is smooth and coherent, there is no stop-and-go phenomenon, smooth gear shift, and the boom is coherent and smooth, and there is no "stop" phenomenon.

Rotary eddy current control: The built-in eddy current controller uses PWM pulse width modulation to adjust the duty cycle of the output voltage in real time according to the operating frequency, which is more excellent than the traditional eddy current voltage regulator module.

Flexible torque control (rotation): The "soft with rigidity" inching is strong and powerful, and the response is fast, and the boom is stable and does not rebound.

Anti-sway function (variation): The swing is restricted by dynamically adjusting the frequency of the inverter and the acceleration and deceleration time. When the object reaches the set speed, the swing is small or it basically does not move when it stops.

Dedicated brake logic control: Through the brake release frequency, brake release current, brake release time, brake holding time, etc., the dedicated brake logic control is realized to ensure the safety and reliability of the system.

Timing description of brake: When the brake is not energized, it is in the state of holding the brake, and the brake must be released when the brake is energized; through the release frequency, the release current, the brake release time, the brake holding time, etc., a dedicated holding The gate logic control ensures the safety and reliability of the system and avoids the phenomenon of hook slipping.

2 before use

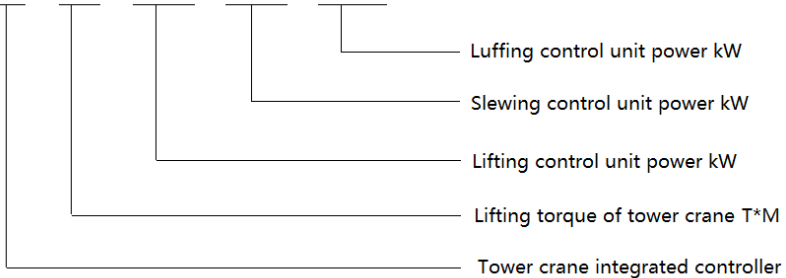
2.1 Product arrival inspection

Upon receipt of the product you ordered, please check that the outer packaging is not damaged. After confirming that it is intact and undamaged, open the outer packaging to confirm whether the inverter is damaged, scratched or dirty (the damage caused by the product during transportation is not within the scope of our company's guarantee). If the product you received is damaged during transportation, please contact our company or the transportation company immediately.

After confirming that the received product is intact, please confirm whether the received inverter model is consistent with the product you ordered. Please refer to the "MODEL" column on the nameplate on the side of the inverter for the model. If you find that the product model is inconsistent, please immediately contact the agent where you purchased the product or the sales department of our company.

2.2 Nameplate

QT02 - 80 - 037 / 015 / 5R5



2.3 Model and rated output current

Low power

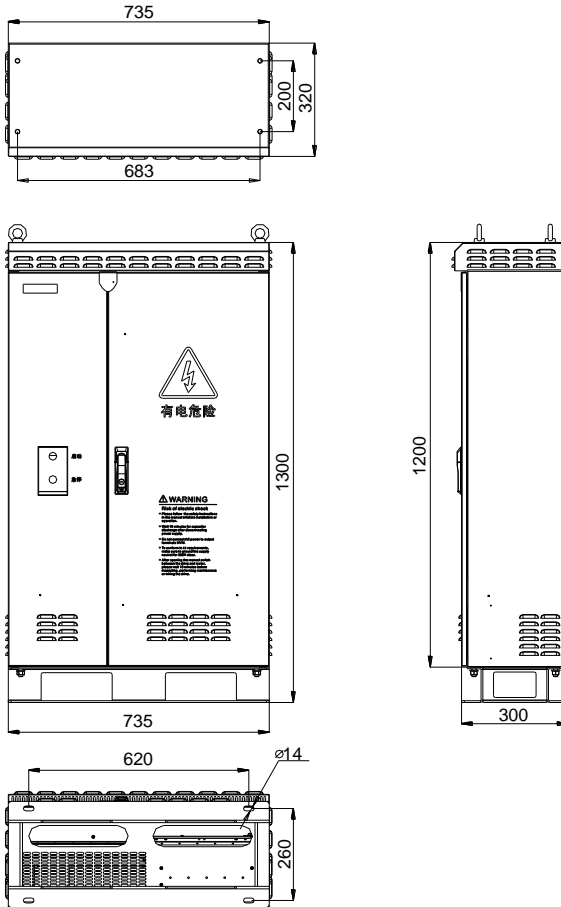
Model	Type	Adaptive motor power	Rated voltage	Rated current
QT02-80-037/015/5R5	Lifting	30KW	Three-phase 380V	75
	Slewing	3.7KW*2/5.5KW*2		32
	Luffing	4KW		10

QT02-100-045/015/5R5	Lifting	37KW		90
	Slewing	5.5KW*2		32
	Luffing	5.5KW		13

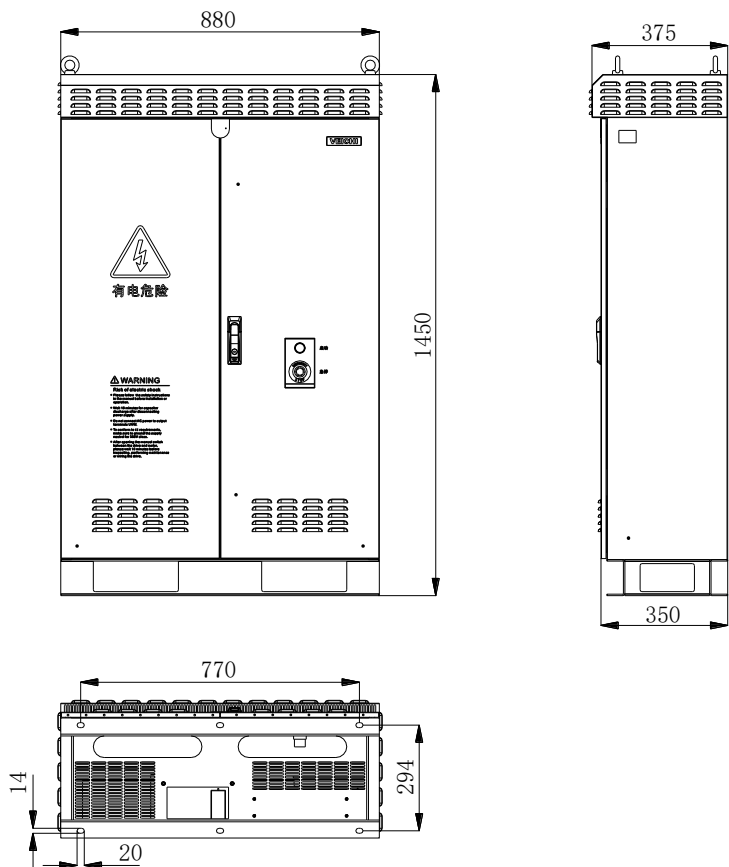
Medium and high power

Model	Type	Adaptive motor power	Rated voltage	Rated current
QT02-160-055/018/7R5	Lifting	45KW	Three-phase 380V	110
	Slewing	5.5KW*2		36
	Luffing	5.5KW		15
QT02-250-075/022/011	Lifting	55KW/60KW		150
	Slewing	5.5KW*3		45
	Luffing	7.5KW		22
QT02-315-090/022/011	Lifting	75KW		180
	Slewing	5.5KW*3		45
	Luffing	7.5KW		22

2.4 Product dimension



Inverter model	Dimensions			Mounting hole		Installation aperture
	W	H	D	W1	H1	
QT02-80-037/015/5R5	735	1300	300	620	260	$\varnothing 14$
QT02-100-045/015/5R5						

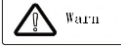




Inverter model	Dimensions			Mounting hole		Installation aperture
	W	H	D	W1	H1	
QT02-160-055/018/7R5	880	1450	350	770	294	Ø14
QT02-250-075/022/011						
QT02-315-090/022/011						

2.5 Electrical installation

This section describes the precautions and requirements to ensure the safe use of the product, maximize the performance of the inverter and ensure the reliable operation of the inverter.

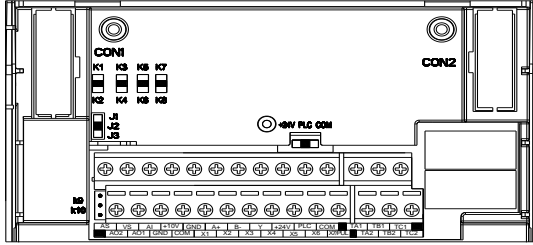
Safety precautions

	<ul style="list-style-type: none"> ● The inverter must be grounded reliably when it is put into operation, otherwise it may cause personal injury or death and the equipment cannot work reliably. ● In order to ensure the safe operation of the inverter, the installation and wiring must be carried out by trained professionals. ● Do not perform related operations when the power is on, otherwise there is a danger of electric shock and death. ● Before performing related operations, please cut off the power supply of all related equipment, and confirm that the main circuit DC voltage has dropped to a safe level, and wait 5 minutes before performing related operations.
	<ul style="list-style-type: none"> ● The wiring of the control cable of the inverter, the power cable and the connecting cable with the motor must be isolated from each other, and do not arrange them in the same cable trough or cable rack. ● This equipment can only be used in accordance with the purpose specified by the manufacturer. If you need to use it on other special occasions, please consult our company's sales department.
	<ul style="list-style-type: none"> ● It is forbidden to use high-voltage insulation testing equipment to test the insulation of the inverter and the insulation of the cables connected to the inverter. ● When the inverter and peripheral equipment (filters, reactors, etc.) need insulation test, first measure their insulation resistance to ground with a 500 volt megger, and the insulation resistance shall not be less than 4MΩ.

Special precautions for on-site installation and debugging:

When GPS remote control locks the machine, the inverter will display "LIFE" fault and cannot be reset. Only allow down or low speed 10Hz operation.

2.6 Function legend and description of control board transfer switch



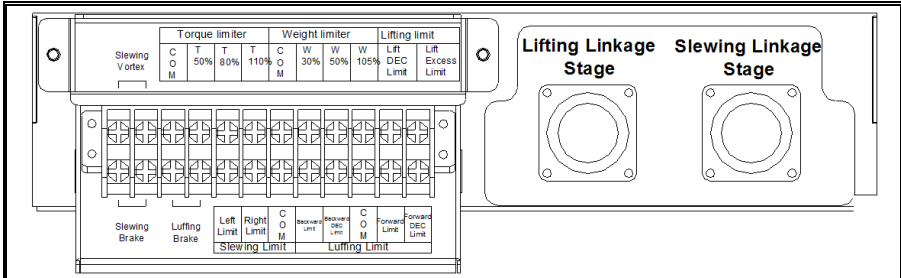
Tag	Select position	Function Description
S1	K1	AO1 output 0~20mA or 4~20mA
	K2	AO1 output 0~10V
S2	K3	AI input 0~20mA or 4~20mA
	K4	AI input 0~10V
S3	K5	When AO2 is 0.0~100kHz output (J1 is open), turn AO2 to open collector output
	K6	When AO2 is 0.0~100kHz output (J1 is on), turn to AO2 for active output
S4	K7	RS485 communication access 120 ohm terminal resistance
	K8	RS485 communication disconnection 120 ohm terminal resistance
S5	J1	AO2 interface 0.0 ~ 100kHz frequency output (PWM eddy current pulse wave output)
	J2	AO2 interface 0 ~ 20mA current output or 4 ~ 20mA current output
	J3	0 ~ 10V voltage output
S6	+24V	+Short circuit between 24 V and PLC
	PLC	PLC receives external power input
	COM	Short circuit between PLC and com
S7	K9	Disconnect GND at working place and PE discharge circuit of casing
	K10	Connect GND of working ground and PE discharge circuit of casing

2.7 Main circuit terminal arrangement and definition

Terminal symbol	Terminal name	Terminal function definition
R	Power supply	Used to connect three-phase AC power supply.
S		
T		
N		
U1	Lifting motor	Used to connect the lifting motor
VI		
WI		
PB	Braking resistance	It is used to connect external lifting brake resistor to realize quick stop.
P+		
YU	Lifting brake	AC380V AC power output, used for external lifting brake
YV		
YW		
U2	Slewing motor	Used to connect the rotary motor
V2		
W2		
U3	Luffing motor	For connecting luffing motors
V3		
W3		

2.8 Schematic diagram of external limit terminal and aviation plug in wiring

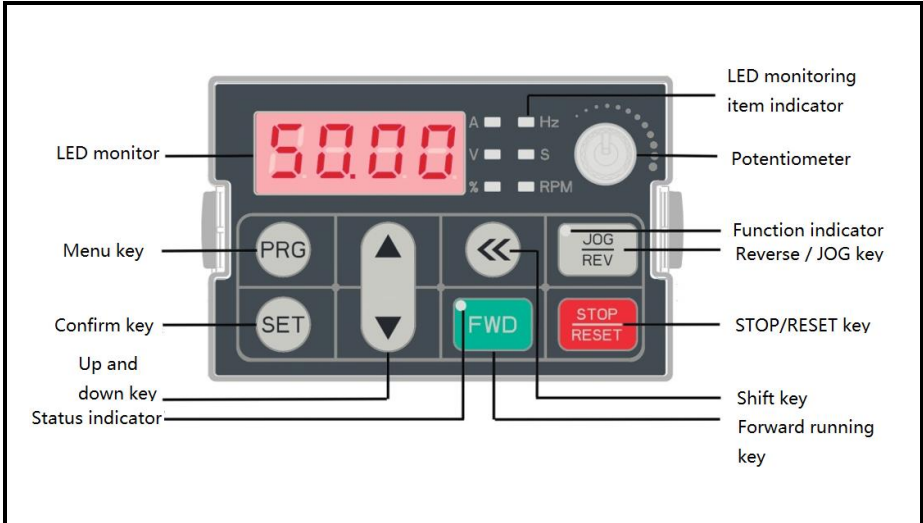
(Low power QT02-80、100)











Terminal name	Terminal function definition
Slewing vortex	Slewing vortex output PWM+
	Slewing vortex output PWM-
Slewing brake	Slewing brake output +24V
	Slewing brake output -24V
Luffing brake	Luffing brake output +24V
	Luffing brake output -24V
Torque limiter	COM
	Torque 50%
	Torque 80%
	Torque 100%
Weight limiter	COM
	weight 30%
	weight 90%
	Weight 105%
Lifting limit	Ascending deceleration limit
	Ascending over height limit
Slewing limit	COM
	Left limit
	Right limit
Luffing limit	Backward limit
	Backward deceleration limit
	COM
	Forward limit
	Forward deceleration limit

3 Keyboard and operation

3.1 Keyboard appearance and key functions



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 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 in modify state. Modify given frequency,PID given while at standby or monitoring state (While given frequency, PID are set by keyboard and [F4.09] needs to be set.
	Shift key	Select digit of function No. modified by up/down key; Select parameter digits modified by up/down key.
	Forward running key	While run/stop is controlled by keyboard, press this key, inverter forward runs, and the indicator is always on. While reverse, the indicator sparks.

	Reverse/JOG key	This key can be defined by [F4.07] . Press it, machine reverses and indicator is off if it is defined as REVERSE. Machine will jog and indicator is on if it is defined as JOG.
	Stop/reset key	Machine stops if press it while run/stop is controlled by keyboard. Its efficiency range is defined by [F4.08] . Inverter resets if press it in fault state (no reset if fault is not solved).
	Keyboard potentiometer	Can be used as input channel for given frequency, upper frequency limit, given torque, given PID or PID feedback setting.

3.2 Keyboard indicator meaning

Name	State	Meaning	
Unit indicator	Hz	twinkle	The digital tube: the given frequency.
	Hz	ON	The digital tube: the output frequency.
	A	ON	The digital tube: the output current.
	V	ON	The digital tube: input voltage.
	V	twinkle	The digital tube: the output voltage.
	S	NO	Indicates that the time unit is seconds.
	S	twinkle	Indicates that the time unit is milliseconds, minutes, or hours.
	RPM	NO	Indicates that the value displayed by the 4-digit number at this time is the motor speed.
Status indicator	FWD	NO	The inverter is running forward.
	FWD	twinkle	The inverter is running in reverse.
	FWD	OFF	The inverter stops.
Function indicator	REV/JOG	NO	This key is defined as a jog key.
	REV/JOG	OFF	This key is defined as a reverse key.

4 Function parameter table

"●": Indicates that the parameter can be changed when the inverter is running;

"○": Indicates that this parameter cannot be changed when the inverter is running;

"x": This parameter can only be read but cannot be changed;

4.1 Factory parameters corresponding to the tower crane application macro

Special macro for lifting mechanism

Function code number	Function code name	Setting range and definition	Factory setting (open loop)	Factory setting (closed loop)
F0.00	Motor control method	0: Open loop vector control mode 1 4: High-performance vector control with PG	0	4
F0.02	Run command channel	Terminal control	1	1
F0.03	Frequency given source channel A	Keyboard number given frequency	0	0
F0.08	Keyboard number setting frequency	0.00~Upper frequency	10.00Hz	10.00Hz
F0.14	Acceleration time 1	0.01~650.00s	6.0s	6.0s
F0.15	Deceleration time 1	0.01~650.00s	2.0s	3.0s
F2.00	Input terminal 1 (X1)	Forward running	1	1
F2.01	Input terminal 2 (X2)	Reverse running	2	2
F2.02	Input terminal 3 (X3)	Fault reset	8	8
F2.03	Input terminal 4 (X4)	Multi-speed terminal 1	16	16

F2.04	Input terminal 5 (X5)	Multi-speed terminal 2	17	17
F2.05	Input terminal 6 (X6)	Multi-speed terminal 3	18	18
F2.06	Input terminal 7 (PUL/X7)	Multi-speed terminal 4	19	19
F2.45	Y1 output terminal	Special control function for brake	33	33
F2.46	Relay output 1	Fault trip alarm 1	4	4
F2.47	Relay output 2	Special control function for brake	33	33
FC.00	PLC multi-segment speed 1	0.00~Max frequency	25.00Hz	25.00Hz
FC.02	PLC multi-segment speed 3	0.00~Max frequency	30.00Hz	30.00Hz
FC.06	PLC multi-segment speed 7	0.00~Max frequency	40.00Hz	40.00Hz
FC.14	PLC multi-segment speed 15	0.00~Max frequency	50.00Hz	50.00Hz
Fd.07	ModbusCommunication failure action mode selection	Do not detect timeout failure	0	0

<p>FF.00</p>	<p>Application type selection</p>	<p>0: General 1: Lifting mechanism (closed loop) 2: Translation mechanism 3: Rotating mechanism 4: Construction elevator 5: Lifting mechanism (open loop) After changing this parameter, you need to restore the factory settings</p>	<p>5</p>	<p>1</p>
<p>FF.01</p>	<p>Braking method selection</p>	<p>Units place: Brake release selection 0: Frequency opening 1: Frequency and current associated opening. Tens place: Start direction selection 0: Torque is the same as running direction 1: Torque is always forward rotation Hundreds place: Stop direction selection 0: Torque Same as the running direction 1: Torque is always in the forward direction Thousands of places: Brake control frequency jump 0: invalid 1: Valid</p>	<p>1001</p>	<p>1001</p>

FF.02	Run command control	LED units: reverse control during operation 0: Not allowed to run 1: Allow reverse operation LED ten digits: zero-crossing frequency skip function 0: invalid 1: valid Hundreds of LEDs: reserved	0010	0010
FF.03	Restart waiting delay during braking	0.00-10.00s	0.30	0.30
FF.04	Brake release current coefficient	10.0-100.0%	30.0%	30.0%
FF.05	Zero crossing hopping frequency	0.00-10.00Hz	1.00Hz	1.00Hz
FF.06	Up release frequency	0.00-10.00Hz	2.00Hz	1.00Hz
FF.07	Up holding brake frequency	0.00-10.00Hz	2.00Hz	0.00Hz
FF.08	Down release frequency	0.00-10.00Hz	2.00Hz	0.50Hz
FF.09	Down holding brake frequency	0.00-10.00Hz	2.00Hz	0.00Hz
FF.10	Delay time before up release	0.00-10.00s	0.20s	0.30s
FF.11	Delay time after up release	0.00-10.00s	0.10s	0.10s
FF.12	Delay before up holding brake	0.00-10.00s	0.00s	0.00s

FF.13	Delay after upward brake	0.00-10.00s	0.50s	0.50s
FF.14	Delay before downward brake release	0.00-10.00s	0.30s	0.30s
FF.15	Delay after downward brake release	0.00-10.00s	0.10s	0.10s
FF.16	Delay before downward brake	0.00-10.00s	0.00s	0.00s
FF.17	Delay after downward brake	0.00-10.00s	0.30s	0.50s
FF.25	Current judgment enable during operation	0~1	1	1
FF.26	Current detection during operation	0%~50%	5%	5%
FF.27	Current detection time during operation	0.000~1.000s	0.400s	0.400s
FF.55	Brake failure detection	0: Invalid 1: Valid	0	0
FF.56	Number of brake failure detections	0~10	3	3
FF.57	Brake failure detection torque	0.0~150.0%	100.0%	100.0%
FF.58	Brake failure detection frequency threshold	0.00~5.00Hz	1.00Hz	1.00Hz

FF.59	Frequency threshold filter for brake failure detection	0.0~2.000s	0.200s	0.200s
FF.60	Anti-flow hook function selection	0: Invalid 1: Valid	0	0
FF.61	Anti-flow hook activation threshold	0.00~5.00Hz	1.00Hz	1.00Hz
FF.62	Anti-flow hook maintenance time	0.0~3000.0s	60.0s	60.0s
FF.63	Anti-flow hook start threshold filtering	0.0~2.000s	0.100s	0.100s

Rotating mechanism special macro

Function code number	Function code name	Setting range and definition	Factory setting
F0.00	Motor control method	Open loop vector control mode 1	0
F0.02	Run command channel	Terminal control	1
F0.03	Frequency given source channel A	Keyboard number given frequency	0
F0.08	Keyboard number setting frequency	0.00~Upper limit frequency	8.00Hz
F0.14	Acceleration time 1	0.01~650.00s	10.0s
F0.15	Deceleration time 1	0.01~650.00s	2.0s
F2.00	Input terminal 1 (X1)	Forward running	1
F2.01	Input terminal 2 (X2)	Reverse operation	2
F2.02	Input terminal 3 (X3)	Fault reset	8
F2.03	Input terminal 4 (X4)	Multi-speed terminal 1	16
F2.04	Input terminal 5 (X5)	Multi-speed terminal 2	17
F2.05	Input terminal 6 (X6)	Multi-speed terminal 3	18
F2.06	Input terminal 7 (PUL/X7)	Multi-speed terminal 4	19
F2.45	Y1 Output terminal	The inverter is running	1
F2.46	Relay output 1	Fault trip alarm 1	4
F2.47	Relay output 2	The inverter is running	1

F3.53	AO2 output signal selection	Frequency output Hundreds of LEDs: reserved LED Thousands: Reserved	0040
FC.00	PLC multi-step speed 1	0.00~Max frequency	20.00Hz
FC.02	PLC multi-step speed 3	0.00~Max frequency	35.00Hz
FC.06	PLC multi-step speed 7	0.00~Max frequency	45.00Hz
FC.14	PLC multi-step speed 15	0.00~Max frequency	50.00Hz
Fd.07	Modbus Communication failure action mode selection	Do not detect timeout failure	0
FF.00	Application type selection	Rotating mechanism	3
FF.36	Slewing gentle control selection	LED digit: Slewing gentle control 0: OFF 1: ON LED tens digit: Gentle control acceleration and deceleration time 0: OFF 1: ON	0011
FF.37	Gentle control initial deviation frequency	0.00~20.00Hz	2.50Hz
FF.38	Gentle control direction changes deviation frequency	0.00~20.00Hz	2.50Hz
FF.39	Gentle control acceleration time 1	0.00~650.00s	20.00s

FF.40	Gentle control deceleration time 2	0.00~650.00s	20.00s
FF.41	Frequency of switching acceleration/deceleration time 1 to acceleration/deceleration time 2	0.00~Max frequency	9.00Hz
FF.42	Frequency of switching acceleration/deceleration time 2 to acceleration/deceleration time 3	0.00~Max frequency	21.00Hz
FF.43	Frequency of switching acceleration/deceleration time 3 to acceleration/deceleration time 4	0.00~Max frequency	36.00Hz
FF.45	Eddy current frequency 1	0.00~Max frequency	20.00Hz
FF.46	Eddy current frequency 2	0.00~Max frequency	40.00Hz
FF.47	Eddy current frequency 3	0.00~Max frequency	40.00Hz
FF.48	Zero speed duty cycle	0.00~100.0%	80.00%
FF.49	Eddy current frequency 1 corresponds to duty cycle	0.00~100.0%	40.00%
FF.50	Maximum duty cycle during shutdown	0.00~100.0%	80.00%

FF.51	Vortex maintenance time at shutdown	0.0~3000.0s	60.00s
FF.52	Eddy current output carrier	0.20-4.00kHz	2.00kHz
FF.53	Duty cycle polarity selection	Valid	1
FF.54	Shutdown duty cycle change rate	0.0%/100ms	1.0ms
FF.70	Swing brake mode selection	0: Powered brake 1: Power off brake	0

Macro for translation mechanism

Function code number	Function code name	Setting range and definition	Factory setting
F0.00	Motor control method	Open loop vector control mode 1	0
F0.02	Run command channel	Terminal control	1
F0.03	Frequency given source channel A	Keyboard number given frequency	0
F0.08	Keyboard number setting frequency	0.00~Upper limit frequency	20.00Hz
F0.14	Acceleration time 1	0.01~650.00s	3.0s
F0.15	Deceleration time 1	0.01~650.00s	3.0s
F2.00	Input terminal 1 (X1)	Forward running	1
F2.01	Input terminal 2 (X2)	Reverse operation	2
F2.02	Input terminal 3 (X3)	Fault reset	8
F2.03	Input terminal 4 (X4)	Multi-speed terminal 1	16

F2.04	Input terminal 5 (X5)	Multi-speed terminal 2	17
F2.05	Input terminal 6 (X6)	Multi-speed terminal 3	18
F2.06	Input terminal 7 (PUL/X7)	Multi-speed terminal 4	19
F2.45	Y1 output terminal	The inverter is running	1
F2.46	Relay output 1	Fault trip alarm 1	4
F2.47	Relay output 2	The inverter is running	1
FC.00	PLC multi-step speed 1	0.00~Max frequency	35.00Hz
FC.02	PLC multi-step speed 3	0.00~Max frequency	50.00Hz
FC.06	PLC multi-step speed 7	0.00~Max frequency	40.00Hz
FC.14	PLC multi-step speed 15	0.00~Max frequency	50.00Hz
Fd.07	Modbus Communication failure action mode selection	Do not detect timeout failure	0
FF.00	Application type selection	Translation mechanism	2

4.2 Basic parameter group

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	Communication addresses
----------------------	--------------------	------------------------------	-----------------	------------	-------------------------

F0.00	Motor control mode	Asynchronous motor control mode: 0: Open loop vector control mode 1 3: Open loop vector control mode 2 4: High-performance vector control with PG Synchronous motor control mode: 6: High-performance vector control without PG 7: High-performance vector control with PG	0	○	0x000
F0.01	Reserved				0x001
F0.02	Run command channel	0: Keyboard control 1: Terminal control 2: RS485 communication control 3: Option card	1	●	0x002
F0.03	Frequency given source channel A	0: keyboard number given frequency 1: Keyboard potentiometer setting 2: Voltage analog quantity VS given	0	●	0x003
F0.04	Frequency given source channel B	3: Current/voltage analog quantity AI given 4: Current analog quantity AS given 5: Terminal pulse PUL setting 6: RS485 communication setting 7: Terminal UP/DW control 8: PID control setting 9: Program control (PLC) setting 10: Optional card 11: Multi-stage speed setting	1	●	0x004
F0.05	Frequency channel B	0: Take the maximum output frequency as the	0	●	0x005

	reference source	reference source 1: Use A set frequency as reference source			
F0.06	Frequency reference source selection	0: Channel A 1: Channel B 2: Channel A + Channel B 3: Channel A-channel B 4: The maximum value of both channels A and B 5: The minimum value of both channels A and B	0	●	0x006
F0.07	Run command bundle	LED digit: Keyboard command instruction bundle LED tens digit: Terminal command binding LED hundreds digit: Communication command binding LED thousands: Optional card command binding 0: No binding 1: Keyboard number given frequency 2: Keyboard potentiometer given 3: Voltage analog quantity VS given 4: Current/voltage analog quantity AI given 5: Current analog quantity AS given 6: Terminal pulse PUL given 7: RS485 communication setting 8: Terminal UP/DW control 9: PID control setting A: Program control (PLC) given B: Option card C: Multi-step speed given	0000	●	0x007

F0.08	Keyboard number setting frequency	0.00~Upper frequency	10.00Hz	●	0x008
F0.09	Maximum frequency	Upper frequency~600.00Hz	100.0Hz	○	0x009
F0.10	Upper limit frequency source selection	0: Digital setting of upper limit frequency 1: Keyboard potentiometer setting 2: Voltage analog quantity VS given 3: Current/voltage analog quantity AI given 4: Current analog quantity AS given 5: Terminal pulse PUL setting 6: RS485 communication setting 7: Optional card	0	●	0x00A
F0.11	Upper limit frequency digital setting	Lower limit frequency~Max frequency	100.0Hz	●	0x00B
F0.12	Lower limit frequency	0.00~Upper limit frequency	0.00Hz	●	0x00C
F0.13	Lower limit frequency operation mode	0: stop the output and enter the pause state 1: Operate at lower limit frequency	1	○	0x00D
F0.14	Acceleration time 1	0.01~650.00s	6.0s	※	0x00E
F0.15	Deceleration time 1	0.01~650.00s	2.0s	※	0x00F

F0.16	Rotation direction selection	<p>LED digit: Reverse running direction 0: The direction remains unchanged. 1: The direction is reversed. LED tens digit: the running direction is prohibited 0: Allow positive and negative commands 1: Only allow forward command 2: Only allow reverse command</p> <p>LED hundreds: Frequency control command direction 0: Frequency control direction is invalid 1: Frequency control direction is valid</p> <p>LED thousands digit: Reserved</p>	0000	○	0x010
F0.19	Parameter initialization	<p>0: No operation 1: Restore factory value (do not restore motor parameters) 2: Restore factory values (restore motor parameters) 3: Clear fault record</p>	0	○	0x013

4.3 Operation control parameter group

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	communication address
----------------------	--------------------	------------------------------	-----------------	------------	-----------------------

F1.00	Start operation mode	0: Start by starting frequency 1: DC braking first and then starting from the starting frequency 2: Restart after speed tracking and direction judgment	0	○	0x100
F1.01	Start pre-excitation time	0.00~60.00s	0.0s	○	0x101
F1.02	Start frequency	0.00~60.00Hz	0.50Hz	○	0x102
F1.03	Start frequency duration	0.0~50.0s	0.0s	○	0x103
F1.04	Braking current before starting	0.0~150.0%	60.0%	○	0x104
F1.05	Braking time before starting	0.0~60.0s	0.0s	○	0x105
F1.06	Speed tracking speed	0.00~60.00s	0.50s	○	0x106
F1.07	Speed tracking stop delay	0.00~60.00s	1.0s	○	0x107
F1.10	Stop mode	0: Decelerate to stop 1: Free stop	0	●	0x10A

F1.11	Start frequency of DC braking at stop	0.00~50.00Hz	0.80Hz	○	0x10B
F1.12	Stop DC braking current	0.0~150.0%	80.0%		0x10C
F1.14	DC braking duration at stop	0.0~60.0s	0.5s	○	0x10E
F1.15	Frequency of shutdown detection	0.00~50.00Hz	0.50Hz	●	0x10F
F1.16	Acceleration and deceleration	<p>LED digit: Time base selection</p> <p>0: Max frequency</p> <p>1: Fixed frequency 50Hz</p> <p>2: Set frequency</p> <p>LED tens digit:</p> <p>SAcceleration and deceleration options</p> <p>0: Linear acceleration and deceleration</p> <p>1: S Curve acceleration and deceleration</p> <p>LED hundreds of thousands digit:</p> <p>Reserved</p>	0011	○	0x110
F1.17	Acceleration start S-curve time	0.00~10.00s	0.00s	○	0x111
F1.18	Acceleration end S curve time	0.00~10.00s	0.00s	○	0x112

F1.19	S-curve time to start deceleration	0.00~10.00s	0.00s	○	0x113
F1.20	S-curve time at the end of deceleration	0.00~10.00s	0.20s	○	0x114
F1.21	Acceleration time 2	0.01~650.00s	20.00s	●	0x115
F1.22	Deceleration time 2	0.01~650.00s	20.00s	●	0x116
F1.23	Acceleration time 3	0.01~650.00s	15.00s	●	0x117
F1.24	Deceleration time 3	0.01~650.00s	15.00s	●	0x118
F1.25	Acceleration time 4	0.01~650.00s	15.00s	●	0x119
F1.26	Deceleration time 4	0.01~650.00s	15.00s	●	0x11A
F1.27	Emergency stop deceleration time	0.01~650.00s	1.00s	●	0x11B
F1.28	Forward and reverse dead time	0.0~120.0s	0.0s	○	0x11C
F1.29	Zero speed torque frequency threshold	0.00~10.00Hz	0.50Hz	●	0x11D

F1.30	Zero-speed torque retention coefficient	0.0~150.0%	60.0%	●	0x11E
F1.31	Zero-speed torque holding time	0.0~6000.0s When set to 6000.0s, it keeps still	0.0s	●	0x11F
F1.35	Restart after power failure	0: Invalid 1: valid	0	○	0x123
F1.36	Waiting time for restart after power failure	0.00~60.00s	0.50s	○	0x124
F1.38	Jog operation frequency setting	0.00~Max frequency	5.00Hz	●	0x126
F1.39	Jog acceleration time	0.01~650.00s	10.00s	●	0x127
F1.40	Jog deceleration time	0.01~650.00s	10.00s	●	0x128

4.4 Switch terminal parameter group

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	Communication address
F2.00	Input terminal 1(X1)	0: No function 1: Forward running 2: Reverse operation 4: Forward jog 5: Reverse jog 7: Emergency stop 8: Fault reset 16-19: Multi-speed terminal 1-4	1	○	0x200
F2.01	Input terminal 2 (X2)		2	○	0x201
F2.02	Input terminal 3 (X3)		8	○	0x202
F2.03	Input terminal 4 (X4)		16	○	0x203
F2.04	Input terminal 5 (X5)		17	○	0x204
F2.05	Input terminal 6 (X6)		18	○	0x205
F2.06	Input terminal 7 (PUL/X7)		19	○	0x206
F2.08	X1~X4 terminal characteristic selection	0: Closed effective 1: Opened effective Ones place: X1 Tens place: X2 Hundreds place: X3 Thousands place: X4	0000	●	0x208
F2.09	X5~X7 terminal characteristic selection	0: Closed effective 1: Opened effective Ones place: X5 Tens place: X6 Hundreds place: X7 Thousands place: reserved	0000	●	0x209

F2.10	X1 effective detection delay	0.000~6.000s	0.010s	●	0x20A
F2.11	X1 invalid detection delay	0.000~6.000s	0.010s	●	0x20B
F2.12	X2 effective detection delay	0.000~6.000s	0.010s	●	0x20C
F2.13	X2 invalid detection delay	0.000~6.000s	0.010s	●	0x20D
F2.14	X3 effective detection delay	0.000~6.000s	0.010s	●	0x20E
F2.15	X3 invalid detection delay	0.000~6.000s	0.010s	●	0x20F
F2.16	X4 valid detection delay	0.000~6.000s	0.010s	●	0x210
F2.17	X4 invalid detection delay	0.000~6.000s	0.010s	●	0x211
F2.18	X5 effective detection delay	0.000~6.000s	0.010s	●	0x212
F2.19	X5 invalid detection delay	0.000~6.000s	0.010s	●	0x213
F2.20	X6 effective detection delay	0.000~6.000s	0.010s	●	0x214
F2.21	X6 invalid detection delay	0.000~6.000s	0.010s	●	0x215
F2.22	X7 effective detection delay	0.000~6.000s	0.010s	●	0x216
F2.23	X7 invalid detection delay	0.000~6.000s	0.010s	●	0x217
F2.24- F2.25		Reserved			
F2.26	Terminal control operation mode	0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2	0	○	0x21A

F2.27	Terminal start protection	0: Off 1: On LED units: terminal start protection when exiting abnormal LED ten digits: jog terminal start protection when exiting abnormally LED hundreds: start protection when the command channel is switched to the terminal LED Thousands: Reserved	0111	○	0x21B
F2.28- F2.43		Reserved			
F2.44	Output terminal polarity selection	0: Positive polarity 1: Negative polarity LED units: Y terminal LED ten digits: Relay output 1 Hundreds of LED: Relay output 2	0000	●	0x22C
F2.45	Y1 output terminal	0: no output 1: The inverter is running	33	●	0x22D
F2.46	Relay output 1	4: Fault trip alarm 1	4	●	0x22E
F2.47	Relay output 2	33: Special control function for brake	33	●	0x22F
F2.48	Y1 output delay time	0.000~6.000s	0.010s	●	0x230
F2.49	Relay 1 output delay	0.000~6.000s	0.010s	●	0x231
F2.50	Relay 2 output delay	0.000~6.000s	0.010s	●	0x232
F2.51	Output frequency level 1 (FDT1)	0.00~Max frequency	2.00Hz	●	0x233
F2.52	FDT1 hysteresis	0.00~Max frequency	1.00Hz	●	0x234
F2.53	Output frequency level 2 (FDT2)	0.00~Max frequency	2.00Hz	●	0x235

F2.54	FDT2 hysteresis	0.00~Max frequency	1.00Hz	●	0x236
F2.55	The given frequency reaches the detection value	0.00~50.00Hz	2.00Hz	●	0x237

4.5 Analog terminal parameter group

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	Communication address
F3.00	VS lower limit	0.00~ 10.00V	0.00V	●	0x300
F3.01	VS lower limit corresponding setting	-100.00~ 100.00%	0.00%	●	0x301
F3.02	VS upper limit	0.00~ 10.00V	10.00V	●	0x302
F3.03	VS upper limit corresponding setting	-100.00~ 100.00%	100.00%	●	0x303
F3.04	VS filter time	0.000~ 6.000s	0.010s	●	0x304
F3.05	VS zero hysteresis voltage	0.00~ 10.00V	0.00V	●	0x305
F3.06	AI(VS) lower limit	0.00~ 10.00V	0.00V	●	0x306
F3.07	AI (VS) lower limit corresponding setting	0.00~ 100.00%	0.00%	●	0x307

F3.08	AI(VS) upper limit	0.00~ 10.00V	10.00V	●	0x308
F3.09	AI (VS) upper limit corresponding setting	0.00~ 100.00%	100.00%	●	0x309
F3.10	AI filter time	0.000~ 6.000s	0.010s	●	0x30A
F3.11	AS lower limit	0.00~ 20.00mA	4.00mA	●	0x30B
F3.12	AS lower limit corresponding setting	0.00~ 100.00%	0.00%	●	0x30C
F3.13	AS upper limit	0.00~	20.00mA	●	0x30D
F3.14	AS upper limit corresponding setting	0.00~ 100.00%	100.00%	●	0x30E
F3.15	AS filter time	0.000~ 6.000s	0.010s	●	0x30F
F3.16	AI(AS) lower limit	0.00~ 20.00mA	4.00mA	●	0x310
F3.17	AI(AS) lower limit corresponding setting	0.00~ 100.00%	0.00%	●	0x311
F3.18	AI(AS) upper limit	0.00~ 20.00mA	20.00mA	●	0x312
F3.19	AI (AS) upper limit corresponding setting	0.00~ 100.00%	100.00%	●	0x313

F3.20	VS terminal function selection (as X)	See X terminal function	0	○	0x314
F3.21	VS high level setting	0.00~100.00%	70.00%	●	0x315
F3.22	VS low level setting	0.00~100.00%	30.00%	●	0x316
F3.23	AI terminal function selection (as X)	See X terminal function	0	○	0x317
F3.24	AI high level setting	0.00~100.00%	70.00%	●	0x318
F3.25	AI low level setting	0.00~100.00%	30.00%	●	0x319
F3.26	AS terminal function selection (as X)	See X terminal function	0	○	0x31A
F3.27	AS high level setting	0.00~100.00%	70.00%	●	0x31B
F3.28	AS low level setting	0.00~100.00%	30.00%	●	0x31C
F3.29	Analog quantity is used as terminal effective state setting	0: Low level 1: High level LED digit: VS LED tens digit: AI LED hundreds digit: AS LED thousands digit: Reserved	0000	●	0x31D
F3.30	Analog input curve selection	LED digit: VS 0: straight line (default)	0000	●	0x31E

		1: Curve 1 2: Curve 2 LED tens digit: AI (select voltage and current input through jumpers) LED hundreds digit: AS LED thousands digit: reserved			
F3.31	Reserved				0x31F
F3.32	Curve 1 lower limit	0.00~ 10.00V	0.00V	●	0x320
F3.33	Curve 1 lower limit corresponding setting	0.00~ 100.00%	0.0%	●	0x321
F3.34	Curve 1 knee point 1 input voltage	0.00~ 10.00V	3.00V	●	0x322
F3.35	Curve 1 inflection point 1 corresponding setting	0.00~ 100.00%	30.00%	●	0x323
F3.36	Curve 1 inflection point 2 input voltage	0.00~ 10.00V	6.00V	●	0x324

F3.37	Curve 1 inflection point 2 corresponding setting	0.00~100.00%	60.00%	●	0x325
F3.38	Upper limit of curve 1	0.00~10.00V	10.0V	●	0x326
F3.39	Curve 1 upper limit corresponding setting	0.00~100.00%	100.00%	●	0x327
F3.40	Curve 2 lower limit	0.00~10.00V	0.00V	●	0x328
F3.41	Curve 2 lower limit	0.00~100.00%	0.00%	●	0x329
F3.42	Curve 2 knee point 1 input voltage	0.00~10.00V	3.00V	●	0x32A
F3.43	Curve 2 inflection point 1 corresponding setting	0.00~100.00%	30.00%	●	0x32B
F3.44	Curve 2 inflection point 2 input voltage	0.00~10.00V	6.00V	●	0x32C
F3.45	Curve 2 inflection point 2 corresponding setting	0.00~100.00%	60.00%	●	0x32D
F3.46	Curve 2 upper limit	0.00~10.00V	10.00V	●	0x32E

F3.47	Curve 2 upper limit corresponding setting	0.00~ 100.00%	100.00%	●	0x32F
F3.48 -F3.52	Reserved				
F3.53	AO output signal selection	LED digit: AO1 0: 0~10V 1: 4.00~ 20.00mA 2: 0.00~ 20.00mA LED tens digit: AO2 0: 0~10V 1: 4.00~ 20.00mA 2: 0.00~ 20.00mA 3: FM Frequency pulse output 4: Frequency output LED Hundreds of thousands digit: Reserved	0040	●	0x335
F3.54	AO1 Output selection	0: given frequency	0	●	0x336
F3.55	A02 Output selection	1: Output frequency 2: Output current 3: Input voltage 4: Output voltage	1	●	0x337

		5: Mechanical speed 6: given torque 7: Output torque 8: PID given amount 9: PID feedback amount 10: output power 11: Bus voltage 12: VS input value 13: AI input value 14: AS input value 15: PUL input value 16: Module temperature 1 17: Module temperature 2 18: RS485 given			
F3.56	AO1 Output gain	25.0~ 200.0%	100.0%	●	0x338
F3.57	AO1 output	-10.0~	0.0%	●	0x339
F3.58	AO1 Output filter	0.000~	0.010s	●	0x33A
F3.59	AO2 Output	25.0~	100.0%	●	0x33B
F3.60	AO2 Analog	-10.0%~	0.0%	●	0x33C
F3.61	AO2 Output filter	0.000~ 6.000s	0.010s	●	0x33D

F3.62	A02 FM Frequency output lower limit	0.00~ 100.00kHz	0.20kHz	●	0x33E
F3.63	A02 FM frequency output upper limit	0.00~ 100.00kHz	50.00kHz	●	0x33F
F3.64- F3.79	Reserved				

4.6 System parameter group

Function code number	Function code name	Setting range and definition	Factor y setting	Attri bute s	commu nication address
F4.00	Parameters and key lock selection	0: not locked 1: Function parameter lock 2: Function parameters and key lock (except RUN/STOP/JOG) 3: Function parameters and keys are fully locked	1	●	0x400
F4.01	user password	0~9999	****	●	0x401
F4.04	LCD Keyboard language selection	0: Chinese 1: English	0	●	0x404
F4.05	Parameter copy	0: No function 1: The inverter parameter value is transferred to the keyboard and saved 2: The parameters saved by the keyboard are transferred to the inverter Remaining value: no operation	0	○	0x405
F4.06	Keyboard special function selection	LED units: turn on DIE monitoring 0: Off 1: On LED ten digits: no potentiometer sampling lock 0: Off 1: On	0000	○	0x406

F4.07	Keyboard REV/JOG selection	0: REV 1: JOG	0	○	0x407
F4.08	Keyboard STOP key setting	0: Non-keyboard control mode is invalid 1: Non-keyboard control mode, stop according to the stop mode 2: Non-keyboard control mode, stop in free mode	0	○	0x408
F4.09	Keyboard up and down key selection	LED digit: Keyboard up and down to modify selection 0: Invalid 1: Used to adjust the frequency keyboard setting F0.08 2: Used to adjust PID keyboard setting Fb.01 LED tens digit: Power-down storage 0: The frequency is not stored after power-off 1: Frequency power down storage LED tens digit: Action restriction 0: Adjustable when running and stopping 1: Adjustable only during operation, keep it when stopped 2: Adjustable during operation, reset at shutdown	0011	○	0x409
F4.10	Lower limit of keyboard potentiometer	0.00~5.00V	0.50V	●	0x40A
F4.11	Keyboard potentiometer lower limit corresponding	0.00~100.00%	0.0	●	0x40B

F4.12	Upper limit of keyboard potentiometer	0.00~5.00V	4.50V	●	0x40C
F4.13	Keyboard potentiometer upper limit corresponding	0.00~100.00%	100.0	●	0x40D
F4.14	The content displayed in the first line of the keyboard is running	See the monitoring code table for specific meanings Ten digits of LED: The first group displays 00~63 Hundreds digits of LEDs: The second group displays 00~63	1101	●	0x40E
F4.15	The content displayed in the first line of the keyboard is running	See the monitoring code table for specific meanings Digits and Ten digits of LED: The first group displays 00~63 Hundreds and thousands of LEDs: The second group displays 00~63	0402	●	0x40F
F4.16	The content displayed on the first line of the keyboard in shutdown state	See the monitoring code table for specific meanings Ten digits of LED: The first group displays 00~63 Hundreds of LEDs: The second group displays 00~63	1100	●	0x410
F4.17	The content displayed on the first line of the keyboard in shutdown state	See the monitoring code table for specific meanings Ten digits of LED: The first group displays 00~63 Hundreds of LEDs: The second group displays 00~63	1100	●	0x411

F4.18	Display content in the second line of the keyboard	See the monitoring code table for specific meanings Ten digits of LED: The first group displays 00~63 Hundreds of LEDs: The second group displays 00~63	0402	●	0x412
F4.19	Display content in the second line of the keyboard	See the monitoring code table for specific meanings Ten digits of LED: The first group displays 00~63 Hundreds of LEDs: The second group displays 00~63	1210	●	0x413
F4.20	The second line of the keyboard displays the content in the stopped state	See the monitoring code table for specific meanings Ten digits of LED: The first group displays 00~63 Hundreds of LEDs: The second group displays 00~63	0011	●	0x414
F4.21	The second line of the keyboard displays the content in the stopped state	See the monitoring code table for specific meanings Ten digits of LED: The first group displays 00~63 Hundreds of LEDs: The second group displays 00~63	0011	●	0x415
F4.22	Keyboard display item settings	LED digit: Output frequency display 0: Given frequency 1: Running frequency LED tens digit: 功率显示量纲 0: 百分比 1: 千瓦	0000	●	0x416
F4.23	Monitor display selection	LED 个位: C-00~C-39 0: 正常 1: 调试	0050	●	0x417

		LED 十位: C-40~C-69 0: 无显示 1: 正常显示			
F4.24	Speed display coefficient	0.0~500.0%	100.0%	●	0x418
F4.25	Power display coefficient	0.0~500.0%	100.0%	●	0x419
F4.26	Alarm selection 1	LED units: E.EEP failure (EEPROM storage failure) 0: Alarm and free stop 1: Alarm and continue to run	0000	○	0x41A
F4.28	Fan control	0: The fan runs after the inverter is powered on 1: Shutdown is related to temperature, running is running 2: Stop when stop, operation is related to temperature	1	●	0x41C
F4.29	Dynamic braking enable	0: OFF 1: ON	1	●	0x41D
F4.30	Dynamic braking action voltage	115.0%~140.0%	128.0%	●	0x41E
F4.31	Energy consumption braking utilization rate	0.0~100.0%	100.0%	●	0x41F
F4.32	PWM Carrier frequency	0.7~16.0kHz	Model setting	※	0x420
F4.33	PWM Control mode	LED digit: Carrier and temperature correlation 0: Not related to temperature 1: Related to temperature LED tens digit: Carrier and output frequency correlation 0: irrelevant 1: relevant Hundreds place of LED: random PWM enable 0: Disable 1: Enable	1000	●	0x421

		<p>LED thousands: PWM modulation method</p> <p>0: Only use three-phase modulation</p> <p>1: Two-phase three-phase modulation automatic switching</p>			
--	--	--	--	--	--

4.7 Motor parameter group

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	Communication address
F5.00	Motor type	0: Asynchronous motor (AM) 1: Permanent magnet synchronous motor (PM)	0	×	0x500
F5.01	Motor pole number	2~98	4	○	0x501
F5.02	Motor rated power	0.1~1000.0kW	Model setting	※	0x502
F5.03	Motor rated frequency	0.01~Max frequency	Model setting	※	0x503
F5.04	Motor rated speed	1~65000rpm	Model setting	※	0x504
F5.05	Motor rated voltage	1~1500V	Model setting	※	0x505
F5.06	Motor rated current	0.1~3000.0A	Model setting	※	0x506
F5.07	Asynchronous motor no-load current	0.1~3000.0A	Model setting	※	0x507
F5.08	Stator resistance of asynchronous motor	0.01~50.00%	Model setting	※	0x508
F5.09	Induction motor rotor resistance	0.01~50.00%	Model setting	※	0x509
F5.10	Asynchronous motor stator leakage inductance	0.01~50.00%	Model setting	※	0x50A
F5.11	Asynchronous motor stator inductance	0.1~2000.0%	Model setting	※	0x50B

F5.20	Motor parameter self-tuning selection	0: No operation 1: Rotary self-learning 2: Static self-learning 3: Fast static learning	0	○	0x514
F5.30	Speed feedback or encoder type	LED digit: Encoder type 0: ABZ encoder 1: Resolver LED tens digit: Encoder direction 0: Same direction 1: Opposite direction LED hundreds digit: Disconnection detection 0: OFF 1: ON LED thousand digit: Z pulse correction 0: OFF 1: ON	0000	○	0x51E
F5.31	ABZ encoder line number	1~10000	1024	○	0x51F
F5.32	Disconnection detection time	0.100~60.000s	0.500s	●	0x520
F5.33	Number of poles of resolver	2~128	2	○	0x521
F5.36	Encoder speed measurement first-order filtering	0.0~100.0ms	1.0ms	●	0x524

4.8 Motor vector control group

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	communication address
F6.00	ASR (speed loop) proportional gain 1	0.01~100.00	10.00	●	0x600
F6.01	ASR (speed loop) integration time 1	0.000~6.000s	0.100s	●	0x601
F6.02	ASR filter time 1	0.0~100.0ms	0.0ms	●	0x602
F6.03	ASR switching frequency 1	0.00~Max frequency	0.0Hz	●	0x603
F6.04	ASR (speed loop) proportional gain 2	0.01~100.00	10.00	●	0x604
F6.05	ASR (speed loop) integration time 2	0.000~6.000s	0.100s	●	0x605
F6.06	ASR filter time 2	0.0~100.0ms	0.0ms	●	0x606
F6.07	ASR switching frequency 2	0.00~Maximum frequency	0.0Hz	●	0x607
F6.08	Electric torque limit	0.0~250.0%	180.0%	●	0x608
F6.09	Generator torque limit	0.0~250.0%	180.0%	●	0x609
F6.10	Current loop D axis proportional gain	0.001~4.000	1.000	●	0x60A
F6.11	Current loop D axis integral gain	0.001~4.000	1.000	●	0x60B
F6.12	Current loop Q axis proportional gain	0.001~4.000	1.000	●	0x60C
F6.13	Current loop Q axis integral gain	0.001~4.000	1.000	●	0x60D

F6.15	Vector control electric slip compensation	0.0~250.0%	100.0%	●	0x60F
F6.16	Vector control power generation slip compensation	0.0~250.0%	0.0%	●	0x610
F6.18	Position compensation control	0: OFF 1: ON	0	○	0x612
F6.19	Compensation gain	0.0~250.0%	0.0%	○	0x613
F6.20	Compensation limit	0.0~100.0%	0.0%	○	0x614
F6.21	Compensation range	0.0~100.0%	10.0%	○	0x615
F6.22	Overexcitation braking gain	0.0~500.0%	100.0%	○	0x616
F6.23	Overexcitation braking limit	0.0~250.0%	100.0%	○	0x617
F6.24	Vector control energy saving function	0: OFF 1: ON	0	○	0x618
F6.25	Energy-saving control gain	0.0~80.0%	50.0%	●	0x619
F6.26	Energy-saving control low-pass filter	0.000~6.000s	0.010s	●	0x61A
F6.27	Motor power limit in constant power zone	0.0~250.0%	200.0%	●	0x61B
F6.28	Upper limit of motor field weakening current	0.0~250.0%	60.0%	○	0x61C
F6.29	Motor field weakening feedforward gain	0.0~200.0%	10.0%	●	0x61D

F6.30	Motor field weakening gain	0.0~500.0%	10.0%	●	0x61E
F6.32	MTPA gain	0.0~400.0%	100.0%	●	0x620
F6.33	MTPA Filter time	0.0~100.0ms	1.0ms	●	0x621
F6.35	Low-frequency pull-in current	0.0~100.0%	20.0%	●	0x623
F6.36	High frequency pull current	0.0~100.0%	10.0%	●	0x624
F6.37	Pull-in current frequency	0.0~100.0%	10.0%	●	0x625
F6.38-F6.69		Reserved			

4.9 Motor V/F control parameters

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	communication address
F8.00	Linear VF curve selection	0: Straight line VF curve; 1-9: 1.1-1.9 power VF curve respectively; 10: Square VF curve; 11: Custom VF curve;	0	○	0x800
F8.01	Self-set voltage V1	0.0~100.0%	3.0%	○	0x801
F8.02	Self-set frequency F1	0.00~Max frequency	1.00Hz	○	0x802
F8.03	Self-set voltage V2	0.0~100.0%	28.0%	○	0x803
F8.04	Self-set frequency F2	0.00~Max frequency	10.00Hz	○	0x804
F8.05	Self-set voltage V3	0.0~100.0%	55.0%	○	0x805
F8.06	Self-set frequency F3	0.00~Max frequency	25.00Hz	○	0x806

F8.07	Self-set voltage V4	0.0~100.0%	78.0%	○	0x807
F8.08	Self-set frequency F4	0.00~Max frequency	37.50Hz	○	0x808
F8.09	Self-setting voltage V5	0.0~100.0%	100.0%	○	0x809
F8.10	Self-set frequency F5	0.00~Max frequency	50.00Hz	○	0x80A
F8.11	Percentage of output voltage	25.0~120.0%	100.0%	○	0x80B
F8.12	Torque boost	0.0~30.0%	0.0%	●	0x80C
F8.13	Torque boost cut-off frequency	0.0~100.0%	100.0%	●	0x80D
F8.14	Slip compensation gain	0.0~200.0%	0.00%	●	0x80E
F8.15	Slip compensation limit	0.0~300.0%	100.0%	●	0x80F
F8.16	Slip compensation filter time	0.000~6.000s	0.200s	●	0x810
F8.17	Oscillation suppression gain	0.0~900.0%	100.0%	●	0x811

4.10 Protection and fault parameter group

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	communication address
----------------------	--------------------	------------------------------	-----------------	------------	-----------------------

FA.00	Overcurrent suppression function	0: suppression is always effective 1: Acceleration and deceleration are valid, and constant speed is invalid	0	●	0xA0 0
FA.01	Overcurrent suppression point	0.0 ~ 300.0%	180.0%	●	0xA0 1
FA.02	Overcurrent suppression gain	0.0 ~ 500.0%	100.0%	●	0xA0 2
FA.03	Current hardware protection settings	LED units: wave-by-wave current limiting 0: Off 1: On Hundreds of LEDs: OC interference suppression 0: Disable 1: Level 1 interference suppression 2: Secondary interference suppression Hundreds of LEDs: SC interference suppression 0: Disable 1: Level 1 interference suppression 2: Secondary interference suppression LED Thousands: Reserved	0000	○	0xA0 3
FA.05	Bus overvoltage hardware protection	0: OFF 1: ON	0	○	0xA0 5
FA.12	Bus undervoltage protection point	60.0 ~ 90.0%	75.0%	※	0xA0 C
FA.13	Reserved				0xA0
FA.14	Power on to ground short circuit detection	0: OFF 1: ON	0	○	0xA0 E
FA.15	Phase protection	LED units: output phase loss 0: Off 1: On	0021	○	0xA0 F

		<p>LED ten: input phase loss 0: Turn off 1: Turn on alarm 2: Turn on fault Hundreds of LEDs: reserved</p>			
FA.16	Motor overload protection factor	0.0~250.0%	100.0%	○	0xA1 0
FA.17	Load warning detection setting	<p>LED digit: Checkout selection (protection 1)0: No detection 1: Excessive detection load 2: Only detect excessive load at constant speed 3: Detection of insufficient load 4: Only detect insufficient load at constant speed LED tens digit: Alarm selection 0: alarm, continue to run 1: Fault protection action and free stop LED hundreds digit: Checkout selection (protect 2) 0: No detection 1: Excessive detection load 2: Only detect excessive load at constant speed 3: Detection of insufficient load 4: Detection of insufficient load only at constant speed LED thousands digit: Alarm selection 0: alarm, continue to run 1: Fault protection action and free stop</p>	0000	○	0xA1 1
FA.18	Load early warning detection level 1	0.0~200.0%	130.0%	○	0xA1 2

FA.19	Load early warning detection level 1	0.0~60.0s	5.0s	○	0xA1 3
FA.20	Load warning detection level 2	0.0~200.0%	20.0%	○	0xA1 4
FA.21	Load warning detection time 2	0.0~60.0s	0.5s	○	0xA1 5
FA.22	Reserved				0xA1
FA.23	Over speed deviation protection action	<p>LED digit: Check out selection 0: No detection 1: Only detect at constant speed 2: Always check</p> <p>LED tens digit: Alarm selection 0: Free stop and report fault 1: Alarm and continue to run</p> <p>LED Hundreds & thousands digit: Reserved</p>	0000	○	0xA1 7
FA.24	Excessive speed deviation detection threshold	0.0~60.0%	10.0%	○	0xA1 8
FA.25	Excessive speed deviation detection time	0.0~60.0s	2.0s	○	0xA1 9
FA.26	Fast protection action	<p>LED digit: Check out selection 0: Do not detect 1: Only detect at constant speed 2: Always detect</p> <p>LED tens digit: Alarm selection 0: Free stop and report fault 1: Alarm and continue to run</p> <p>LED Hundreds & thousands digit: Reserved</p>	0002	○	0xA1 A
FA.27	Fast detection threshold	0.0~150.0%	110.0%	○	0xA1 B

FA.28	Fast detection time	0.000~2.000s	0.010s	○	0xA1 C
FA.29-FA.36		Reserved			
FA.37	Fault self-recovery times	0~5	0	○	0xA2 5
FA.38	Fault self-recovery interval	0.1~100.0s	1.0s	○	0xA2 6
FA.39	Fault diagnosis information	See the fault information code table for details	--	×	0xA2 7
FA.40	Fault type	See the fault information code table for details	--	×	0xA2 8
FA.41	Fault operation frequency	0.00~Max frequency	--	×	0xA2 9
FA.42	Fault output voltage	0~1500V	--	×	0xA2 A
FA.43	Fault output current	0.1~2000.0A	--	×	0xA2 B
FA.44	Fault bus voltage	0~3000V	--	×	0xA2 C
FA.45	Temperature of faulty module	0~100°C	--	×	0xA2 D
FA.46	Faulty inverter status	LED digit: Running direction 0: Forward rotation 1: Reverse rotation LED ten digits: running status 0: stop 1: accelerate 2: Decelerate 3: Constant speed LED Hundreds & thousands digit: Reserved	--	×	0xA2 E

FA.47	Fault input terminal status	See input terminal state diagram	--	x	0xA2 F
FA.48	Fault output terminal status	See output terminal state diagram	--	x	0xA3 0
FA.49	Type of previous failure	See the fault information code table for details	--	x	0xA3 1
FA.50	Operating frequency of previous failure	0.00~Max frequency	--	x	0xA3 2
FA.51	Output voltage of previous failure	0~1500V	--	x	0xA3 3
FA.52	Output current of previous fault	0.1~2000.0A	--	x	0xA3 4
FA.53	Bus voltage at the previous failure	0~3000V	--	x	0xA3 5
FA.54	The temperature of the previous failed module	0~100°C	--	x	0xA3 6
FA.55	Inverter status of previous failure	LED digit: Running direction 0: Forward rotation 1: Reverse rotation LED tens digit:Running status 0: stop 1: steady speed 2: Accelerate 3: Decelerate LED Hundreds & thousands digit: Reserved	--	x	0xA3 7
FA.56	Input terminal of previous fault	See input terminal state diagram	--	x	0xA3 8
FA.57	Last fault output terminal	See output terminal state diagram	--	x	0xA3 9

FA.58	The first two failure types	See the fault information code table for details	--	x	0xA3 A
FA.59	The first three failure types	See the fault information code table for details	--	x	0xA3 B

4.11 Multi-speed, PLC function parameter group

Function code number	Function code name	Setting range and definition	Factor y setting	Attributes	communication address
FC.00	PLC multi-segment speed 1	0.00~Max frequency	25.00Hz	●	0xC00
FC.01	PLC multi-segment speed 2	0.00~Max frequency	20.00Hz	●	0xC01
FC.02	PLC multi-segment speed 3	0.00~Max frequency	30.00Hz	●	0xC02
FC.03	PLC multi-segment speed 4	0.00~Max frequency	40.00Hz	●	0xC03
FC.04	PLC multi-segment speed 5	0.00~Max frequency	50.00Hz	●	0xC04
FC.05	PLC multi-segment speed 6	0.00~Max frequency	40.00Hz	●	0xC05
FC.06	PLC multi-segment speed 7	0.00~Max frequency	40.00Hz	●	0xC06

FC.07	PLC multi-segment speed 8	0.00~Max frequency	20.00Hz	●	0xC07
FC.08	PLC multi-segment speed 9	0.00~Max frequency	10.00Hz	●	0xC08
FC.09	PLC multi-segment speed 10	0.00~Max frequency	20.00Hz	●	0xC09
FC.10	PLC multi-segment speed 11	0.00~Max frequency	30.00Hz	●	0xC0A
FC.11	PLC multi-segment speed 12	0.00~Max frequency	40.00Hz	●	0xC0B
FC.12	PLC multi-segment speed 13	0.00~Max frequency	5.00Hz	●	0xC0C
FC.13	PLC multi-segment speed 14	0.00~Max frequency	40.00Hz	●	0xC0D
FC.14	PLC multi-segment speed 15	0.00~Max frequency	50.00Hz	●	0xC0E
FC.15	PLC operation mode selection	<p>LED digit: Cycle way 0: stop after single cycle 1: Continuous loop 2: Keep the final value after a single cycle</p> <p>LED tens digit: Time unit 0: second 1: minutes 2: hours</p> <p>Hundreds of LEDs: power-down storage mode 0: do not store 1: store</p> <p>LED thousands: start mode 0: Re-run from the first stage 1: Re-operate from the stage of shutdown</p>	0000	●	0xC0F

		2: Continue to run with the remaining time of the shutdown period			
FC.16	PLC 1st segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC10
FC.17	PLC 2nd segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC11
FC.18	PLC 3rd segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC12
FC.19	PLC 4th segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC13
FC.20	PLC 5th segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC14
FC.21	PLC 6th segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC15
FC.22	PLC 7th segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC16
FC.23	PLC 8th segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC17
FC.24	PLC 9th segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC18
FC.25	PLC 10th segment running time	0.0~6500.0(s/m/h)	10.0	●	0xC19
FC.26-FC.30	Reserved				
FC.31	PLC section 1-10 direction and acceleration and deceleration time	LED digit: The running direction of this section 0: Forward 1: Reverse LED tens digit: Acceleration and deceleration time of this section	0000	●	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		0: acceleration and deceleration time 1	0000	●	0xC26
FC.39		1: Acceleration and deceleration time 2	0000	●	0xC27
FC.40		2: Acceleration and deceleration time 3 3: Acceleration and deceleration time 4 LED Hundreds & thousands digit: Reserved	0000	●	0xC28

4.12 Communication control function parameter group

Function code number	Function code name	Setting range and definition	Factory setting	Attributes	communication address
Fd.00	Master-slave selection	LED digit: Modbus Communication master-slave selection 0: Slave 1: Master LED Hundreds & thousands digit: Reserved	0000	○	0xD00
Fd.01	485 communication address	1~247	1	○	0xD01
Fd.02	Communication baud rate selection	LED digit: 485 communication: 0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 38400 bps LED tens & hundreds & thousands digit: Reserved	0005	○	0xD02

Fd.03	ModbusData Format	0: (N, 8, 1) no check, Data bits: 8, Stop bit: 1 1: (E, 8, 1) even parity, Data bits: 8, Stop bit: 1 2: (O, 8, 1) odd parity, Data bits: 8, Stop bit: 1 3: (N, 8, 2) no check, Data bits: 8, Stop bit: 2 4: (E, 8, 2) even parity, Data bits: 8, Stop bit: 2 5: (O, 8, 2) odd parity, Data bits: 8, Stop bit: 2	0	○	0xD03
Fd.04	Communication ratio setting	0.00~5.00	1.00	●	0xD04
Fd.05	Modbus Communication response delay	0~500ms	0ms	●	0xD05
Fd.06	Modbus Communication timeout failure time	0.1~100.0s	1.0s	●	0xD06
Fd.07	Modbus communication failure action mode selection	0: Do not detect timeout failure 1: Alarm and stop freely 2: Warning and continue running 3: Forced shutdown	0	●	0xD07

Fd.08	Modbus Transmission response processing	0: Write operation has response 1: No response to write operation	1	●	0xD08
Fd.09	Host send selection	<p>LED digit: Select the first group of sending frames 0: invalid 1: Host run command 2: Host given frequency 3: Host output frequency 4: Host upper limit frequency 5: Torque given by the host 6: Host output torque 7: Torque control forward speed limit 8: Torque control reverse speed limit</p> <p>LED ten digits: the second group of sending frame selection is the same as above Hundreds digit of LED: the third group of sending frame selection is the same as above Thousands digit of LEDs: The fourth group of sending frames is selected as above</p>	0031	●	0xD09

Fd.10	RS485 Communication port configuration	0: Configure for Modbus communication 1: Configure for serial communication 2: Reserved	0	●	0xD0A
Fd.11 -Fd.13	Reserved				
Fd.14	LAN first level address	Setting range: 0~ 9999	0	●	0xD0E
Fd.15	LAN secondary address	Setting range: 0~ 9999	0	●	0xD0F

4.13 Light load speed up function

FF.28	Light load up-frequency function selection	0: Invalid 1: Judging by current	0
FF.29	Load calculation time	0.000~10.000s	1.000s
FF.30	Judgment value of uplink frequency up	0.0~100.0%	50.0%
FF.31	Uplink frequency up limit frequency	0.00~100.00Hz	65.00Hz
FF.32	Judgment value of downlink frequency up	0.0~100.0%	50.0%
FF.33	Downlink frequency up limit frequency	0.00~100.00Hz	65.00Hz

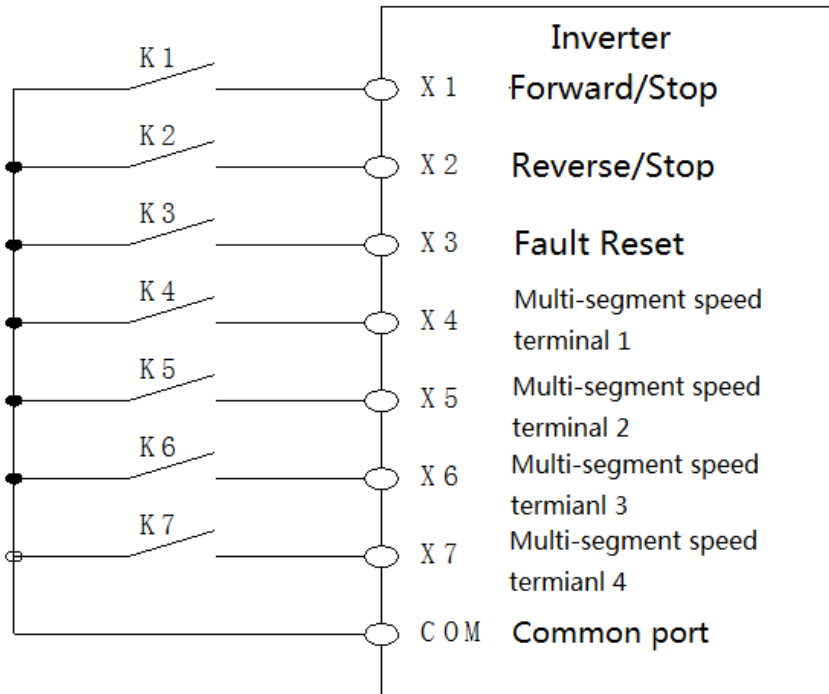
When the output frequency is equal to the rated frequency $f_{5.03}$ of the motor, maintain the set time of ff.29 and judge the frequency increase value. If the frequency increase condition is met, the frequency increase is carried out. Take the current judgment as an example to illustrate: when the output current (the percentage of motor rated current) is less than ff.30 in uplink, the frequency is increased, and the frequency is limited by ff.31; when the output current (the percentage of motor rated current) is less than ff.32 in downlink, the frequency is increased, and the frequency is limited by ff.33.

4.14 Description of multi-segment speed setting

Multi-segment speed 4	Multi-segment speed 3	Multi-segment speed 2	Multi-segment speed 1	Terminal Speed NO
OFF	OFF	OFF	ON	1X [FC.00]
OFF	OFF	ON	OFF	2X [FC.01]
OFF	OFF	ON	ON	3X [FC.02]
OFF	ON	OFF	OFF	4X [FC.03]
OFF	ON	OFF	ON	5X [FC.04]
OFF	ON	ON	OFF	6X [FC.05]
OFF	ON	ON	ON	7X [FC.06]
ON	OFF	OFF	OFF	8X [FC.07]
ON	OFF	OFF	ON	9X [FC.08]
ON	OFF	ON	OFF	10X [FC.09]
ON	OFF	ON	ON	11X [FC.10]
ON	ON	OFF	OFF	12X [FC.11]
ON	ON	OFF	ON	13X [FC.12]
ON	ON	ON	OFF	14X [FC.13]
ON	ON	ON	ON	15X [FC.14]

Multi-stage speed control has priority second only to jog. When the user selects multi-speed operation, 4 multi-function input terminals must be set as multi-speed control terminals.

The ON/OFF combination state of these 4 multi-speed control terminals and **(COM)** controls the speed at which the inverter runs. Its operation and direction are controlled by the operation signal and direction given by the operation command channel [F0.02]. The default acceleration and deceleration time is addition and deceleration time 1 [F0.14], [F0.15], and it can also be selected through the acceleration and deceleration time selection terminals set by the multi-function input terminal [F2.00~F2.06] Select acceleration and deceleration time.



Terminal connection diagram

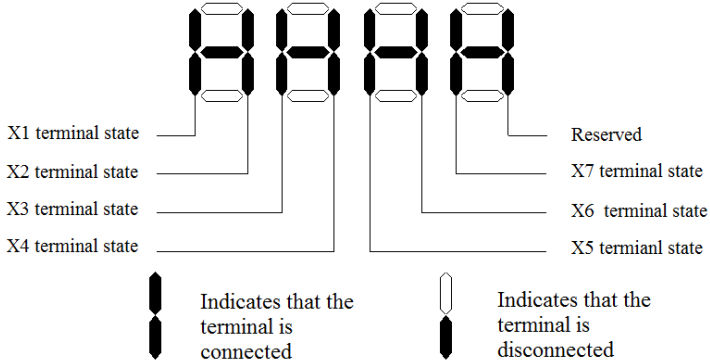
4.15 Monitoring code

Enter the "C" parameter group by pressing the PRG key for more than 2 seconds. Check the current status of the inverter.

Function code number	Function code name	Unit and definition	communicati on address
C-00	Given frequency	0.01Hz	2100H
C-01	Output frequency	0.01Hz	2101H
C-02	Output current	0.1A	2102H
C-03	Input voltage	0.1V	2103H
C-04	Output voltage	0.1V	2104H
C-05	Mechanical speed	1RPM	2105H
C-06	Given torque	0.1%	2106H
C-07	Output torque	0.1%	2107H

C-08	PID given amount	0.1%	2108H
C-09	PID Feedback amount	0.1%	2109H
C-10	Output Power	0.1%	210AH
C-11	Bus voltage	0.1V	210BH
C-12	Module temperature 1	0.1°C	210CH
C-13	Module temperature 2	0.1°C	210DH
C-14	Input terminal X connected state	See input terminal state diagram	210EH
C-15	Output terminal Y connected state	See input terminal state diagram	210FH
C-16	Analog VS input value	0.001V	2110H
C-17	Analog AI input value	0.001V/0.001mA	2111H
C-18	Analog AS input value	0.001mA	2112H
C-19	Pulse signal PUL input value	0.001kHz	2113H
C-20	Analog output AO1	0.01V	2114H
C-21	Analog output AO2	0.01V/0.01mA/0.01kHz	2115H
C-22	Counter count value		2116H
C-23	Running time of this power-on	0.1 hour	2117H
C-24	Accumulated running time of this machine	hour	2118H
C-25	Inverter power rating	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
C-30	Expansion terminal input status	See input terminal state diagram	211EH
C-31	Expansion terminal output status	See input terminal state diagram	211FH
C-35	Timer time	s/minute/hour	2123H
C-36	Fault warning code		2124H

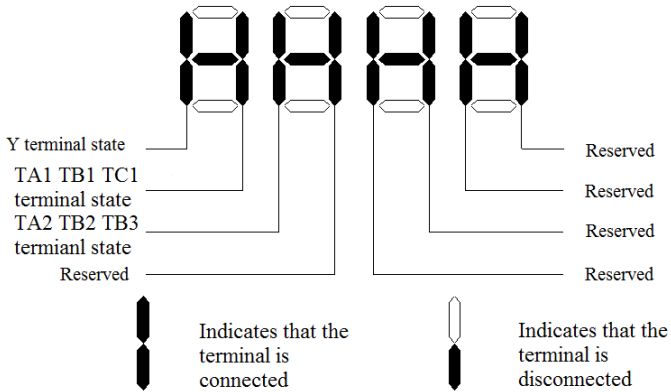
Schematic diagram of input terminal disconnected and connected state:



Schematic diagram of input terminal on/off state

Tip: The connection diagram of C-30 monitoring expansion input terminals D0~D5 is the same as this, but only the first six digits are valid.

Schematic diagram of output terminal disconnected and connected state:



Schematic diagram of input terminal on/off state


5 Fault information








This chapter describes the fault, alarm and operation fault of the inverter, the display content and Countermeasures on the inverter. In addition, this chapter also briefly describes the bad conditions caused by the faults of frequency converter and motor and the solutions. Please refer to this chapter for the adjustment guide of frequency converter during trial operation.





5.1 Fault type

Type	Action of frequency converter in case of fault
Equipment failure	<p>When the inverter detects a fault, the following conditions will occur:</p> <ul style="list-style-type: none"> • The text indicating the fault content appears on the keyboard; • The output of the inverter is cut off and the motor coasts to stop; • When function [F2.45] is selected as 3 (fault trip alarm 1), Y terminal outputs effective open-collector switch output; • When function [F2.46][F2.47] is selected as 3 (fault trip alarm 1), terminals TA1-TC1, TA2-TC2 output closed passive switch output, and terminals TB1-TC1, TB2-TC2 output Disconnected passive switch output; • For the fault phenomena of overload (OL), over current (OC), system abnormality (SC), over voltage (OU), under voltage (LU2) during operation, if the [FA.37] selection is not 0, at this time, If the above fault occurs, the inverter will restart automatically after the time interval set by [FA.38].
External fault	<p>In some applications, the fault signal of external related equipment is incorporated into the frequency conversion control system for monitoring, protection, switching control and other purposes. At this time, if a certain multi-function contact input terminal is defined as "external fault", it will be</p> <p>When the fault signal is valid, the inverter will block the output and give an alarm signal.</p>





5.2 Fault information and details






Keyboard display	Error code	Fault type	Possible cause of failure	Troubleshooting
	64	Voltage is too low	<ul style="list-style-type: none"> •The power supply voltage is too low; •The voltage detection circuit is abnormal. 	<ul style="list-style-type: none"> • Check the input power and troubleshoot; • Seek technical support from the manufacturer.






	10	Undervoltage during operation	<ul style="list-style-type: none"> • The power supply voltage is too low; • The grid capacity is too small, or there is a large inrush current in the grid; • The internal DC main contactor of the inverter is not closed. 	<ul style="list-style-type: none"> • Check the input power and troubleshoot; • Improve the power supply system; • Seek technical support from the manufacturer.
	7	Acceleration overvoltage	<ul style="list-style-type: none"> • Power supply voltage fluctuation exceeds limit; • Start the rotating motor. 	<ul style="list-style-type: none"> • Detect the grid voltage and troubleshoot; • Wait for the motor to stop completely before starting, set [F1.00] to 1 or 2.
	8	Overvoltage during deceleration	<ul style="list-style-type: none"> • The deceleration time is set too short; • The load potential energy or inertia is too large; • The power supply voltage fluctuation exceeds the limit. 	<ul style="list-style-type: none"> • Properly extend the deceleration time; • Reduce the load inertia, or increase the inverter capacity, or add a braking unit; • Check the input power and eliminate the fault.
	9	Overvoltage at constant speed	<ul style="list-style-type: none"> • The power supply voltage fluctuation exceeds the limit. 	<ul style="list-style-type: none"> • Check the input power and troubleshoot; • Install input reactor.
	28	Overvoltage at constant speed	<ul style="list-style-type: none"> • The power supply voltage fluctuation exceeds the limit. 	<ul style="list-style-type: none"> • Check the input power and troubleshoot; • Seek technical support from the manufacturer.
	4	Overcurrent during acceleration	<ul style="list-style-type: none"> • The acceleration time is set too short; • Start the rotating motor; • The V/F curve setting is inappropriate or the torque boost value is too high; • The inverter capacity is too small. 	<ul style="list-style-type: none"> • Properly extend the acceleration time; • Wait until the motor is completely stopped before starting, set [F1.00] to 1 or 2; • Reset V/F curve or torque boost value; • Select the inverter with matching capacity level.
	5	Deceleration	<ul style="list-style-type: none"> • The deceleration time is 	<ul style="list-style-type: none"> • Properly extend the deceleration

		overcurrent	<p>set too short;</p> <ul style="list-style-type: none"> ● Potential energy load or load inertia is large; ● The inverter capacity is too small. 	<p>time;</p> <ul style="list-style-type: none"> ● External braking resistor or braking unit; ● Select the inverter with matching capacity level.
	6	Constant speed overcurrent	<ul style="list-style-type: none"> ● Load mutation; ● The grid voltage is low. 	<ul style="list-style-type: none"> ● Check the load changes and eliminate them; ● Check the input power and eliminate the fault.
	11	Motor overload	<ul style="list-style-type: none"> ● The V/F curve setting is inappropriate or the torque boost value is too high; ● The grid voltage is low; ● Improper setting of motor overload protection coefficient; ● The motor is running locked or the load is too heavy; ● The general-purpose motor runs at low speed for a long time. 	<ul style="list-style-type: none"> ● Reset V/F curve or torque boost value; ● Check the input power; ● [F5.06/FA.16] parameter setting is unreasonable; ● Adjust load conditions or select inverters with matching capacity levels; ● When long-term low-speed operation is required, please select a special frequency conversion motor.
	12	Inverter overload	<ul style="list-style-type: none"> ● The load is too heavy ● The acceleration time is set too short; ● Start the rotating motor; ● The V/F curve setting is inappropriate or the torque boost value is too high. 	<ul style="list-style-type: none"> ● Select the inverter with matching capacity level; ● Properly extend the acceleration time; ● Wait until the motor is completely stopped before starting, set [F1.00] to 1 or 2; ● Reset the V/F curve or torque boost value.
	1	System abnormal	<ul style="list-style-type: none"> ● The acceleration time is set too short; ● Inverter output phase or short circuit to ground; ● The module is damaged; ● Electromagnetic interference. 	<ul style="list-style-type: none"> ● Properly extend the acceleration time; ● Check peripheral equipment and restart after troubleshooting; ● Seek technical support from manufacturers; ● Check the system wiring, grounding, shielding, etc. and deal with it as required.

E.oH1	16	Inverter overheating	<ul style="list-style-type: none"> • The ambient temperature is too high; • The air duct is blocked; • The fan connection plug-in is loose; • The fan is damaged; • The temperature detection circuit is faulty. 	<ul style="list-style-type: none"> • Make the inverter operating environment meet the specifications; • Drain the ventilation duct; • Check and reconnect; • Replace the fan of the same model; • Seek technical support from the manufacturer.
E.oH2	15	Rectifier bridge overheated	<ul style="list-style-type: none"> • The ambient temperature is too high; • The air duct is blocked; • The fan connection plug-in is loose; • The fan is damaged; • The temperature detection circuit is faulty. 	<ul style="list-style-type: none"> • Make the inverter operating environment meet the specifications; • Drain the ventilation duct; • Check and reconnect; • Replace the fan of the same model; • Seek technical support from the manufacturer.
E.FE1	20	Motor detection failure	<ul style="list-style-type: none"> • Motor detection timeout; • Start static detection while the motor is rotating; • The capacity difference between the motor and the inverter is too large; • The motor parameters are set incorrectly. 	<ul style="list-style-type: none"> • Check the motor connection; • Check after the motor has stopped; • Check after the motor has stopped; • Change the inverter model; • Reset according to the motor nameplate.
E.EEP R.EEP	21/69	Storage failure	<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.
L.FE	30	Reserved	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Extended fault number
E.LF R.LF	13/65	Phase loss on the input side	<ul style="list-style-type: none"> • The three-phase input power of the inverter is lacking phase. 	<ul style="list-style-type: none"> • Check the three-phase input power supply voltage and phase number; • Check the three-phase input power wiring.
E.oLF	14	Phase loss on the output side	<ul style="list-style-type: none"> • The three-phase output of the inverter is out of phase. 	<ul style="list-style-type: none"> • Check the three-phase output voltage and current; • Check the motor wiring.
E.Gnd	E.Gnd	Output ground	<ul style="list-style-type: none"> • The output side of the inverter is short-circuited to ground. 	<ul style="list-style-type: none"> • Check wiring and motor insulation.
E.HAL	19	Current detection failure	<ul style="list-style-type: none"> • Detection circuit failure; • The motor phase is 	<ul style="list-style-type: none"> • Seek technical support; • Check the motor and wiring.

			unbalanced.	
	17	External fault of inverter	<ul style="list-style-type: none"> External equipment failure protection action. 	<ul style="list-style-type: none"> Check external equipment.
	E.PAn	Keyboard connection failure	<ul style="list-style-type: none"> Keyboard connection failure; The keyboard assembly is damaged. 	<ul style="list-style-type: none"> Check the keyboard connection; Seek technical support from the manufacturer.
	18	Rs485 communication is abnormal	<ul style="list-style-type: none"> Improper setting of baud rate; The communication connection is disconnected; The communication format does not match the host computer. 	<ul style="list-style-type: none"> Set the matching baud rate; Check the communication connection; Set the matching communication format.
	26	Parameter copy exception	<ul style="list-style-type: none"> Parameter copy communication error; The keyboard connection is faulty. 	<ul style="list-style-type: none"> Check the connection; Seek technical support from the manufacturer.

	E.ECF	Expansion card connection abnormal	<ul style="list-style-type: none"> The communication between the expansion card and the inverter is overtime; The expansion card does not match the inverter. 	<ul style="list-style-type: none"> Check the connector and reconnect the wire; Choose the expansion card of the specified model.
	27	PG card connection is abnormal	<ul style="list-style-type: none"> PG card and inverter connection failure 	<ul style="list-style-type: none"> Check the connection
 	29/66	PID feedback failure	<ul style="list-style-type: none"> The upper limit of PID feedback disconnection alarm is set improperly The lower limit of PID feedback disconnection alarm is set improperly Bad PID feedback wiring Sensor failure for feedback Feedback input loop failure 	<ul style="list-style-type: none"> Confirm the sensor status, if it is damaged, replace the sensor Correct the wiring Confirm the setting values of [Fb.27] and [Fb.28]
	31	Failed to learn the	<ul style="list-style-type: none"> Check motor parameters 	<ul style="list-style-type: none"> Check motor parameters; Study after the motor is stationary;

		initial position angle		<ul style="list-style-type: none"> ● Seek technical support from the manufacturer.
	32/70	Speed deviation is too large	<ul style="list-style-type: none"> ● The detection time or inspection level setting is unreasonable ● Abnormal motor parameters 	<ul style="list-style-type: none"> ● Check the motor parameters and re-learning; ● Check [FA.24]/[FA.25] parameter settings; ● Seek technical support from the manufacturer.
	33/71	Fast protection	<ul style="list-style-type: none"> ● [FA.27]/[FA.28] parameter setting is abnormal ● Abnormal motor parameters ● Check the vector control parameters of group F6 	<ul style="list-style-type: none"> ● Check the motor parameters and re-learning; ● Check [FA.27]/[FA.28] parameter settings;
	34/67	Load protection 1	<ul style="list-style-type: none"> ● The detection time or inspection level setting is unreasonable 	<ul style="list-style-type: none"> ● Check [FA.18]/[FA.19] parameter settings;
	35/68	load Protection 2	<ul style="list-style-type: none"> ● The detection time or inspection level setting is unreasonable 	<ul style="list-style-type: none"> ● Check [FA.20]/[FA.21] parameter settings;
	36	CPU timeout	<ul style="list-style-type: none"> ● CPU timing timeout 	<ul style="list-style-type: none"> ● Seek technical support from the manufacturer.
E.042	42	PG card AB phase disconnection fault	<ul style="list-style-type: none"> ● Encoder AB is disconnected 	<ul style="list-style-type: none"> ● Check the connection line between encoder and PG card
E.043	43	PG card B phase disconnection fault	<ul style="list-style-type: none"> ● Encoder B phase is disconnected 	<ul style="list-style-type: none"> ● Check the connection line between encoder and PG card
E.044	44	PG card A phase disconnection fault	<ul style="list-style-type: none"> ● Encoder A phase is disconnected 	<ul style="list-style-type: none"> ● Check the connection line between encoder and PG card
E.045	45	PG card Z phase disconnection fault	<ul style="list-style-type: none"> ● Encoder Z phase disconnected 	<ul style="list-style-type: none"> ● Check the connection line between encoder and PG card
E.061	61	Brake failure detection	Insufficient braking torque	<ul style="list-style-type: none"> ● Check whether the braking torque is insufficient

		failure		
E.062	62	Current or torque detection failure before opening	If it reaches the opening frequency and the detection current is less than the opening judgment current, the fault will be reported	<ul style="list-style-type: none"> ● Check whether the inverter motor parameters match the actual motor parameters ● Whether the inverter output side and the motor are connected reliably
E.063	63	Current detection failure during operation	(Less current during operation)	<ul style="list-style-type: none"> ● Check whether the inverter motor parameters match the actual motor parameters ● Whether the inverter output side and the motor are connected reliably

5.3 Fault warning

Fault display	Communication code	Fault name
A.072	72	Agent GPRS lock machine alarm
A.073	73	Non-agent GPRS lock alarm
A.074	74	485 communication alarm
A.075	75	PG card AB phase disconnection alarm
A.076	76	PG card B phase disconnection alarm
A.077	77	PG card A phase disconnection alarm
A.078	78	Slip hook alarm
A.079	79	Weighing alarm

6 Recommended accessories

6.1 PG Card selection

PG Card order model

AC200PG01	5V power supply, differential encoder (with disconnection detection, no frequency division)
PG01-PDABZ-A1.1	5V power supply, differential encoder (with 1:1 differential frequency division)



PG card physical picture

6.2 Description of closed-loop vector control

When using a PG card for closed-loop vector control, please select a high-performance vector control mode with PG for F0.00. Please correctly connect the wiring between the incremental encoder and the PG card before starting to use, and then input the motor parameters correctly.

F5.00	F5.01	F5.02	F5.03
Motor type	Motor pole number	Motor rated power	Motor rated frequency
F5.04	F5.05	F5.06	
Motor rated speed	Motor rated voltage	Motor rated current	

Enter the encoder type and number of lines correctly.

F5.30	F5.31
Speed feedback and encoder type	ABZ encoder line number

Finally, perform motor self-learning.

F5.20 (Auto-tuning selection of motor parameters)	0: No operation 1: Rotary self-learning	2: Static self-learning 3: Fast static self-learning
---	--	---





When selecting the motor parameter auto-tuning in the construction hoist and lifting industry, the static auto-learning is generally selected. After the F5.20 parameter is changed to 2, press the start key to start the motor parameter self-learning operation.

Select the open-loop vector control mode. The operation steps are basically the same as those with PG high-performance vector. F0.00 selects the open-loop vector control mode 1. In addition, you need to skip the steps of inputting encoder type and line number.

6.3 Encoder selection and installation guide

1. Mechanical installation

1) The appearance and coupling of common encoders are as follows:

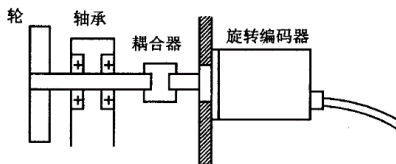
			
Real shaft type	Real shaft flexible coupling	Empty shaft type	Empty shaft stator reed

2) The installation must use a flexible coupling (or stator reed) to connect the coupling and the motor shaft to form a flexible connection to avoid damage to the encoder caused by the rigid connection.

3) When installing a real shaft encoder, the encoder shaft and the motor shaft should have good concentricity (that is, to ensure coaxiality), the maximum radial displacement is $\pm 0.2\text{mm}$, the maximum axial displacement is $\pm 0.05\text{mm}$, and the maximum angle difference is $\pm 2^\circ$. After the coupling is installed, there should be no extrusion or bending, and there should be no camming or axial movement when the motor rotates.

4) When the hollow shaft encoder is installed, the stator spring should be installed in a state of free force. It should not be bent to deform or prestress the spring, otherwise it will reduce the vibration suppression and impact resistance of the encoder and cause The encoder output signal is unstable or even damaged.

5) Install the encoder on the connecting belt and the gear joint. If it is an extension shaft, it should be supported by another bearing first, and then the rotary encoder and the coupler are combined.

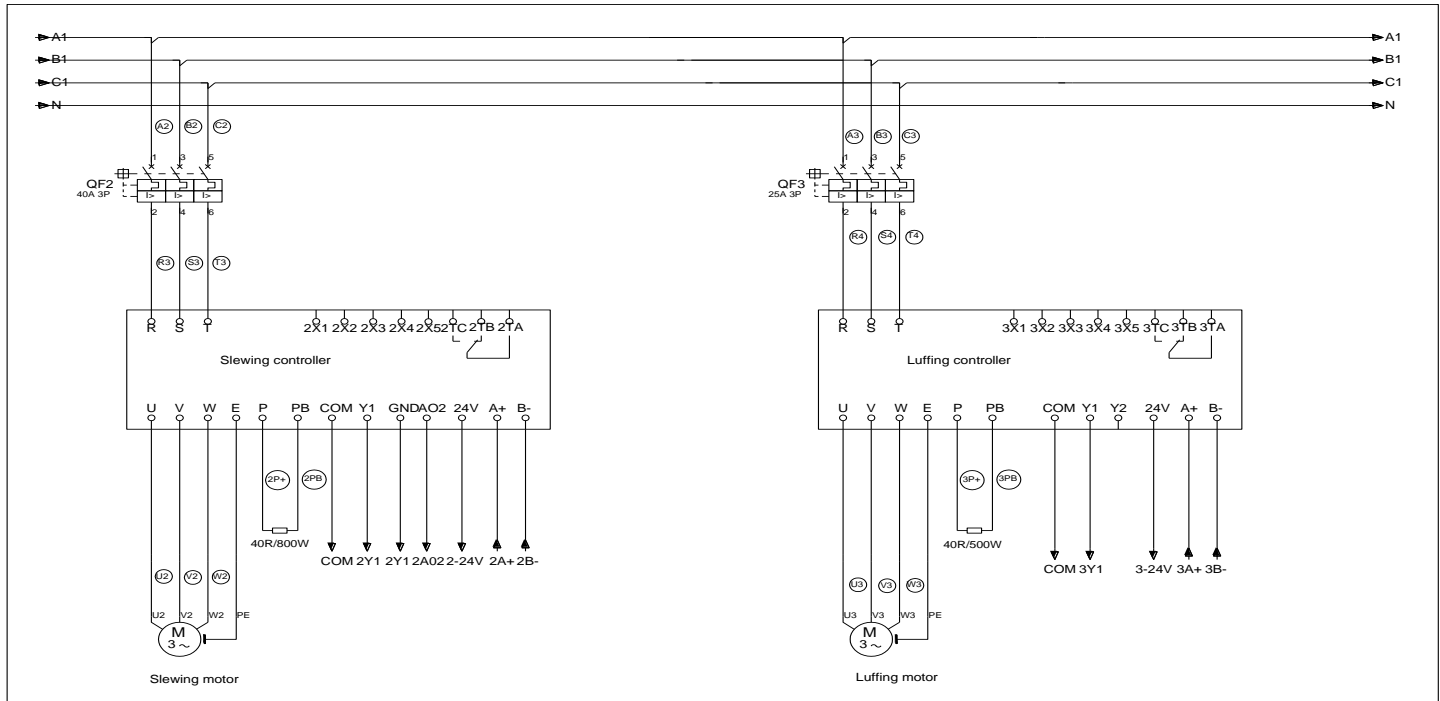


as the picture shows.

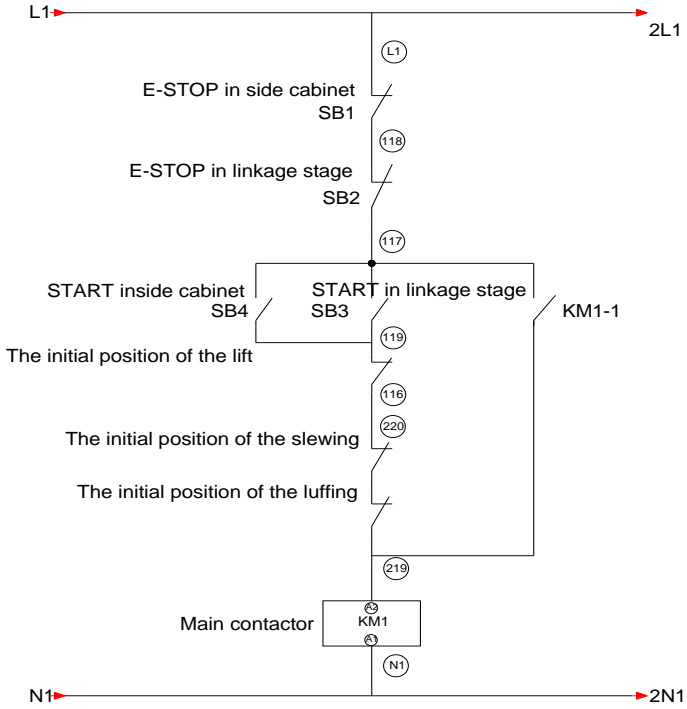
6) The cable of the encoder must be a twisted pair shielded signal cable, and each pair of differential signals must use a pair of twisted pairs. The signal cable must not be interrupted during installation. When an extension cable is really needed, the continuity of the shield connection should be ensured, and the signal extension cable should be connected by soldering.

7) Encoder shielded wire must be grounded at both ends. Single-ended grounding can only resist low-frequency interference and cannot withstand high-frequency.

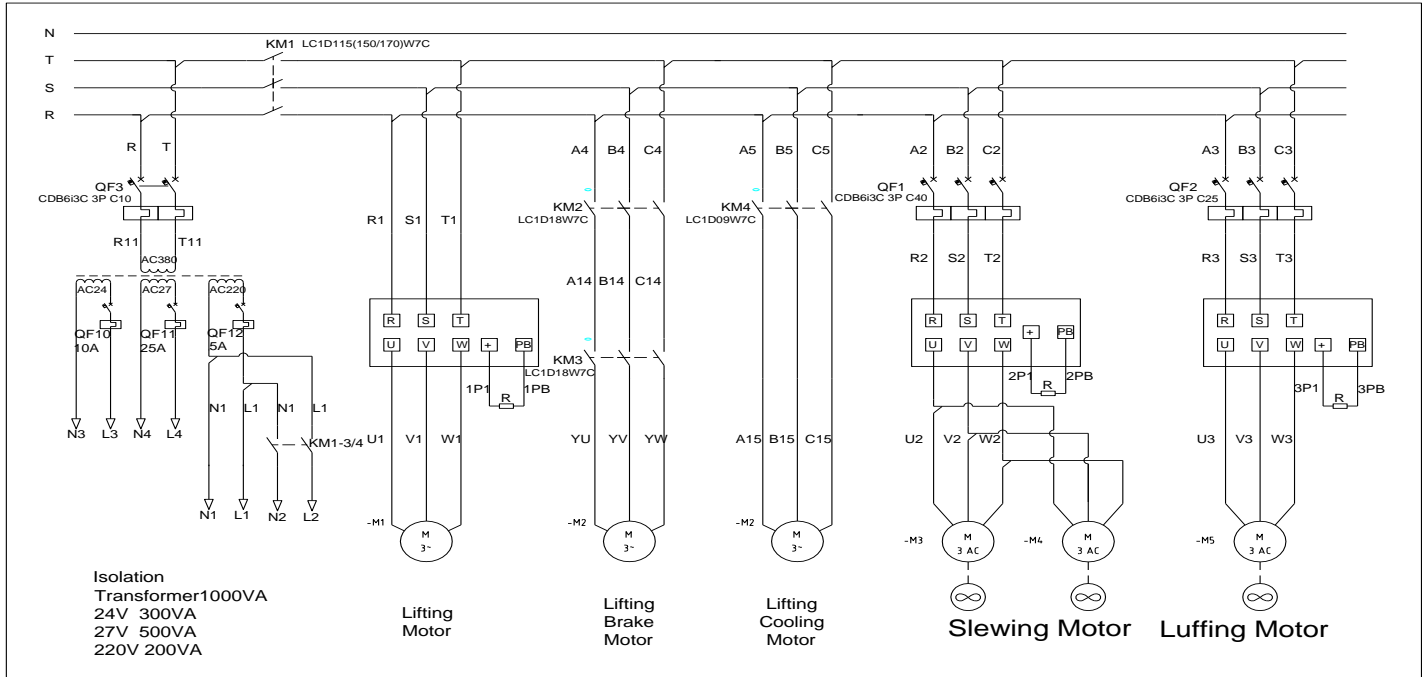
Rotation, luffing mechanism, control power supply main circuit wiring diagram (applicable to small power QT02-80, 100)



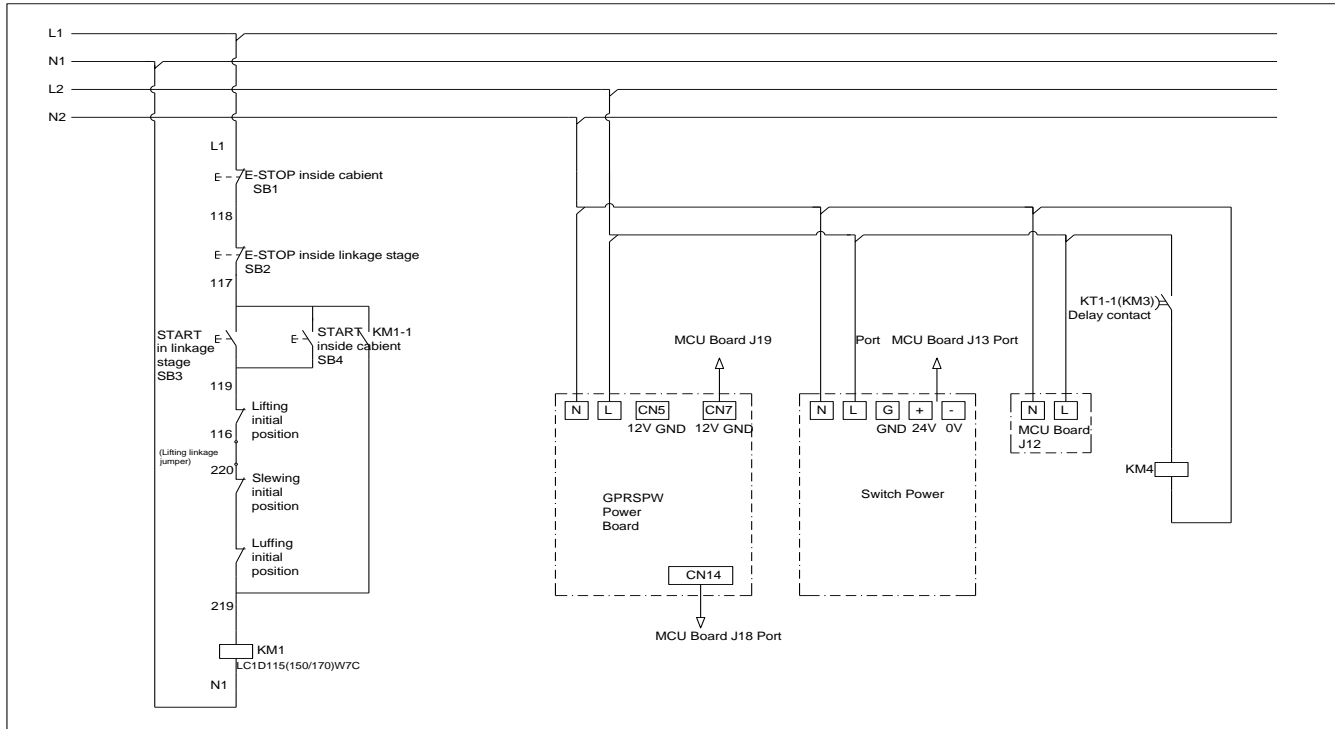
Control power supply main circuit wiring diagram (applicable to small power QT02-80, 100)



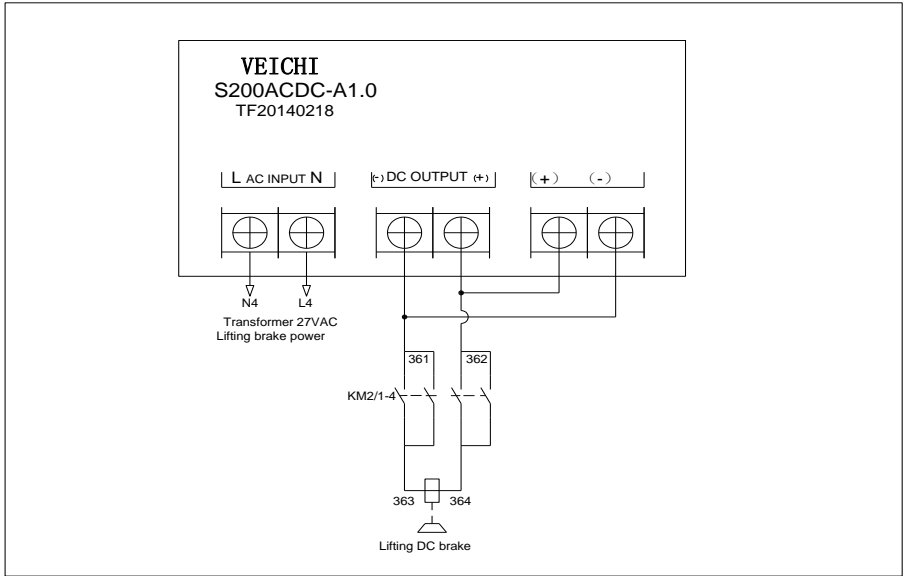
Schematic diagram of main circuit wiring of lifting, rotating and luffing mechanism (applicable to medium and high power QT02-160, 250, 315)



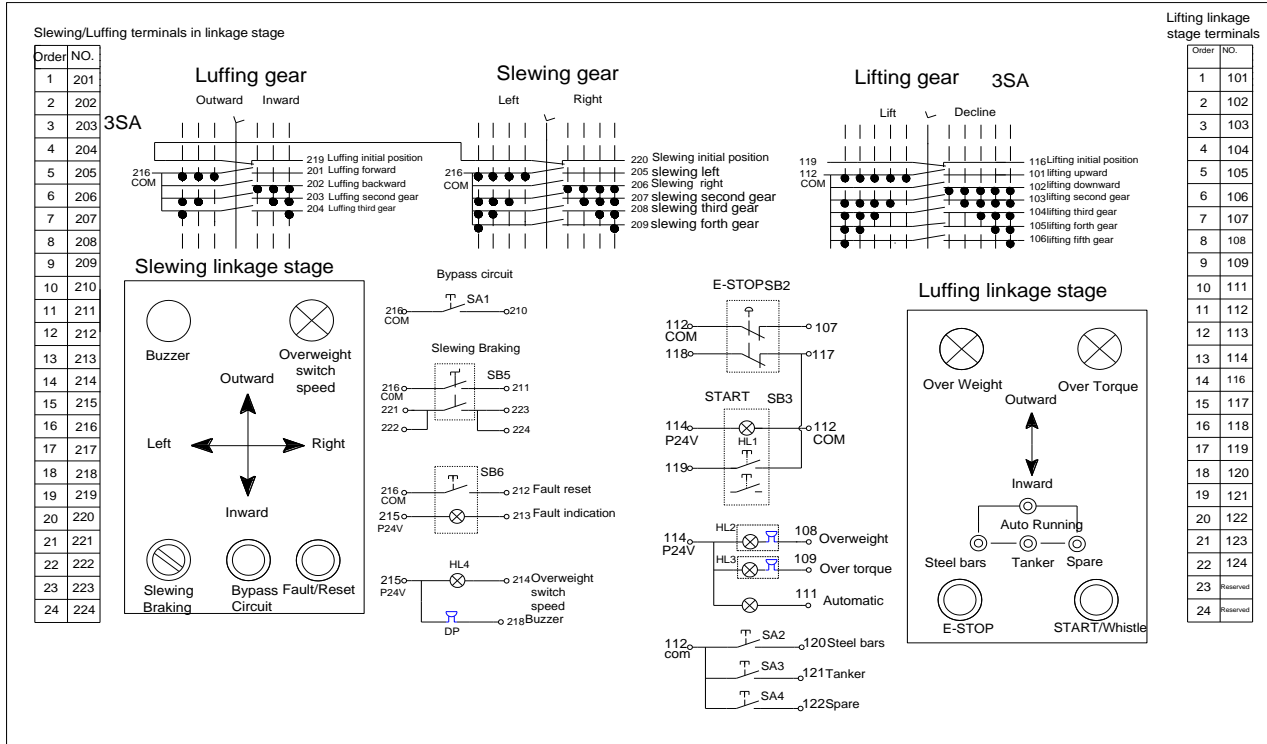
Control circuit wiring diagram (applicable to medium and high power QT02-160, 250, 315)



Hoisting DC brake circuit wiring diagram (for medium and high power QT02-160, 250, 315)



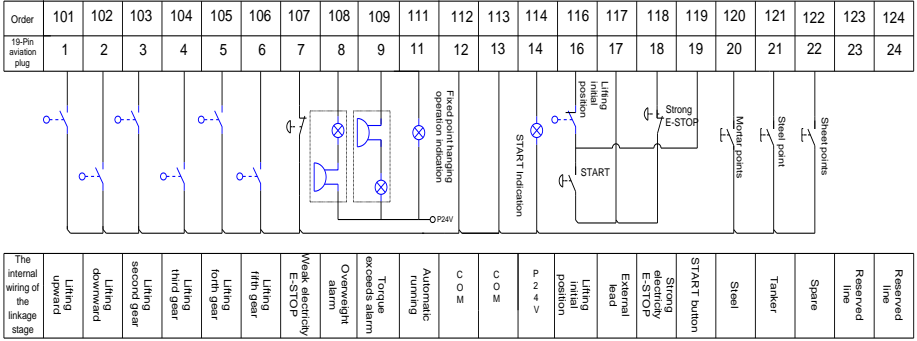
Wiring diagram of linkage platform (applicable to all power section models)



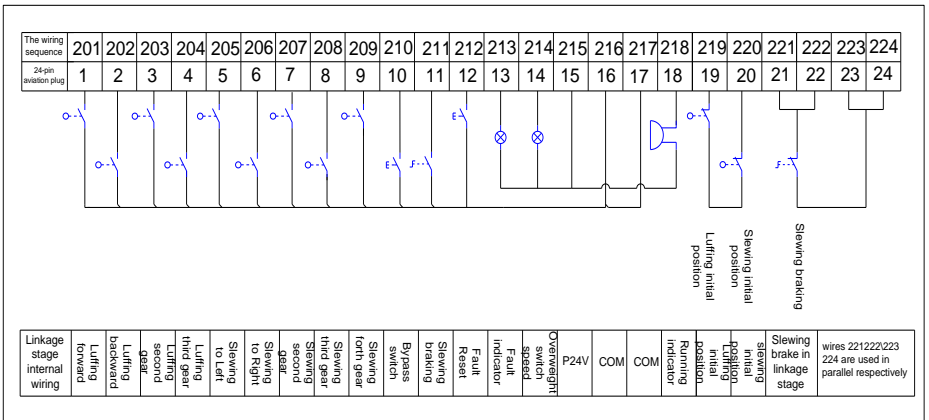
Lifting linkage stage terminals

Order NO.	
1	101
2	102
3	103
4	104
5	105
6	106
7	107
8	108
9	109
10	111
11	112
12	113
13	114
14	116
15	117
16	118
17	119
18	120
19	121
20	122
21	123
22	124
23	Reserved
24	Reserved

Lifting aviation patch cord marking diagram (applicable to all power section models)



Slewing and luffing aviation patch cord marking diagram (applicable to all power section models)



Slewing and luffing brake circuit wiring diagram (applicable to all power section models)

