

Preface

EC100 elevator intelligent integrated machine is the new intelligent elevator control system with drive technology, control technology and network communication technology. Applying advanced frequency vector control technology, intelligent elevator control technology, network communication technology, our products integrate drive, control and management of the elevator to improve the safety and reliability, operation, economy and individual design.

Main features:

- ∅ Integrated design, simple wiring and easy debugging
- ∅ The highest floor: 64th floor Max. speed: 6m/s
- ∅ Distance control principle, direct landing capability
- ∅ Automatic identification running of low floor station
- ∅ Advanced starting compensation of non-load sensor
- ∅ Synchronous and asynchronous master; Static and dynamic self-tuning function
- ∅ Vector control
- ∅ Encoder interface of synchronous and asynchronous master
- ∅ CAN serial communication
- ∅ Automatic car position correction
- ∅ Single-phase AC220V low voltage aid function
- ∅ LED displaying and two keys for simple operation, compatible manual controller and PC debugging software
- ∅ Multiple safety protection; meet the standards of EN81 and GB7588
- ∅ EMC meet C3 standards
- ∅ Various safety design
- ∅ Intelligent, network-based control group control, group up to 8 cars

If the product is ultimately used for military affairs or weapon manufacture, it will be listed on the export control formulated by ***Foreign Trade Law of the People's Republic of China***. Rigorous review and necessary export formalities are needed when exported.

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Chapter 1 EC100 configuration

1.1 Hardware configuration

No	Product name	Product model	Application	Parameter	Installation position	Remarks
1	EC100 elevator intelligent integrated machine	To the actual use	Motor drive control and elevator logic control	1 for each elevator	Elevator control cabinet	Equipped, select according to the motor power
2	Keypad	EC100-PAD	For controller debugging		EC100 elevator intelligent integrated machine	Optional
3	EC100-I/O interface board	EC100-I/O	For input/output interface shifting	1 for each elevator	Control cabinet of the elevator	Equipped, 1 connection cable with DB62 core
4	Main car controller	DC-01	For the signal collection in the car	1 for each elevator	Control box	Equipped, with 12 floor internal commands, dual door control
5	Car Instruction Extension board	DC-02	For calling button extension above 12 th floor	1 for each 8-elevator above the 12 th floor	Control box	Each board can connect 8 floor buttons

6	Displaying board in the car	DC-03A	For displaying in the car	1 for each elevator	Control box	Standard
7	Calling displaying board	DC-03A	For hall call and displaying	1 for each elevator	Hall Call box	Standard
8	Ethernet module	PA_DP/E	Ethernet monitoring	1 for each elevator	EC100 complete machine	Optional

1.2 Software standards

No	Function name	Function instruction	Remarks
1	Direct landing capability	According to distance control principle, get arunning curve	Standard
2	Part programmable output	Logic control of MS output through upper PC software	Standard
3	Autotuning of the Motor	Static and dynamic autotuning for AC induction or ACPM machine compatible. Gear Motor and Gearless Motor	Standard
4	Internal pre-weight compensation	External weight compensation device is not needed when applying speed loop and position loop	Standard
5	OC protection	Protect and stop when overcurrent	Standard
6	OV protection	Protect and stop when overvoltage	Standard
7	OL protection	Protect and stop when overload	Standard
8	Bus voltage protection	Protect and stop when bus undervoltage	Standard
9	Phase loss	Protect and stop when phase loss	Standard

No	Function name	Function instruction	Remarks
	protection		
10	Inverter overtemperature protection	Protect and stop when inverter overtemperature	Standard
11	Rectifier overtemperature protection	Protect and stop when rectifier overtemperature	Standard
12	Split-level protection	The elevator returns to the ground floor and correct when split-level	Standard
13	LED displaying	2-digit LED displaying to show floor number and fault code	Standard
14	Feedback detection of the braking travel switch	Detect the switch and protect automatically	Standard
15	Contact detection of the running contactor	Detect the contacts and protect automatically	Standard
16	Contact detection of the braking contactor	Detect the contacts and protect automatically	Standard
17	Contact detection of the door lock circuit contactor	Detect the circuit and protect automatically	Optional
18	Contact detection of safety circuit contactor	Detect the circuit and protect automatically	Optional
19	Inspection	Operational function	Standard

No	Function name	Function instruction	Remarks
	running		
20	Inspection speed limit	The speed switches to the inspection low speed when the elevator runs at inspection speed to the forced deceleration switch position.	Standard
21	Open/close door inspection	If the door lock circuit is off when inspection, press up/down button to get the closing command. When the circuit is on, the elevator will run up/down. If the elevator stops at the door zone, press the up/down button at the same time to get the opening command and the elevator will open the door.	Standard
22	Shaft self-learn	Shaft self-learn includes individual floor heights, overall travel, and slow down switch positions	Standard
23	Full selective	The system will response the internal car command as well as the calling button signal.	Standard
24	Self leveling run	If the elevator is in non-inspection state and not stop in the leveling area, the elevator will return to the leveling and open the door.	Standard
25	Repeated open/close the door	If the door of the elevator is not closed after closing for 20 seconds, the elevator will open the door. After repeating for 5 times, it will keep opening.	Standard
26	Pre-close of the closing button	Press closing button in the automatic state to close the door in advance.	Standard
27	Door Safety Edge/ a light	A flexible safety edge may be installed at the front edge of the car door. If the edge makes	Standard

No	Function name	Function instruction	Remarks
	curtain Protection	contact with a passenger or an object during closing, the activated safety edge will cause the door to re-open immediately. This same protection may be provided by a light curtain.	
28	Full load by-pass	In the automatic running state, the elevator will not response any hall calling if it is full load. But the calling can be recorded; the outside calling can open the door.	Standard
29	Overload protection	The elevator will keep opening when the elevator is over load in the non-inspection state and it bees to alarm.	Standard
30	Attendant operations	Operate on the attendant switch in the Car box. The door will not close automatically in this mode until press the closing button for a long time. the buzzer alarms and the internal command flashes when hall calling.	Standard
31	Floor displaying	Dot matrix displaying	Standard DC-03A
32	Running direction displaying	Rolling displaying show the running direction.	Standard DC-03A
33	Open the door outside this hall	Open the door outside this hall	Standard
34	Open the door by press the current floor car call	Open the door by press the current floor car call	Optional
35	Lock service	After a specified period of time idle at the last destination floor served and in the absence of any call demand (idle car) the car will automatically return to the main or designated lock floor.	Standard

No	Function name	Function instruction	Remarks
36	Fire Emergency Return	During automatic operation, if the Fire service switch is activated, the car immediately returns to the defined landing at contract speed and opens its doors to evacuate any passengers. If traveling away from the fire return floor when the switch is activated, the car will level into the next available landing and reverse direction without opening its doors.	Standard
37	Fire Service	2 modes of fire service after the elevator returns to the fire return floor: a. fire fighter action by switching the switch in the Car box; b. enter into the fire fighter action after the waiting delay time. there are no automatic opening and closing action in the fire fighter action.	Standard
38	Encoder feedback detection protection	The system judge the current height and speed through high-speed counter. In running state, the system will stop the elevator if without encoder feedback.	Standard
39	Reverse direction protection	If car run direction is reported inconsistent with system instruction for three seconds, the car will perform an emergency stop and an alarm will sound. The car cannot move until it is placed on Inspection operation and the condition is reset.	Standard
40	Non-opening protection	The system forbid automatic opening in non-door area.	Standard
41	Door zone signal fault protection in	The system will stop if the elevator is still in the leveling position in 5 seconds after	Standard

No	Function name	Function instruction	Remarks
	door zone	starting.	
42	Automatic car height correction	The system will correct the position data at the terminal door zone and leveling switch position according to the autotuning data.	Standard
43	Light load Anti-disturbance function	In LL switch action, if the commands in the car beyond 3, the system will clear all commands after running once.	Standard
44	Test running	Used in the fatigue test of new elevator.	Function selection
45	Fault history clearance	The system will record the latest 30 faults, including the fault time, fault code, floor information.	Standard
46	Part programmable output	The user can carry out further development to some output points.	Function selection
47	Motor overheating protection	If the thermal protection signal acts, the elevator will stop and open at the nearest leveling position. The elevator will begin to work after the time set by the protection parameter.	Standard
48	Earthquake operations	There are slight shock and small earthquake modes. When the input signal acts, the elevator will stop at the nearest floor and keep opening the door .	Standard
49	Brake voltage switching	The time can be adjusted through the parameter.	Function selection
50	Error in internal command cancel	Pressing the button twice can cancel the internal command.	Standard

No	Function name	Function instruction	Remarks
51	Independent running	The system will enter into the specific running mode when the independent switch is on.	Standard
52	Door keep opening	In non-attendant mode , the elevator will open the door automatically when arrived, if there is no hall or car calling signal, the opening time can be delayed by setting parameters.	Standard
53	Automatically return to main floor	In non-attendant running mode , automatic returning signal is valid. If there is no command, the elevator will return to main floor after the delay time.	Standard
54	Energy Saving Fan and Light Shut Off	After the car has been locked for a specified period of time, the car light and fan will automatically shut off to conserve power. Any call demand will immediately re-power the fan and light.	Standard
55	Service floor setting	Set the stopping floor and closing/opening state.	Function
56	Floor displaying setting	Set the characters of floor displaying through parameters.	Function
57	Door lock off in running protection	The system stop and protect when the door lock is detected to be off in running.	Standard
58	Short-circuit protection locks	If car doors are indicated to be open but door lock are still on, the alarm will activate and the car will be prevented from operating until the fault is reset and the condition is cleared.	Standard
59	Duplex controll	Connect two CAN communication wires for duplex controll	Standard

No	Function name	Function instruction	Remarks
60	Group control	Group control adjustment	Optional
61	Reverse cancelling	Reverse cancelling	Standard
62	Front/rear door service	Service floor setting through parameters	Standard
63	Hold Closing the door	Hold closing the door when the door is full closed according to the door type	Standard
64	Arrival gong	Ring when car begins deceleration to a landing	Standard
65	Current ramp clearance	In the application of permanent magnet synchronous motor, the maintenance current is cleared through ramp to avoid abnormal noise.	Standard
66	Real-time clock management	Real-time clock chip, work for 3 years without power	Standard
67	Vice COP operation	With the same button and function with the main control box.	Standard
68	To-ground short-circuit detection	Inspect U, V and W when power on.	Standard
69	Hand door control	Hand door control	Standard
70	Door zone switchdetection	Protect and stop when the door zone switch is detected to adhesive.	Standard
71	Overspeed Protection	Ensure the running speed is in the safe range.	Standard
72	Attendant direction select	Change the direction by the UP/DOWN buttons in Cop.	Standard

No	Function name	Function instruction	Remarks
73	Door lock off protection	The system protect automatically when door lock is detected to off.	Standard
74	Failure diagnosis of hoistway autotuning	The elevator can not run without correct hoistway data.	Standard
75	Entire running time protection	If the elevator runs for the entire time without leveling command, the system will stop the running in the car.	Standard
76	Leveling precision adjustment	Adjust the leveling precision	Standard
77	UPS running	Determine the running direction according to the load. Power-off input signal is present in the controller, and when the power is off, start UPS function sxtomatically to open the door after low speed leveling.	Standard
78	Chinese/English menu in manual operator	Chinese/English menu selection	
79	Parameters upload/download in manual operator	Parameters upload/download function	

1.3 Software configuration

No	Function name	Function instruction	Remarks
1	Releveling with door	The system will level at low speed when the passtrongers enter or get off the elevator.	

No	Function name	Function instruction	Remarks
	opening		
2	Arrival lamp outside the hall	The corresponding arrival lamp output when the elevator leveling to inform the arriving and running direction.	Configure Forecast light outside the hall
3	Arrival gang outside the hall	Arrival gang is installed in each floor. It rings when the elevator is in the door zone. In the up/down arrival, it rings once and twice to inform the arrival and running direction.	Configure arrival gang outside the hall
4	Voice announcement	The current floor number and running direction will be announced when the elevator is in the door zone	Optional voice board
5	Vice Cop	Vice Cop function	Configure two separated inside/outside calling
6	Floor service control of car IC card	There is a card reader if configuring the function. The user can only record the authorized entering command with a card.	Optional IC card
7	IC card control for hall call	There is a card reader on the Lop if configuring the function. The user can only record the calling command with a card.	Optional IC card
8	Back/front door control	There are two control modes: 1. independent operation with the rear door; 2. independent operation when configured rear door calling box.	Configure rear door calling box

No	Function name	Function instruction	Remarks
9	Remote monitoring	Remoter monitor the floor position, running direction and fault state.	
10	Ethernet real-time monitoring	Monitor real-time through PA_DP/E	Configure PA_DP/E

Chapter 2 Precautions and notices

This manual describes how to use the product correctly. Read this manual carefully before using (installation, wiring, running, maintenance and inspection). Please use the product after mastering the safety precautions.

2.1 Safety marks

Safety marks are used in this manual and the content with marks are very important, please follow them.

	Potential danger. Ignoring them may cause physical injury or death.
	Steps for correct running.

In some situations, the content in "NOTE" is very important .

2.2 Reader group

Elevator control design personnel

Elevator engineering and maintenance personnel

User technical support personnel

	<ul style="list-style-type: none"> ┆ The diagrams in this manual are just examples and may be different from the products you ordered. ┆ For the convenient application, the content of this manual will update and change as the improvement and updating of the product. ┆ Please contact with our company as the way on the covers if needed. ┆ The content of this manual is confirmed correct when printing, but our company reserves the right of updating.
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2.3 Warning marks

	Danger
	Please maintent the machine after the power supply is disconnected for at least 10 minutes.

The marks are presented on the front cover of the inverter.

Follow the instructions of this manual when using EC100 elevator intelligent integrated machine.

2.4 Safety precautions

2.4.1 Unpacking inspections

	<p>I Do not install or work on any damaged components and parts, otherwise injury may occur.</p>
---	---

Upon unpacking, confirm the following:

1. No damage occurred during transportation. (the damage or scratch to the machine).
2. The rated values on the inverter nameplate are in accordance with your order.
3. The optional parts are in accordance with your order. If you find anything wrong, please contact us or the distributor.

2.4.2 Disassembly and assembly

	<ul style="list-style-type: none"> U Please install according to the mechanical and electrical installation standards. U Only experienced professionals can do the installation. U Read the manual and safety precautions before operation.
	<ul style="list-style-type: none"> U Do not move the machine by lifting its base, otherwise it may fall and get damaged. U Mount the device on nonflammable material and keep away from any explosives and inflammable items, or fire and explosion may occur. U The installation position should be free of dripping water or other liquids. Or damage may occur. U The installation platform should be strong enough to sustain the controller, or the device dropping, physical injury and damage to the controller may occur. U Please install fans or other cooling devices to ensure the

	<p>temperature in the cabinet is below 45°C when installing cooling fan or braking resistor in a cabinet.</p> <ul style="list-style-type: none"> ⊔ Make sure no conductive objects or other metal bars can fall into the controller, or fire and damage to the controller may occur.
--	---

2.4.3 Connection precautions

	<ul style="list-style-type: none"> ⊔ Ensure the power supply is disconnected before connection, otherwise electric shock and fire may occur. ⊔ Only professional electricians are allowed to do the connection, otherwise electric shock and fire may occur. ⊔ Ground the PE terminal with proper techniques, otherwise electric shock and fire may occur. ⊔ Ensure the action is right after safe connection, or physical injury may occur. ⊔ Do not touch the conductor parts of the terminal directly or connect the output wires with the crust, otherwise the electric shock, short-circuit or fire may occur. ⊔ Do not touch the board circuit with hands directly; otherwise the damage may occur to the components and parts.
---	---

	<ul style="list-style-type: none"> ⊔ Ensure the voltage of AV main circuit is in accordance with the rated voltage of the intelligent integral machine, otherwise the electric shock, damage to the controller and fire may occur. ⊔ Do not carry out any voltage-withstand test on the controller, otherwise damage may occur to the semi-conductors. ⊔ Connect the braking resistor according to the wiring diagram, otherwise fire may occur. ⊔ Tighten the screws according to the designated moment, otherwise fire may occur.
---	---

	<ul style="list-style-type: none"> ⊔ Only professional technicians are allowed to do the design, installation, debugging and operation on the device. ⊔ Follow the designated warnings, otherwise serious physical injury or death and property may occur. ⊔ The input power lines should be tightened permanently and the device needs to be grounded with proper techniques. ⊔ Dangerous voltage is still present on the following terminals if the intelligent integral machine does not work. ⊔ Power supply terminal R, S and T ⊔ The connecting terminal U, V and W ⊔ Wait at least 10 minutes after disconnecting the power supply until the CHARGE light is off and the machine is discharged.
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2.4.4 Precautions of running

	<ul style="list-style-type: none"> ⊔ Switch on the power supply after confirming the installation of terminal covers and do not remove the cover in connection, otherwise electric shock may occur. ⊔ Reset the fault after confirming the signal is disconnected, otherwise physical injury may occur. ⊔ Do not perform any signal inspection and wrong operation in running, otherwise physical injury or damage to the machine may occur.
	<ul style="list-style-type: none"> ⊔ Cooling fin will become hot. Do not touch. ⊔ Do not touch the braking resistor, otherwise physical hurt and electric shock may occur. ⊔ EC100 elevator intelligent integral machine is set well in factory. Do not refit by yourself, especially in running, otherwise the damage to the machine may occur.

2.4.5 Precautions of maintenance and inspection

	<ul style="list-style-type: none"> ⌋ There is high voltage terminal in the machine. Do not touch the terminal, otherwise electric shock may occur. ⌋ Do install the protective cover before powering on. Disconnect the breaker of the power circuit before removing the cover, otherwise electric shock may occur. ⌋ Do not remove the protective cover or touch the terminal before disconnecting the main circuit power. Carry out maintenance or inspection when confirm that the bud is discharged, otherwise the voltage is present in the capacitor and electric shock may occur. ⌋ Only qualified electrician is allowed to maintain, check and replace the components and parts, otherwise electric shock and damage may occur to the machine. ⌋ Please take off the metal accessories (such as watched and rings) in working and wear insulating clothes and use the insulating tools, otherwise electric shock may occur. ⌋ Do not change or remove the terminals or connector when power on, otherwise electric shock may occur.
	<ul style="list-style-type: none"> ⌋ Please operate with cautions on the controlling board because there is integrate circuit. ⌋ The PCB boards may be damaged because of the static electricity if touch the boards by hands directly.

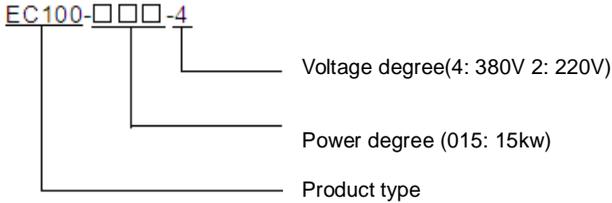
2.4.6 Other precautions

	<ul style="list-style-type: none"> ⌋ Do not refit the EC100 elevator intelligent integral machine by you, or eclectic shock, physical injury and damage to the machine may occur.
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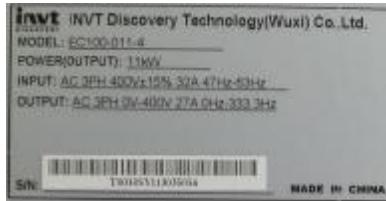
Chapter 3 Product overview

This chapter introduces the model, specification and performance of EC100 elevator intelligent integrated machine, as well as the delivery and installation.

3.1 Model description



3.2 Name plate



3.3 Power selection

Model	Rated output power (kW)	Rated output current (A)	Braking unit	Braking resistor
EC100-7R5-4	7.5	18.5	Built-in	50Ω/2000W
EC100-011-4	11.0	27.0	Built-in	40Ω/4000W
EC100-015-4	15.0	34.0	Built-in	35Ω/4500W
EC100-018-4	18.5	38.0	Built-in	32Ω/5500W
EC100-022-4	22.0	46.0	Built-in	25Ω/7000W
EC100-030-4	30.0	62.0	Built-in	20Ω/9000W



⚠ The other power degree products are non-standard products. Please contact with our company directly if need.

3.4 Technical specifications

Item	Name	Specification
Input/output	Input voltage	380±15%
	Input frequency	47~63Hz
	Output voltage	0~Rated input voltage

Item	Name	Specification
	Output frequency	0~400Hz
Elevator	Highest floor	64 th
	Max. running speed	6m/s
	Group control quantity	8
	Communication mode	CAN communication
Peripheral interface	Switching Low-voltage detection inputs	29 terminals, DC 24V/4.5~8mA
	High-voltage detection inputs	3 terminals, AC/DC 110V
	Switching output port	12 terminals, DC30V/5A, AC250V/5A, Parts can use programmable logic control: PLC programmable control mode
	CAN communication interface	3 terminals
	Encoder interface	Built-in cosine, collector NPN output, push-pull output encoder interface
Technology	Control mode	PG vector control
	Overload capacity	150% of rated current: 60s 180% of rated current: 10s
	Starting torque	PG vector control: 0Hz/150%
	Speed control precision	PG vector control: $\pm 0.1\%$ of the Max. speed
	Carrier frequency	1.0kHz~16.0kHz
Function	Running mode	Fast speed mode, Inspection mode, returning to leveling mode, leveling after opening mode and UPS mode
	Stopping mode	Stop at the distance control principles
	Starting torque compensation	Smooth starting without weighting devices. Apply speed loop and position loop

Item	Name	Specification
	Master self-study mode	Static and dynamic autotuning
	Shaft self-learning mode	Record the position of floor and forced deceleration switch
	Auto-voltage adjustment	Keep the output voltage when the voltage of grid changes
Operation and monitoring	Operational keypad	2-digit LED, 8 lights and 2 buttons Fault inquiry
	Manual controller	Parameters setting, upload, download and fault inquiry and manual calling
	Software of upper PC	Parameters setting, upload, download and fault inquiry, manual calling and parameter monitoring

3.5 Delivery confirmation

Serial No.	Items	Method
1	The received product is in accordance with the ordered.	Confirm by the model in the nameplate
2	Whether there is damage	Check the appearance
3	Whether there is loose screws.	Check the tightening point with screw drives
4	Open the front cover and check whether the control board is loose.	Check the tightening point with screw drives

Please contact with us if anything is wrong.

3.6 Digitron displaying and operation instruction



Figure 3-1 Digitron

State instructions:

No	Code	Meaning	Instruction
1	UP	Up indication	On when elevator is running up
2	DN	Down indication	On when elevator is running down
3	DO	Door open	Flashes during door opening and keep on when the door is fully open
4	DC	Door close	Flashes when door closing and keep on when the door is fully closed.
5	CC	Car communication	Keep on when the communication between EC100 and car is established.
6	LC	Lock indicator	Keep on when lift is locked
7	DZ	Door zone	Keep on when the elevator is stop the door zone.
8	ER	Elevator error	Flash when elevator error

The LED displaying is defaulted as the current floor when there is no fault, while fault occurs, Er is flashing and LED will report the fault code directly, such as **50** and flashing. Press UP key to watch the previous fault and the fault code will flash; press UP key to watch the next fault. Press DOWN key to reset from the fault history and enter into the floor displaying. In the maintenance state, if the elevator is in the bottom floor, dialing the maintenance switch for three times in 5 seconds will clear the fault history.

3.7 Running environment

3.7.1 Temperature & Humidity

Environment temperature range: -10°C ~ +40°C. Derate 4% for every additional 1°C if ambient temperature exceeds 40°C. The highest temperature is 50°C.

Humidity≤90% RH. No condensation is allowed.

3.7.2 Altitude

The machine can output the rated power when installed with altitude of lower than 1000m. It will be derated when the altitude is higher than 1000m. For details, please refer to the following figure:

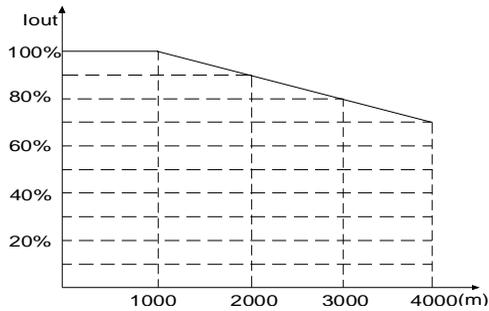


Figure 3-2 Rating curve

3.7.3 Others environmental requirements

It is not allowed that the inverter falls down or suffers from fierce impact or the inverter installed at the place that oscillation frequently. The maximum swing should less than 5.8m/Ss2 (0.6g).

Keep away from the electromagnetic radiation source.

Do not install the inverter at the wringing or dewfall place.

Keep away from air pollution such as dusty, corrosive gas.

Do not store the inverter in the environment with direct sunlight, vapor, oil fog and vibration

Chapter 4 installation and wiring

This chapter describes the terminals configuration, including main circuit terminal configuration, control circuit terminals configuration and PG terminals configuration.

	<ul style="list-style-type: none">⌋ Follow the guidelines of these manual and only professional electricians are allowed to operate, otherwise electric shock may occur.⌋ Breaker is needed between the power supply and the machine, otherwise fire may occur.⌋ Please ensure the power supply is disconnected before wiring, otherwise the electric shock may occur.⌋ The grounding terminal should be reliable, otherwise electric shock may occur.⌋ Do not touch the terminals with hands, otherwise electric shock may occur.⌋ Do not connect the power supply with U/V/W, otherwise damage may occur.⌋ Do not connect the wires of braking resistor with the terminals (+) (-) of DC bus, otherwise electric shock and fire may occur.
	<ul style="list-style-type: none">⌋ Please confirm the voltage degree of the power is in accordance with that of the machine, otherwise damage may occur.⌋ All terminals connected with the machine should be tightened enough, otherwise damage may occur.⌋ Ensure there is no object falling into the machine in the process of configuration and installation, otherwise damage may occur.

4.1 Dimension and size



Figure 4-1 Installation dimension of EC100 elevator intelligent integrated machine

Model	W (mm)	H (mm)	D (mm)	A (mm)	B (mm)	C (mm)	Hole size (mm)	Screw bolt
EC100-7R5-4	170	320	197	151	303	~	~	
EC100-011-4	170	320	197	151	303	~	~	
EC100-015-4	230	330	197	210	311	~	~	
EC100-018-4	230	330	197	210	311	~	~	
EC100-022-4	255	400	226	237	384	~ ₁	~	
EC100-030-4	255	400	226	237	384	~ ₁	~	



When design the control cabinet, the left and right space should be no less than 50mm and the above and below space should be no less than 100mm to ensure enough cooling.

4.1.1 Terminals instruction

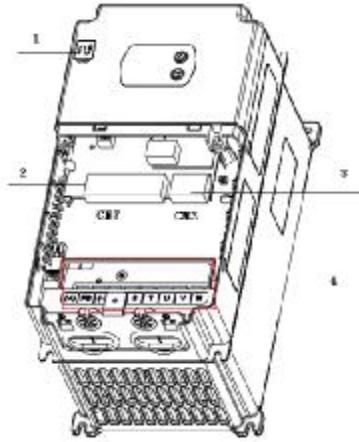


Figure 4-2 Terminals

No	Code	Name	Remarks
1	CN2	Terminal only for manual operation	Use specific cables when connecting with computer
2	CN7	DB62 terminal	Digital input/output, CAN communication , I/O board
3	CN3	Terminal for synchronous master encoder	ERN1387 or incremental encoder
4		Main circuit terminals	See 4.2.1 for the terminals arrangement.

4.2 Main circuit terminals

4.2.1 Terminal arrangement

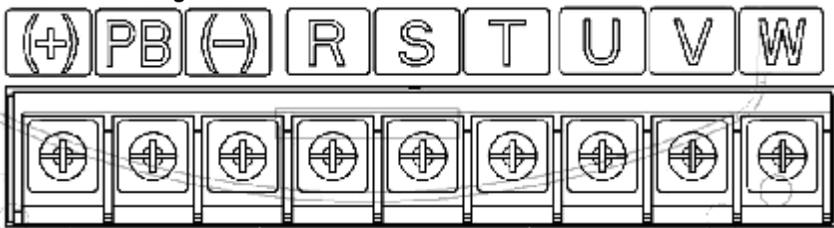


Figure 4-3 EC100 terminals (7.5kW~18.5kW)

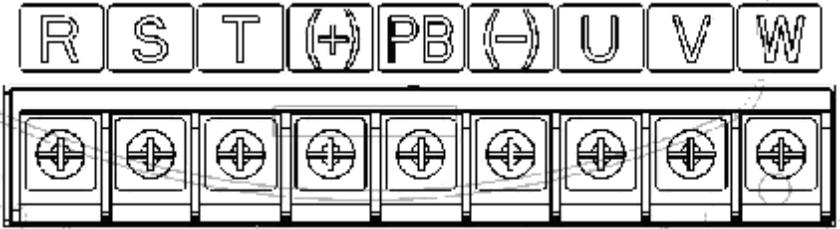


Figure 4-4 Figure 4-3 EC100 terminals (22kW~30kW)

4.2.2 Function instruction

Name	Function
R、S、T	3-phase power input terminals
(+)、(-)	DC bus negative and negative poles
(+)、PB	Wiring terminals of braking resistor
U、V、W	3-phase AC output terminals
	Grounding terminal

4.2.3 Specifaion of the main circuit leads

Model	Input leads (mm ²)	Output leads (mm ²)	Grounding leads (mm ²)
EC100-7R5-4	4	4	4
EC100-011-4	6	6	4
EC100-015-4	6	6	4
EC100-018-4	10	10	4
EC100-022-4	10	10	4
EC100-030-4	16	16	4

4.2.4 Configuration precautions

	<ul style="list-style-type: none"> ⊍ Connect according to the terminal grade. Shorten the length as short as possible to avoid leakage. ⊍ Apply standard 3-phase 5-wire power supply. Ground the grounding terminals with proper techniques. It is recommended to use multiple twisted copper wires and ensure the specific grounding resistor is no more than 4Ω. Do not use it with other devices. ⊍ Do not short circuit or ground the input/output circuits. ⊍ The output terminal of the machine needs to go through the ground metal pipe and route separately with the signal wires of the control circuit to avoid interference.
---	--

4.2.5 Connection of the control circuit of intelligent integral machine in the main circuit

The machine is embedded with braking unit. In order to release the the regenerative energy, it is necessary to connect braking resistor in the terminal of (+) and PB.

The temperature of the braking resistor will increase as the heat-releasing. Ensure safety protection and good ventilation when installing braking resistor.

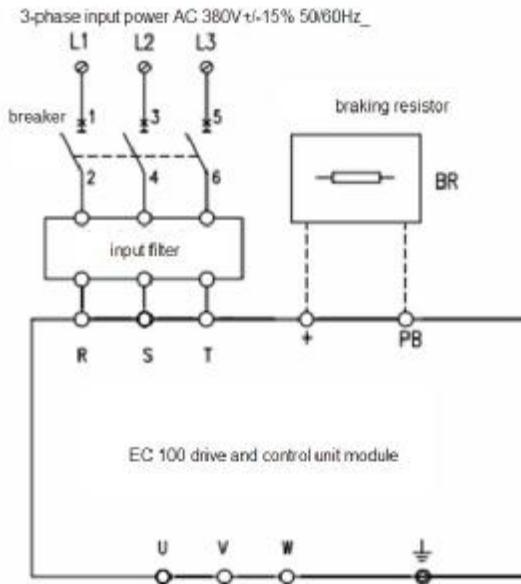


Figure 4-5 Connection diagram of braking resistor and braking unit

Figure 4-7 Appearance and terminal arrangement of I/O board

Terminals:

Terminal No	Terminal name	Remarks	Terminal No	Terminal name	Remarks
CN1	62-core connection interface		CJ3	Hoistway switch signal acquisition interface	
AJ1	Input interface of DC24V power supply		CJ4	Car /car top signal acquisition interface	
AJ2	Asynchronous PG input interface Feedback test of the input terminal contactor in the cabinet		DJ1	Spare	
CJ1	Car, group control and calling communication interface		BJ1	Drive part of the contact output control port of the drive part	
CJ2	Fire input		BJ2	Output interface of the switch door	
	Motor monitoring interface		BJ3	Spare output interface	
			BJ4	High voltage interface of safe circuit	

4.3.2 Terminal definition of I/O board

Plugin No.	Pin No.	Interface definition	Code	LED indicator code	Remarks
AJ1 termin	1	24V power supply -	24V-	LED48 green	Power input
	2	24V power supply +	24V+		

Plugin No.	Pin No	Interface definition	Code	LED indicator code	Remarks
al 1-2					
AJ2 upper terminals 1-10	1	Encoder power supply 24V-	24V-		Asynchronous master encoder input Power supply DC24V
	2	Encoder power supply 24V+	24V+		
	3	Encoder input A phase	PGA		
	4	Encoder input B phase	PGB		
	5	Open door feedback	POF	LED28	Default NO input
	6	Door inspection	POC	LED29	Default NC input
	7	UPS inspection	KPWR	LED23	Default NC input
	8	Spare input 1	LIN1	LED30	Default NO input
	9	Spare input 2	LIN2	LED31	Default NO input
	10	Spare input 3	LIN3	LED32	Default NO input
AJ2 the lower terminals 1-10 pin	1	Input common terminal 24V-			
	2	Contact inspection of the safe contractor	KSAF	LED16	Default NO input
	3	Contact of the door lock contactor	KDL	LED17	Default NO input
	4	Intelligent integral machine enabling	DEN	LED27	Default NO input
	5	Contact inspection of output contactor of the drive	KM1	LED18	Default NC input
	6	Contact inspection	KBK	LED19	Default NC input

Plugin No.	Pin No.	Interface definition	Code	LED indicator code	Remarks
		of the brake contactor			
	7	Emergency power running(off)	INS2	LED10	Inspection signal input of the control cabinet
	8	Inspection signal(off)	INS1	LED9	
	9	Control cabinet inspection UP button input	UPB	LED11	
	10	Control cabinet inspection DOWN button input	DNB	LED12	
CJ1 below terminals 1-6	1	Group control GPRH	GPRH		Group control connection
	2	Group control GPRL	GPRL		
	3	Car communication CARH	CARH		Car communication
	4	Car communication CARL	CARL		
	5	Car communication power 24V-	24V-		Communication power
	6	Car communication power 24V+	24V+		
CJ1 upper terminals 1-6	1	Outbound Communications LADH	LADH		
	2	Outbound Communications LADL	LADL		

Plugin No.	Pin No.	Interface definition	Code	LED indicator code	Remarks
	3	Null			
	4	Null			
	5	Power supply of outbound communications 24V-	24V-		Outbound Communication the load current is less than 2A. If it is above 2A, select the switch power.
	6	Power supply of outbound communications 24V-24V+	24V+		
CJ2 terminal 1-4 pin	1	Braking travel switch inspection	SBR	LED20	Default NC input
	2	Motor thermal protection	SMTR	LED21	Default NC input
	3	Fire action input	SFR	LED22	Default NC input
	4	Input common terminal 24V-	24V-		
CJ3 terminal 1-9 hoistway switch	1	Low speed down forced decel	SDS1	LED1	Default NC input
	2	Low speed up forced decel	SUS1	LED2	Default NC input
	3	Medium speed down forced decel	SDS2	LED3	Default NC input
	4	Medium speed up forced decel	SUS2	LED4	Default NC input
	5	High speed down forced decel	SDS3	LED5	Default NC input
	6	High speed up forced decel	SUS3	LED6	Default NC input

Plugin No.	Pin No.	Interface definition	Code	LED indicator code	Remarks
	7	Down limit switch signal	SDL	LED7	Default NC input
	8	Up limit switch signal	SUL	LED8	Default NC input
	9	Input common terminal 24V-	24V-		Common terminal of hoistway switch digital input
CJ4 Car information interface 1-8	1	Upper Door Zone Signal	SUDZ	LED13	Default NO input
	2	Down Door Zone Signal	SDDZ	LED14	Default NO input
	3	Middle Door Zone Signal	SMDZ	LED15	Default NO input
	4	Inspection signal 2	INS2	LED10	Default NC input
	5	Inspection signal 1	INS1	LED9	Default NC input
	6	Up inspection signal	UPB	LED11	Default NO input
	7	Down inspection signal	DNB	LED12	Default NO input
	8	Common terminal of car information 24V-	24V-		
BJ1 terminal 1-8	1	Intelligent integrated machine Output contactor control 1	JKM1	LED33	
	2	Intelligent integrated machine Output contactor control 2	JKM2	LED34	
	3	Braking contactor control 1	JKBK 1	LED35	

Plugin No.	Pin No.	Interface definition	Code	LED indicator code	Remarks
	4	Braking contactor control 2	JKBK 2	LED36	Braking Hold
	5	1-4 pin common terminal	COM1		
	7		Fire return	1FR	LED37
	8	7 pin common terminal	COM2		
BJ2 terminal 1-8	1	Open-door output signal(Front door)	KOP	LED38	
	2	Close-door output signal(Front door)	KCL	LED39	
	3	1-2 pin common terminal	COM3		
	4	Open-door output signal(Rear door)	RDOP	LED40	
	5	Close-door output signal(Rear door)	RDCL	LED41	
	6	4-5 pin common terminal	COM4		
	7	Open door output	POU	LED42	
	8	7 pin common terminal	COM5		
BJ3 terminal 1-4	1	Self-definition output 1 (advanced opening speed)	OUT1	LED43	
	2	1pin common terminal	COM6		
	3	Self-definition	OUT2	LED44	

Plugin No.	Pi n No	Interface definition	Code	LED indicator code	Remarks
		output 2			
	4	3 pin common terminal	COM7		
BJ4 terminal 1-4	1	High voltage input of the safe circuit	DC_1 +	LED45	AC110V/DC110 Voltage input
	2	High voltage of the car lock	DC_2 +	LED46	AC110V/DC110 Voltage input
	3	High voltage of the door lock	DC_3 +	LED47	AC110V/DC110V Voltage input
	4	High voltage input common terminal	DC-		

4.3.3 Technical specification of the switch input signal

Input		Open input light and electric separation
Current signal	"0" electric level	0~2mA
	"1" electric level	4.5~8mA
Voltage signal	"0" electric level	18~24V DC
	"1" electric level	0~5V DC
Signal data filter delay		30mS
Signal response frequency		200Hz

4.3.4 Technical specification of the relay switch input signal

Output mode	Relay output
AC	250V AC
DC	110V DC
Inductive load	3 A
Resistor load	5 A
Electrical life	300,0000 times
Mechanical life	1000,0000 times

4.4 Encoder wiring

4.4.1 Asynchronous master wiring

When using the asynchronous master, please use the encoder of DC24V and the push or open collector output. The interface of the encoder will be connected with AJ2, which is shown as below:

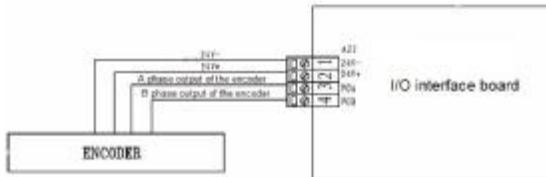


Figure 4-8 Encoder wiring of the asynchronous master

4.4.2 Synchronous master wiring

When using the synchronous master, please use the encoder of DC5V and the interface is connected with terminal DB15 of the intelligent integral machine. There are two types of encoders:

- Ø It is recommended to install the encoder, such as the cosine rotary encoder, for example, HEIDENHAIN ERN1387;
- Ø U, V and W encoder: the polarity number of the encoder should be the same with that of the motor. If using the encoder, it is necessary to install the compensation devices.

The wiring diagram of HEIDENHAIN ERN1387:

DB 15 pin		socket of 1387 encoder	
1	B-	5a	B-
2	null		
3	R+	4b	R+(Z+)
4	R-	4a	R-(Z-)
5	A+	6b	A+
6	A-	2a	A-
7	0V	3a+5b	0V
8	B+	3b	B+
9	5V	7a+1b	5V
10	C-	1a	C-(SIN-)
11	C+	7b	C+(SIN+)
12	D+	2b	D+(COS+)
13	D-	6a	D-(COS-)
14	null		
15	null		

Figure 4-9 The wiring diagram of HEIDENHAIN ERN1387

	<ul style="list-style-type: none"> ⌋ Please select the twisted shield pairs and the shield level can only be grounded with one side. ⌋ Avoid the power cables when configuration, and shorten the length of the cable and through the metal pipes.
---	--

4.5 The system installation and configuration

4.5.1 Electrical installation of the hoistway

Install a leveling switch SMDZ on the top of the car and a plate with the length of 200~300 mm in each floor. When the car is leveling, the plate is in the middle of the leveling switch.

For the elevators with different speed, install forced deceleration switch. Install SDS1 and SUS1 for the elevator with speed less than 1.5m/s; install SDS2 and SUS2 for the elevator with speed of 1.75m/s~2.0m/s; Install SDS3 and SUS3 for the elevator with speed more than 2.0m/s. (in order to avoid shock, bitable magnetic switch is available). The installation position in figure 4-5 means the distance between the car and the leveling when the switch action is valid. Install up leveling switch SUDZ and down leveling switch SDDZ on the top of the car for the elevator with relieving.

Install a SDL and SDFL on the top floor.

Install a SUL and SUFL on the ground floor.

4.5.2 Position diagram for the hoistway switch installation

See the table below for the switch installation distance.

Rated speed Force deceleration distance	≤0.5m/s	≤1.5m/s	≤2.0m/s	≤2.5m/s
L1 force deceleration distance at low speed	0.7m	1.2m	1.2m	1.2m
L2 force deceleration distance at medium speed	—	—	2.2m	2.2m
L3 force deceleration distance at high speed	—	—	—	4.5m

	<ul style="list-style-type: none"> ⌋ Note that the plugging depth of the plate to the standard line when apply magnetic switch for SMDZ. ⌋ The NO/NC state of the leveling switch can be changed through modifying the input logic of the controller.
	<ul style="list-style-type: none"> ⌋ The table above lists the recommended position if the general forced deceleration switch.

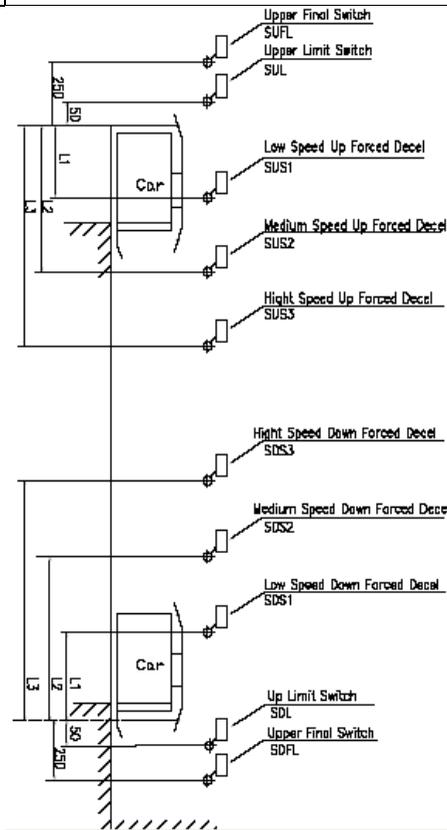


Figure 4-10 Installation position of the hoistway switch

In order to avoid short circuit, measure with millimeter to ensure if circuit is present between the 4 cables and others before power on, especially the power cable of 24V, 36V, 110V, 220V, 80V. 24V power supply is provided to the branch. The diameter is equal to or more than 0.75mm^2 . In higher floor (higher than 25th floor), reduce the voltage drop and ensure the farthest external power voltage is more than 20V.

Twisted-pair specifications: Characteristic impedance 120Ω; The allowable range 108~132Ω
Stranding pitch: $\leq 30\text{mm}$

Diameter: $\geq 0.75\text{mm}^2$

If the parallel distance between the communication and power cables is longer than 5m, there should be a 30cm space to prevent power interface.

	<ul style="list-style-type: none"> ⌋ If the electric wire and weak wire are configured parallel, put the electric together on one side and the weak wires together on the other side. Use grounding wires to separate them.
	<ul style="list-style-type: none"> ⌋ Do not plug the CAN bus plug (24V+, 24V-, CANH and CANL) when power on, otherwise permanent damage to the components may occur. ⌋ Abnormal communication may occur for wrong setting of the terminal resistor. ⌋ In general, the resistor between CANH and CANL is about 60Ω.
	<ul style="list-style-type: none"> ⌋ CAN communication cable is twisted pair and the twisted distance is less than 30mm. ⌋ CAN bus communication is away from electric wire; the communication power cable, communication cable and electric wire can not be twisted. ⌋ CAN communication cable can not connect with other circuit or grounding wire. ⌋ The specific CAN communication power cable is separated from 24V power of the controller. ⌋ The outside/inside calling board is collector open-drain output and only applied for loads such as LED. If the elevator is made

	from old ones, change the button. U Refer to the electrical diagram for detailed configuration.
--	---

4.6 Installation guideline to EMC compliance

4.6.1 General knowledge of EMC

EMC is the abbreviation of electromagnetic compatibility, which means the device or system has the ability to work normally in the electromagnetic environment and will not generate any electromagnetic interference to other equipments.

EMC includes two subjects: electromagnetic interference and electromagnetic anti-jamming.

According to the transmission mode, Electromagnetic interference can be divided into two categories: conducted interference and radiated interference.

Conducted interference is the interference transmitted by conductor. Therefore, any conductors (such as wire, transmission line, inductor, capacitor and so on) are the transmission channels of the interference.

Radiated interference is the interference transmitted in electromagnetic wave, and the energy is inverse proportional to the square of distance.

Three necessary conditions or essentials of electromagnetic interference are: interference source, transmission channel and sensitive receiver. For customers, the solution of EMC problem is mainly in transmission channel because of the device attribute of disturbance source and receiver can not be changed.

4.6.2 EMC features of inverter

Like other electric or electronic devices, inverter is not only an electromagnetic interference source but also an electromagnetic receiver. The operating principle of inverter determines that it can produce certain electromagnetic interference noise. And the same time inverter should be designed with certain anti-jamming ability to ensure the smooth working in certain electromagnetic environment. The following is its EMC features:

- I Input current is non-sine wave. The input current includes large amount of high-harmonic waves that can cause electromagnetic interference, decrease the grid power factor and increase the line loss.
- I Output voltage is high frequency PMW wave, which can increase the temperature rise and shorten the life of motor. And the leakage current will also increase, which can lead to the leakage protection device malfunction and generate strong electromagnetic interference to influence the reliability of other electric devices.
- I As the electromagnetic receiver, too strong interference will damage the inverter and influence the normal using of customers.
- I In the system, EMS and EMI of inverter coexist. Decrease the EMI of inverter can

increase its EMS ability.

4.6.3 EMC Installation Guideline

In order to ensure all electric devices in the same system to work smoothly, this section, based on EMC features of inverter, introduces EMC installation process in several aspects of application (noise control, site wiring, grounding, leakage current and power supply filter). The good effective of EMC will depend on the good effective of all of these five aspects.

4.6.3.1 Noise control

All the connections to the control terminals must use shielded wire. And the shield layer of the wire must ground near the wire entrance of inverter. The ground mode is 360 degree annular connection formed by cable clips. It is strictly prohibitive to connect the twisted shielding layer to the ground of inverter, which greatly decreases or loses the shielding effect.

Connect inverter and motor with the shielded wire or the separated cable tray. One side of shield layer of shielded wire or metal cover of separated cable tray should connect to ground, and the other side should connect to the motor cover. Installing an EMC filter can reduce the electromagnetic noise greatly.

4.6.3.2 Site wiring

Power supply wiring: the power should be separated supplied from electrical transformer. Normally it is 5 core wires, three of which are fire wires, one of which is the neutral wire, and one of which is the ground wire. It is strictly prohibitive to use the same line to be both the neutral wire and the ground wire

Device categorization: there are different electric devices contained in one control cabinet, such as inverter, filter, PLC and instrument etc, which have different ability of emitting and withstanding electromagnetic noise. Therefore, it needs to categorize these devices into strong noise device and noise sensitive device. The same kinds of device should be placed in the same area, and the distance between devices of different category should be more than 20cm.

Wire Arrangement inside the control cabinet: there are signal wire (light current) and power cable (strong current) in one cabinet. For the inverter, the power cables are categorized into input cable and output cable. Signal wires can be easily disturbed by power cables to make the equipment malfunction. Therefore when wiring, signal cables and power cables should be arranged in different area. It is strictly prohibitive to arrange them in parallel or interlacement at a close distance (less than 20cm) or tie them together. If the signal wires have to cross the power cables, they should be arranged in 90 angles. Power input and output cables should not either be arranged in interlacement or tied together, especially when installed the EMC filter. Otherwise the distributed capacitances of its input and output power cable can be coupling each other to make the EMC filter out of function.

4.6.3.3 Grounding

Inverter must be ground safely when in operation. Grounding enjoys priority in all EMC methods because it does not only ensure the safety of equipment and persons, but also is the simplest, most effective and lowest cost solution for EMC problems.

Grounding has three categories: special pole grounding, common pole grounding and series-wound grounding. Different control system should use special pole grounding, and different devices in the same control system should use common pole grounding, and different devices connected by same power cable should use series-wound grounding.

4.6.3.2 Leakage Current

Leakage current includes line-to-line leakage current and over-ground leakage current. Its value depends on distributed capacitances and carrier frequency of inverter. The over-ground leakage current, which is the current passing through the common ground wire, can not only flow into inverter system but also other devices. It also can make leakage current circuit breaker, relay or other devices malfunction. The value of line-to-line leakage current, which means the leakage current passing through distributed capacitors of input output wire, depends on the carrier frequency of inverter, the length and section areas of motor cables. The higher carrier frequency of inverter, the longer of the motor cable and/or the bigger cable section area, the larger leakage current will occur.

Countermeasure:

Decreasing the carrier frequency can effectively decrease the leakage current. In the case of motor cable is relatively long (longer than 50m), it is necessary to install AC reactor or sinusoidal wave filter at the output side, and when it is even longer, it is necessary to install one reactor at every certain distance.

4.6.3.5 EMC Filter

EMC filter has a great effect of electromagnetic decoupling, so it is preferred for customer to install it.

For inverter, noise filter has following categories:

- I Noise filter installed at the input side of inverter;
- I Install noise isolation for other equipment by means of isolation transformer or power filter.

4.6.4 If user install inverter and EMI filter according to the installation guideline, we believe inverter system comply with following compliance.

- I EN61000-6-4; EN61000-6-3; EN61800-3

Chapter 5 Debugging tools

5.1 Instruction

Manual controller is the specific debugging tools for system debugging and maintenance. It consists of LCD display and keys which has following functions:

5.1.1 Main controlling interface:

Following elevator state can be watched through LCD displaying:

- Ø The automotive, maintenance, drive, fire safety, overload and door open state
- Ø Inside and outside calling signal of the elevator
- Ø Floor position of the elevator
- Ø Running direction of the elevator

5.1.2 Fault history

Inquiry the fault time, floor, input/output state.

5.1.3 Parameters setting

Set all the elevator parameters through the manual controller

- Ø Speed setting;
- Ø Motor parameters setting;
- Ø Encoder parameters setting;
- Ø Floor parameters setting;
- Ø Comfortability and protective parameters setting;
- Ø Time and function parameters setting

5.1.4 Password setting

The password of the loading page can be modified and the current password can be used to modify the current password and the lower grade password.

5.1.5 System autotunign

Relative elevator autotuning:

- Ø Hoistway autotuning
- Ø Static autotuning of the motor
- Ø Rotating autotuning of the motor
- Ø Weighting autotuning of the elevator

5.1.6 Data management

- Ø Data storage
- Ø Factory setting restore
- Ø Fault history clearance

5.2 Connection method



Figure 5-1 Interface of the manual controller and EC100

5.3 Keys and LED indicator

5.3.1 Key definition

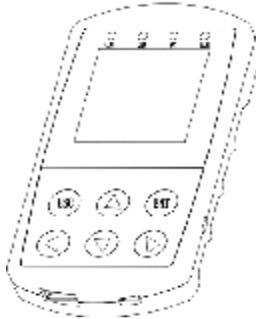


Figure 5-2 Appearance and key definition

5.3.2 Manual controller and LED indicator

Serial No.	No	Meaning	Instruction
1	COM	Connection signal of manual controller and EC100	On when normal communication
2	CAN	Connection signal of manual controller and the car	On when normal communication
3	PC	Connection signal of manual controller and the computer	On when normal communication
4	ALM	Connection fault	Flash when no communication

5.4 Operational procedure flowchart

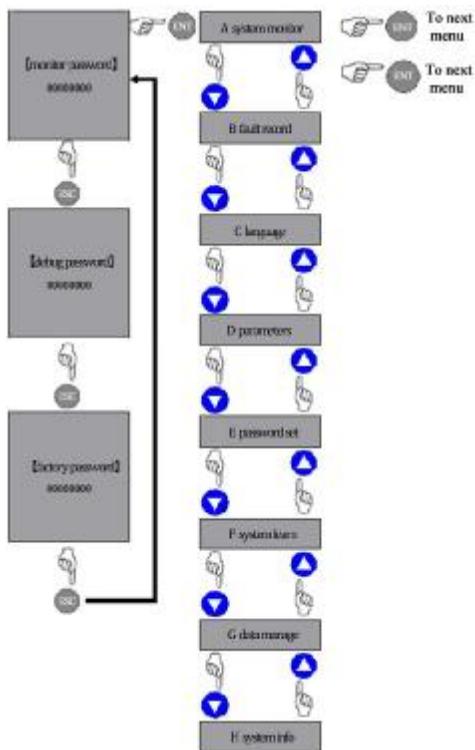
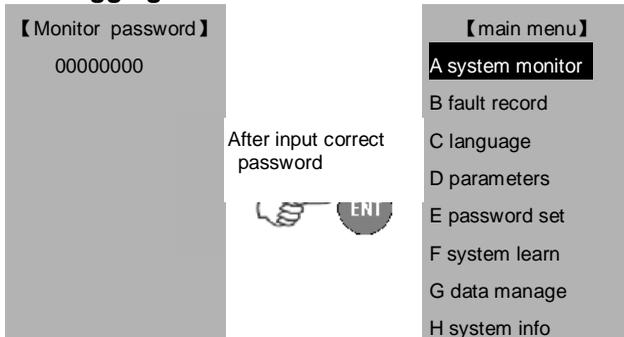


Figure 5-3 Procedure flowchart

Chapter 6 Function parameters

6.1 Original debugging interface



The monitoring password can only enter into A, B and H in the main menu and they are only for read.

After inputting the monitoring password, pressing ESC can shift into the password debugging or factory password input mode.



The original value of monitoring password and debugging password is 00000000.

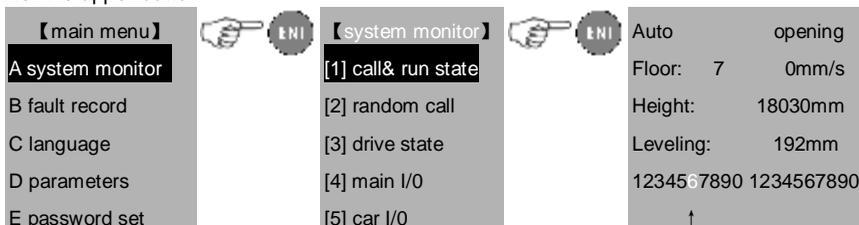
If it is necessary to shift into the other modes after password entering, power off and enter again.

6.2 System monitoring

6.2.1 System monitoring --- calling and running state

6.2.1.1 Calling state

After entering into the calling and running state, move the cursor into the called floor number, press Ent to record the car calling and press DOWN to enter the lower button and press UP to enter the upper button.



F system learn
G data manage
H system info

↓
1234567890 1234567890

6.2.1.2 Monitoring system--Running state

Auto opening
Floor: 7 0mm/s
Height: 18030mm
Leveling: 192mm
1234567890 1234567890
↑
↓
1234567890 1234567890

Serial no	Meaning
1	Stands for the elevator state: auto, maintenance, fire safety, drive, overload, door locked, fault and full load.
2	Stands for the current floor of the elevator.
3	Stands for the current height of the elevator.
4	Stands for the distance between each leveling.
5	Monitor the current recorded car commands.
6	Stands for the current recorded UP commands.
7	Stands for the current recorded DOWN commands.
8	Stands for the door state: opening, closing, open and closed.

6.2.2 Monitoring system---random running

After entering into the interface, the elevator is in the random running state automatically.

Auto opening
Floor: 7 0mm/s
Height: 18030mm
Leveling: 192mm
1234567890 1234567890
↑

↓
1234567890 1234567890

6.2.3 Monitoring system--driving state

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>	<p>【system control】</p> <p>[1] call& run state</p> <p>[2] random call</p> <p>[3] drive state</p> <p>[4] main I/O</p> <p>[5] car I/O</p>	<p>【drive state】</p> <p>1.GivenV: 0mm/s</p> <p>2. ActualV: 0mm/s</p> <p>3.GivenF: 000.000Hz</p> <p>4.OutputF: 000.000 Hz</p> <p>5.RoundV: 00rpm</p> <p>6.Current: 000.0A</p> <p>7.Voltage 0000V</p> <p>8.power: 000.0Kw</p> <p>9.Bus volt: 517.5V</p>
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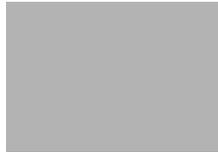
6.2.4 Monitoring system--main controller

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>	<p>【system control】</p> <p>[1] call& run state</p> <p>[2] random call</p> <p>[3] drive state</p> <p>[4] main I/O</p> <p>[5] car I/O</p>	<p>【Input SW 1—32:】</p> <p>1 2 3 4 5 6 7 8 9 10 11 12</p> <p>13 14 15 16 17 18 19 20</p> <p>21 22 23 24 25 26 27 28</p> <p>29 30 31 32</p> <p>【Output Rel 1—12】</p> <p>1 2 3 4 5 6 7 8 9 10 11 12</p> <p>【up & down key check I/O details】</p>
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Watch the state of each point when the output/input point of I/O board changes.

<p>【Input SW 1—32】</p> <p>1 low speed down for</p> <p>2 low speed up force</p> <p>3middle speed down</p> <p>4middle speed up fo</p> <p>5 high speed down fo</p> <p>6 high speed up force</p> <p>7 down limit</p> <p>8 up limit</p> <p>9 emergency-motion</p>	<p>10 inspection signal</p> <p>11 inspection up sig</p> <p>12 inspection down s</p> <p>13 up door area</p> <p>14 down door area</p> <p>15 middle door area</p> <p>16 contact of the sa</p> <p>17 contact of the do</p> <p>18 drive output cont</p> <p>19 contact of the br</p>	<p>20 braking travel sw</p> <p>21 motor thermal pro</p> <p>22 fire action input</p> <p>23 UPS input signal</p> <p>24 high voltage insp</p> <p>25 high voltage insp</p> <p>26 high voltage insp</p> <p>27 hardware enabling</p> <p>29 advanced opening</p> <p>30 Redefined</p>
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E password set
 F system learn
 G data manage
 H system info



6.5 Parameters setting inquiry

Move the cursor into D after entering into the main menu and press ENT into the parameters setting, the main menu is as below:

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p>
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6.5.1 Parameters setting –master drive control

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p>		<p>【P0 drive control】</p> <p>00 control mode</p> <p>01 rating vectory</p> <p>02 Max. vectory</p> <p>03 Max_frequency</p> <p>04 diameter of tract</p> <p>05 reducing ratio</p> <p>06 Suspension ratio 07 carrier frequency</p> <p>08 running direction</p>
--	--	---	--	--

Function code	Instruction	Setting range 【default value】	Remarks
P0_00	Speed control mode	0-2 【1】	Not modify in running

Select the speed control mode of the system.

0: VC without PG, only suitable on the debugging mode of the asynchronous master

1: VC with PG, encoder is needed

2: V/F control, , only suitable on the debugging mode of the asynchronous master

Function code	Instruction	Setting range 【default value】	Remarks
P0_01	Rated speed of the elevator	0.100~6.000m/s 【1.750】	Not modify in running

Input this parameter according to the name plate of the elevator. This is the basic value of the actual speed of the elevator.

Function code	Instruction	Setting range 【default value】	Remarks
P0_02	Max. speed of the elevator	0.100~6.000m/s 【1.750】	Not modify in running

This is the upper limit of the actual speed of the elevator.

Function code	Instruction	Setting range 【default value】	Remarks
P0_03	Max. output speed	10.00~400.00Hz 【27.8】	Not modify in running

This parameter is used to set the Max. output frequency and the Max. linear speed of the elevator will be limited by this value.

Function code	Instruction	Setting range 【default value】	Remarks
P0_04	Diameter of the traction sheave	100~2000mm 【400】	Not modify in running
P0_05	Speed reducing ratio	1.00~100.00 【1.0】	

P0_06	Suspension ratio of the hoisting rope	1~8 【2】	
<p>This parameter is used to set the traction parameters of the elevator. Only correct setting can make the running speed correspond to the actual speed of the elevator.</p>			

Function code	Instruction	Setting range【default value】	Remarks
P0_07	Carrier frequency setting	1.0~16.0kHz 【8.0】	Not modify in running
<p>The advantages of high carrier frequency: optimal current waveform, low current harmonics, low motor noise;</p> <p>Disadvantages of high carrier frequency: increased switching loss, increased inverter temperature rise, affected inverter output capacity, derated operation of the inverter, increased leakage current of the inverter as well as increased electromagnetic interference to the outside.</p> <p>If low carrier frequency is used, the situation will be in contrast with the above. Too low carrier frequency will cause unstable operation at low frequency, lowered torque and even oscillation.</p>			

Function code	Instruction	Setting range【default value】	Remarks
P0_08	Running direction	0-1 【0】	Not modify in running
<p>This parameter is used to change the running direction of the master. When the climbing command direction reverses to the actual running command, this parameter can be changed.</p>			

6.5.2 Parameters setting – speed and deceleration distance

【main menu】 A system monitor B fault record C language D parameters		【parameters】 P0 drive control P1 speed & distance P2 motor parameters P3 encoder para		【P1 speed & distance】 00 jerk 1 01 jerk 2 02 Acc 03 jerk 3
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E password set
 F system learn
 G data manage
 H system info

P4 running comfort
 P5 elevator protect
 P6 communication set
 P7 drive info
 PE factory only

04 jerk 4
 05 Dcc
 06 Door area
 07 Zero-speed thresh
 08 pre_open thresh
 09 Inspection speed
 10 UPS running speed
 11 Landing speed
 12 Autotuning speed
 13 Landing precision

Function code	Instruction	Setting range【default value】	Remarks
P1_00	Increasing acceleration1 (fast acceleration at the beginning stage)	0.001 ~9.999m/s ³ 【0.350】	Not modify in running
P1_01	Increasing acceleration 2 (fast acceleration at the end stage)	0.001 ~9.999m/s ³ 【0.350】	
P1_02	Acceleration speed	0.001 ~9.999m/s ² 【0.700】	
P1_03	Reducing deceleration 1 (fast deceleration at the beginning stage)	0.001 ~9.999m/s ³ 【0.350】	
P1_04	Reducing deceleration 2 (fast deceleration at the beginning stage)	0.001 ~9.999m/s ³ 【0.350】	
P1_05	Deceleration speed	0.001 ~9.999m/s ² 【0.700】	

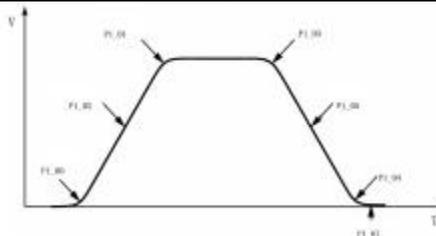


Figure 6-1 Parameters diagram of S curve

Function code	Instruction	Setting range 【default value】	Remarks
P1_06	Door area		Read only



U Parameter P1_06 is the door range measured (length), and the modification is invalid.

Function code	Instruction	Setting range 【default value】	Remarks
P1_07	Zero-speed threshold	0~0.050m/s 【0】	Not modify in running

Zero-speed threshold means the mini running speed before braking.

Function code	Instruction	Setting range 【default value】	Remarks
P1_08	The speed threshold of opening door in advance	0~0.200m/s 【0.050】	Not modify in running

The speed threshold of opening door in advance is the Max. allowed speed when opening the door in advance.

Function code	Instruction	Setting range【default value】	Remarks
P1_09	Inspection speed	0~1.000m/s 【0.200】	Not modify in running
P1_10	Peristaltic landing speed	0~0.200m/s 【0.02】	
P1_11	UPS running speed	0~1.000m/s 【0.100】	
P1_12	Landing speed	0~1.000m/s 【0.200】	
P1_13	Autotuning speed	0~1.000m/s 【0.300】	
P1_14	Landing precision	0~100mm 【50】	

P1.14 is used to adjust the leveling precision. The basic value is 50 (50+*) and 50 (50-*) .

6.5.3 Parameters setting – motor parameters

<p>【main menu】</p> <ul style="list-style-type: none"> A system monitor B fault record C language D parameters E password set F system learn G data manage 		<p>【parameters】</p> <ul style="list-style-type: none"> P0 drive control P1 speed & distance P2 motor parameters P3 encoder para P4 running comfort P5 elevator protect P6 communication set 		<p>【P2 motor parameter】</p> <p>00 Motor type</p> <ul style="list-style-type: none"> 01 motor Rated power 02 motor Rated freq 03 motor Rated speed 04 motor Rated volta 05 motor Rated curre 06 motor stator resist
--	--	--	--	--

H system info	P7 drive info PE factory only	07 motor rotor resist 08 leak_inductance 09 Mutual_inductance 10 Current without load
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Function code	Instruction	Setting range 【default value】	Remarks
P2_00	Motor type selection	0-1 【1】	Not modify in running
Select the motor type 0: Asynchronous master 1: Synchronous master			

	<p>U After changing the motor type, it is necessary to change the encoder type and speed control mode.</p>
---	---

Function code	Instruction	Setting range 【default value】	Remarks
P2_01	Rated power of the motor	3.7~150.0kW 【depend on the model】	Not modify in running
P2_02	Rated frequency of the motor	3Hz~400Hz 【27.8】	
P2_03	Rated speed of the motor	0~30000rpm 【167】	
P2_04	Rated voltage of the motor	0~460V 【380】	
P2_05	Rated current of the motor	0.1~1000.0A 【depend on the model】	
Input correct above parameters when master autotuning.			

Function code	Instruction	Setting range 【default value】	Remarks
---------------	-------------	-------------------------------	---------

P2_06	Resistance of the stator	0.001~65.535Ω 【depend on the model】	Not modify in running
P2_07	Resistance of the rotor	0.001~65.535Ω 【depend on the model】	
P2_08	Inductance of the stator and rotor	0.1~6553.5mH 【depend on the model】	
P2_09	Mutual inductance of the stator and rotor	0.1~6553.5mH 【depend on the model】	
P2_10	Current without load	0.01~655.35A 【depend on the model】	
<p>Above parameters will update automatically after autotuning of the master. These parameters are the basic ones of high performance vector control, having direct impact on the performance control.</p>			



⚡ Do not modify above parameters without permits.

6.5.4 Parameters setting – encoder parameters

<p>【main menu】</p> <ul style="list-style-type: none"> A system monitor B fault record C language D parameters E password set F system learn G data manage H system info 	<p>⚡ ENI 【parameters】</p> <ul style="list-style-type: none"> P0 drive control P1 speed & distance P2 motor parameters P3 encoder para P4 running comfort P5 elevator protect P6 communication set P7 drive info PE factory only 	<p>⚡ ENI 【P3 encoder para】</p> <ul style="list-style-type: none"> 00 encoder type 01 encoder resolution 02 encoder direction 03 off time L speed 04 off time H speed 05 reverse time 06 magneticpole gain 07 cpole position 08 dpole position
--	---	---

Function code	Instruction	Setting range 【default value】	Remarks
---------------	-------------	-------------------------------	---------

P3_00	Encoder type selection	0-2 【1】	Not modify in running
<p>Select the encoder type. Generally, the asynchronous master is set to 0 and applying I/O board AJ2 encoder interface. The asynchronous master is set to be 1 and apply main control board CN3 encoder interface.</p> <p>0: Incremental encoder (Asynchronous master) 1: SIN/COS encoder 2: UVW encoder</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P3_01	Encoder resolution	1~10000 【2048】	Not modify in running
Set the pulse number of the encoder. The incorrect parameter make the master not work normally.			

Function code	Instruction	Setting range 【default value】	Remarks
P3_02	Encoder direction	0-1 【0】	Not modify in running
The magnetic position will be changed as the changing of master angle, please modify the parameter.			

Function code	Instruction	Setting range【default value】	Remarks
P3_03	Disconnection detection time of the encoder at low speed	0.0~10.0s 【1.0】	Not modify in running
P3_04	Disconnection detection time of the encoder at high speed	0.0~10.0s 【1.0】	
P3_05	Reverse detection time of the encoder	0.0~10.0s 【1.0】	
Above parameters are the detection time of the encoder fault. Setting 0 can cancel the fault protection. Ensure the braking is open or not when reporting the encoder fault and ensure whether the elevator is slipping when reverse fault occurs to the encoder.			

Function code	Instruction	Setting range 【default value】	Remarks
P3_06	Magnetic pole position amplitude gain	0.50~1.50 【1.00】	Not modify in running
P3_07	Magnetic pole position of C phase	0~9999 【385】	
P3_08	Magnetic pole position of D phase	0~9999 【385】	
<p>The setting of above parameters is relative to the static autotuning of synchronous master.</p> <p>Generally, the magnetic pole position amplitude gain of P3_07 is 0.99. Please se the value between 0.98 and 1.02. Power on after plugging the encoder. Write the sample value of U1.08 C phase and U1.09 D phase in the magnetic pole position of P3_08 C phase and P3_09 D phase to ensure the correction of static autotuning.</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P3_09	Initial position of the magnetic pole	0.00~360.00 【0.00】	Not modify in running
<p>This parameter will update automatically after autotuning. It is the most important parameter of master running and can not be modified.</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P3_10	Static identification current	10.0-150.0% 【50】	Not modify in running
<p>The reference value of static autotuning. This parameter is used to set the percentage of the identification current to the rated current of the motor. According to the master, it can be set 40%~60%.</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P3_11	Pulse counting direction	0:Do not change 2:reverse for the synchronous motor 4: reverse for the asynchronous motor 【0】	Not modify in running
When the elevator go upstairs, if the height of the floor is decreasing, please change the value of P3_11.			

	<p>U Please judge the counting direction when hoistway autotuning. The real-time height of the elevator will increase when the elevator is raising.</p>
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6.5.5 Parameters setting –running comportsability

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data managet</p> <p>H system info</p>	 	<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p>	 	<p>【P4 running comfort】</p> <p>00 ASR Ispeed gain</p> <p>01 ASR Ispeed int.</p> <p>02 ASR Ispeed filt</p> <p>03 Switch low. Freq.</p> <p>04 ASR hspeed gain</p> <p>05 ASR hspeed int.</p> <p>06 ASR Ispeed filt</p> <p>07 Switch high freq.</p> <p>08 I_loop gain p</p> <p>09 I_loop I</p> <p>10 I_loop filt</p> <p>11 drive_slip</p> <p>12 brake_slip</p> <p>13 upper_torque</p> <p>14 Load comp. enable</p> <p>15 Load comp. time</p> <p>16 loadComp.dec time</p> <p>17 loadComp.gain p</p> <p>18 loadComp. I</p> <p>19 APR gain</p> <p>20 APR I</p>
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		21 I_loop comp.gain 22 ASP lowspeed gain 23 rated load 24 Weit_input select 25 Pre-torque bias 26 brake Bias & gain 27 drive Bias & gain 28 CarAnalog filter 29 Room Analog filter 30 CurveSmooth filter
--	--	---

Function code	Instruction	Setting range【default value】	Remarks
P4_00	ASR low speed proportion gain	0~100 【40】	Not modify in running
P4_01	ASR low speed integral time	0.01~10.00s 【0.50】	
P4_02	Speed detection low speed filtrate times	0~8 【0】	
P4_03	Switch low point frequency	0.00Hz~10.00Hz 【2.00】	
P4_04	ASR high speed proportion gain	0~100 【40】	
P4_05	ASR high speed integral time	0.01~10.00s 【0.60】	
P4_06	Speed detection high speed filtrate times	0~8 【0】	
P4_07	Switch high point frequency	0~400 【5.00】	

The above parameters are only valid for vector control. When under the low point switch frequency (P4_03), speed loop parameter PI is P4_00 and P4_01, when over the high low point switch frequency (P4_07), speed loop parameter PI is P4_04 and P4_05. Please refer to following figure for details.

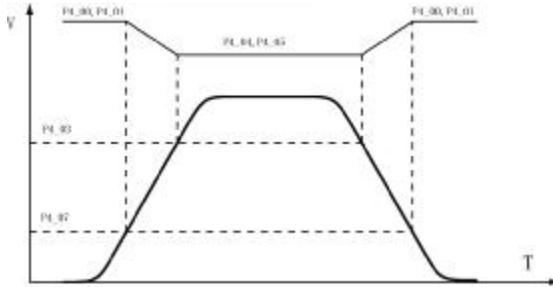


Figure 6-2 Parameters of speed loop PI

The system's dynamic response can be faster if the proportion gain K_{pB} is increased or the integral time K_{iB} is decreased; however, if K_{pB} is too large or K_{iB} is too small, the system becomes overshoot and tends to oscillate. If K_{pB} is too small, may cause the system steady-state-oscillation, and maybe the speed static will occur.

Speed loop parameter PI has strong relationship with the system's inertia, in order to meet the requirement of any situation; the PI should be adjusted based on the default set when the load of the system changed.

P4_02 and P4_06 are filter times of motor speed detection which need not to be adjusted, increase the values if there is current noise when motor is running.

Function code	Instruction	Setting range【default value】	Remarks
P4_08	ACR proportional gain P	0~65535 【2000】	Not modify in running
P4_09	ACR integral gain I	0~65535 【1000】	

Note: The above parameters are related to the ACR adjustment, which directly affects the dynamic response and control accuracy if the system. Generally, the user can not modify the value.

	<p>⚠ Incorrect parameters will make vibration to the system.</p>
---	---

Function code	Instruction	Setting range 【default value】	Remarks
P4_10	Current loop filter coefficient	0-65535 【1】	Not modify in running

This parameter is used to set the current loop filter tims in the whole running.

Function code	Instruction	Setting range【default value】	Remarks
P4_11	Slip compensation rate of drive side	50~200%【100】	Not modify in running
P4_12	Slip compensation rate of braking side	50~200%【100】	
The parameter is used to adjust the slip frequency of vector control and improve the precision of speed control. Properly adjusting this parameter can effectively restrain the steady-state error.			

Function code	Instruction	Setting range【default value】	Remarks
P4_13	Torque upper limit	0.0~200.0% (rated current)【150.0】	Not modify in running
100.0% corresponds with the rated current of inverter.			

Function code	Instruction	Setting range【default value】	Remarks
P4_14	Load compensation enabling	0~1【1】	Not modify in running
P4_15	Load compensation time	0.000~5.000s【0.700】	
P4_16	Reducing time of load compensation	0.000~5.000s【0.300】	
P4_17	ASR proportional gain	0~100【30】	
P4_18	ASR integral time	0.01~10.00s【0.16】	
P4_19	APR proportional gain	0~100【0】	
P4_20	APR integral time	0.01~10.00s【0.01】	
P4_21	Current compensation coefficient	0~4000【1500】	
Above parameters are used to set the non-weighting compensation function.			

	<p>Only when set P4_14 to be 1 to enable the non-weighting compensation function, P4_15, P4_16, P4_17, P4_18, P4_19, P4_20, P4_21 are valid. And P4_17, P4_18, P4_19, P4_20 and P4_21 are valid in the time set by P4_15.</p>
---	---

Function code	Instruction	Setting range【default value】	Remarks
P4_22	Rated load (rated load of the elevator)	0~10000kG 【1000】	Not modify in running
P4_23	Weighing input selection	0~1 【0】	

P4_23: Weighing input selection
 Set the signal input of light load, full load and overload.
 0: Light load, full load and overload correspond to LL, FL and OL.
 1: Select the analog input of the car. Install analog weighting sensor of DC0~10V and set after weighting autotuning.

Function code	Instruction	Setting range 【default value】	Remarks
P4_24	Weighing compensation input channel	0-2 【0】	Not modify in running
P4_25	Pre-torque bias	0.0~100.0% 【45】	
P4_26	Bias and gain at the braking side	0.000~5.000 【2.000】	
P4_27	Bias and gain at the drive side	0.000~5.000 【2.000】	

The parameter is used to set the weighing compensation input channel.
 0: no compensation
 1: CAN communication. Install analog weighting sensor in the bottom of the car. Send the load signal to the main board after autotuning.
 2: terminal input. Need analog weighting signal of DC0~10V output
 P4_25 can improve the comfortability when starting. Usually set to the balance coefficient of the elevator.
 When the drive is in the power generation state, adjust P4_26.
 When the drive is in the motoring state, adjust P4_27.

	<p>U P4_25, P4_26 and P4_27 are only valid when set P4_24 to be non-zero.</p>
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Function code	Instruction	Setting range 【default value】	Remarks
P4_28	Analog input filter of car weighting	0.00~0.50s 【0.1】	Not modify in running
P4_29	Analog input filter of engine room	0.00~0.50s 【0.1】	
P4_30	Smooth filter time of the curve	0~20ms 【6】	

6.5.6 Parameters setting – Elevator protection parameters

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p>		<p>【P5 Elevator protect】</p> <p>00 Input phase loss</p> <p>01 Output phase loss</p> <p>02 Motoroverload sel</p> <p>03 Motor overload cur</p> <p>04 OL pre-warning th</p> <p>05 OL pre-warning se</p> <p>06 OL pre-warning de</p> <p>07 fault reset times</p> <p>08 Fault reset inter</p> <p>09 over speed dev</p> <p>10 over speed time</p> <p>11 Braking v.threshold</p>
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Function code	Instruction	Setting range 【default value】	Remarks
P5_00	Input phase loss protection	0-2 【0】	Not modify in running
P5_01	Output phase loss protection	0-1 【1】	

Above function codes select input/output phase loss protection enabling.

0: Prohibit

1: Enabling

2: Only enabling in running

Function code	Instruction	Setting range 【default value】	Remarks
P5_02	Motor overload protection	0-2 【2】	Not modify in running

0: Disabled

1: Normal motor. For normal motor (within the function of low speed compensation), the lower the speed, the poorer the cooling effect. Based on this reason, if output frequency is lower than 30Hz, inverter will reduce the motor overload protection threshold to prevent normal motor from overheat.

2: Variable frequency motor. For variable frequency motor (without the function of low speed compensation),As the cooling effect of variable frequency motor has nothing to do with running speed, it is not required to adjust the motor overload protection threshold.

Function code	Instruction	Setting range 【default value】	Remarks
P5_03	Motor overload protection current	20.0%~120.0%(rated current of the motor) 【100.0】	Not modify in running

Motor overload protection current = (motor rated current / machine rated current) * 100%



U This parameter is normally used when rated power of the machine is greater than rated power of motor.

Function code	Instruction	Setting range 【default value】	Remarks
P5_04	Overload pre-warning threshold	20.0%~150.0% 【130.0】	Not modify in running

P5_05	Overload selection	pre-warning	0-3 【0】
P5_06	Overload delay time	pre-warning	0.0~30.0s 【5.0】

The value of P5_04 determines the pre-warning threshold, 100% corresponds to the rated current of the machine.

P5_05: Overload pre-warning selection, determine the overload type.

0: corresponds to the rated current of the motor, detecting

1: corresponds to the rated current of the motor, detecting when constant speed

2: : corresponds to the rated current of the machine, detecting

3: : corresponds to the rated current of the machine, detecting when constant speed

When the output current is more than the pre-warning threshold, the system will report fault.

Function code	Instruction	Setting range 【default value】	Remarks
P5_07	Automatic fault reset times	0~10 【3】	Not modify in running
P5_08	Fault reset interval	0.1~100.0s 【5.0】	

When P5_07 is set to non-zero, the drive fault is allowed to reset after the interval time set by P5_08, when the time is more than, the system will stop and need to reset after powering off.

Function code	Instruction	Setting range 【default value】	Remarks
P5_09	Threshold of over speed deviation	0.1%~50.0% 【20.0】	Not modify in running
P5_10	Detection time of over speed deviation	0.000~10.000s 【0.500】	
P5_11	Braking threshold voltage	320~750 【700】	

	<p>The speed detection is set to the rated speed of the elevator, pulley diameter and gear ratio.</p>
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6.5.7 Parameters setting – Communication setting

【main menu】	 	【parameters】	 	【P6 Communication】
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A system monitor	P0 drive control	00 Local com address
B fault record	P1 speed & distance	01 baud rate
C language	P2 motor parameters	02 bit-check
D parameters	P3 encoder para	03 response enable
E password set	P4 running comfort	04 response delay
F system learn	P5 elevator protect	05 timeout fault set
G data manage	P6 communication set	06 reserved
H system info	P7 drive info	07 reserved
	PE factory only	08 Ethernet speed
		09 IP address 1
		10 IP address 2
		11 IP address 3
		12 IP address 4
		13 IP mask 1
		14 IP mask 2
		15 IP mask 3
		16 IP mask 4

Function code	Instruction	Setting range 【default value】	Remarks
P6_00	Local communication address	1-247 【1】	Not modify in running
<p>When the master is writing the frame, if the communication address of the slave is set to be 0 (that is the broadcast communication address), all slaves on the MODBUS bus will receive the frame, but the slaves will not make any response.</p> <p>The local communication address is a unique address in the communication network. This is the basis for point-to-point communications between the upper computer and the inverter.</p>			

	<p>U The slave address should not be set to be 0.</p>
---	--

Function code	Instruction	Setting range 【default value】	Remarks
---------------	-------------	-------------------------------	---------

P6_01	Communication baud rate selection	0-5 【4】	Not modify in running
<p>This parameter is used to set the data transmission rate between the upper computer and the machine</p> <p>0: 1200BPS 1: 2400BPS 2: 4800BPS 3: 9600BPS 4: 19200BPS 5: 38400BPS</p>			

	<p>The baud rate setting of the upper computer should be the same as that of the machine. Otherwise, communications cannot be implemented. The higher the baud rate, the faster the communication speed is.</p>
---	---

Function code	Instruction	Setting range 【default value】	Remarks
P6_02	Data format	0-2 【1】	Not modify in running
<p>The data format setting of the upper computer should be the same as that of the machine. Otherwise, communications cannot be implemented.</p> <p>0: No parity (N, 8, 1) for RTU 1: Even parity (E, 8, 1) for RTU 2: Odd parity (O, 8, 1) for RTU</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P6_03	Communication response enabling	0-1 【0】	Not modify in running
<p>0: enabled 1: disabled</p>			

Function code	Instruction	Setting range 【default value】	Remarks
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P6_04	Communication response delay	0-20ms 【0】	Not modify in running
<p>Reply delay: refers to the interval time between the end of data receiving of the machine and the reply data sending of the upper computer. If the reply delay time is less than the system processing time, take the system processing time as reply delay reference. If the reply delay is longer than the system processing time, after data processing, the system has to wait until the reply delay time is reached before sending data to the upper computer.</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P6_05	Communication timeout fault	0-100.0s 【0】	Not modify in running
<p>If the functional code is set to 0.0s, the communication delay time parameter is disabled.</p> <p>When the functional code is set to be a valid value, if the interval between the current communication and the next communication exceeds the communication delay time, the system will send a communication fault error (Err18).</p> <p>Normally, it is set to be "disabled". If this parameter is set in a consecutive communication system, communication state can be monitored.</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P6_08	Communication speed setting of Ethernet	0-4 【0】	Not modify in running
<p>0: 10M full duplex 1: 10M semi duplex 2: 100M full duplex 3: 100M semi duplex 4: Self-adaption</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P6_09~ P6_12	IP address of Ethernet	0-255 【192】 0-255 【168】 0-255 【5】 0-255 【60】	Not modify in running
<p>Set the IP address of Ethernet. IP address: P6.09.P6.10.P6.11.P6.12. For example: IP address is 192.168.5.60</p>			

Function code	Instruction	Setting range 【default value】	Remarks
P6_13~ P6_16	Set the subnet mask	0-255 【255】 0-255 【255】 0-255 【254】 0-255 【0】	Not modify in running
<p>Set the subnet mask of the Ethernet. The format of IP subnet mask format: P6.13.P6.14.P6.15.P6.16. For example: the subnet mask is 255.255.254.0.</p>			

6.5.8 Parameters setting—Drive information

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p>		<p>【P7 Drive info】</p> <p>00 year</p> <p>01 month & date</p> <p>02 hour & minute</p> <p>03 Rectifier temp.</p> <p>04 Inv.module temp.</p> <p>05 DSP ver</p> <p>06 MCU ver</p> <p>07 FPGA ver</p> <p>08 Car ver</p> <p>09 GCL ver</p> <p>10 run time</p> <p>11 rated power</p> <p>12 rated current</p>
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6.5.9 Parameters setting—Floor setting

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p> <p>A0 reserved</p> <p>A1 floor setting</p> <p>A2 floor displaying</p> <p>A3 IO logic</p> <p>H1 car logic</p> <p>H2 front door floor</p> <p>H3 rear door floor</p> <p>H4 front&rear all</p> <p>L0 group model</p>		<p>【A1 floor setting】</p> <p>00 Collective mode</p> <p>01 total floor</p> <p>02 Base floor</p> <p>03 Fire land floor</p> <p>04 Park floor</p> <p>05 reserved</p> <p>06 reserved</p>
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Function code	Instruction	Setting range【default value】	Remarks
A1_00	Collective selective control mode	0-2【0】	Not modify in running
Select the calling control mode. 0: full selective; 1: up selective; 2: down selective;			

Function code	Instruction	Setting range【default value】	Remarks
A1_01	Total floor setting	2~64【16】	Not modify in running
A1_02	Basement setting	0~10【0】	
A1_03	Fire landing setting	1~64【1】	
A1_04	Park floor	1~64【1】	

Function code	Instruction	Setting range【default value】	Remarks
A1_05	Base floor setting	1~64 【1】	
Above parameters are corresponding floor setting			

6.5.10 Parameters setting—Floor displaying setting

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p> <p>A0 reserved</p> <p>A1 floor setting</p> <p>A2 floor displaying</p> <p>A3 I0 logic</p> <p>H1 car logic</p> <p>H2 front door floor</p> <p>H3 rear door floor</p> <p>H4 front&rear all</p> <p>L0 group model</p>		<p>【A2 Floor displaying】</p> <p>1 floor</p> <p>2 floor</p> <p>3 floor</p> <p>4 floor</p> <p>5 floor</p> <p>6 floor</p> <p>7 floor</p> <p>8 floor</p> <p>9 floor</p> <p>.</p> <p>.</p> <p>.</p> <p>64 floor</p>
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Function code	Instruction	Setting range 【default value】	Remarks
A2_00	1 floor displaying	0~9090 【1617】	Not modify in running
A2_01	2 floor displaying	0~9090 【1618】	
A2_02	3 floor displaying	0~9090 【1619】	
A2_03	4 floor displaying	0~9090 【1620】	
A2_04	5 floor displaying	0~9090 【1621】	
A2_05	6 floor displaying	0~9090 【1622】	

Function code	Instruction	Setting range 【default value】	Remarks
A2_06	7 floor displaying	0~9090 【1623】	
A2_07	8 floor displaying	0~9090 【1624】	
A2_08	9 floor displaying	0~9090 【1625】	
A2_09	10 floor displaying	0~9090 【1716】	
A2_10	11 floor displaying	0~9090 【1717】	
A2_11	12 floor displaying	0~9090 【1718】	
A2_12	13 floor displaying	0~9090 【1719】	
A2_13	14 floor displaying	0~9090 【1720】	
A2_14	15 floor displaying	0~9090 【1721】	
A2_15	16 floor displaying	0~9090 【1722】	
A2_16	17 floor displaying	0~9090 【1723】	
A2_17	18 floor displaying	0~9090 【1724】	
A2_18	19 floor displaying	0~9090 【1725】	
A2_19	20 floor displaying	0~9090 【1816】	
A2_20	21 floor displaying	0~9090 【1817】	
A2_21	22 floor displaying	0~9090 【1818】	
A2_22	23 floor displaying	0~9090 【1819】	
A2_23	24 floor displaying	0~9090 【1820】	
A2_24	25 floor displaying	0~9090 【1821】	
A2_25	26 floor displaying	0~9090 【1822】	
A2_26	27 floor displaying	0~9090 【1823】	
A2_27	28 floor displaying	0~9090 【1824】	
A2_28	29 floor displaying	0~9090 【1825】	
A2_29	30 floor displaying	0~9090 【1916】	
A2_30	31 floor displaying	0~9090 【1917】	
A2_31	32 floor displaying	0~9090 【1918】	
A2_32	33 floor displaying	0~9090 【1919】	
A2_33	34 floor displaying	0~9090 【1920】	
A2_34	35 floor displaying	0~9090 【1921】	
A2_35	36 floor displaying	0~9090 【1922】	

Function code	Instruction	Setting range 【default value】	Remarks
A2_36	37 floor displaying	0~9090 【1923】	
A2_37	38 floor displaying	0~9090 【1924】	
A2_38	39 floor displaying	0~9090 【1925】	
A2_39	40 floor displaying	0~9090 【2016】	
A2_40	41 floor displaying	0~9090 【2017】	
A2_41	42 floor displaying	0~9090 【2018】	
A2_42	43 floor displaying	0~9090 【2019】	
A2_43	44 floor displaying	0~9090 【2020】	
A2_44	45 floor displaying	0~9090 【2021】	
A2_45	46 floor displaying	0~9090 【2022】	
A2_46	47 floor displaying	0~9090 【2023】	
A2_47	48 floor displaying	0~9090 【2024】	
A2_48	49 floor displaying	0~9090 【2025】	
A2_49	50 floor displaying	0~9090 【2116】	
A2_50	51 floor displaying	0~9090 【2117】	
A2_51	52 floor displaying	0~9090 【2118】	
A2_52	53 floor displaying	0~9090 【2119】	
A2_53	54 floor displaying	0~9090 【2120】	
A2_54	55 floor displaying	0~9090 【2121】	
A2_55	56 floor displaying	0~9090 【2122】	
A2_56	57 floor displaying	0~9090 【2123】	
A2_57	58 floor displaying	0~9090 【2124】	
A2_58	59 floor displaying	0~9090 【2125】	
A2_59	60 floor displaying	0~9090 【2216】	
A2_60	61 floor displaying	0~9090 【2217】	
A2_61	62 floor displaying	0~9090 【2218】	
A2_62	63 floor displaying	0~9090 【2219】	
A2_63	64 floor displaying	0~9090 【2220】	

Setting	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
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value																	
Displaying	!	"	#	\$	%	&	'	()	*	+	,	-	.	/		
Setting value	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Displaying	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?	
Setting value	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	
Displaying	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Setting value	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	
Displaying	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_	
Setting value	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	
Displaying	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
Setting value	80	81	82	83	84	85	86	87	88	89	90	Floor displaying					
Displaying	p	q	r	s	t	u	v	w	x	y	z	Corresponding table					

6.5.11 Parameters setting—I/O control board logic setting

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p> <p>A0 reserved</p> <p>A1 floor setting</p> <p>A2 floor displaying</p> <p>A3 IO logic</p> <p>H1 car logic</p> <p>H2 front door floor</p>		<p>【A3 IO I/O logic】</p> <p>00 logic setting 1</p> <p>01 logic setting 2</p> <p>02 logic setting 3</p> <p>03 logic setting 4</p> <p>04 logic setting 5</p> <p>05 logic setting 6</p> <p>06 I/O board set</p> <p>07 reserved</p> <p>08 reserved</p>
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H3 rear door floor
H4 front&rear all
L0 group model

Logic setting 1 is the logic setting of the following signals:

Terminal	P8	P7	P6	P5	P4	P3	P2	P1
Definition	Up limit	Down limit	High speed up forced deceleration signal	High speed down forced deceleration signal	Medium speed up forced deceleration signal	Medium speed down forced deceleration signal	LOW speed up forced deceleration signal	LOW speed down forced deceleration signal
NO/NC	•	•	•	•	•	•	•	•
Binary	1	1	1	1	1	1	1	1
Decimal	1×1 28	1×6 4	1×32	1×16	1×8	1×4	1×2	1×1
A3_00 Logic setting 1	128+64+32+16+8+4+2+1=255							

1 to 8 (from low bit to high bit) are shown in binary numbers. The corresponding bit of NO points set to be 0 and the NC to be 1. Write the converting decimal result to logic 1.

Above switches are NC, which can be shown in binary 11111111, converted into decimal (1+2+4+8+16+32+64+128) =255.

Logic setting 2 is the logic setting of the following signals:

Terminal	P16	P15	P14	P13	P12	P11	P10	P9
Definition	Safety contact or detection	Middle door area	Down door area	Up door area	Inspection down signal	Inspection up signal	Inspection signal	Emergency electrical action

NO/NC	○	○	○	○	○	○	●	●
Binary	0	0	0	0	0	0	1	1
Decimal	0×128	0×64	0×32	0×16	0×8	0×4	2×2	1×1
A3_01 Logic setting 2	2+1=3							

9 to 16 (form low bit to high bit) are shown in binary numbers. The corresponding bit of NO points set to be 0 and the NC to be 1. Write the convertering decimal result to logic 2.

Above switches 9 and 10 are NC, and others are NO, which can be shown in binary 00000011, converted into decimal (1+2) =003.

Logic setting 3 is the logic setting of the following signals:

Terminal	P24	P23	P22	P21	P20	P19	P18	P17
Definition	Safety relay detection	UPS input signal	Fire action signal	Motor thermal protection	Braking travel switch detection	Braking contact or detection	Drive output contact or detection	Door lock contact or detection
NO/NC	○	○	○	○	●	●	●	○
Binary	0	0	0	0	1	1	1	0
Decimal	0×128	0×64	0×32	0×16	1×8	1×4	1×2	0×1
A3_02 Logic setting 3	8+4+2=14							

17 to 24 (form low bit to high bit) are shown in binary numbers. The corresponding bit of NO points set to be 0 and the NC to be 1. Write the convertering decimal result to logic 3.

Above switches 18-20 are NC, and others are NO, which can be shown in binary 00001110, converted into decimal (2+4+8) =014.

Logic setting 4 is the logic setting of the following signals:

Terminal	P32	P31	P30	P29	P28	P27	P26	P25
Definition	Self-defin	Self-defin	Self-defin	Advan	Advan	Hardw	Hall	Car

ion	ition input 3	ition input 2	ition input 1	ced openin g adhesi on	ced openin g feedba ck	are enabli ng	door lock high voltage detect ion	door lock high voltage detect ion
NO/N C	○	○	○	○	○	○	○	○
Binary	0	0	0	0	0	0	0	0
Decim al	0×128	0×64	0×32	0×16	0×8	0×4	0×2	0×1
A3_03 Logic setting 4	0							

25 to 32 (form low bit to high bit) are shown in binary numbers. The corresponding bit of NO points set to be 0 and the NC to be 1. Write the convertering decimal result to logic 1.

Above input are NO, which can be shown in binary 00000000, converted into decimal 000.

The single logic setting of I/O board is the logic setting of each point on I/O board. It can be modified associated with logic setting 1-6:

【A3 I/O logic】 00 logic setting 1 01 logic setting 2 02 logic setting 3 03 logic setting 4 04 logic setting 5 05 logic setting 6 06 I/O board set 07 reserved 08 reserved		【input 1-32:】 1 low speed down for 2 low speed up force 3 middle speed down 4 middle speed up for 5 high speed down for 6 high speed up force 7 down limit 8 up limit 9 emergency-motion		1 low speed down for board I/O logical value: 1 Set: 1 【fuction details】 0: normal open 1: normal close
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6.5.12 Parameters setting—setting of control board in car

【main menu】 A system monitor B fault record		【parameters】 P0 drive control P1 speed & distance		【H1 car logic】 00 car logic 1 01 car logic 2
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C language	P2 motor parameters	02 car logic 3
D parameters	P3 encoder para	03 car logic 4
E password set	P4 running comfort	04 single car logic set
F system learn	P5 elevator protect	05 reserved
G data manage	P6 communication set	06 reserved
H system info	P7 drive info	07 reserved
	PE factory only	08 reserved
	A0 reserved	
	A1 floor setting	
	A2 floor displaying	
	A3 I0 logic	
	H1 car logic	
	H2 front door floor	
	H3 rear door floor	
	H4 front&rear all	
	L0 group model	

Logic setting 1 is the logic setting of below signal points:

Terminal	C8	C7	C6	C5	C4	C3	C2	C1
Definition	Safety edge	Closing input signal	Opening input signal	Door closed	Door open	OL	DD	Attendant
NO/NC	○	○	○	○	○	○	○	○
Binary	0	0	0	0	0	0	0	0
Decimal	0×128	0×64	0×32	0×16	0×8	0×4	0×2	0×1
H1_00 Logic setting 1	0							

Input point 1 to 8 (form low bit to high bit) are shown in binary numbers. The corresponding bit of NO points set to be 0 and the NC to be 1. Write the convertering decimal result to logic 1.

The parameter is set to 004 if the OL switch is NC.

The parameter is set to $(16+8) = 24$ if the Door closed/open is NC.

The parameter is set to 128 if the front door beam is NC.

The parameter is set to $4+8+16+128 = 156$ if the OL, Door closed/open and beam are NC and others are NO.

Logic setting 2 is the logic setting of below signal points:

Terminal	C16	C15	C14	C13	C12	C11	C10	C9
Definition	Closing button for fire fighters	Rear door closed	Rear door open	Independent running	Front/rear door switching	Beam	Full load	Light load
NO/NV	○	○	○	○	○	○	○	○
Binary	0	0	0	0	0	0	0	0
Decimal	0×128	0×64	0×32	0×16	0×8	0×4	0×2	0×1
H1_01 Logic setting 2	0							

The single logic setting of car is the logic setting of each point of main controller in car. It can be modified associated with logic setting 1-4:

【H1 car logic】

00 car logic 1

01 car logic 2

02 car logic 3

03 car logic 4

04 single car logic set

05 reserved

06 reserved

07 reserved

08 reserved

【input signal 1-16:】

1 Attendant

2 Pass

3 Over Load

4 door open limit

5 door closed limit

6 opening button

7 closing button

8 safety Edge

9 Light Load

1 Attendant

car input signal logic set

value: 0

Set : **0**

【function details】

0: Normal Open

1: Normal Close

6.5.13 Parameters setting – front door stopping floor

【main menu】

A system monitor

B fault record

C language

D parameters

E password set

F system learn

G data manage

【parameters】

P0 drive control

P1 speed & distance

P2 motor parameters

P3 encoder para

P4 running comfort

P5 elevator protect

P6 communication set

【H2 front door】

00 front door enable 1

01 front door enable 2

02 front door enable 3

03 front door enable 4

04 front door enable 5

05 front door enable 6

06 front door enable 7

H system info	P7 drive info PE factory only A0 reserved A1 floor setting A2 floor displaying A3 I/O logic H1 car logic H2 front door floor H3 rear door floor H4 front&rear all L0 group model	07 front door enable 8 08 reserved
---------------	---	---------------------------------------

Function code	Instruction	Setting range 【default value】	Remarks
H2_00	Front door 1~8 floor	000~255 【255】	Not modify in running
H2_01	Front door 9~16 floor	000~255 【255】	
H2_02	Front door 17~24 floor	000~255 【255】	
H2_03	Front door 25~32 floor	000~255 【255】	
H2_04	Front door 33~40 floor	000~255 【255】	
H2_05	Front door 41~48 floor	000~255 【255】	
H2_06	Front door 49~56 floor	000~255 【255】	
H2_07	Front door 57~64 floor	000~255 【255】	
H2_08	Reserved		

Set the front door stopping floor which is shown by binary numbers.

- 1: valid
- 0: invalid

For example, if the elevator stops at 1, 3, 6, and 8 floor and does not stop at other floors. Then $H2_00 = (1+4+32+128) = 165$. see the figure below for detailed calculation:

【H2_00 1-8 stopping floor】	NO	NC	【H2_00 1-8 1-8 stopping floor】	NO	NC
1 floor	0	1	5 floor	0	16
2 floor	0	2	6 floor	0	32
3 floor	0	4	7 floor	0	64
4 floor	0	8	8 floor	0	128

6.5.14 Parameters setting – rear door stopping floor

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p> <p>A0 reserved</p> <p>A1 floor setting</p> <p>A2 floor displaying</p> <p>A3 I0 logic</p> <p>H1 car logic</p> <p>H2 front door floor</p> <p>H3 rear door floor</p> <p>H4 front&rear all</p> <p>L0 group model</p>		<p>【H3 rear door】</p> <p>00 rear door enable 1</p> <p>01 rear door enable 2</p> <p>02 rear door enable 3</p> <p>03 rear door enable 4</p> <p>04 rear door enable 5</p> <p>05 rear door enable 6</p> <p>06 rear door enable 7</p> <p>07 rear door enable 8</p> <p>08 reserved</p>
--	---	--	---	---

Function code	Instruction	Setting range 【default value】	Remarks
H3_00	Rear door 1~8 floor	000~255 【0】	Not modify in running
H3_01	Rear door 9~16 floor	000~255 【0】	
H3_02	Rear door 17~24 floor	000~255 【0】	
H3_03	Rear door 25~32 floor	000~255 【0】	
H3_04	Rear door 33~40 floor	000~255 【0】	
H3_05	Rear door 41~48 floor	000~255 【0】	
H3_06	Rear door 49~56 floor	000~255 【0】	
H3_07	Rear door 57~64 floor	000~255 【0】	
H3_08	Reserved		
Set the rear door stopping floor with the same method mentioned above.			

6.5.15 Parameters setting –front/rear door stopping floor

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p> <p>A0 reserved</p> <p>A1 floor setting</p> <p>A2 floor displaying</p> <p>A3 I/O logic</p> <p>H1 car logic</p> <p>H2 front door floor</p> <p>H3 rear door floor</p> <p>H4 front&rear all</p> <p>L0 group model</p>		<p>【H4 front & rear all】</p> <p>00 front & rear EN 1</p> <p>01 front & rear EN 2</p> <p>02 front & rear EN 3</p> <p>03 front & rear EN 4</p> <p>04 front & rear EN 5</p> <p>05 front & rear EN 6</p> <p>06 front & rear EN 7</p> <p>07 front & rear EN 8</p> <p>08 reserved</p>
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Function code	Instruction	Setting range 【default value】	Remarks
H4_00	Front/rear door 1~8 floor	000~255 【0】	Not modify in running
H4_01	Front/rear door 9~16 floor	000~255 【0】	
H4_02	Front/rear door 17~24 floor	000~255 【0】	
H4_03	Front/rear door 25~32 floor	000~255 【0】	
H4_04	Front/rear door 33~40 floor	000~255 【0】	
H4_05	Front/rear door 41~48 floor	000~255 【0】	
H4_06	Front/rear door 49~56 floor	000~255 【0】	
H4_07	Front/rear door 57~64 floor	000~255 【0】	
H4_08	Reserved		
Set the front/rear door stopping floor with the same method mentioned above.			

6.5.16 Parameters setting – Parallel and group control setting

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p> <p>A0 reserved</p> <p>A1 floor setting</p> <p>A2 floor displaying</p> <p>A3 I0 logic</p> <p>H1 car logic</p> <p>H2 front door floor</p> <p>H3 rear door floor</p> <p>H4 front&rear all</p> <p>L0 group model</p>		<p>【L0 group model】</p> <p>00 Group number</p> <p>01 Up bias floor</p> <p>02 Down bias floor</p> <p>03 home floor</p>
--	---	--	---	--

Function code	Instruction	Setting range 【default value】	Remarks
L0_00	Group number of the elevator	0~8 【0】	Not modify in running
L0_01	Up bias floor	0~64 【0】	
L0_02	Down bias floor	0~64 【0】	
L0_03	Parallel home floor	0~64 【0】	

6.5.17 Parameters setting – time setting

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p>		<p>【T0 time setting】</p> <p>00 Open delay</p> <p>01 Reserver</p> <p>02 home delay</p> <p>03 light save delay</p> <p>04 Brake open delay</p>
--	---	---	---	---

F system learn	P5 elevator protect	05 brake close delay
G data manage	P6 communication set	06 start shake prevent
H system info	P7 drive info	07 direction cancel delay
	PE factory only	08 insp.stop delay
	A0 reserved	09 fireman delay
	A1 floor setting	11 arrival gang
	A2 floor displaying	12 pre_ open delay
	A3 I/O logic	13 leveling overtime
	H1 car logic	14 speed given delay
	H2 front door floor	15 brake volt shift
	H3 rear door floor	16 door keep delay
	H4 front&rear all	17 entire protection time
	L0 group model	18 single protection time
	T0 time setting	
	F0 function set	
	U0 call signal	
	U1 system monitor	
	U2 hoistway info	

Function code	Instruction	Setting range 【default value】	Remarks
T0_00	Open delay	0~500s 【3】	Not modify in running
T0_00 set the time from door open to automatic closing.			

Function code	Instruction	Setting range 【default value】	Remarks
T0_02	Return to the home floor delay	0~500s 【20】	Not modify in running
T0_02 set the time from the free elevator to returning to the home floor.			

Function code	Instruction	Setting range 【default value】	Remarks
T0_03	Free emergency-saving delay	0~500s 【60】	Not modify in running
T0_03 set the time from free elevator to entering into the emergency-saving state.			

Function code	Instruction	Setting range 【default value】	Remarks
T0_04	Brake opening delay	0~5.000s 【0.2】	Not modify in running
T0_05	Brake closing delay	0~5.000s 【0.4】	
Above parameters set the braking control sequence. T0_04: the time from running direction given to the output braking T0_05: the time form speed cancel to the braking cancel			

Function code	Instruction	Setting range 【default value】	Remarks
T0_06	Starting shake prevention delay	0~5.000s 【0.2】	Not modify in running
T0_06 set the time from lock connection to the running contactor output. It can not set to be 0 when manual door.			

	Adjust the parameter when the door shakes when door closed.
---	---

Function code	Instruction	Setting range 【default value】	Remarks
T0_07	Direction cancel delay	0~5.000s 【0.2】	Not modify in running
T0_00 set the time from door open to automatic closing.			

	Adjust the parameter when the braking travel switch is not sensitive.
---	---

Function code	Instruction	Setting range 【default value】	Remarks
T0_08	Inspection stopping delay	0~5.000s 【0.300】	Not modify in running

Set the time from speed cancel to braking cancel in inspection state.

	Valid when the parameter is more than or equal to 0.300, otherwise the braking and speed will cancel in inspection stopping.
---	--

Function code	Instruction	Setting range 【default value】	Remarks
T0_09	Fire running delay	0~5.000s 【0.000】	Not modify in running

Set the time form elevator forced stop to the fire floor entering into the fire state.

Function code	Instruction	Setting range 【default value】	Remarks
T0_10	Arrival gang delay	0~5.000s 【0.000】	Not modify in running

Set the time from the arrival gang output to canceling the arrival gang.

Function code	Instruction	Setting range 【default value】	Remarks
T0_11	Thermal protection reset delay	0~5000s 【600】	Not modify in running

Set the time form thermal protection switch reset to rerunning of the elevator.

Function code	Instruction	Setting range 【default value】	Remarks
T0_12	Advanced opening delay	0~5.000s 【0.000】	Not modify in running
Set the advanced opening delay time. And set T0_12 to be 0 to cancel the function.			

Function code	Instruction	Setting range 【default value】	Remarks
T0.13	Creep leveling overtime	0~5.000s 【0】	Not modify in running
Set the protection time of creep leveling running and set it to 0 to cancel the function.			

Function code	Instruction	Setting range 【default value】	Remarks
T0_14	Speed given delay	0~5.000s 【0000】	Not modify in running
Set the time from the braking output and receiving the feedback to the given speed.			

Function code	Instruction	Setting range 【default value】	Remarks
T0_15	Braking voltage shifting delay	0~5.000s 【0.000】	Not modify in running
The time from output braking to output braking shifting.			

Function code	Instruction	Setting range 【default value】	Remarks
T0_16	Keeping time of opening delay	0~500s 【0.000】	Not modify in running

Press the opening delay button, and the system will close the door automatically after the set time. Press closing button can close the door in advance.

Function code	Instruction	Setting range 【default value】	Remarks
T0_17	Entire running protection time	0~100s 【45】	Not modify in running

This parameter is used to limit the running time of the motor. The elevator will stop immediately when the time is arrived. Need manual or power off reset.

Function code	Instruction	Setting range 【default value】	Remarks
T0_18	Single floor running protection time	0~100s 【45】	Not modify in running

This parameter is used to set the single floor running protection time for the higher floors.

6.5.18 Parameters setting – function setting

【main menu】	 ENI	【parameters】	 ENI	【F0 special function】
A system monitor		P0 drive control		00 F000
B fault record		P1 speed & distance		01 F001
C language		P2 motor parameters		02 F002
D parameters		P3 encoder para		03 F003
E password set		P4 running comfort		04 F004
F system learn		P5 elevator protect		05 F005
G data manage		P6 communication set		06 F006
H system info		P7 drive info		07 F007
		PE factory only		08 F008
		A0 reserved		09 F009
		A1 floor setting		10 F010
		A2 floor displaying		11 F011
		A3 IO logic		12 F012
		H1 car logic		13 F013

	H2 front door floor H3 rear door floor H4 front&rear all L0 group model T0 time setting F0 function set U0 cal signal U1 system monitor U2 hoistway info	14 F014
--	---	---------

Function code	Instruction	Setting range 【default value】	Remarks
F0_00	High/low voltage detection	0~2 【2】	Not modify in running
Select for the safety circuit, hall lock and car lock circuit. 0: only detect high voltage, detect the BJ4 terminal 1: only detect low voltage, detect the 1KSAF and 1KDL in AJ2 2: detect high/low voltage			

Function code	Instruction	Setting range 【default value】	Remarks
F0_01	Hand door enabling	0~1 【0】	Not modify in running
0: invalid 1: arrival without open/closed detection. The elevator continues to run after switch off the door lock.			

Function code	Instruction	Setting range 【default value】	Remarks
F0_02	Closing output delay	0~600 【0.5】 unit: 1s	Not modify in running

0: do not output closing signal after the door is closed
 1-599 is the closing keeping time after the door is closed
 600: continuous closing signal output

Function code	Instruction	Setting range 【default value】	Remarks
F0_03	Fire safety mode	0~2 【0】	Not modify in running
0:China fire safety 1: Australia fire safety 2: Britain fire safety			

Function code	Instruction	Setting range 【default value】	Remarks
F0_04	Closing output condition of dual doors	0~1 【0】	Not modify in running
0: dual door output closing signal when the door lock is blocked 1: end the closing command after the door closed			

Function code	Instruction	Setting range 【default value】	Remarks
F0_05	Floor opening mode of parallel outside calling	0~2 【0】	Not modify in running
0: main and sub elevator opening at the same time 1: main elevator opening 2: sub elevator opening			

Function code	Instruction	Setting range 【default value】	Remarks
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F0_06	Reset mode of running fault overtime	0~1 【0】	Not modify in running
0: manual reset 1: returning to leveling automatically			

Function code	Instruction	Setting range 【default value】	Remarks
F0_07	MF definition of IND	0~3 【0】	Not modify in running
0: original definition 1:keep opening delay 2: Half load input 3:Fire fighter input			

Function code	Instruction	Setting range 【default value】	Remarks
F0_08	Internal command limit times	0~5 【0】	Not modify in running
0: without LL function 1-5: record signal times limit when LL			

Function code	Instruction	Setting range 【default value】	Remarks
F0_09	Dual door control mode	0~1 【1】	Not modify in running
0: independent calling operational panel for front/rear door / two set of outside calling system. configure two sets for car main controller and command board. 1: independent operational panel for dual-door machine. Set the front/rear door through the main board.			

Function code	Instruction	Setting range 【default value】	Remarks
F0_10	Output landing of fire forced landing	0~1 【0】	Not modify in running
0: output after forced landing 1: output only in the home floor after forced landing			

Function code	Instruction	Setting range 【default value】	Remarks
F0_11	Floor internal command opening enabling	0~1 【0】	Not modify in running
0: disabled 1: enabled			

Function code	Instruction	Setting range 【default value】	Remarks
F0_12	LINE1 multi-function definition	0~30 【28】	Not modify in running
F0_13	LINE2 multi-function definition	0~30 【29】	
F0_14	LINE3 multi-function definition	0~30 【30】	
Definition of F0_12—F0_14:			
0 self-definition		16 no definition	
1 no definition		17 contact point of the door lock contactor	
2 no definition		18 contact point of the drive output contactor	
3 medium speed down forced speed-changing switch		19 contact point of the braking contactor	
4 medium speed up forced speed-changing switch		20 braking travel switch detection	

5 high speed down forced speed-changing switch	21 motor thermal protection
6 high speed up forced speed-changing switch	22 fire action input
7 down limit	23 UPS input signal inspection
8 up limit	24 no definition
9 emergency electric running	25 no definition
10 inspection signal	26 no definition
11 inspection up button signal	27 no definition
12 inspection down button signal	28 advanced opening feedback
13 up door area (rear door opening inspection)	29 advanced opening adhesion
14 down door area	30 Earthquake
15 no definition	

6.5.19 Parameters setting – calling signal

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p> <p>A0 reserved</p> <p>A1 floor setting</p> <p>A2 floor displaying</p> <p>A3 I0 logic</p> <p>H1 car logic</p> <p>H2 front door floor</p> <p>H3 rear door floor</p>		<p>【U0 call signal】</p> <p>00 callsignal enable</p>
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6.5.21 Parameters setting – hoistway information

The parameters are used to watch the floor height and installation distance of the deceleration switch after the elevator autotuning.

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>	 	<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p> <p>A0 reserved</p> <p>A1 floor setting</p> <p>A2 floor displaying</p> <p>A3 I0 logic</p> <p>H1 car logic</p> <p>H2 front door floor</p> <p>H3 rear door floor</p> <p>H4 front&rear all</p> <p>L0 group model</p> <p>T0 time setting</p> <p>F0 function set</p> <p>U0 cal signal</p> <p>U1 system monitor</p> <p>U2 hoistway info</p>	 	<p>【U2 hoistway info】</p> <p>Total height</p> <p>Low speed down forced</p> <p>Low speed up forced</p> <p>Medium speed down forced</p> <p>Medium speed up forced</p> <p>High speed down forced</p> <p>High speed up forced</p> <p>Longest floor distance</p> <p>Shortest floor distance</p>
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6.6 Password setting

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p>	 	<p>【password set】</p> <p>(1)monitor password</p> <p>(2)debug password</p> <p>(3)factory password</p>
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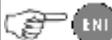
F system learn	
G data manage	
H system info	

6.7 System autotuning

【main menu】 A system monitor B fault record C language D parameters E password set F system learn G data manage H system info		【system tuning】 [1] hoistway info [2] motor rotating [3] motor static [4] LL weighting [5] FL weighting [6] OL weighting
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Refer to the debugging in slow speed running and fast speed running.

6.8 Data management

【main menu】 A system monitor B fault record C language D parameters E password set F system learn G data manage H system info		【data management】 [1] save [2] restore [3] faultRec.delete [4] mainboard to pad [5] PAD to mainboard
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[1]Data storage of the controller: save the data after changing. If not, the data will restore to the original ones.

[2]Factory setting restore: restore the parameters of the controller to the factory setting.

[3]Fault history clearance: clear the fault history.

[4]Save the controller data to PAD.

[5] Download PAD data to the controller.

6.9 System information

【main menu】 A system monitor		【system info】 MCU Ver: 1.06
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B fault record	CAR Ver: 0.00
C language	GCL Ver: 0.00
D parameters	DSP Ver: 1.01
E password set	FPGA Ver: 1.00
F system learn	PAD Ver: 9.13
G data manage	Invt power: 015.0kw
H system info	Run time: 0H
	2011/09/27 14:36

The rated power is that of the integrated machine.

The running time is the accumulative running time of the elevat

Chapter 7 Low Speed/Inspection Run Adjustment

7.1 Inspection before power on

7.1.1 Machinery assembly, inspection and confirmation

- Ø Bracket, rail, traction machine, car, rope, control cabinet, governor are installed according to the standards
- Ø Confirm all the assembly of the safety circuit are well installed and in the normal working state
- Ø Check the installation of all hall and car doors to ensure valid action and normal working state
- Ø Dismount all scaffolds and other obstacles in the hoistway.

7.1.2 Electrical assembly, inspection and confirmation

1. check the connection of:

- I Three-phase wires between the power supply cabinet and the control cabinet
 - I The connection between the braking coil of the master and the control cabinet.
 - I The connection between U1, V1 and W1 of the control cabinet and the three-phase wires of the master motor.
 - I The connection between the master encoder and the control cabinet.
 - I The safety circuit
 - I The door circuit
 - I The car connection
 - I ON-OFF logic of the inspection circuit
 - I Power supply and signal connection of the door operator
 - I CAN-BUS communication circuit connection of the car
 - I CAN-BUS communication circuit connection of the hoistway
2. Connect the communication cables of the hoistway and car to the control cabinet
- I Confirm the connection of the terminal resistor on the DC-03A board in the car
 - I Ensure the connection of the terminal resistor on the DC-03A board in the bottom hoistway module
 - I Connect the hoistway communication module, the resistance is about 60Ω.
 - I Connect the car communication module, the resistance is about 60Ω.
3. Check the resistance of three phase of the motor
4. Check the grounding

In the following inspection, the resistor between the measuring terminal/parts and PE closes to infinity.

- I Between R, S, T and PE

- I Between the braking coil and PE
- I Between safety circuit and PE
- I Between door lock circuit and PE
- I Between the control power supply and PE
- I Between the communication circuit and PE
- I Between motor U, V, W and PE
- I Between the rotating circuit of the encoder and PE
- I Between the unit signal terminal of the machine and the power terminal and PE
- I Between the terminal in the inspection circuit and PE

In above inspection, if the resistor is a little small, please check immediately and find the solution.

In the following inspection, the resistor between the measuring terminal/parts and PE closes to infinitesimal ($0\sim 3\Omega$):

- I Between mains power supply and PE
- I Between the motor contact and PE
- I Between the shield cable of the rotating encoder and PE
- I Between the external metal host of the rotating encoder and PE
- I Between the contact of the machine and PE
- I Between the power contact and PE
- I Between the braking contact and PE
- I Between the control cabinet and door and PE
- I Between the coil end and PE
- I Between the governor and PE
- I Between the car and PE
- I Between the electrical door lock and PE
- I Between the connector of the safety switch and PE



U Ensure the connection of the grounding wires in the power supply meet the national standards before debugging.

7.1.3 Inspection of the encoder assembly

- I Ensure the fixing of the encoder and the is tightened enough and the coupling between the motor shaft and the outrigger shaft of the master.
- I The connection of the encoder is brought into the control cabinet.
- I If the connection cable is not long enough, it is necessary to enlong the cables and the cables should be shield cables. It is recommended to meld

the connection wires and the wire should be isolated from each other with thr metal shield.

- I Connect according to the color of the connection diagram and the encoder.
- I The shield cables are connected to the grounding terminal in the control cabinet
- I The cable of the encoder should be arranged in the metal hose to the control cabinet. The ends should be connected with proper techniques and the end of the metal hose in the control cabinet should be grounded.

If the shield cable of the encoder is grounded , then it can not be connected, but ensure the cable is nor connected with any electrical terminal or grounding cassis.

7.2 Inspection after power on

1. Following steps is needed after the first inspection:
 - I Ensure all the switch and fuse are off
 - I Ensure the inspection/normal switch is in the right position, the emergence-stop switch is off.
 - I Ensure the inspection switch on and in the car is in the right position.
 - I Ensure there is nobody in the hoistway, car, on the top of the car and at the bottom of the hoistway and the elevator can run safely.
 - I Ensure the working outside the hoistway does not effect the running of the elevator.
2. Check the site bus voltage, the 3-phase voltage is $380\pm 7\%VAC$ and the phase bias is no more than $15VAC$. The single voltage between each phase and the N wire is $220\pm 7\%VAC$. If N line and PE is connected, then the voltage between N-PE is no more than $30VAC$.
3. Ensure the wire specification and the total switching capacity should reach the total requirements of the diagram.
4. Power on debugging if all inspections are correct.
5. Inspection after power on:
 - I Switch on the main power switch and check the phase sequence relay, if the green light is on, the phase is normal, otherwise, switch off the power and exchange any two-phase lines.
 - I Check the fault immediately if fault occurs.
 - A. Check the voltage between 24V+ and 4V- is $24.3V\pm 0.3V$.
 - B. Check the relay in the control cabinet

Relay name	Close/release
Phase sequence relay	Action

Input the password on the manual controller and enter into the parameters menu. After

checking the parameters, set according to the actual debugging.

7.3 Static self-tuning of the synchronous motor

	<p>Autotuning is needed before the first slow running of synchronous master, otherwise damage to the machine and motor and physical injury or death may occur.</p>
---	--

Steps:

Turn off the power supply of the elevator and press the emergency-stop switch on the control cabinet. And then, dial the auto-running/inspection switch in the control cabinet to the inspection position.

Ensure the main power cables and brake wires are properly connected to the terminals on the control cabinet.

Ensure the correct connection of the encoder.

Ensure the input parameters below are correct:

Ensure the input parameters below are correct:

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p> <p>P7 drive info</p> <p>PE factory only</p>		<p>【P2 motor parameter】</p> <p>00 motor type</p> <p>01 motor rated power</p> <p>02 motor rated freq</p> <p>03 motor rated speed</p> <p>04 motor rated voltage</p> <p>05 motor rated current</p> <p>06 motor stator resistor</p> <p>07 motor rotor resistor</p> <p>08 leak_inductance</p> <p>09 mutual_inductance</p> <p>10 current withoutlo</p>
--	---	---	---	--

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p>		<p>【parameters】</p> <p>P0 drive control</p> <p>P1 speed & distance</p> <p>P2 motor parameters</p> <p>P3 encoder para</p> <p>P4 running comfort</p> <p>P5 elevator protect</p> <p>P6 communication set</p>		<p>【P3 encoder para】</p> <p>00 encoder type</p> <p>01 encoder resolution</p> <p>02 encoder direction</p> <p>03 off time L speed</p> <p>04 off time H speed</p> <p>05 reverse time</p> <p>06 magneticpole gain</p>
---	---	---	---	---

H system info

P7 drive info
PE factory only

07 c pole position
08 d pole position

Function code	Instruction	Instruction
P0_00	Speed control mode	0-2 【1】
P2_00	Motor type	0: AM 1: SM
P2_01	Rated power of the motor	To the name plate
P2_02	Rated frequency of the motor	To the name plate
P2_03	Rated speed of the motor	To the name plate
P2_04	Rated voltage of the motor	To the name plate
P2_05	Rated current of the motor	To the name plate
P3_00	Encoder type	0: Incremental encoder (Asynchronous motor) 1: SIN/COS encoder (synchronous 1387) 2: UVW encoder (synchronous 8192)
P3_01	Resolution of the encoder	1~10000
P3_06	Magnetic pole position amplitude gain	0.50~1.50 is generally set to be 1
P3_10	Static identification current	50% of the rated current of the motor

(1) Enter into the system autotuning menu to select the motor static autotuning.

<p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p>		<p>【system tuning】</p> <p>[1] hoistway info</p> <p>[2] motor rotating</p> <p>[3] motor static</p> <p>[4] LL weighting</p> <p>[5] FL weighting</p> <p>[6] OL weighting</p>
---	---	---

Steps of	Check the connection of master UVW, connection wires, braking
----------	---

static autotuning	<p>connection and encoder connection.</p> <p>Connect the safety and door lock circuit and check the parameters setting of master and encoder in the inspection state.</p> <p>Enter into the static identification current menu, set P3_10 and enter into the main menu—F system autotuning—[3] motor static autotuning. Then the operational interface of the manual controller will display “please confirm the inspection state?”. If select [YES], then the interface will display “please confirm the autotuning?”. If confirmed, master autotuning will begin.</p> <p>Reconfirm the brake is in the closing state, if select [YES], press the inspection up button, and then the running contactor will close automatically to begin the autotuning and the controller display the motor is autotuning. After about 0.3s, the motor will squeak to end the autotuning and the running release automatically.</p> <p>If the master autotuning succeed, the manual controller will display “autotuning succeed”. Press ESC to retreat the interface, and then enter main menu—G data management—[1] data saving interface of controller to save the data. If the manual controller display “autotuning failed”, find the fault reason.</p>
Precautions in autotuning	<p>In the master autotuning, if any abnormality occurs, press the emergency-stop button or switch off the power supply to stop the autotuning.</p> <p>If the autotuning is failed, first confirm the brake is closed or not, and the connection of the encoder and the static identification current is in 40%~60%</p> <p>In the autotuning, the direction of the encoder is not detected. Repeat the autotuning twice and record the value of P3_09. if the three results are the same, the setting of P3_02 is correct, otherwise change the setting of P3_02 and reautotune.</p> <p>Judge the direction of the elevator before the first trial running to avoid collision limit. if the inspection running direction is different form the actual direction, change the value of P0_08.</p>

	<p>Try to inspect the up/down running elevator when enter into U1_21. if the feedback current is in normal state, the motor autotuning is finished. Otherwise please check the parameters setting in P0, P2 and P3 group and the autotuning steps.</p>
--	--

Enter in to the autotuning:

【motor static autotuning】
 Whether in the inspection state?
 [Y] [N]

Select [Yes] and enter:

【motor static autotuning】
 Whether begin the motor autotuning?
 [Y] [N]

Select [Yes] and enter, and press the up inspection button:

【motor static autotuning】
 Motor autotuning...

If succeeded, the

【motor static autotuning】
 Successful autotuning

If failed, then

【motor static autotuning】
 Autotuning failed

	<p>U Save the parameters after autotuning.</p>
---	---

7.4 Rotating autotuning of the motor

Ensure the wire rope on the motor is removed before the rotating autotuning and the input parameters are correct.

Function code	Instruction	Instruction
P2_00	Motor type selection	0:AM 1:SM
P2_01	Rated power of	According to the name plate

Function code	Instruction	Instruction
	the motor	
P2_02	Rated frequency of the motor	According to the name plate
P2_03	Rated speed of the motor	According to the name plate
P2_04	Rated voltage of the motor	According to the name plate
P2_05	Rated current of the motor	According to the name plate
P3_00	Encoder type selection	0: Incremental encoder (Asynchronous motor) 1: SIN/COS encoder (synchronous 1387) 2: UVW encoder (synchronous 8192)
P3_01	Encoder resolution	1~10000
P3_06	Magnetic pole position amplitude gain	0.50~1.50 is generally set to be 1
P3_07	Magnetic pole position of C phase	Read U1_08 in the monitoring
P3_08	Magnetic pole position of D phase	Read U1_09 in the monitoring
P3_10	Static identification current	40% of the rated current of the motor

Enter into the main menu—F system autotuning--[2] motor autotuning interface. The manual controller will display “please confirm to enter into the inspection state?”. Select [YES], and the manual controller will display “please confirm to begin autotuning”? Select [YES] to press the inspection up button and the running contactor and braking contactor will close automatically to begin the autotuning. After about 60s, the motor ends rotating and the contactors release automatically. Press ESC to retreat from the interface. Then enter into the main menu—G data

management-- [1] controller data saving interface to save the data. If the manual controller display “autotuning failed”, return to the main menu to find the fault reason in the B record fault record.

Enter into the autotuning:

【motor rotating autotuning】
Whether in the inspection state?
[Y] [N]

Select [Yes] and enter:

【motor rotating autotuning】
Whether begin the motor autotuning?
[Y] [N]

Select [Yes] and enter, and press the up inspection button:

【motor rotating autotuning】
Motor autotuning...

If succeeded, then

【motor rotating autotuning】
Successful autotuning

If failed, then

【motor rotating autotuning】
Autotuning failed

	<p>U Save the parameters after autotuning.</p>
---	---

7.5 Inspection running

1. Switch on the general power and reset the emergency-stop switch of the control cabinet.
2. Smooth safety circuit: normal phase sequence, emergency-stop button of the control cabinet reset.
3. Smooth door lock circuit: serial circuit of the car and hall
4. Smooth upper and lower bit circuit
5. The up/down forced deceleration circuit need to keep smooth, otherwise the actual running speed is the leveling speed when slow running.
6. Good connection of the inspection circuit
7. Press the UP/DOWN button to run UP/DOWN at slow speed in inspection:
 - (1) The manual controller can display the current running speed or frequency when the elevator is running.

- (2) Input the receiving and output state in the manual controller.
 - (3) Enter into the parameters setting—drive control of the master—running direction selection to change the running direction if the running direction of the elevator is different from the direction of the button.
 - (4) Check the displayed speed in the manual controller. The up running is the positive value and the down running is the negative value. If abnormal, enter into the parameters setting—encoder parameters—pulse counting direction to change the value.
 - (5) Check if the displayed speed in the manual controller corresponds to the set speed. If the fluctuation is large, check the grounding of the encoder and the motor.
8. Carry out the rest connection if the slow running of the engine room is normal.

Chapter 8 Normal Adjustment

8.1 Inspection and confirmation of the electrical assembly

1. The connection of the engine room and beam are correct.
2. The connection and installation size of the door zone switch on the car top are correct.
3. All safety circuit in the hoistway can act validly.
4. The installation position of the up/down limit switches in the hoistway is correct and can act validly.
5. The installation position of the up/down limit switches is correct and can act validly.
6. The installation position of the up/down forced deceleration switches are correct and can act validly.

Terminal deceleration switch: if the speed of the elevator is less than 1.5m/s, install two deceleration switches SDS1 and SUS1; if the speed of the elevator is between 1.75 ~ 2 m/s, install up/down deceleration switch SDS2 and SUS2; if the speed of the elevator is more than 2 m/s, install 3 deceleration switches and add SDS3 and SUS3. the distance between the switch and the terminal leveling position corresponds to each deceleration distance in each stage.

7. The connection of the interphone is connection and can work normally.
8. The connection of the arrival gang is correct.
9. The connection of the calling communication board is reliable and correct.
10. Switch off the main power supply and check the communication wires.
 - (1) check the connection of J3 on DC-03A board in the car.
 - (2) measure the module cable of the hoistway communication to keep about 60Ω.
 - (3) measure the module cable of the car communication to keep about 60Ω.
11. The connection of the car light and fan are correct.

8.2 Power on and check

1. Following steps need to be confirm and check after the action in section 1:
 - (1) Switch off the power supply.
 - (2) Ensure all switches are off.
 - (3) Ensure all inspection/automatic switches are in the inspection position and the emergency-stop switch is pressed.
 - (4) Ensure there is nobody in the hoistway and car and the elevator is in the safe condition.
 - (5) Ensure the running of the elevator is not affected by the outside.
2. Inspection and debugging of the door
 - (1) Switch on the power supply.

- (2) Restore the emergency-stop switch of the control cabinet.
- (3) Switch on the power supply of the door of the control cabinet and the inspection/automatic switch in the inspection position.
- (4) Ensure the voltage between the power terminal of the door is $220V \pm 7\%VAC$.
- (5) Debug according to the instruction of the door.
- (6) Check the opening and closing of the door.
 - A. Set the door in the automatic state and the door is closed.
 - B. Press the opening relay and the door opens.
 - C. Press the closing relay and the door closes.
 - D. When the door is open totally, press the UP/DOWN button, the door closes automatically.
- (7) Check the door closed/open actions.
- (8) Stop the elevator in the leveling position and dial the inspection/automatic switch in the normal position and the door is closed.
 - A. Monitor the automatic state in the manual controller.

3. Inspection of the beam

Check and correct according to the installation of the beam. In the automatic mode, enter to monitor the input state:

- (1) Switch off the power supply of the elevator and connect the car communication, and then switch on the power supply.
- (2) Confirm the display screen of the car is correct and change with the displaying on the manual controller in the control cabinet.
- (3) Short circuit J3.

4. Connection inspection of the door zone switch

- (1) Connect the door zone switch according to the diagram.
- (2) Inspect the signal of door zone switch.
- (3) Inspect the position of the limit switch.

The car runs up until to the up limit switch acts, then the sill of the car is above the sill of the hall about 50mm.

The car runs down until to the down limit switch acts, then the sill of the car is below the sill of the hall about 50mm.

Cross-circuit the up/down limit switch, and the car goes up/down until the safety switch acts, and then the sill of the car is above the sill of the hall about 250mm.

The car runs down until to the down limit safety switch acts, then the sill of the car is below the sill of the hall about 250mm.

After the adjustment, remove the cross-connection and restore the original connection.

5. Inspection and adjustment of the terminal forced deceleration switch
6. Check the installation position and quantity of each leveling plate.

8.3 Parameter check

Check the controller parameters one by one according to the actual technical parameters. If there is non-stopping floor in site and the non-stopping floor has no magnet vane, please set the total floor as the actual stopping floor.

8.4 Autotuning of the hoistway position

1. Set the autotuning speed of the elevator is 0.20m/s and the elevator is in the state of engine room inspection state.
2. Before autotuning, stop the elevator at the bottom with the position of more than 1 door zone switches action other than the position of down limit switch action. At the time, the single down terminal deceleration switch need to act and confirm the corresponding signal on the main board.
3. Keep the safety circuit normal.
4. Ensure the safety running of the elevator in the hoistway.
5. Begin the autotuning through the manual controller.

(1) Enter into the system autotuning menu and select the hoistway autotuning.

<div style="background-color: #cccccc; padding: 5px; border: 1px solid #ccc;"> <p>【main menu】</p> <p>A system monitor</p> <p>B fault record</p> <p>C language</p> <p>D parameters</p> <p>E password set</p> <p>F system learn</p> <p>G data manage</p> <p>H system info</p> <p>Select [Y] to enter</p> </div>	<div style="background-color: #cccccc; padding: 5px; border: 1px solid #ccc;"> <p>【system tuning】</p> <p>[1] hoistway info</p> <p>[2] motor rotating</p> <p>[3] motor static</p> <p>[4] LL weighting</p> <p>[5] FL weighting</p> <p>[6] OL weighting</p> <p>Select [Y] to enter</p> </div>	<div style="background-color: #cccccc; padding: 5px; border: 1px solid #ccc;"> <p>【hoistway info】</p> <p>Please ensure forced switch allright?</p> <p>[Y] [N]</p> <p>【forced dec distance】</p> <p>Low: 0 mm</p> <p>Mid: 0 mm</p> <p>High: 0 mm</p> <p>Select [Y] to enter</p> </div>
<div style="background-color: #cccccc; padding: 5px; border: 1px solid #ccc;"> <p>【hoistway info】</p> <p>Please ensure car locate bottom?</p> <p>[Y] [N]</p> </div>	<div style="background-color: #cccccc; padding: 5px; border: 1px solid #ccc;"> <p>【hoistway info】</p> <p>Please ensure begin tuning?</p> <p>[Y] [N]</p> </div>	<div style="background-color: #cccccc; padding: 5px; border: 1px solid #ccc;"> <p>【hoistway info】</p> <p>hoistway tuning...</p> <p>Floor : 1</p> <p>Car : 87610mm</p> <p>V : 0mm/s</p> </div>

After confirmation, press the inspection up button until the elevator leaves the door area and

release, and then the elevator will begin autotuning at the inspection speed and record the position of the leveling plate and the up/down terminal deceleration switches.

(2) The manual controller will display the relative information on floor and speed.

When the elevator runs to the top door area, the system will end the autotuning and the manual controller will display the following interface:

【hoistway information autotuning of
the elevator】
Succeeded.

(3) Save the autotuning data and retreat the displaying of the manual controller to the state interface.

If failed, then

【hoistway information autotuning
of the elevator】
Failed.

	<ul style="list-style-type: none"> ⌋ Adjust according to the precautions because the current height of the elevator is reducing when the elevator goes up. ⌋ The installation and quantity of the anti-magnetic / light board in the door area are not correct. ⌋ Low speed down forced deceleration switches does not reset or disconnection. ⌋ Low speed up forced deceleration switch adhesive or install too high. ⌋ Reperform the hoistway autotuning when adjust the deceleration switch.
--	--

8.5 Run at fast speed

	<ul style="list-style-type: none"> ⌋ Ensure the 3 safety switches are correct and reliable. ⌋ Ensure there is no short circuit of the car and hall lock and the locks can work normally.
---	--

	<ul style="list-style-type: none"> U Ensure the forced deceleration switches and limit switched can work normally. U Ensure the hoistway autotuning are succeeded. And the logic setting of the I/O board and car main controller is correct. U The elevator runs at slow speed to the leveling of the terminal landing. Correct the floor displaying and inspect normally. The elevator will open and close the door automatically to ensure the outside/inside calling communication is normal.
	<ul style="list-style-type: none"> U Avoid terminal landing running in first running at fast speed.

Run at fast speed in the engine room after the hoistway autotuning, and monitor the feedback speed on the manual controller.

	<ul style="list-style-type: none"> U Reperform the hoistway autotuning after adjust the up/down forced deceleration switch.
---	--

8.6 S Curve adjustment

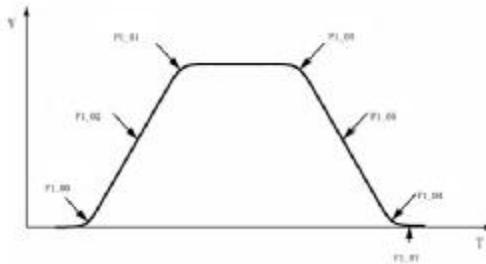


Figure 8-1 S Curve adjustment

8.7 Leveling adjustment

1. The leveling plate are plugged in the photoelectric switch or magnetic switch for about 2/3 and check the depth of each plate are the same and as vertical as possible.
2. Keep the center of the plate and sensor is in one line when installation.
3. Record the distance between the car sill and hall sill when the elevator goes up/down to a floor.

4. Leveling adjustment:

Adjust P1_14 if the up/down leveling precision is not in the right position, the basic value is 50-x and 50+x.

5. Interference and bad quantity of the rotating encoder may affect the leveling precision.

Ensure the connection of the encoder is shield cable, and the shield layer needs to be grounded at the end of the control cabinet. The connection of the encoder and the power cables can not route in one trough.

	<p>↳ Reperform the hoistway autotuning after adjust the leveling switch or magnet vane.</p>
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8.8 Comfortability

8.8.1 Vector control of the sequence in fast-running

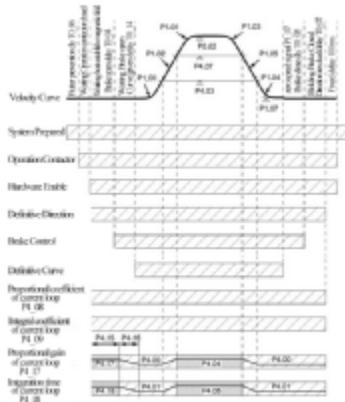


Figure 8-2 Sequence diagram

8.8.2 Adjustment of non-weighting compensation starting

1. set P4_14 to be 1, in the time set by P4_15, P4_17, P4_18, P4_19, P4_20 and P4_21 are valid.
2. P4_16 is the transition time from speed loop zero speed (load compensation) to the low speed.
3. if the motor shocks in starting, increase P4_18 or P4_21.
4. if the elevator slides in starting, reduce P4_18 or increase P4_17. Increase P4_21 when adjust the load compensation speed loop to eliminate the vibration.
5. no need to set position loop parameters. Too high P4_19 may cause motor vibration.

8.8.3 Adjustment of the speed loop

Speed loop PI has a close relationship with the inertia of the system. Setting the proportional

gain and integration time can adjust the dynamic response of the speed loop in vector control. Shifting of the speed loop gain: when the running frequency is below P4_03, select P4_00 and P4_01; if the running frequency is above P4_07, select P4_04 and P4_05; if the running frequency is between P4_03 and P4_07, select through the linear change of the parameters .

8.8.4 Adjustment of the current loop

The adjustment of P4_08 and P4_09 has an effect on the dynamic response speed and control performance of the system.

The factory setting of the current loop meet the needs basically. Reduce P4_08 and P4_09 if high frequency noise occurs and increase P4_08 and P4_09 if low-speed vibration occurs.

P4_08 is increasing with the sudden inductance of the motor and 4_09 is increasing with the resistance of the rotor.

8.8.5 Motor noise

Check and adjust P0_07, P4_08, P4_09 and P4_10 if the motor has noise in running.

8.8.6 Relative parameters

Fast running state	Relative parameters
Slide at the heavy side when starting	Adjust P4_14, set P4_15, reduce P4_18 and increase P4_17
Starting shock	Increase P4_18, reduce P4_17, adjust P4_21 or T0_14
Rapid acceleration and deceleration	Reduce P1_02 and P1_05
Vibration during acceleration and deceleration	Adjust P4_03 and P4_07
Shock acceleration and deceleration at the end	Adjust P1_01 and 2 P1_04.
Shock acceleration and deceleration at the end	Reduce the acceleration and deceleration speed
Stopping vibration	Adjust T0_02 and P1_07

Slide at the heavy side when stopping	Increase T0_07 and P4_00
Low-speed vibration	Adjust P4_00, P4_01.
High-speed vibration	Adjust P4_04, P4_05
Entire running shock	Reduce P4_08, P4_09 and increase P4_02, P4_06, P4_10

Chapter 9 User-specific design—Programmable logic control

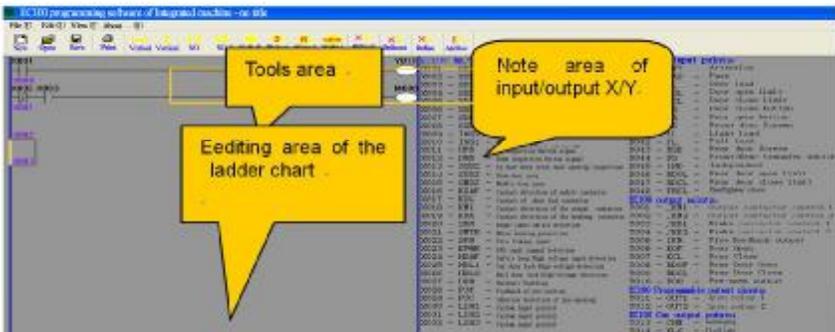
9.1 Introduction

EC100 elevator intelligent integrated machine provides two multi-function output signal used to provide secondary development platform. Users can use the existing basic input and output points to logical combination of output. The Max. program support is 300 steps, meeting the need of users.

9.2 Programming software

The program software of integrated machine can be installed in PC through programmable design, after that, connect it with EC100 with program cables, the user can download programs.

Software interface:



9.2.1 Shifting between the ladder chart and the command table

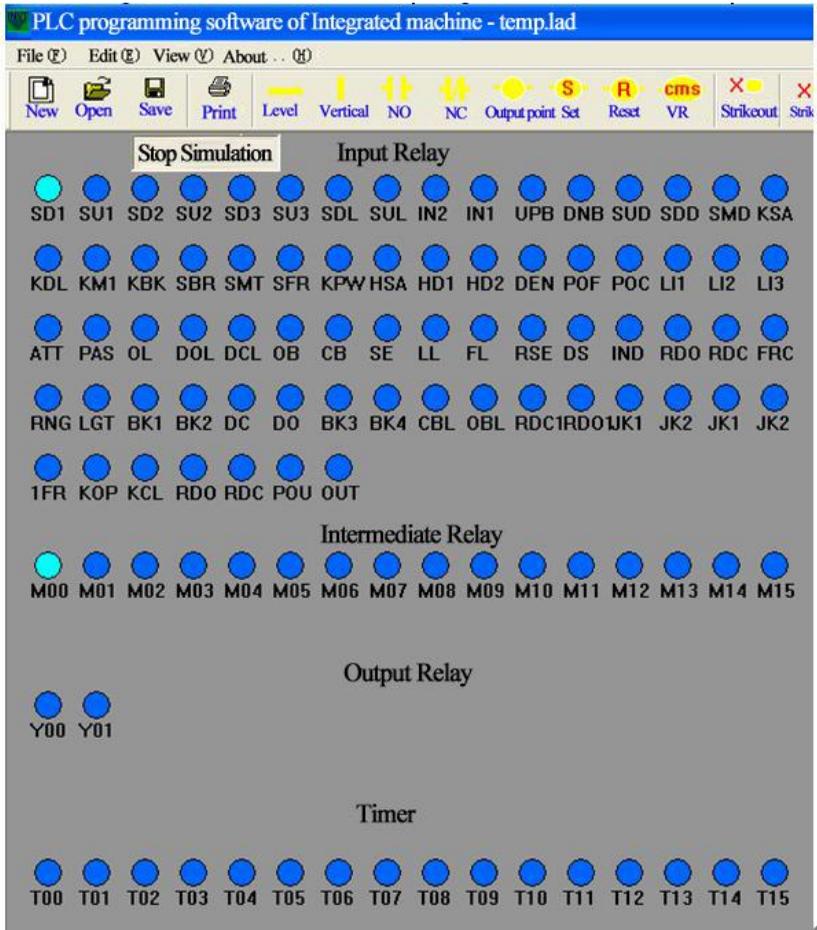
Click the ladder chart to enter into the program editing state of the ladder chart:

Click the ladder command to enter into the command table button, the interface shift into the command table:



9.2.2 Logic test

Logic test is used on the logic simulation of the programs to solve the problems.



9.2.3 Code upload

Upload the codes in the controller to PC.

9.2.4 Code download

Download PC software to the controller.

9.3 Programming Introduction

The software support ladder program and not provide command table program.

For example:



There are many relay, timer and counter in the programmable controller with usual NO and NC contactor.

The connection of contactor and coils compose the control circuit. Below is the introduction of some components.

9.3.1 Input relay X

Input relay (X) is used to receive the signal of external switch .

The address of X:

EC100 status:	
X049 – UP – UP	X030 – LIN1 - Custom input points1
X050 – DOWN – DOWN	X031 – LIN2 - Custom input points2
X051 – IC – Use of IC Card	X032 – LIN3 - Custom input points3
X052 – ERR – Elevator fault	EC100 Car input points:
X053 – PARK – Lock elevator	X033 – ATT – Attention
X054 – FIRE –Fire operation	X034 – PAS – Pass
X007 – SDL – Down limit	X035 – OL – Over load
X008 – SUL – Up limit	X036 – DOL – Door open limit
X009 – INS2 –Emergency power running	X037 – DCL – Door close limit
X010 – INS1 –Inspection signal	X038 – OB –Door close button
X011 – UPB – Up inspection button signal	X039 – CB –Door open button
X012 – DNB – Down inspection button signal	X040 – SE –Front door Screen
X013 – SUDZ – Up door area (rear door opening	X041 – LL – Light load
X014 – SDDZ – Down door area	X042 – FL – Full load
X015 – SMDZ – Middle door area	X043 – RSE – Rear door Screen
X016 – KSAF – Contact detection of safety conta	X044 – DS –Front/Rear transfer switch
X017 – KDL – Contact of door lock contactor	X045 – IND – Independent
X018 – KM1 – Contact detection of the output c	X046 – RDOL –Rear door open limit
X019 – KBK – Contact detection of the braking	X047 – RDCL – Rear door close limit
X020 – SBR – Brake limit switch detection	X048 – FRCL –firefighter close
X021 – SMTR –Motor heating protection	EC100 status:
X022 – SFR – Fire linkage input	X049 – UP – UP
X023 – KPWR –UPS input signal detection	X050 – DOWN – DOWN
X024 – HSAF –Safety loop High voltage input de	X051 – IC – Use of IC Card
X025 – HDL1 –Car door lock High-voltage detect	X052 – ERR – Elevator fault
X026 – HDL2 –Hall door lock High-voltage detec	X053 – PARK –Lock elevator
X027 – DEN – Hardware Enabling	X054 – FIRE –Fire operation
X028 – POF – Feedback of pre-opening	
X029 – POC – Adhesion detection of pre-opening	
X030 – LIN1 - Custom input points1	
X031 – LIN2 - Custom input points2	
X032 – LIN3 - Custom input points3	

9.3.2 Output relay Y

EC100 output points:
Y001 – JKM1 - Output contactor control 1
Y002 – JKM2 - Output contactor control 2
Y003 – JKB1 - Brake contactor control 1
Y004 – JKB2 - Brake contactor control 2
Y005 – 1FR - Fire feedback output
Y006 – KOP –Door Open
Y007 – KCL – Door Close
Y008 – RDOP - Rear Door Open
Y009 – RDCL – Rear Door Close
Y010 – POU – Pre-open output
EC100 Programmable output points:
Y011 – OUT1 - Open relay 1
Y012 – OUT2 - Open relay 2
EC100 Car output points:
Y013 – CHM - Arrival gong
Y014 – KLS - Flodlight
Y015 – BK1 - Reserve 1
Y016 – BK2 - Reserve 2
Y017 – DC - Closed output
Y018 – DO – Open door output
Y019 – BK3 - Reserve 3
Y020 – BK4 - Reserve 4
Y021 – CBL - Closed lamp output
Y022 – OBL - Door lamp output
Y023 – RDC – Output of rear door close
Y024 – RDO - Output of rear door open

The main board provide two programmable output relay OUT1 and OUT2 for the sub-development. The others are unprogrammable.

9.3.3 Assistant relay M

The assistant relay is the relay inside the controller.

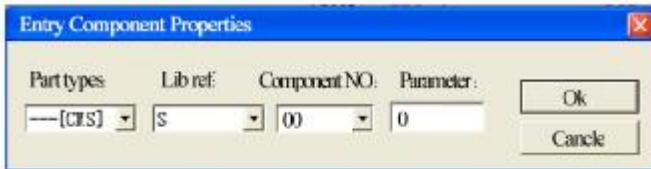
Address configuration principle: 16 assistant relays M00-M15

	<ul style="list-style-type: none"> ⊔ The relay is different from input/output relay. It is used in the program, but can not receive the external output and drive the external load directly. ⊔ Note that there is no power-off protection in the assistant relay.
---	--

9.3.4 Current speed comparison command CMS

It is used on the relay output at the regulated speed.

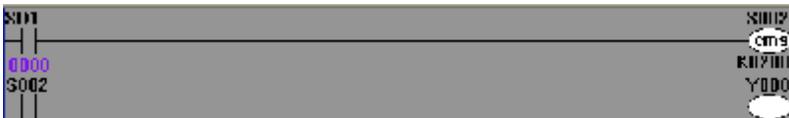
For example:



Speed Comparator S, when SXX is above the setting parameter (XX is any component code in 00-07), the unit of the parameter is mm/s



For example:

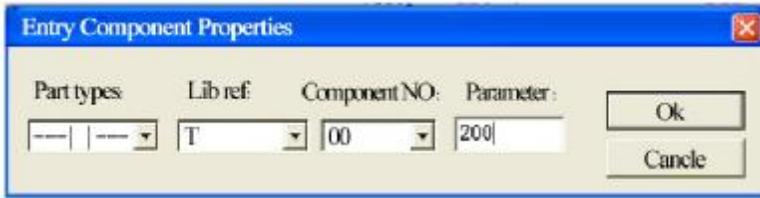


9.3.5 Timer T

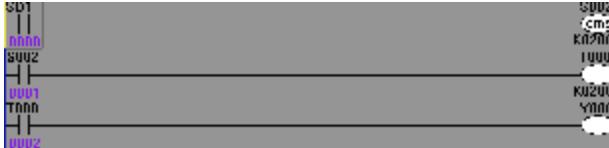
Timer is used to add the pulse in the controller in 100ms, if reach the set value, output the contact action.

Address configuration principle: T00-T15 (16)

For example: when time reply is T00, the time is 为 $200 \times 0.1 = 20$ second, max. setting value is 65535.



For example:



If the elevator does not act deceleration at low speed, output Y000 in T000 when the speed is more than 0.2m/s.

The Mini. Unit of the timer is 0.1s. the counter is raiding edge and the Max. step is 300.

9.3.6 Counter C

The counter can be classified according to the usage and application:

- Ø Internal counter (general use/ keep on using when power off)
- Ø 16-bit counter: increasing counting; counting range: 1–65535

C00–C09 general use, C10—C15is used on the internal signal of the controller. Its response speed is 10ms/time.



The figure above stands for that output Y001 when the opening times of breaker is accumulated to 2000.

9.3.7Setting command S

Function: used on step ladder chart

Force Y000 to output when SD1 is on.



9.3.8 Reset Relay R

Function: used on step ladder chart

Force Y000 to reset when SD1 is off.

Chapter 10 Complete product description

10.1 Main controller DC-01 of the car

DC-01 is the main control board of the elevator car, including 16 digital signal input, NO signal output of 4 relays, command signal input of the connection interface of command board DC-02 and 12 floors of the elevator. It has terminals to perform CAN communication with main control board.

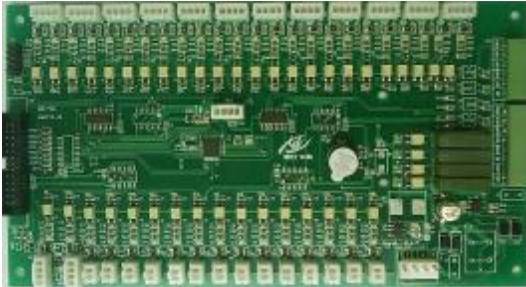


Figure 10-1 Car main controller DC-01

10.1.1 Installation size

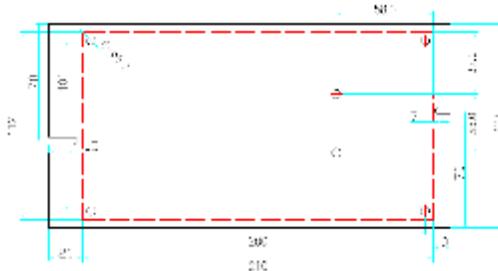


Figure 10-2 Installation size of car main controller DC-01 (the red in the figure is the size of PCB board and the black is the size of shield)

10.1.2 Specification of the connectors

No	Model
J20/J21	2EG3.81-3
J22	2EG3.81-8
J4-J5/J24-J35	XH-4
J6-J19	XH-2
J23	13 pin dual arrangement base
J1	VH-4

10.1.3 Electrical specifications

10.1.3.1 Power supply specifications:

Function		Instruction
Input voltage range		22~26VDC
Recommended input voltage		24VDC
Max. power (U*I)	Relay full output	$24*0.03=0.07W$
	Main board control the chip to run	$24*0.03=0.72W$
	Optical coupling full input valid	$24*0.13=3.12W$
	Key light	$14*24*0.03$

10.1.3.2 Working environment:

Environment	Condition
Temperature	-10 degree ~ +60 degree
Humidity	<80%
Soil fog	Soil fog: $0.13\mu g/m^3$
Shock	Peak acceleration speed 100gn ; 100 times
Vibration	10Hz-100Hz 50 times ; 100Hz-10Hz 50 times
Sudden pulse group interference	2000V

10.1.4 Definition of the input/output interface

Serial No.	Pin	Terminal code	Terminal definition
1	J6	ATT	Attention
2	J7	PAS	Pass
3	J8	OL	Over Load
4	J9	DOL	Door Open limit
5	J10	DCL	Door Close limit
6	J11	SE	Safety Edge

Serial No.	Pin	Terminal code	Terminal definition
7	J4	V-, OB, V+, OBL	Opening button and light
8	J5	V-, CB, V+, CBL	Closing button and light
9	J12	LL	Light Load
10	J13	FL	Full Load
11	J14	RSE	Rear Safety Edge
12	J15	DS	Door Select Switch
13	J16	IND	Independent
14	J17	RDOL	Rear Door Open limit
15	J18	RDCL	Rear Door Close limit
16	J19	FRCL	Fire close limit
17	J23		Extension interface of command board
18	J24	DJ1, V+, AJ1, V-	1 floor Call and LED
19	J25	DJ2, V+, AJ2, V-	2 floor Call and LED
20	J26	DJ3, V+, AJ3, V-	3 floor Call and LED
21	J27	DJ4, V+, AJ4, V-	4 floor Call and LED
22	J28	DJ5, V+, AJ5, V-	5 floor Call and LED
23	J29	DJ6, V+, AJ6, V-	6 floor Call and LED
24	J30	DJ7, V+, AJ7, V-	7 floor Call and LED
25	J31	DJ8, V+, AJ8, V-	8 floor Call and LED
26	J32	DJ9, V+, AJ9, V-	9 floor Call and LED
27	J33	DJ10, V+, AJ10, V-	10 floor Call and LED
28	J34	DJ11, V+, AJ11, V-	11 floor Call and LED
29	J35	DJ12, V+, AJ12, V-	12 floor Call and LED
30	J20/J21	DC, DO, DCM, RDO, RDC, RDCM	Opening/closing output DC—Door Close DO—Door Open DCM—COM Rear Open/Close Output RDC—Rear Door Close RDO—Rear Door Open RDCM—COM

Serial No.	Pin	Terminal code	Terminal definition
31	J22	CHM, COM6, KLS, COM5, BK1, COM4, BK2, COM3	CHM—Chime KLS—Light Saving Arrival gang, lighting control
32	J1	CANH, CANL, 24V-, 24V+	Serial communication interface

10.1.5 Connection method

10.1.5.1 Car controller and the connection between the power supply and the communication bus

The power and communication of the car is brought in by J1.1-J1.4, of which , 24+, 24- are the communication wires of DC24V, CANH and CANL. The communication wires should be 4-core twist pairs.

Item	Requirement or remark
Usage	J1 is the serial communication interface connecting the engine room and the landing display controller
Connector type	VH-4 connector
Interface definition	4 pins 24+; 3 pins 24-; 2 pins CANL; 1 pin CANH
Connection wire requirement	Connect the 4-core twist pairs 24+ and 24- are a pair; CANH and CANL are a pair

The detailed connection:

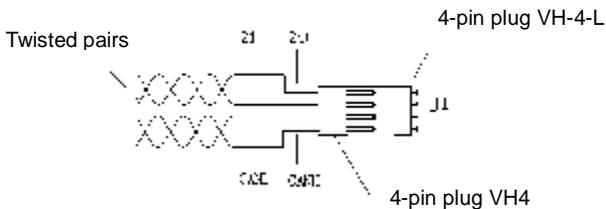


Figure 10-3 connection of the car main controller DC-01

10.1.5.2 Connection of the input signal of the car controller

Car controller mainly apply parts switch signals on the top of the car, in the car and at the bottom of the car and send these signal, such as attention, pass, overload, safety edge to the main controller.

10.1.5.2 Connection of the output signal of the car controller

The car controller controls the output of relay and transistor through the signal sent by main controller. The output of relay controls the arrival prediction and light through controlling the relay of the station clock and light. The output of the transistor controls the output of the button light.

10.1.5.3 Connection of door button and indicator

Close door button Close door button Open door button Close door button

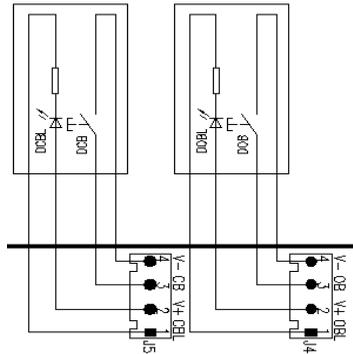


Figure 10-4 Connection of door button and indicator

10.2 DC-02 command expander

10.2.1 Overall picture



Figure 10-5 DC-02 command expander

10.2.2 DC-02 interface instruction

10.2.2.1 Installation size

Above parts are needed when the floor is higher than the 12th floor. Add 1 for additional 8 floors.(the red in the figure is the size of PCB board and the black in the figure is the size of shield board).

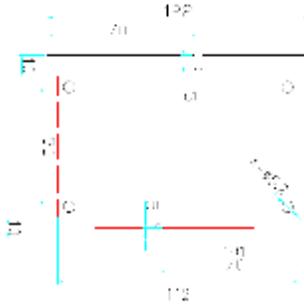


Figure 10-5 Installation size of the DC-02 command expander

Serial	Code	Name	Remark
1~8	P1~P8	Calling signal input and Registration instructions output terminal	XH-4 terminal
9	J1	Input connector of the command control bus	DC3-26PIN connector
10	J2	Output connector of the command control bus	DC3-26PIN connector

10.2.2.2 P1~8 terminal function of the car I/O controller DC-02

Code	Instruction	Code	Instruction
①	Indicator output	③	Calling input
②	Positive pole of the power 24V	④	Negative pole of the power 24V

The first controller P1~P8 corresponds to the command record and indication of the 1~8 floor; the second controller corresponds to the command record and indication of the 9~16 floor; the highest floor is the 64th floor.

10.2.2.3 Electrical specification of P1~P8 terminal in car I/O controller DC-02

Command I/O input

I/O input		Optical isolation Open circuit input
Current signal	"0" electrical level	0~2mA
	"1" electrical level	4.5~8mA
Voltage signal	"0" electrical level	18~24V DC
	"1" electrical level	0~5V DC
Signal digital filter delay		20mS

Signal response frequency		500Hz
Indicator I/O output		
I/O output		Open collector output
Load voltage	DC	<30V DC
Load current	Resistor load	<100m A

10.2.3 Connection method

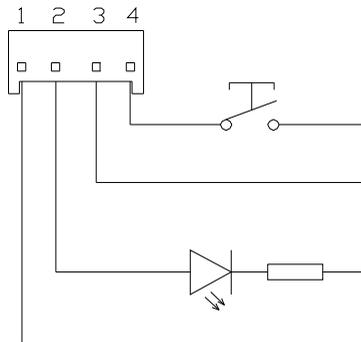


Figure 10-6 Connection of P1-P8 command button wires

10.2.3.1 Connection of P1-P8 command button wires

P1-P8 of the car command board is connected to the command, P1 is connected to the command in 13 floor; P2 is connected to the command in 14 floor and so on. If the floor number is more than 20, then P1 on 2# command board is connected to the command in 21 floor. The command on the corresponding board is connected to the plug-ins, of which, 1 pin is connected to the power supply “-” of command indicator; 2 pin is connected to “+” of the power supply and pin 3 and 4 are connected to buttons.

10.2.3.2 Connection method of P9 and P10

P9 is the connector of car controller. If the floor is high, the command board needs to be expanded. P9 of the sub-command board is connected with P10 of the upper command.

10.3 Calling displaying board DC-03A

10.3.1 Overall picture and installation size of the calling displaying board



Figure 10-7 Calling displaying board DC-03A

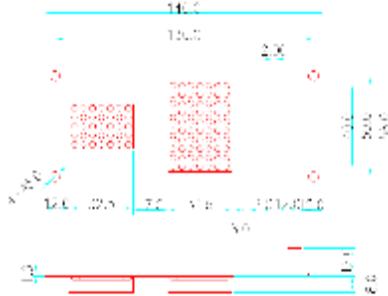


Figure 10-8 installation size of calling displaying board DC-03A (the screw is M3*20)

10.3.2 Parts instruction of calling displaying board DC-03A

Serial No.	Code	Function	Remark
1	P1	Power input and communication bus interface	
2	P2	Up calling button and registration LED	
3	P3	Down calling button and registration LED	
4	P4	Lock signal	
5	P5	Fire signal	
6	D3	Running communication indicator	Off when normal communication Flashing when no communication
7	P6	Program download port	

Serial No.	Code	Function	Remark
8	P7	Spare function port	
9	J3	Across terminal of the communication terminator	Short circuit the corresponding J3of the outside calling displaying board at the bottom floor and the displaying board in the car
10	J5	Across terminal of parameters setting	Short circuit : setting state Off: running state

10.3.3 Communication interface of the calling displaying board DC-03A

10.3.3.1 P1 of the calling displaying board DC-03A

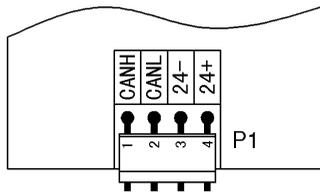


Figure 10-9 P1 of the calling displaying board DC-03A (terminal model: VH-4)

10.3.3.2 P1 of the calling displaying board DC-03A

Code	Instruction	Code	Instruction
①	Communication signal CANH	③	Negative pole of power 24V
②	Communication signal CANL	④	Positive pole of power 24V

10.3.4 P2~P5 terminal instruction of the calling displaying board DC-03A

10.3.4.1 Electrical connection of the calling displaying board DC-03A:

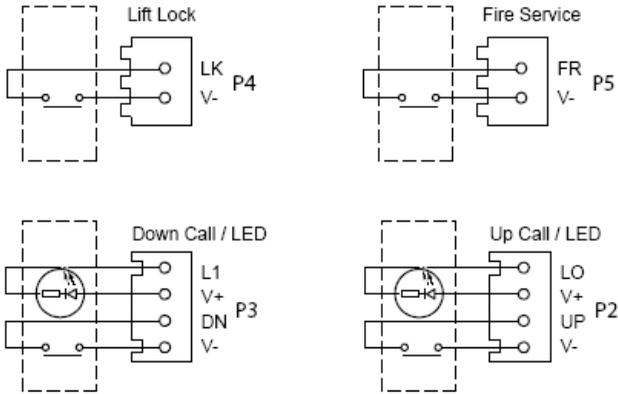


Figure 10-10 Electrical connection of the calling displaying board (terminal model of P2 and P3: XH-4; terminal model of P4 and P5: XH-2)

10.3.4.2 P2~P5 terminal group of calling displaying board DC-03A

Code	Function	Remark
P2	Up calling button and registration LED	
P3	Down calling button and registration LED	
P4	Lock signal (LK)	
P5	Fire signal(FR)	

10.3.5 Electrical specification of P2~P5 terminal in calling displaying board DC-03A

10.3.5.1 Button switch input

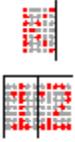
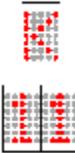
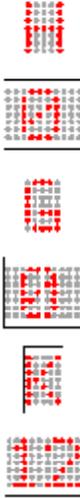
Input type		Optical isolation Open circuit input
Current signal	“0” electrical level	0~2mA
	“1” electrical level	4.5~8mA
Voltage signal	“0” electrical level	18~24V DC
	“1” electrical level	0~5V DC
Signal digital filter delay		20mS
Signal f response frequency		500Hz

10.3.5.2 Indicator output

Output type		Open collector output
Load voltage	DC	<30V DC
Load current	Resistor load	<100m A

10.3.6 Parameters setting of calling displaying board DC-03A

10.3.6.1 setting operation

Operation steps	Lattice displaying	Instruction
(1):short circuit J5(SET) for 2 seconds and enter into the setting state		“K” is the code of the parameter of setting address “12” is the set address
(2):UP button of the jogging calling; the setting parameter is increasing DOWN button of the jogging calling; the setting parameter is reducing		After the parameters modification, remove the tag and the parameter will save automatically.
(3):jogging P5 or P4, change the code for setting parameters: H→G→K cycle shifting		H: function selection G: spare function K: address of displaying board

Operation steps	Lattice displaying	Instruction
(4):remove J5 (SET) to run normally, and then the setting is over.		Normal running displaying

10.3.6.2 Parameters setting of the calling displaying board

Code	Definition	Factory setting
K	Address of the displaying board Range: 0~64.	0
H	Function selection: lock enabling, fire enabling and arrow selection	0
G	Spare parameter	3

10.3.6.3 Address setting of the hall displaying board

If the hall displaying board is DC-03A, set the value of 'K' to corresponds to the floor number. That is, the K value of the bottom floor is 1 and the maximum can not exceed 64. When the button control of the back and front door is applied, the address of DC-03A board starts from K=33 and the maximum address can not exceed 64.

10.3.6.2 Address displaying of the displaying board in car

If the displaying board in car is DC-03A, 'K' is set to '0'.

10.3.7 Function setting of the calling displaying board

10.3.7.1 Definition of 'H'

'H' is a hex data composing of 8 binaries. 4 low bit can be transformed into low hex bit and 4 high bit can be transformed into high hex bit. Below are the definition:

Data (X stands for any data: 0 or 1)								Definition
7	6	5	4	3	2	1	0	
X	X	X	X	X	X	X	1	Lock enabling, the lock signal act when the 0 position is 1
X	X	X	X	X	X	1	X	Fire enabling, fire signal act when the 1 position is 1

10.3.7.2 Lock enabling setting

Set lock enabling to be '1', the elevator is running automatically and when the lock signal close, the floor displaying outside the elevator is off, but the displaying in car is normal. When the elevator returns to the stopping floor and the door is closed, the elevator is locked.

10.3.7.3 Fire enabling setting

Set the fire safety enabling to be '1', when the fire signal is off and the elevator is running, the elevator will be in the fire running state.

Note: the lock enabling and fire enabling is only one valid at the outside calling controller of the elevator, but the can be set on different outside calling controller.

10.3.7.4 Value table of "H"

Binary Value								Decimal value	Function	
7	6	5	4	3	2	1	0		Fire enabling	Lock enabling
0	0	0	0	0	0	0	0	0	No	No
0	0	0	0	0	0	0	1	1	No	Yes
0	0	0	0	0	0	1	0	2	Yes	No
0	0	0	0	0	0	1	1	3	Yes	Yes

10.3.8 Displaying table of elevator state

Displaying in car				
Station prediction:no				
Inspection	p normal displaying	.. abnormal displaying	.. special characterizes or other mode	Display floor number and leveling mark when inspection in leveling; Display floor number when inspection not in leveling
Power off Leveling	p normal displaying	.. no displaying	.. special characterizes or other mode	

Independent	p normal displaying	.. no displaying	.. special characterizes or other mode	
Fire	p normal displaying	.. no displaying	.. special characterizes or other mode	
Safety circuit off	p normal displaying	.. no displaying	.. special characterizes or other mode	
Lock	.. normal displaying	.. no displaying	p special characterizes or other mode	
Fault	.. normal displaying	.. no displaying	p special characterizes or other mode	
Overload	.. normal displaying	.. no displaying	p special characterizes or other mode	Display "oL"
Attention	p normal displaying	.. no displaying	.. special characterizes or other mode	
Full load	p normal displaying	.. no displaying	.. special characterizes or other mode	

Displaying outside the hall				
Station prediction:no				
Inspection	.. normal displaying	.. no displaying	p special characterizes or other mode	
Power off Leveling	p normal displaying	.. no displaying	p special characterizes or other mode	

Displaying outside the hall				
Station prediction:no				
Independent	.. normal displaying	p no displaying	.. special characterizes or other mode	
Fire	p normal displaying	.. no displaying	.. special characterizes or other mode	
Safety circuit off	p normal displaying	.. no displaying	.. special characterizes or other mode	
Lock	.. normal displaying	p no displaying	.. special characterizes or other mode	
Fault	.. normal displaying	p no displaying	.. special characterizes or other mode	
Overload	p normal displaying	.. no displaying	.. special characterizes or other mode	
Attention	.. normal displaying	.. no displaying	p special characterizes or other mode	1[F] , 2/3 normal displaying
Full load	.. normal displaying	.. no displaying	p special characterizes or other mode	1[F] , 2/3 normal displaying

10.3.9 Displaying pictures

Serial No.	Picture	Meaning
1		Displaying in the inspection car “=” means the elevator is in the leveling position of 12 th floor

2		<p>Displaying outside the car means the inspection state</p>
3		<p>Displaying outside the car “F” means the elevator is full running</p>
4		<p>Monitor inside the car “OL” means overload</p>
5		<p>Up arrow means the elevator is going to go up. Rolling arrow means the elevator is going up. The quicker the rolling speed is, the faster the elevator is running.</p>
6		<p>Down arrow means the elevator is going to go down. Rolling arrow means the elevator is going down. The quicker the rolling speed is, the faster the elevator is running.</p>
7		<p>The monitor is in the state of floor setting.</p>
8		<p>The monitor is in the state of multiple-function displaying.</p>
9		<p>“V” means the version of the elevator. 12 means version 1.2. Display when power on.</p>
10		<p>The elevator is locked.</p>

10.3.10 Connection method

10.3.10.1 Connection between the displaying board, power supply and the communication bus

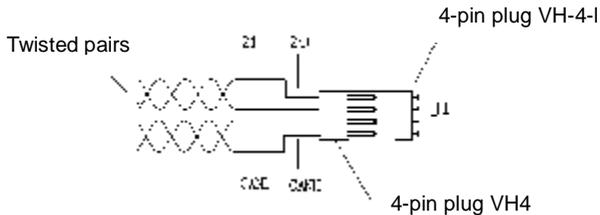


Figure 10-11 connection method

The power supply and communication of the displaying board is brought in by 4-hole plug, of which, 1 pin is 24+; 2 pins are 24-; input power supply is DC24V; 3 pins are CANL; 4 pins are CANH. The communication wires are twist pairs.

10.3.10.2 Installation requirement

- Ø Do not install on the combustible materials, otherwise fire may occur.
- Ø Keep away from combustible items, otherwise fire may occur.
- Ø Do not install in the environment with explosive gas, otherwise fire may occur.
- Ø Do not remove any part on the protective plate. The plate is designed to protect all parts.
- Ø Do not put any force on the cover and panel, otherwise damage may occur to the controller.
- Ø Do not install in the situation with water drops, otherwise damage may occur to the controller.
- Ø Do not drop any metal objects, such as screw and so on into the controller, otherwise, damage may occur to the controller.

Chapter 11 Maintenance and hardware diagnostics

11.1 Maintenance intervals

If installed in an appropriate environment, the inverter requires very little maintenance. The table lists the routine maintenance intervals recommended by INVT.

Checking part		Checking item	Checking method	Criterion
Ambient environment		Check the ambient temperature, humidity and vibration and ensure there is no dust, gas, oil fog and water drop.	Visual examination and instrument test	Conforming to the manual
		Ensure there are no tools or other foreign or dangerous objects	Visual examination	There are no tools or dangerous objects.
Voltage		Ensure the main circuit and control circuit are normal.	Measurement by millimeter	Conforming to the manual
Keypad		Ensure the display is clear enough	Visual examination	The characters are displayed normally.
		Ensure the characters are displayed totally	Visual examination	Conforming to the manual
Main circuit	For public use	Ensure the screws are tightened security	Tighten up	NA
		Ensure there is no distortion, crackles, damage or color-changing caused by overheating and aging to the machine and insulator.	Visual examination	NA

Checking part		Checking item	Checking method	Criterion
		Ensure there is no dust and dirtiness	Visual examination	NA Note: if the color of the copper blocks change, it does not mean that there is something wrong with the features.
The lead of the conductors		Ensure that there is no distortion or color-changing of the conductors caused by overheating.	Visual examination	NA
		Ensure that there are no crackles or color-changing of the protective layers.	Visual examination	NA
Terminals seat		Ensure that there is no damage	Visual examination	NA
Filter capacitors		Ensure that there is no weeping, color-changing, crackles and cassis expansion.	Visual examination	NA
		Ensure the safety valve is in the right place.	Estimate the usage time according to the maintenance or measure the static capacity.	NA
		If necessary, measure	Measure the	The static

Checking part		Checking item	Checking method	Criterion
		the static capacity.	capacity by instruments.	capacity is above or equal to the original value *0.85.
	Resistors	Ensure whether there is replacement and splitting caused by overheating.	Smelling and visual examination	NA
		Ensure that there is no offline.	Visual examination or remove one ending to coagulate or measure with multimeters	The resistors are in $\pm 10\%$ of the standard value.
	Transformers and reactors	Ensure there is no abnormal vibration, noise and smelling,	Hearing, smelling and visual examination	NA
	Electromagnetism contactors and relays	Ensure whether there is vibration noise in the workrooms.	Hearing	NA
		Ensure the contactor is good enough.	Visual examination	NA
Control circuit	PCB and plugs	Ensure there is no loose screws and contactors.	Fasten up	NA
		Ensure there is no smelling and color-changing.	Smelling and visual examination	NA
		Ensure there are no crackles, damage distortion and rust.	Visual examination	NA

Checking part		Checking item	Checking method	Criterion
		Ensure there is no weeping and distortion to the capacitors.	Visual examination or estimate the usage time according to the maintenance information	NA
Cooling system	Cooling fan	Estimate whether there is abnormal noise and vibration.	Hearing and Visual examination or rotate with hand	Stable rotation
		Estimate there is no losses screw.	Tighten up	NA
		Ensure there is no color-changing caused by overheating.	Visual examination or estimate the usage time according to the maintenance information	NA
	Ventilating duct	Ensure whether there is stuff or foreign objection in the cooling fan, air vent.	Visual examination	NA

11.2 Cooling fan

The inverter's cooling fan has a minimum life span of 25,000 operating hours. The actual life span depends on the inverter usage and ambient temperature.

The operating hours can be found through parameters.

Fan failure can be predicted by the increasing noise from the fan bearings. If the inverter is operated in a critical part of a process, fan replacement is recommended once these symptoms appear. Replacement fans are available from INVT.

11.2.1 Replacing the cooling fan

	<p>U Read and follow the instructions in chapter <i>Safety Precautions</i>. Ignoring the instructions would cause physical injury or death, or damage to the equipment.</p>
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1. Stop the inverter and disconnect it from the AC power source and wait for at least the time designated on the inverter.
2. Lever the fan holder off the drive frame with a screwdriver and lift the hinged fan holder slightly upward from its front edge.
3. Free the fan cable from the clip.
4. Disconnect the fan cable.
5. Remove the fan holder from the hinges.
6. Install the new fan holder including the fan in reverse order.
7. Restore power.

11.3 Capacitors

11.3.1 Reforming the capacitors

The DC bus capacitors must be reformed according to the operation instruction if the inverter has been stored for a long time. The storing time is counted form the producing date other than the delivery data which has been marked in the serial number of the inverter.

Time	Operational principle
Storing time less than 1 year	Operation without charging
Storing time 1-2 years	Connect with the power for 1 hour before first ON command
Storing time 2-3 years	Use power surge to charge for the inverter <ul style="list-style-type: none"> • Add 25% rated voltage for 30 minutes • Add 50% rated voltage for 30 minutes • Add 75% rated voltage for 30 minutes • Add 100% rated voltage for 30 minutes
Storing time more than 3 years	Use power surge to charge for the inverter <ul style="list-style-type: none"> • Add 25% rated voltage for 2 hours • Add 50% rated voltage for 2 hours

	<ul style="list-style-type: none"> • Add 75% rated voltage for 2 hours • Add 100% rated voltage for 2 hours
--	---

The method of using power surge to charge for the inverter:

The right selection of Power surge depends on the supply power of the inverter. Single phase 230V AC/2A power surge applied to the inverter with single/three-phase 230V AC as its input voltage. The inverter with single/three-phase 230V AC as its input voltage can apply Single phase 230V AC/2A power surge. All DC bus capacitors charge at the same time because there is one rectifier.

High-voltage inverter needs enough voltage (for example, 400V) during charging. The small capacitor power (2A is enough) can be used because the capacitor nearly does not need current when charging.

The operation method of inverter charging through resistors (LEDs):

The charging time is at least 60 minutes if charge the DC bus capacitor directly through supply power. This operation is available on normal temperature and no-load condition and the resistor should be serially connected in the 3-phase circuits of the power supply:
 400V driven device: 1k/100W resistor. LED of 100W can be used when the power voltage is no more than 400V. But if used, the light may be off or weak during charging.

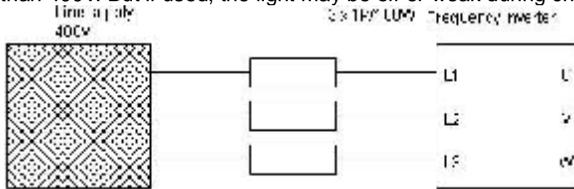


Figure 11-1 400V charging illustration of the driven device

11.3.2 Change electrolytic capacitors

	<p>U Read and follow the instructions in chapter <i>Safety Precautions</i>. Ignoring the instructions may cause physical injury or death, or damage to the equipment.</p>
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Change electrolytic capacitors if the working hours of electrolytic capacitors in the inverter are above 35000. Please contact with the local INVT offices or dial our national service hotline (400-700-9997) for detailed operation.

11.4 Power cable

	<p>U Read and follow the instructions in chapter <i>Safety Precautions</i>. Ignoring the instructions may cause physical injury or death, or damage to the equipment.</p>
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1. Stop the drive and disconnect it from the power line. Wait for at least the time designated on the inverter.
2. Check the tightness of the power cable connections.
3. Restore power.

Chapter 12 Fault code

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
1	1	1	Main control board fault	Internal fault	Replace the main control board	Stop immediately
2	2	2	Power fault of IO board	1.Power damage (external DC 24V)or offline	1.Check the cable connection between IO board and master	Stop immediately; fault reset automatically
				2.Cable disconnection	2.Check the power supply (24V)	
3	5	5	No pulse feedback	1.DSP communication fault	1.replace the main control board;	Stop immediately; fault reset automatically
				2.Corresponding speed is 0	2.modify the parameter	
4	6	6	Pulse reversion	1.Pulse direction parameters fault	1.modify the parameter and counting direction	Stop immediately; fault reset automatically
				2.Running direction of the elevator reverses	2.Set load compensation	
				3.Elevator sliding down	3.Reautotuning of the master	
5	9	9	Thermal protection	Thermal protection	1.Check whether the motor is damaged.	Preferred stopping, fault reset automatically
					2.Improve motor cooling	
6	10	10	Communic	No	1.Check the	No impact

No.	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
			ation fault of group control	communication between controller and group control board	communication and the plug-ins. 2.Check the power supply (DC24V).	to the motor running, fault reset automatically
7	11		Car CAN communication fault	No communication between the controller and the car.	1.check the communication cable circuit and plug-ins. 3.Check the power supply (DC24V).	Preferred stopping, fault reset automatically
8	30		Safety circuit open	1.Safety circuit disconnection 2.Bad connection of the contact of the relay or damage to the voltage detection point	1.check the switch in the safety circuit. 2.replace the contractor of the safety circuit or change the IO board.	Stop immediately; fault reset automatically
9	31		Door Lock open in running	1.Misadjustment of the position of the door knife 2.Bad connection of the contact of the door lock 3.Bad connection of the car lock or hall lock	1.adjust the door lock. 2.replace the contactor of the door lock. 3.check the circuit of the door lock	Stop immediately; fault reset automatically

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
10	32		Short circuit fault of door lock	1.The lock signal and opening signal act at the same time	1.check the short circuit of the door lock	Preferred stopping, fault reset automatically
				2.After the opening signal output for 5 seconds, the lock still disconnect.	2.check the misaction of the switch	
					3.Check the door	
11	33		Elevator did not stop in the door zone	Elevator protection caused by other faults	Analyze with other faults	Fault tips
12	34		Deceleration overtime	The deceleration time exceeds the time calculated in the parameter	1.sliding of the elevator rope	Stop immediately; reset automatically
					2.wrong parameters setting	
13	37		Running overtime fault	1.signal loss in the door zone	1.check the signal door zone	Stop immediately; fault reset manually
				2.motor stall or	2.Check the tractor	
				3.decelerate	3. wrong parameters setting	
14	40		Door signal incorrect	Elevator is still in the door zone 2 seconds after high speed run commanded	1.check the braking devices	Stop immediately; fault reset manually
					2.check the door zone	

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
15	42	42	Deceleration forced switch of the bottom and top floor act at the same time	Deceleration forced switch of the bottom and top floor act at the same time	1.check the forced switch 2.check the corresponding logic setting	Stop immediately; fault reset automatically
16	43	43	Earthquake motion	The main board detects the earthquake	1.check the corresponding logic setting 2.corresponding detection point damage	Function tips
17	46	46	Abnormal speed of the elevator	The running speed of the elevator exceed 115% of the rated speed.	1.check the speed feedback of the encoder 2.check the parameters setting	Stop immediately; fault reset automatically
18	47	47	Down limit switch action	down limit switch action	1.check the installation position of down limit switch 2.check the corresponding logic setting 3.check the switch wiring	Stop immediately; fault reset automatically
19	48	48	Up limit switch action	Up limit switch action	1. check the installation position of the up limit switch 2.check the	Stop immediately; fault reset

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
					corresponding logic setting 3.check the switch wiring	automatically
20	50		Overtime of the running contactor closing	No feedback after the running contactor closing	1.replace the contactor 2. Check the external wiring; 3. check the corresponding logic setting	Stop immediately; fault reset automatically
21	51		Overtime of the running contactor opening	Feedback after the running contactor releasing	1.replace the contactor 2. Check the external wiring; 3. check the corresponding logic setting	Stop immediately; fault reset automatically
22	52		Brake contactor closed feedback past due	No feedback after the braking contactor closing	1.replace the contactor 2. Check the external wiring; 3. check the corresponding logic setting	Stop immediately; fault reset automatically
23	53		Brake contactor opened feedback past due	Feedback after the braking contactor releasing	1.replace the contactor 2. Check the external wiring; 3. check the corresponding logic	Stop immediately; fault reset automatically

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
					setting	
24	54	54	Brake travel action overtime	1.the brake does not open totally when the elevator starts	1.check the brake opening devices	Stop immediately; fault reset automatically
				2. the brake does not close totally when the elevator stops	2.the brake travel switch does not contact well.	
					3.check the corresponding logic setting	
					4.adjust the position of the brake travel switch	
25	55	55	Brake position detection past due	1. the brake does not close totally when the elevator stops	1. check the braking opening device	Stop immediately; fault reset automatically
				2.the brake switch does not install well	2.bad connection of the brake travel switch	
					3.check the corresponding logic setting	
					4. adjust the position of the brake travel switch	
26	58	58	Hardware enabling adhesion	No detection of the signal after the starting	1.check the connection cables of the IO board	Stop immediately; fault

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
					2.check the contractor and connection	reset automatically
27	60	60	Door Open error	Door open operation exceeding 10 sec but no signal on door limit switch	1.Clean the door sill 2.enlargen the low speed torque of the door 3.check the corresponding logic setting 4. adjust the position of the open switch	
28	61	61	Door Close error	1. Door closing operation exceeding 10 sec but no signal on door limit switch 2. Door fully closed but door lock circuit still open.	1.Clean the door sill 2.enlarg the low speed torque of the door 3.check the corresponding logic setting 4. adjust the position of the open switch 5.adjust the lock device	Fault instruction
29	62	62	Door open and close limit switches in the	Limit switch of door closed/open act at the same time	1.limit switch damage 2.check the corresponding logic setting	Fault instruction

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
			same stage			
30	64	64	Safety edge/light curtain activated time-out	Safety edge/light curtain activated time-out	<ol style="list-style-type: none"> 1.human obstruction; 2.detection point damage, disconnection or short circuit 3. check the corresponding logic setting 	Fault instruction
31	65	65	Auto aid	The main board detect the auto aid signal	<ol style="list-style-type: none"> 1. check the corresponding logic setting 2.corresponding detection point damage 	Function instruction
32	66	66	Door lock block when door closed	Door lock block when door closed	<ol style="list-style-type: none"> 1.adjust the digital position of the door 2. Exchange lock device; 3. check the corresponding logic setting 	Stop immediately; fault reset automatically
33	70	70	UP/DOWN limit switch act at the same time	UP/DOWN limit switch act at the same time	<ol style="list-style-type: none"> 1.switch damage or disconnection 2. check the corresponding logic setting 	Stop immediately; fault reset automatically
34	71	71	Up and down forced	The forced deceleration	1. switch damage or disconnection	Stop immediately

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
			deceleration switches activated at the same time(moderate speed)	switches act at the same time	2. check the corresponding logic setting	ly; fault reset automatically
35	72		Down forced deceleration limit switch sticking (low speed)	DOWN speed forced deceleration switch and the terminal switch do not reset when the elevator leaves the ground floor for 9 seconds. .	1. switch damage or disconnection 2.check the speed or deceleration/acceleration curve setting	Stop immediately; fault reset automatically
36	73		Up forced deceleration limit switch sticking(low speed)	UP speed forced deceleration switch and the terminal switch do not reset when the elevator leaves the ground floor for 9 seconds.	1. switch damage or disconnection 2. check the speed or deceleration/acceleration curve setting	Stop immediately; fault reset automatically
37	74		Down forced deceleration limit switch sticking(moderate speed)	MEDIUM/DOWN speed forced deceleration switch does not reset when the elevator leaves the ground floor	switch damage or disconnection	Stop immediately; fault reset automatically

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
				for 9 seconds.		
38	75		Up forced deceleration limit switch sticking(moderate speed)	UP/MEDIUM speed forced deceleration switch does not reset when the elevator leaves the ground floor for 9 seconds.	Switch damage or disconnection	Stop immediately; fault reset automatically
40	79		Abnormal elevator position	1.the elevator is in the terminal station, but the corresponding low speed forced deceleration switch does not act	1.disconnection or short circuit of the low speed forced deceleration switch	Preferred stopping, fault reset automatically
				2.the corresponding low speed forced deceleration switch acts, but the elevator is in the terminal station	2.high speed counting pulse and door area signal loss	
				3.information loss of the hoistway.	3.check the wire rope	
				4.floor error	4. check the corresponding logic	

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
					setting	
					5.the position of the forced deceleration switch changed after hoistway autotuning	
41	82	82	Contactor adhesion fault exceeds the setting	No. 50, 52, 54 fault more than 5 times	Replace the corresponding contactor	Stop immediately; fault reset manually
42	83	83	Fault of drive unit exceeds the setting value	Drive unit fault exceeds the value of P5.07		Stop immediately; fault reset manually
43	89	89	Maintenance switch action in running	Manual maintenance action or bad connection of the maintenance switch	Check the circuit	Stop immediately
44	101	A1	Inverter unit U phase protection	1.output of main circuit is grounded or short circuited	1.check the external problems except the connection	Stop immediately; fault restore, fault reset when power off
				2.too long connection wires of the tractor	2.install the reactor or output filter	
45	102	A2	Inverter unit V phase protection	3.Internal damage to IGBT	3.contact with the manufacturer	Stop immediately; fault restore,

No	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
46	103	A3	Inverter unit W phase protection	4.Internal connection of the controller is loose	4.check the internal problems	fault reset when power off
47	104	A4	Acceleration overcurrent	1.wrong parameters setting of the name plate of the master	1.check the parameter of the name plate	Stop immediately; fault reset automatically
				2.too large load	2.check the encoder feedback	
				3.wrong encoder signal	3.enlarge the deceleration and acceleration time	
				4.too fast acceleration	4.reautotuning of the motor	
48	105	A5	Deceleration overcurrent	1.the output of the main circuit is grounded to the earth or short circuit	5.check the braking device in elevator running	Stop immediately; fault reset automatically
				2. wrong parameters setting of the name plate of the master	6.check to avoid mechanical seizure;	
				3. too large load	7.check the balance coefficients	
				4. wrong encoder signal	8.check the encoder signal, the wires routine and the	

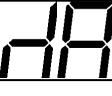
No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
					shield layer.	
				5. too fast deceleration		
47	106		Constant speed overcurrent	1.the output of the main circuit is grounded to the earth or short circuit		Stop immediately; fault reset automatically
				2. wrong parameters setting of the name plate of the master		
				3. too large load		
				4.encoder signal interference		
48	107		Acceleration overvoltage	1.too high input voltage	1.adjust the input voltage, monitoring bus voltage	Stop immediately; fault reset automatically
				2.serious counter EMF of the tractor	2.check the balance coefficient	
				3.large braking resistor and abnormal braking unit	3.select suitable braking resistor	
				4.acceleration curve is too swift	4.check the connection of the braking resistor	
49	108		Deceleration	1. too high input voltage	5.reduce the curve rate of acceleration	Stop immediately

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
			overvoltage		and deceleration	ly; fault reset automatically
				2. large braking resistor and abnormal braking unit		
				3. acceleration curve is too swift		
50	109		Constant speed overvoltage	1. too high input voltage		Stop immediately; fault reset automatically
				2. large braking resistor and abnormal braking unit		
51	110		Undervoltage fault	1.sudden power off	1.check the external power supply and whether the power is off when the motor is running	Stop immediately; fault reset automatically
				2.too low input voltage	2.check the contacting layer of the input power supply	
				3.abnoraml drive control board	3.contact with the manufacturer	
52	111		Motor overload	1.wrong parameters setting	1.adjust the parameters	Stop immediately; fault reset automatically
				2.abnormal braking circuit	2.check the braking circuit	
				3.too heavy load		
53	112		System	1.braking circuit	1. check the braking	Stop

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
			overload	abnormal	circuit and braking devices	immediately; fault reset automatically
				2.too large load	2.reduce the load	
				3.check the encoder feedback signal	3.check the feedback signal of the encoder and the original angle of the encoder	
				4.check the parameters of the master	4.check the parameter setting of the name plate of the master	
				5.check the power cable of the master	5.check the power cable of the master	
54	113		Phase loss in input side	1. asymmetrical input power	1.set through the parameters	Stop immediately; fault reset automatically
				2.abnormal drive control board	2.check the 3 phase power supply in input side and the power voltage	
					3. contact with the manufacturer	
55	114		Phase loss in output side	1.loose connection of the output of the main circuit	1.check the contactor in input side	Stop immediately; fault reset automatically
				2.damage to the master	2.slove the master fault	
56	115		Overheat of the reticifier	1.sudden overcurrent	1.refer to the overcurrent	Stop immediately

No	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
			module		measurement	ly; fault
				2.output grounding short circuit	2.reconfigure	reset automatically
				3.air duct block or damage	3.dredge the air duct or change the fan	
				4.environment temperature is too high	4.reduce the temperature	
				5.control board or plug-in loose		
				6.damage to the assistant power and drive undervoltage		
				7.power module break-through		
58	116		Overheat of the inverter module	Main board abnormal		Stop immediately; fault reset automatically
59	118		485 communication fault		Check the parameters setting	
60	119		Current detection fault	1.bad connection of the control board	1.check the cable of the main board and the drive board	Stop immediately; fault reset automatically
				2.auxiliary power damage	2.check the main board or main	

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
					control board	ally
				3.Hall device damage	3.check the main board	
				4.amplifying circuit abnormal;		
				5.no enabling of the drive module		
61	120		Autotuning fault of the motor	1.wrong setting of the autotuning static current of the master	1.adjust the autotuning static reorganization current	Stop immediately; fault reset automatically
				2.wrong parameters setting	2.set the ratedparameters according to the name plate of the motor	
				3.the capacity does not match that of the drive board	3.check the motor connection	
				4.the running contactor does not close	4.change the drive board	
62	121		Encoder offline	Encoder damage or offline	Check the encoder and the connection Check the braking Check the speed setting	
64	122		Encoder reversion	Signal wires reverse	Serious sliding;change the direction of the	Stop immediately; fault

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
					encoder and reautotuning of the master	reset automatically
65	126		Braking circuit fault	1.damage to the braking circuit or braking pipes	1.check the braking unit	Stop immediately; fault reset automatically
				2.low external braking resistor	2.replace new braking pipe	
					3.increase the braking resistor	
66	131		CPU abnormal	CPU communication overtime	1.reatart after the power off in the system	Stop immediately; fault reset automatically
					2.replapce the main controller	
67	132		Excessive speed deviation	1.excessive rotating speed deviation	1.check the encoder and the connection	Stop immediately; fault reset automatically
				2.running fast	2.add the gain	
				3.overaadjustme nt of the system	3. contact with the manufacture	
68	137		With running signal, but without hardware enabling signal	1.disconnectiono fthe hardware enabling wires	1.check the circuit and the connection	Stop immediately; fault reset automatically
					2.contact with the manufacture	
69	138		Motor short circuit to	1.damage to the motor wires .	1.check the motor connection	Stop immediately

No .	Fault code of controller	Fault code of LED	Fault instruction	Fault reason	Solution	Method
			the ground Software fault	contact with the shell. 2. Motor insulation damage, contact with the shell	2.Check the motor insulation	ly; fault restore, fault reset when power off
70	139		Motor short circuit to the ground Hardware fault	1.damage to the motor wires . contact with the shell. 2. Motor insulation damage, contact with the shell	1.check the motor connection 2.Check the motor insulation	Stop immediately; fault restore, fault reset when power off

Chapter 13 Appendix

13.1 10-2-16 Binary table

Decimal	Binary	Hexadecimal
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F

13.2 Definition table

Displayed						
Meaning	0	1	2	3	4	5
Displayed						
Meaning	6	7	8	9	A	B

Displayed						
Meaning	C	D	E	F	H	L
Displayed						
Meaning	P	T	U	TU		

13.3 Meaning of special characters

Serial No.	Picture	Meaning
1		Displaying in the inspection car "=" means the elevator is in the leveling position of 12 th floor
2		Displaying outside the car means the inspection state
3		Displaying outside the car "F" means the elevator is full running
4		Monitor inside the car "OL" means overload
5		Up arrow means the elevator is going to go up. Rolling arrow means the elevator is going up. The quicker the rolling speed is, the faster the elevator is running.
6		Down arrow means the elevator is going to go down. Rolling arrow means the elevator is going down. The quicker the rolling speed is, the faster the elevator is running.

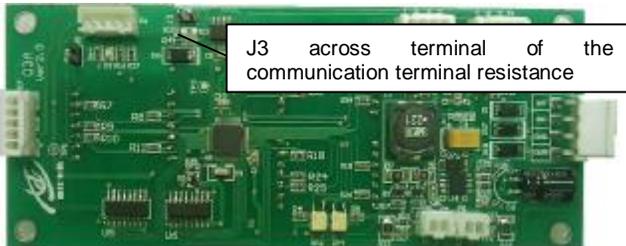
7		The monitor is in the state of floor setting.
8		The monitor is in the state of multiple-function displaying.
9		“V” means the version of the elevator. 12 means version 1.2. Display when power on.
10		The elevator is locked.

13.4 Communication terminal resistance and communication indicator

13.4.1 Terminal resistance of DC-03A monitor

J3 on DC-03A is the across terminal of the terminal resistance.

The displaying board on the bottom floor and in the control box need to short-circuit.



The communication resistor is usually 600ohm when all connection is normal. If the it is 120ohm, there is a communication terminal resistance lost.

13.4.2 communication indicator and instruction of the operational panel

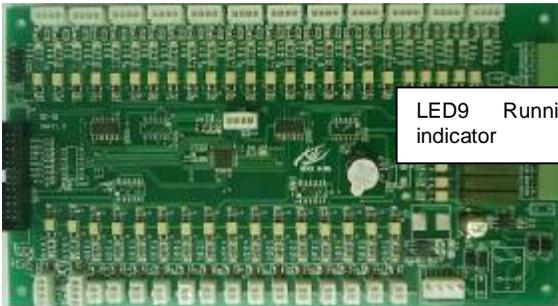


Code	Indicator name	Indicator instruction
Cc	Car communication indicator	Flashing when communication is connected

		Off when no communication
Lc	Elevator lock indicator	On when elevator is locked.

13.4.3 DC-01 communication indicator

Code	Indicator name	Indicator instruction
LED9	Running communication indicator	Flashing when normal communication. On and off when abnormal communication



13.4.4 DC-03A communication indicator

Code	Indicator name	Indicator instruction
D3	Running communication indicator	Off when normal communication Flashing when no communication

