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Introduction

SJT-WVF5-A elevator control system is hi-tech smart production, which function is more powerful and debug and maintenance is more convenient. Besides elevator general function, it has the function of parameter set, function selection, debug and maintenance and field adaptation.

System's general control mode is serial communication and frequency conversion timing. It adapts that total floors are smaller than 64 and elevator speed is smaller than 4m/s. It may be equipped with all kind of elevator motors include permanent magnet synchronous motor.

SJT-WVF5-A elevator controller (main board, COP and landing call board) MCU is 32 bits FUSITSU microprocessor, which integrate degree and reliability are first-class in the world. FUJITSU is a famous industrial MCU manufacturer. It is Software technology characteristic that function is perfect, setting parameter interface is clearly arranged, debugging and diagnostic information is sufficient, resistance interference is powerful and intensity of interference evaluates. We design diagnostic interface for electric components except elevator control system. Elevator diagnose has a definite object in view. It realizes high performance and reliability united, high level and practicability united and hi-tech and simple usage united.

Warning:

When user makes use of SJT-WVF5-A system, you should strictly accord to national elevator standard and read used inverter manual in detail. All of parts related to safety are warning to user.

Informing

This control system was examined by China National Elevator Inspection and Testing Center, matching various inspections request.NO:L0454

CAUTION

Symbol and diagram refers to drawing attached machine, which may be changed in this manual.

Chapter 1 Control System Function

1.1 General Function

1.1.1 Inspection Running

There are 3 inspection switches, which are car top inspection switch, car inspection switch and control cabinet inspection switch. Their priority decreases one by one. If the high priority switch is valid, the low priority switch will be invalid. When push down up-run/down-run button on inspection running mode, elevator runs up/down at inspection speed, it will stop, if you release button. System close/open door is push-start and release-stop mode on inspection running mode.

1.1.2 Automation Running (no Attendant)

When control cabinet switch is set to 'normal position', COP switch is set to 'automation' position and the other inspection switch is invalid, elevator runs on automation mode. Landing call register rule is that elevator services the same direction call and elevator services the opposite direction call at the highest (lowest) floor. After leveling it automatically open door, then it will close door in delay time, which can be set in menu. If close door button is push down, door will be closed ahead of delay time. If there is landing call on current floor, door is opened automatically. When all of register calls are serviced, elevator returns to homing floor.

1.1.3 Attendant Running

When control cabinet switch is set to 'normal' position, COP switch is set to 'attendant' position and the other inspection switch is invalid, elevator runs on attendant mode. On attendant mode, car call is register. If there is landing call, corresponding car call light in car will blink. Elevator services the same direction call. After leveling it automatically open door, but it don't close door until close door button be push down.

1.1.4 Automatically Open Door After Power on

If car at leveling zone when elevator is powered on, door is opened automatically.

1.1.5 Automatically Close Door Time Setting

On automation running mode, elevator automatically opens door and close door in delay time when it stops. Delay time is set by open door holding time. When elevator stops for car call, delay time is T (set time); When elevator stops for landing call, delay time is T-2s; when elevator stops for both car call and landing call, delay time is 2T.

1.1.6 Open Door for Current Floor Landing Call

If landing call button is pressed at current floor when door is closing or closed but elevator doesn't start, door will be opened automatically. Delay time is set by open door holding time.

1.1.7 Safety Edges for Door or Photoelectric Board Protection

If the safety edges for door or the photoelectric board is activated when door is closing, closing action stops at once, door is opened and closed again. If safety edges or photoelectric board action isn't cleared up, door isn't closed.

1.1.8 Full Load By-pass and Over Load don't Close Door

If load device is installed, elevator responds to car call and not to landing call when it is full load. If elevator is over load, the car will remain at the floor with door open, overload indicator light is light, buzzer sounds, 'CZ' is displayed on COP and close door button is valid. It will restore normally after overload is clear up.

1.1.9 By-Pass on Attendant Control Running Mode

On attendant control running mode, elevator responds to car call and not to landing call if by-pass button is pushed down.

1.1.10 Running State Display

Elevator state, direction, floor, door state, load and fault information may be displayed on LCD

1.1.11 Automation Control Light

Car light is turned off automatically, if elevator isn't used within 15 minutes. It will be turned on after receiving any call.

1.1.12 Fire Mode

When fire switch is closed, system enters into fire mode. It clears up all calls and return to fire floor and keep door opening. If elevator direction is opposite, it stops at nearest floor without open door and returns to fire floor and keep door opening. When it arrives at fire floor, it output fire signal.

There are two kinds of fire mode for user to choose:

- a. Mode 1: elevator returns to fire floor and stops service.
- b. Mode 2:
 - (a) Landing call is invalid.
 - (b) Door keep opening at fire floor.
 - (c) When elevator is needed to start service, fireman pushes down car call button and presses close door button until door closed. If close door button is released before door closed, door is opened at once.
 - (d) When elevator arrives at target floor, door is closed. Fireman presses open door button until door opened. If open door button is released

before door open, door is closed at once.

(e) Only one target floor can be set in every times fire running process.

1.1.13 Automatically Stop for Fault

When elevator stop out of leveling zone for fault, it should be automatically leveling to leveling zone and open door if safety circuit and inverter are both normal

1.1.14 Parking

When electronic lock is closed on automatic running mode, elevator enters into parking mode. Elevator doesn't respond to landing call. If there is car call, it finishes all car call service and returns to parking floor (set). Otherwise, it returns to parking floor directly. After it arrives at parking floor, it doesn't respond to landing call and landing call box and COP display 'ZT'. Door is automatically closed, light is turned off and display is cleared after 10 seconds. If anybody is in car, car call button or close/open door button is pressed, light will be turned on. He can leave car by pushing down close/open door button. Door is automatically closed and light is turned off again after 10 seconds.

When electronic lock is closed on inspection mode, elevator can't return to parking floor, the other is the same as above.

CPU always keep working on parking mode, once electronic lock is opened elevator will exits parking mode and begin normal running process.

1.1.15 Twins Control

When the parallel connection interface of two elevators are connected by attached cables and corresponding parameters is set, elevator's running on twins control mode can be performed. It's character: When there is landing call, two elevators can respond to it at same time. One of them finishes the service by the rule of speediness and economy from their position and direction. Elevator efficiency is improved. When two elevators both haven't service, one returns to homing floor, another stays at there.

1.1.16 Group Control

BL2000 can controls 8 elevators on the group control mode.

1.2 Special Function

1.2.1 Hoistway Learning

System can learn and save the position of leveling zone and hoistway switch by hoistway learning.

On inspection mode, elevator will move up the hoistway form bottom limit switch position to top limit switch position, to learn every floor's position and hoistway switch position and save these data for ever.

Chapter 1 Control System Function

Note: in hoistway learning process, if abnormal phenomena is detected, system will abort hoistway learning process and provide corresponding error code, detail information of error code refer to appendix 5. .

Notice : after hoistway learning is complete, only “**success**” is displayed by LCD, hoistway learning is really successful.

1.2.2 Cancel Mistake Operating

When passenger press car call button by mistake and this call is registered (light on), it can be canceled by pressing the button again if elevator has not started.

1.2.3 Prevent Making Trouble

- (1) When elevator arrives at farthest floor and changes direction, it clears all car call registers.
- (2) If load device is installed, only three call may be registered when elevator is in light load state, If a fourth call is entered, it is invalid.

1.2.4 Landing Call Button Inset Self Diagnose

When landing call button is press over 20s, this call is invalid. The corresponding light blinks to alarm. When the button is released, system restore normally.

1.2.5 Repeat Close Door

After perform close door command, if door inter-lock circuit hasn't been is connected, elevator opens door and closes it again. If the action repeats 5 times, door inter-lock circuit still hasn't been is connected, system stops service to wait for inspection and display fault code.

1.2.6 Close/Open Door and Call At Machine Room

You can input close/open door and car call command by LCD operation.

1.2.7 Bypass Floor Setting

By setting bypass floor, elevator will not stop this floor.

1.2.8 Homing Floor Setting

On automation mode, if there are no car call and landing call in some time, elevator will returns to homing floor (only one).

1.2.9 Displaying Character Setting

Displaying character may set by LCD operation, which is letter or figure.

1.2.10 Attendant Select Direction

On attendant mode, attendant has priority to determine running direction by pressing up-run/down-run button.

1.2.11 Timing Start/Stop Service Automatically

User may set start/stop service time by practical requirement.

- (1) The 24 hours time format is adopted
- (2) If the automatic start/stop service time is set to 0, this function is canceled.
- (3) The principle that electronic lock with high priority: This function is valid in electronic lock is switched on, if it is switched off, elevator works on parking mode.
- (4) To run the car in automatic stop service mode, following operation should be performed:
A: move electronic lock switch from open to close, wait for 1 second, move electronic lock switch to open again, elevator will be forced to run normally.
B: after using elevator, move electronic lock switch from open to close, wait for 1 second and move electronic lock to open, exit forced running process and go into timing stop service mode.

1.2.12 VIP Running

If elevator has VIP input button, it can run on VIP mode. Landing call is invalid. Elevator is controlled by attendant. Door control mode is the same as attendant mode.

1.2.13 ARD Function (Automatic Rescue Device)

When ARD signal is input (default terminal is X15), elevator stop at the nearest floor at half creep speed under conditions that elevator is permitted to run. The door is opened and elevator is out of service. ARD is normally used when stand-by power is on after main power is off.

1.2.14 Automatically Close Door Delay Time (open door delay time) Setting

Elevator has a close door delay button. On automation mode, when this button is pushed down, open door holding time is open door delay time. This function is used in hospital elevator.

1.2.15 Two Doors Control

By setting two doors mode, the front and the back door's action can be controlled in corresponding floor. To obtain the definitions and setting of two doors mode, please refer to chapter 3.

1.2.16 Fault Diagnose

When fault occurred, WVF-V system diagnose fault and display fault information on LCD. The fault time, fault type and fault floor of the latest 10 faults is stored, maintenance man can refer to them. Refer to appendix 7.

1.2.17 Interference Evaluation

EMI is potential threaten to MCU control elevator. Contactor action and PWM

generate interference to MCU unit and communication wire, even it makes system abort or result in malfunction. WVF-V system not only takes steps to improve is anti-jamming ability, but also evaluates system connection with ground. It conducts maintenance to eliminate hidden trouble and provides more safe and reliable circumstance. This function only can be used after system's installation and debugging is finished.

1.2.18 Encoder Evaluation

Encoder is a component detecting elevator speed and position, encoder's performance and installation is key factor to elevator running. Many faults is arisen from encoder. WVF-V system analyse and evaluates encoder pulse signal and avoid elevator's fault which brought by encoder , it can conducts maintenance man to eliminate trouble of tingling and leveling.

1.2.19 Input Port Evaluation

Because traveling cable, hoistway cable and MCU unit is parallel connected, the interference can't be neglected, which may lead to display error and leveling fault. WVF-V evaluates input signal and display the result on LCD. It conducts maintenance lay out cables and solves above problem completely.

1.2.20 Emergency Automatic Leveling run

After power off, emergency automatic leveling device can supply power to elevator until elevator run to leveling floor and passenger leave safely.

It must to meet following condition for elevator to run to level floor automatically

1. After power off ,emergency automatic leveling control device supply power to elevator (main board emergency automatic leveling input X18 is valid).
2. Elevator is not on inspection mode.
3. Elevator is out of door zone.
4. There are no fault which make elevator stop.
5. Door inter-lock circuit signal is normal.

The process of elevator emergency automatic leveling running as follow:

1. According to the load, the elevator determine the running direction automatically;
2. Running to the nearest floor, the elevator stop and open door, at same time, the elevator keep door opening; after delaying some time, the emergency automatic leveling device cut power off.
- 3 After elevator 's power supply is restored, if emergency automatic leveling running process has been recorded, the elevator will return to bottom floor and revise scale.

In door zone, when emergency automatic leveling device supply power(main board emergency automatic leveling input terminal X18 is valid),elevator open door automatically.

Remark:

Because WVF-V system adopt the emergency automatic leveling running device, the blueprint of WVF-V system control cabinet is different from the standard

blueprint, please ask technology department for reference blueprint if this function is used. To use SYT-YY elevator emergency automatic leveling device, please refer to appendix 3: SYT-YY elevator emergency automatic leveling device user guide.

1.2.21 Special Function for Handicapped

Because of special COP and landing call button, it is convenient for handicapped to ride elevator.

1. Set parameter to start the special function for handicapped .
2. The special COP: with car call button and open close door button for handicapped.
3. The special landing call button: by address, WVF-V system can distinguish handicapped landing call from normal landing call.
4. The principle of handicapped use elevator: in leveling zone, if the handicapped press car call button or landing call button, WVF-V system will prolong the open door holding time (open door delay time can be set), if the handicapped press open door button, open door holding time will be prolonged.

Remark:

(1) Landing call panel address setting:

- ◆ When mainboard's handicapped function is set, (function selection F14=ON), landing call panel's address should be set as follow principle:
 - ◇ 1~32 is the absolute address of normal landing call, 1 is the address of lowest floor's; 2 is the address of the second lowest floor, 32 is max floor address, the total floor address is 32.
 - ◇ 33~64 is the absolute address of handicapped landing call, 33 is the address of the lowest floor, 34 is the address of the second lowest floor, 64 is the max address, the total floor address is 32.
 - ◇ If there is only a kind of landing call in some floor, the other landing call address must be null.
- ◆ car call button's connection :
 - ◇ 1~n floor car call button wire should be connected to car's 1~n floor car call interface as normal car call. n+1~n+n's car call button be used as handicapped special car call button.
 - ◇ COP open **door** 2 input、close **door** 2 input be used as handicapped special open/close door input。

1.2.22 Pre-opening Door

In order to improve running efficiency, WVF-V system will open door ahead of schedule when elevator slow down. If elevator run to door zone of target floor and meet following condition, the system will open door ahead of schedule.

1. The elevator slow down normally when elevator near to target door zone.
2. Two sensor of pre-opening door is valid.
3. Elevator's speed is lower than the setting speed of pre-opening door.
4. The inverter's low speed output is valid.
5. The output fo Safety circuit board is valid

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When special parameter 's function selection parameter FU20=ON, pre-opening door function is valid; to know pre-opening/re-leveling function collection principle graph and explain, please refer to appendix 5.

1.2.23 Re-leveling

When elevator stop at current floor and passenger enter or leave car, because the rope is stretched or shortened , car deviate from leveling zone (one of door zone sensor come away) ; Elevator will run into leveling point in low speed with opening door. Re-leveling running condition:

1. Elevator has deviated from leveling zone, when elevator stop
2. Two sensor of pre-opening is valid.
3. Elevator's speed is lower than the re-leveling protection setting speed.
4. The inverter's low speed output is valid
5. The output fo Safety circuit board is valid

When special parameter 's function selection parameter FU19=ON, re-leveling function is valid; Want to know pre-opening/re-leveling function collection principle graph and explain, please refer to appendix 5.

1.3 Safety Protection

1.3.1 Safety Circuit Protection

If safety circuit is cut off, elevator stops running at once.

1.3.2 Door Inter-lock Protection

Only all door inter-lock is closed, elevator can start running. If door inter-lock is opened or oscillating, elevator will stop running.

1.3.3 Running contactor Protection

System may check main circuit contactor action, if there is abnormal (e.g. conglutination), elevator will stop running.

1.3.4 Braking Detect Protection

By breaking detect switch, system can real time monitor brake's open and close. When brake can't open, system will forbid elevator to start.

1.3.5 Terminal Reversal and Leveling Revise

When system detects terminal switch in running process, elevator is forced to slow down and revise floor indication automatically.

1.3.6 Normal Limit Protection

When system detects normal limit switch, elevator stops at once.

1.3.7 Final Limit Protection

When system detects final limit switch, system is powered off.

1.4 Select Function

1.4.1 Remote Monitor

You may real time monitor elevator running in remote monitor center by wire or wireless module.

1.4.2 Traction Motor Selection

System may be equipped with asynchronous/synchronous motor or gear/gearless traction machine.

1.4.3 Arrival Bell (Arrival Chime)

Arrival bell (Arrival chime) prompt that your target floor has arrived

1.4.4 Voice Report

Voice report device can report Elevator running direction and current floor in voice.

1.4.5 ID Identification

ID/IC card can be identified.

Chapter 2 Control System Combination And Installation

2.1 Control System Combination

2.1.1 System Structure and Schematic Diagram

Figure 2-1 is system structure. Main board BL2000-STB is main control unit. It exchanges data with COP and landing call box by CAN BUS. It collects data from hoistway and safe circuit by parallel sample signal method. MCU analyzes these data, then it outputs control and response signal to control inverter, door machine and braking device. The system provide logic function, fault diagnose and direct stop function etc.

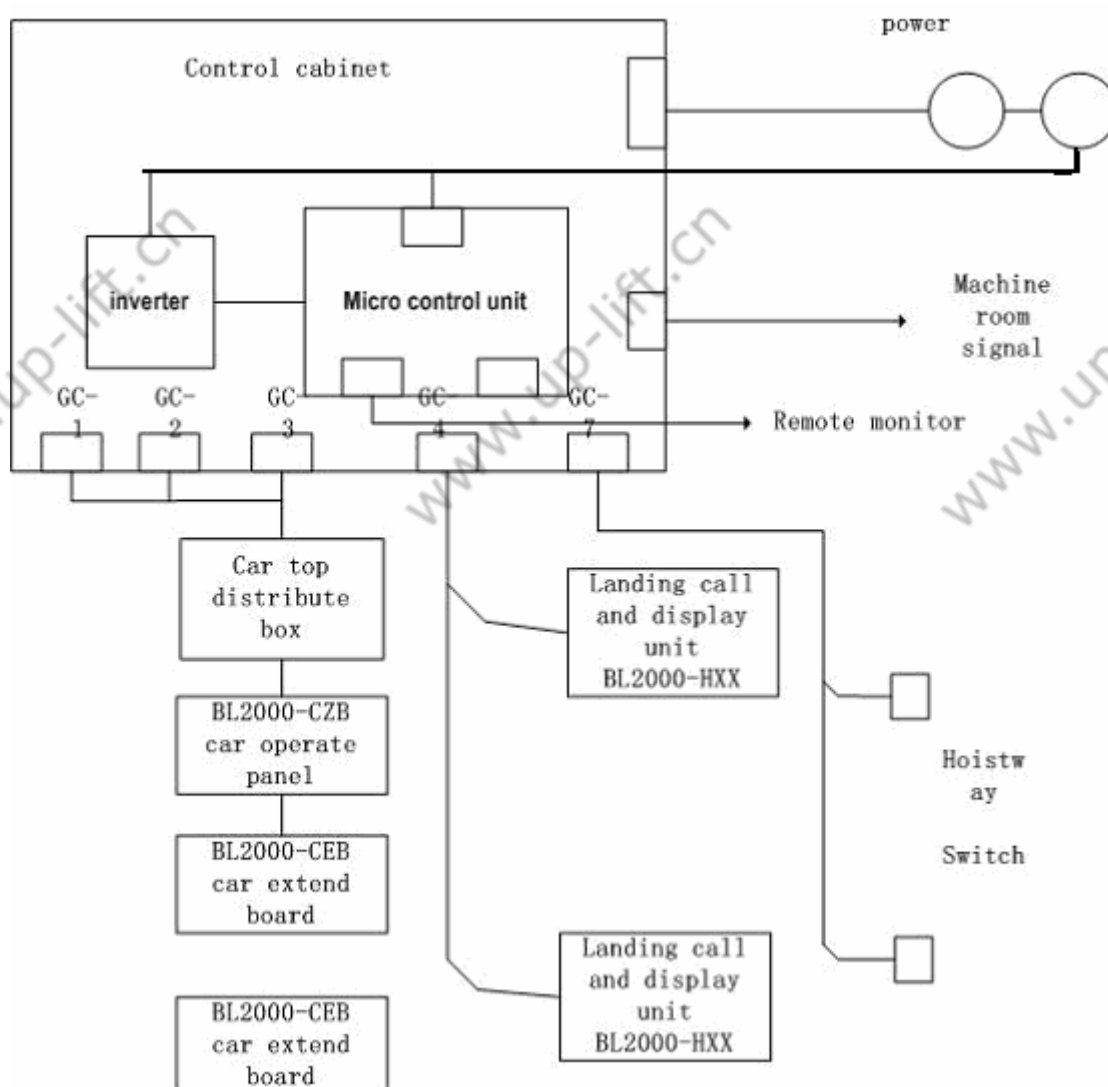


Figure 2-1

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2.1.2 Control System Combination

Figure 2-2 is components and parts of an apparatus lay out. The position may be modified, it is only for refer to.

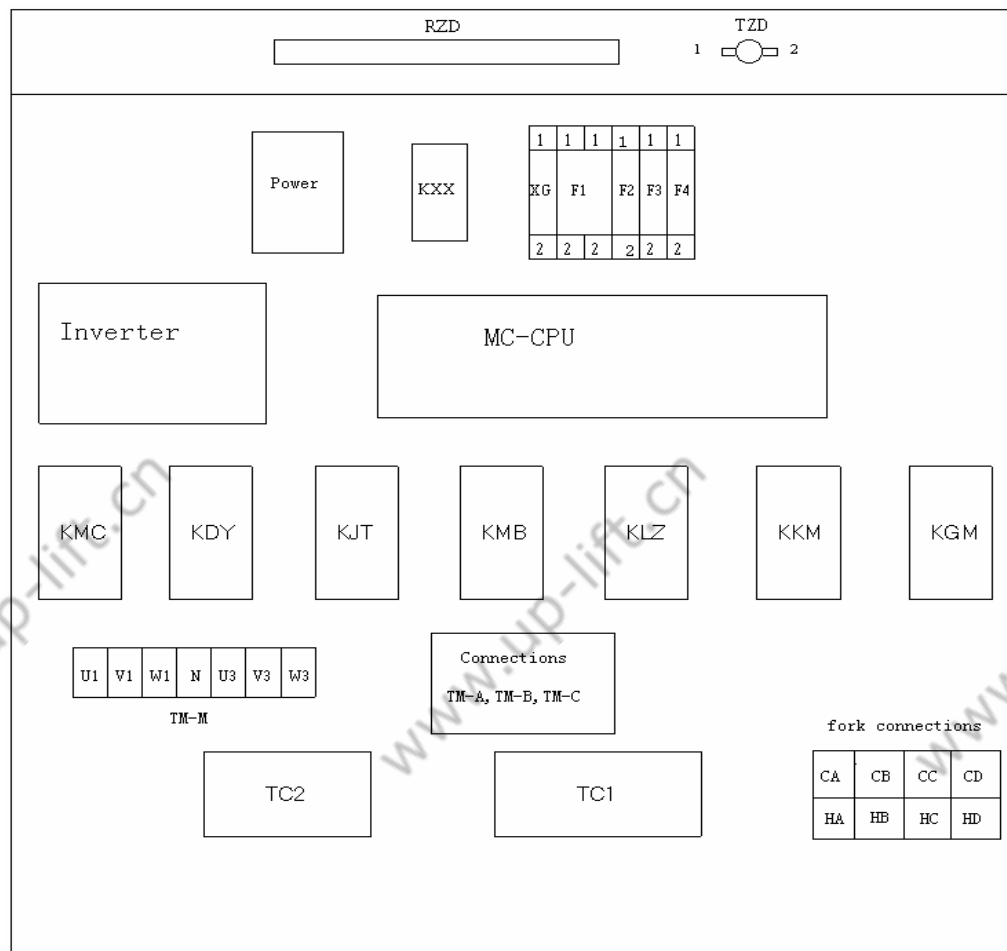


Figure 2 – 2 Control Cabinet's Layout

(1) MCU BL2000-STB

Main board is the control system kernel, all of control instruction is sent by it.
Refer to 2-3.

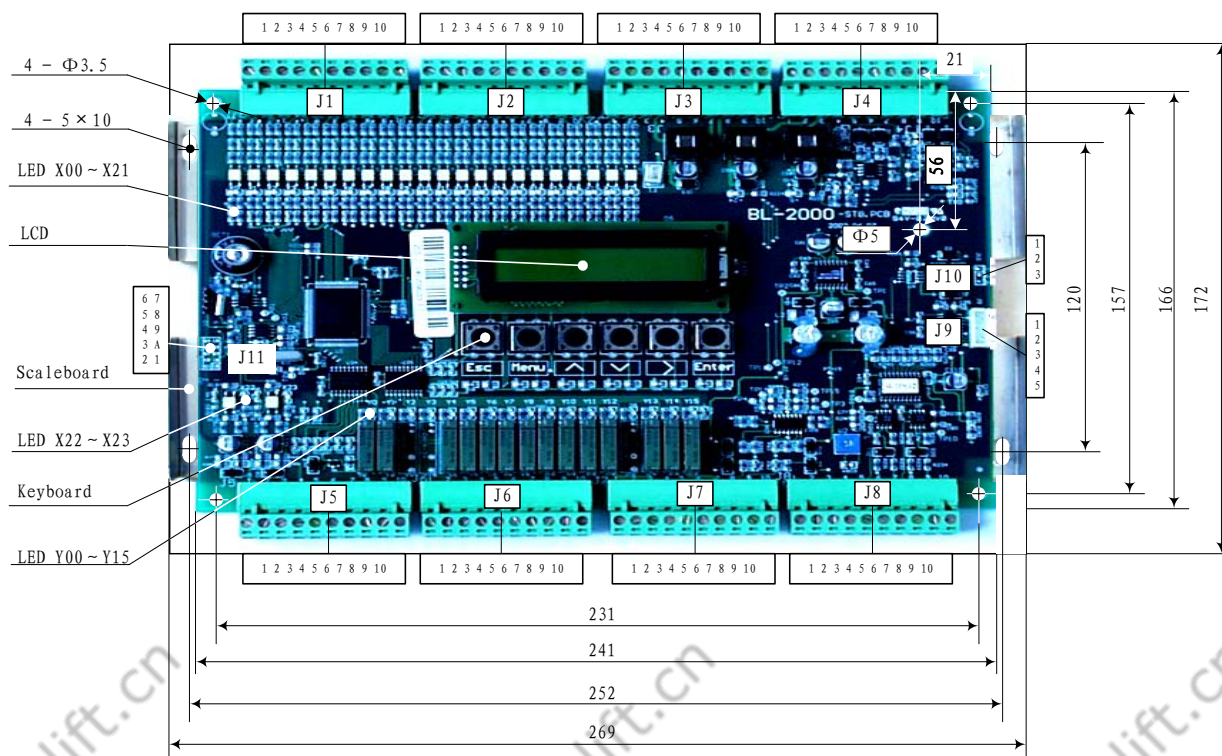


Figure2-.3 BL2000-STB Profile and Dimension

Table 2-1 Main Board Input Signal X0~X19 Ports:

Port	Position	Define	Port	Position	Define
X0	J1-1	Inspection input	X10	J2-1	Down leveling input
X1	J1-2	Up running input	X11	J2-2	Inverter fault input
X2	J1-3	Down running input	X12	J2-3	Fire input
X3	J1-4	Top terminal 2 input	X13	J2-4	Emergency stop input
X4	J1-5	Bottom terminal 2 input	X14	J2-5	Door Inter-lock input
X5	J1-6	Top limit input	X15	J2-6	ARD input
X6	J1-7	Bottom limit input	X16	J2-7	Running contactor input
X7	J1-8	Top terminal 1 input	X17	J2-8	Braking feedback input
X8	J1-9	Bottom terminal 1 input	X18	J2-9	Emergency automatic leveling input
X9	J1-10	Up leveling input	X19	J2-10	Inverter running input

Table 2-2 Main Board Input Signal X20~X21Ports:

Port	Position	Define	Port	Position	Define
X20	J3-1	Electronic lock input	X29	J3-6	Multi-function input
X21(*)	J3-2	Heat sensitive switch	GND2	J3-7	24Vground

X26	J3-3	Re-leveling condition input
X27	J3-4	Re-leveling sensitive signal input
X28	J3-5	Multi-function input

GND2	J3-8	24Vground
GND2	J3-9	24Vground
24V2	J3-10	24V X0~X21 common

Table 2-3 Power and Communication Port:

Port	Position	Define
GND3	J4-1	0V
24VIN	J4-2	24V input
GND3	J4-3	0V
5VIN	J4-4	5V input
24VOT	J4-5	24V output

Port	Position	Define
1H	J4-6	Twins control/Group control communication TXA+
1L	J4-7	Twins control/Group control communication TXA-
GND1	J4-8	0V
2H	J4-9	Landing call /car call communication TXA+
2L	J4-10	Landing call /car call communication TXA-

Table 2-4 Including 2 COM Inputs and 2 or More Outputs (COM1):

Port	Position	Define
X22	J5-1	110V emergency stop input +
X23	J5-2	110V emergency stop input -
X24	J5-3	110V door inter-lock input +
X25	J5-4	110V door inter-lock input -
	J5-5	Void

Port	Position	Define
	J5-6	Void
COM0	J5-7	Y16、Y17 common
Y0	J5-8	Re-leveling output
Y1	J5-9	Fire output
COM1	J5-10	Y0-Y1 common

Table 2-5 Main Board Digital and Analog Output:

Port	Position	Define
Y2	J6-1	Open door 2 contactor control output
Y3	J6-2	Close door 2 contactor control output
Y4	J6-3	Open door 1 contactor control output
Y5	J6-4	Close door 1 contactor control output
COM2	J6-5	Y2~Y5 common
Y6	J6-6	Braking control output
Y7	J6-7	Braking Economical resistance control output

Port	Position	Define
Y10	J7-1	Inverter up control output
Y11	J7-2	Inverter down control output
Y12	J7-3	Inverter enable output
Y13	J7-4	Multi-speed given X1 output
Y14	J7-5	Multi-speed given X2 output
Y15	J7-6	Multi-speed given X3 output
COM4	J7-7	Y10~Y15 common

Y8	J6-8	Main contactor control output
Y9	J6-9	Running contactor control output
COM3	J6-10	Y3~Y9 common

VB	J7-8	Load compensation analog voltage output
VS	J7-9	Analog speed given output
GND3	J7-10	Analog 0V

Table 2-6 Main Unit Encoder Signal Input:

Port	Position	Define
15VB	J8-1	15V input
0VB	J8-2	0V
5VB	J8-3	5V input
	J8-4	Void
A	J8-5	A phase (pull-push output)

Port	Position	Define
B	J8-6	B phase (pull-push output)
A+	J8-7	A +phase (long line drive)
A-	J8-8	A -phase (long line drive)
B+	J8-9	B+ phase (long line drive)
B-	J8-10	B -phase (long line drive)

Table 2-7 Telecommuting Port (Wire or Wireless):

Port	Position	Define
	J9-1	(v2: control) (v9: +5V)
	J9-2	(V2: RX) (V9: RX)-
	J9-3	(v2: control) (v9: TX)
	J9-4	(v2: control)
	J9-5	Communication 0V

Table 2-8 RS485 Ports

Port	Position	Define
DA+	J10-1	Communication DA+
DA-	J10-2	Communication DA+
0V	J10-3	Communication 0V

X0~X21 LED: X0~X21 input signal indicator

X22~X23 LED: X22~X23 input signal indicator

Y0~Y15 LED: Y0~Y15 output signal indicator.

(2) Inverter: It is driving device and controlled by main board.

(3) TC1: control power transformer. Power supply for control cabinet is provided by it. Input: 380VAC; output: 220VAC and 110VAC.

(4) TC2: safe light power transformer. It provides power for control cabinet jacklight. Input: 220VAC; output: 36VAC.

(5) Switch power: main board power. Input: 220VAC; output: 24V DC and 5VDC. It is connected to ground. Otherwise, it may work abnormally.

(6) KXX: phase sequence relay.

(7) F1-F4: air switch. F1: main power switch; F2: 110V control power switch; F3:

- 22V control power switch; F4: light power switch.
- (8) KMC: main contactor. It controls inverter power, when it is picked, inverter begin works.
 - (9) KDY: running contactor. It controls circuit between inverter output and motor, when it is picked, the circuit works.
 - (10) KJT: emergency stop contactor. When emergency stop circuit is connected, KMB is picked.
 - (11) KMB: door inter-lock contactor. When door inter-lock circuit is connected, KMB is picked.
 - (12) KLZ: braking contactor. When it is closed, brake is released.
 - (13) KJR: economical resistance contactor. When it is released, economical resistance is connected.
 - (14) KKM: open door contactor. When it is closed, door machine opens door.
 - (15) KGM: close door contactor. When it is closed, door machine closes door.
 - (16) RZD: braking resistance.
 - (17) TZD: thermal switch of monitoring braking resistance. When temperature is higher than 100°C, it is opened.
 - (18) KER: inverter fault relay. When inverter faults, it is released (only for KEB serial inverter).
 - (19) RF1: rectifying bridge. Output: 110VAC.
 - (20) D1: discharge current diode.
 - (21) RLZ: discharge current resistance.
 - (22) RJ: braking economical resistance.
 - (23) TM-M: main circuit terminal.
 - (24) GC-1: COP communication cable jack.
 - (25) GC-2: traveling cable jack.
 - (26) GC-3: traveling cable jack.
 - (27) GC-4: landing call box communication cable jack.
 - (28) GC-7: hoistway cable jack.
 - (29) JXH-B: loco mote inspection cable jack.
 - (30) TM-1, TM-2: 10A small circuit terminal.
- The definiens of above terminal and jack refers to schematic diagram.

2.2 System Installation

2.2.1 Hoistway and Traveling Cable Installation

When you install cables at field, all of you can do is that you put and install cables in hoistway.

- (1) hoistway cable include: landing call communication cable CB2, door inter-lock and hoistway signal cable CB3.

CB2 is 4 cores STP. One pair (24V, 0V) is used to control unit power supply; another is used to communication cable. Both branches are connected with landing

call unit by plug and jack. Cables top terminal is connected with GC-4 in control cabinet.

CB3 has 3 wires, two of which are connected with inter-lock switch, the others is ground wire, which should be reliably connected with conductor of door. Ground wire of CB3 is connected with control cabinet ground body. Hoistway trunk cable is connected with GC-7, branch cables are connected with top/bottom limit, top/bottom terminal and pit switch. All of branches are fixed interval 1.5m at same level.

- (2) Car traveling cable CB5 is 36 cores and 4core STP flat cable. When rise is higher than 70m, rope should be added to it. One terminal is connected with GC-1,GC-2and GC-3, another is connected with DC-1, DC-2 , and DC-3.
- (3) When you are welding, remember that neuter wire of welding machine should be connected with welded object, it is forbid that neuter wire of welding machine is connected with ground wire in elevator cable, otherwise, cable may be destroyed.

2.2.2 Control Cabinet Installation and Connection

There are 7 terminals in main circuit connector. U1, V1 and W1 are 3-phase power input. Power from distribute room input into U1, V1 and W1 through air switch, N is neuter wire. The section area of wire is determined by load. If load is 15KW motor, the section area is no less than 10mm². U3, V3 and W3 are connected with motor coil. It should be avoid that two groups terminal being connected mistakenly when control cabinet electrical connections are made, else inverter will be destroyed after power on. Power cable should be isolated from signal cable, if they are putted into the same slot, system may work unreliably. Cable between motor and control cabinet is as short as possible (<5m), the section area should be increased if output power is wasted too much.

GC-1, GC-2,GC-3, GC-4,GC-7,JXH-B terminals are plug or jack.

GC-1 and GC-4 are serial communication port. Which are connected with COP communication cable and landing call communication cable respectively.

GC-2 and GC-3 are car power and signal cables, which are connected with traveling cable GC-2, GC-3

GC-7 is magnetic switch, safe circuit and light circuit cable, which is connected with GC-7 in CB3.

JXH-B mobile inspection box cable, it is connected with JXH-B in mobile inspection box.

C2 terminal. It includes coder, talk about and stand by port. There is safe circuit port in it.

Refer to schematic diagram.

2.2.3 Encoder Installation and Connection

Encoder is important detection component, which their quality has directly effect on system performance. Generally it is installed at factory, if it need to be installed at field, the following is noticed:

- (1) Countershaft encoder is installed at motor tail by soft cardo. Confirm concentric degree in encoder's installation. If it is poor, encoder can't steadily outputs pulse, elevator can't running smoothly, cardo may be destroyed. To avoid slide, the nail

is install at flat besides shaft. If cardo looses, system feedback is error and elevator tingles and don't leveling.

- (2) If there isn't axostyle, nesting encoder is installed at motor shaft. The diameter is confirmed before ordering. To avoid damaging glass bar, it is forbid to heavy strike. If it is installed properly, Encoder will not be vibrating when motor is revolving.
- (3) Encoder cable is correctly connected with inverter and MCU system. It will be destroyed by poor installation and wiring. encoder cable is putted into metal tube far from power cable. Notice: encoder shield can't be connected with motor ground wire.

2.2.4 COP Installation and Connection

Generally, COP and control board are installed before leaving factory, user only need to connect CB9 to car top wiring interconnect box. If distribute and maintenance are needed, refer to following:

2.2.4.1 Communication and power COP circuit board connection and extend

Figure 2-4 is circuit board connection

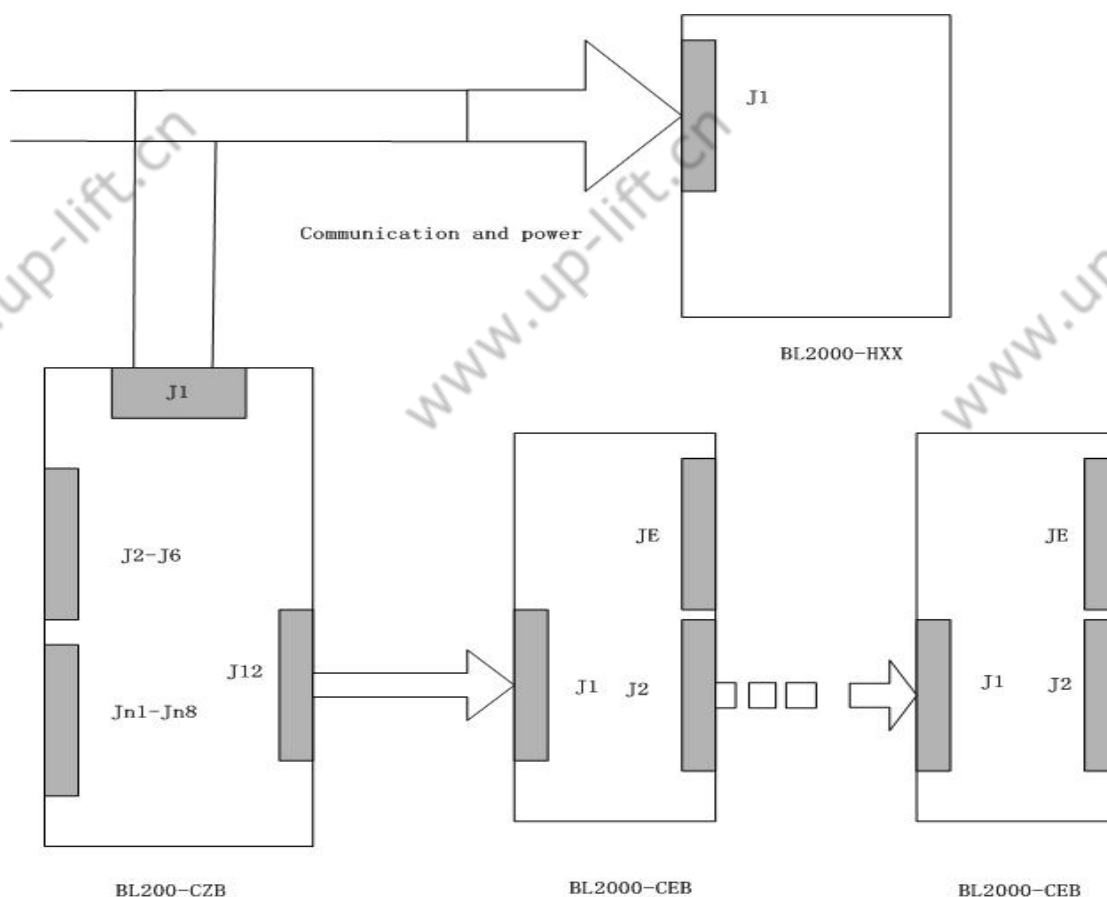


Figure 2-4 Circuit Board Connection

2.2.4.2 COP Main Unit BL2000-CZB

2.2.4.2.1 Introduction

COP main unit may connect to 8 floors car call signal. When total floors is beyond 8 floors, extend board NEB-01 is connected with J12, there are 8 floors car call every extend board, extend board may connected with other extend board too, the max number is 7.

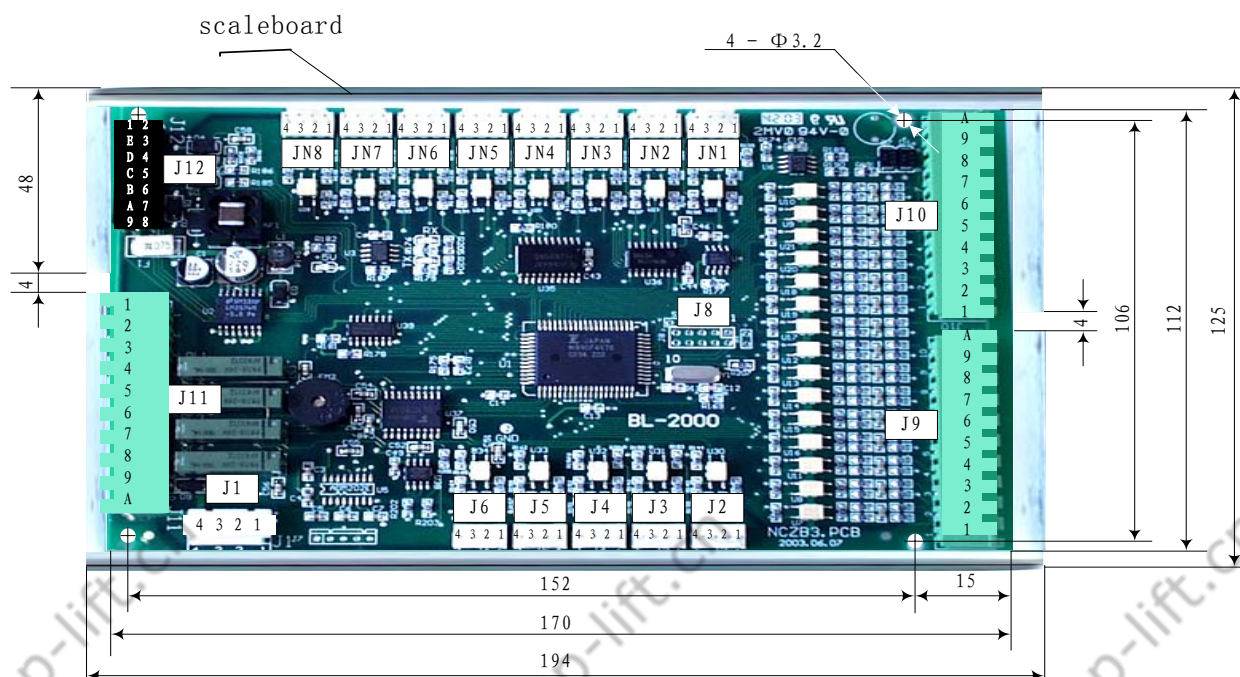


Figure 2-5 BL2000-CZB Profile and Dimension

2.2.4.2.2 Interface Circuit

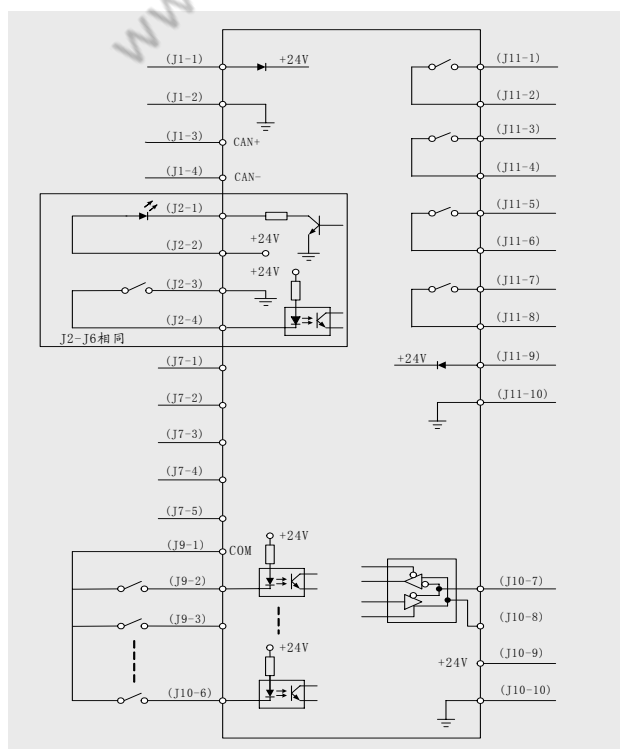


Figure 2-6 BL2000-CZB Interface Circuit

2.2.4.2.3 Interface Define

Table 2-9 The Interface Define and Special:

Name	Port	Position	Define	Use
J1		J1-1	24V input	Power and communication interface
		J1-2	0V input	
		J1-3	CAN BUS H	
		J1-4	CAN BUS L	
J2		J2-1	Open door button 1 acknowledge	Open door button 1 and acknowledge
		J2-2	24V output com	
		J2-3	0V input com	
		J2-4	Open door button 1 input	
J3		J3-1	Close door button1 acknowledge	Close door button 1 and acknowledge
		J3-2	24V output com	
		J3-3	0V input com	
		J3-4	Close door button 1 input	
J4		J4-1	Open door button 2 acknowledge	Open door button 2 and acknowledge
		J4-2	24V output com	
		J4-3	0V input ground	
		J4-4	Open door button 2 input	
J5		J5-1	Close door button 2 acknowledge	Close door button 2 and acknowledge
		J5-2	24V output com	
		J5-3	0V input com	
		J5-4	Close door button 2 input	
J6		J6-1	Open door delay button acknowledge	Open door delay button acknowledge
		J6-2	24V output com	
		J6-3	0V input com	
		J6-4	Open door delay button input	
J7		J7-1	RS232 receive	RS232 communication
		J7-2	RS232 sent	
		J7-3	0V Signal com	
		J7-4	RS232 output control	
		J7-5	RS232 input control	
J8 Programming Interface				
J9	CMM	J9-1	Input Common	Input
	KMV1	J9-2	Open door limit input	
	GMV1	J9-3	Close door limit input	
	KAB1	J9-4	Safety edge for door 1 input	
	CZ	J9-5	Overload input	
	MZ	J9-6	Full load input	
	KAB2	J9-7	Safety edge for door 2 input	
	QZ	J9-8	Light load input	
	KZ	J9-9	50% load input	

	SZH	J9-10	Attendant input	
J10	SZY	J10-1	VIP input	Input
	SZS	J10-2	By-pass input	
	ZHS	J10-3	Attendant directional upward	
	ZHX	J10-4	Attendant directional down	
	KMV2	J10-5	Open door limit 2 input	
	GMV2	J10-6	Close door limit 2 input	
	RT-	J10-7	Load detecting serial communication RT+	SJT-150 serial input
	RT+	J10-8	Load detecting serial communication RT-	
	24V	J10-9	+24V	
	CMM	J10-10	0V	
J11	BLV-	J11-1	Arrival Bell (chime) 1A	Output
	BLV+	J11-2	Arrival Bell (chime) 1B	
	N1	J11-3	Lighting control A	
	ZM	J11-4	Lighting control B	
	BK1	J11-5	Stand by 1A	
	BK2	J11-6	Stand by 1B	
	CZD	J11-7	Overload indicator light A	
	CMM	J11-8	Overload indicator light B	
	24V	J11-9	Auxiliary power +24V input	
	0V	J11-10	Auxiliary power 0V input	
J12	24V	J12-1、2	Power +24V input	Car call extend link
	5V	J12-3、4	Power +5V input	
	0V	J12-5、6	Power 0V input	
		J12-7~12	Communication terminal	
		J12-13、14	Null	
JN1~JN8		JNn-1	Acknowledge output	1~8 floor car call input and acknowledge output
	24V	JNn-2	+24V	
	0V	JNn-3	0V Input com	
		JNn-4	Car call input	

2.2.4.3 Car Call Extend Board BL2000-CEB

2.2.4.3.1 Introduction

BL2000-CEB is car call extend board.

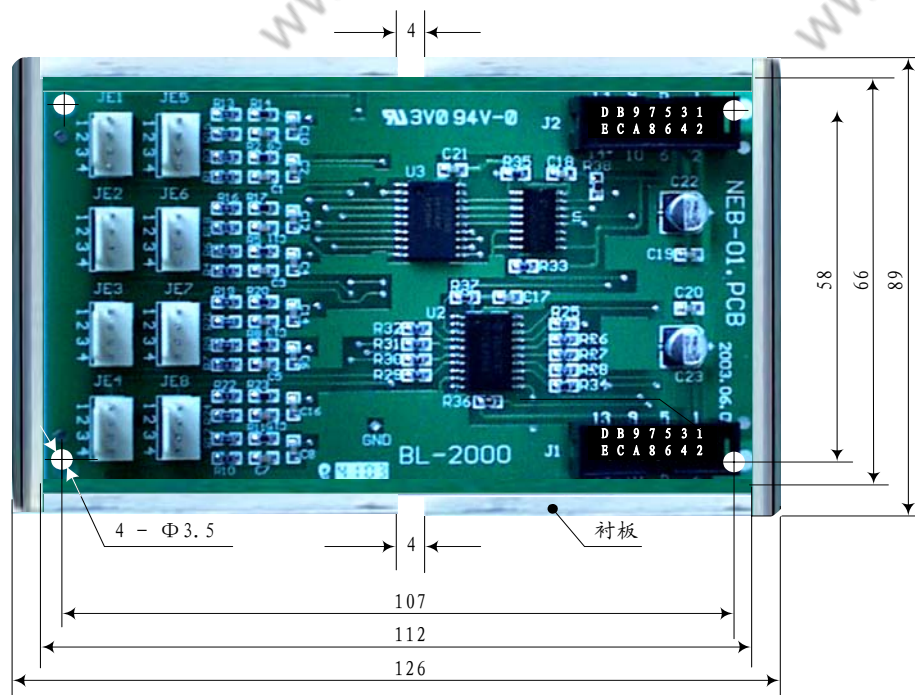


Figure 2-7 BL2000-CEB Profile and Dimension

2.2.4.3.2 Interface Circuit

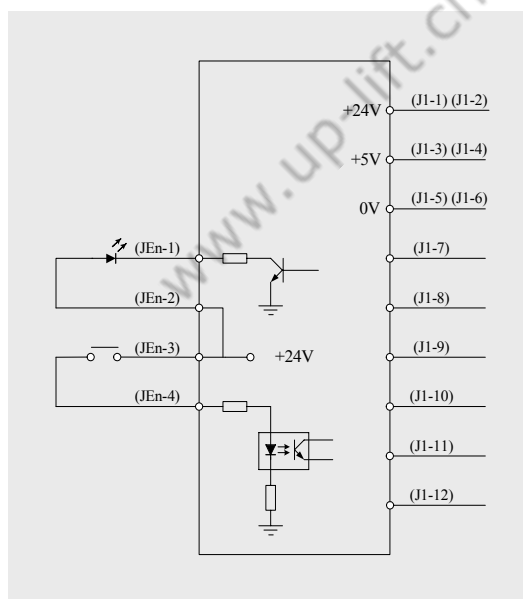


Figure 2-8 BL2000-CEB Interface Circuit

2.2.4.3.3 Interface define

Table 2-10 BL2000-CEB Interface Define

Name	Port	Position	Define	Usage
J1	24V	J1-1、 J1-2	Power +24V input	Previous board port
	5V	J1-3、 J1-4	Power +5V input	
	0V	J1-5、 J1-6	Power 0V input	
		J1-7~J1-12	Communication terminal	
			Null	

J2			Same as J1	Next board port
JEN		JEn-1	Acknowledge output	8i+1~8i+8 floor car call button input and acknowledge
	24V	JEn-2	+24v output com	
	24V	JEn-3	+24v Input com	
		JEn-4	car call input	

I: Extend board series No.

2.2.4.4 Landing Call and Display Unit BL2000-Hxx-xn

2.2.4.4.1 Introduction

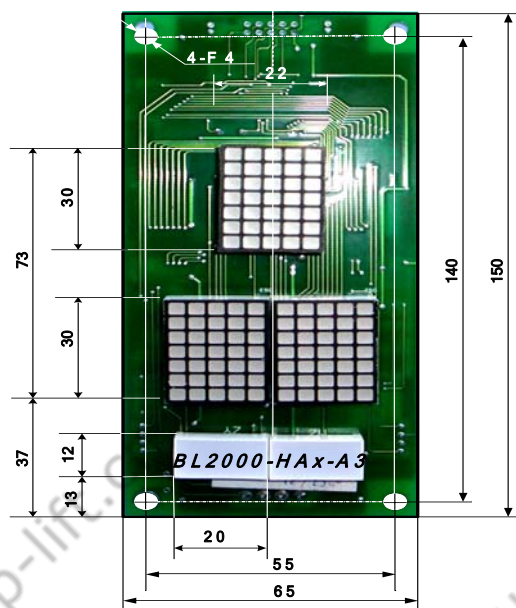


Figure 2-9 BL2000-HAX-A3 Profile and Dimension

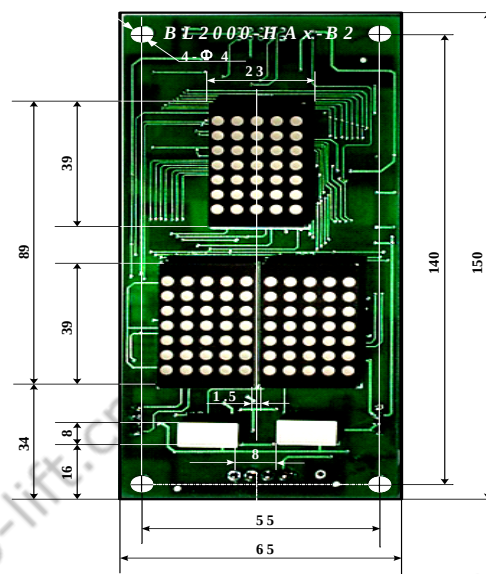


Figure 2-10 BL2000-HAX-B2 Profile and Dimension

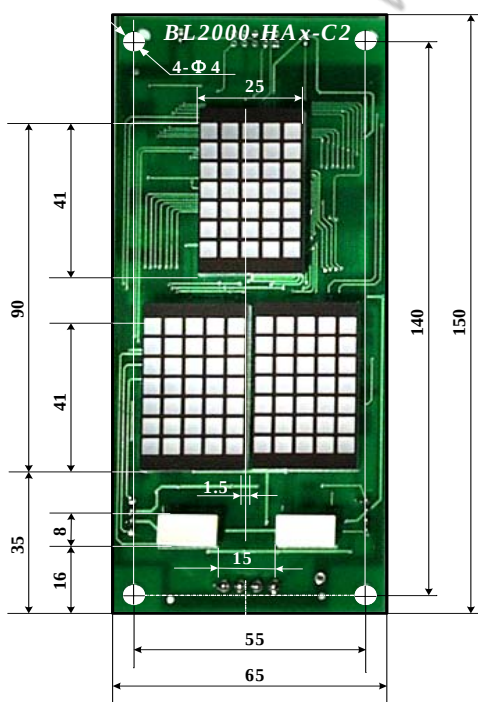


Figure 2-11 BL2000-HAX-C2 Profile and Dimension

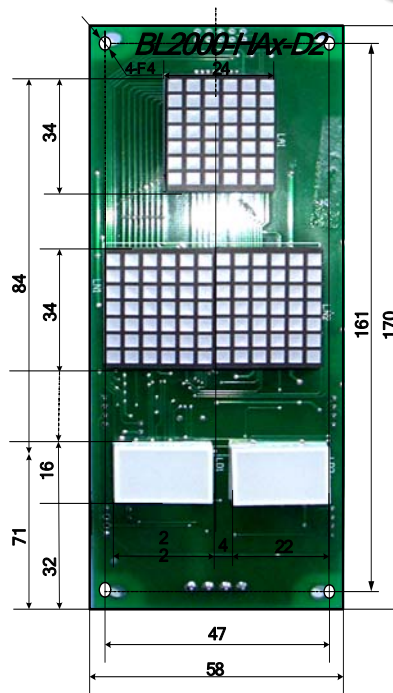


Figure 2-12 BL2000-HAX-D2 Profile and Dimension

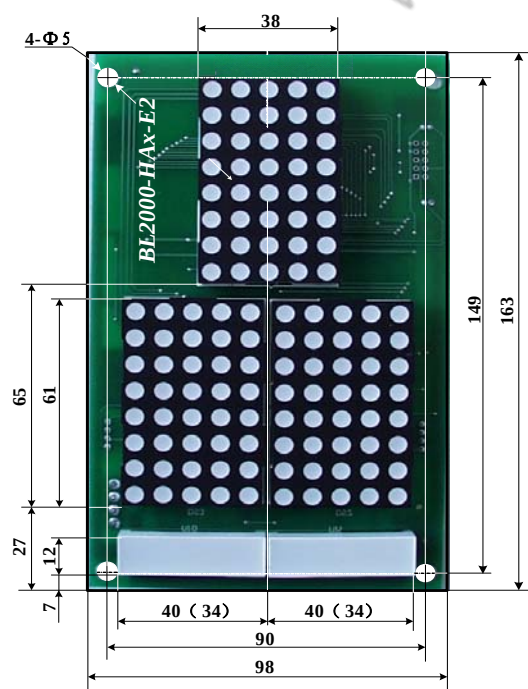


Figure 2-13 BL2000-HAX-E2 Profile and Dimension

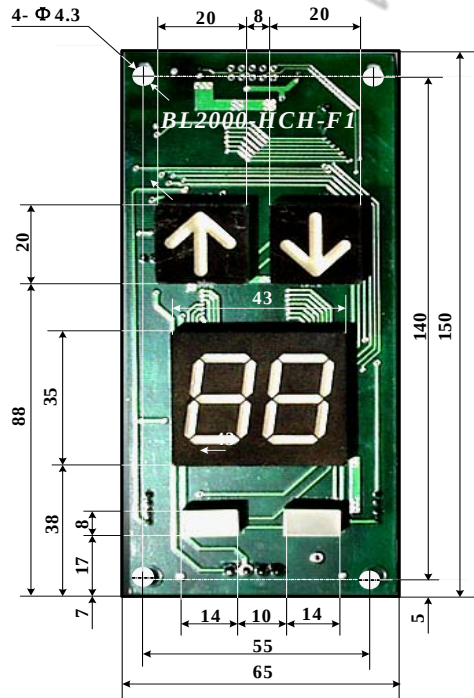


Figure 2-14 BL2000-HCH-G1 Profile and Dimension

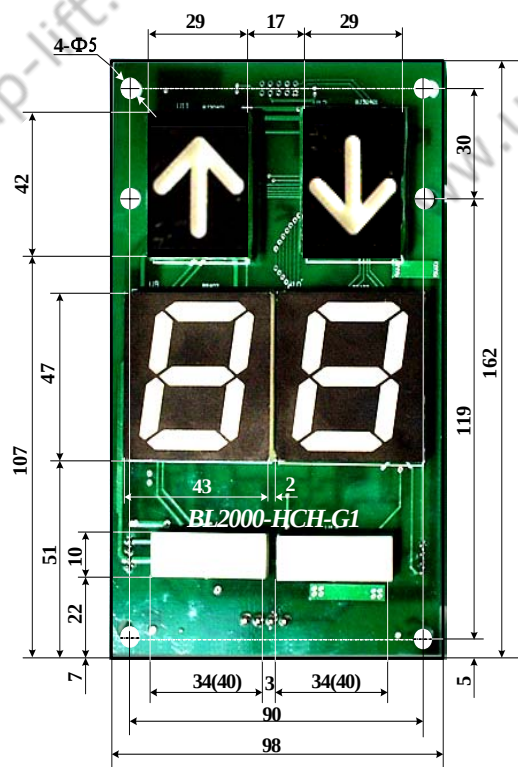


Figure 2-15 BL2000-HCH-F1 Profile and Dimension

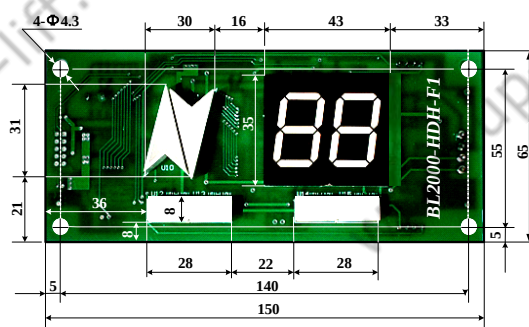


Figure 2-16 BL2000-HBX-F2 Profile and Dimension

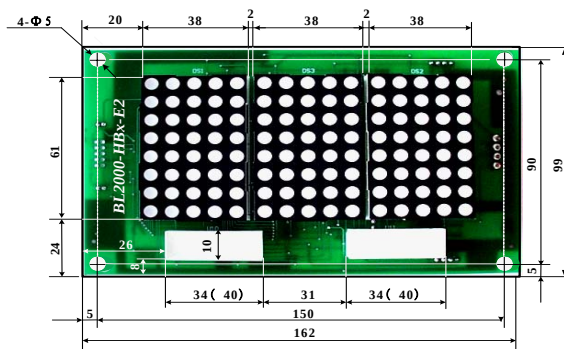
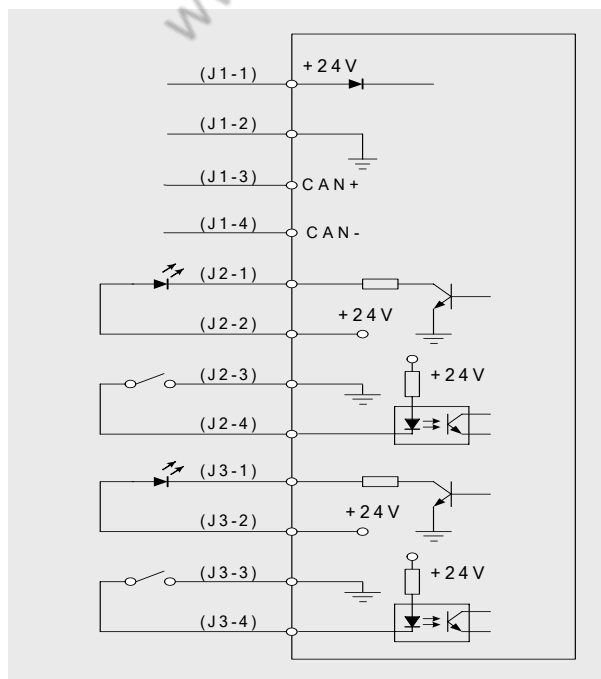


Figure 2-17 BL2000-HDH-F1 Profile and Dimension

2.2.4.4.2 Interface Circuit



2-18 BL2000-Hxx-xn Interface Circuit

2.2.4.4.3 Interface Define

Table 2-11 BL2000-Hxx-xn Ports:

Name	Position	Define	Usage
J1	J1-1	24v power input	Power and communication port
	J1-2	0v power input	
	J1-3	CAN bus H	
	J1-4	CAN bus L	
J2	J2-1	Up landing call acknowledge	Up landing call input and acknowledge voltage output
	J2-2	24v output	
	J2-3	0v output com	
	J2-4	Up landing call input	
J3	J3-1	Down landing call acknowledge	Down landing call input and acknowledge voltage output
	J3-2	24v output	
	J3-3	0v output com	
	J3-4	Down landing call input	
J4	Programming port		
S1	Serial communication terminate resistance jumper (in board)		
AN	Address setting key (in board)		

2.2.4.4.4 Model and Specification

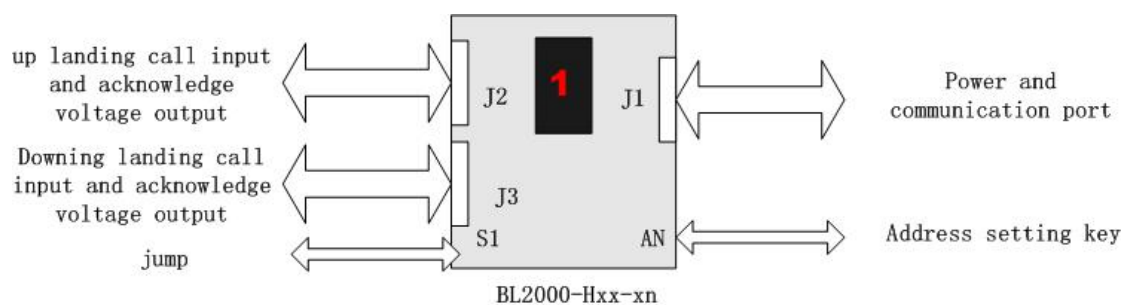
Table 2-12 Landing Call and Display Unit BL2000-Hxx Model and Specification

Model	Display module specification						
	Model	Arrange	Shape	Structure	Color	length × wide × high mm	Lightness
BL2000-HAH-A3	1357AH	Vertical	Square dot	Dot Matrix		30×22×10	High
BL2000-HAS-A3	1357AS						Super
BL2000-HAR-A3	1357ASR						UltraHigh
BL2000-HAH-B2	1057AH	Vertical	dot	Dot Matrix		39×23×8	high
BL2000-HAS-B2	1057AS						Super
BL2000-HAR-B2	1057ASR						UltraHigh
BL2000-HAH-C2	1257AH		Square dot	Dot Matrix		42×25×7	Super
BL2000-HAS-C2	1257AS						Super
BL2000-HAR-C2	1257ASR						UltraHigh
BL2000-HAH-D2	1067BH		Square dot	Dot Matrix		34×24×6	High
BL2000-HAH-E2	2058AH		Big dot	Dot Matrix		61×38×8	High
BL2000-HAS-E2	2058AS						Super
BL2000-HAR-E2	2058ASR						UltraHigh
BL2000-HBH-C1	1257AH	Horizontal	Square dot	Dot Matrix		42×25×7	High
BL2000-HBS-C1	1257AS						Super
BL2000-HBR-C1	1257ASR						UltraHigh
BL2000-HBH-E2	2058AH	Horizontal	Big dot	Dot Matrix		61×38×8	High
BL2000-HBS-E2	2058AS						Super
BL2000-HBR-E2	2058ASR						UltraHigh
BL2000-HCH-F1	BS252	Vertical	Segmented	Dot Matrix		35×42×h	Arrow dimension 22×20
BL2000-HCH-G1	BS402					46×44×10	
BL2000-HDH-F1	BS252	Horizontal				35×42×h	

When it is used in car, J1 connects to BL2000-Hxx-xn J1, J2 and J3 is void, address is 0. To set address, refers to 2.2.5

2.2.5 Landing Call and Display Unit Installation and Setting

BL2000-Hxx-xn is landing call and display unit that is set out of landing door. Refers to figure 2-19



2-19 BL2000-Hxx-xn Sketch Map

(1) Display unite:

Display unite is composed of running direction and floor display .The display mode is selectable.

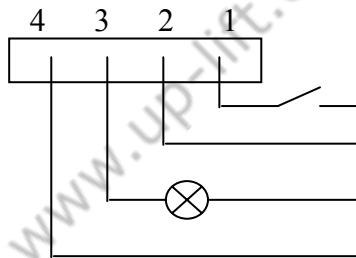
- a. If the direction arrow will scroll.
- b. The changing mode of the floor number: dragging screen, scroll vertical, scroll horizontal & not scroll
- c. If the station light will blink.
- d. Default mode: the arrow will scroll under running and not scroll normally; Dragging screen will change under “floor running” and it will not blink at landing station.

(2) Indicator light:

The indicator light is composed of 2 display position and 6 setting function included full load、parking、fire、special function、overload、inspection.

(3) The wiring diagram of landing call button and responding light

Landing call button and responding light are connected with landing call board through J2 and J3. J2 is up landing call button, J3 is down landing call button. The wiring diagram of J2 and J3 refers to figure 2-9. The voltage of responding light is DC24V and the current should be less than 50mA.



2-9 the wiring diagram of landing call button

(4) The connection of power and communication port:

The branches of every landing call communication cable CB2 should be inserted in J1.

(5) The address settings of landing call and display unite:

Because the system use serial communication, every communication unite has only one address. Under “address setting”, it can be set by observing lattice block display and pressing AN key. Landing call/display board can be set according to the address of absolute landing number (1~64), the lowermost address is 1,next is 2, by analogy, all others can be set.

- ① Press button AN, display unit will display the unit address which has been set, press AN button and wait for 5 second ,elevator enter address setting mode .
- ② On “address setting” mode, press the AN button to increase the address number, it will began to another circle when the address number rise up to 64.
- ③ After address setting, release the button, for 2 second the address number will blink, at same time it will be saved.
- ④S1 will be shorted. It is indicated that the terminal communication resistance is

connected.

Note : Only the landing call/display unit of the bottom floor(the address number is 1) can be connected with terminal resistance.

2.2.6 Car top wiring interconnect box Installation and Connection

Car top wiring interconnect box is installed at position on car top for convenient connection and check. Generally, the cable has been distributed before leaving factory. There are GC-2、GC-3、C9、C10、 car top operation box、 car top switch and door machine switch terminal. You can connect cable and terminal referring to schematic.

Notice: door machine control circuit is install at car call distribute box, because door machine be produced by different manufacture, it may has a change, the control circuit should be connected according to door machine manual. If door machine doesn't work normally, this part circuit should be checked and adjusted.

2.2.7 Leveling Zone Switch and Leveling Inductor Plate Install and Adjustment

Elevator needs 2 door zone switches and some leveling inductor plates to control leveling.

It is suggested that door zone leveling inductor plate's length is 250mm when elevator's speed greater than 2m/s. 2 leveling zone switches are installed at car top; leveling inductor plates are installed in hoistway, which position refers to the following figure2-10:

Leveling zone switch adopt photo electronic switch or magnetic switch.

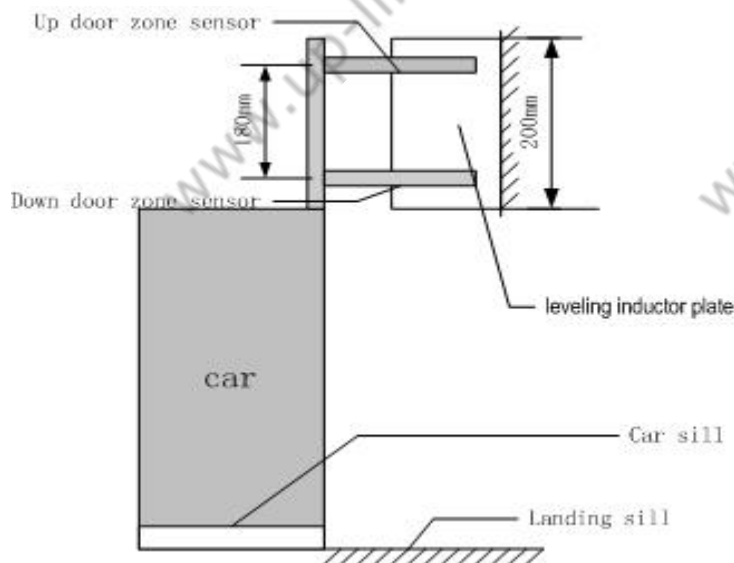


Figure 2-10 Door Zone Switch and Leveling Inductor Plate

2.2.8 Top/Bottom Terminal Switch Install

Elevator needs one top terminal switch, bottom terminal switch (<1.75) and terminal leveling inductor plate. Top/bottom terminal switch are installed in hoistway. Terminal leveling inductor plate is installed on car top. Top/bottom terminal switch is install at the position which distance is 2.5m (<1.75 m/s) from car sill to top/bottom hall sill. The number of terminal switch should be increased for elevator speed is greater than 2.0m/s. refer to table: terminal switch adopts contactless

inductive switch. e.g. magnetic switch.

Table 2-13 Terminal Switch Installation Position

Speed Positio Name	0.5m/s	1.0m/s	1.6m/s 1.75m/s	2.0m/s	2.5m/s	4.0m/s
Up/bottom terminal 1	1m	1.3m	2.5m	2.5m	2m	2.5m
Up/bottom terminal 2				4m	6.25m(4m)	*8m
Up/bottom terminal 3						

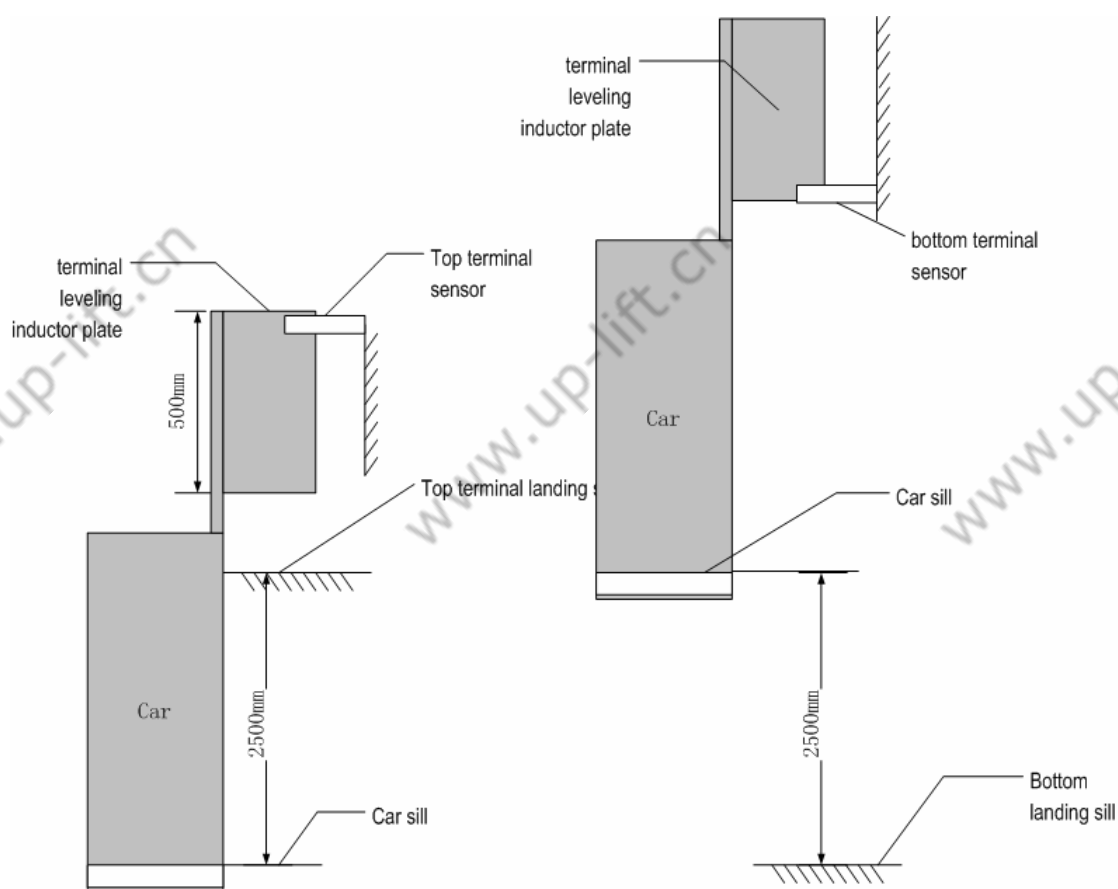


Figure 2-11 Top/bottom Terminal Installation (1.6m/s or 1.75m/s)

Chapter 3 LCD Display And Parameter Operation

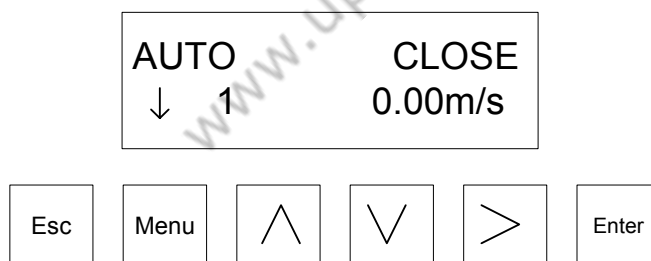
3.1 Summary

LCD is a good interface for debug and maintenance. They may set and monitor elevator running by LCD.

1. Monitor elevator state: automation, inspection, attendant, fire and lock etc.
2. Monitor: hoistway position, elevator speed, I/O port, fault information, load, landing call, car call and communication etc.
3. Set parameters: general parameter, running parameter and special parameter
4. Hoistway learning
5. Save parameter
6. Set new password

3.2 Key Operation

There are 6 keys on it. Their function is defined as follows:



Menu: exclude hoistway learning and save parameter, system returns to main menu by pressing this key.

Enter: enter into next menu, confirm changing parameter and instruction register

Esc: cancel key, cancel、 return to previous menu

>:Cursor key, system enters into communication state by pressing it in main menu.

^: Page up, increase 1 or select YES (on) key

v: Page down, decrease 1 or select NO (off) key

3.3 LCD Display and Parameter Operation Flowchart

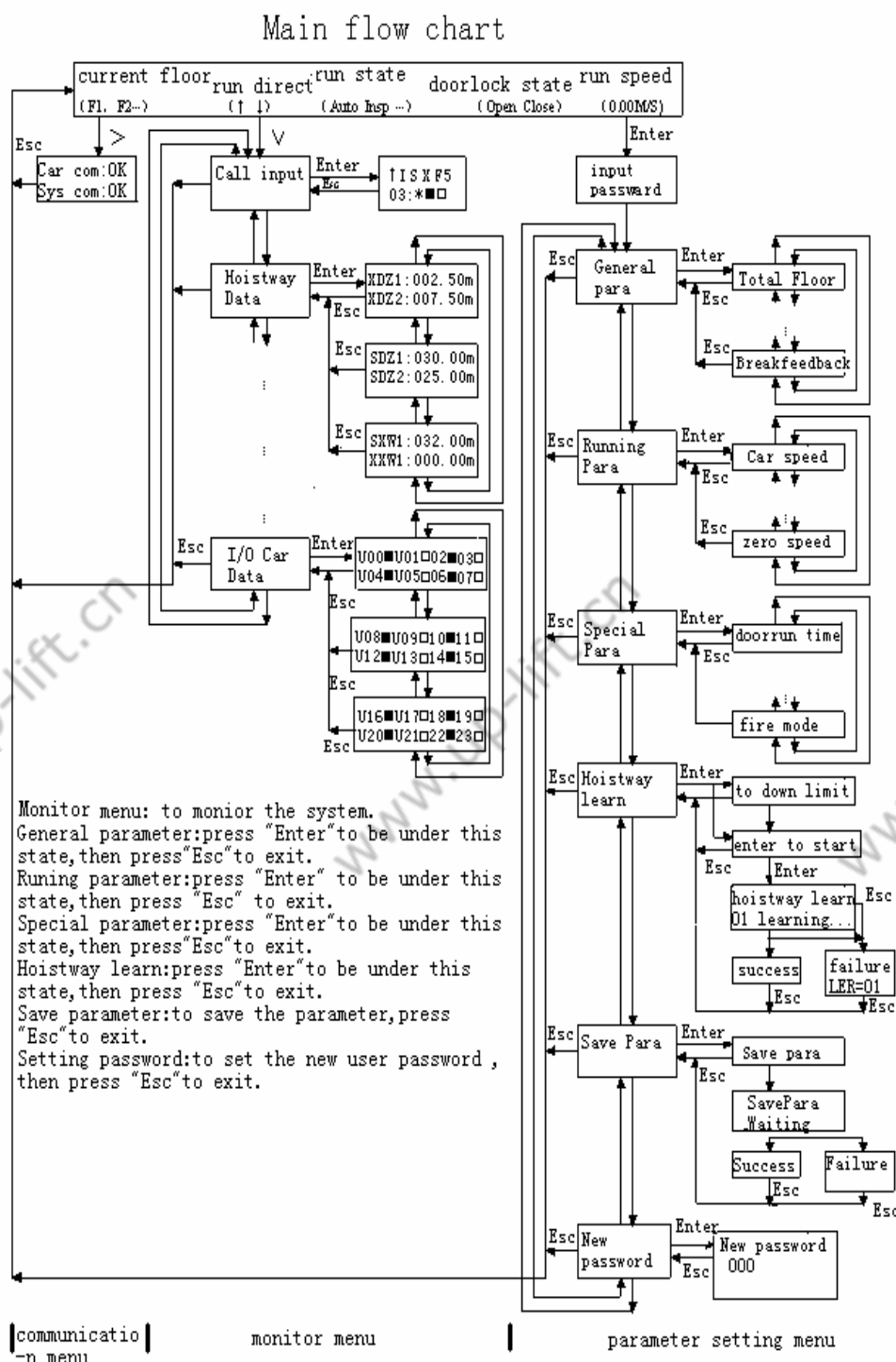
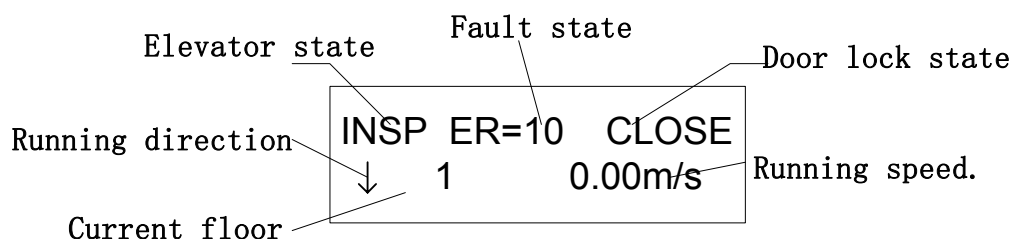


Figure 3-1 Main Menu Flow Chart

3.3.1 Main Menu

It displays current floor, running direction, running state, fault code, door lock state and running speed.



Elevator state: INSP, MENU, AUTO, FIRE, STOP and USER(VIP).

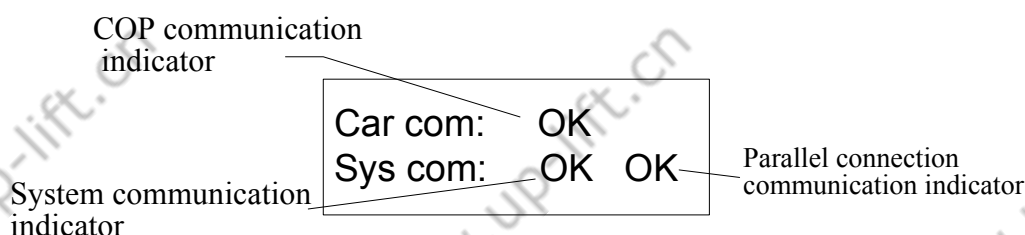
Fault state: if there is fault, it displays ER=#, otherwise, it displays nothing.

Door lock state: close and open

Current floor: actual floor

3.3.2 Communication State

System enters into communication state by pressing “>” key in main menu.



COP communication indicator: OK—communication normal, ER—main board receives error (check wire and COP), if there is error, it will display number of errors.

System communication indicator: OK—communication normal, ET—main board transfer error (check landing call wire), if there is error, it will display number of errors.

Parallel communication indicator: OK—communication normal, ET/ER—communication error (select)

3.3.3 Verify Password

Before you set and save parameters, you must input correct password on inspection mode (user password may be modify in setting password menu). If you want to set parameters in 3.3.4(b), you must input factory password, which is set before leaving factory and can't be modify.

3.3.4 Monitor Menu and Setting Parameter Menu

Monitor menu, general parameter, running parameter and special parameter are basic of elevator debugging. Menu is divided into user menu and factory menu according to user's requirement. The flowchart is as following:

a. User Menu:

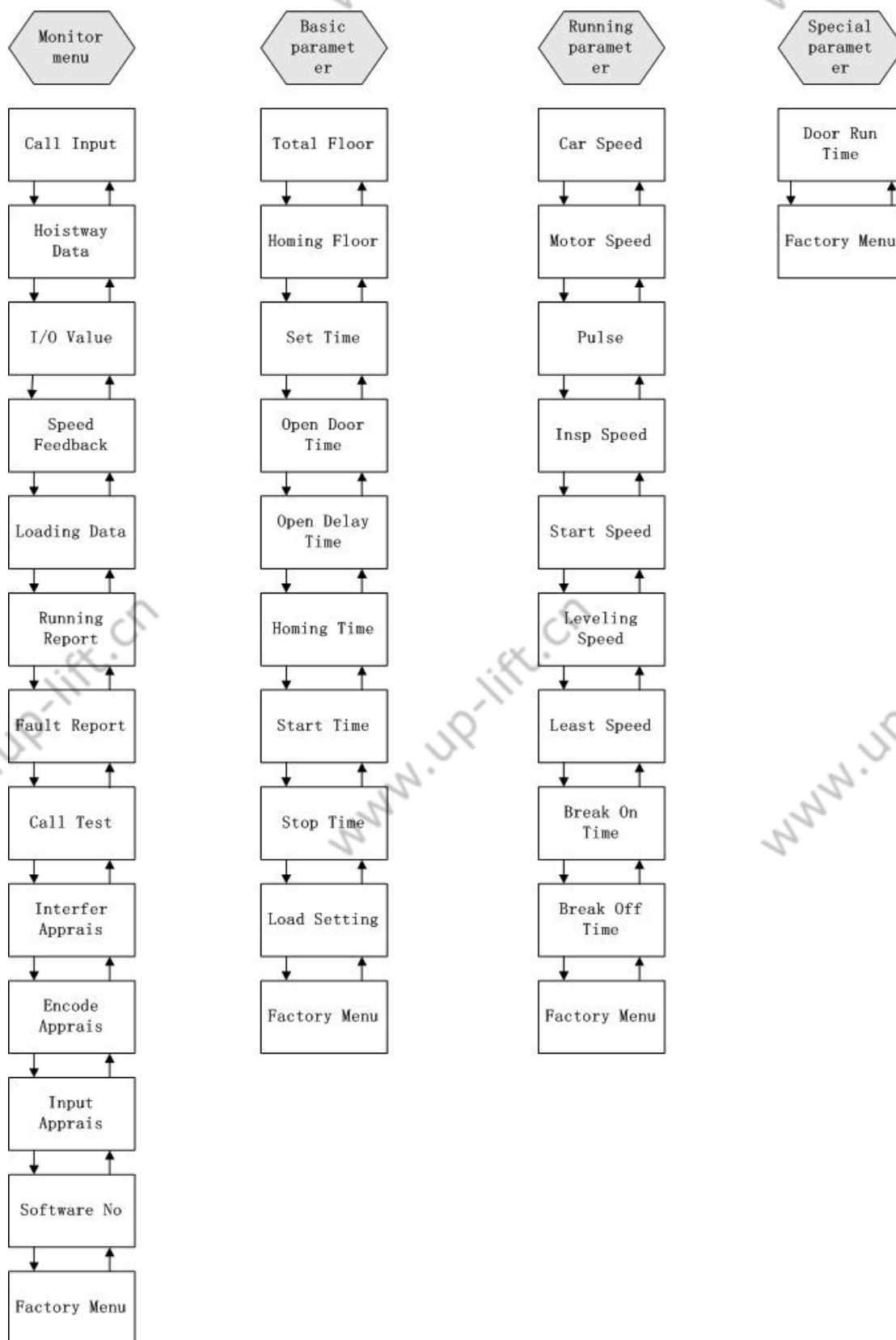


Figure 3-2 User Menu Flow chart

b. Factory Menu:

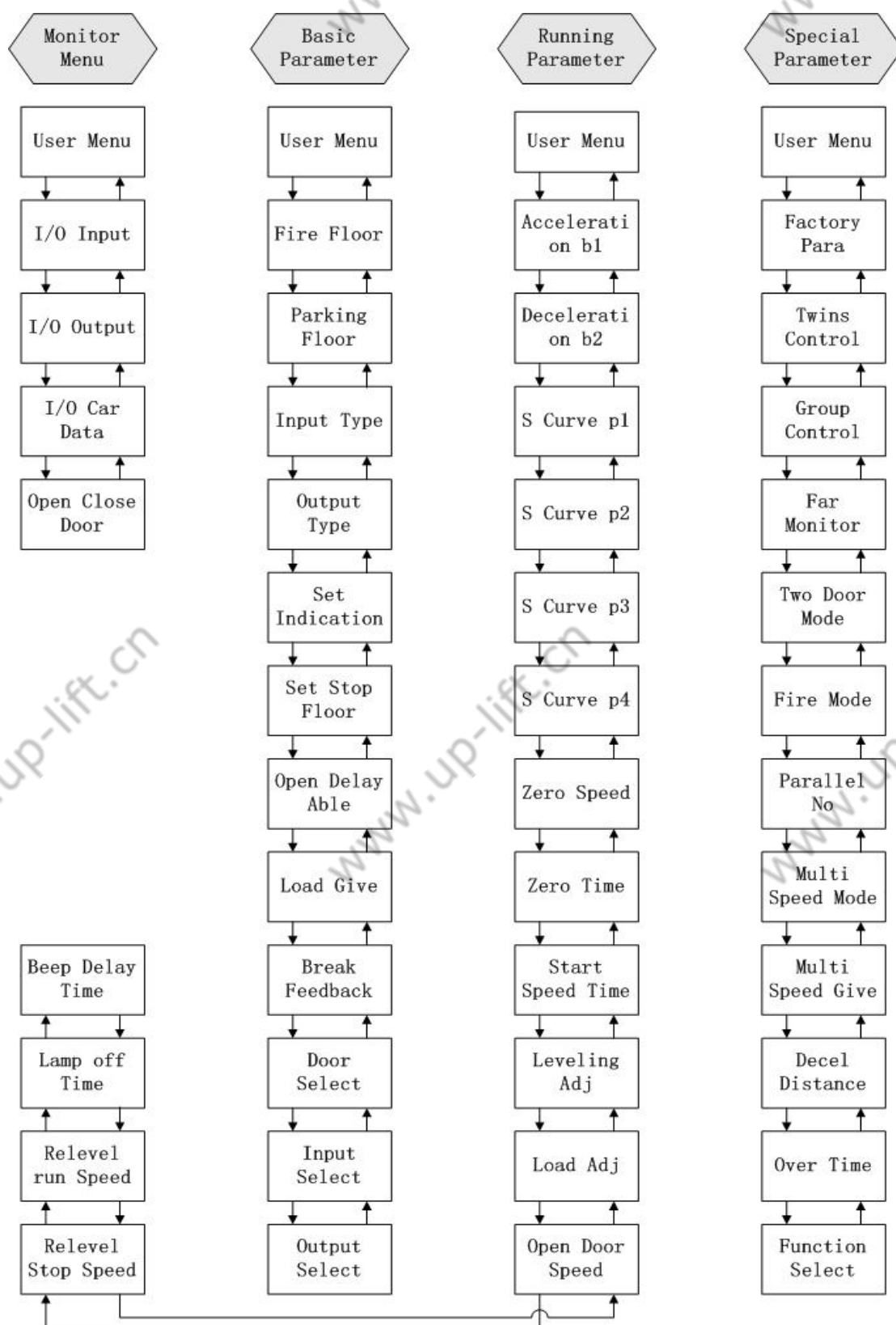


Figure 3-3 Factory Menu Flow chart

c. Parameter Explain:

- (1) Monitor menu: all the interfaces are read only except floor select menu and close/open door menu.

Table 3-1 Monitor Menus

User Menu		
No.	Menu	Note
1	Call input	It displays car call, landing call and inter select
2	Hoistway data	It displays top/bottom limit and terminal's position
3	Floor data	Leveling position and stop or not
4	Speed feedback	Motor speed (rpm) and elevator speed (m/s)
5	I/O value	I/O state corresponding to decimal.
6	Loading data	Current load percentage (load device is valid)
7	Run report	Accumulated running time
8	Fault report	The latest 20 fault records
9	Call test	Test communication between main board and landing call box
10	Interfer apprais	Valuate EMI
11	Encoder apprais	Valuate encoder interference and quality of pulse
12	Input apprais	Display input interference
13	Software No.	Software version
Factory Menu		
14	I/O input	Input port state
15	I/O output	Output port state
16	I/O car data	COP input/output state
17	Open close door	Close/open door command

(2) General Parameter

Table 3-2 General Parameter

User Menu				
No.	Menu	Default	Range	Note
1	Total floors		1~64	Elevator total floors (equate to number of leveling inductor plate)
2	Homing floor	1	1~total floor	Elevator return to homing floor without call
3	Set time			Display and set system time
4	Open door hold time	3s	0~999s	Close door waiting time after opening door on automation mode
5	Open delay time	30s	0~999s	Open door delay time (open door delay enable) on automatic mode
6	Homing time	60s	0~999s	Waiting time before returning to homing floor when without call
7	Start time	00:00		Start run time (electronic lock on)

8	Stop time	00:00		Stop run time (electronic lock on)
9	Loading setting	no		Load detection enable/disable (only for system with SJT-150 detection device)
Factory Menu				
10	Fire floor	1	1-total floors	The floor to which elevator return on fire mode
11	Parking floor	1	1-total floors	The floor to which elevator return when electronic lock is locked
12	Input type	On		Input signal is valid when level is high or low
13	Output type	Off		Output relay, off- open normally, on-closed normally
14	Set indication	0~64		Display character
15	Set stop floor	On		Stop or not
16	Open delay able	No		Open door delay enable
17	Load give	0-10V	-10V—10V	Load output voltage range
18	Break feedback	Yes		Yes—brake feedback will be detected; no—brake feedback will not be detected
19	Door select			Front/back door selection
20	Input select		0-27	X26~X29 terminal input function selection
21	Output select		0-19	Y16、Y17 terminal output function selection

(3) Running Parameter

Table3-3 Running Parameter

User menu				
No.	Menu	Default	Range	Note
1	Car speed	1.6m/s	1~2.5m/s	Elevator rated speed
2	Motor speed		1~9999	Motor rated speed
3	Pulses		500~9999	The number of the pulse which be inputted into main board
4	Insp speed	0.3m/s	0.01~0.6m/s	Inspection running speed
5	Start speed	0.00m/s	0~0.20m/s	Smooth speed is added before start curve
6	Leveling speed	0.3m/s	0.01~0.6m/s	Leveling speed
7	Least speed	1m/s	0.01~1.0m/s	Min speed curve steady value

8	Break on time	50ms	10~9990ms	Time between brake release and start running
9	Break off time	50ms	10~9990ms	Time between open door and brake on
Factory Menu				
10	Acceleration B1	0.6	0.1~9.99	Acceleration
11	Deceleration B2	0.6	0.1~9.99	Deceleration
12	S curve P1	0.7	0.1~9.99	S time1
13	S curve P2	0.7	0.1~9.99	S time 2
14	S curve P3	0.7	0.1~9.99	S time 3
15	S curve P4	0.7	0.1~9.99	S time 4
16	Zero speed	5rpm	0~9999	Zero speed threshold
17	Zero Time	210ms	0~999ms	Break off delay time after system detect zero speed
18	Start speed time	0	0~9000ms	Start smooth speed hold time
19	Leveling adj	50mm		Adjust Leveling offset
20	Load adj	0	0~12	Load compensating voltage should be adjusted base on floor.
21	Open door speed	0.15	0~0.3m/s	The speed of elevator pre-open door
22	Re-leveling stop speed	0.30	0~0.3m/s	In the process of re-leveling running or pre-opening, if elevator's speed greater than this speed, it will stop
23	Re-leveling run speed	0.06	0~0.3m/s	Re-leveling running speed which is set on analog given mode
24	Lamp off time	15	0~599m	Lamp off delay time
25	Beep delay time	100	0~9990ms	Arrival signal delay time

Elevator rated speed, motor rated speed and number of encoder pulse are the important parameters. They should be set by nameplate. If one of them is changed, hoistway learn must be perform before system start running normally. When main board input pulse is dividing frequency, number of encoder pulse is calculated pulse.

Notice: it is required that number of encoder pulse should more than 500, gearless motor number of encoder pulse >4096. The frequency of pulse ranges from 6kHz to 25kHz.

For example: encoder: 1024, 2 dividing frequency, number is $1024/2=512$.

The relationship between motor rated speed and elevator speed is:

Elevator rated speed = (motor rated speed* **traction sheave diameter***3.14*driving ratio)/(60*1000*traction ratio)

For example: motor rated speed = 1370rpm, **traction sheave**

diameter=590mm,driving ratio = 2/53, traction ratio = 1/1;

Elevator rated speed = $(1370 \times 590 \times 3.14 \times 2) / (60 \times 1000 \times 1 \times 53) = 1.6\text{m/s}$.

(4) Special parameter

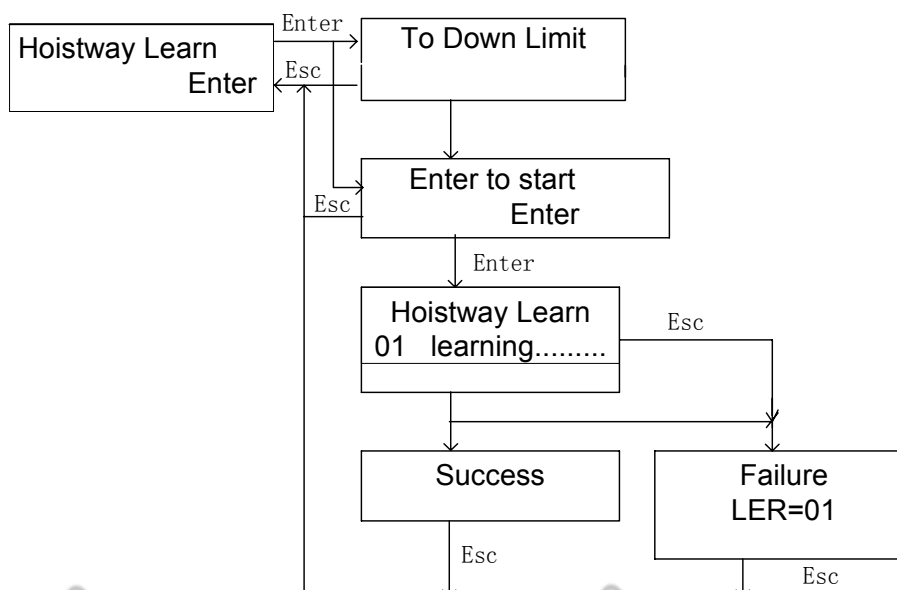
Table3-4 Special Parameter

User Menu				
No.	Menu	Default	Range	Note
1	Door run time	5s	0~999s	Close/open door relay holding time
Factory Menu				
2	Factory parameter	No		Restore default
3	Twins control	0	0-1	Select
4	Group control	0	0-1	Select
5	Far monitor	0	0-1	Remote monitor enable and telephone number
6	Two door mode	0	0-1	Select
7	Fire mode	0	0-1	Select
8	Parallel no	0	A/B	Twins control enable is valid, one is A, the other is B
9	Multi speed mode	No	Yes/no	Yes: multi speed given; no: analog given
10	Multi speed give	0	0~4m/s	Set speed
11	Decel distance	0	0~10m	Decelerate distance
12	Over time	45	0~999s	Time limit of Single times Running
13	Function selection	OFF	OFF/ON	

Notice: * parameter is default parameter.

3.3.5 Hoistway Learning

Elevator must perform hoistway learning before it normally runs.

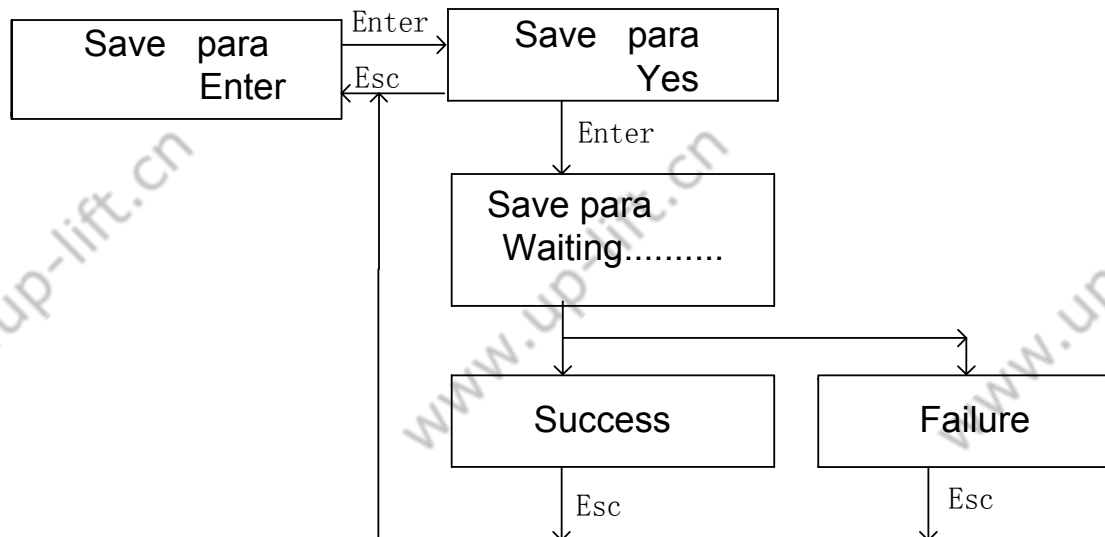


Hoistway learn is perform on inspection mode and car must press bottom limit switch. If car doesn't locate bottom limit, 'to down limit' is displayed, otherwise, 'enter to start' is displayed, press 'enter' key, it performs hoistway learning until top limit. If it success, 'success' is displayed, else 'failure LER=#' is displayed. It is processed by fault coder and repeats learning. It will exit if you press 'esc' key, 'LER=15' is displayed, it exit by pressing 'esc' again.

Hoistway learning must meet following condition:

1. Top/bottom limit and terminal and leveling inductor plate are installed and electrical connection is correct.
2. Up/down leveling zone switch and leveling inductor plate are installed and electrical connection is correct.
3. Safety circuit and door inner-lock circuit are normal.
4. General parameter and running parameter are set
5. Elevator may perform inspection running normally.

3.3.6 Save Parameter

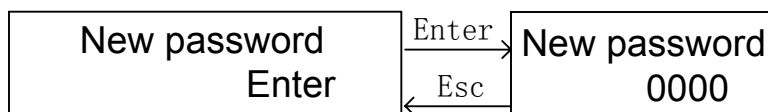


System automatically saves modify parameter if you select yes in save parameter menu and press 'enter' key. If it success, 'success' is displayed, else 'failure' is displayed. Please contact with factory.

Notice: Modify parameter is valid at once, but if they will be lost if you don't save them

3.3.7 Password Setting

User may modify password.



3.4 Windows Operation

User menu are open to all users. Only after factory password is inputted, factory menu can be viewed and the parameter in factory menu can be modified.

Notice:

1. When 'enter' is displayed on bottom right corner on LCD, you may press 'enter' key enter into sub-interface.
2. If there isn't cursor, you can't set parameter.
3. When press 'enter' key and cursor is displayed, by pressing '^' and 'v' key to modify parameter, by pressing '>' key to shift cursor.

Noun explanation:

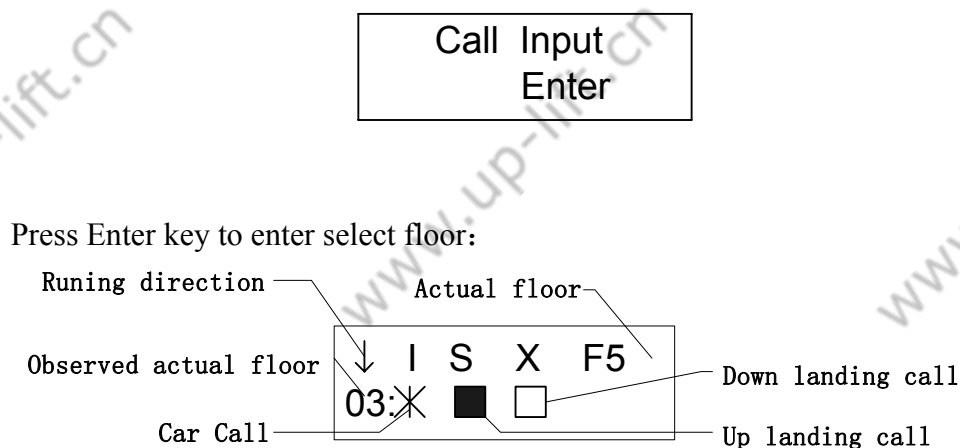
1. Actual floor: display floor
2. Absolute floor: bottom floor is 1.

3.4.1 Monitor Menu

(1) Call floor information

It display car call and landing call, car call may be selected in menu.

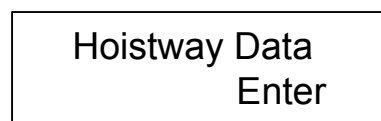
It will enter into the first page of monitor menu by pressing 'v' key from main menu.



You may select observation floor by '^' and 'v'. '^' and 'v' are current running direction. A blinking character '*' indicate there is car call, by press 'enter' to select car call in debugging mode, the high speed debugging can be preformed. '□' represents no landing call, '■' represents landing call. 'F-XX' is current floor. It will return to main menu by pressing 'esc'.

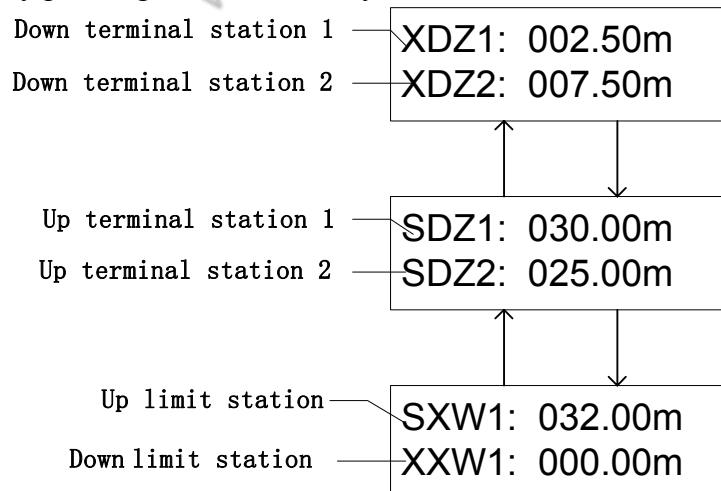
(2) Hoistway Switch Position

It displays the position of top/bottom limit switch and top/bottom terminal. It start from bottom limit. Unit is meter.



It will enter into the 2nd monitor item by pressing 'v' key from instruction menu.

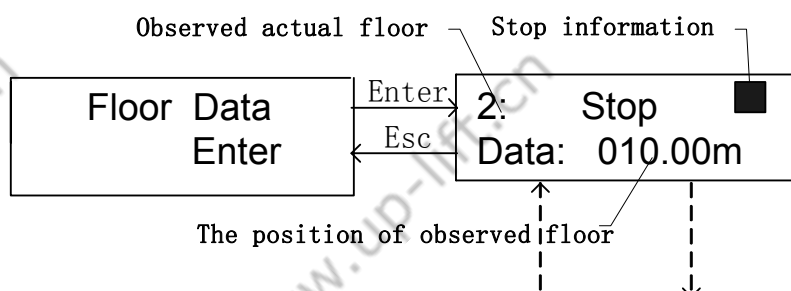
Select item by pressing ‘^’ and ‘v’ key.



(3) Floor Information

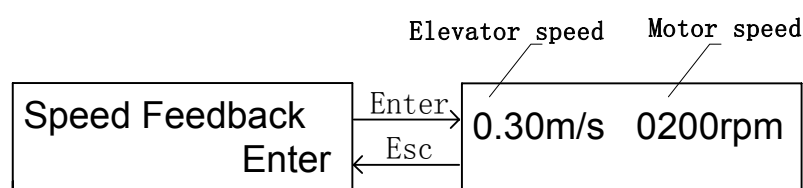
The 1st line is stop information (□: not stop; ■: stop).

The 2nd line is actual position of floor.



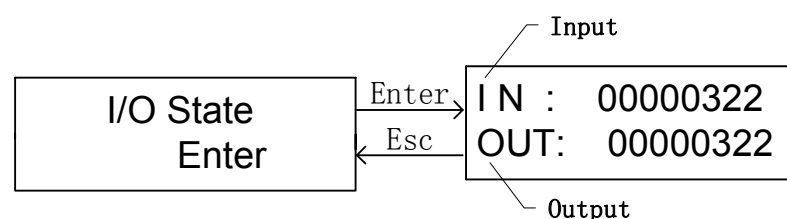
(4) Speed Feedback

It displays elevator and motor speed.



(5) I/O Combination

The data is decimal, which represents the I/O port state by corresponding binary.



e.g.: Decimal: IN=00000322, OUT=00000322
 Binary: N=101000010, OUT=101000010

X0	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
0	1	0	0	0	0	1	0	1	0	0	0
X12	X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23
0	0	0	0	0	0	0	0	0	0	0	0
Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
0	1	0	0	0	0	1	0	1	0	0	0
Y12	Y13	Y14	Y15	Y16							
0	0	0	0	0							

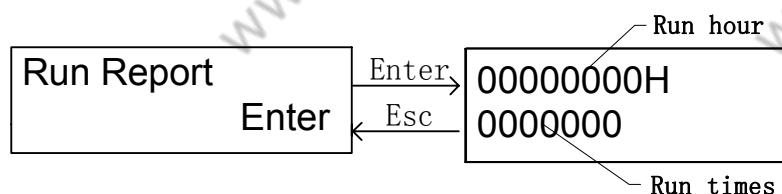
(6) Load Weight

it is required that load enable is set to 'Yes' before enter into this menu.
 Empty load: 0%; light load: 50%; full load: 100%.

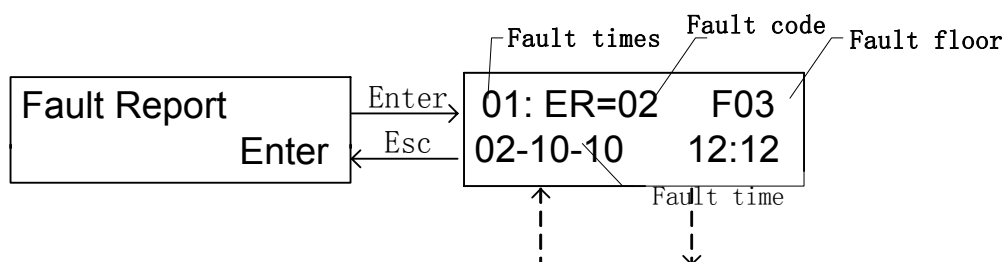


(7) Running Record

It is accumulated time and times

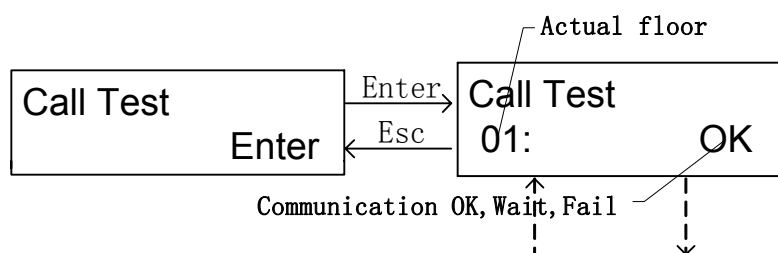


(8) Fault Record



It records type and time of the latest 10 faults. Which is selected by pressing '∧' and '∨'

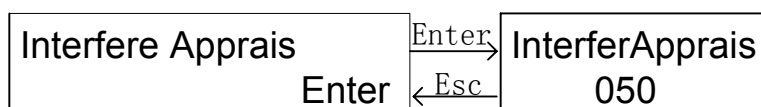
(9) Landing Call Communication Test



It checks communication between main board and landing call box. The number of landing call is selected by pressing ‘^’ and ‘v’. OK: normally communicate, Fail: fail to communicate (check landing call board), wait: testing (If the time is too long, check communication system).

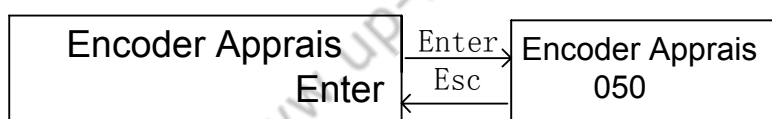
(10) EMI Evaluation

When elevator is finished debugging, EMI may be evaluated in this interface.



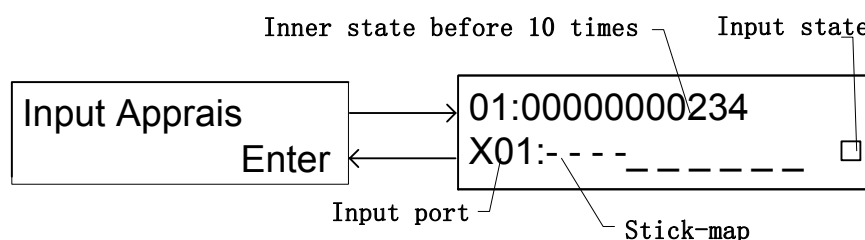
The data represents the intensity of EMI, ‘000’ represents system is well connected to ground.

(10) Encoder Evaluation



When elevator speed is steady, the data is bigger and the quality of encoder signal is worse.

(12) Input Signal Evaluation – Input Port Interference



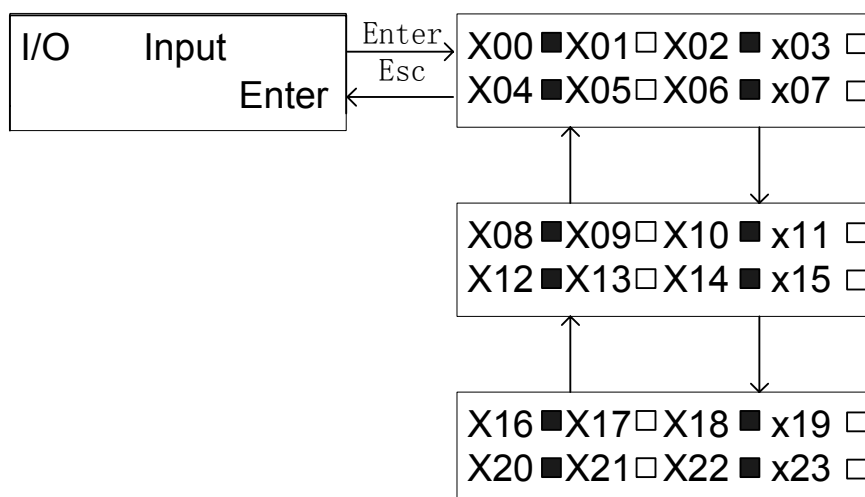
The bar represents input port logic level. High: 1, low: 0. If the numbers of 1 is more close to the number of 0, the interference is more intense.

(13) Software Version

It is software version.

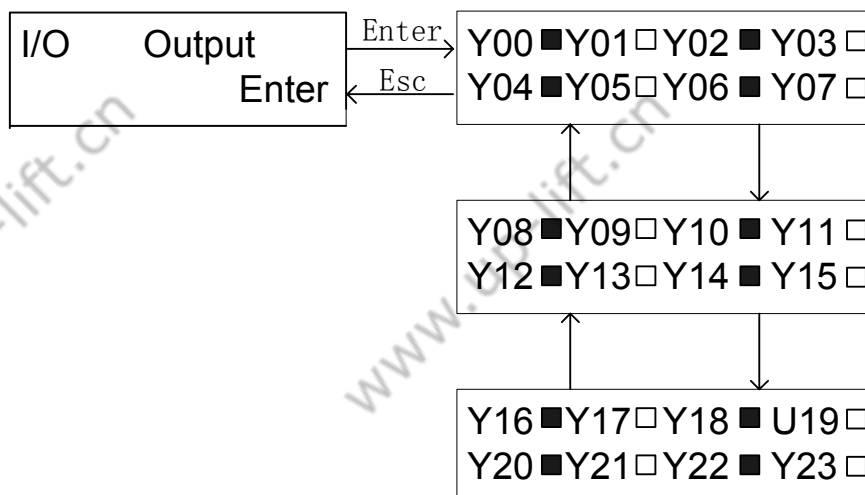


(14) Input Signal



□: input 0; ■: input 1; □: light off; ■: light on

(15) Output Signal



□: output 0; ■: output 1(relay is activate);

(16) car signal

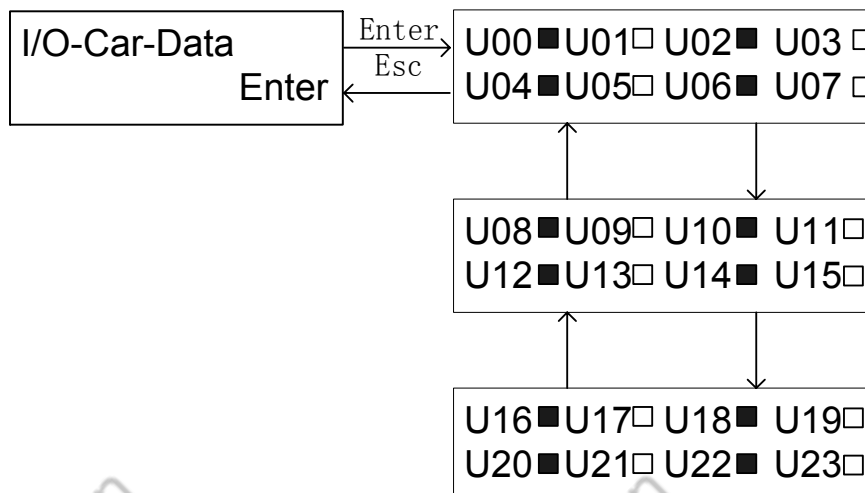
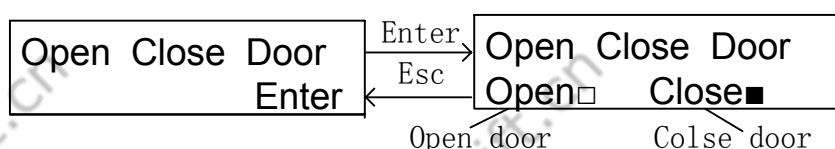


Table 3-5 Car Signal (□: Input 0; ■: Input 1)

No.	Define	No.	Define
U00	Close door button 1	U10	Attendant switch
U01	Open door button 1	U11	Stand by
U02	Open door button 2	U12	Bypass switch
U03	Close door button 2	U13	Full load switch
U04	Close door limit 2	U14	Light load switch
U05	Open door limit 2	U15	Over load switch
U06	Close door limit 1	U16	50% load switch (stand by)
U07	Open door limit 1	U17	Safety edge switch 2 (two door mode)
U08	Special switch	U18	Safety edge switch 1
U09	Open door delay button	U19~U23	Stand by

(17) Open/Close Door Input



Can perform open/close door operation by pressing ‘^’ or ‘v’ key. “■” stand for open door input is valid, “□” stand for open door input is invalid, input close door instruction is same as above.

3.4.2 General Parameter Operation

Before you set parameter, you must input right password (user password /factory password).

Input Password
0000 Enter

When you enter into input password menu, ‘>’ select bit, ‘^’ and ‘v’ modify data, if password is correct, it will display general parameter menu, otherwise, following information will be displayed, so please input password again.

Password error
Enter

(Please dial the number 024 23782971 to obtain the password)

General para
Enter

(1) Total Floors

When you press 'enter' key, bottom right corner number will be blinking, you can modify parameter, then you press 'enter' to confirm or press 'esc' to cancel. Total floors are equal to leveling inductor plate number in hoistway.

Total Floor
64

(2) Homing Floor

Elevator returns to homing floor, if there aren't car call and landing call.

Homing Floor
1

(3) System Time

Time format (24 hours): year-month-day hour: minute

Set Time
00-00-00 00:00

(4) Open Door Holding Time

It is elevator open door holding time on automation mode. Open door time is adjusted base on the reason of stop. If there is either car call or landing call, it is this time; if there are both car call and landing call, 2 seconds is added on this time.

Open Door Time
005s

(5) Open Door Delay Time

The open door time may be prolonged by pressing open door delay button (switch) when open delay enable is set to 'yes', this function is valid. Unit: second.

Open Delay Time
060s

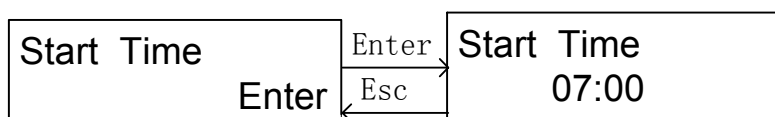
(6) Return to Homing Floor Time

The time that elevator return to homing floor automatically, when the parameter is set to 0, the function that return to homing floor time is invalid

Homing Time
060s

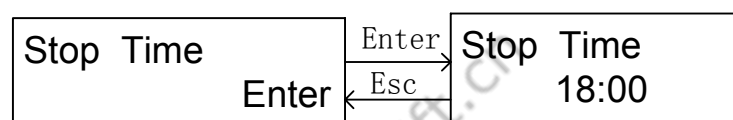
(7) Automatically Start Service Time

Elevator will start service at this time. (Electronic lock is on)



(8) Automatically Stop Service Time

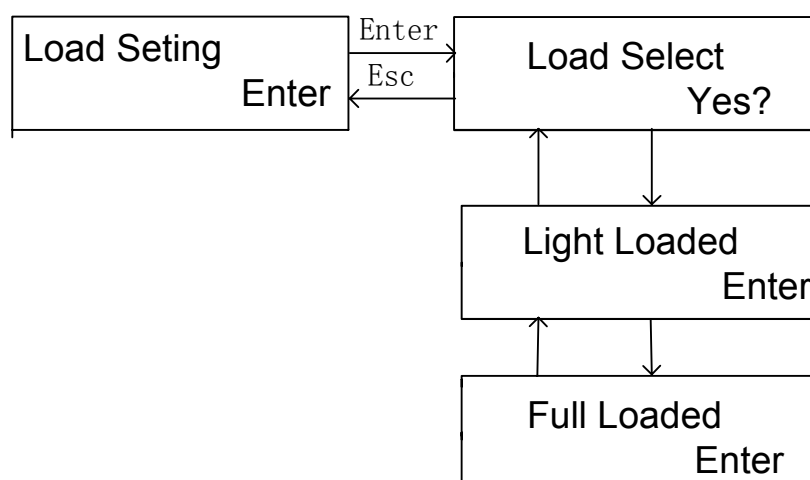
Elevator will stop service at this time. (Electronic lock is on).



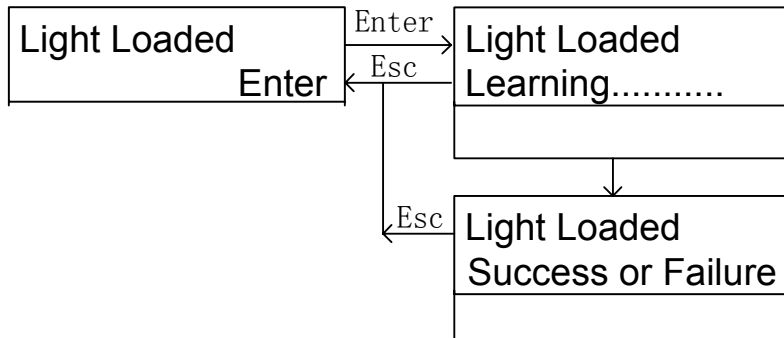
If start time is equal to stop time, this function is invalid.

(9) Load Setting (only for SJT-150)

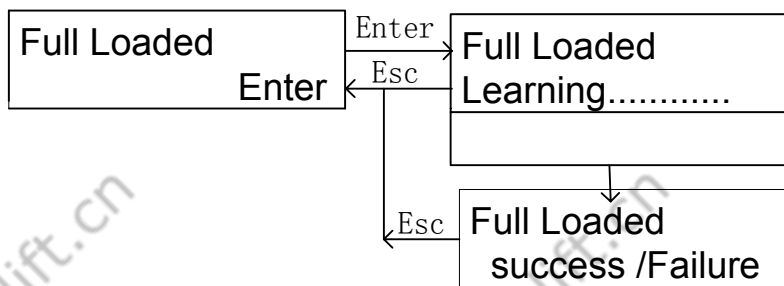
Sometimes inverter needs load compensation. If you want to get Load compensation, load learning must be performed. You enter into load select menu and select yes/no. It is confirmed by pressing 'enter' and canceled by pressing 'esc'. Load learning is performed if you select 'yes'.



Light load learn: car is light loaded, press 'enter' to confirm.



Full load learn: car is full loaded, press 'enter' to confirm.



Success: finish learning.

Failure: fail to learn

Display "Wait" in load learning process: It is learning please wait; while "success" is displayed, it is indicated that load learning is successful; "Failure" is displayed, it is indicated that load learning is failure;

Notice:

- ◆Load detection device is one of the system's optional accessories;
- ◆Light load signal, full load signal and over load alarm signal is provided;
- ◆It can output analog signal to be used as inverter load compensation input.
- ◆After load learning, it is necessary to set offset voltage range and grade according to inverter requirement.
- ◆Current load may be monitor in menu.
- ◆If load learning is failed, check load device
- ◆for load detection device detailed information, please refer to <SJT-150 user guide>

If load detection device that produced by other manufacturer is used, to input no-load signal, full load signal, overload signal by COP, please set Load select to No and system will confirm load digital signal input directly.

(10) Fire Floor

When elevator receives fire signal, it clears all car call and landing call and return to fire floor.



(11) Parking Floor

When elevator's electronic lock is locked in normally running, it returns to parking floor and stops running.



(12) Input Logic Level

If it is needed that input port is valid in low level, the parameter should be set to 'on'; if it is needed that input port is valid in high level, the parameter should be set to 'off'; (No connection is high)

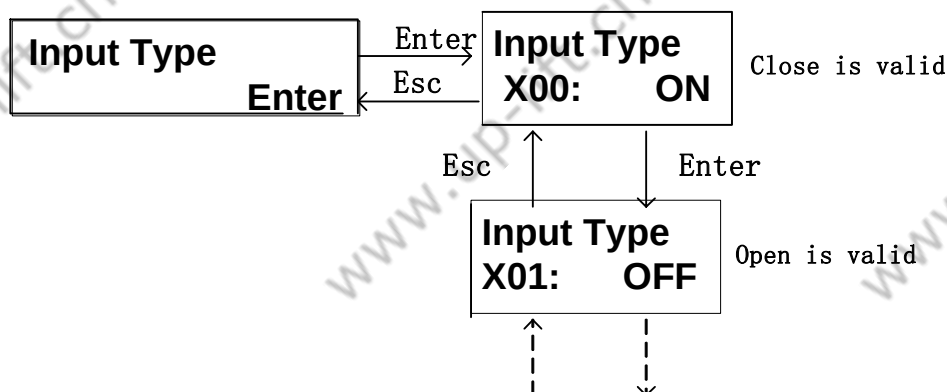


Table 3-6 Input Port Level Setting

Name	Port	Position	Define	Parameter	Default leveling	Switch state	Light
Main board	X1	J1-2	Up running input	X1	ON	Open normally	OFF
	X2	J1-3	Down running input	X2	ON	Open normally	OFF
	X3	J1-4	Top terminal 2 input	X3	OFF	Closed normally	ON
	X4	J1-5	Bottom terminal 2 input	X4	OFF	Closed normally	ON
	X5	J1-6	▲top limit input	X5	ON	Closed normally	ON
	X6	J1-7	▲bottom limit input	X6	ON	Closed normally	ON
	X7	J1-8	Top terminal 1input	X7	OFF	Closed normally	ON
	X8	J1-9	Bottom terminal 1input	X8	OFF	Closed normally	ON
	X9	J1-10	Up leveling input	X9	ON	Open normally	OFF
	X10	J2-1	Down leveling input	X10	ON	Open normally	OFF
	X11	J2-2	Inverter fault input	X11	ON	Open normally	OFF

	X12	J2-3	Fire input	X12	ON	Open normally	OFF
	X13	J2-4	Emergency stop input	X13	ON	Open normally	OFF
	X14	J2-5	Door inner-lock input	X14	ON	Open normally	OFF
	X15	J2-6	ARD input	X15	ON	Open normally	OFF
	X16	J2-7	Running contactor input	X16	ON	Open normally	OFF
	X17	J2-8	Braking feedback input	X17	ON	Open normally	OFF
	X18	J2-9	Emergency automatic leveling running input	X18	ON	Open normally	OFF
	X19	J2-10	Inverter running input	X19	ON	Open normally	OFF
	X20	J3-1	Electronic lock input	X20	ON	Open normally	OFF
	X21	J3-2	Heat sensitive switch	X21	ON	Open normally	OFF
	X22	J5-1	Emergency stop input +	X22	ON	Open normally	OFF
	X23	J5-2	Emergency stop input -				
	X24	J5-3	Door inner-lock input +	X23	ON	Open normally	OFF
	X25	J5-4	Door inner-lock input -				
COP Main-board	KMV1	J9-2	Open door limit input	U04	ON	Open normally	OFF
	GMV1	J9-3	Close door limit input	U05	ON	Open normally	OFF
	KAB1	J9-4	Safety edge for door linput	U17	ON	Open normally	OFF
	CZ	J9-5	Overload input	U15	ON	Open normally	OFF
	MZ	J9-6	Full load input	U13	ON	Open normally	OFF
	KAB2	J9-7	Safety edge for door2 input	U18	ON	Open normally	OFF
	QZ	J9-8	Light load input	U14	ON	Open normally	OFF
	KZ	J9-9	No-load input	No		Open normally	
	SZH	J9-10	Attendance input	No		Open normally	
	KMV2	J10-5	Open door limit 2 input	U06	ON	Open normally	OFF
	GMV2	J10-6	Close door limit 2 input	U07	ON	Open normally	OFF
	SZY	J10-1	Special input	No		Open normally	
	SZS	J10-2	Bypass input	No		Open normally	
	ZHS	J10-3	Up attendance directional input	No		Open normally	
	ZHX	J10-4	Down attendance directional input	No		Open normally	

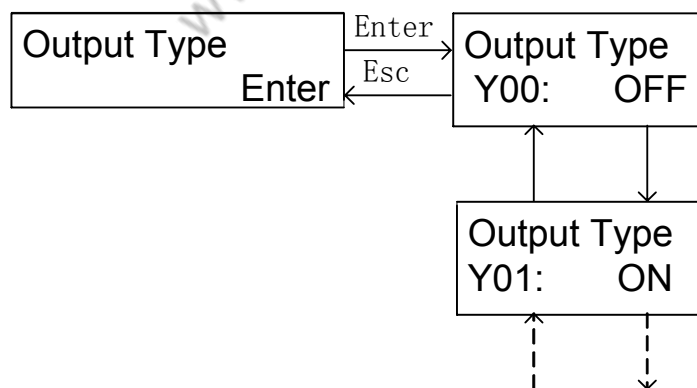
▲Notice : when top/bottom limit circuit is normal, if top/bottom limit circuit is connected , input type should be displayed as ON; if top/bottom limit circuit is cut off, input type should be displayed as OFF.

(13) Setting output relay contactor type

OFF: open normally

ON: closed normally.

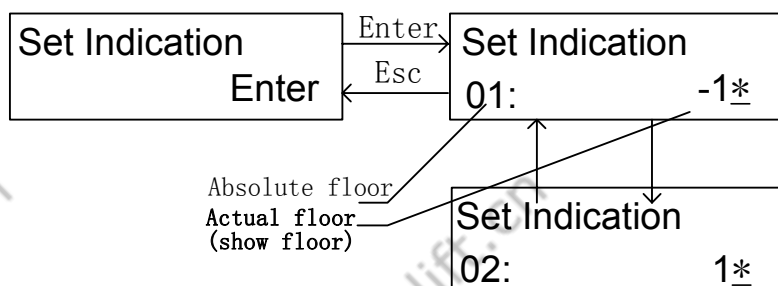
Default: OFF



Notice: Y12 is ON for Fuji inverter .

(14) Indication Character

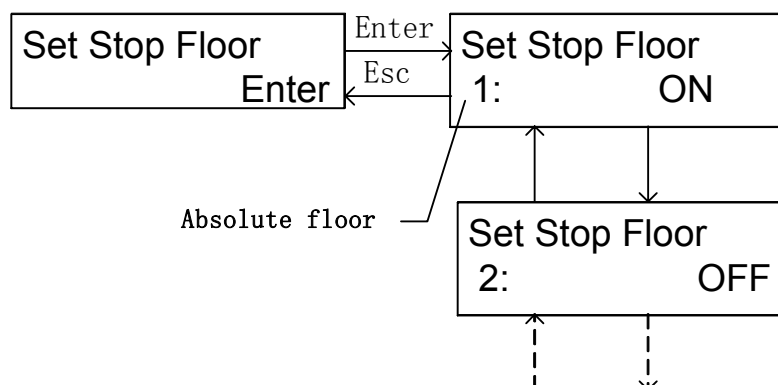
Indication character may be set to letter or figure.



On general parameter's indication character setting mode, the third bit can be set, previous two bits can set to numeric, character or minus, the third bit only can be set to capital letter: ABCDEFGHIJKLMN. If only two bits indication character setting is needed, please set previous two bits and the third bit should be set to null.

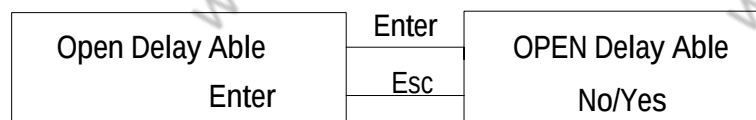
(15) Stop Floor

Set every floor is stop or not. (ON: stop, OFF: don't stop)



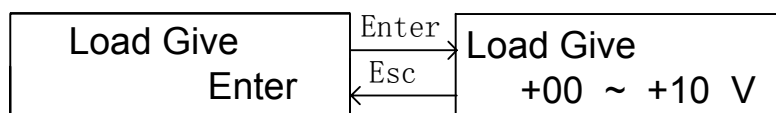
(16) Open Door Delay Enable

It is used to set open door delay enable/disable.

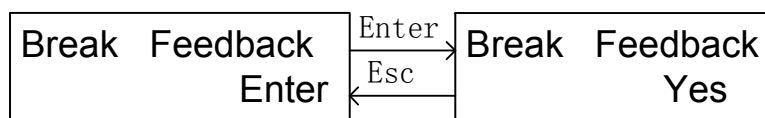


(17) Load Output Voltage

It is set output voltage range(base on inverter's requirement).



(18) Brake Feedback Detection Enable

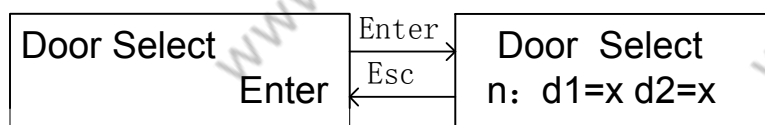


If the parameter is set to 'YES', system will detect brake feedback.

If the parameter is set to 'No', system will not detect brake feedback.

It is suggested that detect switch be installed on traction motor and feedback signal input into the system. Feedback detection is enabled.

(19) Two Door Mode



n: floor it can be changed by pressing '^' or 'v' key.

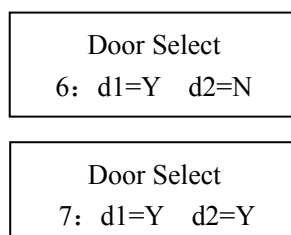
d1: front door. it is selected by pressing '>' key.

d2: back door. it is selected by pressing '>' key.

x=Y: this door is activated

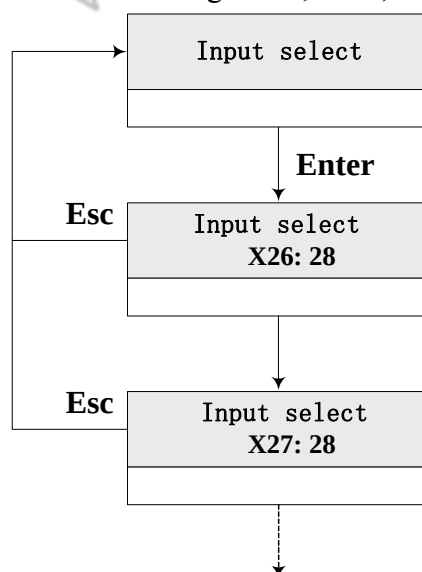
x=N: this door is not activated.

For example: two door elevator, 6th floor, only front door is activated; 7th floor, both front door and back door is activated.



(20) Multi-function Input Setting

Multi-function input can be set through X26, X27 , X28 and X29.



On “multi-function setting” mode, if input port function code has been occupied by other port, error message will be reported, and this function selection is invalid; For example: port X28 has been set to 1(up running input),when set X29 to 1,after pressing “enter” key,message”X28 already set 1” will be displayed, and port X29’s set is unchanged; so if want to set X29 to 1, Port X28 must be set to other function selection or be set to 28(stand by).

It is not suggested to change input port setting.

Note: terminal input, door zone input is required to have high real time character, multi-function input port can’t replace these input port function

Table 3-7 Multi-function Input Table:

Function No	Define	Function No	Define
0	Inspection input	16	Running contactor input
1	Up-running input	17	Brake feedback input
2	Down-running input	18	ARD input
3	Top-terminal station 2 input	19	Inverter running input
4	Bottom-terminal station 2 input	20	Electric interlock input
5	Top -limit input	21	Heat sensitive switch
6	Bottom-limit input	22	Invalid
7	Invalid	23	Invalid
8	Invalid	24	Invalid
9	Invalid	25	Invalid
10	Invalid	26	Re-leveling condition input
11	Inverter faulty	27	Re-leveling door zone input

	input
12	Fire input
13	Emergency stop input 1
14	Door interlock 1 input
15	Main contactor input

28	Stand by

(21) Multi-function Output Setting

It can be set through Y16, Y17.

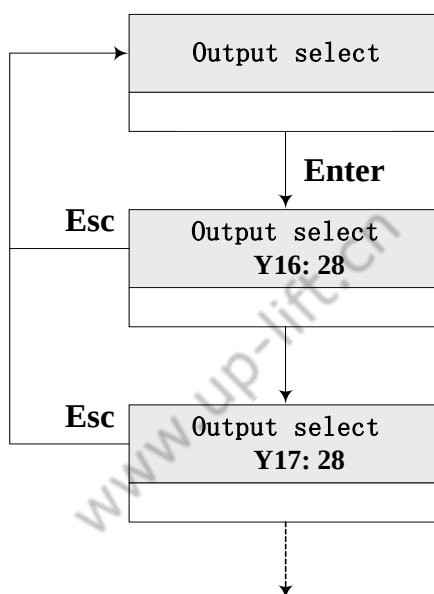


Table 3-8 Multi-function Output Table

Function No	Define
0	Re-leveling control output
1	Fire output
2	Open 2 contactor control output
3	Close 2 contactor output
4	Open 1 contactor control output
5	Close 1 contactor control output
6	Brake control

Function No	Define
8	Main contactor output
9	Running contactor output
10	Inverter up-running output
11	Inverter down-running output
12	Inverter enable output
13	Multi-speed1 output
14	Multi-speed2 output

	output
7	Economical resistance control output

15	Multi-speed3 output

The range of port with multi-function output setting function is from Y0 to Y15;

Multi-function output setting is same as multi-function input setting.

Note: whether the port COM is suitable to the multi-function output setting, otherwise corresponding device will be destroyed.

3.4.3 Running Parameter Operation

It is used to set running parameters.

Runing para
Enter

(1) Elevator Rated Speed

It is elevator rated speed, which can be set according to calculation result of motor rated speed, driving ratio and traction wheel diameter.

Elevator rated speed can be used to calculate ratio between motor rated speed and elevator rated speed, to change this parameter cannot change elevator actual speed.

Car Speed
1.60m/s

(2) Motor Rated Speed

It is set by nameplate.

Motor Speed
1350rpm

(3) Number of Encoder Pulse

The number of encoder pulse is pulse number that is inputted into main board. It's range from 6kHz to 25kHz, if it is more than 25kHz, it should be divided, but pulse frequency divided is not less than 6kHz.

Pulses
1024 PPR

Notice: elevator rated speed, motor rated speed and number of encoder pulse are the important parameters. They should be set by nameplate. If one of them is

changed, hoistway learning must be performed again before system normally runs.

(4) Inspection Running Speed

It shouldn't be greater than 0.6m/s.

Insp Speed
0.30m

(5) Start Speed (Smooth Start Speed)

Smooth start speed can be used to optimize feeling at starting in some types of installations.

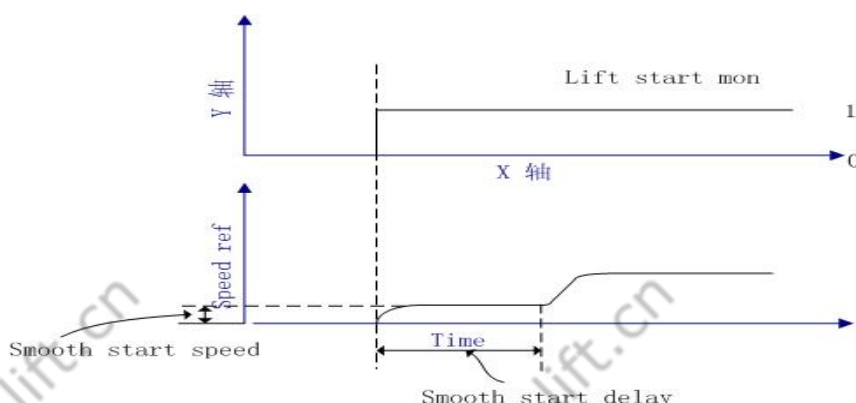


Figure 3-4 smooth start speed and smooth start delay sketch map
When traction machine's starting friction too much , start speed can be added measurably , if smooth start speed is set to 0,the function is invalid.

Start Speed
0.30m/s

(6) Leveling Speed

When elevator doesn't stop at leveling zone for fault, it should be automatically crawling to leveling zone if safe circuit and inverter both restore normally. Leveling speed is range from 0.01 m/s to 0.6m/s.

Leveling speed
0.30m/s

(7) Least Speed (One-Floor Running Speed)

When elevator speed is higher than 1.5m/s, one-floor running speed is different from multi floor running speed. It determines the smallest inter floor distance. If inter floor distance is too small, least speed (one-floor running speed) should be reduced. It is range from 0.8m/s to 1.0m/s

Least Speed
1.00m/s

(8) Break on Time (advance brake release time)

To improve passenger ride quality at elevator's start point and make system to adapt different kind of traction machine, it is necessary to adjust advance brake release time.

Break On Time
50ms

(9) Braking Time

By adjusting this parameter, to make system wait for brake to hold traction sheave tightly then open door after brake drop, it can avoid car's rollback caused by inverter remove locked-rotor torque too early when door is opening.

Break Off Time
50ms

(10)b1 Acceleration Slope

Acceleration b1
0.60m/s²

(11)b2 Deceleration Slope

Deceleration b2
0.60m/s²

(12)P1: S Time 1

S Curve P1
0.60m/s³

(13)P2: S Time 2

S Curve P2
0.60m/s³

(14)P3: S Time 3

S Curve P3
0.60m/s³

(15)P4: S Time 4

S Curve P4
0.60m/s³

B1,b2,p1,p2,p3 and p4 are used to adjust running curve. Passenger will feel more comfortable by adjusting these six parameters (besides inverter parameters). Parameter is increased, curve transition becomes more quickly; parameter is decreased, curve transition becomes more slowly. Elevator can meet standards by adjusting them

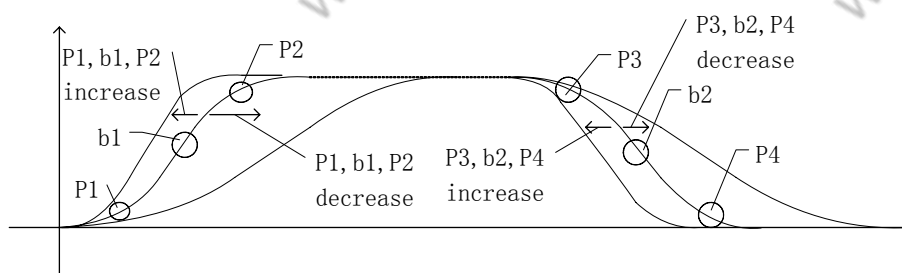


Figure 3-5 Speed Curve Parameter Adjustment

(16)Zero Speed

When elevator speed is less than this speed, system regard elevator's speed as zero and make brake drop.

Zero Speed
0005r

5r/minute

On analog given mode, the min value of zero speed can be set to 0, on multi-speed mode, the value of zero speed should be set greater than or equal to 1

(17) Zero Time

Adjusting this parameter measurably until the motor is clearly at zero speed when the brake drops.

Zero Time
210ms

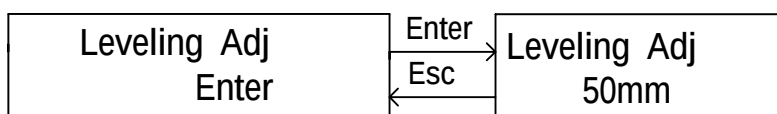
(18) Start Speed Time(Smooth Start Delay)

It is the start speed hold time, refer to figure 3-4.

Start Speed Time
200ms

(19) Leveling adjustment

When elevator stops at different position for up/down running, this parameter should be adjusted (The car's stop position is higher than leveling position in elevator's up-running and The car's stop position is lower than leveling position in elevator's down-running, this parameter should be decreased; otherwise, it should be increased.). The adjusting amplitude is half of the leveling difference (default is 50mm).



(20) Load Adjustment

In Synchronous Control System, because the lower rise floor elevator without compensation chain, so the load device which be installed on elevator can only detect car's load, it can't detect the change of every floor rope's weight .so load adjust parameter is added into running parameter to adjust.

- Adjust method:
- 1.Perform no-load hoistway learning and full load hoistway learning;
 2. Run no-load elevator up to top floor;
 - 3.setting load compensate voltage: the setting range is

-8~+8v

4. Adjust inverter's analog load compensate given, it is the proper value which will never result in car rollback in down running process form top floor.

5. No-load elevator arrive at bottom floor, increase load adjust parameter, it is the proper value that will never result in car rollback in up running process form bottom floor.

6. save system parameter.

Notice: The function is suitable for the hard version that above 700-33, the range of the parameter is from 0 to 12.

(21) Pre-opening speed

The elevator's pre-opening door speed after elevator run and slow down into re-leveling door zone normally.

Note: in multi-speed running mode, (double door zone speed given is 0 FU02=ON), after slowing down, leveling speed must less than pre-opening speed

Open Door Speed
0.15m/s

(22) Re-leveling Stop Speed

In pre-opening door or re-leveling process, if running speed is excess of re-leveling stop speed, elevator will stop running.

Relevel St Speed
0.20m/s

(23) Re-leveling Running Speed

The re-leveling running speed that is set on analog given mode.

Relevel Run Speed
0.06m/s

(24) Lamp off Time

The setting unit is minute, the setting range is 0~999 minute. On automatic running mode, if there is not any car call or landing call, after lamp off time, system will cut off lamp's power by COP.

Lamp off Time
15 m

(25) Beep Delay Time (Arrival Signal Output Delay Time)

The setting unit is millisecond, the setting range is 0~5000 millisecond, while elevator run and slow down into target floor, it will delay this time to output arrival signal and make report device or arrival bell (arrival chime) delay some

time to report.

Beep Delay Time
100 ms

3.4.4 Special Parameter

It is used to set special parameter.

Special para
Enter

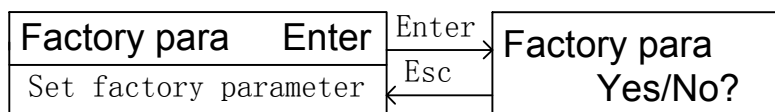
(1) Door Run Time (open/close door relay holding time)

It is holding time of open/close door command. When there aren't open door limit switch and close door limit switch, open/close door relay's holding time is determined by setting this parameter. When there are open door limit switch and close door limit switch, the value is longer than actual open/close door time by 1 second.

Door Run Time 005s 5 second

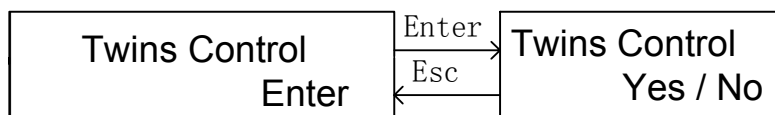
(2) Factory Parameter

By setting factory parameter to Yes, all parameter will be restored to the default value. When system parameters are disorder, by setting this parameter to start debug afresh.



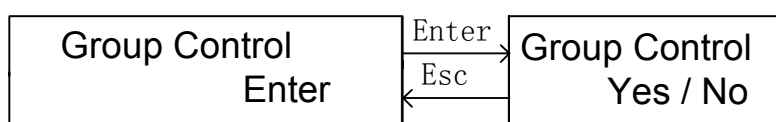
(3) Twins Control Enable

1: on twins control mode; 0: on single control mode.



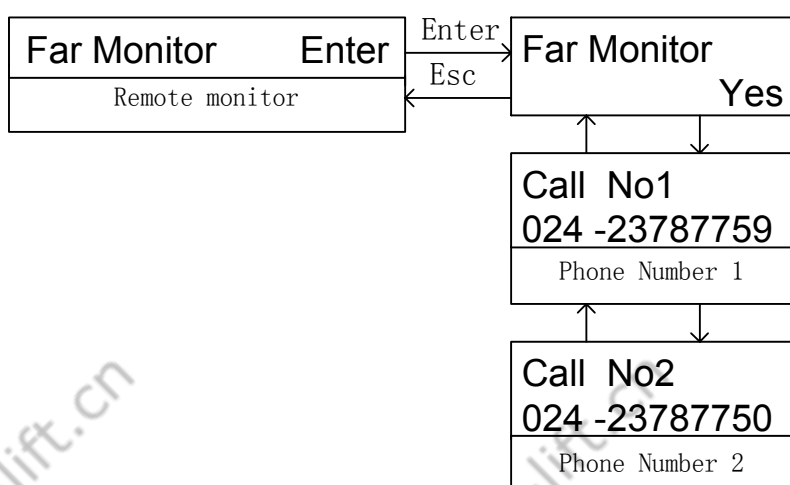
(4) Group Control Enable

1: on group control mode; 0: single control mode. (provided according to client's requirement)



(5) Far Monitor(Remote Monitor Enable)

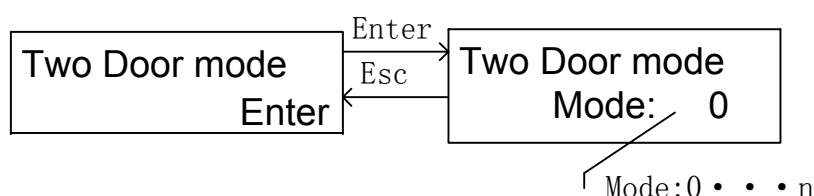
1: remote monitor; 0: local monitor (provided according to client 's requirement)



Phone number can be set, if parameter far monitor enable is set to “Yes”. When elevator fault is presented, system will call the set phone number automatically. There are two phone number can be set at most on remote monitor mode

(6) Two Door Mode

This is open door mode when elevator with two doors at same floor, mode 0 to mode n can be set according to client's requirement.



Mode n=0: one-floor mode.

Mode n=1:two door mode 1, only one door can be opened at every floor.

Mode n=2: two doors mode 2, two doors can be opened at some floors, but not all door can be opened at same time. To open the other door, this door must be closed. (Both the front door and the back door have their own car call button input)

Mode n=3: two door mode 3,two door can be opened at some floor, when

elevator arrive at two door floor normally, both of them can be opened at same time. (There is only one suit of car call bottom input; landing call address setting method is same as mode 2)

Mode $n=4$: two door mode 4, two door can be opened at some floor, when elevator arrive at two door floor normally, both of them can be opened at same time. (Both the front door and the back door have their own car call button input)

Mode $n=5$: two door mode 5, two door can be opened at some floor, when elevator arrive at the two door floor normally, the door can be opened according to requirement, for example: before elevator's stop, the front door's car call or landing call is valid, the front door is opened; the back door's car call or landing call is valid, the back door is opened; both front and back door's car call or landing call are valid, both of two door are opened at same time. (Both the front door and the back door have their own car call button input)

Because work mode is different, the connection of car and landing call unit address is different.

(a) Landing call box address set:

1. $n=0,1$: landing call box address is normally set. Refer to 2.25 (3)
2. $n=2,3,4,5$: the rule of set landing call box is as following:
 - a. 1~32 front door absolute address, 1—bottom floor, max is 32, 32nd floors
 - b. 33~64 back door absolute address, 33—bottom floor, max is 64, 32nd floors

If there is only one door at some floor, the other door address is vacant.

For example1: one elevator has one floor under ground, front door and back door both can be opened. Thus front door address is 1 and back door address is 33.

For example2: one elevator has one floor under ground with front door, front door and back door of ground floor both can be opened. Thus front door address of basement is 1, back door address of basement is vacant; front door address of ground floor is 2, back door address of ground floor is 34.

(b) COP button connection

1. $n=0,1$: 1~N car call buttons are normally connected to COP 1~N ports
2. $n=2,3,4,5$: N =total floors, COP 1~ N ports are connected to front door car call buttons, 1—bottom floor, N —top floors; COP $N+1$ ~ $2N$ ports are connected to back door car call 1~ N buttons, $N+1$ —bottom floor, $2N$ —top floor

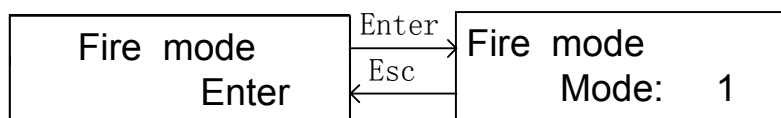
For example: elevator total floors=6, no basement, two doors at 3rd floor, only front door at the other floors. Thus 1~6 floors front door car call buttons are connected to COP 1~6 ports, back door at 3rd floor car call button is connected to COP $N+3=6+3=9$ port.

Notice: when two-door mode is set to 1,2,3,4,5, two suit of open/close door button should be installed in order to the front and the back door can be opened optionally.

(7) Fire Mode

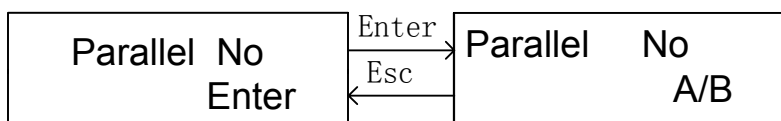
Mode 1: only return to homing floor

Mode 2: Be sure that the outer device meets national standards.



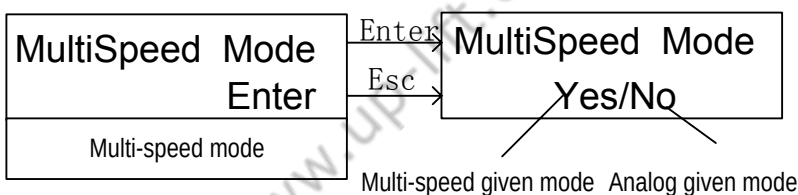
(8) Parallel Elevator Number

Elevator number is A or B, if twins control enable is set to yes.



(9) Multi-speed Mode

When some inverter (e.g. Fuji G11UD) needs multi-speed given, this parameter is 'Yes'; analog given is 'NO'.



(10) Multi-speed Setting

When multi-speed given is enabled, you must set multi-speed and deceleration distance. Refer to following table:

Table 3-10 Multi-speed Setting

Value Parameter	Elevator Speed	1.0m/s	1.5~1.75m/s	2.0m/s	2.5m/s
V1		1m/s	1.5~1.75m/s	2.0m/s	2.5m/s
V2		0	1.0m/s	1.6m/s	2.0m/s
V3		0	0	1.0m/s	1.6m/s
V4		0	0	0	1.0m/s
S1		1.3m	2.4m	4.2m	6.5m
S2		0	1.3m	2.4m	4.2m
S3		0	0	1.3m	2.4m
S4		0	0	0	1.3m

When perform multi-speed setting, parameter V1 should be set to the speed value which is corresponding to the highest speed value, parameter V4 should be set to the speed value which is corresponding to the lowest speed value, the unit is m/s. once value is set, LCD will display the converted corresponding motor speed, the unit is rpm.

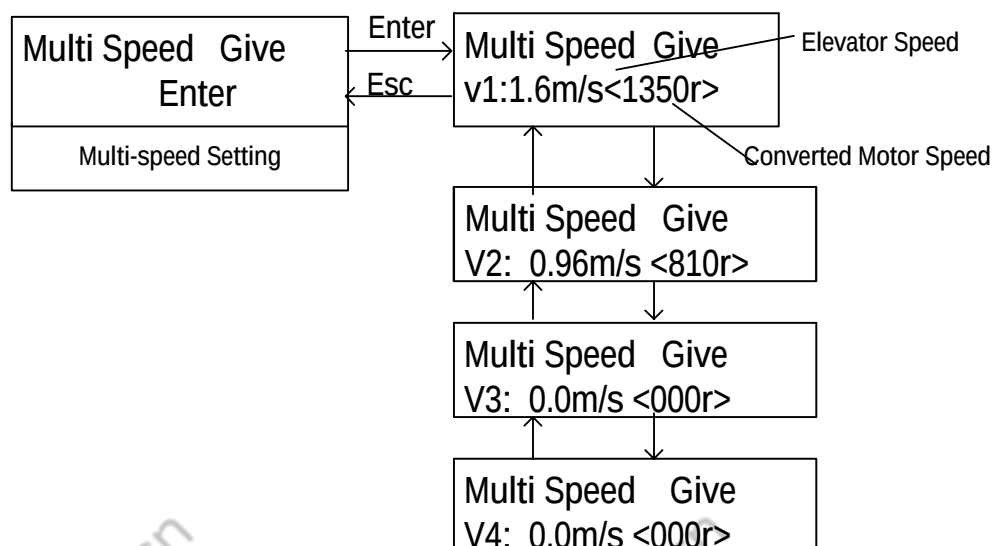
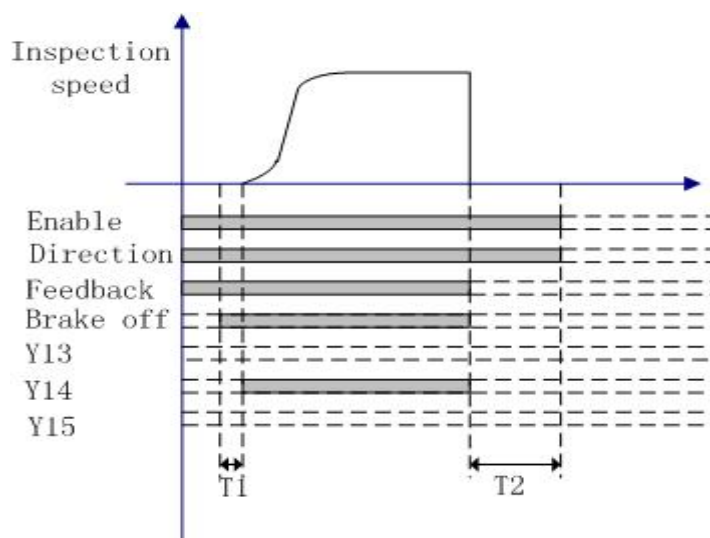


Table 3-11 Multi-speed Given Output Logic is Combination of Y15,Y14 and Y13.

Port Speed	Y15 (J7-8)	Y14 (J7-5)	Y13 (J7-4)
Inspection speed	0	1	0
Re-leveling speed	0	0	1
Leveling speed	0	1	1
Low speed V1	1	0	0
Moderate speed V2	1	0	1
Moderate speed V3	1	1	0
High speed	1	1	1

Example of multi-speed output

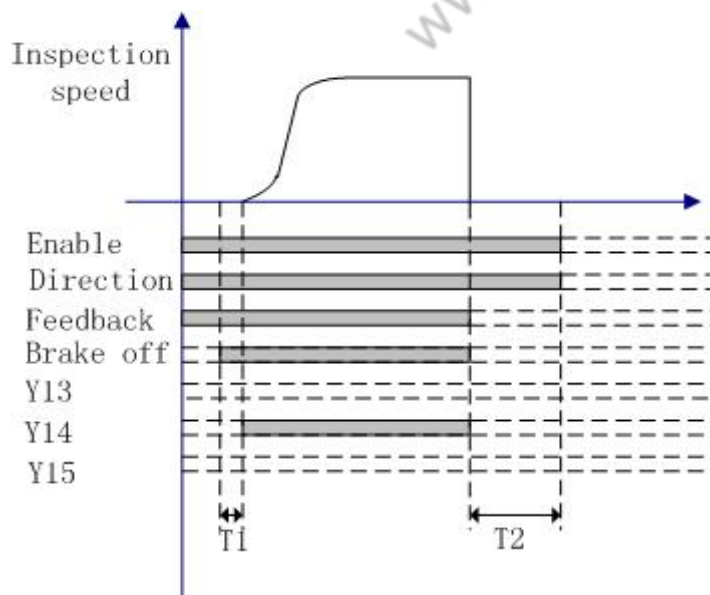
① Inspection (no jog)



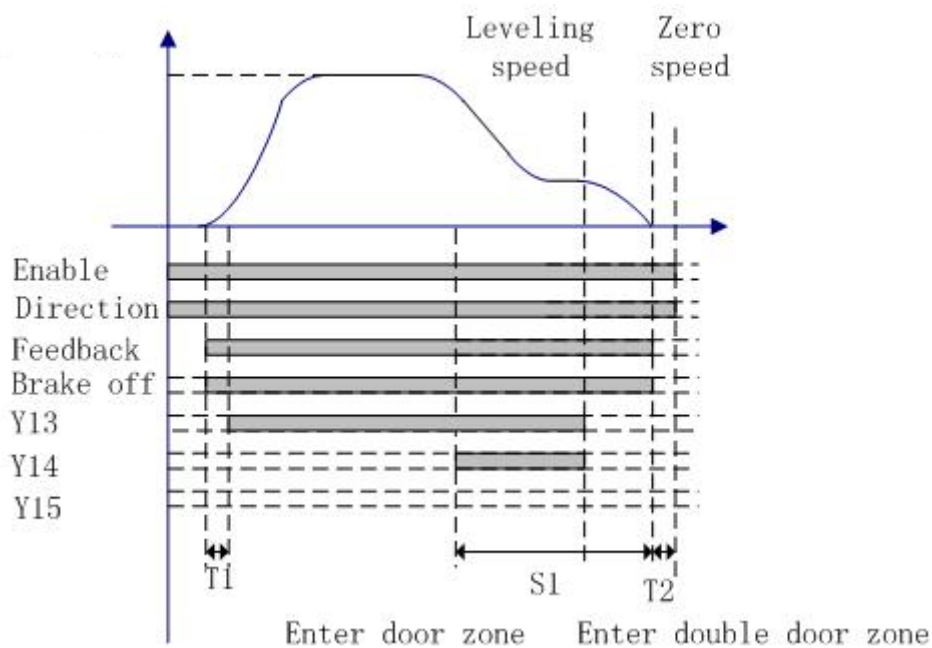
t1:brake opened time ahead of schedule t2:holding time after the elevator stopping (not be set)。

② Inspection (jog, for example YASKAWA inverter)

The mode “Drive” being 1 is the mode that has jog output and decreased time switching output. Inspection speed is only controlled by Y1.

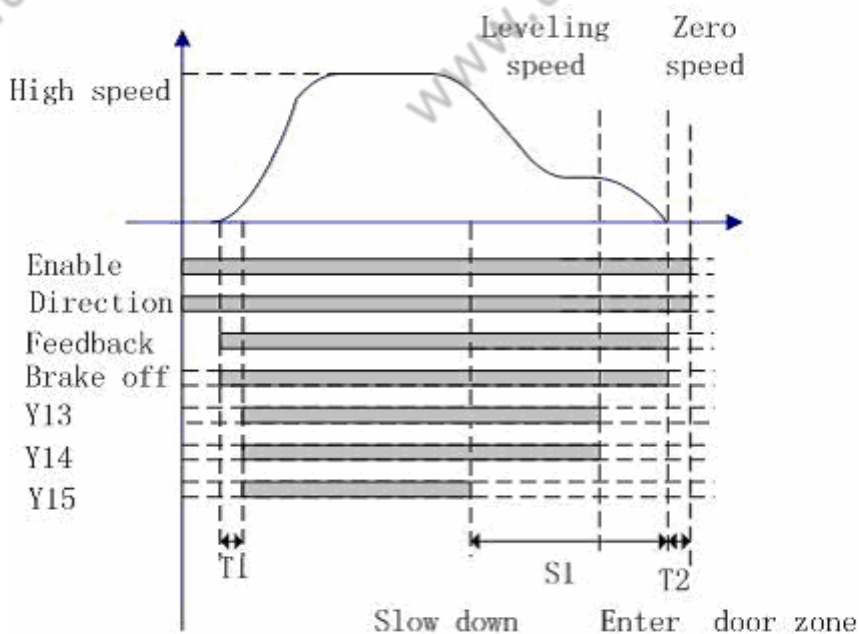


③ Hoistway learning or leveling



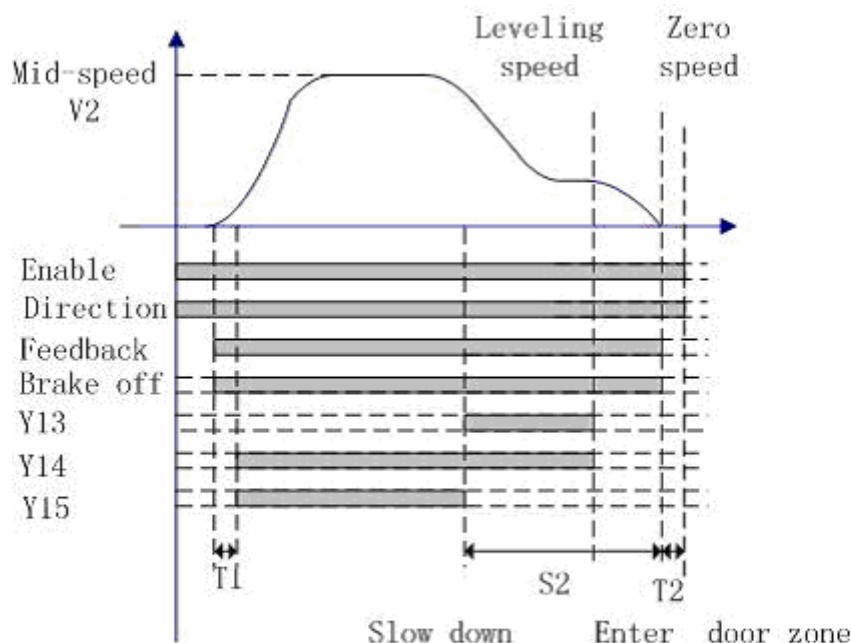
④ Protecting auto returning (the position of door entrance range is the bottom door entrance zone the same to leveling)

⑤ High speed



s1 is slowdown distance in high speed running

⑥ Middle speed



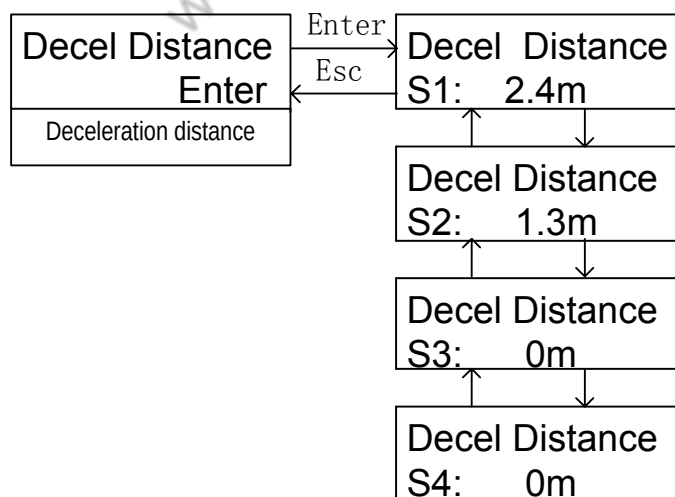
s2 is slowdown distance in mid_speed 2 running

Note: ①when the system leaves the factory, after changing the speed, the set point of zero speed (the output of Y15、Y4、Y13 is 0) is the position of single door entrance range. If it needs enter the double door range as the zero speed setting, please contact with our company.

② if the setting mode Drive is 1 in the multi-speed function, when running state turns into zero speed state, Y0 is output port whose output is as the decelerated time switching. (for example, for YASKAVA inverter, when running state turns into zero speed state, it will switch decelerated time to adjust the leveling.)

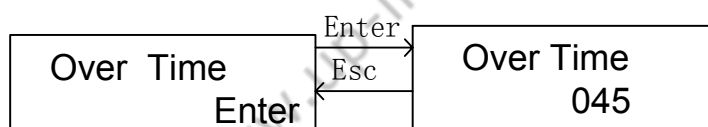
(11)Deceleration Distance

On multi-speed given mode, in order to avoid braking at non-zero speed or too long leveling distance, deceleration distance should be adjusted. Deceleration distance is different for different speed, it should be determined by testing.



(12) Over Time (running over time)

The elevator's running time for from start to stop should be limited, in order to avoid damaging by rope slides or car blocked. If running time from bottom to top in excess of this time, system will be stop to protect. It exits protection mode, only if system is powered on again. it can be set according to elevator speed and inter floor distance. The default value is 45 seconds.



(13) Special Function Selection

In order to meet user special need, some special function is added; user can select some of these functions according to their requirement.

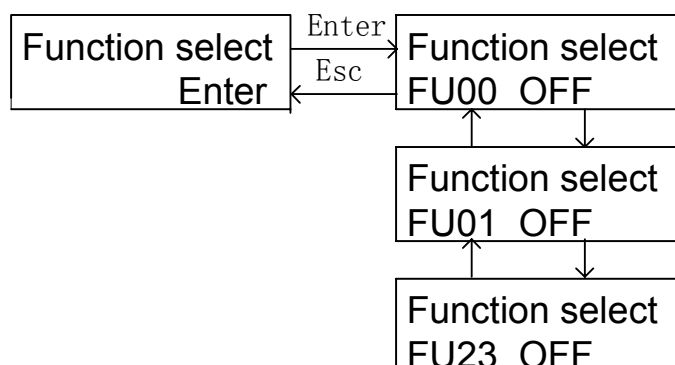


Table 3-12 Special Function Selection

Function Number	Function Description
FU00	After stopping and leveling, if there is not any car call or landing call from the floor that above current floor, all car call register is

	cleared
FU01	Inner testing
FU02	Elevator slow down into leveling region and meet double door zone, inverter's speed given will be set to 0, else, the default setting is that elevator meet single door zone and inverter's speed given is 0.
FU03	Inner testing
FU09	If FU09 is set to ON; car call can be canceled in running process; set to OFF, car call can't be canceled in running process.
FU10	If FU10 is set to ON, while inverter 's running feedback (X19) is valid, break is released at once; if be set to OFF; break will delay 0.5 second to released, after inverter's running feedback is valid.
FU11	The value is set to ON, KEB F4 inverter multi-speed logic is output
FU12	The value is ON: enable output、direction output、speed output can be given at same time (while CV、KEB inverter be used in multi-speed mode); else, the value should be set as OFF.
FU13	The value is ON: while elevator stop, direction output is cut off before break off output in zero speed state; the value is OFF: enable output and direction output will be cut off at same time.
FU14	ON: handicapped function is valid; OFF: this function is invalid.
FU16	ON: when system ensure that door lock is closed, close door limit must be valid; OFF: door lock state is irrespective of close door limit
FU17	ON: on inspection mode, when elevator stop, enable output、direction output、break off output are cut off at same time, OFF: while elevator stop and break off, it is will delay 0.5 second that enable output is cut off.
FU18	ON: you call install one suit of close and open door button in two door mode, OFF: you must install two suit of open and close button in two door mode.
FU19	ON: re-leveling function enable. OFF: re-leveling function disable
FU20	ON: pre-opening enable; OFF: pre-opening disable.
FU21	ON: on inspection mode, door can't be opened, when elevator out of door zone; OFF: on inspection mode, door can be opened in any position.
FU22	ON: the main board's hardware version is higher than BL200-STB-V9(can by terminal X26、X27、X28、X29 input and Y16、Y17 output), OFF: The hardware version is BL200-STB-V2
FU23	FU23=ON: serial load device is SJT-300 which adopt CAN bus method in communication process. FU23=OFF: serial load device is SJT-150 that adopts RS485 method in communication process.

Chapter 4 System Debugging And Running

4.1 Check Before Power On

Electric part must be checked after electrical connection is completed. The fellow should be noticed:

1. Check whether electrical connection is correct, refer to manual and electric schematic diagram.
2. Check whether high voltage and low voltage are connected. Measure resistance between different voltage circuit. The resistance between ground and system is infinite
3. To prevent inverter from being destroyed, check the connection between control cabinet power supply and motor
4. Check control cabinet shell, motor shell car ground wire and hall door ground wire are reliably connected to ground.
5. Check connection and lay out between encoder and inverter. Check degree of concentric between encoder and traction motor.
6. Elevator stop at inter mediate floor's leveling position
7. Electronic lock switch is set to 'on' position.

4.2 Power on and Check

4.2.1 Confirm the Follow Item before Power on:

1. All air switches in control cabinet are open.
2. Emergency stop button is pushed down and control cabinet switch is in inspection position
3. Car top and car switch is in normal position
4. Verify that bottom landing call box terminal resistance is connected.
5. Check power voltage: three phase wire phase voltage V_p : $380 \pm 7\% \text{VAC}$, V_p error: $V_{pe} < 15 \text{VAC}$; line voltage V_l : $220 \pm 7\% \text{VAC}$

4.2.2 Check after Power on

1. Close power switch, if phase sequence relay KXX green light on, the phase sequence is correct, otherwise, two of wires are exchanged, and then repeat this step.
2. Check voltage between terminals of TC1 in control cabinet, which error is no more than $\pm 7\%$.
3. If above check is normal, you can continue doing the following step:
 - a. Close F2: voltage between terminal 100 and 100 is $110 \pm 7\% \text{VAC}$
voltage between terminal 102 and 103 is $110 \pm 7\% \text{VAC}$
 - b. Close F3: voltage between terminal 200 and 201 is $220 \pm 7\% \text{VAC}$

Table 4-1 Switch Power Voltage Table:

Terminal	L-N	5V-G	24V-G
Voltage	220±7%VAC	5±0.1VDC	24±0.3VDC

4. Reset emergency stop button, KJT and KMC will pick-up, and inverter will work.
5. If above check is normal, you can continue doing the following step:
 - a. Check inter-lock circuit
 - b. Check leveling zone signal and top/bottom limit signal
 - c. Check electronic lock: when the parameter of automatic start/stop elevator time is 0, if lock switch is 'on', 'insp' is displayed on LCD; if lock switch is 'off', 'stop' is displayed on LCD.
 - d. Check close/open door system.

4.3 Parameter Setting

4.3.1 Main Control Unit Parameter Setting

These parameters are set by local factual requirement. The method refers to chapter 3

4.3.2 Inverter Parameter Setting

The parameter of inverter must be configured before elevator start low speed running. The detail refers to appendix 1. It is suggested that motor parameters are set by inverter's self-learning. To obtain the method of inverter's self-learning, please refer to inverter manual.

4.4 Low Speed Running

4.4.1 Perform Inspection Running in Machine Room

- (1) The following must be confirmed before start inspection running:
 - a. Control cabinet inspection switch is set to inspection position; car top and car inspection switch is set to normal position.
 - b. Safety circuit and door inner-lock circuit are normal. Encoder is installed and connected correctly. Notice: door inter-lock mustn't be short.
 - c. KJT relay, KMB relay and KMC contactor in control cabinet are picked up after powering on. Inverter displays normally and inspection parameter are set correctly. Elevator's working status that displayed on LCD is 'INSP'.
 - d. The connection between traction motor and control cabinet is correct.

(2) Running

If the condition of inspection running is met, press low speed running button (up/down), elevator should runs at set inspection speed, observe the speed and direction of feedback displayed on inverter LCD. When elevator runs up, the running direction is positive; when elevator runs down, the running direction is negative.

- a. When low speed running (up/down) button is push down, if the feedback speed isn't steady or error is too much, when system is powered off,

exchange then phase A and phase B of encoder. Restore system's power and check again.

- b. If elevator speed is steady, but the direction of running is contrary to the direction given by button, exchange two connection wires of inverter and motor and exchange phase A and phase B of encoder too, after power off. Restore system's power and check again.
- c. If feedback direction is consistent to the actual running direction, but the fault 'Er04' is detected, exchange A phase wire and B phase wire of encoder on main board after power off. Restore system's power and check again

4.4.2 Car Top and Car Inspection

When running on machine room inspection is normal, elevator's car top and car inspection running can be performed. If the direction given by up/down button in car top and car is contrary to elevator actual running direction, you should check corresponding circuit of inspection direction button and shouldn't change circuit in control cabinet.

4.5 Hoistway Learning

Hoistway learning is the process that elevator detects the position of every floor and every switch in hoistway at learning speed. Because elevator's starting and braking and indicator must base on the position of floor, elevator's hoistway learning running must be performed before normally running. The hoistway learning step as follows:

- a. It must be ensured that Elevator meets safety running conditions.
- b. Check whether the switches in hoistway 's installation and connection are correct. And check whether traveling cables and landing call cable's connection are correct. Set landing call and display unit's addresses.
- c. Runs car down to bottom limit at low speed when elevator on inspection mode.
- d. You operate elevator by menu after entering into hoistway learning menu. Elevator runs from bottom to top at inspection speed. 'Learning' is displayed on LCD. 'Success' is displayed on LCD after elevator runs to top limit and stops.

After hoistway learning is finished. The result of learning may be checked in monitor menu. Unit is m. if some fault occurs in the learning course, it will abort and display fault code (refer to appendix 5)

Notice: hoistway learning is really successful only if 'success' is displayed on LCD after it finishes learning.

4.6 High Speed Running

Elevator can run at high speed after it is verified that hoistway learning is successful.

- a. Elevator runs on attendant mode.
- b. You may select target floors by monitor menu, it may run in one-floor mode, double floor mode, multi-floor mode and all floor mode.

- c. It is confirmed that starting, acceleration, deceleration and leveling are all normal.
- d. If elevator's running is abnormal, please check main board's parameter setting and inverter's parameter setting.

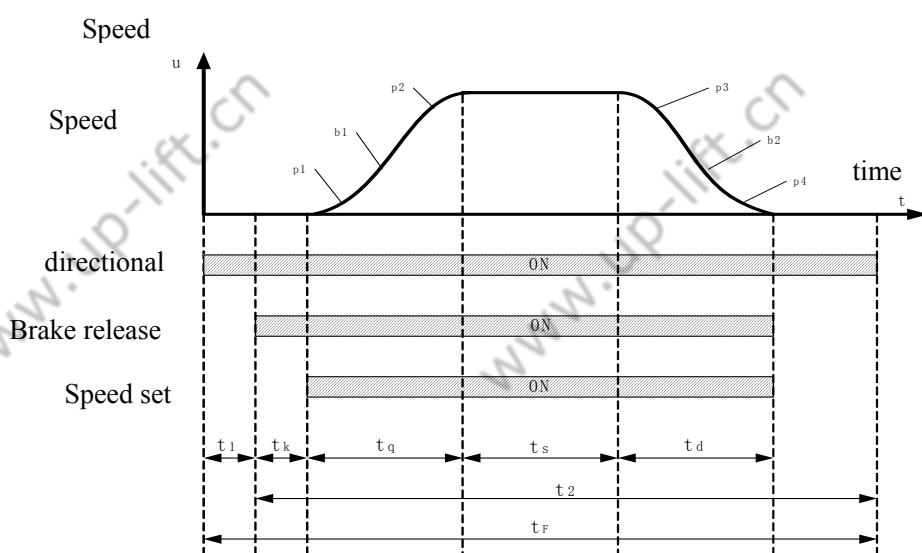
4.7 Adjust Elevator more Comfortable

If leveling precision and running comfortable feeling is not ideal enough, first you should check mechanical system (e.g. clearance and lubricate of track, degree of tightness of rope and position of rope gripper etc.). Then you may adjust control part if mechanical system is good.

Because inverter runs according to starting and braking given curves, the curves profile, tracking error and time sequence of logic all have effect on comfortable degree.

4.7.1 Adjustment of Starting and Braking Curves

Figure 4-1 is running curves.



t1-running direction setup time;
t2-running direction holding time;
tk-advance brake release time;
ts-constant speed running time;

tq-startup accelerating time;
td-brake decelerating time;
tf-single running circle;

P1: beginning start-up step acceleration: define curves acceleration variation ratio. As the value decrease, the profile transition more slowly from starting to maximum acceleration and elevator runs more smoothly.

B1: start-up step acceleration: maximum acceleration of curves. Lower value will provide more slowly acceleration transition and make elevator runs more smoothly.

P2: end start-up step acceleration: it determines how quickly the acceleration transfer from maximum value to zero. As the parameter's value decreases, the profile

transition more slowly and elevator runs more smoothly.

P3: begin braking step deceleration: it determines how quickly the deceleration transfer from zero to maximum value, as the value decreases, the profile transition more slowly and elevator run more smoothly.

B2: braking step deceleration: define the maximum value of deceleration .the value has great effect on the profile transition of braking step deceleration. As the value decreases, the profile transition more slowly and elevator runs more smoothly

P4: end braking step acceleration: define the deceleration rate for transition from the maximum value of deceleration to leveling speed .As the value decreases, the profile transition more slowly and elevator runs more smoothly.

4.7.2 Adjustment of Curves Track

Inverter must control motor and make motor's speed feedback to track the given curve's variety strictly, elevator's running quality will improved and obtain anticipant comfortable feeling. Inverter establishes math model of motor by inputting motor parameter. According to the math model, controls motor's starting or braking, so user must input right motor parameters (we suggest motor parameter learn.).

Speed loop proportion gain C5-01 and integral gain C5-02 both have effect on tracking error. Increasing proportion gain may improve dynamic characteristic, but if proportion gain is too much, it may cause high frequency vibration and increase motor noise; increasing integral gain may improve anti-jamming ability, tracking ability and precision of leveling, but too much integral gain may cause vibration.

Generally, to improve quick response characteristic and to prevent too much overshoot, at first, adjust proportion gain and increase it as more as possible, but it must be ensure that vibration will never appear in system, then adjust integral gain.

4.7.3 adjustment of elevator running control time sequence

Figure 4-1 is time sequence. Micro control unit program run by figure 4-1. User may adjust the advance brake release time and zero speed.

Advance brake release time t_k : t_k is the delay time of output release brake command and start-up cures. This parameter adapts to traction motor acting time, which affects elevator smoothly start. If it is too small, elevator will brake at start time; if it is too much, car will begin rollback at start time.

Zero speed set: zero speed threshold, Micro control unit judge braking time according to it. If it is too much, elevator will brake at moving time, if it is too small, open door will delay. Default value is 5rpm.

4.8 leveling precision adjustment

Precision of leveling is adjusted after 4.7.1 has been finished.

The condition to ensure elevator's leveling as follow:

- (1) If you want to exact level, leveling zone sensor and leveling inductor plate are installed correctly.
- (2) The length of leveling inductor plate in every floor door zone must be consistent exactly

- (3) The support must be firm
- (4) When car locate at leveling position, the center of leveling inductor plate is middle of two leveling zone sensor, otherwise, leveling point of this floor will deviate.
- (5) If magnetic switch is adopted, it is ensured that leveling inductor plate is inserted into hoistway deeply, otherwise, the magnetic switch action time will be affected and follow phenomenon will appear.

in up running process, elevator's stop position will higher than this landing floor 's leveling position; in down running process, elevator's stop position will lower than this landing floor 's leveling position

- (6) Elevator must has leveling running process momentarily before stop to ensure elevator's leveling
- (7) In actual adjustment, adjust inter mediate floor's leveling precision firstly until elevator's stop position is consistent with leveling point, and then adjust other floor's leveling precision base on this position.
- (8) By curve selection and proportion gain and integral gain adjustment in above section, it is ensured that elevator's stop position is same whenever up run or down run to inter mediate floor to stop (this is to say that the error range of every time stop position is from positive 2~3 mm to minus 2~3mm).

Leveling precision adjustment on multi-speed mode:

- (1) Without leveling running or leveling time too long.

After slowing down, elevator should enter leveling running. it is basic condition for elevator's leveling. If without leveling running, it is indicated that deceleration curve profile transition too slowly; if leveling time too long, it is indicated that deceleration curve profile transition too quickly. Adjust deceleration curve to make elevator can enter leveling running but leveling time isn't too long.

- (2) Stop position higher than leveling point in down running process and stop position lower than leveling point in up running process or stop position higher than leveling point in up running process and stop position lower than leveling point in down running process.

When stop position higher than leveling point in down running process and stop position lower than leveling point in up running process, it is indicated that leveling running speed too low; when stop position higher than leveling point in up running process and stop position lower than leveling point in down running process, it is indicated that leveling running speed too high; so the leveling running speed should be adjusted.

- (3) Stop position higher than leveling point in up running process and stop position higher than leveling point in down running process or stop

position lower than leveling point in up running process and stop position lower than leveling point in down running process.

When stop position higher than leveling point in up running process and stop position higher than leveling point in down running process or when stop position lower than leveling point in up running process and stop position lower than leveling point in down running process, it is indicated that door zone leveling inductor plate position has deviated, so leveling inductor plate position should be adjusted.

(4) Top terminal /bottom terminal have not been installed in correct position

If top terminal /bottom terminal have not been installed in correct position, it will have effect on elevator's leveling precision when elevator stop at top terminal landing or bottom terminal landing. Top terminal position adjustment step as follow:

- ◆ Top terminal switch should be installed at such place that position is longer than deceleration distance
- ◆ Run car up to top terminal, after slow down and stop, elevator position will not stop at leveling point.
- ◆ Make system on inspection mode;
- ◆ Measure distance between elevator's stop position and leveling position, this is adjustment distance of top terminal.

Bottom terminal position adjustment step is same as above step.

Leveling precision adjustment on analog given mode:

(1) Elevator's stop position confirmation

By curve selection and proportion gain, integral gain in above section, it should be ensured that whenever elevator run up to intermediate floor or run down to intermediate floor, car consistently stop at the same position (the error of every time stop position range is from positive 2~3mm to minus 2~3mm.

(2) Adjustment of leveling inductor plate

- ◆ When elevator stops at every floor, you should measure and record the departure value (Δs) of the height of landing door sill and the height of car sill. ($\Delta s > 0$, car sill is higher than landing door sill; $\Delta s < 0$, car sill is lower than landing door sill)
 - ◆ Adjust leveling inductor plate every floor $\Delta s > 0$: leveling inductor plate is moved up; $\Delta s < 0$: leveling inductor plate is moved down.
 - ◆ Hoistway learning must be performed again after leveling inductor plate position is adjusted.
 - ◆ Leveling is checked again, if precision of leveling can't reach your requirement, repeat above step again.
6. If elevator consistently stop at the same position in every time running, but up running stop position and down running stop position isn't same, it may be adjusted by leveling adjusting menu, the default value is 50mm. If up running stop position is higher than leveling point and down running stop position is

lower than leveling point, it is reduce; If up running stop position is lower than leveling point and down running stop position is higher than leveling point, it is increased, the value is $\Delta s/2$. If Δs is 20mm, adjust value is 10mm.

4.9 Terminal Switch Position Confirmation

Terminal signal is signal that force elevator to slow down, at same time, it is signal that be used for revising floor position also. It should be installed at the position that the distance is 2.5m (1.6m/s) from car top(car platform) to leveling position.

Inspection speed is 0.3m/s and elevator runs on inspection mode. It runs up (down), when it arrives at terminal it stops. The distance is $2.5m \pm 0.1m$ from car sill to landing door sill.

4.10 Fault Process

4.10.1 Machine Room Inspection Running Fault

1. Safety circuit break. TMA-09 and TMA-10 is short connected. (Car top emergency stop 100 and 105 are forbid to be connected discretionarily)
2. Door lock circuit break. TMA-06 and TMA-07 is short connected.
3. Up/down limit switch break. TMA-03, TMA-04 and TMA-05 is short connected.
4. Inspection signal disconnected. TMA-11 and TMA-12 is short connected.
5. Limit speed switch disconnected, TMA-14 and TMA-15 is short connected.

4.10.2 Learning Fault

The problem is resolved by appendix 8. If it display 2F and learning is passed when elevator depart from bottom floor, up/down leveling switch may be reverse.

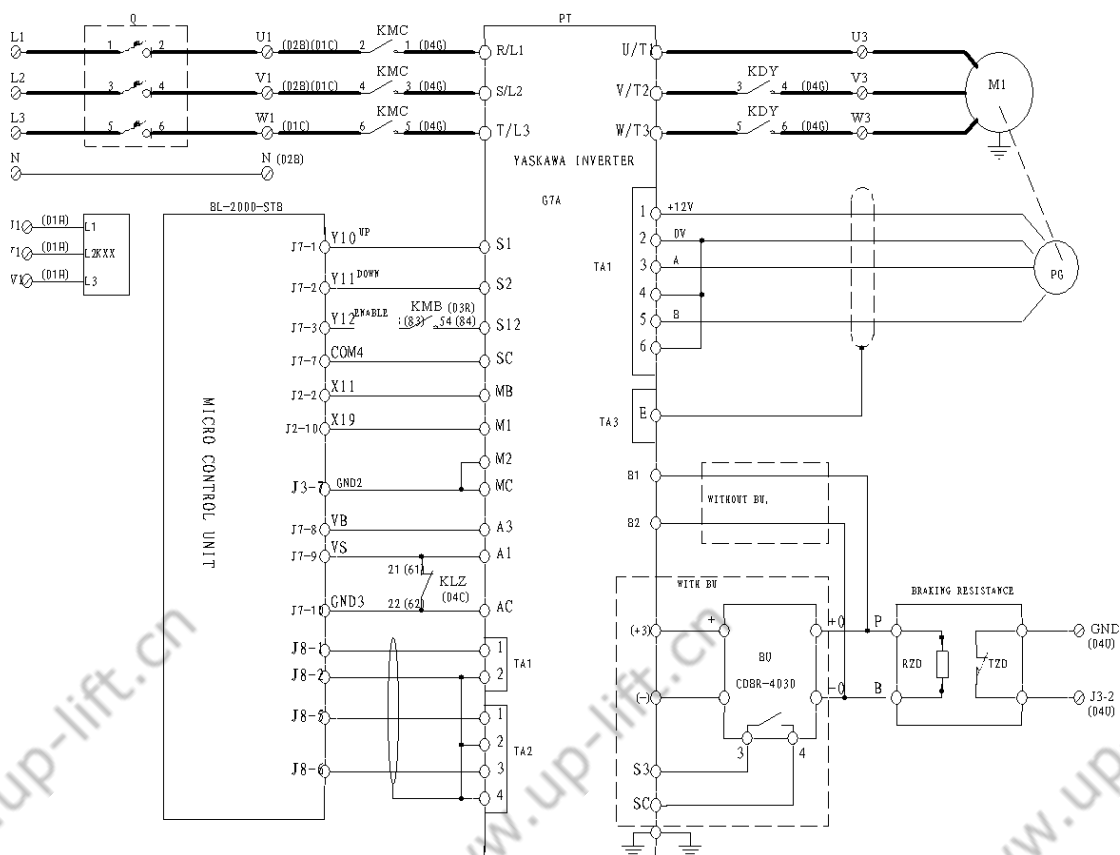
4.10.3 LCD doesn't Display and Others are Normal

You may connect 1st and 2nd pin of J12, meanwhile 3rd and 4th pin of J12 are short connected.

4.10.4 If there is other fault, you may contact us. Tel: +86-24-23787759

Appendix 1 Asynchronous Motor Control Cabinet YASKAWA

616G5, 676GL5-JJ Inverter Parameter Set Table



1. Key

‘Menu’ key: display menu

‘Esc’ key: exit menu

‘>’ key: Select bit

‘^’, ‘v’ key: select menu and modify value

Data/enter key: confirm

2. Setting:

The following table is only for refer to.

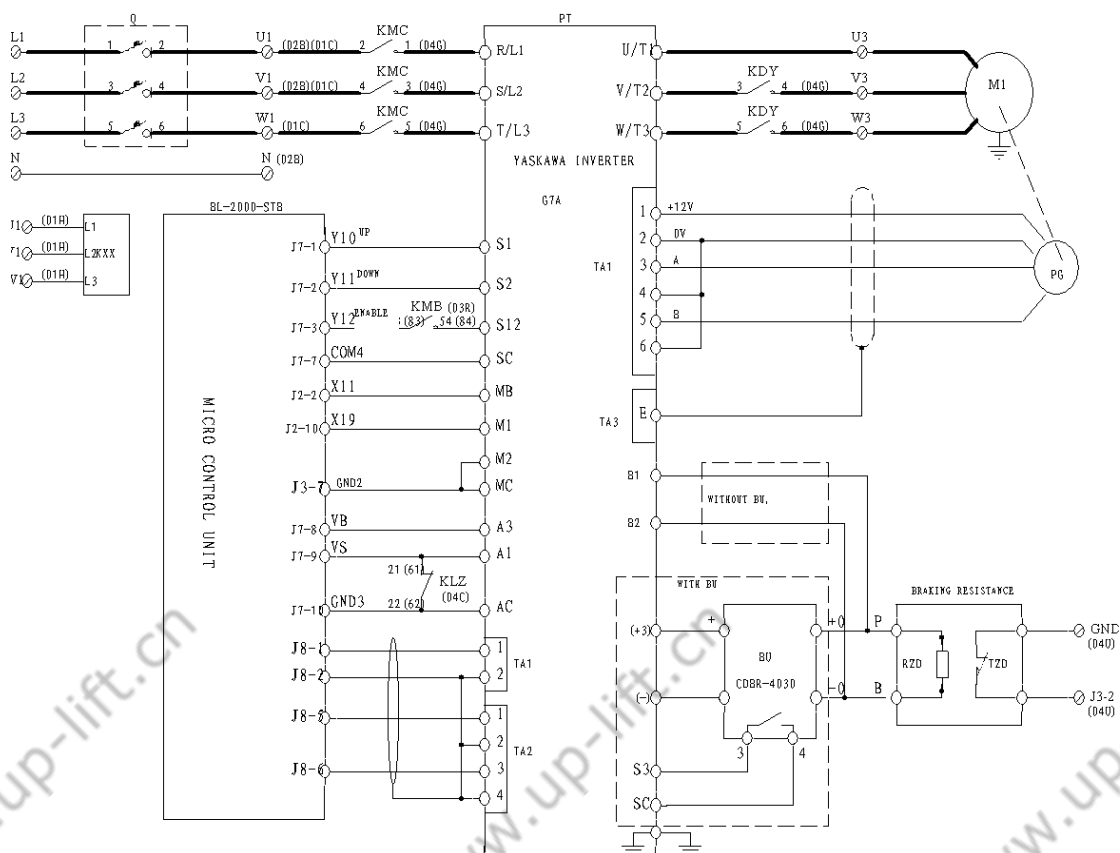
No.	Parameter	Name	Value	Note
1	A1-02	Control mode selection	3	PG vector control
2	A1-00	Language selection	0	
3	A1-01	Parameter access level	4	
4	B1-01	Speed instruction selection	1	
5	B1-02	Running instruction selection	1	
6	B1-03	Stop method selection	1	
7	B1-04	Reverse forbid selection	0	
8	B2-01	Zero speed logic level	0.1	
9	B2-03	Start DC control time	0	
10	B2-04	Stop DC control time	1	

11	C1-01	Acceleration time 1	0.1	
12	C1-02	Deceleration time 1	0.1	
13	C1-03	Acceleration time 2	2	
14	C1-04	Deceleration time 2	2	
15	C2-01	Begin Acceleration characteristic time	0	
16	C2-02	End Acceleration characteristic time	0	
17	C2-03	Begin deceleration characteristic time	0	
18	C2-04	End deceleration characteristic time	0	
19	C5-01	ASR proportion gain 1	10	
20	C5-02	ASR integral gain 1	0.35	
21	D1-09	Inching instruction	200	
22	E1-01	Inverter input voltage	380	
23	E1-02	Motor selection	0	
24	E1-04	Max output frequency	50	
25	E1-05	Max voltage	380	
26	E1-06	Base frequency	50	
27	E1-09	Min output frequency	0	
28	E2-01	Motor rated current	*	Nameplate
29	E2-02	Motor rated voltage	*	Nameplate
30	E2-03	Motor empty load current	*	Rated current 35-40%
31	E2-04	Motor polar	*	Nameplate
32	F1-01	PG constant	*	By encoder
33	F1-02	PG open action	1	
34	F1-03	Speed over action	0	
35	F1-04	Speed error too large action	0	
36	F1-06	Divide frequency ratio	1	
37	F1-08	Speed over standard	105	
38	F1-09	Speed over delay time	1	
39	F1-10	Speed error too large standard	30	
40	F1-11	Speed error too large delay time	1	
41	H1-03	Terminal 5 function selection	F	Not used
42	H1-05	Terminal 7 function selection	6	Inching
43	H1-06	Terminal 8 function selection	9	
44	H2-01	Terminal 9 function selection	37	
45	H2-02	Terminal 25 function selection	37	
46	H3-01	Terminal 13 logic level selection	0	
47	H3-02	Terminal 13 input gain	*	Setting the parameter according to analog voltage and elevator speed
48	H3-03	Terminal 13 input error	0	
49	H3-04	Terminal 16 logic level selection	1	

50	H3-05	Terminal function selection	14	
51	H3-06	Terminal 16 input gain	0	
52	H3-07	Terminal 16 input error	0	
53	L3-04	Drop speed function of deceleration selection	0	
54	L5-01	Reset times	5	
55	L8-05	Input low voltage protect	1	
56	L8-07	Output low voltage protect	1	
57	O1-01	Monitor selection	5	
58	O1-02	Monitor power on selection	1	
59	O1-03	Speed instruction unit	*	Motor polar
60	O1-04	Frequency instruction unit	0	

Appendix 2 Asynchronous Motor Control Cabinet YASKAWA G7A

Inverter Parameter Set Table



(1) At first, set “control mode” parameter A1-02=3

(2) Set “initialization” parameter A1-03=2220 to initialize the inverter parameter.

According to follow table to set inverter parameter, (analog + multi-speed)

The following table is only for refer to.

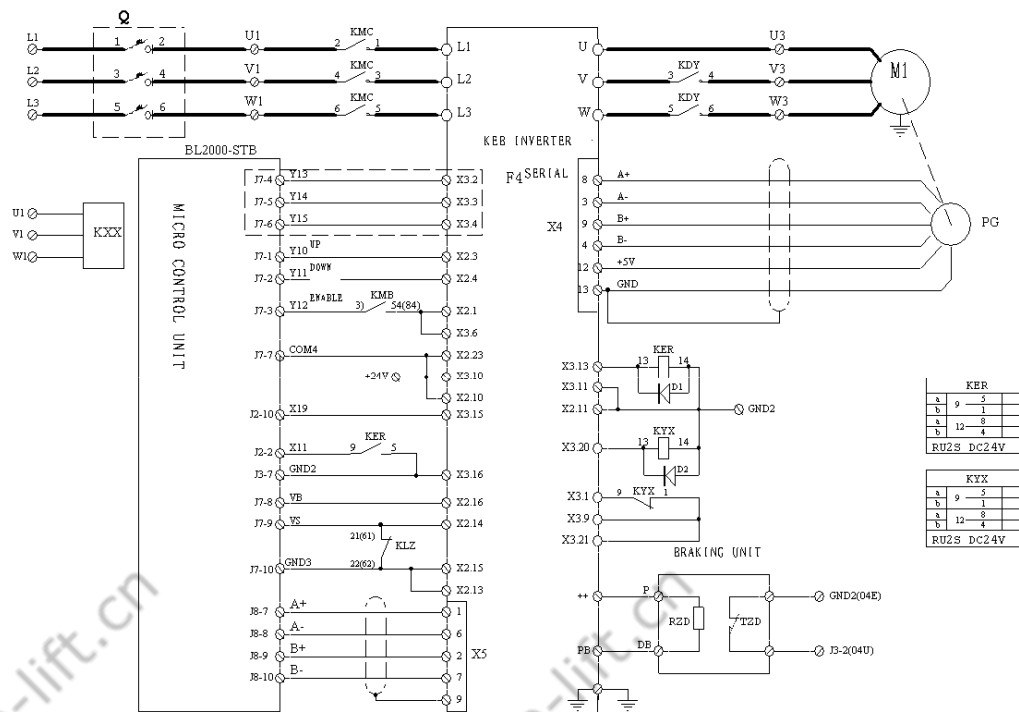
No.	Parameter	Name	Value	Note
1	A1-02	Control mode selection	3	PG vector control
2	A1-00	Language selection	0	
3	B1-01	Speed instruction selection	1	
4	B1-02	Running instruction selection	1	
5	B1-03	Stop method selection	1	
6	B1-06	Control input span selection	0	
7	B2-01	Zero speed logic level	0.1	
8	C1-01	Acceleration time 1	1.0	
9	C1-02	Deceleration time 1	1.0	
10	C1-03	Acceleration time 2	2	
11	C1-04	Deceleration time 2	2	
12	C2-01	Begin Acceleration characteristic time	0	
13	C2-02	End Acceleration characteristic time	0	

14	C2-03	Begin deceleration characteristic time	0	
15	C2-04	End deceleration characteristic time	0	
16	C5-01	ASR proportion gain 1	10	
17	C5-02	ASR integral gain 1	0.35	
18	D1-02	Frequency instruction 2	0	Hoistway learning speed in multi-speed mode
19	D1-03	Frequency instruction 3	0	Inspection running speed in multi-speed mode
20	D1-04	Frequency instruction 4	0	Leveling speed in multi-speed mode
21	D1-05	Frequency instruction 5	0	Low speed (v1) in multi-speed mode
22	D1-06	Frequency instruction 6	0	Middle speed1 (v2) in multi-speed mode
23	D1-07	Frequency instruction 7	0	Middle speed2 (v3) in multi-speed mode
24	D1-08	Frequency instruction 8	0	High speed (v4) in multi-speed mode
25	D1-17	Inching instruction	200	
26	E1-01	Inverter input voltage	380	
27	E1-04	Max output frequency	50	
28	E1-05	Max voltage	380	
29	E1-06	Base frequency	50	
30	E1-09	Min output frequency	0	
31	E2-01	Motor rated current	*	Nameplate
32	E2-02	Motor rated voltage	*	Nameplate
33	E2-03	Motor empty load current	*	Rated current 35-40%
34	E2-04	Motor polar	*	Nameplate
35	E2-11	Motor rated power		
36	F1-01	PG constant	*	By encoder
37	F1-03	Speed over action	0	
38	F1-04	Speed error too large action	0	
39	F1-10	Speed error too large standard	30	
40	F1-11	Speed error too large delay time	1	
41	H1-01	Terminal 3 function selection	24	
42	H1-02	Terminal 4 function selection	F	
43	H1-03	Terminal 5 function selection	F	Not used
44	H1-04	Terminal 6 function selection	F	

45	H1-05	Terminal 7 function selection	F	Inching
46	H1-06	Terminal 8 function selection	F	
47	H1-07	Terminal 9 function selection	F	
48	H1-08	Terminal 10 function selection	F	
49	H1-09	Terminal 11 function selection	F	
50	H1-10	Terminal 12 function selection	9	
51	H2-01	Terminal M11-M12 function selection	37	
52	H3-01	Terminal A1 signal level	0	
53	H3-02	Terminal A1 input gain	100%	By analog voltage and elevator speed set
54	H3-03	Terminal A1 input bias	0.0%	
55	H3-04	Terminal A3 signal level	1	
56	H3-05	Terminal A3 input gain	14	
57	H3-06	Terminal A3 input bias	100.0%	
58	L3-04	Drop speed function of deceleration select	0	
59	L5-01	Reset times	5	
60	L8-05	Input low voltage protect	1	
61	L8-07	Output low voltage protect	1	
62	O1-01	Monitor selection	5	
63	O1-02	Monitor power on selection	1	
64	O1-03	Speed instruction unit	*	Motor polar
65	O1-04	Frequency instruction unit	0	
66	O2-01	Local/remote key function selection	0	
67	O2-02	Stop key function selection	0	

Appendix 3 Asynchronous Motor Control Cabinet F4 (KEB)

Inverter Parameter Set Table



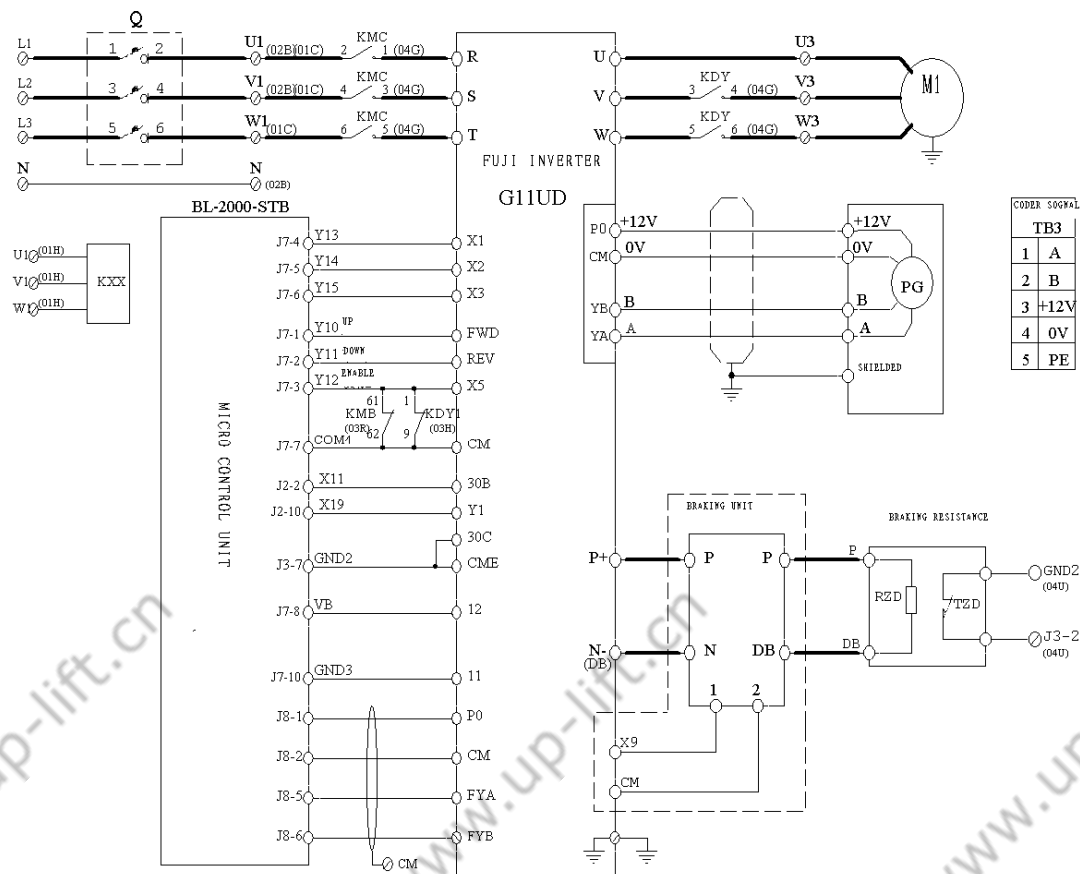
According to the following table to set the inverter parameter, This table is only for refer to .

Parameter	Name	Value	Note
LF.00	Password	-4	
LF.01	Password for user	440	
LF.02	Operation mode	3	
LF.03	Frequency coefficient	1	
LF.04	Motor selection	0	
LF.05	Running direction adjustment	0	
LF.10	Asynchronous motor rated power		By actual
LF.11	Asynchronous motor rated rotate speed		By actual
LF.12	Asynchronous motor rated current		By actual
LF.13	Asynchronous motor rated frequency		By actual
LF.14	Asynchronous motor rated voltage		By actual
LF.15	Asynchronous motor power factor		By actual
LF.16	Rotate speed in weak magnetic field		By actual

LF.17	Asynchronous motor encoder distinguish ability		By actual
LF.18	Asynchronous motor encoder phase	0	
LF.19	Volts D.C. compensation	400	
LF.20	Rating systematic speed		By actual
LF.21	Traction sheave diameter		By actual
LF.22	Traction machine decelerated ratio		By actual
LF.23	Traction rope rounding mode		By actual
LF.24	Loading capacity		
LF.30	Control mode	2or3	2:closed loop 3:closed loop+ pre-control torque
LF.31	Asynchronous motor speed proportion	3000	
LF.32	Asynchronous motor speed integral	1000	
LF.33	Asynchronous motor speed integral offset	1000	
LF.34	Asynchronous motor current proportion	1500	
LF.35	Asynchronous motor current integral	500	
LF.36	Asynchronous motor max torque	2*LF9 1	
LF.38	Modulate frequency change	0	
LF.50	Rapid acceleration	9.99	
LF.51	Acceleration	2.0	
LF.52	Rapid deceleration	9.99	
LF.53	Deceleration	2.0	
LF.54	Slope when stopping the elevator	9.99	
LF.60	Brake speed	0.005	
LF.61	Over-speed monitor	1.1*L F20	
LF.62	Deceleration monitor	0.95L F20	
LF.63	Leveling monitor	0.25	
LF.64	Volts d.c. monitor		
LF.65	Heat excess delay time	300	
LF.66	Radiator temperature monitor	40	
LF.67	Pre-torque plus	1	
LF.68	Pre-torque offset	0	
LF.69	Pre-torque direction	0	
LF.70	Brake opening time	0.3	

Appendix 4 Asynchronous Motor Control Cabinet FUJI G11UD

Inverter Parameter Set Table



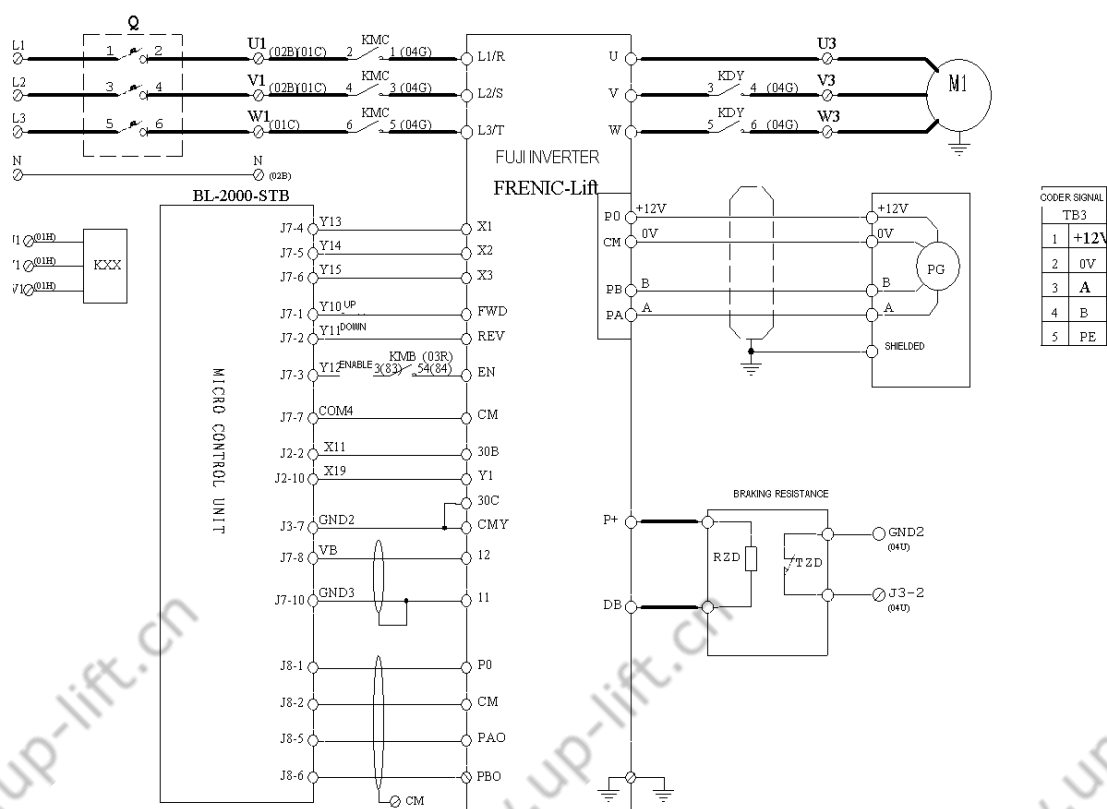
The following table is only for refer to.

No.	Parameter	Name	Value	Note
1	F01	Frequency set1	1	
2	F02	Running instruction select	1	
3	F03	Output max frequency 1	50Hz	
4	F04	Base frequency 1	50Hz	
5	F05	Rated voltage	380V	
6	F06	Max voltage	380V	
7	F07	Acceleration time 1	0.01s	
8	F08	Deceleration time 1	0.01s	
9	F15	Frequency up limit	50Hz	
10	F16	Frequency down limit	0Hz	
11	F17	Analog input proportion frequency	*	Set by analog max voltage and elevator speed
12	F18	Analog set frequency offset	0	
13	F23	Start frequency	0.4Hz	
14	F24	Start frequency holding time	0.3s	
15	F25	Stop frequency	0.1Hz	

16	F26	Switch frequency	15Hz	
17	F27	Motor tone	0	
18	F36	30Ry action mode	0	
19	F40	Torque limit 1 (electro motion)	200	
20	F41	Torque limit 1 (brake)	200	
21	E01	X1 terminal function selection	0	
22	E02	X2terminal function selection	1	
23	E03	X3 terminal function selection	2	
24	E04	X4 terminal function selection	3	
25	E05	X5 terminal function selection	4	
26	E09	X9 terminal function selection	7	
27	E10	Acceleration time 2	0.01s	
28	E11	Deceleration time 2	0.01s	
29	E12	Acceleration time 3	0.01s	
30	E13	Deceleration time 3	0.01s	
31	E14	Acceleration time 4	0.01s	
32	E20	Y1 terminal function selection	7	
33	E21	Y2 terminal function selection	34	
34	E22	Y3 terminal function selection	37	
35	E23	Y4 terminal function selection	1	
36	E25	Y5 action mode	0	
37	E33	Over load action selection	1	
38	E34	Over load action value	P06*0.5	
39	E35	Over load action time	0.2s	
40	E46	Language setting	1	
41	C05	Multi-speed 1	0	Terminal leveling speed
42	C06	Multi-speed 2	0	Inspection speed
43	C07	Multi-speed 3	0	Leveling speed
44	C10	Multi-speed 6	0	Moderate speed
45	C11	Multi-speed 7	0	High speed
46	P01	Motor polar	*	By nameplate
47	P02	Motor power	*	By nameplate
48	P03	Motor rated current	*	By nameplate
49	P06	Motor no-load current	*	By default
50	P09	Motor rated slide frequency	note	
51	H11	Deceleration mode	1	
52	H18	Torque control	3	
53	O01	Speed instruction mode	1	
54	O02	Speed instruction filter constant	0.020	
55	O03	No. of encoder pulse	*	By actual
56	O04	ASR P constant	20	
57	O05	ASR L constant	0.1	
58	O06	Speed feedback filter constant	0.003	

59	O07	ASR P constant switch frequency 1	5	
60	O08	ASR P constant switch frequency 2	10	
61	O09	ASR P constant	20	
62	O10	Multi-speed instruction time	0.005s	
63	O13	S curves setting 1	0	Begin acceleration
64	O16	S curves setting 4	0	Moderate acceleration end
65	O17	S curves setting 5	0	Moderate deceleration end
66	O18	S curves setting 6	0	High acceleration end
67	O19	S curves setting 7	0	High deceleration end
68	O20	S curves setting 8	0	End deceleration
69	O21	S curves setting 9	0	
70	O22	S curves setting 10	0	
71	O37	Torque instruction filter constant	0.0	
72	O38	Start time	0.3	
73	C31	Analog input offset adjust	0	
74	C32	Offset adjust	0	
75	C33	Analog input filter	0.5	

Note: motor rated slip frequency=basic frequency*(Synchronous speed-rate speed)/
Synchronous speed [Hz]



Parameter	Name	Value	Note
F01	Speed setting	0	With S curve acceleration/deceleration multi-speed instruct (SS1,SS2,SS4)
F03	Max speed	*	By Nameplate
F04	Rated speed	*	By Nameplate
F05	Rated voltage	380V	
F07	Accel/Decel time1	3.5S	Low speed acceleration/deceleration time
F08	Accel/Decel time2	2.1S	Low speed deceleration/deceleration time
F23	Start time	0.4Hz	
F24	Hold time	0.3s	
F25	Stop speed	0.1Hz	
F42	Control select	0	With PG vector control (Asynchronous Motor)
E01	Terminal x1 function selection	0	

E02	Terminal x2 function selection	1	
E03	Terminal x3 function selection	2	
E10	Accel/Decel time3	3.5s	Middle speed acceleration/deceleration time
E11	Accel/Decel time4	2.5s	Middle speed acceleration/deceleration time
E12	Accel/Decel time5	3.5s	High speed acceleration/deceleration time
E13	Accel/Decel time6	2.0s	High speed acceleration/deceleration time
E14	Accel/Decel time7	11s	Leveling deceleration time
E20	Terminal Y1 function selection	35	Inverter output
E27	Terminal 30A/B/C (relay output)	99	Whole alarm
E48	LED monitor detailed content	2	Setting speed
E61	Terminal 12 (function selection)	4	Torque bias instruct
C05	Multi-speed 1	8	Terminal leveling speed • unit: HZ
C06	Multi-speed 2	8	Inspection speed
C07	Multi-speed 3	3	Leveling speed
C10	Multi-speed 6	30	Middle speed
C11	Multi-speed 7	45	High speed
C31	Analog input bias adjust (terminal12)	0	
C32	Analog input gain adjust (terminal12)	100 %	
C33	Analog input filter adjust (terminal12)	0.05s	
P01	Motor poles	*	By Nameplate
P02	Motor power	*	By Nameplate
P03	Motor rate current	*	By Nameplate
P06	Motor no-load current	*	Nameplate
P12	Motor rate slip		
L01	Pulse encoder (select)	0	A , B phase : 12 , 15V complement number, collector open, 5Vwiredrive
L02	Pulse	*	By actual
L19	S curve setting 1	20	S curve in acceleration start

L22	S curve setting 4	20	S curve in middle speed acceleration end
L23	S curve setting 5	20	S curve in middle deceleration start
L24	S curve setting 6	20	S curve in high speed acceleration end
L25	S curve setting 7	16	S curve in high speed deceleration start
L26	S curve setting 8	18	S curve in deceleration end
L27	S curve setting 9	30	
L28	S curve setting 10	30	
L36	P constant in high speed	8	
L37	I constant in high speed	0.5s	
L38	P constant in low speed	10	
L39	I constant in low speed	0.5s	
L40	Switch speed 1	5HZ	
L41	Switch speed 2	10HZ	
L60	Torque bias driving gain	50 %	By actual
L61	Torque bias breaking gain	50 %	By actual

Note: motor rated slip=base frequency*(synchronous speed-rated speed)/synchronous speed [Hz]

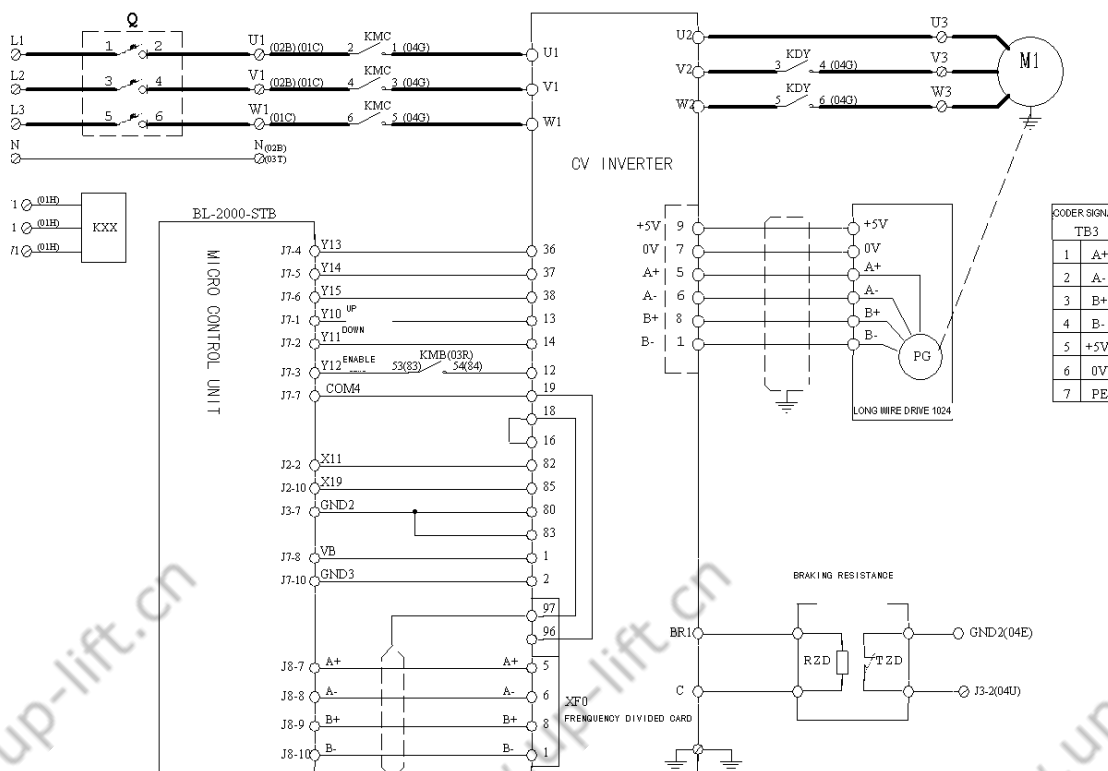
Auto-turning:

- Set function code P04=1 or P04=2, press DATA key (1 or 2 display blink become slower)
- Input running instruction which running direction has been determined.
- 1 or 2 's display is lighted, auto-turning begin.(auto-turning time: P04=1, the max auto-turning time is approx 15 second)
- After testing is end, show "end".
- Set running instruction to OFF, when auto-turning is finished, operation panel will show next function code (P06)

The motor's constant which are auto-turned will be saved, They are one time resistance %R1 is P07, leaking reactance %X is P08, no-load current is P06, rated slip is P12.

Appendix 6 Asynchronous Motor Control Cabinet CV Inverter

Parameter Set Table



According to follow table to set inverter parameter (only for refer to): Multi-speed

Caution: inverter's model is AVy...AC/AC4, the part which in suspension point is inverter's power

Encoder can be set by using jumper S11—S17, S11—S17 should be set as OFF

the following table can be used in speed setting

Item	Terminal			Value
	38	37	36	
Hoistway learn speed	0	0	1	200mm/s
Inspection speed	0	1	0	200mm/s
Leveling speed	0	1	1	50 mm/s
Speed 4	1	0	0	0 mm/s
Speed 3	1	0	1	0mm/s
Speed 2	1	1	0	800mm/s
Speed V ₁	1	1	1	1000mm/s

Debug step:

1: After electrical connection, please check whether there are some connection errors in inverter's main circuit and control circuit to avoid destroying inverter; check whether

encoder's electrical connection is correct. Check whether inverter output three-phase wire U V W is consistent with motor three-phase wire U V W.

2: After checking, if you make sure that there is not any error, set parameter and perform low speed running.

3: if elevator can run in low speed normally, make elevator in automatic running mode, perform elevator's high speed running, observe whether there are car rollback phenomena and over rush phenomena in elevator's up running process and down running process, if there is car rollback phenomena, please increase pre-torque function.

4: if elevator can run both in low speed and in high speed normally, adjust S curve parameter and P、I parameter to enhance elevator's comfortable level in high speed.

Elevator common parameter

1: Motor data

Parameter	Value	Note
Rated voltage	380V	
Rated frequency	50HZ	*
Rated current	23.5A	*
Rated speed	1440pm	
Rated power	11KW	*
Coefficient	0.85	*
Efficiency	96%	*

2: Hoistway learning

see motor latter learning step.

3: Mechanical data

Parameter	Value	Note
Travel units selection	Millimeters	
Gearbox ratio	2	
Pulley diameter	410mm	*
Full scale speed	150rpm	*

4: Weights

Parameter	Value	Note
Cabin weight	2100kg	*
Counter weight	2900kg	*
Load weight	1600kg	*
Rope weight	300kg	*
Motor inertia	5.0	*
Gearbox inertia	0.0	*

5: Encoder's configuration

Parameter	Value	Note
-----------	-------	------

Speed feedback selection	0 (Std encoder)	
Standard encoder type	Digital	
Standard encoder pulses	1024pps	
Standard digital encoder mode	0(FP)	
Standard encoder supply	0 (5.14V)	

6: Breaking Unit protection

Parameter	Value	Note
BU control	1 (internal)	
BU resistance	15 Ω	*
BU resistance	8.0KW	*

7: Regulation mode

Parameter	Value	Note
Regulation	Field oriented	

8: Speed profile

Parameter	Value	Note
Smooth start speed	0	
Multi speed1	200mm/s	
Multi speed2	200mm/s	
Multi speed3	50 mm/s	
Multi speed4	0mm/s	
Multi speed5	0mm/s	
Multi speed6	800mm/s	
Multi speed7	1000mm/s	

9: Ramp profile

Parameter	Value	Note
MR0 acceleration initial jerk	300 mm/s ³	
MR0 acceleration	600 mm/s ²	
MR0 acceleration end jerk	500 mm/s ³	
MR0 deceleration initial jerk	500 mm/s ³	
MR0 deceleration	600mm/s ²	
MR0 deceleration end jerk	500mm/s ³	
MR0 end deceleration	200mm/s ²	

10: Lift sequence

Parameter	Value	Note
Contactor close delay	304ms	
Brake open delay	416ms	
Smooth start delay	400ms	

Brake close delay	680ms	
Contactor open delay	200ms	

11: Speed regulation gains

Parameter	Value	Note
Speed P1 gain%	20%	
Speed I1 gain%	3.3%	
Speed P2 gain%	20%	
Speed I2 gain%	5%	
Speed I3 gain%	12%	
Speed 0 enable	2(Enable as start)	
Speed 0 P gain%	19%	
Speed 0 I gain%	20%	
Prop filter		

12: Speed threshold

Parameter	Value	Note
Speed 0 refer threshold	2rpm	
Speed 0 refer delay	500rpm	
Speed 0 speed threshold	2rpm	
Speed 0 speed delay	500rpm	
SGP tran21 h thr	94%	threshold
SGP tran32 l thr	5%	threshold
SGP tran21 band	4%	threshold
SGP tran 32 band	4%	threshold

13: Speed regulator

Parameter	Value	Note
Speed P base value	50A/rpm	
Speed I base value	8000A/rpm	

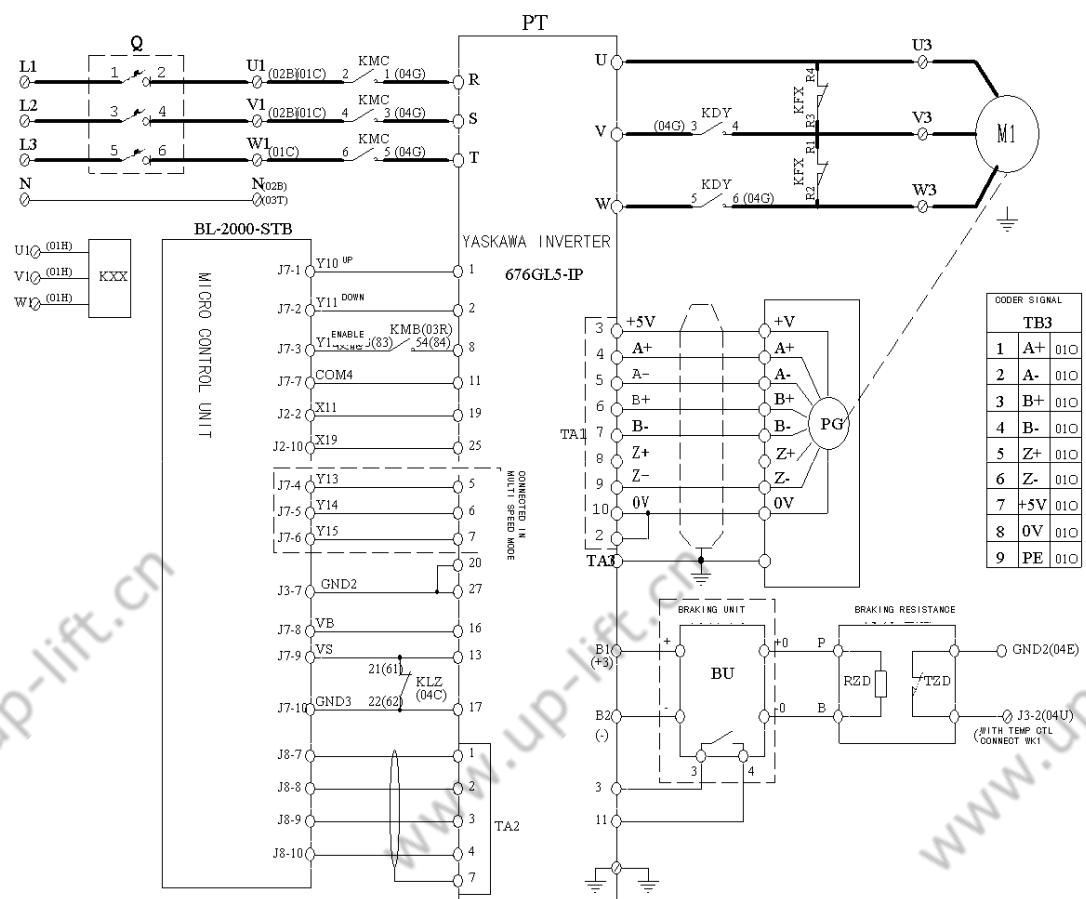
14:

Parameter	Value	Note
TRAVEL\Ramp function	default	
TRAVEL\Ramp set point	default	
TRAVEL\ Speed set point	default	

Note : the parameter with " * " mark should be set by actual.

Appendix 7 Synchronous Motor Control Cabinet YASKAWA

676GL5-IP Inverter Parameter Set Table



1. Key

drive/prgm key: enter or exit set parameter state

‘←’ key: select or reset

‘^’, ‘v’ key: modify value

dspl key: return to previous menu—select monitor item

2. Set

a. Inverter parameters are initialized if A1-03 = 2220.

b. A1-04 = 686, A1-01 = 686.

c. A1-05 = 5, inverter is controlled in synchronous mode

d. Inverter parameters may be set according to the following table.

The following table is only for refer to.

No.	Parameter	Name	Value	Note
1	A1-06	Input voltage	380	
2	01-01	Monitor item selection	1	
3	01-02	Monitor o1-01 item selection	4	
4	01-03	Speed instruction display unit	20	Set by motor

				parameter
5	B1-01	Speed instruction selection	1	
6	B1-02	Running instruction selection	1	
7	B1-03	Stop method selection	0	
8	B1-04	Reverse forbid selection	0	
9	B2-01	Zero speed logic level	1	
10	C1-01	Acceleration time 1	2	
11	C1-02	Deceleration time 1	2	
12	C1-03	Acceleration time 2	2	
13	C1-04	Deceleration time 2	2	
14	C2-01	Begin Acceleration characteristic time	0	
15	C2-02	End Acceleration characteristic time	2	
16	C2-03	Begin deceleration characteristic time	2	
17	C2-04	end deceleration characteristic time	0	
18	C5-01	ASR proportion gain 1	5	
19	C5-02	ASR integral gain 1	1	
20	C5-03	ASR proportion gain 2	7	
21	C5-04	ASR integral gain 2	0.8	
22	C5-08	ASR filter	0	
23	C5-09	ASR switch speed	30	
24	C6-04	Modulate frequency	10	
25	D1-02	Frequency instruction 2	0	
26	D1-03	Frequency instruction 3	0	
27	D1-04	Frequency instruction 4	0	
28	D1-05	Frequency instruction 5	0	
29	D1-06	Frequency instruction 6	0	
30	D1-07	Frequency instruction 7	0	
31	D1-08	Frequency instruction 8	0	
32	D1-09	Inching run instruction	200	Set by nameplate or motor learning
33	E3-10	Motor d (D) shaft inductance	*	Set by nameplate or motor learning
34	E3-11	Motor q (Q) shaft inductance	*	Set by nameplate or motor learning
35	E3-12	Motor induce voltage parameter	*	Set by nameplate or motor learning
36	E3-13	Motor mechanical wastage	*	Set by nameplate or motor learning
37	E3-14	Motor connect resistance	*	Set by nameplate or motor learning
38	E3-18	PG original pulse offset	*	PG learning
39	E3-23	Magnet moment coefficient K1	0.39	
40	E3-24	Rated moment coefficient K2	1.04	

41	E2-26			
42	E2-29	Electrical and machine time constant	0.056	
43	E2-30	Compensated loop parameter P	0.2	
44	E2-31	Compensated loop parameter I	0.05	
45	E2-32	Filter time constant 1	0.004	
46	E2-33	Filter time constant 2	0.396	
41	F1-01	PG constant	*	By encoder
42	L5-01	Reset times	5	
43	L8-05	Input low voltage protect	1	
44	L8-07	Output low voltage protect	1	
45	H1-03	Terminal 5 function selection	F	
46	H1-04	Terminal 6 function selection	F	
47	H1-05	Terminal 7 function selection	6	
48	H1-06	Terminal 8 function selection	9	
49	H2-02	Terminal 25 function selection	37	Moment offset 40
50	H3-01	Terminal 13 logic level select	0	
51	H3-02	Terminal 13 input gain	100	By analog voltage and elevator speed set
52	H3-03	Terminal 13 input error	0	
53	H3-04	Terminal 16 logic level select	1	
54	H3-05	Terminal function selection	14	
55	H3-06	Terminal 16 input gain	100	
56	H3-07	Terminal 16 input error	0	
57	H3-12	Analog input filter time	0.02	
58	S1-10	Start torque compensated ascend offset	0	
59	S1-11	Start torque compensated descend offset	0	
60	S1-12	Increase/decrease torque compensation filter times	0	
61	S1-13	Accelerated torque compensation gain	0	

Notice: If 'OPE11' is displayed on inverter after parameters are set, C6-04 should be decreased 2 every time until system is normal.

Motor parameters are input into inverter by nameplate or learning.

First, general parameters (max speed, general speed, polar, rated voltage and rated current etc.) are set, motor is turned anti-clockwise, direction feedback is positive in U1-05, and otherwise, F1-02 is changed. When it learns, motor must be no-load state. The follow is the method.

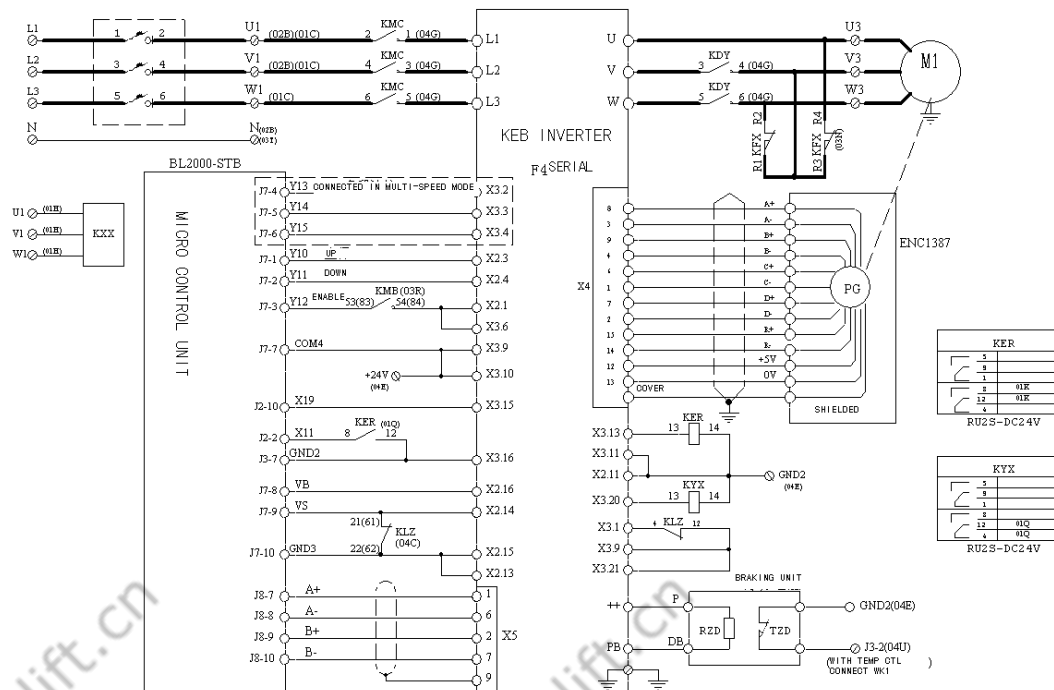
1. T1-01 = 2
2. Return to T1-01 by pressing 'dspl' key
3. It displays CAL12 by pressing 'drive/prgm' key.
4. It displays Cal13 (blink), motor is learning.

5. 'END' is displayed for 2s and it returns to monitor state, motor learning is finished.
6. In order to confirm PG original pulse offset is correct, it must learn under conditions that motor is no-load state
 - a. T1-01 = 3
 - b. Return to T1-01 by pressing 'dspl' key
 - c. It displays CAL12 by pressing '/drive/prgm'
 - d. It displays Cal13 (blink), motor is learning.
 - e. 'END' is displayed for 2s and it returns to monitor state, motor learning is finished.
 - f. Record E3-18
7. Problem
 - a. Motor speed isn't steady. Check connection between encoder and motor, if it is correct, encoder electrical character maybe is poor.
 - b. Speed is low. If the direction of elevator is consistence with direction which be displayed on inverter's LCD and feedback speed and given speed isn't same, check inverter parameter.

676GL5-IP			
Rated voltage	E1-01	Rated current	E2-01
Max output frequency	E1-04	Motor margin	E2-02
Max output frequency voltage	E1-05	Motor polar	E2-04
General frequency	E1-06	Encoder pulse	F1-01
Inspection speed	D1-09		

- c. If no feedback speed, the fault maybe is caused by the destruction encoder's output or the problem of connection cable

It is forbid that inverter runs for a long time under condition that elevator's running is abnormal.

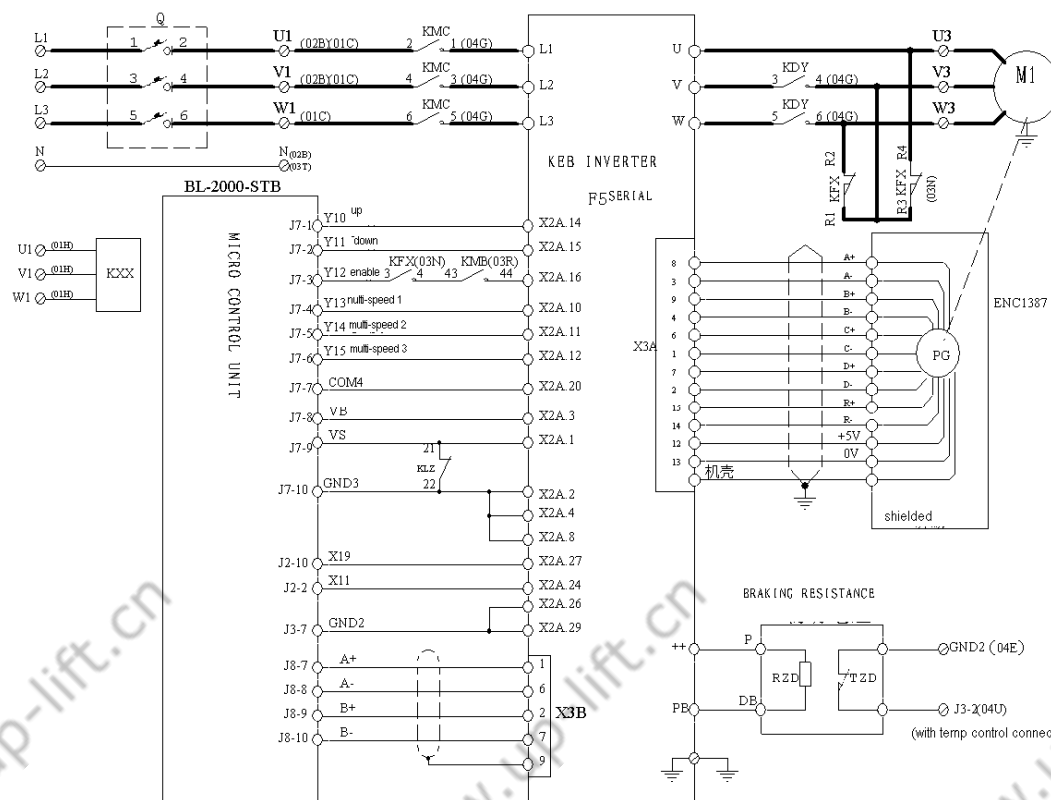


No.	Parameter	Name	Value	Note
1	LF.00	Password	-4	
2	LF.01	User password	440	
3	LF.02	Operation mode	3	
4	LF.04	Motor selection	1	
5	LF.05	Running direction	Off	
6	LF.06	High distinguish ratio	1	
7	LF.20	Elevator rated speed		
8	LF.21	Traction sheave diameter		
9	LF.22	Traction motor driving ratio	Off	
10	LF.23	Traction rope mode	2	
11	LF.24	Load		
12	LF.30	Control mode	2	2: Close loop
13	LF.36	Max torque	1.5* rate torque	DR09*1.5
14	LF.41	Release speed1	0.5	7.5kw: 0.5, 15kw: 0
15	LF.44	Release speed2	0.5	15kw: 0.5, 7.5kw: 0
16	LF.38	Modulate frequency change	0	

17	LF.50	Quickly accelerate	0.5	
18	LF.51	Acceleration	1.5	
19	LF.52	Quickly Deceleration	2.5	
20	LF.53	Deceleration	2.0	
21	LF.54	Stop slope	Off	
22	LF.60	Brake speed	0.010	
23	LF.61	Over speed monitor	1.1*LF.20	
24	LF.62	Deceleration monitor	0.010	
25	LF.63	Leveling monitor	0.25	
26	LF.65	Hot delay time	300	
27	LF.66	Scatter temperature monitor	40	
28	LF.67	Pre-torque gain	1	
29	LF.68	Pre-torque offset	0	
30	LF.69	Pre-torque direction	off	
31	LF.70	Brake release time	0.3	
32	Dr.00	Motor rated power	*	By nameplate
33	Dr.01	Rated speed	*	By nameplate
34	Dr.02	Rated current	*	By nameplate
35	Dr.03	Rated frequency	*	By nameplate
36	Dr.07	Stator current	1.1*dr.02	By nameplate
37	Dr.09	Motor rated torque	*	By nameplate
38	Dr.17	Anti-electromotive force	*	By nameplate
39	Dr.41	Coil resistance	*	By nameplate
40	Dr.42	Coil inductance	*	By nameplate
41	EC01	Number of encoder pulse	*	By nameplate
42	EC03	Number of encoder polar	0	
43	EC04	System position adjust	7	
44	EC06	Encoder model type	1	
45	EC07	System position	1	
46	EC17	Divide frequency coefficient		
47	LF31	Speed proportion	1500	
48	LF32	Speed integral	125	
49	LF33	Speed integral offset	1875	
50	LF34	Current proportion	980	
51	LF35	Current integral	160	

Appendix 9 Synchronous Motor Control Cabinet KEB F5 Inverter

Parameter Set Table



Setting inverter parameter, you can refer to following table

No	Name	Parameter	Address	Value
1	CP.0	Password	1000	Read only
			2000	Read/write
2	CP.1	PM rated current	0617	By Nameplate
3	CP.2	PM rated speed	0618	By Nameplate
4	CP.3	PM rated frequency	0619	By Nameplate
5	CP.4	PM EMK voltage constant	061A	By Nameplate
6	CP.5	PM rated torque	061B	By Nameplate
7	CP.6	PM Winding resistance	061E	By Nameplate
8	CP.7	PM winding Inductance	061F	By Nameplate
9	CP.8	PM Torque Limit	0621	
10	CP.9	Motor adaptation	090A	
11	CP.10	abs. torque reference	0F13	
12	CP.11	Speed V1	0P03	
13	CP.12	Speed V2 analog rated value	0P03	
14	CP.13	Speed V3	0P03	
15	CP.14	Speed V4	0P03	

16	CP.15	Speed V5	0P03	
17	CP.16	Speed V6	0P03	
18	CP.17	Speed V7	0P03	
19	CP.18	S-Curve Time acceleration	0P32	2.10S
20	CP.19	Acceleration Time	0P28	2.70S
21	CP.20	S-Curve Time deceleration	0P34	2.10
22	CP.21	Deceleration Time	0P30	2.70S
23	CP.22	Premagnetizing Time	0423	1S
24	CP.23	Brake Release Time	0424	0.15S
25	CP.24	Brake Engage Time	0428	0.30S
26	CP.25	Switching Frequency	050B	4KHZ
27	CP.26	Encoder Pulse Number	1001	2048Inc
28	CP.27	Encoder Track Change	1006	0:OFF
29	CP.28	System Position	1002	2206
30	CP.29	KP Speed	0F06	2000
31	CP.30	KI Speed	0F09	1500
32	CP.31	KI Speed-Offset	0F0A	3500
33	CP.32	KP Current proportion gain	1100	Motor auto adaptive
34	CP.33	KI Current integral gain	1101	Motor auto adaptive
35	CP.34	Indication Parameters only:		
36	CP.35	Actual Speed (min^{-1})	0209	
37	CP.36	Apparent Current (A)	020F	

Note: in analog give mode , such parameter as following table is added:

Name	Parameter	Value	Note
AN0	Analog voltage input selection	0	0~10V
AN1	Analog sample times	1	2times
AN2	Analog save mode	0	Direct way
AN4	Zero point lag	0%	
AN5	Analog 1 input increment	1	
AN6	X axis bias	0	
AN7	Y axis bias	0	
OP.00	Running instruction selection	0	Analog curve
		2	Multi-speed

KEB F5 self-learning:

Step 1: CP.00: input 200, press “enter” key to confirm;

Step 2: Input motor parameter

CP.01: motor rated current, press “enter” key to confirm;

CP.02: motor rated speed, press “enter” key to confirm;

CP.03: motor rated frequency, press “enter” key to confirm;

CP.04: motor counter electromotive force per 1000 turns, press “enter” key to confirm;

CP.05: motor rated torque, press “enter” key to confirm; CP.06: motor coil

resistance, press “enter” key to confirm;

CP.07: motor coil Inductance, press “enter” key to confirm;

Step 3: Motor ‘s auto adaptive

CP.09: input 1, press “enter” key to confirm

Step 4: CP26: encoder wire number, press “enter” key to confirm

Step 5: System position

CP28: input “2206”, press “enter” key to confirm

Step 6: Add “enable” signal

Step 7: Observe CP.35 until the value of CP.35’s from 0 rise up to rated current step by step, it should be hold for 30 minutes and never change, it mean that self-learning is successful;

Step 8: Cut off “enable” signal. Notice: if there are “E .Enc” alarm in self-learning process, the main reason that result in alarm come from following 3 aspect:

(1) Motor electrical connection is wrong, check whether motor’s three phase wire U, V, W are consistent with inverter’s three phase wire U, V, W.

(2) Encoder wire number is wrong, check CP.26.

(3) Encoder electrical connection is wrong

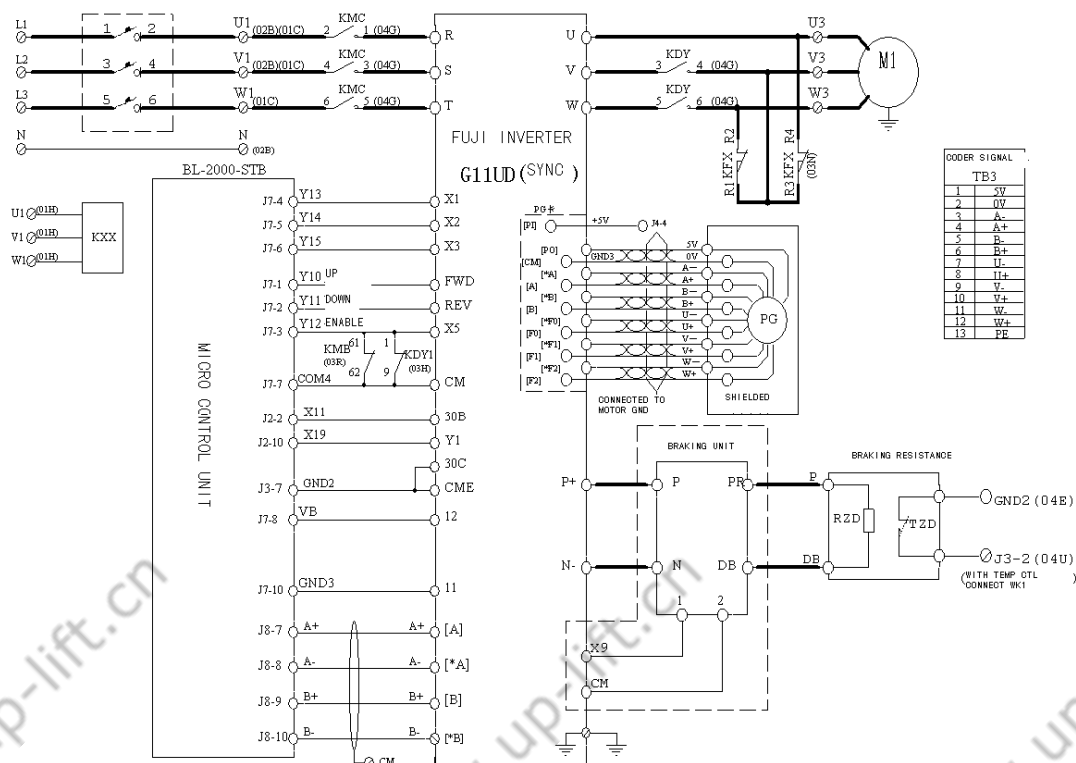
After adjustment, repeat step 5-step8;

Step 9: after inverter’s self-learning is successful ,set correspond speed in parameter CP11-CP17,and give “enable” signal、 direction and speed , elevator running can start;

Step 10: CP.00: input 100, press “enter” to confirm; CP parameter can be read only, it will avoid parameter’s optional modification.

Appendix 10 Synchronous Motor Control Cabinet FUJI

G11UD-4C4 Inverter Parameter Set Table



Setting parameter, you can refer to following table: multi-speed +analog

Paramete r	Name	Value	Note
F01	Frequency give selection	0	Analog given, F01=1
F02	Running instruction selection	1	
F03	Max output frequency 1	*	By Nameplate
F04	Base frequency1	*	By Nameplate
F05	Rated voltage 1	380	By Nameplate
F06	Max voltage 1	380	By Nameplate
F07	Acceleration time 1	3.5S	Inspection acceleration time
F08	Deceleration time 1	1.00S	Inspection deceleration time
F15	Frequency top limit	*	According to base frequency
F16	Frequency bottom limit	0 Hz	
F23	Start frequency	0Hz	
F24	Start frequency hold time	0.5s	
F25	Stop frequency	0.1Hz	
F26	Switch frequency	15KHz	

Δ F27	Motor tone	0	
F36	30Ry action mode	0	
Δ F40	Torque limit 1 (drive)	200	
Δ F41	Torque limit 1 (trig)	200	
E01	Terminal X1 function selection	0	
E02	Terminal X2 function selection	1	
E03	Terminal X3 function selection	2	
E05	Terminal X5 function selection	7	
E09	Terminal X9 function selection	9 (4)	Less than 7.5KW, set to 4 more than 11KW, set to 9
E10	Acceleration time 2	3.5s	Middle speed acceleration time
E11	Deceleration time 2	2.5s	Middle speed deceleration time
E12	Acceleration time 3	3.5s	High speed acceleration time
E13	Deceleration time 3	2.0s	High speed deceleration time
E14	Acceleration time 4	11s	Stop acceleration time
E20	Terminal Y1 function selection	0	
E46	Language setting	1	
C05	Multi-speed 1	2.5 Hz	Leveling speed
C06	Multi-speed 2	2.5 Hz	Inspection speed
C07	Multi-speed 3	1.5 Hz	Leveling speed
C08	Multi-speed 4	*	Low speed (V4)
C09	Multi-speed 5	*	Middle speed 1 (V3)
C10	Multi-speed 6	*	Middle speed 2 (V2)
C11	Multi-speed 7	*	High speed (V1)
C12	Multi-speed 0	*	
C31	Analog input bias adjustment	*	
C33	Analog input filter time	0.05	Analog terminal 12 input filter
P01	Motor poles	20	By Nameplate
P02	Motor power	*	By Nameplate
P03	Motor rated current	*	By Nameplate
P04	Self-learning	0	Set as 3 while in self-learning mode

P06	Motor no-load current	0	
P07	%R1	5	
P08	%X	10	
P09	Motor rated slip	0	
H11	Deceleration mode	1	
H18	Torque control selection	3	
O01	Speed instruction selection	02	
O02	Speed instruction filter time constant	0.020	
O03	Encoder pulse	8192	By Nameplate
O04	ASR P constant (high speed)	5	
O05	ASR I constant	0.3	
O06	Speed feedback filter time constant	0.003	
O07	ASR P constant switch frequency 1	0	
O08	ASR P constant switch frequency 2	5	
O09	ASR P constant (low speed)	10	
O10	Multi-speed instruction consistent time	0.005S	
O11	Emergency mode acceleration/deceleration time	1.0	
O13	S curve setting 1	20	Acceleration begin S curve
O14	S curve setting 2	20	Middle speed1 (V3) and low speed (V4) acceleration end S curve
O15	S curve setting 3	20	Middle speed1 (V3) and low speed (V4) acceleration begin S curve
O16	S curve setting 4	20	Middle speed acceleration end S curve
O17	S curve setting 5	20	Middle speed deceleration begin S curve
O18	S curve setting 6	20	High speed acceleration end S curve
O19	S curve setting 7	16	High speed acceleration begin S curve
O20	S curve setting 8	18	Deceleration end S curve
O21	S curve setting 9	30	
O22	S curve setting 10	30	
O24	Torque bias start time	0.2S	By actual
O35	Torque bias increment (drive)	50%	By actual
O36	Torque bias increment (trig)	50%	By actual

O37	Torque instruction filter time constant	0.0	
O38	Start time	0.3	
O53	Self-learning angle	0~360	

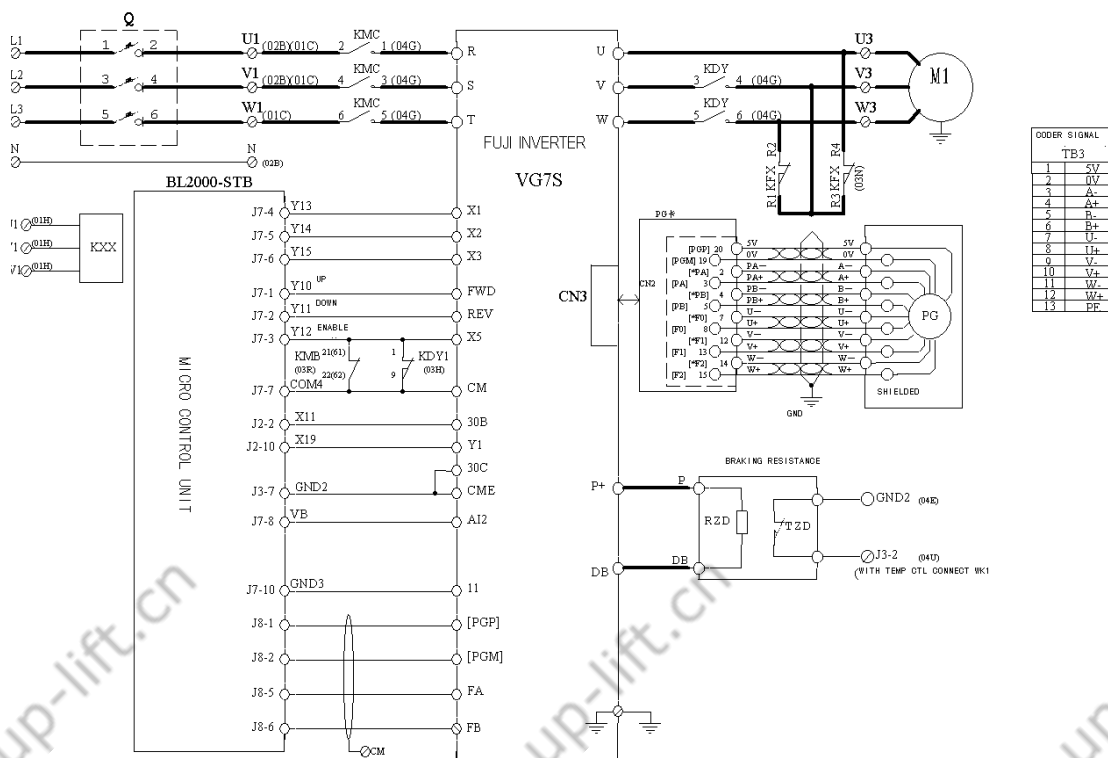
1. Self-learning explain: set parameter P04 =3 by pressing DATA key.
2. It is requested that motor's three phase wire U,V,W are corresponding to inverter 's three phase wire U, V, W.
3. After performing self-learning 5 times, observe O53's value, it is requested that error can not higher than 20 degree.
4. Try to perform running, current is approx 0.5A (no rope).
5. Repeat electrify, after running normally several times, it is confirmed that there is no error.
6. If there is "OS" over speed etc, it is confirmed that connection between motor and inverter、connection between PG and inverter is correct.

	selection		
E02	Terminal x2 function selection	1	
E03	Terminal x3 function selection	2	
E10	Accel/Decel time3	3.5s	Middle speed deceleration/deceleration time
E11	Accel/Decel time4	2.5s	Middle speed deceleration/deceleration time
E12	Accel/Decel time5	3.5s	High speed deceleration/deceleration time
E13	Accel/Decel time6	2.0s	High speed deceleration/deceleration time
E14	Accel/Decel time7	11s	Leveling deceleration time
E20	Terminal Y1 function selection	35	Inverter output
E27	Terminal 30A/B/C (relay output)	99	Whole alarm
E48	LED monitor detailed content	2	Setting speed
E61	Terminal 12 (function selection)	4	Torque bias instruct
C05	Multi-speed 1	8	Terminal leveling speed • Unit: HZ
C06	Multi-speed 2	8	Inspection speed
C07	Multi-speed 3	3	Leveling speed
C10	Multi-speed 6	30	Middle speed
C11	Multi-speed 7	45	High speed
C31	Analog input bias adjust (terminal12)	0	
C32	Analog input gain adjust (terminal12)	100 %	
C33	Analog input filter adjust (terminal12)	0.05s	
P01	Motor poles	*	By Nameplate
P02	Motor power	*	By Nameplate
P03	Motor rate current	*	By Nameplate
P06	Motor no-load current	*	By Nameplate
P12	Motor rated slip		
L01	Pulse encoder (selection)	0	A , B phase : 12 , 15V complement number, collector open, 5Vwiredrive

L02	Pulse	*	By actual
L19	S curve set1	20	S curve in acceleration start
L22	S curve set4	20	S curve in middle speed acceleration end
L23	S curve set 5	20	S curve in middle deceleration start
L24	S curve set 6	20	S curve in high speed acceleration end
L25	S curve set 7	16	S curve in high speed deceleration start
L26	S curve set 8	18	S curve in deceleration end
L27	S curve set 9	30	
L28	S curve set 10	30	
L36	P constant in high speed	8	
L37	I constant in high speed	0.5s	
L38	P constant in low speed	10	
L39	I constant in low speed	0.5s	
L40	Switch speed 1	5HZ	
L41	Switch speed 2	10HZ	
L60	Torque bias drive gain	50 %	By actual
L61	Torque bias trig gain	50 %	By actual

Appendix 12 Synchronous Motor Control Cabinet VG7S Inverter

Parameter Set Table



The following table is only for refer to :multi-speed

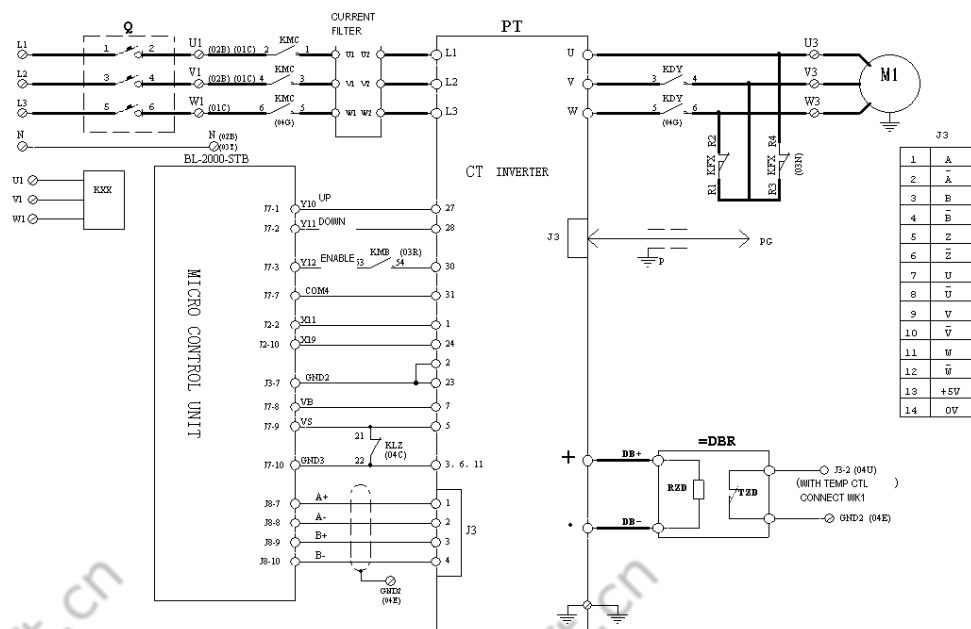
Func.No	Name	Default	Value
C05	Multi-speed1	0r/min	24
C06	Multi-speed 2		0
C07	Multi-speed 3	0r/min	10
C08	Multi-speed 4	0r/min	0
C09	Multi-speed 5	0r/min	96
C10	Multi-speed 6	0r/min	153
C11	Multi-speed 7	0r/min	192
C20	Multi-speed instruction consistent timer	0.00	0.02
C35	Acceleration time JOG	5.00S	3
C36	Deceleration time JOG	5.00S	3
C46	Acceleration time 2	5.00S	3
C47	Deceleration time 2	5.00S	3
C56	Acceleration time 3	5.00S	3.8
C57	Deceleration time 3	5.00S	3
C67	Deceleration time 4	5.00S	1

E01	X1 function selection	0	0
E02	X2 function selection	1	1
E03	X3 function selection	2	2
E04	X4 function selection	3	8
E05	X5 function selection	4	7
E15	Y1 function selection	1.00	0
E16	Y2 function selection	2.00	1
E17	Y3 function selection	3.00	4
E18	Y4 function selection	4.00	5
E29	PG pulse output select	0.00	0
E38	Speed inspection mode	0.00	0
E39	Speed inspection value 1	1500r/min	24
E49	Ai1 function selection	0.00	5(+/-10v)
E55	Ai1 Electro motion Gain	1.00	2.8
E56	Ai1 trig Gain	1.00	2
E61	Ai1 filter setting	0.010s	0.1
E69	AO1 function selection	1	26 u-v
E70	AO2 function selection	6	31(O10)
E84	AO1-5 filter setting	0.010s	0.00
F01	Analog mode		2
F02	Running operation	0	1
F03	M1 max speed	1500 r/min	192
F04	M1 rated speed	1500 r/min	192
F05	M1 rated voltage	V	380
F07	Acceleration time 1	5.00S	3.5
F08	Deceleration time 1	5.00S	3
F37	Stop speed	10.0r/min	0.1
F38	Stop speed (inspection mode)	0	0
F39	Stop (zero speed control hold time)	0.50s	0.5
F61	ASR1-P (gain)	10	10
F62	ASR1-1 (integer constant)	0.200s	0.3
F65	ASR1 inspection filter	0.005s	0.002
F80	Motor select (M1.M2.M3)	0	2 HT
H71	Self- learning ^+stop key	0	_5
L03	Elevator rated speed	100.0m/min	120
L04	Fixed S curve mode	0	0
L05	S curve setting 1	0.00%	20
L06	S curve setting 2	0.00%	20
L07	S curve setting 3	0.00%	20
L08	S curve setting 4	0.00%	20

L09	S curve setting 5	0.00%	20
L10	S curve setting 6	0.00%	20
L11	S curve setting 7	0.00%	20
L12	S curve setting 8	0.00%	20
L13	S curve setting 9	0.00%	20
L14	S curve setting 10	0.00%	20
O09	ABS signal input define (synchronous)	0	1
O10	Magnetic pole position deviation (synchronous)	0	*
O11	Salient pole ratio (%Xq/%Xd)		1
P01	M1 control mode	0	3
P02	M1 motor selection		37
P03	M1 rated power		13.4
P04	M1 rated current		30
P05	M1 pole	4	20
P06	M1-%R1		3.6
P07	M1-%X		22
P08	M1 exciting current		0.01
P09	M1 torque current		30
P10	M1 slip on driving		0.001
P11	M1 slip on breaking		0.001
P21	M1 induce voltage coefficient		283
P28	M1-PG poles	1024	8192
P30	M1 heat thermistor resistant selection	1	0

Appendix 13 Synchronous Elevator Control Cabinet CT Inverter

Parameter Set Table



1. #0.00=1255, inverter parameters are initialized.
2. #0.00=1253, #0.48=SerUO, close loop servo control mode

The following table is only for refer to.

No.	Parameter	Name	Value	Note
1	#0.01	Min frequency	0	
2	#0.02	Max frequency (unit: rpm)	*	Polar rated speed
3	#0.03	Acceleration	0	
4	#0.04	Deceleration	0	
5	#0.05	Speed given mode	1	Analog given 1
6	#0.06	Current limit	175%	
7	#0.07	Proportion gain	6500	By actual
8	#0.08	Integral gain	600	By actual
9	#0.10	Polar feedback speed	*	Monitor
10	#0.11	Given before slope process	*	Monitor
11	#0.13	Given after slope process	*	Monitor
12	#0.13	Polar current	*	Monitor
13	#0.15	Slope mode	1(fast)	
14	#0.16	Stop mode	Coast	
15	#0.18	S curves enable	0	
16	#0.42	Motor polar	*	By nameplate
17	#0.43	Motor COS ϕ	1.0	
18	#0.44	Motor rated voltage	*	By nameplate

19	#0.45	Motor rated speed	*	By nameplate
20	#0.46	Motor rated current	*	By nameplate
21	#0.47	Motor rated frequency	*	By nameplate
22	#1.10	Reverse enable	1	
23	#2.02	Slope enable	0	
24	#3.05	Zero speed definite	0	
25	#3.08	Over speed threshold	*	Polar rated speed +20
26	#3.21	Encoder line	*	By encoder line
27	#3.23	Encoder voltage	*	5V: 0,15V: 1
28	#4.08	Torque given	*	Load device given
29	#4.09	Torque offset	*	Adjust by fact
30	#4.10	Torque offset enable	1	
31	#4.11	Torque mode	4	Motor learn is 0
32	#4.15	Motor over hot time constant	89	
33	#6.15	Soft enable	1	
34	#7.06	Analog voltage input mode	Volt	
35	#7.07	Analog input offset	0	
36	#7.08	Analog input1	1	Adjust by fact
37	#7.10	Analog input map1	1.36	
38	#7.11	Analog voltage input mode1	Volt	
39	#7.12	Analog input2	1	
40	#7.14	Analog input map2	4.08	
41	#7.15	Analog voltage input mode2	Volt	
42	#8.10	F1 output source parameter	10.02	
43	#8.11	F1 output anti-phase	0	
44	#8.12	F1 output enable	1	
45	#8.27	Logic input polarity select	0	
46	#8.28	Open collection output select	0	
47	#10.34	No. of reset	5	
48	#10.35	Reset interval	0	

PG learn method

Control cabinet power on

Motor is on no- load mode

J6-2 and J6-1 on main board are short connect

KDY is close.

LZ open

Terminal 31 and 30 on inverter are short connected.

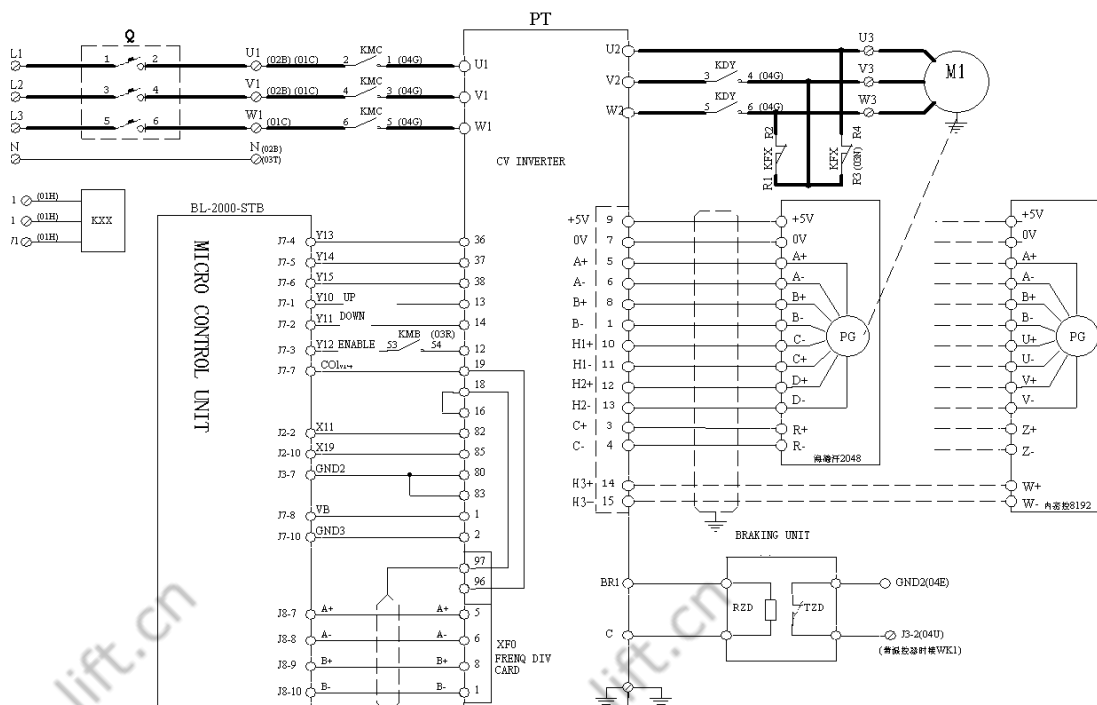
#0.40=1, motor turns. When #0.40 turn 0 from 1, learning is finished.

Parameter is save in #3.28.

If it halts, two phases of motor are exchanged. Learn is repeated.

Appendix 14 Synchronous Elevator Control Cabinet CV Inverter

Parameter Set Table



(1) The following table is only refer to , please setting parameter according to actual instance:

Item	Terminal			Value
	38	37	36	
Self-learning speed	0	0	1	300mm/s
Inspection speed	0	1	0	300mm/s
Leveling speed	0	1	1	50 mm/s
Speed 4	1	0	0	0 mm/s
Speed 3	1	0	1	0mm/s
Speed 2	1	1	0	1000mm/s
Rated speed V_1	1	1	1	1600mm/s

(2) Debug Step:

- ◆ after electrical connection, please check whether there are some connect error in inverter's main circuit and control circuit to prevent from destroying inverter; check whether encoder's electrical connection is correct. Check whether inverter 's three-phase wire U V W is consistent with motor 's three-phase wire U V W.
- ◆ Set control mode as synchronous elevator control mode, short inverter's terminal 19and 12 ,make output contactor and break contactor closed, make traction motor to perform current self-learning .
- ◆ after self-learning , do encoder zero point position job.

- ◆ after above step, set parameter and perform low speed running.

if elevator can run in low speed normally, make elevator in automatic running mode, perform elevator's high speed running, observe whether there are car rollback phenomena and over rush phenomena in elevator's up running process and down running process, if there is car rollback phenomena, please increase pre-torque function.

4: if elevator can run both in low speed and in high speed normally, adjust S curve parameter and P、I parameter to improve elevator's comfortable degree in high speed.

(3) Elevator general parameter

Motor data

Parameter	Value	Note
Rated voltage	380V	
Rated current	61.5A	*
Rated current	234rpm	*
Pole pairs	10	
Stator resistance	0.8 Ω	*
Stator inductance	0.020H	*
Torque constant	18.210NM/A	*
EMF constant	10.514	*

- ◆ Self-learning

Please refer to latter gearless motor current self-learning step。

- ◆ Encoder zero point position

Please refer to latter gearless motor magnetic field position step。

- ◆ Mechanical data

Parameter	Value	Note
Travel units select	Millimeters	
Gearbox ratio	2	
Pulley diameter (traction sheave diameter)	410mm	*
Full scale speed	150rpm	*

- ◆ Car Weights

Parameter	Value	Note
Cabin weight	2100kg	*
Counter weight	2900kg	*
Load weight	1600kg	*
Rope weight	300kg	*
Motor inertia	5.0	*
Gearbox inertia	0.0	*

- ◆ Encoders configuration

Parameter	Value	Note
Speed feedback select	0 (Std encoder)	
Standard encoder type	4 (Sinusoidalsincos)	

Standard encoder pulses	2048pps	
Standard encoder mode	0 (FP)	
Standard encoder supply	0 (5.14V)	

◆ Breaking Unit protection

Parameter	Value	Note
BU control	1 (internal)	
BU resistance	15 Ω	*
BU resistance	8.0KW	*

◆ Regulation mode

Parameter	Value	Note
Regulation	4 (Brushless)	

◆ Speed profile

Parameter	Value	Note
Smooth start speed	5mm/s	
Multi speed1	300mm/s	Self-learning speed
Multi speed2	300mm/s	Inspection speed
Multi speed3	50 mm/s	Leveling speed
Multi speed4	0mm/s	
Multi speed5	0mm/s	
Multi speed6	1000mm/s	
Multi speed7	1600mm/s	Rated speed

◆ Ramp profile

Parameter	Value	Note
MR0 acc ini jerk	300 mm/s ³	Acceleration initial jerk
MR0 acceleration	600 mm/s ²	Acceleration ramp
MR0 acc end jerk	500 mm/s ³	Acceleration end jerk
MR0 dec ini jerk	500 mm/s ³	Deceleration initial jerk
MR0 deceleration	600mm/s ²	Deceleration ramp
MR0 dec end jerk	500mm/s ³	Deceleration end jerk
MR0 end decel	200mm/s ²	Final deceleration slope

◆ Lift sequence

Parameter	Value	Note
Cont close delay	304ms	
Brake open delay	416ms	
Smooth start delay	400ms	
Brake close delay	680ms	
Contact or open delay	200ms	

◆ Speed P1 regulation gains

Parameter	Value	Note
Speed P1 gain%	20%	

Speed I1	gain%	3.3%	
Speed P2	gain%	20%	
Speed I2	gain%	5%	
Speed P3	gain%	25%	
Speed I3	gain%	12%	
Speed 0	enable	2 (Enable as start)	
Speed 0 P	gain%	19%	
Speed 0 I	gain%	20%	
Proportion filter			

◆ Speed threshold

Parameter	Value	Note
Speed 0 reference threshold	2rpm	
Speed 0 reference delay	500rpm	
Speed 0 speed threshold	2rpm	
Speed 0 speed delay	500rpm	
SGP tran21 h threshold	94%	
SGP tran32 l thr	5%	threshold
SGP tran21 band	4%	Band wide
SGP tran32 band	4%	Band wide

◆ Inertia compensate

Parameter	Value	Note
Inertia compensate enable	1 (Enable)	

◆ Speed regulator

Parameter	Value	Note
Speed P base value	50A/rpm	
Speed I base value	8000A/rpm	



Parameter	Value	Note
TRAVEL\Ramp function	Default	
TRAVEL\Ramp set point	Default	
TRAVEL\ Speed set point	Default	

Note : the parameter with mark “*” should be set according to actual .

(4) **gearless motor current self-learning step**

- ◆ Enter STARTUP/SETUP MODE/Autotune/Complete still;
- ◆ When display “Press I key “ release brake, KDY; after giving out “enable” and direction ,press inverter’s STAR key;
- ◆ When display “END”, cancel enable and direction signal output;
- ◆ Perform Load setup.

(5) **Gearless motor magnet position step**

- ◆ Enter REGULATION PAPAMFlux config\Magnetiz config\Autophasing

menu;

- ◆ On no rope condition , close KDY, "enable", close break, press "Enter" key ;
- ◆ When inverter display "Waiting start.....", give out "enable" and direction signal;
- ◆ When inverter display "Auto phasing End" , remove "enable" and direction, close KDY, break;
- ◆ Perform Save configuration.

(6) Gearless motor magnetic field position operation method

- ◆ By BL2000-STB breaking on, KDY; perform motor's enable and direction self-learning :
 - ◇ Disable Door lock 、emergency stop, on inspection mode, negate X19 input type ;
 - ◇ Inverter into self-learning mode, wait for KDY、break、enable and direction signal;
 - ◇ Negate X1input type, BL2000-STB main board will output KDY、break、enable and direction signal;
- ◆ After finish self-learning ,recover X1 input type, and recover X19 input type。

Appendix 15 Fault Code

The following table is only for refer to.

No.	Code	Note	Process
1	Er1		
2	Er2	Door Inter-lock fault circuit open	Check door inter-lock circuit and door knife
3	Er3	Inverter fault	Check inverter fault code
4	Er4	Elevator direction is contrary to direction that is given by instruct: a. micro control unit A, B phase pulse is reverse, b. elevator direction is inverse	a. Exchange A and B b. Exchange motor phase sequence
5	Er5	It doesn't monitor feedback signal after output release signal	Check switch and connect wire. If there isn't switch, brake feedback disable
6	Er6	Leveling zone signal doesn't cut off	Check leveling zone signal and induction switch
7	Er7	The number of Encoder pulse which is put into micro control unit is too few	Check pulse input circuit and connection
8	Er8		
9	Er9	Output KDY acting instruction is not consistence with feedback	Check KDY output, feedback circuit and KDY contactor
10	Er10	Emergency stop circuit open	Check emergency stop circuit
11	Er11	Elevator doesn't detect leveling zone signal	Check leveling zone signal and induce switch
12	Er12	Over top limit	Check encoder and connect
13	Er13	Over bottom limit	Check encoder and connect
14	Er14	Floor counter error.	Elevator returns to bottom floor and revise position. Check encoder, leveling zone circuit and connect. Type fault: leveling zone switch tingle or rope slide
15	Er15		
16	Er16		
17	Er17	Micro control unit output instruction, but it has not received inverter running signal	Check inverter direction, enable, and running circuit. Check parameters setting.

18	Er18	Floor counter error.	Elevator returns to bottom floor and revise position. Check encoder, leveling zone circuit and connect. Type fault: leveling zone switch tingle or rope slide
19	Er19		
20	Er20		
21	Er21	Running time is in excess of setting time	Check rope slide or car block. Check over time setting.
22	Er22	Inspection signal is input at High running process	Check inspection switch and circuit
23	Er23	One of two leveling zone is invalid	Check leveling zone signal and induce switch
24	Er24	On Multi-speed mode, slow down distance is too short.	Set proper distance by running speed
25	Er26	Door inter-lock contactor state is different to coil	Check coil and contactor state Check main board input port
26	Er27	Emergence stop contactor state is different to coil	Check coil and contactor state Check main board input port
27	Er28	Top and bottom terminal station or Top and bottom secondary terminal station are sticked each other	Correspond terminal station is valid, please check terminal station signal
28	Er29	Communication interference is too great and result in system's protection	1 deal with system ground to eliminate interference 2 check whether COP or landing call and display unit's has been destroyed and it result in CAN bus's malfunction.

Appendix 16 Hoistway Learn Fault Code Table

The following table is only for refer to.

No.	Code	Note	Process
1	LER=0	System running protection	Press 'esc', check fault record
2	LER=1	Pulse input phase reverse	Exchange A phase and B phase
3	LER=2	Bottom terminal 1 input repeat	Bottom terminal 1 installed in error or tingle
4	LER=3	Bottom terminal 1 lost (>2m/s)	Arrive at bottom Terminal 2 before bottom terminal 1 or bottom terminal 1 lost
5	LER=4	Bottom terminal 2 input repeat (>2m/s)	Bottom terminal 2 installed in error or tingle
6	LER=5	Bottom terminal 2 lost (>2m/s)	Arrive at top Terminal 2 before bottom terminal 2 or bottom terminal 2 lost
7	LER=6	Top terminal 2 input repeat (>2m/s)	Top terminal 2 installed in error or tingle
8	LER=7		
9	LER=8	Top terminal 2 lost (>2m/s)	Arrive at top Terminal 1 before top terminal 2 or top terminal 2 lost
10	LER=9	Bottom terminal 1 lost	Arrive at bottom Terminal 2 before bottom terminal 1 or bottom terminal 1 lost
11	LER=10	Top terminal 1 input repeat	Top terminal 1 installed in error or tingle
12	LER=11	Top terminal 1 lost	Arrive at top limit before top terminal 1 or top terminal 1 lost
13	LER=12	Total floors which obtained by hoisyway learning is error	Check total floor set and leveling inductor plate install
14	LER=14	Two leveling zone switch without overlap position	Leveling inductor plate can't shield two switch, or lost one switch
15	LER=15	Press 'esc' to cancel hoistway learning	press 'esc' key
16	LER=17	Leveling zone 1 and 2 input at the same time	The wire of two door zone switch is parallel connected together by mistake, or bottom limit switch is installed close to 1 st floor leveling position.
17	LER=18	Save data in error	Contact with us

18	LER=19	Arrival at top limit, two leveling zone signal input	Top limit switch is installed too low It is move down
19	LER=20	Bottom limit switch installation position is too high	It is moved up
20	LER=21	In hoistway learning process, when elevator run to up limit, bottom terminate station or bottom terminate station 2 is still valid.	Check whether bottom terminate station or bottom terminate station 2's installation or switch type is correct
21	LER=22	In hoistway learning process, when elevator start running from bottom limit, up terminate station or up terminate station 2 is still valid	Check whether up terminate station or up terminate station 2's installation or switch type is correct

Index

A

Acceleration 加速度

Acknowledge 应答

Analog given mode 模拟给定模式

Attendant mode 司机模式

ARD(automatic rescue device) 自救装置

Arrival bell(chime) 到站钟

Auto turn 自整定

B

Bottom limit switch 下极限开关

Bottom terminate station 下端站开关

Brake release time 抱闸释放时间

BU (Braking Unit) 制动单元

Braking resistance 制动电阻

Brake feedback 制动反馈

By-pass 直驶

C

Car call 内呼

Car call extend board 内呼扩展板

Car sill 轿厢门坎

Car rollback 溜车

Car top 轿顶

Car top wiring interconnect box 轿顶分线盒

Compensation chain 补偿链

Control cabinet 控制柜

COP (control operation panel) 操纵盘

D

Deceleration 减速度

Door Inter-lock 门连锁

Door zone 门区

Dot matrix 点阵

E

Electronic lock 电锁

Elevator rated speed 电梯额定速度

Emergency automatic leveling 应急自动平层

Emergence stop 急停

EMI (electro magnetic interference)

电磁干扰

Encoder 编码器

F

Fire floor 消防层

Fire mode 消防模式

Full load 满载

G

Geared motor 有齿轮电机

Gearless motor 无齿轮电机

Group control mode 群控模式

H

Heat sensitive switch 热敏开关

Hoistway 井道

Hoistway learning 井道自学习

Homing floor 待梯层

I

Indicator light 指示灯

Inspection mode 检修模式

Inspection speed 检修速度

Inverter 变频器

Integral gain 积分增益

Inter floor distance 楼层间距

J

Jumper 跳线

K

KDY (running contactor) 辅助接触器

KJT (emergency stop contactor.) 急停接触器

KMC (main contactor) 主接触器

KMB (door inter-lock contactor) 门连锁接触器

KXX (phase sequence relay.) 相序继电器

L

Landing call 外呼

Landing call and display unit 外呼与显示单元

Landing sill 厅门坎

Leveling adjustment 平层调整

Leveling inductor plate 平层感应板 (桥板)

Leveling speed 平层速度 (爬行速度)

Leveling zone 平层区

Light load 轻载

Load compensation 负载补偿

Low rise elevator 低层电梯

M

Main board 主板

Machine room inspection 机房检修

Micro control unit 微控制单元

Multi-speed mode 多段速模式

Motor rated speed 电机额定速度

Motor rated slip 电机额定滑差

N

No-load 空载

O

One-floor run 单层运行

Open delay time 开门延时

Overload 超载

Over speed 超速

Over shoot 超调

P

Phase 相位

Passenger 乘客

Parking 驻停

Parking floor 驻停层

Power supply 供电

Pre-opening door 提前开门

Proportion gain 比例增益

Q

R

Re-leveling 再平层

S

The safety edges for door 安全触板

Safety circuit 安全回路

Serial communication 串行通讯

Slowdown 换速

Slowdown distance 换速距离

Smooth start speed 平滑启动速度

Smooth start delay 平滑启动保持时间

Speed feedback 速度反馈

Synchronous speed 同步转速

T

Terminal resistance 终端电阻

Three phase wire 三相线

Total floor 总楼层

Traction machine 曳引机

Traction sheave diameter 曳引轮直径

Traveling cable 随行电缆

Twins control mode 并联控制模式

U

Up limit switch 上极限开关

Up terminal station 上端站

V

Voice report 语音报站

W

X

Y