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Chapter 1 Introduction of the Functions of BL2000 Serial Control System

1.1. List of Basic Functions

No	Description	Usage	Instruction of elevator action	Remarks
1	Automatic running		(1) Arrival open door; (2) Delay close door; (3) Manual pre-opening(door opens when the delay open time is not reached)' (4) Internal selecting automatic register(elimination of wrong operation); (5) Call directional car stop; (6) Call opposite highest (lowest) car stop.	ˆ 1˜ Turn the normal/inspection switch of cabinet to the normal position; ˆ 2˜ Position the automatic/attendant switch to the automatic position ; ˆ 3˜ The other two normal/inspection switches are on the normal positions.
2	Attendant running		ˆ 1˜ Arrival open door; ˆ 2˜ Manual close door; ˆ 3˜ Internal selecting automatic register (elimination of wrong operation); ˆ 4˜ Call directional car stop.	ˆ 4˜ Turn the normal/inspection switch of cabinet to the normal position; ˆ 5˜ Position the automatic/attendant switch to the attendant position ; ˆ 1˜ The other two normal/inspection switches are on the normal positions.
3	Inspection running	Used in debugging, maintenance and inspection	After the system is set to be in maintenance state, if the slow running up or slow running down, the elevator will run upward and downward with the maintenance speed and it will stop when the button is released.	Normal/inspection switch is respectively positioned on the car top, in the car or on the control cabinet. The preference is from the top to the bottom.
4	Automatically			

				ˆ 3˜ When elevator stops for both car call and landing call, delay time is **T+2 second.**
6	Open door for current floor landing call	call open door	When door is closing or closed but elevator doesn't start, door will be opened automatically again.	Delay time is set by the set open door holding time.

13	Fire	When fire switch is closed, system enters into fire state: (1) It clears up all calls; (2) It will return to fire floor open door. (3) Hold-open door; (4) When it arrives at fire floor, it outputs fire signal. (5) If elevator direction is opposite, it stops at nearest floor without open door

			is turned off and the display is extinguished after 10 seconds. (4) Pressing any car call button or close/open door button, light is turned on. (5) Pressing close/open door button; Door will be automatically closed and light will be turned off again after 10s.	
No	**Name**	**Usage**	**Instruction of elevator action**	**Remark**
16	Parallel control	Preferable parallel control	(1) When there is landing call, two elevators respond to it at one time. One of them finishes the service by the rule of speediness and economy from their position and direction, therefore, elevator efficiency is improved. (2) When two elevators both haven't service, one returns to homing floor (usually the 1st floor), another one stands by.	When parallel connection of two elevators is connected by supplied cables and parallel connection parameters are set correctly, parallel running can be realized.
17	Group control running	Multi-elevator optimized control	BL2000 can control 8 elevators simultaneously	

1.2. Special Functions

No	Description	Usage	Instruction of elevator action	Remarks
1	Hoistway self-learning	Measure and		

				function is valid when electronic lock is switched on, if it is switched off, elevator works at parking state. 4. If you want elevator to exit from automatic stop service, you may perform the following operation: (1) Switch electronic lock from on to off for 1s, then switch it on again, the system will enter the enforced running state and the elevator can run normally. (2) After that, switch electronic lock from on to off for 1s, then switch it on again, the system will exit the enforced running state and elevator will enter into automatically stop service state.
13	Special running	Services for special passenger	The landing call is invalid in this state. The elevator is controlled by the attendant. Door control mode is the same as attendant mode.	When special switch is equipped
14	Prolong the close door time	Prolong the close door time	During the door opening to the automatic door closing, if the button is pressed, the holding time of the opening will be prolonged to be the set prolonging time.	ˆ 1˜ The elevator is equipped with prolonging closing delay time button. ˆ 2˜ It can be used in the automatic running state. ˆ 3˜ It is usually used in hospital elevator.
15	**Rear opening control**	Elevator with 2 doors	It can control the opening and closing of two doors act at corresponding floor.	For the definition of the rear opening, please refer to the relative chapters of this manual.
16	Fault diagnosis	Automatically searching and recording the error information	(1) When elevator is error, the system diagnoses the fault and display fault information on LED. (2) The time, type and floor of the latest 10 faults will be stored in fault report for maintenance personnel to check.	For the error codes, please refer to relative appendix.
No	**Description**	**Usage**	**Instruction of elevator action**	**Remarks**
17	Interference	Automatically	It can evaluate the ground	This function is used after finishing

	evaluation	measure the interference on site to the main board	connecting condition (restraining interference source) of the control cabinet and the ground connection of hoistway (reliable shied); in addition, It conducts maintenance personnel to remove hidden trouble and provides more safe and reliable circumstance.	debugging.
18	**Encoder evaluation**	Automatically inspect the quality of the encoder output pulse	It analyzes and evaluates the encoder pulse signal to avoid the error caused by the encoder and conducts maintenance personnel to remove the trouble on tingling and leveling.	The judgment of the quality of encoder and the interference condition.
19	**Evaluation of the interference on input port**	Automatically inspect the influence of the input signal interfered by hoistway	The system can evaluate the input signal and displays it by on LCD; in addition, it can conduct the personnel to reasonably and properly complete the wiring and ground connection, so as to eliminate the faults on the floor number displaying and leveling caused by the interferences of the trailing cable and hoistway parallel connected with the main board to the input of the main board.	**The direct display of electric level interference of the input circuit**
20	Automatic rescue running	When power off, the automatic rescue device will supply the power for leveling	After power off, the automatic rescue device (ARD) will supply the power for the leveling of the elevator and the escaping of the passenger: The automatic rescue running should meet the following requirements: 1à When power off, the automatic rescue device will supply the power (the automatic rescue running input X18 of the main board is valid); 2à The elevator is not in maintenance state; 3à The elevator is not in landing; 4à There is no running fault; 5à The door lock circuit signal	Because the ARD is used in the automatic rescue running, and the drawing of control cabinet in the system is different from the standard drawing, so please contact our technical office for the reference drawing; if the SYT-YY automatic rescue device manufactured by our company is used, please see the appendix 3: specification of the SYT-YY automatic rescue device.

is normal;

The running process of the automatic resue device when the elevator is not in the leveling zone:

1 à

			time will be prolonged (the open delay time can be set).	in the car as the normal car calls(n is the total floor number); **N+1~N+N** can be taken as the car call of **1**˙ **N** floor on the operating panel for the disabled. The opening 2 and closing 2 inputs on the operating panel can be input as the opening/closing input for the disabled. **(Note: the functions for the disabled can not be used with the rear opening)**

			3. The speed should be lower than the re-leveling protection speed; 4. The low speed output of the inverter is valid; 5. Safety circuit board outputs are valid;	

1.3. List of Safety Protection Functions

No.	Description	Action instruction
1	Safety circuit protection	If safety circuit is opened, the elevator stops at once.
2	Door inter-lock protection	Only all door interlocks are closed, elevator can run. If door interlock is opened or tingled, elevator will stop.
3	Running contactor protection	System may check the reliability of action of the motor main circuit contactor, if there is abnormality (e.g. not picking up or conglutination), the elevator will stop.
4	Brake inspection protection	The opening and closing of the brake can be real-time inspected by the brake arm inspection switch; if brake action is error, system will forbid the starting of the elevator.
5	Terminal landing speed change and floor number correct	When the system detects the terminal switch during running, elevator is forced to change speed and correct the display of floor number.
6	Limit protection	When system detects limit switch, elevator will stop at once.
7	Final limit protection	When system detects the actions of final limit switch, system will be powered off.

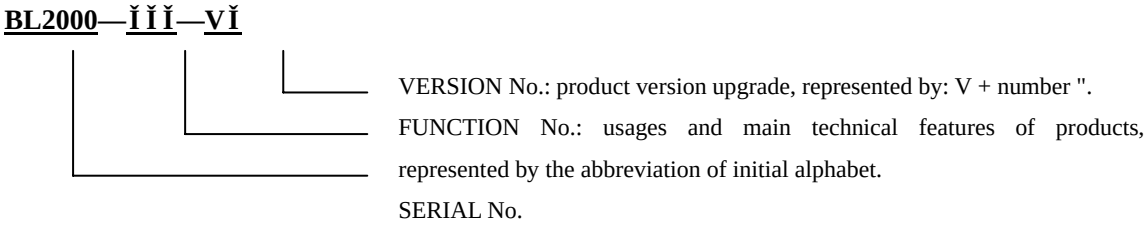
1.4. List of selectable functions

No.	Description	Instruction
1	Remote control	The running of the elevator can be real-time monitored in monitor center by wire or wireless communication module.
2	Arrival gong	Arrival gong indication
3	Voice synthesizer	Voice indication

Chapter 2 Types of BL2000 Serial Control System Computer Boards

2.1. Designation of product models

1. Basic regulation



2. Designation of main board, car board and car expansion board

ˆ **1˜** Main board : BL2000-STB-Vn

ˆ **2˜** Car board BL2000-CZB-Vn

ˆ **3˜** Car expansion board BL2000-CEB-Vn

ˆ **4˜** Group control board BL2000-QKB-Vn

ˆ **5˜** For other types, please refer to table of computer board types of 2.2.

3. Designation of elevator call and display boards

ˆ **1˜** Code of features: The first H represents call and display board
The second A: point array vertical display, B: point array horizontal display, C: 7 segment vertical display, D: 7 segment horizontal display.
The third H: high light, S: over light and R: over high light

ˆ **2˜** Version code: The first code represents luminescent diode parameters of digital displaying block.
A: 1357
B: 1057
C: 1257
D: 1067
E: 2058
F: BS252
G: BS402
The second code means version upgrade, represented by numbers.

ˆ **3˜** For the object, please refer to Diagram 3-3-4-1.

2.2. Table of computer board types

Name	Model	Unit	Instruction
Main board	BL2000-STB-V2	block	
Car board	BL2000-CZB-V7	block	Contains command for 8 floors.
Car expansion board	BL2000-CEB-V2	block	Command for 8 layers is added when one block is added.
Call and display board	BL2000-Hxx-xn	block	Details please refer to Diagram 3-3-4-1.
Call and display interface board	BL2000-HXJ-V2	block	
Group control board	BL2000-QKB-V2	block	Group control of 8 elevators
Group control call and display board	BL2000-HQK-V2	block	For group control
Arrival gong	SJT-DZA	one	
Load inspection device	SJT-150	one	For car with car bottom
Voice synthesizer	SJT–YBA–V6	one	
Remote control device	SJT-WJ	one	Remote control center end
Remote control device	SJT-WK	one	Control cabinet end
IC card wired data collector	SJT-QIC-V2	one	Remote control center
IC card wired remote monitor	BL2000-KIC-V2	one	Control cabinet end
ID cared wired data collector	SJT–QID–V2	one	Control center
ID card wired remote monitor	BL2000-KID-V2	one	Control cabinet end
Car IC card floor selector	BL2000-CIC-V2	one	
Car ID card floor selector	BL2000-CID-V2	one	
IC card reader	MF-500	one	
ID card reader	YX-K4-232	one	

Note: The table is only for reference because the contents may be changed with time.

Chapter 3 Combination and components of BL2000 serial control system

3.1. Schematic diagram of system composition

3.2. Performance of the main parts of the system

The **main parts of the system** related in the manual means the boards composing of BL2000 serial control system, which consists of: main board, car board, car expansion board, call and display board, group control board, group control call and display board, voice synthesizer and load inspection device. The serial products of control cabinet with BL2000 serial control system and the other components in BL2000 serial control system are not contained.

3.2.1 Description of features:

3.2.1.1. Fujitsu industrial control single chip computer;
3.2.1.2. Four-layer plate binding process with CAN bus serial communications;
3.2.1.3. High intelligence, strong resistance to interference, and high reliability;
3.2.1.4. Keyboard operation and liquid crystal display;
3.2.1.5. Specialty of elevator operating curve and the leveling precision ≤ 3mm when landing directly;
3.2.1.6. Support parallel connection, group control, monitoring and intelligent management;
3.2.1.7 Provided with RS-485 communication interface (which can be connected with weight inspecting device made by Blue Light to improve elevator startup)'
3.2.1.8 Use portable computer to connect with RS232 interface, being able to choose velocity of elevator in car to comfort passenger.

3.2.2. Scope of application:

3.2.2.1. Elevator selective-collective operation, two elevators parallel connection and group control of 3-8 elevators;
3.2.2.2. Range of speed: 0.5-4m/s;
3.2.2.3. Applicable story: below 64 floors.
3.2.2.4. Passenger elevator, freight elevator, ward elevator and residential elevator'
3.2.2.5. With weighting inspecting compensation and fire control linked interface;
3.2.2.6. Support wired video monitoring, remote monitoring and wireless remote monitor'
3.2.2.7. Applicable to gear towing machine and gearless permanent magnetic towing machine.

3.2.3. Standards for reference

3.2.3.1. Elevator Manufacture and Installation Regulation (GB7588-2003)
3.2.3.2. SJT Serial BL2000 Elevator Control System (Q1SL.J02.01-2003)

3.2.4. Power supply specification

Voltage: DC24V ±1.2V' current: 2A'
Voltage : DC5V ±0.1V' current: 1 A.

z Note: Increase the power capacity when the building is more than 20 stories. For each story, the increasing value should be 100mA.

3.2.5. Working temperature

Working temperature of devices: · 40ºC ~ ¯ 80ºC (except LCD)

3.2.6. Inspection standards

3.2.6.1. Inspecting according to GB/T17626.2-1998 Electromagnetic Compatibility- Testing and Measuring Techniques-Static discharging interference test to make sure the

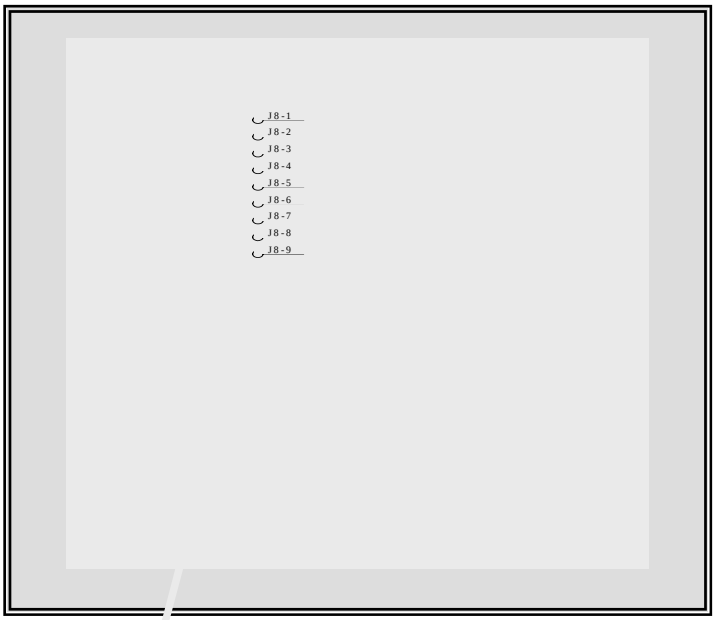
requirements are met (contact discharging: 8kV’ test grade: 4).

3.2.6.1. Inspecting according to GB/T17626.3-1998 Electromagnetic Compatibility- Testing and Measuring Techniques-Radiated, radio-frequency, electromagnetic field immunity test to ensure the requirements are met (frequency domain: 80~1000MHz, filed density: 10V/m, signal: 1kHz sine wave, modulation percentage: 80% and test grade: 3).

3.2.6.1. Inspecting according to GB/T17626.4-1998 Electromagnetic Compatibility- Testing and Measuring Techniques-Electrical fast transient/burst immunity test to ensure the requirements are met (power and grounding port-test voltage: 4kV, repetition rate:

ˆ **3˜** J10single-row pin 2.54/3P

ˆ **4˜** J11 double-row connector 2.54/10P



2˙ Port circuit

Please refer to:

Diagram 3-3-1-2

Diagram 3-3-1-3



Diagram 3-3-1-3 Main board BL-2000-STB port circuit

3. Definition and specification of ports

Table 3-3-1 Definition and specification of main board BL2000-STB

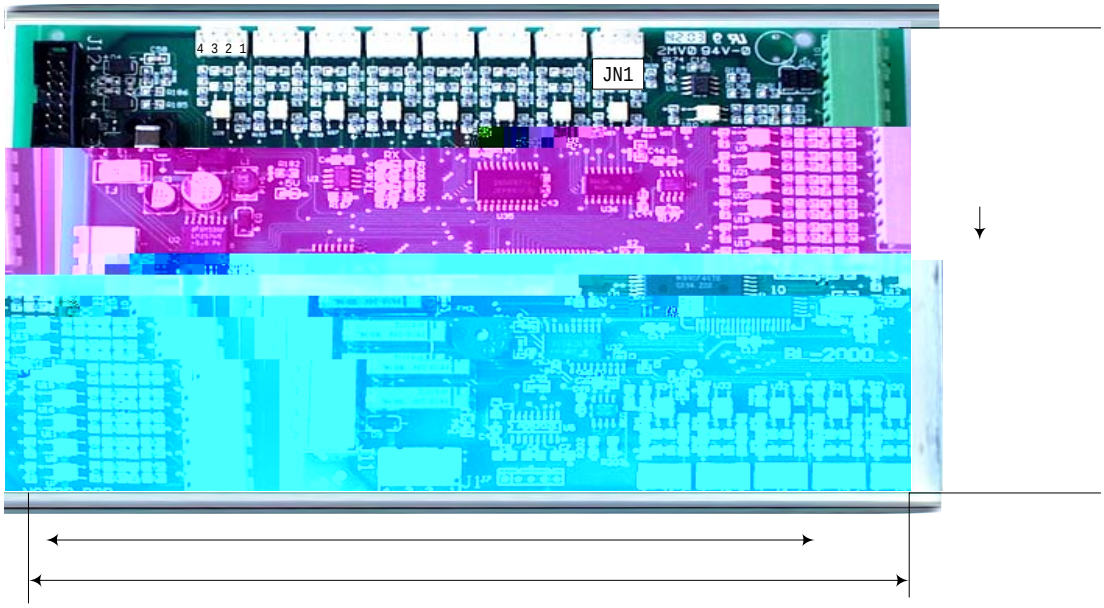
Name	Port No.	Location	Definition	Usage	Technical specifications of ports			
					Port form	Rated load	Off /on time	Max. speed
J1	X0	J1-1	Inspection input	Input	Optical coupler	DC24V 7mA	10mS	100Hz
	X1	J1-2	Up running input					
	X2	J1-3	Down running input					
	X3	J1-4	Top terminal 2 input					
	X4	J1-5	Bottom terminal 2 input					
	X5	J1-6	Top limit input					
	X6	J1-7	Bottom limit input					
	X7	J1-8	Top terminal 1 input					
	X8	J1-9	Bottom terminal 1 input					
	X9	J1-10	Up leveling input					

Continue Table 3-3-1-

Name	Port No.	Location	Definition	Usage	Technical specifications of ports			
					Port form	Rated load	off/on time	Max. speed
J2	X10	J2-1	Bottom leveling input	Input	Optical coupler	DC24V 7mA	10mS	100Hz
	X11	J2-2	Transducer failure input					
	X12	J2-3	Fire input					
	X13	J2-4	Emergency stop input					
	X14	J2-5	*door interlock input					
	X15	J2-6	*braking feedback input/main power contactor input					
	X16	J2-7	Running contactor input					
	X17	J2-8	Braking contactor feedback input					
	X18	J2-9	Automatic rescue running input					
	X19	J2-10	Transducer running input					
J3	X20	J3-1	Electronic lock input	Input	Optical coupler	DC24V 7mA	10mS	100Hz
	X21	J3-2	Thermal switch input					
	X26	J3-3	Re-leveling input			Only V9 board		
	X27	J3-4	Re-leveling sensor signal input					
	X28	J3-5	Multi-function input					
	X29	J3-6	Multi-function input					
	GND2	J3-7	24V ground		0V			
	GND2	J3-8						
	GND2	J3-9						
	24V2	J3-10	24V X0˙ X21common		Power	DC24V147 mA		
J4	GND3	J4-1	0V	Power and communication port				
	24VIN	J4-2	24V input		Power	DC24V10A		
	GND3	J4-3	0V					
	5VIN	J4-4	5V input		Power	DC5V500mA		
	24VOUT	J4-5	24V output		Power	DC24V10A		
	1H	J4-6	parallel /group communication wire TXA+		CAN	80mA		25kH
	1L	J4-7	parallel /group communication wire TXA-					
	GND1	J4-8	0V					
	2H	J4-9	Call /car communication wire TXA+		CAN	80mA		25kH

	2L	J4-10	Call /car communication wire TXA-					
	X22	J5-1	Emergency stop input+	Input	Optical coupler	AC110V8mA		
	X23	J5-2	Emergency stop input-					
	X24	J5-3	*door interlock input+					
	X25	J5-4	*door interlock input-					
	Y16	J5-5	Standby					
	Y17	J5-6						
	COM0	J5-7	Y16 Y17common					
	Y0	J5-8	Re-leveling control output					

3.3.2. Car board BL2000-CZB



Please refer to **Diagram 3-3-2-2, Diagram 3-3-2-3 and Diagram 3-3-2-4.**

4 definition and specification of port

Table 3-3-2- Definition and specification of port on car board BL2000-CZB

					Technical specification of port

			J4-2	24V output			limit	
747)uorg tuotuo (4-24.5pO			J4-3	24V output ground			resistor 560Ω	

3 w-.357 relpuoc(otsi560r

	RT-	J10-7	Serial load inspection communication RT-	SJT-150 serial input	RS485		
	RT+	J10-8	Serial load inspection communication RT+				
	24V	J10-9	+24V				
	CMM	J10-10	0V				
	BLV-	J11-1	Arrival gong 1A	Output	Reply	DC5A24V AC5A250 V	20cpm Off/on time 5/10mS
	BLV+	J11-2	Arrival gong 1B				
	N1	J11-3	Lighting control A				
	ZM	J11-4	Lighting control B				
	BK1	J11-5	Standby 1 A				
	BK2	J11-6	Standby 1 B				
	CZD	J11-7	Overload indicator light A				
	CMM	J11-8	Overload indicator light B				
	24V	J11-9					

3.3.3. Car ex



4. Definition and specification of port

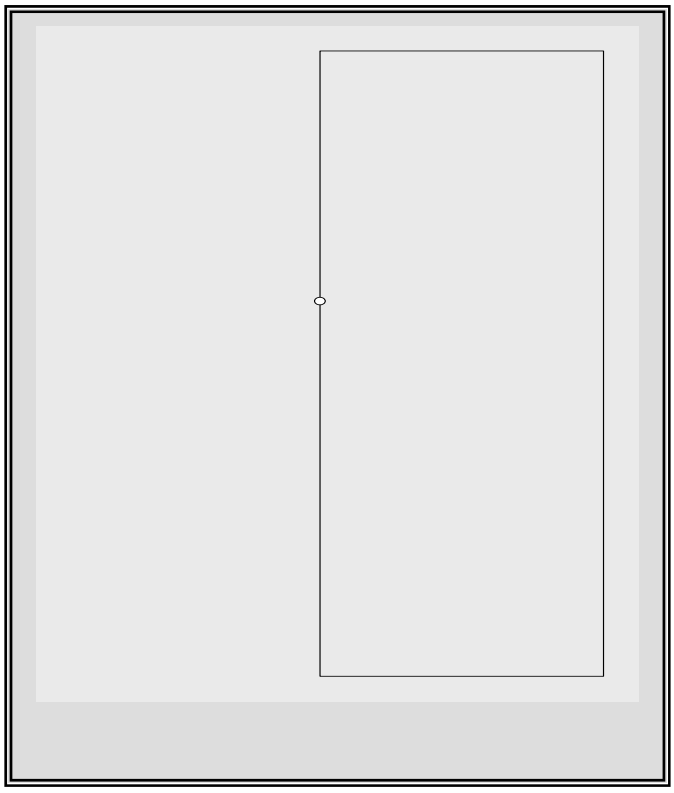
Table 3-3-3 Definition and specification of ports on car expansion board BL2000-CEB

Name	Port No.	Location	Definition	Usage	Technical specification of port		
					Port form	Rated load	Max. speed
J1	24V	J1-1, J1-2	Power +24V input terminal	Previous board port			
	5V	J1-3, J1-4	Power +5V input terminal				
	0V	J1-5, J1-6	Power 0V input terminal				
		J1-7˙ J1-12	Data signal wire				
		J1-13, J1-14	Void				
J2			The same with J1	Next board port			
		JEn-1	Response output				
	24V	JEn-2	+24V				

3.3.4. Call and display board BL2000-Hxx-xn

1. instruction

call and display board BL2000-Hxx-xn can be classified to be a lot of kinds: vertical display type and horizontal display type according to alignment of running direction display block and floor display block; point array display and 7-segment display according to the lighting of display block; big point array, small-point array, square-point array, high light, over light and over high light types according to the size, appearance and lightness of the point. For practical use, please refer to 3-3-4-1.



2. specification of connector (BL2000-Hxx)

- **1˜** J1, single-row socket 3.96/4P port circuit
- **2˜** J2, J3single-row pin 2.54/4P (single –jacket)
- **3˜** J4 double-row hole 2.54/10P
- **4˜** S1,CZ,JC skip wire 2P

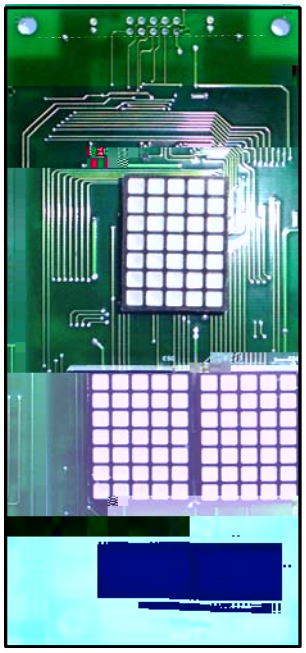
3. port circuit

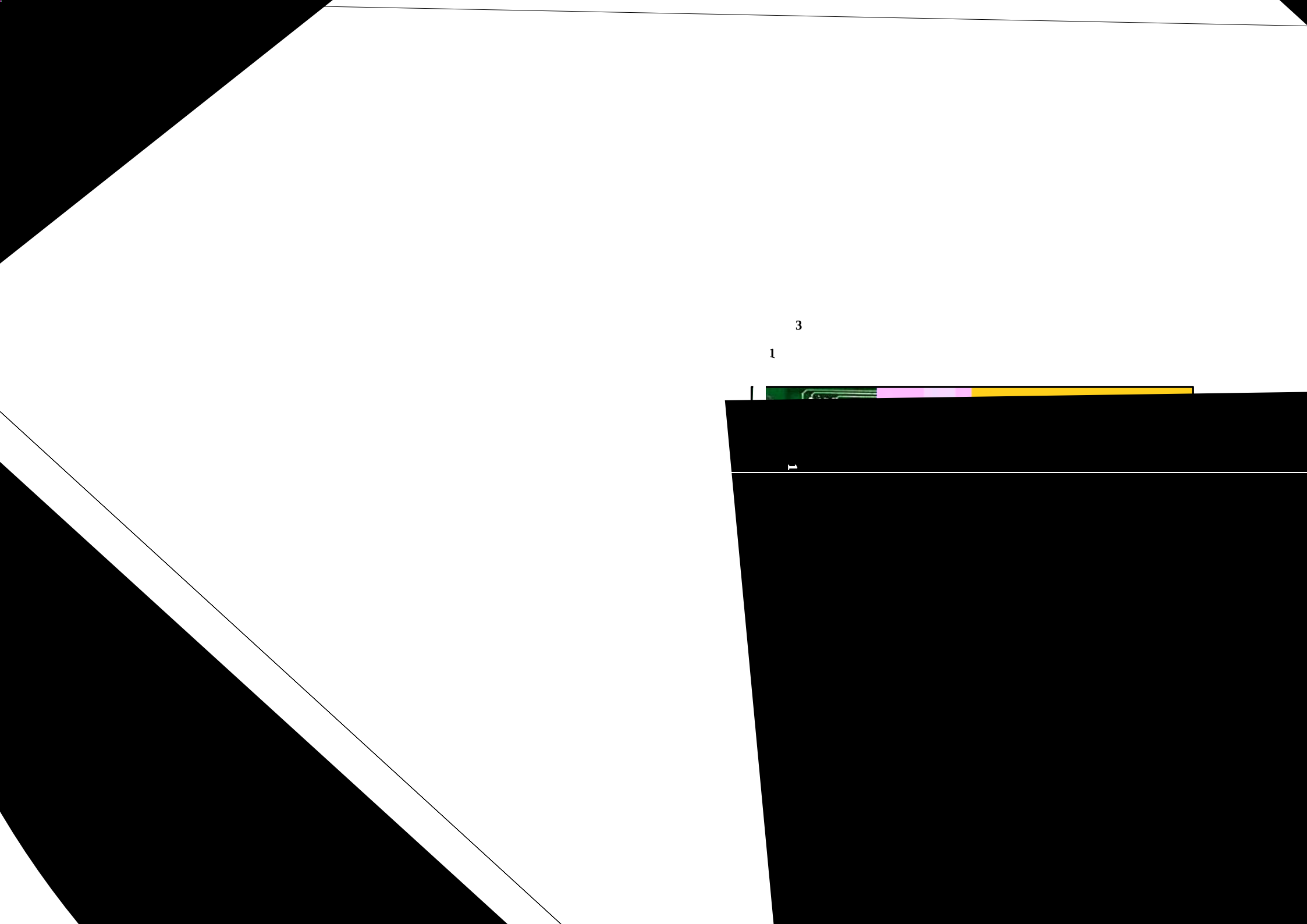
4. definition and specification of port

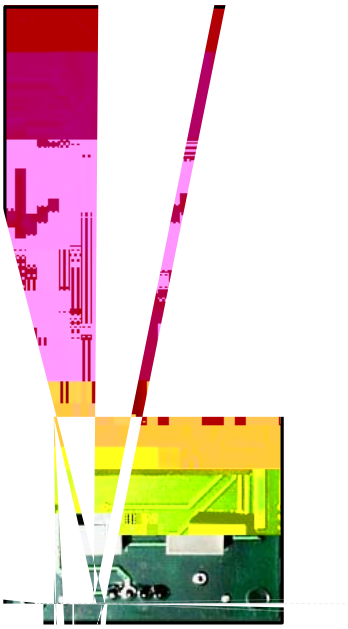
Table 3-3-4-2 Definition and specification of ports on call and display board BL2000-Hxx

Name	Location	Definition	Usage	Technical specification of port		
				Port form	Rated load	Max. speed
J1	J1-1	24V power input	Power and communication port		Point array 100mA 7-segment 160mA	
	J1-2	24V power input ground				
	J1-3	CAN bus H				
	J1-4	CAN bus L				
	J2-1	Up call response				
	J2-2	24V output				

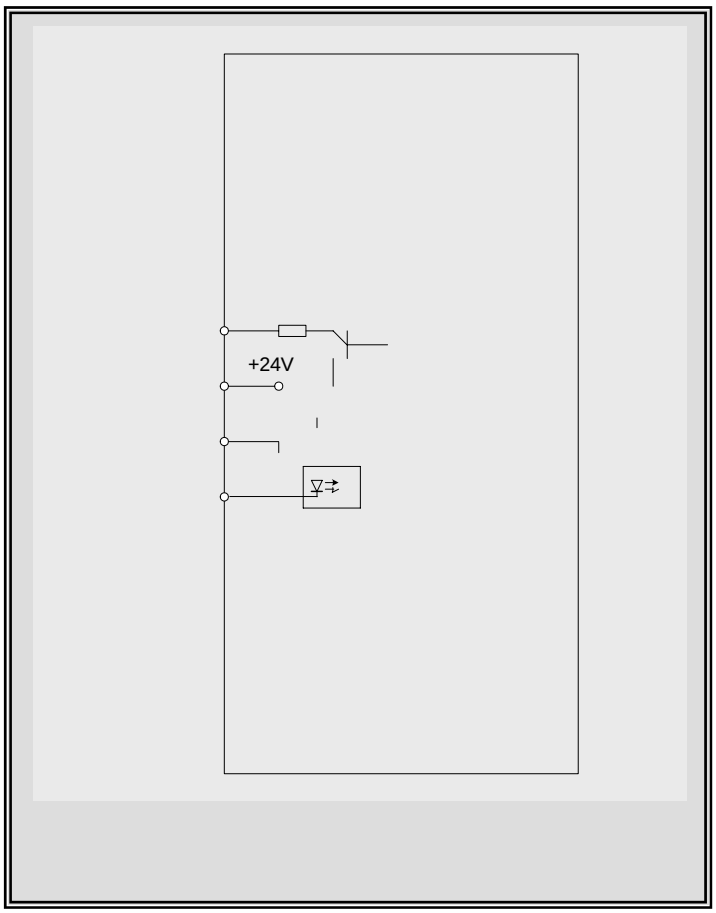
7. Appearance and layout installation dimension




3
1
1



BL2000–HBH–C1	1257AH	Horizontial display	Square point	point array		42×25×7 High light	High light
BL2000–HBS–C1	1257AS						
BL2000–HBR–C1	1257ASR						



2. Specification of connector (BL2000-HQK-V1/V2)

ˆ **1˜** J1 single-row socket 3.96/4P

ˆ **2˜** 2.54/4P

ˆ **3˜** SH, XH single-row socket 2.54/4P (single jacket)

ˆ **4˜** J4 double-row hole 2.54/10P

ˆ **5˜** J5-0 terminal DG301-3P (5.08/3P)

ˆ **6˜** J5-1,J5-2 terminal DG301-2P (5.08/2P)

ˆ **7˜** S1 skip wire 2P

3. Port circuit

Please refer to Diagram 3-3-5-1 Wiring diagram of ports on BL2000-HQK

4. Definition and specification of ports

5. Table 3-3-5 Definition and specification of ports on group control and call board BL2000-HQK

Name	**Location**	**definition**	**Usage**	**technical specification of port**		
				port form	**rated load**	**Max. speed**
J1	J1-1	24V power input	Power and communication		point array 100mA 7-segment 160mA	
	J1-2	24V power ground input				
	J1-3	CAN bus H				
	J1-4	CAN bus L				
J2	J2-1	Up call response	Up running call button	OC door	Current limit	

	J2-2	24V output	input and response voltage output		resistor 120Ω	
	J2-3	24V ground output				
	J2-4	Up call input		Optical coupler	8mA	50Hz
J3	J3-1	Down call response	Down running call button input and response voltage output	OC door	Current limit resistor 120Ω	
	J3-2	24V output				
	J3-3	24V ground output				
	J3-4	Down call input		Optical coupler	DC24V8mA	50Hz
J4	Programming port					

Diagram 3-3-6 Appearance and layout installation dimension of group control board BL2000-QKB-V1

1. Instruction

ˆ **1˜** Group control system is composed of group control board **BL2000-QKB-V1** and boards (**BL2000—xxx**) on each elevator. Group control board collects the landing call, car call and state information of each elevator by **CAN** bus serial communication (Diagram 3-3-6-1), processes the information intelligently, and then assign the commands to all the elevators to group control 8 elevators below 64 stories.

ˆ **2˜** Four running modes

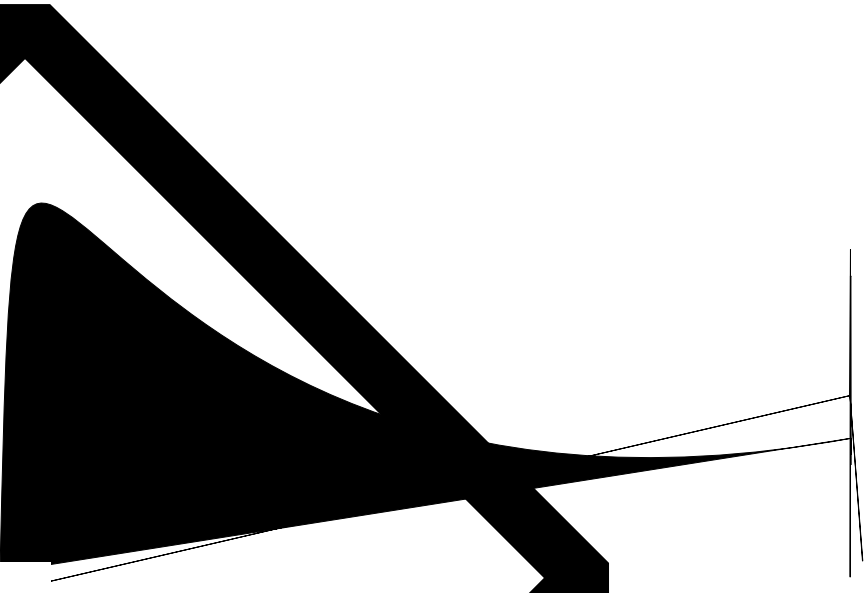
Up peak mode——all the elevator supply landing call service with the preference of landing floor up call in the set time.

Down peak mode——one elevator preferentially supplies up call service and other elevators preferentially supply down call service with zone allocation to respond to the down call as quickly as possible.

Balance mode——fine preference and assign for landing call; respond the landing call at the minimum time.

Free mode——if there is no selective landing call in balance mode for 3 minutes, the elevator will wait on the first16tTf0.001(n)- mhelltosoronto in landincals

svatiatif ins4eatwevi pof fi9 control a4lpe(c)eria



5. Definition and specification of port

Table 3-2-6 Definition and specification of port group control board BL2000-QKB-V1

Name	Port No.	Location	Definition	Usage	Technical specifications		
					port form	rated load	Max. speed
J1	GND3	J1-1	0V	Power and communication			
		J1-2					
	GND3	J1-3	0V				
	5V IN	J1-4	5V input			200mA	
		J1-5					
	TXA+	J1-6	Group communication				
	TXA-	J1-7					
	GND3	J1-8	0V				
		J1-9	Standby CAN communication TXA+				
		J1-10	Standby CAN communication TXA-				
J2	DA+	J2-1		RS485			
	DA-	J2-2					
	GND	J2-3					
J3	Programming port						
J4	TX	J4-1	Communication transmit	RS323			
	RX	J4-2	Communication receive				
	IN	J4-3	Control input				
	OUT	J4-4	Control output				
J5	TXA+	J5-1	Group control communication				
	TXA-	J5-2					
	GND3	J5-3	0V				
		J5-4					

3.3.7. Introduction of load inspection device SJT-150

1. Working principle

Under the principle that: bottom car elastically changes with the weight, the device inspects the changes of displacement by Hall sensor, calculates by the single chip computer and corrects error so as to inspect the load of the elevator car.

2. Description of feature

^

computer of high quality; working parameters can beset at site.

ˆ **3**˜ Self-learning and convenient adjustment at site.

ˆ **4**˜ Serial output, working as landing call box.

ˆ **5**˜ Small volume, easily mounting and simple structure.

ˆ **6**˜ Matching with BL2000; being used for load compensation of drive to solve the problem of sliding of gearless towing machine when starting.

3. Technical index and specification

ˆ **1**˜ Scope of application: movable bottom car elevator, effective sensing range of magnetic filed: 2-24mm.

ˆ **2**˜ Sensibility:

Table 3-3-7

Distance between bottom car and load inspection device when idling	24mm	20mm	10mm
Motivating range of bottom car from idling to full load	9mm	7mm	3mm
Sensibility	Rated loading weight /200		

ˆ **3**˜ Response time: ≤0.5s

ˆ **4**˜ Output form: RS485 serial single byte output

ˆ **5**˜ Voltage : DC 9 - 24V

4. Operating instruction

The device should be used with serial control systems of **BL2000** serial communication frequency control elevator. In normal working state, load inspecting value can take part in the controlling of system, which can achieve the functions of torque compensation, full load passby, overload voice and light alarms performed.

(For details, please refer to Specification of SJT–150 Elevator Load Inspecting Device.)

5. Definition and specification of ports

Table 3-3-8-1 Load Inspecting Device SJT-150

Name	**Port No.**	**Location**	**Definition**	**Usage**	**Technical specification**		
					port form	**rated load**	**Max. speed**
		DB9-3	RT-				
		DB9-7	RT+				
		DB9-4	24V				

music. No elevator adjustment. Broadcast advertisement according to customer’s requirement.

2. Technical index and specification

(1) Language selection

(2) Broadcasting content of reNor landing

(3) Background music selection

(4) Salutatory (less than 15 characters)

3. Selective voice selection

Customer can select language, background music and advertisement (details please refer to specification of SJT-YBA voice synthesizer).

4. definition and specification of port

Table 3-3-8-2 Voice synthesizer **SJT-YBA**

Name	Port No.	Location	Definition	Usage	Technical specifications		
					port form	rated load	Max. speed

ѝ Ы Л

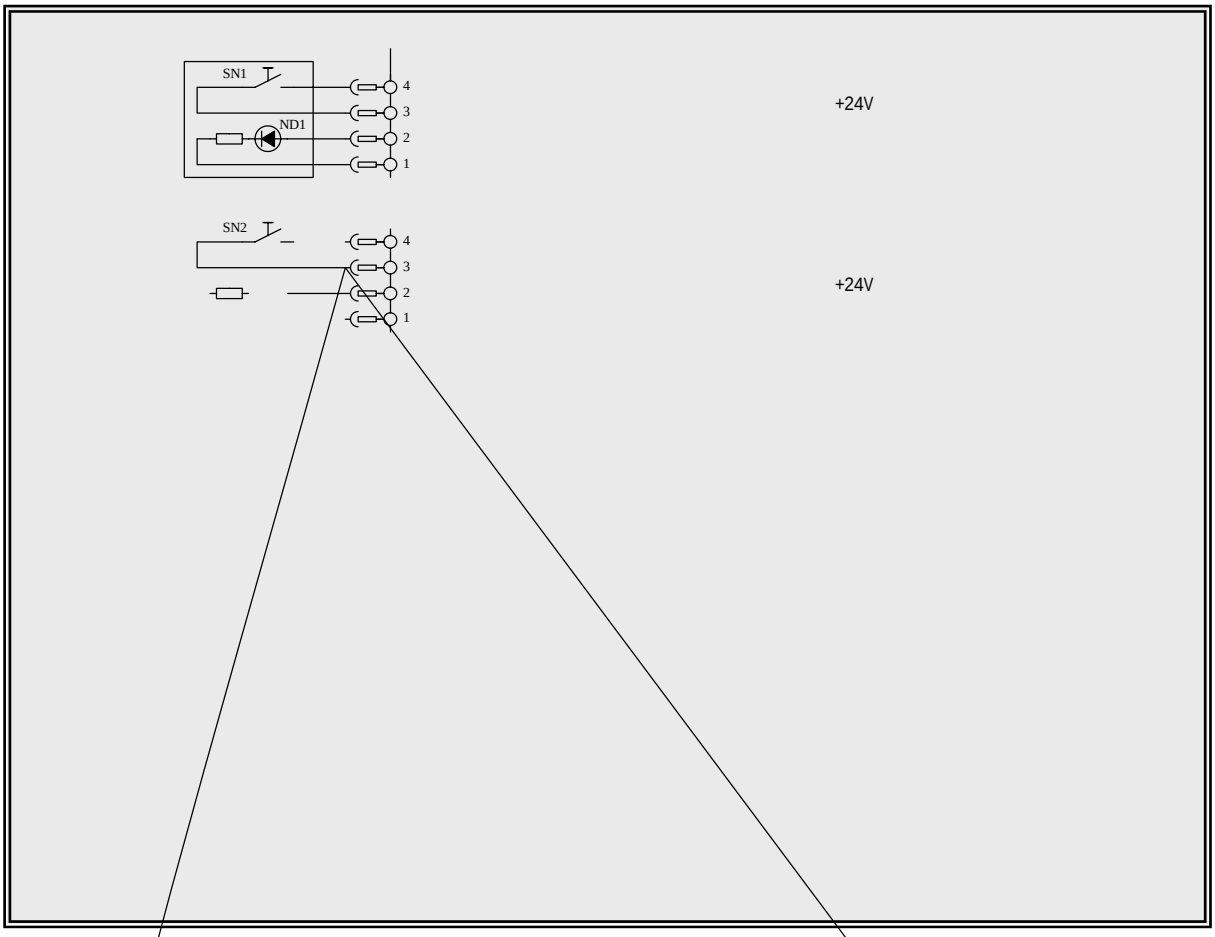
2) ┘ Ы≥18.5KW ⁸ ╟´ ĩ

2.

5. BL2000 Serial Control System – Car Control Loop Schematic Diagram

G ″I a Not connected when using Bluelight weighing device

6. **BL2000 Serial Control System – Car and Extension Board**



1	ą ą	Call in 1st floor
2	ą ą	Call in 2nd floor
3	ą ą	Call in 3rd floor
8	ą ą	Call in 8th floor
9	ą ą	Call in 9th floor
16	ą ą	Call in 16th floor
17	ą ą	Call in 17th floor
24	ą ą	Call in 24th floor

7. BL2000 Serial Control System – Call and Display Loop Schematic Diagram

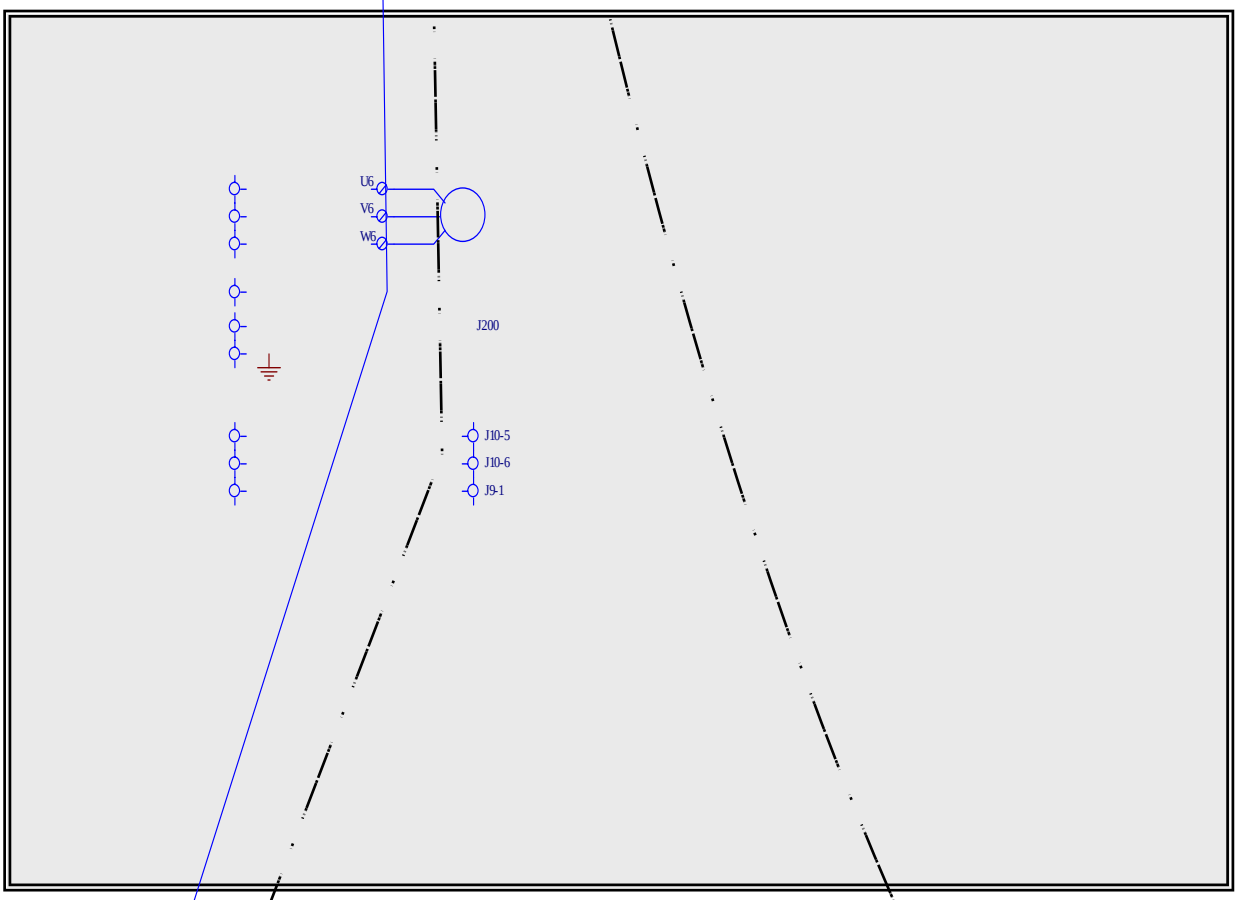


N ЮL	Down Call From Floor N
N-1 ЭL	Up Call From Floor N
N-1 ЮL	Down Call From Floor N
3 ЭL	Up Call From 3rd Floor
3 ЮL	Down Call From 3rd Floor
2 ЭL	Up Call From 2nd Floor
2 ЮL	Down Call From 2nd Floor
1 ЭL	Up Call From 1st Floor

8. **BL2000 Serial Control System – Communication Loop Schematic Diagram**

ㄴ ㄲ	Optional function
N ㅓ ㄷ	Call from floor N
N-1 ㅓ ㄷ	Call from floor N-1
	Control panel
ㄱ	car display
	connection terminal block
ㅈ	voice synthesizer
2 ㅓ ㄷ	call from 2(N-1)]TJ/C2_0-19.8 384.27 Td(2)Tj/C2_0 1 Tf0 Tc 10 Td<121609C

9. **BL2000 Serial Control System – Door Motor Loop Schematic Diagram**



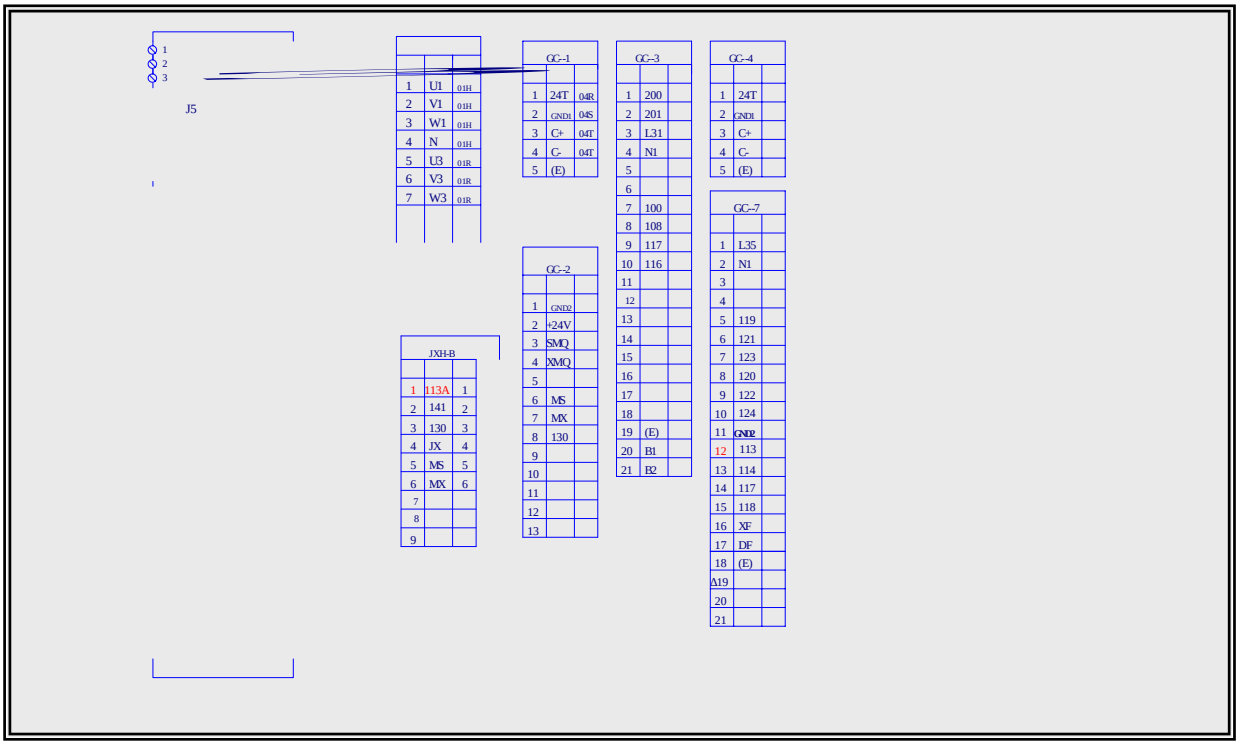
⁸ ⅄	Door motor controller
Æ	Open door limit
˜Ω Æ	Close door limit
˜Ø˜Ω	Common
˜Ω ə ʌ	Open door signal
ə ʌ	Close door signal
ɔ	Side door motor
ў	Main door motor

10. BL2000 Serial Control System – Parallel Loop Schematic Diagram



A	Elevator A
B	Elevator B
ч ´ ⅄ ɒ ˘ في ˘ ⅄ ⅄ ɒ ˘ ⅄ Â	For two elevators parallel connected, connect according to this diagram when single call button is used and only connect parallel lines when double call buttons are used.
Э ⅄ ɒ	Up call
Ю ⅄ ɒ	Down call

11. L2000 Serial Control System – Control Cabinet Terminal and Plug-ins Location Diagram



TB1	Power terminal TB1
/\	No.
/\	Symbol
Æ	Location
╟ g JXH-B	JXH-B Socket for mobile inspection station
	Pin
/\	Symbol
/\	Line No.
Æ	Location
8 ╟ g ˚	Have this plug-in when there is controller mobile inspection station
	Trailing communication cable
	Pin
/\	Symbol
Æ	Location
	Line for shielded layer
	Trailing cable
L	Call communication cable
Ч	Hoistway cable
⊿	Small terminal block
/\	No.
/\	Symbol
Æ	Location
╟	Fire linkage
/	Parallel connection/group control
Y صر ⊿	Connected for Y-shaped synchronous

	Braking
ɣ	Speed limiter
б GND2 ˇΩ	Connected to braking inspection switch with GND2
ŏ	Safety seal line
	Door connection seal line
	Electric lock seal line
б GND2 Æ	Limiting seal line with GND2
б GND2 g	Inspecting seal line with GND2
	Power supply for talkback
	Standby

' 1) ą / ɔ ╖

2)*4- ɖ ˇΩ 114A б 108

3) *9- ˇΩ 113A б 113

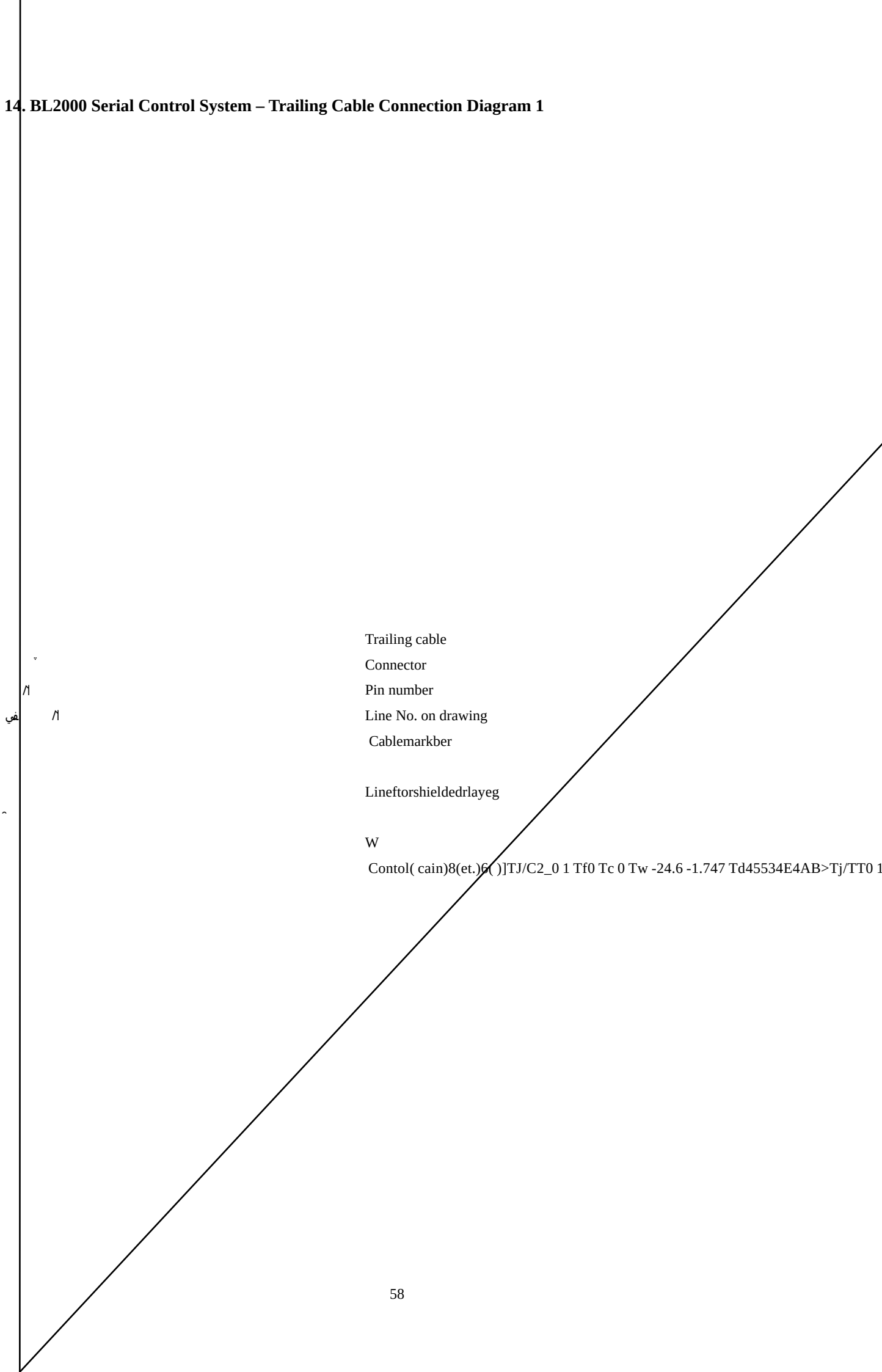
2: P1\P2 ὴ ὲ ῞ ὼ ᾳ ᾼ emergency operation function

3: ᾳ ᾼ ῀ Note 2: P1\P2 is the input signal of the emergency lighting power from other suppliers

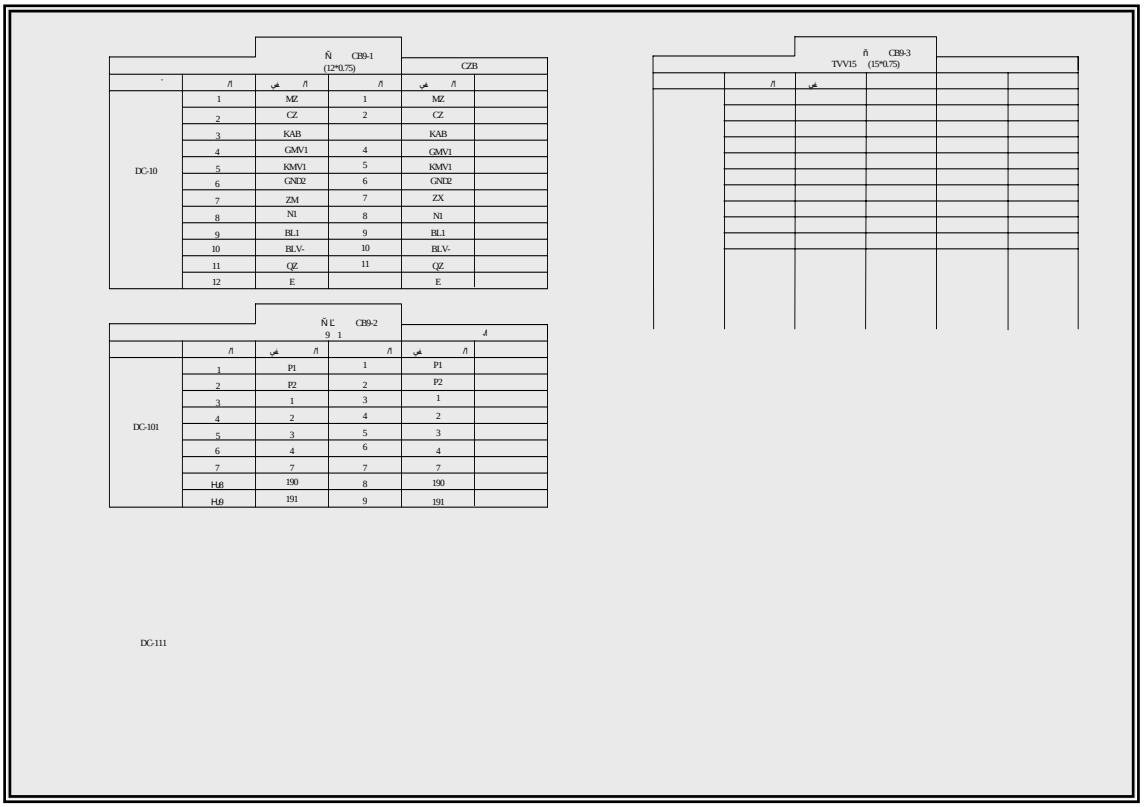
Note 3: connect the signal marked with in the case of voice device

ἓ ῆ voice device

14. BL2000 Serial Control System – Trailing Cable Connection Diagram 1

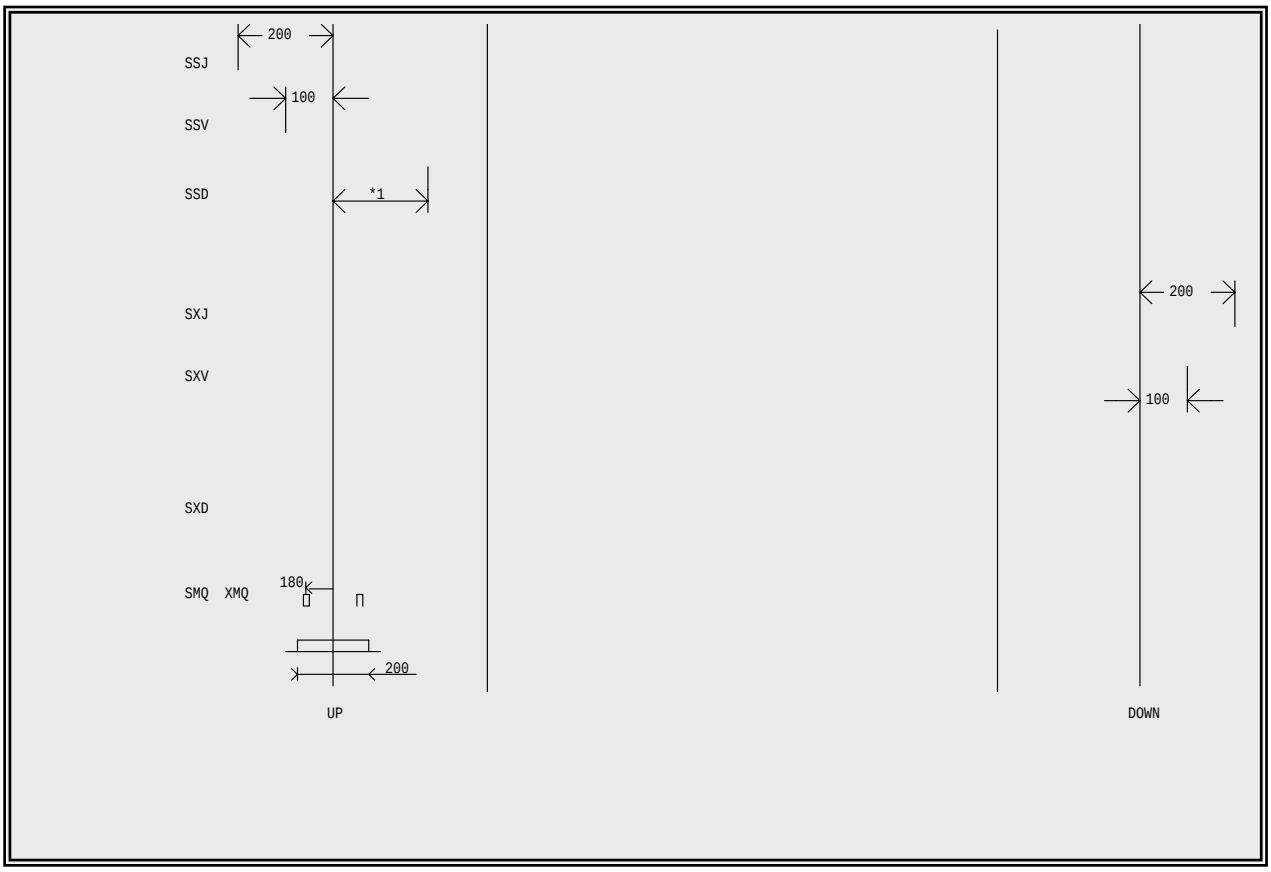


15. BL2000 Serial Control System – Trailing Cable Connection Diagram 2 (Car Cable)



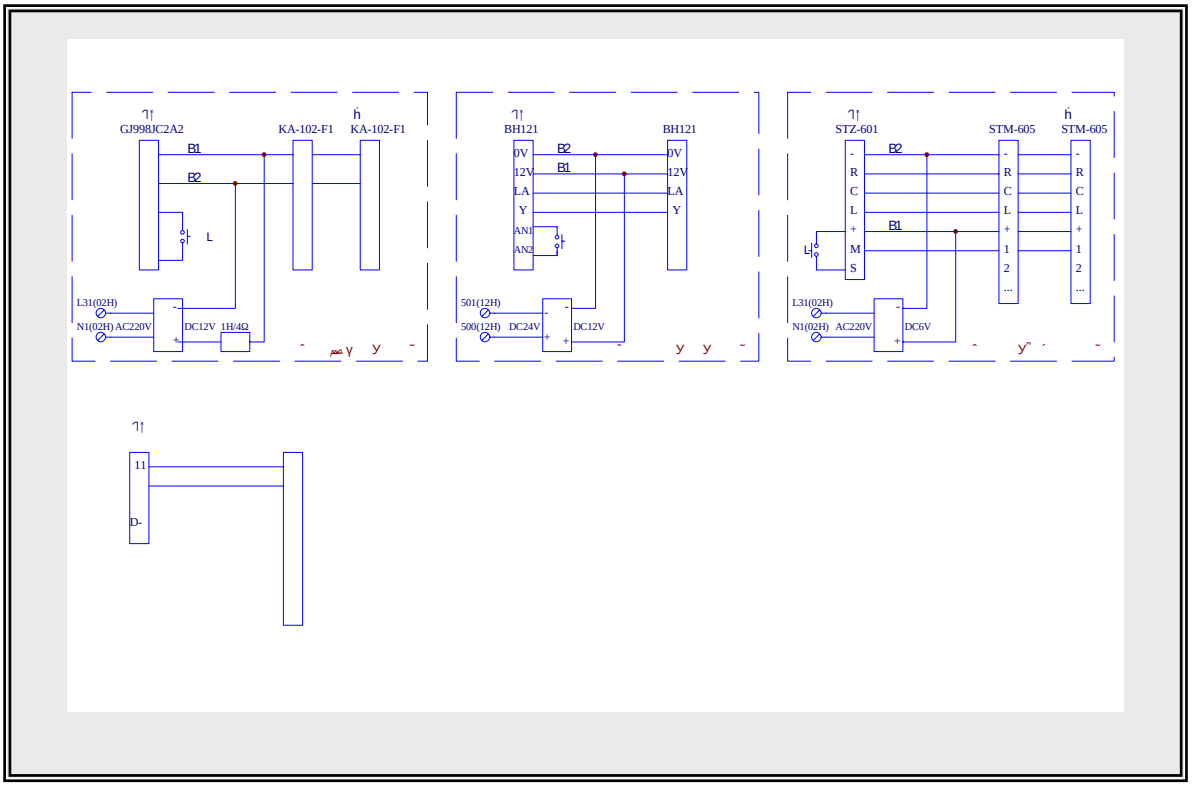
I	Operation panel cable I
CZB	Operation panel CZB terminal
ᵛ	Connector
/ſ	Pin No.
غفي /ſ	Line No. on drawing
/ſ	Cable marker
	Car top
I’ CB9-2	Operation panel cable I’ CB9-2
9 1	One 9-core cable
⅄	Operation panel terminal block
ᵛ	Connect this plug-in in the case of rear opening
II CB9-4	Operation panel cable II CB9-4
2 2	Two 2-core cables
⅄	Operation panel terminal block
	Line for shielded layer
⅂	Car display panel
: ə /ſ ɔ ⅂	Note: connect to the signal marked with in case of emergency operation function

16. L2000 Serial Control System – Hoistway Switch Location Diagram



Э ˇΩ	Final Limit Switch Up
Э Æ ˇΩ	Limit Switch Up
Э ˇΩ	Terminal Landing Switch Up
Э ˇΩ	Secondary Terminal Landing Switch Up
Ю ˇΩ	Final Limit Switch Down
Ю Æ ˇΩ	Limit Switch Down
Ю ˇΩ	Secondary Terminal Landing Switch Down
Ю ˇΩ	Terminal Landing Switch Down
Æ	Leveling Position
Ш ˇΩ	Landing Switch
˥	Car
´ Æ	Unit
Ш	Landing Magnet Vane
	Speed
	Item

17. BL2000 Serial Control System – Talkback System Schematic Diagram



٦↑	Extension within car
	Machine room
ḣ	Duty room
	Red
	Black
	Yellow
	Blue
L ɬ ў	Calling host
L ɬ	Calling terminals
L	Emergency call
	Emergency power supply
	Inductance
ممم ɣ У	GreatWall One-Drive-Two Talkback
٦↑	Extension within care
	Machine room
ḣ	Duty room
	White
	Green
	Red
	Black
	Power supply
ɬ ў	Jiangyan double host talkback
У У	Best one-drive-one talkback
	Red

Orange

Brown

Single-office talkback of Ningbo No. 1 Factory

Gray

White

Purple

Brown

Laogang single-office talkback

KBK1 KBK2	Brake inspection switch	

	control button		
NMS	Car slow-up button		Car
NMX	Car slow-down button		Car
PG	Rotary encoder		Machine room
PT	Frequency inverter	Variable speed drive for elevator running, controlled by main board and its type will be selected by user.	Cabinet
Q	Master control supply air switch (Party A)		Machine room
Q1	Hoistway lighting power air switch (Party A)		Machine room
RC	Arc extinguisher		Cabinet
RF1	110V rectifier bridge	Outputting 110V DC voltage.	Cabinet
RJ	Braking economy resistance (option)		Cabinet
RLZ	Brake follow current resistance		Cabinet
RMD	Door motor resistor		Cabinet
RZD	Braking resistor		Cabinet
SCS	Up overspeed protection switch		Machine room
SDC	Car emergency stop button		Car
SDF	Electric lock switch		Home floor
SDM	Car top light switch		Car top
SDT	Car top emergency button		Car top
SDZ1	Up terminal switch 1		Hoistway
SDZ2	Up terminal switch 2		Hoistway
SFA	Car fan switch		Car
SFK	Hoistway lighting control switch		Machine room
Code	**Name**	**Main function**	**Location**

Chapter 4 The Installation of BL200 Serial Control System

4.1. Important Notes

1. The products made in our company have been strictly inspected through automatic inspection line and usually can be can be normally installed and used, except for some accidental damages during the transportation process (please refer to the content of “arrival check” in this manual).

2.

terminal is S1.

2. 0˙ 4 m/s'

If the floor space is big enough, the terminal installation distance shall be equal to S2. If not, the terminal station installation distance shall be larger than 2.5 m and less than the landing of the hypo highest floor. If the floor spaces for upper and lower terminals are different, the installation positions of upper and lower terminal can be different. If the floor space for bottom floor is big, the installation distance of lower terminal shall be equal to S2. If the distance between the two highest floors is higher than S2, the installation distance of the upper terminal is equal to S2, if it is smaller than S2, the installation can be carried out in the landing on the hypo highest floor. The installation positions of the upper and lower terminal are equal to S1, if this position is the same as the landing position of one floor, please install it in a long distance to avoid the superposition with the landing, the installation position is a litter bit bigger than S1.

4.3.4. Grounding of the control system

In the system installation process, please guarantee the system and the grounding terminals of every part grounded properly.

1. Grounding the shielded wire of rotary encoder'

2. Grounding wire of hoistway wire and traveling cable'

3. Grounding control cabinet case, grounding terminal of the inverter, the motor case and the car.

4. Grounding the grounding terminals of other parts'

5. Pay attention to figure out the common, power grounding and external grounding.

Chapter 5 Parameter setup of BL2000 serial control system

5.1. General

LCD and keyboard are good man-machine communication interface which is set on main board BL2000-STB to debug, maintain and monitor the system. Operator can set the running parameter of the control system and inspect the running state and main input/output signal by LCD and keyboard during adjustment, maintenance and monitoring.

1. Introduction of LCD and keyboard

6 buttons are equipped at the bottom of LCD. The alignment and definition are as followed:



Diagram 5-1-1 Layout of LCD and key

Menu Menu key: return to main menu (excluding hoistway self learn, load inspection self learn and save parameter).

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

Esc Esc key: cancel and return to the previous menu.

Cursor key: Circle move right; system enters into communication state by clicking it in main menu.

Page up, increase 1 or select Yes (ON) key.

Page down, decrease 1 or select No (OFF) key.

2. Setting and monitoring parameters

- **1** Parameter setup: general parameter, running parameter and special parameter.
- **2** Monitor elevator state: automation, inspection, attendant, fire and lock etc.
- **3** Data monitor: hoistway position, elevator speed, I/O port, fault information, load, landing call, car call and communication etc.
- **4** Hoistway self learn.
- **5** Set new password.

5.2. Menu structure and flowchart

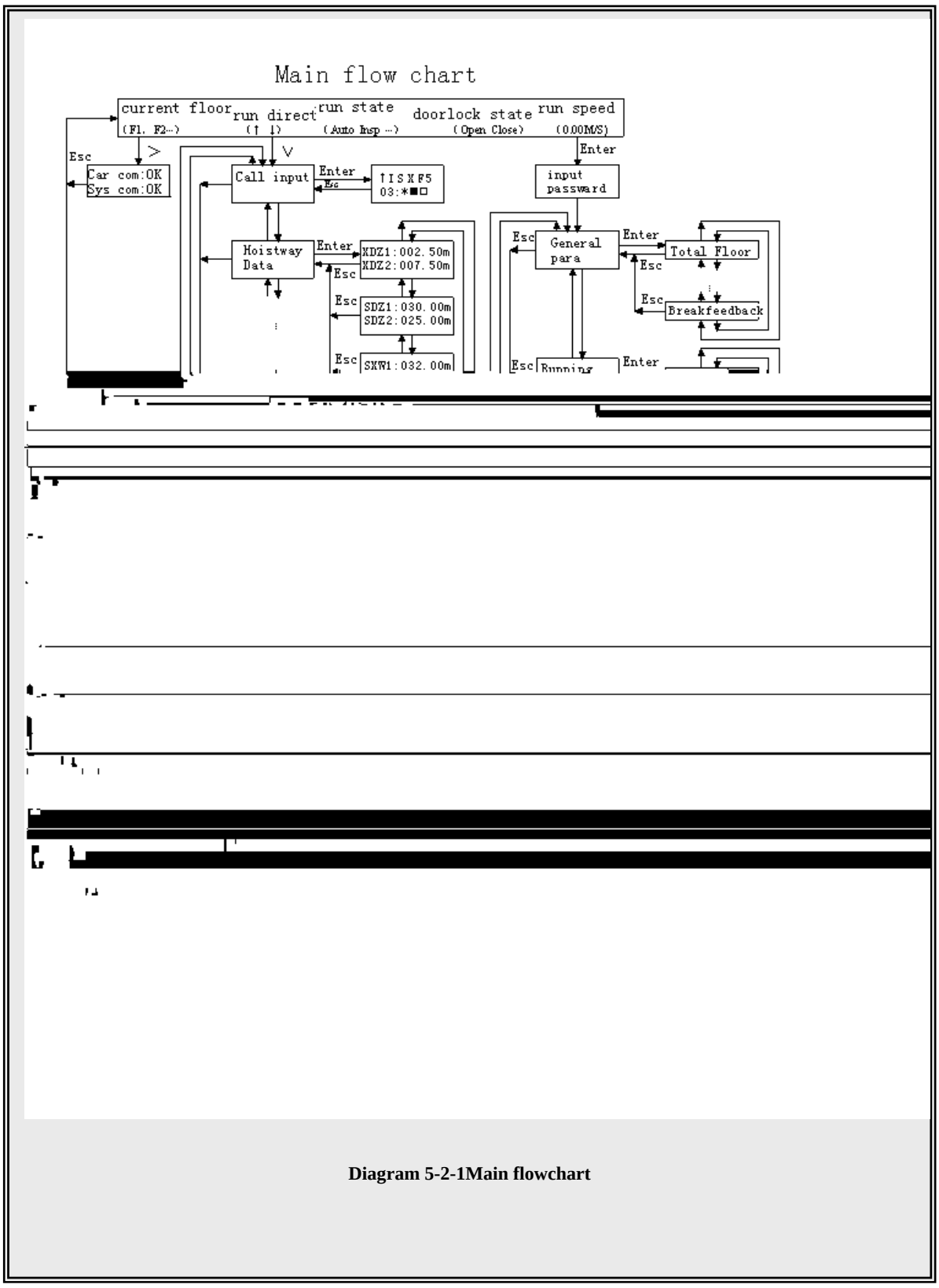
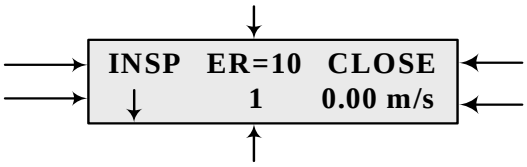


Diagram 5-2-1Main flowchart

5.2.1. Main menu

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



Elevator state:

INSP	inspection
MANU	attendant
AUTO	automation
FIRE	fire
STOP	stop
USER	

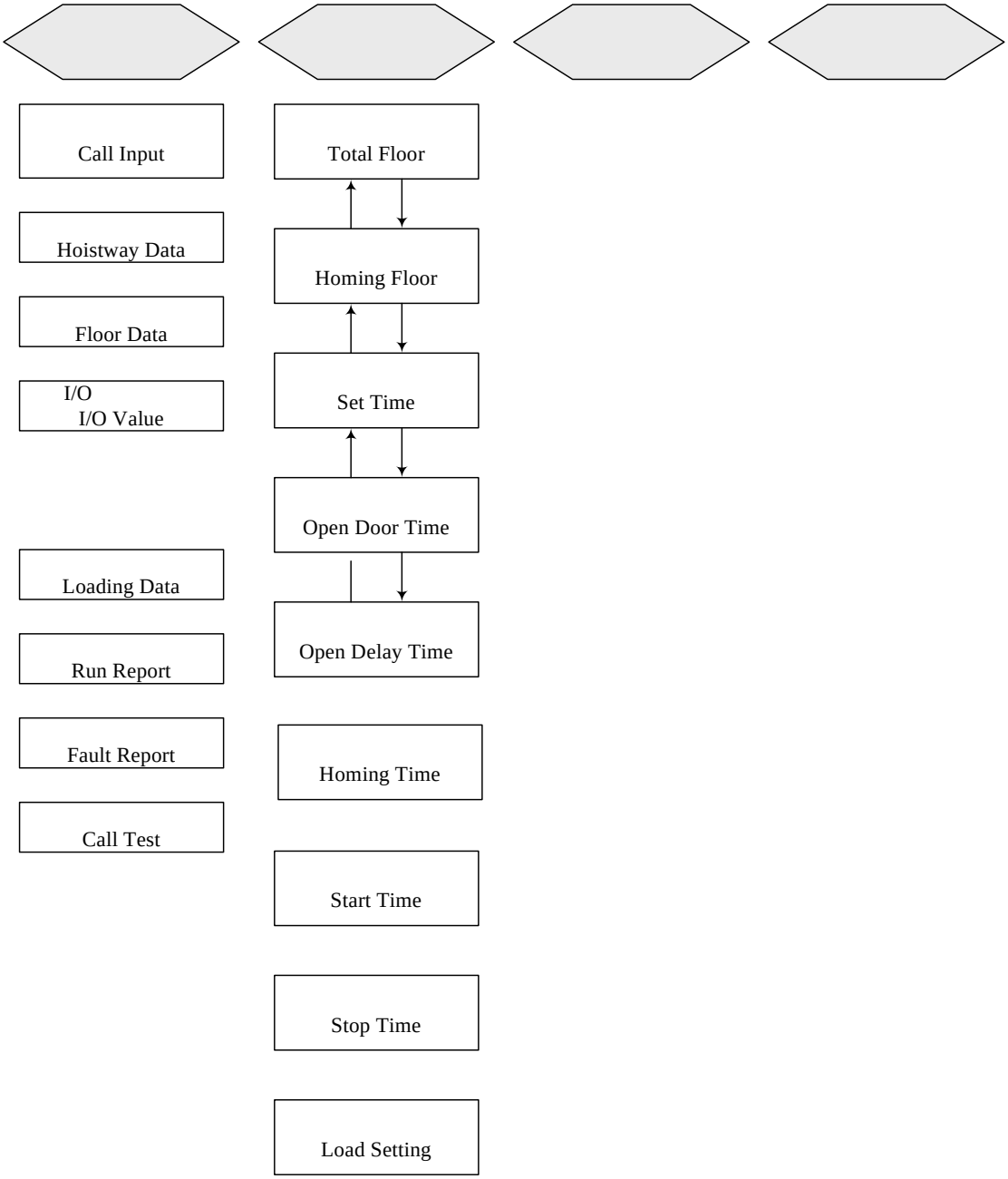
5.2.3. Password verify

Before you enter user menu and factory menu, set and save parameters, you must input right password in inspection state with the elevator on inspection state. User password may be modified in setting password menu, while factory menu can not be modified because it is set before the elevator is delivered. The concrete operations can refer to the following content.

5.2.4. Monitor menu and parameter setting menu

Monitor menu, general parameter, running parameter and special parameter are the basic interface for setting parameters and monitoring running state. Menu is divided into user menu and factory menu by user’s requirement.

1. User menu


Call Input
Hoistway Data
Floor Data
I/O
I/O Value
Loading Data
Run Report
Fault Report
Call Test
Total Floor
Homing Floor
Set Time
Open Door Time
Open Delay Time
Homing Time
Start Time
Stop Time
Load Setting

3. When ‘enter’ is displayed on bottom right corner on LCD, you may click ‘enter’ key enter into sub-interface.

4. If there is no cursor, you can not set parameter. When you click ‘enter’ key and cursor is displayed, you can modify parameter by “ " and “ ”, move cursor by “ ”..

5. Definitions of terms:

1. Actual floor: display floor
2. Absolute floor: bottom floor is 1, the 2nd floor is 2, the 3rd floor is 3 and so on.

5.3. Setup and operation of monitor parameter menu

5.3.1. Monitor menu: all the interfaces are read only except floor select menu and close/open door menu

Table 5-3-1 Monitor parameter

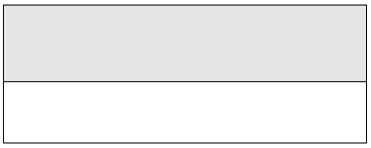
No	Chinese	English	Instruction
User menu			
1	ə	Call Input	displays car call, landing call and inter select
2	Ч ΏÆ	Hoistway Data	displays top/bottom limit and terminal
3	ə	Floor Data	Leveling position and stop or not
4	I/O И Л ћ	I/O Value	I/O state corresponding to decimal
5	И ћ	Speed Feedback	Current motor speed (rpm) and elevator speed (m/s)
6		Loading Data	Current load percentage (load device is valid)
7	`	Run Report	Accumulated running time
8		Fault Report	The latest 10 faults records
9	Л	Call Test	

5.3.2. Setup and operation

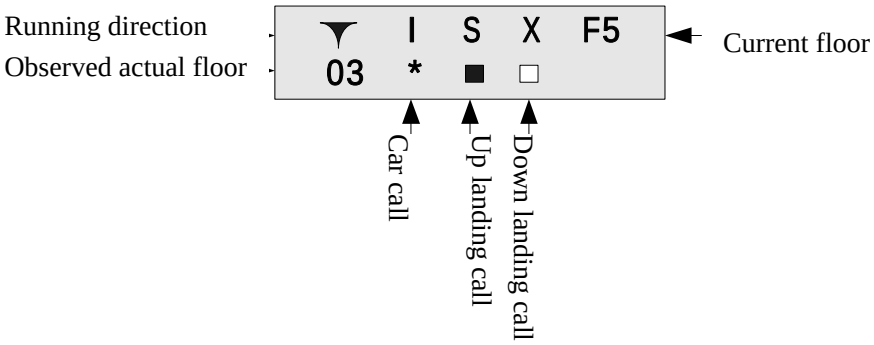
1. Call floor information

(1) It display car call and up and down landing call, car call may select via menu operation (for adjustment).

It will enter into the first page of monitor menu by striking ‘ ’ key from main menu.



(2) Press Enter key to enter select floor:

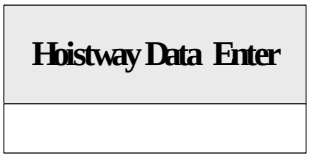


You may select observation floor by “ ” and “ ” in call information interface. “ ” and “ ” are current running direction. “*” twinkling represents car call. Click “enter” to select car call in adjustment. “□” represents no landing call, “■” represents up and down landing call. “F-XX” is current floor. It will return to main menu by click “esc”.

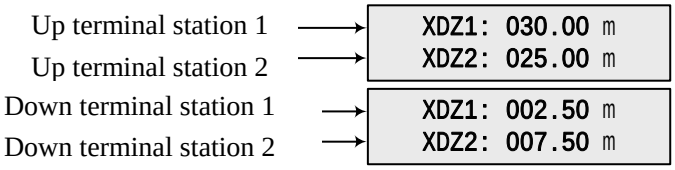
2. Hoistway switch position

It displays the position of top/bottom limit switch and top/bottom terminal. It starts from bottom limit. The unit is meter.

ˆ **1˜** It will enter into the 2nd monitor item by click “ ” key from instruction menu (Select item by “ ” and “ ” key, the following in accordance with this).



ˆ **2˜** press **Enter** to hoistway switch position interface:




1
2
XDZ1: 032.00 m
XDZ2: 000.00 m

5. Speed feedback

It displays speeds of elevator and motor.

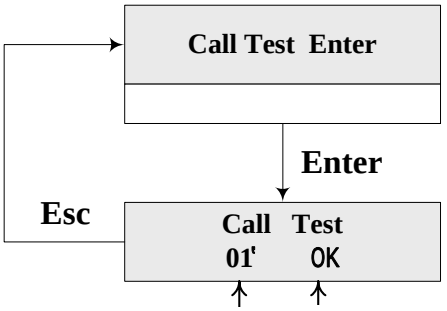


9. Landing call communication test

It checks communication among call and display board and main board.

The number of landing call is selected by “ ” and “ ”.

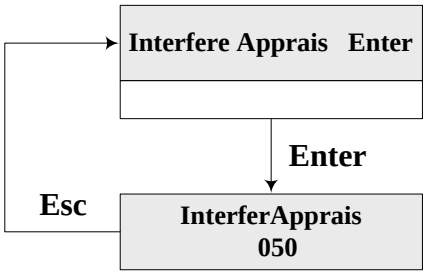
OK: normally communicate; Wait: testing (If the time is too long, check communication system); Fail: fail to communicate (check call and display board of the floor).



Actual floor Communication: OK,WAIT,FAIL

10. EMI evaluation

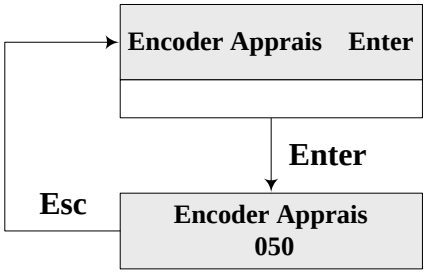
When elevator is debugged and running normally, EMI may be evaluated in this interface.



The data represents the intensity of EMI, “000” represents system is well connected to ground

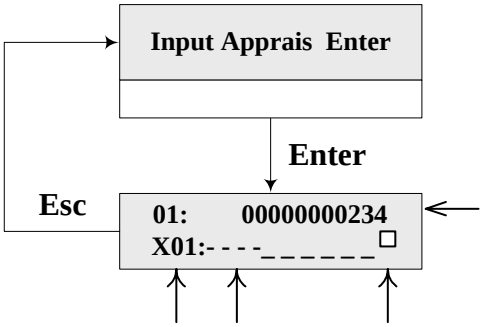
11. Coder evaluation

When elevator speed is steady, the higher the values are, the worse the quality of coder signal is.



12. Input signal elevation

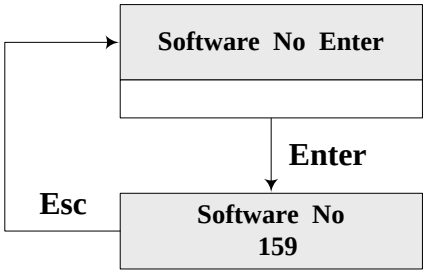
Observe input interference.



The heights of bars represent input port logic levels. High: 1, low: 0. If the quantity of 1 of input port in the bar chart is closer to that of 0, the interference is more intense.

13. Software version number

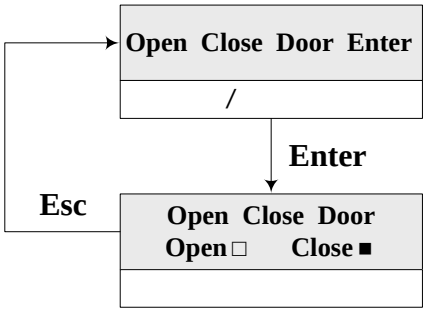
Software number when it is delivered.



14. Input signal (point to point)

	limit 2			U23	
U06	Close door limit 1	U13	Full load switch		

17. Open/close door input



Press or to enter open/close door. ■: valid of close door input. You may input “open” as the same.

5.4. General parameters menu setting and operation

5.4.1. General parameters list

Please refer to the list of 5-4-1 general parameters.

5.4.2. Setting and operation

1. Initial steps

When setting the parameter related to the elevators, input the correct password (user password/factory password). Press OK key under the state of maintenance.



ˆ **1˜** After the interface for inputting password appears, the position for setting password will blink, press or key for increasing or decreasing the number. If the password is correctly inputted, press **Enter** key to display the general parameters menu**,** or the followings will be displayed**.**



ˆ **2˜** Press **Enter** key to input password again till the password is correct and then press **Enter** key to

Serial No.	Chinese	English	Factory Parameters	Range	Description
User menu					
1		Total Floor	——	1˙ 64	The total floor number(which is equal to bridge plate number within the door
2		[redacted]	1*	[redacted]	when there is no internal selection.

[redacted]

[redacted]

18	↴ G	Brake Feedback Inspection Able	Yes*		Select **Yes**, system will inspect the brake feedback. Select **No**, system won't inspect it.
19	╟ ↄ	Rear opening Action Selection			Door action selection of landing floor (front door or rear door) .
20	ώ ╖	Input select		0˙ 27	Output function selection of output ports of X26˙ X29
21	╖	Output select		0˙ 19	Output function selection of output ports of Y16, Y17

1. The setting of total floor number

Set the total floor number of the elevator.

Total Floor 64

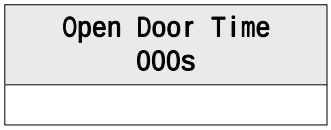
- **1˜** Press **Enter** key**,** modify the total floor number when the number in lower right corner is blinking'
- **2˜** After modification, press **Enter** key to finish;
- **3˜** Press **Esc** key to cancel modification and restore to the original value'
- **4˜** The total floor number should be equal to the bridge plate number within the door zone in the hoistway.

2. The setting of homing floor

The floor elevator returns (returns to the ground floor) when there is no external call or internal selection, the set method please refer to above mentioned one.

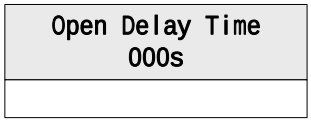
Homing Floor 1

3. The setting of system time



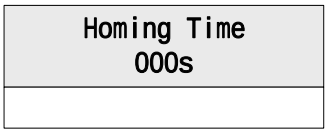
5. The setting of open delay time

Pressing the open delay time button (switch) under the automatic state could prolong the open delay time of an elevator. This function should be set or taken into effect only when the door open delay able is set **Yes.** The time unit for the open delay time is second.



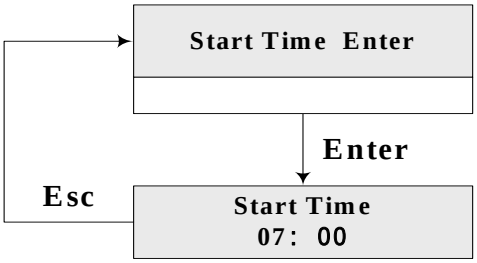
6. The setting of homing time

The automatic homing time' If it is set 0, it means there is no homing function.



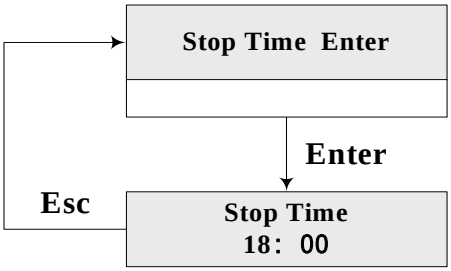
7. The setting of automatic start time

System will start the elevator according to the set time. (electrical lock **ON**) .



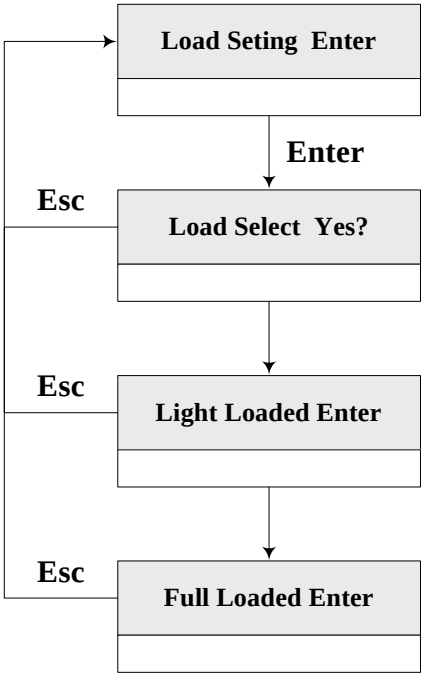
8. The setting of automatic stop time

System will stop the elevator according to the set time (electrical lock **ON**) .
When the automatic start time is the same as the automatic stop time, the function fails.

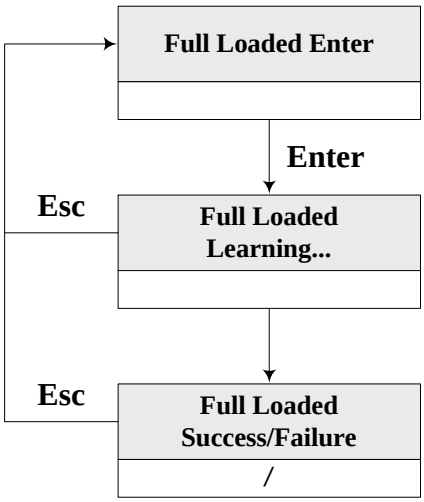


9. The setting of load inspection (this function is only applicable to the SJT-150 load inspection device)

When the load compensation is needed by the frequency inverter control, load inspection self-learning has to be carried out if the correct load compensation output is needed. The method for self-learning is as following:



ˆ **1˜** Enter the load inspection **Yes/No**



ˆ 4˜ **Wait** will be displayed during the self learning, please wait for a while; Display of **Success** means self learning is carried out successfully; Display of **Failure** means self learning fails.

ˆ 5˜ Notes

Load inspection device is one of optional accessories in this system;

It can produce light loaded, full loaded and overloaded alarm signal;

It can output the analogue signal used for load compensation input of the frequency inverter.

After load inspection self-learning, set compensation voltage degree and range according to the requirements of the frequency inverter.

After load inspection self learning, if the current load condition is wondered, please check the load inspection status in the monitoring menu.

If load inspection self learning fails, please check the load inspection device.

Please refer to ***Instruction of SJT-150*** for details about load inspection device.

When using the load inspection device manufactured by other companies through operation panel to input light loaded, full loaded and overloaded switch signals, please set Load select to be **No**, the system will directly confirm load switch signal input.

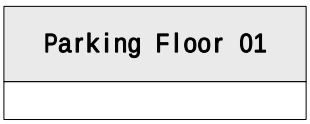
10. The setting of fire evacuation floor

After receiving the fire switch signal, the elevator will cancel internal selection and external call signals and direct run to the fire evacuation floor.

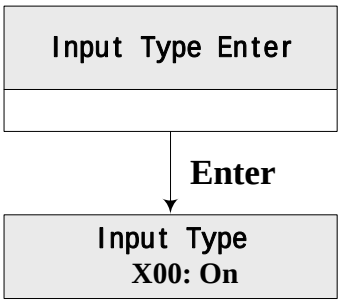


11. The setting of parking floor

Turn off the electrical lock during the normal running of the elevator, the elevator runs to the parking floor and stop.



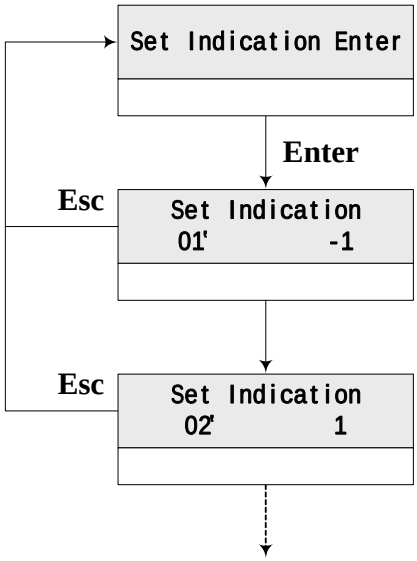
12. The setting of effective electrical level at the input port



	X20	J3-1	Electrical Input	X20	ON	Normally ON	OFF
	X21	J3-2	Thermo-switch Input	X21	ON	Normally ON	OFF
	X22	J5-1	Emergency Stop Input+	X22	ON	Normally ON	OFF
	X23	J5-2	Emergency Stop Input				
	X24	J5-3	Door Interlock Input +	X23			
	X25	J5-4	Door Interlock Input -				

14. The setting of floor indication

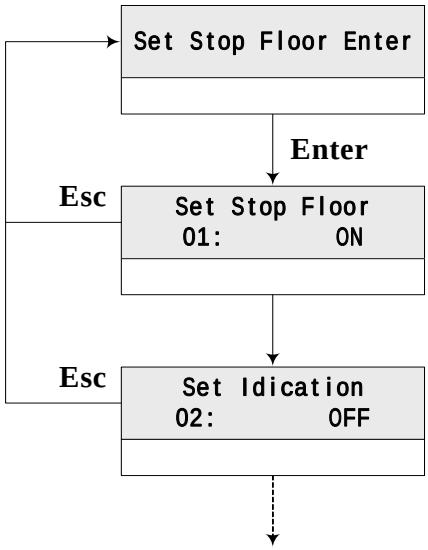
Set the displayed symbol (to indicate the floor) for each floor in the building, it can be English letters or numbers with symbols.



The display setting in the general parameter could set the third position as the display setting position, the second position as numbers, letters and symbols. Only the following capital letters could be set at the third position, ABCDEFGHIJKLMNO. If two positions are only needed, please set the initial two positions, and the third one is set vacant; (The function for displaying the third position should match with the program of the call board, or all the three positions could not be displayed.)

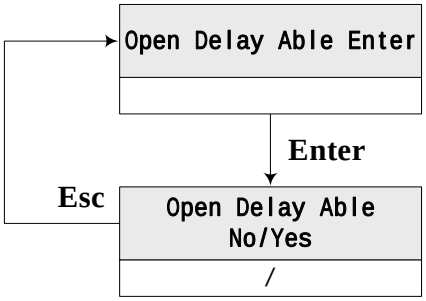
15. The setting of stop floor

Set if landing each floor is needed. (**On** refers to the landing floor, **OFF** refers to non landing floor.)



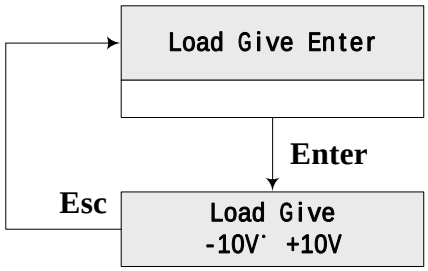
16. The setting of open delay able

Door open delay time is effective. (Optional)

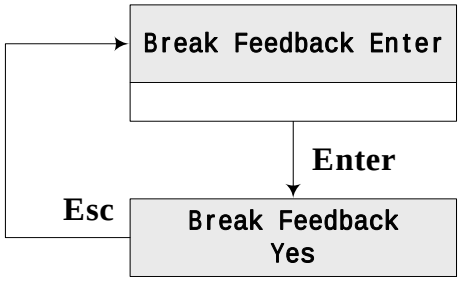


17. The setting of load inspection output voltage

The range of load compensation output voltage (set the voltage range according to the requirements for the frequency inverter.)



18. The setting of brake feedback inspection able



ˆ **1˜** Select **Yes,** the system will inspect brake feedback. Select **No,** the system will not inspect it.

ˆ **2˜** It is suggested that an inspection switch should be installed on the traction machine brake and connect this switch signal to the system and select this function.

For example, only the front door of a given elevator with rear opening will open when the elevator stops at 6th floor, the rear door will not open. When the elevator stops at 7th floor, both the front and rear doors will open.

The program should be set as followings:

Door Select 6:d1=Y d2=N	Door Select 7:d1=Y d2=Y

20. Input select

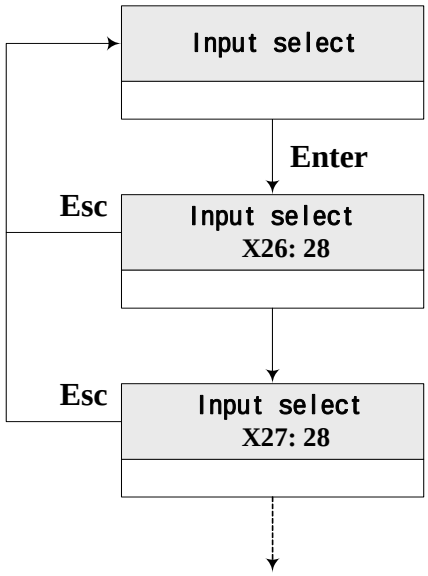


Table 5-4-3-The setting of input functions

Function No.	Signification	Function No.	Signification
0	Maintenance Input	16	Auxiliary Contactor Input
1	Upward Input	17	Brake Feedback Input
2	Downward Input	18	Emergency Run Input
3	Null Input	19	Frequency Inverter Run Input
4	Null Input	20	Electrical Lock Input
5	Upper Limit Position Input	21	Thermo-switch Input
6	Lower Limit Position Input	22	Null Input
7	Null Input	23	Null Input
8	Null Input	24	Null Input
9	Null Input	25	Null Input
10	Null Input	26	Re-leveling Requirements Satisfied Input
11	Frequency Inverter Fault Input	27	Re-leveling Door Zone Input
12	Fire Input	28	Backup Input
13	Emergency Stop 1 Input		
14			

5	Door Close 1 Contactor Control Output	13	Multi Speed Command 1 Control Output
6	Brake Control Output	14	Multi Speed Command 2 Control Output
7	Economical Type Resistance Control Input	15	Multi Speed Command 3 Control Output

- The range of ports with multifunctional output setting function: from Y0 to Y15;
- The setting method of multifunctional output is the same as “multifunctional input setting”.

When setting the multifunctional output, please pay attention to if the COM end of this function is applicable, or some relevant elements will be damaged!!!

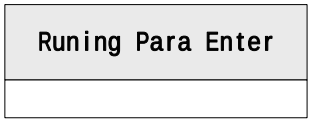
5.5. The setting and operation of run parameter menu

5.5.1. Table of run parameter

Table 5-5-1 Table of run parameter

Serial No.	Chinese	English	Factory Data	Range	Description

14	P3	S Curve P3	0.7*	0.1˙ 9.99	S time 3
15	P4	S Curve P4	0.7*	0.1˙ 9.99	S time 4
16		Zero Speed Setting	5rpm*	0˙ 9999	Threshold value of zero speed
17		Zero Speed Time	210ms	0~999ms	The delay brake time after the system detected the zero speed
18	╟	Start Speed Time	0	0~9000ms	Duration of start speed time
19		Leveling Adj	50mm		leveling
	±	Load Compensation Adj	0	0~12	Adjust load compensation output voltage according to the floor
21	⋔	Open Door Speed	0.15	0~0.3m/s	Open door speed of an elevator



Press **Enter** key to enter parameter setting.

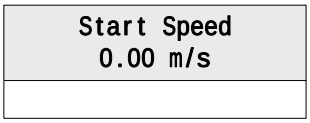
1. The setting of car rated speed

The car rated speed is calculated by motor rated speed, traction ratio, speed reduction ratio and the diameter of traction sheave.

Note

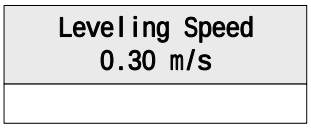
5. The setting of start speed

If the start resistance of the traction machine is too high, appropriately increase the start speed. If the start speed is set to 0, it will not take effect.



6. The setting of leveling speed

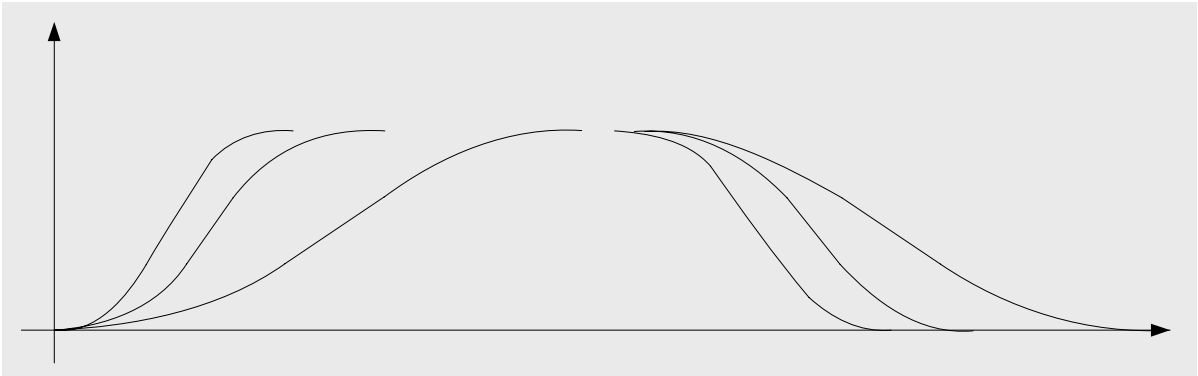
When the elevator stops in the non door zone due to some faults, if the elevator is in the safe loop, after the frequency inverter returns to the normal state, the elevator could automatically level (levels to the door zone).This interface should be used to set leveling speed within the range from **0.01 m/s** to **0.6m/s**.



10. The setting of accelerating gradient b1

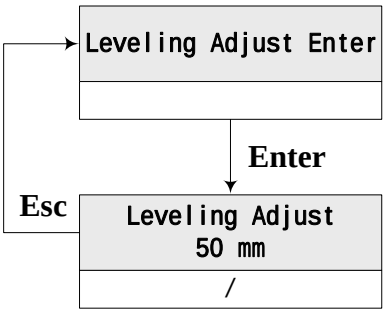


11. The setting of decelerating gradient



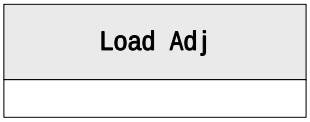
19、 Leveling adjustment

If the ascending and descending for one elevator of every floor can't park at the same position, adjust this parameter (if the ascending parking position is higher, and the descending position is lower, increase the parameter, or, contrarily decrease the parameter. The adjustment quantity should be half of the leveling difference (the default value is **50mm).**



20、 Load compensation adjustment

In the synchronous control system, the elevator on the lower floors is not provided with compensation chains, so the weighing apparatus of our company can only weigh the car load, excluding the weight change of steel wire rope of each floor. The systems make the adjustment through adding load compensation adjustment parameter to the running parameter.



Adjustment Method、 1. Perform no load and full loaded self learning;

2. Run the no load elevator to the top floor;
3. Set the compensation output voltage between—8V to +8V (smaller than±8 volt for the tolerance of adjustment) ;
4. Adjust the simulating load compensation gain of the frequency inverter and make the car not slide when the car runs downwards, the gain at this time is the reasonable value;
5. Run the no load elevator to the bottom floor、 increase the load compensation adjustment parameter and make the car not slide when the car runs upwards from the bottom floor, the parameter at this time is the reasonable value;
6. Save the system parameter.

Note: This function is only applicable to the edition higher than 700_33, the adjustment range for this parameter is from 0 to 12.

21、 Open door speed

It refers to the open door speed after the elevator normally runs and changes the speed and finally enters in the re-leveling door zone.

Note、 When running with multi speed (the speed at dual doors zone is zero FU02=ON) , the creeping speed after speed changing must be smaller this speed.



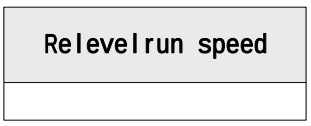
22. Re-leveling stop speed

In the process of door open or re-leveling, if the speed is higher than this speed, the elevator stops running.



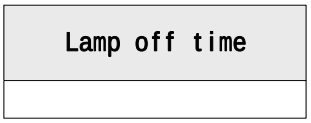
23. Re-leveling run speed

The re-leveling run speed set when the simulation is given.



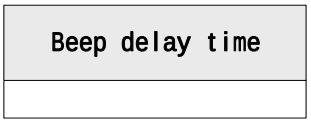
24. Lamp off time

The set unit is minute, and the set range is from 0 to 999 minutes. Under the automatic state, if there is no any internal selection or external call during this period of time, the system will cut off the power supper of the illumination via the operation panel.



25. Beep delay time

The set unit is millisecond, and the set range is from 0 to 5000 milliseconds (0 to 5 seconds); The elevator runs to the aim floor after speed changing, delay this set time output arrival signal to make the system voice synthesizer or arrival gong beep at a later time.

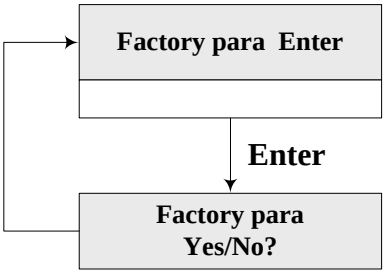


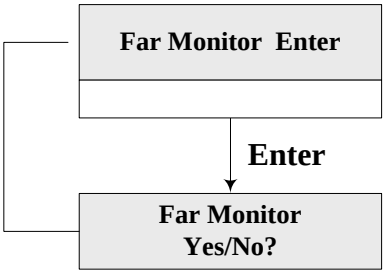
5.6. The setting and operation of special parameters menu

5.6.1. Special parameter table

Table 5-6-1 Special Parameter Table

Serial No.	Chinese	English	Factory data	Range	Description
User Menu					
1	ﾄ ﾄ	Door Run Time	5s*	0 999s	Open/Close Door Run Time
Factory Menu					
2	ﾃ ﾍ	Restore to the Factory	NO		Restore to the factory parameter


Factory para Enter
Enter
Factory para
Yes/No?


Far Monitor Enter
Enter
Far Monitor
Yes/No?

internal selection or external call for the front door, the front door will open; or there is any internal selection or external call for the rear door, the rear door will open; if there are some internal selections or external calls for both the front and rear doors, both the two doors will open simultaneously. (There is one set of internal input buttons both on the front and rear doors.)

According to the different working modes of the rear opening, the setting of external unit address differs from the internal selection port connecting wire of the car operation board; refer to the followings for details:

ˆ 2˜ The setting of external call board address

When setting the rear opening mode of main control board as **0, 1**, the setting method of external call board address is the same as the normal mode, please refers to part of 3-2-3-4 (2) in this brochure;

When setting the rear opening mode of s main control board as **2, 3, 4, 5**, the setting method of external call board address should obey the following principles;

1˙ 32 is the absolute floor address the front door corresponds to: 1 refers to the bottom floor, 2 refers to the hypo-bottom floor, 32 floors could be set at most. There are 32 floors totally;

33˙ 64 is the absolute floor address the rear door corresponds to: 33 refers to the bottom floor, 34 refers to the hypo-bottom floor, 64 floors could be set at most. There are 32 floors totally;

If there is only one door on a certain floor, thus the address the other door corresponds to is vacant.

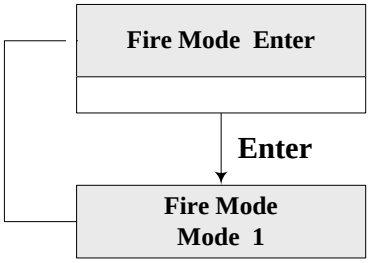
Example **1:** If a building has a basement where the front and rear doors of the elevator will open, the external call board address the front door of the basement corresponds to be 1, the external call board address the rear door of the basement corresponds to is 33.

Example **2:** If a building has a basement where there is only one front door, but there are front and rear door on the first floor, thus the external call board address the front door of the basement corresponds to is 1, the external call board address the rear door of the basement corresponds to is vacant, the external call board address the front door of the first floor corresponds to is 2, the external call board address the rear door of the first floor corresponds to is 34.

The connection of car internal selective buttons:

When setting the rear opening mode of main control board as **0, 1**, the connecting wires of internal selective buttons on **1˙ N** floor should normally connect to the internal selective ports on the **1˙ N** floor**;**

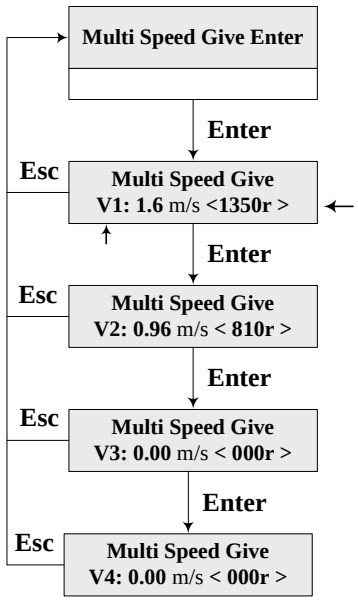
When setting the rear opening mode of main control board as **2, 4, 5**: set the total floor number as N, thus car internal selective ports on **1˙ N** floor correspond to internal selective press buttons of the actuating front door, 1 corresponds to the bottom floor, N corresponds to the top floor. Car internal selective ports on **N+1˙ 2N** floor correspond to internal selective press buttons on the **1˙ N** floor of the actuating rear door, **N+1** corresponds to the bottom floor, **2N**


Fire Mode Enter
Enter
Fire Mode
Mode 1

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 setting multi speeds values, please set **V1** as the speed value the highest speed corresponds to, please set **V4** as the speed value the lowest speed corresponds to, the speed unit is **m/s**. After setting the speed values, the LCD interface will display the motor speed calculated according to the elevator speed with the unit of rpm (**r=rpm**)

▲Note: to set the frequency inverter, the customer must apply this displayed value as the rotary speed given value the frequency inverter corresponds to, or the operation speed of electrical equipment won't satisfy with the requirements.

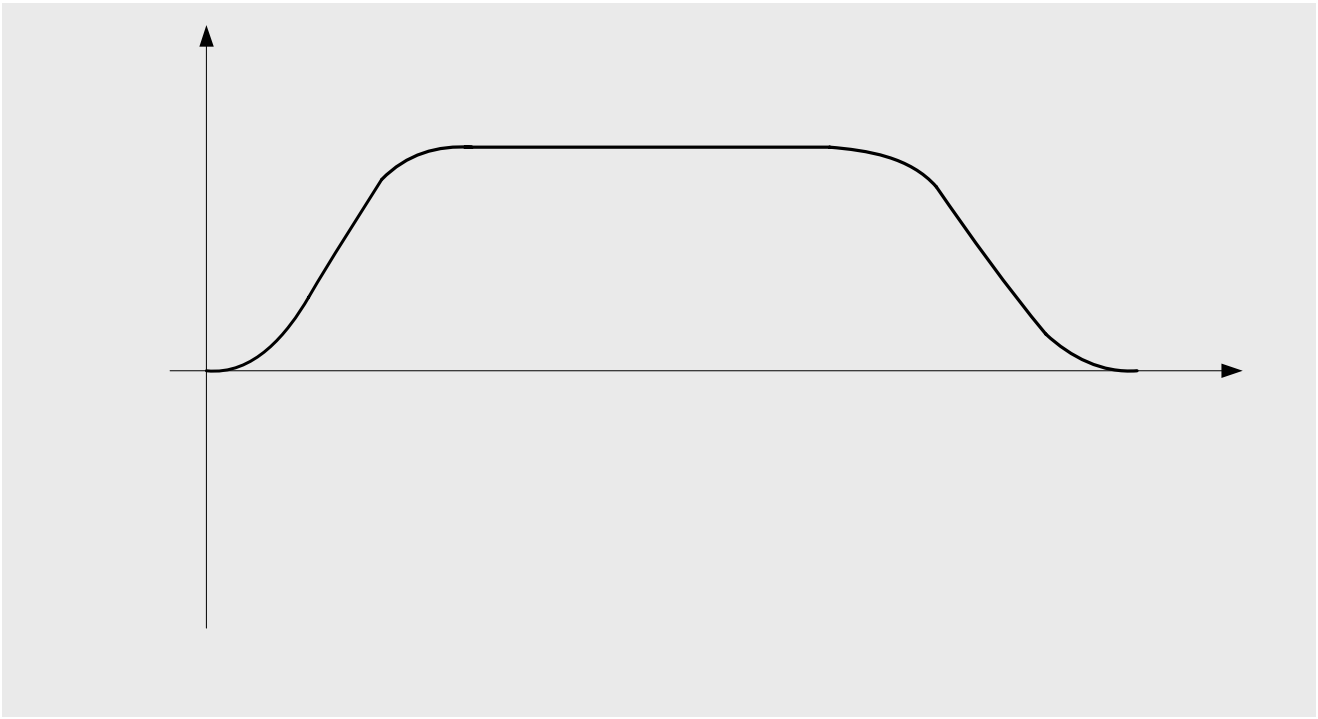


Multi speeds command output logic

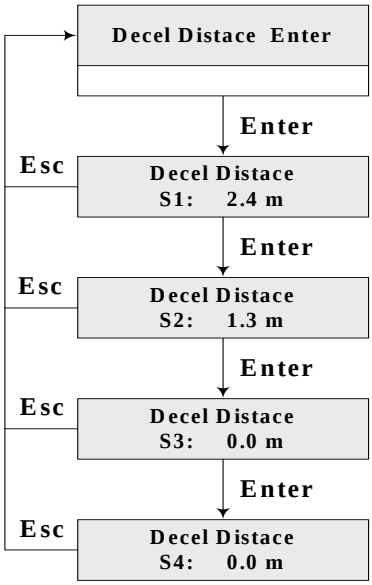
Multi speeds output commands consist of three output combinations of **Y15, Y14, Y13**, refer to the following table for their logics.

Table 5-6-2-2 Multi Speed Command Output Logic

Port / Item	Y15 (J7-6)	Y14 (J7-5)	Y13 (J7-4)
Maintenance Run Speed /Self Learning Speed	0	1	0
Re-leveling Run Speed	0	0	1
Creeping speed	0	1	1
Low speed (V1)	1	0	0
Medium Speed 1 (V2)	1	0	1
Medium Speed 2 (V3)	1	1	0
High speed (V4)	1	1	1



11. The setting of decelerating distance

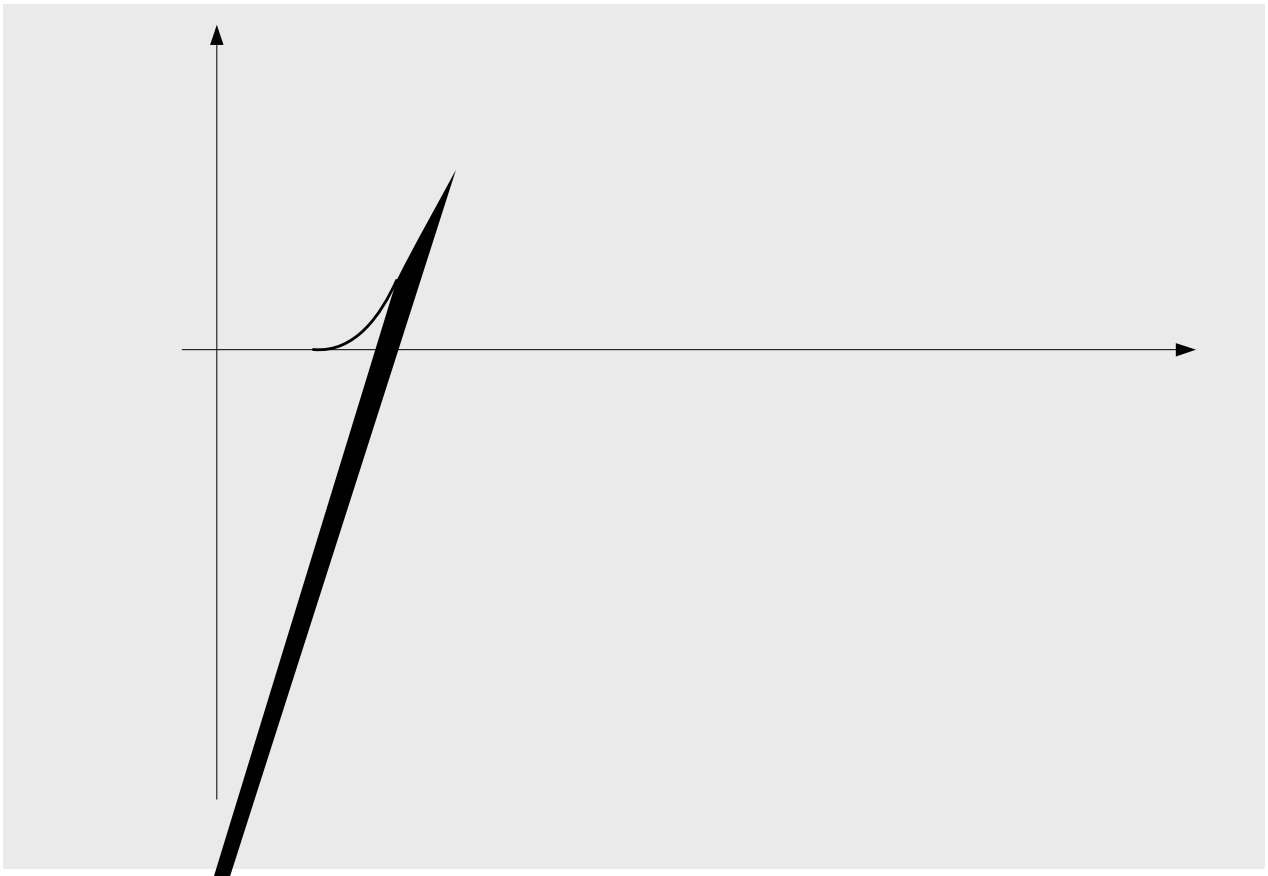


In the multi speed modes, regulating the decelerating distance of multi speeds could prevent the elevator from braking at non zero speed or overlong creeping distance. The decelerating distances which correspond to different speeds are different, which ar

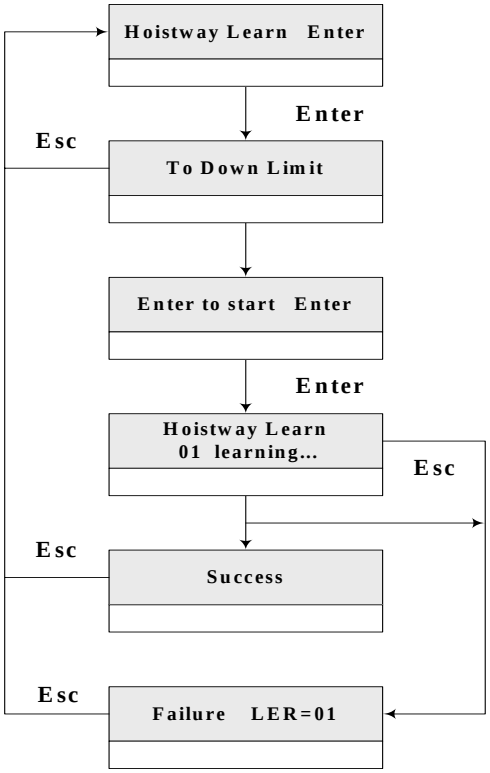
FU21	ON" door won't open at non door zone position when the elevator is under the maintenance state" OFF" door will open at any position when the elevator is under the maintenance state.
FU22	ON" the hardware edition of main board is high than BL2000—STB-V9 (X26, X27, X28, X29 input and Y16, Y17 output could be used) " OFF" the hardware edition of main board is BL2000—STB-V2 (the newly added input and output ports cannot be used) .
FU23	FU23=ON" the serial weighing apparatus which match with the main board use SJT-300 of CAN bus mode, FU23=OFF" The serial weighing apparatus which matches with the main board uses SJT-150 of 485 bus mode.
FU24	ON" when the speed is less than 2m/sec , second terminal landing input is used(for the elevator with running speed 1.75m/sec, the two-level enforced changing device should be equipped);OFF" for the elevator with running speed less than 2m/sec, the second terminal landing input can not beused.
FU25	ON" the terminal landing only proof the floor number and calibration; OFF" When multi-segment given, because of the too large allowance in the terminal landing proofing, ER14 protection occurs.

Table 5-6-2-4 Output Logic Table of Multi Speeds of KEB F4 Frequency inverter

speed / Port	**Y15 (J7-6)**	**Y14 (J7-5)**	**Y13 (J7-4)**
Maintenance	1	0	0
Self Learning Speed /Leveling speed	1	0	0
Creeping	0	1	0
Low Speed (V4)	1	1	0
Medium Speed 1 (V3)	1	1	0
Medium Speed 2 (V2)	1	0	1
High Speed (V1)	0	1	1

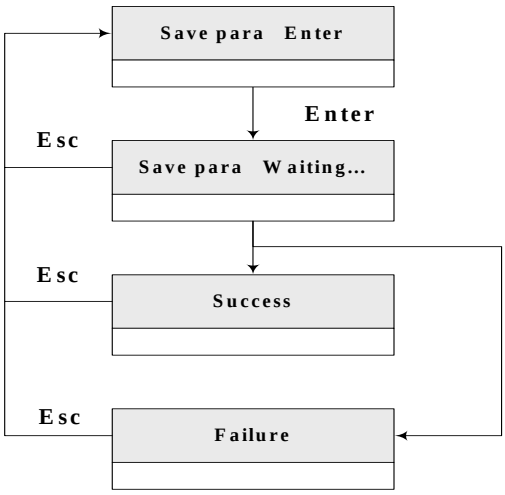


9. If the user wants to quit self learning during the process of self learning, please press **Esc** key˘ **LER=15** will be displayed, and press **Esc** key to quit.



5.7.2. Parameter saving

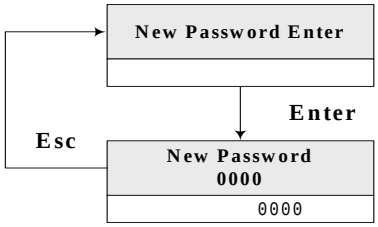
After entering the parameter saving menu, select **Yes** and press **Enter** key, the system will automatically save the revised parameter. If saving is successful, **Success** is displayed, otherwise **Failure** is displayed. Please contact our factory if parameter saving fails.



ź Note' the parameter which could be set will take effect instantly after modification. But if the parameter is not saved after modification, after turning off the power supply of the system, the parameter will be restored to the original one.

5.7.3. Password setting

This interface could be used for setting, modifying and saving the user's password.



Chapter 6 Debug and Operation of Bl2000 Serial Control System

6.1. Significant notice

1. The users who have bought our products are expected to carefully read the manual and assembly equipment manual before the debug and operation, and carry out the debug and operation according to this manual, enclosed document and the content of assembly equipment manual to avoid the accidental losses. Â

2. Please carefully read and refer to the contents of ***Setting of System Parameter****s* before the debug and operation of the system.

3. For on-site debug, please guarantee all the mechanical equipments especially the equipments and devices in the hoistway have been successfully installed (the equipment in the machine room depends on the condition of the machine room)'

4. For on-site debug, please guarantee all the equipments and device which should be installed and debugged before the system debug have been successfully installed and debugged'

5. The staff who is responsible for the on-site debug should get the confirmation of the installation and debug leader of mechanical system and other systems (device) or some responsible staff'

6. Before debug, the staff who is responsible for the on-site debug should carefully check if the mechanical equipment related to the electric system debug and other devices or equipments have been successfully installed and debugged'

7. Before debug, the staff who is responsible for the on-site debug should carefully check and confirm that there is not any dangerous factor which will do harm to the people and equipment (including any potential and possible d dangerous factor)'

8. The staff that is responsible for the on-site debug should be qualified for debugging the elevator control system.

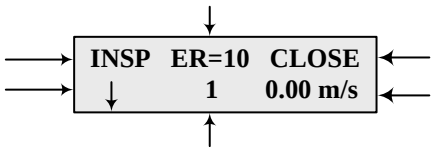
6.2. Inspection before power-up

After the electric parts of the control system installed, the electric parts must be inspected and the following should be noted:

1. Check if the connections of all parts are correct according to the instruction and electric diagram.

2. Check if there is any relation between strong electricity and weak electricity part. Use the pointer type ohmmeter multimeter to check if the resistance among the different voltage circuits and resistance to ground are **Đ**.

3. Please carefully check if the power inlet wire of control cabinet and the connection wire of the motor are



fault state

elevator state

˩ running direction

door lock state

running speed

ɱ current floor

ˆ **4˜** See the following diagram for every terminal voltage of switch power supply :

Diagram 6-3-2 (4) Every terminal voltage of switch power supply

Terminal	L˙ N	5V˙ G	24V˙ G
Voltage	220±7%VAC	5.0±0.1VDC	24.0±0.3VDC

ˆ **5˜** Reset the emergency stop switch of the control cabinet, the relay **KJT** and contactor **KMC** should pull in, the inverter is powered on to work.

ˆ **6˜** If all the above are checked to be normal, further check the following:

Check if the door lock circuit is normal.

Check if the signal of landing and signal of upper/ lower limit are normal.

Check if the electric lock is normal: set the automatic elevator turn-on/off time in the setting parameter as zero, and turn the electric lock to ON position, the elevator state displays on the LCD is **"INSP"** at this time, if turn to **OFF** position, **"STOP"** should be displayed.

Check if the door open/close system works normally, if it doesn't, please make some relevant inspections.

6.4. Setting of system parameters

Set the system parameter according to the actual scene condition; please see **Chapter 5 Setting of System Parameters** for the specific parameter definitions and setting methods. Additionally, when setting the system parameter, please pay attention to the following points**:**

1. Before carrying out the debug at the lower speed, please correctly set the configured parameters of the inverter;

2. Please see the **Appendixes** for specific parameters setting of different types of inverters;

3. The setting of the motor parameters is recommended to be determined according to the self-learning function of inverter to motor. See the instruction of the inverter for the methods of self-learning the motor parameters.

6.5. Trial Run at Lower Speed

6.5.1. Inspection Run of Machine Room

1. The things that should be confirmed before inspection run of the machine room:.

ˆ **1˜** The inspection switch of the control cabinet is switched to **"Inspection"** position, the inspection switches on and within the car is switched to **"Normal"** position.

ˆ **2˜** Safety circuit and door lock circuit work normally, **remember not to short-circuit the door interlock**.

ˆ **3˜** The installation and connection of the encoder are normal.

ˆ **4˜** After power-on, the contactors of **KJT** à **KMB** à **KMC** in the control cabinet pull in, the powered inverter works normally and check if the parameters setting is correct, the elevator state displayed on the LCD is **“INSP”**.

ˆ **5˜**

6.7. Trail Run at high speed

If the hoistway self-learning is confirmed to be correct, the trial run at the high speed can be carried out. The steps are as follows:

1. Set the elevator in the attendant state.

2. Supervise the floor selection interface in the menu through LCD, select the floor the elevator runs to, the trial for single floor, double floors and multi floors and whole trip can be separately carried out.

3. Confirm the elevator can normally start up, accelerate, decelerate to zero speed, level and stop in the above areas.

4. If the running is normal, please carefully check if there is any mistake in the parameter setting of main board and the inverter.

6.8. Elevator Comfort Adjustment

If the comfort sense and leveling precision of the elevator is not perfect, firstly check the mechanical condition of the system' for example the clearance of the guide shoes, lubrication and the tightness of the steel

⁽⁄	break on time
	running time of the stable speed
⁵ ╟ ╕	start-up and acceleration time
⁸ ╟ ˟	brake and deceleration time
´ □	single running period

في 6-8-1 في Diagram 6-8-1 Diagram of the Running Curve

1. The S shape curves in the starting part will be adjusted by the following three parameters'

ˆ **1˜ P1'** At the beginning of the start, the acceleration increases, which means the acceleration change rate of curve, the smaller this value is, the slower the start will be, and the better the stability will be.

ˆ **2˜ b1'** The acceleration of the startup segment, which means the speed change rate of the curve, the smaller this value is, the slower the start will be, and the better the stability will be.

ˆ **3˜ P2'** the acceleration decreases at the ending segment of start-up, which means the acceleration change rate of the curve, the smaller this valu Tc 0.0000 10.5 1000,2(T5e-6b813 T43Pc -0.00021.5i021.gwer ts(s)2t)5(4t)5(h)- .00

and make the system have the quick response and less overshoot.

6.8.3. Adjustment of Elevator Running Control Timing & Sequence

See the diagram **6-8-**1 for the elevator timing and sequence diagram of the system, the internal program of the main board can be implemented according to the control time sequence which the diagram shown, the parameters which the user can set are the brake time and zero speed setting.

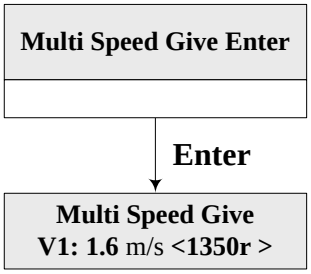
1. The adjustment of prior break time

It is the delay time from inputting the break command to activating the curve to give out the command; the parameter is set for suiting the action time of the PM break. The value is regulated properly or not will greatly affect the comfort at the start point. If the value is too small, the elevator will start with brake. If it is too big, the elevator will slide when start-up.

2. Zero Speed Setting

The parameter set the zero speed threshold of the system. The main board takes this setting value to judge the moment the car should stop and brake. If this value is too big, the elevator will brake with speed. If it is too small, the door will delay to open when the car lands. The general value is **5 r/m** Â

When setting the multi speed values, set V1 as the speed value corresponding to the highest speed, and set **V4** as the speed value corresponding to the lowest speed, the unit is **m/s**. Once the speed value is set, LCD interface will display the corresponding motor rotation value, the unit is rpm.



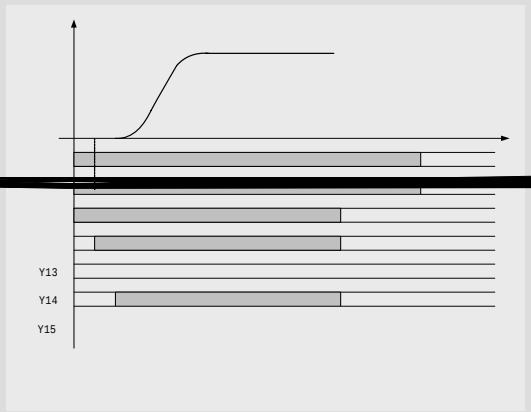
List 6-8-4-2 Logic list of multi speed output command

Ports / Speed	Y15 (J7-6)	Y14 (J7-5)	Y13 (J7-4)
Maintenance (no inching)	0	1	0
Self-learning	0	0	1
Creep	0	1	1
Low speed (V4)	1	0	0
Medium speed1 (V3)	1	0	1
Medium speed 2 (V2)	1	1	0
High speed (V1)	1	1	1

3. The output examples of multi speed

- **1˜ Maintenance (no inching) Diagram 6-8-4-1**
- **2˜ Maintenance (inching, such as** Yaskawa inverter**) Diagram 6-8-4-2**

  When **Drive** mode is set as **1**, there is some inching output and output mode of deceleration time switch, the maintenance speed only controlled by **Y1** output.
- **3˜ Running Curve of Self-learning and Creeping for Leveling (Diagram 6-8-4-3)**
- **4˜ Home Landing Return for Safety** (the same as the creeping for leveling, the position entering landing is the lowest landing)
- **5˜ High speed running curve diagram (6-8-4-4)**



g Inspection speed

ㅗ direction

ㄱ feedback

brake

speed changing

Ш entrance door area

è è t1 и ⁄и ˘ t2 и G ɖ (a ㄱ)

T1 is break on time and t2 is enable hold time (can't be set)

في 6-8-4-1 g (╟) في Diagram 6-8-4-1 Curve diagram of maintenance (no inching) running

في 6-8-4-2 g (╟) في Diagram 6-8-4-2 Curve diagram of maintenance (inching included) running

G able

ㅗ direction

ㄱ feedback

break

creep speed

zero speed

Ш entering landing

ㄱ Ш entering double landings

Ш entering the top landing when self-learning

Э Æ enter the top landing when self-learning

في 6-8-4-3 في Diagram 6-8-4 Curve diagram of self-learning or creep for leveling running

high speed

è è S1 и S1 is the speed change distance when high speed running

في 6-8-4-4 في Diagram 6-8-4-4 High-speed Running Curve diagram

ˆ 6˜ Medium Speed Running (Diagram 6-8-4-5)

z Notice'

When ex-work, the given point of zero (the output of **Y15 à Y14 à Y13** is **0**) speed is the position of single landing after the speed changing;

If entering double landings needs to be given at zero speed segment, please contact our company and our engineer will help set;

If setting **Drive** mode in the multi speed mode menu to **1** when changing the creep into the zero given, the output is **Y0,** take Y0 as the deceleration time switch (for example when changing Yaskawa inverter from creep to zero speed, use the switch deceleration time to adjust the leveling).

medium speed

bridge plate deviates, please adjust it.

ˆ **4˜** The wrong installation position of the upper and lower terminal

The wrong installation position of the upper and lower terminal will affect the leveling precision of the elevator at two sides. Taking the upper terminal as the example, the regulation steps of the terminal position are as follows:

Install the terminal switch to the position which is over the speed change distance;

The elevator quickly runs to the terminal, changes speed and stops, it will cause no leveling;

Immediately switch the system into the inspection state;

Measure the distance between the elevator and the leveling, which is the distance that the upper terminal needs to be regulated upwards.

The lower terminal should be adjusted in a similar way.

3. Leveling precision adjustment of simulation given mode

ˆ **1˜** The repeatability confirmation of the stop position

Chapter 7 BL2000 Serial Control System Failures Analysis

7.1 Running State during Inspection

- Under the state of inspection, no matter whether the communication is normal or not, as long as the running state of the elevator (door lock, brake, open/close door) is normal, the operation condition is therefore satisfied and the maintenance control can be applied.
- When the input signal **X1 (X2)** is valid, the main control computer board will output **Y10 (Y11) and Y12**;
- The rated voltage of simulative signals are **J7-9˙ J7-10 > 2V**, and the **Y14** is valid under the mode of multi speed;
- The converter outputs operating signal, which makes the input signal **X19**of main board valid and the motion of contactor KDY normal. Otherwise, please note:
- Whether the output signal of the open/close door of main board is normal;
- Whether the input signal of converter is normal and the parameter setting is correct.

7.2 The low traveling speed and the heavy current during inspection

The occurrence of such phenomenon due to the following possibilities:

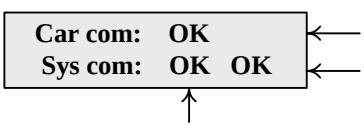
1. Phase Sequence of the encoder is reversely connected;
2. The encoder is abnormal and the pulse is lost;
3. The setting of pulse number of encoder is wrong;
4. The set of poles of electric motor is wrong.

7.3 The speed displayed by the main board is incorrect.

The feedback speed of converter is normal and the current is normal, but the feedback speed of main board is abnormal, please notice the phase-sequence or frequency of the pulse input on the main board.

7.4 Check on the abnormity of communication

Under the normal state, on the main menu displayed by the LCD main board, press > to enter the interface of communication status:



Indication of control board Communication
Indication of Parallel Communication

Indication of Normal Communication

Otherwise, the following problems may occur:

1. The LCD displays **Car Com ER/0~256**, which indicates that the communication between the car board and the main board is abnormal. Please check if the communication wire in the traveling cable is short circuited, and the communication indicator of the car board blinks.

2. The LCD displays **Sys Com ER/0˙ 256**, which indicates that the communication is abnormal while the main board receiving a call or the display board and car board sending out public data. Please check whether the switch-in inserter of terminating resistance on the lowest call board is inserted or not.

3. The main board has failure in sending out public data; probably because that the communication cable is short-circuited to thtance on

(Y4) , check if the open door limit input or the close door limit input is correct. Inspect U07 (open door limit), (and whether the back door U05 is "■"under the rear opening mode).

- É Under the normal condition, the U06 will become valid when the car door closes to its designated position (the crystal display changes from "□" to "■"), U07 becomes invalid (the crystal display changes from "■" to "□"); when the car door opens to the designated position, U07 becomes valid and U06 becomes invalid; when the car door opens to the middle position, U06 and U07 will become invalid at the same time.
- É If the inspection results do not conform to the above situation, it is probably that the installation of open door limit switch or the close door limit switch is incorrect or the applied type of contact is incorrect. If U06 is invalid while U07 is valid when the car door closes to its designated position, and U06 is valid while U07 is invalid when the car door opens to its designated position, it belongs to the problem of reversal connect, please correct it; if both U06 and U07 are valid when the car door opens to the middle position, it may result from that the setting of adopted input type of normally opened or closed contact is unmatched, then please change the type of contact or alter the setting of valid electrical level at the input port. (Please alter the input type of U04~U07 on the Input Type of the menu.)
- É When the elevator is rear opening, please notice that whether the open/close door of the front door and rear door is set reversely, and whether the touch panel, screen signal is corresponding, please observe the status of I/O Car Data referring to the above operation. Note: Please confirm the front/rear door respectively.

7.7 Unlock of the door

Under the normal operational status, the door of elevator opens and then automatically closes. If the door is not closed right, it will open the door and repeat for several times, the methods of check and diagnose are as follows:

1. Check whether the close door is blocked;
2. Confirm whether the traveling route of close door is too long;
3. If it's unable to close the door within the operation time of open/close the door in the system, please adjust the Door Run Time.
4. It also may be that the door limit installation or the contactor type is incorrect, please refer to the "**open door failure**" to check and solve it.
5. If the open door or close door is normal under the inspection status, but it doesn't close the door when the elevator enters into the normal status. At this time, please check the switch of safety edge or whether the input type of the switch is correct. Observe the signal of U18 safety edge switch signal (the rear door of rear opening, see U17) in the I/O Car Data menu, if the safety edge or the screen is, U18 should be valid (the LCD display changes from "□" to "■"), if the safety edge is unlocked, U18 should be invalid (the LCD display changes from "■" to "□"). If it is contrary to the above situation, please change the type of contact or adjust the setting of valid electrical level at the input port, the Input Type setting in the menu U17~U18). If the U18 is valid at all the time, please check the connection between the input port of safety edge and the safety edge switch of car board. If the inputs of safety edges are correct, please confirm if the overload U15 is valid (overload and unopened).

7.8 Malfunction of elevator arisen from wrong setting of switching value output of load test device

1. If the system is installed with load test device, and the state of load test is output to the car board, namely J9-8 light load input, J9-6 full load input, J9-5 overload input, so please confirm the type of connection point

of switching value output, for example, for the normal opened contact, please set the input type of U13, U14 and U15 ON in Input Type, (Otherwise, for the normal closed contact, please set it OFF).Please observe whether the U13,U14,U15 in the car signal of I/O Car Data is correctly input according to the load state.

2. If the number of passengers in the car is large, and the selected numbers are automatically canceled when there are more than three selections, it may be caused by the incorrect input of light load;

3. When the elevator is empty and it doesn't response to the call, it is probably because that the full load input is always valid;

4. If the phenomenon of unclose of the door appears, it is probably because that the overload input is always valid.

7.9 The running direction of elevator is contrary to the instruction (ER04)

1.If the two pulses of the main board A and B is adversely connected, namely, the feedback speed displayed by main board is negative when the elevator is up, and the feedback speed is positive when the elevator is down, then exchange the two phases of A and B of input pulse on the main board.

2. If the direction of elevator running is contrary to the designated direction, please change the phase of eclectic motor and the A, B phase of encoder.

3. If the directions of feedback speed display keep unchanged when the elevator is up and down, it may be caused by the loss of phase of A, B pulse. If the feedback speed is positive no matter when the elevator is up or down, the phase B is probably lost. The solution is as below:

- Firstly cancel the A phase input from the main board pulse, and there will be no feedback speed display during running. Then cancel the phase B input, connect the phase A to phase B;
- When it starts again, if there's feedback speed display, it6(nn)eaWdialer hatthere 222s nn m

- When using the push-pull pulse source, the voltage between J8-1 (the positive test pen) and J8-5of low-speed rotating electric motor, J8-1 and J8-6 is around **+6V.**
- When using the line driver pulse source, the voltage between J8-7(the positive test pen) and J8-8 should be **2.5V or -2.5V**, that between J8-9(the positive test pen) and J8-10 should be **2.5V or -2.5V.**
- The correctness of the above voltage is the basis of judging the failure: if the voltage is correct, the failure lies in the main board, otherwise the failure lies in the frequency divider (encoder).

7.12 The output of KDY contactor is inconformity to the feedback result ER09)

If such phenomenon occurs, there are following possibilities:

1. KDY (contactor) sticks;
2. KDY doesn't switch on when the main board outputs Y9. The connection breaks or the KDY contactor is damaged;
3. KDY feedback contactor is bad contacted.

7.13 The mistake of building floor counter (ER14)

1. The input interference of encoder is too large, and the connection of the system to land should be standard.

2. The steel rope skids;

3. The input frequency of pulse is too high. And the highest frequency input of main board is 25KHZ. If the input frequency of pulse is above 25KHZ, please use the frequency dividing function of frequency divider to decrease the frequency of pulse.

Note: The calculation method of pulse frequency and the relevant relation should be:

$$\frac{\text{Rated rotating speed} \times \text{The pulse count of encoder}}{60 \times \text{Frequency dividing coefficients} \times 1000} < 25\text{KHZ}$$

7.14 The main board's not receiving feedback of transducer (ER17)

When the main board sends out instruction (direction, enable) and doesn't receive feedback from the transducer (X19). At this time, the following check should be carried out:

1. Please check the direction, enable signal of transducer and the output circuit of function signal;
2. Check if the setting of relevant parameters of transducer on input and output is correct;
3. Check if the transducer is under the state of operation.

7.15 The value of floor counter is wrong (ER18)

If such phenomenon occurs, there are following possibilities:

1. The hoistway self learning is not finished, the floor data on the main board is inconsistent to the actual floor;
2. The end station switch of the hoistway; after the installation position of switch 1 and switch 2 of the upper and lower end station changes, hoistway self learning is not applied.
3. The big error of encoder pulse input, refer to ER14 for treatment.

7.16 The low-speed adjusting distance is longer than the interval of a single floor (ER19)

The distance required for the low-speed running is larger than the interval of single floor, therefore the

elevator cannot operate.

1. When using the simulation set, such defaults occur when it runs from the second top floor to the top floor or it runs from the second lowest floor to the lowest floor. You may add the parameter of deceleration time b1, b2 to the simulative curve, and the set values of p1, p2, p3 and p4 increase. When the speed of elevator is larger than 1 m/s, the failure may be eliminated by decreasing the single floor running speed.
2. When multi-segment given is used, the running distance with the minimum speed is larger than the singlew floor distance; therefore the speed of the segment can not be selected during the single floor running.

z Note: The speed adjusting distance at the lowest running speed(m) ×2 0.15 (m) < the smallest floor interval (m)

7.17 Thermal Switch Protection, the brake resistor overheated or the electric motor overheated (ER25)

Please check the thermal switch loop (The input point is X21).

7.18 The state of contact of gate interlock is inconformity with the state of the coil (ER26)

According to the requirement of **GB7588-2003 Standard to the gate interlock, BL 2000 main board** is designed with the monitor function for gate interlock loop and its feedback contact; under normal condition, the motion of coil and the contact (X14 and X23) should keep in conformity, or there will be failure alarm.

The state of contactor of gate interlock is inconsistent with the state of the coil, that is to say X14 and X13 (terminal No. X24, X25) are inconsistent. Observe the input indicator LED X14 and LED X23, when the gate interlock switch on or switch off, LED X14 and LED X23 should be on or off correspondently.

1. If there are not on at the same time, please check the outer connection.
2. If they are on or off at the same time, please observe if the input signal display on the monitoring menu conforms to the state of LED indicator, if the display of X23 input signal is inconsistent to the state of LED X23 indicator, it is possibly that the voltage input of X23 to the circuit is not compatible.

7.19 The inconformity between state of emergency stop contactor and the state of the coil

The state of emergency stop contactor is inconsiste

Appendix 1 Connection Diagram and Parameter Setting for Inverters Controlled by Asynchronous Motor

1. Connection graph and parameter setup menu of YASKAWA 616G5 &676GL5-JJ Transducer

ˆ 1˜ Wiring diagram of transducer terminals (See the schematic diagram of typical control circuit in this manual)

ˆ 2˜ Instruction for keying

MENU à ESC key: Displaying, exiting menu; " " à " " key: Selecting menu, and modifying values

" " key: Selecting the modifying bit; DATA à ENTER key: Confirming

ˆ 3˜ Parameter setup of transducer(for reference only): simulation + multi-segment

Parameters	Names	Setting values	Comments
A1-02	Selection of Control mode	3	With PG vector control
A1-00	Language Selection	0	
A1-01	Parameter access level	4	
B1-01	Selection of speed instruction	1	Setting 0 when multi speed
B1-02	Selection of running instruction	1	
B1-03	Selection of stop method	1	
B1-04	Selection of inversion inhibition	0	
B2-01	Zoro velocity level	0.1	
B2-03	DC braking time when starting	0	
B2-04	DC braking time when stopping	1	
C1-01	Acceleration time 1	0.1	Setting 2.0 when multi speed (for reference)
C1-02	Deceleration time 1	0.1	Setting 2.0 when multi speed (for reference)
C1-03	Acceleration time 2	2	Setting 2.0 when multi speed (for reference)
C1-04	Deceleration time 2	2	Setting 2.0 when multi speed (for reference)
C2-01	S characteristic time when beginning acceleration	0	Setting 1.5 when multi speed (for reference)
C2-02	S characteristic time when stopping acceleration	0	Setting 1.5 when multi speed (for reference)
C2-03	S characteristic time when beginning deceleration	0	Setting 1.5 when multi speed (for reference)
C2-04	S characteristic time when stopping deceleration	0	Setting 1.5 when multi speed (for reference)
C5-01	ASR proportion gain 1	10	
C5-02	ASR integral time 1	0.35	

D1-02	Frequency instruction 2	0	Self leaning speed when multi speed(setting as the actual requirement)
D1-03	Frequency instruction 3	0	Inspection traveling speed when multi speed(setting as the actual requirement)
D1-04	Frequency instruction 4	0	Creep speed when multi speed(setting as the actual requirement)
D1-05	Frequency instruction 5	0	Low speed when multi speed (V1) (setting as the actual requirement)
D1-06	Frequency instruction 6	0	Medium speed when multi speed 1 (V2) (setting as the actual requirement)
Parameters	**Names**	**Setting values**	**Comments**
D1-07	Frequency instruction 7	0	Medium speed when multi speed 2 (V3) (setting as the actual requirement)
D1-08	Frequency instruction 8	0	High speed when multi speed (V4) (setting as the actual requirement)
D1-09	Inching instruction 2	200	

	velocity deviation		
F1-11	Detection delay time when too large velocity deviation	1	
H1-03	Function selection of terminal 5	F	(Setting 3 when multi speed)
H1-04	Function selection of terminal 6	F	(Setting 4 when multi speed)
H1-05	Function selection of terminal 7	6	Inching (Setting 5 when multi speed)
H1-06	Function selection of terminal 8	9	

ˆ 1˜ Connection graph of transducer terminals

ˆ 2˜ First setting “control mode” parameter A1-02=3.

ˆ 3˜ Then using “initialization” parameter A1-03=2220 to initialize the transducer parameter.

ˆ 4˜ Setting transducer parameters as table below (for reference only)' simulation+multi-segment

parameters	Names	Setting values	Comments
A1-02	Selection of Control mode	3	
A1-00	Language Selection	0	
B1-01	Selection of speed instruction	1	Setting 0 when multi speed
B1-02	Selection of running instruction	1	
B1-03	Selection of Stop method	1	Debug setup: 0
B1-06	Time selection for control terminal scanning twice	0	

C2-03	S characteristic time when beginning deceleration	0	Setting 1.5 when multi speed (for reference)
C2-04	S characteristic time when stopping deceleration	0	Setting 1.5 when multi speed (for reference)
C5-01	ASR proportion gain 1	10	
C5-02	ASR integral time 1	0.35	
D1-02	Frequency instruction 2	0	Self leaning speed when multi speed(setting as the actual requirement)

			multi speed)
H1-04	Function of selecting terminal S6	F	Multifunction contact inputting 4 (Setting 4 when multi speed)
H1-05	Function of selecting terminal S7	F	Multifunction contact inputting 5 (Setting 5 when multi speed)
H1-06	Function of selecting terminal S8	F	Multifunction contact inputting 6
H1-07	Function of selecting terminal S9	F	Multifunction contact inputting 7
H1-08	Function of selecting terminal S10	F	Multifunction contact inputting 8
H1-09	Function of selecting terminal S11	F	Multifunction contact inputting 9
H1-10	Function of selecting terminal S12	9	Multifunction contact inputting 10
H2-01	Function of selecting terminal S M1-M2	37	
H3-01	Selecting frequency instrument (voltage) terminal A1 signal electrical level	0	
H3-02	Selecting frequency instrument (voltage) terminal A1 input gain	100%	Setting as the given analog voltage maximum and elevator speed
H3-03	Selecting frequency instrument (voltage) terminal A1 signal offset	0	
H3-04	Selecting multifunction analog input terminal A3 signal electric level	1	
H3-05	Selecting multifunction analog input terminal A3 function	14	
H3-06	Selecting multifunction analog input terminal A3 input gain	100%	
L5-01	Restart times when abnormal reset	5	
L8-05	Action selection of input side open-phase protection	1	
L8-07	Action selection of output side open-phase protection	1	
O1-01	Monitor selection	5	
O1-02	Monitor selection when power supply input	1	
O1-03	Selection of frequency instrument	*	Setting as motor pole numbers
O1-04	Unit setting of frequency instrument	0	
O2-01	Function selection of local and remote keys	0	
O2-02	Function selection of STOP key	0	
L3-04	Stall preventing function selection when deceleration	0	

3˙ Connection graph and parameter setup 3.0 version of KEB F4 Transducer

ˆ 1˜ Connection graph of transducer terminals

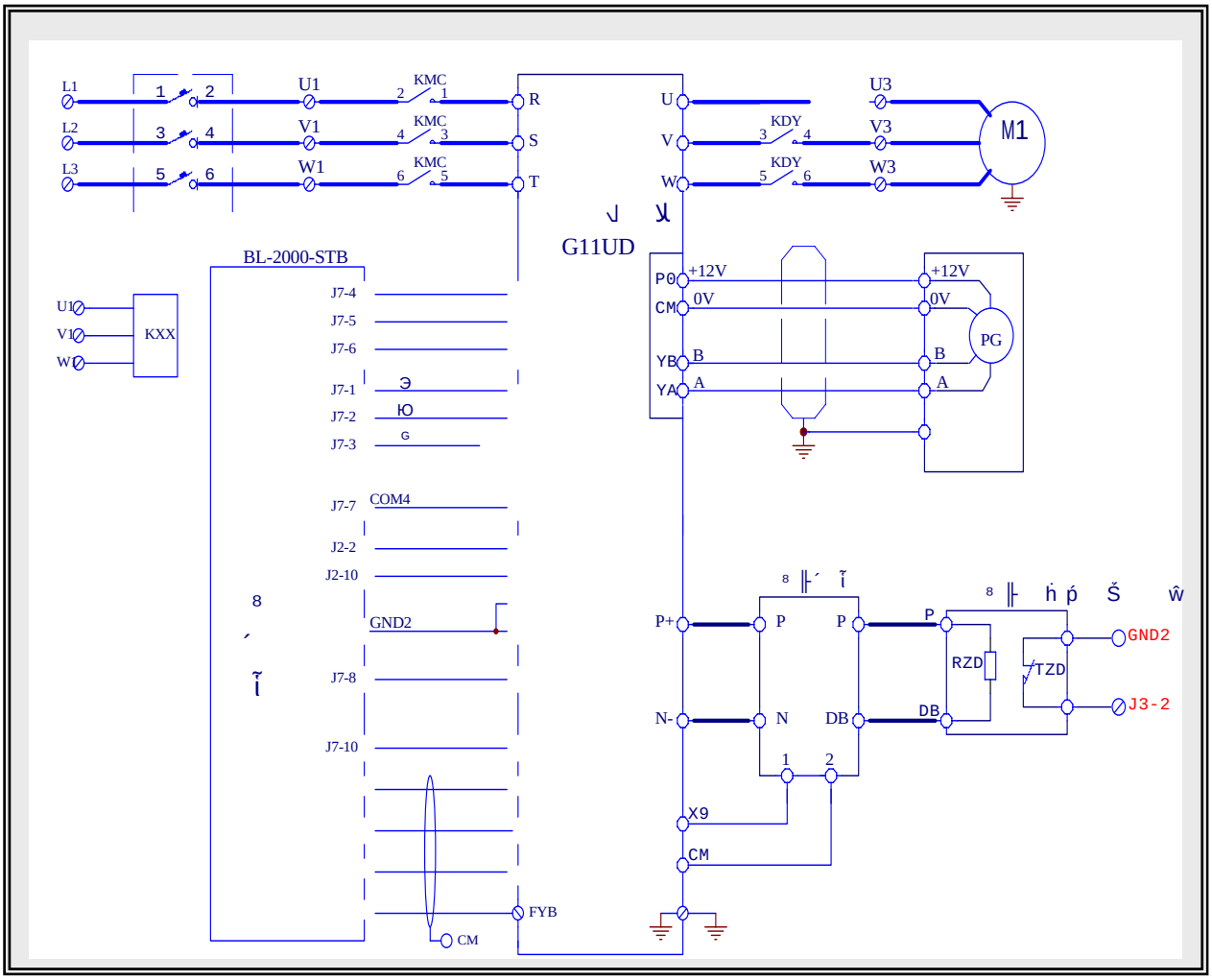
ˆ 2˜ Setting transducer parameters as table below (for reference only): simulation

Parameters	Names	Setting values	Comments

LF.15	Power factor of asynchronous motor		Setting as spot actual parameter
LF.16	Speed of synchronous		Setting as spot actual parameter

4˙ Wiring diagram and parameter setup menu of FUJI G11UD Transducer

ˆ 1˜ Wiring diagram of transducer terminals



ˆ 2˜ Setting transducer parameters as table below (for reference only): multi-segment

Parameters	Names	Setting values	Comments
F01	Frequency setting 1	0	
F02	Selection of running instrument	1	
F03	Maximum output frequency 1	50Hz	
F04	Basic frequency 1	50Hz	
F05	Rated voltage 1	380V	
F06	Maximum voltage 1	380V	
F07	Acceleration time 1	0.01S	
F08	Deceleration time 1	0.01S	
F15	Frequency upper limit	50Hz	Setting according to the given analog voltage maximum and elevator speed
F16	Frequency lower limit	0 Hz	
F17	Setting proportional frequency of	*	Setting proportional frequency of analog input

	analog input		
F18	Analog setting frequency offset	0	
F23	Start-up frequency	0.4Hz	
Parameters	**Names**	**Setting values**	**Commenui1442 767.78 0.48 17.04 ref(S98 ref0 g.34 -51 re3(**

	adjustment		
P01	Motor pole numbers	*	Setting as motor nameplate
P02	Motor power	*	Setting as motor nameplate
P03	Motor rated current	*	Setting as motor nameplate
P06	Motor no-load current	*	Setting as default value
P09	Motor rated slip	note	
H11	Deceleration mode	1	
H18	Torque control	3	Torque offset of terminal 12
O01	Selection of velocity instrument mode	1	Required to set 1
Parameters	**Names**	**Setting values**	**Comments**
O02	Velocity instrument filter time constant	0.020	
O03	Encoder pulse numbers	*	Setting as practical configuration
O04	ASR P constant (high speed)	20	
O05	ASR I constant	0.1	
O06	Velocity feedback filter time constant	0.003	
O07	ASR P constant switching frequency 1	5	
O08	ASR P constant switching frequency 2	10	
O09	ASR P constant (low speed)	20	
O10	Multi-segment velocity	0.005S	S-type curve when finishing medium

6 323[(S-ty)-14(pe cur)4(-2 Teed)8(back)-6(i)8 Tim7(is)9beginni8 ini8 g acceleli

O22	S-type curve setting 10	*	(Setting according to requirements)
O37	Torque instrument filter time constant	0.0	
O38	Start-up time	0.3	
C31	Analog input deviation adjustment (terminal 12)	0	
C32	Deviation adjustment	0	
C33	Analog input filter	0.05	
H18	Torque control	3	Torque offset of terminal /2

F03	Maximum speed	*	Setting as motor nameplate
F04	Rated speed	*	Setting as motor nameplate
F05	Rated voltage	380V	
F07	Acceleration and deceleration time 1	3.5S	Low speed acceleration time
F08	Acceleration and deceleration time 2	2.1S	Low speed deceleration time
F23	Starting speed	0.4Hz	
F24	Duration time	0.3s	
F25	Stopping speed	0.1Hz	
F42	Control selection	0	With PG vector control (asynchronous motor)
E01	Function selection of terminal X1	0	
E02	Function selection of terminal X2	1	
E03	Function selection of terminal X3	2	
E10	Acceleration and deceleration time 3	3.5s	Low speed acceleration time
E11	Acceleration and deceleration time 4	2.5s	Medium speed deceleration time ationtion and dece 17.04.38 492.u 7.t.78 0.4

	(terminal 12)		
C33	Analog input filter adjustment (terminal 12)	0.05s	
P01	Motor pole numbers	*	Setting as motor nameplate
P02	Motor capacity	*	Setting as motor nameplate
P03	Motor rated current	*	Setting as motor nameplate
P06	Motor no-load current	*	Setting as default value
P12	Motor rated slip	noting	
L01	Pulse programmer (selection)	2	A, B phases ' 12, 15V complement, oc, 5Vcable-driven.
L02	Pulse numbers	*	Setting as practical configuration
L19	S-shaped setting 1	20	S-type curve when beginning acceleration
L22	S-shaped setting 4	20	S-type curve when finishing medium speed acceleration
L23	S-shaped setting 5	20	S-type curve when beginning medium speed deceleration
L24	S-shaped setting 6	20	S-type curve when finishing high speed acceleration
L25	S-shaped setting 7	16	S-type curve when beginning high speed deceleration
L26	S-shaped setting 8	18	S-type curve when finishing deceleration
L27	S-shaped setting 9	30	
L28	S-shaped 10	30	
L36	P constant when high speed	8	
L37	I constant when high speed	0.5s	
L38	P constant when low speed	10	
L39	I constant when low speed	0.5s	
L40	Switching speed 1	5HZ	
L41	Switching speed 2	10HZ	
L60	Torque offset driving side gain	50Hь	Setting as spot actual value
L61	Torque offset braking side gain	50Hь	Setting as spot actual value

Notes: Motor rated slip frequency = basic frequency × $\frac{\text{Synchronous speed – Rated speed}}{\text{Synchronous speed [r/min]}}$ [Hz]

Self-tuning implementation:

1 à Set 1 or 2 in the function code P04, and press DATA key. (Flashing displayed by 1 or 2 can turn slow.)

2 à Input the running instrument of determined rotation direction.

3 à Lighten the display of 1 or 2, and begin self-tuning. (Self-tuning time: maximum value is about 15 seconds when P04=1, and maximum value is about 15 seconds when P04=1)

4 à Display end when determination is over.

5 à Set running instrument as OFF, then self-tuning is over. Operation panel will display next function code (P06).

Motor constants after self-tuned will be saved automatically, respectively once resistance %R1 is P07, leaking reactance %X is P08, no-load current is P06, and rated slip is P12.

6' Wiring diagram and parameter setup menu of SIEI Transducer

(1) Wiring diagram of transducer terminals

(2) Setting transducer parameters as table below (for reference only): multi-segment

Notes: Standard and type of transducers should be AVy…AC/AC4, wherein, ellipsis part should be transducer power

Encoders are set by jumpers S11—S17 which should be set as OFF

4' When both normal and idle operations are normal, adjust S curve parameters and P, I parameters to set the comfortable degree of high-speed elevator.

1' Motor data

Parameters	Setting values	Comments
Rated voltage	380V	
Rated frequency	50HZ	*
Rated current	23.5A	*
Rated speed	1440pm	
Rated power	11KW	*
Cosfi	0.85	*
Efficiency	96	*

2' self learning

See the subsequent motor current self-learning steps.

3' hoist machine data

Parameters	Setting values	Comments
Speed units selection	Millimeters	
deceleration ratio	2	
Hoist wheel diameter	410mm	*
Maximum speed scale	150rpm	*

4' Car weight data

Parameters	Setting values	Comments
Car weight	2100kg	*
Counter weight	2900kg	*
Maximum load weight	1600kg	*
Rope weight	300kg	*
Motor inertia	5.0	*
gearbox inertia	0.0	*

5' Encoders data

Parameters	Setting values	Comments
Encoder type	0 (Std encoder)	
Standard encoder type	Digital	
Standard encoder pulses	1024pps	
Standard encoder mode	0(FP)	
Standard encoder supply	0 (5.14V)	

6' Braking unit data

Parameters	Setting values		

Braking unit resistance power	8.0KW	*

7' Control mode parameter

C	Setting values	Comments
Control mode selection	Field oriented	

8 Multi-segment speed parameter

Parameters	Setting values	Comments
Smooth start speed	0	
Self-learning speed (Multi speed 1)	200mm/s	
Inspection traveling speed (Multi speed 2)	200mm/s	
Creep speed (Multi speed 3)	50 mm/s	
Speed 4 (Multi speed 4)	0mm/s	
Speed 3 (Multi speed 5)	0mm/s	
Speed 2 (Multi speed 6)	800mm/s	
Rated speed (Multi speed 7)	1000mm/s	

9 Ramp curve parameter

Parameters	Setting values	Comments
Initial jerk acceleration (MR0 acc ini jerk)	300 mm/s^3	
Acceleration (MR0 acceleration)	600 mm/s^2	
End jerk acceleration (MR0 acc end jerk)	500 mm/s^3	
Initial jerk deceleration (MR0 dec ini jerk)	500 mm/s^3	
Deceleration (MR0 deceleration)	600mm/s^2	
End jerk deceleration (MR0 dec end decel)	500mm/s^3	
Ending deceleration (MR0 end decel)	200mm/s^2	

10' Elevator time sequence parameter

Parameters	Setting values	Comments
Contactor close delay	304ms	
Brake open delay	416ms	
Smooth start delay	400ms	
Brake close delay	3000ms	
Contactor open delay	200ms	

11' Speed P1 parameter

Parameters	Setting values	Comments
SpeedP1 gain%	20%	
Speedl1 gain%	3.3%	
SpeedP2 gain%	20%	
Speedl2 gain%	5%	
Speedl3 gain%	12%	
Speed 0 enable	2(Enable as start)	
Speed 0 P gain%	19%	

Speed 0 I gain%	20%	
filter time		

12' Speed threshold parameter

Parameters	Setting values	Comments
Spd 0 ref thr	1rpm	
Spd 0 ref delay	3000ms	
Spd 0 speed thr	1rpm	
Spd 0 spd delay	3000ms	
SGP tran21 h thr	94%	
SGP tran32 l thr	5%	
SGP tran21 band	4%	
SGP tran 32 band	4%	

13' Speed PI regulator parameter

Parameters	Setting values	Comments
Speed P base value	50A/rpm	
Speed I base value	8000A/rpm	

14'

Parameters	Setting values	Comments
TRAVEL\Ramp function	Using default value	
TRAVEL\Ramp setpoint	Using default value	
TRAVEL\ Speed setpoint	Using default value	

Notes: Parameters with * mark are set according to actural conditions.

7 à

B1-03	Selection of stop method	1	Free running stop
B1-06	Twice reading time selection of control terminal	0	2ms
C1-01	Acceleration time 1	2	Setting with the unit of second Acceleration time from 0 to 100 % of maximum output frequency
C1-02	Deceleration time 1	2	

			units

Parameters	Names	Setting values	Comments
E2-02	Motor rated slip	*	Using equation to calculate slip according to rated speed
E2-03	Motor idle current	*	35%-40% of rated current
E2-04	Motor pole number	*	Setting as motor nameplate
E2-11	Motor Rated capacity	*	Motor power
F1-01	P PG Pulse	*	Setting as actual encoder
F1-03	Action selection when overspeed	0	
F1-04	Action selection when detection of oversize velocity deviation	0	
F1-08	Overspeed detection standard	105	
F1-09	Overspeed detection delay time	1	
F1-10	Detection standard when oversize velocity deviation	30	
F1-11	Detection relay time when oversize velocity deviation	1.0	
H1-01	Function selection of terminal S3	24	Multifunction contact input 1
H1-02	Function selection of terminal S4	14	Multifunction contact input 2
H1-03	Function selection of terminal S5	3	Multifunction contact input 3
H1-04	Function selection of terminal S6	4	Multifunction contact input 4

S1-25	Torque compensation offset in down motion	-60%	Setting according to the spot

* Adjustment methods of starting torque compensation are as below:

1. **Parameter H3-15=1, terminal A1 of analog input is 0˙ 10V.**
2. **Parameter H3-17=0.**
3.

⁸ ╟	Brake resistor
⅄ WK1	Connected to WK1 in the case of with thermostat
: 1) ∧ q̈ ὶ ⅄ ∧, ∧ ὶ ⅄ ∧	Note: the number inside the brackets denotes the contact of Fujitsu Contactor and that outside brackets denotes the contact of Schneider contractor

ˆ 2˜ Key Instructions

DRIVE/PRGM key: enter or exit setstate.

“ ” key: select and reset.

“ ” and “ ” keys: change number.

DSPL key: return to previous menu and switch between the monitored items in running. Â

ˆ 3˜ Setting

- Initializing inverter parameters by using “Initialized” parameter A1-03=2220.
- Setting A1-01 to 686 and A1-04 to 686.
- Setting A1-02 to 5 and inverter to synchronous control mode.
- Setting inverter parameters according to the following table (for reference only): simulation + multi-segment

Parameter	**ÅÅVIR!V4/LU9—hIg:µ4%&u#ŁP&Å**

C5-09	ASR switching speed	30	
D1-02	Frequency instruction2	0	Self-learning speed in the case of multi speed (set according to actual need)
D1-03	Frequency instruction3	0	Inspection traveling speed in the case of multi speed (set according to actual need)
D1-04	Frequency instruction4	0	Creep speed in the case of multi speed (set according to actual need)
D1-05	Frequency instruction5	0	Low speed in the case of multi speed (V1) (set according to actual need)
D1-06	Frequency instruction6	0	Medium speed in the case of multi speed (V2) (set according to actual need)
D1-07	Frequency instruction7	0	Medium speed in the case of multi speed (V3) (set according to actual need)
D1-08	Frequency instruction8	0	High speed in the case of multi speed (V4) (set according to actual need)
D1-09	Inching instruction	200	
E3-10	Motor d (D) axis inductance	*	See nameplate
E3-11	Motor q (Q) axis inductance	*	See nameplate
E3-12	Induced voltage parameter of motor	*	See nameplate
E3-13	Mechanical loss of motor	*	See nameplate
E3-14	Connection resistance of motor	*	See nameplate
E3-18	PG origin pulse compensation	*	Establishment of PG self-learning
E3-23	Magnetic torque coefficient K1	*	
E3-24	Rated torque coefficient K2	*	
E2-26	De-vibration compensation loop effective	1	
E2-29	Electrical mechanical time constant	0.056	
E2-30	P value of compensation loop	0.2	
E2-31	I value of compensation loop	0.05	
Parameter	**Name**	**Set value**	**Notes**
E2-32	Filtering time constant 1	0.004	
E2-33	Filtering time constant 2	0.396	
F1-01	PG constant	*	Set according to coder
L5-01	Abnormal reset and restart times	5	
L8-05	Input-side lack-phase protection action selection	1	
L8-07	Output-side lack-phase protection action selection	1	
H1-03	Function selection of terminal 5	F	Set to “3” in the co67.92 162.92 H430.56 0.48 Function se62.98 on of te

H2-01	Function selection of terminal 9	37	
H2-02	Function selection of terminal 25	37	Set to “40” when using torque compensation
H3-01	Level selection of terminal 13	0	
H3-02	Input gain of terminal 13	*	Set according to analog voltage max and elevator speed
H3-03	Input offset of terminal 13	0	
H3-04	Level selection of terminal 16	1	
H3-05	Function selection of terminal 16	14	
H3-06	Input gain of terminal 16	0	
H3-07	Input offset of terminal 16	0	
H3-12	Analog input filtering time	0.02	
S1-10	Starting torque compensation offset for rising	0	
S1-11	Starting torque compensation offset for descending	0	
S1-12	Accelerated moment compensation filtering time	0	
S1-13	Accelerated moment compensation gain	0	

z Notes: Upon finishing parameter setting, if the “OPE11” is displayed on frequency inverter, reduce parameter C6-04 at the interval of 2.

ˆ 4˜ The inverter can get the parameters of motor according to the motor nameplate or through the self-learning. Firstly, set up the basic parameters of the motor: max speed of revolution, basic speed of revolution, number of poles, rated voltage and rated current, then observe the negative rotating (positive rotating) motor on Pulley side to see if the direction feedback from parameter U1-05 is positive, if not, change by negating parameter F1-02. Motor must be in no-load state when self-learning through:

- Setting the parameter T1-01 of inverter to 2 (full self-learning)
- Pressing DSPL key to return to T1-01 display
- Pressing DRIVE/PRGM key to display CAL 12
- Pressing RUN key to display CAL13 (blink), motor is self-learning.
- Displaying END for about 2 seconds to automatically return to monitoring state to finish self-learning.

To ensure the correctness of PG origin pulse compensation, PG origin pulse must conduct single-item self-learning at no load condition of motor through:

- Setting the parameter T1-01 of inverter to 3
- Press DSPL key to return to T1-01 display
- Press DRIVE/PRGM key to display CAL 12
- Pressing RUN to display CAL 13 (blink), inverter is self-learning
- Displaying END for about 2 seconds to automatically return monitoring state to finish self-learning
- Taking down parameter E3- 18, PG origin pulse compensation

ˆ 5˜ FAQ in trial running:

- Elevator jitters and speed is unstable. Please check the connection between rotation encoder and motor. If no connection problem, it may be because the poor performance of rotation encoder.
- Speed is too low. If the elevator is running in the direction as displayed on inverter but the speed feedback value is not consistent with the speed given with great difference, please check if the parameters of the inverter are set correctly. The following table is given for your reference.

ÞNo speed feedback. It may be because of the output damage of rotation encoder or the problem with the connecting cable.

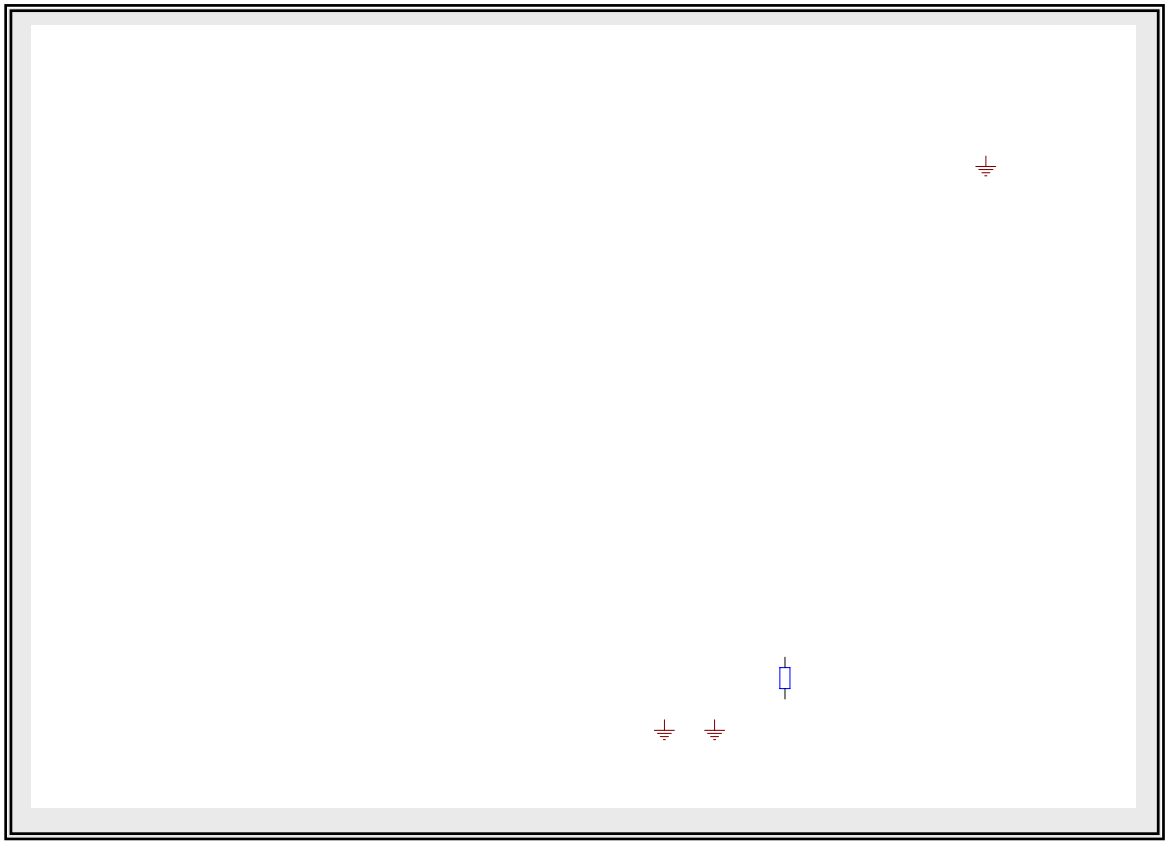
Yasakawa 676GL5-IP			
Rated voltage	E1-01	Rated current of motor	E2-01
Max output frequency	E1-04	Slip frequency of motor	E2-02
Max output frequency voltage	E1-05	Motor poles	E2-04
Basic frequency	E1-06	Encoder pulse count	F1-01
Inspection speed	D1-09		

ÆNote: Do not let inverter drive motor to run for long when elevator can't running normally!

2. KEB F4 Inverter Connection Diagram and Parameter Setting 3.0 Version

(1) Inverter terminal connection diagram

(2) Set inverter parameters according to the following table (reference only):



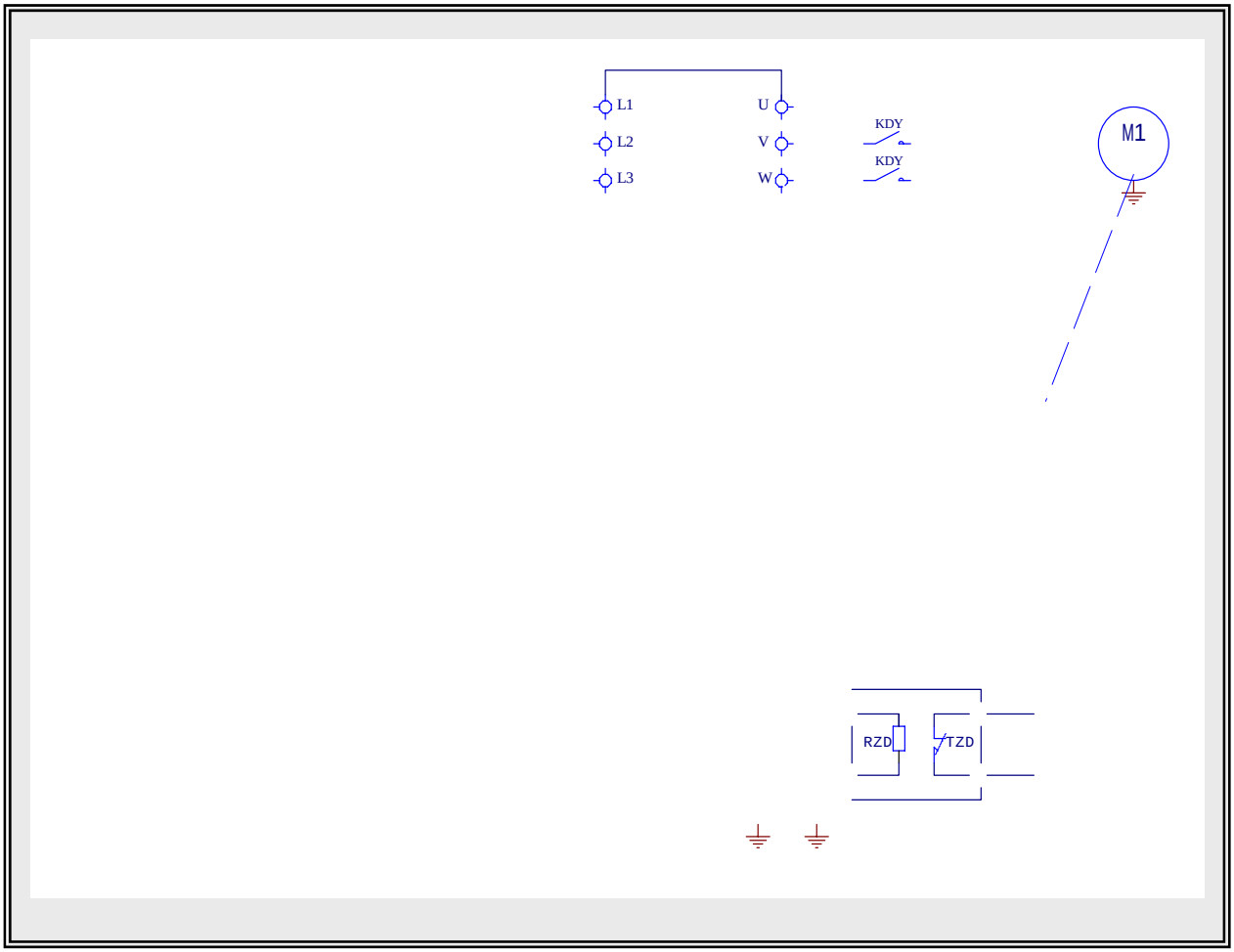
˩ ⅄	KEB inverter
F4 "	F4 series
	Connected in the case of multi speed
Э	Up
Ю	Down
G	Enable
8 ´ ĩ	Computer control unit
	Case
	Shielded
8 ╟	Brake resistor
⅄ WK1	Connect to WK1 in the case of with thermostat
: 1) ᴨ ᾳ ὶ ⅄ ᴨ, ᴨ ὶ ⅄ ᴨ	Notes: 1) the number inside the brackets denotes the contact of Fujitsu Contactor and that outside brackets denotes the contact of Schneider contractor.
2) ,X3.6 a .	2) Not connect X3.6 if running multi speed curve.

Parameter	Description	Setting value	Note
dr.00	Rated power of motor	*	See nameplate
dr.01	Rated speed	*	See nameplate
dr.02	Rated current	*	See nameplate
dr.03	Rated frequency	*	See nameplate

LF32	Speed integrator	125	Typical value
LF33	KI Speed-Offset	1875	Typical value
LF34	Current proportion	980	Typical value
LF35	Current integrator	160	Typical value

3 KEB **F5 Inverter Diagram and Parameter Setting**

1 **Inverter Terminal Connection Diagram**



KEB inverter	
F5	F5 series
	Up
	Down
1	Multi speed 1
2	Multi speed 2
3	Multi speed 3
	Enable
	Computer control unit
	Case
	Shielded
	Brake resistor
WK1	Connect to WK1 in the case of with thermostat

ˆ 2˜ Set the parameters of inverter according to the following table (reference only): multi-segment

Name	Parameter	hexadecimal address:	Recommended value
CP.0	Password	1000 2000	Read only Read-write
CP.1	PM Rated Current	0617	See motor nameplate
CP.2	PM Rated Speed	0618	See motor nameplate
CP.3	PM Rated Frequency	0619	See motor nameplate
CP.4	PM EMF Voltage Constant	061A	See motor nameplate
CP.5	PM Rated Torque	061B	See motor nameplate
CP.6	PM Winding Resistance	061E	See motor nameplate
CP.7	PM Winding Inductance	061F	See motor nameplate
CP.8	PM Torque Limit(Torque limit)	0621	
CP.9	Motor Adaption	090A	
CP.10	abs. torque ref	0F13	
CP.11	Speed V1	0P03	
CP.12	Speed V2 analog rated number	0P03	
CP.13	Speed V3	0P03	
CP.14	Speed V4	0P03	
CP.15	Speed V5	0P03	
CP.16	Speed V6	0P03	
CP.17	Speed V7	0P03	
CP.18	S-Curve Time acc	0P32	2.10S
CP.19	Acceleration Time	0P28	2.70S
CP.20	S-Curve Time dec	0P34	2.10
CP.21	Deceleration Time (deceleration time)	0P30	2.70S
CP.22	Premagnetizing Time	0423	1S
CP.23	Brake Release Time	0424	0.15S
CP.24	Brake Engage Time	0428	0.30S
CP.25	Switching Frequency	050B	4KHZ

Notes: add the following parameters setting in the case of simulation set:

Name	Parameter	Recommended value	Notes
AN0	Input voltage selection	0	0˙ 10V
AN1	Analog collection times	1	2 times
AN2	Analog variable storage mode	0	Direct mode
AN4	Zero lag	0%	
AN5	Analog 1 input increment	1	
AN6	X-axis offset	0	
AN7	Y-axis offset	0	
0P.00	Operation instruction selection	0	Analog curve
		2	Multi speed given

(3) KEB F5 Self-learning:

Step1: CP.00: enter 200, press Enter to confirm;

Step 2: enter motor parameters

CP.01: motor rated current, press Enter to confirm;

CP.02: motor rated speed, press Enter to confirm;

CP.03: motor rated frequency, press Enter to confirm;

CP.04: EMF per 1000 rotations, press Enter to confirm;

CP.05: motor rated torque, press Enter to confirm;

CP.06: motor winding resistance, press Enter to confirm;

CP.07: motor winding inductance, press Enter to confirm;

Step 3: motor self-adapting

CP.09: enter 1, press Enter to confirm;

Step 4: CP.26: encoder lines, press Enter to confirm

Step 5: system location

CP.28: enter 2206, press Enter to confirm;

Step 6: add “Enable”;

Step 7: observe CP.35 until CP.35 value increase gradually from 0 to around the rated current and remain the same for around 30s, then self-learning is successful;

Step 8: disconnect “Enable”;

Notes: During self-learning, if E.Enc fault alarm occurs, find the reason in the following three aspects:

ˆ 1˜ Motor is not connected correctly, check the phase U, V and W connection of motor is strictly consistent with the phase U, V and W of inverter;

ˆ 2˜ The number of encoder line is not correct, check CP.26,

ˆ 3˜ Encoder cable is connected wrongly;

After correction, repeat Step 5 - 8,

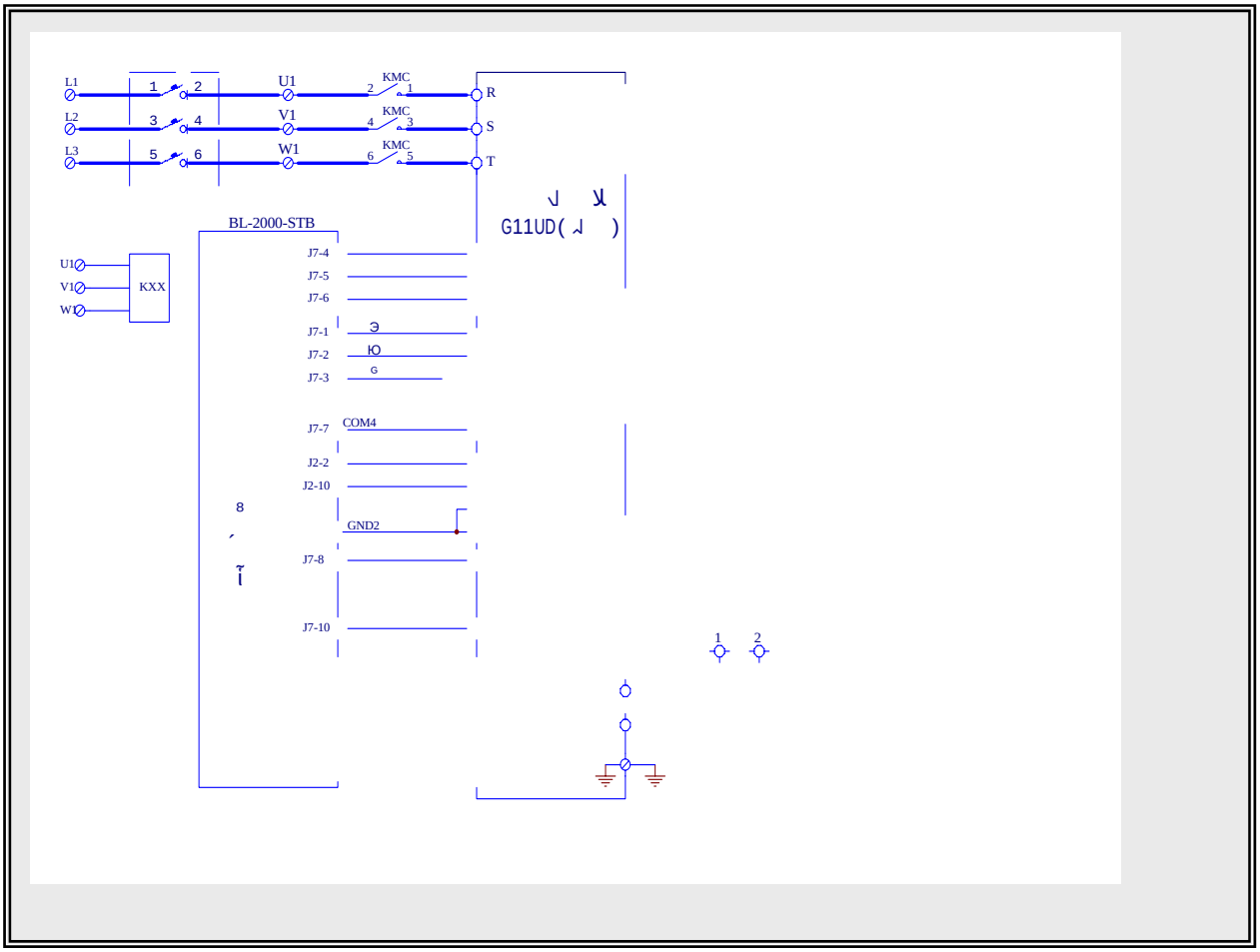
Step 9: After self-learning is successful, set the corresponding speed in CP.11 - CP.17, then add “Enable”, direction and speed to start up.

Step 10: CP.00: enter“100”, press Enter to confirm, set CP parameters as Indication Parameters only to avoid rewriting

without permission.

4˙ Fuji G11UD-4C4 Inverter Connection Diagram and Parameter Setting Table

ˆ 1˜ Inverter Terminal Connection Diagram



ل ﻼ G11UD (ل)	Fuji inverter G11UD (synchronous)
ﻼ ą ﻵ	Encoder signal
Э , Ю	Up, Down
G	Enable
⁸ ´ ĩ	Computer control unit
	Shielded
⁸ ╟	Brake resistor
ﻼ WK1	Connect to WK1 in the case of with thermostat
: 1) 7.5W ل ﻼ ﻠ ą̈ ⁸ ╟	Notes: 1) The internal brake resistor of 7.5KW inverter needs to be removed.
2) ل ﻼ ╖ ≥11KW ⁸ ╟´ ĩ , ⁸ ╟´ ĩ ¥ P+ ∩ N-	2) when inverter power≥11KW, brake unit is external linked and connected to P+ and N-
2) ﻵ ą̈ ṅ ﻼ ﻵ , ﻵ ṅ ﻼ ﻵ	3) The number inside the brackets denotes the contact of Fujitsu Contactor and that outside brackets denotes the contact of Schneider contractor.

ˆ 2˜ Set up the parameters of inverter according to the following table (reference only): multi-segment + analog

Parameter	Description	Setting value	Note
F01	Selection of frequency set	0	Set to 1 in the case analog set
F02	Operation instruction selection	1	
F03	Max output frequency 1	*	See motor nameplate
F04	Basic frequency 1	*	See motor nameplate
F05	Rated voltage 1	380	See motor nameplate
F06	Max voltage 1	380	See motor nameplate
F07	Acceleration time 1	3.5S	Inspection acceleration time
F08	Deceleration time 1	1.00S	Inspection deceleration time
F15	Frequency upper limit	*	Set up according to base frequency
F16	Frequency lower limit	0 Hz	
F23	Start-up frequency	0Hz	
F24	Start-up frequency holding time	0.5s	
F25	Stop frequency	0.1Hz	
F26	Switching frequency	15KHz	
F27	Motor timbre	0	

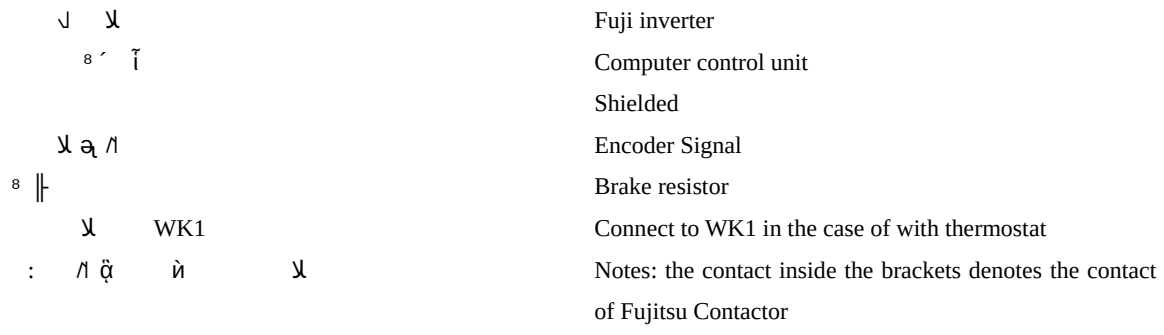
C10	Multi speed 6	*	Medium speed 2 (V2)	system debugging and maintenance instruction.
C11	Multi speed 7	*	High speed (V1)	
C12	Multi speed 0	*		
C31	Analog input shift control	*	Field setting	
C33	Analog input filtering time	0.05	Enter filtering to analog port 12	
P01	Motor poles	20	See motor nameplate	
P02	Motor power	*	See motor nameplate	
P03	Motor rated current	*	See motor nameplate	
P04	Self-learning item	0	Self-learning is 3	
P06	Motor no-load current	0	Not set	
P07	%R1	5		
P08	%X	10		
P09	Motor rated slip	0	Not set	
H11	Deceleration mode	1		
H18	Torque control selection	3	Enter with analog port 12 to conduct torque compensation	
O01	Speed instruction mode selection	02	PG is UVW type	
O02	Speed instruction filtering time constant	0.020		
O03	Encoder pulse count	8192	See the nameplate of encoder	
O04	ASR P constant (high speed)	5		
O05	ASR I constant	0.3		
O06	Speed feedback filtering time constant	0.003		
O07	ASR P constant switching frequency 1	0		
Parameter	Description	Setting value	Note	
O08	ASR P constant switching frequency 2	5		
O09	ASR P constant (low speed)	10		
O10	MultiTf0.00rpiform timing	0.005S		
O11	Emergency mode acceleration and deceleration time	1.0		
O13	S-curve setting 1	20	S-curve at acceleration start	
O14	S-curve setting 2	20	S-curve at medium 1 (V3) and low (V4) acceleration end	
O15	S-curve setting 3	20	S-curve at mediumTf0.0 1 (V3) and low (V4) deceleration start	
O16	S-curve setting 4	20	S-curve at acceleration end	
O17	S-curve setting 5	20	S-curve at medium declaration end	
O18	S-curve setting 6	20	S-curve at high acceleration end	
O19	S-curve setting 7	16	S-curve at high deceleration end	

(1) Inverter terminal connection diagram

	time 1		
F08	Acceleration and deceleration time 2	2.1S	Low deceleration time
F23	Start-up speed	0.4Hz	
F24	Duration	0.3s	
F25	Stop time	0.1Hz	
F42	Control selection	0	Control with PG vector (asynchronous)
E01	X1 terminal function selection	0	
E02	X2 terminal function selection	1	
E03	X3 terminal function selection	2	
E10	Acceleration and deceleration time 3	3.5s	Medium speed acceleration time
E11	Acceleration and deceleration time 4	2.5s	Medium speed deceleration time
E12	Acceleration and deceleration time 5	3.5s	High acceleration time
E13	Acceleration and deceleration time 6	2.0s	High deceleration time
E14	Acceleration and deceleration time 7	11s	Creeping deceleration time
E18	Multi speed instruction uniform timer	2	
E19	Multi speed instruction uniform timer time	0.010	
E20	Y1 terminal function selection	35	Inverter outputting
E27	Terminal 30A/B/C (relay output)	99	Whole alarm
E48	LED monitor details	2	Set speed
E61	Terminal 12 (function selection)	4	Torque offset instruction
C05	Multi speed 1	8	Terminal landing creep speed, unit: HZ
C06	Multi speed 2	8	Inspection speed
C07	Multi speed 3	3	Creep speed
C10	Multi speed 6	30	Medium speed
C11	Multi speed 7	45	High speed
C31	Analog input shift control (terminal 12)	0	
C32	Analog input gain control (terminal 12)	100Ь	
C33	Analog input filter adjustment (terminal 12)	0.05s	
P01	Motor poles	*	See motor nameplate
P02	Motor capacity	*	See motor nameplate
P03	Motor rated current	*	See motor nameplate

P06	Motor no-load current	*	Set up according to default value
P12	Motor rated slip	Note	
L01	Pulse programmer (option)	0	Phase A and B: 12 or 15V complement, open collector and 5V line drive
L02	Pulse count	*	Set up according to actual configuration
L19	S-curve setting 1	20	S-curve at acceleration start
L22	S-curve setting 4	20	S-curve at medium acceleration end
L23	S-curve setting 5	20	S-curve at medium deceleration start
L24	S-curve setting 6	20	S-curve at high acceleration end
L25	S-curve setting 7	16	S-curve at high deceleration start
L26	S-curve setting 8	18	S-curve at deceleration end
L27	S-curve setting 9	30	
L28	S-CURVE SETTING 10	30	
L36	P constant at high speed	8	
L37	I constant at high speed	0.5s	
L38	P constant at low speed	10	

ˆ 1˜ **Inverter terminal connection diagram**



(2) Set the parameters of inverter according to the following table (reference only): multi segment

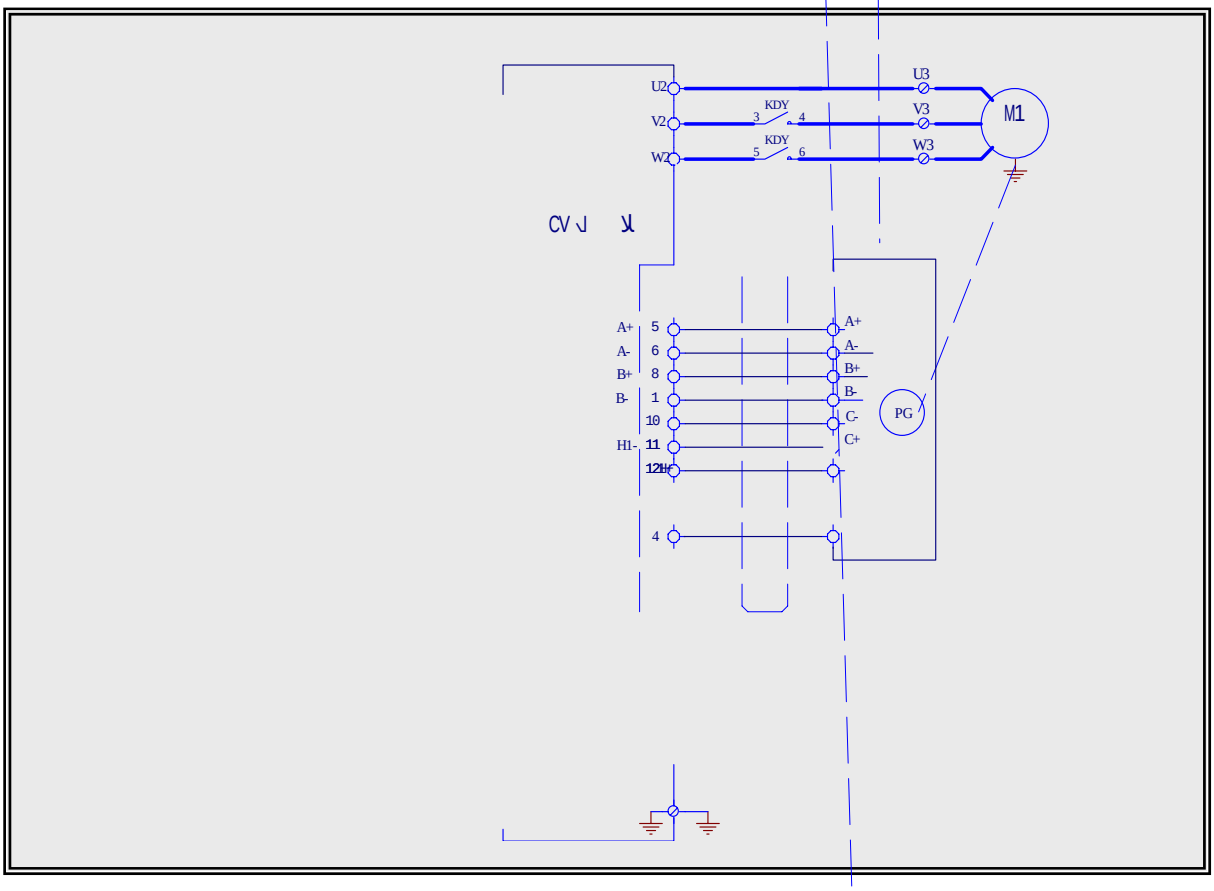
Func.No	Name	Standard value	

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 definition (synchronous)	0	1
O10	Magnetic pole position offset (synchronous)	0	*
O11	Salient pole ratio (%Xq/%Xd)		1
P01	M1 control mode	0	3
P02	M1 motor selection	Volume class	37

⁸´ Ĩ	Computer control unit
	Shielded

ɣ ą ʌ

(1) Inverter terminal connection diagram



CV 变频器	**CV inverter**
注：选择一种编码器	**Note: choose one encoder**
计算机控制单元	**Computer control unit**
制动电阻	**Brake resistor**

(2) The following parameters are only for your reference, please make adjustment according to actual situation:

Item	Terminal			Speed value
	38	37	36	
self-learning speed	0	0	1	300mm/s
Inspection speed	0	1	0	300mm/s
Creep 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

Steps for Adjustment

- After finishing connection, check for the correct connection of the main loop and control loop of inverter to avoid the damage of inverter. Check for the correct connection of encoder and the U V W of the outlet line of inverter to the U V W of the motor line.
- Set the control mode as synchronous elevator control mode and short-circuit the terminal 19 with terminal 12 of the inverter and make the output contactor and brake contactor pull in to conduct the current self-learning of hoist machine.
- After self-learning finishes, start the zero setting of encoder.

- After the above step finishes, set the parameters and start slow running.
- In the circumstance of slow running can go normally and elevator is operating normally, start the fast running of elevator to see if there is backward sliding and overshoot in the process of up run and down run. If backward sliding occurs, increase the function of pre-torque.
- When slow and fast running can both go normally, adjust the S-curve parameter and P, I parameters to adjust the comfort at high-speed running of the elevator.

ˆ 2˜ **General parameters of elevator**

- Motor data

Parameter	Setting value	Note
Rated voltage (Rated voltage)	380V	
Rated current	61.5A	*

- BU protection

Parameter	Setting value	Note

Spdl2 gain%	5%	
SpdP3 gain%	25%	
Spdl3 gain%	12%	
Sped 0 enable	2 (Enable as start)	
Sped 0 P gain%	19%	
Sped 0 I gain%	20%	
Prop filter		

- Speed threshold

Parameter	Setting value	Note
Spd 0 ref thr	1rpm	
Spd 0 ref delay	3000ms	
Spd 0 speed thr	1rpm	
Spd 0 spd delay	3000ms	
SGP tran21 h thr	94%	
SGP tran32 l thr	5%	
SGP tran21 band	4%	
SGP tran32 band	4%	

- Inertia compensate

Parameter	Setting value	Note
Inertia comp en	1 (Enable)	

- Speed regulator

Parameter	Setting value	Note
SpdP base value	50A/rpm	
SpdI base value	8000A/rpm	

-

Parameter	Setting value	Note
TRAVEL\Ramp function	Default	
TRAVEL\Ramp setpoint	Default	
TRAVEL\ Speed setpoint	Default	

Note: set the parameters marked with * according to actual situation.

3 Steps for gearless motor current self-learning

- Enter STARTUP/SETUP MODE/Autotune/Complete still;
- Open brake KDY when displaying Press I key, press the STAR key of inverter after giving enable and direction;
- Cancel enable and direction upon displaying END;
- Execute Load setup.

4 Steps for gearless motor magnetic orientation

- Enter REGULATION PAPAM\Flux config\Magnetiz config\Autophasing menu;
- In the case of without steel cable, pull in KDY, enable, and make brake pull in, then press Enter;
- Give enable and direction when inverter displays “Waiting start……”
- When inverter displays “Autophasing End”, cancel enable and direction, close KEY and brake
- Execute Save config.

ˆ 5˜ **Gearless motor magnetic orientation operation**

Þ **Open brake by means of BL2000-STB and KDY, give enable and direction to conduct motor self-learning:**

Ñ Properly seal the door lock and emergency stop, change the input type of X19 in Inspection state'

Ñ Inverter enters self-learning to wait for KDY, brake, enable and direction state'

Ñ Change the input type of X1, BL2000-STB main board will output KDY, brake, enable and direction state;

Þ After self-learning finishes, it will restore the input type of X1 and then that of X19.

9. Parameter Setting Table for the Yaskawa Inverter for WVF5 Synchronous System

Steps for setting the parameters of inverter:

1. First, set the parameter of “Control Mold” to A1-02=6
2. Then use “Initialization” parameter A1-03=2220 to initialize the parameters of inverter.
3. Set the parameters of inverter according to the following table (reference only for multi segment), set o1-03=Motor poles, o1-04=1 will display rotation number.

Parameter	Description	Setting value	Remarks
A1-00	Digital operator display language selection	0	English (default)
A1-01	Parameter access level	2	ADVANDCED
A1-02	Control mode selection	6	PM vector with PG
B1-01	Frequency instruction selection	0	Digital operator
B1-02	Running instruction selection	1	Control loop terminal (sequential control)
B1-03	Stop selection	1	Free running stop
B1-06	Control terminal two-time read time selection	0	2ms
C1-01	Acceleration time 1	2	Set in Second Acceleration time from 0% to 100% of max output frequency
C1-02	Deceleration time 1	2	Set in Second Deceleration time from 100% to 0% of output frequency
C1-08	Deceleration time 4	3˙5	Deceleration time at the frequency below C1-11
C1-11	Acceleration and deceleration time switching frequency	˛	

d1-03	Frequency instruction 3	15	Inspection running speed (Set up according to actual need)
d1-04	Frequency instruction 4	6	Creep speed (Set up according to actual need)
d1-05	Frequency instruction 5	*	Low speed (V1) (Set up according to actual need)
d1-06	Frequency instruction 6	*	Medium speed 1 (V2) (Set up according to actual need)
d1-07	Frequency instruction 7	*	Medium speed 2 (V3) (Set up according to actual need)
d1-08	Frequency instruction 8	*	High speed (V4) (Set up according to actual need)
E1-01	Inverter input voltage	380	Unit: V
E1-04	Max output frequency/rotation number	*	Sam as E1-06
E1-05	[redacted]	*	[redacted]otor nameplate
			otor nameplate
			otor nameplate, take note of unit
			otor nameplate, take note of unit

		Remarks
		otor nameplate

H1-01	Terminal S3 function selection	24	Multifunctional contact input 1
H1-02	Terminal S4 function selection	14	Multifunctional contact input 2
H1-03	Terminal S5 function selection	3	Multifunctional contact input 3
H1-04	Terminal S6 function selection	4	Multifunctional contact input 4
H1-05	Terminal S7 function selection	5	Multifunctional contact input 5
H2-01	Terminal M1-M2 function selection	37	
H3-15	Terminal A1 function selection	1	Torque compensation
H3-16	Terminal A1input gain	120%	Set up according to actual field setting
H3-17	Terminal A1input offset	0	
L3-04	Antistall function selection in deceleration	0	
L8-07	Output side lack-phase protection selection	1	
o1-01	Drive mode display item selection	5	Select the monitored item number that needs to be displayed in drive mode
o1-02	Monitored display item selection when power is ON	1	Set up monitoring frequency instruction,
o1-03	Frequency instruction setup/display unit selection	*	Set up according to motor poles
o1-04	Frequency instruction parameters setup unit	1	Display rotation
S1-20	Zero-servo gain	*	Set up according to field setting
S1-24	Up-run torque compensation offset	-60%	Set up according to actual field setting
S1-25	Down-run torque compensation offset	-60%	Set up according to actual field setting

*The methods to adjust the start-up torque compensation are as follows:

1. **Parameter H3-15=1, simulation input terminal A1 0˙ 10V.**
2. **Parameter H3-17=0**
3. **Adjust parameter S1-24 and S1-25 (adjust to negative direction) until no sliding at both up run and down run.**
    i. **Note: S1-24 and S1-25 use the same value (if set to -60%)**
4. **H3-16=2×(S1-24), if set to 120%.**

10. L7B synchronous motor self-learning method and magnetic pole detection method when self-learning

Compared with 646GL5-IP, the self-learning method of L7B is more simple and visualized and can learn out the motor parameters that couldn't be learned out before. Its self-learning method is the same as the rotating self-learning method of G7.

Steps for PM motor self-learning

1˙ Short-circuit the terminal BB and BB1 on terminal L7B with terminal SC separately.

Terminal BB and BB1 are both the hardware base locking signals of L7B and can't be shielded through changing parameter; and the base locking signals can only be cancelled by short and if they are not cancelled, PM self-learning can't be conducted.

2˙ Connection of motor PG.

Please use PG-X2 card as the speed feedback card of PM motor and choose long line 819P/R encoder with phase A, B and Z as output for the PM motor. Select the encoder with e=T±T/2 to realize the required precision of encoder. Please not if the PG voltage class is 12V or 5V.

3. Setting of control mode

   A1-02=6 with PG PM motor vector control mode

4.

Note: if self-learning fails, repeat step 3-9 after input according to the previous succeeded E5-11.
The angle that need to be tested include: 0, 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, 180, 195, 210, 225, 240, 255, 270, 285, 300, 315, 330 and 345, among which, 0, 90, 180 and 270 are tested for five times each and the others three times.

Appendix 3 Reference list of fault codes

1. List of system fault codes

Fault code	Description	Treatment
Er2	Door interlock fault: door interlock circuit is opened in	

	installing position changed.	3 à complete hoistway learning;
Er21	Running time over setting time	(1) check the relative inverter parameters setting (2) check whether steel wire slides or car is blocked; (3) Check the setting value of item Over Time.
Er22	Inspection signal input at high running	Check the inspection switch and the relative circuit.
Er23	One of two landing input signals is invalid	Check the signal and the inducing switch.
Er24	When given in multi-speed mode, speed change distance is too short.	Set the reasonable speed changeover distance according to the running speed
Er25	Thermal switch protection, brake resistor or motor overheating	Check the thermal switch circuit.
Er26	Door interlock fault, the condition of contact of interlock contactor is inconsistent with that of the winding	Check the conditions and the main board as well as the corresponding input terminal
Er27	Emergency stop fault; the states of contact of the	

LER=11	Top terminal 1 lost	Top limit is arrived before top terminal 1 or top terminal 1 lost; Check the

device makes the maximum utilization of the existing resources of the elevator control system. It has the characteristics of low cost, high reliability, flexible control, etc.

2. Scope of Application

This device is applicable to variable frequency speed control elevator drived by gearless permanent magnet synchronous motor drive or asynchronous motor.

3. Model/Specification

Model/specification instruction of the device

SJT-YY

A' Power of asynchronous motor≤

(4) When the elevator is in emergency operation, it can choose the running direction automatically.

(5) Elevator leveling is accurate, the precision is ±15mm.

(6) The device has maximum operation time protection function.

(7) The device has automatic constant voltage and constant current charge function.

5. Installation and Adjustment

Fitting wiring diagram of the device and the SJT-WVF5 elevator control system produced by our company is shown in Fig.1. For fitting wiring diagram of the elevator control system produced by other company, this figure can also be provided as a reference. Or our company can provide alternative design for them.

(1) Port Function Definitions of the Device are as Follows:

Symbol	Description	Location	Instruction
PS1 PS2	Input power	CN1-1 CN1-12	PS1 and PS2 are the input power. They must be from one of the three phases and the neutral of main power supply. AC220V±15% 50HZ, They provide charge power to the device. And they are used to determine whether the power supply is normal. Wires of 2mm^2 are recommended.
Y5	Power failure output signal	CN1-6	Separate the grounding terminal of brake voltage DC192V supplied by the accumulator from the grounding of brake circuit (only for synchronization system).
BS+ BS-	Output power	TB1-1 TB1-2	BS+ and BS-, DC192V, are the output power of the device for power supply to the inverter. 4mm^2 wire is recommended.
BK+ BK-	Output power	CN1-3 CN1-14	BK+ à BK- are the brake power output provided for the device.. DC 192V is for the model with synchronous motor, and the model with asynchronous motor is DC110V. 0.75mm^2 wire is recommended.

CP1 CP2	Output power	CN1-4 CN1-15	CP1 and CP2 are the output control power provided for the device. AC220V 50HZ, maximum power 600W. They are used to supply power to the control circuit and door machine circuit. 0.75mm^2 wire is recommended.
IL1 IL2	Power interlock input	CN1-7 CN1-17	IL1 and IL2 are the interlock input normally closed points of the device provided by the control system. They are used for the electric interlock of the device and elevator control system.
IL3 IL4	Power interlock output	CN1-5 CN1-16	IL3 and IL4 are the power interlock output normally closed points provided by the control system. They are used for the electric interlock of the device and elevator control system.
IL5 IL6	Power interlock output signal	CN1-8 CN1-18	They are used for interlocking with power and electric control of the control system.
Y4 COM4	Power failure output signal	CN1-19 CN1-9	They are used to lock the normally open point of the phase-sequence relay in safety circuit when the power fails.
Y3 COM3	Power failure output signal	CN1-20 CN1-10	They are used to provide input signal for the microprocessor.
Y2 Y6 COM2	Power failure output signal	CN1-21 CN1-13 CN1-11	They are used to provide input signal for the inverter. COM2 is the common terminal. Y2 provides running signal of the frequency inverter accumulator. Y6 provides inverter fault reset signal.

(2) Installation, wiring and debugging

Disconnect the air switch F1, F2, F3, F4 (such a switch is provided when YASKAWA 676GL-JJ and Varispeed-L7B inverter systems are used) and rocker switch F2 (F1, F2, F3 and F4 are device's shutdown switch. They are in disconnect state when they leave the factory)

Cut off elevator power supply.

Connect the separate terminals of the random cable to the control system according to wire number in compliance with the instruction and requirement of the wiring chart and the above figure. Use the supplied cable to connect the power at the side of inverter with the BS+ and BS- of the device. When YASKAWA 676GL5-JJ and Varispeed-L7B inverter are used, use supplied cable to connect P0 and N0 of the control cabinet with P0 and N0 of the device.

Strictly check if all the wirings are correct. Incorrect wiring may damage the device or the control system's power-on.

When all the wirings are checked to be correct, insert the cable plug-in into CN1. Turn off the air switch F1, F3, F4 and rocker switch F2, press power switch of UPS to power the elevator on.

If the elevator functions normally, set the relevant parameters of inverter.

Run the elevator to a certain floor, cut off the power. At this moment, the door should open automatically.

Power on the elevator again. Park the elevator between floors and cut off the electricity again. When emergency operating conditions are met, the elevator should run towards the light load direction, level and open the door.

6. Fault Analysis and Troubleshooting

1. The elevator power is abnormal after the device is connected. Check the interlock wiring.

2. When the power is cut off, there is no display on inverter. Check whether air switch F3 and F4 are shut. Check whether the output power BS+ and BS- are greater than DC192V, whether air switch F1 is shut, and whether battery wiring is secured and reliable .

3. When the power is cut off, the device is connected and the elevator is powered on, the frequency converter has no display. Check if air switch F1 is shut.

4. When the power is cut off, the microprocessor has no display. Check if rocker switch F2 is closed and if the UPS power switch is shut (it should always in the ON state).

5. In emergency operation, the brake of the elevator isn't on. For synchronous motor, check if the brake power output is DC192V. For asynchronous motor model, check if the brake output signal is normal.

6. When power fails, emergency operation does not work. Check if the emergency stop and gate lock circuits are normal, if the elevator is in the non-inspection state, if the normally open point of phase-sequence relay is normal and if the input signals of microprocessor and frequency converted are normal.

7. Technical Parameters

1. Input power AC220V±15 ， 50HZ ±10%

2. Output power DC192V
AC220V 50HZ I_{ced}≤3A
DC110V (for asynchronous motor model) I_{ed}≤3A

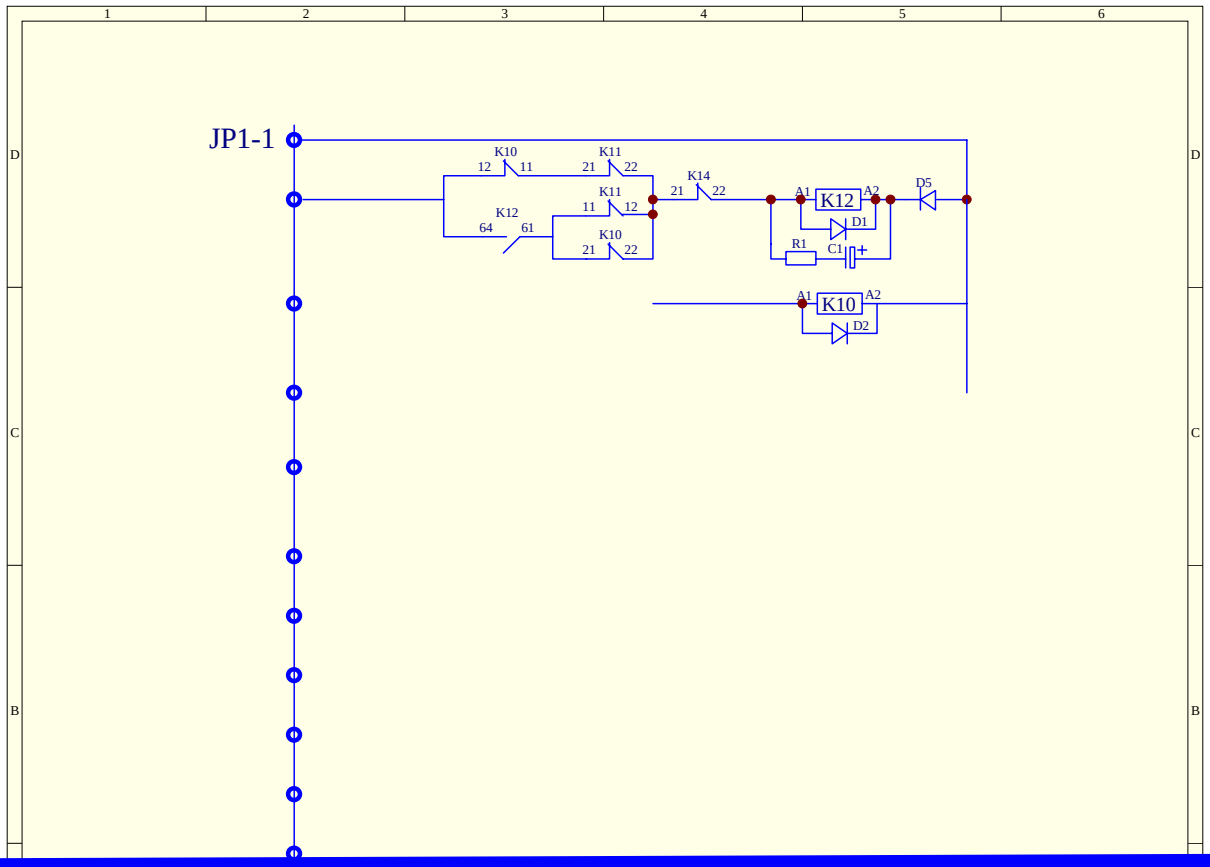
3. Ambient temperature: 0 ˙ 40

4. Relative humidity:20˙ 90 ， non condensing

5. Leveling precision: ±15mm

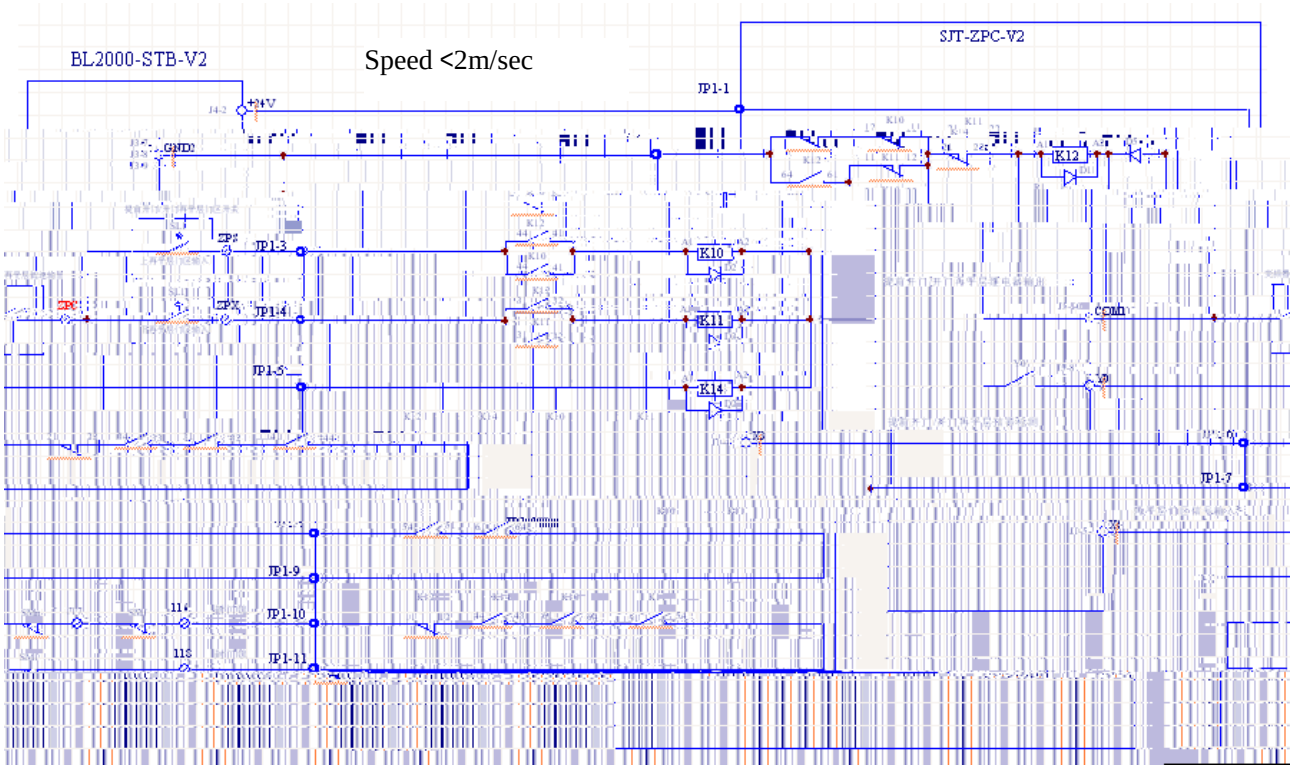
Appendix 5 Advance Door Opening/Re-Leveling Instruction

1. Safety Circuit Board (SJT-ZPC-V2) Schematic Diagram



	JP1-4	Re-leveling lower landing		JP1-10	Door lock output
	JP1-5	Control system re-leveling condition satisfied		JP1-11	Door lock output
	JP1-6	Re-leveling condition satisfied output			

3. Wiring Diagram When BL2000-STB-V2 Main board is used in Advance Door Opening/Re-Leveling Function (Elevator speed is less than 2 m/sec.)



Э ̈Ạ ш ώ upper releveling landing input ' Sealing lock

Ю ̈Ạ ш ώ lower releveling landing input

ⅿ / ̈Ạ ɣ ' Pre-opening/opening releveling relay output

ⅿ / ̈Ạ ą ʌ ' Pre-opening releveling signal inspection

̈Ạ ш ώ' releveling landing signal input

4. Wiring Diagram When BL2000-STB-V9 is used in Advanced Door Opening/Re-leveling Function

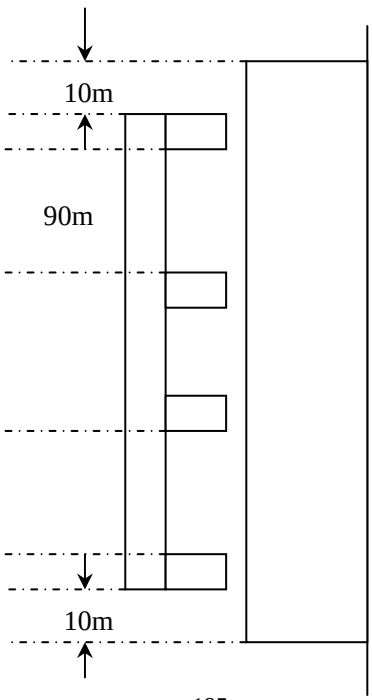


Э Ѝ Ѧ ѡ ώ upper releveling landing input ' Sealing lock

Ю Ѝ Ѧ ѡ ώ lower releveling landing input

5. Installation Instructions of Re-Leveling Landing Sensor and Landing Sensor

Two landing sensors have to be installed when advance door opening /re-leveling function is used: mq1: upper landing; mq2: lower landing; sll: upper re-leveling landing; sl2: lower re-leveling landing. Landings should be installed in order, or, the running direction of the re-leveling is in reverse direction.



6. Mainboard Parameter Setting

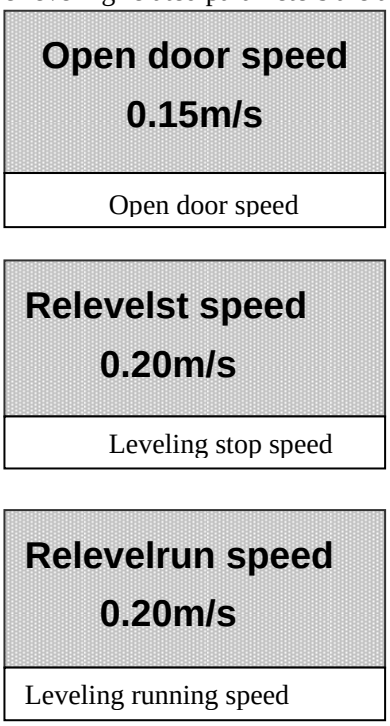
6.1 Advanced door opening/ re-leveling function enable by special function selection setting in special parameters

Special function selection setting

Function NO.	Function instruction
FU00~FU18	For the definition, see system instruction manual
*FU19	ON' door opening re-levelling enable' OFF' no re-levelling function
*FU20	ON' advance door opening enable' OFF' no advanced door opening function

6.2 advance door opening/re-leveling function running parameter in running parameters

Three advance door opening and re-leveling related parameters are added in running parameter:



Open door speed: Elevator advance door opening speed when the elevator switches speed to go into the re-leveling landing.

ATTENTION: When running in multi speeds (use double door zero speed FU02=ON), the creep speed after speed switch must be less than this speed.

Leveling stop speed: If the speed in advance door opening or re-leveling process is more than this speed, the elevator stops running.

Leveling running speed: the set re-leveling running speed when the analog is given.

6.3 Advance door opening/re-leveling function speed table in multi-speed running

ATTENTION: When running in multi speeds, double door zero speed FU02=ON must be used to reduce the creeping speed after speed switch.

Multi speed command output logic

Port / Item	Y15 (J7-6)	Y14 (J7-5)	Y13 (J7-4)
Inspection running speed/self learning speed	0	1	