Contents

1 BL6-B Series Integrated Controller Model & Specifications

1.1 Model description

Model description of BL6-B Series Integrated Controller is shown as figure 1(take 22KW closed type controller as example).

Specifications list in chart 1.

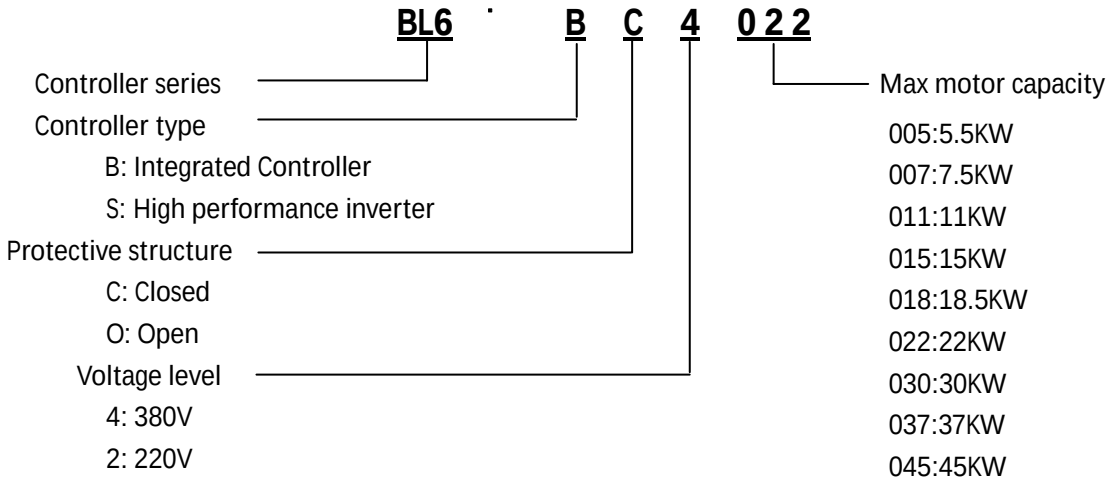


FIGURE 1 MODEL DESCRIPTION DIAGRAM

1.2 Specifications

Specifications of BL6-B Series Integrated Controller in chart 1.

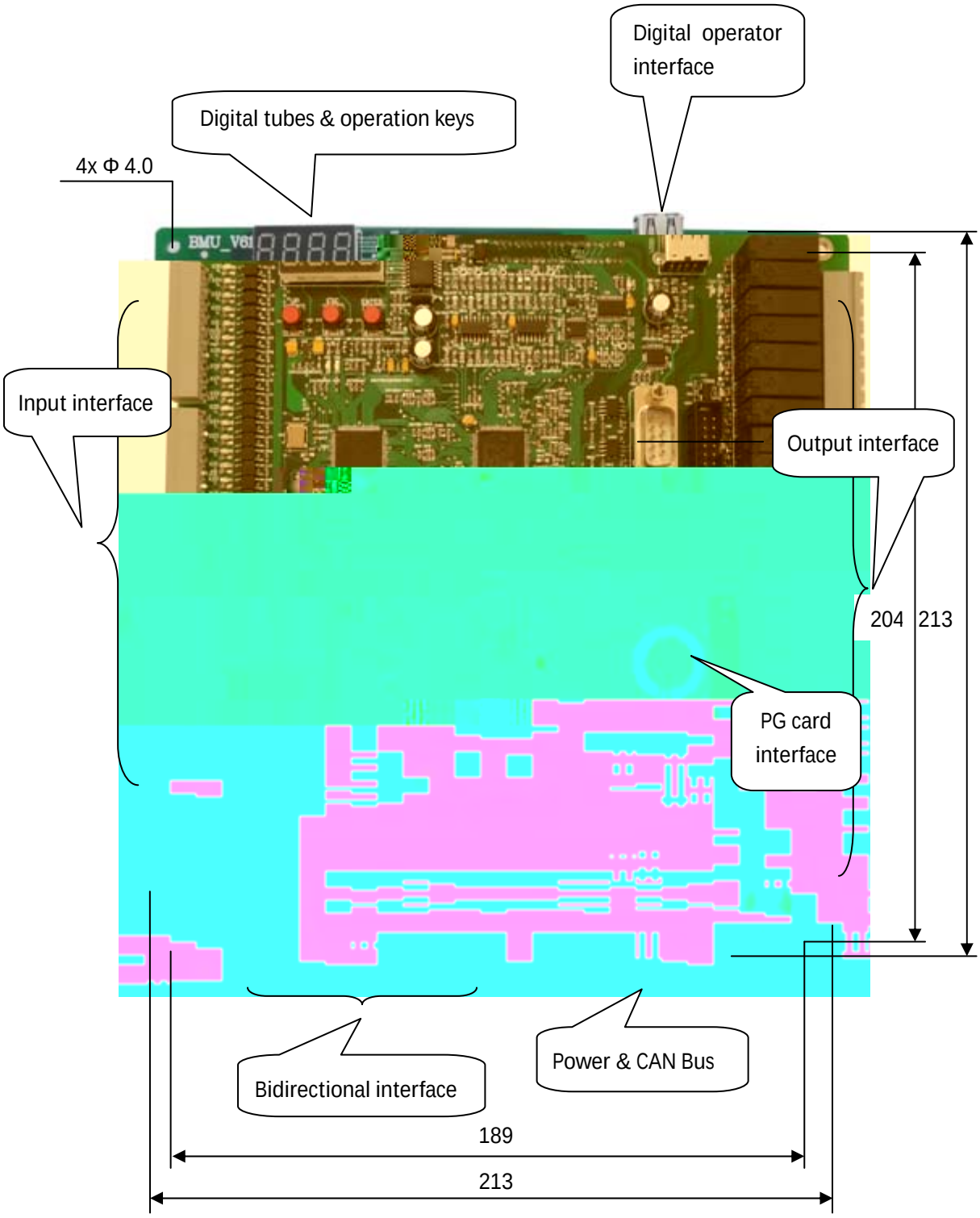
CHART 1 SPECIFICATIONS

MODEL BL6¨ BǴ40ǴǴ	4005	4007	4011	4015	4018	4022	4030	4037	4045
MAX MOTOR CAPACITY(KW)	5.5	7.5	11	15	18.5	22	30	37	45
RATED OUTPUT CAPACITY(KVA)	915.636		647.0603		Tm-0.0419		Tc64	61	OUT92Tc2	0[(9103
RATED OUTPUT										

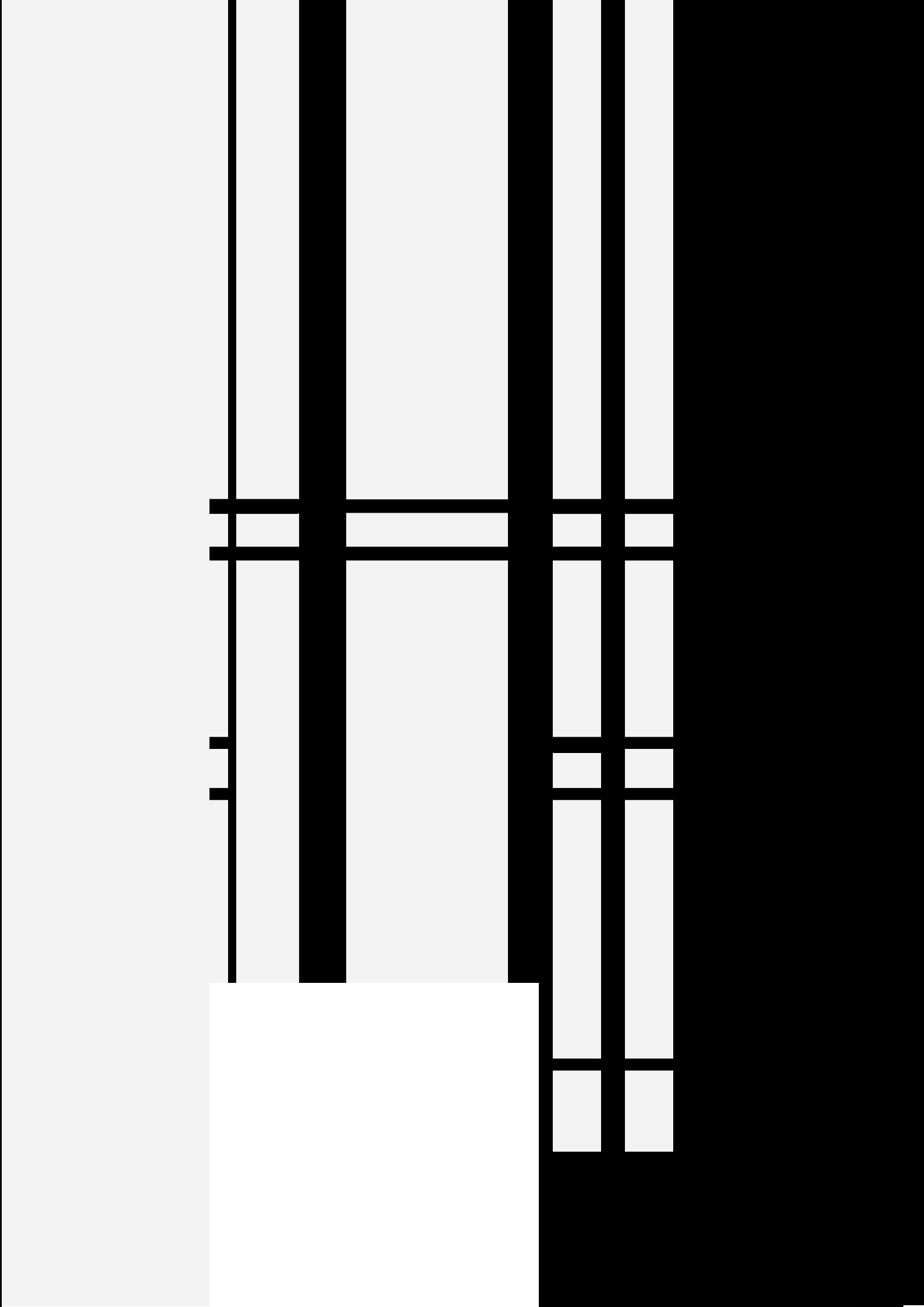
DRIVE CONTROL FEATURES	**TORQUE ACCURACY**	±5%
	FREQUENCY CONTROL RANGE	0~120Hz
	FREQUENCY ACCURACY	Digital Ref: ±0.01% (-10 ℃~+40 ℃)
	FREQUENCY REF RESOLUTION	Digital Ref: 0.01Hz
	OUTPUT FREQ RESOLUTION	0.01Hz
	OVERLOAD CAPACITY	150% rated current 60s; 180% rated current 10s
	STARTING TORQUE	180% rated current 0Hz
	DECELERATION TIME	0.001~600s
	MAIN CONTROL FUNCTIONS	START WITHOUT LOAD COMPENSATION, BATTERY OPERATION, AUTO TUNING, LOAD COMPENSATION, COOLING FAN CONTROL, BASE BLOCK, TORQUE LIMIT, CAN COMMUNICATION REF, ACCELERATION/DECELERATION TIME, S CURVE ACCELERATION/DECELERATION, **MONITOR OF MAIN MACHINE FOR WHICH ELECTRIC CURRENT CAN BE EFFECTIVELY INTERDICT OR NOT WHEN THE CAR STOPS;** INTERNAL BRAKE, PG FREQ DIVIDING OUTPUT, AUTOMATIC FAULT RETRY, AUTOMATIC FAULT RESET,

	SAFETY CIRCUIT FAULT	PROTECT AT SAFETY CIRCUIT OPEN WHEN RUNNING
	BRAKE FAULT	NO BRAKE OPEN FEEDBACK SIGNAL AFTER OUTPUT BRAKE OPEN COMMAND
	LEVELING ZONE SIGNAL FAULT	PROTECT AT LEVELING ZONE SIGNAL FAULT
MAIN PROTECTION FUNCTIONS	**OUTPUT CONTACTOR FAULT**	PROTECT AT OUTPUT CONTACTOR FAULT
	RUNNING TIME PROTECTION	PROTECT AT SINGLE RUNNING TIME EXCEEDS LIMIT
	FLOOR COUNTER FAULT	PROTECT AT FLOOR COUNTER FAULT
	COMMUNICATION INTERFERENCE FAULT	PROTECT AT COMMUNICATION INTERFERENCE FAULT
	HOISTWAY PARAMETER LEARNING FAULT	HOISTWAY PARAMETER LEARNING FAULT PROTECTION
STRUCTURE	**PROTECTION DEGREE**	C:CLOSED IP20; O:OPEN IP00
	COOLING	FORCED AIR COOLING
	INSTALLATION	CABINET EMBEDDED INSTALLATION/HANGING INSTALLATION
	AMBIENT TEMPERATURE	-10 ℃~+40 ℃
USING AMBIENT	**HUMIDITY**	5~95%RH, NO CONDENSATION
	STORAGE TEMPERATURE	-20 ℃~+60 ℃
	APPLICATION SITUATION	INDOOR (NO CORROSIVE GAS, FLAMMABLE GAS, DUST AND DIRECT SUNLIGHT)
	ALTITUDE	BELOW 1000M
	VIBRATION	10~20HZ,<9.8M/S ;20~50HZ, <2M/S

2 BL6-B Series Integrated Controller Main Board Terminals



Usage	Interface Tech Spec			
	Interface Type	Rated Capacity	On/off Time	Max Speed
Input Output	Input: Optical-couple Output: OC	Input: DC 24V 7mA Output: 300mA	Input: 10mS	Input: 100Hz
Input Output	Input: Optical-couple Output: OC	Input: DC 24V 7mA Output: 300mA	Input: 10mS	Input: 100Hz



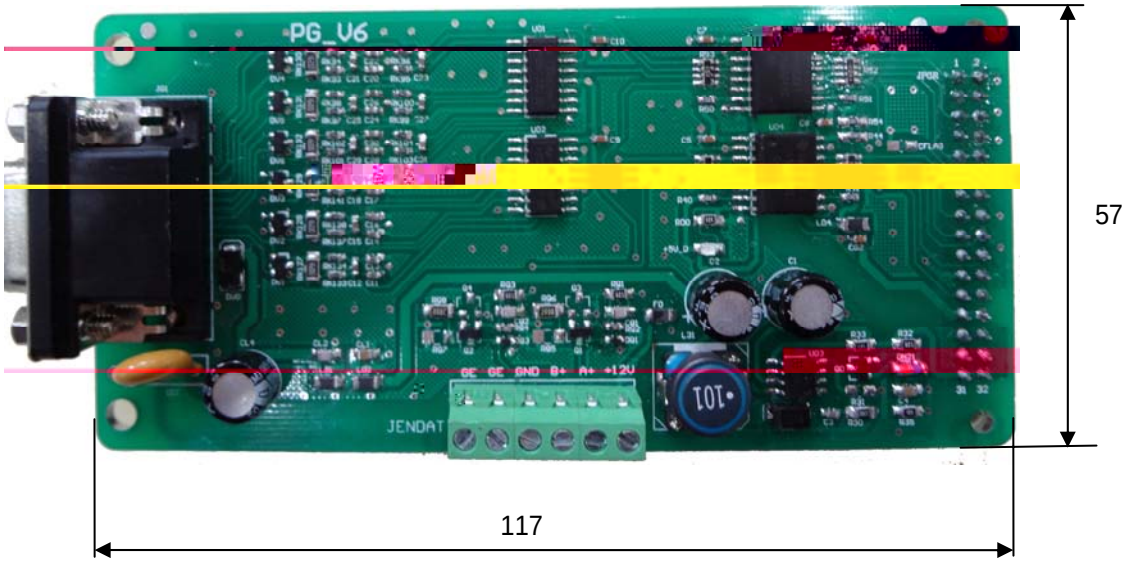
3 PG Card Terminals & Assemblage

Note: With the hardware version upgrade, the corresponding pictures may be changed. Reference to prevail in kind.

3.1 PG_V6

PG_V6 interface card is sync/async machine universal pulse encoder speed feedback and frequency dividing output card.

PG_V6 is in supporting use of 5V line driver output type encoder. Encoder for async machine: A/B and encoder for sync machine: A/B/Z/U/V/W.



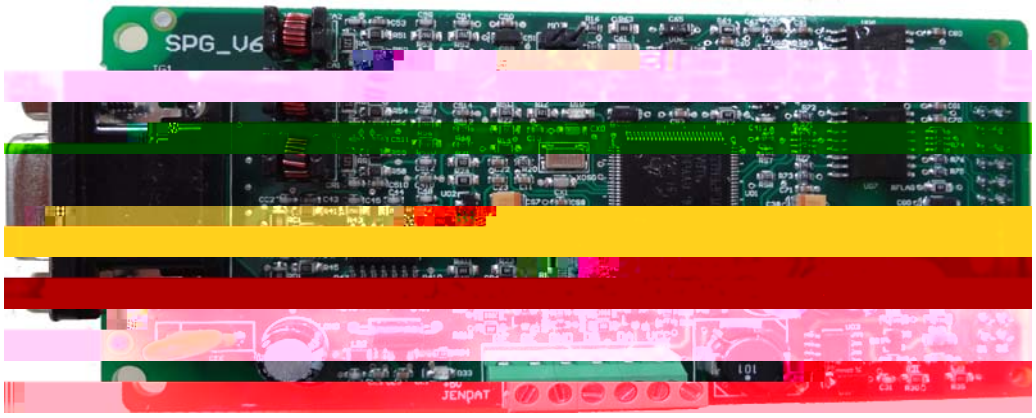
PG-V6 Card Port definition and Function

Port No.	Terminal Symbol	Location	Definition	Usage	Interface Tech Spec			
					Interface Type	Rated Capacity	On/off Time	Max Speed
JENDATA short for JEN	+12V	JEN-1	OC/Push-pull type power	12V power	Power output	+150Ma/12V±5%		
	A+	JEN-2	Freq dividing signal OC output A	Sync freq dividing	OC/Push pull output	±50Ma		500KHz
	B+	JEN-3	Freq dividing signal OC output B	Sync freq dividing	OC/Push pull output	±50Ma		500KHz
	0V	JEN-4	Power ground	Power ground	Power ground	—		
	GE	JEN-5	Shield ground	Shield ground		—		
	GE	JEN-6	Shield ground	Shield ground		—		
JG1	+5V	JG1-1	+5V	5V Power	Power output	+400Ma/5V±5%		
	U+	JG1-2	U+	differential signal U+	differential input	±20Ma/3.1-5V		500KHz
	Z+	JG1-3	Z+	differential signal Z+	differential input	±20Ma/3.1-5V		500KHz

	B+	JG1-4	B+	differential signal B+	differential input	±20Ma/3.1-5V		500KHz
	A+	JG1-5	A+	differential signal A+	differential input	±20Ma/3.1-5V		500KHz
	GND	JG1-6	GND	5V ground	Power ground	—		
	U-	JG1-7	U-	differential signal U-	differential input	±20Ma/3.1-5V		500KHz
	Z-	JG1-8	Z--	differential signal Z-	differential input	±20Ma/3.1-5V		500KHz

	+12V	JEN-4	OC/Push-pull type power	12V Power supply	Power output	+150Ma/12V±5%		
		JEN-5						
	+12V	JEN-6	OC/Push-pull type power	12V Power supply	Power output	+150Ma/12V±5%		
	A+	JEN-7	Freq dividing signal OC output A	Sync freq dividing	OC/Push pull output	±50Ma		500KHz
	B+	JEN-8	Freq dividing signal OC output B	Sync freq dividing	OC/Push pull output	±50Ma		500KHz
	0V	JEN-9	Power ground	Power ground	Power ground	Í		
	GE	JEN-10	Shield ground	Shield ground		Í		

3.3 SPG_V6



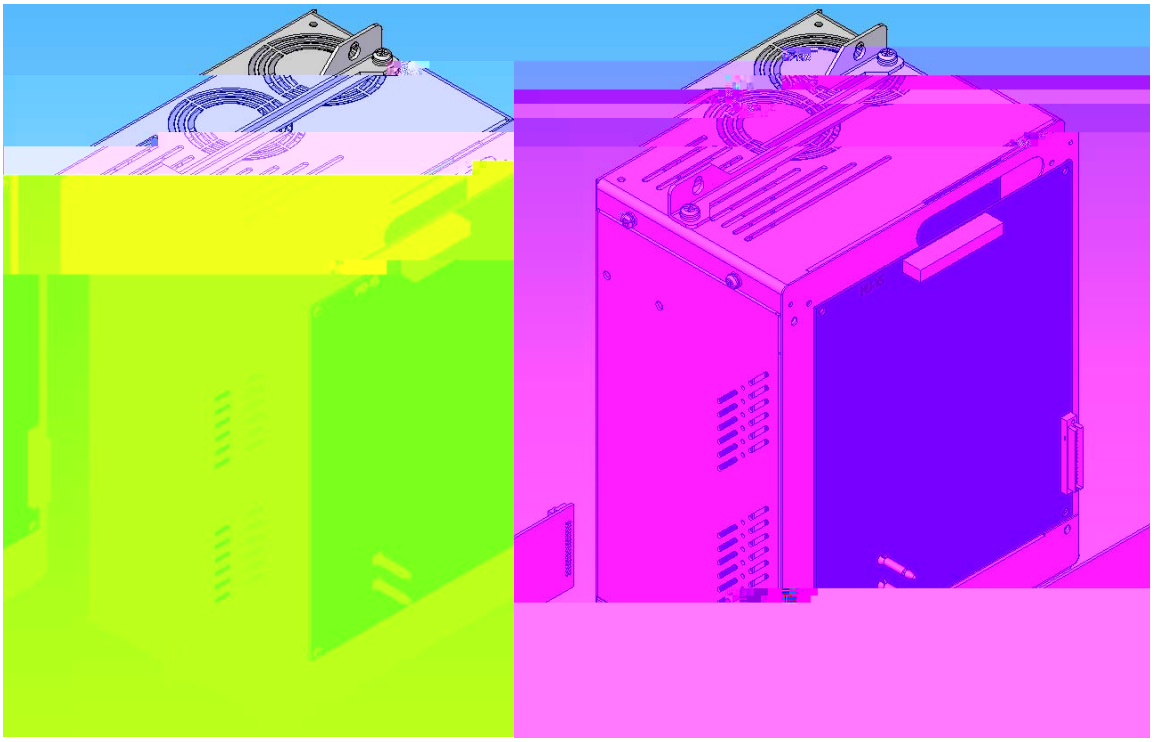
SPG_V6 Interface card Port definition and Function

Port No.	Terminal Symbol	Location	Definition	Usage	Interface Tech Spec			
					Interface Type	Rated Capacity	On/off Time	Max Speed
JENDAT short for JEN	+12V	JEN-1	OC/Push-pull type power	12V Power supply	Power output	+150mA/12V±5%		
	A+	JEN-2	Freq dividing signal OC output A	Sync freq dividing	OC/Push pull output	±50mA		500KHz
	B+	JEN-3	Freq dividing signal OC output B	Sync freq dividing	OC/Push pull output	±50mA		500KHz
	0V	JEN-4	Power ground	Power ground	Power ground	Í		
	GE	JEN-5	Shield ground	Shield ground		Í		
	GE	JEN-6	Shield ground	Shield ground				

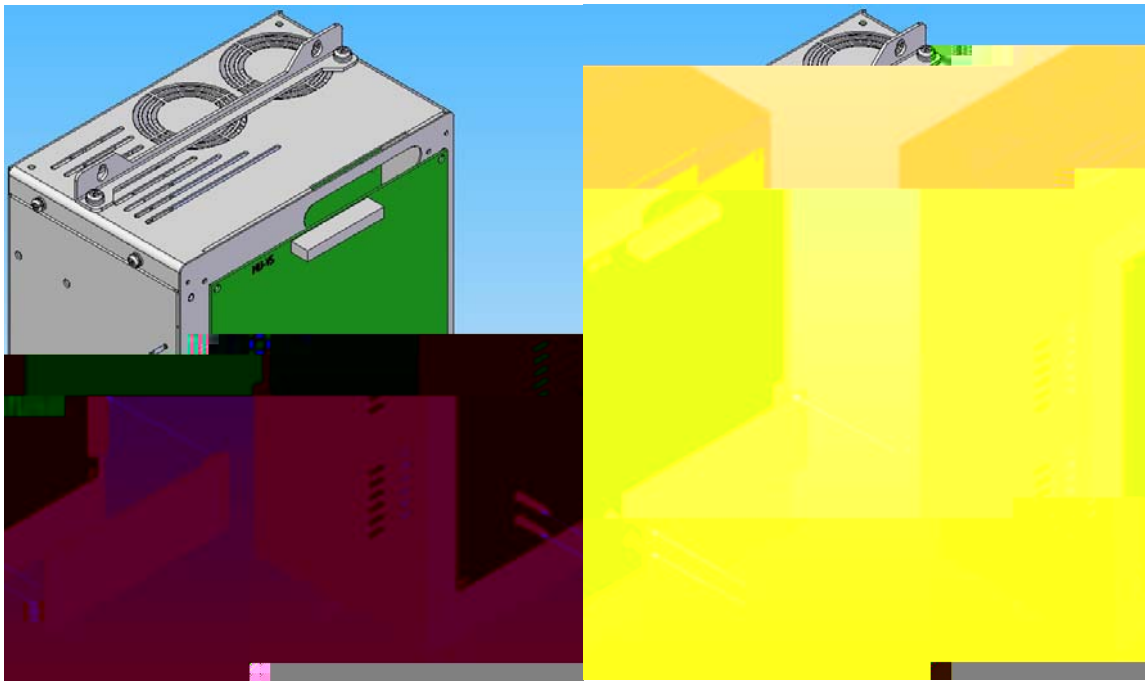
	R-	JG1-4	R-	differential signal R-	differential input			40KHz
	A+	JG1-5	A+	differential signal A+	differential input			40KHz

3.4 BL-U Series Integrated Controller PG Card Assemblage

Take out the chassis and PG card from Packing;



Align PG card and sustain pillar and right socket, as the graphic.



4 Parameter Need to set before Inspection Run

Note' Parameters must be saved after setting operation, otherwise the original value will be saved after power off.

Parameter List			Setup Method	
	Parameter No.	Name	Use BL Sync-machine	Use Non-BL Sync-machine
Automatic Generate	F5-00	Motor Type	In blue-light machine input, these parameters can generate automatically, see instructions below for detail.	0:Sync machine˘ 1: async machine. Fill in according to actual situation.
	F5-01	Poles		Follow motor nameplate
	F5-02	Sync Frequency		Follow motor nameplate
	F5-03	Rated Power		Follow motor nameplate
	F5-04	Rated Speed		Follow motor nameplate
	F5-08	Motor rated current		Follow motor nameplate
	F8-00	Encoder PPR		Base on site condition
	F8-02	PG card Type		PG card type (0: Incremental encoder, 1: Sine/Cosine encoder)
Manual Input based on Site Condition	F1-00	Car Speed	Base on site condition	
	F1-01	Motor Speed	Motor speed at elevator rated speed (calculated)	
	F5-09	No-Load Current	Only for asynchronous machine; no need to set synchronous machine. Normally set for 25%-40% of rated current.	
	F5-10	Rated Slip	Only for asynchronous machine; No need to set synchronous machine .Setting according to actual situation. Calculation method: Rated Slip = rated frequency -(rated speed * poles/60).e.g.: The motor rated slip is50-ˆ 1440*2/60˜ =2Hz.,when motor frequency is 50Hz, rated speed is 1440rmp, and motor type is four-pole motor.	
	F6-03	DirSel (direction select)	Select according to the motor installation direction in actual situation, Select motor running direction (0/1' Motor rotates anti- clockwise, car move down/up).	
	F9-11	Load Comp Enable	Load Compensation: 1 enable; 0 Unable. If use incremental encoder set this to 1; If use 1387 encoder at no-weighing mode, set this to 0.	

When using Blue-Light Integrated Controller, if the traction machine is also made by Blue-Light,

Motor parameters automatically generated:

Enter the "BL Machine Input" interface as shown below from the main menu. Press [LEFT] or [RIGHT] key to move the cursor left or right cyclically. Press [UP] or [DOWN] key to set the content of the pointed area. The input content has three parts, separated by ".". The first part is the model

5 Motor Initial Angle Tuning (Only for Synchronous Machine)

For machines without attached steel rope and no load, please follow section 1 " **Motor Initial Angle Tuning with no load**". For machines attached with steel rope and have load, please follow section 2 "**Motor Initial Angle Tuning with loa**d".

(The two angle tuning modes can achieve the same effort. Please choose one of them according to the actual situation.)

5.1 Motor Initial Angle Tuning with no load

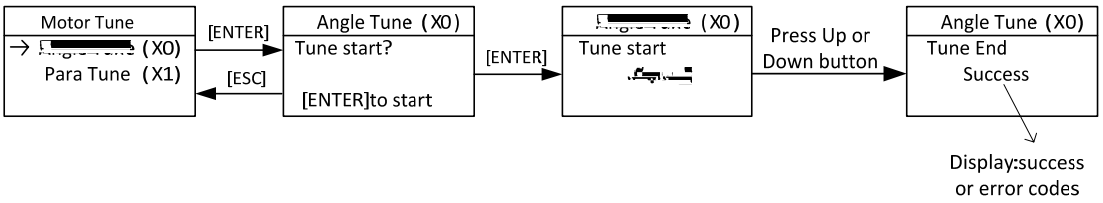
Please set PG type F8-02 correctly, set AutoTuneModeSel FC-13 to 0 before perform Motor initial tuning with no load (Do not attach steel ropes).Procedures required before tuning:

1) Ensure synchronous motor (traction machine) has no load (DO NOT attach steel ropes);

2) Connect running contactor output Y1 (J1-4) and COM1 (J1-5) to make it close;

3) Connect brake contactor output Y0(J1-3) and COM3 (J1-5) to release the brake;

Perform motor initial angle tuning with digital operator based on following procedures shown below:



Motor initial tuning with no load (Do not attach steel ropes) sketch

Note: Rotation angle tuning no longer distinguish encoder type.

After pressing "Enter", tuning starts. First, motor rotates to a firm position, then it rotates forward˙ facing to driving shaft, anticlockwise rotation is forward direction˜ in a constant speed, rotation speed and time depends on the pole number and initial position, it stops after maximum one round rotation, then it rotates to one position and remains for 2 seconds again, motor stops and indicates success. The whole tuning procedure lasts less than 20 seconds.

Motor Initial Angle Rotation Tuning Fault List (without load)

Error Code	Definition	Possible Causes	Possible Solution
RF228	ESC input	ESC input valid at tuning	Try tuning again.
RF229	Zero speed waiting timeout	1. Motor with load; 2. Encoder interference.	1. Make sure motor has no load; 2. Eliminate encoder interference;
RF230	Current detection error	1. Load side open/phase lost; 2. Motor three-phase unbalanced; 3. Incorrect rated current.	1. Make sure motor three-phase connection correct; 2. Make sure motor parameter input correct.

Motor Initial Angle Rotation Tuning Fault List (without load)(cont'd)

Note1: The description above just for Sine/Cosine Encoder;
Note2: For Incremental Encoder, RF231 corresponding to encoder UVW signals, RF234 corresponding to encoder Z signal; solution in the same way; the other faults completely consistent.

5.2 Motor Initial Angle Tuning with load

For this tuning method, tuning can be carried out with steel rope attached, but please make

After pressing "Enter", tuning starts. When digital operator indicates "waiting" , press slow up or down button , contactor KDY closes, motor will vibrate a little and give a noise, the duration depends on motor rated power and rated current, but no longer than 5 seconds, this is static tuning period.(Motor keep still in this procedure.);(Make sure slow up or down button is pressed constantly, DO NOT release the button during this period.)Motor will then start and run in inspection speed, slow up or down, until digital operator indicates success, this is a test running period. Finally, release the slow up or down button and finish the tuning procedure.

5.2.2 Motor Initial Angle Tuning With digital tubes and operation keys on the upper left of main board

Prefer to contents of appendix VII.

5.2.3 Please note the following items at Motor initial Angle tuning with load (attach steel ropes):

1) **To ensure safety, during tuning process, people are not allowed to stay in car/hoistway.**
2) Press slow up or down button can base on the current cabin position;
3) The whole tuning procedures can be divided into two steps: static tuning and motor test run, make sure there is no gap between two steps. If no fault happens, before digital operator indicates success, press the slow up or down button constantly (**Except fault or error exists!**);
4) If car running direction is opposite to inspection run button, correct this through F6-03.0:traction sheaves counterclockwise rotation & car run down;1:traction sheaves clockwise rotation & car run up(facing to traction sheaves).Set according to actual situation.

Motor initial Angle tuning with load (attach steel ropes) error code:

Error Code	Definition	Possible Causes	Possible Solution
RF228	ESC input	ESC input valid/Enable-break in auto tuning	Retry auto tuning
RF229	Waiting of zero speed over time error	1. Motor brake is not close; 2. Encoder interference.	1. Make sure motor brake is close; 2. Eliminate encoder interference.
RF230	Current detection error	1.Open circuit/phase lost in load side 2. Motor three-phase unbalance / rated current setting error	1. Make sure motor three-phase wiring correct; 2. Make sure motor parameter filled correct.
RF231	Encoder CD signal error	1. Encoder CD signal analysis error; 2. Motor/encoder parameter input error.	1. Check the encoder CD signal wiring; 2. Eliminate encoder signal interference; 3. Check motor/encoder parameter input.
RF237	Motor is not held still	1. Encoder connection is incorrect; 2. Motor brake is not close.	1. Check the encoder A,B signal wiring; 2. Eliminate encoder signal interference; 3. Make sure the motor brake is close.

RF238	Detection current is too small	1. Motor parameter input error; 2. Motor/Controller connection is incorrect.	1. Check motor parameter; 2. Make sure the motor is connected with controller correctly.
RF239	Encoder R signal error	1. No detection of R pulse after running 10 s; 2. Interference exist in R pulse; 3. AB signal wiring is incorrect.	1. Make sure motor operating normally; 2. Check the encoder R & A,B signal wiring; 3. Eliminate encoder signal interference;
RF252	Speed over deviation in stationary auto tuning	Motor needs to rotate 3 circles after locating initial position in stationary auto tuning. While rotating, if there is motor given speed, but no feedback speed, and the last time of keeping this status exceeds the protect-time, it will prompt error. It is speed over deviation in stationary auto tuning, differ from DF8.	1. Check encoder feedback signal; 2. Check power cable phase order.

Note1: The description above just for Sine/Cosine Encoder;

Note2: For Incremental Encoder,RF231 corresponding to encoder UVW signals,RF234 & RF239 corresponding to encoder Z signal; Solution in the same way; The other faults completely consistent.

6 Asynchronous Motor Adjustment

Asynchronous motor do not need angle tuning. But compared with synchronous motor, NO-Load Current (F5-9) and Rated Slip (F5-10) should be adjusted. The parameters and information below should be confirmed as well (parameters below are different with synchronous motor).

6.1 Motor Parameters Confirmation

Para No.	Display (In Chinese) Display (In English)	Content	Range	Parameter setting requirements
F5-00	صر Motor Type	Set motor type 0:sync- outer rotor, 1:async machine, 2:sync-inner rotor	0~2	1
F5-01	 Poles	Motor poles (Nameplate)	1~99	Fill in according to actual motor parameters
F5-02	لہ	Motor synchronous frequency (Nameplate)	0.001~50	Fill in according to actual motor parameters

F5-10	Rated Slip	For asynchronous machine rated slip. (Nameplate)	0.1~10	Rated Slip=rated freq-(Rated Speed× pole pairs/60) If rated Slip is set too small, motor speed could not keep pace during acceleration--OE fault. If set too large, motor could not keep pace with acceleration Ref in steady period or indicate overcurrent fault.

6.4 Elevator System Confirmation

6.4.1 Time Setup Parameters

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Chang	Ref Page
F2-00	开闸时间 / Brake ON Time	After system output open brake (Y7), brake contactor and brake arm feedback (if set F1-31 to 1), wait brake ON time (F2-00), then give running speed. Brake ON Time (F2-00) has two functions: 1. Brake open fully in this waiting time to avoid running speed exists when brake open. 2. Tractor may turn under the action of load after open brake. Let tractor sheave stable at zero speed and then start speed to get a better start comfort. According to brake situation, Brake ON Time should be set to 0.8~1.5s /0.3~0.5 in sync control/async control. When start closing brake, brake cannot hold traction sheave immediately due to free wheeling and demagnetization. Keep output	0.00 ~ 9.99	0.50	s	Y	6-4

F2-01

F2-02	g	Brake is not close at zero speed when stops at inspection running .Brake close immediately with running speed exists after canceling jog up/down input. Keeping torque output time is too long in an asynchronous traction machine control situation will cause drive output overcurrent protection. Appropriately reduce this parameter value can avoid it. Insp Brake Time should be set to 0.8~1.5s /0.1~03 in sync control/async control.	0.00 ~ 9.99	0.05	s	Y	6-4

7 Inspection Running

7.1 Things to check before inspection running:

1) Safety circuit/door interlock circuit are normal, **DO NOT short door interlock**!

2) After power on, **KJT** emergency stop contactor in control cabinet, **KMB** door interlock contactor, **KMC power** contactor are closed, check if the controller is normal and parameter setting is correct, in LCD indicator, elevator state is "**INSP".**

3) **Connect the brake to control cabinet properly.**

7.2 Inspection running

When the conditions for inspection running in machine room are satisfied, press the Jog Up/Down button on the control cabinet, elevator will run up/down in set inspection speed. If car running direction is opposite to inspection run button, correct this through F6-03. 0: traction sheaves counterclockwise rotation & car run down; 1: traction sheaves clockwise rotation & car run up. Set according to actual situation.

8 Hoistway Parameter Learning

Parameters need to set before hoistway parameter learning'

Para No.	Name	Setup Method
F0-00	Total Floor	Set floor number based on actual site condition.
F9-03	Speed Deviation Set	Normally set 5 for synchronous machine, set 20 for asynchronous machine.

8.1 Perform Hoistway Parameter Learning with Digital Operator

Hoistway parameter self-learning means elevator runs at a self-learning speed and measures every floor height and record the position of every switch in the hoistway. As the floor position is the foundation for elevator normal running, braking and floor display. Therefore, before normal running, **hoistway parameter self-learning must be performed. Before hoistway parameter self-learning, inspection running in full trip must be performed too; elevator must be able to run normally from bottom limit to top limit.**

Hoistway parameter self-learning procedure is as follows:

1) **Make sure elevator meets the conditions for safety running !**

2) Make sure all the switches in hoistway are installed and connected correctly, traveling cable and hoistway cable are connected correctly, and finish setting the HOP/display address;

3) Elevator in inspection mode, jog elevator down to the down limit (down limit is valid);

4) Enter elevator hoistway self-learning menu through digital operator, follow the learning procedures shown below in Figure 8.1.

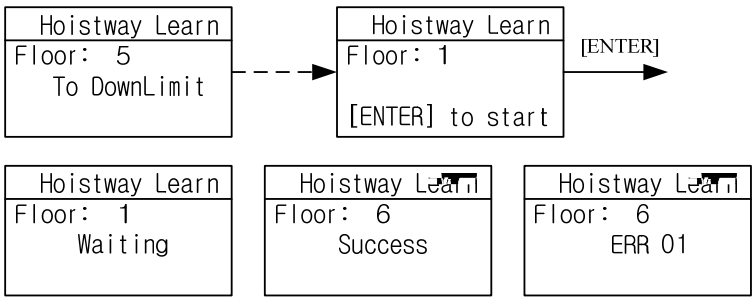


Figure 8.1 Hoistway Parameter Self-Learning Procedures

6) In self-learning process, if control system detects any abnormal phenomenon, self-learning will be terminated and give fault code, please refer to troubleshooting table in chapter 8, find out the reason and solve it accordingly, then start hoistway parameter self-learning again.

Note: When self-learning process stops, only when LCD indicator shows “success” on digital operator, self-learning is completed successfully.

After hoistway parameter self-learning is completed successfully, **normal speed running** can be carried out. Procedure as follows:

1) Switch elevator to attendant mode (Manual).

2) In floor selection parameter D0 through digital operator, target floor can be set (details refer to chapter **4.5 Commissioning Parameters Setup**). Then it is possible to perform single floor traveling, double floor traveling, multi-floor traveling and full trip traveling test. Through D1 parameter interface, input door open / close instruction to control the door.

3) Make sure elevator can start, accelerate, decelerate, leveling normally in normal speed.

If running is abnormal, please check for parameters setting.

8.2 Perform Hoistway Parameter Learning with Digital Tubes & Operation Keys

Prefer to contents of Appendix VII.

8.3 Hoistway Parameter Learning Fault Diagnosis

Error Code	Definition	Possible Solution
LER=0	System running error	Press "ESC" to exit learning, check fault record shown in table 8.1
LER=1	Pulse input phase reverse	Exchange phase A and phase B in encoder.
	epeat.	Bottom terminal 1 switch installation error, causing multiple terminal switch input or bottom terminal 1 switch signal shake. Check related switches.
LER=3	Bottom terminal 1 switch signal lost (elevator >2.0m/s)	Bottom terminal 2 switch enable before bottom terminal 1 switch or bottom terminal 1 switch signal lost. Check related switches.

LER=9	Bottom terminal 1 switch signal lost	Top terminal 1 switch enable before bottom terminal 1 switch or bottom terminal 1 switch signal lost.
LER=10	Top terminal 1 switch signal repeat	Top terminal 1 switch installation error, causing multiple terminal switch input or top terminal 1 switch signal shake. Check related switches.
LER=11	Top terminal 1 switch signal lost	Top limit switch enable before top terminal 1 switch or top terminal 1 switch signal lost.
LER=12	Total floor setting error	Check total floor number match actual floor number. Check leveling inductor plates on every floor.
LER=14	Two leveling inductors cannot trigger together	Leveling inductor plate on this floor cannot cover both inductors or misses one leveling inductors.
LER=15	Press "ESC" in the middle of hoistway parameter learning process.	Cancel the learning by pressing "ESC".
LER=17	Up/Down leveling switch enable at same time	Wiring of two switches is parallel connection by mistake, or bottom limit switch is installed close to 1st floor leveling position.
LER=18	Hoistway data saving error	Please contact supplier at once.
LER=19	Both leveling switch signal enable together when arrive at top limit switch.	Move up top limit switch.
LER=20	Bottom limit switch too high	Lower the bottom limit switch.
LER=21	When elevator reaches top limit switch, bottom terminal 1/2 switch is valid.	Check the switches position and their wirings.
LER=22	When elevator start from bottom limit switch, top terminal 1/2 switch is valid.	Check the switches position and their wirings.

Note: System has 2 top and 2 bottom terminal switches for elevator speed >2.0m/s

9 Start-up comfort level adjustment

9.1 Comfort level adjustment with weighing device

There are 3 weighing devices available for BL series integrated controller: 1. Blue-light CAN BUS weighing device; 2. -10V to 10V simulated signal output weighing device; 3. 0-10V simulated signal output weighing device.

Parameter F9-13 can be used to choose the weighing device.

Before adjust elevator start-up comfort level with weighing device, **make sure the weighing device is tuned and it can respond the correct cabin load situation.**

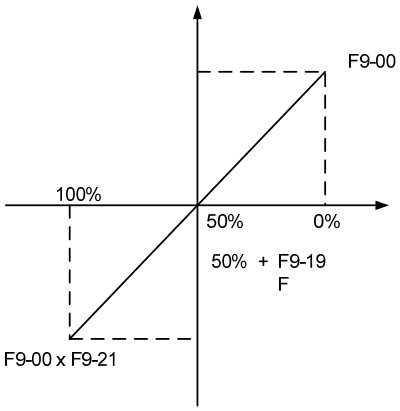
Adjustment method:

1) With cabin no-load, adjust F9-00 till car does not slip at empty load condition: When car has no load and brake open, if counter-weight goes down, then increase F9-00. Otherwise if car goes down then decrease F9-00. Normally F9-00 is set between 45% and 70%.

2) Adjust F9-19 & F9-20: When elevator balance coordinator is 45%, if F6-03=0, then set F9-19 & F9-20 to -(50-45)=-5. If F6-03=1, then set F9-19 & F9-20 to (50-45) = 5.

3) After empty load adjustment, if full load condition is different, then adjust F9-21: When car has full load and brake open, if counter-weight goes down, then decrease F9-21. Otherwise if car goes down then increase F9-21.

The block diagram of weighing is shown below:



2) Adjustment method for elevator starting without load compensation:

a) Principles: As can be seen in figure below, when brake open, based on the position feedback from Sine/Cosine PG card, system can calculates the necessary torque required for motor to remain the steady position under current load, and it gives corresponded torque at once to minimize the traction sheave movement and to achieve comfortable start.

value of F2-00 (brake opening time before running) must be 100ms longer than the value of FA-09, so that this action can finish before speed curve start.

FA-08 and FA-11: Two gain parameters for the starting without load compensation action, these two parameters can be adjusted according to the elevator slipping condition and comfort level, if the slipping is too much please increase the value of FA-08; if the traction machine gets vibration, please reduce this value; during the period of torque keeping, if there is slight slipping or small back-and-forth movement on traction sheave, please increase the value of FA-11, if there is vibration, please reduce this value.

(The period of torque keeping means keep zero-speed period before speed curve start, after release brake.)

Note:

1) During commissioning, besides the mentioned 3 parameters, other parameters in FA group can be kept with factory setting.

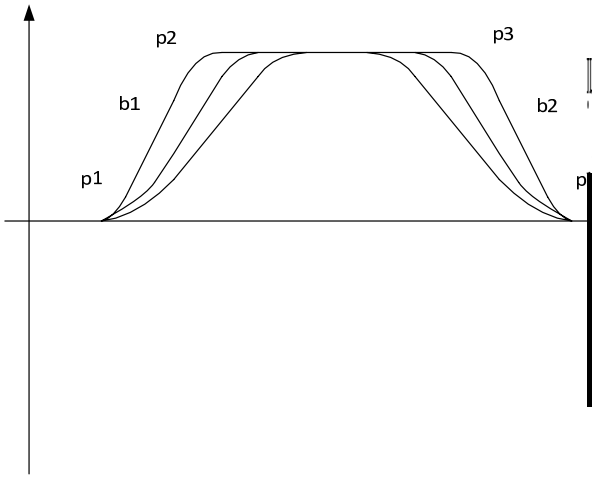
2) The setting value of above parameters is just for reference, as the PG card is not same in different job side; please adjust above parameters based on site condition.

3) F9-00 is the pre-set torque when the starting without load compensation function is enabled. Generally there is no need to change its value, please keep it with factory setting (0).

10 Elevator normal speed comfort level adjustment

Adjustments for Start/Brake Speed curve.

Elevator running speed curve is shown below.



11 Leveling Precision Adjustment

Leveling precision adjustment should be performed after comfort level adjustment is satisfied.

11.1 Basic Conditions for Elevator Leveling

1) Make sure the leveling switches and leveling inductor plates are installed in the right position.

2) Leveling inductor plates' length on every floor must be same.

3) Leveling inductor plates must be installed vertically.

4) The position of leveling inductor plates should be precise. When elevator is at the leveling position, the center of the plate and center of two inductors should match together (refer to appendix III), otherwise elevator leveling will have deflection, which means in up or down running, elevator stops higher or lower than leveling position.

5) If magnetic inductors are adopted, please make sure the inductor plates inserting to the inductor sufficiently, otherwise it will influence the reaction time of inductor, in that way elevator will overruns the leveling position.

6) To ensure precise leveling, system require elevator to crawl for a certain distance before stop.

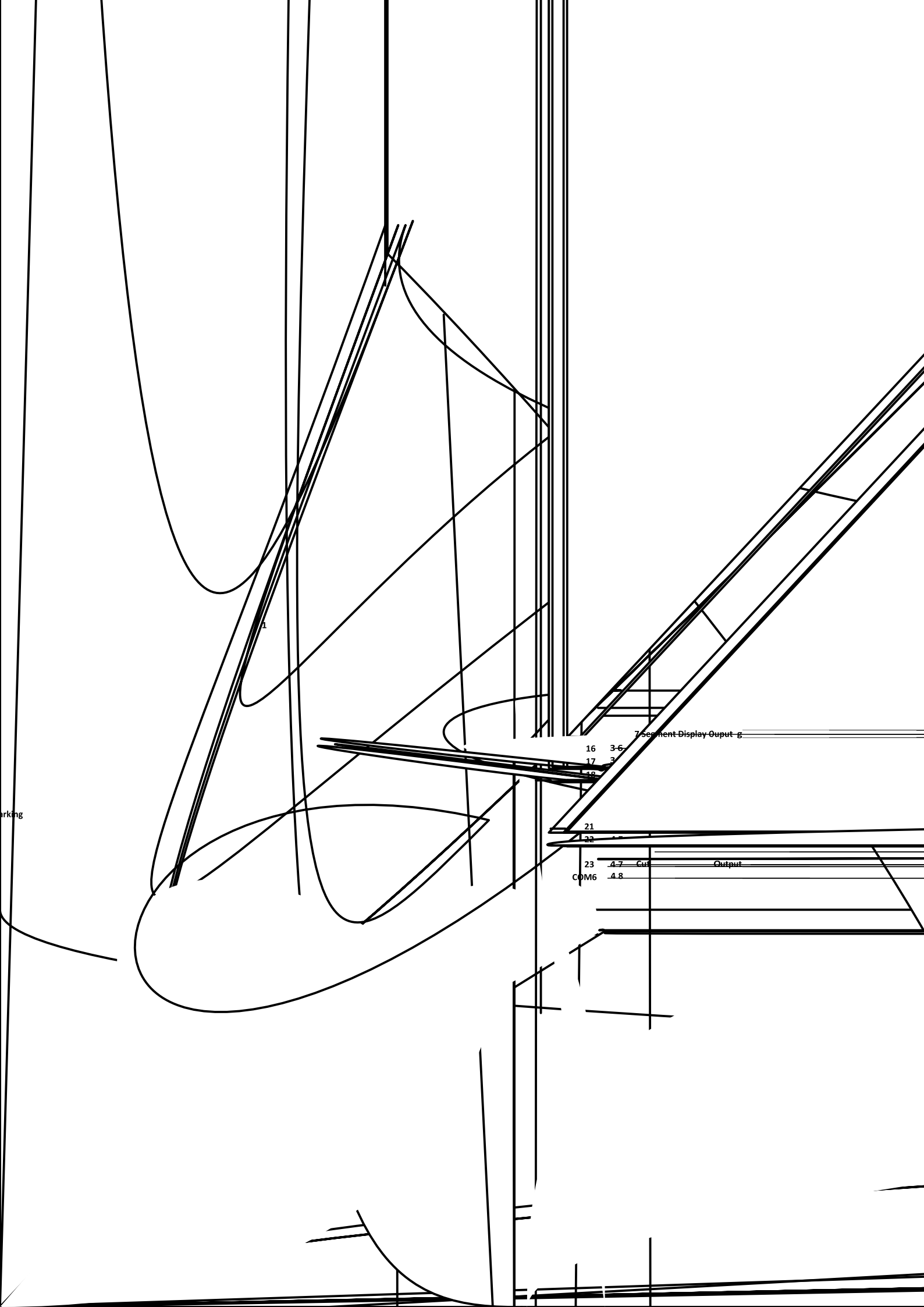
7) In practice, first make adjustment for a middle floor, until leveling is precise. Then, adjust the other floors on the base of these parameters.

After adjusting curve selection, ratio and integral gain in the above context, please make sure every time elevator runs up or down, when stop at middle floor, its leveling positions are the same(or deflection ≤±2~3mm every time).

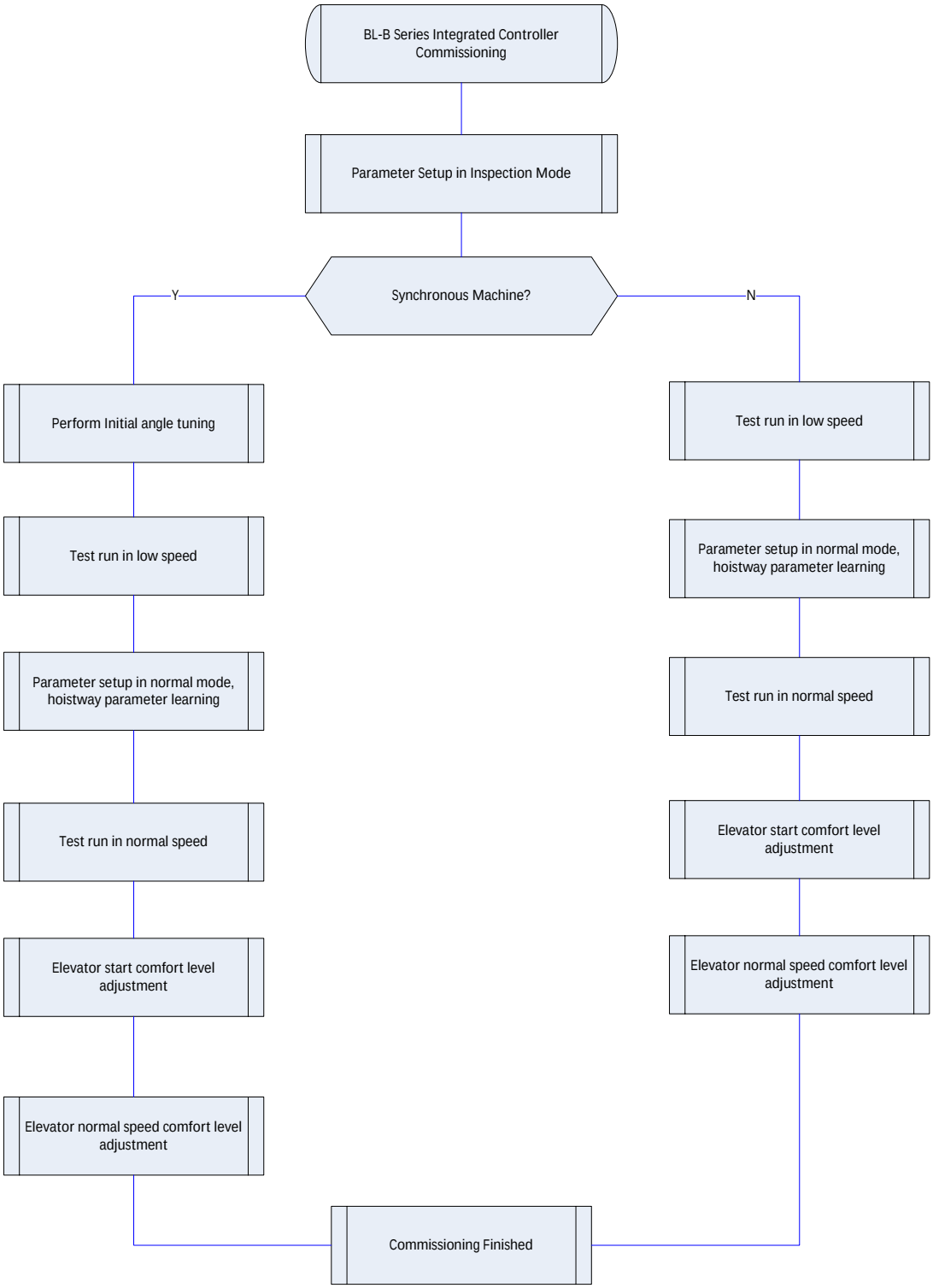
11.2 Leveling Parameter Adjustment

If elevator still cannot achieve desired leveling condition with adjustment based on instructions in section 1 of this chapter, further adjustments can be done by parameters. After elevator stops in normal running, if running speed curve has no problem (for example, no sudden stop or overrun beyond leveling zone), if elevator overruns the leveling position (it stops higher in up-running, lower in down-running), please decrease leveling adjustment parameter F1-17` default: 50~ . if elevator cannot reach the leveling position(it stops lower in up running, higher in down running), increase leveling adjustment parameter F1-17, generally the range of this parameter is 40~60, if the adjustment is too big, please adjust driving parameter PI, or the shape of speed curve (F1-10~F1-15).

Warning' If the leveling precision of a majority of floors are no good, you should firstly adjust leveling parameter to make most of them leveled, and then adjust the flag of specific ones.


1
7 Segment Display Ouput g
16 3 6
17 3
21
22
23 4 7 Cut Output
COM6 4 8
arking

Appendix I BL-B Series Integrated Controller Test Commissioning

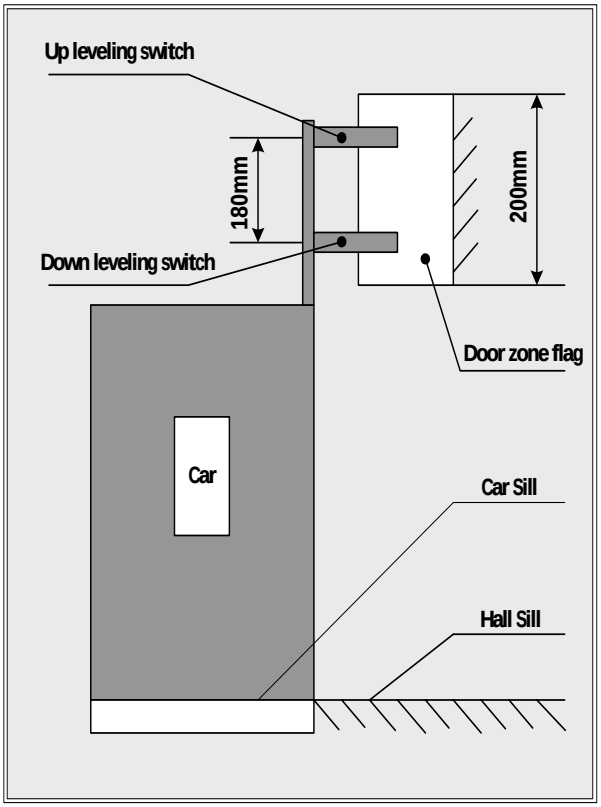


Appendix II BL-U Series Integrated Controller Operator Menu

Menu → MonitorPara

Appendix III Leveling Switches & Flag Installation

For elevator leveling control, two leveling switches (up/down leveling switches) and some door zone flags (one in each floor) are required. Two leveling switches are installed on top of car, door zone flag is installed in hoistway, their dimensions and positions are illustrated in figure below. Leveling switches can be optical or magnetic.



Door zone flag & Leveling Switch Position

Door zone flag adjustment:

1. Elevator stop at each floor, measure car and hall sills difference Ë S on each level at elevator park (car sills higher is position, lower is negative).
2. Adjust door zone flag on each floor, if Ë S>0, flag on this floor should move down Ë S; move flag up Ë S ,if Ë S<0.
3. Elevator need to redo the hoistway parameter learning after door zone flag adjustment.
4. Check elevator leveling on each floor, and redo part 1-3 if necessary.

Appendix IV Parameters

U0 Monitoring Parameters

Para No.	Display (In Chinese) / Display (In English)	Content	Unit	Ref Page
U0-00	Ю Æ 2 / Lower Limit	The location of bottom limit in hoistway. Data will be recorded after finishing hoistway learning	m	--
U0-01	Э Æ 2 / Upper Limit	The location of top limit in hoistway. Data will be recorded after finishing hoistway learning Â	m	--
U0-02	Ю 1 2 / Lower Slowdown 1	Location of bottom terminal switch 1 in hoistway. Data will be recorded after finishing hoistway learning	m	--
[redacted]	2 2	Location of bottom terminal switch 2 in hoistway. Data will be recorded after finishing hoistway [redacted]ing	m	--
U0-04	Э 1 2	Location of top terminal switch 1 in hoistway. Data will be recorded after finishing hoistway learning	m	--

U1~U5 Monitoring Parameters (Con't)

Para No.	Display (In Chinese)	Content	Unit	Ref Page

U6 Drive Monitoring Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Unit
U6-00	Power	Rated power class	kW
U6-01	Ref Speed	Reference Speed	RPM
U6-02	Feedback Speed	Feedback Speed	RPM
U6-03	Load	The current load in % of full load	%
U6-04	DC Voltage	DC BUS voltage	V
U6-05	Output Current	Output Current	A
U6-06	Temperature	Drive internal temperature	℃
U6-07	Output Torque	Output Torque	N·M

Building Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Change
F0-00	Total Floor	Total floor number (same as door zone plate number)	2~64	6	--	N
F0-01	Homing Floor	Without landing/car call elevator will return this floor.	1~ Total Floor	1	--	N
F0-02	Fire Floor	At fire-linkage circuit close, elevator enter fire mode and return to this floor automatically.	1~ Total Floor	1	--	N
F0-03	Parking Floor	When close electric lock in the process of running, elevator return to this floor and stop.	1~ Total Floor	1	--	N
F0-04	Show Select	Set the output display style: 1: 7-segment Code 2:BCD Code 3: Gray Code 4:Point-to-point 5: Binary	1~5	1	--	N
F0-05 ... F0-68	1~64 Set Indication 1~64	Set indication 1-64, customized character/ figure display available	---	1 ... 64	--	N

Running Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Change
F1-00	Car Speed	Elevator speed at motor rated speed. Calculate through motor rated rev, traction ratio, deceleration ratio and traction sheave diameter.	0~4.0	1.6	m/s	N
F1-01	Motor Speed	Motor speed at elevator rated speed (Calculated)	1~9999	1450	RPM	N
F1-03	Insp Speed	Car running speed at inspection cannot exceed 0.6m/s based on relevant standards and regulations	0~0.6	0.3	m/s	Y
F1-04	Start Speed	For large resistance at motor start, the starting speed can have smooth increase. The start smooth speed is invalid if set to "0".	0~0.2	0.00	m/s	Y
F1-05		When elevator park outside door zone				

Running Setup Parameters List (Cont'd)

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Change
F1-16	ḣ / Zero Speed	Motor speed less than set value, system considers elevator speed as zero and generates brake signal.	0~10	1	RPM	Y
F1-17	/ Leveling Adj	Adjust differences of up/ down leveling	0~100	50	mm	N
F1-18	/ Load Adj	Normally used in synchronous machine system, compensate elevator load based on steel rope weight difference on each floor.	0~20	0	--	Y
F1-21	╟ / Drive Mode	Selection of driving mode ,when setting "1", attendant/VIP mode close door manually; when setting "3", elevator automatically do test run ,other value is invalid.	0~9	0	--	N
F1-22	/ Two Door Mode	Setup rear door mode, based on customer requirements, set from mode"0" to"5".	0~5	0	--	N
F1-23	/ Fire Mode	Three Fire modes: 1.Mode"0": Elevator run fire-mode after returning to fire floor; 2.Mode "1": Elevator stop running after returning to fire floor; 3. Mode "2": After elevator return to fire floor, depend on fire switch to run/stop in fire mode.	0~2	0	--	N
F1-24	/ſ / Parallel No.	Set "YES" in duplex enable. Set elevator number 0-1 in duplex; 0-7 in group control.	0~7	0	--	N
F1-25	G / Twins Control	Elevator duplex control: 1: On 0:OFF	0/1	0	--	Y
F1-26	G / Group Control	Elevator group control: 1:ON 0:OFF	0/1	0	--	Y
F1-27	G / Far Monitor	Remote Monitoring System: 1' On 0' Off	0/1	0	--	Y
F1-28	╟ ˜Ω G / Auto Parking	Auto parking: 1:ON 0:OFF	0/1	0	--	Y
F1-29	G / Load Enable	Load Weighing: 1:ON 0: OFF	0/1	0	--	Y
F1-30	G / Open Delay Able	Door open/close delay: 1:ON 0:OFF	0/1	0	--	Y
F1-31	√ G / Brake Feedback	Test brake feedback signal: 1: open 2: close	0/1	0	--	Y
F1-32	/ Rerun Password	Password to release elevator stop.	0~9999	0	--	N

Time Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Change
F2-00	ɲʎ / Brake ON Time	Brake open first then run elevator speed curve. This is to improve the elevator start comfort and match control system with different machine brake on time.	0.00 ~ 9.99	0.50	s	Y
F2-01	Brake OFF Time	Brake close first then disable elevator run. This is to improve elevator stop comfort and avoid slip at elevator stop.	0.00~ 9.99	0.50	s	Y
F2-02	g / Insp Brake Time	The time delay in inspection mode before brake close.	0.00~ 9.99	0.05	s	Y
F2-04	Zero Time	The time delay when system detects elevator stop. Adjust this parameter to close brake after elevator reach 0 speed completely, increase elevator stop comfort.	0~9.99	0.30	s	Y
F2-05	ɖ / Open Door Time	In Auto mode, elevator automatically open door when stopping at one floor, door will automatically close after set time.	0~999	3	s	Y
F2-06	Open Delay Time	Enable door open delay function, press open delay button, door open time will be delayed.	0~999	30	s	Y
F2-07	ɑɑɯ / Homing Time	The waiting time before elevator return to homing floor without landing/car call, Set value to "0" to disable this function.	0~999	60	s	Y
F2-08	˜Ω ɖ / Door Run Time	1. The door open/close command run time; 2. Door open/close relay run time for door drive without open/close limit switch. 3. For door drive with open/close limit switch, this run time should be 1s longer than the door actual open/close time.	0~999	5	s	Y
F2-09	ˆ əɻ /ʅ / Beep Delay Time	After elevator change speed to target floor, landing signal is delayed by set time, arrival gong /voice synthesizers are also delayed by set time.	0.00~ 9.99	0.15	s	Y
F2-10	G / Enable Delay	Drive enable signal given/drop is delayed by set time after drive direction signal is given/drop. During this time, drive output current is decreased to reduce current noise.	0.00~ 9.99	0	s	Y
F2-11	˜Ω / Lamp Off Time	In Auto mode, if have no car/landing call during set time, system will cut car light power from COP.	0~999	15	min	Y
F2-12	Over Time	To prevent wire rope slipping or elevator car stuck, time from elevator running to stop is limited to set value. If elevator is running longer than set value, system stops immediately and enter protection mode. Need to re-start the system in order to exit from such mode.	0~999	45	s	Y

Time Setup Parameters List (Cont'd)

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Change
F2-13	ŭ ╟ / SmoothStart Time	The time to keep elevator start smooth.	0.00~ 9.99	0	s	Y
F2-14 F2-15	╟ / Start Time	System will automatically start the elevator (Electric lock: ON) at set time.	00:00 ... 23:59	00:00	Hour: minute	Y
F2-16 F2-17	╟ ̃Ω / Stop Time	System will automatically stop the elevator (Electric lock: OFF) at set time. This function is disabled if same start/stop time.	00:00 ... 23:59	00:00	Hour: minute	Y
F2-18 F2-19	a ṃ / Start Time1	System will automatically start the elevator (Electric lock: ON) at set time.	00:00 ... 23:59	00:00	Hour: minute	Y
F2-20 F2-21	a ṃ ̃Ω / Stop Time1	System will automatically stop the elevator (Electric lock: OFF) at set time. This function is disabled if same start/stop time.	00:00 ... 23:59	00:00	Hour: minute	Y

Note: The elevator automatic switch: F2-14, F2-15 F2-16, F2-17 were set separately as per hours and minutes. Please follow the operator indication for this setting.

Input Type Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Live Change
F3-00	ў ώ ص / Input Type	Setting the input type on main control panel. Each bit corresponds to one terminal. Set default level of main board input port. **ON:** Close enable, **OFF**: Open enable.	0~ 4294967295	3974102631	N
F3-01	٦ ώ ص / Car Input Type	Setting the input type of cabin. Each bit corresponds to one terminal. **ON**: Close enable, **OFF**: Open enable.	0~ 4294967295	4294573839	N
F3-02	ώ ╖ 1 / Input select 1	X19 Input Function Selection	0~32	19	N
F3-03	ώ ╖ 2 / Input select 2	X22 Input Function Selection	0~32	22	N
F3-04	ώ ╖ 3 / Input select 3	X23 Input Function Selection	0~32	23	N
F3-05	ώ ╖ 4 / Input select 4	X24 Input Function Selection	0~32	24	N
F3-06	ώ ╖ 5 / Input select 5	X25 Input Function Selection	0~32	25	N
F3-07	╖ 1 / output select 1	Y0 Output Function Selection	0~32	0	N
F3-08	╖ 2 / output select 2	Y11 Output Function Selection	0~32	11	N
F3-09	╖ 3 / output select 3	Backup Output Function Selection	0~32	12	N

Service Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Live Change
F4-00	a m 1 / Set Stop Floor1	Set elevator stop/bypass at floor corresponds to each bit. (1-32 floors)	0~ 4294967295	4294967295	Y
F4-01	a m 2 / Set Stop Floor2	Set elevator stop/bypass at floor corresponds to each bit. (33-64floors)	0~ 4294967295	4294967295	Y
F4-02	a m 1 / TIM Stop Floor1	Set elevator stop/bypass at floor corresponds to each bit at the set time. (1-32 floors)	0~ 4294967295	0	Y
F4-03	a m 2 / TIM Stop Floor2	Set elevator stop/bypass at floor corresponds to each bit at the set time. (33-64 floor)	0~ 4294967295	0	Y
F4-04	1 / Door Select A1	Set elevator front door enable /disable at floor corresponds to each bit (ON/OFF: Front door enable /disable at this floor)	0~ 4294967295	4294967295 (1~32 levels)	Y
F4-05	1 / Door Select B1	Set elevator rear door enable /disable at floor corresponds to each bit (ON/OFF: Rear door enable /disable at this floor)	0~ 4294967295	4294967295 (1~32 levels)	Y
F4-06	/ Funtion Select	Set elevator functions enable /disable at floor corresponds to each bit. (ON: Enable, OFF: Disable)	0~ 4294967295	4	Y
F4-07	2 / Function Select 2	Set elevator functions enable /disable at floor corresponds to each bit. (ON: Enable, OFF: Disable)	0~ 4294967295	0	Y

Special Function List

Number	Instruction
F4-06-00	After elevator stops, based on current floor, if there is no landing/car call ahead of the current floor in previous running direction, system will cancel all the car calls.
F4-06-01	Only for internal test.
F4-06-02	ON: In Fire mode when elevator leaves fire floor then disable fire linkage output, when elevator return to fire floor then restore fire linkage output.
F4-06-03	ON: Disable ER29 fault.
F4-06-04	ON: Two elevators in duplex control and not in service, when the same floor has both up/down landing call registered, both elevator serve this call. OFF: Only one elevator serve this call.
F4-06-05	ON: Elevator disable cabeabe

Special Function List (Cont'd)

Number	Instruction
F4-06-11	ON: Floor display change After car arriving at leveling zone; OFF: Floor display change After elevator change speed.
F4-06-12	ON: When elevator stops in inspection mode, brake will close after receiving zero speed signals to reduce impact.
F4-06-13	Spare
F4-06-14	Spare (Default: OFF)
F4-06-15	ON: Disable all display relays when elevator is in electric lock mode or emergency mode.
F4-06-16	ON: When door lock is closed, door close limit must be valid too. OFF: Door lock state is not related to door close limit.
F4-06-17	ON: When elevator stops in inspection mode, inverter direction given and brake are released together. OFF: When elevator stops in inspection mode, inverter direction given drop is 0.5s later than brake close.
F4-06-18	ON: In rear door mode, elevator only installs one set of door open& close buttons. OFF: In rear door mode, elevator installs two sets of door open & close buttons.
F4-06-19	ON: Door close 1 and door close 2 will share the Y3 Output. Y5 is economy resistance. OFF: Y3 is door close 1, and Y5 is door close 2.
F4-06-20	ON: 3-phase 380V 50Hz power supply (with back-up generator) OFF: Battery power supply (disable BUS under voltage fault)
F4-06-21	ON: In inspection mode, door cannot open outside leveling zone. OFF: In inspection mode, door can open at any position.
F4-06-22	ON: Simplex collective OFF: Full collective Default' OFF
F4-06-23	ON: Use SJT-300 weighing device through CAN BUS OFF: Use SJT-150 weighing device through RS485
F4-06-24	Spare
F4-06-25	ON: When the elevator cannot open door in current floor (OP fault in controller), it will automatically go to the next floor and open door.
F4-06-26	ON: KMC power on delay 20s OFF' KMC power on delay 7s
F4-06-27	ON: Redirection when zero speed has been detected. OFF: Redirection after brake close at zero speed.

Special Function List (Cont'd)

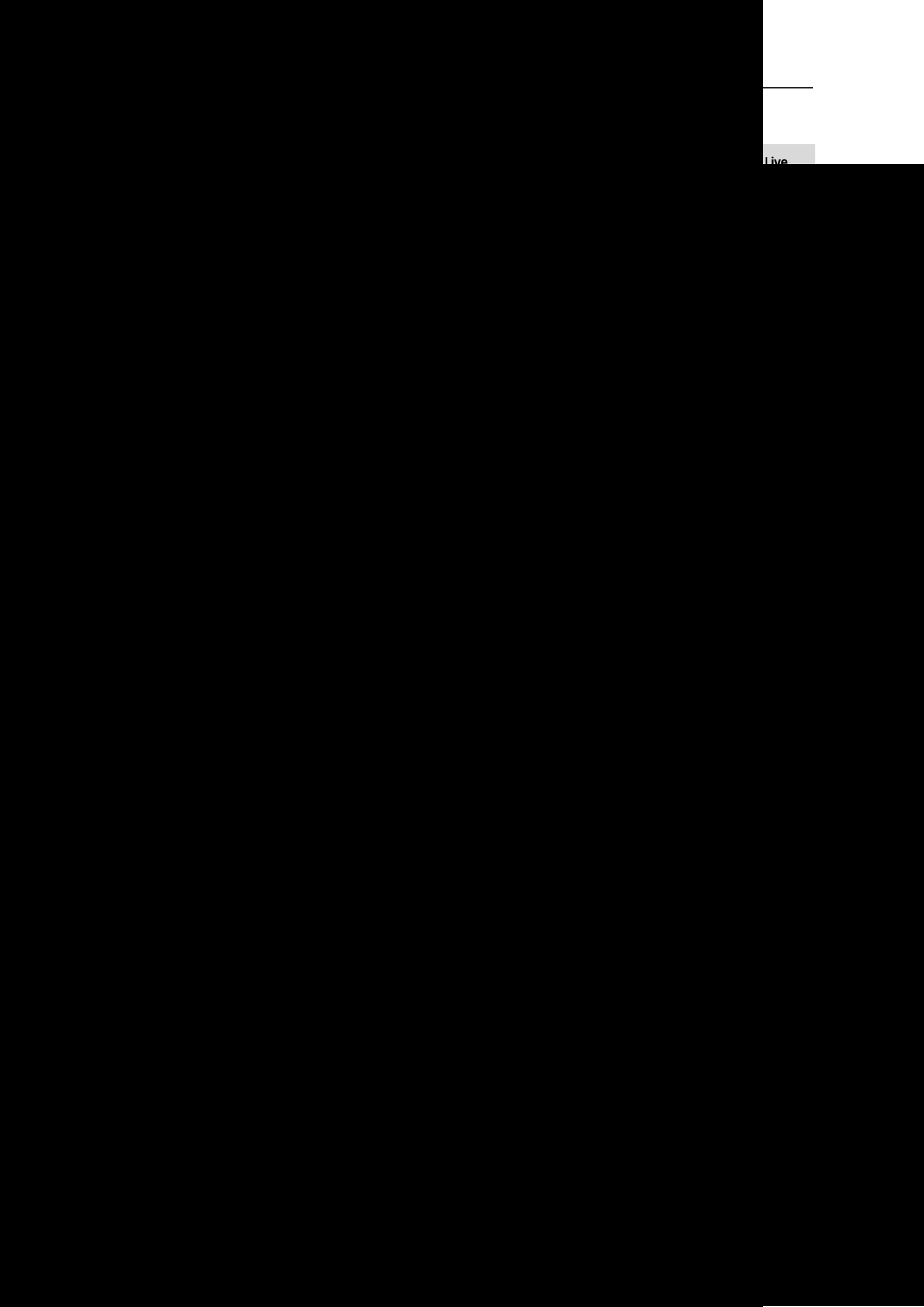
Number	Instruction
F4-07-00	ON: When ARD function is active, system will open brake for 1s (when sliding speed >0.1m/s, brake will close again), it will then find the heavy load direction based on the sliding direction, use battery to land the cabin on heavy load direction and reduce leveling energy cost.
F4-07-01	ON: Enable elevator data recorder. Together with PC debugging software, after-sales/ service team can provide fault diagnosis Â
F4-07-02	Spare
F4-07-03	Spare(gnxz36)
F4-07-04	Spare(gnxz37)
F4-07-05	Spare(gnxz38)
F4-07-06	Spare(gnxz39)
F4-07-07	ON: If car speed inside leveling zone is still faster than rescue speed, then the car will be forced to stop in leveling zone.
F4-07-08	Spare(gnxz41)
F4-07-09	Spare(gnxz42)
F4-07-10	Spare
F4-07-11	Spare
F4-07-12	ON: Enable clearing car calls when no light curtain actions within three car-call stops in auto running mode to anti trouble make.
F4-07-13	ON: Enable auto-restricting-door function to prevent door lock loop disconnect caused by no self-locking power.
F4-07-14	Default: OFF. Improve car stop. ON: Give up the time-dependent decreasing speed curve after speed change in leveling zone.
F4-07-15	For internal test.(gnxz48)
F4-07-16	For internal test.(gnxz49)
F4-07-17	ON: In UPS running mode, elevator will arrive in leveling zone, open the door, and close the Y23 contactor in 30s, then cut-off the UPS circuit to

Special Function List (Cont'd)

Number	Instruction
F4-07-21	ON: There is only one door zone signal, the elevator will still level while it turns from inspection to auto or from error to normal, or runs in ARD mode

Motor Setup Parameters List

Para No.	Display (In Chinese) Display (In English)	Content	Range	Factory Setting	Unit	Live Chang
F5-00	صر Motor Type	Set motor type (0:sync- outer rotor, 1:async machine, 2:sync-inner rotor)	0˙ 2	0	--	N
F5-01	 Poles	Moto poles (Nameplate)	1~99	20	--	N
F5-02	ﻝ Sync Freq	Motor synchronous frequency (Nameplate)	0.001 ~99.999	16	Hz	N
F5-03	╗ Rated Power	Motor rated power (Nameplate)	1~50	6.7	kW	N
F5-04	 Rated Speed	Motor rated speed (Nameplate)	1~1999	96	RPM	N
F5-05	ﻥ ╟□ V IN	Motor counter-EMF (Nameplate)	1~380	280	V	N
F5-06	 L_phase	Motor phase inductance set. (Auto-tuning/ manual input)	Auto-tuning/ Nameplate		mH	N
F5-07	 R_phase	Motor phase resistance set. (Auto-tuning/ manual input)	Auto-tuning/ Nameplate		Ω	N
F5-08	 Rated FLA	Motor rated current. (Nameplate)	0˙ 99.999		A	N
F5-09	 NO-Load Current	For asynchronous machine, no-load excitation current.	0.1~50	0	A	N
F5-10	 Rated Slip	For asynchronous machine rated slip. (Nameplate)	0.1~10	1.3	HZ	N
F6-00	 Carrier Freq	Set controller carrier frequency.	6~15	8	kHz	N
F6-02	ﻥ SpeedZoom	Speed Zoom (Reduce elevator actual running speed)	0~100	100	%	Y
F6-03	ﻝ DirSel	Select motor running direction (0/1' Motor rotates anti-clockwise, car move down/up).	0/1	0	--	--
F6-04	R Kp	Speed loop proportional gain. (Valid for complete curve if not used in multiple PI.)	0~65535	1000	--	--
F6-05	ﺇ KI	Speed loop integral gain. (Valid for the complete curve if not used in multiple PI.)	0~65535	600	--	--


Live

Control Setup Parameters List

Para No.	Display (In Chinese) Display (In English)	Content	Range	Factory Setting	Unit	Live Chang
F9-00	Š F Max Torq Comp	Maximum torque compensation (torque required to compensate at no load, 100% correspond to machine rated torque.)	0~100%	0	%	N
F9-01	 SPDSourceSel	Speed given source selection: 0: Simulation; 1: Multi-segment 2: Internal; 3: Operator	0~3	2		N
F9-03	ت Spderr Set	Speed Deviation Set (100% correspond to machine rated speed.)	0~100	5	%	Y
F9-11	Š G Load Comp Enable	Load Compensation: 1 enable; 0 Unable	0/1	1	--	N
F9-13	 Load Source Sel	Weighing source (0:SJT weighing, 1: -10~10V weighing, 2: 0-10V weighing)	0/1/2	0	--	N
F9-19	Š Ļ UP Comp Bias	Up direction (clockwise) Compensation Bias	-100~100	0	--	Y
F9-20	Š Ļ DOWN Comp Bias	Down direction (anti- clockwise) Compensation Bias	-100~100	0	--	Y
F9-21	Š R FULL Comp Pro	Full load compensation proportion	0~200	100	--	Y

No-load Compensation Setup Parameters List

Para No.	Display (In Chinese) Display (In English)	Content	Range	Factory Setting	Unit	Live Chang
FA-00	ŭ ╟ R StratKP	Start-up proportional gain with no compensation.	0~50000	30	--	N
FA-01	ŭ ╟ ŕ StratKI	Start-up integral gain with no compensation	0~50000	750	--	N
FA-08	Š R 1 PLKP1	No compensation effect proportional gain 1	1~6500	3600	--	N
FA-09	Š ɔ PLTime	No compensation effect time	1~1000	900	ms	N
FA-11	Š R 2 PLKP2	No compensation effect proportional gain 2	0~50000	800	--	N
FA-12	Š R PLKPMOD	No compensation effect proportional factor	0~50000	125	--	N

Special parameters (FC) are mapping a part of factory parameters (FX) in customer level; users can access this part information by user level password. In these parameters, FC-00~FC-06 can only be viewed but not editable, while other parameters can be changed. Special parameters (FC) number, description and content are shown below.

rameters List

Display (In Chinese) Display (In English)	Content	Range	Factory Setting	Live Chang
Z ă Zpulse_Init	Result of motor angle tuning, same as FX-00.	0~3277	--	N
R KpIreg	Current ring proportional (FX-07), **MODIFY WITH CAUTION!**	0~65535	10000	N
Ĭ KxIreg	Current ring integral (FX-08), **MODIFY WITH CAUTION!**	0~65535	5000	N
- AutoTuneModeSel	Sine/Cosine PG card auto- tuning selection (FX-20): 0:Rotation; 1:Stationary;	0/1	0	N
G N Temp Alarm Ena	Negative temperature alarm (FX-21) 1: Alarm enable at -15C; 0: Alarm disable at -15C.	0/1	1	N
] Æ G InitTuneEnable	When using Sine/Cosine PG card, whether need CD signal for position at power up 0:Yes.1:No (Can only set to 0 for SPG-V33 and above) Set to 0 can avoid electric noise at first power up.	0/1	0	N
CD ą /I J CD DirSel	FC15 is available if set to 1. Set to 0 if AB & CD signal in same phase, otherwise set to 1. (Auto selected at motor angle tuning.)	0~3	0	N

ent Setup Parameters List

Display (In Chinese)	Content	Range	Factory Setting	Live Chan g

Appendix V Elevator System Faults

Error Code	Definition	Possible Solution
Er2	Door inter-lock faults: Door inter-lock circuit open at elevator running	Check the work condition of door vane and door interlock circuit. Roller should have enough space at both side of the vane.
Er3	Driver faults	Check drive-error code. Determine the possible cause of the fault and solve in corresponding solution.
Er4	Elevator running in opposite direction with command	1. Exchange phase “V” and “W” on motor 2. Exchange phase “A” and “B”, on encoder tsolution. 13.8(-0.-.3(A)12.9(.9(

Elevator System Fault List (Cont'd)

Er19	The deceleration distance for target floor is not enough, elevator did not perform hoistway parameter learning after changing terminal switch location.	1. Decrease "Least Speed" in user menu; make elevator running curve more steep; reduce speed adjusting distance; 2. Do hoistway parameter learning again.
Er20	When elevator reaches top/bottom floor and get deceleration instruction, but elevator doesn't slow down; elevator did not perform hoistway parameter learning after changing terminal switch location.	1. Increase the proportion parameter of controller; Check the braking resistor specification; 2. Make elevator running curve more smooth; 3. Do hoistway parameter self-learning.
Er21	Single running time is over set time	1. Check related parameters in controller; 2. Check the traction rope for slip or car jam; 3. Check value of parameter "Over Time".
Er22	Elevator has inspection signal input (X0 invalid) at elevator normal running.	Check inspection switch and related circuits.
Er23	One of two leveling switch (X3, X4) is invalid at elevator normal running .	Check leveling switches and wirings.
Er25	Heat sensor protection: Braking resistor or motor is over heat (X32 invalid).	Check heat sensor circuit. If this error cannot reset in 90s, Y23 relay on controller will output KMC contactor open signal.
Er26	Door inter-Lock fault: Door inter-Lock contactor working state does not match to its coil (X11, X36 input different)	Check door interlock contactor terminal & coil and their related terminal on controller.
Er27	Emergency stop fault: Emergency stop contactor working state does not match its coil state. (X13, X29 input different)	Check emergency stop contactor terminal & coil and their related terminal on controller.
Er28	Top/bottom terminal (1st or 2nd) adhesions.(X16 or X17 valid when elevator outside their floor)	Terminal invalid in corresponding floor. Check terminal signals.
Er29	Communication interference too much (In system or in duplex communication).	Check system ground condition; Eliminate interference. Check COP/LOP for possible damage that may influence CAN BUS communication.
Er30	Door open fault (car cannot open door)	1. Run elevator in inspection mode, give door open command and check Y2 for output signal; 2. If Y2 has no output, need to check door open, close limit switch and related signal; 3. Be aware whether front door and rear door setting is opposite when two door mode is used.
Er31	Door close fault (car cannot close door)	Normally due to door not installed properly and short circuit door interlock circuit. Check if door close and door interlock circuit are output at same time.

Elevator System Fault List (Cont'd)

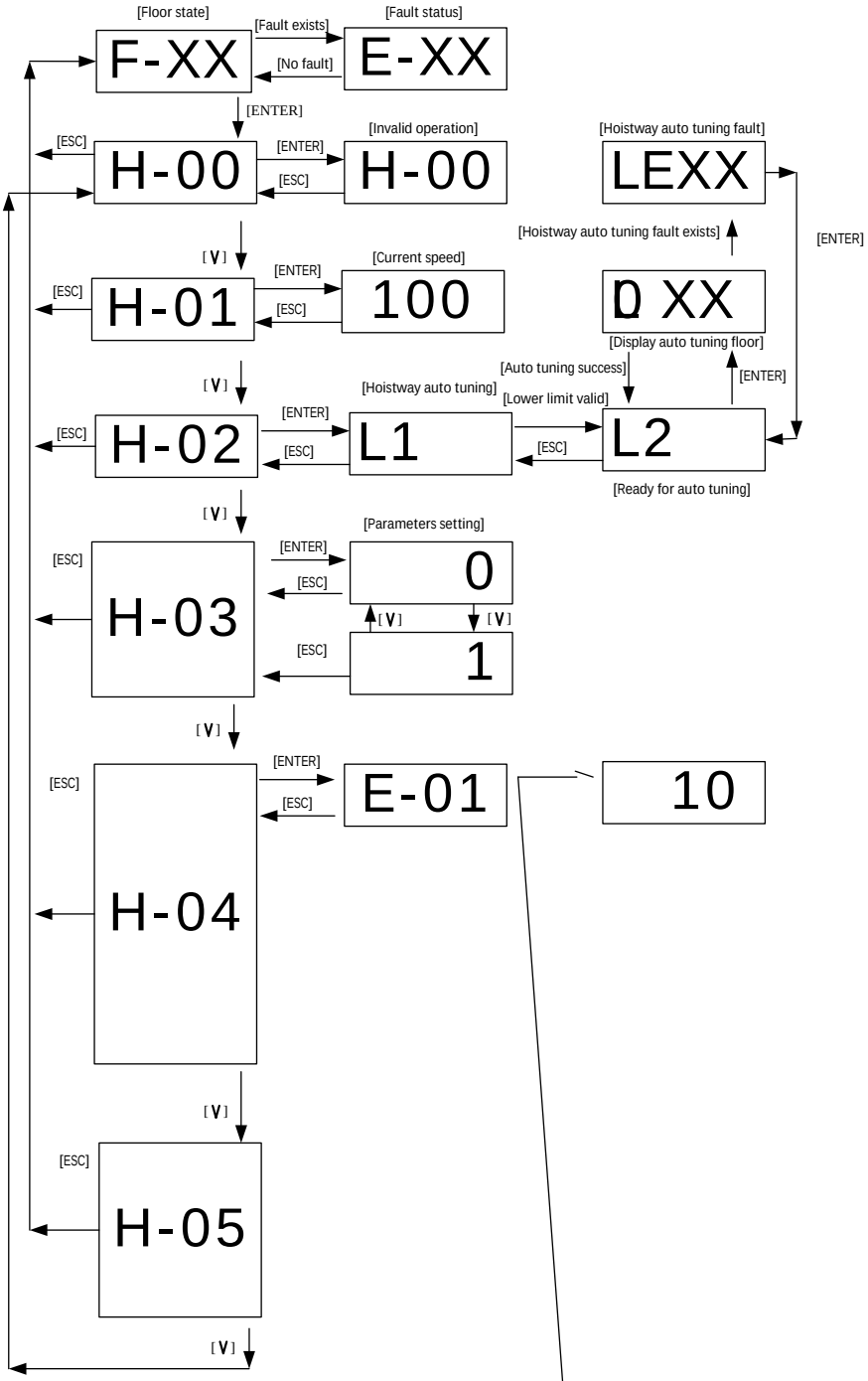
Er32	Floor number counting error.	A sudden power break may affect terminal/limit switches and cause floor number error. Elevator will then return to bottom floor for recalibration.
Er34	External switching power supply 24V sag fault	1. Check External switching power supply 24V connection; 2. Fault prompt given if detect the external voltage is lower than 16V.
Er35	Master clock error	Main board hardware circuit working abnormal. Please contact supplier.
Er36	Internal power supply 5V error	Fault prompt given if detect the 5V voltage is lower than 4.7V.
Er37	Running contactor shakes in brake open action.	Check running contactor action and X5 running contactor feedback.

Appendix VI Driver Fault

Error Code	Display	Definition	Possible Causes	Possible Solution
DF1	UV	DC bus under voltage (for 400V drive, 380V at UV protection)	1. Phase lost on input supply; 2. Excessive input voltage fluctuation; 3. Loose terminals at input.	1. Check input power supply; 2. Check input power cable terminals.
DF2	OV	DC bus over voltage (for 400V drive, 760V at OV protection)	1. Supply voltage too high 2. Abnormal braking/no connection to braking resistor. 3. Too short deceleration time,	1. Check power supply. 2. Check the wiring at brake resistor; 3. Increase deceleration time;
DF3	OH	Heat sink overheated	1. Excessively ambient temperature; 2. Existence of heat source around. 3. Damaged cooling fan; 4. Current temperature below zero	1. Reduce ambient temperature; 2. Remove heat source around; 3. Check the fan and wiring. 4. Turn FX-21(N Temp Alarm Ena)OFF.
DF4	IF	IPM fault	1. IPM over current/short circuit; 2. IPM over heat; 3. Abnormal IPM control power (UV)	1. Check output short circuit; 2. Check motor short circuit; 3. Contact supplier.
DF5	OC	Over current. Controller ouput current exceeds detection overcurrent valve.	1. Inverter output short circuit; 2. Machine over-load; 3. Accel/ decel time too short.	1. Check motor short circuit; 2. Check accel/ decel time, slow down if needed.
DF6	CF	CUP faults	Too much interference.	Please contact supplier.
DF7	OS	Elevator over speed. The speed feedback exceeds the speed limit and last longer than set time.	1. Max speed /last time set incorrect; 2. Speed over-tuning; 3. Encoder feedback incorrect.	1.Check speed limit setting/last time ; 2. Check the P/I parameter; 3. Check encoder
DF8	OE	Speed over deviation. The speed deviation exceeds the allowable range and last longer than set time.	1. System overload; 2. Accel/decel time short; 3. Deviation and set time is incorrectly; 4. Encoder cannot work properly.	1. Check mechanical system, reduce system load; 2. Increase accel/decel time; 3. Check the parameters; 4. Check the encoder.
DF9	PGO	PG dis-connect, did not receive encoder signal at operation and last longer than set time.	1.Encoder wiring break/loose/wrong; 2. Encoder damaged.	1. check encoder wiring; 2. Check encoder.
DF10	FF	Flash memory fault	Data fault at saving parameters.	Please contact supplier.
DF11	BF	Base block circuit error	1. Incorrect external base block wiring. 2. Base block voltage type set incorrect.	1. Check base block terminal wiring. 2. Change base block voltage type setting.
DF12	OL	Motor overload, current output exceed 150% (200%) rated value for 60s (10s).	1. System load too heavy; 2. System power rating too low.	1. Reduce system load; 2. Change a more suitable controller.

DF13 MC

Appendix VII Menu operation processes with Digital tubes & operation keys



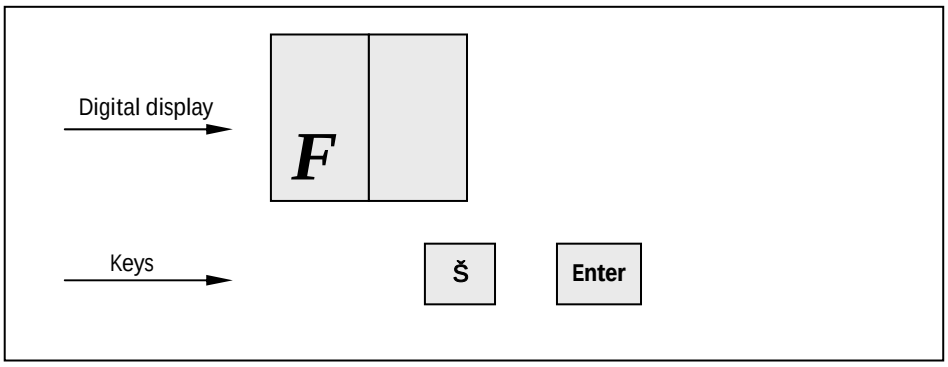


Figure Display and key layout

ESC: Cancel/return key;

▽: Flip key;

ENTER: OK key;

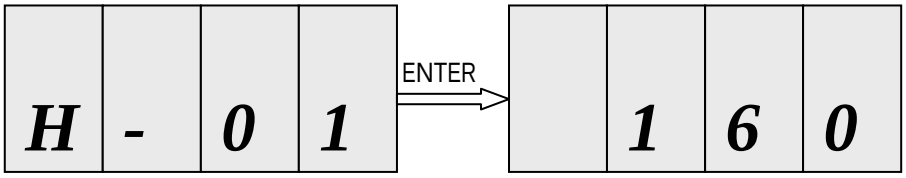
1. **Normally, display current floor F-XX:**

2. **Digital tube flashing display error code when fault occurs.**

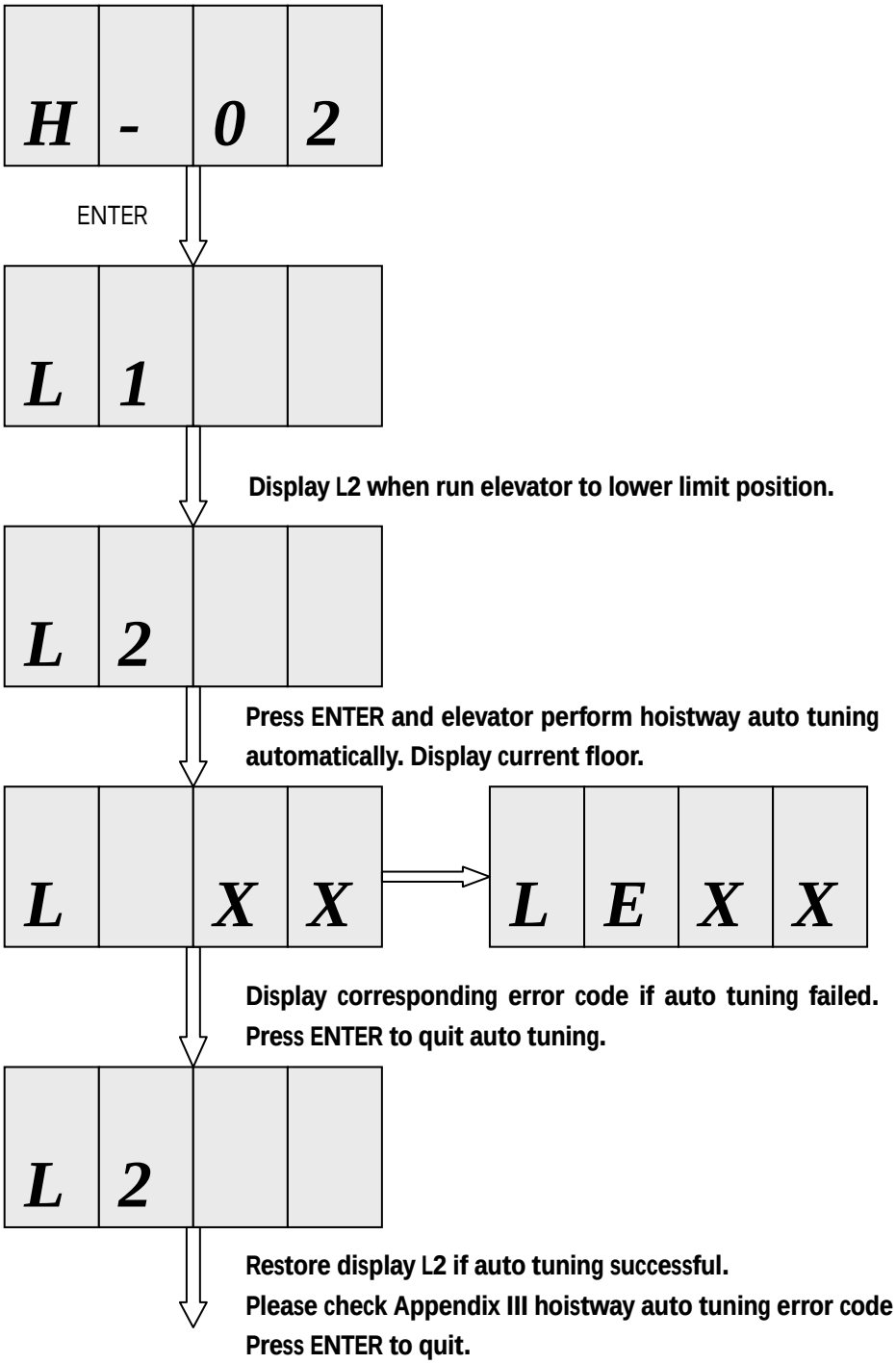
3. **Press ENTER key and Flip key to select H-00~H-04 parameters:**

4. **H-00: Invalid parameter;**

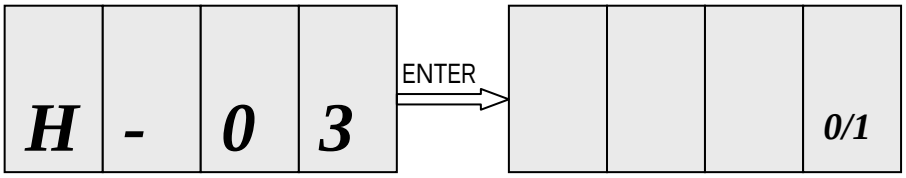
5. H-01: Display current running speed (Unit: cm/s):



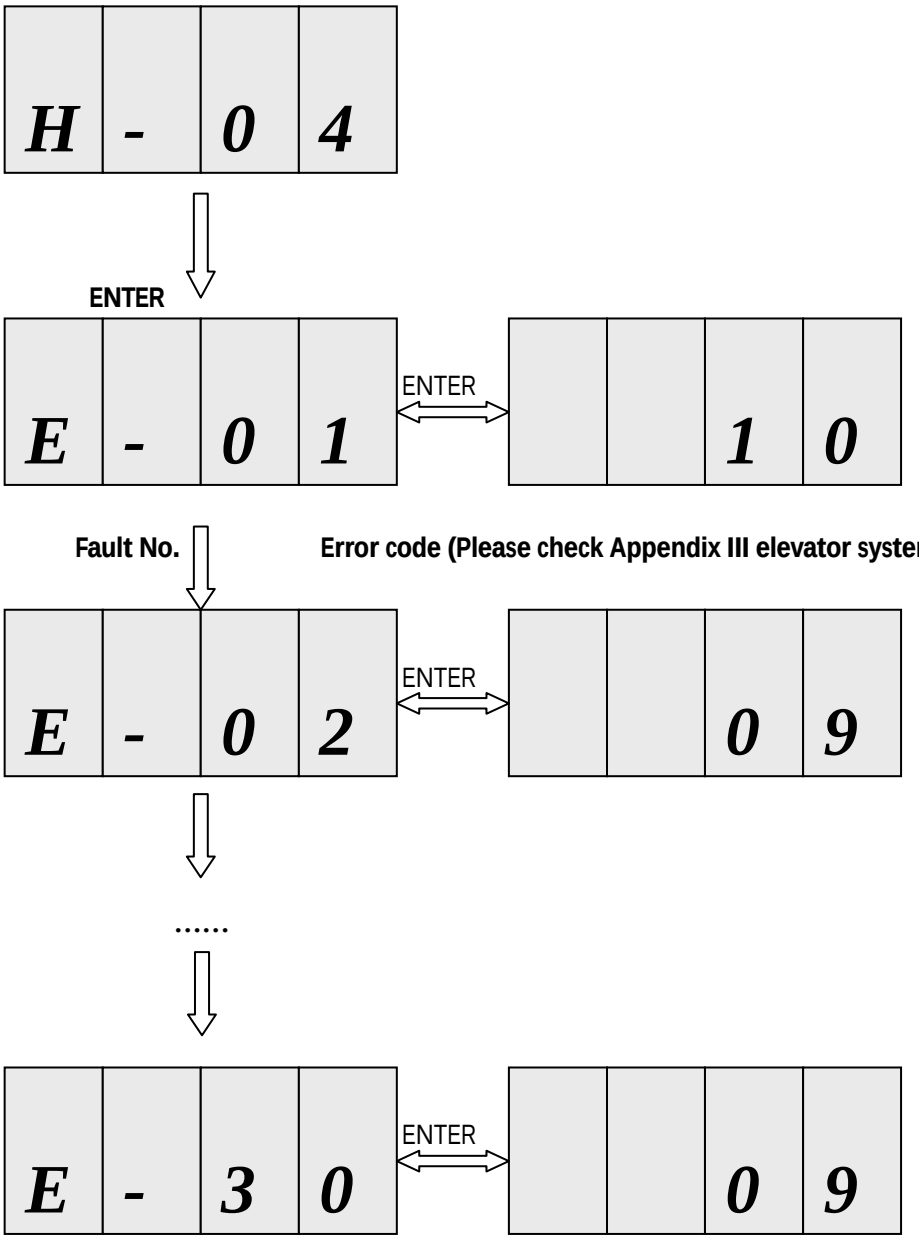
6. H-02: Hoistway parameter self-learning:



7. **H-03: Parameters setting with hand operator. Set once the parameter when connecting digital operator. (Set this parameter again to support hand operator after main board reset).**



8. **H-04: View 30 fault recodes.**



9. H-05: Motor static angle auto tuning

Choose 1, press ENTER to enter motor auto tuning mode.