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.

$$BL6 - B\ C\ 4\ 022$$

Controller series ————————

Controller type ————————
    B: Integrated Controller
    S: High performance inverter

Protective structure ————————
    C: Closed
    O: Open

Voltage level ————————
    4: 380V
    2: 220V

Max motor capacity
005:5.5KW
007:7.5KW
011:11KW
015:15KW
018:18.5KW
022:22KW
030:30KW
037:37KW
045:45KW
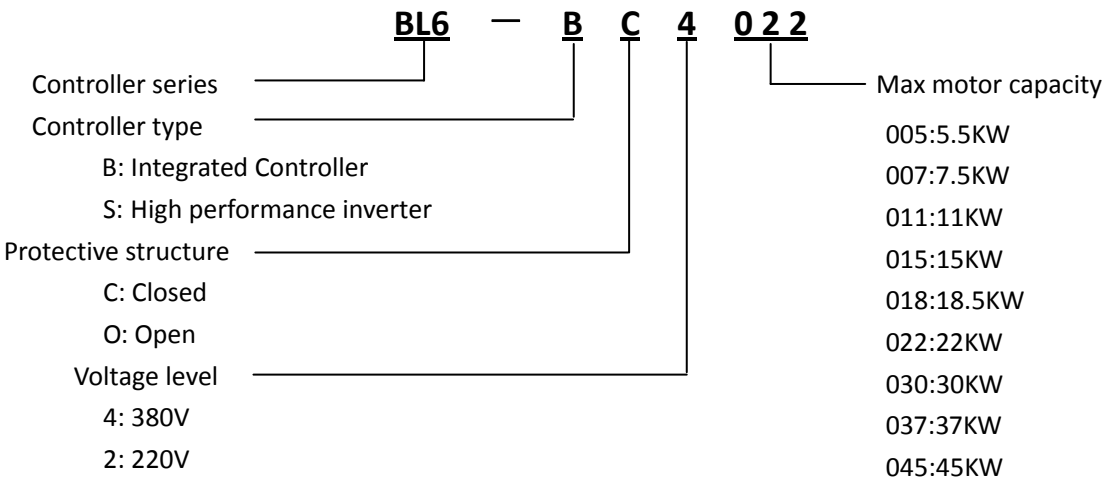
FIGURE 1   MODEL DESCRIPTION DIAGRAM

1.2 Specifications

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

CHART 1   SPECIFICATIONS
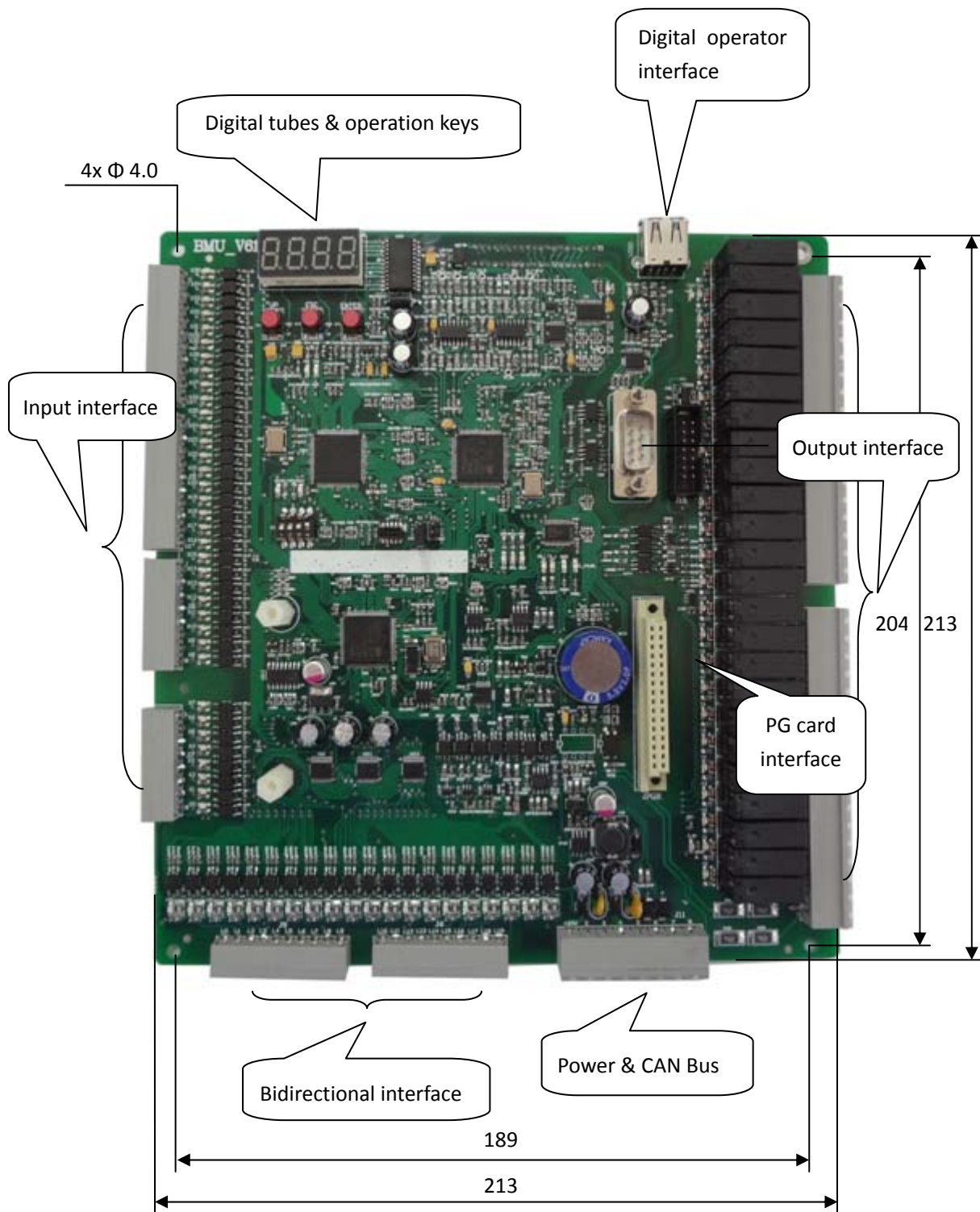
MODEL BL6－B□40□□		4005	4007	4011	4015	4018	4022	4030	4037	4045
MAX MOTOR CAPACITY(KW)		5.5	7.5	11	15	18.5	22	30	37	45
RATED OUTPUT	RATED OUTPUT CAPACITY(KVA)	9	12	18	22	27	32	43	53	63
	RATED OUTPUT CURRENT(A)	14	18	27	34	41	48	65	80	96
	MAX OUTPUT VOLTAGE(V)	Three-phase,AC380(corresponding to the input voltage)								
	RATED FREQUENCY(Hz)	50								
	MAX OUTPUT FREQUENCY(Hz)	120								
POWER INPUT	RATED VOLTAGE(V)	Three-phase,AC380								
	RATED FREQUENCY(Hz)	50								
	RATED INPUT CURRENT(A)	17	22	32	41	49	58	78	96	115
	ALLOWABLE VOLTAGE FLUCTUATION	±15%								
	ALLOWABLE FREQ FLUCTUATION	±5%								
MODEL BL6－B□20□□		2003		2005		2007		2011		2015
MAX MOTOR CAPACITY(KW)		3.7		5.5		7.5		11		15
RATED OUTPUT	RATED OUTPUT CAPACITY(KVA)	7		10		14		20		27
	RATED OUTPUT CURRENT(A)	17.5		25		33		49		66
	MAX OUTPUT VOLTAGE(V)	Three-phase,AC220(corresponding to the input voltage)								
	RATED FREQUENCY(Hz)	50								
	MAX OUTPUT FREQUENCY(Hz)	120								
POWER INPUT	RATED VOLTAGE(V)	Three-phase,AC220V								
	RATED FREQUENCY(Hz)	50								
	RATED INPUT CURRENT(A)	21		27		40		52		68
	ALLOWABLE VOLTAGE FLUCTUATION	+10%，-15%								
	ALLOWABLE FREQ FLUCTUATION	±5%								
BASIC FEATURES	ELEVATOR CONTROL MODE	Simplex Collective, Duplex Collective, 3~8 units Group Control								
	ELEVATOR SPEED RANGE	0.5~4m/s								
	APPLICABLE HIGHEST FLOORS	15 levels								
	APPLICABLE ELEVATOR TYPE	Passenger, Hospital, Panoramic, Goods, Villa Elevator								
	APPLICABLE MOTOR	Gear Traction Machine, Gearless Traction Machine								
	COMMUNICATION MODE	CAN bus serial communication								
	LEVELING ACCURACY	≤3mm								
DRIVE CONTROL FEATURES	CONTROL MODE	Space vector PWM (SVPWM) closed loop vector control								
	CARRIER FREQUENCY	8KHz (6~12KHz ajustable)								
	SPEED CONTROL RANGE	1:1000								
	SPEED CONTROL ACCURACY	±0.05%(25˚C±10˚C)								
	SPEED RESPONSE	30Hz								
	TORQUE LIMIT	Yes(Set by parameters)								

DRIVE CONTROL FEATURES	TORQUE ACCURACY	±5%
	FREQUENCY CONTROL RANGE	0~120Hz
	FREQUENCY ACCURACY	Digital Ref: ±0.01% (-10˚C~+40˚C)
	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, PARAMETER COPY
CONTROL/INPUT/ OUTPUT INTERFACE	OC INPUT CONTROL POWER	ISOLATED EXTERNAL DC24V
	RELAY OUTPUT CONTROL POWER	ISOLATED INTERNAL DC24V
	LOW OPTO-ISOLATED INPUTS	46-CHANNEL SWITCHES: RATED LOAD 7mA/DC24V,UPPER FREQ 100HZ
	HIGH OPTO-ISOLATED INPUTS	2-CHANNEL SWITCHES: RATED LOAD 8mA/AC110V,UPPER FREQ 100HZ
	PROGRAMMABLE RELAY OUTPUT	24-CHANNEL SWITCHES:1NO,CONTACT CAPACITY 5A/30VDC,5A/250VAC
	CAN COMMUNICATION INTERFACE	1 CHANNEL:(DUPLEX/GROUP CONTROL, REMOTE WIRELESS MONITORING)
	RS232 COMMUNICATION INTERFACE	2 CHANNELS: DIGITAL OPERATOR/PC MONITORING/PROGRAMMABLE INTERFACE; SECURITY DOG COMMUNICATION
DISPLAY	DIGITAL OPERATOR	LCD DISPLAY IN CHINESE/ENGLISH
	MONITORING SOFTWARE INTERFACE	MENU/PARAMETER/STATE/VARIABLE TIMING/DIGITAL OSCILLOSCOPE ETC.
MAIN PROTECTION FUNCTIONS	INSTANTANEOUS OVERCURRENT PROTECTION	STOP AT OVER 200% RATED OUTPUT CURRENT
	FUSE PROTECTION	STOP AT FUSED
	OVERLOAD PROTECTION	STOP AT 150% RATED CURRENT 60S/180% RATED CURRENT 10S
	OVERVOLTAGE PROTECTION	STOP AT DC BUS VOLTAGE OVER 780V(FOR 400V DRIVE)
	UNDERVOLTAGE PROTECTION	STOP AT DC BUS VOLTAGE UNDER 380V(FOR 400V DRIVE)
	HEATSINK OVERHEAT PROTECTION	PROTECT BY THERMISTORS
	IPM INTERNAL PROTECTION	IPM OVERCURRENT/OVERHEAT/SHORT CIRCUIT/UNDERVOLTAGE PROTECTION
	MOTOR PROTECTION	PROTECT BY ELECTRONIC THERMAL DEVICES
	IMPACT RESTRAINING CIRCUIT	PROTECT BY CONTACTOR FEEDBACK
	OVERSPEED PROTECTION	PROTECT AT SPEED EXCEED THE MAXIMUM ALLOWABLE SETTING
	SPEED DEVIATION PROTECTION	PROTECT AT SPEED DEVIATION EXCEEDS ALLOWABLE VALUE
	PG FAULT PROTECTION	PROTECT AT PG DISCONNECTION/PHASE ERROR
	AUTO TUNING PROTECTION	PROTECT AT AUTO TUNING FAULT
	OPEN-PHASE PROTECTION	PROTECT AT INPUT/OUTPUT PHASE LOST
	DOOR INTERLOCK FAULT	PROTECT AT DOOR INTERLOCK CIRCUIT OPEN WHEN RUNNING

MAIN PROTECTION FUNCTIONS	**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
	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˚C~+40˚C
USING AMBIENT	**HUMIDITY**	5~95%RH, NO CONDENSATION
	STORAGE TEMPERATURE	-20˚C~+60˚C
	APPLICATION SITUATION	INDOOR (NO CORROSIVE GAS, FLAMMABLE GAS, DUST AND DIRECT SUNLIGHT)
	ALTITUDE	BELOW 1000M
	VIBRATION	10~20HZ,<9.8M/S^2 ;20~50HZ, <2M/S^2

2 BL6-B Series Integrated Controller Main Board Terminals

Digital operator interface

Digital tubes & operation keys

4x Φ 4.0

Input interface

Output interface

204 213

PG card interface

Bidirectional interface

Power & CAN Bus

189

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Control Circuit Port definition and Function

Port No.	Terminal Symbol	Location	Definition	Usage	Interface Type	Rated Capacity	On/off Time	Max Speed
					Interface Tech Spec			
J1	X36+	J1-1	Door inter-lock input +　(110V-220VAC)	Input	OC	AC110V 8mA	10mS	100Hz
	X36-	J1-2	Door inter-lock input −　(110V-220VAC)					
	Y0	J1-3	KBC brake output	Output	Relay	DC10A30V AC10A250V	5/10mS	20cpm
	Y1	J1-4	KDY auxiliary contact output					
	COM1	J1-5	Y0-Y1 common terminal					
	Y2	J1-6	KKM Door open 1 control output					
	Y3	J1-7	KGM Door close 1 control output					
	Y4	J1-8	KKM2 door open 2 control output					
J2	Y5	J2-1	KGM2 door close 2 control output	Output	Relay	DC10A30V AC10A250V	5/10mS	20cpm
	CM2	J2-2	Y2-Y5 common terminal					
	Y6	J2-3	KXFL fire linkage output					
	Y7	J2-4	Illumination switch-off output					
	Y8	J2-5	KDZZ arrival gong output					
	CM3	J2-6	Y6-Y8 common terminal					
	Y9	J2-7	Ea low 7 segment code a display					
	Y10	J2-8	Eb low 7 segment code b display					
J3	Y11	J3-1	Ec low 7 segment code c display	Output	Relay	DC10A30V AC10A 250V	5/10mS	20cpm
	Y12	J3-2	Ed low 7 segment code d display					
	Y13	J3-3	Ee low 7 segment code e display					
	Y14	J3-4	Ef low 7 segment code f display					
	Y15	J3-5	Eg low 7 segment code g display					
	Y16	J3-6	EHbc high 7 segment code bc display (Inspection output when floor display is not in 7-seg-code mode. when floor display is in 7-seg-code mode, and the high bit is not used,　Inspection output can be set by function code FU-05)					
	Y17	J3-7	EHg high 7 segment code g display					
	Y18	J3-8	ES up arrow display					
J4	Y19	J4-1	EX down arrow display	Output	Relay	DC 10A30V AC 10A250V	5/10mS	20cpm
	CM4	J4-2	Y9~Y19 common terminal					
	Y20	J4-3	Cut-off power after parking(disabled output after parking)					
	Y21	J4-4	ECZ overload output					
	Y22	J4-5	FMQ buzzer control output					
	CM5	J4-6	Y20~Y22 common terminal					
	Y23	J4-7	Cut main contactor output					
	CM6	J4-8	Y23 common terminal					

Port No.	Terminal Symbol	Location	Definition	Usage	Interface Tech Spec			
					Interface Type	Rated Capacity	On/off Time	Max Speed
J5	I0	J5-1	SKYC door open delay input	Input Output	Input: Optical-couple Output: OC	Input: DC 24V 7mA Output: 300mA	Input: 10mS	Input: 100Hz
	I1	J5-2	Full Collective/Simplex Collective Car call input 1/ Car call input 1					
	I2	J5-3	Full Collective/Simplex Collective Car call input 2/ Car call input 2					
	I3	J5-4	Full Collective/Simplex Collective Car call input 3/ Car call input 3					
	I4	J5-5	Full Collective/Simplex Collective Car call input 4/ Car call input 4					
	I5	J5-6	Full Collective/Simplex Collective Car call input 5/ Car call input 5					
	I6	J5-7	Full Collective/Simplex Collective Car call input 6/ Car call input 6					
	I7	J5-8	Full Collective/Simplex Collective Car call input 7/ Car call input 7					
	I8	J5-9	Full Collective/Simplex Collective Call up input 1/ Car call input 8					
	I9	J5-10	Full Collective/Simplex Collective Call up input 2/ Car call input 9					
J6	I10	J6-1	Full Collective/Simplex Collective Call up input 3/ Call input 1	Input Output	Input: Optical-couple Output: OC	Input: DC 24V 7mA Output: 300mA	Input: 10mS	Input: 100Hz
	I11	J6-2	Full Collective/Simplex Collective Call up input 4/ Call input 2					
	I12	J6-3	Full Collective/Simplex Collective Call up input 5/ Call input 3					
	I13	J6-4	Full Collective/Simplex Collective Call up input 6/ Call input 4					
	I14	J6-5	Full Collective/Simplex Collective Call down input 2/ Call input 5					
	I15	J6-6	Full Collective/Simplex Collective Call down input 3/ Call input 6					
	I16	J6-7	Full Collective/Simplex Collective Call down input 4/ Call input 7					
	I17	J6-8	Full Collective/Simplex Collective Call down input 5/ Call input 8					
	I18	J6-9	Full Collective/Simplex Collective Call down input 6/ Call input 9					
	I19	J6-10	Full Collective/Simplex Collective Call down input 7/ Call input 10					

Port No.	Terminal Symbol	Location	Definition	Usage	Interface Tech Spec			
					Interface Type	Rated Capacity	On/off Time	Max Speed
J7	X0	J7-8	SJX Inspection/auto input	Input	OC	DC24V7mA	10mS	100Hz
	X1	J7-7	SSXW up limit input					
	X2	J7-6	SXXW down limit input					
	X3	J1-5	SSMQ up leveling input					
	X4	J1-4	SXMQ down leveling input					
	X5	J1-3	SKDY auxiliary contactor input					
	X6	J1-2	KBC brake contactor feedback					
	X7	J1-1	Door open limit 2 input					
J8	X8	J8-8	Door close limit 2 input	Output	Relay	DC10A30V AC10A250V	5/10mS	20cpm
	X9	J8-7	Safe plates 2 input					
	X10	J8-6	SJT Emergency stop input					
	X11	J8-5	SMB door inter-lock input					
	X12	J8-4	spare					
	X13	J8-3	SXF fire input					
	X14	J8-2	SMS jog up input(Attendant up)					
	X15	J8-1	SMX jog down input(Attendant down)					
J9	X16	J9-10	SSDZ top terminal input	Input	OC	DC24V 7mA	10mS	100Hz
	X17	J9-9	SXDZ bottom terminal input					
	X18	J9-8	ARD input					
	X19	J9-7	SKM door open signal input 1					
	X20	J9-6	SGM door close signal input 1					
	X21	J9-5	SKMW1 door open limit input 1					
	X22	J9-4	SGMW1 door close limit input 1					
	X23	J9-3	STAB1 safe plate 1 input					
	X24	J9-2	SDS electronic lock signal input					
	X25	J9-1	SCZ over-load input					
J10	X26	J10-10	SMZ full-load input	Input	OC	DC 24V 7mA	10mS	100Hz
	X27	J10-9	Spare					
	X28	J10-8	Light-load input					
	X29	J10-7	SZH Attendant input					
	X30	J10-6	SZS Bypass drive input					
	X31	J10-5	Brake position switch input					
	X32	J10-4	Thermal switch input					
	X33	J10-3	SKM2 door open input 2					
	X34	J10-2	SGM2 door close Input 2					
	X35	J10-1	Standby					

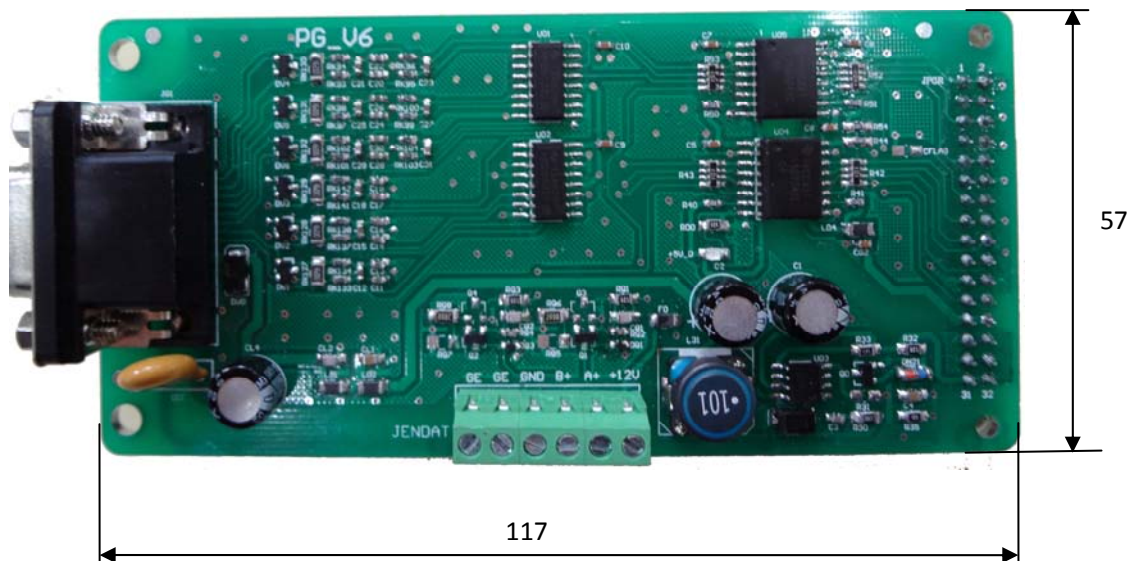| Port No.	Terminal Symbol	Location	Definition	Usage	Interface Tech Spec			
					Interface Type	Rated Capacity	On/off Time	Max Speed
J11	+24V1	J11-1	Input common terminal					
	24V_GND	J11-2,J11-3	Input power ground	Power	Power	DC24V10A		
	+24V	J11-4	Input power					
	AG0 IN	J11-5	Analog input	Input	Analog	-10V~+10V		
	GND1	J11-6	Input ground	Analog input ground				
	1H	J11-7	Duplex/Group control communications +	Communication Interface	CAN	80mA		25Khz
	1L	J11-8	Duplex/Group control communications -					

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.
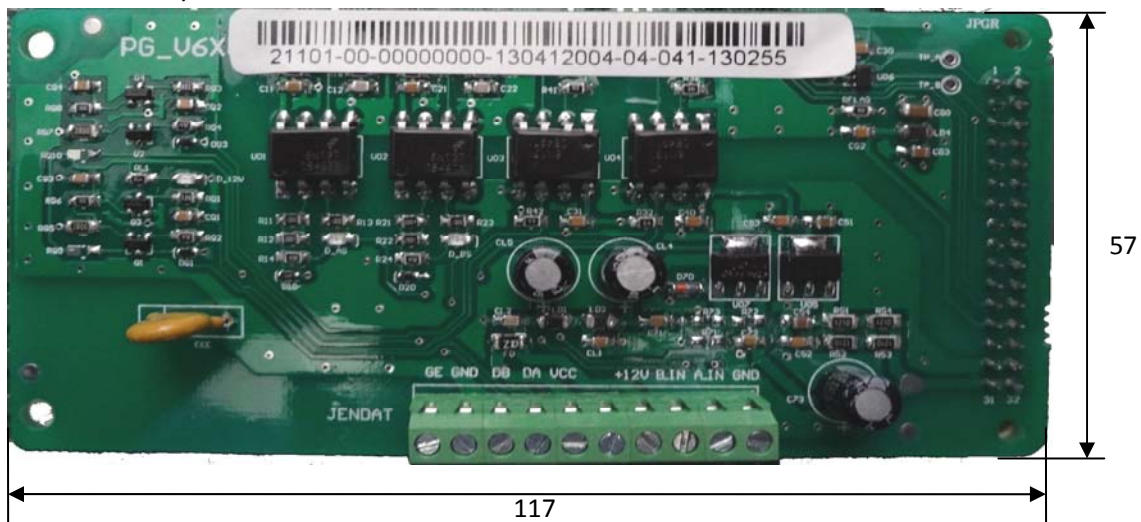

PG-V6 Card Port definition and Function

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
B-	JG1-9	B-	differential signal B-	differential input	±20Ma/3.1-5V		500KHz
A-	JG1-10	A-	differential signal A-	differential input	±20Ma/3.1-5V		500KHz
GND	JG1-11	GND	5V ground	Power ground	—		
V+	JG1-12	V+	differential signal V+	differential input	±20Ma/3.1-5V		500KHz
V-	JG1-13	V-	differential signal V-	differential input	±20Ma/3.1-5V		500KHz
W+	JG1-14	W+	differential signal W+	differential input	±20Ma/3.1-5V		500KHz
W-	JG1-15	W-	differential signal W-	differential input	±20Ma/3.1-5V		500KHz

3.2 PG_V6X

PG_V6X interface card is async machine universal pulse encoder speed feedback and frequency dividing output card.

PG_V6X is in supporting use of 12V OC output and push-pull output type pulse encoder. Encoder for async machine: A/B.

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PG-V6X Card Port definition and Function

Port No.	Terminal Symbol	Location	Definition	Usage	Interface Tech Spec		On/off Time	Max Speed
					Interface Type	Rated Capacity		
JENDATA(short for JEN)	0V	JEN-1	Power ground	Power ground	Power ground	—		
	IA	JEN-2	OC/Push-pull type A phase input	Input signal A	OC/Push pull input	-10Ma/12V-15V		500KHz
	IB	JEN-3	OC/Push-pull type B phase input	Input signal B	OC/Push pull input	-10Ma/12V-15V		500KHz

					Interface Type	Rated Capacity		
+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	—			
GE	JEN-10	Shield ground	Shield ground		—			

3.3 SPG_V6

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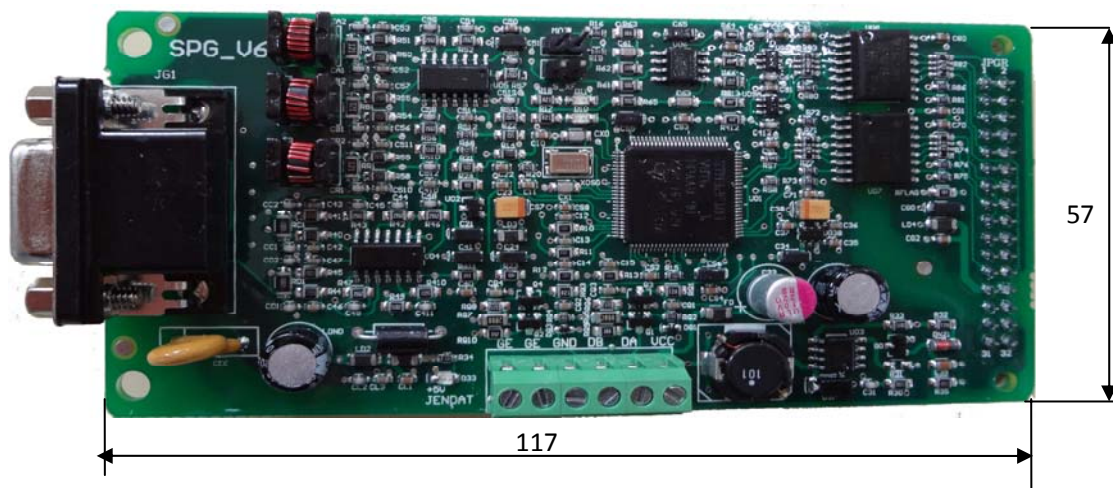
SPG_V6 Interface card Port definition and Function

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	—		
	GE	JEN-5	Shield ground	Shield ground		—		
	GE	JEN-6	Shield ground	Shield ground		—		
JG1	B-	JG1-1	B-	differential signal B-	differential input			40KHz
	*	JG1-2	—	—	—			
	R+	JG1-3	R+	differential signal R+	differential input			40KHz

|							
R-	JG1-4	R-	differential signal R-	differential input			40KHz
A+	JG1-5	A+	differential signal A+	differential input			40KHz
A-	JG1-6	A-	differential signal A-	differential input			40KHz
0V	JG1-7	GND	5V ground	Power ground			
B+	JG1-8	B+	differential signal B+	differential input			40KHz
5V	JG1-9	+5V	5V Power supply	Power output	500mA/5V±2.5% Voltage ripple lower than 50mV		
C-	JG1-10	C-	differential signal C-	differential input			40KHz
C+	JG1-11	C+	differential signal C+	differential input			40KHz
D+	JG1-12	D+	differential signal D+	differential input			40KHz
D-	JG1-13	D-	differential signal D-	differential input			40KHz
*	JG1-14	—	—	—			
*	JG1-15	—	—	—			

3.4 BL-U Series Integrated Controller PG Card Assemblage

Take out the chassis and PG card from Packing;
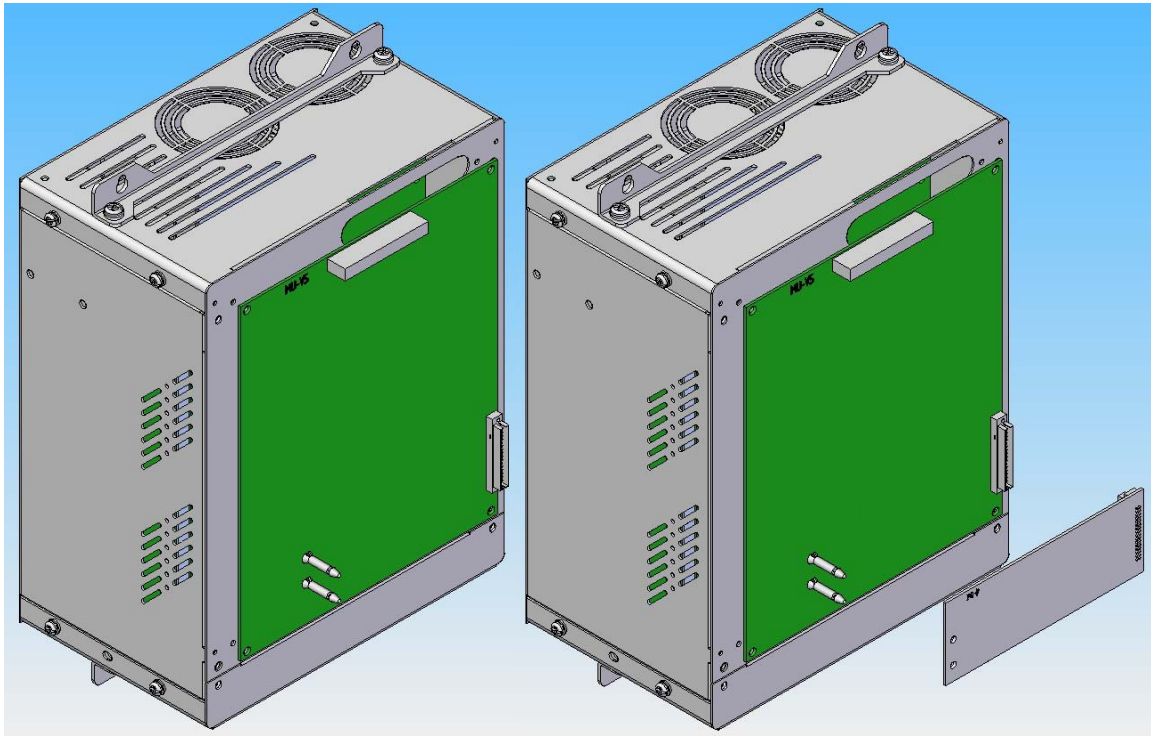
Align PG card and sustain pillar and right socket, as the graphic.
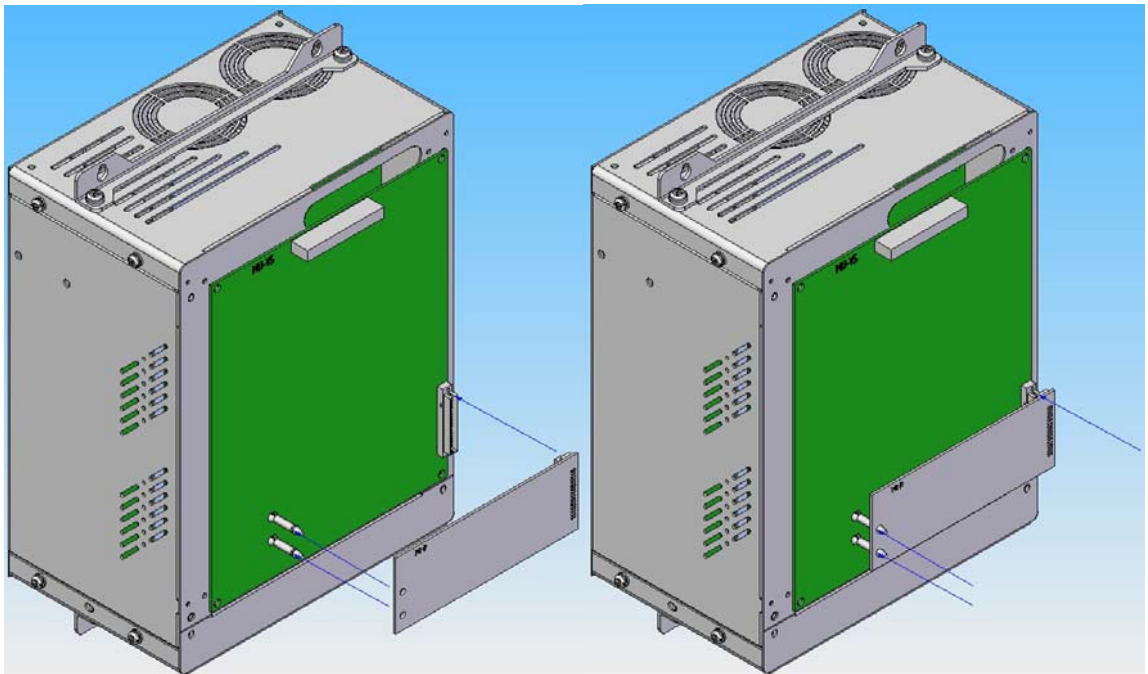
4 Parameter Need to set before Inspection Run

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

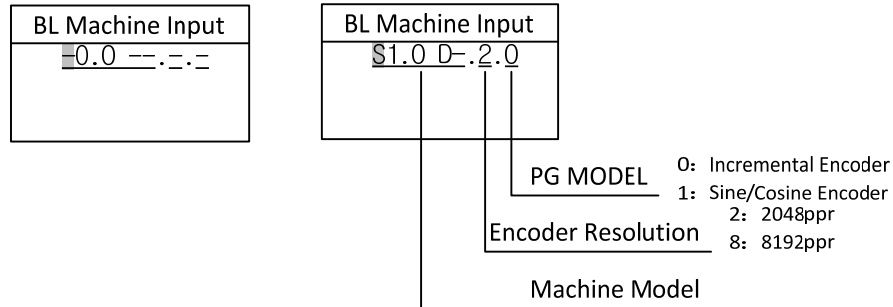| Parameter List			Setup Method	
	Parameter No.	**Name**	**Use BL Sync-machine**	**Use Non-BL Sync-machine**
Automatic Generate	**F5-00**	Motor Type	In blue-light machine input, these parameters can generate automatically, see instructions below for detail.	0:Sync machine，1: async machine. Fill in according 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-（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, you only need to input the machine model number and encoder information on the machine name plate to finish the parameter setting of the machine.

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 number (separated in 4 digits), the middle part is encoder resolution information, and the last part is the PG model.

The detail information is showing below

BL Machine Input	BL Machine Input
‐0.0 ‐‐.‐.‐	S1.0 D‐.2.0

PG MODEL   0：Incremental Encoder
           1：Sine/Cosine Encoder
Encoder Resolution   2：2048ppr
                      8：8192ppr
Machine Model

(a)   (b)

Press [ENTER] button after entering complete motor and encoder information. BL series integrated controller automatically generates motor parameters corresponding to current motor model. Wait to exit the interface until prompting success. Then save the parameters.

If motor model entered invalid, or information entered incompletely(for example, only input the motor model but did not enter the encoder information), interface will indicates "Invalid model".Please conform model and encoder information is correct before proceeding.

Try again if interface indicates fail.

16
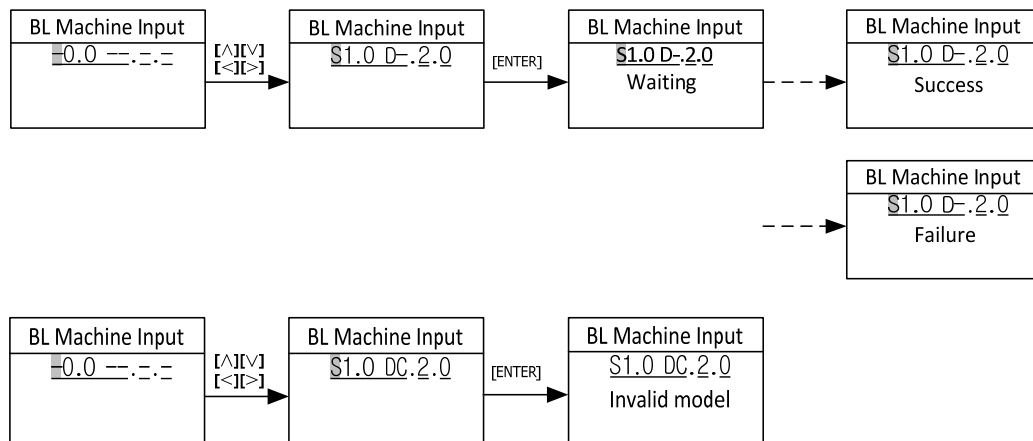
5 Motor Initial Angle Tuning (Only for Synchronous Machine)

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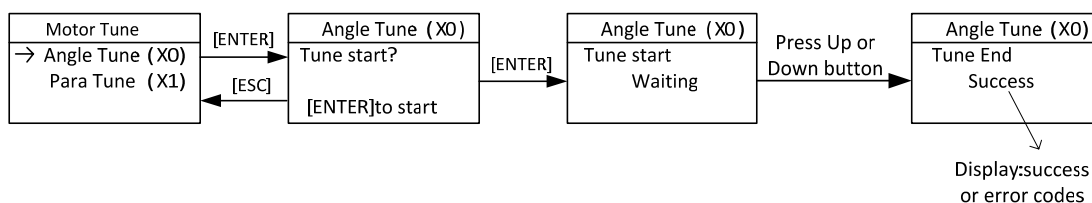
Motor initial tuning with no load (Do not attach steel ropes) sketch

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)

Error Code	Definition	Possible Causes	Possible Solution
RF231	Encoder CD signal error.	1. Encoder CD signal analysis error; 2. Motor/Encoder parameters input error.	1. Check wiring for CD signal; 2. Eliminate encoder signal interference; 3. Check motor/encoder parameter.
RF232	Motor does not rotate at auto tuning	1. Encoder connection fault; 2. Motor has load or brake close.	1. Check encoder A,B signal connection; 2. Eliminate encoder signal interference; 3. Make sure motor has no load & brake open.
RF233	Motor rotates in reverse	Motor phase sequences donot match the encoder.	1.Adjust motor/encoder phase sequence; 2.Exchange A-,A+/B-,B+ signal
RF234	Encoder R pulse signal error.	1. No detection of R pulse signal; 2. Motor/Encoder parameter input error	1. Check wiring for R pulse signal; 2. Eliminate encoder signal interference; 3. Check motor/encoder parameter; 4. Output disconnect/brake close in auto tuning.

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 sure the following procedures are finished correctly before tuning:

1) Wiring in control cabinet is completely correct, and system under inspection state;

2) Set running parameter(F1),motor parameter(F5),encoder parameter(F8) correctly;

3) All mechanical faults in hoistway are eliminated!

5.2.1 Motor Initial Angle Tuning With Digital Operator

Correctly set PG type F8-02 on digital operator, set tuning method parameter(FC-13) to "1"(default setting is 1 in BL Series Integrated Controller), perform motor initial angle tuning based on following procedures shown below:

Motor Tune		Angle Tune（X0）		Angle Tune（X0）		Angle Tune（X0）
→ Angle Tune（X0） Para Tune（X1）	[ENTER] [ESC]	Tune start? [ENTER]to start	[ENTER]	Tune start Waiting	Press Up or Down button	Tune End Success

Display:success or error code
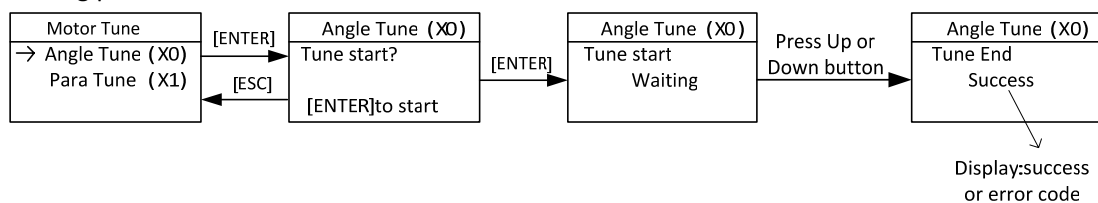
Motor initial tuning with load (attach steel ropes) sketch

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	电机类型 / Motor Type	Set motor type 0:sync- outer rotor, 1:async machine, 2:sync-inner rotor	0~2	1
F5-01	电机极数 / Poles	Motor poles (Nameplate)	1~99	Fill in according to actual motor parameters
F5-02	电机同步频率 / Sync Freq	Motor synchronous frequency (Nameplate)	0.001~50	Fill in according to actual motor parameters
F5-03	电机额定功率 / Rated Power	Motor rated power (Nameplate)	1~50	Fill in according to actual motor parameters
F5-04	电机额定转速 / Rated Speed	Motor rated speed (Nameplate)	1~1999	Fill in according to actual motor parameters
F5-08	电机额定电流 / Rated FLA	Motor rated current. (Nameplate)	0~99.999	Fill in according to actual motor parameters
F5-09	空载电流 / NO-Load Current	For asynchronous machine, no-load excitation current.	0.1~50	Fill in according to 30% rated current, adjustable in 20% to 40%; If rated current is set too small, motor will run with howling sound; If set too large, fluctuation feeling will be obvious in steady speed period.

Para No.	Display (In Chinese)	Content	Range	Parameter setting range
F5-10	滑差 / 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.

6.2 Encoder Parameters Confirmation

Para No.	Display (In Chinese) Display (In English)	Content	Range	Parameter setting range
F8-00	编码器线数 / Encoder PPR	The encoder pulse count per-revolution.	100~8192	Typically, Encoder PPR is 1024.Specific modification according to actual situation.
F8-02	PG 类型 / PG Type	PG card type 0: Incremental encoder, 1: Sine/Cosine encoder	0/1	PG type is 0：Incremental encoder. Short JA, JB short blocks on PG card if choose to use 12V encoder.

6.3 PI Parameters Confirmation

Para No.	Display (In Chinese) Display (In English)	Content	Range	Parameter setting requirements
F6-04	速度环比例 / Kp	Speed loop proportional gain. (Valid for complete curve if not used in multiple PI.)	0~65535	Default value is 1000.No need to modify typically. It can be adjusted in increments of 100 when debugging.
F6-05	速度环积分 / KI	Speed loop integral gain. (Valid for the complete curve if not used in multiple PI.)	0~65535	Default value is 600.No need to modify typically. It can be adjusted in increments of 100 when debugging.

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	提前开闸时间 / 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.	0.00 ~ 9.99	0.50	s	Y	6-4
F2-01	抱闸时间 / Brake OFF Time	When start closing brake, brake cannot hold traction sheave immediately due to free wheeling and demagnetization. Keep output torque in this period of time. Remove internal direction enable and cancel torque output after this time. This parameter can prevent car slip caused by brake lag when car stopping. According to brake situation, Brake OFF Time should be set to 0.8~1.5s /0.3~0.5 in sync control/async control.	0.00 ~ 9.99	0.50	s	Y	6-4

| F2-02 | 检修抱闸时间

Insp Brake Time | 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 |

6.4.2 Zero Speed Parameters

Para No.	Display (In Chinese) Display (In English)	Content	Range	Parameter setting requirements
F1-16	零速阈值 Zero Speed	Motor speed less than set value, system considers elevator speed as zero and output brake signal.	0~10	Set to 1 circle / 5circles for sync /async machine.

Warning: Most of asynchronous motors use incremental encoder which works at 12V voltage.

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.
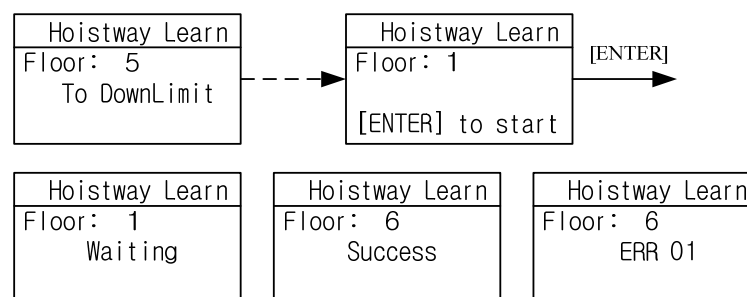
Figure 8.1 Hoistway Parameter Self-Learning Procedures

5) The results of learning can be seen from hoistway position parameter U0-00 to U0-69 under monitor menu with unit of meter, please check the switches position after hoistway learning.

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.
LER=2	Bottom terminal 1 switch input repeat.	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=4	Bottom terminal 2 switch signal repeat. (elevator >2.0m/s)	Bottom terminal 2 switch installation error, causing multiple terminal switch input or bottom terminal 2 switch signal shake. Check related switches.
LER=5	Bottom terminal 2 switch signal lost (elevator >2.0m/s)	Top terminal 2 switch enable before bottom terminal 2 switch or bottom terminal 2 switch signal lost.
LER=6	Top terminal 2 switch signal repeat. (elevator >2.0m/s)	Top terminal 2 switch installation error, causing multiple terminal switch input or top terminal 2 switch signal shake. Check related switches.
LER=8	Top terminal 2 switch signal lost (elevator >2.0m/s)	Top terminal 1 switch enable before top terminal 2 switch or top terminal 2 switch signal lost.

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:
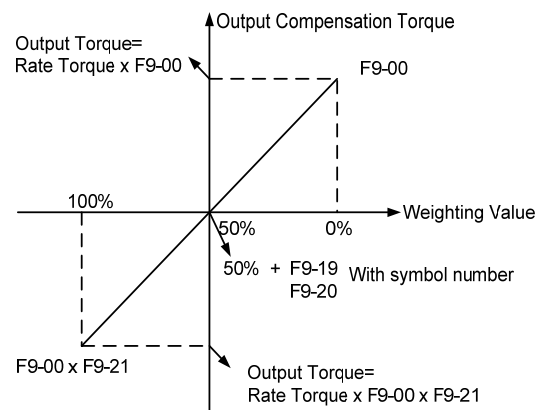
Good comfort level could be achieved with adjustment shown above.

9.2 Start without Load Compensation Setup

When using BL6 series integrated controller with Sine/Cosine PG card, it is possible to achieve comfort start without load compensation by proper setup in FA group parameters. (It means elevator can reach the same effect of load compensation even without weighing device.)

1) Note for starting without load compensation:

a) PG card type, F8-02 is set to "1" (Sine/Cosine PG card)

b) Weighing compensation invalid, confirms F9-11 is set to "0" to disable weighing compensation and enable FA group parameters.

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.
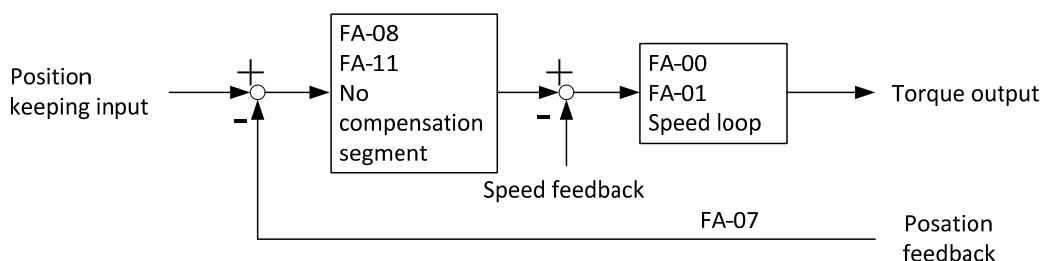
Flowchart for elevator starting without load compensation

b) Parameters: Parameters related to function can be seen below in table below.

Elevator start without load compensation parameters list

Parameters No.	Display in Chinese / Display in English	Factory Setting	Fast Brake Recommendation	Slow Brake Recommendation
FA-00	启动段比例增益 / StratKP	30	KEEP	KEEP
FA -01	启动段积分增益 / StratKI	750	KEEP	KEEP
FA -08	无负载比例 1 / PLKP1	3600	4800	3600
FA -09	无负载作用时间 / PLTime	900	700	KEEP
FA -11	无负载比例 1 / PLKP2	800	KEEP	KEEP
FA -12	无负载比例系数 / PLKPMOD	125	KEEP	KEEP
F2-00	提前开闸时间 / Brake ON Time	0.5	0.9	1
F9-00	最大补偿力矩 / Max Torq Comp	0	KEEP	KEEP
F9-11	补偿使能 / Load Comp Enable	1	0	0

c) Adjustment method:

Main parameters used are FA-08, FA-09 and FA-11.

FA-09: This parameter is the working time for starting without load compensation after brake opens, it must be set according to the actual brake opening time, if the time is too short, elevator will slip as this action will be over before brake fully opened; Also the

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.

t$_1$ Direction forming time   t$_q$ Acceleration time at starting
t$_2$ Direction keeping time   t$_d$ Deceleration time at braking
t$_k$ Advanced time for brake release t$_f$ One cycle of running
t$_s$ Running time at constant speed
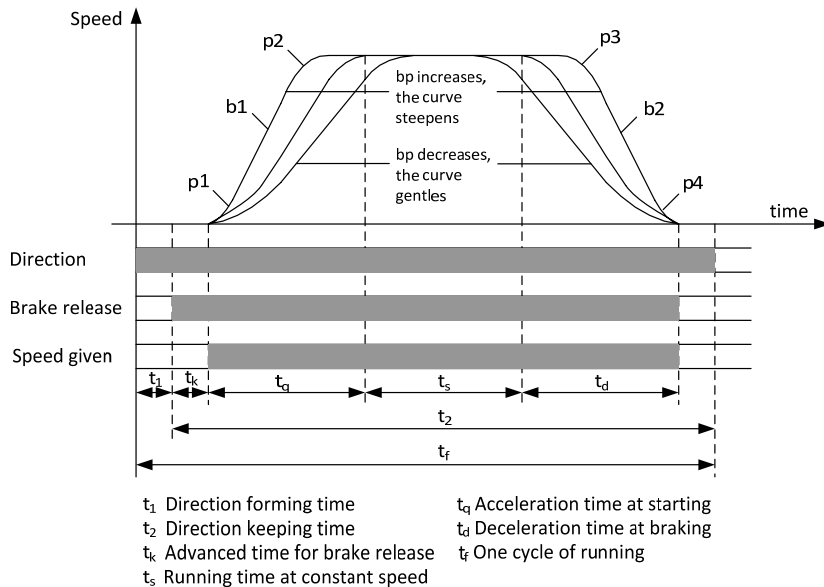
Elevator running speed curve graphic

Note: In the guarantee of elevator operation efficiency, adjust the 6 parameters of curve slope appropriately to obtain best elevator operation curve when debugging in the actual situation.

To achieve the maximum level of comfort, integrated controller must control the motor and make feedback speed strictly following the change of running curve.

Proportional gain on the speed circle **F6-04** and integral gain **F6-05 or F7-05~F7-12** for PI section parameters also influence the motor tracking ability to speed curve. Generally, increasing the proportion gain will improve the reaction of the system and promote the tracking speed. However, if proportion gain is set too big, it will cause system vibration with high frequency and large motor noise. Increasing integral gain can improve the system anti-interference/tracking ability and improve the leveling precision, but set integral gain too big will make system vibration, speed over adjustment and wave vibration.

Generally, it is recommended to first adjust proportion gain, increase it right before system vibration threshold. Then adjust the integral gain, enable system with quick reaction and no over adjustment.

Speed Loop PI Recommend Value:

Type	Recommend Value
Proportional	700
Integral	260

Speed loop proportional/integral can be adjusted in 50 increments. If system performance is not perfect at start or stop period (low speed period), try to control in multi-section PI. Detailed method in description section of specific section is in instruction.

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.

12 Integrated Controller Terminal Wiring Diagram

Wiring Diagram

Terminal	Signal	Code
Inspection Input	J7-8	X0
Up Limit input	J7-7	X1
Down Limit Input	J7-6	X2
Up Leveling Input	J7-5	X3
Down Leveling Input	J7-4	X4
Running Contactor Input	J7-3	X5
Brake contactor feedback	J7-2	X6
Door Open 2 Limit Input	J7-1	X7
Door Close 2 Limit Input	J8-8	X8
Safe Plates 2 Input	J8-7	X9
Emergency Stop Input	J8-6	X10
Door Inter-lock Input	J8-5	X11
Standby 1	J8-4	X12
Fire Input	J8-3	X13
Jog Up Input	J8-2	X14
Jog Down Input	J8-1	X15
Top Terminal Input	J9-10	X16
Bottom Terminal Input	J9-9	X17
ARD Input	J9-8	X18
Door Open 1 Input	J9-7	X19
Door Close 1 Input	J9-6	X20
Door Open 1 Limit Input	J9-5	X21
Door Close 1 Limit Input	J9-4	X22
Safe Plates 1 Input	J9-3	X23
Electric Lock Input	J9-2	X24
Over Load Input	J9-1	X25
Full Load Input	J10-10	X26
Spare	J10-9	X27
Light Load Input	J10-8	X28
Attendent Input	J10-7	X29
Drive By-pass Input	J10-6	X30
Brake Position Switch Input	J10-5	X31
Thermo switch input	J10-4	X32
Door Open 2 Input	J10-3	X33
Door Close 2 Input	J10-2	X34
Spare	J10-1	X35

	J11-2	GND1
	J11-3	GND1
Input 24V	J11-4	+24V
GND	J11-2	GND1
	J11-3	GND1
	J11-1	+24V
1H	J11-8	
1L	J11-7	
	J11-6	GND2

24V Power Input

Duplex Communication

X36+	J1-1	110V Door Inter-lock Input
X36-	J1-2	
I0	J5-1	Door Open Time Input & Answer
	J5-2	
I1		Car Call Input 1
I7	J5-8	Car Call Input 7
I8	J5-9	Up Call Input 1
I13	J6-4	Up Call Input 6
I14	J6-5	Down Call Input 2
I19	J6-10	Down Call Input 7 & Answer
Y0	J1-3	Brake Control Output
Y1	J1-4	Running contactor control output
Y0-Y1 COM1	J1-5	Y0-Y1 Common Terminal
Y2	J1-6	Door open 1 control output
Y3	J1-7	Door close 1 control output
Y4	J1-8	Door open 2 control Output
Y5	J2-1	Door close 2 control Output
Y2-Y5 COM2	J2-2	Y2-Y5 common terminal
Y6	J2-3	Fire linkage output
Y7	J2-4	Illumination Switch-off Output
Y8	J2-5	Arrival Gong Output
Y6-Y8 COM3	J2-6	Y6-Y8 Common Terminal
Y9	J2-7	7-Segment Display Ouput (a)
Y15	J3-5	7-Segment Display Ouput (g)
Y16	J3-6	Inspection Output
Y17	J3-7	First 7-Segment Display Ouput(g)
Y18	J3-8	ES Up Arrow Display
Y19	J4-1	EX Down Arrow Display
COM4	J4-2	Y9-Y19 Common Terminal
Y20	J4-3	Cut Power After Parking
Y21	J4-4	Over Load Output
Y22	J4-5	Buzzer Control Output
COM5	J4-6	Y20-Y22 Common Terminal
Y23	J4-7	Cut Main Contactor Output
COM6	J4-8	Y23 Common Terminal
AG0_IN	J11-5	Simulation Input
GND2	J11-6	

+24V

J11-2 GND1

15PIN

JG1

Encoder Interface

Appendix I   BL-B Series Integrated Controller Test Commissioning

```
                    ┌─────────────────────────────┐
                    │  BL-B Series Integrated      │
                    │  Controller Commissioning    │
                    └─────────────────────────────┘
                                  │
                    ┌─────────────────────────────┐
                    │ Parameter Setup in Inspection Mode │
                    └─────────────────────────────┘
                                  │
              Y  ◄──────  Synchronous Machine?  ──────►  N
              │                                          │
   ┌────────────────────┐                    ┌────────────────────┐
   │ Perform Initial    │                    │ Test run in low    │
   │ angle tuning       │                    │ speed              │
   └────────────────────┘                    └────────────────────┘
              │                                          │
   ┌────────────────────┐                    ┌────────────────────┐
   │ Test run in low    │                    │ Parameter setup in │
   │ speed              │                    │ normal mode,       │
   └────────────────────┘                    │ hoistway parameter │
              │                               │ learning           │
   ┌────────────────────┐                    └────────────────────┘
   │ Parameter setup in │                               │
   │ normal mode,       │                    ┌────────────────────┐
   │ hoistway parameter │                    │ Test run in normal │
   │ learning           │                    │ speed              │
   └────────────────────┘                    └────────────────────┘
              │                                          │
   ┌────────────────────┐                    ┌────────────────────┐
   │ Test run in normal │                    │ Elevator start     │
   │ speed              │                    │ comfort level      │
   └────────────────────┘                    │ adjustment         │
              │                               └────────────────────┘
   ┌────────────────────┐                               │
   │ Elevator start     │                    ┌────────────────────┐
   │ comfort level      │                    │ Elevator normal    │
   │ adjustment         │                    │ speed comfort level│
   └────────────────────┘                    │ adjustment         │
              │                               └────────────────────┘
   ┌────────────────────┐                               │
   │ Elevator normal    │                               │
   │ speed comfort level│                               │
   │ adjustment         │                               │
   └────────────────────┘                               │
              │                                          │
              └──────────►  Commissioning Finished  ◄────┘
```

Appendix II   BL-U Series Integrated Controller Operator Menu

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.
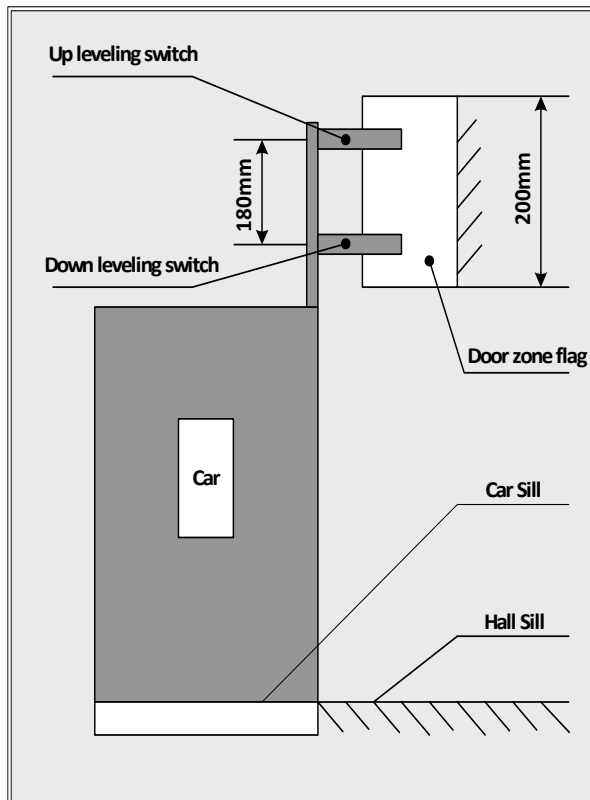
Door zone flag & Leveling Switch Position

Door zone flag adjustment:

1. Elevator stop at each floor, measure car and hall sills difference $\triangle$ S on each level at elevator park (car sills higher is position, lower is negative).

2. Adjust door zone flag on each floor, if $\triangle$ S>0, flag on this floor should move down $\triangle$ S; move flag up $\triangle$ S ,if $\triangle$ 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	下限位刻度 Lower Limit	The location of bottom limit in hoistway. Data will be recorded after finishing hoistway learning	m	--
U0-01	上限位刻度 Upper Limit	The location of top limit in hoistway. Data will be recorded after finishing hoistway learning。	m	--
U0-02	下端站 1 刻度 Lower Slowdown 1	Location of bottom terminal switch 1 in hoistway. Data will be recorded after finishing hoistway learning	m	--
U0-03	下端站 2 刻度 Lower Slowdown 2	Location of bottom terminal switch 2 in hoistway. Data will be recorded after finishing hoistway learning	m	--
U0-04	上端站 1 刻度 Upper Slowdown 1	Location of top terminal switch 1 in hoistway. Data will be recorded after finishing hoistway learning	m	--
U0-05	上端站 2 刻度 Upper Slowdown 2	Location of top terminal switch 2 in hoistway. Data will be recorded after finishing hoistway learning	m	--
U0-06 … U0-69	1 层刻度 … 64 层刻度 Floor Data 1…64	The location of floor 1-64 switches in hoistway. Data will be recorded after finishing hoistway learning	m	--

U1~U5 Monitoring Parameters

Para No.	Display (In Chinese) Display (In English)	Content	Unit	Ref Page
U1-00	输入状态 Input Data	Controller input data show in decimal type. It will be turned into binary type to show the logical status of the input port.	--	--
U1-01	输入状态指示 Input Bin	Input port data show in binary type .Each data correspond to logical status of one input port.	--	--
U1-02	输入状态评价 Input App	Each line correspond to one input port, "On/Off" states the current port status, the following "n" value states the signal appraisal to input level. Value from "10" to "0" refers to interference condition from good (less interference) to bad (large interference)	--	--
U2-00	输出状态 Output Data	Display the output port Y0-Y15 current status. The valid output port has the corresponded indication. Port without output (invalid) will be hidden.	--	--
U3-00	轿厢信号 Car Input Data	Display car input signal status. The valid input port has the corresponded indication. Port without input (invalid) will be hidden.	--	--
U4-00	运行次数 Run Times	Show the elevator accumulated running times. Adopts 10 digital decimal figures as indication	Times	--

U1~U5 Monitoring Parameters (Cont'd)

Para No.	Display (In Chinese) / Display (In English)	Content	Unit	Ref Page
U4-01	运行时间 / Run Hours	Show the elevator accumulated running hour. Adopts 10 digital decimal figures as indication.	Hour	--
U4-04	并联通讯 1 / SendApp1	Signal send appraisal for Duplex and group control. Large number means comm send more mistakes.	--	--
U4-05	并联通讯 2 / ReceiveApp2	Signal receive appraisal for Duplex and group control. Large number means communication receive more mistakes.	--	--
U4-06	电磁干扰评价 / Interfer Apprais	Appraise the value of interference strength at site. The big value refers to strong interference,"0" states no interference and good GND condition.	--	--
U4-07	编码器评价 / Encoder Apprais	The interference degree of encoder signal. When elevator runs steady, large value states the encoder signal weak with heavy interference.	--	--
U4-09	锁梯计数 / Lock Timer	The current elevator stop timer	--	--
U5-00	控制软件版本 / CtrlSoftWare NO	Show the elevator control software information. Provide the current software version for factory maintenance and software upgrading.	--	--
U5-01	驱动软件版本 / DriveCodeVer	Show the drive control software information. Provide the current software version for factory maintenance and software upgrading.	--	--
U5-02	底层驱动版本 / CpldEdition	Show base drive control software information. Provide the current software version for factory maintenance and software upgrading.	--	--

U3-00 Cabin Signal Content & Definition

Cabin signal	Symbol signal	Cabin terminal No.	Content
C00	IGM1	J3-4	door close 1 input
C01	IKM1	J2-4	door open 1 input
C02	IGM2	J5-4	door close 2 input
C03	IKM2	J4-4	door open 2 input
C04	GMV2	J10-6	door close limit 2 input
C05	KMV2	J10-5	door open limit 2 input
C06	GMV1	J9-3	door close limit 1 input
C07	KMV1	J9-2	door open limit 1 input
C08	SZY	J10-1	Special Use Input
C09	IGMYS	J6-4	door open delay input
C10	SZH	J9-10	Attendant input
C11	--	--	Empty (for Backup use)
C12	SZS	J10-2	Bypass drive input
C13	MZ	J9-6	Full-load input
C14	QZ	J9-8	Light-load input
C15	CZ	J9-5	Over-load input
C16	KZ(50%)	J9-9	50% Full-load (No-load) input
C17	KAB2	J9-7	Door safety plate 2
C18	KAB1	J9-4	Door safety plate 1

U6 Drive Monitoring Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Unit
U6-00	功率等级 / Power	Rated power class	kW
U6-01	给定转速 / Ref Speed	Reference Speed	RPM
U6-02	反馈转速 / Feedback Speed	Feedback Speed	RPM
U6-03	称重值 / Load	The current load in % of full load	%
U6-04	直流母线电压 / DC Voltage	DC BUS voltage	V
U6-05	输出电流 / Output Current	Output Current	A
U6-06	变频器内部温度 / Temperature	Drive internal temperature	˚C
U6-07	输出转矩 / 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	总楼层 / Total Floor	Total floor number (same as door zone plate number)	2~64	6	--	N
F0-01	基站层 / Homing Floor	Without landing/car call elevator will return this floor.	1~ Total Floor	1	--	N
F0-02	消防层 / Fire Floor	At fire-linkage circuit close, elevator enter fire mode and return to this floor automatically.	1~ Total Floor	1	--	N
F0-03	锁梯层 / 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	显示输出编码选择 / 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 层显示设置 / 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	电梯额定速度 / 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	折算转速 / Motor Speed	Motor speed at elevator rated speed (Calculated)	1~9999	1450	RPM	N
F1-03	检修运行速度 / 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	启动平滑速度 / 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	自救运行速度 / Leveling Speed	When elevator park outside door zone due to fault, if satisfy running condition, the elevator can level to door zone with this speed.	0.01 ~ 0.6	0.3	m/s	Y
F1-06	单层运行速度 / Least Speed	Steady speed on the lowest speed curve.	0~1.0	0.5	m/s	N
F1-07	提前开门速度 / Open Door Speed	Car speed when elevator open door in advance is allowed.	0~0.3	0.15	m/s	N
F1-08	再平层保护速度 / Relevelst Speed	The speed limit for re-leveling. If speed exceeds such value in re-leveling process, the re-leveling will stop with #03 protections.	0~0.3	0.3	m/s	N
F1-09	再平层运行速度 / Relevelrun Speed	Elevator running speed at re-leveling.	0~0.10	0.05	m/s	N
F1-10	加速斜率 B1 / Acceleration B1	B1 refers to the acceleration speed curve changing rate, smaller value means elevator start with smooth and gentle increase of speed.	0.1~1.0	0.7	m/s^2	N
F1-11	减速斜率 B2 / Deceleration B2	B2 refers to the deceleration speed curve changing rate, smaller value means elevator brake with smooth and gentle decrease of speed.	0.1~1.0	0.7	m/s^2	N
F1-12	S 曲线 P1 / S Curve P1	P1: Acceleration speed increase rate at beginning of elevator start; smaller value means beginning of elevator start with slow and steady movement.	0.1~1.0	0.6	m/s^3	N
F1-13	S 曲线 P2 / S Curve P2	P2: Acceleration speed decrease rate at end of elevator start; smaller value means end of elevator start with slow and steady movement.	0.1~1.0	0.6	m/s^3	N
F1-14	S 曲线 P3 / S Curve P3	P3: Deceleration speed increase rate at beginning of elevator brake; smaller value means beginning of elevator brake with slow and steady movement.。	0.1~1.0	0.6	m/s^3	N
F1-15	S 曲线 P4 / S Curve P4	P4: Deceleration speed decrease rate at end of elevator brake; smaller value means end of elevator brake with slow and steady movement.	0.1~1.0	0.6	m/s^3	N

Running Setup Parameters List (Cont'd)

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Change
F1-16	零速阈值 / 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	平层调整 / Leveling Adj	Adjust differences of up/ down leveling	0~100	50	mm	N
F1-18	称重调整 / 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	驱动模式 / 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	贯通门方式 / Two Door Mode	Setup rear door mode, based on customer requirements, set from mode"0" to"5".	0~5	0	--	N
F1-23	消防方式 / 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	并联梯号 / 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	并联使能 / Twins Control	Elevator duplex control: 1: On　　0:OFF	0/1	0	--	Y
F1-26	群控使能 / Group Control	Elevator group control: 1:ON　0:OFF	0/1	0	--	Y
F1-27	远程监控使能 / Far Monitor	Remote Monitoring System: 1：On　0：Off	0/1	0	--	Y
F1-28	自动开关梯使能 / Auto Parking	Auto parking: 1:ON　　　0:OFF	0/1	0	--	Y
F1-29	称重使能 / Load Enable	Load Weighing: 1:ON　　　0: OFF	0/1	0	--	Y
F1-30	开门延长使能 / Open Delay Able	Door open/close delay: 1:ON　　　0:OFF	0/1	0	--	Y
F1-31	闸臂反馈使能 / Brake Feedback	Test brake feedback signal: 1: open 2: close	0/1	0	--	Y
F1-32	解梯密码 / 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	提前开闸时间 / 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	抱闸时间 / 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	检修抱闸时间 / Insp Brake Time	The time delay in inspection mode before brake close.	0.00~ 9.99	0.05	s	Y
F2-04	零速时间 / 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	开门保持时间 / 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	开门延长时间 / 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	返基站时间 / 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	开关门保持时间 / 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	到站信号延时 / 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	使能延时 / 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	关照明延时 / 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	运行超时时间 / 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	启动平滑时间 / SmoothStart Time	The time to keep elevator start smooth.	0.00~9.99	0	s	Y
F2-14 F2-15	自动开梯时间 / 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	自动关梯时间 / 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	不停层开时间 / 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	不停层关时间 / 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	主板输入类型 / 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	轿厢输入类型 / 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	输入功能 1 / Input select 1	X19 Input Function Selection	0~32	19	N
F3-03	输入功能 2 / Input select 2	X22 Input Function Selection	0~32	22	N
F3-04	输入功能 3 / Input select 3	X23 Input Function Selection	0~32	23	N
F3-05	输入功能 4 / Input select 4	X24 Input Function Selection	0~32	24	N
F3-06	输入功能 5 / Input select 5	X25 Input Function Selection	0~32	25	N
F3-07	输出功能 1 / output select 1	Y0 Output Function Selection	0~32	0	N
F3-08	输出功能 2 / output select 2	Y11 Output Function Selection	0~32	11	N
F3-09	输出功能 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	不停层设置 1 / Set Stop Floor1	Set elevator stop/bypass at floor corresponds to each bit. (1-32 floors)	0~ 4294967295	4294967295	Y
F4-01	不停层设置 2 / Set Stop Floor2	Set elevator stop/bypass at floor corresponds to each bit. (33-64floors)	0~ 4294967295	4294967295	Y
F4-02	分时不停层 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	分时不停层 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	前门设置 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	后门设置 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	特殊功能选择 / Funtion Select	Set elevator functions enable /disable at floor corresponds to each bit. (ON: Enable, OFF: Disable)	0~ 4294967295	4	Y
F4-07	特殊功能选择 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 cabin overload signal, this is used in elevator 125% load test. OFF: Overload signal enable.
F4-06-06	ON: Y16 means inspection output, when floor display is in 7-segment code mode (First 7-segment display must be not occupied).
F4-06-07	ON: Direction arrow flashes when the car is running
F4-06-08	ON: When set floor display to 7-segment code mode, the floor display remains. OFF: When set floor display to 7-segment code mode, the floor display doesn't remain.
F4-06-09	ON: Elevator can cancel registered car call at running. If all call canceled, elevator stops in nearby floor.
F4-06-10	Only for internal test. Remain the default OFF state. ON: New curve is applied compulsively.

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.
F4-06-28	ON: Use light curtains/safety plates separately, the attendant up/down input terminal is used as front/rear door safety plates input. OFF: Light curtains and safety plates have serial connection (Blue-light default Setting)
F4-06-29	Spare
F4-06-30	ON: Integrated controller LED has reverse display. This is used for Blue-light G-series cabinet in room-less elevator (where control board is placed reversely) OFF: Integrated controller LED has normal display. (Blue-light default Settings)
F4-06-31	Spare

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。
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 avoid UPS battery pack deep discharge.(gnxz50)
F4-07-18	ON: The car waits at homing floor with door open.
F4-07-19	ON: Enable elevator run to bottom level in UPS running mode.(gnxz52)*: When applying this function, F4-07-00 and F4-07-25 will be no effect.
F4-07-20	ON：Enable TIM Stop Floor function. Stop floor time set1 Start time:F2-18 & 19; End time:F2-20 & 21 TIM stop floor time set1 corresponds Set Stop Floor parameter is：F4-00 Set Stop Floor1, F4-01 Set Stop Floor2. Stop floor time set2 Start time: F2-14&15; End time: F2-16 & 17(multiplexing start time/stop time setting). TIM stop floor time set2 corresponds Set Stop Floor parameter is：F4-02 Set Stop Floor1, F4-03 Set Stop Floor2.

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. It will avoid that the car door vane cannot drive the hall door when it is too short.(gnxz54)
F4-07-22	ON: Hall door circuit is separate from car door circuit. X36: hall door detect; X35: car door detect (non-high voltage circuit).
F4-07-23	Spare
F4-07-24	ON: Elevator return to homing floor to proofreading level number when power on for the first time.(gnxz57)
F4-07-25	Spare
F4-07-26	Spare
F4-07-27	Spare
F4-07-28	Spare
F4-07-29	ON: Leveling adjustment can be set separately. The default Leveling adjustment of each floor (1~64 floor) in setting parameters is 50mm.
F4-07-30	Spare
F4-07-31	Spare(gnxz64)
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. It will avoid that the car door vane cannot drive the hall door when it is too short.(gnxz54)
F4-07-22	ON: Hall door circuit is separate from car door circuit. X36: hall door detect; X35: car door detect (non-high voltage circuit).
F4-07-23	Spare
F4-07-24	ON: Elevator return to homing floor to proofreading level number when power on for the first time.(gnxz57)
F4-07-25	Spare
F4-07-26	Spare
F4-07-27	Spare
F4-07-28	Spare
F4-07-29	ON: Leveling adjustment can be set separately. The default Leveling adjustment of each floor (1~64 floor) in setting parameters is 50mm.
F4-07-30	Spare
F4-07-31	Spare(gnxz64)

Motor Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Chang
F5-00	电机类型 / Motor Type	Set motor type (0:sync- outer rotor, 1:async machine, 2:sync-inner rotor)	0～2	0	--	N
F5-01	电机极数 / Poles	Moto poles (Nameplate)	1~99	20	--	N
F5-02	电机同步频率 / Sync Freq	Motor synchronous frequency (Nameplate)	0.001 ~99.999	16	Hz	N
F5-03	电机额定功率 / Rated Power	Motor rated power (Nameplate)	1~50	6.7	kW	N
F5-04	电机额定转速 / Rated Speed	Motor rated speed (Nameplate)	1~1999	96	RPM	N
F5-05	反电动势 / V IN	Motor counter-EMF (Nameplate)	1~380	280	V	N
F5-06	电机相电感 / L_phase	Motor phase inductance set. (Auto-tuning/ manual input)	Auto-tuning/ Nameplate		mH	N
F5-07	电机相电阻 / R_phase	Motor phase resistance set. (Auto-tuning/ manual input)	Auto-tuning/ Nameplate		Ω	N
F5-08	电机额定电流 / Rated FLA	Motor rated current. (Nameplate)	0～99.999		A	N
F5-09	空载电流 / NO-Load Current	For asynchronous machine, no-load excitation current.	0.1~50	0	A	N
F5-10	滑差 / Rated Slip	For asynchronous machine rated slip. (Nameplate)	0.1~10	1.3	HZ	N
F6-00	载波频率 / Carrier Freq	Set controller carrier frequency.	6~15	8	kHz	N
F6-02	速度压缩比 / SpeedZoom	Speed Zoom (Reduce elevator actual running speed)	0~100	100	%	Y
F6-03	运行方向选择 / DirSel	Select motor running direction (0/1：Motor rotates anti-clockwise, car move down/up).	0/1	0	--	--
F6-04	速度环比例 / Kp	Speed loop proportional gain. (Valid for complete curve if not used in multiple PI.)	0~65535	1000	--	--
F6-05	速度环积分 / KI	Speed loop integral gain. (Valid for the complete curve if not used in multiple PI.)	0~65535	600	--	--

Multiple PI Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Chang
F7-00	多段 PI 使能 PIMulEnable	Multiple PI parameters 1: Enable; 0: Disable	0/1	0	--	N
F7-01	PI 作用范围 1 PI1 Range	PI available range 1 (Start -middle speed running PI switch frequency)	0～ Rated freq	0	Hz	Y
F7-02	PI 作用范围 2 PI2 Range	PI available range 2 (middle -high speed running PI switch frequency)	0～ Rated freq	0	Hz	Y
F7-04	PI 作用范围 4 PI3 Range	PI available range 4	0～ Rated freq	0	Hz	Y
F7-05	比例增益 1 Kp1	PI available range 1 proportional gain	0~2000	700	--	Y
F7-06	积分增益 1 Kx1	PI available range 1 integral gain	0~2000	260	--	Y
F7-07	比例增益 2 Kp2	PI available range 2 proportional gain	0~2000	0	--	Y
F7-08	积分增益 2 Kx2	PI available range 2 integral gain	0~2000	0	--	Y
F7-11	减速段比例 Kp3	PI available range 4 proportional gain	0~2000	700	--	Y
F7-12	减速段积分 Kx3	PI available range 4 integral gain	0~2000	260	--	Y

Encoder Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Chang
F8-00	编码器线数 Encoder PPR	The encoder pulse count per-revolution.	100~8192	8192	--	N
F8-02	PG 类型 PG Type	PG card type (0: Incremental encoder, 1: Sine/Cosine encoder）	0/1	0	--	N

Control Setup Parameters List

Para No.	Display (In Chinese) / Display (In English)	Content	Range	Factory Setting	Unit	Live Chang
F9-00	最大补偿力矩 / 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	速度来源选择 / SPDSourceSel	Speed given source selection: 0: Simulation; 1: Multi-segment 2: Internal; 3: Operator	0~3	2		N
F9-03	超差范围设定 / Spderr Set	Speed Deviation Set (100% correspond to machine rated speed.)	0~100	5	%	Y
F9-11	补偿使能 / Load Comp Enable	Load Compensation: 1 enable; 0 Unable	0/1	1	--	N
F9-13	称重来源 / Load Source Sel	Weighing source (0:SJT weighing, 1: -10~10V weighing, 2: 0-10V weighing)	0/1/2	0	--	N
F9-19	顺时针补偿偏置 / UP Comp Bias	Up direction (clockwise) Compensation Bias	-100~100	0	--	Y
F9-20	逆时针补偿偏置 / DOWN Comp Bias	Down direction (anti- clockwise) Compensation Bias	-100~100	0	--	Y
F9-21	满载补偿比例 / 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	启动段比例增益 / StratKP	Start-up proportional gain with no compensation.	0~50000	30	--	N
FA-01	启动段积分增益 / StratKI	Start-up integral gain with no compensation	0~50000	750	--	N
FA-08	无补偿比例 1 / PLKP1	No compensation effect proportional gain 1	1~6500	3600	--	N
FA-09	无补偿作用时间 / PLTime	No compensation effect time	1~1000	900	ms	N
FA-11	无补偿比例 2 / PLKP2	No compensation effect proportional gain 2	0~50000	800	--	N
FA-12	无补偿比例系数 / 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.

Special Parameters List

Para No.	Display (In Chinese) Display (In English)	Content	Range	Factory Setting	Live Chang
FC-00	Z 脉冲数 / Zpulse_Init	Result of motor angle tuning, same as FX-00.	0~3277	--	N
FC -07	电流环比例 / KpIreg	Current ring proportional (FX-07), **MODIFY WITH CAUTION!**	0~65535	10000	N
FC -08	电流环积分 / KxIreg	Current ring integral (FX-08), **MODIFY WITH CAUTION!**	0~65535	5000	N
FC-13	自学习方式选择 / AutoTuneModeSel	Sine/Cosine PG card auto- tuning selection (FX-20): 0:Rotation; 1:Stationary;	0/1	0	N
FC-14	负温度报警使能 / N Temp Alarm Ena	Negative temperature alarm (FX-21) 1: Alarm enable at -15C; 0: Alarm disable at -15C.	0/1	1	N
FC-15	初始定位使能 / 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
FC-16	CD 信号方向选择 / 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

Environment Setup Parameters List

Para No.	Display (In Chinese) Display (In English)	Content	Range	Factory Setting	Live Chang
A0-00	显示语言 / Language Sel	Language selection	--	Chinese	Y
A0-01	用户密码 / User Password	Input/Setting user level password	000000~ 999999	000000	Y
A0-02	厂家密码 / Factory Password	Input/setting factory level password	000000~ 999999	0000000	Y
A0-04	对比度 / Contrast	Setting the LCD contrast level	0~10	5	N

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 terminal block or change in parameter setup.
Er5	Brake open fault：System does not receive brake open feedback signal after output brake open command: 1. No X6/X31 feedback after Y0output 0.5/2s. 2. X6/X31 enable when Y0 has no output.	1. Check the traction machine brake detection switch and wiring; 2. If no feedback switch, should set feedback enable to **OFF**
Er6	During elevator running, leveling zone input signal X3, X4 is always on.	Check leveling zone signal circuit and induction switch
Er7	Inverter pulse not enough at elevator running.	Check the wiring from encoder to controller.
Er9	KDY fault: Contactor KDY output not matching feedback signal: 1. After Y1 output X5 no feedback in 0.4s. 2. X5 is enabled when Y1 has no output.	Check the contactor KDY coil and output/feedback circuit wiring.
Er10	Safety circuit open, input X10 is invalid.	Check all safety circuits.
Er11	Leveling switch signal missing: Elevator is running pass the floor, but there is not input at X3 /X4.	Check the leveling switches and its wiring.
Er12	Elevator pass top limit switch (X1 is invalid)	Check encoder, top limit switch including its position / wiring.
Er13	Elevator pass bottom limit switch (X2 is invalid)	Check encoder, bottom limit switch including its position / wiring.
Er14	Floor counter error from encoder deviation accumulation: after this error, elevator will return to bottom floor in inspection speed for recalibration.	1. Check encoder wiring and related circuits; 2. Check the leveling switch and related circuits; 3. Possible reason: traction rope slip /door drive shake at start.
Er17	No drive output after running command.	Check parameters in controller or contact supplier.
Er18	Floor number error: after this error, elevator will return to bottom floor in inspection speed for recalibration.	Check the encoder and its wiring.

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	Controller main contactor MC dose not close after given close command for set time.	1. Wrong wiring for MC contactor; 2. MC contactor damaged.	Try to reset the power, if this error occurs again, contact supplier for replacement.
DF14	BR	Brake unit fault	1. Brake cable/elements issue; 2. External brake resistor disconnected.	1. Check brake resistor; 2. Replace the controller.
DF15	OF	Output phase lost	1. Output cable break or loose terminal. 2. Disconnect motor stator cable.	1. Check output cable/terminal; 2. Check motor stator cable.
DF16	SCF	Current remains at elevator stop.	Controller damaged.	Change the controller.
DF17	SRF	Elevator slip after stop.	1. Brake/encoder loose; 2. Encoder interference.	1. Fasten brake/encoder; 2. Remove interference source.
DF18	UF	Signal U of encoder wire lost.	Encoder damaged or wiring incorrect.	Check encoder and wirings
DF19	VF	Signal V of encoder wire lost.	Encoder damaged or wiring incorrect.	Check encoder and wirings
DF20	WF	Signal W of encoder wire lost.	Encoder damaged or wiring incorrect.	Check encoder and wirings
DF21	DF	Parameter setting error	Parameter setting error	Check parameter setting
DF22	SDF	Internal programmer check error	Internal data setting error	Please contact supplier

Appendix VII　Menu operation processes with Digital tubes & operation keys
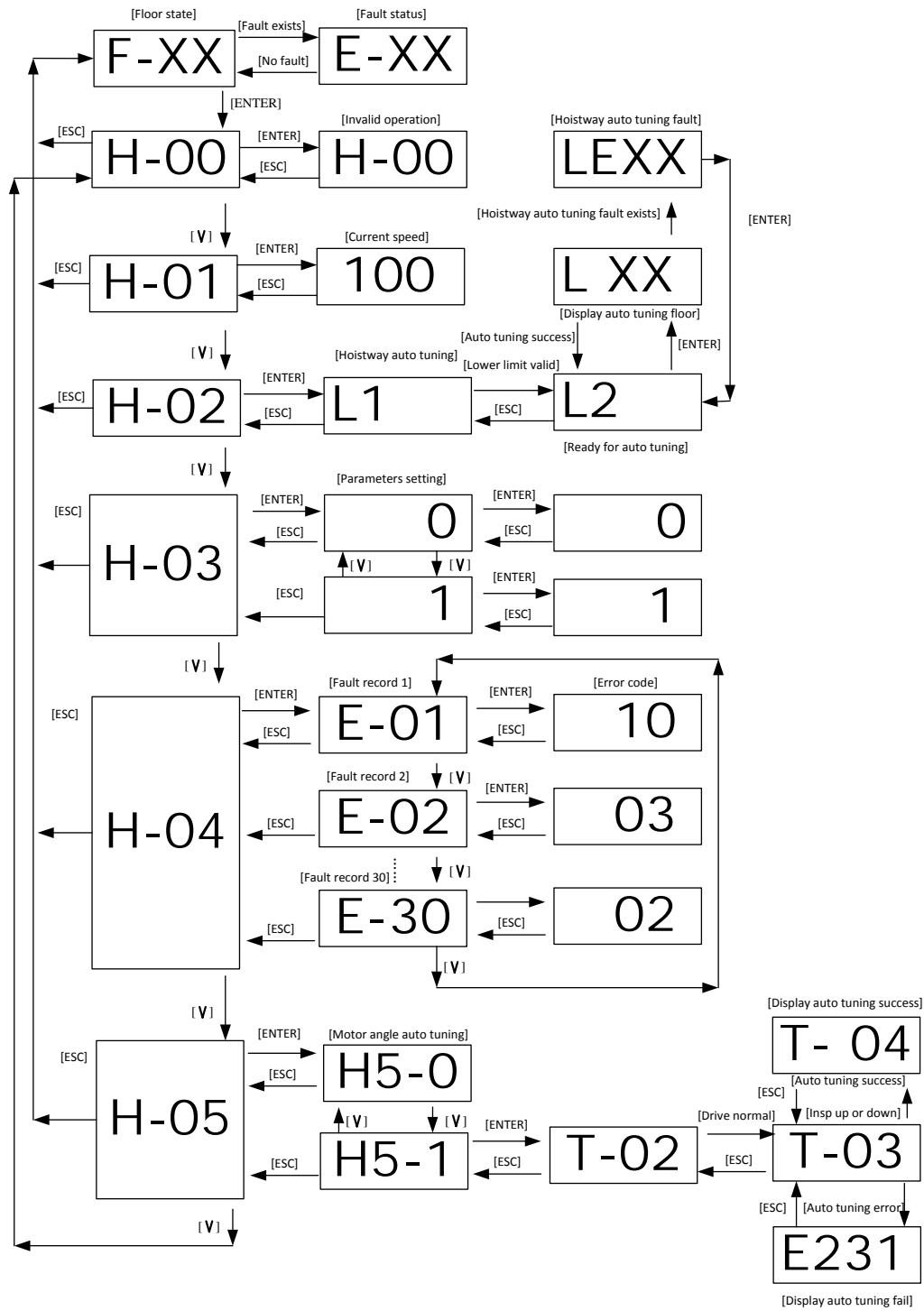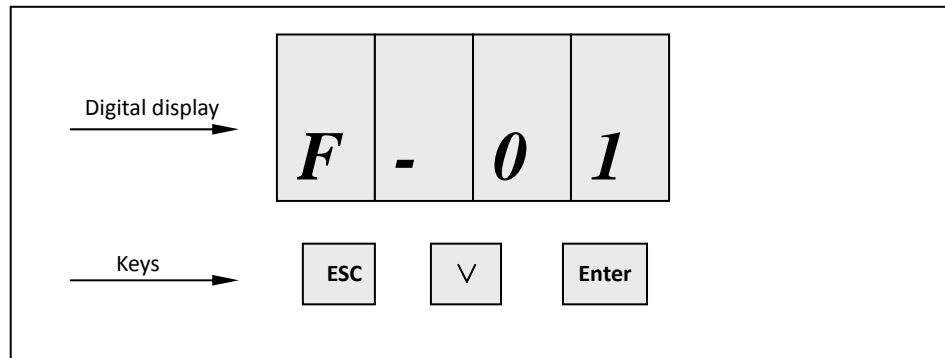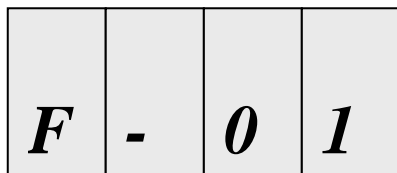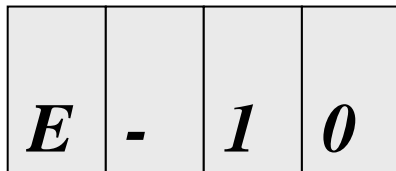
Figure Display and key layout
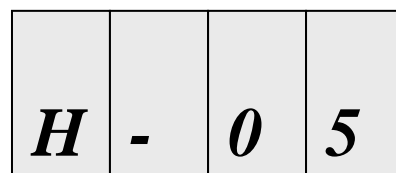
ESC: Cancel/return key;

▽: Flip key;

ENTER: OK key;
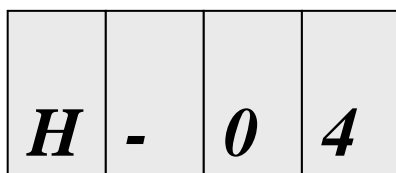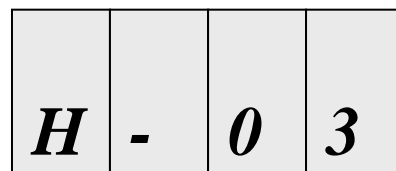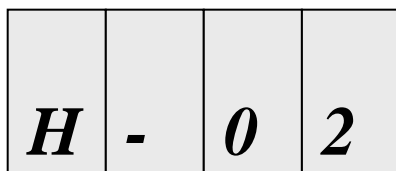
1. **Normally, display current floor F-XX:**

$$F - 0\ 1$$

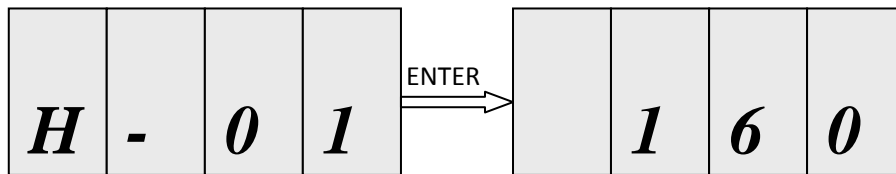2. **Digital tube flashing display error code when fault occurs.**

$$E - 1\ 0$$

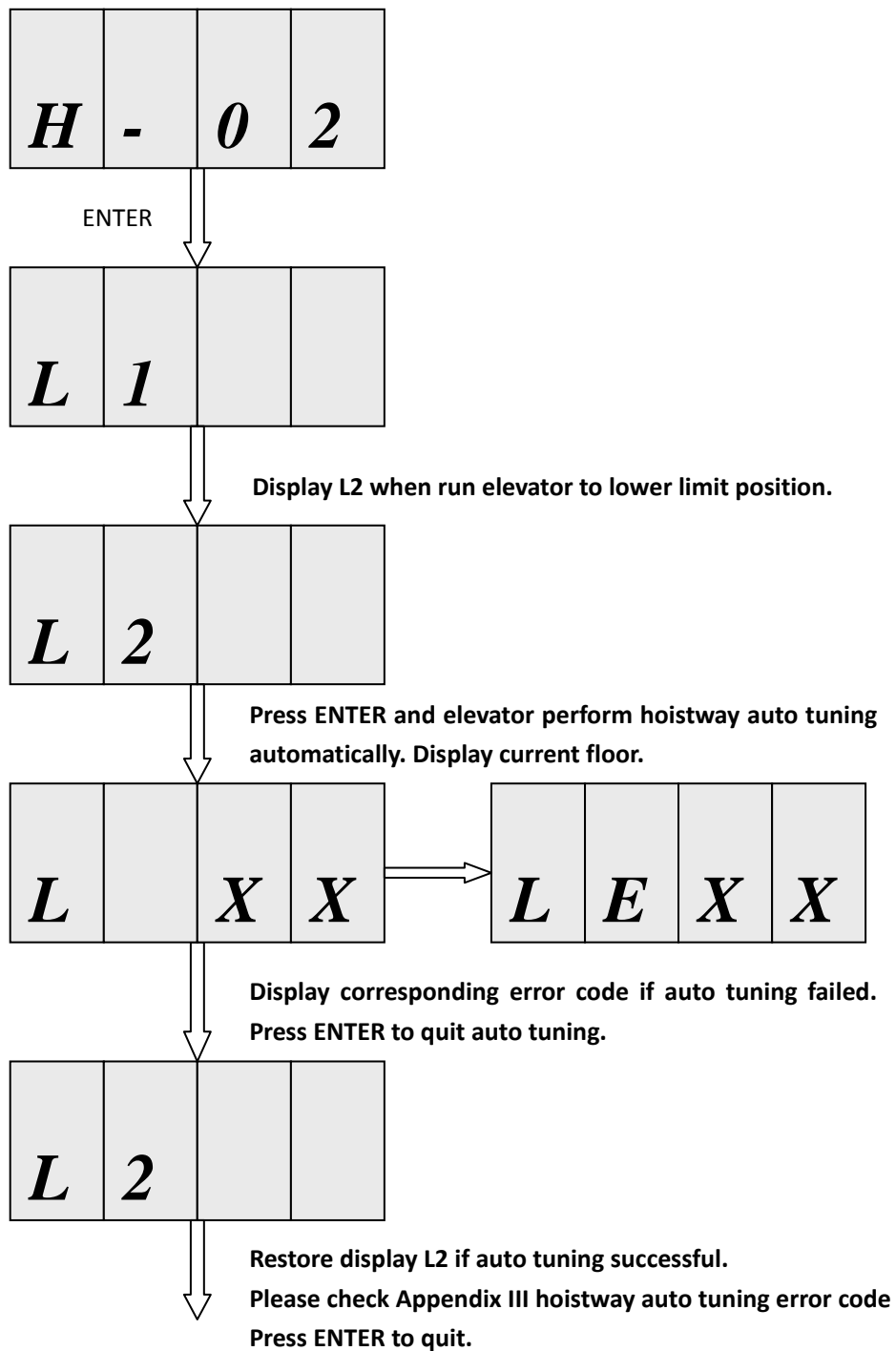3. **Press ENTER key and Flip key to select H-00~H-04 parameters:**

$$H - 0\ 0 \qquad H - 0\ 1$$

$$H - 0\ 2 \qquad H - 0\ 3$$

$$H - 0\ 4 \qquad H - 0\ 5$$
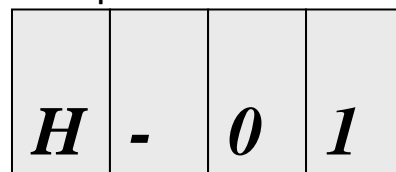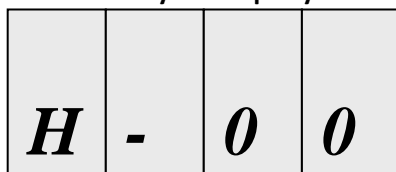
4. **H-00: Invalid parameter;**

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

H	*-*	*0*	*1*

ENTER →

	1	*6*	*0*

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

H	*-*	*0*	*2*

ENTER ↓

L	*1*		

Display L2 when run elevator to lower limit position.

L	*2*		

Press ENTER and elevator perform hoistway auto tuning automatically. Display current floor.

L		*X*	*X*

→

L	*E*	*X*	*X*

Display corresponding error code if auto tuning failed. Press ENTER to quit auto tuning.

L	*2*		

Restore display L2 if auto tuning successful.
Please check Appendix III hoistway auto tuning error code
Press ENTER to quit.

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).**

H	*-*	*0*	*3*

ENTER ⟹

			0/1
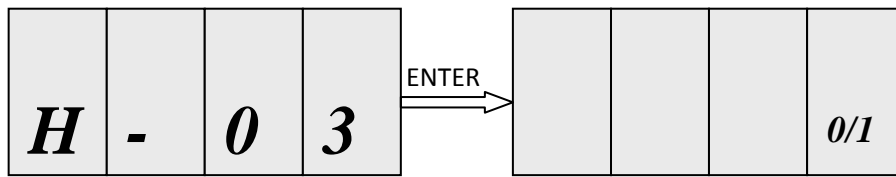
8. **H-04: View 30 fault recodes.**

H	*-*	*0*	*4*

⇩

ENTER

E	*-*	*0*	*1*

ENTER ⟺

		1	*0*

Fault No. ⇩   **Error code (Please check Appendix III elevator system faults)**

E	*-*	*0*	*2*

ENTER ⟺

		0	*9*

⇩

......

⇩

E	*-*	*3*	*0*

ENTER ⟺

		0	*9*
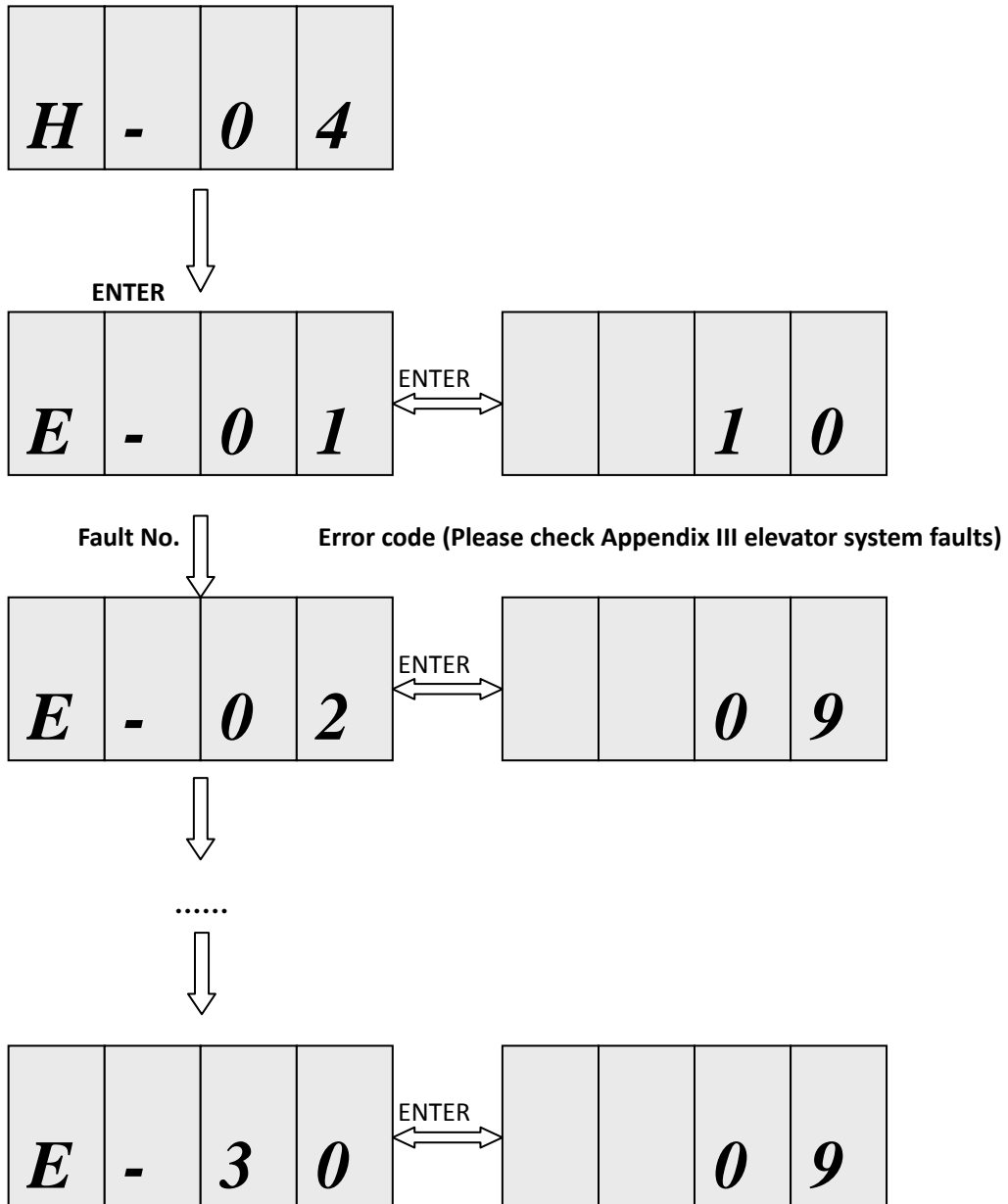
9. H-05: Motor static angle auto tuning

$$H - 0\ 5$$

$$H\ 5 - \ {}^{0/1}$$

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

$$T - 0\ 2$$

After drive microcontroller answer normal, display is shown below:

$$T - 0\ 3$$
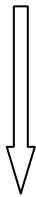
Keep pressing jog up or jog down to rotate motor 3 circles.

Auto tuning fault
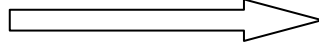
$$E\ X\ X\ X$$

Handling according to error information prompted.

$$T - 0\ 4$$

Auto tuning proceeds gradually.

Press ENTER to quit.