Thank you for purchase of ELIO I/O Board!

SAFETY PRECAUTIONS

- Always follow safety precautions to prevent accidents and potential hazards from occurring.
- Safety precautions are classified into “WARNING” and “CAUTION” in this manual.

WARNING	Indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, can result in minor to moderate injury, or serious damage to the product.

- Throughout this manual we use the following two illustrations to make you aware of safety considerations:

Identifies potential hazards.
Read the message and follow the instructions carefully.

Identifies shock hazards.
Particular attention should be directed because dangerous voltage may be present.

- Keep this manual at handy for quick reference.

CAUTION

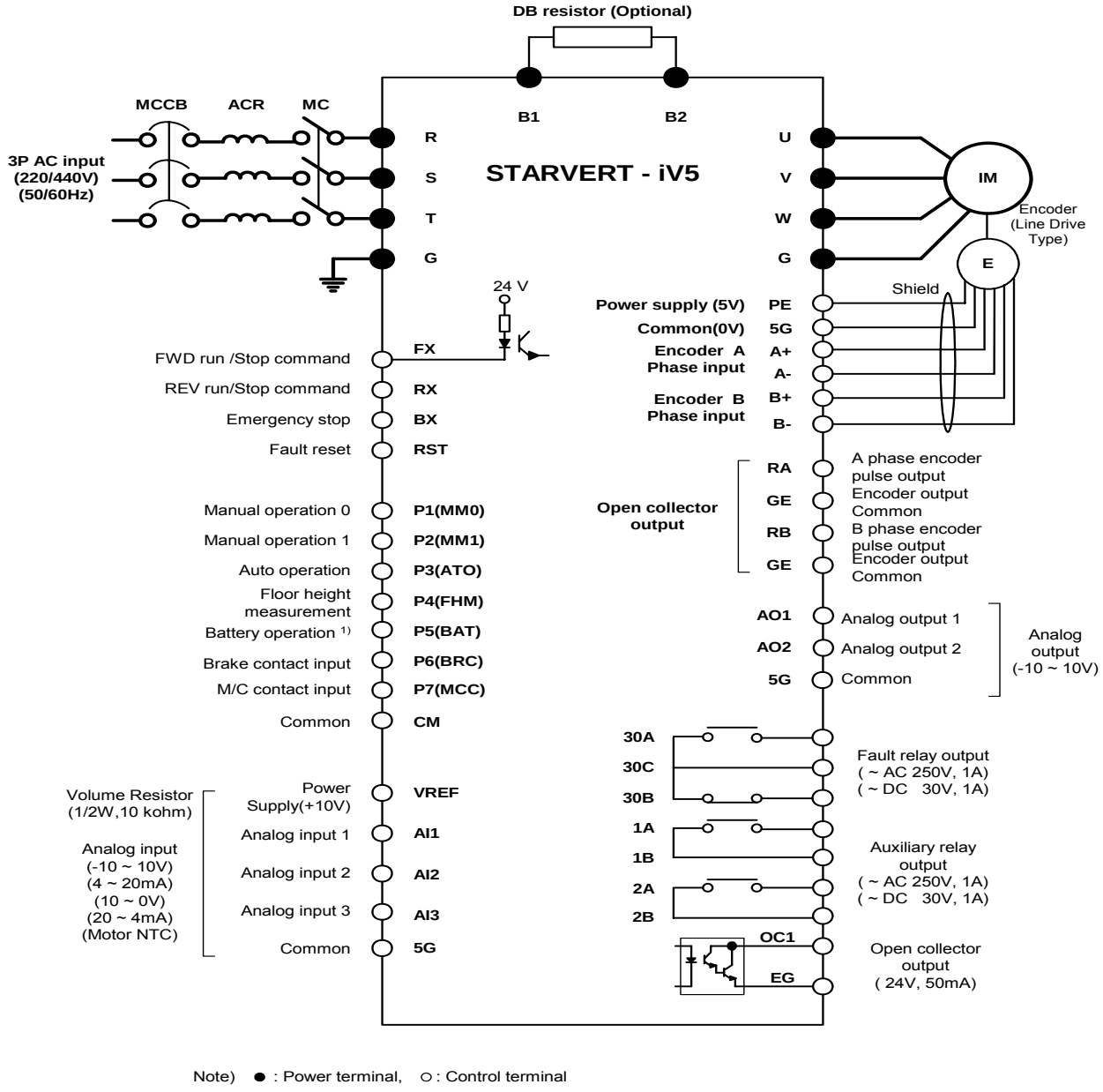
- **Do not touch the CMOS components unless the board is grounded.**
  ESD can cause break down of CMOS components.
- **Do not change the communication cable with the inverter power is turned on.**
  Otherwise, there is a danger of connecting error and damage to the board.
- **Make sure to precisely insert the connector of inverter and option board**
  Otherwise, there is a danger of connecting error and damage to the board.
- **Check the parameter unit when setting the parameters.**
  Otherwise, there is a danger of connecting error and damage to the board.

Refer to iV5 series User Manual for general functions. This manual only describes functions for Elevator I/O board. To use elevator functions, EL-I/O (Elevator-dedicated I/O) board should be installed onto the iV5 inverter.

1 Installation and wiring

1.1 Terminal wiring block diagram

■ **SV055, 075, 110, 150, 185, 220iV5-2(DB)**
SV055, 075, 110, 150, 185, 220iV5-4(DB)

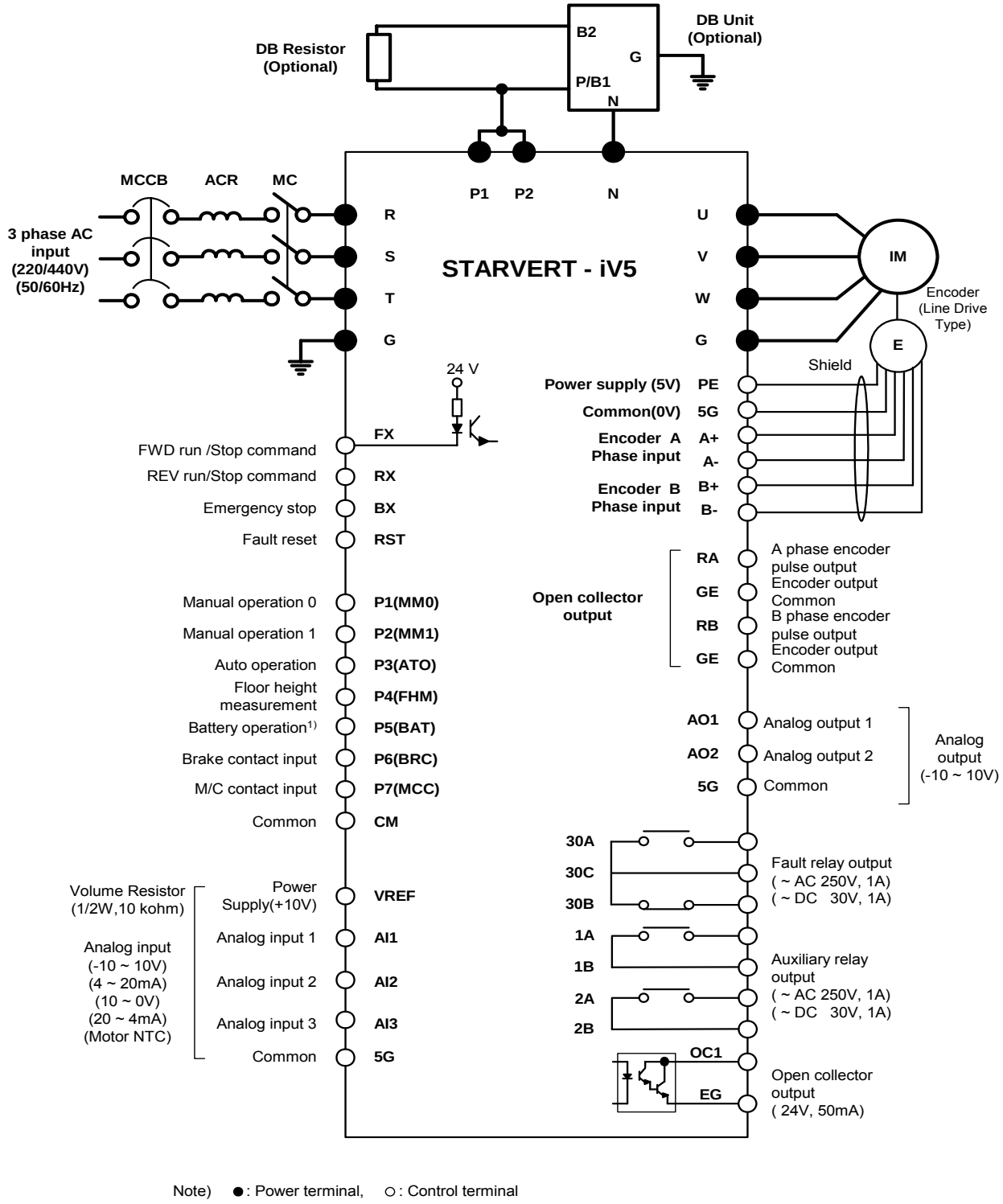


Note) ● : Power terminal, ○ : Control terminal

1) P1 ~ P7 values shown above are factory defaults. Battery operation is in preparation.

■ SV300, 370iV5-2

SV300, 370, 450, 550, 750, 900, 1100, 1320, 1600, 2200iV5-4

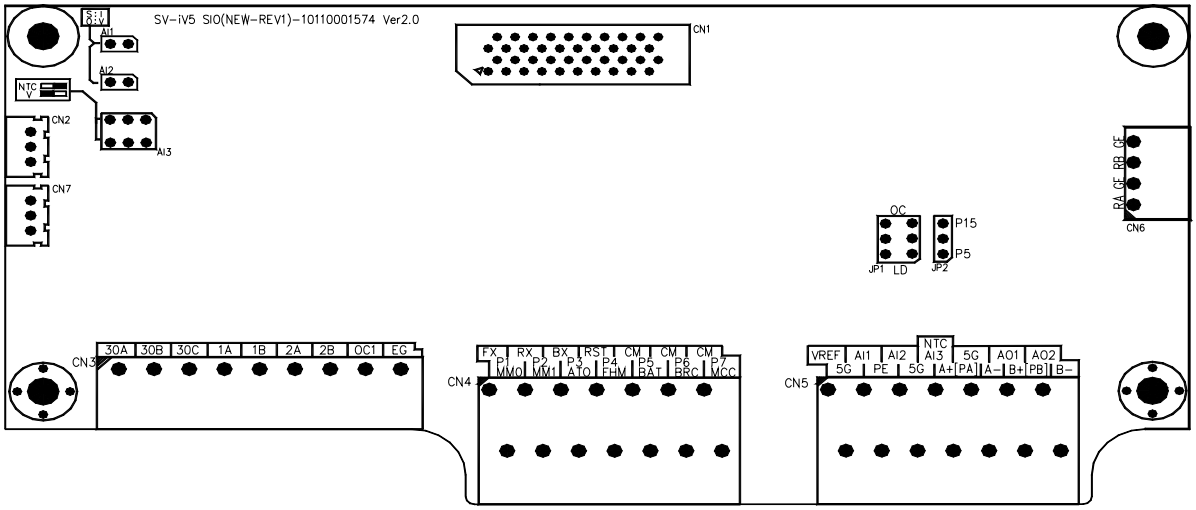


Note) ●: Power terminal, ○: Control terminal

1) P1 ~ P7 shown above are factory defaults. Battery operation is in preparation.

1.2 Control terminal – Standard I/O Board and Elevator I/O board (EL-I/O)

1) Standard I/O Board terminal layout



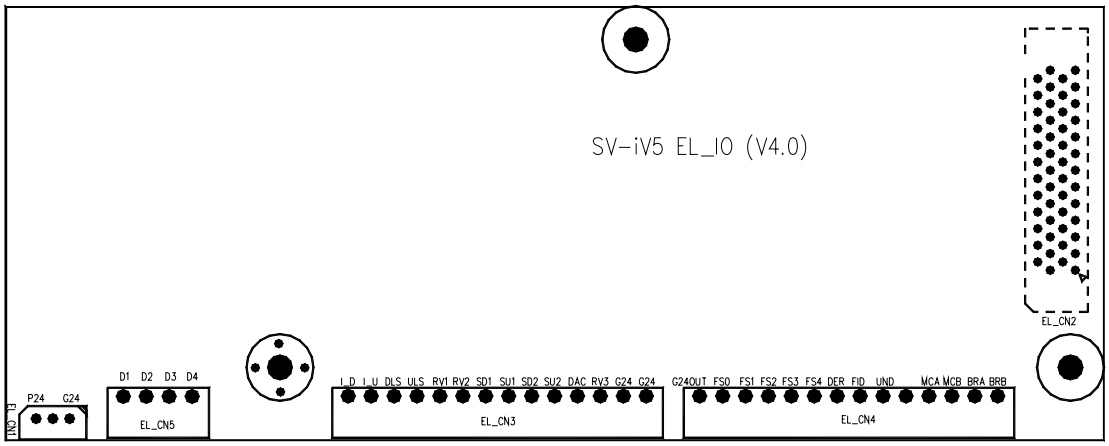
2) Standard I/O Board terminal description

	Code	Function	Description
Contact input	FX	Forward RUN /Stop command	● Forward/Reverse RUN Command is ON when closed to CM separately. ● Motor stops when FX/RX is ON or OFF at the same time.
	RX	Reverse RUN / Stop command	
	BX	Emergency stop	ON when closed to CM, FREERUN Stop and Deceleration Stop. It does not trigger fault alarm signal.
	RST	Fault reset	Resets when fault condition is cancelled.
	P1(MM0)	Multi-function input terminals	● **Elevator mode- the following 7 functions added to vector mode functions.** Manual operation mode 0/1 (MM0, MM1), Auto operation mode (ATO), Floor Height Measurement (FHM), Operation using Battery (BAT)(1), Brake Contact input (BRC), M/C contact input(MCC) ● Operation using Battery function (BAT) is in preparation.
	P2(MM1)		
	P3(AT0)		
	P4(FHM)		
	P5(BAT)		
	P6(BRC)		
	P7(MCC)		
	CM	COMMON	● ON when each contact is closed to CM.
Analog input	VREF	Power Supply for analog setting	● Reference voltage by variable resistor (+ 10V): 10kΩ
	AI1	Voltage/current input	● Voltage input (-10 ~ 10V) or current (4~20mA) input, Motor NTC input selectable. Selectable among following 8 different functions. (Speed/Torque/Flux command, Torque bias, Torque limit, Process PI controller command/ feedback value, Draw command, Motor NTC)
	AI2		

	Code	Function	Description
	AI3	Voltage input Motor NTC input	● **Jumper setting for voltage input (Jumpered as default)** **➔ AI1 and AI2 Open, AI3: Switch set to Left** ● **Jumper setting for current input** **➔ AI1 and AI2 Closed** ● **Switch setting for motor NTC signal (based on LG Otis Motor)** **➔ AI3: switch set to Right**
	5G	COMMON	● COMMON for analog input
Pulse Encoder Input	PE	Power Supply for Line Drive Encoder	+5V
	5G		0V
	A+	Encoder A phase	● A, B signal in **Line Drive type Pulse Encoder** ● Jumper JP2 on the I/O PCB should be tied to P5. Set JP1 switch to "LD". Jumpered as default.
	A-		
	B+	Encoder B phase	
	B-		
	PE	Power Supply for Open Collector Encoder	+15V
	5G		0V
	PA	Encoder A phase	● A, B signal in **Complementary** or **Open Collector type Pulse Encoder**. Jumper JP2 on the I/O PCB should be tied to P15. Set JP1 switch to "OC".
	PB	Encoder B phase	
Encoder output	RA	A phase encoder pulse output	Encoder A, B phase signal output – Open Collector Type
	GE	Output Common	
	RB	B phase encoder pulse output	
	GE	Output Common	
Analog Output	AO1	Analog output 1	● -10V ~ +10V ● Selectable among 31 different functions (Motor speed, Speed command1~2, Torque command1~2, Torque current, Flux command, Flux current, Output current, Output voltage, Motor temperature, DC Voltage..)
	AO2	Analog output 2	
	5G	COMMON	● COMMON for analog output
Contact Output	1A	Auxiliary relay Output 1 (A contact)	● Selectable among the following 14 functions Zero speed detect, Speed detect (Bi-directional), Speed detect (Uni-directional), Speed reach, Speed deviation, Torque detect, On torque limit, Motor overheat, Inverter overheat, On low voltage, Inverter running, Inverter regenerating, Inverter Ready, Timer output, **Nearest/Base floor operation status/end, E/L Fault (Available only with EL_IO board installed.)**
	1B		
	2A	Auxiliary relay Output 2 (A contact)	
	2B		
	OC1	Multi-function Contact output	
	EG		
	30A	Fault alarm, A contact	● Activated when fault occurs. ● Not activated in case of emergency stop
	30B	Fault alarm, B contact	
	30C	COMMON	● COMMON for contact A and B

3) Elevator I/O board (EL-I/O) terminal layout

■ **EL-I/O version: V4.0**



4) Elevator I/O board (EL-I/O) function description

	Code	Function	Description
Elevator contact input (CN3)	I_D	Signal for lower Inductor	Lower inductor signal for detecting car position
	I_U	Signal for upper Inductor	Upper inductor signal for detecting Car position
	DLS	Down Limit Switch	Switch for limiting car down operation. Down operation is disabled when this switch turns ON.
	ULS	Up Limit Switch	Switch for limiting car up operation. Up operation is disabled when this switch turns ON.
	WD1	Reserved	
	WD2	Reserved	
	SD1	Slow Down Switch Down 1	1st Slow-down Switch for forced deceleration
	SU1	Slow Down Switch Up 1	1st Slow-down Switch for forced deceleration
	SD2	Slow Down Switch Down 2	2nd Slow-down Switch for forced deceleration
	SU2	Slow Down Switch Up 2	2nd Slow-down Switch for forced deceleration
	DAC	Decel Acknowledge Command	Acknowledging signal for deceleration
	ACR	Reserved	
	G24	COMMON	ON when each contact input and G24 is connected.
	G24		
Elevator contact output (CN4)	G24OUT	COMMON	Common for contact outputs
	FS0	Floor Stop request /Current floor bit 0	● Floor Stop request /Current floor data format (1~32nd) Bit4 Bit3 Bit2 Bit1 Bit0 FS4 FS3 FS2 FS1 FS0 1st floor: OFF OFF OFF OFF OFF 32nd floor: ON ON ON ON ON
	FS1	Floor Stop request/ Current floor bit 1	
	FS2	Floor Stop/ Current floor bit 2	
	FS3	Floor Stop request / Current floor bit 3	

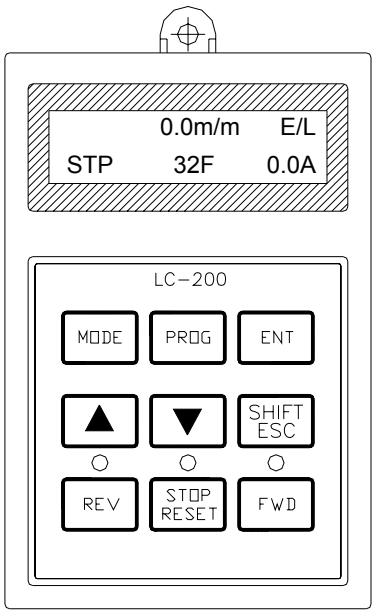
<table>
<tr><th></th><th>Code</th><th>Function</th><th>Description</th></tr>
<tr><td rowspan="6"></td><td>FS4</td><td>Floor Stop request / Current floor bit 4</td><td></td></tr>
<tr><td>DER</td><td>Decel request signal</td><td>Operation controller outputs DAC signal when this signal is input and stop request floor and hall call floor matches.</td></tr>
<tr><td>FID</td><td>Floor Indication Signal</td><td>ON: floor call (Hall call) to stop (forward going floor)
OFF: Current floor</td></tr>
<tr><td>UND</td><td>Signal during decel</td><td>ON when motor is in deceleration.</td></tr>
<tr><td>MCA/MCB</td><td>M/C A contact</td><td>Activating M/C for blocking inverter output</td></tr>
<tr><td>BRA/BRB</td><td>Brake A Contact</td><td>Activating Traction Machine Brake</td></tr>
<tr><td rowspan="4">Fault Output (CN5)</td><td>D1</td><td>Fault history BIT0 (LSB)</td><td rowspan="4">Inverter outputs Fault message in 4 bit. <u>(available from ELIO V4.0).</u> E/L fault output has priority over Inverter fault output.

To differentiate E/L fault from Inverter fault, define one of the Ax1~OC1 to “E/L Fault”. If the defined contact is turned ON, E/L fault occurs and if turned Off, Inverter fault occurs.
< E/L fault output code >
<table><tr><th>Fault message</th><th>D4</th><th>D3</th><th>D2</th><th>D1</th></tr><tr><td>No Fault</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr><tr><td>FHM RUN Fail</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td></tr><tr><td>Flr Data Fail</td><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td></tr><tr><td>CHKSUM Err</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr><tr><td>NOTRDY(E/L)</td><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td></tr><tr><td>DECEL</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td></tr><tr><td>ACC/DEC</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td></tr><tr><td>SDS Error</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td></tr><tr><td>IND Reserved</td><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td></tr><tr><td>IND’TOR Fail</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td></tr><tr><td>CMDSRC</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr><tr><td>NOTRDY (FHM)</td><td>ON</td><td>OFF</td><td>ON</td><td>ON</td></tr></table>
< Inverter fault output code >
<table><tr><th>Fault message</th><th>D4</th><th>D3</th><th>D2</th><th>D1</th></tr><tr><td>No Fault</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr><tr><td>ArmShort-U,V,W</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td></tr><tr><td>Fuse Open</td><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td></tr><tr><td>Ground Fault</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr><tr><td>OC-U,V,W</td><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td></tr><tr><td>Over Voltage</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td></tr><tr><td>Encoder Err</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td></tr><tr><td>Low Voltage</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td></tr><tr><td>InvOverHeat</td><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td></tr><tr><td>E-Thermal</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td></tr><tr><td>Over Load</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr><tr><td>Ext.Trip-B</td><td>ON</td><td>OFF</td><td>ON</td><td>ON</td></tr><tr><td>Inv. OLT</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td></tr><tr><td>MotOverHeat</td><td>ON</td><td>ON</td><td>OFF</td><td>ON</td></tr><tr><td>InvThemOP MotThemOP</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr><tr><td>OverSpeed</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td></tr></table></td></tr>
<tr><td>D2</td><td>Fault history BIT1</td></tr>
<tr><td>D3</td><td>Fault history BIT2</td></tr>
<tr><td>D4</td><td>Fault history BIT3</td></tr>
</table>

2 Getting started

2.1 Changing to Elevator mode

Set CON_02 (Application) to “Elevator” while I/O option board for Elevator (E/L-I/O) is installed. Then, LCD window is displayed as shown below. Refer to Chapter 4, keypad for detailed key configuration.



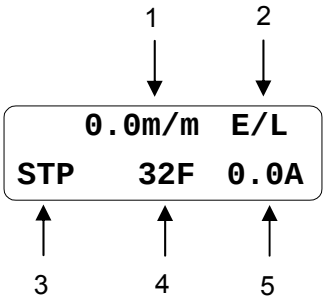
1) Programming Elevator mode

CON▶Application 02 General Vect	Move to Application mode in CON group. (CON_02 settable and displayed Only when Elevator I/O card installed.)
CON▶ Application 02 General Vect ■	Press the [PROG] key. General Vector mode (■) will be displayed.
CON▶ Application 02 Elevator ■	Set to Elevator mode using the [▲(Up)] key.
CON▶ Application 02 Elevator	Press the [ENT] key to finish.

* Basic parameters for E/L application are automatically set when E/L mode is set.

2.2 LCD display

1) Initial display



It is called “initial display of Display group or “initial display”. To return to this code from other codes, press SHIFT/ESC key. See the following table for details.

	Items	Description
1	Elevator car position and speed (settable in E/L_58)	m/m: car speed per minute m/s: car speed per second rpm: motor actual rotating speed mm: car’s current position motor output torque(%), limit switch input status Remaining distance when 1st inductor (upper) is activated
2	Elevator operation mode	E/L: Auto operation mode MAN: Manual operation mode FHM: Floor Height Measurement operation mode N/A: Operation mode not selected (disabled)
3	Current car operating direction	UP: car operating Upward DN: car operating Downward STP: car at a stop
4	Current floor (F)	Current floor displayed
5	Inverter output current (A)	Current flowing to motor displayed

2.3 Changing parameter group

Elevator (**E/L**) group is added below User group when selected.

Groups	LCD display (Up left side of LCD)	Description
Display	DIS	Motor rpm, motor control mode, output torque, inverter output current, User-selection display, Process PID output/Ref/Fdb, Current fault display, User group display selection
Input/Output	I/O	Digital input parameter, Digital output parameter, Analog input parameter, Analog output parameter etc.
Parameter	PAR	Parameter initialize, Parameter READ / WRITE / LOCK / PASSWORD, Motor parameters, Auto tuning etc.
Function	FUN	Operating frequency, Operating method, Stopping method, Accel/Decel time and pattern, Carrier frequency, Electronic thermal selectable
Control	CON	Control mode, ASR PI Gain, Process PID Gain, Draw Control, Droop/ Torque/ V/F control parameters
User	USR	User macro define, User macro save, User macro recall
E/L	**E/L**	**Elevator speed pattern and parameter setting for position control**

- Refer to Chapter 6. Function description except E/L group.

2.4 Motor parameter input

Set the motor parameters as shown below before performing Auto-tuning function to maximize elevator operating condition.

Keypad display	Description
PAR▶ Motor select 07 kW	Enter the motor capacity. Normally it is same as inverter capacity. If no match is found on the list, select “User Define” in PAR_07 and enter the rating in PAR_08 directly.
PAR▶ UserMotorSel 08 kW	In the case of selecting “User Define” in PAR_07, set the motor rating in this code directly. (This code is only displayed when “User Define” is set in PAR_07.)
PAR▶ Enc Pulse 09 [][][][]	Set the pulse numbers per revolution of pulse encoder coupled with the motor shaft.
PAR▶ Base Speed 16 rpm	Set the motor base speed. ☞ Note : it is not the motor nameplate rpm.
PAR▶ Rated Volt 17 V	Set the rated voltage of the motor. (Voltage value on the name plate)
PAR▶ Pole number 18 []	Set the number of poles of the motor.
PAR▶ Efficiency 19 %	Set the efficiency of the motor. If this is not indicated on the nameplate, do not change the initial value.
PAR▶ Rated-Slip 20 rpm	Set the rated slip of the motor. Rated slip = motor base speed – rated speed
PAR▶ Rated-Curr 21 A	Set the rated current of the motor.

2.5 Auto-Tuning

Parameters such as stator resistance (Rs), stator leakage inductance (sL), flux current (IF), rotor time constant (τ r) and stator self-inductance (Ls) are indispensable for obtaining an excellent control performance in the vector control and are automatically measured in a motor stop.

1) Before starting

Turn traction machine brake Off to hold the motor shaft tightly.

2) Auto-tuning procedure

Keypad display	Description	Tuning time
PAR ▶ AutoTuneType 23 StandStill	Set the auto-tuning type to "**Standstill**".	-
PAR ▶ Auto tuning 24 ALL1	Auto-tuning starts upon **ALL1** is set.	-
PAR ▶ Auto tuning 24 Rs Tuning	Stator resistance (R_s) is measured without rotating the motor.	20 ~ 30(sec)
PAR ▶ Auto tuning 24 sL Tuning	Leakage inductance (sL) of the motor is measured without rotating the motor.	90~ 150(sec)
PAR ▶ Auto tuning 24 If/Tr/Ls Tuning	Flux current (IF), rotor time constant (τ_r) and stator self-inductance (Ls) is measured simultaneously without rotating the motor.	40 ~ 70(sec)
PAR ▶ Auto tuning 24 None PAR ▶ Auto tuning 24 [][] Error	When auto-tuning is complete successfully, "None" is displayed. If error occurs during auto-tuning, "[][] Error" is displayed. In this case, verify motor parameters and encoder setting are done properly and redo the auto-tuning. If the problem persists, contact LS representatives.	**Total: 3 ~ 5(Min)**

2.6 Elevator parameter setting ((Ex) 1500rpm, 120m/min, 32nd floor)

1) Enter total floor number

Enter the total number of floors including ground floor which inductor plates are installed.

```
E/L▶          Floor
Number
```

2) Enter Elevator rated speed

```
E/L▶   Car Speed
03      120m/m
```

3) Enter Motor rated rpm

Enter motor rpm while a car is operating at its rated speed in E/L_03. Enter motor rpm when a car is operating at E/L_03(rated speed of the car). E/L_03 and E/L_04 value should be entered correctly because inverter calculates remaining distance from these values. When there are some changes made in these codes E/L_03 and E/L_04 after FHM operation (See 2.9), make sure to perform FHM operation again. Increase E/L_04 value to make car's operating speed faster because Inverter controls the motor in Rpm unit (inverter converts m/m to rpm.).

```
E/L▶  Motor Speed
04      1500rpm
```

2.7 Operating mode and Multi-function relay output setting

Changing Elevator operating modes (High speed /Manual/FHM operation) are available using Multi-function input terminals. Multi-function input terminal's factory setting is "**Not Used" but if CON_02 setting is changed to "Elevator", P1~P4 terminals are automatically defined as MM0/P1, MM1/P2, ATO/P3 and FHM/P4 to select elevator operating modes. However, if I/O_01~I/O_04 setting is other than "Not Used", the following settings are not made automatically.**

```
I/O▶   P1 define
01 Manual Spd-L
```

```
I/O▶   P2 define
02 Manual Spd-H
```

```
I/O▶   P3 define
03 HighSpeedRun
```

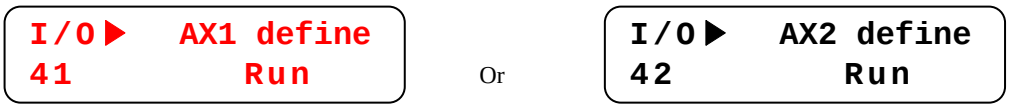
```
I/O▶   P4 define
04     FHM Run
```

After terminal definition is finished, operating modes are determined according to P1-P4 input status as shown below. If two input modes are assigned at the same time, latter one is ignored. If FHM mode is input during Manual mode, it is substituted by FHM mode. However, if terminal definition is done but not signal assignment and the vice versa, LCD window will display 'N/A' and STOP/RESET LED (RED) will blink, operation will be disabled.

P1	P2	P3	P4	Operation	LCD display
ON	OFF	OFF	OFF	Manual	MAN
OFF	ON	OFF	OFF	Manual	MAN
ON	ON	OFF	OFF	Manual	MAN
OFF	OFF	ON	OFF	Auto(High spd)	E/L
OFF	OFF	OFF	ON	FHM	FHM
OFF	OFF	OFF	OFF	NO MODE	N/A

These operation related signals assigned by P1~P4 terminals should be set before up/down command and removed after up/down command. If operation mode (High spd operation, FHM) is turned off while operating command is ON, elevator car may stop suddenly or Floor Height Measurement may not be performed correctly.

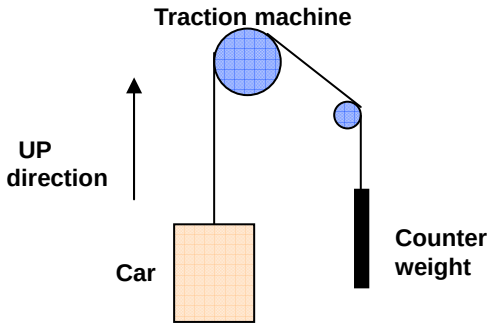
If one of AX1, AX2 is set to "**RUN",** it can be used as Machine brake ON/OFF signal**.**



2.8 Checking Encoder in Manual operation

1) UP direction define

Up direction marks elevator car going UP. Also, keypad display indicates UP when FX input terminal is ON.



2) Parameter setting for control terminal operation - Ex) 15m/min Manual operation

Check the settings in the following table before starting Low Speed Manual Operation and check the input status of multi-function input terminals in DIS Grp. (Refer to 6.1)

Description / MF input terminal	Defining input terminal function	Input value from operation controller	DIS_03 Terminal In status
MM0/P1	Manual Spd-L	One of the two ON	0001000000
MM1/P2	Manual Spd-H		(EX) P1: ON, P2: OFF

◆ **Moving to FUN group**

```
FUN▶ Run/Stop Src
01    Terminal 1
```

① RUN/STOP command via control terminal
(“**Err – CMDSRC” will appear when setting via Keypad** and operation disabled.)

```
FUN▶ Spd Ref Sel
02      Keypad1
```

② Speed reference selection via Keypad

◆ **Moving to E/L group**

```
E/L▶ Manual Spd1
22      15.0 m/m
```

③ Operating speed setting
(Speed ref value when P1: ON, P2: OFF)

3) UP /DOWN direction operation

① Low Speed Manual operation

- Check motor speed in initial display of Display group is 15m/m and direction “UP” while pressing the [UP] button. Floor height is displayed as “—F” before FHM operation.

```
       15.0m/m  MAN
UP      --F    4.6A
```

- Check motor speed in initial display of Display group is 15m/m and direction “DN” while pressing the [DOWN] button.

```
       15.0m/m  MAN
 DN     --F    4.6A
```

Operating status in the case of reverse (wrong) wiring of encoder and motor is as follows;

FX/RX	Car direction	Speed display	Torque display [1]	Operating status
FWD	UP	+15.0 m/m	Over -10%	Normal
REV	DOWN	-15.0 m/m	Over -10%	
FWD	UP	-4.5 ~ 10.5 m/m	150%	Encoder wiring reversed
REV	DOWN	4.5 ~ 10.5 m/m	-150%	
FWD	DOWN	-4.5 ~ -10.5 m/m	150%	Motor wiring reversed
REV	UP	4.5 ~ 10.5 m/m	-150%	
FWD	DOWN	+15.0 m/m	Over +10%	Encoder/Motor wiring reversed
REV	UP	-15.0 m/m	Over +10%	

[1] Torque display is based on No-load low speed Manual operation. Set E/L_58 to “Trq Output” to display torque.

- Check for the encoder wiring reversed. If so, correct the encoder wiring.
- Check for the motor wiring reversed. If so, change the wiring of two phases (U,W).
- When PAR_14 [Encoder fault time] is set, reverse wiring of motor or encoder is detected as Encoder Error.
- When the car operating direction (UP/DOWN) on the keypad is displayed reversed, check whether FX/RX signal is opposite. Or if FX/RX signal is normally set but the car direction is opposite, change the motor rotating direction in (E/L_05)”. It is desired that car direction is UP when FX terminal is ON.
- Check for DB resistor wiring and its resistance if DOWN operation is working well but UP operation is not made properly.
- Check for Encoder wiring and Multi-function input terminal setting when Speed display keeps showing 0.0m/m.
- When ULS or DLS signal is ON, Up or Down operation is disabled. Check these signals before setting E/L_39.
- When vibration level is high during stop of manual operation due to sudden deceleration and Over voltage trip occurs, change the setting of **E/L_31 (ManZeroDec T) to** 1.0 sec.

```
E/L▶ManZeroDec T
31     1.0 sec
```

2.9 FHM (Floor height measurement) operation

1) Check inductor signal and forced decel switch SD1 and SU1 are wired to elevator I/O board. Limit switches installed in hoistway are normally B contact so set limit switch to B contact in E/L_39.

E/L_39 setting value (from left): I_D, I_U, DLS, ULS…on CN3 terminal
"0": A contact, "1": B contact.
For example, E/L 39 setting should be made as shown below when ULS/DLS and SD1/SU1 are B contact.

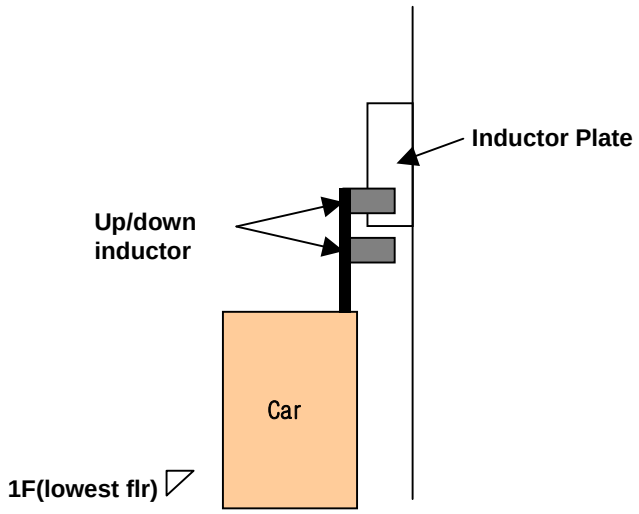
```
E/L▶ ELIO In Neg
39   001100110000
```

2) If FHM should be started from the location of DLS and ended at the location of ULS, set E/L_61 to "DLS ON/SD1-ON". In this case, DLS/ULS signals should be connected to Inverter.

```
E/L▶  FHM Start
61  DLS ON/SD1-ON
```

3) Move the car with manual operation ON and check inductor, forced decal switch and ULS/DLS signals are turned ON. Forced decel switch signal must be ON to the inverter. Otherwise, elevator car will not decelerate at the top floor, resulting in critical accident.

4) Move the car to the lowest floor to meet E/L_61 condition with manual operation. If E/L_61 is set to "ID-OFF/IU-ON", it stops the car at the position where upper inductor is within the plate and lower inductor is without the plate as shown below. If E/L_61 is set to "DLS ON/SD1-ON", the car is moved to detect DLS by manual operation.



5) Check E/L_02 (Floor Number) setting value matches total floors (Max. stopping floor).
6) Activate FHM operation by turning ON the terminal defined as FHM Run or setting E/L-62 to “Yes”.

```
E/L▶ KeyPad FHM
62       Yes
```

7) If the inductor position is different from activating condition set in E/L_61 and SD1 is not ON, keypad will display the message “**NOTRDY”** as shown below and STOP/RESET LED (Red) will be flickering. In this case, FHM operation cannot be activated. Return to Manual operation mode and set the inductor position correctly and wire the forced decel switch and try FHM operation again. Manual operation is not activated when E/L_62 is set to “Yes” (Only FHM operation enabled). Make sure to turn E/L_62 off before changing from FHM mode to Manual operation. Motor does not run when Down(RX) signal is issued in FHM mode but runs in Manual operation.

```
E/L▶  0.0m/m  FHM
Err     1F NOTRDY
```

8) Apply FX signal and FHM operation command to inverter control terminal and initiate FHM operation. Keep UP operation command until the car reaches the highest floor level. Car speed change is available if terminals defined as MM0, MM1 are turned ON.
9) When car is reaching the highest level with E/L_61 set to “ID-OFF/IU-ON”, inverter automatically starts to decelerate the car speed to zero and maintains the car at zero speed. At this time, remove the FX signal and FHM operation is finished.

- When UP/DOWN inductor signal is reversely connected to EL-I/O board, operation is stopped and fault message will appear as shown below upon the car leaving of lowest floor in early stage of FHM operation. In this case, change the wiring of inductor signals. After this, return to Manual operation, move the car to the position set in E/L_61 and perform FHM operation again.

```
DIS▶   Faults
05  IND Reversed
```

- After FHM operation started and inductor plate sensing signals from UP/Down inductors are not input at the same time, the following message will appear with the operation

stopped. In this case, adjust the inductor position. After this, return to manual operation and move the car as on page 16 and restart FHM operation.

```
DIS▶   Faults
05  IND'TOR FAIL
```

- When FHM operation is failed, "—F" is displayed. However, if operation mode is changed to "Manual", this fault message is automatically reset (cleared).

```
     0.0m/m   FHM
STP    --F    0.0A
```

- LCD display when FHM is complete. Current floor value becomes Highest floor (E/L_02). E/L_02 value symbolizes the total stopping floors including base floor.

```
     0.0m/m   FHM
STP    32F    0.0A
```

- After finishing FHM operation, each floor height can be checked in E/L_60 in mm unit.

```
E/L▶Show FlrPosi
60              1F
```

① Press [PROG] key in E/L_60.

```
E/L▶POSI        0mm
60              1F
```

②Increase/decrease the floor No. by pressing [UP]/[DOWN] Key.

```
E/L▶POSI 45000mm
60             16F
```

③ Accumulated floor height is displayed as floor no is increasing.

```
E/L▶POSI  3000mm
60              2F
```

④ Escape the code using [MODE] or [ENT] key when finished.

- When highest floor is reached but the number of inductor plates which inductors are detected(sensed) is less than E/L_02 or measured floor height data is incorrect, fault message will appear when removing FX signal.

```
DIS▶   Faults
05  FHM Run Fail
```

① Number of Inductor plates sensed does not match E/L_02 (Max stopping floor).

```
DIS▶   Faults
05  Flr Data Fail
```

② Measured floor data is wrong.

- Check for correct plate installation, noise interference in inductor signal and inductor malfunction to correct the error. After clearing the cause, move the car to the lowest floor and restart FHM operation.

- When FHM is failed, error message will appear in the initial display if not pressing [STOP/RESET] key while fault message is output. Only pressing [MODE] key moves to initial display at fault message output.

① Number of inductor plate sensed does not match E/L_02 (Max stopping floor).
→ FHM Run Fail

```
     0.0m/m   FHM
Err   --F   Fcount
```

```
DIS▶   Faults
05  FHM Run Fail
```

② When there is a certain floor of which height is far less than below floor or distance is too close (below 1000mm, Flr Data Fail).

```
     0.0m/m   FHM
Err    --F   Fdata
```

```
DIS▶   Faults
05  Flr Data Fail
```

- When FHM is succeeded, each floor height and its checksum are saved into memory. If previous Checksum data and new Checksum when power ON differ, the following error message will appear and FHM operation is required one more time.

```
DIS▶   Faults
05  Checksum Err
```

- Forced decel switch (SD1, SU1) position measurement – Measure SD1 installation position based on lowest floor level during FHM operation. Also, measure SU1 installation position based on highest floor level. Measured data can be checked after setting DIS_01 ~ DIS_03 to either “SDSD1 Posi” or “SDSU1 Posi”.

```
DIS▶ SDSD1 Posi
01    1200.0 mm
```

```
DIS▶ SDSU1 Posi
01    1200.0 mm
```

2.10 High Speed Auto Operation

- High Speed Auto Operation is ready to perform when FHM operation is finished successfully. However, FHM operation is stopped when the upper inductor (IND_U) is not within an inductor plate so car does not begin operation when hall call(cage call) is input, even if E/L_50 is set to “Inductor ON”(high speed operation active in normal condition). Therefore, high speed auto operation should be performed after setting UP/DOWN inductors within the car plate by performing manual down operation.

- **Adjustment of Speed control gain and torque limit value**

  Adjust the gain for speed control and torque limit when large level error is generated at leveling to stop or car is not stable during accel/decel operation. Gain value for speed control is increasing if ASR P Gain1 (CON_03) value is higher, ASR I Gain1 (CON_04) value is decreasing.

  Adjust the torque limit values for Pos Trq Lmt (CON_29), Neg Trq Lmt (CON_30), Reg Trq Lmt (CON_31) between 160% and 180% according to load condition.

- **Overload trip level and time setting**

  Set the OLT Level (I/O_60) between 150 and 190%, 10% less than torque limit value and OLT Time (I/O_61) to 60 sec.

- **Adjustment of operating condition at start**

  Perform one floor, two floors, three floors and highest/lowest floor operation repeatedly to check car operating(riding) condition at start, stop and during running at constant speed. Especially when sudden deceleration shock occurs due to stop friction of traction machine at a start, change E/L_51 to “U-curve” and increase E/L_08 time larger

than present value.

E/L▶AccStartType	E/L▶ Acc Start T
51 U-Curve	08 2.00 sec

Especially when deceleration shock keeps occurring after changing E/L_51, E/L_08 setting, adjust the parameters E/L_52~E/L_54 setting value as below for optimal condition.

Recommended adjusting range

	E/L▶StartUpAccT	E/L▶StartUp Wait
52 0.01m/s2	53 0.50 sec	54 0.20 sec
(0.01 ~ 0.03m/s^2)	(0.3 ~ 0.8 sec)	(0.2 ~ 0.4 sec)

- **Adjusting Accel/Decel, Time setting before Accel/Decel and Checking Floor Height**

E/L_06~E/L_11 setting is based on 60m/m. If the car rated speed is slower than 60m/m and especially it is below 30m/m, set E/L_06 and E/L_07 to smaller than 0.5.

Set DIS_01~DIS_03 to 'MinSpd Acc (Min. Speed for Accel End)' and 'Min.SpdDec (Min. Speed for Decel Start)' and compare these values with current values set in E/L_03. 'MinSpd Acc' is the required minimum speed needed for making S curve in Acceleration, which makes smooth riding condition during Accel/Decel. E/L-03 should be set much higher than DIS-01[Min.Spd Acc] value to avoid shock at start-up of a car.

Check Min.FlrDist (Minimum Floor Distance measured by FHM operation) has set much higher than Min.RunDist(Minimum Distance for High speed operation without shock) in DIS_01~DIS_03.

DIS▶ Min.Spd Acc	DIS▶Min.Run Dist
01 30.0 m/m	01 1400 mm

- **Nearest Floor/Base Floor operation**

If High Speed Auto Operation is interrupted by some reasons such as power outage and the car is stopped in the middle of the elevator door, the car is moved to the nearest floor and escape the people from the car and resume high speed operation after moving down the car to the base floor to reset the wrong information (current floor position and floor height information).

It is also possible to move the car to nearest/base floor using Manual operation mode but with this function, automatically the car is moved to the nearest floor and base floor and the car speed is decreased to zero automatically at the nearest/base floor level.

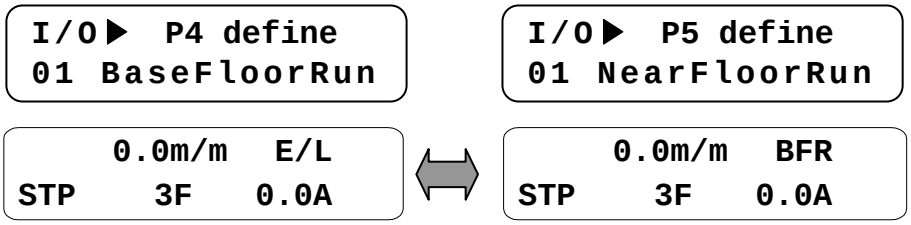
This function is only available when operating mode is **High Speed operation**. When the car

is in **stop with High speed operation**, set P1~P7 to Base Floor Run and Near Floor Run and the defined terminal is turned ON to enable Nearest/Base floor operation mode and issue a run command then this function is activated. This is important to maintain High speed operation signal and Nearest/Base floor operation signal until the operation is finished.

To move to the nearest floor in High speed operation, issue the signal for nearest floor operation via inverter multi-function terminal and apply UP or DOWN operation signal, nearest of the two. Inverter is moving the car to the nearest floor and when UP/DOWN inductor signal is sensed at first time, the car decelerates to stop at zero speed after E/L_55 set time. Then remove the operation command to end Nearest floor operation.

To reset the position and floor information, the car should be down to base floor. To do this, remove(turn off) the nearest floor operation signal in High speed operation and turn on the base floor operation signal and issue Down command. Then inverter makes the car descending and when inductor plate detects upper/lower inductor, the car decelerates to zero speed after E/L_55 set time. Turning off the operation signal and Down command ends the base floor operation. Current car position and floor information are renewed by this operation using Slow Down Switch 1(SD1), Upper/Lower inductor signals.

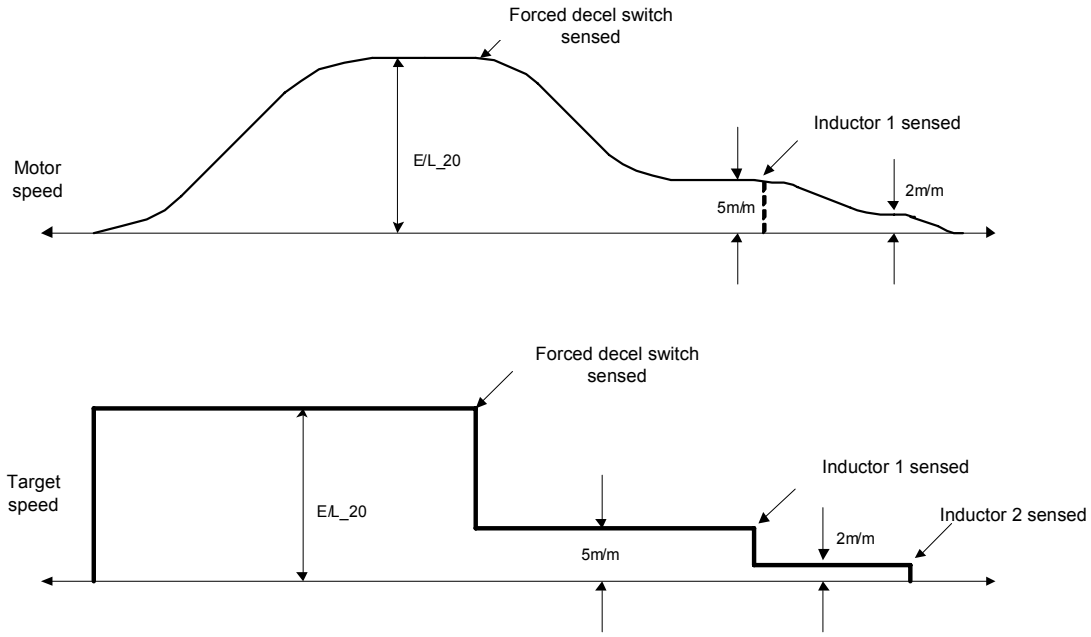
See the table below for setting example of I/O_01~I/O_05, P1~P5, operation mode. High speed operation command should be entered for setting Nearest/Base floor operation. In Base Floor Operation, E/L and BFR message flickers on the LCD display as shown below. E/L and NFR flicker in the case of Nearest Floor Operation.



Code	Setting	P1	P2	P3	P4	P5	Mode
I/O_01	Manual Spd-L	OFF	OFF	OFF	OFF	OFF	N/A
I/O_02	Manual Spd-H	ON	OFF	OFF	OFF	OFF	MAN
I/O_03	HighSpeedRun	OFF	ON	OFF	OFF	OFF	MAN
I/O_04	BaseFloor Run	ON	ON	OFF	OFF	OFF	MAN
I/O_05	NearFloor Run	OFF	OFF	ON	OFF	OFF	E/L
		OFF	OFF	ON	ON	OFF	Base Floor Running (BFR)
		OFF	OFF	ON	OFF	ON	Nearest Floor Running (NFR)

Same Accel/Decel speed and time are applied to base floor operation as Manual operation. The motor target speed is changed based on limit switch input status as shown below. Actual speed of the motor(car) follows target speed based on the Accel/Decel setting. E/L_20 set value is used as Target speed before sensing Slow Down Switch and target speed is changed to 5m/m after sensing Slow Down Switch and changed to 2m/m after sensing one inductor signal and becomes zero after E/L_55 set time. Target speed value after sensing inductor (5m/m and 2m/m) cannot be changed.

Accel/Decel speed and time setting for Nearest Floor operation is same as Manual operation and Target Speed change is similar to Base Floor operation. The difference is without operating at E/L_20, the target speed is directly changed to 5m/m and changed to 2m/m after sensing one inductor and after sensing two inductors, target speed becomes zero after E/L_55 set time. The target speed value cannot be changed.



For exact leveling of the car at stop, set E/L_55 value properly. E/L_55 is the time to decrease the target speed to zero when both inductors are within the inductor plate. If E/L_55 is set too high, the car may not stop exactly.

3 Display group (DIS_[][])

1) DIS_01 ~ 03 (User display select 1, 2, 3)

One of the following parameters is displayed when selected in this code.

Factory default values: **DIS_01= "PreRamp Ref"**, **DIS_02= "DC Bus Volt"**, **DIS_03= "Terminal In"**

- **When EL-I/O board is connected to the inverter control board and CON_02 is set to "Elevator", the followings will appear according to selection.**

<table>
<tr><th>Code</th><th>LCD display</th><th>Name</th><th>Unit</th><th>Description</th></tr>
<tr><td rowspan="11">DIS_01
~
DIS_03</td><td>Car Speed</td><td>Rated car speed per minute</td><td>m/min</td><td>Current Car speed displayed in "m/min"</td></tr>
<tr><td>Car Speed</td><td>Rated car speed per sec</td><td>m/sec</td><td>Current Car speed displayed in "m/sec"</td></tr>
<tr><td>Car Position</td><td>Value of current car position</td><td>mm</td><td>Current Car position displayed in "mm"</td></tr>
<tr><td>ELIO IN</td><td>ELIO input signal</td><td>-</td><td>Inductor, limit switch, decel acknowledging signal, input terminal ON/OFF status display,
'1' : Closed, '0' : Open
<table>
<tr><th>LSB</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>MSB</th></tr>
<tr><td>I_D</td><td>I_U</td><td>DLS</td><td>ULS</td><td>RV1</td><td>RV2</td><td>SD1</td><td>SU1</td><td>SD2</td><td>SU2</td><td>DAC</td><td>RV3</td></tr>
</table></td></tr>
<tr><td>Limit S/W In</td><td>Limit switch status</td><td>-</td><td>ON/OFF switch status display corresponding to E/L_40 ELIO IN A or B contact, '1': S/W ON, '0': S/W OFF, bit set is the same as ELIO IN.</td></tr>
<tr><td>ELIO Out</td><td>ELIO output signal</td><td>-</td><td>Floor info (current floor, advanced floor), floor identification, decel request, decelerating, contactor driving, brake signal ON/OFF status displayed
<table>
<tr><th>LSB</th><th></th><th></th><th></th><th></th><th></th><th></th><th>MSB</th></tr>
<tr><td>FS0 FS1 FS2 FS3 FS4</td><td>DER</td><td>FID</td><td>UND</td><td>MC</td><td>BR</td></tr>
</table></td></tr>
<tr><td>Tuning Dist</td><td>Tuning distance</td><td>mm</td><td>Remaining distance when 1st inductor is operating.
(UP: IN_U, Down: IN_D)</td></tr>
<tr><td>Cur Floor</td><td>Current floor</td><td>F</td><td>Floor value where elevator car is positioned</td></tr>
<tr><td>Adv Floor</td><td>Advanced (Stopping) floor</td><td>F</td><td>Floor where the elevator car can stop at</td></tr>
<tr><td>Remain Dist</td><td>Remain distance</td><td>mm</td><td>Remain distance to target floor level after deceleration.</td></tr>
<tr><td>SDS1 Speed</td><td>1st SDSD (Up) car speed</td><td>m/m</td><td>Displays car speed in m/m while SDSD1 (negative value) and SDSU1 (positive value) are operating.</td></tr>
<tr><td>SDS2 Speed</td><td>2nd SDSD (Up) car speed</td><td>m/m</td><td>Displays car speed in m/m while SDSD2 (negative value) and SDSU2 (positive value) are operating.</td></tr>
</table>

Code	LCD display	Name	Unit	Description
	SDS3 Speed	3rd SDSD (Up) car speed	m/m	Displays car speed in m/m while SDSD3 and SDSU3 are operating (in preparation).
	Min.FlrDist	Floor distance Minimum	mm	Indicates minimum height of the floors in the building.
	Min.RunDist	Minimum running distance	mm	Distance required to make starting and ending pattern of acceleration
	DecelDist	Rated Decel distance	mm	Distance required to decelerate from car rated speed.
	Min.SpdAcc	Min. speed for acceleration end	m/m	Min. speed required to make starting and ending pattern of acceleration
	Min.SpdDec	Min. speed for deceleration start	m/m	Min. speed required to make starting and ending pattern of deceleration
	Dec.End Dist	Distance for deceleration end	mm	Distance required to make ending pattern of deceleration.
	SDSD1 Dist	1st SDSD distance	mm	Distance between the lowest level and SDSD1 installation position.
	SDSU1 Dist	1st SDSU distance	mm	Distance between the highest level and SDSU1 installation position.
	SDSD2 Dist	2nd SDSD distance	mm	Distance between the lowest level and SDSD2 installation position.
	SDSU2 Dist	2nd SDSU distance	mm	Distance between the highest level and SDSU2 installation position.
	SDSD3 Dist	3rd SDSD distance	mm	Distance between the lowest level and SDSD3 installation position (in preparation)
	SDSU3 Dist	3rd SDSU distance	mm	Distance between the highest level and SDSU3 installation position (in preparation)

2) DIS_05 (Fault display)

Current fault status/ previous fault history (1,2) / number of previous faults/ clear previous faults are displayed. Use [SHIFT/ESC] key to navigate these functions in DIS_05.

Code	LCD display	Name	Description
DIS_05	Faults	Fault status display	**No Fault** displayed during normal operation. Faults status is displayed when faults occur. (Refer to'[3] fault display)
	Last Fault1	Previous fault display	**Refer to troubleshooting.**
	Last Fault2	Previous previous fault display	
	Fault Count	Total number of faults	Display total number of faults occurred.
	Fault Clear	Clearing faults number	Resets total number of faults to 0.

Fault contents, speed reference at the time of fault, speed feedback, output frequency/current/voltage, torque current reference value and actual value, DC link voltage, input terminal status, output terminal status, operating status, run time can be check using [PROG], [▲(Up)] / [▼(Down)] keys before pressing [RESET] key. Pressing [ENT] key returns to first. Pressing [RESET] key saves data into Last Fault 1. Refer to [Chapter 8 Troubleshooting and maintenance].

No	Fault status	Keypad display	No	Fault status	Keypad display
1	Over current- phase U	OC–U	13	Inverter Overheat	Inv OverHeat
2	Over current- phase V	OC–V	14	Electronic thermal	E-Thermal
3	Over current- phase W	OC–W	15	Overload trip	Over Load
4	Fuse open	Fuse Open	16	External trip input B	Ext-B Trip
5	Over voltage	Over Voltage	17	Option error	Option Err
6	IGBT short- phase U	Arm Short–U	18	Inverter overload	Inv OLT
7	IGBT short- phase V	Arm Short–V	19	Motor overheat	Mot OverHeat
8	IGBT short- phase W	Arm Short–W	20	Inverter thermal open	Inv THR Open
9	IGBT short- phase DB	Arm Short–DB	21	Motor thermal open	Mot THR Open
10	Encoder error	Encoder Err	22	Motor overspeed	Over Speed
11	Low voltage	Low Voltage	**23**	**Floor height measurement data(1)**	**Flr/FHM Data**
12	Ground fault	Ground Fault	**24**	**Slow down switch error(1)**	**SDS Error**

(1) detection is available only when elevator board is installed.

☞ **Note : when multiple faults occur, latest fault is displayed and others can be checked in previous fault display.**

Faults related to E/L board and have serious implication are displayed in DIS_05. Other faults are displayed on the initial display, showing 'Err' and the contents are displayed on the second row on the right.

```
      0.0m/m   E/L
Err    1F   CMDSRC
```

FHM and slow down switch error can be checked both in DIS_05 and initial display.

```
      0.0m/m   FHM
Err    --F   Fdata
```

```
DIS▶   Faults
05  Flr Data Fail
```

```
      0.0m/m   N/A
Err    --F  NOTRDY
```

The following table describes faults only occurred with using ELIO board.

Protection	LCD DISPLAY	Fault Description
FHM RUN failure	FHM Run Fail	● After FHM operation is finished, number of inductor plate detected(E/L_21) does not match stopping floor (E/L_02). ● E/L_21 value is not (E/L_02)*10+1" after parameter initializing. ● 'Fcount' is displayed on the initial display and can be checked in DIS_05
Floor data failure	Flr Data Fail	● If there is a floor showing – floor height. ● If distance between neighboring floors are within 2000mm or there is a floor having greater floor height value than the above floor. ● 'Fdata' is displayed on the initial display and can be checked in DIS_05.
Floor data Check Sum error	CHKSUM Err	● After FHM operation, floor level data of each floor and Check Sum of floor level data are saved to EEPROM respectively but the Check Sum between the two data is different. ● Detected when parameter initializing or before High Speed Auto operation. ● 'CHKSUM' is displayed on the initial display and can be checked in DIS_05.
High speed auto operation starting condition error	NOTRDY	● When High Speed Auto Operation Starting Condition (E/L_50) is set to 'Inductor ON', UP/DOWN inductors are not sensed in the inductor plate. ● Only checked on the initial display.

Protection	LCD DISPLAY	Fault Description
Deceleration error	DECEL	● When FX/RX signal is not removed after deceleration is started and the time elapses. ● Only checked on the initial display.
Speed pattern control error	ACC/DEC	● When a certain time is passed from the speed pattern's start to finish. ● Only checked on the initial display.
Slow down switch error	SDS Error	● When SDS-D1 and SDS-U1 are both detected. (SDS-D2 and SDS-U2 are detected if SDS2 is used.) ● When SDS-D1 (SDS-U1) input is not detected or SDS-U1 (SDS-D1) input is detected at the lowest (or highest) floor. ● Although D1 (SDS-U1) input is detected, the car is not at the lowest (or highest) floor. ● 'SDS is displayed on the initial display and can be checked in DIS_05.
UP/DOWN Inductor reversed	IND Reversed	● After FHM operation started, if the lower inductor signal is not on at the moment of the upper inductor is off from the 1st floor plate. ● "IND Reversed" is displayed when the floor height measuring is finished in DIS_05, but 'FHM Run Fail' will be displayed if power is reapplied.
Inductor failure	IND'TOR FAIL	● After FHM operation started, if the upper inductor signal is not on at the moment of the lower inductor senses the plate. ● "IND'TOR FAIL" is displayed when the floor height measuring is finished at DIS_05, but 'FHM Run Fail' will be displayed if power is reapplied.
Operating command source error	CMDSRC	● For EL-dedicated mode supports terminal operation only, so this error occurs when RUN/STOP command select (FUN_01) is set to Keypad. ● If FUN_01 is set to 'Terminal1', the problem will be cleared automatically.
FHM invalid	NOTRDY	● When the starting condition specified in E/L_61 is not satisfied during Floor Height Measurement in FHM mode. ● Do not get confused with 'high speed auto operation starting condition error,' this is displayed in FHM mode.

4. I/O group (I/O_[][])

1) I/O_01 ~ 07 (Multi-function input terminals P1~7 define)

When EL-I/O board is connected to the inverter control board and CON_02 is set to “Elevator”, the following functions can be selected in I/O_01 ~ 07.

Code	LCD display	Name	Description
I/O_01 ~ I/O_07	Manual Spd-L	Manual low speed operation command bit 0	Three kinds of speeds can be selected with mixture of manual low speed operation command bit 0 and bit 1.
	Manual Spd-H	Manual low speed operation command bit 1	
	HighSpeed Run	High speed operation Run command	Selects High speed auto run command
	FHM Run	Floor height measurement run command	Selects FHM run command
	BaseFloor Run	Base floor run command	Select this command to compensate the car position by performing lowest floor operation when power failure or emergency stop occurs during high speed auto operation.
	NearFloor Run	Nearest floor run command	Use this command to escape people by operating nearest floor when power failure or emergency stop occurs during high speed auto operation.
	MotorM/C State	Motor output contactor relay input	A contact input for checking contactor driving status when contactor is installed between inverter and motor. Operation will not be allowed when there is no contact input even though this function is set-up.
	CarBrake State	Brake contact input	Brake driving relay or brake contact input for Brake driving status check. Operation will not be allowed when there is no contact input even though this function is set-up.

2) I/O_41 ~ 43 (AX1, AX2, OC1 define)

If ELIO board is installed to control board and CON_02 is set to “Elevator”, the following additional functions can be set in I/O_41 ~ 43 (AX1, AX2, OC1 define).

Code	Keypad display	Name	Description
I/O_41 ~ I/O_43	BFR/NFR Mode	Nearest/Base floor operation status	Contact activated when operation mode is High speed & Nearest/Base floor operation.
	BFR/NFR End	Nearest/Base floor operation end	Contact activated when Nearest/Base floor operation is accomplished (floor level reached).
	E/L Fault	Elevator fault	Contact activated when Elevator faults occur.

5 Function code table for Elevator group (E/L _□□)

CODE NO.	CODE NAME	LCD DISPLAY	SETTING DATA			Adj. During Run(5)	Page
			RANGE	UNIT	DEFAULT		
E/L_00	Jump Code	Jump Code	1 ~ 64				29
E/L_01	Speed Reference pattern select	Spd Ref Type	DecelReq-D/B DecelReq-T/B		DecelReq -D/B	No	29
E/L_02	Number of total floor	Floor Number	1 ~ 32	FLOOR	32	No	30
E/L_03	Rated car speed	Car Speed	30 ~ 420	m/m	60	No	30
E/L_04	Motor speed at rated car speed	Motor Speed	20.0 ~ 3600.0	rpm	1500.0	No	30
E/L_05	Motor rotating direction select	UP Direction	FX-CCW FX-CW		FX-CCW	No	30
E/L_06	Rated acceleration speed	Rated Accel	0.10 ~ 1.00	m/sec^2	0.50	No	31
E/L_07	Rated deceleration speed	Rated Decel	0.10 ~ 1.00	m/sec^2	0.50	No	31
E/L_08	Acceleration start time	Acc Start T	0.50 ~ 2.50	sec	1.00	No	31
E/L_09	Acceleration end time	Acc End T	0.50 ~ 2.50	Sec	1.00	No	31
E/L_10	Deceleration start time	Dec Start T	0.50 ~ 2.50	sec	1.00	No	31
E/L_11	Deceleration end time	Dec End T	0.50 ~ 2.50	sec	1.00	No	31
E/L_12	Communication delay compensation distance	CommDlyDist	100 ~ 1000	mm	400	No	32
E/L_13	Deceleration start adjustment	DecStart Adj	-10 ~ 100	mm	0	No	32
E/L_14	Pre-excitation time	PreExct Time	100 ~ 10000	msec	300	No	32
E/L_15	Brake open time	Brake Time	0 ~10000	msec	300	No	32
E/L_16	Hold time	Hold Time	0 ~10000	msec	300	No	32
E/L_17	Wait time before Restart	Restart Time	1.00~100.00	sec	1.00	No	32
E/L_18	Inductor plate length	Plate Length	E/L_19~1000.0	mm	200.0	Yes	33
E/L_19	Distance between inductor and inductor plate	InductorEdge	0.0 ~ E/L_18	mm	20.0	Yes	33
E/L_20	Car speed during FHM (Floor height measurement) operation	FHM/BFR Speed	0.0 ~ 60.0	m/m	15.0	No	34
E/L_21	Floor height measurement data	FHM DATA	0 ~ 321		0	Yes	34
E/L_22	Car speed 1 during manual operation	Manual Spd1	0.0 ~ 60.0	m/m	3.0	No	34
E/L_23	Car speed 2 during manual operation	Manual Spd2	0.0 ~ 60.0	m/m	10.0	No	34
E/L_24	Car speed 3 during manual operation	Manual Spd3	0.0 ~ 60.0	m/m	15.0	No	34
E/L_25	Acceleration speed during manual operation	MAN Accel.	0.01 ~ 5.00	m/sec^2	0.25	No	35
E/L_26	Deceleration speed during manual operation	MAN Decel.	0.01 ~ 5.00	m/sec^2	0.25	No	35

CODE NO.	CODE NAME	LCD DISPLAY	SETTING DATA			Adj. During Run(5)	Page
			RANGE	UNIT	DEFAULT		
E/L_27	Acceleration start time during manual operation	ManAccStartT	0.01 ~ 2.00	sec	0.50	No	35
E/L_28	Acceleration end time during manual operation	Man AccEnd T	0.01 ~ 2.00	sec	0.50	No	35
E/L_29	Deceleration start time during manual operation	ManDecStartT	0.01 ~ 2.00	sec	0.50	No	35
E/L_30	Deceleration end time during manual operation	Man DecEnd T	0.01 ~ 2.00	sec	0.50	No	35
E/L_31	Deceleration time duirng manual operation	ManZero Dec T	0.00 ~ 600.00	sec	2.00	No	35
E/L_32	Distance compensation, Minimum during operation	DistComp.Min	0.0 ~ 2*E/L_19	mm	0.0	No	36
E/L_33	Distance compensation, Maximum during operation	DistComp.Max	0.0 ~ 100.0	mm	0.0	No	36
E/L_34	Leveling distance compensation (1)	DistComp.Lev	-E/L_19 ~ E/L_19	mm	0	No	36
E/L_35	Creep speed (2)	Creep Speed	0.1 ~ 60.0	m/m	3.0	No	37
E/L_36	Creep distance(2)	Creep Dist.	0 ~ 500	mm	5	No	37
E/L_37	Ending Position control and Starting zero speed deceleration distance	D/B End Dist	0 ~ E/L_19	mm	0	No	37
E/L_38	Time to decelerate to zero speed after position control ends	SpdZero Time	0.01 ~ 10.00	sec	2.00	No	37
E/L_39	ELIO input negative (inversion)	ELIO In Neg	000000000000 ~111111111111	-	000000000000	No	37
E/L_40	Inductor input filter time	IND Filter	0 ~ 50	ms	25	No	38
E/L_41	Filter time for SDS input	SDS Filter	50 ~ 500	ms	250	No	38
E/L_42	Forced deceleration starting speed during SDS-1 input	ForcedDecSpd	0.0 ~ 420.0	m/m	0.0	No	38
E/L_43	Deceleration speed during SDS-1 forced deceleration (3)	ForcedDecel	0.01 ~ 1.50	m/sec^2	1.50	No	38
E/L_44	Creep speed during forced deceleration (3)	ForcedCrpSpd	0.0 ~ 60.0	m/m	3.0	No	38
E/L_45	Wait after zero speed arrival during forced (3)	Frcd.DecWait	0 ~ 10000	ms	300	No	38
E/L_46	Use SDS-2	Use FrcdDcl2	No Yes		No	No	38
E/L_47	Forced deceleration start speed during SDS-2 input (4)	Frcd.DecSpd2	0.0 ~ 420.0	m/m	0.0	No	38
E/L_50	Starting Condition for	HighSpdStart	Inductor ON	-	Inductor	No	39

CODE NO.	CODE NAME	LCD DISPLAY	SETTING DATA			Adj. During Run(5)	Page
			RANGE	UNIT	DEFAULT		
	High speed Auto Operation		Always		ON		
E/L_51	Acceleration Start curve type selection	AccStartType	Linear U-Curve	-	Linear	No	39
E/L_52	Start-up acceleration speed	StartupAccel	0.00 ~ 1.00	m/sec^2	0.00	No	39
E/L_53	Start-up acceleration time	StartupAccT	0.01 ~ 5.00	sec	0.50	No	39
E/L_54	Start-up wait time	StartupWait	0.00 ~ 5.00	sec	0.50	No	39
E/L_55	Wait time before leveling at lowest floor/Nearest floor	BFR/NFR Wait	0.00 ~ 5.00	Sec	0.30	No	40
E/L_58	Keypad display selection	Display Sel.	Car Spd (m/m) Car Spd (M/S) Car Spd (RPM) Car Position Trq Output Lmt.S/W State Tuning Dist		Car Spd (m/m)	Yes	40
E/L_59	Clear car position	Clear Posi.	No Yes		No	No	41
E/L_60	Show floor position	Show FlrPosi	1 ~ E/L_02	FLOOR	1	Yes	41
E/L_61	Floor Height Measurement Operation Start Condition Setting	FHM Start	ID-OFF/IU-ON DLS ON/SD1-ON	-	ID-OFF/IU-ON	No	41
E/L_62	Floor Height Measurement Mode setting via Keypad	KeyPad FHM	No Yes		No	No	41
E/L_63	Distance (Level) compensation for Up direction	UpDir Level	-E/L_19 ~ E/L_19	mm	0	No	42
E/L_64	Distance (Level) compensation for Down direction	DnDir Level	-E/L_19 ~ E/L_19	mm	0	No	42

(Note)

1) Only displayed when E/L_01 is set to "DecelReq-D/B".

2) Only displayed when E/L_01 is set to "DecelReq-T/B".

3) Only displayed when E/L_42 or E/L_47 is set to the value other than "0".

4) Only displayed when E/L_46 is set to "Yes".

5) Yes: Adjustable during run, No: not available

6. Elevator group Function Description

1) Jump code (E/L_00)

You can move on to the code you want to check using E/L_00.

(Example) moving to E/L_03

After pressing the [PROG] key, set 3 using [SHIFT/ESC] / [▲UP] / [▼DOWN] keys and press [ENT]. The following will be displayed.

```
E/L▶  Car Speed
03        120m/m
```

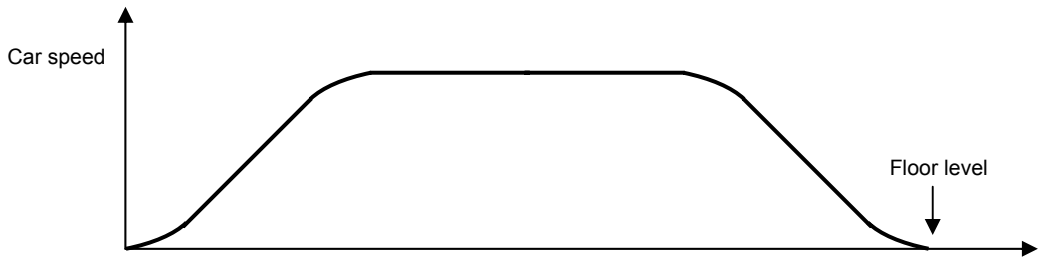
You can move to the other codes using [▲UP] / [▼DOWN] keys.

2) E/L_01

In elevator speed pattern, two different speed patterns can be selected by Decel request signal before passing the floor which elevator car can stop at. These are “DecelReq-D/B” (Distance-based Decel request) and “DecelReq-T/B” (Time-based Decel request).

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_01	Spd Ref Type	Speed reference type select	DecelReq-D/B DecelReq-T/B	-	DecelReq-D/B

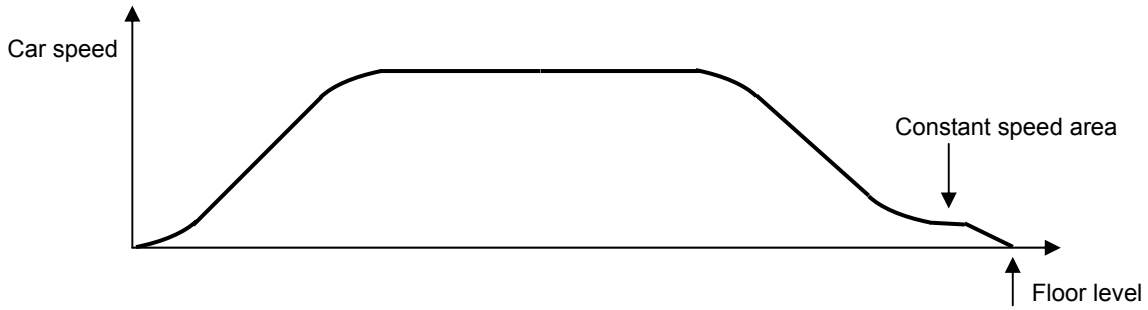
① Speed pattern by “DecelReq-D/B”



When the car starts run, position controller inside the inverter makes stop-available signals (terminals CN4-FS0, FS1, FS2, FS3, FS4, FID on EL-I/O board). Inverter outputs Decel request signal to operation controller before stopping signals are renewed. Operation controller receives signal from inverter and checks whether there is hall call (calling floor) matching advanced (stopping) floor inverter outputs. If the suitable floor is identified, operation controller transmits Decel acknowledging signal (EL_CN3-DAC terminal on the board) to the inverter.

When this signal is input, inverter makes itself ready to decelerate and starts deceleration at the point where distance to target floor matches decel starting distance and makes leveling to stop at the target floor with speed reference based on distance to target floor.

② Speed pattern by “DecelReq-T/B”



It is similar to “DecelReq-D/B” except that it is able to set constant speed area before leveling and based on time.

3) E/L_02 (Number of total floor, advanced floor)

4) E/L_03 (Rated car speed)

5) E/L_04 (Motor speed at rated car speed)

Sets number of floors for elevator car to stop, rated car speed and motor speed when E/L_03 is output in each parameter. Enter total floor including underground floor in E/L_02 and motor speed in E/L_04 when car is running according to E/L_03.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_02	Floor Number	Number of total floor elevator car stops	1 ~ 32	floor	32
E/L_03	Car Speed	Rated car speed	30 ~ 420	m/min	240
E/L_04	Motor Speed	Motor speed at rated car speed	20.0 ~ 3600.0	rpm	1500.0

6) E/L_05

iV5 is programmed to perform UP operation when FX signal is input. But if the car performs “Down operation” when Fx is ON, set this code to FX-CW to change the car operating direction.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_05	UP Direction	Motor rotating direction select	FX-CCW FX-CW	-	FX-CCW

7) E/L_06

8) E/L_07

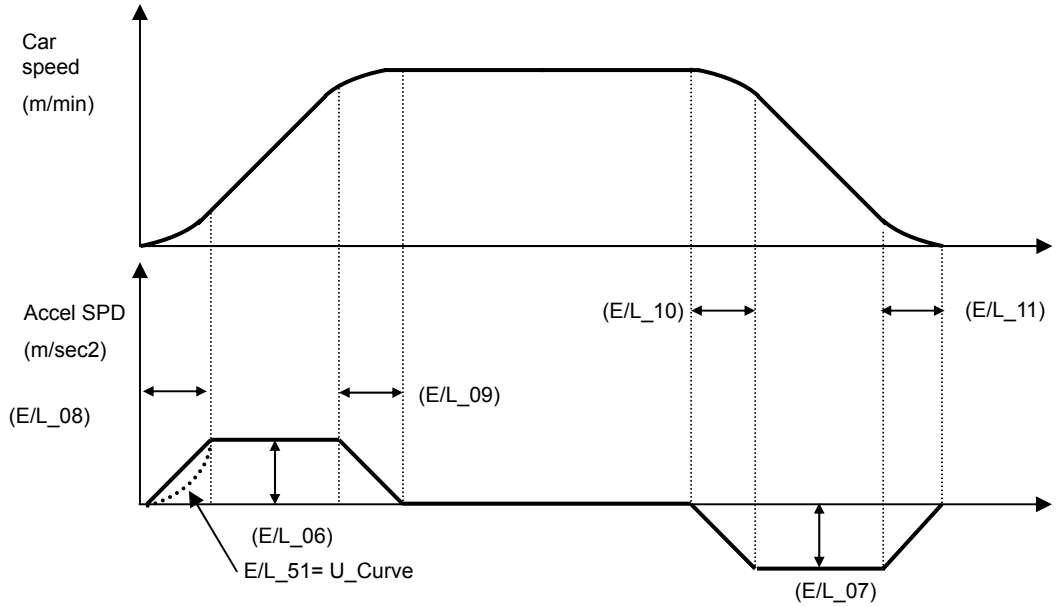
9) E/L_08

10) E/L_09

11) E/L_10

12) E/L_11

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_06	Rated Accel	Rated acceleration speed	0.10 ~ 1.00	m/sec^2	0.50
E/L_07	Rated Decel	Rated deceleration speed	0.10 ~ 1.00	m/sec^2	0.50
E/L_08	Acc Start T	Acceleration start time	0.50 ~ 2.50	sec	1.00
E/L_09	Acc End T	Acceleration end time	0.50 ~ 2.50	sec	1.00
E/L_10	Dec Start T	Deceleration start time	0.50 ~ 2.50	sec	1.00
E/L_11	Dec End T	Deceleration end time	0.50 ~ 2.50	sec	1.00



When E/L_51 is set to ‘Linear’, Acceleration starting pattern becomes linear (straight) and to ‘U-Curve’, it shows a Curved line. E/L_51 is only applied to the Acceleration start.

13) E/L_12

Compensates distance which car is moving while inverter sends decel request signal to operation controller and receives decel acknowledging signal. This value is used to calculate stop request floor.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_12	CommDlyDist	Distance to compensate Communication delay	100 ~ 1000	mm	400

14) E/L_13

Deceleration start distance (Distance from decal start position to target floor level) can be adjusted corresponding to speed controller characteristics and load quantity. Deceleration is made from the distance calculated by deceleration start distance from inverter plus E/L_13.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_13	DecStartAdj	Deceleration start adjustment	-10 ~ 20	mm	0

15) E/L_14

Time taken to output traction machine Brake ON command to BRA-BRB terminal on the board after FX/RX is input.

16) E/L_15

Time taken to output elevator speed command after traction machine Brake ON command is output to BRA-BRB terminal on the board after FX/RX is input.

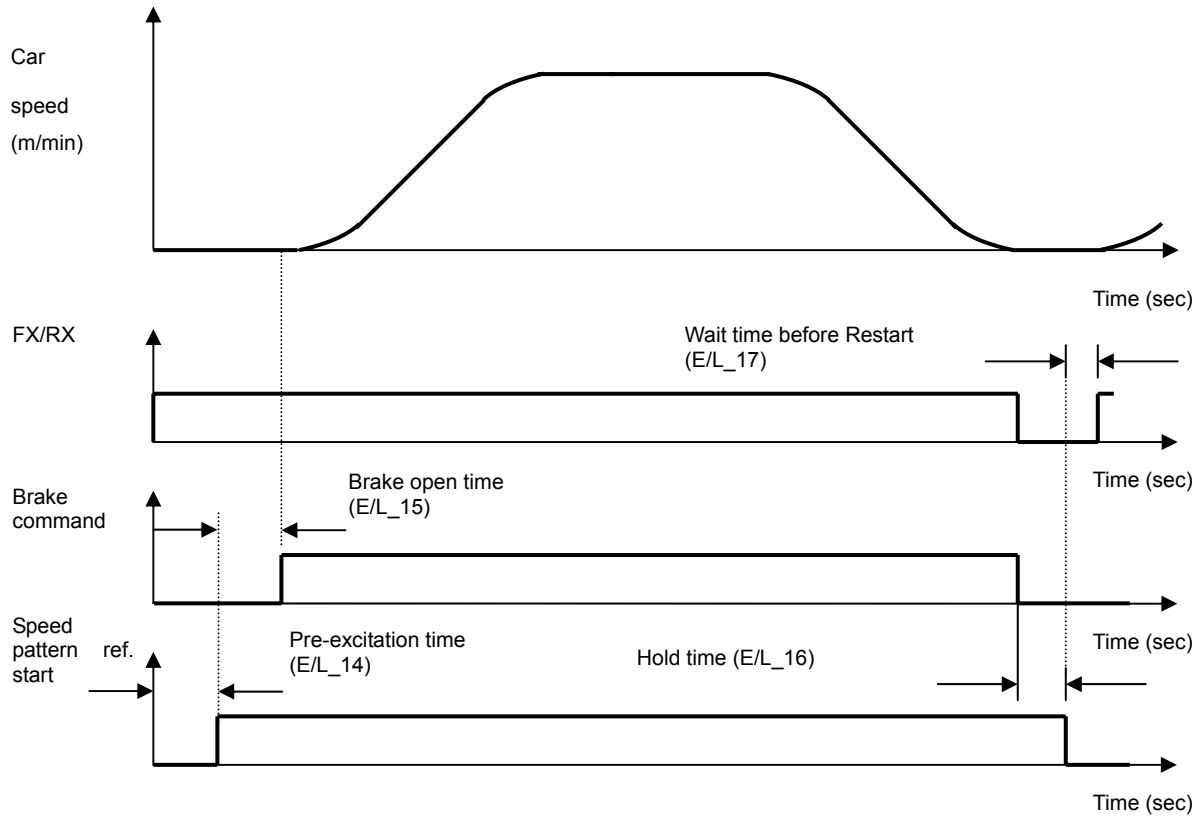
17) E/L_16

Can set the time to maintain zero speed after elevator car speed becomes zero. There is delay time for traction machine brake to activate after FX/RX command is off, triggering brake command off. If inverter does not output stopping torque at zero speed, elevator car may perform Up or Down operation depending on load quantity.

18) E/L_17

Time taken to restart after stop. Minimum 1 sec.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_14	PreExct Time	Pre-excitation time	100 ~ 10000	msec	300
E/L_15	Brake Time	Brake open time	0 ~ 10000	msec	300
E/L_16	Hold Time	Hold time	0 ~ 10000	msec	300
E/L_17	Restart Time	Wait time before Restart	0.00 ~ 100.00	sec	1.00

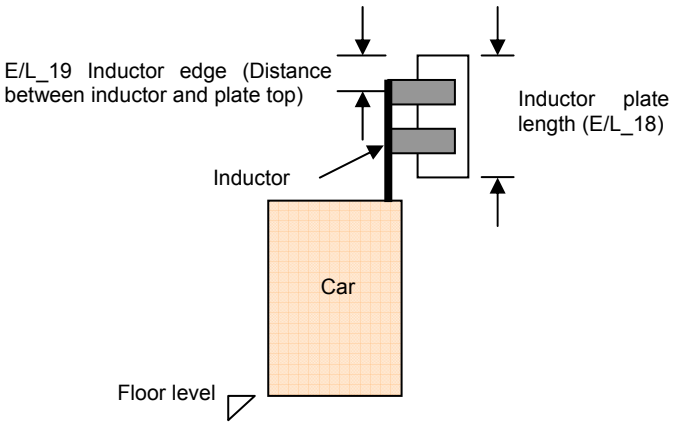


19) E/L_18

20) E/L_19

In FHM operation, inverter measures inductor plate length and distance between inductor and inductor plate top as well as floor level of each. These values are automatically saved to the memory after FHM operation. This value should not be programmed to other values.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_18	Plate Length	Inductor plate length	E/L_19 ~ 1000.0	mm	200.0
E/L_19	InductorEdge	Distance between inductor and car plate top	0.0 ~ E/L_18	mm	20.0



21) E/L_20

Sets the car speed per minute (m/m) during FHM operation. When one of the terminal defined as manual operation is turned ON, car speed value is changed to one of E/L_22~E/L_24 from E/L_21. E/L_20 setting is used as the speed ref. for Base floor operation.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_20	FHM/BFR Speed	Car speed during FHM (Floor height measurement) operation	0.0 ~ 60.0	m/m	15.0

22) E/L_21

Displays FHM operation results. First two bits indicate the number of floor mesured and the last bit shows success(“1” displayed) or failure(“0” displayed) of operation. For instance, when “321” is displayed after FHM operation is finished, “32” means the number of floors checked is 32 and “1” marks successful operation. This value should not be programmed to other values.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_21	FHM DATA	Floor height measurement data	0 ~ 321		0

23) E/L_22

24) E/L_23

25) E/L_24

Speed for various modes of manual operation (maintenance, escape and FHM operation) can be set by mixing multi-function input terminals **MM0/P1 and MM1/P2.**

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_22	Manual Spd1	Car speed 1 during manual operation	0.0 ~ 60.0	m/m	15.0
E/L_23	Manual Spd2	Car speed 2 during manual operation	0.0 ~ 60.0	m/m	10.0
E/L_24	Manual Spd3	Car speed 3 during manual operation	0.0 ~ 60.0	m/m	3.0

When **MM0/P1**, **MM1/P2** are set to **"Man Speed-L", "Man Speed-M"**, respectively, car speed ref. is determined as the followings.

MM0/P1	MM1/P2	Set speed
OFF	OFF	N/A (1)
ON	OFF	E/L_22
OFF	ON	E/L_23
ON	ON	E/L_24

(1) Decelerates to zero speed when MM0 and MM1 are Off during manual operation. N/A is displayed at a stop.

26) E/L_25

27) E/L_26

28) E/L_27

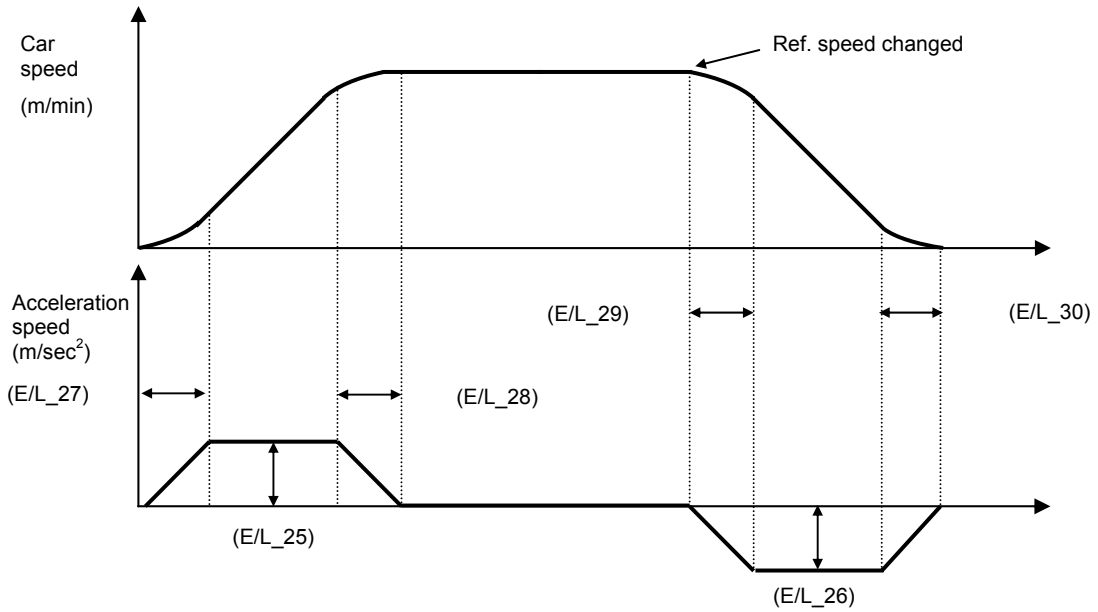
29) E/L_28

30) E/L_29

31) E/L_30

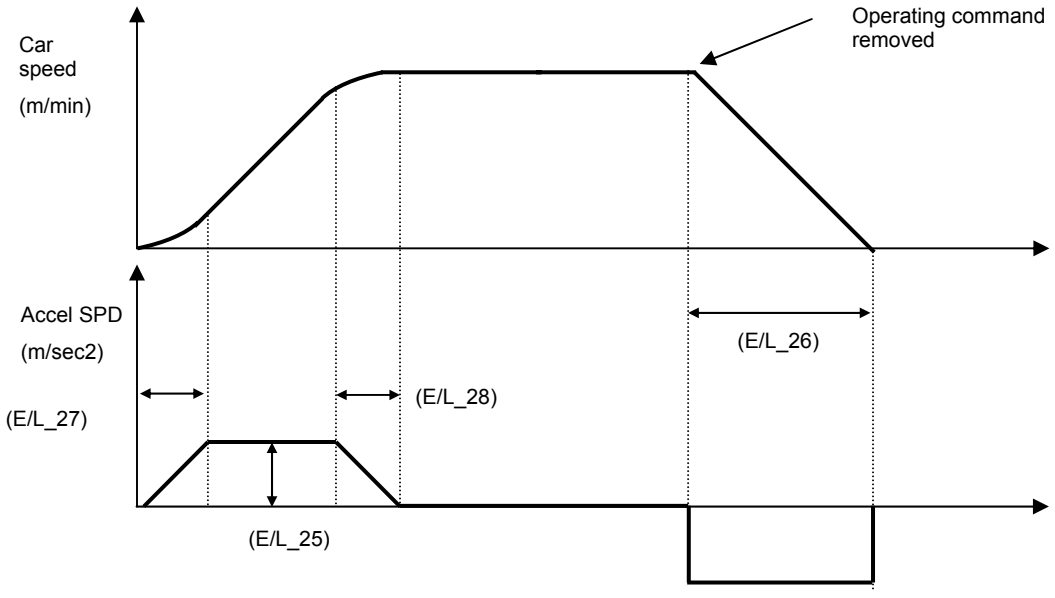
32) E/L_31

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_25	MAN Accel.	Acceleration speed during manual operation	0.01 ~ 5.00	m/sec^2	0.50
E/L_26	MAN Decel.	Deceleration speed during manual operation	0.01 ~ 5.00	m/sec^2	0.50
E/L_27	ManAccStartT	Acceleration start time during manual operation	0.01 ~ 2.00	sec	0.50
E/L_28	Man AccEnd T	Acceleration end time during manual operation	0.01 ~ 2.00	sec	0.50
E/L_29	ManDecStartT	Deceleration start time during manual operation	0.01 ~ 2.00	sec	0.50
E/L_30	Man DecEnd T	Deceleration end time during manual operation	0.01 ~ 2.00	sec	0.50



When speed command is changed due to change in multi-function input status and deceleration begins (for example, 15m/m → 3m/m), set the decel condition in **E/L_26, E/L_29 and E/L_30.** This will lead to S-curve deceleration. However, if FX/RX command is off while multi-function input status is maintained, linear deceleration will be performed at zero speed. It is used when faster stop is required than soft landing.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_31	ManZeroDec T	Deceleration time during manual operation	0.00 ~ 2.00	sec	0.00



33) E/L_32

34) E/L_33

It will be active and compensate the distance when an inductor located upwards of the car is not stationed within the inductor plate. The adjusting value depends on car speed. Max/Min value should be set for appropriate compensation. E/L_32 value will be automatically set as initial value after FHM operation is finished. When floor height is high or Slip is large, set E/L_33 to small (x mm).

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_32	DistComp.Min	Distance compensation, Minimum during operation	0 ~ 2*E/L_18	mm	0
E/L_33	DistComp.Max	Distance compensation, Maximum during operation	0 ~ 100	mm	0

35) E/L_34

This setting value is used to compensate the current position when inductors are sensing inductor plate after car deceleration is started and reaches a floor level. Enter + value when the car is stopped after passing the floor level and – value when the car is stopped below the floor level. Factory default is 0. When leveling error occurs, set this value from low. This value is applied to all floors equally regardless of car direction. If only a specific floor has leveling error, use E/L_63 and E/L_64 additionally.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_34	DistComp.Lev	Leveling distance compensation (1	-E/L_19 ~ +E/L_19	mm	0

36) E/L_35

Sets the creep speed (Constant speed) when E/L_01 is set to DecelReq-T/B (Stopping method after running at constant speed before reaching a floor level).

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_35	Creep Speed	Creep speed	1.0 ~ 60.0	m/m	3.0

37) E/L_36

Sets the creep distance when E/L_01 is set to DecelReq-T/B.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_36	Creep Dist.	Creep distance	0 ~ 500	mm	0

38) E/L_37

39) E/L_38

If E/L_37 is set to “0”, deceleration is made based on distance until leveling and if E/L_37 is set to other than “0”, deceleration is made based on time to the remaining distance to floor level. When E/L_37 is set to “0”, speed reference is changed to 0 for leveling after E/L_38 set time after inductors meet the inductor plate. Therefore, E/L_38 should not be set too small if E/L_37 is “0”.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_37	D/B End Dist	Ending Position control and distance to start deceleration to zero speed	0 ~ E/L_19	mm	0
E/L_38	SpdZero Time	Time to decelerate to zero speed after position control ends	0.01 ~ 10.00	sec	2.00

40) E/L_39

ELIO board input signal is programmed as A contact (Normally OFF (Open), ON when operating (Closed)). If inductor and Limit switch for forced deceleration are programmed as B contact (normally ON (Closed), OFF when operating (Open)), input signal should be set to “1” to inverse the signal. However, DAC is not able to be operated as B contact. However, DAC cannot be set as B contact even though set to 1. Take caution because it is changed to A contact after parameter initialize.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_39	ELIO IN Neg	ELIO input negative (inversion)	000000000000 ~ 111111111111	sec	000000000000

E/L_39 set value is corresponding to EL-I/O input terminal (CN3) one to one and setting “1” makes the selected terminal to “B contact”.

MSB											LSB
I_D	I_U	DLS	ULS	RV1	RV2	SD1	SU1	SD2	SU2	DAC	RV3

41) E/L_40
42) E/L_41

Adjust the filter time when elevator car is operating incorrectly due to noise interference.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_40	IND Filter	Inductor input filter time	0 ~ 50	ms	25
E/L_41	SDS Filter	Filter time for SDS input	50 ~ 500	ms	250

43) E/L_42
44) E/L_43
45) E/L_44
46) E/L_45

When Limit switch for forced decel (SDS-U1) at highest floor is active and car speed exceeds setting in E/L_42, car starts forced deceleration with E/L_43 and keeps running with E/L_44 until UP/DOWN inductors are active and stops after E/L_45 elapses. E/L_43 and E/L_44 are only displayed when E/L_42 or E/L_47 setting is other than “0”. E/L_43, E/L_44, E/L_45 are applied for SDS-D2 and SDS-U2.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_42	ForcedDecSpd	Forced deceleration starting speed during SDS-1 input	0.0 ~ 420.0	m/m	0.0
E/L_43	ForcedDecel	Deceleration speed during SDS-1 forced deceleration	0.01 ~ 5.00	m/sec^2	1.50
E/L_44	ForcedCrpSpd	Creep speed during forced deceleration	0.0 ~ 60.0	m/m	3.0
E/L_45	Frcd.DecWait	Wait after zero speed arrival during forced deceleration	0 ~ E/L_16	msec	300

47) E/L_46

48) E/L_47

Defines the use of SDS-D2 and SDS-U2 and forced decel start speed. E/L_47 will appear when E/L_46 is set to “Yes”.

When this Limit switch at highest floor is active and car speed exceeds setting in E/L_57, car starts forced deceleration with E/L_43 and keeps running with E/L_44 until UP/DOWN inductors are active and stops after E/L_45 elapses.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_46	Use FrcdDcl2	Use SDS-2	No/Yes	-	No
E/L_47	ForcedDecSpd	Forced deceleration start speed during SDS-2 input	0.0 ~ 420.0	m/m	0.0

49) E/L_50

When this parameter is set to ‘Inductor ON’, elevator car can start only when two inductors are operating within car plate. When set to ‘Always’, car can always start regardless of inductor operation.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_50	HighSpdStart	Starting Condition for High speed Auto Operation	Inductor ON Always	-	Inductor ON

50) E/L_51 (Acceleration Start Pattern Selection)

Selects acceleration start pattern between Linear and U-Curve. U-Curve is useful to improve riding condition of the car at start.

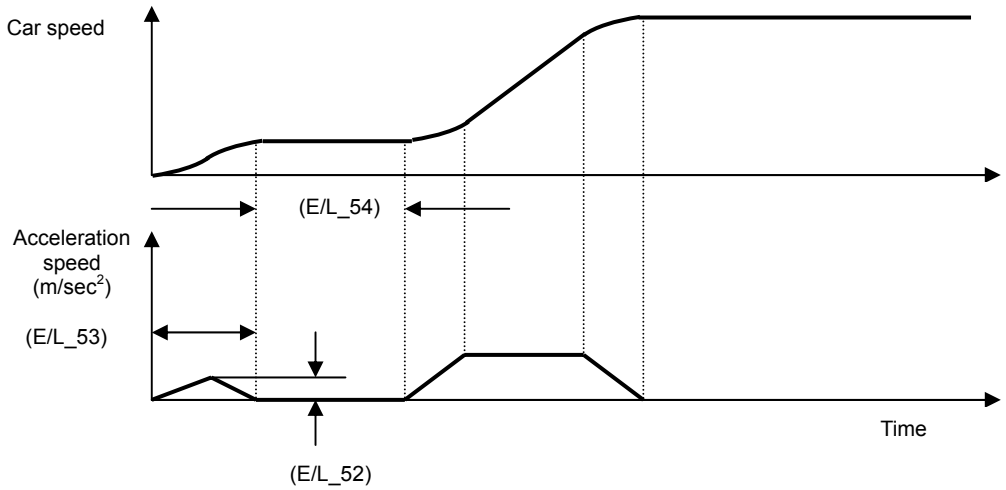
Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_51	AccStartType	Acceleration Start Pattern Selection during High speed operation	Linear U-Curve	-	Linear

51) E/L_52

52) E/L_53

53) E/L_54

Used for optimal starting/stopping (up/down) operation condition of the elevator car during Auto operation. User can find the optimum value by repeating operation with different parameter values input.



Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_52	StartupAccel	Start-up acceleration speed	0.01 ~ 1.00	m/sec^2	0.00
E/L_53	StartupAccT	Start-up acceleration time	0.01 ~ 5.00	sec	0.01
E/L_54	StartupWait	Start-up wait time	0.00 ~ 5.00	sec	0.50

54) E/L_55

Set the wait time taken for leveling/decel/stop is complete for base floor operation or nearest floor operation after UP/Down inductor is operating. When the car is stopped above the floor level, set this smaller and stopped below, set this value larger.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_55	BFR/NFR Wait	Wait time before leveling at Lowest floor/Nearest floor	0.00 ~ 5.00	sec	0.30

55) E/L_58 – refer to "2.2 Keypad display at elevator mode" for detail description

When CON_02 "**Application"** is set to "**Elevator"**, the following display mode can be settable. In case of "Limit S/W State", ON/OFF status will appear according to setting in E/L_39.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_58	Display Sel.	Current car speed per min.	Car Speed (m/m)	m/m	Car Speed (m/m)
		Current car speed per sec.	Car Speed (m/s)	m/s	
		Motor speed	Motor Speed	rpm	
		Current car position	Car Position	mm	
		Motor output torque	Trq Output	%	
		Limit switch status [1)]	Lmt.S/W State	I--S--S2--	
		Tuning distance when first inductor is active	Tuning Dist	mm	

1) Limit switch status displayed

Ex) when an elevator car is stationed at lowest floor level. - IND_UP, IND_DN, SDS1, SDS2 ON (-: OFF, ○: ON)

Inductor	Down	Up	SDS1	Down	Up	SDS2	Down	Up
I	○	○	S	○	-	S2	○	-

56) E/L_59

Current car position is reset to 0mm, becoming the lowest level and floor number on the LCD display is changed to "1".

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_59	Clear Posi.	Clear car position	No Yes	-	No

57) E/L_60

Can check the height of each floor after FHM operation is accomplished. Take caution because Floor height data will be reset to 0 if E/L group parameter initialize is performed in PAR_01 or E/L_02 setting value(floor number) is changed.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_60	Show FlrPosi	Show floor position	1 ~ E/L_02	FLOOR	1

58) E/L_61 (Start Condition setting for FHM operation)

When FHM operation is needed to master controller as well as Inverter, set E/L_61 to 'DLS ON/SD1-ON'. In this case, DLS and ULS signals should be provided to the inverter. When FHM operation is needed to inverter only, use as default setting 'ID-OFF/IU-ON'. In this case, inverter decelerates to stop automatically when upper inductor(IU) passes inductor plate at the highest floor. However, in the case of 'DLS ON/SD1-ON', inverter keeps running to sense ULS.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_61	FHM Start	Starting condition setting for FHM operation	ID-OFF/IU-ON DLS ON/SD1-ON	-	ID-OFF/IU-ON

59) E/L_62 (FHM mode setting via Keypad)

When E/L_62 is set to "Yes", operating mode is changed to FHM regardless of multi-function terminal input status. To activate this function, move the car to the position same as E/L_61 setting by Manual operation and set E/L_62 to "Yes". It is important that after finishing FHM operation, set this to "NO". If not, FHM operation is always ON. When FHM operation is failed, always move the car to the base floor and start FHM operation again because FHM is not available on UP operation.

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_62	Keypad FHM	FHM mode setting via Keypad	No Yes	-	No

60) E/L_63 (Floor compensation for UP operation)

61) E/L_64 (Floor compensation for DOWN operation)

Code	LCD display	Parameter name	Setting range	Unit	Factory setting
E/L_63	UpDir Level	Floor compensation for UP operation	-E/L_19 ~ E/L_19	mm	0
E/L_64	DnDir Level	Floor compensation for Down operation	-E/L_19 ~ E/L_19	mm	0

Distance compensation for leveling is available in E/L_34, but this value is applied to all floors. However E/L_63, 64 adjust each floor for UP/DOWN operation. Similar to E/L_34, when the car is stopped passing floor level, give + value and stopped below the floor level, give – value. See the table below for details. If E/L group parameter initialize is performed in PAR_01 or number of floors is changed in E/L_02, E/L_63 and E/L_64 set values are reset to 0.

LCD Display	Description
E/L▶ Up 2F Level 63 0mm	● Press the [PROG] key and the cursor will blink on the second row. ● Set the desired value using [▲], [▼] keys and press [ENT] to save the data into memory.
E/L▶ Up 5F Level 63 0mm	● To change the other floor's data, press the [PROG] key again. ● Use [▲], [▼] to go to the floor to be set and press the [PROG] to finish floor setting.
E/L▶ Up 5F Level 63 2mm	● Cursor will be blinking on the second row. ● Adjust the value using [▲], [▼] keys and press [ENT] key to save the data into memory.
E/L▶ Up 5F Level 63 2mm	● To check settings of the each floor, press the [PROG] twice (Cursor does not blink) and press [▲], [▼] keys to change the floors and check the preset value.