



Function Guide

SLIM LINE Series Control Cabinet



Function Guide

Data code 19011453 A00

Preface

Thank you for purchasing the SLIM LINE series control system.

By 2019, over two million elevator controllers/control cabinets produced by INOVANCE, an elevator brand owned by Inovance, have been put into use around the world.

Based on such extensive practices and the application experience in different regions, we developed the SLIM LINE control system to meet the new requirements of global market.

This guide introduces the commissioning, parameter setting, typical functions and solutions, and troubleshooting of the control system.

Read this guide carefully before using the product, and keep it properly for future maintenance reference.

Notes

- ◆ For illustration purpose, the drawings in this guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified before using the product, and perform operations following the instructions.
- ◆ The drawings in this guide are for illustration only. Actual products may vary.
- ◆ The instructions are subject to change, without notice, due to product upgrade, specification modification as well as efforts to increase the accuracy and convenience of the guide.
- ◆ If the guide is damaged or lost, order a replacement from your agent or the customer service center of Inovance.
- ◆ Contact the customer service center of Inovance if you have any problems during use.

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Revision History

Date	Version	Change Description
November 2020	A00	First release.

Safety Instructions

Safety Precautions

- 1) Before using the product, read the safety instructions thoroughly and comply with them during operations.
- 2) To ensure the safety of humans and equipment, follow the signs on the product and all the safety instructions in this guide.
- 3) "CAUTION", "WARNING", and "DANGER" items in this guide do not indicate all safety precautions that need to be followed; instead, they just supplement the safety precautions.
- 4) Use this product according to the designated environmental requirements. Damage caused by improper usage is not covered by warranty.
- 5) Inovance shall take no responsibility for any personal injuries or property damage caused by improper usage.

Safety Levels and Definitions



indicates that failure to comply with the notice will result in severe personal injuries or even death.



indicates that failure to comply with the notice may result in severe personal injuries or even death.



indicates that failure to comply with the notice may result in minor personal injuries or damage to the equipment.

Safety Instructions

Power-on



- ◆ Before power-on, make sure that the equipment is installed properly with reliable wiring and the motor can be restarted.
- ◆ Before power-on, make sure that the power supply meets equipment requirements to prevent equipment damage or even a fire.
- ◆ At power-on, unexpected operations may be triggered on the equipment. Therefore, stay away from the equipment.
- ◆ After power-on, do not open the cabinet door and protective cover of the equipment. Failure to comply will result in an electric shock.
- ◆ Do not touch any wiring terminals at power-on. Failure to comply will result in an electric shock.
- ◆ Do not remove any part of the equipment at power-on. Failure to comply will result in an electric shock.

Operation



- ◆ Do not touch any wiring terminals during operation. Failure to comply will result in an electric shock.
- ◆ Do not remove any part of the equipment during operation. Failure to comply will result in an electric shock.
- ◆ Do not touch the equipment shell, fan, or resistor for temperature detection. Failure to comply will result in heat injuries.
- ◆ Signal detection must be performed by only professionals during operation. Failure to comply will result in personal injuries or equipment damage.



- ◆ Prevent metal or other objects from falling into the device during operation. Failure to comply may result in equipment damage.
- ◆ Do not start or stop the equipment using the contactor. Failure to comply may result in equipment damage.

Maintenance



- ◆ Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed by only professionals.
- ◆ Do not maintain the equipment at power-on. Failure to comply will result in an electric shock.
- ◆ Before maintenance, cut off all equipment power supplies and wait at least 10 minutes.



- ◆ Perform daily and periodic inspection and maintenance for the equipment according to maintenance requirements and keep a maintenance record.

Repair



- ◆ Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed by only professionals.
- ◆ Do not repair the equipment at power-on. Failure to comply will result in an electric shock.
- ◆ Before inspection and repair, cut off all equipment power supplies and wait at least 10 minutes.



- ◆ Require repair services according to the product warranty agreement.
- ◆ When the equipment is faulty or damaged, require professionals to perform troubleshooting and repair by following repair instructions and keep a repair record.
- ◆ Replace quick-wear parts of the equipment according to the replacement guide.
- ◆ Do not operate damaged equipment. Failure to comply may result in worse damage.
- ◆ After the equipment is replaced, perform wiring inspection and parameter settings again.

Disposal



- ◆ Dispose of retired equipment by following local regulations or standards. Failure to comply may result in property damage, personal injuries, or even death.
- ◆ Recycle retired equipment by following industry waste disposal standards to avoid environmental pollution.

Other Instructions

1) Requirements for the main air switch

Install a circuit breaker on the front-end of the input power supply side (L, N) of the control cabinet to prevent such faults as short circuit and overload on the back-end load. For a three-phase 380 V or single-phase 220 VAC system, the rated current of the circuit breaker cannot be lower than 32 A. A circuit breaker with rated current above the rated input current of the control cabinet is recommended.

2) Requirements for the residual current device (RCD)

Install an RCD with rated tripping current not higher than 30 mA in the car top lighting and shaft lighting circuits for protection.

3) High leakage current warning

The equipment generates high leakage current during running. Ground the equipment reliably before connecting it to the input power supply. Grounding must comply with local regulations and related IEC standards.

4) Motor insulation test

Perform the insulation test when the motor is used for the first time, after long-time storage, or in a regular inspection, to prevent the control cabinet from being damaged due to the poor insulation of motor windings. The motor must be disconnected from the control cabinet during the insulation test. A 500 V megger is recommended for the test. Ensure that the measured insulation resistance is 5 MΩ or above.

5) Motor thermal protection

Set the motor overload protection parameters properly or install a thermal relay for the motor for protection.

6) Disposal

The electrolytic capacitors inside the control cabinet and on the PCBs may explode when they are burnt. Poisonous gas is generated when the plastic parts are burnt. Treat them as industrial waste.

7) Inspection of peripheral cables

Ensure the cross-sectional area and voltage resistance of power cables and control power cables meet the requirements. Connect the input and output cables separately to avoid danger caused by cable mixing and insulation damage.

Run the signal cables and power cables separately. Use shielded twisted pairs (STPs) as analog signal cables, and make sure that the shielded cables are reliably grounded at one end.

Safety Signs

For safe equipment operations and maintenance, comply with the safety signs on the equipment, and do not damage or remove the safety labels.

The following table describes the safety signs.

Safety Sign	Description
 <p>Authorized Person Only</p>  <p>Electric Shock</p>   <p>10min</p> 	<ul style="list-style-type: none"> <li>◆ Only professionals are allowed to open the cabinet door. <li>◆ High voltage! <li>◆ Before maintenance, cut off all power supplies and wait 10 minutes. <li>◆ Before using the product, read this document (especially safety instructions) carefully.

1 Function Overview

The SLIM LINE is a general-purpose feature-rich elevator control system designed for home elevators, small residential elevators, and newly installed elevators in old buildings. The following section describes its functions in detail.

1.1 Common Running Functions

Function	Description
Full collective selective	In the automatic running or attendant state, this function enables the elevator to respond to both car calls and hall calls. Passengers at any service floors can call the elevator by pressing the up/down button.
Service floors	The standard product supports up to 40 service floors. More floors can be expanded by customizing the product.
Door open time setting	The system automatically judges the door open state (door open at calls/commands, door open for protection, and delayed door open) and determines the corresponding door open holding time according to the settings.
Door open holding	In the automatic running state, you can hold down the door open button in the car to postpone the door close so that goods can be moved in or out.
Service floor setting for door operators	You can set the service floors of each door operator as required.
Advance door closing (ADC) using the door close button	During door open holding in the automatic running state, you can press the door close button to close the doors in advance to improve the efficiency.
Floor number display setting	The system supports the display of floor numbers in combinations of numbers and letters, meeting the requirements of special conditions.
Light curtain signal judgment	If the car door is blocked by stuff during door close, the light curtain operates and the elevator doors re-open. This function is inactive in the fire emergency state.
Auxiliary operation box	An optional auxiliary operation box with the same functions as the main operation box is available.
Repeated door close	After the door close maintains for a certain period, if the door lock is not closed, the elevator automatically opens and then closes the doors.

Function	Description
Auto-leveling	The system automatically implements accurate leveling based on the floor pulse counting as well as the up and down leveling feedback signals.
Response during acceleration	The system allows the elevator to stop during acceleration and automatically respond to the calls from service floors.
Down collective selective control	In the automatic/attendant state, the elevator responds only to car calls and down hall calls during running.
Idle elevator returning to parking floor	In the automatic running state, the elevator automatically returns to the set parking floor and waits for passengers if it does not receive any car calls or hall calls within the set time.
Automatic running to next landing	If the door open time exceeds the door open protection time but the door open limit signal is still inactive, the elevator closes the doors and automatically runs to the next landing. The system reports Err55.
Forced door close	When the elevator doors fail to close within the set time due to the action of the light curtain or safety edge, the elevator forcibly closes the doors at a low speed and gives a prompt tone.
False car call cancellation	Passengers can cancel a false car call by double pressing the floor button in the car.
Service floor setting	You can enable or disable the system service for one or more floors as required.
Low-speed re-leveling	When the elevator is in the non-inspection state and stops in the non-leveling zone, it automatically runs to the leveling zone at a low speed and opens the doors if the safe running requirements are met.
Door control function	Based on the type of the door operator(s), you can set whether the system keeps outputting commands after the door open/close limit.
Car arrival gong	After the elevator arrives at the destination floor, the CTB gives a prompt tone.
Hall arrival forecast indicator	When the elevator is about to arrive at the destination floor, the hall arrival forecast indicator lights up. Note: dedicated hall call board (HCB) required

Function	Description
Hall arrival gong	When the elevator is about to arrive at the destination floor, the hall arrival gong sounds. Note: dedicated HCB required
Hall I/O expansion	If the hall I/O terminals are not sufficient, more DIs/DOs can be expanded by using the MCTC-KZ-G1.
Car I/O expansion	If the car I/O terminals are not sufficient, more DIs/DOs can be expanded by using the MCTC-KZ-G1.
Button stuck check	The system identifies whether a hall call button is stuck and automatically cancels the stuck call, preventing the condition that the elevator doors cannot close due to the stuck hall call.
Automatic startup torque compensation	Before running, the system automatically implements the startup torque compensation based on the current car load to achieve a smooth startup, improving the riding comfort.
Direct travel ride	The system automatically calculates and generates the running curves based on the distance, which enables the elevator to directly stop at the leveling position without creeping.
Automatic generation of the optimum curve	Based on the distance, the system automatically calculates the optimum speed curve compliant with the human-machine function principle, without being limited by the number of curves or short floors.
Service suspension signal output	When the elevator cannot respond to hall calls, the corresponding terminal outputs a service suspension signal.
Running times recording	In the automatic running state, the system automatically records the running times of the elevator.
Running time recording	The system automatically records the accumulative working hours and working days of the elevator.
Automatic door open upon door lock abnormality	If the system detects a door lock circuit abnormality during door open/close, the elevator automatically re-opens/re-closes the doors and reports a fault after the set door open/close times is reached.
Anti-nuisance	The system automatically judges the number of passengers in the car and the number of car calls registered. If too many car calls are registered, the system determines that a nuisance exists and cancels all car calls. In this case, passengers need to register the car calls correctly again.

Function	Description
Prompt of non-door zone stop	The system automatically gives a prompt when the elevator stops in the non-door zone due to faults.
Full-load indication	When the elevator is fully loaded, the HCB displays a full-load state and the elevator directly runs to the car call floors.
Car energy saving	In the door open holding and door close limit states, the system automatically turns off the lighting and fan in the car after the set time (F9-01) to save energy.
Energy-saving running with standby power supply	When the normal power supply is cut off and the emergency power supply is used, this function allows the system to reduce the elevator's running speed in the prerequisite of guaranteeing the smooth running curve.
Arrival gong disabled at night	This function allows the elevator to cancel the arrival gong announcement within the set time range.
Overload protection	When the car load exceeds 110% of the rated elevator load, the elevator generates an alarm, keeps the doors open, and stops running.
Fault data recording	The system automatically records the detailed fault information, improving the efficiency of maintenance.
Current ramp down	In applications where a permanent magnet synchronous motor (PMSM) is used, the motor's holding current ramps down to zero after the elevator stops through deceleration, preventing abnormal noise in this process.
Simple maintenance keypad	The 3-button keypad on the main control board (MCB) allows the commissioning of running floors, door open/close, and so on.
Shaft auto-tuning	Shaft auto-tuning is required before first-time automatic running. The elevator runs from the bottom floor to the top floor at the inspection speed and automatically records all position signals in the shaft in this process.
Check on user-defined parameters	You can view the parameters different from the factory settings.
Inspection running	After the elevator enters the inspection state, the system disables the automatic running and automatic door operations. You can press the up/down button to make the elevator jog at the inspection speed.

Function	Description
Running under emergency electrical operation (EEO)	After the elevator enters the EEO state, the system disables the automatic running and automatic door operations. You can press the up/down button to make the elevator jog at the EEO speed.
Motor auto-tuning	With a simple parameter setting, the system can obtain the motor parameters no matter whether the motor carries a load or not.
Dual-speed for inspection	Considering the inaccurate running control at a high inspection speed and too long running time at a low inspection speed, the system provides the dual-speed curve for inspection. This greatly improves the running efficiency during inspection.

1.2 Special Functions

Function	Description
Fire emergency return	After receiving a fire emergency signal, the elevator does not respond to any call but directly runs to the fire emergency floor and waits.
Firefighter operation	After entering the firefighter operation mode, the elevator opens or closes the doors only after the door open/close button is pressed at jog (optional). Besides, the elevator only responds to car calls and only one car call can be registered every time.
Independent running	The elevator does not respond to any call, and the elevator doors need to be closed manually. In the case of group control, the elevator exits the group control system and runs independently.
Attendant running	After the elevator enters the attendant state, the running of the elevator is controlled by the attendant.
Voice announcement	During running, the elevator automatically announces such information as the running direction and the next arriving floor. Note: dedicated intercom required
Disability service	When the elevator is waiting in the leveling position, if there is a call or door open command from the car operating panel (COP) for the disabled at this floor, the door open holding time will be prolonged.
VIP service	The elevator runs to the VIP floor first to provide services for special persons.

Function	Description
Direct travel ride with full-load	When the car is fully loaded in the automatic running state, the elevator does not respond to hall calls from passing floors. These hall calls, however, can still be registered. They will be executed during the next running (in the case of a single elevator) or by other elevators (in the case of parallel/group control).
Security floor	After the security floor function is enabled, the security floor remains active from 22:00 to 06:00 (24-hour clock). During this period, the elevator runs to the security floor first every time, stops and opens the doors, and runs to the destination floor. This enhances safety.
Elevator lock	In the automatic running state, when the elevator lock switch operates or the set lock time is reached, the elevator returns to the elevator lock floor after executing all car calls, stops the automatic running, and turns off the lighting and fan in the car.
Parallel/Group control	The system supports the parallel/group control of two elevators and provides multiple scheduling algorithms to meet the requirements of different customers. Note: The group control board (GCB) is required to implement the group control.
Dispersed waiting	In the parallel/group control mode, different elevators wait at different floors.
Exiting from parallel/group control	If the parallel/group control exiting switch signal of a certain elevator in the parallel/group control system is active or the time of exiting the parallel/group control is reached, this elevator will exit from the parallel/group control and run independently. This does not affect the normal running of the parallel/group control system.
Automatic exiting from parallel/group control	If an elevator in the parallel/group control system cannot respond to calls in time due to faults, it automatically exits from the parallel/group control system and runs independently. This does not affect the normal running of the parallel/group control system.
Maintenance mode	After entering the maintenance mode by setting parameters, you can perform the running operations such as elevator testing.

Function	Description
Advance door opening (ADO)	After reaching the door zone, the elevator opens the doors in advance with the participation of safety components to improve the running efficiency. Note: MCTC-SCB board required
Re-leveling	In the door open state, when the car movement detected by leveling switches exceeds a certain distance, the system will short the door lock with the participation of safety components and drive the car to move to the leveling position. Note: MCTC-SCB board required

1.3 Safety Functions

Function	Description
Troubleshooting based on fault level	Faults are classified into different levels based on the severity. Different levels of faults are rectified using different methods, improving system operation efficiency.
Runaway prevention	The system detects the elevator's running state in real time. Once the elevator speed exceeds the limit, the system immediately stops the elevator.
Electric brake release	When the system power supply is disconnected, manually activate the automatic rescue device (ARD) and open the traction machine brake by pressing the brake release button. Then, the car will move in the light-load direction due to the difference of weights on two sides of the motor. In this process, once the brake release button is released, the system immediately stops the output and closes the brake. Note: battery box required
ARD function	When the elevator runs to the non-door zone, the ARD function is automatically enabled if the mains electricity is disconnected. The ARD drives the motor to move the car to the nearest floor where the elevator stops to evacuate passengers. Note: battery box required
Automatic running mode switchover at power failure	In applications where synchronous motor is used, after the supply system is disconnected, the system can perform automatic switchover between shorting stator braking mode and controller drive mode, achieving quick and stable self-rescue.

Function	Description
Automatic running direction identification at power failure	After the supply system is disconnected, the system can automatically identify the current car load and determine the running direction.
Main floor verification	After detecting a position abnormality, the system controls the elevator to move to each floor until reaching the terminal floor for verification, guaranteeing the system safety.
Passenger unloading first upon faults	The system automatically classifies the faults. If the safety running conditions are met, the elevator re-levels to unload passengers before troubleshooting.
Interference degree judgment	The system judges the degree of communication interference.
Earthquake function	When the earthquake detection device operates and outputs a signal to the system, the elevator lands at the nearest floor and stops running. It restores normal running only after the earthquake signal becomes inactive and the fault is reset manually.
Intelligent floor position correction	Every time the elevator runs to the terminal floor, the system automatically checks and corrects the car position information based on slow-down switch 1, and eliminates top-hitting or bottom-clashing fault with the assistance of the slow-down system.
Automatic voltage identification	By detecting the bus voltage, the system automatically adjusts the running speed of the elevator to adapt to the situation of insufficient supply power (such as emergency UPS).
Unintended car movement protection (UCMP)	When the elevator runs in the door zone, the system triggers the safety components to stop the car if it detects an unintended car movement.
Door lock shorting detection	The system detects whether the landing/car door lock contact is shorted manually to prevent the running of the elevator when the door lock contact is shorted.
Running time protection	The system automatically closes the brake to stop the elevator if it does not detect valid car movement within the prescribed period.
Pit protection	After identifying the manual opening of the landing door, the system forces the elevator to enter the inspection state to protect people in the pit. The elevator returns to normal running only after a manual fault reset.

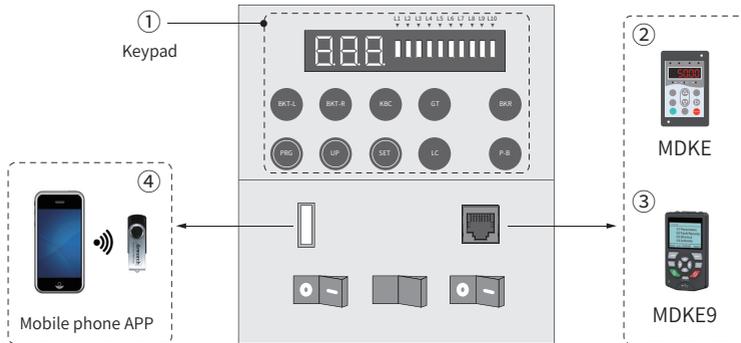
1.4 Testing Functions

Function	Description
Routine running tests	Include the fatigue test of new elevators, car call floor test, hall call floor test, hall call response forbidden, door open/close forbidden, limit switches shielded, overload signal shielded, and so on.
Auxiliary motor slip test	An auxiliary function used to test whether the motor slips successfully during elevator acceptance
UCMP test	Tests whether the UCMP function is reliable and effective.
Static braking force test	Tests whether the braking force meets the safety requirements.
Dynamic single-/dual-arm braking force test	Tests whether the single-arm or dual-arm brake can effectively decelerate and stop the car.
Overspeed governor test	Tests whether the overspeed governor can operate and be reset.
Ascending car overspeed protection (ACOP) test	Tests whether the ACOP function is reliable and effective.

2 Commissioning Tools

2.1 Overview

Use the following tools to implement system commissioning.



No.	Tool Type	Function Description	Remarks
①	Keypad	<ul style="list-style-type: none"> ◆ Function test ◆ Fault reset ◆ Floor display ◆ Signal monitoring 	Standard
②	LED operating panel (MDKE)	<ul style="list-style-type: none"> ◆ Viewing and modification of parameters ◆ LED display 	Optional
③	LCD operating panel (MDKE9)	<ul style="list-style-type: none"> ◆ Viewing, modification, and copy of parameters ◆ Display language (Chinese/English) selection 	Optional
④	Mobile phone commissioning software	<ul style="list-style-type: none"> ◆ Connects the control cabinet to the mobile phone APP through Wi-Fi. ◆ Viewing, modification, downloading, and uploading of parameters ◆ Program downloading ◆ Viewing of running curves and data ◆ Display language (Chinese/English) selection 	Optional



NOTE

- ◆ This guide only describes the commonly-used keypad and LED operating panel (MDKE) in detail.

2.2 Keypad

The keypad consists of the display area and keys. You can view the information about the control cabinet and input simple commands using the keypad.



NOTE

- ◆ Before operations, wear insulation gloves to avoid an electric shock or damage to control board components caused by the static electricity in your body.
- ◆ Never operate the keys with metal or sharp tools. Failure to comply will result in a short circuit or damage to components.

1) Keys and display

The keypad consists of three 7-segment LEDs, 10 signal indicators, and 10 keys.

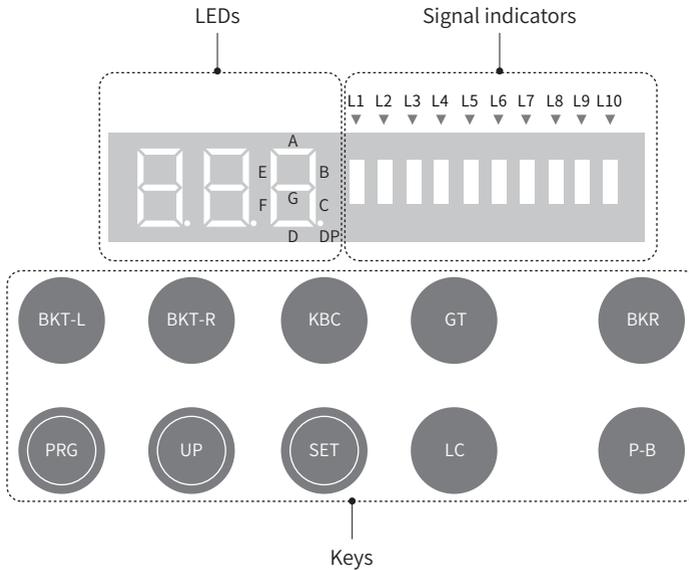


Figure 2-1 Keypad

Definition of keys on the keypad:

Key	Name
BKT-L	Left brake test key
BKT-R	Right brake test key
KBC	Parameter switchover key (used for the switchover between MCB parameters and ARD parameters)

Key	Name
GT	Overspeed governor key
BKR	Brake release key
PRG	Display key
UP	Page-turning key
SET	Setting key
LC	Menu page switchover key
P-B	Common key

2) Keypad operations

Example: To call the elevator to floor 4 using the keypad, operate as follows:

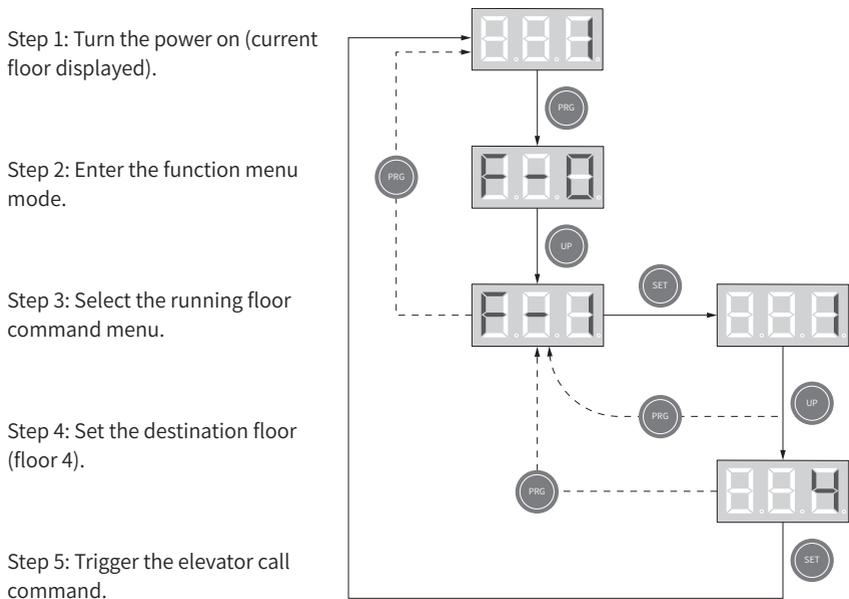


Figure 2-2 Setting procedure for calling an elevator

2.3 LED Operating Panel

2.3.1 Overview

The LED operating panel is connected to the RJ45 interface of the control cabinet through a LAN cable (8-core flat cable). Using the LED operating panel, you can modify the parameters, monitor the working status of the control cabinet, and start or stop the control cabinet under operating panel control. The following figure shows the appearance of the panel.

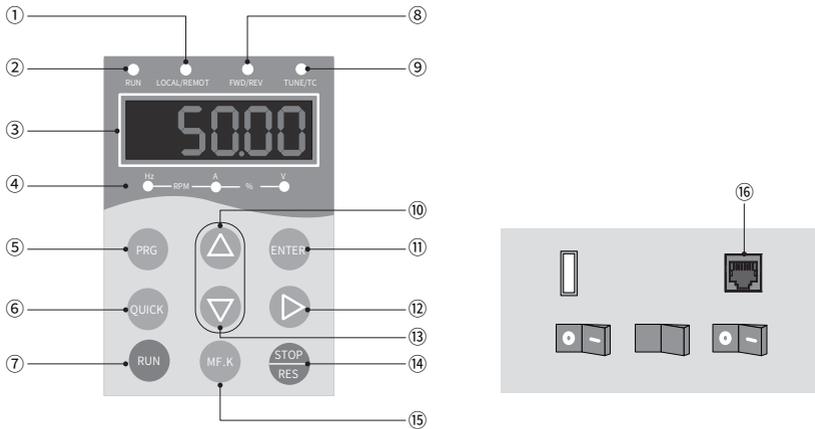


Figure 2-3 Components of the LED operating panel

Table 2-1 Description of components

No.	Component Name	No.	Component Name
①	Reserved	⑨	Auto-tuning indicator
②	Running status indicator	⑩	Increment key
③	Data display zone	⑪	Confirm key
④	Unit indicator	⑫	Shift key
⑤	Programming key	⑬	Decrement key
⑥	Menu key	⑭	Stop/Reset key
⑦	Run key	⑮	Fault hiding key
⑧	Running direction indicator	⑯	RJ45 interface

1) Keys

Table 2-2 Description of keys on the LED operating panel

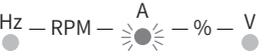
Key	Name	Function
	Programming key	Enter or exit Level I menu.
	Confirm key	Enter the menu interfaces level by level, and confirm parameter settings.
	Increment key	Increase the data or parameter.
	Decrement key	Decrease the data or parameter.
	Shift key	Select the displayed parameters in turn in the stop or running state. Select the digit to be modified when modifying a parameter value.
	Run key	Start the control cabinet in the operating panel control mode.
	Stop/Reset key	In the operating panel control mode, this key is used to stop the control cabinet when it is running and perform a reset operation when it is faulty.
	Menu key	Enter or exit the Level I quick menu.
	Fault hiding key	Display or hide the fault information in the fault state, which facilitates parameter viewing.

2) Indicators

In the following table,  indicates ON,  indicates OFF, and  indicates flashing.

Table 2-3 Description of indicators on the LED operating panel

Status	Status Description
RUN Running status indicator	 RUN OFF: Stop
	 RUN ON: Running

Status		Status Description
FWD/REV Running direction indicator	 FWD/REV	OFF: Forward running
	 FWD/REV	ON: Reverse running
TUNE/TC Auto-tuning indicator	 TUNE/TC	OFF: Non-auto-tuning state
	 TUNE/TC	ON: Auto-tuning state
		Unit of frequency: Hz
		Unit of current: A
		Unit of voltage: V
		Unit of rotational speed: RPM
		Percentage: %

3) Data display

The 5-digit LEDs on the operating panel can display the frequency reference, output frequency, various monitoring data, and fault codes.

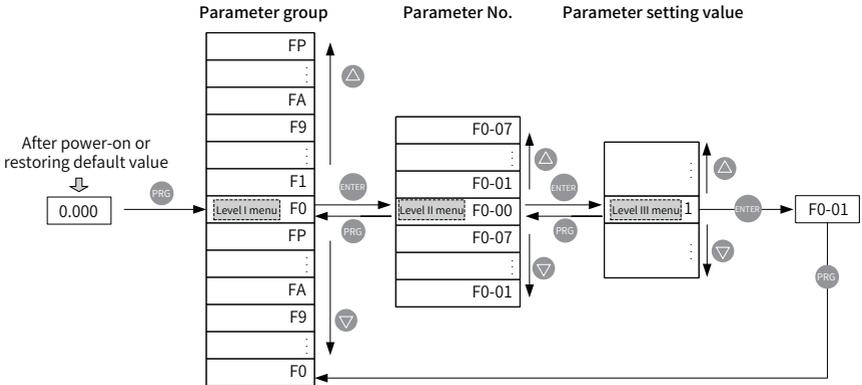
Table 2-4 LED displays and actual data

LED Display	Actual Data	LED Display	Actual Data	LED Display	Actual Data	LED Display	Actual Data
0	0	6	6	C	C	n	N
1	1	7	7	c	c	p	P
2	2	8	8	d	D	r	R
3	3	9	9	E	E	T	T
4	4	A	A	F	F	U	U
5	5, S	b	B	L	L	u	u

2.3.2 Parameter Modification

The LED operating panel adopts a three-level menu to perform operations such as parameter setting. It consists of:

- Level I menu: parameter group
- Level II menu: parameter No.
- Level III menu: parameter setting value



After you enter each level of the menu, if a display bit flashes, it indicates that you can modify it by pressing , , or .

Example: Change F1-04 (Rated motor frequency) from 10.00 Hz to 15.00 Hz.

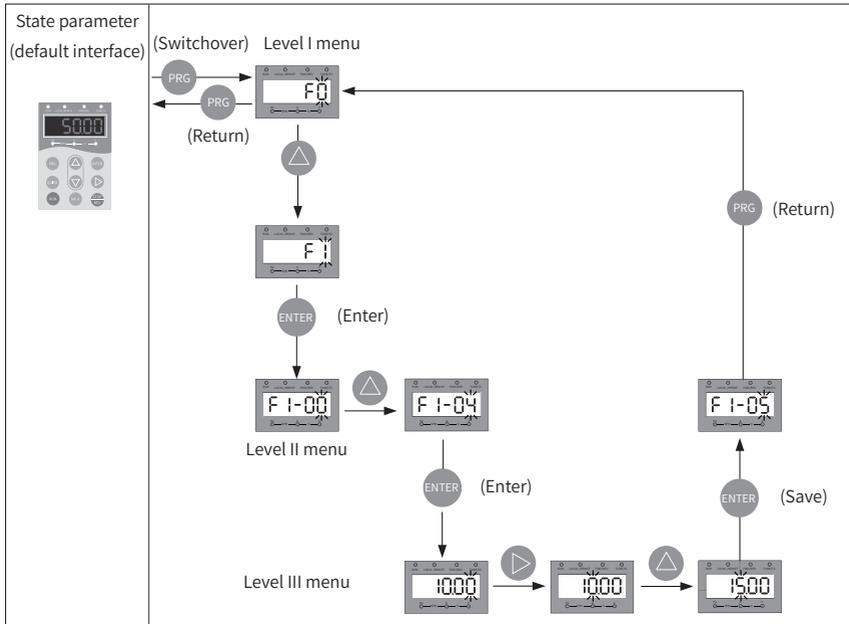


Figure 2-4 Parameter modification procedure

You can return to Level II menu from Level III menu by pressing **PRG** or **ENTER**. The difference between the two is as follows:

- After you press **ENTER**, the system saves the parameter setting, returns to Level II menu, and automatically moves to the next parameter.
- After you press **PRG**, the system directly returns to Level II menu without saving the current parameter modification and remains at the current parameter.

In Level III menu, if a parameter does not include a flashing digit, it indicates that this parameter cannot be modified. This may be because:

- It is a read-only parameter, such as the AC drive type, detected parameters, and running record parameters.
- This parameter cannot be modified in the running state. It can be modified only at stop.

2.3.3 Parameter Viewing

The following figure shows how to view a parameter.

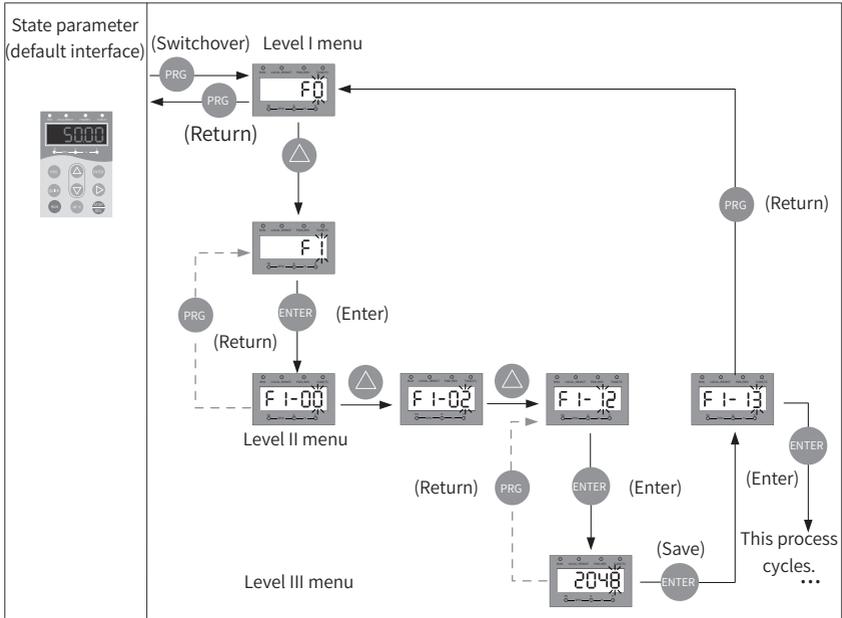


Figure 2-5 Parameter viewing procedure

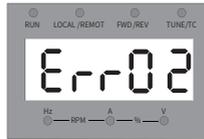
2.3.4 State Parameter Display

In the running state, press  to view the running state parameters. The parameters displayed by default include the running speed, bus voltage, output voltage, output current, and output frequency. To view more running state parameters, see the description of FA-01 (Parameter display during running).

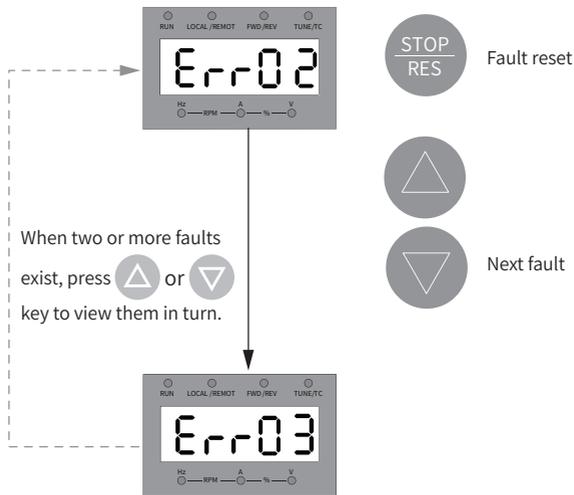
In the stop state, press  to view the stop state parameters. The parameters displayed by default include the rated speed and bus voltage. To view more stop state parameters, see the description of FA-02 (Parameter display at stop).

2.3.5 Fault and Alarm Displays

When a fault occurs in the control cabinet, the LED operating panel will display the fault code shown as follows.



The control cabinet stops outputting immediately, and the fault relay contact becomes closed. Find out the fault cause according to the displayed fault code and eliminate the fault following the solutions described in ["6.4 Fault Information and Solutions" on Page 237](#). Then, reset the control cabinet.



2.4 Mobile Phone Commissioning Software

The commissioning software allows the following operations on the integrated elevator controller using a smartphone: parameter setting, function commissioning, real-time running status monitoring, parameter uploading and downloading, and firmware programming of the elevator control system.

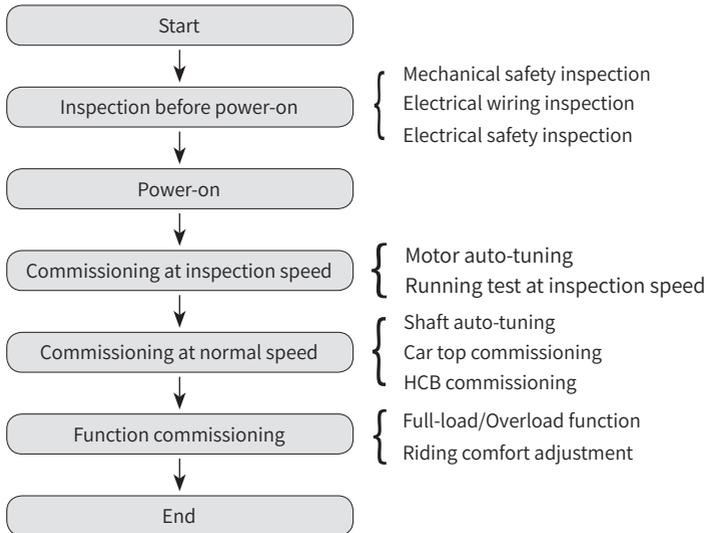


NOTE

◆ For more details, see the *User Guide of Smartphone Commissioning APP for Elevators*.

3 System Commissioning

3.1 Commissioning Flowchart



3.2 Commissioning Procedure

3.2.1 Inspection Before Power-on

Before commissioning, check the mechanical and electrical parts of the system to make sure that the field is safe and the system allows commissioning.



NOTE

- ◆ At least two operators are needed to perform commissioning. Cut off the power supply immediately if any abnormality occurs.

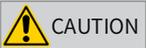
Step 1: Check the mechanical safety.

Confirm that the shaft is unobstructed, nobody is in the shaft, inside the car, or on the top of the car, and the conditions for safe elevator running are met.

Step 2: Check the electrical wiring.

<input checked="" type="checkbox"/>	No.	Inspection Item
<input type="checkbox"/>	1	Check whether the power input terminals (R/S/T or L/N) are connected correctly and securely.

<input checked="" type="checkbox"/>	No.	Inspection Item
<input type="checkbox"/>	2	Check whether motor cables (U/V/W) are connected to the control cabinet correctly and securely.
<input type="checkbox"/>	3	Check whether the control cabinet and motor are grounded correctly.
<input type="checkbox"/>	4	Check whether the safety circuit is on and whether the emergency stop buttons and switches in the control cabinet and machine room operate properly.
<input type="checkbox"/>	5	Check whether the door lock circuit is on and whether it is disconnected when the car door or any landing door opens.

 CAUTION	
	<p>To guarantee safe elevator running, pay attention to the following points:</p> <ul style="list-style-type: none"> ◆ Short the safety circuit with caution. If you start the elevator when the safety circuit is shorted, severe personal injuries or even death may be caused. ◆ Before commissioning, confirm that nobody is in the shaft to avoid personal injuries. ◆ Never perform running at normal speed when the safety circuit is shorted. ◆ Never start the elevator when the door lock circuit is shorted. Failure to comply will result in severe personal injuries or even death.

Step 3: Check the electrical safety.

<input checked="" type="checkbox"/>	No.	Inspection Item
<input type="checkbox"/>	1	Check whether the voltage of the user power supply is within the allowable range (see the nameplate of the control cabinet), with the phase unbalance factor not exceeding 3%.
<input type="checkbox"/>	2	Check whether the total inlet cable gauge and total switch capacity meet the requirements.
<input type="checkbox"/>	3	Check whether the inter-phase voltage of the input power supply (R/S/T or L/N) is normal and whether the input power supply is short-circuited to ground.
<input type="checkbox"/>	4	Check whether U/V/W phases of the controller are mutually short-circuited or short-circuited to ground and whether U/V/W phases of the motor are short-circuited to ground.

<input checked="" type="checkbox"/>	No.	Inspection Item
<input type="checkbox"/>	5	Check whether an inter-phase short circuit or a short circuit to ground exists in the lighting power supply of the control cabinet.
<input type="checkbox"/>	6	Check whether the voltage between the positive and negative poles (301/302) of 24 V output control power supply is normal and whether the control power supply is short-circuited to ground.
<input type="checkbox"/>	7	Check whether the CAN/Modbus communication cable has a short circuit with 24 V control power supply (301/302) or a short circuit to ground.

3.2.2 Power-on

Step 1: Turn off the main switch in the power distribution box.

Step 2: State inspections at normal power-on

<input checked="" type="checkbox"/>	No.	Inspection Item
<input type="checkbox"/>	1	After power-on, check whether the keypad LEDs have a display. If not, check the power supply of the control cabinet.
<input type="checkbox"/>	2	If some of the signal indicators corresponding to the MCB input terminals are ON, the external 24 VDC power supply is normal and the X input terminals on the MCB work properly. If all the indicators are OFF, check whether the external 24 VDC power supply is abnormal.

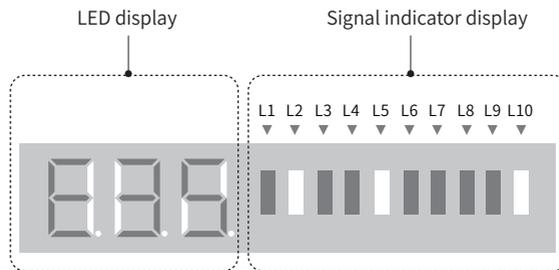


Figure 3-1 MCB signal display at normal power-on



- ◆ During commissioning at inspection speed, certain faults may occur at first-time power-on because the conditions for automatic elevator running are not met or certain peripheral signals are not connected correctly. Such faults include Err35, Err41, Err42, Err51, Err52, and Err58.

Table 3-1 Troubleshooting before commissioning at inspection speed

Fault Code	Fault Name	Fault Description	Solution
Err41	Safety circuit disconnected	The safety circuit is disconnected.	Connect the safety circuit. Otherwise, the elevator cannot run.
Err42	Door lock disconnected during running	The door lock circuit is disconnected.	Connect the door lock circuit. Otherwise, the elevator cannot run.
Err35	Shaft auto-tuning data abnormal	There is no data in the control board because shaft auto-tuning is not complete.	<p>These faults do not affect commissioning at inspection speed and elevator running.</p> <p>Press  on the LED operating panel to cancel the fault display, and then perform motor auto-tuning and commissioning at inspection speed.</p>
Err51	CAN communication fault	<ol style="list-style-type: none"> The car top box is not connected. The car top box communication is abnormal. 	
Err52	HCB communication fault	<ol style="list-style-type: none"> The HCB is not connected. The HCB is connected incorrectly. 	
Err58	Shaft position switches abnormal	<ol style="list-style-type: none"> The feedback inputs of both up slow-down switch 1 and down slow-down switch 1 are active. The feedback inputs of both up limit switch and down limit switch are active. 	Check the shaft switches and eliminate the fault. Otherwise, the elevator cannot run.

3.2.3 Commissioning at Inspection Speed

 CAUTION	
	<ul style="list-style-type: none"> ◆ Before starting commissioning at inspection speed, make sure that all the installations and wirings comply with the electrical safety specifications. ◆ During auto-tuning with the car, pay attention to the motor running direction to prevent the elevator from getting too close to terminal floors. It is recommended that commissioning at inspection speed be performed from a floor at least two floors away from terminal floors. ◆ In the emergency electrical operation (EEO) state, certain shaft safety circuits will be shorted. When performing EEOs during commissioning at inspection speed, take care when the car runs in a position close to the top/bottom terminal floor.

The commissioning at inspection speed includes motor auto-tuning and running test at inspection speed.

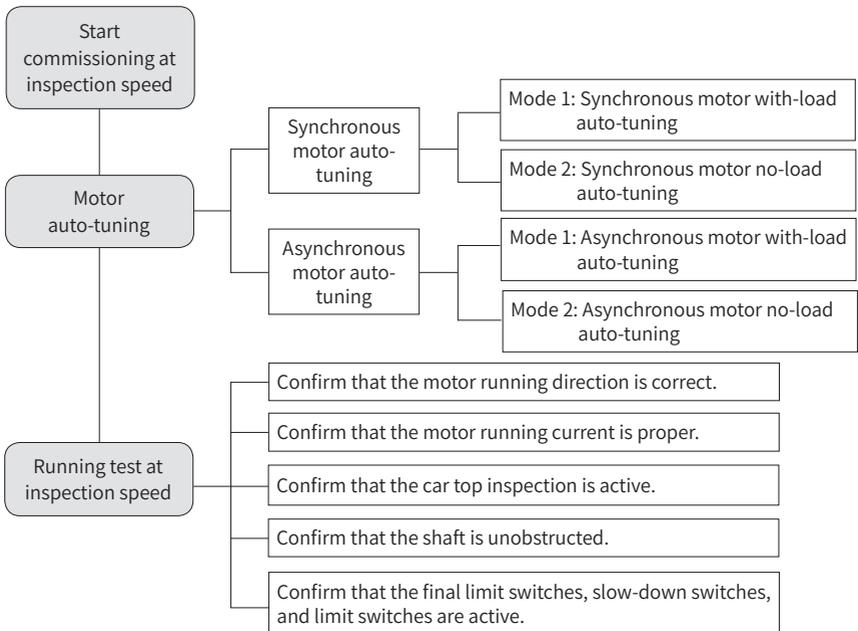


Figure 3-2 Diagram of commissioning at inspection speed

1 Motor auto-tuning

 DANGER	
	<p>To guarantee safe elevator running, pay attention to the following points:</p> <ul style="list-style-type: none"> ◆ The motor may rotate during auto-tuning. Keep a safe distance from the motor to prevent personal injuries. ◆ During with-load auto-tuning, make sure that nobody is in the shaft. Failure to comply will cause personal injuries or even death.

■ Parameters related to motor auto-tuning

Parameter No.	Parameter Name	Setting Range
F1-25	Motor Type	0: Asynchronous motor 1: Synchronous motor
F1-00	Encoder type	0: Sin/Cos encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute/ Communication encoder
F1-12	Encoder pulses per revolution (PPR)	0–10000
F1-01 to F1-05	Rated motor power/voltage/current/ frequency/speed	Motor parameters, requiring manual input
F0-01	Command source selection	0: Operating panel control 1: Distance control
F1-11	Auto-tuning mode	0: No operation 1: With-load auto-tuning 2: No-load auto-tuning

To meet the needs of different working conditions and operating habits, the SLIM LINE offers a variety of motor auto-tuning modes, listed as follows:

Motor Type	Auto-tuning Mode	Load Allowed or Not	Brake Released or Not	Motor Rotates or Not
Synchronous motor	With-load auto-tuning	Yes	Automatically released	Yes
	No-load auto-tuning	No	Manually released	Yes

Motor Type	Auto-tuning Mode	Load Allowed or Not	Brake Released or Not	Motor Rotates or Not
Asynchronous motor	With-load auto-tuning	Yes	Not released	No
	No-load auto-tuning	No	Manually released	Yes

■ Motor auto-tuning flowcharts



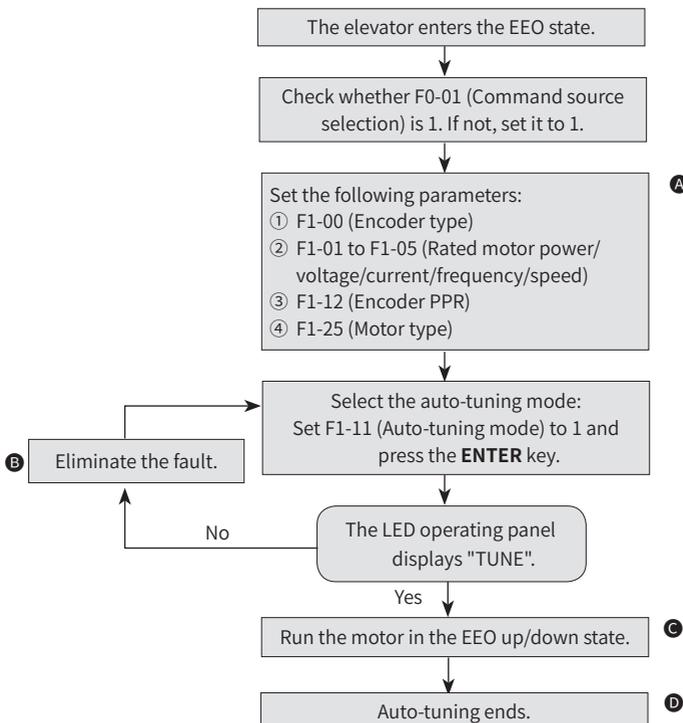
NOTE

- ◆ When the **CIS** switch is turned to **INSP.** position, the system will disconnect the safety circuit and Err41 will be reported. But this does not affect parameter settings and motor auto-tuning. When you start auto-tuning by turning the **CIS** switch to **INSP.** position and pressing the UP/DOWN button, the safety circuit will be automatically shorted and Err41 will be reset.

① Synchronous motor auto-tuning

Two modes are available for synchronous motor auto-tuning.

Mode 1: Synchronous motor with-load auto-tuning (motor connected with the car)



- Ⓐ Set the parameters of the motor and encoder properly. Otherwise, an auto-tuning fault will be reported.

- Ⓑ After setting the auto-tuning mode in F1-11 (Auto-tuning mode), press .

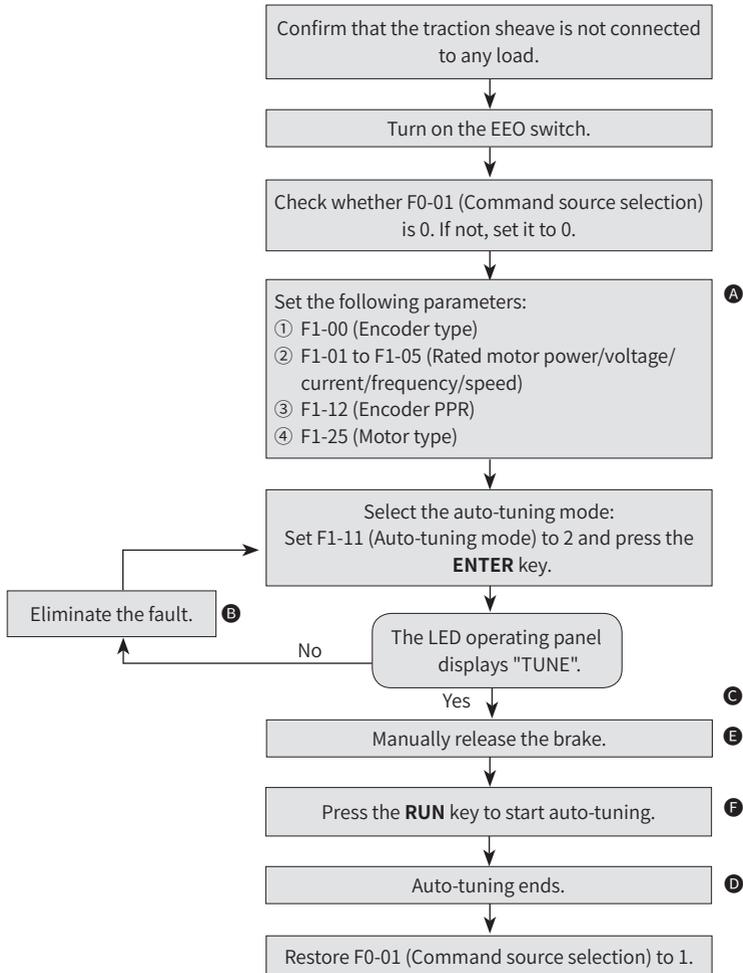
If the LED operating panel displays "TUNE", it indicates that the elevator enters the auto-tuning state.

If the LED operating panel displays "F1-12", it indicates that the elevator has failed to enter the auto-tuning state. Check whether the control cabinet displays a fault. If

yes, press  to clear the fault. If the fault cannot be cleared, it indicates that it is a high-level fault. You need to perform troubleshooting first to enter the auto-tuning state. After "TUNE" is displayed on the LED operating panel, start auto-tuning within 10s. Otherwise, the elevator will automatically exit the auto-tuning state.

- Ⓒ During auto-tuning, you need to hold down the EEO and UP/DOWN buttons. After the motor sounds for 5s, the brake is released and the traction sheave rotates for about two revolutions. When auto-tuning is complete, the control cabinet stops output and automatically closes the brake. At this time, release the EEO and UP/DOWN buttons to exit auto-tuning.
- Ⓓ If auto-tuning succeeds, the LED operating panel displays the encoder angle once. If auto-tuning fails, the MCB displays the fault code. In this case, clear the fault and perform auto-tuning again.

In normal cases, multiple times of auto-tuning are required. Auto-tuning is considered to be successful when the difference between the angle values (F1-06) obtained during two adjacent auto-tuning operations is within $\pm 5^\circ$. If the difference exceeds $\pm 20^\circ$, the encoder signals may suffer interference or the encoder is not installed securely. Rectify the fault and perform auto-tuning again.

Mode 2: Synchronous motor no-load auto-tuning (motor disconnected from the car)

A Set the parameters of the motor and encoder properly. Otherwise, an auto-tuning will be reported.

B After setting the auto-tuning mode in F1-11 (Auto-tuning mode), press  to confirm.

If the LED operating panel displays "TUNE", it indicates that the elevator enters the auto-tuning state.

If the LED operating panel displays "F1-12", it indicates that the elevator has failed to enter the auto-tuning state. Check whether the control cabinet displays a fault. If yes, press  to clear the fault. If the fault cannot be cleared, it indicates that it is a high-level fault. You need to perform troubleshooting first to enter the auto-tuning state. After "TUNE" is displayed on the LED operating panel, start auto-tuning within 10s. Otherwise, the elevator will automatically exit the auto-tuning state.

- Ⓒ During auto-tuning, you need to hold down the EEO and UP/DOWN buttons. After the motor sounds for 5s, the brake is released and the traction sheave rotates for about two revolutions. When auto-tuning is complete, the control cabinet stops output and automatically closes the brake. At this time, release the EEO and UP/DOWN buttons to exit auto-tuning.
- Ⓓ If auto-tuning succeeds, the LED operating panel displays the encoder angle once. If auto-tuning fails, the MCB displays the fault code. In this case, clear the fault and perform auto-tuning again.

In normal cases, multiple times of auto-tuning are required. Auto-tuning is considered to be successful when the difference between the angle values (F1-06) obtained during two adjacent auto-tuning operations is within $\pm 5^\circ$. If the difference exceeds $\pm 20^\circ$, the encoder signals may suffer interference or the encoder is not installed securely. Rectify the fault and perform auto-tuning again.

- Ⓔ During no-load auto-tuning, the control cabinet does not control the brake. A manual brake release is required.
- Ⓕ Make sure that the brake remains released during auto-tuning. Do not close it until the motor stops rotating.

Pay attention to the following precautions during synchronous motor auto-tuning:

- ◆ The auto-tuned motor parameters are saved in F1-06 (Encoder initial angle), F1-08 (Synchronous motor wiring mode), F1-19 (Q-axis inductance), and F1-20 (D-axis inductance).
- ◆ Perform three or more times of auto-tuning. Compare the auto-tuned values of F1-06 (Encoder initial angle), and make sure that the difference between the values (F1-06) obtained during two adjacent auto-tuning operations is within $\pm 5^\circ$.
- ◆ Perform motor auto-tuning again after changing the encoder, the encoder cable, motor wiring sequence, or rated motor current/frequency/speed.
- ◆ You can modify F1-06 (Encoder initial angle) manually. The modification takes effect immediately (Note: Set F0-01 to 0 before modifying F1-06). Therefore, after replacing the MCB, you can directly run the controller by manually setting F1-06 to the previous value, without performing motor auto-tuning.

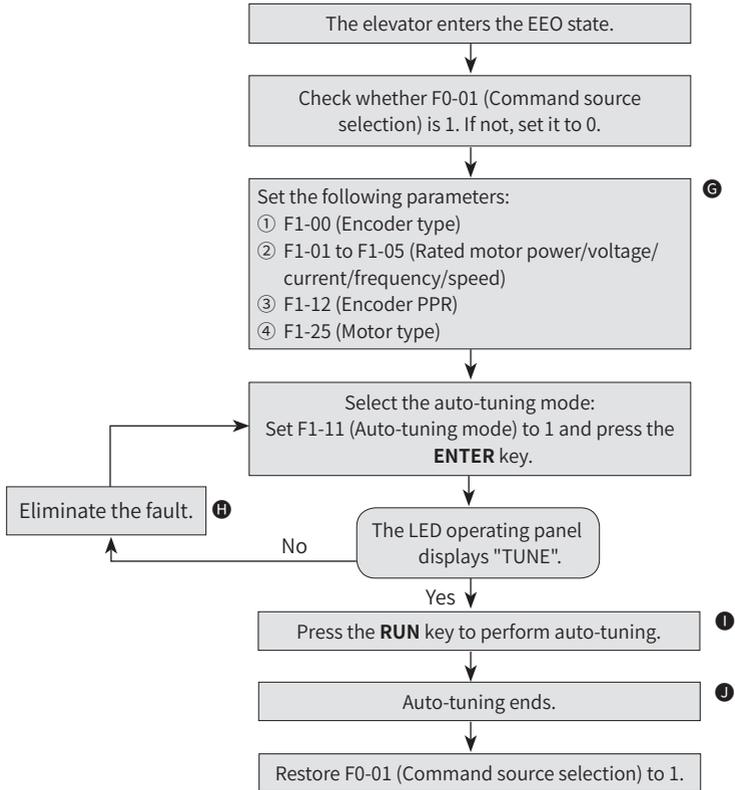


NOTE

② Asynchronous motor auto-tuning

Two modes are available for asynchronous motor auto-tuning.

Mode 1: Asynchronous motor with-load auto-tuning (motor connected with the car)



Ⓒ Set the parameters of the motor and encoder properly. Otherwise, an auto-tuning will be reported.

Ⓓ After setting the auto-tuning mode in F1-11 (Auto-tuning mode), press .

If the LED operating panel displays "TUNE", it indicates that the elevator enters the auto-tuning state.

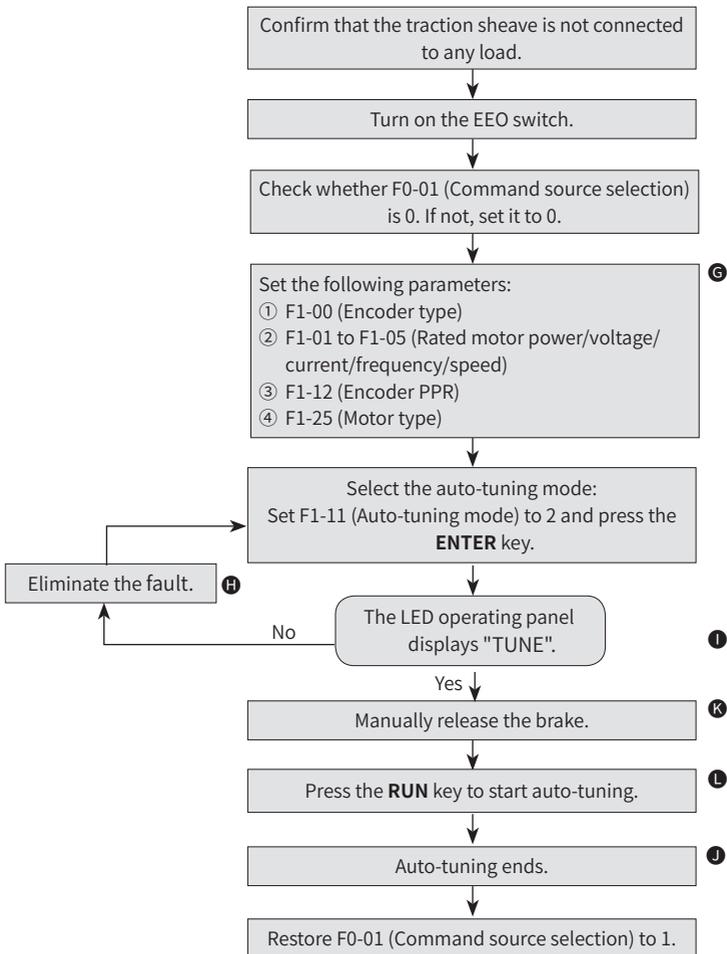
If the LED operating panel displays "F1-12", it indicates that the elevator has failed to enter the auto-tuning state. Check whether the control cabinet displays a fault. If

yes, press  to clear the fault. If the fault cannot be cleared, it indicates that it is

a high-level fault. You need to perform troubleshooting first to enter the auto-tuning state. After "TUNE" is displayed on the LED operating panel, start auto-tuning within 10s. Otherwise, the elevator will automatically exit the auto-tuning state.

- ① During auto-tuning, the brake remains closed and the motor does not rotate, but the current generates a whistling sound. Auto-tuning lasts for about 10s.
- ② If auto-tuning succeeds, the system will automatically exit the "TUNE" state. If auto-tuning fails, the MCB will display the fault code. In this case, clear the fault and perform auto-tuning again.

Mode 2: Asynchronous motor no-load auto-tuning (motor disconnected from the car)



- G** Set the parameters of the motor and encoder properly. Otherwise, an auto-tuning fault may be reported.
- H** After setting the auto-tuning mode in F1-11 (Auto-tuning mode), press  .

If the LED operating panel displays "TUNE", it indicates that the elevator enters the auto-tuning state.

If the LED operating panel displays "F1-12", it indicates that the elevator has failed to enter the auto-tuning state. Check whether the control cabinet displays a fault. If yes, press  to clear the fault. If the fault cannot be cleared, it indicates that it is a high-level fault. You need to perform troubleshooting first to enter the auto-tuning state. After "TUNE" is displayed on the LED operating panel, start auto-tuning within 10s. Otherwise, the elevator will automatically exit the auto-tuning state.
- I** During auto-tuning, the brake remains closed and the motor does not rotate, but the current generates a whistling sound. Auto-tuning lasts for about 10s.
- J** If auto-tuning succeeds, the system will automatically exit the "TUNE" state. If auto-tuning fails, the MCB will display the fault code. In this case, clear the fault and perform auto-tuning again.
- K** During no-load auto-tuning, the control cabinet does not control the brake. A manual brake release is required.
- L** Make sure that the brake remains released during auto-tuning. Do not close it until the motor stops rotating.

Pay attention to the following precautions during asynchronous motor auto-tuning:

- ◆ The auto-tuned motor parameters are saved in F1-14 (Asynchronous motor stator resistance), F1-15 (Asynchronous motor rotor resistance), F1-16 (Asynchronous motor leakage inductance), F1-17 (Asynchronous motor mutual inductance), and F1-18 (Asynchronous motor no-load current).
- ◆ Perform motor auto-tuning again after changing the encoder, the encoder cable, motor wiring sequence, or rated motor current/frequency/speed.
- ◆ Ensure the correct sequence of encoder phases A and B during auto-tuning. Incorrect wiring will result in Err38. If Err38 occurs, exchange phases A and B of the encoder.



NOTE

2 Running test at inspection speed

The running test at inspection speed aims to make sure that the motor rotation direction is consistent with the elevator running direction.

Table 3-1 Parameters related to running test at inspection speed

Parameter No.	Parameter Name	Setting Range	Default
F2-10	Elevator running direction	0: Running direction unchanged 1: Running direction reversed	0
F3-25	Elevator speed in the EEO state	0.100–0.300 m/s	0.250 m/s

Procedure for running test at inspection speed:

① Confirm that the motor running direction is correct.

After auto-tuning is complete, perform trial run at inspection speed to check whether the actual motor running direction is consistent with the command direction. If not, change the motor direction by setting F2-10 (Elevator running direction).

② Confirm that the motor running current is proper.

In the inspection state, the motor current during no-load running is much smaller than the rated motor current, and the actual motor current during with-load running at a constant speed does not exceed the rated motor current. After multiple times of auto-tuning, if the encoder angle difference is very small but the actual motor current during with-load running at a constant speed is larger than the rated motor current, check the following items:

- Whether the brake is fully released.
- Whether the elevator balance coefficient is normal.
- Whether the guide shoes for the car or counterweight are too tight.

③ Confirm that the car top inspection is active.

Confirm that car top inspection is active and the EEO is inactive. That is, the car top inspection takes precedence over the EEO.

④ Confirm that the shaft is unobstructed.

Confirm that the shaft is not obstructed by mechanical or building obstacles. Otherwise, the car will be damaged.

⑤ Confirm that slow-down switches, limit switches, and final limit switches are active.

Check whether the slow-down switches, limit switches, and final limit switches are active when the car moves to a terminal floor. Pay special attention to your safety in this process. Avoid too long running time and distance each time because overtravel will cause mechanical damage to the car.

3.2.4 Commissioning at Normal Speed

The commissioning at normal speed includes three stages: shaft auto-tuning, car top commissioning, and HCB commissioning.

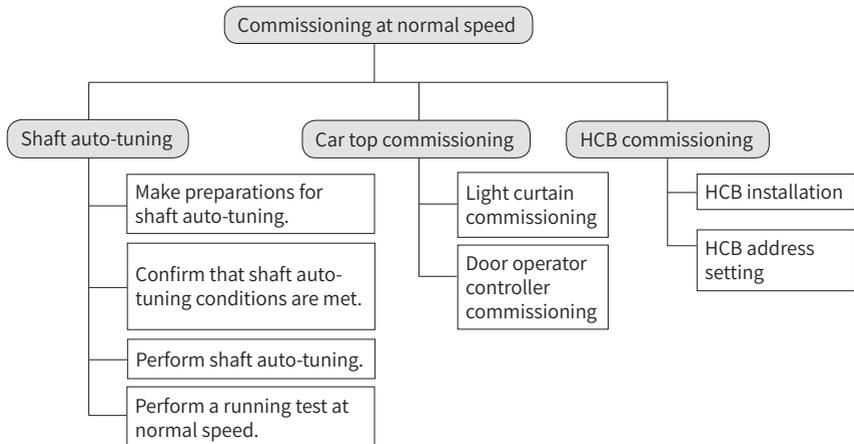


Figure 3-3 Diagram of commissioning at normal speed

1 Shaft auto-tuning

Shaft auto-tuning enables the MCB to obtain the following information: floor height, floor-to-floor height, and the positions of final limit switches, limit switches, slow-down switches, and leveling switches. These data provide a computation basis for generating running curves for the MCB.

■ **Make preparations for shaft auto-tuning.**

① Confirm that shaft switches operate normally.

The shaft switches include final limit switches, limit switches, slow-down switches, and leveling switches.

② Confirm that leveling switches operate in the correct sequence.

Installing two leveling switches is recommended. Check whether the leveling switches operate in the correct sequence when passing the leveling plates. For example, if two leveling switches are installed:

- When the elevator runs up in the EEO state, the operation sequence is: up door zone switch ➔ down door zone switch.
- When the elevator runs down in the EEO state, the operation sequence is: down door zone switch ➔ up door zone switch

③ Confirm that CAN communication is normal.

Check whether CAN1 communication between the control cabinet and the car top box is normal (no Err51). If not, see ["Err51" on Page 262](#) to eliminate the fault.

■ **Confirm that shaft auto-tuning conditions are met.**

- ① The elevator is in the EEO state.
- ② The elevator runs to a position below the leveling of the bottom floor (that is, at least one leveling switch is disconnected from the leveling plate) and the down slow-down switch signal input to the MCB is active. (This condition applies only to two-floor elevators.)
- ③ The system has no fault. If there is a fault, press  on the LED operating panel to reset it.



NOTE

- ◆ If the fault is a high-level fault which cannot be reset, rectify it according to ["6.4 Fault Information and Solutions" on Page 237](#).

Table 3-2 Parameters related to shaft auto-tuning

Parameter No.	Parameter Name	Setting Range	Default
F0-04	Rated speed	0.100–2.000 m/s	0.400 m/s
F6-00	Top floor of the elevator	F6-01 to 40	9
F6-01	Bottom floor of the elevator	1 to F6-00	1
F3-26	Shaft auto-tuning speed	0.250–0.630 m/s	0.250 m/s

**NOTE**

- ◆ After modifying F0-04 (Rated speed), perform shaft auto-tuning again. Otherwise, the elevator cannot run properly.

■ Perform shaft auto-tuning.

① Shaft auto-tuning of two-floor elevators

Method 1 (applicable to elevators whose leveling switch(es) can be disconnected from the leveling plate at the bottom terminal floor):

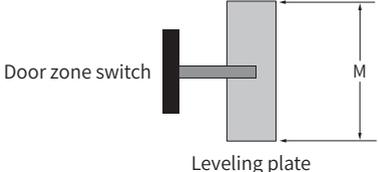
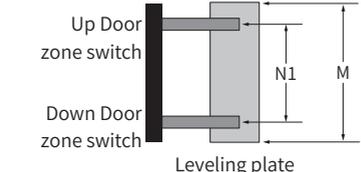
- 1) In the EEO state, run the car to the door zone of the bottom terminal floor. Make sure that at least one leveling switch is disconnected from the leveling plate at this floor.
- 2) Set F1-11 (Auto-tuning mode) to 3 using the LED operating panel or F-7 (Floor auto-tuning command input) to 1 using the keypad, and switch the elevator to the normal state. The system automatically starts shaft auto-tuning. The elevator then runs up to the top terminal floor at shaft auto-tuning speed (F3-26) and stop after the leveling plate at the top terminal floor is activated.
- 3) After the running is complete, the keypad displays the current floor number (top floor), indicating that shaft auto-tuning succeeded.

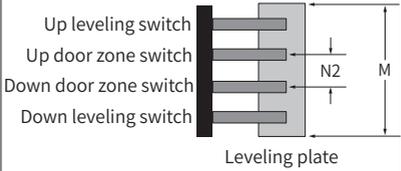
Method 2 (applicable to elevators whose leveling switch(es) cannot be disconnected from the leveling plate at the bottom terminal floor):

- 1) In the EEO state, run the car to the door zone of the bottom terminal floor.
- 2) Set F1-11 (Auto-tuning mode) to 3 using the LED operating panel or F-7 (Floor auto-tuning command input) to 1 using the keypad, and switch the elevator to the normal state. The system automatically starts shaft auto-tuning. The elevator then runs up to the top terminal floor at shaft auto-tuning speed (F3-26) and stop after the leveling plate at the top terminal floor is activated.

- 3) After the running is complete, the keypad displays subcode 114 of Err35. In this case, set the leveling plate length in A1-36 (Leveling plate length setting) according to the following table, and press  to clear the fault. Then, power off and on the system again. The elevator can run at normal speed.

The leveling plate length is set in different ways when different number of leveling switches are used, as shown in the following figure.

Number of Switch	Setting Method	Remarks
One	<p>Measure the actual leveling plate length (M) and input the result to A1-36 (Leveling plate length setting). The diagram is as follows:</p>  <p style="text-align: center;">Leveling plate</p>	<ol style="list-style-type: none"> The system automatically computes F4-04 (Leveling plate length 1) and F4-05 (Leveling plate length 2). In this case, F4-04 equals F4-05. The door zone switch is connected to pin FL1 on the car top board (CTB).
Two	<ol style="list-style-type: none"> Measure the actual leveling plate length M and enter the result into A1-36 (Leveling plate length setting). Measure the distance (N1) between two leveling switches. Calculate the value of F4-05 (Leveling plate length 2) using this formula: $F4-05 = F4-04 \times (N1/M)$ <p>The diagram is as follows:</p>  <p style="text-align: center;">Leveling plate</p>	<ol style="list-style-type: none"> After you enter M into A1-36 (Leveling plate length setting), the system automatically computes F4-04 (Leveling plate length 1). $F4-04 \neq F4-05$ The up leveling switch and down leveling switch are connected to pins FL1 and FL2 on the CTB respectively.

Number of Switch	Setting Method	Remarks
Four	<ol style="list-style-type: none"> 1. Measure the actual leveling plate length M and enter the result into A1-36 (Leveling plate length setting). 2. Measure the distance (N2) between two door zone switches. 3. Calculate the value of F4-05 (Leveling plate length 2) using this formula: $F4-05 = F4-04 \times (N2/M)$ <p>The diagram is as follows:</p> 	<ol style="list-style-type: none"> 1. After you enter M into A1-36 (Leveling plate length setting), the system automatically computes F4-04 (Leveling plate length 1). 2. $F4-04 \neq F4-05$ 3. The up door zone switch and down door zone switch are connected to pins FL1 and FL2 on the CTB respectively, and the up leveling switch and down leveling switch are connected to pins CX9 and CX10 on the CTB respectively.

② Shaft auto-tuning of elevators with more than two floors

For elevators with more than two floors, shaft auto-tuning can be started in any position.

- 1) In the EEO state, set F1-11 (Auto-tuning mode) to 3 using the LED operating panel or F-7 (Floor auto-tuning command input) to 1 using the keypad.
- 2) Switch the elevator to the normal state. The system automatically starts shaft auto-tuning. At shaft auto-tuning speed (F3-26), the elevator automatically runs down to the leveling plate at the bottom terminal floor and then runs up to the leveling plate at the top terminal floor. It stops after the leveling plate at the top terminal floor is activated.
- 3) After the running is complete, the keypad displays the current floor number (top floor), indicating that shaft auto-tuning succeeded.



NOTE

- ◆ If Err35 is reported during shaft auto-tuning, it indicates that shaft auto-tuning fails. You need to perform troubleshooting according to "[6 Troubleshooting](#)" on [Page 234](#) and implement shaft auto-tuning again.



NOTE

Perform shaft auto-tuning again in following conditions:

- ◆ The positions of leveling plates or slow-down switches are changed on-site.
- ◆ F0-04 (Rated speed), F6-00 (Top floor of the elevator), or F6-01 (Bottom floor of the elevator) is modified.
- ◆ The MCB or control cabinet is replaced with a new one.

■ **Perform a running test at normal speed.**

Perform a trial run at normal speed to test whether the elevator runs properly in the normal state.

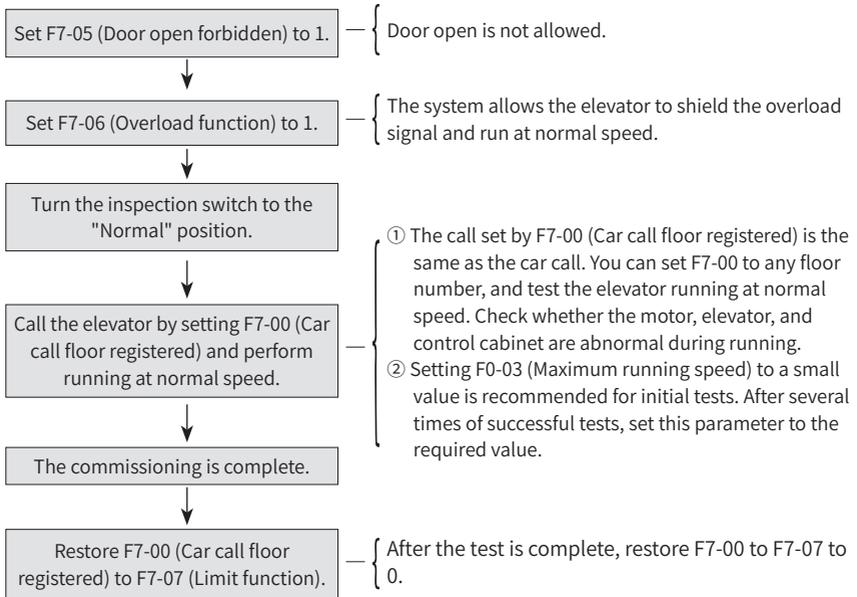
Parameters in group F7-00 (set using the LED operating panel) are used in this test. You can set F7-00 (Car call floor registered) which is used as the car call button to any floor.



NOTE

◆ After shaft auto-tuning has been completed successfully, the running at normal speed may fail because the door operator controller and full-load/overload function are not commissioned. In this case, enable the door open forbidden and overload functions by setting parameters, and then test the running at normal speed.

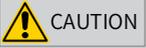
Flowchart of running test at normal speed:



NOTE

◆ After power-off and power-on again, F7-00 (Car call floor registered) to F7-02 (Down hall call floor registered) and F7-05 (Door open forbidden) to F7-07 (Limit function) will be restored to 0. If you need to continue the running test at normal speed, set these parameters again.

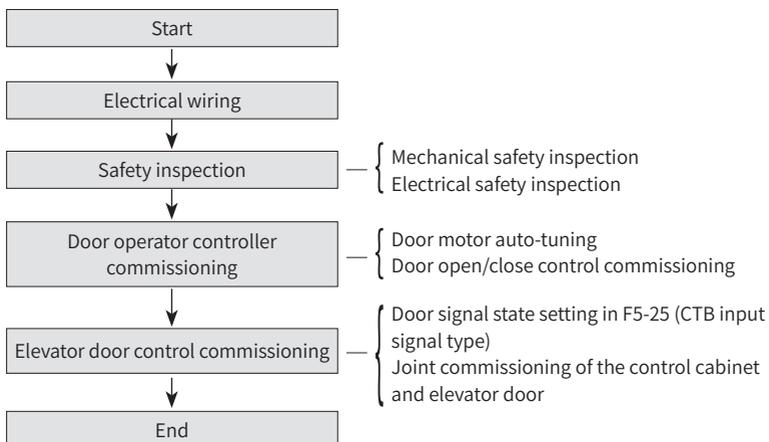
2 Car top commissioning

	
	<ul style="list-style-type: none"> ◆ Before the technicians start to operate on the top of the car, enable the car top inspection. ◆ The car top box (MCTC-CTW-N series) for this system is active high by default.

You need to set the feature (NO/NC) of elevator door input signals in F5-25 (CTB input signal type) according to that of electrical switches (light curtains and door open/close limit switch). The control by the CTB can be implemented only after the signal features are set correctly. If the signal features are inconsistent with the actual features of electrical switches, the elevator doors cannot open or close, or Err53 is reported.

Bit of F5-25	Default	Function Description
Bit0	0	Door 1 light curtain signal state setting (0: NC input; 1: NO input)
Bit1	0	Door 2 light curtain signal state setting (0: NC input; 1: NO input)
Bit2	0	Door 1 open limit signal state setting (0: NC input; 1: NO input)
Bit3	0	Door 1 close limit signal state setting (0: NC input; 1: NO input)
Bit4	0	Door 2 open limit signal state setting (0: NC input; 1: NO input)
Bit5	0	Door 2 close limit signal state setting (0: NC input; 1: NO input)

Commissioning procedure for the elevator door control:





◆ For the commissioning of the door operator controller, see the user guide of the door operator. This chapter only introduces the joint commissioning of the control cabinet and elevator door.

Monitoring methods of elevator door signals:

① Monitoring using the CTB

The MCTC-CTB-N1 is equipped with LED indicators indicating the working status of all DIs/DOs.

If a CX input terminal indicator is ON, it indicates that the corresponding CX terminal input is active (active high).

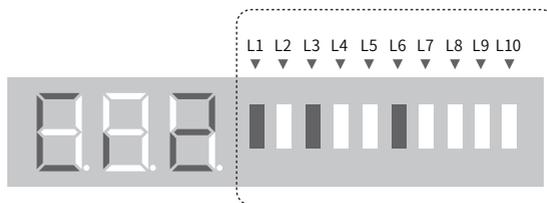
If a CY output terminal indicator is ON, it indicates that the corresponding CY relay output is active (contact on the secondary side of the relay is NO).

The following table shows the related signals.

CTB Terminal	Terminal Definition
CX1/CX2	Light curtain 1/2 signal input
CX3/CX4	Door 1/2 open limit signal input
CX5/CX6	Door 1/2 close limit signal input
CY2/CY5	Door 1/2 open output
CY3/CY6	Door 1/2 close output
CY4/CY7	Door 1/2 forced close output

② Monitoring using the keypad

You can monitor the status of all the elevator door input signals using indicators L1 to L10 on the keypad.



The following table describes the status monitoring of elevator door Y output relays using indicators on the keypad.

Indicator	000	000
L1	CTB CX1: light curtain 1 signal active	CTB CY1 output active: lighting
L2	CTB CX2: light curtain 2 signal active	CTB CY2 output active: door 1 open
L3	CTB CX3: door open limit 1 signal active	CTB CY3 output active: door 1 close
L4	CTB CX4: door open limit 2 signal active	CTB CY4 output active: door 1 forced close
L5	CTB CX5: door close limit 1 signal active	CTB CY5 output active: door 2 open
L6	CTB CX6: door close limit 2 signal active	CTB CY6 output active: door 2 close
L7	CTB CX7: full-load signal active	CTB CY7 output active: door 2 forced close
L8	CTB CX8: overload signal active	CTB CY8 output active: up arrival signal

■ Light curtain commissioning

Light curtain commissioning aims to check whether the inputs/outputs and signal feature (NC/NO) settings of light curtains are correct.

Taking monitoring using the CTB indicators as an example:

- ① Check whether the light curtains are installed and connected properly and securely.
- ② Check the CX1 and CX2 indicators on the CTB to make sure that light curtains are working normally. Judge the light curtains as follows:

	State of Light Curtain	State of CX1/CX2 Indicator	Bit0/Bit1 Value of F5-25
The light curtain signals are set to NO.	Unblocked	Steady OFF	1
	Blocked	Steady ON	
The light curtain signals are set to NC.	Unblocked	Steady ON	0
	Blocked	Steady OFF	

If the CX1 and CX2 indicators are steady ON/OFF, check whether light curtain 1 is normal or connected correctly.

- ③ Check Bit0 of F5-25 (CTB input signal type). When no light curtain is blocked, if segment A on the LED operating panel is OFF (light curtain signal inactive), it indicates that the signal feature (NC/NO) setting of light curtains is correct. If segment A is ON (light curtain signal active), set Bit0 of F5-25 (CTB input signal type) to the opposite state. That is to say, if the previous value of Bit0 is 0, change it to 1; if the previous value of Bit0 is 1, change it to 0.

■ Door operator controller commissioning

The door operator controller commissioning is used to check whether the input/output control of the door operator controller is normal in the terminal control mode.

Taking monitoring using the CTB indicators as an example:

- ① Check whether F7-05 (Door open forbidden) is 0 (default). If yes, it indicates that the door open is allowed. (This step can be skipped.)
- ② Confirm that the door open/close control output of the door operator controller is normal.
- ③ View the CX3 and CX5 indicators on the CTB to check whether the door open/close limit signal feedback of the door operator controller is normal. Additionally, check Bit2 and Bit4 of F5-25 (CTB input signal type) to confirm that their settings are consistent with the actual NO/NC feature of the door open limit signal and door close limit signal.

Door 1/2 open limit signal:

	Door State	State of CX3/CX5 Indicator	Bit2/Bit4 Setting of F5-25
The door open limit signals are set to NO.	At door open limit	Steady ON	1
	At door close limit	Steady OFF	
The door open limit signals are set to NC.	At door open limit	Steady OFF	0
	At door close limit	Steady ON	

Door 1/2 close limit signal:

	Door State	State of CX4/CX6 Indicator	Bit3/Bit5 Setting of F5-25
The door close limit signals are set to NO.	At door open limit	Steady OFF	1
	At door close limit	Steady ON	

	Door State	State of CX4/CX6 Indicator	Bit3/Bit5 Setting of F5-25
The door close limit signals are set to NC.	At door open limit	Steady ON	0
	At door close limit	Steady OFF	

The following table shows the relationship between the door open/close signal state and the setting of Bit2/Bit4 of F5-25 (CTB input signal type).

Signal	Signal State Monitoring		Signal State	Whether to Reset Bit2/Bit4 of F5-25
	At Door Open Limit	At Door Close Limit		
Door open limit signal (View segment C of LED 1 of F5-35 on the LED operating panel)			Normal	Not required
			Abnormal	Set Bit2 of F5-25 (CTB input signal type) to the opposite state: If the previous value is 0, change it to 1. If the previous value is 1, change it to 0.
Door close limit signal (View segment E of LED 1 of F5-35 on the LED operating panel)			Normal	Not required
			Abnormal	Set Bit4 of F5-25 (CTB input signal type) to the opposite state: If the previous value is 0, change it to 1. If the previous value is 1, change it to 0.

**NOTE**

If the state of signal indicators is inconsistent with the actual door state or the signal state keeps unchanged, check:

- ◆ Whether the cable between the CTB and the door operator controller is connected correctly.
- ◆ Whether the door open/close output parameters are set properly.
- ◆ Whether the door operator controller commissioning fails. If yes, perform commissioning again.

3 HCB commissioning

This section only describes the HCB installation and setting for the independent single-door elevator system.

■ Installation of HCBs

- ① Install an HCB for each service floor. The non-service floors do not require the HCB.
- ② The HCBs communicate with the MCB through Modbus. They are connected to the MCB in parallel.

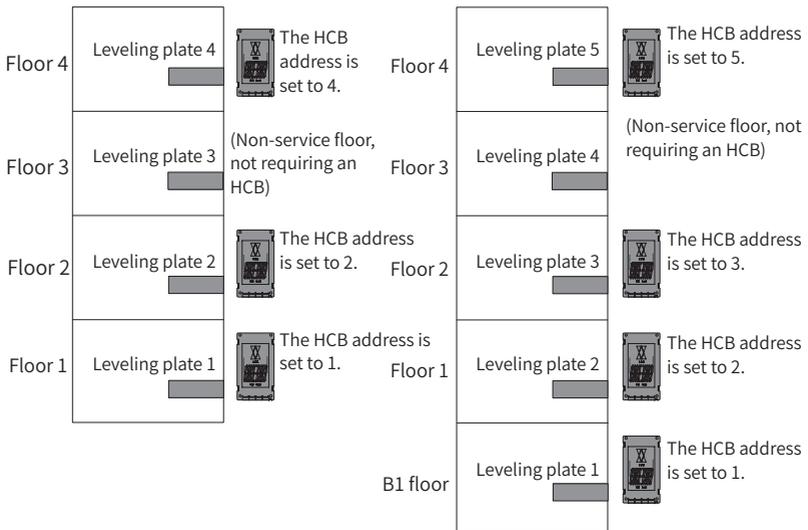
■ HCB address setting

- ① Set an address for each HCB. Otherwise, the HCB(s) cannot be used.
- ② The address of each HCB must be unique. The HCBs with the same address cannot be used.
- ③ Set the address of an HCB based on the No. of the leveling plate at the same floor.



NOTE

◆ The address of an HCB is set based on the No. of the leveling plate at the same floor. For example, set the address of the HCB at the floor where the "Nth" leveling plate is located to "N". However, if a leveling plate is installed at a non-service floor, an HCB address must be reserved for this floor. See the following examples.



Example 1: an elevator without an underground floor

Example 2: an elevator with an underground floor

- ④ After setting an address for each HCB, you can call the elevator by using the HCB and perform normal-speed running.

**NOTE**

- ◆ Set a unique address for each HCB. Otherwise, the HCBs with the same address cannot be used.
- ◆ When an HCB is installed in the car, its address must be set to 0.

3.2.5 Balance Coefficient Auto-tuning

The SLIM LINE can realize balance coefficient auto-tuning without using external tools and weights, which greatly reduces the on-site commissioning time and labor cost.

Perform balance coefficient auto-tuning as follows:

- ① Set F0-05 (Rated load) and F1-03 (Rated motor current) properly.
- ② Make the elevator enter the no-load state.
- ③ Set F-8 (Test function) to 11 using the keypad or F3-24 (Program function selection) to 6 using the LED operating panel to start balance coefficient auto-tuning.
- ④ The elevator clears the hall calls and executes all the car calls. When there is no car/hall call 3s after the door close limit is reached, it shields the car calls and hall calls and enters the balance coefficient auto-tuning state. The car moves to the bottom physical floor, then to the top physical floor, and to the bottom physical floor again to complete auto-tuning. The keypad displays "Pxx.xx" in scrolling mode for 8s, and the balance coefficient is stored in F7-13 (Balance coefficient).
- ⑤ State display: After the elevator enters the test mode, the HCB displays "0", with the floor number and arrow direction consistent with the current floor and elevator running direction respectively.

**NOTE**

Safety precautions:

- ◆ F0-05 (Rated load) and F1-03 (Rated motor current) must be set properly.
- ◆ The elevator can enter the auto-tuning mode only in the normal, elevator lock, and parking states. When waiting with door open, it automatically exits the auto-tuning mode after 30s.
- ◆ Balance coefficient auto-tuning is not affected by the setting of non-service floors. Even if a terminal floor is a non-service floor, the elevator will stop at this floor during auto-tuning.
- ◆ If a fault of level 3 or above occurs during auto-tuning, the system will exit the auto-tuning mode and respond to the fault. You need to set the related parameters again before starting auto-tuning.
- ◆ During auto-tuning, you can press the **PRG** key on the keypad to exit the auto-tuning mode.

3.2.6 Overload/Full-Load Function



◆ Balance coefficient auto-tuning must be implemented before overload/full-load commissioning. This is to make sure that the balance coefficient is within the specified range.

1 Function description

Overload

- The buzzer tweets.
- The elevator door cannot close, even if you press the door close button.
- The car display board displays " 超载 ", "OL", or "OVERLOAD" (the information displayed is determined by the type of HCB).
- The HCB displays " 满载 ", "FL", or "FULL" (the information displayed is determined by the type of HCB).

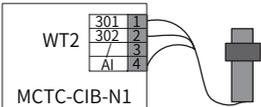
Full-load

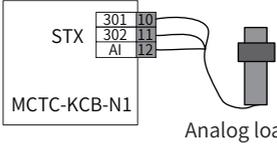
- The HCB displays " 满载 ", "FL", or "FULL".
- The car calls can be used to call the elevator as normal.
- The hall calls can be registered, but the elevator does not respond to them before exiting the full-load state.

The elevator full-load/overload switches are classified into two types: analog and digital. The following part describes the parameter settings for the two types of switches.

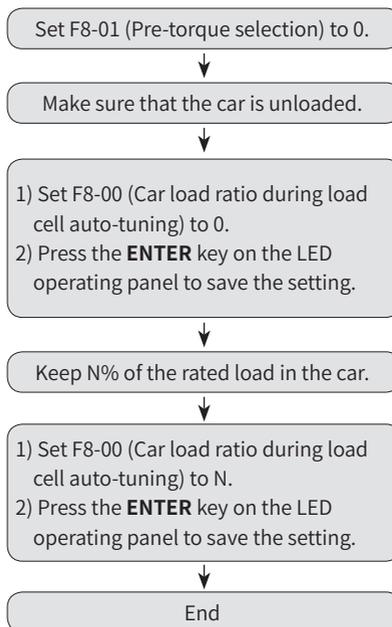
2 Wiring

Wiring and parameter setting of analog full-load/overload switches:

Type	Wiring Diagram	Parameter Setting
Analog signals connected to the CTB	<p>Terminals 301 and 302 are connected to the positive and negative poles of the load cell power cable respectively, and terminal AI is connected to the load cell signal cable.</p> 	F5-36 = 2

Type	Wiring Diagram	Parameter Setting
Analog signals connected to the control cabinet	<p>Terminals 301 and 302 are connected to the positive and negative poles of the load cell power cable respectively, and terminal AI is connected to the load cell signal cable.</p> 	F5-36 = 3

When an analog load cell is used, load cell auto-tuning must be performed. Otherwise, the load cell signals will be invalid. Perform full-load/overload auto-tuning of the analog load cell according to the following flowchart.



F8-06 (No-load measured by load cell) and F8-07 (Full-load measured by load cell) record the auto-tuned no-load and full-load values respectively. You can monitor the current car load by viewing F8-05 (Current car load). When the current car load exceeds 110% of the rated load, the system reports an overload fault.

**NOTE**

- ◆ F8-05 (Current car load), F8-06 (No-load measured by load cell), and F8-07 (Full-load measured by load cell) record the binary data indicating the car load condition rather than the actual car load or the ratio of the actual car load to the rated load.

The parameters involved in full-load/overload auto-tuning of the analog load cell are listed in the following table.

Parameter No.	Parameter Name	Setting Range	Remarks
F8-00	Car load ratio during load cell auto-tuning	0% to 100%	Sets the load ratio of the car properly during analog load cell auto-tuning.
F8-01	Pre-torque selection	0: Pre-torque disabled 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Load cell pre-torque compensation and automatic pre-torque compensation both enabled	Set this parameter to 0 before starting analog load cell auto-tuning.
F8-05	Current car load	0–1023	Displays the current load condition in the car.
F8-06	No-load measured by load cell	0–1023	Records the no-load data obtained through auto-tuning.
F8-07	Full-load measured by load cell	0–1023	Records the full-load data obtained through auto-tuning.

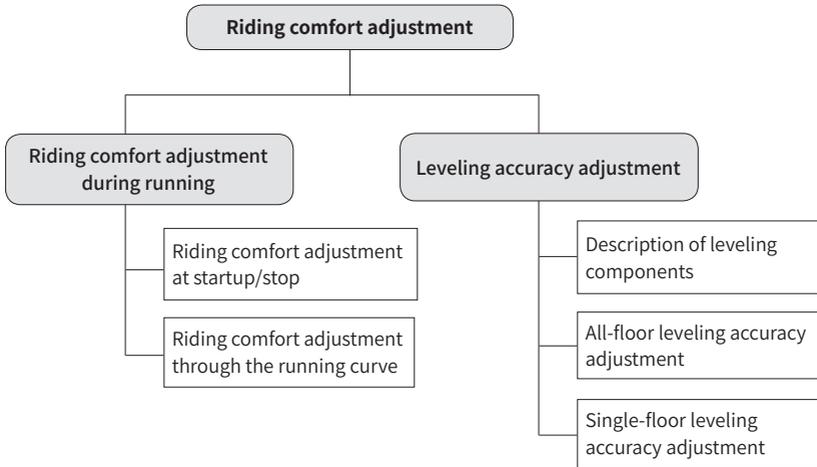
Wiring and parameter setting of digital full-load/overload switches:

Type	Wiring Diagram	Parameter Setting
Digital signals connected to the CTB	<p>The full-load signal and overload signal must be connected to X7 and X8 respectively.</p>	F5-36 = 1
Digital signals connected to the control cabinet	<p>Take X19 or X20 on the reserved terminal STX as an example.</p>	F5-36 = 0

Related parameters:

Type	Parameter No.	Name	Setting Range	Setting Value
Setting of input type	F5-36	Load cell input selection	0: MCB digital input 1: CTB digital input	0
MCB input	F5-19	X19 function selection	0-195	14/46: Overload signal NO/NC
	F5-20	X20 function selection	0-199	15/47: Overload signal NO/NC
CTB input	F5-25	Bit6: Full-load signal NO/NC setting	0-511	Bit6 = 0 (applicable to NC full-load signal) Bit6 = 1 (applicable to NO full-load signal)
		Bit7: Overload signal NO/NC setting	0-511	Bit7 = 0 (applicable to NC overload signal) Bit7 = 1 (applicable to NO overload signal)

3.2.7 Riding Comfort Adjustment



1 Riding comfort adjustment during running

The riding comfort is an important factor indicating the elevator's overall performance. Improper installation and model selection of mechanical parts possibly cause discomfort. You can improve the riding comfort by adjusting the controller outputs and the elevator's mechanical structure.

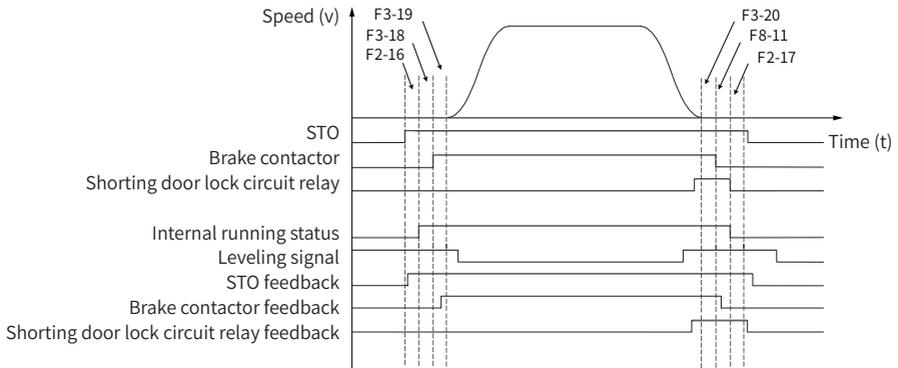


Figure 3-4 Controller running timing diagram

■ Riding comfort adjustment at startup/stop

Related parameters:

Parameter No.	Parameter Name	Setting Range	Default
F2-00	Speed loop proportional gain Kp1	0–100	20
F2-01	Speed loop integral time Ti1	0.01s to 10.00s	0.30s
F2-03	Speed loop proportional gain Kp2	0–100	20
F2-04	Speed loop integral time Ti2	0.01s to 10.00s	0.30s

① Adjustment to abnormal motor startup

The four parameters listed above are used to adjust the speed dynamic response characteristics of the motor.

- Increasing the proportional gain or reducing the integral time will quicken the dynamic response of the motor. However, too large proportional gain or too small integral time may lead to motor jitter due to oscillation.
- Decreasing the proportional gain or increasing the integral time will slow the dynamic response of the motor. However, too small proportional gain or too large integral time may cause motor speed tracking abnormality, resulting in Err33 or unstable leveling at stop.

The default settings are proper for most motors, and you need not modify these parameters. When default parameters are used, if oscillation occurs at motor startup, perform the following steps:

- Decrease the proportional gain set in F2-00 (recommended range: 10–20) so that the system does not oscillate.
- Reduce the integral time set in F2-01 (recommended range: 0.1–0.3) to make sure that the system has a quick response but small overshoot.

② Riding comfort adjustment at startup

Adjustment for no-load-cell startup**Related parameters:**

Parameter No.	Parameter Name	Setting Range	Default	Remarks
F8-01	Pre-torque selection	0: Pre-torque disabled 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Load cell pre-torque compensation and automatic pre-torque compensation both enabled	2	Set this parameter to 2 when the no-load-cell startup function is enabled.
F2-11	Position lock current coefficient	2.0%–50.0%	15.0%	Position lock regulation parameters (effective only when F8-01 is set to 2 or 3)
F2-12	Position lock speed loop Kp	0.00–2.00	0.30	
F2-13	Position lock speed loop Ti	0.00–2.00	0.60	

Adjustment descriptions:

When no-load-cell pre-torque compensation is enabled, no analog load cell is required. The controller quickly compensates for the torque based on the slight rotation of the encoder at the moment of startup.

The default settings of F2-11, F2-12, and F2-13 are proper for most motors. You need not to modify them. However, if rollback or noise exists in the motor at with-load startup, perform the following steps:

- Decrease the value of F2-11 (between 5 and 15) to eliminate the motor oscillation.
- Adjust the values of F2-12 and F2-13 (between 0.1 and 0.8) to reduce the motor noise, improving the riding comfort at startup.

Adjustment for load cell startup

Related parameters:

Parameter No.	Parameter Name	Setting Range	Default	Remarks
F8-01	Pre-torque selection	0: Pre-torque disabled 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Load cell pre-torque compensation and automatic pre-torque compensation both enabled	2	Set this parameter to 1 when a load cell is used.
F8-02	Pre-torque offset	0.0%–100.0%	50.0%	Load cell pre-torque compensation regulation parameters
F8-03	Drive gain	0.00–2.00	0.60	
F8-04	Brake gain	0.00–2.00	0.60	

Adjustment descriptions:

When an analog load cell is used, the controller identifies the motor state (braking or driving) according to the load cell signal and then automatically computes the required torque compensation. In this case, F8-03 and F8-04 are used to adjust the elevator's startup. The detailed operations are as follows:

- In the driving state, increase F8-03 properly if a rollback occurs at startup, and decrease F8-03 properly if there is a car lurch at startup.
- In the braking state, increase F8-04 properly if a jerk in the command direction occurs at startup, and decrease F8-04 properly if there is a car lurch at startup.



- ◆ F8-02 (Pre-torque offset) is the elevator's balance coefficient. It is the ratio of the car load to the rated load when the car and counterweight are balanced. This parameter must be set correctly.
- ◆ F8-03 (Drive gain) and F8-04 (Brake gain) indicate the current pre-torque coefficient when the motor runs at the driving and braking sides respectively. A higher gain requires a larger startup pre-torque compensation.
- ◆ The motor's running states can be classified into:
 - 1) Driving state: full-load up, no-load down
 - 2) Braking state: full-load down, no-load up

Riding comfort adjustment at startup when the load cell pre-torque compensation and automatic pre-torque compensation are both enabled

Related parameters:

Parameter No.	Parameter Name	Setting Range	Default	Remarks
F8-01	Pre-torque selection	0: Pre-torque disabled 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Load cell pre-torque compensation and automatic pre-torque compensation both enabled	2	Set this parameter to 3 when a load cell is used and the inconsistency of startup effects at different loads is caused by improper load cell linearity.
F8-02	Pre-torque offset	0.0%–100.0%	50.0%	Load cell pre-torque compensation regulation parameters
F8-03	Drive gain	0.00–2.00	0.60	
F8-04	Brake gain	0.00–2.00	0.60	

Parameter No.	Parameter Name	Setting Range	Default	Remarks
F2-11	Position lock current coefficient	2.0%–50.0%	15.0%	Automatic pre-torque compensation regulation parameters
F2-12	Position lock speed loop Kp	0.00–2.00	0.30	
F2-13	Position lock speed loop Ti	0.00–2.00	0.60	

Adjustment descriptions:

When the load cell pre-torque compensation and automatic pre-torque compensation are both enabled, the controller identifies the motor state (braking or driving) according to the load cell signal and then automatically computes the required torque compensation. It also quickly compensates the torque based on the slight rotation of the encoder at the moment of startup.

Adjust the riding comfort based on the methods used in ["Adjustment for no-load-cell startup" on Page 64](#) and ["Adjustment for load cell startup" on Page 65](#).

③ Handling of elevator rollback at startup/stop

Related parameters:

Parameter No.	Parameter Name	Setting Range	Default
F3-19	Holding time of zero-speed torque current upon brake release	0.000s to 2.000s	0.600s
F8-11	Holding time of zero-speed torque current upon brake close	0.200s to 1.500s	0.600s

From the moment of sending a brake release command, the system maintains the zero-speed torque current output in the time set by F3-19 to prevent rollback. If there is an obvious rollback at startup, increase this parameter properly.

From the moment of sending a brake close command, the system maintains the zero-speed torque current output in the time set by F8-11 to prevent rollback. If there is an obvious rollback at stop, increase this parameter properly.

④ Handling of motor current noise at startup/stop

During startup or stop, certain motors may generate noise when the current is applied before the brake is released or when the current is removed after the brake is closed. In this case, increase F2-16 or F2-17 properly.

Related parameters:

Parameter No.	Parameter Name	Setting Range	Default
F2-16	Torque acceleration time	1–500 ms	1 ms
F2-17	Torque deceleration time	1–3000 ms	350 ms

⑤ Startup riding comfort adjustment in case of excessive mechanical static friction

Related parameters:

Parameter No.	Parameter Name	Setting Range	Default
F3-00	Startup speed	0.000–0.050 m/s	0.000m/s
F3-01	Startup speed holding time	0.000s to 5.000s	0.000s

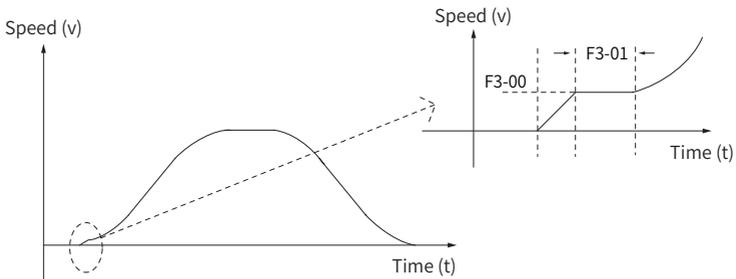


Figure 3-5 Startup timing diagram for eliminating the static friction

When there is large friction between the guide shoes and the guide rails, large static friction will be generated at the moment of startup, leading to bad riding comfort. This situation often exists in villa elevators.

You need to start the elevator at a specified speed by setting F3-00 and F3-01 to eliminate the static friction, thereby improving the riding comfort at startup.

■ Riding comfort adjustment through the running curve

Related parameters:

Parameter No.	Parameter Name	Setting Range	Default
F3-02	Acceleration rate	0.200–1.500 m/s ²	0.200 m/s ²
F3-03	Acceleration start jerk time	0.300s to 4.000s	1.500s
F3-04	Acceleration end jerk time	0.300s to 4.000s	1.500s
F3-05	Deceleration rate	0.200–1.500 m/s ²	0.200 m/s ²
F3-06	Deceleration end jerk time	0.300s to 4.000s	1.500s
F3-07	Deceleration start jerk time	0.300s to 4.000s	1.500s

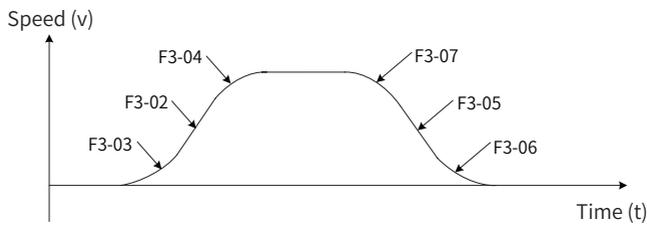


Figure 3-6 Running curve diagram

F3-02, F3-03, and F3-04 are used to set the running curve that the elevator accelerates from zero to the maximum speed. If discomfort exists due to too short acceleration time, decrease F3-02 and increase F3-03 and F3-04 properly to smooth the acceleration curve. If the acceleration time is too long, increase F3-02 and decrease F3-03 and F3-04 properly.

Similarly, adjust F3-05, F3-06, and F3-07 properly to make the deceleration process appropriate for achieving superb riding comfort.

■ Mechanical factors affecting the riding comfort

The mechanical factors affecting the riding comfort include the installation of guide rails, guide shoes, steel rope and brake, the balance of the car, as well as the resonance caused by the car, guide rails, and traction machine. For asynchronous motor, abrasion or improper installation of the gearbox may also lead to discomfort.

No.	Mechanical Factor	Description
1	Guide rails	The installation of guide rails mainly involves the verticality and surface flatness of guide rails, the smoothness of guide rail connections, and the parallelism between two guide rails (including the guide rails on the counterweight side).
2	Guide shoes	The tightness of guide shoes (including the guide shoes on the counterweight side) will influence the riding comfort. The guide shoes cannot be too loose or tight.
3	Steel rope	The motor drives the car purely through the steel rope. Large flexibility of the steel rope and irregular resistance during elevator running may result in a curly oscillation of the car. Additionally, the unbalanced stress of multiple steel ropes may cause the car to jitter during running.
4	Brake	The riding comfort during running may be worsened if the brake arm is installed too tightly or released incompletely.
5	Balance of the car	If the car weight is unbalanced, it will cause uneven stress of the guide shoes that connect the car and guide rails. As a result, the guide shoes will rub with the guide rails during running, affecting the riding comfort.
6	Gearbox	For asynchronous motor, abrasion or improper installation of the gearbox may cause discomfort.
7	Resonance caused by the car, guild rails, and traction machine	Resonance, an inherent characteristic of a physical system, is related to the material and quality of system components. If you are sure that the oscillation is caused by resonance, reduce the resonance by increasing or decreasing the weight of the car or counterweight and installing resonance absorbers at connections of the components (for example, place a rubber blanket under the traction machine).

2 Leveling accuracy adjustment

The leveling accuracy adjustment includes the adjustment both for all floors and for a single floor.

■ Description of leveling components

- ① The length of leveling plates needs to match that of leveling switches. In normal cases, when a leveling switch runs across a leveling plate, ensure that the distance between the leveling switch and each end of the leveling plate is at least 10 mm. All leveling plates must have the same length, with a tolerance not larger than 5 mm.
- ② Magnetic switches
 - The leveling plates must be vertical to the leveling switches.
 - When the car reaches the leveling position, the leveling plate must be inserted into the leveling switch by at least 2/3 of its length.
- ③ Optoelectronic switches

The NO optoelectronic switches are recommended to improve the stability of signal sensing.

■ All-floor leveling accuracy adjustment

Parameter No.	Parameter Name	Setting Range	Default
F4-00	Leveling adjustment	0–60 mm	30 mm

F4-00 (default: 30) is used to adjust the car stop position at all floors. The stop position at all floors will change after F4-00 is modified.

Increase F4-00 if under-leveling occurs at every floor, and decrease F4-00 if over-leveling occurs at every floor.

■ Single-floor leveling accuracy adjustment

Adjust the car stop position at each floor separately by setting parameters in group Fr.

Parameter No.	Parameter Name	Setting Range	Default	Unit
Fr-00	Leveling adjustment function	0 or 1	0	-

Parameter No.	Parameter Name	Setting Range	Default	Unit
Fr-01	Leveling adjustment record 1	00000-60060	30030	mm
Fr-02	Leveling adjustment record 2		30030	mm
to	to		to	to
Fr-20	Leveling adjustment record 20		30030	mm

Adjust the leveling accuracy for each floor according to the following flowchart:

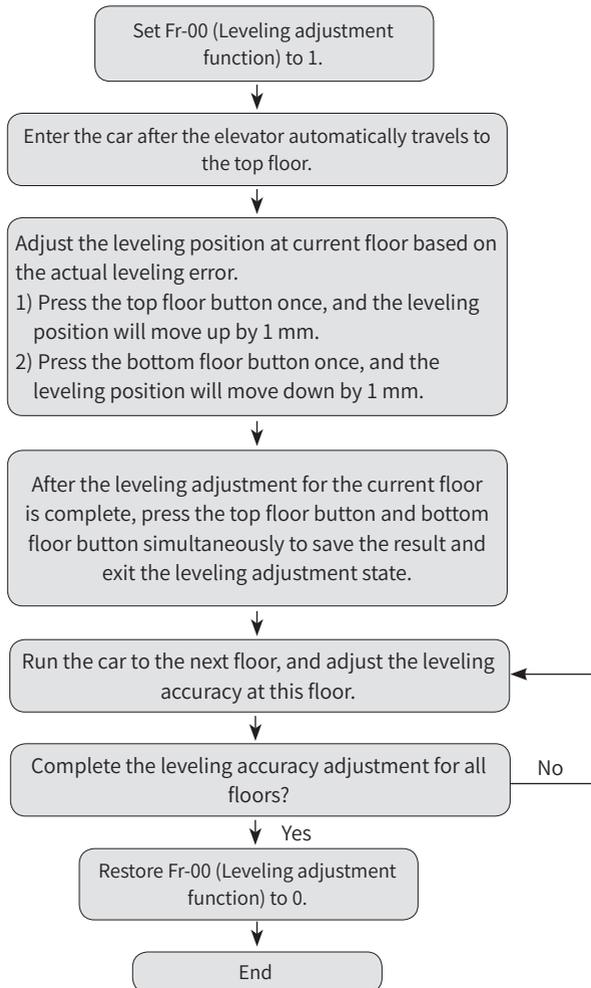


Figure 3-7 Flowchart of single-floor leveling accuracy adjustment

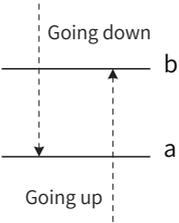
**NOTE**

- ◆ Make sure that shaft auto-tuning has been completed successfully, and the elevator runs properly at normal speed.
- ◆ After Fr-00 (Leveling adjustment function) is set to 1, the elevator does not respond to hall calls any more. It automatically runs to the top floor and keeps door open after arrival.
- ◆ During adjustment, the car display board displays "00" or the value after adjustment (positive number: up arrow + value; negative number: down arrow + value). The adjustment range is ± 30 mm.
- ◆ After you save the adjustment result, the car display board displays the current floor number.
- ◆ Note that if the leveling accuracy at a certain floor need not be adjusted, you also need to save the data once. Otherwise, the car calls cannot be registered.

Detailed instructions for the leveling accuracy adjustment:

- ① If the car stop position at a floor is fixed and the same in the up and down directions but is not aligned with the landing/car door sill, adjust the leveling accuracy of this floor by setting parameters in group Fr.
- ② If the car stop positions at a floor are fixed but different in the up and down directions, adjust the leveling accuracy of this floor by setting both F4-00 (Leveling adjustment) and parameters in group Fr. The specific operations are as follows:
 - Adjust the overall leveling error of all floors by setting F4-00 (Leveling adjustment). Assume that the car stop positions in the down and up directions are "a" and "b" respectively, the values to be adjusted and the adjustment methods are shown in the following table.

Type	Name	Value to be Adjusted	Adjustment Method
Under-leveling		$H = (a - b)/2$	$(F4-00) + H$

Type	Name	Value to be Adjusted	Adjustment Method
Over-leveling		$H = (b - a)/2$	$(F4-00) - H$

- Adjust the leveling accuracy of all the floors with leveling error by setting parameters in group Fr.

Assume that after the car arrives at the leveling position, the distance between the top of the up leveling switch and the top of the leveling plate is A, and the height difference between the car door sill and the landing door sill is B (shown in the following figure). If $B \geq A$ for a certain floor, you need to adjust the position of the leveling plate at this floor first to make sure that $B \leq A$ upon arrival. Otherwise, the elevator may still stop in the non-leveling zone even if you have adjusted the leveling accuracy of this floor by setting parameters in group Fr.

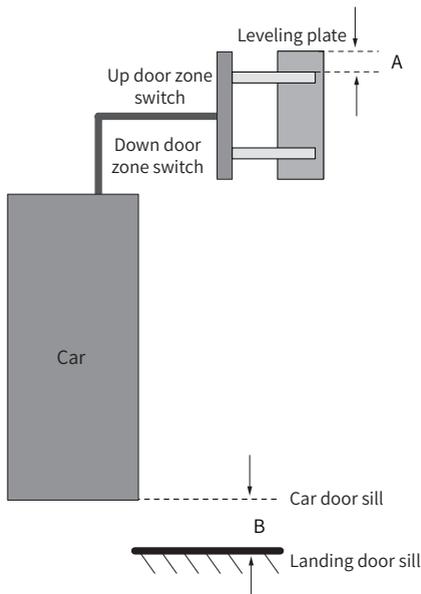


Figure 3-8 Leveling diagram

If the car stop position at the same floor and the height difference between the car door sill and the landing door sill are not fixed under different travels or loads, the speed loop parameters may be improper. To solve the problem, increase the speed loop proportional gain or decrease the speed loop integral time properly.

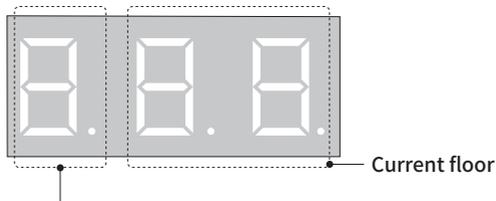
4 Parameter Description

4.1 Keypad Parameters

4.1.1 Menu Functions

- F-0: Display of the floor number and running direction

By default, the F-0 menu is displayed on the keypad upon power-on. The first LED indicates the running direction, and the last two LEDs indicate the current floor number. When the elevator stops, the first LED has no display. When the elevator runs up/down, the first LED flashes to indicate the running direction. When a system fault occurs, the fault code scrolls automatically. If the fault is reset automatically, the F-0 menu is displayed.



Running direction

Stop state: No display

Running state: Flashing to indicate the up/down direction

Fault state: Displays the fault code.

- F-1: Command input of the running floor

After you enter the F-1 menu using the **PRG**, **UP** or **SET** key, the LEDs display the bottom floor of the elevator (F6-01). Press the **UP** key to set the destination floor (range: Bottom floor to Top floor) and press the **SET** key to save the setting. The elevator runs to the destination floor, and the display automatically switches to the F-0 menu.

- F-2: Fault reset and display of the fault time and code

After you enter the F-2 menu using the **PRG**, **UP** or **SET** key, the LEDs display "0". You can press the **UP** key to change the parameter value within the range of 0 to 2.

1: If you select this value and press the **SET** key, the system fault is reset. Then, the display automatically switches to the F-0 menu.

2: If you select this value and press the **SET** key, the LEDs display the codes and occurrence time of 10 faults circularly. Press the **PRG** key to exit.

■ F-3: Time display

After you enter the F-3 menu using the **PRG**, **UP** or **SET** key, the LEDs display the current system time circularly.

■ F-4: Contract number display

After you enter the F-4 menu using the **PRG**, **UP** or **SET** key, the LEDs display the user's contract number circularly.

■ F-5: Running times display

After you enter the F-5 menu using the **PRG**, **UP** or **SET** key, the LEDs display the elevator running times circularly.

■ F-6: Door open/close control

After you enter the F-6 menu using the **PRG**, **UP** or **SET** key, the LEDs display "1-1". The **UP** and **SET** keys are used as the door open button and the door close button respectively. You can press the **PRG** key to exit.

■ F-7: Floor auto-tuning command input

After you enter the F-7 menu using the **PRG**, **UP** or **SET** key, the LEDs display "0". You can press the **UP** key to change the parameter value within the range of 0 to 2, where both 1 and 2 indicate the floor auto-tuning command (1: Leveling adjustment parameters in group Fr not cleared; 2: Leveling adjustment parameters in group Fr cleared). If you select 1 or 2 and press the **SET** key, shaft auto-tuning is implemented when the conditions are met. Meanwhile, the display switches to the F-0 menu. After shaft auto-tuning is complete, F-7 restores to 0 automatically. If shaft auto-tuning conditions are not met, Err35 is reported.

■ F-8: Test function

After you enter the F-8 menu using the **PRG**, **UP**, or **SET** key, the LEDs display "0". The setting of F-8 is as follows:

1	Hall call forbidden
2	Door open forbidden
3	Overload forbidden
4	Limit switches disabled
6	Auxiliary motor slip test
7	Manual UCMP test
8	Manual braking force test
11	Balance coefficient detection

After the setting is complete, press the **SET** key to save it. The LEDs display "E88" and flash, indicating the elevator is being tested. When you press the **PRG** key to exit, F-8 restores to 0 automatically.

■ F-9: Reserved

■ F-A: Auto-tuning

After you enter the F-A menu using the **PRG**, **UP**, or **SET** key, the LEDs display "0". The setting range of F-A is 0 to 2, described as follows:

1	With-load auto-tuning
2	No-load auto-tuning

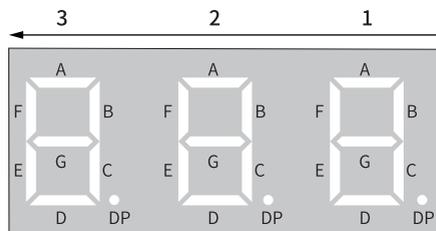
After the setting is complete, press the **SET** key to save it. The LEDs display "TUNE", and the elevator enters the auto-tuning state. After confirming that the safe running conditions are met, press the **SET** key again to start auto-tuning.

After the auto-tuning is complete, the LEDs display the current angle for 2s and then switch to the F-0 menu automatically. You can press the **PRG** key to exit the auto-tuning state.

■ F-b: CTB state display

After you enter the F-b menu using the **PRG**, **UP** or **SET** key, the LEDs display the input/output state of the car top board (CTB).

The following figure shows the meaning of each segment.



Segment ON: Signal active
 Segment OFF: Signal inactive

	1	2	3
A	Light curtain 1 input	Light-load	Door open 1 output
B	Light curtain 2 input	-	Door close 1 output
C	Door open limit 1 input	-	Forced door close 1 output
D	Door open limit 2 input	-	Door open 2 output
E	Door close limit 1 input	-	Door close 2 output
F	Door close limit 2 input	-	Forced door close 2 output
G	Full-load input	-	Up arrival gong output
DP	Overload input	-	Down arrival gong output

■ F-C: Elevator direction change

0: Running direction unchanged

1: Running direction reversed

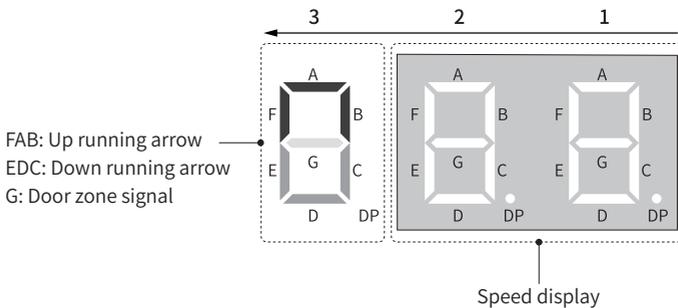


NOTE

◆ Do not modify the value of F-C. The function of F-C is the same as that of F2-10 (Elevator running direction).

■ F-d: Elevator state display in the emergency running state

After you enter the F-b menu using the **PRG**, **UP** or **SET** key, the LEDs display the state of emergency displays. The following figure shows the meaning of each segment.



The system automatically goes to this interface in the emergency evacuation or shorting stator braking (for PMSM) state.

■ A-0: Function testing

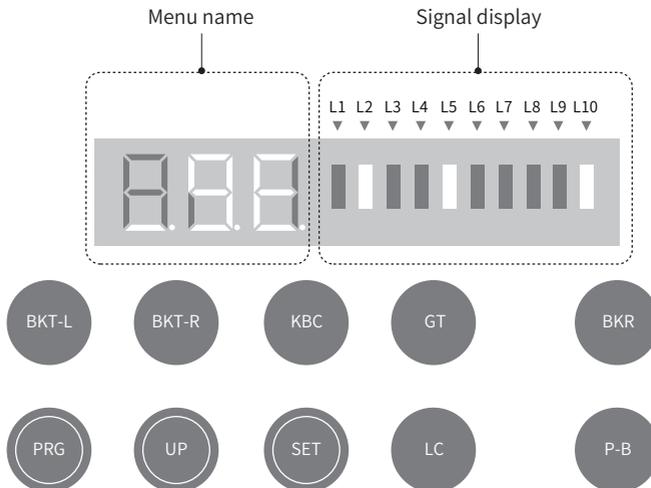
A-0 is used to select the elevator function to be tested. The following table lists the settings and corresponding functions.

Value	Function	LEDs Display (3s)
1	Dynamic single-arm braking force test	T-1
2	Dynamic dual-arm braking force test	T-2
3	Car overspeed governor test	T-3
4	Car overspeed governor reset	T-4
5	Reserved	-
6	Reserved	-
7	ACOP test	T-7
8	Maximum running time test in the event of Err30	T-8
9	Entering the maintenance test mode	T-9
10	Exiting the maintenance test mode	T-10

Example:

Set A-0 (Function testing) to 7 to test the ACOP function. Then, the keypad displays "T-7" for 3s. The three decimal point (DP) segments of LEDs keep flashing throughout the test to indicate that the elevator is under test. The indicators keep flashing throughout the test. Perform the ACOP test according to the operation instructions described in ["5.1.11 Maintenance Test" on Page 201](#).

4.1.2 Signal Monitoring



- ① 7-segment LEDs: display the menu names
- ② Indicators L1 to L10: display different elevator signals

You can enter the elevator information monitoring interface by pressing the **LC** key. This interface is designed with multiple menu pages. L1 to L10 indicate different elevator signals on different menu pages, which allows you to monitor all DIs/DOs of the control system and most elevator states.

The monitoring interface displays "L 0 0 0" by default. You can switch one menu page each time by pressing the **LC** key once (The menu pages are displayed circularly.).

① Menu description:

0 0 0 → 0 0 4 Displays the state of all DIs on the MCTC-MCB-N1

0 0 0 Displays the state of all DOs on the MCTC-MCB-N1

0 0 0 → 0 0 3 Displays the state of all DIs on the MCTC-CTB-N1

0 0 0 → 0 0 2 Displays the state of all DOs on the MCTC-CTB-N1

0 0 0 Displays the state of all DIs on the MCTC-PTB-N1

0 0 0 → 0 0 4 Displays the common elevator states and the state of DIs/DOs on the monitoring board

For indicators L1 L10, if a certain indicator is ON, the elevator signal indicated by this indicator is active. If this indicator is OFF, the elevator signal indicated by this indicator is inactive.

② Monitoring mode:

After you enter the monitoring menu, the LEDs display the current menu name and stay on this page. If you want the keypad to display the running information (such as running floor or direction), press the **P-B** key to exit the current menu display. But indicators L1 to L10 still display the elevator signals under the current menu page so that users can continue to monitor corresponding information.

The following table lists the elevator information indicated by L1 to L10 under each menu page.

Parameter Description

Indicator	A00	A01	A02
L1	X1 - Up leveling signal input active	X9 - Emergency electrical operation (EEO) signal input active	X17 - Shorting door lock circuit relay feedback active
L2	X2 - Door zone signal input active	X10 - EEO up signal input active	X18 -- (Backup) input active
L3	X3 - Down leveling signal input active	X11 - EEO down signal input active	X19 - (Backup) input active
L4	X4 - Bypass signal input active	X12 - Brake travel switch 1 active	X20 -- (Backup) input active
L5	X5 - Brake power supply feedback active	X13 - Brake travel switch 2 active	X21 - Main air switch disconnection detection active
L6	X6 - Motor power supply feedback active	X14 - Up slow-down switch active	X22 - Automatic rescue device (ARD) switch detection active
L7	X7 -- (Backup) input active	X15 - Down slow-down switch active	X23 -- (Backup) input active
L8	X8 - (Backup) input active	X16 - (Backup) input active	X24 - Detection of safety circuit to ground active
L9	Parameters monitored by the LED operating panel MDKE (ON: MCB parameters; OFF: ARD parameters)		
L10	ARD state display: ON when the ARD switch is turned on and OFF when the ARD switch is turned off		

Indicator	A03	A04	E00
L1	X25 input active	Y1 - RUN contactor output active	CX1 - Light curtain 1 signal input active
L2	X26 input active	Y2 - Left brake output active	CX2 - Light curtain 2 signal input active
L3	X27 input active	Y3 - Right brake output active	X3 - Door open limit 1 signal input active
L4	X28 input active	Y4 - Main brake contactor output active	CX4 - Door open limit 2 signal input active
L5	Reserved	Y5 - Shorting door lock circuit relay output active	CX5 - Door close limit 1 signal input active

Indicator	A04	A01	E00
L6	Reserved	Y6 - User-defined signal output active	CX6 - Door close limit 2 signal input active
L7	Reserved	Y7 - User-defined signal output active	CX7 - Full-load signal input active
L8	Reserved	Y8 - Shorting motor stator contactor output active	CX8 - Overload signal input active
L9	Parameters monitored by the LED operating panel MDKE (ON: MCB parameters; OFF: ARD parameters)		
L10	ARD state display: ON when the ARD switch is turned on and OFF when the ARD switch is turned off		

Indicator	002	003	000
L1	CX9 - Up leveling signal input active	CX17 - (Backup) input active	CY1 output active - Lighting
L2	CX10 - Down leveling signal input active	CX18 - (Backup) input active	CY2 output active - Door 1 open
L3	CX11 - Door operator over-temperature signal input active	CX19 - (Backup) input active	CY3 output active - Door 1 close
L4	CX12 - Car top inspection signal input active	CX20 - (Backup) input active	CY4 output active - Forced door 1 close
L5	CX13 - Car top inspection up signal input active	CX21 - (Backup) input active	CY5 output active - Door 2 open
L6	CX14 - Car top inspection down signal input active	CX22 - (Backup) input active	CY6 output active - Door 2 close
L7	CX15 - Safety edge 1 signal input active	CX23 - (Backup) input active	CY7 output active - Forced door 2 close
L8	CX16 - Safety edge 2 signal input active	Reserved	CY8 output active - Up arrival signal
L9	Parameters monitored by the LED operating panel MDKE (ON: MCB parameters; OFF: ARD parameters)		
L10	ARD state display: ON when the ARD switch is turned on and OFF when the ARD switch is turned off		

Parameter Description

Indicator	002	001	000
L1	CY9 output active - Down arrival signal	PX1 - Pit inspection signal active	Safety circuit 104
L2	CY10 output active - Sound and light alarm output	PX2 - Pit inspection up signal active	Safety circuit 117
L3	CY11 output active - Fan output	PX3 - Pit inspection down signal active	Safety circuit signal X25
L4	CY12 (backup) output active	PX4 - Front landing door triangle lock signal record (default: NC)	Door lock 1 shorting signal X26
L5	CY13 (backup) output active	PX5 - Rear landing door triangle lock signal record (default: NC)	Door lock circuit signal X27
L6	CY14 (backup) output active	PX6 - Pit inspection reset signal (default: NO)	EEO
L7	CY15 (backup) output active	Pit safety protection (triggered through pit inspection device)	Car top inspection
L8	CY16 (backup) output active	Pit safety protection (triggered through terminal PX4/PX5 on the pit board)	Pit inspection
L9	Parameters monitored by the LED operating panel MDKE (ON: MCB parameters; OFF: ARD parameters)		
L10	ARD state display: ON when the ARD switch is turned on and OFF when the ARD switch is turned off		

Indicator	002	003	004
L1	CTB communication	Inspection up	Monitoring board X9M input active
L2	HCB communication	Inspection down	Monitoring board X12M input active - Braking resistor over-temperature input active
L3	Pit communication	Running forbidden sign	Monitoring board X16M input active

Indicator	002	003	004
L4	Power supply board communication	Forced inspection sign	Monitoring board Y5M output active
L5	SPI communication	Door lock bypass	Reserved
L6	MOD2 communication	Brake release state	Reserved
L7	CAN2 communication	Reserved	Reserved
L8	Reserved	Reserved	Reserved
L9	Parameters monitored by the LED operating panel MDKE (ON: MCB parameters; OFF: ARD parameters)		
L10	ARD state display: ON when the ARD switch is turned on and OFF when the ARD switch is turned off		

4.2 Operating Panel Parameters

The parameters adopt a three-level menu.

- Level I menu: parameter group
- Level II menu: parameter No.
- Level III menu: parameter setting value

The meaning of each column in the parameter table is as follows:

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Parameter number	Full name of parameters	Valid setting range of parameters	Factory value of parameters	Unit of measurement of parameters	Operation property of parameters (whether to allow operation and operation conditions)

" ☆ ": The parameter can be modified when the control cabinet is in either stop or running state.

" ★ ": The parameter cannot be modified when the control cabinet is running.

" ● ": The parameter is the measured value and cannot be modified.



◆ ◆ The system automatically restricts the modification property of all parameters to prevent misoperation.

NOTE

4.2.1 Parameter Groups

After pressing  and then  /  on the LED operating panel, you can view the parameter groups. They are classified as follows:

F0	Basic parameters	FA	Keypad setting parameters
F1	Motor parameters	FB	Door function parameters
F2	Vector control parameters	FC	Protection function parameters
F3	Running control parameters	FD	Communication parameters
F4	Floor parameters	FE	Display setting parameters
F5	Terminal function parameters	FF	Factory parameters (reserved)
F6	Basic elevator parameters	FP	User parameters
F7	Intelligent commissioning parameters	Fr	Leveling adjustment parameters
F8	Enhanced function parameters	E0 to E9	Fault record parameters
F9	Time parameters	FJ	Factory parameters (reserved)
-	-	A1	Special function setting parameters

4.2.2 Parameter Table

Group F0: Basic Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F0-00	Control mode	0: Sensorless vector control (SVC) 1: Feedback vector control (FVC) 2: Voltage/Frequency (V/f) control	1	-	★

F0-00 is used to set the control mode of the system. The details are as follows.

Parameter No.	Control Mode	Function	Encoder Required or Not
0	SVC	Vector control, mainly applied to: <ul style="list-style-type: none"> ◆ Low-speed running during no-load asynchronous motor commissioning and fault judgment running during repair ◆ Special working conditions of synchronous motors (used only by professional technicians, not described in this guide) 	No
1	FVC	Vector control, mainly applied to the normal running under distance control.	Yes
2	V/f control	Sensorless V/f control, applied to equipment detection (fixed ratio between the voltage and the frequency, simple control, and poor low-frequency output torque characteristics)	No

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F0-01	Command source selection	0: Operating panel control 1: Distance control	1	-	★

F0-01 is used to set the source of running commands and running speed references, as described in the following table.

Value	Running Mode	Working Mode		Application	Remarks
		X Input	Y Output		
0	Operating panel control	X input signals not detected	No output (Only relay Y1 controlling the RUN contactor has output.)	Applies only to motor test or no-load auto-tuning.	The control cabinet is operated by pressing the  and  keys on the LED operating panel, and the running speed is set by F0-02 (Running speed under operating panel control).

Parameter Description

Value	Running Mode	Working Mode		Application	Remarks
		X Input	Y Output		
1	Distance control	X input signals detected	Output	Used during normal elevator running.	<ol style="list-style-type: none"> 1. During inspection, the elevator runs at the speed set in F3-11 (Inspection speed). 2. During normal running, the control system automatically computes the speed and running curve for the elevator based on the distance between the current floor and the destination floor within the rated elevator speed, implementing direct travel ride.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F0-02	Running speed under operating panel control	0.050 to F0-04	0.050	m/s	☆
F0-03	Maximum running speed	0.000 to F0-04	0.400	m/s	★
F0-04	Rated speed	0.100–2.000	0.400	m/s	★

F0-02 is used to set the running speed in the operating panel control mode.

F0-03 is used to set the maximum running speed of the elevator. Its value cannot exceed the rated elevator speed.

F0-04 is used to set the nominal rated speed of the elevator. Its value depends on the elevator's machinery and the traction machine.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F0-05	Rated load	300–9999	1000	kg	★

F0-05 is used to set the rated elevator load and applied to the anti-nuisance function.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F0-06	Maximum frequency	F1-04 to 99.00	50.00	Hz	★

F0-06 is used to set the maximum system output frequency. Its value must exceed the rated motor frequency.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F0-07	Carrier frequency	0.5–16.0	6.0	kHz	★

F0-07 is used to set the carrier frequency of the control cabinet.

The carrier frequency is closely related to the motor noise during running. When the carrier frequency is set to a value above 6 kHz, quiet running is achieved. It is recommended that the carrier frequency be set to the lowest within the allowable noise range. This is to reduce the control cabinet loss and suppress the emission of radio frequency interference.

- When the carrier frequency reduces, the high harmonics of the output current and the power loss and temperature rise of the motor will increase.
- When the carrier frequency increases, the power loss and temperature rise of the motor will reduce, but the interference and the power loss and temperature rise of the system will increase.

Adjusting the carrier frequency will exert impacts on the following aspects:

Carrier frequency	Low — High
Motor noise	Large — Small
Output current waveform	Bad — Good
Motor temperature rise	High— Low
Control cabinet temperature rise	Low — High
Leakage current	Small — Large
External radiation interference	Small — Large

Group F1: Motor Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-00	Encoder type	0: Sin/Cos encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute/ Communication encoder	0	-	★

Parameter Description

Set F1-00 to a proper value according to the type of encoder used together with the motor.

- When F1-25 (Motor type) is set to 1 (Synchronous motor), F1-00 will be automatically set to 0.
- When F1-25 (Motor type) is set to 0 (Asynchronous motor), F1-00 will be automatically set to 2.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-01	Rated motor power	0.7–75.0	Model dependent	kW	★
F1-02	Rated motor voltage	0–600	Model dependent	V	★
F1-03	Rated motor current	0.00–655.00	Model dependent	A	★
F1-04	Rated motor frequency	0.00 to F0-06	Model dependent	Hz	★
F1-05	Rated motor speed	0–3000	Model dependent	RPM	★

Set these parameters according to the motor type and motor nameplate.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-06	Encoder initial angle (synchronous motor)	0.0–359.9	0	°	★
F1-07	Encoder angle at power-off (synchronous motor)	0.0–359.9	0	°	★
F1-08	Synchronous motor wiring mode	0–15	0	-	★

These parameters are obtained through synchronous motor auto-tuning.

F1-06 specifies the encoder angle at zero. After multiple times of auto-tuning, compare the obtained values. The difference between these values cannot exceed $\pm 5^\circ$.

F1-07 specifies the angle of the motor's magnetic pole when the power is off. Its value is recorded at power-off and used for comparison at the next power-on.

F1-08 specifies the motor connection mode, indicating whether the output phase sequences of the driver board are consistent with the UVW phase sequences of the motor. If the value

obtained through no-load auto-tuning is an even number, the phase sequences are correct. If the value is an odd number, the phase sequences are incorrect. In this case, exchange any two of the motor UVW phases.

F1-06 and F1-08 can be modified only when F0-01 (Command source selection) is set to 0.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-09	Current filter time (synchronous motor)	0.0–359.9	0	-	★

F1-09 is used to set the current filter time, which suppresses the periodic vertical jitter. Increase the value in ascending order of 5 to achieve the optimum effect.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-10	Encoder check selection	0–65535	0	-	★

F1-10 is used to set the encoder signal check. It is used by the manufacturer. No modification is required.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-11	Auto-tuning mode	0: No operation 1: With-load auto-tuning 2: No-load auto-tuning 3: Shaft auto-tuning 1 4: Shaft auto-tuning 2 5: Synchronous motor static auto-tuning	0	-	★

F1-11 is used to select the auto-tuning mode. The setting values are as follows:

0: No operation

1: With-load auto-tuning

2: No-load auto-tuning

3: Shaft auto-tuning 1, with parameters in group Fr not cleared

4: Shaft auto-tuning 2, with parameters in group Fr cleared

5: Synchronous motor static auto-tuning

Static auto-tuning is a with-load motor auto-tuning without releasing the brake. It is suitable for fields where it is not convenient to release the brake.



◆ It is not recommended to use static auto-tuning for first-time motor auto-tuning or as an alternative to with-load auto-tuning.

Requirements for static auto-tuning:

- The encoder working with synchronous motor is Sin/Cos encoder or absolute encoder, and the output power cable sequences must be consistent with the encoder cable sequences. Otherwise, auto-tuning will fail and the motor cannot run properly.
- F1-08 (Synchronous motor wiring mode) must always be 0 during auto-tuning. If the actual encoder phase sequence is 8, set Bit6 of F1-24 to 1 and F1-08 to 0 (Set F0-01 to 0 before modifying F1-08).



- ◆ The operation procedure and precautions of synchronous motor static auto-tuning are the same as those of synchronous motor with-load auto-tuning.
- ◆ During synchronous motor static auto-tuning, EEO up/down is required but the brake is not released. The system automatically exits the "TUNE" state after auto-tuning is complete.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-12	Encoder PPR	0-10000	2048	PPR	★

F1-12 is used to set the encoder PPR according to the encoder nameplate.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-13	Encoder disconnection detection time	0-10.0	2.1	s	★

F1-13 is used to set the time that the encoder disconnection fault lasts before it is detected.

After the elevator starts running at non-zero speed, the system reports the encoder fault and the elevator stops running if there is no encoder signal input within the time set in F1-13. If the value of F1-13 is smaller than 0.5s, this function is inactive.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-14	Asynchronous motor stator resistance	0.000–30.000	Model dependent	Ω	★
F1-15	Asynchronous motor rotor resistance	0.000–30.000	Model dependent	Ω	★
F1-16	Asynchronous motor leakage inductance	0.00–300.00	Model dependent	mH	★
F1-17	Asynchronous motor mutual inductance	0.1–3000.0	Model dependent	mH	★
F1-18	Asynchronous motor no-load current	0.01–300.00	Model dependent	A	★

These parameters are obtained through asynchronous motor auto-tuning. After motor auto-tuning is complete, the parameter values are updated automatically. If motor auto-tuning cannot be performed on-site, manually enter the parameter values of the motor with same nameplate.

Each time the rated power (F1-01) of the asynchronous motor is modified, these parameters automatically restore to the standard default values.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-19	Q-axis inductance (torque)	0.00–650.00	3.00	mH	★
F1-20	D-axis inductance (excitation)	0.00–650.00	3.00	mH	★
F1-21	Back EMF coefficient	0–65535	0	-	★

F1-19, F1-20, and F1-21 are used to display the inductance of Q-axis and D-axis and the back EMF coefficient of the synchronous motor. These values are obtained through motor auto-tuning.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-22	Auto-tuning function selection	Bit1 = 1, Bit2 = 0: Semi-automatic angle-free auto-tuning Bit1 = 1, Bit2 = 1: Automatic angle-free auto-tuning	0	-	★

Bit1 and Bit2 are used to select the angle-free auto-tuning mode for the synchronous motor.

■ Bit1 = 1, Bit2 = 0: Semi-automatic angle-free auto-tuning

After power-off and power-on again, the system automatically performs the encoder angle auto-tuning only during first-time trial running at inspection speed. After the auto-tuning succeeds, the system will not perform auto-tuning again before the next power-off.



NOTE

◆ During trial running at inspection speed, if a power failure occurs before the auto-tuning is complete, Err19 is reported when the elevator enters the normal state after power-on again.

■ Bit1 = 1, Bit2 = 1: Automatic angle-free auto-tuning

After power-off and power-on again, the system automatically performs the encoder angle auto-tuning during first-time running at inspection/normal speed. After the auto-tuning succeeds, the system will not perform auto-tuning again before next power-off.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F1-25	Motor type	0: Asynchronous motor 1: Synchronous motor	1	-	★

F1-25 is used to set the motor type. The setting values include:

0: Asynchronous motor

1: Synchronous motor

Group F2: Vector Control Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F2-00	Speed loop proportional gain Kp1	0-100	20	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F2-01	Speed loop integral time Ti1	0.01–10.00	0.30	s	★
F2-02	Switchover frequency 1	0.00 to F2-05	2.00	Hz	★
F2-03	Speed loop proportional gain Kp2	0–100	20	-	★
F2-04	Speed loop integral time Ti2	0.01–10.00	0.30	s	★
F2-05	Switchover frequency 2	F2-02 to F0-06	5.00	Hz	★

F2-00 and F2-01 are PI regulation parameters when the running frequency is smaller than switchover frequency 1 (F2-02).

F2-03 and F2-04 are PI regulation parameters when the running frequency is larger than switchover frequency 2 (F2-05).

If the running frequency is between switchover frequency 1 (F2-02) and switchover frequency 2 (F2-05), the speed loop PI parameters are obtained from the weighted average value of the two groups of PI parameters (F2-00 and F2-01, F2-03 and F2-04), as shown in the following figure.

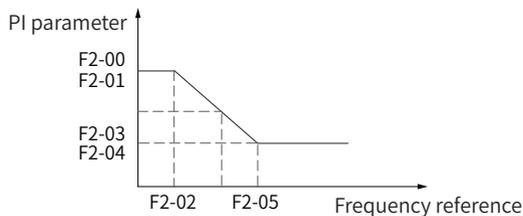


Figure 4-1 Relationship between the running frequency and PI parameters

The dynamic response characteristics of the speed loop in vector control can be adjusted by setting the proportional gain and integral time of the speed regulator. To achieve a faster system response, increase the proportional gain or reduce the integral time. Be aware that this may lead to system oscillation.

The recommended adjustment method is as follows:

If the default setting cannot meet the requirements, make fine adjustments: 1) Decrease the proportional gain to make sure that the system does not oscillate; 2) Reduce the integral time to make sure that the system has a quick response but small overshoot.

If both F2-02 (Switchover frequency 1) and F2-05 (Switchover frequency 2) are 0, only F2-03 (Speed loop proportional gain Kp2) and F2-04 (Speed loop integral time Ti2) are effective.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F2-06	Current loop proportional gain Kp	10-500	60	-	★
F2-07	Current loop integral gain Ki	10-500	30	-	★

F2-06 and F2-07 are the regulation parameters for the torque axis current loop.



◆ The two parameters are used as the torque axis current regulator in vector control. The optimum values matching the motor characteristics are obtained through motor auto-tuning. Generally, you need not modify these parameters.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F2-08	Torque upper limit	0.0-200.0	200.0	%	★

F2-08 is used to set the torque upper limit of the motor. The value 100% corresponds to the rated output torque of the AC drive.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F2-10	Elevator running direction	0-1	0	-	★

F2-10 is used to change the elevator running direction. The setting values are as follows:

0: Running direction unchanged

1: Running direction reversed

You can modify this parameter to reverse the motor running direction without changing the motor wiring. After the motor auto-tuning succeeds, check whether the actual motor running direction is consistent with the inspection command direction when you perform the inspection running for the first time. If not, change the motor running direction by setting F2-10 so that it is consistent with the inspection command direction.

Pay attention to the setting of this parameter when restoring the default settings.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F2-11	Position lock current coefficient	2.0–50.0	15.0	%	★
F2-12	Position lock speed loop Kp	0.00–2.00	0.30	-	★
F2-13	Position lock speed loop Ti	0.00–2.00	0.60	-	★

F2-11, F2-12, and F2-13 are used to adjust the automatic pre-torque compensation when the no-load-cell function is enabled. You can enable the no-load-cell startup function by setting F8-01 (Pre-torque selection) to 2 or 3.

Decrease the value of these parameters properly in the case of car lurch at startup, and increase the values properly in the case of rollback at startup.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F2-16	Torque acceleration time	1–500	1	ms	★
F2-17	Torque deceleration time	1–3000	350	ms	★

F2-16 and F2-17 are used to set the acceleration/deceleration time of the torque current.

Due to the differences in motor characteristics at stop:

- ① If a clash occurs when the current is applied at startup, increase the value of F2-16 to eliminate the abnormal sound.
- ② If a clash occurs when the current is canceled at stop, increase the value of F2-17 to eliminate the abnormal sound.

Group F3: Running Control Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-00	Startup speed	0.000–0.050	0.000	m/s	★
F3-01	Startup speed holding time	0.000–5.000	0.000	s	★

F3-00 and F3-01 are used to set the startup speed and startup speed holding time of the system respectively. For details, see ["Figure 4-2 Speed curve" on Page 99](#).

Proper setting of the two parameters may reduce the terrace feeling at startup caused by the static friction between the guide rail and guide shoes.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-02	Acceleration rate	0.150–1.500	0.200	m/s ²	★
F3-03	Acceleration start jerk time	0.300–4.000	1.500	s	★
F3-04	Acceleration end jerk time	0.300–4.000	1.500	s	★

F3-02, F3-03, and F3-04 are used to set the running curves during acceleration, as shown in ["Figure 4-2 Speed curve" on Page 99](#) and ["Figure 4-3 Acceleration/Deceleration curve" on Page 99](#).

- F3-02 is the acceleration rate of the elevator speed curve (constant acceleration phase).
- F3-03 is the time for the acceleration rate to increase from zero to the value set in F3-02. The larger the value is, the smoother the speed curve (increasing acceleration phase) is.
- F3-04 is the time for the acceleration rate to decrease from the value set in F3-02 to zero. The larger the value is, the smoother the speed curve (decreasing acceleration phase) is.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-05	Deceleration rate	0.150–1.500	0.200	m/s ²	★
F3-06	Deceleration end jerk time	0.300–4.000	1.500	s	★
F3-07	Deceleration start jerk time	0.300–4.000	1.500	s	★

F3-05, F3-06, and F3-07 are used to set the running curves during deceleration, as shown in ["Figure 4-2 Speed curve" on Page 99](#) and ["Figure 4-3 Acceleration/Deceleration curve" on Page 99](#).

- F3-05 is the deceleration rate of the elevator speed curve (constant deceleration phase).
- F3-06 is the time for the deceleration rate to decrease from the value set in F3-05 to zero. The larger the value is, the smoother the speed curve (decreasing deceleration phase) is.
- F3-07 is the time for the deceleration rate to increase from zero to the value set in F3-05. The larger the value is, the smoother the speed curve (increasing deceleration phase) is.

Figure 4-2 shows the settings of the entire speed curve.

F3-02 (F3-05) is the acceleration (deceleration) rate of the S-curve in the linear acceleration

process.

F3-03 (F3-07) is the time for the acceleration (deceleration) rate to increase from zero to the value set in F3-02 (F3-05) in the S-curve (start jerk segment). The larger the value is, the smoother the jerk is.

F3-04 (F3-06) is the time for the acceleration (deceleration) rate to decrease from the value set in F3-02 (F3-05) to zero in the S-curve (end jerk segment). The larger the value is, the smoother the jerk is.

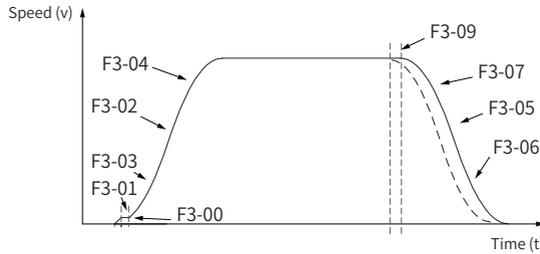


Figure 4-2 Speed curve

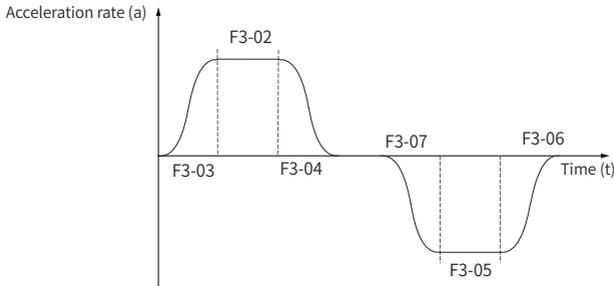


Figure 4-3 Acceleration/Deceleration curve

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-08	Special deceleration rate	0.200-1.500	0.900	m/s ²	★

F3-08 is used to set the deceleration rate when the elevator has a level 4 fault or in the inspection, shaft auto-tuning, re-leveling, and terminal floor verification state.

This parameter is not used during normal running. It is used only when the elevator position or the slow-down signal is abnormal, preventing the occurrence of top-hitting and bottom-clashing to the maximum.

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-09	Pre-deceleration distance	0–90.0	0.0	mm	★

F3-09 is used to set the pre-deceleration distance of the elevator under distance control, as shown in "[Figure 4-2 Speed curve](#)" on [Page 99](#). This function is to eliminate the influence of encoder signal loss or leveling signal delay.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-10	Re-leveling speed	0.020–0.080	0.040	m/s	★

F3-10 is used to set the elevator speed during re-leveling.

It is effective only when an advance door opening module (MCTC-SCB) is added to implement the re-leveling function (set in FE-32).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-11	Inspection speed	0.100–0.630	0.250	m/s	★

F3-11 is used to set the elevator speed in the inspection state.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-12	Position of up slow-down switch	0.00–300.00	0.00	m	★
F3-13	Position of down slow-down switch	0.00–300.00	0.00	m	★

F3-12 and F3-13 indicate the position of all slow-down switches relative to the leveling position of the bottom floor. Their values are automatically recorded during shaft auto-tuning.



NOTE

- ◆ For the installation distance of slow-down switches, see *SLIM LINE Series Control Cabinet Hardware Guide*.

The system automatically detects the elevator speed when the slow-down switch operates. If the detected speed or position is abnormal, the system enables the elevator to slow down at the special deceleration rate set in F3-08 (Special deceleration rate) to prevent top-hitting or bottom-clashing.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-18	Zero-speed current output time	0.200–1.000	0.200	s	★
F3-19	Holding time of zero-speed torque current upon brake release	0.000–2.000	0.600	s	★
F3-20	Running completion delay time	0.000–1.000	0.300	s	★

F3-18, F3-19, and F3-20 are used to set the zero-speed current output holding time and the braking action delay.

- F3-18 is the time interval between the RUN contactor output and the brake contactor output, during which the control cabinet performs excitation on the motor and outputs zero-speed current with large startup torque.
- F3-19 is the time from the moment when the system sends a brake release command to the moment when the brake is completely released, during which the system maintains the zero-speed torque current output to prevent rollback.
- F3-20 is the zero-speed current output time before the running curve ends. The following figure shows the running timing.

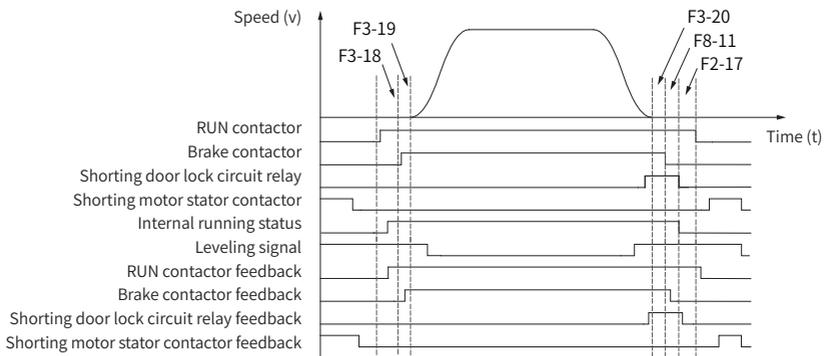


Figure 4-4 Running timing diagram



- ◆ The system maintains the zero-speed torque current output within the time set in F8-11 (Holding time of zero-speed torque current upon brake close) from the moment when the system sends the brake close command to prevent rollback.

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-21	Low-speed re-leveling speed	0.080 to F3-11	0.100	m/s	★

F3-21 is used to set the elevator speed of returning to the leveling position at normal non-leveling stop.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-22	Acceleration rate during emergency evacuation	0.020–1.300	0.050	m/s ²	★

F3-22 is used to set the acceleration rate during emergency evacuation.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-23	Deceleration delay time upon hitting slow-down switch	0.00–10.00	00.00	0.01s	★

F3-23 indicates the delay that the elevator speed decreases to 0.1 m/s upon hitting the slow-down switch during inspection, re-leveling, terminal floor verification, and shaft auto-tuning.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-24	Program function selection	0: Reserved 1: Auxiliary motor slip test 2: UCMP test 6: Balance coefficient auto-tuning	0	-	★

F3-24 is used to start certain elevator test functions. For more details, see ["5.1 Running and Function Tests" on Page 193](#) .

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-25	Elevator speed in the EEO state	0.100–0.300	0.250	m/s	★

F3-25 is used to set the elevator speed in the EEO state.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-26	Shaft auto-tuning speed	0.100–0.300	0.250	m/s	★

F3-26 is used to set the elevator speed during shaft auto-tuning.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-27	Overspeed threshold	0.000–1.000	0.150	m/s	★

F3-27 applies only to home elevators. It is used to set the overspeed protection threshold during the running of home elevators. Due to the low running speed of home elevators, the abnormal activities of passengers in the car are very likely to make the speed fluctuation of the elevator exceed the permitted value, resulting in an overspeed fault. You can increase the upper limit of speed protection properly by setting F3-27.

Actual upper limit of speed protection = Rated speed + F3-27

Group F4: Floor Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F4-00	Leveling adjustment	0–60	30	mm	★

F4-00 is used to adjust the leveling accuracy at stop.

If over-leveling occurs at all floors when the elevator stops, decrease the value of F4-00 properly. If under-leveling occurs at all floors when the elevator stops, increase the value of F4-00 properly. This parameter takes effect to the leveling of all floors. Therefore, if the leveling of a single floor is inaccurate, it is recommended to adjust the position of the leveling plate or the parameters in group Fr. The SLIM LINE provides a built-in advanced distance control algorithm and adopts multiple methods to make sure the stability of direct travel ride. You need not modify this parameter in most cases.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F4-01	Current floor	F6-01 to F6-00	1	-	★

F4-01 indicates the current floor where the elevator car is located.

The system automatically changes the value of this parameter during running and corrects it in the leveling position (door open limit) after the up/down slow-down switch operates. In the leveling of floors except for the bottom and top floors, you can manually modify this parameter, but the value must be consistent with the actual current floor number.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F4-02	High byte of current floor position	0-65535	1	Pulses	●
F4-03	Low byte of current floor position	0-65535	34464	Pulses	●

F4-02 and F4-03 indicate the absolute pulses of the current car position relative to the bottom leveling position.

The shaft position data are recorded in pulses. Each position is expressed by a 32-bit binary number, where the high 16 bits indicate the high byte of the floor position and the low 16 bits indicate the low byte of the floor position.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F4-04	Leveling plate length 1	0-65535	0	Pulses	★
F4-05	Leveling plate length 2	0-65535	0	Pulses	★

F4-04 indicates the pulses corresponding to the valid leveling plate length.

F4-05 indicates the pulses corresponding to the distance between the up and down leveling switches and two ends of the leveling plate.

These two parameters are automatically recorded during shaft auto-tuning.



NOTE

◆ For the relationship between leveling plate length 1 and leveling plate length 2, see *SLIM LINE Series Control Cabinet Hardware Guide*.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F4-06	High byte of floor height 1	0-65535	0	Pulses	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F4-07	Low byte of floor height 1	0-65535	0	Pulses	★
High and low bytes of floor height 2 to floor height 38					
F4-82	High byte of floor height 39	0-65535	0	Pulses	★
F4-83	Low byte of floor height 39	0-65535	0	Pulses	★

These parameters indicate the pulses corresponding to floor height i (the distance between the leveling plates of floor i and floor " $i+1$ "). Each floor height is expressed by a 32-bit binary number, where the high 16 bits indicate the high byte of the floor height and the low 16 bits indicate the low byte of the floor height. Under normal conditions, the pulses corresponding to the floor height of each floor are almost the same.

Group F5: Terminal Function Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-00	Attendant/Automatic state switchover time	3-200	3	s	★

If there is a hall call at a non-current floor in the attendant state, the system automatically switches to the automatic (normal) state after the time set in F5-00. After this running is complete, the system automatically restores to the attendant state (Bit2 of F6-43 must be set to 1). When F5-00 is smaller than 5, the attendant/automatic state switchover function is disabled. In this case, F5-00 is used as the normal attendant function.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-01	X1 function selection	1-191	01	-	★
F5-02	X2 function selection	1-191	0	-	★
F5-03	X3 function selection	1-191	02	-	★
F5-04	X4 function selection	1-191	118	-	★
F5-05	X5 function selection	1-191	39	-	★
F5-06	X6 function selection	1-191	38	-	★
F5-07	X7 function selection	1-191	0	-	★

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-08	X8 function selection	1-191	30	-	★
F5-09	X9 function selection	1-191	116	-	★
F5-10	X10 function selection	1-191	9	-	★
F5-11	X11 function selection	1-191	10	-	★
F5-12	X12 function selection	1-191	58	-	★
F5-13	X13 function selection	1-191	110	-	★
F5-14	X14 function selection	1-191	48	-	★
F5-15	X15 function selection	1-191	49	-	★
F5-16	X16 function selection	1-191	0	-	★
F5-17	X17 function selection	1-191	22	-	★
F5-18	X18 function selection	1-191	0	-	★
F5-19	X19 function selection	1-191	0	-	★
F5-20	X20 function selection	1-191	0	-	★
F5-21	X21 function selection	1-191	123	-	★
F5-22	X22 function selection	1-191	92	-	★
F5-23	X23 function selection	1-191	0	-	★
F5-24	X24 function selection	1-191	94	-	★

F5-01 to F5-24 are used to set the digital signals input to terminals X1 to X24. Select the

correct input parameters according to the function of input signals.

The control system provides 24 low-voltage DIs (X1 to X24) and one AI (Ai/M). All low-voltage inputs share a COM terminal. When the 24 VDC voltage is applied, the corresponding input indicator becomes ON.

The following parameter values are used to set the functions of multi-functional DI terminals. If a certain function cannot be set, check whether this function has been allocated to another terminal or is running.



NOTE

The parameter values that can be set repeatedly include:

- ◆ 04/36: Safety circuit feedback NO/NC
- ◆ 05/37: Door lock circuit feedback NO/NC
- ◆ 06/38: RUN contactor/STO feedback NO/NC
- ◆ 07/39: Brake contactor feedback NO/NC

The meaning of the NO setting of the functions is as follows (NC setting: NO value + 32).

■ 00: Disabled

Even if there is a signal input to the terminal, the system has no response. You can allocate this function to unused terminals to prevent misoperation.

■ 01: Up door zone signal

■ 02: Down door zone signal

■ 03: Door zone signal

The control system determines the door zone position based on the door zone switch signal(s). Three kinds of switch configurations are supported:

- ① One switch: door zone switch
- ② Two switches: up door zone switch and down door zone switch
- ③ Four switches: up and down leveling switches, as well as up and down door zone switches

If the leveling signal is abnormal (stuck or disconnected), the system reports Err22.

■ 04: Safety circuit 1 feedback signal

■ 05: Door lock circuit 1 feedback signal

■ 29: Safety circuit 2 feedback signal

■ 31: Door lock circuit 2 feedback signal

The safety circuit guarantees the safe and reliable running of elevators, and the door lock circuit ensures that the landing door and car door have been closed when the elevator starts to run. Active feedback signals of the safety circuit and door lock circuit are necessary to elevator running. It is recommended that these signals be set to NO input. If they are set to NC input, the system considers the input is active even though there is no input. In this case, the actual state of the safety circuit cannot be detected, which may cause safety hazards.

- 06: RUN contactor/STO feedback signal
- 07: Brake contactor feedback signal
- 26: Brake travel switch 1 input signal
- 78: Brake travel switch 2 input signal

The system sends commands to the RUN and brake contactors and automatically detects the feedbacks from these contactors. If the commands and the feedbacks are inconsistent, the system reports a fault.

- 08: Inspection signal
- 09: Inspection/EEO up signal
- 10: Inspection/EEO down signal

When the inspection switch is active, the elevator enters the inspection state. In this case, the system cancels all automatic running operations, including the automatic door actions. When there is an inspection up/down signal input, the elevator runs at the speed set in F3-11 (Inspection speed).

- 11: Fire emergency signal

When the fire emergency switch is turned on, the elevator enters the fire emergency state, immediately cancels the registered hall calls and car calls, and runs to the fire emergency floor. The elevator door automatically opens after arrival.

- 12: Up limit signal
- 13: Down limit signal

When the elevator runs over the leveling position of terminal floors but does not stop, the up limit signal and down limit signal are used as the stop switches at the terminal floors to prevent top-hitting or bottom-clashing.

- 14: Overload signal

When the elevator load exceeds 110% of the rated load during normal use, the elevator enters the overload state. In this case, the overload buzzer beeps, the overload indicator in the car becomes ON, and the elevator door keeps open. The overload signal becomes inactive after the door lock is closed. If running with 110% of the rated load is required during inspection, set F7-06 (Overload function) to 1 to enable the overload function. It must be noted that this function may cause safety hazards. Therefore, use it with caution.

It is recommended that the overload signal be set to NC input. If it is set to NO input, the system cannot detect the overload state when the overload switch is damaged or disconnected. In this case, the elevator running may cause safety hazards. Similarly, it is recommended that the up limit signal, down limit signal, and slow-down signal be set to NC input.

- 15: Full-load signal

When the elevator load is 80% to 110% of the rated load, the HCB at the main floor displays

the full-load state, and the elevator does not respond to hall calls.

■ 16: Up slow-down 1 signal

■ 17: Down slow-down 1 signal

The two parameters are used to set corresponding input terminals as slow-down switch signal inputs. The slow-down signals are used to enable the elevator to stop at the slow-down speed when the car position is abnormal, guaranteeing the elevator's safety. The control system automatically records the position of slow-down switches in group F3 during shaft auto-tuning.

■ 22: Shorting door lock circuit relay feedback

It is the feedback signal from the shorted door lock when the advance door opening upon arrival or re-leveling at door open is enabled for elevators configured with the advance door opening module. This is to ensure the safe running of elevators.

■ 23: Firefighter signal

It serves as the firefighter switch signal input terminal, used for the firefighter operation. After returning to the fire emergency floor in the event of a fire, the elevator enters the firefighter operation state if the firefighter signal is active.

■ 24: Door 1 light curtain signal

■ 25: Door 2 light curtain signal

The two parameters are used to detect the light curtain signal of door 1 and door 2 (if existing).

■ 27: Emergency evacuation signal at power failure

It is the emergency evacuation signal at power failure. If this signal is active, it indicates that the emergency evacuation can be performed at power failure. This function can be applied only to working conditions with an external ARD which provides power for the control cabinet.

■ 28: Elevator lock signal

If this signal is active, the elevator enters the elevator lock state, returns to the elevator lock floor, and does not respond to any calls until the signal becomes inactive. It has the same function as the hall call elevator lock signal. For details, see parameters FD-07 (HCB-JP1 input selection) and FD-08 (HCB-JP2 input selection).

■ 30: Shorting motor stator contactor feedback

The shorting motor stator contactor of synchronous motors protects the elevator from falling at a high speed in the case of brake failure. This signal is used to monitor whether the shorting motor stator contactor is normal.

■ 65: Door 1 safety edge signal

■ 66: Door 2 safety edge signal

The two parameters are used to detect the safety edge signal of door 1 and door 2 (if existing).

■ 67: Motor over-temperature input signal

It is used for the motor thermal protection switch signal input. If this signal remains active for more than 2s, the control system stops output and reports Err39 to prompt motor over-temperature. After this signal becomes inactive, Err39 is reset automatically and the system restores the normal operation.

■ 68: Earthquake signal

If this signal remains active for more than 2s, the elevator enters the earthquake stop state, stops at the nearest landing floor, and opens the door to let passengers out. Then, the elevator automatically closes the door, does not respond to hall calls, and stops running until the earthquake signal becomes inactive.

■ 69: Rear door forbidden signal

If the elevator has double doors, this signal is used to prohibit the use of door 2.

■ 70: Light-load signal

This signal is used for the nuisance judgment when the anti-nuisance function is enabled. If Bit2 of F8-08 (Anti-nuisance function) is set to 1, the system performs the nuisance judgment using the light-load switch. The load below 30% of the rated load is regarded as a light load.

■ 71: Half-load signal

This signal is mainly used for judging the elevator running direction during emergency evacuation at power failure.

■ 72: Fire emergency floor switchover signal

The control system supports a maximum of two fire emergency floors. By default, the elevator stops at fire emergency floor 1 in the fire emergency state. If this signal is active, the elevator stops at fire emergency floor 2 in the fire emergency state.

■ 73: Dummy floor input

The dummy floor signal is required if the running time between two adjacent floors exceeds the minimum values set in F9-02 (Running time protection) and FA-38 (Maximum floor running time interval) due to too large distance between the two floors. Otherwise, the system reports Err30.

■ 76: Door 1 open input

■ 77: Door 2 open input

■ 78: Brake travel switch 2 feedback

■ 79: External fault input

The external fault input is used to notify the controller to stop when other modules in the control cabinet, such as the external braking unit, are faulty.

■ 80: Terminal floor verification signal

This signal is used together with slow-down signals to determine the terminal floor position when the height of some terminal floors are too short.

■ 81: Door lock 1 shorting

This signal is used to detect whether door lock 1 is shorted.

■ 82: Door lock 2 shorting

This signal is used to detect whether door lock 2 is shorted.

■ 84: EEO input

When the EEO switch is active, the elevator enters the EEO state. In this case, the system cancels all automatic running operations, including the automatic door actions. When there is an EEO up/down signal input, the elevator runs at the speed set in F3-26 (Shaft auto-tuning speed).

■ 86: Door lock bypass signal

It is the signal input when the door lock is bypassed. After the signal becomes active, the system enters the inspection state.

■ 88: Rope gripper feedback signal input

Allocate the value "88" to the MCB to enable the rope gripper feedback signal input.

- ① In the normal or inspection state, the system reports Err67, and the elevator stops immediately when the rope gripper feedback signal is inactive. At the same time, the system detects whether the UCMP fault occurs. If there is an unintended car movement, the system reports Err65, which prevails Err67.
- ② Reset Err67 by pressing  on the LED operating panel, setting F-2 to 1 using the keypad, or making the rope gripper feedback signal remain active for at least 1s. If the rope gripper feedback signal becomes inactive after the fault reset, the system continues to report Err67.

■ 91: Main air switch auxiliary contact input

It is used to detect whether the main air switch is disconnected manually or due to the failure of the external power supply.

■ 92: ARD evacuation input

The system detects the ARD evacuation input signal before power failure. If this signal is active, the control cabinet drives the ARD to implement emergency evacuation when the ARD evacuation conditions are met. Otherwise, emergency evacuation by ARD cannot be implemented.

■ 93: Landing door triangle lock detection switch input

This function detects whether anyone enters the pit. After the detection switch operates, the elevator can only run in the inspection or EEO state for the safety of people in the pit. You must reset the elevator by using the reset switch to make it restore running.

From the perspective of safety, it is recommended to use the NC switch as the landing door lock detection switch and set the DI parameters of the MCB to NC function 125.

■ 94: Detection of safety circuit shorted to the ground

This function can be used only by operators. The power supply board inside the control cabinet can detect whether the safety circuit is shorted to the ground. If yes, the system implements the hardware protection and sends a signal to the MCB.

■ 95: Reset of pit protection function

After the landing door triangle lock detection switch or pit protection function becomes active once, the system enters the pit safety protection state and reports Err96. This function is used to reset Err96 by using the MCB. From the perspective of safety, it is recommended to use the NC switch as the reset switch and set the DI parameters of the MCB to NC function 95.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-25	CTB input signal type	0-511	320	-	★

F5-25 is used to define the CTB input signal types by binary bit.

For example, the CTB input signal types of an elevator are set as follows:

Bit	Parameter Name	Default	Bit	Parameter Name	Default
Bit0	Door 1 light curtain	0	Bit8	Light-load signal (digital)	1
Bit1	Door 2 light curtain	0	Bit9	Up leveling signal	1
Bit2	Door 1 open limit	0	Bit10	Down leveling signal	1
Bit3	Door 2 open limit	0	Bit11	Door operator over-temperature detection	0
Bit4	Door 1 close limit	0	Bit12	Door 1 safety edge	0
Bit5	Door 2 close limit	0	Bit13	Door 2 safety edge	0
Bit6	Full-load signal (digital)	1	Bit14	Reserved	-
Bit7	Overload signal (digital)	0	Bit15	Reserved	-
0: NC input 1: NO input					

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-26	Y1 function selection	0-31	1	-	★
F5-27	Y2 function selection	0-31	0	-	★
F5-28	Y3 function selection	0-31	0	-	★
F5-29	Y4 function selection	0-31	2	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-30	Y5 function selection	0-31	3	-	★
F5-31	Y6 function selection	0-31	0	-	★

These parameters are used to set the signals output by terminals Y1 to Y6 of the output relay.

■ 00: Disabled

The terminal is not used.

■ 01: RUN contactor/STO output

■ 02: Brake contactor output

■ 03: Shorting door lock circuit relay output

The system relay output is used to control the close and release of rear-end contactors/relays.

■ 04: Fire emergency floor arrival signal feedback

In the fire emergency state, the system sends the feedback signal after the elevator arrives at the fire emergency floor and performs the door open limit. It is used for fire control.

■ 05: Door open output by door operator 1

■ 06: Door close output by door operator 1

■ 07: Door open output by door operator 2

■ 08: Door close output by door operator 2

These signals are used to control the open and close of door 1 or 2.

■ 09: Brake and RUN contactors (STO) healthy

When the brake and RUN contactors or STO operates properly (Err36/Err37 does not occur), the system sends the feedback signal for monitoring.

■ 10: Fault state output

This signal is output when the system is in the level-3, level-4, or level-5 fault state.

■ 11: Running state output

This signal is output when the control system is running.

■ 12: Shorting motor stator contactor output

When the shorting motor stator contactor is applied in synchronous motors, the terminal with this signal is used to control the close and release of the contactor.

■ 13: Reserved

■ 14: System healthy

The terminal with this signal has an output when the control system runs normally.

■ 15: Emergency buzzer control

The terminal with this signal has an output when the control system is in the emergency evacuation state, used to control the buzzer to tweet for prompting.

■ 16: High-voltage startup of brake

This signal is used for the brake that keeps the release state when the voltage is reduced. The terminal with this signal keeps output for 4s to release the brake at a high voltage, and then the voltage is reduced to keep the brake release state.

■ 17: Up signal output

This signal is output when the elevator runs up.

■ 18: Lighting/Fan output

It is used for the lighting/fan output, the same as the energy-saving control output of the CTB.

■ 19: Medical sterilization output

It is used to control the output of sterilizing equipment such as the ultraviolet sterilizing lamp. After the elevator stops running and both the lighting and the fan stop operating, the medical sterilization output starts.

■ 20: Non-door zone stop output

The terminal with this signal has an output when the elevator stops at the non-door zone.

■ 21: Electromagnetic lock control output

It is used to control the close and release of the electromagnetic lock in the case of manual door.

■ 22: Non-service state prompt

It is output when the elevator is in the non-service state and cannot respond to hall calls.

■ 23: Emergency evacuation completion output

It is output after the emergency evacuation by the ARD has been completed.

■ 25: Rope gripper reset

Conditions of the rope gripper reset output (only need to meet either of them):

- ① The system does not report Err65 and Err41 5s after the first-time power-on.
- ② The system reports Err67 but does not report Err65. In the inspection state, the safety circuit is disconnected first (Err41 is reported) and then restores the connection.

Requirements for the rope gripper reset output:

- ① The rope gripper reset output signal is active. Detect whether the rope gripper feedback signal is active.
 - a. If the rope gripper feedback signal remains active for 1s or above, reset Err67. The elevator restores the normal running after the rope gripper reset output signal becomes inactive.
 - b. If the rope gripper feedback signal is still inactive after 22s (the rope gripper action

time), the system continues to report Err67. The elevator cannot run after the rope gripper reset output signal becomes inactive.

- ② The elevator cannot open/close the doors and run when the rope gripper reset output signal is active.

Set Bit14 of F6-52 (Program function selection) to enable this function (disabled by default).

■ 26: Braking transistor short circuit output

It is output when the braking transistor has a short circuit fault.

■ 27: Alarm filter output

In the non-inspection state, there is an alarm filter output when the system is operating or at door open limit.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-32	Communication status	CANbus and Modbus communication status monitoring	-	-	●

F5-32 is used to monitor the status of CANbus communication with the CTB and Modbus communication with the HCB.

After you enter the F5-32 interface, the LEDs indicate the current HCB communication status. For the sake of description, the LEDs are numbered 5, 4, 3, 2, and 1 respectively from left to right. The segments are defined as follows:

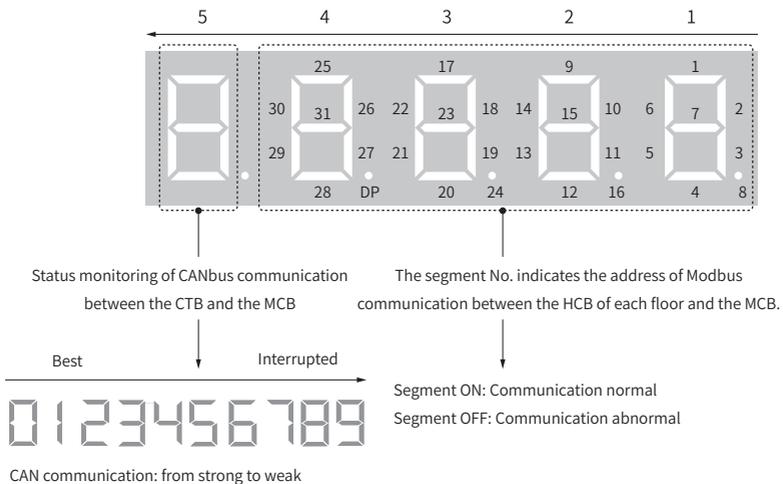


Figure 4-5 Communication status monitoring in F5-32

Example: Communication status displayed by the LEDs

For example, if the LEDs are as follows, it indicates that the Modbus communication of addresses 1, 5, 6, 7, 12, 15, 16, 18, 19, 21, 22, 23, 25, 26, and 27 is abnormal, and that of other addresses is normal. The rightmost number "3" represents the CAN communication, indicating that the CAN communication suffers interferences.

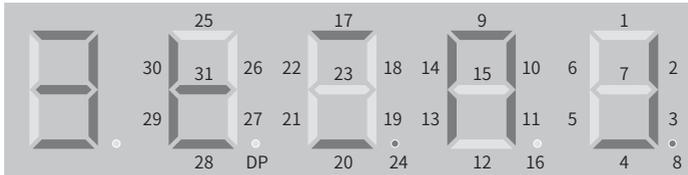


Figure 4-6 Example of communication status monitoring

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-33	Program control selection	0-65535	0	-	★

F5-33 is used to set the required elevator functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of F5-33 are described in the following table.

F5-33: Program Control Selection			
Bit	Function	Meaning	Default
Bit3	Elevator fire emergency requirements in Hong Kong	If it is effective, the fire emergency functions set in F6-44 (Fire emergency function selection) applicable to Hong Kong become enabled automatically.	0
Bit4	Arrival gong disabled at night	The arrival gong is disabled from 10:00 p.m. to 7:00 a.m.	0
Bit6	Door lock disconnected once during switchover from the inspection state to the normal state	The door lock is additionally disconnected once when the elevator switches from the inspection state to the normal state.	0
Bit7	Fault code not displayed on the keypad	The keypad does not flash to display the fault code.	0

F5-33: Program Control Selection			
Bit	Function	Meaning	Default
Bit8	Door open command canceled immediately when receiving the door open limit signal	The system immediately cancels the door open command after receiving the door open limit signal.	0
Bit9	Torque output holding at stop in the case of abnormal brake feedback	When the brake travel switch feedback is abnormal, the elevator stops in the door zone and the door keeps closed. The system maintains torque output as long as possible. After the system is overloaded, the torque output stops, and then the elevator may enter the shorting stator braking mode. Note: Use this function with caution.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-34	Terminal state display	Monitoring of I/O terminals on the MCB	-	-	●
F5-35	Terminal state display	Monitoring of I/O terminals on the CTB, CCB, and HCB	-	-	●

These parameters are used to monitor the state of all I/O terminals of the system.

As shown in the following figure, the LEDs for F5-34 and F5-35 are numbered 5, 4, 3, 2, and 1 respectively from left to right. The segments are defined as follows.

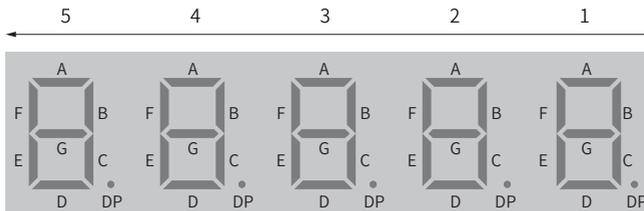


Figure 4-7 Terminal state monitoring

Parameter Description

F5-34			F5-35		
No.	Segment	Meaning	No.	Segment	Meaning
1	A	-	1	A	Light curtain 1
	B	Up Door zone signal		B	Light curtain 2
	C	Down Door zone signal		C	Door open limit 1
	D	Door zone signal		D	Door open limit 2
	E	Safety circuit feedback 1		E	Door close limit 1
	F	Door lock circuit feedback 1		F	Door close limit 2
	G	RUN contactor output feedback		G	Full-load signal
	DP	Brake contactor output feedback 1		DP	Overload signal
2	A	Inspection signal	2	A	Door open button
	B	Inspection up signal		B	Door close button
	C	Inspection down signal		C	Door open delay button
	D	Fire emergency signal		D	Direct travel ride signal
	E	Up limit signal		E	Attendant signal
	F	Down limit signal		F	Direction change signal
	G	Overload signal		G	Independent running signal
	DP	Full-load signal		DP	Firefighter operation signal
3	A	Up slow-down signal	3	A	Door open output 1
	B	Down slow-down signal		B	Door close output 1
	C	-		C	Door lock signal
	D	-		D	Door open output 2
	E	-		E	Door close output 2
	F	-		F	Door lock signal
	G	Shorting door lock circuit relay output feedback		G	Up arrival gong
	DP	Firefighter operation signal		DP	Down arrival gong

F5-34			F5-35		
No.	Segment	Meaning	No.	Segment	Meaning
4	A	Door operator 1 light curtain	4	A	Door open button display
	B	Door operator 2 light curtain		B	Door close button display
	C	Brake contactor output feedback 2		C	Door open delay button display
	D	UPS input		D	Non-door zone stop output
	E	Elevator lock input		E	Reserved
	F	Safety circuit feedback 2		F	Buzzer output
	G	Synchronous motor self-locking feedback		G	Reserved
	DP	Door lock circuit feedback 2		DP	Energy saving sign
5	A	Reserved	5	A	System light curtain state 1
	B	RUN contactor output		B	System light curtain state 2
	C	Brake contactor output		C	Hall call elevator lock input
	D	Shorting door lock circuit relay output		D	Hall call fire emergency input
	E	Fire emergency floor arrival signal		E	Full-load signal
	F	-		F	Overload signal
	G	-		G	-
	DP	-		DP	-

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-36	Load cell input selection	0-4	1	-	★

F5-36 is used to set the channel of the load cell signal. Set this parameter properly before using the load weighing device. The setting range is as follows:

- 0: Control cabinet digital input
- 1: CTB digital input
- 2: CTB analog input
- 4: Control cabinet analog input

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-37	X25 function selection	0: Disabled 4: Safety circuit signal 5: Door lock circuit signal 1 6: Door lock circuit signal 2 7: Door lock 1 shorting 8: Door lock 2 shorting	4	-	★
F5-38	X26 function selection		7	-	★
F5-39	X27 function selection		5	-	★
F5-40	X28 function selection		0	-	★

F5-37 to F5-40 are used to set the signals input to high-voltage detection terminals X25 to X28. The setting range is as follows:

- 0: Disabled
- 4: Safety circuit signal
- 5: Door lock circuit signal 1
- 6: Door lock circuit signal 2
- 7: Door lock 1 shorting
- 8: Door lock 2 shorting

Group F6: Basic Elevator Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-00	Top floor of the elevator	F6-01 to 40	9	-	★
F6-01	Bottom floor of the elevator	1 to F6-00	1	-	★

The two parameters are used to set the top floor and bottom floor of the elevator, determined by the number of installed leveling plates

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-02	Parking floor	F6-01 to F6-00	1	-	★

When the idle time of the elevator exceeds the value set in F9-00 (Maximum idle time before returning to main floor), the elevator returns to the parking floor set in F6-02 automatically.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-03	Fire emergency floor	F6-01 to F6-00	1	-	★

After entering the fire emergency floor return state, the elevator returns to the floor set in this parameter.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-04	Elevator lock floor	F6-01 to F6-00	1	-	★

After entering the elevator lock state, the elevator returns to the floor set in this parameter.

F6-04 is used to set the elevator lock floor. In the automatic running state, if the elevator lock switch activates or the set elevator lock time is reached, the elevator cancels all registered hall calls, responds to all registered car calls, returns to the elevator lock floor, stops the automatic running, and closes the lighting and fan in the car. After the door closes, the elevator cancels the hall call display.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-05	Service floor 1	0-65535 (floors 1 to 16)	65535	-	★
F6-06	Service floor 2	0-65535 (floors 17 to 32)	65535	-	★
F6-35	Service floor 3	0-65535 (floors 33 to 40)	65535	-	★

These parameters are used to set the service floors among floors 1 to 40.

Service floors 1, 2, and 3 correspond to floors 1 to 16, floors 17 to 32, and floors 33 to 40 respectively.

The following part takes F6-05 as an example to introduce how to set the service floors.

The 16 binary bits of this parameter respectively correspond to 16 floors. If a bit is set to 1, the elevator will respond to the calls of this floor. If this bit is set to 0, the elevator will not respond to the calls of this floor.

Parameter Description

Set the value of these bits one by one. Convert the binary value to a decimal value and then set the decimal using the LED operating panel, as shown in the following figure.

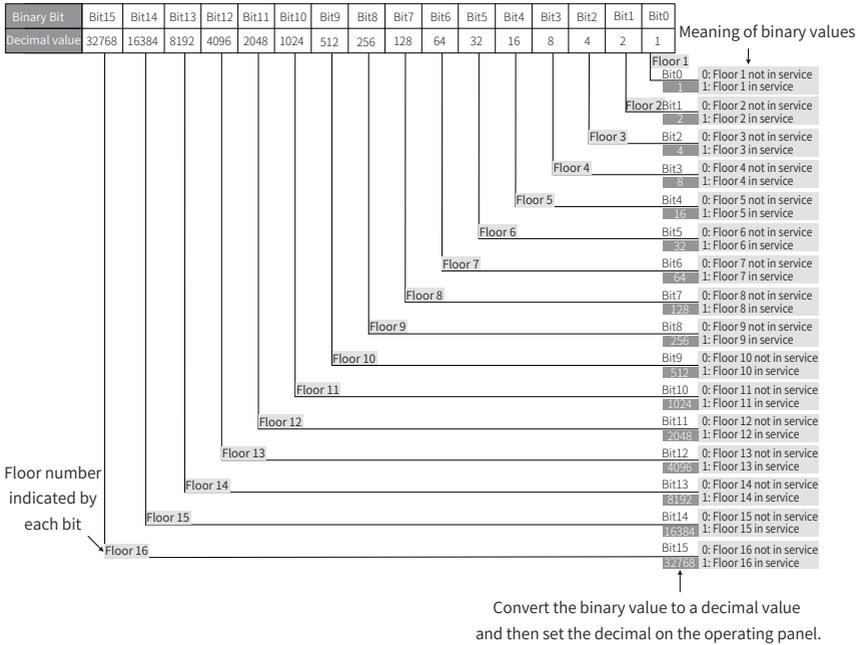
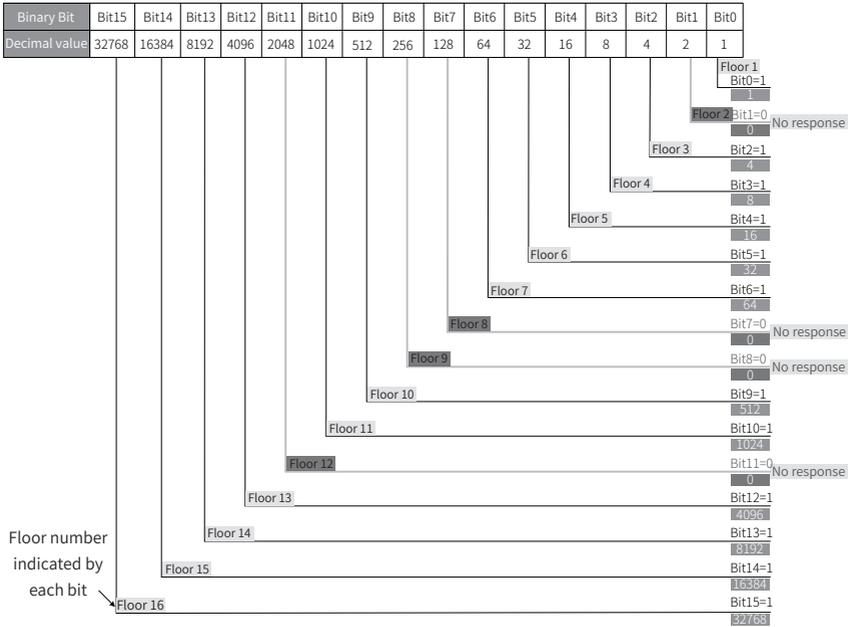


Figure 4-8 Conversion of binary values to decimal values

Example:

For a 16-floor elevator, if it does not respond to the calls of floors 2, 8, 9, and 12, you need to set Bit1, Bit7, Bit8, and Bit11 to 0 and other bits to 1, as shown in the following figure.



Convert the binary value to a decimal value and then set the decimal on the operating panel.

Convert the binary value to a decimal value:

$$1 + 4 + 8 + 16 + 32 + 64 + 512 + 1024 + 4096 + 8192 + 16384 + 32768 = 63101$$

Then, set F6-05 (Service floor 1) to 63101 using the LED operating panel.

Set F6-06 (Service floor 2) and F6-35 (Service floor 3) in the same way as F6-05 (Service floor 1).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-07	Number of elevators in group control	1-8	1	-	★
F6-08	Elevator No.	1-8	1	-	★

F6-07 and F6-08 are used to set the number of elevators and elevator No. in the parallel/group control mode.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-09	Program selection	Bit0: Dispersed waiting Bit2: Reserved Bit3: Parallel/Group control implemented at CAN2 Bit4: Reserved Bit6: Clearing the floor number and display direction in advance Bit8: Unidirectional hall call Bit9: Analog disconnection not detected Bit10: Canceling Err30 judgment at re-leveling Bit14: Time interval detection of safety circuit 2 and door lock circuit 2 (1.5s)	0	-	★



NOTE

◆ Bit0 to Bit4 of F6-09 are used to set different parallel/group control modes. For details, see ["5.9 Parallel/Group Control Solution" on Page 222](#).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-10	Leveling switch delay	10–50	14	ms	★

F6-10 indicates the time from the moment when the leveling switch activates to the moment when the leveling signal becomes active. You need not modify it.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-11	Elevator function selection	0–65535	8448	-	★

F6-11 is used to set the required elevator functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is

enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of F6-11 are described in the following table.

F6-11: Elevator Function Selection			
Bit	Function	Meaning	Default
Bit1	Disabling returning to main floor for verification	It is used to disable the function of returning to the main floor for verification in the case of excessive car position deviation.	0
Bit2	Canceling auto sequential arrange of hall call floor addresses to be displayed	If the display of a floor number in group FE is set to 1, the following floor numbers to be displayed are automatically arranged in the ascending order. This bit is used to cancel this function.	0
Bit5	Output current detection at startup of synchronous motor	The system detects the output current when the synchronous motor is started up. If the current is abnormal, the output will be locked and the operation will be forbidden.	0
Bit6	Reversing MCB lighting output	After this function is enabled, the output logic of the MCB lighting output parameter is reversed.	0
Bit7	Door open in the non-door zone in the inspection state	In the inspection state, you can open/close the elevator door by pressing the door open/close button when the elevator is in the non-door zone.	0
Bit8	Door opens and closes once after inspection state switches to normal state	The elevator door opens and closes once automatically after the system switches from the inspection state to the normal state at first-time power-on.	1
Bit10	Buzzer not tweeting upon re-leveling	The buzzer inside the car does not tweet upon re-leveling.	0
Bit11	Customized super-short floor function	The system cannot perform shaft auto-tuning if the floor height is less than 500 mm. In this case, enable this function to perform shaft auto-tuning.	0
Bit12	Automatic fault reset	The system automatically resets the faults once every other hour.	0

F6-11: Elevator Function Selection			
Bit	Function	Meaning	Default
Bit13	Err53 auto reset	When Err53 is reported, the system automatically resets the fault if the door open limit signal is active and the door lock is disconnected. A maximum of three times of auto reset is allowed.	1
Bit14	Floor display of super-short floor not reset by up slow-down signal	If this function is enabled, the up slow-down signal does not reset the floor display, but the down slow-down signal still resets the floor display (valid only when the customized super-short floor function is enabled).	0
Bit15	Floor display of super-short floor not reset by down slow-down signal	If this function is enabled, the down slow-down signal does not reset the floor display, but the up slow-down signal still resets the floor display (valid only when the customized super-short floor function is enabled).	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-12	VIP floor	0 to F6-00	0	-	★



NOTE

◆ F6-12 is used to set the VIP floor. For details, see ["5.6 VIP Running Function" on Page 213](#).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-13	Security floor	0 to F6-00	0	-	★

F6-13 is used to set the security floor.

When the security signal is active or it is during the night security period, the elevator runs to the security floor first every time, opens and closes the door once, and then moves to the destination floor.

Enter the security state in either of the following methods:

- ① Set FD-07 (HCB-JP1 input selection) or FD-08 (HCB-JP2 input selection) to 5. If the security signal is active, the elevator enters the security state.
- ② Set Bit5 of FE-32 (Elevator function selection 1) to 1 to enable the night security floor function. The elevator enters the security state from 10:00 p.m. to 6:00 a.m.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-14	Start time of down collective selective 1	00.00–23.59	00.00	HH.MM	☆
F6-15	End time of down collective selective 1	00.00–23.59	00.00	HH.MM	☆
F6-16	Start time of down collective selective 2	00.00–23.59	00.00	HH.MM	☆
F6-17	End time of down collective selective 2	00.00–23.59	00.00	HH.MM	☆

F6-14 to F6-17 define the time range of down collective selective 1 and down collective selective 2, within which the elevator responds only to down calls.

**NOTE**

- ◆ To enable the peak service of down collective selective, set Bit6 of FE-32 (Elevator function selection 1) to 1.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-18	Start time of time-based floor service 1	00.00–23.59	00.00	HH.MM	☆
F6-19	End time of time-based floor service 1	00.00–23.59	00.00	HH.MM	☆
F6-20	Service floor 1 of time-based floor service 1	0–65535	65535	-	☆
F6-21	Service floor 2 of time-based floor service 1	0–65535	65535	-	☆
F6-36	Service floor 3 of time-based floor service 1	0–65535	65535	-	☆
F6-22	Start time of time-based floor service 2	00.00–23.59	00.00	HH.MM	☆
F6-23	End time of time-based floor service 2	00.00–23.59	00.00	HH.MM	☆

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-24	Service floor 1 of time-based floor service 2	0-65535	65535	-	☆
F6-25	Service floor 2 of time-based floor service 2	0-65535	65535	-	☆
F6-37	Service floor 3 of time-based floor service 2	0-65535	65535	-	☆

These parameters set the time range and service floors of time-based floor service 1 and time-based floor service 2.

Service floors 1, 2, and 3 correspond to floors 1 to 16, floors 17 to 32, and floors 33 to 40 respectively. For example, during the period of time-based floor service 1 (defined in F6-18 and F6-19), the elevator responds only to the service floors defined in F6-20, F6-21, and F6-36 and ignores the service floors defined in F6-05 (Service floor 1), F6-06 (Service floor 2), and F6-35 (Service floor 3). The setting of time-based service floors is the same as that of service floors in F6-05 (Service floor 1).



NOTE

◆ To enable the time-based floor service, set Bit8 of FE-32 (Elevator function selection 1) to 1. Then, you can set the time range and service floors of time-based floor 1 and time-based floor service 2.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-26	Peak 1 start time for parallel/group control	00.00-23.59	00.00	HH.MM	☆
F6-27	Peak 1 end time for parallel/group control	00.00-23.59	00.00	HH.MM	☆
F6-28	Peak 1 floor for parallel/group control	F6-01 to F6-00	1	-	★
F6-29	Peak 2 start time for parallel/group control	00.00-23.59	00.00	HH.MM	☆

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-30	Peak 2 end time for parallel/group control	00.00–23.59	00.00	HH.MM	☆
F6-31	Peak 2 floor for parallel/group control	F6-01 to F6-00	1	-	★

F6-26, F6-27, and F6-28 are used to set peak service period 1 in the parallel/group control mode and the service floors during this period.

F6-29, F6-30, and F6-31 are used to set peak service period 2 in the parallel/group control mode and the service floors during this period.

During peak periods, if there are more than three car calls from the peak floor, the elevator enters the peak service state. In this case, all the car calls from the peak floor are active. The elevator returns to this floor when idle.

**NOTE**

- ◆ To enable the peak service for parallel/group control, set Bit7 of FE-32 (Elevator function selection 1) to 1. To disable the peak service for parallel/group control, set Bit7 of FE-32 (Elevator function selection 1) to 0.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-38	Elevator lock start time	00.00–23.59	00.00	HH.MM	☆
F6-39	Elevator lock end time	00.00–23.59	00.00	HH.MM	☆

F6-38 and F6-39 are used to set the elevator lock period, during which the elevator is in the lock state. The effect is the same as the elevator lock key switch.

**NOTE**

- ◆ The elevator can switch to the lock state in the following two ways:
- ◆ Set Bit5 of F6-40 (Program control selection 1) to 1 to enable the timed elevator lock function.
F6-38 (Elevator lock start time) and F6-39 (Elevator lock end time) are used to set the elevator lock period, during which the elevator is in the lock state.
- ◆ Set FD-07 (HCB-JP1 input selection) to 1 to activate the hall elevator lock key switch.

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-40	Program control selection 1	0-65535	0	-	★
F6-41	Program control selection 2	0-65535	0	-	★
F6-42	Program control selection 3	0-65535	0	-	★

These parameters are used to select program control functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

The functions defined by the binary bits of these parameters are described in the following tables.

F6-40: Program Control Selection 1			
Bit	Function	Meaning	Default
Bit0	Accessibility function selection	It is used to enable or disable the accessibility function.	0
Bit1	Software limit	The system considers that the up limit is reached when the up slow-down switch and down door zone (or down leveling) switch are active, but the up door zone (or up leveling) switch is inactive. The system considers that the down limit is reached when the down slow-down switch and up door zone (or up leveling) switch are active, but the down door zone (or down leveling) switch is inactive.	0
Bit2	JP16 input used as rear door selection (button)	JP16 is used for the rear door selection input. This function is enabled if FC-04 (Through-type door control selection) is set to 2. When JP16 has an input, the elevator opens only the rear door. When JP16 has no input, the elevator opens only the front door.	0
Bit3	JP16 input used as rear door open signal	JP16 is used for the input of the rear door open signal.	0

F6-40: Program Control Selection 1			
Bit	Function	Meaning	Default
Bit4	Opening only one door of through-type door under manual control	This function is enabled only in the through-type door control modes 3 and 4. In this case, only one door of the elevator opens every time, while the other door must stay in the door close limit state. Note: In group FD, the extended inputs include "Single/Double door selection". If this input is active in the through-type door control mode 3, both front and rear doors open when there is a car call.	0
Bit5	Timed elevator lock	Used to enable the timed elevator lock function. F6-38 (Elevator lock start time) and F6-39 (Elevator lock end time) are effective only when this function is enabled.	0
Bit6	Manual door	This function is used for elevators with manual door.	0
Bit7	Reserved	-	-
Bit8	Reserved	-	-
Bit9	Disabling reverse floor number clear	By default, the system clears all the current car calls every time the elevator changes the running direction. If this function is enabled, the floor numbers will not be cleared when the elevator direction changes.	0
Bit10	Displaying the next arriving floor number	The next floor to be arrived at is displayed during running.	0
Bit11	Responding to car calls first	The system responds to hall calls only after executing all car calls.	0
Bit12	Car call auxiliary command terminal used for accessibility function	Used to set the auxiliary command terminal CN8 on the CTB for the input of calls from the disabled. 0: Consistent with CN7 in the case of single door, and rear door in the case of double door 1: CN8 used as commands from the disabled	0

F6-40: Program Control Selection 1			
Bit	Function	Meaning	Default
Bit13	Duplicated command used as accessibility and rear door functions	Used to set the function of duplicated commands (active only when Bit14 is effective) 0: Rear door function 1: Accessibility function	0
Bit14	Car call command duplication	Car call command duplication: ◆ If this parameter is ineffective, CN7 is used for front door calls or ordinary calls, and CN8 is used for rear door calls or calls from the disabled. ◆ If this parameter is effective, inputs 1 to 16 of CN7 and CN8 are used for front door calls or ordinary calls, and inputs 17 to 32 are used for rear door calls or calls from the disabled.	0
Bit15	JP20 input used for switchover to rear door (switch)	JP20 is used for the input of switchover between the front door and the rear door.	0

F6-41: Program Control Selection 2			
Bit	Function	Meaning	Default
Bit0	Reserved	-	-
Bit1	Reserved	-	-
Bit2	Decelerates to stop upon active slow-down 1 switch in the inspection state	In the inspection state, the elevator decelerates to stop after the slow-down 1 switch at the terminal floor operates.	0
Bit3	Reserved	-	-
Bit4	Buzzer tweeting when door open delay time is reached	The buzzer tweets when the door open delay time set in FB-14 (Door open holding delay time) is reached.	0
Bit5	Reserved	-	-
Bit6	Door open delay cancellation	The door open delay is canceled when the door open delay button is pressed again.	0

F6-41: Program Control Selection 2			
Bit	Function	Meaning	Default
Bit7	Reserved	-	-
Bit8	Elevator lock at door open	In the elevator lock state, the elevator keeps the door open at the elevator lock floor.	0
Bit9	Display available at elevator lock	In the elevator lock state, the hall calls are displayed normally.	0
Bit10	Elevator lock in the attendant state	The elevator is locked properly in the attendant state.	0
Bit11	Flashing at arrival	The car display board flashes when the elevator arrives at a destination floor. The flashing advance time is set in F6-47 (Flashing advance time).	0
Bit12	Door re-open upon active door open delay	The door re-opens if the door open delay input is active during door close.	0
Bit13	Door re-open upon active car call at current floor	The door re-opens if the car call at the current floor is active during door close.	0

F6-42: Program Control Selection 3			
Bit	Function	Meaning	Default
Bit0	Reserved	-	-
Bit1	Canceling door open/close command at a delay after door open/close limit	If this function is enabled, the door open/close command is canceled at a delay of 1s after door open/close limit.	0
Bit2	Door lock state not judged at door close output	In normal conditions, the system determines that the door is completely closed only when the door close limit signal is active and the door lock is applied. If this function is enabled, the system does not judge the door lock state.	0
Bit3	Door close output during running	The door close command is output continuously during the elevator running.	0

F6-42: Program Control Selection 3			
Bit	Function	Meaning	Default
Bit4	Returning to terminal floor for verification at first-time power-on	If this function is enabled, the elevator runs to the bottom floor for verification at first-time power-on.	0
Bit5	Clearing calls immediately at elevator lock	0: After the elevator lock signal becomes active, the elevator clears all hall calls, responds to the car calls, and enters the lock state. 1: After the elevator lock signal becomes active, the elevator clears all calls and enters the lock state.	0
Bit6	Electromagnetic lock NC output	After the NC output is selected, the electromagnetic lock signal is not output during door open and is output during door close.	0
Bit7	Canceling Err50 detection	When Bit7 is set to 1, fault Err50 is not detected.	0
Bit8	Canceling door open/close limit detection	When this function is enabled, the fault detection of the door open/close limit signal is canceled.	0
Bit9	Canceling fault subcode scrolling display	When this function is enabled, the keypad will not display the fault subcode in a scrolling manner.	0
Bit10	Door open energy saving	When the elevator is waiting with door open, the system closes the lighting and fan after the time set in F9-01 (Car energy saving time) passes by in the door open limit state.	0
Bit11	Independent switch exiting from parallel control	When this function is enabled, individual elevators will exit the parallel control and run independently in the normal mode. When this function is disabled, the elevators will exit the parallel control and enter the VIP running mode.	1

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-43	Attendant function selection	0-65535	128	-	★

F6-43 is used to select attendant-related functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled. You can view and set the functions using the bits.

The functions defined by the binary bits of F6-43 are described in the following table.

F6-43: Attendant Function Selection			
Bit	Function	Meaning	Default
Bit0	Calls canceled after entering the attendant state	All hall calls and car calls are canceled after the elevator enters the attendant state for the first time.	0
Bit1	Not responding to hall calls	The car display board flashes to prompt the floors with a hall call, but the system does not respond to these hall calls.	0
Bit2	Attendant/Automatic state switchover	If this function is enabled, the setting of F5-00 (Attendant/Automatic state switchover time) is effective.	0
Bit3	Door close at jog	The elevator door closes after the attendant presses the door close button once.	0
Bit4	Automatic door close	It is the same as the normal state. After the door open holding time is reached, the door closes automatically.	0
Bit5	Buzzer tweeting at intervals in the attendant state	When there is a registered hall call, the buzzer tweets for 2.5s at intervals.	0
Bit6	Continuous buzzer tweeting in the attendant state	When there is a registered hall call, the buzzer tweets continuously until there is a registered car call at the hall call floor.	0
Bit7	Car call button flashing to prompt	When the hall call input signal is active, the car call button for the corresponding floor flashes to give a prompt.	1

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-44	Fire emergency function selection	0-65535	16456	-	★

F6-44 is used to select the fire emergency-related functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of F6-44 are described in the following table.

F6-44: Fire Emergency Function Selection			
Bit	Function	Meaning	Default
Bit0 to Bit2	Reserved	-	-
Bit3	Arrival gong output in the inspection or fire emergency state	The arrival gong signal is output in the inspection or fire emergency state.	1
Bit4	Multiple car calls registered in the fire emergency state	Multiple car calls can be registered in the fire emergency state. If this function is disabled, only one car call can be registered.	0
Bit5	Retentive at power failure in the fire emergency state	In the fire emergency state, the current system and car states will be memorized at power failure and be resumed at the next power-on.	0
Bit6	Door close by holding down the door close button	In the fire emergency state, the door close process can be completed only by holding down the door close button until the door close limit is reached. Otherwise, it will automatically switch to the door open state.	1
Bit7	Reserved	-	-
Bit8	Door close at car call registration	The elevator door closes if a car call is registered.	0
Bit9	Hall call floors displayed in the fire emergency state	Hall call floors are displayed in the fire emergency state.	0

F6-44: Fire Emergency Function Selection			
Bit	Function	Meaning	Default
Bit10	Forced running in the firefighter state	JP22 is used for forced running input in the firefighter state. In the firefighter operation state, when the JP22 input switch and the door close button are pressed simultaneously, the buzzer tweets and the system outputs the door close signal. If the door lock is not applied within 10s, the system outputs the shorting door lock circuit relay signal and the elevator starts running.	0
Bit11	Exiting the firefighter state upon arrival at fire emergency floor	The system exits the firefighter state only after the elevator arrives at the fire emergency floor.	0
Bit12	Not clearing car calls at reverse door open in the firefighter state	In the firefighter state, the car calls that have been registered are not cleared at reverse door open.	0
Bit13	Reserved	-	-
Bit14	Door open by holding down the door open button	In the fire emergency state, the door open process can be completed only by holding down the door open button until the door open limit is reached. Otherwise, it will automatically switch to door close state.	1
Bit15	Automatic door open at fire emergency floor	The door opens automatically after the elevator arrives at the fire emergency floor.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-45	Emergency evacuation function selection	0-65535	0	-	★

F6-45 is used to select emergency evacuation-related functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

When Bit2 of F6-45 is set to 1, the elevator stops at the floor set in F6-49 (Emergency evacuation parking floor).

When Bit2 of F6-45 is set to 0, the elevator stops at the nearest floor.

The functions defined by the binary bits of F6-45 are described in the following table.

F6-45: Emergency Evacuation Function Selection										
Bit	Function	Meaning						Default		
Bit0		0		0		1		1	For positive drive elevators, the default emergency evacuation is downwards (suitable for asynchronous motor applications where the motor stator is not shorted after the brake is released).	0
Bit1	Direction determining mode	0	Automatic computation of the direction (The elevator runs in the heavy-load direction. Select this function in the no-load-cell mode.)	1	Direction of the nearest landing floor	0	0 heavy-load direction. Select this function in the load-cell mode.)	1		0
Bit2	Stop at the emergency evacuation parking floor	During emergency evacuation, the elevator stops at the floor set in F6-49 (must be a non-zero value and a service floor). Otherwise, the elevator stops at the nearest floor.							0	
Bit3	Door open upon one leveling signal	When the elevator arrives at the destination floor during emergency evacuation, it decelerates to stop if there is one active leveling signal.							0	
Bit4	Startup compensation	Valid for no-load-cell startup during emergency evacuation							0	
Bit5 to Bit7	Reserved	-							0	
Bit8	Emergency evacuation running time protection	When the emergency evacuation lasts for more than 50s, Err33 is reported. In this case, the switchover from shorting stator braking (for PMSM) to controller drive that is set through time cannot be performed.							0	

F6-45: Emergency Evacuation Function Selection			
Bit	Function	Meaning	Default
Bit9	Reserved	-	0
Bit10	Buzzer prompt	The buzzer tweets at intervals to give prompts during emergency evacuation.	0
Bit11	Reserved	-	0
Bit12	Shorting stator braking mode (for PMSM) switched to controller drive	If the elevator speed is still lower than the value set in F6-48 (Emergency evacuation switching speed) after the elevator runs in the shorting stator braking mode (for PMSM) for 10s, the elevator will switch to controller drive.	0
Bit14	Emergency evacuation exit mode	0	The system exits emergency evacuation when receiving the door open limit signal from the elevator that arrives at the destination floor.
		1	The system exits emergency evacuation when receiving the door close limit signal from the elevator that arrives at the destination floor.
Bit15	Shorting stator braking (for PMSM) function	The parameters related to shorting stator braking mode (for PMSM) are effective only when this function is enabled.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-46	VIP function selection	0-65535	0	-	★

F6-46 is used to select VIP-related functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of F6-46 are described in the following table.

F6-46: VIP Function Selection			
Bit	Function	Meaning	Default
Bit0	VIP enabled by hall call at VIP floor	The elevator enters the VIP state when there is a hall call at the VIP floor.	0

F6-46: VIP Function Selection			
Bit	Function	Meaning	Default
Bit1	VIP enabled by terminal	The elevator enters the VIP state when the terminal for VIP hall calls becomes ON.	0
Bit2 to Bit7	Reserved	-	-
Bit8	Number of VIP car calls limited	If this function is enabled, only one car call can be selected each time in the VIP state.	0



NOTE

◆ For more details about the VIP function, see ["5.6 VIP Running Function" on Page 213.](#)

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-47	Flashing advance time	0.0-15.0	1.0	s	☆

F6-47 is used to set the flashing advance time of arrival indicator when the elevator arrives at the floor required by the car call.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-48	Emergency evacuation switching speed	0.010-0.630	0.010	m/s	★

F6-48 is used to set the switching speed when the elevator switches from shorting stator braking (for PMSM) to controller drive through speed setting.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-49	Emergency evacuation parking floor	0 to F6-00	0	s	★

When Bit2 of F6-45 (Emergency evacuation function selection) is set to 1, the elevator stops at the floor set in F6-49 during emergency evacuation.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-50	Floor offset in parallel control	0-40	0	-	★

F6-50 is used when the bottom floors of two elevators in parallel control are inconsistent. When this function is enabled, the parallel control can be implemented directly. You need not adjust the top and bottom floors of the two elevators and perform shaft auto-tuning again.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-51	Quiescent current	0.00-655.00	0	A	★

F6-51 is used to set the quiescent current during the certification of static elements.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-52	Program function selection	0-65535	0	-	★

F6-52 is used to select the program functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of F6-52 are described in the following table.

F6-52: Program Function Selection			
Bit	Function	Meaning	Default
Bit1	MCTC-SCB support for CAN communication	Enables CAN communication between the MCB and the communication-type MCTC-SCB (specific to MCTC-SCB-A4/D4).	1
Bit2	CAN communication supported by the active front end (AFE)	Enables the AFE communication function.	0
Bit6	Leveling signal input/output through CAN communication	Enables the transmission of up and down leveling signals from the CTB to the MCB through CAN communication.	0
Bit7	Door operator over-temperature detection	Enables the door operator over-temperature detection function.	0

F6-52: Program Function Selection			
Bit	Function	Meaning	Default
Bit14	Rope gripper reset	Enables the rope gripper reset.	0

Group F7: Intelligent Commissioning Parameters

The parameters in group F7 are provided to facilitate the elevator commissioning.

Before the running test at normal speed, make sure that the shaft is unimpeded and the parameters have been set properly. Let the elevator run slowly to the middle floor of the entire travel to prevent the running direction error. Then, run the single-floor call and enter the multi-floor call to perform trial running. After the commissioning is complete, check whether the parameters in this group are set properly.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-00	Car call floor registered	0 to F6-00	0	-	☆
F7-01	Up hall call floor registered	0 to F6-00	0	-	☆
F7-02	Down hall call floor registered	0 to F6-00	0	-	☆

The three parameters are used to set the destination floors during commissioning or repair. F7-00, F7-01, and F7-02 are used as the car call button, hall call up button, and hall call down button, respectively. After the test parameters are set, the calls remain active until the parameters are changed to 0 or the system power is completely off once.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-03	Random running times	0-60000	0	-	☆

The SLIM LINE provides a random automatic running function. F7-03 is used to set the times of automatic running to the random destination floor. If F7-03 is greater than 60000, the system keeps random automatic running until you set F7-03 to 0. You can set the time interval between two times of random running in F7-08 (Random running interval).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-04	Hall call forbidden	0: Disabled 1: Enabled	0	-	☆

F7-04 is used to forbid the hall calls.

When it is set to 0, the hall calls are allowed. When it is set to 1, the hall calls are forbidden.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-05	Door open forbidden	0: Disabled 1: Enabled	0	-	☆

F7-05 is used to forbid the door open.

When it is set to 0, the door open is allowed. When it is set to 1, the door open is forbidden.



NOTE

- ◆ Continuous running of the elevator without opening the door accelerates the over-temperature of the control cabinet module. Long-time use in such a mode may cause over-temperature protection. Therefore, use this function with caution.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-06	Overload function forbidden	0: Disabled 1: Enabled	0	-	☆

F7-06 is used to enable/disable the overload function.

When it is set to 0, the overload function is disabled. When it is set to 1, the overload function is enabled.



NOTE

- ◆ The overload function can be used only for the heavy-load test. Once the test is complete, disable this function immediately.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-07	Limit function forbidden	0: Disabled 1: Enabled	0	-	☆

F7-07 is used to enable/disable the limit switches.

When it is set to 0, the limit switches are enabled. When it is set to 1, the limit switches are disabled.



◆ The limit switches can be disabled only in the final limit switch test. Use this function with caution.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-08	Random running interval	0-1000	0	s	☆

F7-08 is used to set the time interval between two times of random running.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-09	Braking force detection result	0: Meaningless 1: Passed 2: Failed	0	-	●
F7-10	Countdown for braking force detection period	0-1440	1440	min	★

F7-09 indicates the result of braking force detection.

0: Braking force detection has not been performed yet.

1: Braking force detection passed.

2: Braking force detection failed and Err66 is reported. The brake must be inspected after any fault and the fault can be reset only after the braking force detection passes.

F7-10 is the countdown for the braking force detection period.

The initial value is 1440 minutes (24 hours). The braking force detection is automatically triggered if the system receives no call within 12 h (the stop time exceeds the energy saving time). Twenty-three hours and 55 minutes after the detection, the system clears car calls without any response to hall calls, the door automatically closes, and the buzzer tweets. After 30s tweeting, the system forcibly performs braking force detection once.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-13	Balance coefficient	00.00-99.99	0	%	●

Group F8: Enhanced Function Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-00	Car load ratio during load cell auto-tuning	0-100	0	%	★

Perform the load cell auto-tuning as follows:

- ① Set F8-01 (Pre-torque selection) to 0 and F5-36 (Load cell input selection) to 2 or 3 so that the system allows the load cell auto-tuning.
- ② Stop the elevator at any floor, with the car in the no-load state. Set F8-00 to 0 and press  key on the LED operating panel to confirm.
- ③ Put N% of the rated load in the car. Then set F8-00 to N and press  key on the LED operating panel to confirm. For example, if you put a 500 kg load in the elevator with a rated load of 1000 kg, set F8-00 to 50.

After the load cell auto-tuning is complete, the corresponding no-load and full-load data will be recorded in F8-06 (No-load measured by load cell) and F8-07 (Full-load measured by load cell) respectively. You can also manually input the data according to the actual situation.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-01	Pre-torque selection	0-3	2	-	★
F8-02	Pre-torque offset	0.0-100.0	50.0	%	★

F8-01 is used to set the pre-torque compensation mode at the startup of the elevator. The values are as follows:

0: Pre-torque disabled

Load cell auto-tuning is allowed.

1: Load cell pre-torque compensation

With a load cell, the system implements the pre-torque compensation.

2: Automatic pre-torque compensation

The system automatically adjusts the compensated torque at startup without a load cell.

3: Load cell pre-torque compensation and automatic pre-torque compensation both enabled

The system automatically adjusts the compensated torque at startup and corrects it together with the load cell to achieve better startup effects on some occasions.

If F8-01 is set to 1, the system outputs a torque matching the load in advance to ensure the riding comfort at startup. The output torque is limited by the torque upper limit (F2-08). When the load torque is greater than the set torque upper limit, the output torque of the system is the torque upper limit.

Parameter Description

F8-02 is used to set the pre-torque offset.

It is the balance coefficient of the elevator, indicating the ratio of the car load to the rated load when the counterweight and the car weight are balanced.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-03	Drive gain	0.00–2.00	0.60	-	★
F8-04	Brake gain	0.00–2.00	0.60	-	★

F8-03 and F8-04 are used to set the pre-torque gain when the elevator runs on the drive or brake sides.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-05	Current car load	0–1023	0	-	●

F8-05 is a read-only parameter indicating the car load. With the value sampled using an analog load cell, it is used to judge the overload or full-load, or compute the torque current for load cell pre-torque compensation.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-06	No-load measured by load cell	0–1023	0	-	★
F8-07	Full-load measured by load cell	0–1023	0	-	★

F8-06 and F8-07 record the car load in the no-load and full-load states respectively. They are AD sampling values.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-08	Anti-nuisance function	0: Disabled 1: Nuisance judged by load cell 2: Nuisance judged by light curtain 4: Nuisance judged by light-load signal	0	-	☆

F8-08 is used to set the criteria for judging whether a nuisance exists. The values are as follows:

0: Disabled

1: Nuisance judged by load cell

A load cell is required. The system judges whether a nuisance exists by comparing the load cell data and the number of car calls.

2: Nuisance judged by light curtain

The system determines that a nuisance exists when the light curtain does not operate after the elevator stops at arrival for three consecutive times.

4: Nuisance judged by light-load signal

If the light-load signal is active, the system determines that a nuisance exists when the number of car calls is greater than a certain value.

When the system determines that a nuisance exists, it cancels all car calls. In this case, car calls need to be registered again.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-09	Emergency evacuation speed at power failure	0.020 to F3-11	0.050	m/s	★
F8-10	Emergency evacuation power supply at power failure	0-2	2	-	★

F8-09 is used to set the elevator speed for emergency evacuation operation at power failure.

F8-10 is used to set the power mode for emergency evacuation operation at power failure.

The setting range of F8-10 is as follows:

0: Motor not running

1: Motor driven by ARD

2: Motor driven by 48 V power supply



NOTE

- ◆ For more details about the elevator speed and power mode for emergency evacuation operation at power failure, see "[5.8.1 Emergency Evacuation Using ARD at Power Failure](#)" on Page 219.

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-11	Holding time of zero-speed torque current upon brake close	0.200–1.500	0.600	s	★

F8-11 is used to set the time during which the system keeps the zero-speed torque current output at stop.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-12	Fire emergency floor 2	0 to F6-00	0	-	★

F8-12 is used to set fire emergency floor 2. After the fire emergency floor switchover signal set on the MCB is active, the elevator enters the fire emergency state and returns to the floor set in this parameter.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-14	Hall call communication setting	Bit0: Baud rate of hall call communication Bit4: Energy saving of hall call communication Bit9: Shimmering control of HCB buttons	1	-	☆
F8-15	CAN communication setting	Bit4: Voice calls supported Bit10: Door open/close button not controlled by the IC card	0	-	☆
F8-16	Start address of hall call auxiliary command	0–40	0	-	★
F8-17	Hall call address check	0–1	0	-	★

When Bit0 of F8-14 is set to 0, the communication baud rate between the MCB and the HCB is 9600 bps.

When Bit0 of F8-14 is set to 1, the communication baud rate between the MCB and the HCB is 38400 bps.

The system automatically determines the communication baud rate. Generally, you need not set this parameter.

F8-16 is used to set the HCB start address for the rear door of through-type door.

HCb address of the rear door = HCB address of the front door at the same floor + F8-16

If F8-17 is set to 1, the HCB displays the address set by itself rather than the current floor information, convenient for the inspection in the case of wrong floor address setting. This function is active only when the communication baud rate is 38400 bps.

Group F9: Time Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F9-00	Maximum idle time before returning to main floor	0-240	10	min	☆

F9-00 is used to set the maximum idle time of the elevator before returning to the main floor. When the idle time of the elevator exceeds the value of this parameter, the elevator returns to the main floor.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F9-01	Car energy saving time	0-240	2	min	☆

F9-01 is used to set the time that the fan and lighting in the car stay ON before being turned off automatically.

If there is no running command in the automatic running state, the system automatically cuts off the power supplies of the fan and lighting after the time set in this parameter.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F9-02	Running time protection	0-45	45	s	★

This parameter is used to set the running time limit for the traction machine.

In the normal running state, the system performs protection if the continuous running time in the same direction between two adjacent floors exceeds the setting of this parameter but no

Parameter Description

leveling signal is received. This parameter is used for timeout protection when the steel rope slips on the traction sheave.

If this parameter is set to a value smaller than 3s, it becomes ineffective.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F9-03	Clock: year	2000-2100	Current time	YYYY	☆
F9-04	Clock: month	01-12	Current time	MM	☆
F9-05	Clock: day	1-31	Current time	DD	☆
F9-06	Clock: hour	0-23	Current time	HH	☆
F9-07	Clock: minute	0-59	Current time	MM	☆

These parameters are used to set the current date and time of the system.

They indicate the internal time of the control system. Timekeeping is supported at power failure. You need to set the current system time correctly so that the functions related to the time can be implemented.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F9-09	Accumulative running time	0-65535	0	h	●
F9-11	High byte of running times	0-9999	0	-	●
F9-12	Low byte of running times	0-9999	0	-	●

These parameters are used to view the actual running time and running times of the elevator.

Running times of the elevator = F9-11 x 10000 + F9-12.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F9-13	Maintenance notification period	0-99	0	day	☆

It is the forced maintenance notification function.

When F9-13 is set to a non-zero value, this function is enabled and the system starts to count the days. If there is no power-off operation during the counting and the counted days reaches the value set in this parameter, the elevator enters the parking state and the system reports Err08 to notify that the elevator must be maintained. In this case, the elevator cannot run. The maintenance personnel needs to power off and maintain the elevator, after which the system restores F9-13 to 0 and starts counting again.

When F9-13 is set to 0, this function is disabled.

Group FA: Keypad Setting Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-00	Keypad display selection	0-3	3	-	☆

The SLIM LINE has three LEDs on the MCB. You can set this parameter to change the LED display. The values are as follows:

- 0: Negative display of physical floor
- 1: Positive display of physical floor
- 2: Negative display of hall call floor
- 3: Positive display of hall call floor

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-01	Parameter display during running	1-65535	65535	-	☆

FA-01 is used to set the state parameters displayed on the LED operating panel when the elevator is running.

A total of five parameters corresponding to five binary bits of FA-01 can be displayed during running. Perform switchover between parameters using the  key.

Each parameter is controlled by a binary bit. If a bit is set to 1, the parameter indicated by this bit is displayed. If this bit is set to 0, the parameter is not displayed.

You can modify this parameter according to your operating habit.

The running parameters corresponding to five binary bits of FA-01 are listed in the following table.

Bit	Parameter Name	Default
Bit0	Running speed	1
Bit1	Bus voltage	1
Bit2	Output voltage	1
Bit3	Output current	1
Bit4	Output frequency	1

In the running state, the parameters selected in FA-01 are displayed in decimal.

Press  key on the LED operating panel to view the parameter indicated by each bit circularly.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-02	Parameter display at stop	1-65535	65535	-	☆

FA-02 is used to set the state parameters displayed on the LED operating panel when the elevator stops.

A total of 16 parameters corresponding to the 16 binary bits of FA-02 can be displayed at stop.

They are listed in the following table.

Bit	Parameter Name	Default	Bit	Parameter Name	Default
Bit0	Rated speed	1	Bit8	Deceleration distance at rated speed	1
Bit1	Bus voltage	1	Bit9	CTB input state	1
Bit2	Low byte of input terminals	1	Bit10	CTB output state	1
Bit3	High byte of input terminals	1	Bit11	System state	1
Bit4	Output terminal	1	Bit12	Reserved	1
Bit5	Current floor	1	Bit13	Reserved	1
Bit6	Current position	1	Bit14	Reserved	1
Bit7	Car load	1	Bit15	Reserved	1

The method of setting and viewing FA-02 is similar to that of FA-01 (Parameter display during running).

The running/stop parameters are important references for technicians to perform commissioning on site. The detailed information of these parameters is as follows.

Running speed: Indicates the actual running speed of the elevator, whose maximum value is F0-03 (Maximum running speed). The unit is m/s.

Rated speed: Indicates the allowable maximum running speed of the elevator in the current state. The unit is m/s.

Bus voltage: Indicates the DC bus voltage of the SLIM LINE system. The unit is V.

Output voltage: Indicates the RMS value of the equivalent voltage of the PWM wave output by the SLIM LINE system. The unit is V.

Output current: Indicates the RMS value of the actual current when the SLIM LINE system drives the motor to run. The unit is A.

Output frequency: Indicates the actual motor frequency during running. It has a fixed corresponding relationship with the running speed. The unit is Hz.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-03	Current encoder angle	0.0-359.9	0.0	°	●

FA-03 displays the real-time encoder angle. It cannot be modified.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-05	MCB software version	0-65535	0	-	●
FA-06	Driver board software version	0-65535	0	-	●

FA-05 and FA-06 are used to view the software version of the MCB and driver board respectively.

Taking the MCB as an example, the following section describes how to view the software version:

Example:

MCB version: V16.00-F15.00-L01.00

When you view FA-05, the LED operating panel displays the customer No. "F15.00" first. After 3s, it displays the major and minor version information "16.00".

Press  key, and the LED operating panel displays the customized and process version

information "L01.00".

When you view FA-06, the LED operating panel displays "32.126" if the driver board version is V32.126-L01.06.

Press  key, and the LED operating panel displays the sub-version "L01.06".

The method of viewing FA-06 is similar to that of FA-05.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-07	Heatsink temperature	0-100	0	°C	●

FA-07 displays the current temperature of the heatsink.

Normally, the heatsink temperature is below 40° C. When the heatsink temperature is too high, the system automatically lowers the carrier frequency to reduce heating. When the heatsink temperature rises to a threshold, the system reports the heatsink over-temperature fault and stops running.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-11	Pre-torque current	0.0-200.0	0	%	●

FA-11 displays the ratio of pre-torque current to the rated current (positive/negative display, indicating driving or braking).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-12	Logic information	0-65535	0	-	●

FA-12 displays the elevator and door states.

As shown in the following figure, five LEDs are numbered 1, 2, 3, 4, and 5 from right to left. LED 1 indicates door 1 state, LEDs 2 and 3 are reserved, and LEDs 4 and 5 indicate the elevator state.

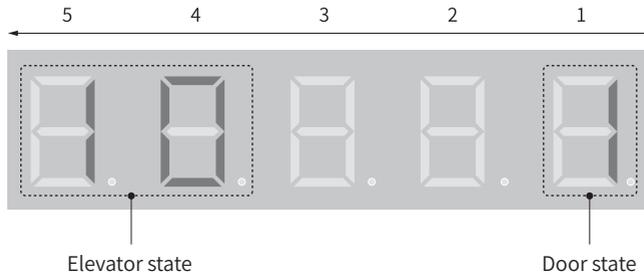


Figure 4-9 State display diagram

The following table shows the specific information indicated by each number:

5		4		3	2	1	
Elevator State				Reserved	Reserved	Door 1 State	
00	Inspection state	08	Elevator lock	Reserved	Reserved	0	Waiting state
01	Shaft auto-tuning	09	Idle elevator parking			1	Door open state
02	Micro-leveling	10	Low-speed re-leveling			2	Door open limit
03	Returning to fire emergency floor	11	Emergency evacuation operation			3	Door close state
04	Firefighter operation	12	Motor auto-tuning			4	Door close limit
05	Fault state	13	Keypad control			5	Running state
06	Attendant	14	Main floor verification			-	-
07	Automatic running	15	VIP state			-	-

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-13	Curve information	0-65535	0	-	●

FA-13 displays the system running curve information. As shown in the following table, LEDs 4 and 5 indicate the running curve information, and LEDs 1 and 2 indicate the running timing information.

Parameter Description

5	4	3	2	1
Curve Information		No display	Timing Information	
00	Standby state	-	00	Stop state
01	Startup speed segment		01	Shorting door lock circuit relay output
02, 03	Acceleration start segment		02	Output of shorting motor stator and RUN contactors
04	Linear acceleration segment		03	Zero-speed torque current holding
05, 06, 07	Acceleration end segment		04	Brake contactor output
08	Steady-speed running segment		05	Curve running
09, 10, 11	Deceleration start segment		06	Stop zero-speed
12	Linear deceleration segment		07	Brake contactor disconnected
13, 14	Deceleration end segment		08	Stop timing
15	Curve stop		-	-

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-14	Speed reference	0.000–4.000	0	m/s	●
FA-15	Feedback speed	0.000–4.000	0	m/s	●
FA-16	Bus voltage	0–999.9	0	V	●
FA-17	Current position	0.00–300.00	0	m	●
FA-18	Output current	0–999.9	0	A	●
FA-19	Output frequency	0.00–99.99	0	Hz	●
FA-20	Torque current	0–999.9	0	A	●
FA-21	Output voltage	0–999.9	0	V	●
FA-22	Output torque	0–100	0	%	●
FA-23	Output power	0.00–99.99	0	kW	●

FA-14 to FA-23 display the current performance states of the system (the output torque and output power support positive/negative display).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-24	Communication interference	0-65535	0	-	●

FA-24 displays the current communication qualities of the system, as described in the following table.

5		4		3		2		1	
SPI Communication Quality of the Inverter		SPI Communication Quality of the Rectifier		CAN2 Communication Quality		Modbus Communication Instruction		CAN1 Communication Quality	
0	High	0	High	0	High	0	High	0	High
↓	↑	↓	↑	↓	↑	↓	↑	↓	↑
9	Interrupted	9	Interrupted	9	Interrupted	9	Interrupted	9	Interrupted

0 to 9 indicate the communication quality, where a larger value indicates a stronger interference and lower communication quality.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-26	Input state 1	0-65535	0	-	●
FA-27	Input state 2	0-65535	0	-	●
FA-28	Input state 3	0-65535	0	-	●
FA-29	Input state 4	0-65535	0	-	●
FA-30	Input state 5	0-65535	0	-	●
FA-31	Output state 1	0-65535	0	-	●
FA-32	Output state 2	0-65535	0	-	●

FA-26 to FA-32 display the input and output states of the system.

■ Description of input state 1 (FA-26) display

As shown in the following figure, five LEDs are numbered 1, 2, 3, 4, and 5 from right to left. LEDs 5 and 4 indicate the function code of an input/output terminal. LED 3 indicates the state of this function signal (0: inactive; 1: active). LEDs 1 and 2 display the overall state of the 16 functions included in this parameter using 16 LED segments.

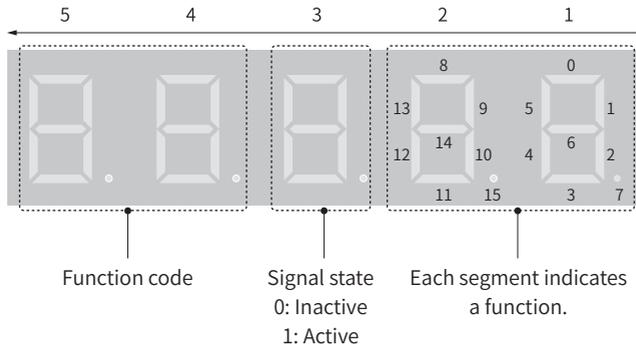


Figure 4-10 Input state 1 display

No.	Function	No.	Function	No.	Function	No.	Function
0	Reserved	4	Safety circuit feedback	8	Inspection signal	12	Up limit signal
1	Up door zone signal	5	Door lock circuit feedback	9	Inspection up signal	13	Down limit signal
2	Down door zone signal	6	RUN contactor feedback	10	Inspection down signal	14	Overload signal
3	Door zone signal	7	Brake contactor feedback	11	Fire emergency signal	15	Full-load signal

Example:

As shown in the following figure, LEDs 3, 4, and 5 together indicate that function 10 (Inspection down signal) is active (1). Besides, LEDs 1 and 2 indicate that functions 4 (Safety circuit feedback), 5 (Door lock circuit feedback), 6 (RUN contactor feedback), 7 (Brake contactor feedback), and 8 (Inspection signal) are also active.

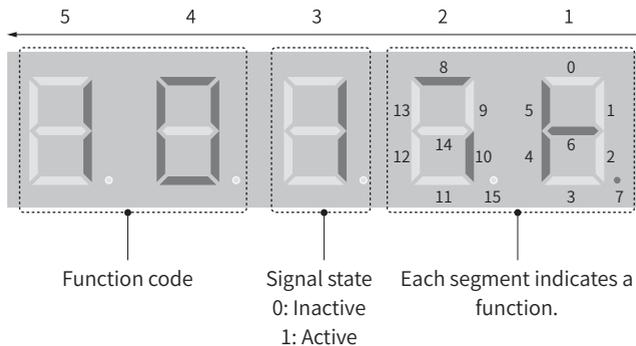


Figure 4-11 Example of input state 1 display

■ Description of input state 2 (FA-27) display

(See "[Figure 4-10 Input state 1 display](#)" on [Page 158](#) for the display diagram)

No.	Function	No.	Function	No.	Function
0	Up slow-down signal	8	Door operator 1 light curtain	12	Elevator lock input
1	Down slow-down signal	9	Door operator 2 light curtain	13	Safety circuit 2 feedback
6	Shorting door lock circuit relay output feedback	10	Brake travel switch 1 feedback	14	Shorting motor stator contactor feedback input
7	Firefighter operation signal	11	UPS input	15	Door lock circuit 2 feedback

■ Description of input state 3 (FA-28) display

(See "[Figure 4-10 Input state 1 display](#)" on [Page 158](#) for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Reserved	4	Earthquake signal input	8	Fire emergency floor switchover signal	12	Door 1 open signal input
1	Door 1 safety edge input	5	Rear door forbidden signal	9	Dummy floor input	13	Door 2 open signal input
2	Door 2 safety edge input	6	Light-load signal	10	Reserved	14	Brake travel switch 2 feedback
3	Motor over-temperature input	7	Half-load signal	11	Reserved	15	External fault input

■ Description of input state 4 (FA-29) display

(See "[Figure 4-10 Input state 1 display](#)" on [Page 158](#) for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Terminal floor signal	4	Reserved	8	Reserved	12	Reserved
1	Door lock shorting input	5	Reserved	9	Reserved	13	Reserved
2	Reserved	6	Reserved	10	Reserved	14	Reserved
3	Reserved	7	Reserved	11	Reserved	15	Reserved

■ Description of input state 5 (FA-30) display

(See "[Figure 4-10 Input state 1 display](#)" on [Page 158](#) for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Reserved	4	Safety circuit	8	Reserved	12	Reserved
1	Reserved	5	Door lock circuit 1 signal	9	Reserved	13	Reserved
2	Reserved	6	Door lock circuit 2 signal	10	Reserved	14	Reserved
3	Reserved	7	Door lock shorting signal	11	Reserved	15	Reserved

■ Description of output state 1 (FA-31) display

(See "[Figure 4-10 Input state 1 display](#)" on [Page 158](#) for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Reserved	4	Fire emergency floor arrival signal feedback	8	Door close by door operator 2	12	Shorting motor stator contactor output
1	RUN contactor output	5	Door open by door operator 1	9	Brake and RUN contactors healthy	13	Emergency evacuation operation output at power failure
2	Brake contactor output	6	Door close by door operator 1	10	Fault state above level 3	14	System healthy
3	Shorting door lock circuit relay output	7	Door open by door operator 2	11	Running state	15	Emergency buzzer control

■ Description of output state 2 (FA-32) display

(See "[Figure 4-10 Input state 1 display](#)" on [Page 158](#) for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	High-voltage startup of brake	4	Non-door zone stop	8	Reserved	12	Reserved
1	Up running signal	5	Electromagnetic lock output	9	Reserved	13	Reserved
2	Fan/Lighting output	6	Non-service state	10	Reserved	14	Reserved

No.	Function	No.	Function	No.	Function	No.	Function
3	Medical sterilization output	7	Emergency evacuation completion output	11	Reserved	15	Reserved

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-33	Car input state	0-65535	0	-	●
FA-34	Car output state	0-65535	0	-	●

FA-33 and FA-34 are used to display the input and output states of the car. Their operating instructions are the same as those of the MCB input and output displays.

■ Description of car input display (FA-33)

(See "[Figure 4-10 Input state 1 display](#)" on [Page 158](#) for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Reserved	4	Door 2 open limit	8	Overload input	12	Reserved
1	Door 1 light curtain	5	Door 1 close limit	9	Light-load input	13	Inspection input
2	Door 2 light curtain	6	Door 2 close limit	10	Up leveling communication state	14	Up running input
3	Door 1 open limit	7	Full-load input	11	Down leveling communication state	15	Down running input

■ Description of car output display (FA-34)

(See "[Figure 4-10 Input state 1 display](#)" on [Page 158](#) for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Reserved	4	Door 2 open	8	Down arrival gong	12	Reserved
1	Door 1 open	5	Door 2 close	9	Reserved	13	Reserved
2	Door 1 close	6	Forced door close 2	10	Reserved	14	Reserved
3	Forced door close 1	7	Up arrival gong	11	Reserved	15	Reserved

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-35	Hall sate	0-65535	0	-	●
FA-36	System state 1	0-65535	0	-	●
FA-37	System state 2	0-65535	0	-	●

These parameters are used to display the hall and system states. Their operating instructions are the same as those of the MCB input and output displays.

■ Description of hall sate (FA-35) display

(See "[Figure 4-10 Input state 1 display](#)" on Page 158 for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Reserved	4	VIP signal	8	Reserved	12	Reserved
1	Elevator lock signal	5	Security signal	9	Reserved	13	Reserved
2	Fire emergency signal	6	Door close button input	10	Reserved	14	Reserved
3	Current floor forbidden	7	Reserved	11	Reserved	15	Reserved

■ Description of system state 1 (FA-36) display

(See "[Figure 4-10 Input state 1 display](#)" on Page 158 for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Door open 1 button	4	Attendant switch	8	Door open 2 button	12	Reserved
1	Door close 1 button	5	Direction change switch	9	Door close 2 button	13	Reserved
2	Door open delay 1	6	Independent switch	10	Door open delay 2	14	Reserved
3	Direct travel ride switch	7	Fire emergency 2 switch	11	Reserved	15	Reserved

■ Description of system state 2 (FA-37) display

(See "[Figure 4-10 Input state 1 display](#)" on Page 158 for the display diagram)

No.	Function	No.	Function	No.	Function	No.	Function
0	Up direction display	4	System overload	8	Reserved	12	Reserved

No.	Function	No.	Function	No.	Function	No.	Function
1	Down direction display	5	System half-load	9	Reserved	13	Reserved
2	Running state	6	System light-load	10	Reserved	14	Reserved
3	System full-load	7	Reserved	11	Reserved	15	Reserved

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-38	Maximum floor running time interval	0-200	0	s	●

FA-38 indicates the time required for the elevator to run from the bottom floor to the top floor at normal speed. The smaller value of "FA-38 + 10s" and F9-02 (Running time protection) is used as the reference time for motor running time protection. During running, if the time during which the leveling signal does not change exceeds the reference time, the system reports Err30 and the elevator stops running.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-46	Hall call communication state 1	0-65535	0	-	●
FA-47	Hall call communication state 2	0-65535	0	-	●
FA-48	Hall call communication state 3	0-65535	0	-	●
FA-50	Communication state 1 between expansion board and HCB	0-65535	0	-	●
FA-51	Communication state 2 between expansion board and HCB	0-65535	0	-	●
FA-52	Communication state 3 between expansion board and HCB	0-65535	0	-	●

These parameters display the communication state between the HCB of each floor and the MCB.

FA-46 to FA-48 display the communication state between the MCB Modbus interface and the HCBs.

FA-50 to FA-52 display the communication state between the machine room expansion board and the HCBs. The Modbus interface on the machine room expansion board can be connected to the rear door HCBs of the through-type door.

States 1, 2, and 3 correspond to the hall call communication state of floors 1 to 16, 17 to 32, and 33 to 40, respectively. The following figure shows the state information.

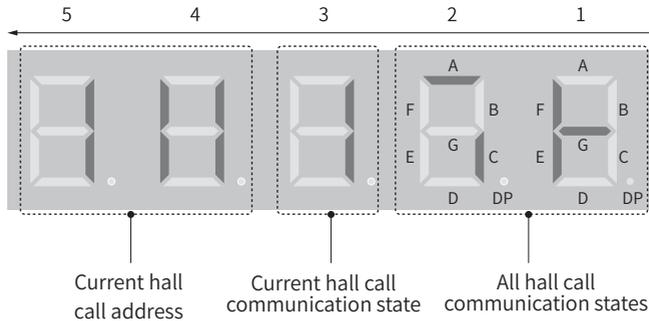


Figure 4-12 Hall call communication state viewing

As shown in the preceding figure, LEDs 3 to 5 indicate that the hall call communication at floor 11 is normal. To view the hall call communication state at other floors, you can change the display of LEDs 4 and 5 by pressing  /  key. It can be seen from LEDs 1 and 2 that the hall call communication at floors 5, 6, 7, 8, 9, and 11 is normal.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-58	Version display selection	0: Machine-room-less monitoring board version 1: Machine room expansion board version 2: Car expansion board version 3: ARD version 4: AFE master version 5: AFE slave version	0	-	☆
FA-59	Expansion board software version	0-65535	0	-	●

FA-58 and FA-59 are used together to display the expansion board software version.

Example:

To view the machine room expansion board software version, do as follows:

- 1) Set FA-58 to 1.
- 2) View FA-59 to obtain the machine room expansion board software version.

The viewing method of FA-59 is the same as that of FA-05 (see "["MCB version: V16.00-F15.00-L01.00" on Page 153](#)").

Group FB: Door Function Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-00	Number of door operator(s)	1-2	1	-	★

FB-00 is used to set the number of door operator(s). You can set this parameter based on actual conditions.

For example, set it to 1 in the case of single entrance door and 2 in the case of through-type door.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-01	CTB software version	0-999	0	-	●

When the control system is connected to the CTB, this parameter displays the CTB software version. The viewing method of FB-01 is the same as that of FA-05 (see "["MCB version: V16.00-F15.00-L01.00" on Page 153](#)").

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-02	Service floor 1 of door operator 1	0-65535	65535	-	☆
FB-03	Service floor 2 of door operator 1	0-65535	65535	-	☆
FB-18	Service floor 3 of door operator 1	0-65535	65535	-	☆
FB-04	Service floor 1 of door operator 2	0-65535	65535	-	☆

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-05	Service floor 2 of door operator 2	0-65535	65535	-	☆
FB-19	Service floor 3 of door operator 2	0-65535	65535	-	☆

These parameters are used to set the service floors of door operators 1 and 2.

- Service floor 1 corresponds to floors 1 to 16.
- Service floor 2 corresponds to floors 17 to 32.
- Service floor 3 corresponds to floors 33 to 48.

The setting of door operator service floors is the same as that of service floors in F6-05 (Service floor 1).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-06	Door open protection time	5-99	10	s	☆
FB-07	Arrival gong output delay	0-1000	0	ms	☆
FB-08	Door close protection time	5-99	15	s	☆

FB-06 is used to set the door open protection time.

After outputting the door open command, the system re-opens the door if it does not receive the door open limit signal within the time set in this parameter. When the door open/close times reach the value set in FB-09 (Door open/close times), the system reports Err48.

FB-07 is used to set the arrival gong output delay.

When this parameter is set to a value larger than 10 and the car display is switched to the destination floor, the system outputs the arrival gong after the time set in this parameter. If this parameter is set to a value smaller than 10, the system outputs the arrival gong at stop.

FB-08 is used to set the door close protection time.

After outputting the door close command, the system re-closes the door if it does not receive the door close limit signal within the time set in this parameter. When the door open/close times reach the value set in FB-09 (Door open/close times), the system reports Err49.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-09	Door open/close times	0-20	0	-	☆
FB-10	Door state of standby elevator	0-2	0	-	☆

FB-09 is used to set the door re-open/re-close times allowed when the door open/close is abnormal.

FB-10 is used to set the door state when the elevator stops and is waiting.

The values are as follows:

0: Closing the door as normal at main floor

1: Waiting with door open at main floor

2: Waiting with door open at each floor

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-11	Door open holding time for hall call	1-1000	5	s	☆
FB-12	Door open holding time for car call	1-1000	3	s	☆
FB-13	Door open holding time at main floor	1-1000	10	s	☆
FB-14	Door open holding delay time	10-1000	30	s	☆

FB-11 is used to set the door open holding time when there is a hall call. The elevator closes the door immediately after receiving a door close command.

FB-12 is used to set the door open holding time when there is a car call. The elevator closes the door immediately after receiving a door close command.

FB-13 is used to set the door open holding time after the elevator arrives at the main floor. The elevator closes the door immediately after receiving a door close command.

FB-14 is used to set the door open holding time when there is a door open delay signal input during door open. The elevator closes the door immediately after receiving a door close command.

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-15	Special door open holding time	10–1000	30	s	☆
FB-16	Manual door open limit delay	1–60	5	s	☆
FB-17	Waiting time for forced door close	5–180	120	s	☆

FB-15 is used to set the door open holding time when there is a call from the disabled.

FB-16 is used to set the door open limit delay in the case of manual door. It is active only when the manual door function is enabled.

FB-17 is used to set the waiting time before forced door close is implemented.

If the forced door close function is enabled, the system enters the forced door close state and sends a forced door close signal when there is no door close signal after the time set in this parameter is reached.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-20	Manual door lock waiting time	0–60	0	s	☆

This parameter is used to set the waiting time from the door lock disconnection and then close to next running in the case of manual door.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FB-24	UCMP test program version	0–65535	1	-	●

FB-24 indicates the version number of the UCMP test program.

Group FC: Protection Function Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FC-00	Program control selection	0–65535	0	-	★

FC-00 is used to select the program control functions.

If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of FC-00 are described in the following table.

FC-00: Program Control Selection			
Bit	Function	Meaning	Default
Bit0	Detection of short circuit to ground upon power-on	Detects whether a short circuit to ground exists in the motor upon power-on. If yes, the system blocks the motor output immediately and reports the short circuit to ground fault.	1
Bit1	Reserved	-	0
Bit2	Decelerating to stop at active light curtain	During normal-speed running, the elevator decelerates to stop immediately after the light curtain activates, and then runs to the registered destination floor after the light curtain restores. This function is used in the case of manual door.	0
Bit9	Mode without door open/close limit	In this mode, the door open/close limit signal is not required, and the system automatically judges the door open/close limit. It determines that the door open limit is implemented 3s after the door open signal is output and the door close limit is implemented 3s after the door close signal is output.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FC-01	Function selection	0-65535	65	-	★

FC-01 is used to select functions.

If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of FC-01 are described in the following table.

FC-01: Function Selection			
Bit	Function	Meaning	Default
Bit0	Overload protection	0: Motor overload detection enabled 1: Motor overload detection disabled	1

Parameter Description

FC-01: Function Selection			
Bit	Function	Meaning	Default
Bit1	Canceling output phase loss protection	Used to cancel the protection against output phase loss.	0
Bit4	Light curtain judgment upon door close limit	Upon door close limit, the door re-opens if the light curtain is active.	0
Bit5	Canceling SPI communication judgment	Used to cancel the disconnection detection of SPI communication between the MCB and the driver board.	0
Bit6	Reserved	-	0
Bit8	Reserved	-	0
Bit14	Canceling input phase loss protection	Used to cancel the protection against input phase loss.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FC-02	Overload protection coefficient	0.50–10.00	1.00	-	★
FC-03	Overload pre-warning coefficient	50–100	80	%	★

FC-02 takes the motor overload current as a reference. When the output current reaches "FC-02 x Rated motor current" and lasts the time specified in the inverse time lag curve, the system reports Err11.

FC-03 takes the motor overload current as a reference. When the output current reaches "FC-03 x Rated motor current" and lasts the time specified in the inverse time lag curve, the system outputs an overload pre-warning signal.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FC-04	Through-type door control selection	0–3	0	-	★

For example, set it to 1 in the case of single entrance door and 2 in the case of through-type door.

FC-04 is used to set the through-type door control function. The values are as follows:

0: Door open/close on both sides if the car/hall call is active on either side

1: Door open on the same side if the hall call is active, and door open on both sides if the car call is active

2: Door open on the same side if the hall call is active, and door open only on one side if the car call is active (manual selection)

3: Door open on the same side if the car/hall call is active

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FC-11	11th fault code	0-9999	0	-	●
FC-12	11th fault subcode	0-65535	0	-	●
FC-13	11th fault month and day	0-1231	0	MM.DD	●
FC-14	11th fault hour and minute	0-23.59	0	HH.MM	●
FC-15	21st fault code	0-9999	0	-	●
FC-16	21st fault subcode	0-65535	0	-	●
FC-17	21st fault month and day	0-1231	0	MM.DD	●
FC-18	21st fault hour and minute	0-23.59	0	HH.MM	●
...					
FC-207	60th fault code	0-9999	0	-	●
FC-208	60th fault subcode	0-65535	0	-	●
FC-209	60th fault month and day	0-1231	0	MM.DD	●
FC-210	60th fault hour and minute	0-23.59	0	HH.MM	●

If the detailed information of 10 faults occurred has been recorded, the earliest detailed fault record will be moved to the latest brief fault record. For example, if a new fault occurs, the code, subcode, and time information of the fault recorded in group E9 will be automatically moved to FC-11 to FC-14.

A brief fault record is a 4-digit number. The two high digits indicate the floor where the car is located when the fault occurs, and the two low digits indicate the fault code. For example, if the 1st fault record is 0835, it indicates that the car is near floor 8 when the latest brief fault Err35 occurs. The fault subcode is used to locate the causes of the fault. Fault month and day and fault hour and minute record the accurate occurrence time of the fault.

Group FD: Communication Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FD-00	Baud rate	0: 9600 1: 38400	1	-	☆
FD-02	Local address	0-127 0: Broadcast address	1	-	☆
FD-03	Response delay	0-20	0	ms	☆
FD-04	Communication timeout	0-60	0	s	☆

These RS232 serial port communication parameters are used for communication with the host controller monitoring software.

FD-00 is used to set the baud rate for serial communication.

FD-02 is used to set the current address of the control cabinet.

The setting of FD-00 and FD-02 must be consistent with that of the serial port parameters of the control cabinet to enable the normal communication between the control cabinet and the host controller.

FD-03 is used to set the delay for the control cabinet to send data through the serial port.

FD-04 is used to set the communication timeout of the serial port. The transmission of each frame must be completed within the time set in this parameter. Otherwise, a communication fault will occur.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FD-05	Re-leveling stop delay	0.00-2.00	0.00	s	★

FD-05 is used to set the re-leveling stop delay. During re-leveling, the elevator decelerates to stop after this delay timed from the moment when it receives the leveling signal.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FD-07	HCB-JP1 input selection	0: Disabled 1: Elevator lock signal 2: Fire emergency signal 3: Current floor forbidden	1	-	★
FD-08	HCB-JP2 input selection	4: VIP signal 5: Security signal 6: Door close button signal 7: Fire emergency floor 2 signal input from the hall	2	-	★

FD-07 and FD-08 are input parameters of pins 2 and 3 of JP1 and JP2 on the HCB.

The setting is effective for the HCBs of all floors.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FD-09	HCB-JP1 output selection	0: Disabled 1: Up arrival indicator 2: Down arrival indicator	1	-	★
FD-10	HCB-JP2 output selection	3: Fault output 4: Non-door zone stop output 5: Non-service state output 6: Door close button indicator output	2	-	★

FD-09 and FD-10 are output parameters of pins 1 and 4 of JP1 and JP2 on the HCB.

The setting is effective for the HCBs of all floors.

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FD-11	Expansion board 1: X1 input	0: Reserved	0	-	★
FD-12	Expansion board 1: X2 input	NO inputs: 1: Fire emergency signal	0	-	★
FD-13	Expansion board 1: X3 input	2: Overload signal	0	-	★
FD-14	Expansion board 1: X4 input	3: Full-load signal	0	-	★
FD-15	Expansion board 1: X5 input	4: Firefighter operation signal	0	-	★
FD-16	Expansion board 1: X6 input	5: Door operator 1 light curtain signal	0	-	★
FD-17	Expansion board 1: X7 input	6: Door operator 2 light curtain signal	0	-	★
FD-18	Expansion board 1: X8 input	7: Brake travel switch 1 feedback	0	-	★
FD-19	Expansion board 1: X9 input	8: UPS active signal	0	-	★
FD-20	Expansion board 1: X10 input	9: Elevator lock signal	0	-	★
FD-21	Expansion board 2: X1 input	10: Safety circuit signal 2	0	-	★
FD-22	Expansion board 2: X2 input	11: Synchronous motor self-locking feedback	0	-	★
FD-23	Expansion board 2: X3 input	12: Door lock circuit 2 feedback	0	-	★
FD-24	Expansion board 2: X4 input	13: Door operator 1 safety edge signal	0	-	★
FD-25	Expansion board 2: X5 input	14: Door operator 2 safety edge signal	0	-	★
FD-26	Expansion board 2: X6 input	15: Motor over-temperature signal	0	-	★
FD-27	Expansion board 2: X7 input	16: Earthquake signal	0	-	★
FD-28	Expansion board 2: X8 input	17: Rear door forbidden signal	0	-	★
FD-29	Expansion board 2: X9 input	18: Light-load signal	0	-	★
FD-30	Expansion board 2: X10 input	19: Half-load signal	0	-	★
		20: Fire emergency floor switchover signal	0	-	★
		21: Dummy floor signal	0	-	★
		22: Door 1 open signal	0	-	★
		23: Door 2 open signal	0	-	★
		24: Brake travel switch 2 feedback	0	-	★
		25: External fault signal	0	-	★
		26: Terminal floor signal	0	-	★
		27: Door 2 selection	0	-	★
		28: Single/Double door selection (NC point + 32)	0	-	★

FD-11 to FD-30 are used to set the functions of input terminal X on the expansion card. The SLIM LINE supports up to two expansion cards that are used to expand the functions of input terminals in the control cabinet or on the car.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FD-31	Expansion board 1: Y1 output	0: Unused	0	-	★
FD-32	Expansion board 1: Y2 output	1: Door open by door operator 1	0	-	★
FD-33	Expansion board 1: Y3 output	2: Door close by door operator 1	0	-	★
FD-34	Expansion board 1: Y4 output	3: Door open by door operator 2	0	-	★
FD-35	Expansion board 1: Y5 output	4: Door close by door operator 2	0	-	★
FD-36	Expansion board 1: Y6 output	5: Brake and RUN contactors healthy (no Err36 and Err37)	0	-	★
FD-37	Expansion board 1: Y7 output	6: Fault state (output in level 3/4/5 faults)	0	-	★
FD-38	Expansion board 1: Y8 output	7: Running monitoring (SLIM LINE in running state)	0	-	★
FD-39	Expansion board 1: Y9 output	8: Synchronous motor self-locking output	0	-	★
FD-40	Expansion board 1: Y10 output	9: Control system normal	0	-	★
FD-41	Expansion board 2: Y1 output	10: Emergency buzzer tweeting	0	-	★
FD-42	Expansion board 2: Y2 output	11: High-voltage startup of brake (lasts for 4s)	0	-	★
FD-43	Expansion board 2: Y3 output	12: Up running signal	0	-	★
FD-44	Expansion board 2: Y4 output	13: Lighting/Fan output	0	-	★
FD-45	Expansion board 2: Y5 output	14: Medical sterilization output	0	-	★
FD-46	Expansion board 2: Y6 output	15: Non-door zone stop	0	-	★
FD-47	Expansion board 2: Y7 output	16: Electromagnetic lock output	0	-	★
FD-48	Expansion board 2: Y8 output	17: Non-service state output	0	-	★
FD-49	Expansion board 2: Y9 output	18: Emergency evacuation completion output	0	-	★
FD-50	Expansion board 2: Y10 output	19: Fire emergency output during fire emergency operation and when returning to fire emergency floor	0	-	★
		20: Emergency output at power failure	0	-	★
		21: Door lock active	0	-	★
		22: Night output signal	0	-	★

These parameters are used to set the functions of 10 output relays on the MCTC-KZ-G1. The system supports a maximum of two I/O expansion cards with up to 20 output terminals.

Group FE: Elevator Function Setting Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FE-00	Collective selective mode	0-2	0	-	★

FE-00 is used to set the collective selective mode of the control system. The values are as follows:

0: Full collective selective

The elevator responds to both up and down hall calls.

1: Down collective selective

The elevator only responds to down hall calls.

2: Up collective selective

The elevator only responds to up hall calls.

Parameter No.	Parameter Name	Setting Range		Default	Unit	Property
FE-01	Floor 1 display	00: Display "0"	22: Display "23"	1901	-	☆
FE-02	Floor 2 display	01: Display "1"	23: Display "C"	1902	-	☆
FE-03	Floor 3 display	02: Display "2"	24: Display "D"	1903	-	☆
FE-04	Floor 4 display	03: Display "3"	25: Display "E"	1904	-	☆
FE-05	Floor 5 display	04: Display "4"	26: Display "F"	1905	-	☆
FE-06	Floor 6 display	05: Display "5"	27: Display "I"	1906	-	☆
FE-07	Floor 7 display	06: Display "6"	28: Display "J"	1907	-	☆
FE-08	Floor 8 display	07: Display "7"	29: Display "K"	1908	-	☆
FE-09	Floor 9 display	08: Display "8"	30: Display "N"	1909	-	☆
FE-10	Floor 10 display	09: Display "9"	31: Display "O"	0100	-	☆
Floor 11 display to Floor 30 display		10: Display "A"	32: Display "Q"	...		
FE-31	Floor 31 display	11: Display "B"	33: Display "S"	0301	-	☆
FE-35	Floor 32 display	12: Display "G"	34: Display "T"	0302	-	☆
FE-36	Floor 33 display	13: Display "H"	35: Display "U"	0303	-	☆
FE-37	Floor 34 display	14: Display "L"	36: Display "V"	0304	-	☆
FE-38	Floor 35 display	15: Display "M"	37: Display "W"	0305	-	☆
FE-39	Floor 36 display	16: Display "P"	38: Display "X"	0306	-	☆
FE-40	Floor 37 display	17: Display "R"	39: Display "Y"	0307	-	☆
FE-41	Floor 38 display	18: Display "-"	40: Display "Z"	0308	-	☆
FE-42	Floor 39 display	19: No display	41: Display "15"	0309	-	☆
FE-43	Floor 40 display	20: Display "12"	42: Display "17"	0400	-	☆
		21: Display "13"	43: Display "19"			

These parameters are used to set the display of each floor. The setting range is 0000 to 9999, where the two high digits indicate the display code of tens position of the floor number, and the two low digits indicate the display code of ones position.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FE-52	Highest digit selection 1	0-5699	0	-	☆
FE-53	Highest digit selection 2		0	-	☆
FE-54	Highest digit selection 3		0	-	☆
FE-56	Highest digit selection 4		0	-	☆
FE-69	Highest digit selection 5		0	-	☆

FE-52 to FE-56 are used to set the special display of floor numbers.

When the 2-digit display cannot meet your requirements, add the third-digit display by setting these parameters as follows:

Set the floor address that requires a special display in two high digits and the display content in two low digits. For example, if floor 18 needs to be displayed as "17A", do as follows:

- 1) Set FE-18 to 0710 (displays "7A").
- 2) Set FE-65 to 1801, indicating that the highest digit display of floor 18 is "1".
- 3) Set Bit0 of F8-14 (Hall call communication setting) to 1.
- 4) Power off and then on the system.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FE-32	Elevator function selection 1	0-65535	34816	-	☆

FE-32 is used to set the required functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of FE-32 are described in the following table.

FE-32: Elevator Function Selection 1			
Bit	Function	Meaning	Default
Bit0	Reserved	-	0
Bit1	Reserved	-	0
Bit2	Re-leveling function	The elevator performs re-leveling at a low speed with door open. This function must be used together with the MCTC-SCB.	0
Bit3	Advance door opening	During normal stop, when the elevator speed is smaller than a certain value and the door zone signal is active, the system shorts the door lock using the shorting door lock circuit relay and outputs the door open signal, realizing advance door opening. This improves the elevator use efficiency.	0
Bit4	Stuck hall call cancellation	The system automatically identifies the state of hall call buttons. If the state is abnormal, the system cancels the stuck hall call.	0
Bit5	Night security floor function	From 10:00 p.m. to 6:00 a.m., the elevator runs to the security floor first every time, stops, opens the door, and then runs to the destination floor.	0
Bit6	Peak service in down collective selective mode	Enables the peak service in the down collective selective mode.	0
Bit7	Peak service in parallel/group control mode	Enables the peak service in the parallel/group control mode.	0
Bit8	Time-based floor service	Enables the time-based floor service function. For details, see the description of relevant parameters in group F6.	0
Bit9	VIP function	Enables the VIP function.	0
Bit10	Reserved	-	0
Bit11	Car call cancellation	A registered car call can be canceled by pressing the button twice consecutively.	1
Bit12	Reserved	-	0
Bit13 to Bit15	Reserved	-	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FE-33	Elevator function selection 2	0-65535	36	-	☆

FE-33 is used to set the required functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of FE-33 are described in the following table.

FE-33: Elevator Function Selection 2			
Bit	Function	Meaning	Default
Bit0	Reserved	-	0
Bit1	Door open holding upon door open limit	The system still outputs the door open command after door open limit.	0
Bit2	Door close command not output upon door close limit	The system stops outputting the door close command after door close limit.	1
Bit3	Reserved	-	0
Bit4	Automatic reset for stuck RUN and brake contactors	If the feedback of RUN and brake contactors is abnormal, the system reports Err36 and Err37. In this case, a manual fault reset is required. If this function is enabled, the fault automatically resets after the fault symptom disappears. A maximum of three times of auto reset is supported.	0
Bit5	Slow-down switch stuck detection	The system detects the state of slow-down switches all the time. Once the stuck fault is detected, the system instructs the elevator to decelerate immediately and reports a corresponding fault.	1
Bit6	Reserved	-	0
Bit7	Forced door close	In the automatic state, the system outputs a forced door close signal if the door still does not close within the time set in FB-17 (Waiting time for forced door close). At this moment, the light curtain becomes inactive, and the buzzer tweets.	0

FE-33: Elevator Function Selection 2			
Bit	Function	Meaning	Default
Bit8	Reserved	-	-
Bit10 to Bit12	Reserved	-	-
Bit13	High-speed protection function	This function is used to set the maximum speed allowed when the car is in the slow-down switch position. If the elevator speed in this position exceeds the set value, the system outputs a protection signal.	0
Bit14	Reserved	-	0
Bit15	Reserved	-	0

Group FP: User Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FP-00	User password	0-65535	0	-	☆

FP-00 is used to set the user password. 0 indicates that there is no password.

The password prohibits unauthorized personnel from viewing and modifying parameters. If this parameter is set to a non-zero value, the password protection function is enabled. You need to enter the correct password to view and modify parameters. To disable the password protection function, set FP-00 to 00000.



NOTE

◆ Remember the password you set. If the password is set incorrectly or forgotten, contact Inovance to replace the control board.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FP-01	Parameter update	0: Disabled 1: Restoring parameters to factory setting 2: Clearing fault records 3: Clearing shaft data	0	-	★

FP-01 is used to reset some system parameters.

The values are as follows:

0: Disabled

1: Restoring parameters to factory setting

Factory reset all parameters except group F1. Use this function with caution.

2: Clearing fault records

Fault records are cleared. FC-11 to FC-210 and parameters in groups E0 to E9 are all set to 0.

3: Clearing shaft data

The floor pulse data in the shaft are cleared. F3-12 to F3-17 and shaft pulse parameters in group F4 are all set to 0. The leveling adjustment parameters in group Fr are set to 30030.

Shaft auto-tuning must be performed again after clearing.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FP-02	Check on user-defined parameters	0: Disabled 1: Enabled	0	-	★

FP-02 is used to view the parameters that are different from default settings. When it is set to 1, you can view these parameters.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FP-05	Contract No. 2	0-65535	0	-	★
FP-06	Contract No. 1	0-65535	5555	-	★

FP-05 and FP-06 are used to set manufacturer contract No. used in the HCB software or door operator software requiring contract No. checking. If the checking fails, the system cannot work properly.

Group Fr: Leveling Adjustment Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Fr-00	Leveling adjustment function	0: Disabled 1: Enabled	0	-	★

Fr-00 is used to enable or disable the leveling adjustment function.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property	
Fr-01	Leveling adjustment record 1	00000-60060	30030	mm	★	
Fr-02	Leveling adjustment record 2		30030	mm	★	
...			...			
Fr-20	Leveling adjustment record 20		30030	mm	★	

These parameters are used to record the leveling adjustment values. Each parameter records the adjustment information of two floors. Therefore, a total of 56 floor adjustment records are supported. The following figure shows how to view the records.

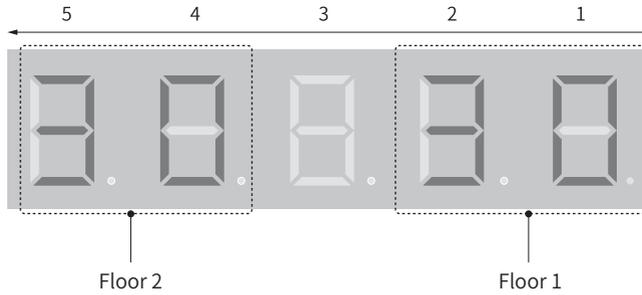


Figure 4-13 Viewing the leveling adjustment record

As shown in the preceding figure, the leftmost two LEDs and the rightmost two LEDs respectively show the adjustment base of floor 1 and floor 2. If the value is larger than 30, upward leveling adjustment is performed. If the value is smaller than 30, downward leveling adjustment is performed. The default value "30" indicates that there is no leveling adjustment. The maximum adjustment range is ± 30 mm.

Adjust the leveling accuracy as follows:

- ① Make sure that shaft auto-tuning has been completed and the elevator runs properly at normal speed.
- ② Set Fr-00 (Leveling adjustment function) to 1 to enable the car leveling adjustment function. In this case, the elevator does not respond to any hall call, automatically runs to the top floor, and keeps the door open after arrival. If the elevator is currently at the top floor, it directly keeps the door open.
- ③ Enter the car and press the top floor button once, and then the leveling adjustment value increases by 1 mm. Press the bottom floor button once, and the leveling adjustment value decreases by 1 mm. The adjusted value is displayed in the car. The positive number is

displayed as "Up arrow + Value", and the negative number is displayed as "Down arrow + Value". The leveling adjustment range is ± 30 mm.

- ④ After completing the adjustment, press the top floor button and bottom floor button in the car simultaneously to save the adjustment result. The car display restores to the normal state. If no adjustment of the leveling position at the current floor is required, you also need to press the two buttons simultaneously to exit the leveling adjustment state. Otherwise, car calls cannot be registered.
- ⑤ Register a car call and press the door close button. The elevator runs to the next floor for adjustment and keeps the door open after arrival.

**NOTE**

- ◆ After the leveling adjustment is complete, set Fr-00 to 0 to disable the leveling adjustment function. Otherwise, the elevator cannot be used.

Groups E0 to E9: Fault Record Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
E0-00	Latest fault code	0-9999	0	-	●
E0-01	Latest fault subcode	0-65535	0	-	●
E0-02	Latest fault month and day	0-1231	0	MM.DD	●
E0-03	Latest fault hour and minute	0-23.59	0	HH.MM	●
E0-04	Latest fault logic information	0-65535	0	-	●
E0-05	Latest fault curve information	0-65535	0	-	●
E0-06	Speed reference upon latest fault	0.000-4.000	0	m/s	●
E0-07	Feedback speed upon latest fault	0.000-4.000	0	m/s	●
E0-08	Bus voltage upon latest fault	0-999.9	0	V	●
E0-09	Current position upon latest fault	0.0-300.0	0	m	●
E0-10	Output current upon latest fault	0.0-999.9	0	A	●

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
E0-11	Output frequency upon latest fault	0.00–99.99	0	Hz	●
E0-12	Torque current upon latest fault	0.0–999.9	0	A	●
E0-13	Output voltage upon latest fault	0–999.9	0	V	●
E0-14	Output torque upon latest fault	0–200.0	0	%	●
E0-15	Output power upon latest fault	0.00–99.99	0	kW	●
E0-16	Communication interference upon latest fault	0–65535	0	-	●
E0-17	Encoder interference upon latest fault	0–65535	0	-	●
E0-18	Input state 1 upon latest fault	0–65535	0	-	●
E0-19	Input state 2 upon latest fault	0–65535	0	-	●
E0-20	Input state 3 upon latest fault	0–65535	0	-	●
E0-21	Input state 4 upon latest fault	0–65535	0	-	●
E0-22	Input state 5 upon latest fault	0–65535	0	-	●
E0-23	Output state 1 upon latest fault	0–65535	0	-	●
E0-24	Output state 2 upon latest fault	0–65535	0	-	●
E0-25	Car input state upon latest fault	0–65535	0	-	●
E0-26	Car output state upon latest fault	0–65535	0	-	●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
E0-27	Hall call state upon latest fault	0-65535	0	-	●
E0-28	System state 1 upon latest fault	0-65535	0	-	●
E0-29	System state 2 upon latest fault	0-65535	0	-	●
...					
E9-00	10th fault code	0-9999	0	-	●
E9-01	10th fault subcode	0-65535	0	-	●
E9-02	10th fault month and day	0-1231	0	MM.DD	●
E9-03	10th fault hour and minute	0-23.59	0	HH.MM	●
E9-04	10th fault logic information	0-65535	0	-	●
E9-05	10th fault curve information	0-65535	0	-	●
E9-06	Speed reference upon 10th fault	0.000-4.000	0	m/s	●
E9-07	Feedback speed upon 10th fault	0.000-4.000	0	m/s	●
E9-08	Bus voltage upon 10th fault	0-999.9	0	V	●
E9-09	Current position upon 10th fault	0.0-300.0	0	m	●
E9-10	Output current upon 10th fault	0.0-999.9	0	A	●
E9-11	Output frequency upon 10th fault	0.00-99.99	0	Hz	●
E9-12	Torque current upon 10th fault	0.0-999.9	0	A	●
E9-13	Output voltage upon 10th fault	0-999.9	0	V	●

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
E9-14	Output torque upon 10th fault	0-200.0	0	%	●
E9-15	Output power upon 10th fault	0.00-99.99	0	kW	●
E9-16	Communication interference upon 10th fault	0-65535	0	-	●
E9-17	Encoder interference upon 10th fault	0-65535	0	-	●
E9-18	Input state 1 upon 10th fault	0-65535	0	-	●
E9-19	Input state 2 upon 10th fault	0-65535	0	-	●
E9-20	Input state 3 upon 10th fault	0-65535	0	-	●
E9-21	Input state 4 upon 10th fault	0-65535	0	-	●
E9-22	Input state 5 upon 10th fault	0-65535	0	-	●
E9-23	Output state 1 upon 10th fault	0-65535	0	-	●
E9-24	Output state 2 upon 10th fault	0-65535	0	-	●
E9-25	Car input state upon 10th fault	0-65535	0	-	●
E9-26	Car output state upon 10th fault	0-65535	0	-	●
E9-27	Hall call state upon 10th fault	0-65535	0	-	●
E9-28	System state 1 upon 10th fault	0-65535	0	-	●
E9-29	System state 2 upon 10th fault	0-65535	0	-	●

These parameters record the latest 10 faults and the corresponding system states in detail.

Group A1: Special Function Setting Parameters

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-00 to A1-10	Reserved	-	-	-	-

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-11	Manual door function selection	Bit0: Manual door function Bit0 = 0: Disabled Bit0 = 1: Enabled Bit1: Electromagnetic lock output property Bit1 = 0: Doors opened at power-off Bit1 = 1: Doors opened at power-on Bit2: Front door property Bit2 = 0: Manual door Bit2 = 1: Automatic door Bit3: Rear door property Bit3 = 0: Manual door Bit3 = 1: Automatic door Bit4: Electromagnetic lock controlled by the MCB relay Bit4 = 0: Enabled Bit4 = 1: Disabled Bit5: Electromagnetic lock controlled by the car top SL relay Bit5 = 0: Disabled Bit5 = 1: Enabled Bit6: Electromagnetic lock controlled by the expansion board relay Bit6 = 0: Enabled Bit6 = 1: Disabled Bit7: Manual door magnet-related function Bit8: On-site energy saving of manual door magnet	-	-	-

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-12 ~ A1-30	Reserved	-	-	-	-

A1-31 is used to select the program functions.

Each binary bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled. If this bit is set to 0, the function is disabled.

The functions defined by the binary bits of A1-31 are described in the following table.

A1-31: Program Function Selection			
Bit	Function	Meaning	Default
Bit0	Floor selection for braking force test	Sets the floor where the braking force test is implemented. 0: Second highest floor 1: Any floor	0
Bit1	Stop setting when receiving a door zone signal during electric brake release	Sets whether the elevator stops when receiving a door zone signal from the service floor in the shorting stator braking mode. 0: The elevator does not stop and keeps the shorting stator braking mode. 1: The elevator stops immediately.	0
Bit2	ARD fault warning	When the ARD function is faulty, the buzzer tweets for 5s after door open limit to alert users. 0: Enabled 1: Disabled	0
Bit3	ARD switch action prompt	Sets whether the MCB reports a fault when the ARD switch on the monitoring board is off. 0: Err69/Err104 reported 1: No fault report	1
Bit4	EEO during evacuation using ARD	Sets whether to allow the EEO in the ARD state. 0: Allowed 1: Forbidden	1
Bit5	Handling of pit communication disconnection	Sets whether to enter the inspection state when the pit communication board is disconnected. 0: Automatically enters the inspection state. 1: Does not enter the inspection state.	0

A1-31: Program Function Selection			
Bit	Function	Meaning	Default
Bit6	Software limit self-adaption	Automatically configures the software limit properly according to the current setting of leveling signals. 0: Enabled 1: Disabled	0
Bit7	Detection of triangle lock at the main floor using the pit board	Detects the triangle lock at the main floor by using the pit board. 0: Enabled 1: Disabled	0
Bit8	Pit safety protection reset by the bottom HCB	Resets the pit safety protection by using the bottom HCB. 0: Enabled 1: Disabled	0
Bit9	Pit safety protection reset by the pit inspection board	Resets the pit safety protection by using the switch input terminal on the pit inspection board. 0: Enabled 1: Disabled	0
Bit10	Pit safety protection reset by the X input terminal in the control cabinet	Resets the pit safety protection by using the X input terminal in the control cabinet. 0: Enabled 1: Disabled	0
Bit11	Operating mode of the brake voltage	Switches the operating mode of the brake voltage. 0: High-voltage startup + Low-voltage operating 1: High-voltage startup	0
Bit12	State feedback detection of relay K13 on the power supply board	Detects the state feedback of relay K13 on the power supply board. 0: Enabled 1: Disabled	0
Bit13	Number of brake input terminals	Sets the number of brake input terminals. 0: Two brake input terminals 1: One brake input terminal	

A1-31: Program Function Selection			
Bit	Function	Meaning	Default
Bit14	Emergency evacuation using automatic brake release	Enables the emergency evacuation using automatic brake release. 0: Enabled 1: Disabled	0
Bit15	Reserved	-	-

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-33	Test mode input	1-10	0	-	★

The control cabinet supports the testing of specific elevator functions. You can enter a number in A1-33 using the LED operating panel (or in A-0 using the keypad) to activate the test mode for the corresponding function. For details, see ["5.1 Running and Function Tests" on Page 193](#).

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-34	Output time upper limit during overspeed governor test	0-100	30	s	★

In the overspeed governor test mode, if the overspeed governor test button is active, the system automatically disconnects the power circuit of the overspeed governor coil after the time set by A1-34 to prevent the coil from being damaged.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-35	Speed setting for ACOP test	1.0-1.5	1.0	-	★

Before performing the ACOP test (A1-33 = 7 or A-0 = 7), set the maximum up running speed of the elevator in A1-35.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-36	Leveling plate length setting	0.0-999	0	0.1 mm	★

This function applies only to 2-floor elevators whose down leveling switches cannot be detached from the leveling plates due to too shallow pit during shaft auto-tuning.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-37	Door zone stop delay during emergency evacuation by shorting stator braking	0.0-3.0	0	s	★

When the elevator enters the ARD emergency evacuation by shorting stator braking after a power failure, the brake is released with a delay set in A1-37 after the car arrives at the door zone. This parameter is used to adjust the leveling accuracy at stop during ARD emergency evacuation by shorting stator braking.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-38	Relay Y7 function setting	0-31	0	-	★

This parameter is used to set the function of relay Y7.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-39	Vacation mode days	0-65535	0	day	★

This function is available only to home elevators. If the elevator remains idle within the time set by A1-39, it automatically runs once after the time is reached.

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-40	Left brake voltage monitoring	0-999.9	0	V	★

Parameter Description

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-41	Right brake voltage monitoring	0-999.9	0	V	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
A1-42	Battery level monitoring	0-100%	0	%	★

5 Typical Functions and Solutions

5.1 Running and Function Tests

The control system offers abundant running/function test modes, facilitating the testing of normal-speed running and key functions. You can activate the testing modes using the keypad. The parameters related to each test are listed in the following table. For more details, see the description of corresponding tests in this section.

No.	Testing Function		Parameter Settings		LED Display
			Keypad Parameter	MCB Parameter	
①	Running tests	Car call test	F-1 = 1	F7-00	-
		Hall call test	-	F7-01/F7-02	-
		Random running test	-	F7-03	-
		Hall call forbidden	F-8 = 1	F7-04 = 1	E88 (enabled only by setting F-8)
		Door open forbidden	F-8 = 2	F7-05 = 1	E88 (enabled only by setting F-8)
		Overload forbidden	F-8 = 3	F7-06 = 1	E88 (enabled only by setting F-8)
		Limit switches disabled	F-8 = 4	F7-07 = 1	E88 (enabled only by setting F-8)
②	Auxiliary motor slip test		F-8 = 6	F3-24 = 1	E88 (enabled only by setting F-8)
③	Manual UCMP test		F-8 = 7	F3-24 = 2	E88 (enabled only by setting F-8)
④	Static braking force test		F-8 = 8	None	E88
⑤	Dynamic single-arm braking force test		A-0 = 1	A1-33 = 1	T-1
⑥	Dynamic dual-arm braking force test		A-0 = 2	A1-33 = 2	T-2
⑦	Overspeed governor test		A-0 = 3	A1-33 = 3	T-3
⑧	Overspeed governor reset		A-0 = 4	A1-33 = 4	T-4
⑨	ACOP test		A-0 = 7	A1-33 = 7	T-7
⑩	Running time protection test		A-0 = 8	A1-33 = 8	T-8
⑪	Entering the maintenance test mode		A-0 = 9	A1-33 = 9	T-9
⑫	Exiting the maintenance test mode		A-0 = 10	A1-33 = 10	T-10



- ◆ After setting F-8 (Test function) using the keypad, press the **SET** key to save the setting. Then, the LEDs display "E88" and flash, indicating that the elevator is under test. You can press the **PRG** key to exit the test, after which F-8 (Test function) will be automatically restored to 0.
- ◆ After you activate the T-X test mode by setting A-0 (Function testing), the keypad and LED operating panel display "T-X" for 3s, indicating that the elevator has entered the corresponding test state. Then, the keypad and LED operating panel display the floor state for monitoring the test. During the test, the three decimal point (DP) segments keep flashing to prompt that the elevator is under test. Pay attention to safety hazards in this process. The DP segments stop flashing automatically after the elevator exits the test state.

5.1.1 Running Tests with Hall Call, Door Open, Overload, and Limit Switches Disabled and Random Running Test

The hall call, door open, overload, and limit switches are disabled to facilitate the commissioning and maintenance of elevators, involving:

- Hall/Car call test
- Random running test
- Running tests with certain functions (hall call, door open, overload, and limit switches) disabled

Before the normal-speed running test, make sure that the shaft is unobstructed and the safety circuits, door lock circuits, and shaft switches are all normal.

Example of parameter setting:

If F7-00 (Car call floor registered), F7-01 (Up hall call floor registered), and F7-02 (Down hall call floor registered) are set to 6, 3 and 5 respectively, the car call registered is floor 6, up call registered is floor 3, and down call registered is floor 5. After the test parameters are set, the calls remain active until the parameters are changed to 0 or the system power is completely off once.

F7-03 (Random running times) is used to set the times of automatic running to a random destination floor. It is retentive upon power failure and decreased by 1 for each running. The elevator stops running automatically when its value becomes 0.

5.1.2 Auxiliary Motor Slip Test

This function is used for the motor slip experiment during elevator acceptance. In normal cases, it is enabled only when the on-site motor slip experiment fails.

- ① Make the elevator enter the EEO state.
- ② Set F-8 (Test function) to 6 using the keypad or F3-24 (Program function selection) to 1 using the LED operating panel to enter the auxiliary motor slip test mode.
- ③ Enable the EEO when the elevator arrives at the position where the slip needs to be tested. The car or counterweight will then move upwards until the traction sheave slips.
- ④ After the test is complete, switch the elevator to the normal state. The elevator will automatically exit the test mode.

5.1.3 Manual UCMP Test

- ① Make the elevator enter the EEO state, with the door lock closed and the elevator stopping in the door zone.
- ② Set F-8 (Test function) to 7 using the keypad or F3-24 (Program function selection) to 2 using the LED operating panel to enter the UCMP test mode.
- ③ Remove the UCMP terminal and press the **CIS** switch knob and **CIU/CID** button simultaneously within 10s. Then, the SO terminal of the shorting door lock circuit relay on the MCTC-SCB shorts the door lock, and the elevator starts to run in the EEO mode.
- ④ After either of the up and down door zone switches detaches from the leveling plate (either of the up and down door zone signals becomes inactive), the SO terminal stops shorting the door lock, the door lock circuit is disconnected, and the brake becomes de-energized to stop the car. The system reports Err65 when the car stops running.

5.1.4 Static Braking Force Test

Function description (default function, certain actions can be modified by setting the parameters)

To prevent failure of the motor brake that guarantees safe running, check whether the braking force meets the requirements periodically. The control system will monitor the braking force regularly.

Parameters

Parameter No.	Function Description	Setting Range	Default	Remarks
F2-32	Torque output duration	1s to 10s	5s	When it is set to 0, the torque output lasts 5s by default.
F2-33	Torque amplitude	1% to 150% of the rated motor torque	110%	When it is set to 0, 80% of the rated motor torque is used by default.
F2-34	Threshold of pulses for judging braking force abnormal	1 to 100 encoder feedback pulses	0	When it is set to 0, the system uses 30 encoder feedback pulses by default.
F2-35	Threshold of excessive slip distance	1° to 20° motor rotating mechanical angle	0	When it is set to 0, the system uses 5° for synchronous motors and 10° for asynchronous motors by default.
F-8	Test function	8: Manual braking force test	0	Activate the braking force test using the keypad.
F7-09	Braking force detection result	0-2	0	/
F7-10	Countdown for braking force detection period	0-1440	1440	The countdown time is automatically restored to 1440 after the test is complete.

Manual test:

- ① The system enters the EEO state.
- ② The elevator stops in the door zone, with the door lock closed.
- ③ Set F-8 (Test function) to 8 using the keypad to enter the test mode. The MCB displays "E88".
- ④ Switch elevator from the EEO state to the normal state within 10s. Otherwise, the elevator will automatically exit the test state.
- ⑤ The shorting motor stator and RUN contactors have output, but the brake contactor has no output.

- ⑥ The system outputs the torque according to the parameters related to the braking force and then starts the braking force test.
- ⑦ The test is complete when "E88" disappears on the MCB. If the test passed, the value of F7-09 (Braking force detection result) is 1, and the elevator switches to the normal state. If the test failed, the value of F7-09 (Braking force detection result) is 2, and the elevator moves to the top floor and reports Err66 to Err101 (manual reset is required for Err66). In this case, the elevator cannot run again.

Automatic test:

If the braking force test condition ① is satisfied, the system automatically enters the test state. The operations are the same as steps ④ , ⑤ , ⑥ , and ⑦ of the manual test.

Err66 cannot be reset through power failure and can be automatically reset only when the braking force test is redone and passes.

5.1.5 Dynamic Single-Arm Braking Force Test

This function is used to test whether the single arm of the brake can effectively decelerate and brake the car when the elevator is running at the rated speed. It supports two test modes: up running in the no-load state and down running in the full-load state. Select a proper mode according to your requirements. The detailed operating steps are as follows:

- ① In the normal state, set A-0 (Function testing) to 1 using the keypad or A1-33 (Test mode input) to 1 using the LED operating panel to enter the test mode.
- ② If the down running test with a full load is required, manually register the top floor. If the up running test without load is required, manually register the bottom floor.
- ③ After the elevator arrives at the terminal floor, press the **P-B** key on the monitoring board to start the test. The system automatically exits the test mode if the **P-B** key is not pressed within 30s after arrival.
- ④ After the test starts, register the reverse terminal floor in F7-00 (Car call floor registered) using the LED operating panel. When the elevator reaches the rated speed, manually trigger the brake test button on the monitoring board to release the corresponding single-arm brake for the test (simultaneous triggering of two brake test buttons is not supported).
- ⑤ If the elevator decelerates to zero within 10s, the keypad displays "End" for 5s, indicating that the test succeeded. Otherwise, the keypad displays "Err" for 5s,

indicating that the test failed.

- ⑥ If the test succeeded, the system exits the test mode at a delay of 20s, during which the braking maintains for checking. If the test failed, the system exits the test mode immediately, and the elevator automatically re-levels if it is not in the leveling position.



NOTE

- ◆ After entering the test mode, the elevator responds only to calls from the lowest and highest service floors.
- ◆ The system provides the brake test button stuck detection. It determines that the button is stuck if the brake input remains active more than 20s. In this case, the system reports fault 94-101 (Left brake input stuck) or 94-102 (Right brake input stuck). The faults can be reset automatically.
- ◆ The system reports fault 94-103 when the left/right brake travel switch feedback signal is connected incorrectly. This fault cannot be reset automatically. Therefore, a manual reset is required.
- ◆ Exit the test mode by pressing the inspection or emergency electrical operation button.

5.1.6 Dynamic Dual-Arm Braking Force Test

- ① In the normal state, set A-0 (Function testing) to 2 using the keypad or A1-33 (Test mode input) to 2 using the LED operating panel to enter the test mode.
- ② The operations of dynamic dual-arm braking force test are the same as those of dynamic single-arm braking force test. During the dual-arm braking force test, only one of the left and right brakes needs to be triggered. For detailed operating steps, see ["5.1.7 Overspeed Governor Test" on Page 199](#).



NOTE

Countdown function:

- ◆ After 12 hours pass, the system starts to judge whether condition 1 (Normal test on braking force) is satisfied. If the braking force test has been performed, the countdown parameter (F7-10) restores to 24 h. If no test has been performed, a forced test on the braking force (condition 2) will be implemented.

**NOTE****During automatic braking force test:**

- ◆ No fault is reported for hall calls. The keypad displays "E88" to indicate the test state.
- ◆ Hall calls can be registered, but the elevator does not respond to them. After the test is complete, the system restores to normal and responds to registered hall calls. The car calls are canceled. The elevator door cannot be opened or closed.

**NOTE****Detection conditions:**

- ◆ **Condition 1: Normal test on the braking force**
Under the condition of no car and hall calls, the braking force test is performed after the elevator energy saving time or 3 minutes.
- ◆ **Condition 2: Forced test on the braking force**
The system makes a judgment ahead of 10 minutes. If the time set by F7-10 (Countdown for braking force detection period) is shorter than or equal to 10 minutes, the elevator buzzes for 30s. You can disable the buzzer by setting Bit13 of F8-19. In this case, the registered hall calls are reserved, but the car calls are canceled. The elevator door can be opened or closed. The system starts the braking force test after door close.

5.1.7 Overspeed Governor Test

- ① After the elevator enters the EEO state, set A-0 (Function testing) to 3 using the keypad or A1-33 (Test mode input) to 3 using the LED operating panel to enter the test mode.
- ② Press the **GT** and **P-B** keys simultaneously and hold them for more than 3s, and then the corresponding overspeed governor test DO terminal has an output. The output maintains when you hold down the two keys and stops immediately as soon as you release them. The system automatically exits the test mode if the overspeed governor output is not triggered for consecutive 30s. You can trigger the overspeed governor output again by re-inputting the parameter.
- ③ To perform the safety gear test, you need to hold down the GT and P-B keys and then run the car down in the EEO state until the car cannot move or slips.

5.1.8 Overspeed Governor Reset

- ① After the elevator enters the EEO state, set A-0 (Function testing) to 4 using the keypad or A1-33 (Test mode input) to 4 using the LED operating panel to enter the test mode.
- ② Press the **GT** and **P-B** keys simultaneously and hold them for more than 3s, and then the corresponding overspeed governor reset DO terminal outputs. The output maintains when you hold down the two keys and stops immediately as soon as you release them. The system automatically exits the test mode if the overspeed governor output is not triggered for consecutive 30s. You can trigger the overspeed governor output again by re-inputting the parameter.



NOTE

- ◆ The system automatically exits the overspeed governor test mode when the continuous output time of the overspeed governor exceeds A1-34 (Output time upper limit during overspeed governor test).
- ◆ For applications where the overspeed governor will be reset automatically after activation, the test keys must be held down all the time. This is because the overspeed governor test DO terminal stops the output immediately once the test keys are released, resulting in the automatic reset of the overspeed governor. For applications where the overspeed governor will not reset automatically, the test keys can be released after the overspeed governor has an output.

5.1.9 ACOP Test

- ① Set the maximum elevator speed for up running in A1-35 (Speed setting for ACOP test), for example, 1.2 times rated speed.
- ② Call the elevator to the bottom floor and set A-0 (Function testing) to 7 using the keypad or A1-33 (Test mode input) to 7 using the LED operating panel to enter the test mode.
- ③ Register your destination floor, and the elevator starts to move. In normal cases, the overspeed governor will operate when an overspeed occurs.
- ④ The system automatically exits the test mode after the ACOP test is complete.

5.1.10 Running Time Protection Test

- ① Set A-0 (Function testing) to 8 using the keypad or A1-33 (Test mode input) to 8 using the LED operating panel to enter the test mode.
- ② The system automatically modifies the running protection time set in F9-02. If you register a floor at this moment, Err30 will occur during normal running.

- ③ After a fault occurs, the system automatically restores the running protection time to the previously set value. Manually reset the fault, and the elevator will return to normal.

5.1.11 Maintenance Test

- ① Set A-0 (Function testing) to 9 using the keypad or A1-33 (Test mode input) to 9 using the LED operating panel to enter the maintenance test mode. If successful, the three DP segments on the keypad flash.
- ② After entering the test mode, the system does not respond to hall calls and door open/close commands, and the maintenance personnel can only call the elevator using the keypad.
- ③ The elevator exits the maintenance test mode only after A-0 (Function testing) is set to 10 using the keypad or A1-33 (Test mode input) is set to 10 using the LED operating panel. Automatic exit is not supported. After the elevator exits the test mode, the DP segments on the keypad stop flashing and the system returns to normal.

5.1.12 Voice Announcement

The control system is equipped with voice announcement, supporting the arrival notification, door open/close notification, background music play, and breakdown appealing. Two parts are needed to implement the voice announcement:

- ① Hardware control: The MCTC-COB-B1 is equipped with voice announcement, integrating the hardware, and selection buttons.
- ② External amplifier: The model of car intercom must be MCTC-CI-B1.

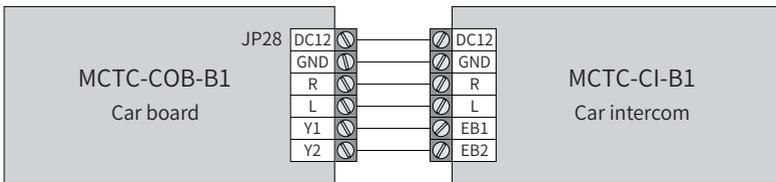


Figure 5-1 Wiring of voice announcement devices

Table 5-1 Voice functions set by MCTC-COB-B1 keys

Button	Name	Function
S1	Voice announcer PRG	Menu of the voice announcer

Button	Name	Function
S2	Voice announcer UP	Perform incremental operations, for example, increase the voice volume or switch languages in the up direction.
S3	Voice announcer DOWN	Perform decremental operations, for example, decrease the voice volume or switch languages in the down direction.

Voice functions set by the operation box:

For the operation of voice announcer by using buttons in the operation box, see the following flowchart.

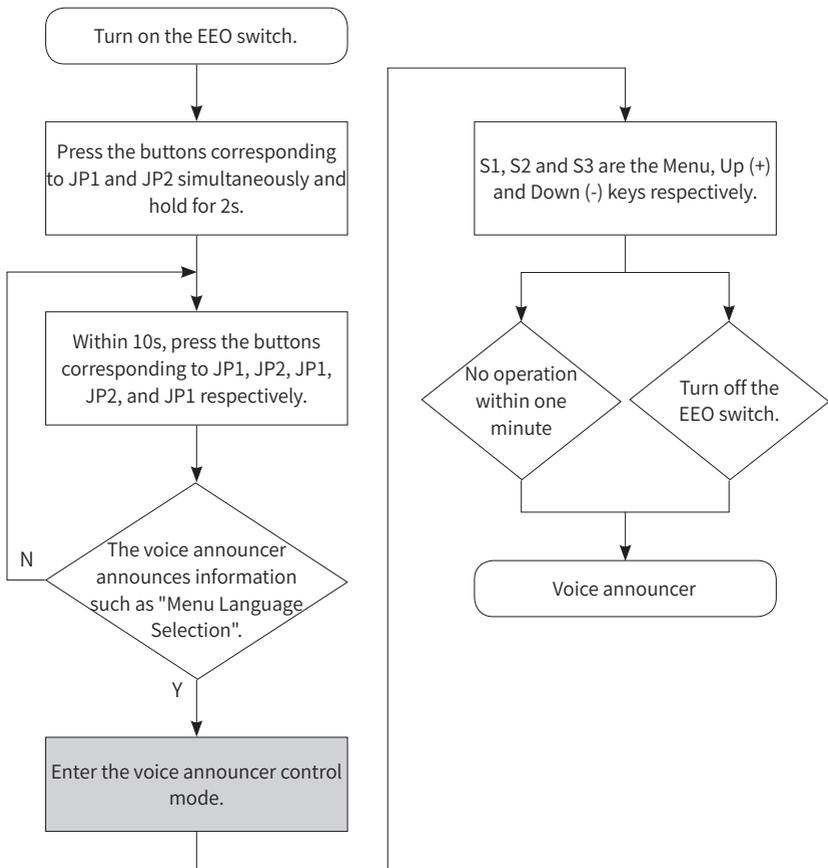


Figure 5-2 Flowchart of operating the voice announcer by using buttons on the operation box



◆ Shortcut for voice announcer language selection: After power-on, short J4 and hold down S1. The voice announcer language will switch every 2s (cyclical switchover between Chinese and English). Release S1 to complete the language setting after the language prompt.

5.1.13 Manual Door



◆ The standard control cabinet supports only Turkey CL-07 manual door and similar manual doors controlled by the electromagnetic lock.

Wiring:

① Wiring of the door lock circuit

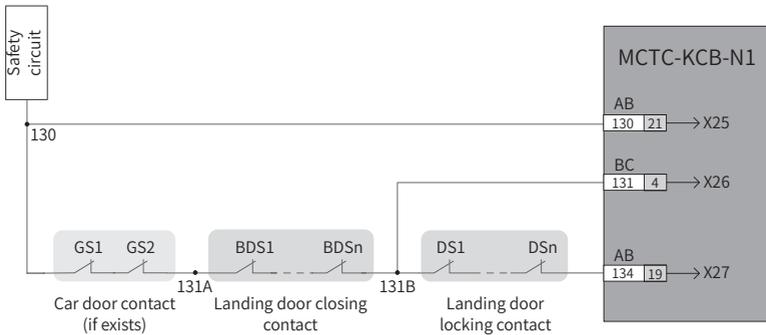


Figure 5-3 Wiring of the door lock circuit

② Wiring of the electromagnetic lock control circuit

The control cabinet supports the use of terminal Y7 on the MCB or terminal CY12 on the CTB as the electromagnetic lock control output. This section describes only the use of CY12.

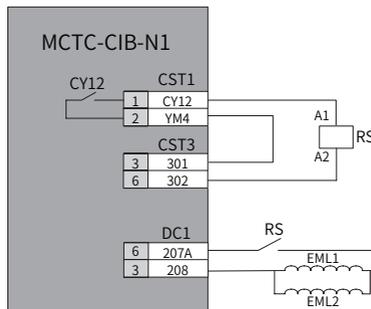


Figure 5-4 Wiring of the electromagnetic lock control circuit



NOTE

◆ Prepare the RS relay yourself according to the electrical specifications of the electromagnetic lock.

③ Parameter setting

Parameter No.	Setting Value	Function Description	Remarks
A1-11	Bit0 = 1	Manual door function enabled	CY12 is automatically used as the manual door control output when the manual door function is enabled.
F5-38	5	Manual door close limit detection	Function assigned to X26
F5-39	10	Manual door lock detection	Function assigned to X27
FC-00	Bit2 = 1	Decelerating to stop at active light curtain	During normal-speed running, the elevator decelerates to stop immediately after the light curtain operates, and runs to the registered floor after the light curtain restores.
FC-00	Bit9 = 1	Mode without door open/close limit	In this mode, the system automatically judges the door open/close limit without the participation of the door open/close limit signal. It determines that the door open limit is reached 3s after the door open signal output and the door close limit is reached 3s after the door close signal output.

5.2 Attendant Function

1 Function description

- The elevator responds to hall calls.
- The elevator door does not close automatically. You need to hold down the door close button to close the door. If you release the door close button during door close, the elevator opens the door again automatically.
- In the attendant state, direct travel ride and direction change can be implemented by using terminals JP20 and JP22 on the car call board (CCB) respectively. When the direct travel ride signal is active, the elevator does not respond to hall calls. After

responding to the direction change signal once, the elevator responds to calls of the reverse direction.

- If the elevator that enters the attendant state is under parallel/group control, the hall calls of this elevator are responded to by other elevators in the parallel/group control system.



NOTE

- ◆ The system offers the attendant function by default. Certain actions can be modified by setting the parameters.

2 Wiring

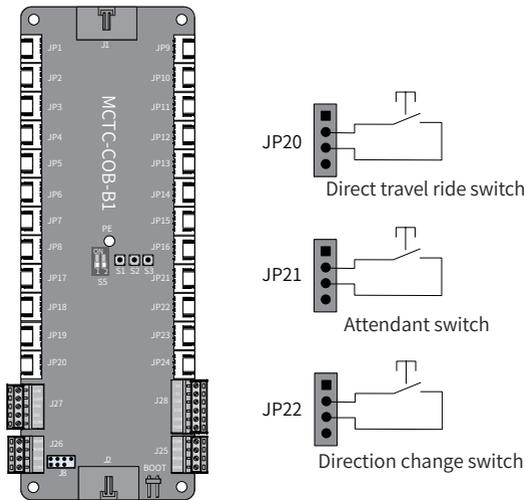


Figure 5-5 Wiring of the attendant mode

- After pins 2 and 3 of JP21 on the CCB become ON, the elevator enters the attendant state.
- After pins 2 and 3 of JP20 on the CCB become ON, the elevator enters the direct travel ride state.
- After pins 2 and 3 of JP22 on the CCB activates once, the elevator changes its running direction once in the attendant state.

3 Parameters

Parameter No.	Parameter Name	Setting Range	Default
F5-00	Attendant/ Automatic state switchover time	3-200	3
F6-41	Program control selection 2	Bit10: Elevator lock in the attendant state	0
F6-43	Attendant function selection	Bit0: Calls canceled after entering the attendant state Bit1: Not responding to hall calls Bit2: Attendant/Automatic state switchover Bit3: Door close at jog Bit4: Automatic door close Bit5: Buzzer tweeting at intervals in the attendant state Bit6: Continuous buzzer tweeting in the attendant state Bit7: Car call button flashing to prompt	128

■ Attendant/Automatic state switchover

When Bit2 of F6-43 is set to 1 and F5-00 is smaller than 5 in the attendant state, if there is a hall call at non-current floors, the elevator automatically switches to the automatic (non-attendant) state after the time set in F5-00 is reached and responds to the hall call. After running is complete, the elevator automatically returns to the attendant state.

5.3 Fire Emergency Function

1 Function description (default function, certain actions can be modified by setting the parameters)

Phase 1 (returning to fire emergency floor)

- The elevator automatically clears car calls and hall calls.
- The elevator stops at the nearest floor without opening the door and then directly runs to the fire emergency floor.
- The elevator keeps the door open after arriving at the fire emergency floor.
- If the elevator is under parallel/group control, it exits the parallel/group control system after entering the fire emergency state.

Phase 2 (firefighter operation)

- The elevator responds only to car halls, and only one call can be registered.
- The elevator does not open/close the door automatically. You need to hold down the door open/close button to open/close the door.
- The light curtain signal input is inactive, but the safety edge signal input is active.



NOTE

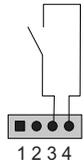
◆ The system offers the fire emergency function by default. Certain actions can be modified by setting the parameters.

2 Wiring

① Phase 1 (returning to fire emergency floor)

Scheme 1: Fire emergency signal input from the HCB (taking the MCTC-HCB-D630 as an example)

Table 5-2 Fire emergency signal input from the HCB

HCB	Terminal Name	Function	Wiring
MCTC-HCB-D630 	CN4	Interface for the fire emergency switch Pins 3 and 4 are for switch input.	Fire emergency signal input 

Scheme 2: Fire emergency signal input from the MCB (taking X18 input of reserved terminal STX as an example)

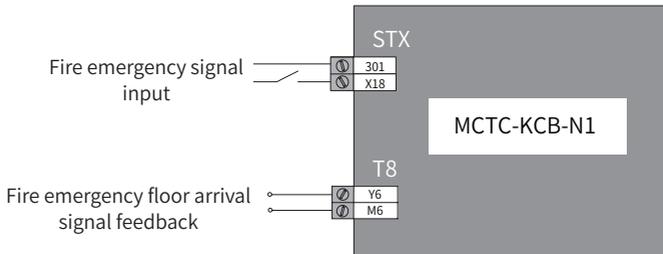


Figure 5-6 Wiring of fire emergency signal input from the MCB

Parameter No.	Parameter Name	Setting Range
F5-18	X18 function selection	11: Fire emergency signal NO 43: Fire emergency signal NC
F5-31	Y6 function selection	4: Fire emergency floor arrival signal feedback

② Phase 2 (firefighter operation)

Scheme 1: Entering the firefighter operation state using the CCB

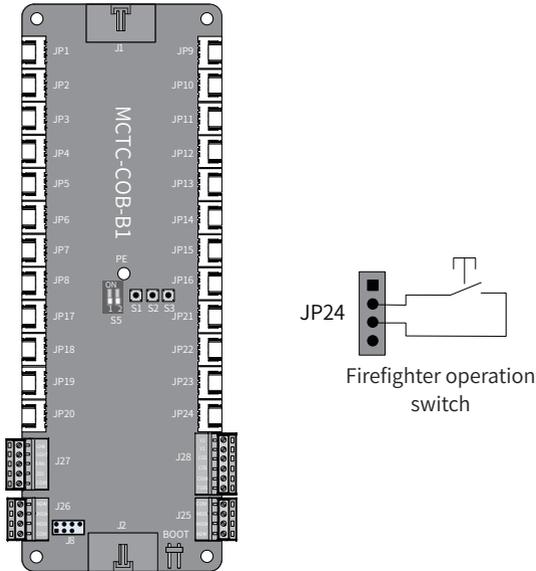


Figure 5-7 Wiring of firefighter operation signal input from the car board

Scheme 2: Entering the firefighter operation state using the control cabinet (taking X18 input of reserved terminal STX as an example)

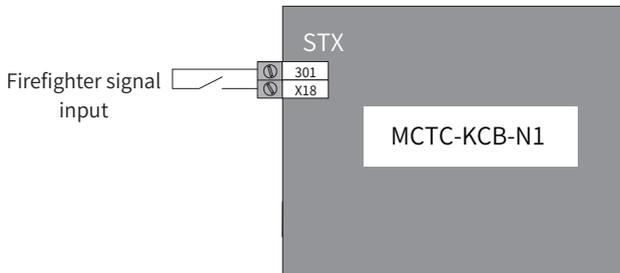


Figure 5-8 Wiring of firefighter operation signal input from the control cabinet

Parameter No.	Parameter Name	Setting Range
F5-18	X18 function selection	23: Firefighter operation signal NO 55: Firefighter operation signal NC

3 Parameters

Parameter No.	Parameter Name	Setting Range	Default
F6-44	Fire emergency function selection	Bit3: Arrival gong output in the inspection or fire emergency state Bit4: Multiple car calls registered in the fire emergency state Bit5: Retentive at power failure in the fire emergency state Bit6: Door close by holding down the door close button Bit7: Reserved Bit8: Door close at car call registration Bit9: Displaying hall calls in the fire emergency state Bit10: Forced running in the firefighter state Bit11: Exiting the firefighter state upon arrival at fire emergency floor Bit12: Not clearing car calls at reverse door open in the firefighter state Bit14: Door open by holding down the door open button Bit15: Automatic door open at fire emergency floor	16456
F5-Xa/Xb/Xc	Reserved input terminal	11/43: Fire emergency signal NO/NC 23/55: Firefighter operation signal NO/NC 40/72: Fire emergency floor switchover signal NO/NC	0
F5-29	Y4 function selection	4: Fire emergency floor arrival signal feedback	0
F6-03	Fire emergency floor	0 to F6-00	0
F8-12	Fire emergency floor 2	0 to F6-00	0

5.4 Elevator Lock Function

1 Function description

- After responding to all car calls that have been registered, the elevator returns to the elevator lock floor.
- After arriving at the elevator lock floor, the elevator opens and then closes the door and stops.
- After stopping, the elevator cancels all the hall call displays and turns off the lighting and fan in the car.



NOTE

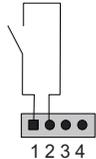
◆ The system offers the elevator lock function by default. Certain actions can be modified by setting the parameters.

2 Wiring

The input modes and corresponding settings of the elevator lock function are as follows:

Scheme 1: Elevator lock signal input from the HCB (taking the MCTC-HCB-D630 as an example)

Table 5-3 Elevator lock signal input from the HCB

HCB	Terminal Name	Function	Wiring
<p>MCTC-HCB-D630</p> 	CN4	Interface for the elevator lock switch Pins 1 and 2 are for switch input.	<p>Elevator lock signal input</p> 

Scheme 2: Elevator lock signal input from the control cabinet (taking Xa input of reserved terminal T7 as an example)

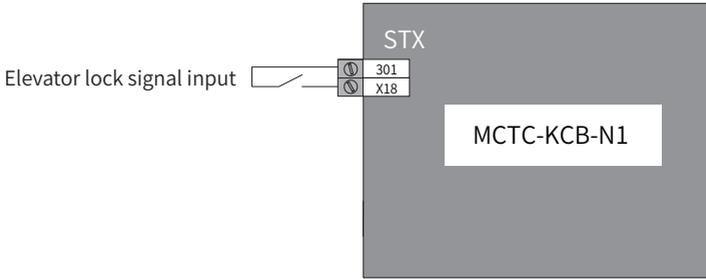


Figure 5-9 Wiring of elevator lock signal input from the control cabinet

Parameter No.	Parameter Name	Setting Range
F5-a	Xa function selection	28: Elevator lock signal NO 60: Elevator lock signal NC

3 Parameters

Parameter No.	Parameter Name	Setting Range	Default
F6-04	Elevator lock floor	F6-01 to F6-00	1
F6-38	Elevator lock start time	00.00–23.59	0
F6-39	Elevator lock end time	00.00–23.59	0
F6-40	Program control selection 1	Bit5: Timed elevator lock	0
F6-41	Program control selection 2	Bit8: Elevator lock at door open Bit9: Display available at elevator lock Bit10: Elevator lock in the attendant state	0
F6-42	Program control selection 3	Bit5: Clearing calls immediately at elevator lock	0

5.5 Time-based Floor Service

1 Function description

This function provides services for specified floors during certain periods.

2 Parameters

Parameter No.	Parameter Name	Setting Range	Default
FE-32	Program function selection 5	Bit8: Time-based floor service	0
F6-18	Start time of time-based floor service 1	00.00–23.59	00.00
F6-19	End time of time-based floor service 1	00.00–23.59	00.00
F6-20	Service floor 1 of time-based floor service 1	0–65535	65535
F6-21	Service floor 2 of time-based floor service 1	0–65535	65535
F6-36	Service floor 3 of time-based floor service 1	0–65535	65535
F6-22	Start time of time-based floor service 2	00.00–23.59	00.00
F6-23	End time of time-based floor service 2	00.00–23.59	00.00
F6-24	Service floor 1 of time-based floor service 2	0–65535	65535
F6-25	Service floor 2 of time-based floor service 2	0–65535	65535
F6-27	Service floor 3 of time-based floor service 2	0–65535	65535

These parameters set the time range and service floors of time-based floor service 1 and time-based floor service 2.

During non-time-based floor service periods, the elevator responds to the service floors defined in F6-05 (Service floor 1), F6-06 (Service floor 2), and F6-35 (Service floor 3).

Where,

- Service floor 1 corresponds to floors 1 to 16.

- Service floor 2 corresponds to floors 17 to 32.
- Service floor 3 corresponds to floors 33 to 40.

For example, during the period of time-based floor service 1 (defined in F6-18 and F6-19), the elevator responds only to the service floors defined in F6-20 (Service floor 1 of time-based floor service 1), F6-21 (Service floor 2 of time-based floor service 1), and F6-36 (Service floor 3 of time-based floor service 1) and ignores the service floors defined in F6-05 (Service floor 1), F6-06 (Service floor 2), and F6-35 (Service floor 3).

The setting of time-based service floors is the same as that of service floors in F6-05 (Service floor 1). For details, see "[Figure 4-8 Conversion of binary values to decimal values](#)" [on Page 122](#)

5.6 VIP Running Function

1 Function description

The SLIM LINE provides the VIP function. If this function is enabled, the elevator directly runs to the VIP floor first and provides services for VIP passengers.

In the VIP state:

- The elevator responds only to car calls (registered hall calls are cleared automatically).
- The elevator does not close the door automatically. You need to hold down the door close button to close the door. If you release the door close button during door close, the elevator opens the door again automatically.
- Running times setting:

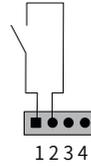
Set the VIP running mode in Bit8 of F6-46 (VIP function selection).

- When Bit8 is set to 1, the elevator responds only to one car call (the last one registered). After arriving at the destination floor, the elevator automatically exits the VIP state.
- When Bit8 is set to 0, there is no limit to the number of car calls. The elevator automatically exits the VIP state in either of the following conditions:
 - 1) It has executed all car calls (the elevator automatically enters the car call running 30s after each stop if the door open/close button is not pressed).
 - 2) No car call is registered within 30s after the elevator has arrived at the VIP floor.

2 Wiring



VIP input



Wiring:
Connect the VIP switch to pins 1 and 2 of terminal CN4 on the HCB.

Parameter setting:
Set FD-07 (HCB: JP1 input) to 4 and pins 1 and 2 of terminal CN4 for VIP input.

Figure 5-10 Wiring of the VIP mode enabled by the HCB

3 Parameters

Parameter No.	Parameter Name	Setting Range	Default
F6-12	VIP floor	0 to F6-00	0
FE-32	Elevator function selection 1	Bit9: VIP function	0
F6-46	VIP function selection	Bit0: VIP enabled by hall call at VIP floor Bit1: VIP enabled by terminal Bit8: Number of VIP car calls limited	0

Example:

The following part introduces how to use the VIP function and set the VIP floor.

① Parameter setting (for example, set floor 8 of a 20-floor elevator as the VIP floor)

Parameter No.	Parameter Name	Setting Range	Set Value	Remarks
F6-00	Top floor of the elevator	F6-01 to 40	20	The two parameters are used to set the top floor and bottom floor of the elevator, determined by the number of installed leveling plates.
F6-01	Bottom floor of the elevator	1 to F6-00	1	

Parameter No.	Parameter Name	Setting Range	Set Value	Remarks
F6-12	VIP floor	0 to F6-00	8	Sets floor 8 as the VIP floor.
FE-32	Elevator function selection 1	Bit9: VIP function	Bit9 = 1	Enables the VIP function.
F6-46	VIP function selection	Bit8: Number of VIP car calls limited	-	Bit8 = 1: The elevator responds only to one car call (the last one registered). Bit8 = 0: The number of car calls is not limited.

② Method of entering the VIP state

VIP enabled by hall call at VIP floor: The elevator enters the VIP state only when there is a hall call (input by the up/down hall call button) at the VIP floor. The parameters to be set are as follows.

Parameter No.	Parameter Name	Setting Range	Set Value	Remarks
F6-12	VIP floor	0 to F6-00	Actual VIP floor	-
F6-46	VIP function selection	Bit0: VIP enabled by hall call at VIP floor	Bit0 = 1	The elevator enters the VIP state when there is an active hall call at the VIP floor.

VIP enabled by terminal: The elevator enters the VIP state when the terminal for VIP hall calls becomes ON. In this mode, when the terminal for VIP hall call becomes ON, the elevator directly runs to the VIP floor, automatically opens the door, and wait for passengers. The parameters to be set are as follows.

Parameter No.	Parameter Name	Setting Range	Set Value	Remarks
FD-07	HCB: JP1 input	NO inputs: 1: Elevator lock signal 2: Fire emergency signal 3: Current floor forbidden signal 4: VIP signal 5: Security signal 6: Door close button input	FD-07 = 4	The two parameters are used to set the functions of JP1 and JP2 on the HCB. The setting is effective for HCBs at all floors. You can use either JP1 or JP2 for VIP input.
FD-08	HCB: JP2 input		FD-08 = 4	
F6-46	VIP function selection	Bit1: VIP enabled by terminal	Bit1 = 1	After the terminal for VIP hall calls becomes ON, the elevator enters the VIP state.

5.7 UCMP Function

1 Function description (default function, certain actions can be modified by setting the parameters)

When the landing door is unlocked and the car door is open, the elevator stopping at a landing may move unexpectedly if the motor guaranteeing safe running or any component of the drive control system fails. The UCMP device is used to avoid or stop such movement.

The components required to implement the UCMP include:

① MCTC-SCB board (standard)

MCTC-SCB-A3 is provided for the SLIM LINE control cabinet meeting the European standard, and MCTC-SCB-A4/D4 is provided for the SLIM LINE control cabinet meeting only the Chinese standard.

② Four leveling switches

The up and down leveling switches can be NO or NC, but the up and down door zone switches must be NO.

Output specifications of switches: 24 V voltage, min. 70 mA output current

- ③ The recommended installation requirements for the leveling switches and leveling plates are as follows:
- $H1 \leq 20 \text{ mm}$
 - The length of leveling plates ($H2$) affects the UCMP braking-to-stop distance. Therefore, select a proper length for leveling plates based on actual conditions. The recommended length is 300 mm or below.
 - There is no requirement for the distance between the up door zone switch and the down door zone switch ($H3$), but a larger distance indicates a shorter UCMP detection distance.

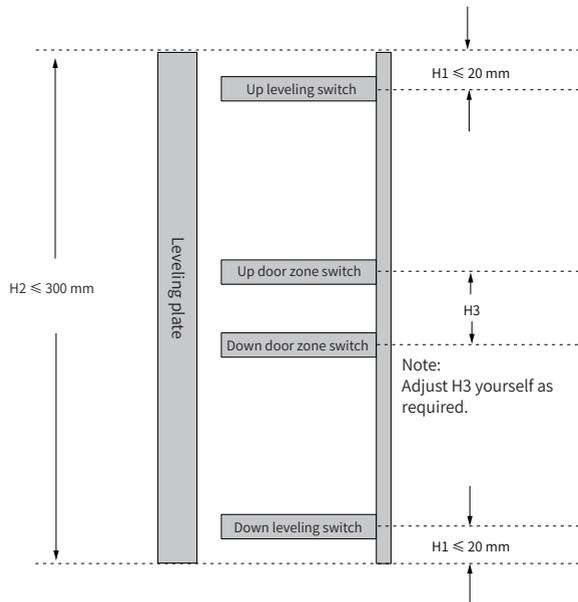


Figure 5-11 Recommended installation for INOVANCE UCMP switches

Operating principles (taking the ascending unintended car movement as an example):

■ UCMP for elevators with synchronous motor during re-leveling

When the up leveling switch detaches from the leveling plate, the SO terminal on the MCTC-SCB shorts the door lock and the control system starts to drive the car to re-level downwards. If the car moves unexpectedly at this time, it will be out of control and continue the downward movement until the down leveling switch detaches

from the leveling plate. Then, the SO terminal stops shorting the door lock and cuts off the brake power supply so that the brake can stop the car. The UCMP is complete. The protection principle is the same for upward re-leveling.

■ UCMP for elevators with synchronous motor during ADO

During up running, after the up leveling switch and the up/down door zone switch trigger the leveling plate, the SO terminal on the MCTC-SCB shorts the door lock and the elevator continues running with door open. If the car moves unexpectedly at this time, it will be out of control and continue the upward movement until the up leveling switch detaches from the leveling plate. Then, the SO terminal stops shorting the door lock and cuts off the brake power supply so that the brake can stop the car. The UCMP is complete. The protection principle is the same for downward ADO.

Note: For the wiring of MCTC-SCB, see the electrical schematic diagram of the control cabinet.

2 Parameters

Parameter No.	Parameter Name	Setting Range	Remarks
F6-52	Program function selection	Bit1 = 1: Enables CAN communication between the MCTC-SCB and the MCB	Applies only to MCTC-SCB-A4/D4
FE-32	Elevator function selection 1	Bit2 = 1: Enables the re-leveling function	The UCMP will be automatically enabled after either of the re-leveling and ADO functions is enabled.
		Bit3 = 1: Enables the ADO function	

Parameter No.	Parameter Name	Setting Range
F5-01	X1 function selection	01: Up leveling signal NO
F5-02	X2 function selection	03: Re-leveling signal NO
F5-03	X3 function selection	02: Down leveling signal NO
F5-08	X17 function selection	22: Shorting door lock circuit relay feedback NO
F5-30	Y5 function selection	03: Shorting door lock circuit relay output

5.8 Emergency Evacuation Function

5.8.1 Emergency Evacuation Using ARD at Power Failure

The control system offers an ARD that enables automatic emergency evacuation after a power failure if proper batteries are configured.

1 Emergency evacuation conditions

The ARD function will not be enabled in either of the following two conditions:

- ① When the power grid is normal, a power failure occurs on the system due to the disconnection of the main air switch.
- ② When the ARD switch is turned off, a power failure occurs on the system due to the failure of the power grid, with the main air switch being ON.

If the ARD switch is turned on when the power grid fails and the main air switch is ON, the ARD function will be enabled as soon as a power failure occurs on the system.

2 Emergency evacuation modes

The system provides two ARD emergency evacuation modes: controller drive and shorting stator braking (for PMSM). You can select the required mode by setting Bit15 of F6-45 (Emergency evacuation function selection).

- ① Bit15 of F6-45 = 0: controller drive mode enabled, with the speed set in F8-09 (Emergency evacuation speed at power failure)

When the elevator enters the ARD state and the running conditions are met, the system releases the brake and automatically compares the weights on two sides of the motor (car vs. counterweight). Based on the comparison, the system then drives the elevator to move in the heavy-load direction and stops it at the nearest floor to unload passengers.

- ② Bit15 of F6-45 = 1: shorting stator braking mode (for PMSM) enabled

When the elevator enters the ARD state and the running conditions are met, the system releases the brake and shorts the motor stator. The elevator then runs down in the heavy-load direction under shorting stator braking mode and stops at the nearest floor. Considering the weight balance on two sides of the motor, Bit12 of F6-45 (Emergency evacuation function selection) must be set to 1 to enable the switchover from the shorting stator braking mode (for PMSM) to controller drive. Once the system detects that the running speed is extremely low, it will automatically close and then release the brake and switch to the controller drive mode.

3 Precautions

- The ARD function is active only at power failure during normal-speed running.
- The motor drive mode is used by default (F8-10 = 2; Bit15 of F6-45 = 0).
- During emergency evacuation, the keypad in the monitoring cabinet displays the running direction, elevator speed, and door zone signal.
- The system is de-energized 15s after the door close limit signal becomes active at the end of emergency evacuation. The elevator doors will open again if the door open button is pressed within 15s after door close.

5.8.2 Emergency Evacuation Using Electric Brake Release Device

The electric brake release function is required when the elevator cannot run and the brake needs to be released manually. The operation requirements are as follows:

- Disconnect the main switch to make sure that the control cabinet is de-energized.
- Hold down the **START** button to activate the electric brake release function. If successful, the LEDs of the keypad will automatically light up.
- Release the **START** button and hold down the **BKR** and **P-B** keys on the keypad. Then, the electric brake release circuit has an output, the traction machine brake is released, and the system runs at a low speed in the light-load direction. (The brake release remains active when the **BKR** and **P-B** keys are held down.)

In the process of brake release, the system automatically closes the brake to stop the elevator after the door zone signal becomes active. If you press the **BKR** and **P-B** keys simultaneously at this time, the brake will be released again. The battery exits the working state five minutes after the brake release operation has been completed. The brake release will start again whenever you press the **BKR** and **P-B** keys within this period.

During brake release, the keypad displays the running direction, elevator speed, and door zone signal, and the motor stator is shorted for braking. For compliance with elevator standards and safety, the electric brake release device automatically cuts off the output when the elevator speed exceeds 0.3 m/s in the shorting stator braking mode.



NOTE

- ◆ The electric brake release function must only be performed by professionals.
- ◆ After any one of keys **BKR** and **P-B** is pressed, the other key must be pressed within 1s. Otherwise, you must release the keys and press them again.

Battery pack specifications:

The control cabinet integrates the ARD and electric brake release functions. The battery box, as an external part, needs to be configured separately. You can order it together with the control cabinet from Inovance or prepare it yourself. Inovance provides four batteries (12 V, 5.5 Ah) connected in series, supporting up to 6-minute emergency evacuation by ARD. The diameter of battery cables must be equal to or larger than 2 mm.

You can configure the battery box (pack) based on the emergency evacuation mode required and the specifications recommended in the following table.

Emergency Evacuation Mode	Motor Control Mode	Elevator Speed	Continuous Working Time of Fully Charged Batteries	Specifications of Battery Pack (48 VDC)
Electric brake release (ARD function not required)	Shorting motor stator braking	-	≤ 6 minutes	Four 12 V, 2.3 Ah batteries connected in series
ARD (Electric brake release function provided)	Motor drive	0.05 m/s	≤ 3 minutes	Four 12 V, 4 Ah batteries connected in series
		0.05 m/s	≤ 6 minutes	Four 12 V, 5.5 Ah batteries connected in series



NOTE

- ◆ When Err69 occurs on the system, the buzzer in the car tweets for 5s during door open to prompt users that the ARD function/battery is abnormal. In this case, you need to perform troubleshooting. This function is enabled by default and can be disabled by setting Bit2 of A1-31 (Program function selection) to 1.

5.8.3 Intelligent Automatic Emergency Evacuation

Intelligent automatic emergency evacuation is a function designed to reduce the probability of passenger trap. It works as follows:

Intelligent automatic emergency evacuation is a function designed to reduce the probability of passenger trap. It works as follows:

During running, if the elevator cannot operate normally due to a fault, the control system automatically analyzes and troubleshoots the fault. Under the premise of ensuring safety, the system automatically releases the brake to rescue passengers. The elevator moves slowly to the door zone in the light-load direction. After reaching the door zone, the elevator automatically opens the doors for passengers to evacuate. To prevent the elevator from starting again, the elevator doors are closed and the elevator stops running after the evacuation has been completed.



NOTE

- ◆ The brake cannot be released or the motor stator cannot be shorted when Err13, Err29, Err36, Err37, Err41, and Err42 occur. In this case, the automatic emergency evacuation is unavailable.
- ◆ This function is specific to synchronous motor.

5.9 Parallel/Group Control Solution

The SLIM LINE offers parallel control and group control functions to improve the elevator use efficiency. The parallel control is implemented through the CAN communication port, and the group control is implemented using the GCBs. This provides a solution for intelligent elevator allocation, achieving high efficiency and energy saving.

5.9.1 Parallel Control

1 Function description

The parallel control of two elevators is implemented through the CAN2 communication port.

2 Wiring

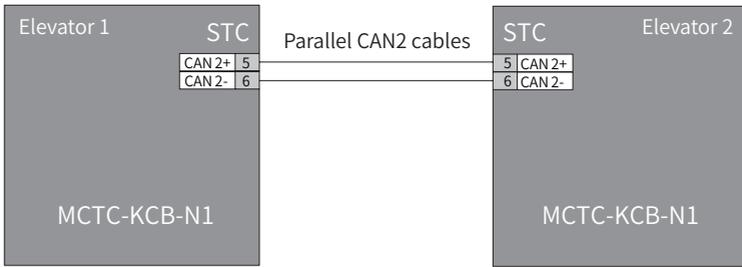


Figure 5-12 Wiring of parallel control

Instructions for using the parallel control (set F6-50 to a non-zero value):

- User floor: the actual floor of the building
- Physical floor: the floor which any elevator stops at and provides service for or the floor with the leveling plate
- For the same physical floor, the leveling plate must be installed for both elevators. Even if one elevator does not need to stop at a certain floor, the leveling plate must be installed at this floor for this elevator. You can set the service floors of this elevator so that it does not stop at this floor.
- Set the HCB addresses according to the physical floors of each elevator. The physical floors of different elevators may be inconsistent.
- Set the top floor (F6-00) and bottom floor (F6-01) of each elevator based on actual physical floors.

3 Parameters

Parameter No.	Parameter Name	Setting Range	Setting in Parallel Control	Remarks
F6-07	Number of elevators in group control	1-8	2	-
F6-08	Elevator No.	1-8	Master: Elevator 1 Slave: Elevator 2	-
F6-09	Program selection	-	Bit3 = 1: Parallel/Group control implemented through the CAN2 communication port	Set Bit3 to 1 when the CAN2 communication port is used for parallel control.

Taking the parallel control of two elevators as an example:

Elevator 1 has one underground user floor and four above-ground user floors but stops only at floors B1, 1, 2, and 3.

Elevator 2 has four above-ground user floors but stops only at floors 1, 3, and 4.

The following figure shows the attributes of the two elevators:

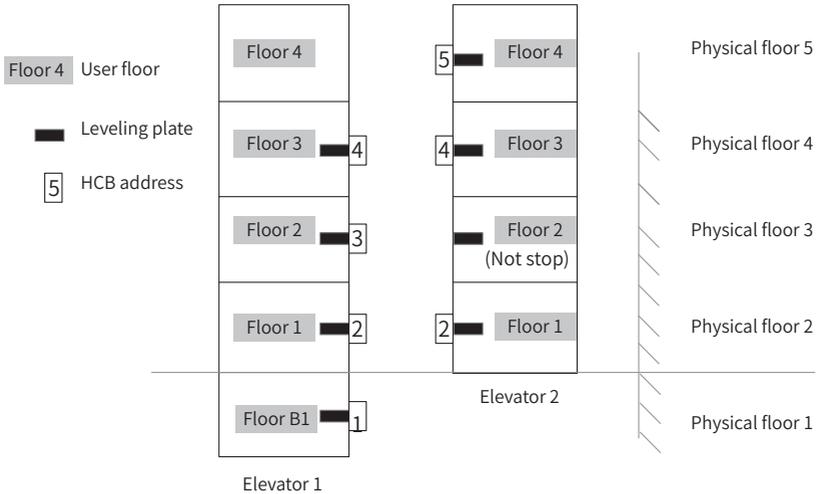


Figure 5-13 Floor diagram of two elevators in parallel control

The following table shows the parameter settings.

		Elevator 1		Elevator 2	
Number of elevators in group control (F6-07)		2		2	
Elevator No. (F6-08)		1		2	
User floor	Physical floor	HCB address	HCB display	HCB address	HCB display
B1	1	1	FE-01 = 1101	1	FE-01 = 1901
1	2	2	FE-02 = 1901	<ul style="list-style-type: none"> ◆ Non-stop floor ◆ No hall call ◆ Leveling plate required 	-
2	3	3	FE-03 = 1902	3	FE-03 = 1903

		Elevator 1		Elevator 2	
3	4	4	FE-04 = 1903	4	FE-04 = 1904
4	5	No hall call	No hall call	-	-
Bottom floor of the elevator (F6-01)		1		1	
Top floor of the elevator (F6-00)		4		4	
Service floor 1 (F6-05)		65535		65533 (does not stop at physical floor 2)	
Offset floor (F6-50)		0		1	

5.9.2 Group Control

1 Function description

Collaborating with the GCB (MCTC-GCB-A), the SLIM LINE can implement the group control of three or more elevators. One GCB supports the group control of up to four elevators.

2 Wiring

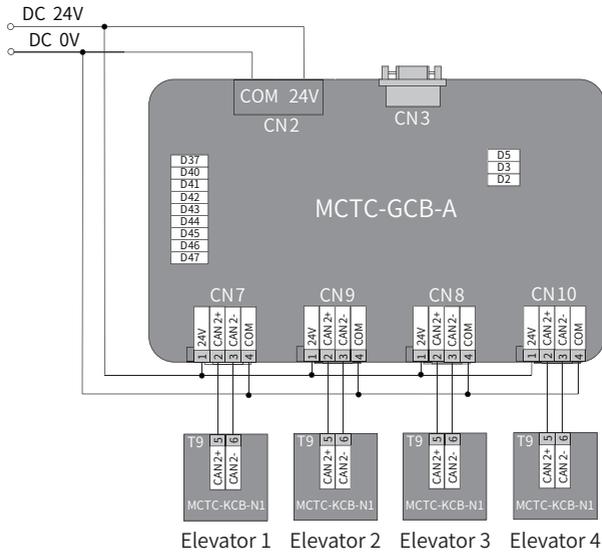


Figure 5-14 Wiring of group control

3 Parameters

Parameter No.	Parameter Name	Setting Range	Setting in Group Control	Remarks
F6-07	Number of elevators in group control	1-8	1-8	Actual number of elevators under group control
F6-08	Elevator No.	1-8	1-8	1: Elevator 1 2: Elevator 2 3: Elevator 3 4: Elevator 4

5.10 Through-type Door Solution

1 Function description

This function implements separate control on two doors of an elevator.

The SLIM LINE supports four through-type door control modes: mode 1, mode 2, mode 3, and mode 4, as described in the following table.

Table 5-4 Through-type door control modes

Mode	Mode Description	Function Description
Mode 1	Door open/close on both sides if the car/hall call is active on either side: ① Doors 1 and 2 open simultaneously upon arrival for car calls. ② Doors 1 and 2 open simultaneously upon arrival for hall calls. ③ Doors 1 and 2 open/close simultaneously if any door open/close button in the car is active.	FC-04 = 0 ① Number of door operator(s): FB-00 = 2 ② Hall call address setting: F8-16 = N (N ≥ F6-00) Start address of door 1 hall call: 1 Start address of door 2 hall call: N + 1
Mode 2	Door open on the same side if the hall call is active, and door open on both sides if the car call is active: ① Doors 1 and 2 open simultaneously upon arrival for car calls. ② Door 1 opens upon arrival for door 1 hall call, and door 2 opens upon arrival for door 2 hall call. ③ Doors 1 and 2 open/close simultaneously if any door open/close button in the car is active.	FC-04 = 1

Mode	Mode Description	Function Description	
Mode 3	<p>Door open on the same side if the hall call is active, and door open only on one side if the car call is active (manual selection):</p> <p>① Upon arrival for car calls, select the door (door 1 or door 2) to open through the door switchover signal (JP16 or JP20 on the MCTC-COB-B1 board). The control modes are as follows:</p> <ul style="list-style-type: none"> ● Control the door to open using the button Set Bit2 of F6-40 (Program control selection 1) to 1: The button signal is connected to JP16. Door 1 opens if the button is triggered once, and door 2 opens if the button is triggered twice. ● Control the door to open using the switch Set Bit15 of F6-40 (Program control selection 1) to 1: The switch signal is connected to JP20. Door 1 opens if the switch is off, and door 2 opens if the switch is on. <p>② Door 1 opens upon arrival for door 1 hall call, and door 2 opens upon arrival for door 2 hall call. If door 1 hall call and door 2 hall call are both active, door 1 opens and closes, and then door 2 opens.</p>	FC-04 = 2	<p>① Number of door operator(s): FB-00 = 2</p> <p>② Hall call address setting: F8-16 = N (N ≥ F6-00) Start address of door 1 hall call: 1 Start address of door 2 hall call: N + 1</p>
Mode 4	<p>Door open on the same side if the car/hall call is active.</p> <p>① Door 1 opens upon arrival for door 1 hall call, and door 2 opens upon arrival for door 2 hall call.</p> <p>② Door 1 opens upon arrival for door 1 car call, and door 2 opens upon arrival for door 2 car call.</p> <p>③ Door 1 opens if the door 1 open button in the car is active, and door 2 opens if the door 2 open button in the car is active. Doors 1 and 2 close simultaneously if any door close button is active.</p>		FC-04 = 3

Table 5-5 Wiring description of car operation box

Mode	Wiring Description of Car Operation Box	Wiring Description of HCB
Mode 1	Supports both the single operation box and double operation boxes:	Connect the HCBs of both door 1 and door 2 to pins 301, 302, MOD+, and MOD- of terminal BD in the control cabinet.
Mode 2	① Single operation box: Connect the MCTC-COB-B1 board in the operation box to terminal COB1 on the CTB.	
Mode 3	② Double operation boxes: Connect the MCTC-COB-B1 board in operation boxes 1 and 2 to terminals COB1 and COB2 on the CTB respectively.	
Mode 4	If two operation boxes are required: ① Connect the MCTC-COB-B1 board in operation box 1 to terminal COB1 on the CTB. ② Connect the MCTC-COB-B1 board in operation box 2 to terminal COB2 on the CTB, and push pin 2 of DIP switch S5 to ON, as shown in the following figure. 	

2 Wiring

① Operation box

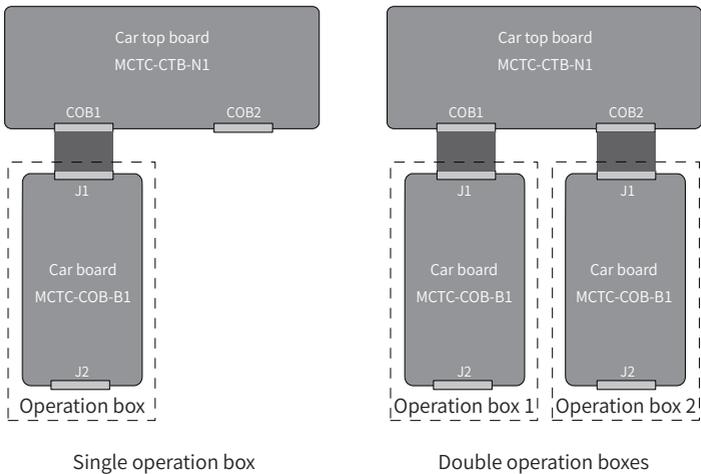


Figure 5-15 Wiring of single operation box and double operation boxes

② HCB address setting

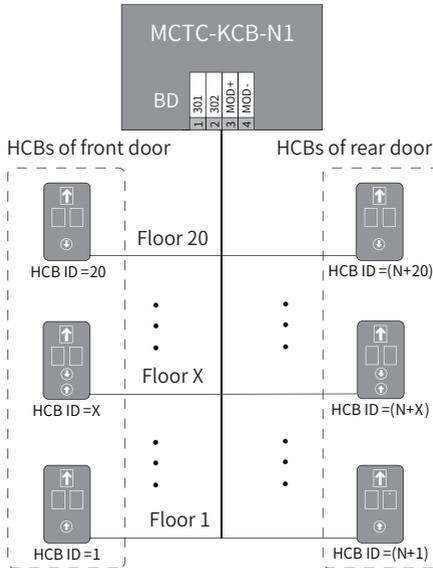


Figure 5-16 HCB setting diagram

HCB addresses of the front door: 1 to 20

HCB addresses of the rear door: N to N+20

F8-16 = N (N > F6-00)

5.11 Accessibility Function

1 Function description

This function, which allows wheelchair passengers to use the elevator conveniently, is implemented using the operation box and landing operating panel (LOP) specialized for the disabled. The standard control system software supports the accessibility function only for elevators with 16 or fewer floors. For elevators with more than 16 floors, customized software is required.

- If there is a call registered using the operation box for the disabled, the door open holding time (FB-15) will be prolonged.
- If there is a door open command from the operation box for the disabled, the door open holding time (FB-15) will be prolonged.
- If there is a call registered using the LOP for the disabled, the door open holding time (FB-15) will be prolonged.

2 Wiring

① Operation box

Connect the MCTC-COB-B1 board in the main operation box to terminal COB1 on the CTB, and connect that in the operation box for the disabled to the rear end of the MCTC-COB-B1 board in the main operation box. Additionally, set both Bit13 and Bit14 of F6-40 (Program control selection 1) to 1.

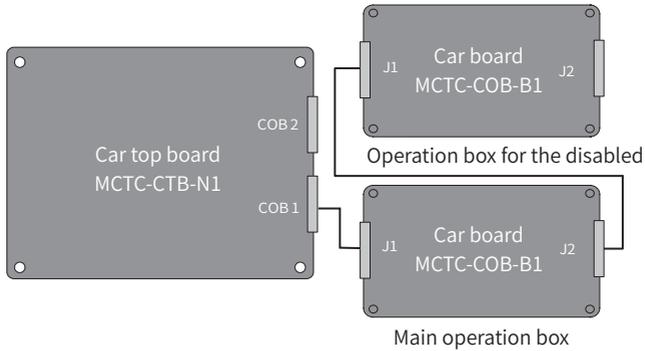


Figure 5-17 Wiring of the operation box for the disabled

② Accessibility function enabled by MCTC-HCB-B

An HCB (MCTC-HCB-B) specialized for the accessibility function is required at each floor to register hall calls from the disabled.

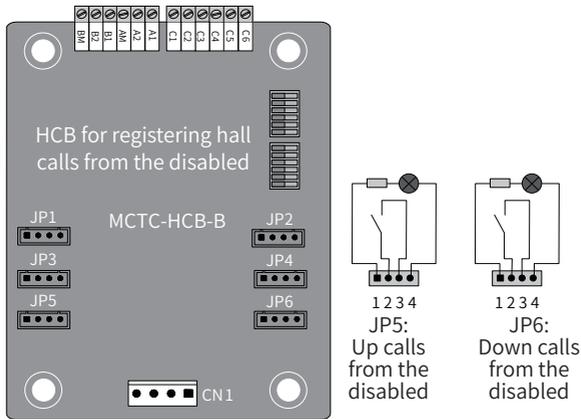


Figure 5-18 Wiring of the MCTC-HCB-B board

3 Parameters

Parameter No.	Parameter Name	Setting Range	Default	Set Value
F6-40	Program control selection 1	Bit0: Accessibility function selection Bit13: Duplicated commands used as accessibility function and rear door function 0: Rear door function 1: Accessibility function Bit14: Car call command duplication	0	Bit0 = 1 Bit13 = 1 Bit14 = 1
FB-15	Special door open holding time	10-1000 Used to set the door open holding time upon arrival when the accessibility function is enabled.	0	Set this parameter as required.

5.12 Pit Safety Protection

The control system provides pit safety protection function. It limits the elevator's running after detecting that someone enters the pit. This guarantees the safety of the person(s) in the pit.

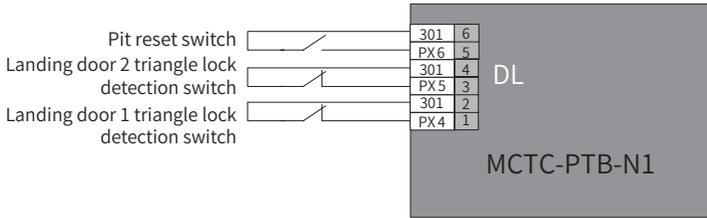
This function can be activated in the following three methods:

■ Method 1:

- ① The MCTC-PTW-N1 is configured.
- ② The inspection signal of the pit inspection device becomes active once.

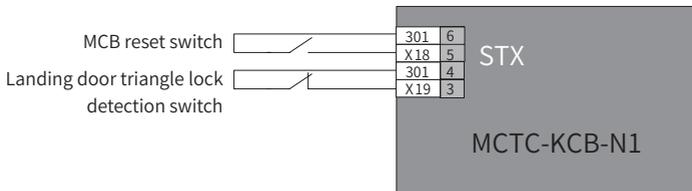
■ Method 2:

- ① The MCTC-PTW-N1 is configured.
- ② A triangle lock detection switch is added for landing door 1/2 and connected to pin PX4/PX5 on the MCTC-PTB-N1. The elevator running is limited immediately once the detection switch is disconnected.
- ③ The triangle lock detection switch and reset switch must be NC and NO respectively.



■ Method 3:

- ① A triangle lock detection switch is added for the landing door and connected to input point X (for example, X18) on the MCB. The elevator running is limited immediately once the detection switch is disconnected.
- ② The triangle lock detection switch and reset switch must be NC and NO respectively.



After any one of the preceding methods takes effect, the control system considers that someone has entered the pit. Then, it limits the elevator's running and reports Err96 to protect the person(s) in the pit. The elevator can only run in the EEO or inspection state. A manual reset is required to exit the pit protection state.

There are three reset methods, described as follows:

- ① Reset using the hall call button at the bottom terminal floor

Make sure that the door lock signal is active. Press the hall call button at the bottom terminal floor and hold for 5s. Repeat this operation three times to reset the elevator.

This reset method is enabled by default. You can disable it by setting Bit8 of A1-31 (Program function selection) to 1.
- ② Reset using the pit reset switch

Make sure that the door lock signal is active. Connect the reset switch to pin PX6 on the pit board. The elevator can be reset after the reset switch operates once.

This reset method is enabled by default. You can disable it by setting Bit9 of A1-31 (Program function selection) to 1.

③ Reset using the MCB reset switch

Make sure that the door lock signal is active. Connect the reset switch to input point X on the MCB. The elevator can be reset after the reset switch operates once.

This reset method is enabled by default. You can disable it by setting Bit10 of A1-31 (Program function selection) to 1. Set the parameter corresponding to the MCB reset switch to 95/127. The signal feature (NO/NC) depends on the field wiring.

5.13 Door Lock Shorting Detection

The door lock shorting detection requires an MCTC-SCB. This function is enabled automatically after the ADO or re-leveling function is activated.

After arrival at the destination floor, the SO terminal on the MCTC-SCB shorts the door lock and the system detects the landing/car door contact state via pin X26/X28 on the MCB only in the door open state.

When the elevator doors are open, if X26 is active during the door lock shorting detection, it indicates that the front car/landing door contact is shorted; if X28 is active, it indicates that the rear car/landing door is shorted. The system reports Err53 and the elevator stops running.



NOTE

- ◆ For the wiring of the MCTC-SCB, see the electrical schematic diagram of the control cabinet.

6 Troubleshooting

6.1 Fault Display

When a fault occurs in the control cabinet, the keypad displays the current fault code and subcode in scrolling mode, such as "E22-101" shown in the following figure.



Figure 6-1 Fault code and subcode displayed on the keypad

When a LED operating panel is used, it displays the current fault code, such as "Err22".

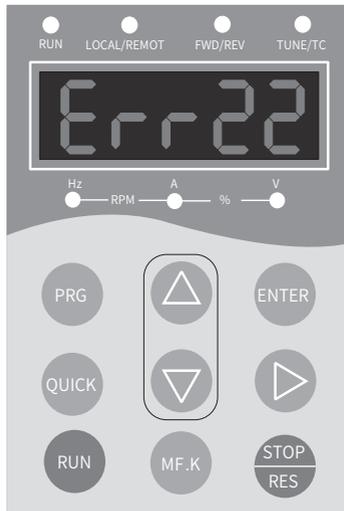
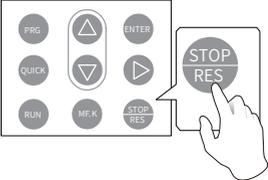
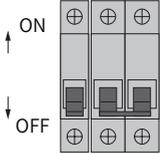


Figure 6-2 Fault code displayed on the LED operating panel

If you set F-2 (Fault reset and display of the fault time and code) to 2 using the keypad, the keypad will display the information about the latest 10 faults, including fault code, subcode, and occurrence time. After troubleshooting, reset the fault by setting F-2 to 1.

The control cabinet records detailed information about the latest 10 faults and brief information about 50 groups of faults. For more details, see the description of FC-11 (11th fault code) to FC-210 (60th fault hour and minute) and groups E0 to E9.

6.2 Restart After Faults

Stage	Solution	Remarks
After the fault occurs	Set F-2 (Fault reset and display of the fault time and code) to 2 using the keypad. The keypad will then display the information about the latest 10 faults, including fault code, subcode, and occurrence time.	For more details, see the description of FC-11 (11th fault code) to FC-210 (60th fault hour and minute) and groups E0 to E9.
Before fault reset	Find out the fault cause and eliminate the fault according to the fault code displayed on the LED operating panel.	See " 6.4 Fault Information and Solutions " on Page 237 for troubleshooting.
Methods of fault reset	<p>① Automatic fault reset</p> <p>After troubleshooting, some faults can be automatically reset if the conditions for automatic reset are met.</p>	-
	<p>② Manual fault reset</p> <p>After troubleshooting, some faults must be manually reset by pressing  on the LED operating panel or setting F-2 to 1 using the keypad.</p>	<p>1) Press  on the LED operating panel.</p>  <p>2) Set F-2 to 1 using the keypad.</p> 
	<p>③ Fault reset through power-off</p> <p>After troubleshooting, some faults must be reset by powering off and then on the controller.</p>	 <p>Main switch</p>

6.3 Fault Levels

The control cabinet offers approximately 70 alarms and protection functions, allowing real-time monitoring of various input signals, running conditions, and feedback signals. Once a fault occurs, the corresponding protection function will be activated and the fault code will be displayed on the control cabinet.

According to the severity, the faults occurring in the system can be graded into five levels. The faults of different levels are handled in different ways. See the following table for the solutions for each fault level.

Table 6-1 Description of fault levels

Fault Level	Fault State	Solution
Level 1	<ul style="list-style-type: none"> ◆ Displays the fault code. ◆ Outputs the fault relay action command. 	1A – The elevator running is not affected under any working conditions.
Level 2	<ul style="list-style-type: none"> ◆ Displays the fault code. ◆ Outputs the fault relay action command. ◆ Continues normal running of the elevator. 	2B – The advance door opening and re-leveling functions are disabled.
Level 3	<ul style="list-style-type: none"> ◆ Displays the fault code. ◆ Outputs the fault relay action command. ◆ Stops output and closes the brake immediately after stop. 	3A – In low-speed running, the elevator decelerates to stop at a special deceleration rate and cannot restart.
		3B – In low-speed running, the elevator does not stop. In normal-speed running, the elevator can start running at a low speed at a delay of 3s after stop.
Level 4	<ul style="list-style-type: none"> ◆ Displays the fault code. ◆ Outputs the fault relay action command. ◆ In the distance control mode, the elevator decelerates to stop and cannot run again. 	4A – In low-speed running, the elevator decelerates to stop at a special deceleration rate and cannot restart.
		4B – In low-speed running, the elevator does not stop. In normal-speed running, the elevator can start running at a low speed at a delay of 3s after stop.
		4C – In low-speed running, the elevator does not stop. After stop, the elevator can start running at a low speed at a delay of 3s.
Level 5	<ul style="list-style-type: none"> ◆ Displays the fault code. ◆ Outputs the fault relay action command. ◆ The elevator stops immediately. 	5A – In low-speed running, the elevator stops immediately and cannot restart.
		5B – In low-speed running, the elevator does not stop. After stop, the elevator can start running at a low speed at a delay of 3s.

6.4 Fault Information and Solutions

If a fault is reported, the system will perform corresponding processing based on the fault level. You can handle this fault according to the information provided in the following table.

Fault Code	Fault Description	Possible Cause	Solution	Level
Err02	Overcurrent during acceleration	A grounding or short circuit fault exists in the main circuit output.	<ul style="list-style-type: none"> ◆ Check whether the motor and grounding cables are connected correctly. ◆ Check whether the shorting motor stator contactor causes a short circuit at the controller output side. ◆ Check whether motor cables have a damaged jacket. 	5A
		Motor auto-tuning is performed improperly.	<ul style="list-style-type: none"> ◆ Set motor parameters according to the motor nameplate and perform motor auto-tuning again. 	
		The encoder signal is incorrect.	<ul style="list-style-type: none"> ◆ Check whether encoder PPR is set correctly. ◆ Check whether the encoder signal is interfered with, whether the encoder cable runs through the duct independently or is too long, and whether the shield is grounded at one end. ◆ Check whether the encoder is installed reliably, whether the rotating shaft is connected to the motor shaft securely, and whether the encoder is stable during normal-speed running. ◆ Check whether the encoder is connected correctly and securely. For an asynchronous motor, try to run it in the open-loop control mode and compare the currents in the open-loop and closed-loop control modes to judge whether the encoder works properly. 	
		The motor phase sequence is incorrect.	<ul style="list-style-type: none"> ◆ Exchange the motor UVW cables. 	
		The acceleration time is too short.	<ul style="list-style-type: none"> ◆ Reduce the acceleration rate. 	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err03	Overcurrent during deceleration	A grounding or short circuit fault exists in the main circuit output.	<ul style="list-style-type: none"> ◆ Check whether the motor and grounding cables are connected correctly. ◆ Check whether the shorting motor stator contactor causes a short circuit at the controller output side. ◆ Check whether motor cables have a damaged jacket. 	5A
		Motor auto-tuning is performed improperly.	<ul style="list-style-type: none"> ◆ Set motor parameters according to the motor nameplate and perform motor auto-tuning again. 	
		The encoder signal is incorrect.	<ul style="list-style-type: none"> ◆ Check whether encoder PPR is set correctly. ◆ Check whether the encoder signal is interfered with, whether the encoder cable runs through the duct independently or is too long, and whether the shield is grounded at one end. ◆ Check whether the encoder is installed reliably, whether the rotating shaft is connected to the motor shaft securely, and whether the encoder is stable during normal-speed running. ◆ Check whether the encoder is connected correctly and securely. For an asynchronous motor, try to run it in the open-loop control mode and compare the currents in the open-loop and closed-loop control modes to judge whether the encoder works properly. 	
		The acceleration time is too short.	<ul style="list-style-type: none"> ◆ Reduce the deceleration rate. 	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err04	Overcurrent at a constant speed	A grounding or short circuit fault exists in the main circuit output.	<ul style="list-style-type: none"> ◆ Check whether the motor and grounding cables are connected correctly. ◆ Check whether the shorting motor stator contactor causes a short circuit at the controller output side. ◆ Check whether motor cables have a damaged jacket. 	5A
		Motor auto-tuning is performed improperly.	<ul style="list-style-type: none"> ◆ Set motor parameters according to the motor nameplate and perform motor auto-tuning again. 	
		The encoder signal is incorrect.	<ul style="list-style-type: none"> ◆ Check whether encoder PPR is set correctly. ◆ Check whether the encoder signal is interfered with, whether the encoder cable runs through the duct independently or is too long, and whether the shield is grounded at one end. ◆ Check whether the encoder is installed reliably, whether the rotating shaft is connected to the motor shaft securely, and whether the encoder is stable during normal-speed running. ◆ Check whether the encoder is connected correctly and securely. For an asynchronous motor, try to run it in the open-loop control mode and compare the currents in the open-loop and closed-loop control modes to judge whether the encoder works properly. 	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err05	Overvoltage during acceleration	The input voltage is too high.	<ul style="list-style-type: none"> ◆ Check whether the input voltage is too high. ◆ Check whether the bus voltage is too high (normal: 540–580 V for 380 V input; 280–350 V for 220 V input). 	5A
		The braking resistance is too large, or the braking unit is abnormal.	<ul style="list-style-type: none"> ◆ Check the balance coefficient. ◆ Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper. ◆ Check whether the braking resistor cable is damaged, touches the ground, and is connected securely. ◆ Check whether the resistance of the braking resistor is proper. ◆ If the resistance of the braking resistor is proper and overvoltage occurs whenever the elevator reaches the target speed, decrease the value of F2-01 (Speed loop integral time Ti1) or F2-04 (Speed loop integral time Ti2) to reduce the curve following error and prevent overvoltage due to system overshoot. 	
		The acceleration rate is too large.	<ul style="list-style-type: none"> ◆ Reduce the acceleration rate. 	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err06	Overvoltage during deceleration	The input voltage is too high.	<ul style="list-style-type: none"> ◆ Check whether the input voltage is too high. ◆ Check whether the bus voltage is too high (normal: 540–580 V for 380 V input; 280–350 V for 220 V input). 	5A
		The braking resistance is too large, or the braking unit is abnormal.	<ul style="list-style-type: none"> ◆ Check the balance coefficient. ◆ Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper. ◆ Check whether the braking resistor cable is damaged, touches the ground, and is connected securely. ◆ Check whether the resistance of the braking resistor is proper. ◆ If the resistance of the braking resistor is proper and overvoltage occurs whenever the elevator reaches the target speed, decrease the value of F2-01 (Speed loop integral time Ti1) or F2-04 (Speed loop integral time Ti2) to reduce the curve following error and prevent overvoltage due to system overshoot. 	
		The deceleration rate is too large.	<ul style="list-style-type: none"> ◆ Reduce the deceleration rate. 	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err07	Overvoltage at a constant speed	The input voltage is too high.	<ul style="list-style-type: none"> ◆ Check whether the input voltage or bus voltage is too high. 	5A
		The braking resistance is too large, or the braking unit is abnormal.	<ul style="list-style-type: none"> ◆ Check the balance coefficient. ◆ Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper. ◆ Check whether the braking resistor cable is damaged, touches the ground, and is connected reliably. ◆ Check whether the resistance of the braking resistor is proper. ◆ If the resistance of the braking resistor is proper and overvoltage occurs every time when the elevator reaches the target speed, decrease the value of F2-01 (Speed loop integral time Ti1) or F2-04 (Speed loop integral time Ti2) to reduce the curve following error and prevent overvoltage due to system overshoot. 	
Err08	Maintenance notification period reached	The elevator is not maintained within the notification period.	<ul style="list-style-type: none"> ◆ Power off and maintain the elevator. ◆ Disable the maintenance notification function by setting F9-13 (Maintenance notification period) to 0. ◆ Contact the agent or Inovance. 	5A

Fault Code	Fault Description	Possible Cause	Solution	Level
Err09	Undervoltage	An instantaneous power failure occurs in the input power supply.	<ul style="list-style-type: none"> ◆ Check whether power disconnection occurs during running. ◆ Check whether all the power input cables are connected securely. 	5A
		The input voltage is too low.	◆ Check whether the external power voltage is too low.	
		The drive control board is abnormal.	◆ Contact the agent or Inovance.	
Err10	Controller overload	The mechanical resistance is too large.	<ul style="list-style-type: none"> ◆ Check whether the brake is released and whether the brake power supply is normal. ◆ Check whether the guide shoes are too tight. 	5A
		The balance coefficient is improper.	◆ Check the balance coefficient.	
		The encoder feedback signal is abnormal.	◆ Check whether the feedback signal and parameter setting of the encoder are correct. For synchronous motors, check whether the initial angle of the encoder is correct.	
		Motor auto-tuning is performed improperly (the elevator running current is higher than normal in this case).	<ul style="list-style-type: none"> ◆ Check whether motor parameters are set properly, and perform motor auto-tuning again. ◆ If this fault is reported during the slip experiment, perform the slip experiment by enabling the slip function set in F3-24 (Program function selection). 	
		The motor phase sequence is incorrect.	◆ Check whether the UVW phase sequence of the motor is correct.	
		The AC drive power class is too low.	◆ Check whether the current exceeds the rated current of the AC drive when the elevator with no load runs at a stable speed.	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err11	Motor overload	The mechanical resistance is too large.	<ul style="list-style-type: none"> ◆ Check whether the brake is released and whether the brake power supply is normal. ◆ Check whether the guide shoes are too tight. 	5A
		The balance coefficient is improper.	<ul style="list-style-type: none"> ◆ Check the balance coefficient. 	
		Motor auto-tuning is not performed properly (the elevator running current is higher than normal in this case).	<ul style="list-style-type: none"> ◆ Check whether motor parameters are set properly, and perform motor auto-tuning again. ◆ If this fault is reported when the slip experiment is carried on, perform the slip experiment by enabling the slip function set in F3-24 (Program function selection). 	
		The motor phase sequence is incorrect.	<ul style="list-style-type: none"> ◆ Check whether the UVW phase sequence of the motor is correct. 	
		The motor power class is too low.	<ul style="list-style-type: none"> ◆ Check whether the current exceeds the rated motor current when the elevator with no load runs at a stable speed. 	
Err12	Input phase loss	The power input phases are not symmetric.	<ul style="list-style-type: none"> ◆ Check whether the three phases of the input power supply are lost. ◆ Check whether the three phases of the input power supply are balanced. ◆ Check the power voltage. If it is abnormal, adjust the input power supply. 	5A
		The drive control board is abnormal.	<ul style="list-style-type: none"> ◆ Contact the agent or Inovance. 	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err13	Output phase loss	The main circuit output cables are loose.	<ul style="list-style-type: none"> ◆ Check whether motor cables are connected securely. ◆ Check the RUN contactor on the output side. 	5A
		The motor is damaged.	<ul style="list-style-type: none"> ◆ Check whether the motor is internally abnormal. 	
Err14	IGBT over-temperature	The ambient temperature is too high.	<ul style="list-style-type: none"> ◆ Lower the ambient temperature. 	5A
		The fan is damaged.	<ul style="list-style-type: none"> ◆ Replace the damaged fan. 	
		The air filter is blocked.	<ul style="list-style-type: none"> ◆ Clean the air filter. ◆ Check whether the installation clearances of the controller satisfy the requirements. 	
Err15	Output abnormal	Subcode 1: The braking resistor is short-circuited.	<ul style="list-style-type: none"> ◆ Check whether the braking resistor and braking unit are connected correctly. Make sure that there is no short circuit. ◆ Check whether the main contactor works properly, generates arc, or is stuck. 	5A
		Subcode 2: The braking IGBT is short-circuited.	<ul style="list-style-type: none"> ◆ Contact the agent or Inovance. 	
Err16	Current control fault	Subcode 1: The excitation current deviation is too large.	<ul style="list-style-type: none"> ◆ Check whether the input voltage is too low (often exists in the temporary power supply). 	5A
		Subcode 2: The torque current deviation is too large.	<ul style="list-style-type: none"> ◆ Check whether the cables between the controller and the motor are connected securely. ◆ Check whether the RUN contactor works properly. 	
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Fault Code	Fault Description	Possible Cause	Solution	Level
Continued from previous page				
Err16	Current control fault	Subcode 3: The speed deviation is too large.	<ul style="list-style-type: none"> ◆ Check the encoder circuit. <ol style="list-style-type: none"> 1) Check whether encoder PPR is set correctly. 2) Check whether the encoder signal is interfered with. 3) Check whether the encoder cable runs through the duct independently or is too long and whether the shield is grounded at one end. 4) Check whether the encoder is installed reliably, whether the rotating shaft is connected to the motor shaft securely, and whether the encoder is stable during normal-speed running. ◆ Check whether motor parameters are set properly, and perform motor auto-tuning again. ◆ Increase the torque upper limit (F2-08). 	5A
Err17	Encoder interference during motor auto-tuning	Subcode 1: Reserved	◆ Reserved	5A
		Subcode 2: The Sin/Cos encoder signal is abnormal.	<ul style="list-style-type: none"> ◆ Serious interference exists in the C, D, and Z signals of the Sin/Cos encoder. Check whether the encoder cable is routed separately from power cables and whether the system grounding is reliable. ◆ Check whether the PG card is connected correctly. 	
		Subcode 3: The UVW encoder signal is abnormal.	<ul style="list-style-type: none"> ◆ Serious interference exists in the U, V, and W signals of the UVW encoder. Check whether the encoder cable is routed separately from power cables and whether system grounding is reliable. ◆ Check whether the PG card is connected correctly. 	

Fault Code	Fault Description	Possible Cause	Solution	Level	
Err18	Current detection fault	The drive control board is abnormal.	◆ Contact the agent or Inovance.	5A	
Err19	Motor auto-tuning fault	Subcode 1: Stator resistance auto-tuning fails.	◆ Check whether motor cables are connected correctly.	5A	
		Subcode 5: Motor pole position auto-tuning fails.			
		Subcode 8: Synchronous motor static auto-tuning is selected, but the encoder is not a Sin/Cos encoder.	◆ Change the auto-tuning mode or replace the encoder with a Sin/Cos encoder.		
		Subcode 9: The CD signal fluctuation is too large during synchronous motor static auto-tuning.	◆ Hardware interference exists in the CD signals of the Sin/Cos encoder. Check whether the grounding is reliable.		
		Subcode 12: The encoder's initial angle is not obtained during angle-free auto-tuning of synchronous motor and an alarm is reported.	◆ For semi-automatic angle-free auto-tuning, the elevator can run at normal speed only after obtaining the encoder initial angle in the inspection mode.		
Err20	Speed feedback incorrect	Subcode 1: Encoder signals are not detected during synchronous motor no-load auto-tuning.	<ul style="list-style-type: none"> ◆ Check the encoder signal circuit. ◆ Check the PG card. ◆ Check whether the brake is released. 	5A	
		Subcode 4: Z signal cannot be detected during synchronous motor auto-tuning.			
		Subcode 5: The Sin/Cos encoder signals are disconnected.			<ul style="list-style-type: none"> ◆ Check the encoder signal circuit. ◆ Check the PG card.
		Subcode 7: The UVW encoder signals are disconnected.			
		Subcode 14: Z signal is lost during normal running			
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Fault Code	Fault Description	Possible Cause	Solution	Level
Continued from previous page				
Err20	Speed feedback incorrect	Subcodes 2 and 8: Reserved	<ul style="list-style-type: none"> ◆ Reserved 	5A
		Subcodes 3 and 15: The phase sequence of the motor is incorrect, the motor brake is not released, or the encoder signal is in poor quality.	<ul style="list-style-type: none"> ◆ Exchange any two phases among the motor UVW phases. ◆ Check whether the brake is released during synchronous motor with-load auto-tuning. ◆ Check the encoder signal circuit. 	
		Subcode 9: The speed deviation is too large.	<ul style="list-style-type: none"> ◆ The angle of synchronous motor is abnormal. Perform motor auto-tuning again. ◆ Reduce the position lock speed loop Kp. ◆ Decrease the speed loop gain or increase the integral time. ◆ Check whether the UVW phase sequence of the motor is correct. 	
		Subcode 12: The encoder AB signals are lost at startup.	<ul style="list-style-type: none"> ◆ Check whether the brake is released. ◆ Check whether the encoder AB signals are disconnected. 	
		Subcode 13: The encoder AB signals are lost during running.	<ul style="list-style-type: none"> ◆ Check whether the encoder wiring is normal, whether strong interference exists, and whether the brake is suddenly closed due to a power failure during running. 	
		Subcode 19: The Sin/Cos encoder signals are seriously interfered with during running.	<ul style="list-style-type: none"> ◆ During motor running, the encoder analog signals suffer serious interference, or the encoder cable is in poor contact. Check the encoder circuit. 	5A
		Subcode 55: During auto-tuning, the Sin/Cos encoder signals are seriously interfered with or the CD signals are incorrect.	<ul style="list-style-type: none"> ◆ During auto-tuning, the encoder analog signals suffer serious interference, or the CD signals are in the wrong sequence. 	
Note: In some cases, Err20 is mistakenly reported when there is a grounding short circuit.				

Fault Code	Fault Description	Possible Cause	Solution	Level
Err21	Parameter setting error	Subcode 2: The set maximum frequency (F0-06) is smaller than the rated motor frequency.	◆ Set F0-06 (Maximum frequency) to a value greater than the rated motor frequency.	5A
		Subcode 3: The encoder type is incorrectly set.	◆ The Sin/Cos encoder, absolute encoder, or ABZ encoder is incorrectly set as the UVW encoder. Check whether the encoder type (F1-00) is the same as that of actual encoder.	
Err22	Leveling signal abnormal	Subcode 101: The leveling signal is stuck.	◆ Check whether the leveling and door zone switches work properly. ◆ Check the installation verticality and depth of leveling plates. ◆ Check the leveling signal input terminals on the MCB.	1A
		Subcode 102: The leveling signal is lost.		
		Subcode 103: The leveling position deviation is too large in the automatic running state.	◆ Check whether the steel rope slips.	
Err23	Short circuit	Subcodes 1, 2, and 3: Short circuit to ground exists.	◆ Check whether a short circuit to ground exists in the three-phase output of the AC drive.	5A
		Subcode 4: Inter-phase short circuit exists.	◆ Check whether an inter-phase short circuit exists in the three-phase output of the AC drive.	
Err24	RTC clock fault	Subcode 101: The RTC clock information of the MCB is abnormal.	◆ Replace the clock battery. ◆ Replace the MCB.	3B
Err25	Storage data abnormal	Subcodes 101, 102, and 103: The storage data of the MCB is abnormal.	◆ Contact the agent or Inovance.	4A
Err26	Earthquake signal	Subcode 101: The earthquake signal is active for more than 2s.	◆ Check whether the NC/NO feature of the earthquake signal is consistent with the parameter setting of the MCB.	3B

Troubleshooting

Fault Code	Fault Description	Possible Cause	Solution	Level
Err27	Fault specific to customized product	Reserved	◆ Contact the agent or Inovance.	-
Err28	Maintenance fault	Reserved	◆ Contact the agent or Inovance.	-
Err29	Shorting motor stator contactor feedback abnormal	Subcode 101: The shorting motor stator contactor feedback of the MCB is abnormal.	<ul style="list-style-type: none"> ◆ Check whether the NO/NC feature of the shorting motor stator contactor feedback input signal is set correctly. ◆ Check whether the shorting motor stator contactor and corresponding feedback contacts act properly. ◆ Check whether the coil circuit power supply of the shorting motor stator contactor is abnormal. 	5A
		Subcode 102: The shorting motor stator contactor feedback of the I/O expansion board is abnormal.		
Err30	Elevator position abnormal	Subcodes 101 and 102: In the normal-speed running or re-leveling state, the leveling signal has no change within the time set in F9-02 (Running time protection) or FA-38 (Maximum floor running time interval).	<ul style="list-style-type: none"> ◆ Check whether the leveling signal cables are connected reliably, touch the ground, or are shorted with other signal cables. ◆ Check whether the floor-to-floor height is too large or the re-leveling speed set by F3-21 (Low-speed re-leveling speed) is too small, causing over long re-leveling time. 	4A
Err31	Reserved	Reserved	◆ Reserved	-
Err32	Reserved	Reserved	◆ Reserved	-

Fault Code	Fault Description	Possible Cause	Solution	Level
Err33	Elevator speed abnormal	Subcode 101: Overspeed occurs during normal-speed running.	<ul style="list-style-type: none"> ◆ Check whether the parameter setting and wiring of the rotary encoder are correct. ◆ Check whether motor parameters are set properly according to the nameplate. Perform motor auto-tuning again. 	5A
		Subcode 102: Overspeed occurs during inspection or shaft auto-tuning.	<ul style="list-style-type: none"> ◆ Reduce the inspection speed or perform motor auto-tuning again. 	
		Subcode 103: Overspeed occurs in the shorting stator braking mode (for PMSM).	<ul style="list-style-type: none"> ◆ Check whether the shorting motor stator function is enabled. ◆ Check whether the UVW phase sequence of the motor is correct. 	
		Subcodes 104 and 105: Overspeed occurs during emergency running.	<ul style="list-style-type: none"> ◆ Check whether the emergency power capacity meets the requirements. ◆ Check whether the emergency running speed is set properly. 	
		Subcode 106: The speed measured by the MCB shows an excessive deviation.	<ul style="list-style-type: none"> ◆ Check the wiring of the rotary encoder. ◆ Check whether the SPI communication between the MCB and the AC drive is in good quality. 	
Err34	Logic fault	The logic of the MCB is abnormal.	<ul style="list-style-type: none"> ◆ Contact the agent or Inovance to replace the MCB. 	5A

Fault Code	Fault Description	Possible Cause	Solution	Level
Err35	Shaft auto-tuning data abnormal	Subcode 101: When shaft auto-tuning is started, the elevator is not at the bottom floor or the down slow-down switch 1 is inactive.	<ul style="list-style-type: none"> ◆ Check whether the down slow-down switch 1 is active and whether F4-01 (Current floor) is set to the bottom floor. 	4C
		Subcode 102: The inspection switch is disconnected during shaft auto-tuning.	<ul style="list-style-type: none"> ◆ Check whether the elevator is in the inspection state. 	
		Subcode 103: It is judged upon power-on that shaft auto-tuning is not performed.	<ul style="list-style-type: none"> ◆ Perform shaft auto-tuning again. 	
		Subcodes 104, 113, and 114: In the distance control mode, it is judged at startup that shaft auto-tuning is not performed.		
		Subcode 105: The elevator running direction is inconsistent with the pulse change.	<ul style="list-style-type: none"> ◆ Check whether the elevator running direction is consistent with the pulse change in F4-03 (Low byte of current floor position). That is, F4-03 increases when the elevator runs up and decreases when the elevator runs down. 	
		Subcodes 106, 107, and 109: The sensing interval between the up leveling switch and the down leveling switch and the leveling plate pulse length are abnormal.	<ul style="list-style-type: none"> ◆ Check whether the signal feature (NO/NC) of leveling switches is set incorrectly. ◆ If the leveling switch signal flashes, check whether the leveling plates are installed properly and whether there is high-voltage interference. 	

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Fault Code	Fault Description	Possible Cause	Solution	Level
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Err35	Shaft auto-tuning data abnormal	Subcodes 108 and 110: No leveling signal is received within 45s during auto-tuning.	<ul style="list-style-type: none"> ◆ Check whether the leveling switches are connected correctly. ◆ Check whether the floor-to-floor height is too large, causing the running timeout. You can increase the auto-tuning speed (F3-26) so that auto-tuning of the longest floor can be completed within 45s, and then perform shaft auto-tuning again. 	4C
		Subcodes 111 and 115: The stored floor height is smaller than 50 cm.	◆ Enable the super-short floor function if there is a floor lower than 50 cm. If not, check the installation of the leveling plate for this floor as well as the leveling switches and their wiring.	
		Subcode 112: The elevator is not at the top floor when auto-tuning is complete.	◆ F6-00 (Top floor of the elevator) is set incorrectly, or a leveling plate is missing.	
		Subcode 116: The up and down leveling signals are in the wrong sequence.	<ul style="list-style-type: none"> ◆ Check whether the up and down leveling switches are connected correctly. ◆ Check whether the distance between the up leveling switch and the down leveling switch is proper. 	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err36	RUN contactor feedback abnormal	Subcode 101: The RUN contactor has no output, but the contactor feedback is active.	<ul style="list-style-type: none"> ◆ Check whether the feedback contact of the RUN contactor acts properly. ◆ Check the signal feature (NO/NC) of the feedback contact. 	5A
		Subcode 102: The RUN contactor has an output, but the contactor feedback is inactive.		
		Subcode 104: When both feedback signals of the RUN contactor are active, their states are inconsistent.		
		Subcode 105: The RUN contactor feedback is active before re-leveling is started.		
		Subcode 103: The current of asynchronous motor from the acceleration segment to the constant speed segment is too small (≤ 0.1 A).	<ul style="list-style-type: none"> ◆ Check whether the output cables (UVW) of the controller are connected correctly. ◆ Check whether the coil control circuit of the RUN contactor is normal. 	
Err37	Brake control output feedback abnormal	Subcode 101: The output of the brake contactor is inconsistent with the feedback.	<ul style="list-style-type: none"> ◆ Check whether the brake contactor is closed normally. ◆ Check whether the signal feature (NO/NC) of the brake contactor feedback contact is set correctly. ◆ Check the brake contactor feedback circuit. 	5A
		Subcode 102: The feedback states of multiple brake contactor feedback contacts are inconsistent.	<ul style="list-style-type: none"> ◆ Check whether the signal features (NO/NC) of the brake contactor feedback contacts are set correctly. ◆ Check whether the feedback states of multiple output feedback contacts are consistent. 	

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Fault Code	Fault Description	Possible Cause	Solution	Level
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Err37	Brake control output feedback abnormal	Subcode 103: The brake contactor output is inconsistent with the brake travel switch 1 feedback.	◆ Check whether the signal feature (NO/NC) of the brake travel switch 1/2 feedback contact is set correctly.	5A
		Subcode 106: The brake contactor output is inconsistent with the brake travel switch 2 feedback.	◆ Check the brake travel switch 1/2 feedback circuit.	
		Subcode 105: The brake contactor feedback is active before the brake is released at startup.	◆ Check whether the brake contactor feedback contact malfunctions.	
		Subcode 104: The feedback states of multiple brake travel switch 1 feedback contacts are inconsistent.	◆ Check whether the signal features (NO/NC) of brake travel switch 1/2 feedback contacts are set correctly.	
		Subcode 107: The feedback states of multiple brake travel switch 2 feedback contacts are inconsistent.	◆ Check whether the feedback states of multiple output feedback contacts are consistent.	
		Subcode 108: The brake contactor output is inconsistent with the feedback of the brake travel switch 1 on the I/O expansion board.	◆ Check whether the signal feature (NO/NC) of the brake travel switch 1/2 feedback contact on the I/O expansion board is set correctly.	
		Subcode 109: The brake contactor output is inconsistent with the feedback of the brake travel switch 2 on the I/O expansion board.	◆ Check the brake travel switch 1/2 feedback circuit.	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err38	Rotary encoder signal abnormal	Subcode 101: The pulses recorded in F4-03 (Low byte of current floor position) do not change within the time threshold set in F1-13 (Encoder disconnection detection time).	<ul style="list-style-type: none"> ◆ Check whether the rotary encoder is used correctly. ◆ Check whether the brake works properly. 	5A
		Subcode 102: F4-03 (Low byte of current floor position) increases when the elevator runs down.	<ul style="list-style-type: none"> ◆ Check whether the parameter setting and wiring of the rotary encoder are correct. ◆ Check whether the system grounding and signal grounding are reliable. 	
		Subcode 103: F4-03 (Low byte of current elevator position) decreases when the elevator runs up.	<ul style="list-style-type: none"> ◆ Check whether the UVW phase sequence of the motor is correct. 	
		Subcode 104: The sensorless vector control (SVC) is used in the distance control mode.	<ul style="list-style-type: none"> ◆ Set F0-00 (Control mode) to 1 (FVC) in the distance control mode. 	
		Subcode 105: During up running, the down limit switch operates when the down slow-down switch 1 becomes active.	<ul style="list-style-type: none"> ◆ Check whether the up and down limit switches are connected correctly. 	
		Subcode 106: During down running, the up limit switch operates when the up slow-down switch 1 becomes active.		

Fault Code	Fault Description	Possible Cause	Solution	Level
Err39	Motor over-temperature	Subcode 101: The motor over-temperature relay input remains active for a certain period.	<ul style="list-style-type: none"> ◆ Check whether the signal feature (NO/NC) settings of motor parameters are correct. ◆ Check whether the thermal protection relay socket is normal. ◆ Check whether the motor is used properly or damaged. ◆ Improve the cooling conditions of the motor. 	3A
Err40	Reserved	Reserved	◆ Contact the agent or Inovance.	4B
Err41	Safety circuit disconnected	Subcode 101: The safety circuit signal becomes OFF.	<ul style="list-style-type: none"> ◆ Check the safety circuit switches and their states. ◆ Check the external power supply. ◆ Check whether the safety circuit contactor acts properly. ◆ Check whether the signal feature (NO/NC) of the feedback contact on the safety circuit contactor is set correctly. 	5A
Err42	Door lock disconnected during running	Subcodes 101 and 102: The door lock feedback is inactive during running.	<ul style="list-style-type: none"> ◆ Check whether the landing door lock and car door lock are in good contact. ◆ Check whether the door lock contactor acts properly. ◆ Check whether the signal feature (NO/NC) of the feedback contact on the door lock contactor is set correctly. ◆ Check the external power supply. 	5A

Fault Code	Fault Description	Possible Cause	Solution	Level
Err43	Up limit signal abnormal	Subcode 101: The up limit switch operates during up running.	<ul style="list-style-type: none"> ◆ Check the signal feature (NO/NC) of the up limit switch. ◆ Check whether the up limit switch is in good contact. ◆ Check whether the up limit switch is installed in a position lower than normal, which causes this switch to operate even when the elevator arrives at the top terminal floor normally. 	4A
Err44	Down limit signal abnormal	Subcode 101: The down limit switch operates during down running.	<ul style="list-style-type: none"> ◆ Check the signal feature (NO/NC) of the down limit switch. ◆ Check whether the down limit switch is in good contact. ◆ Check whether the down limit switch is installed in a position higher than normal, which causes this switch to operate even when the elevator arrives at the bottom terminal floor normally. 	4A

Fault Code	Fault Description	Possible Cause	Solution	Level
Err45	Slow-down switch abnormal	Subcode 101: The down slow-down distance is insufficient during shaft auto-tuning.	<ul style="list-style-type: none"> ◆ Check whether the up and down slow-down switches are in good contact. 	4B
		Subcode 102: The up slow-down distance is insufficient during shaft auto-tuning.	<ul style="list-style-type: none"> ◆ Check whether the signal feature (NO/NC) of the up and down slow-down switches are set correctly. 	
		Subcode 103: During normal running, the slow-down switch is stuck, or the switch position is abnormal.	<ul style="list-style-type: none"> ◆ Check whether the distance between the slow-down switch and the leveling plate of the terminal floor meets the slow-down requirement at this speed. 	
		Subcode 106: The up and down slow-down switches 2 act improperly during shaft auto-tuning.	<ul style="list-style-type: none"> ◆ Check whether the up and down slow-down switches 2 are connected reversely. ◆ Check whether the signal feature (NO/NC) of the up and down slow-down switches 2 are set correctly. 	
		Subcode 107: The up and down slow-down switches 3 act improperly during shaft auto-tuning.	<ul style="list-style-type: none"> ◆ Check whether the up and down slow-down switches 3 are connected reversely. ◆ Check whether the signal feature (NO/NC) of the up and down slow-down switches 3 are set correctly. 	
Err46	Re-leveling abnormal	Subcode 101: The leveling signal is inactive during re-leveling.	<ul style="list-style-type: none"> ◆ Check whether the leveling signal is normal. 	2B
		Subcode 102: The elevator speed exceeds 0.1 m/s during re-leveling.	<ul style="list-style-type: none"> ◆ Check whether the rotary encoder is used correctly. 	

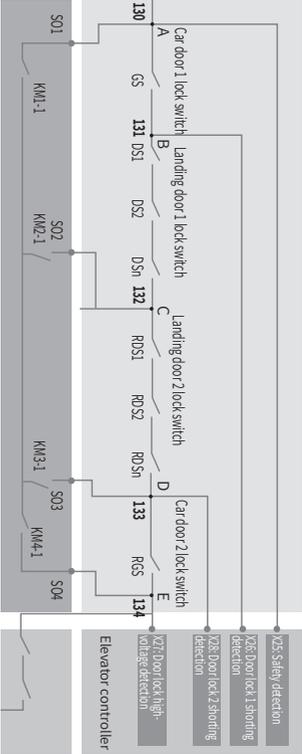
Fault Code	Fault Description	Possible Cause	Solution	Level
Err47	MCTC-SCB-related fault	Subcode 101: The shorting door lock circuit relay has an output, but the relay feedback is inactive.	<ul style="list-style-type: none"> ◆ Check whether the electrical wiring of the MCTC-SCB is normal. ◆ Check whether the parameters that define the cooperation between the MCB and the MCTC-SCB are set correctly. ◆ Check whether the MCTC-SCB is pirated. ◆ Check whether the MCTC-SCB-A4/D4 works normally. 	2B
		Subcode 102: The shorting door lock circuit relay has no output, but the relay feedback is active.		
		Subcode 103: The output of the shorting door lock circuit relay lasts for 15s.		
		Subcode 201: Communication between the MCB and the MCTC-SCB-A4/D4 is abnormal.		
		Subcode 202: The manufacturer No. of the MCB and MCTC-SCB are inconsistent.		
		Subcode 203: The relay signal feedback from the MCTC-SCB remains inconsistent with the close relay signal output by the MCB for 2s.		
		Subcode 209: The encryption authentication of the MCB and MCTC-SCB fails.		
		Subcode 210: The self-authentication of the MCTC-SCB fails.		
Continued on next page				

Fault Code	Fault Description	Possible Cause	Solution	Level																						
Continued from previous page																										
Err47	SCB-related fault	Subcode 3xx: MCTC-SCB fault	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">MCTC-SCB fault</th> </tr> <tr> <th style="text-align: center;">Fault Code (xx)</th> <th style="text-align: center;">Fault Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Software fault (CPU self-check, watchdog abnormal, control flow abnormal and so on)</td> </tr> <tr> <td style="text-align: center;">2</td> <td>MCTC-SCB identification fault</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Up re-leveling signal abnormal</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Down re-leveling signal abnormal</td> </tr> <tr> <td style="text-align: center;">5</td> <td>Safety relay KM1 abnormal</td> </tr> <tr> <td style="text-align: center;">6</td> <td>Safety relay KM2 abnormal</td> </tr> <tr> <td style="text-align: center;">7</td> <td>Safety relay KM4 abnormal</td> </tr> <tr> <td style="text-align: center;">8</td> <td>Safety relay KM5 abnormal</td> </tr> <tr> <td style="text-align: center;">9</td> <td>Safety relay KM6 abnormal</td> </tr> </tbody> </table>	MCTC-SCB fault		Fault Code (xx)	Fault Description	1	Software fault (CPU self-check, watchdog abnormal, control flow abnormal and so on)	2	MCTC-SCB identification fault	3	Up re-leveling signal abnormal	4	Down re-leveling signal abnormal	5	Safety relay KM1 abnormal	6	Safety relay KM2 abnormal	7	Safety relay KM4 abnormal	8	Safety relay KM5 abnormal	9	Safety relay KM6 abnormal	2B
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			7	Safety relay KM4 abnormal																						
8	Safety relay KM5 abnormal																									
9	Safety relay KM6 abnormal																									
Err48	Door open fault	Subcode 101: The consecutive times that the door does not open to the limit exceeds the value set in FB-09 (Door open/close times).	<ul style="list-style-type: none"> ◆ Check whether the door operator system works properly. ◆ Check whether the CTB output is normal. ◆ Check whether the door open limit signal and door lock signal are normal. 	5A																						
Err49	Door close fault	Subcode 101: The consecutive times that the door does not close to the limit exceeds the value set in FB-09 (Door open/close times).	<ul style="list-style-type: none"> ◆ Check whether the door operator system works properly. ◆ Check whether the CTB output is normal. ◆ Check whether the door close limit signal and door lock signal are normal. 	5A																						

Fault Code	Fault Description	Possible Cause	Solution	Level
Err50	Consecutive loss of leveling signal	<p>Subcode 101: Stuck leveling signal is detected for three consecutive times.</p> <p>Subcode 102: Leveling signal loss is detected for three consecutive times.</p>	<ul style="list-style-type: none"> ◆ Check whether the leveling switches and door zone switches work properly. ◆ Check the installation verticality and depth of leveling plates. ◆ Check the leveling signal input terminals on the MCB. ◆ Check whether the steel rope slips. 	5A
Err51	CAN communication fault	Subcode 101: Feedback data of CANbus communication with the CTB remains incorrect.	<ul style="list-style-type: none"> ◆ Check the communication cable connection. ◆ Check the power supply of the CTB. ◆ Check the 24 V power supply of the controller. ◆ Check whether high-voltage interference exists in communication. 	1A
Err52	HCB communication fault	<p>Subcode 101: Feedback data of Modbus communication with the HCB remains incorrect.</p> <p>Subcode 201: Communication between the MCB and the MCTC-PTB-N1 is abnormal. (Note: If pit inspection is not required, set Bit5 of A1-31 to 1 to disable the detection of pit board communication state.)</p>	<ul style="list-style-type: none"> ◆ Check the communication cable connection. ◆ Check the 24 V power supply of the controller. ◆ Check whether there are repeated HCB addresses. ◆ Check whether high-voltage interference exists in communication. 	1A

Fault Code	Fault Description	Possible Cause	Solution	Level
Err53	Door lock fault	Subcode 101: Three seconds after door open output, the door lock feedback signal is still active when the shorting door lock circuit relay has no output.	<ul style="list-style-type: none"> ◆ Check whether the door lock circuit is shorted. ◆ Check whether the door lock feedback is correct. 	5A
		Subcode 102: The state of multiple door lock feedback signals are inconsistent, or the door lock 1 feedback is inconsistent with the door lock 2 feedback.		
		Subcode 105: Three seconds after door open output, the door lock 1 shorting signal is active when the shorting door lock circuit relay has an output.		
		Subcode 106: Three seconds after door open output, the door lock 2 shorting signal is active when the shorting door lock circuit relay has an output.		
		Subcode 107: The door lock shorting input parameter is selected, but the feedback signal remains disconnected or is not connected.	<ul style="list-style-type: none"> ◆ Check whether the door lock shorting feedback signal cable is not connected or is disconnected. 	

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Fault Code	Fault Description	Possible Cause	Solution	Level
Continued from previous page				
Err53	Door lock fault	Subcode 201: AB/BC shorting, indicating that the front car/landing door is shorted.	 <p>The diagram shows a wiring schematic for door lock detection. On the left, terminal blocks KM1-1, KM2-1, KM3-1, and KM4-1 are connected to switches SO1, SO2, SO3, and SO4. On the right, switches A, B, C, D, and E are connected to terminal blocks 130, 131, 132, 133, and 134. These terminal blocks are connected to various detection modules: VZS (Safety detection), VZD (Door lock 1 shorting detection), VZS (Door lock 2 shorting detection), VZD (Door lock 1 shorting detection), VZS (Safety detection), VZD (Door lock 1 shorting detection), VZS (Door lock 2 shorting detection), VZD (Door lock 2 shorting detection), and an Elevator controller. Labels include 'Car door 1 lock switch', 'Landing door 1 lock switch', 'Landing door 2 lock switch', and 'Car door 2 lock switch'.</p>	5A
		Subcode 202: BE shorting, indicating that 131 and 134 are shorted.		
		Subcode 203: AD shorting, indicating that 130 and 133 are shorted.		
		Subcode 204: DE shorting, indicating that 133 and 134 are shorted.		
		Subcode 205: BC shorting, indicating that 131 and 132 are shorted.		
		Subcode 206: CD/DE shorting, indicating that the rear landing/car door is shorted.		
		Subcode 207: CE/AE shorting, indicating that 132 and 134 or 130 and 134 are shorted.		
		Subcode 208: BD shorting, indicating that 132 and 133 are shorted.		
		Subcode 209: KM3 cannot be disconnected due to a stuck fault.		
		Subcode 210: AC/AE shorting, indicating that 130 and 132 or 130 and 134 are shorted.		
		Subcode 211: AE shorting, indicating that 130 and 134 are shorted.		
		Subcode 212: KM3 cannot be closed due to a stuck fault.		

Find out the fault according to the preceding figure.

Fault Code	Fault Description	Possible Cause	Solution	Level
Err54	Overcurrent at inspection startup	Subcode 102: The current at startup for inspection exceeds 120% of the rated current.	<ul style="list-style-type: none"> ◆ Reduce the load. ◆ Check whether the UVW phase sequence of the motor is correct. ◆ Change Bit1 of FC-00 (Program control selection) to 1 to disable the startup current detection. 	5A
Err55	Stop at another landing floor	Subcode 101: During automatic running, the door open limit signal is not received within the time set in FB-06 (Door open protection time).	<ul style="list-style-type: none"> ◆ Check the door open limit signal of the current floor. 	1A
Err56	Door open/close signal fault	Subcode 101: The door open limit signal is active during running.	<ul style="list-style-type: none"> ◆ Check the signal feature (NO/NC) of the door open/close limit signal set in F5-25 (CTB input signal type). ◆ Check the wiring of door open and close signals. 	5A
		Subcode 102: The door close limit signal is inactive during running.		
		Subcode 103: The door open limit signal and door close limit signal are both active.		
		Subcode 104: The door close limit signal remains connected 3s after door open. This fault subcode is detected after the door lock bypass is set.	<ul style="list-style-type: none"> ◆ Check whether the door close limit signal is always active. 	
Err57	SPI communication fault	Subcodes 101 and 102: The communication between the MCB and the inverter DSP board is abnormal.	<ul style="list-style-type: none"> ◆ Check whether the cable between the MCB and the driver board is connected correctly. 	5A
		Subcode 103: The MCB does not match the AC drive.	<ul style="list-style-type: none"> ◆ Contact the agent or Inovance. 	

Fault Code	Fault Description	Possible Cause	Solution	Level
Err58	Shaft position switches abnormal	Subcode 101: The up and down slow-down switches 1 are disconnected simultaneously.	<ul style="list-style-type: none"> ◆ Check whether the signal feature (NO/NC) of the slow-down switches and limit switches are consistent with those of MCB parameters. ◆ Check whether the slow-down and limit switches malfunction. 	4B
		Subcode 102: The up limit switch feedback and down limit switch feedback are disconnected simultaneously.		
Err59	Reserved	Reserved	◆ Reserved	-
Err60	Reserved	Reserved	◆ Reserved	-
Err61	Reserved	Reserved	◆ Reserved	-
Err62	Analog disconnection	Subcode 101: The analog load cell is disconnected.	<ul style="list-style-type: none"> ◆ Check the setting of F5-36 (Load cell input selection). ◆ Check whether the CTB/MCB analog input cable is connected incorrectly or is disconnected. ◆ Adjust the load cell switch function. 	3B
Err64	External fault	Subcode 101: The external fault signal remains active for 2s.	<ul style="list-style-type: none"> ◆ Check the signal feature (NO/NC) of the external fault terminal. ◆ Check the input signal state of the external fault terminal. 	5A
Err65	UCMP test fault	The car moves unexpectedly.	◆ Check whether the brake is fully closed and whether the car does not move unexpectedly.	5A
Err66	Braking force test fault	The braking force is insufficient.	◆ Check the brake clearance.	5A

Fault Code	Fault Description	Possible Cause	Solution	Level
Err69	ARD-related fault (subcode >100: external ARD application fault)	Subcode 101: The binding between the MCB and the ARD manufacturer goes wrong.	◆ Bind the MCB and the ARD manufacturer again.	1A
		Subcode 102: The binding between the MCB and the ARD contract No. goes wrong.	◆ Bind the MCB and the ARD contract No. again.	
		Subcode 103: Communication between the MCB and the ARD is abnormal.	◆ Check the communication cable connection. ◆ Check the power supply board. ◆ Check the 24 V power supply of the controller. ◆ Check whether high-voltage interference exists in communication.	
		Subcode 104: The ARD cannot be used.	◆ Check whether the ARD switch on the interface board is off. If yes, the ARD will not be activated at power failure. You can disable the ARD switch detection by setting Bit3 of A1-31 (Program function selection) to 1 (default).	
		Subcode 105: Terminal 301 on the power supply board does not have an output, but the interface board feedback X7 is active.	◆ Check whether relay K13 on the power supply board is in good contact.	
		Subcode 106: Terminal 301/302 on the power supply board has an output, but the interface board feedback X7 is inactive.	◆ The elevator cannot restart after stopping in the door zone. You can disable the relay state feedback detection by setting Bit12 of A1-31 (Program function selection) to 1.	

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Fault Code	Fault Description	Possible Cause	Solution	Level	
Continued from previous page					
Err69	ARD-related fault (subcode <100: ARD fault)	Description of ARD fault			
		Fault Subcode	Protection Function	Description	Level
		Err1	Battery retirement detection	Reported when the battery voltage detected at power-on is between F2-09 (default: 5 V) and F2-08 (default: 28 V).	3A
		Err2	Detection of battery not connected or connected reversely	Reported when the battery voltage detected at power-on is lower than F2-09 (default: 5 V).	3A
		Err3	Power grid abnormality detection at power-on	Detects whether any grid input phases are lost or incorrect at power-on.	2B
		Err4	Battery undervoltage protection	During discharging, the battery voltage is below 38 V.	2A
		Err5	Internal EEPROM fault	EEPROM storage fault	3A
		Err6	Reserved	Reserved	-
		Err7	Current zero drift protection	The zero drift of the battery charging current is too large.	3A
		Err8	Over-temperature protection	The NTC temperature exceeds the permitted value.	3A
		Err9	Overload on the inverter side during discharging	Overload on the battery side	2A
		Err10	Reserved	Reserved	-
		Err11	Reserved	Reserved	-
Err12	Bus overvoltage protection	The DC bus voltage of the power supply board is too high.	3A		
Err13	Reserved	Reserved	-		

Fault Code	Fault Description	Possible Cause		Solution	Level
Err69	ARD-related fault (subcode <100: ARD fault)	Description of ARD faults			
		Fault Subcode	Protection Function	Description	Level
		Err14	Reserved	Reserved	-
		Err15	Protection against overload on the inverter line side	Abnormal power grid causes continuous excessive inverter power.	2A
		Err16	Protection against overcurrent on the inverter line side	Abnormal power grid causes too high discharging current of the inverter.	3A
		Err17	Brake overcurrent	The brake output current is too high.	2A
		Err18	Brake overload	The brake output power remains to be too high.	2A
		Err19	Overcurrent protection during discharging	The battery output current is too high during discharging.	2A
		Err20	Reserved	Reserved	-
		Err21	Reversed connection of the DC bus on the drive side	The system considers that the DC bus on the drive side is connected reversely when the drive voltage is below 0 V.	2A
		Err22	Controllable rectifier overcurrent	The line-side current is too high in the rectification state.	3A
		Err23	CAN communication abnormal	No correct PDO data is received within 4s (resets automatically after the data becomes normal).	2A
		Err24	Emergency evacuation timeout	The system does not stop emergency evacuation after the largest evacuation time (6 minutes) is reached.	2A

Fault Code	Fault Description	Possible Cause	Solution	Level
Err94	Brake test fault	Subcode 101: The left brake test key on the monitoring board is stuck for more than 20s.	◆ Check whether the BKT-L key is faulty.	1A
		Subcode 102: The right brake test key on the monitoring board is stuck for more than 20s.	◆ Check whether the BKT-R key is faulty.	
		Subcode 103: The left and right brake travel feedback switches are connected incorrectly. They continue operating without being reset (manual reset is required after the elevator arrives at the door zone).	◆ It is detected that the left and right brake travel feedback switches are connected reversely. You need to change the switch wiring.	
Err95	Short circuit to ground	There is a short circuit between the safety circuit and the grounding (PE) terminal.	◆ Check the short circuit point between the safety circuit and the grounding terminal.	3A

Fault Code	Fault Description	Possible Cause	Solution	Level
Err96	Pit safety protection	<p>Subcode 101: The system enters the pit protection state after PX4/PX5 on the pit board (detection terminal for the landing door detection switch) becomes active once. A manual reset is required.</p> <p>Subcode 102: The system enters the pit protection state after the DIs on the MCB (detection terminal for the landing door detection switch) becomes active once. A manual reset is required.</p> <p>Subcode 103: The system enters the pit protection state after the pit inspection device operates once. A manual reset is required.</p>	<p>◆ For the reset methods, see section 5.12.</p>	3B



NOTE

- ◆ Err41 is not recorded at stop.
- ◆ Err42 is automatically reset when the door lock circuit is on or 1s after a fault occurs in the door zone.
- ◆ If Err51, Err52, and Err57 persist, they are recorded once every other hour.

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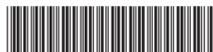
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