Monarch

User Guide

NICE3000new Series

Integrated Elevator Controller

User Guide

INOVANCE

A01
Data code 19010659

Contents

Safety Information and Precautions

This User Guide is packaged together with the NICE3000^{new} Controller AC Drive. It contains basic information for quick start of the drive. For safety and more information, please refer to the NICE3000^{new} Advanced User Guide, which can be downloaded on the website http://www.inovance.cn.

Electrical Safety

Extreme care must be taken at all times when working with the AC Drive or within the area of the AC Drive. The voltages used in the AC Drive can cause severe electrical shock or burns and is potentially lethal. Only authorized and qualified personnel should be allowed to work on AC Drives.

Machine/System Design and Safety of Personnel

Machine/system design, installation, commissioning startups and maintenance must be carried out by personnel who have the necessary training and experience. They must read this safety information and the contents of this manual. If incorrectly installed, the AC Drive may present a safety hazard.

The AC Drive uses high voltages and currents (including DC), carries a high level of stored electrical energy in the DC bus capacitors even after power OFF. These high voltages are potentially lethal.

The AC Drive is NOT intended to be used for safety related applications/functions. The electronic “STOP & START” control circuits within the AC Drive must not be relied upon for the safety of personnel. Such control circuits do not isolate mains power voltages from the output of the AC Drive. The mains power supply must be disconnected by an electrical safety isolation device before accessing the internal parts of the AC Drive.

Safety risk assessments of the machine or process system which uses an AC Drive must be undertaken by the user and or by their systems integrator/designer. In particular the safety assessment/design must take into consideration the consequences of the AC Drive failing or tripping out during normal operation and whether this leads to a safe stop position without damaging machine, adjacent equipment and machine operators/users. This responsibility lies with the user or their machine/process system integrator.

System integrator/designer must ensure the complete system is safe and designed according to the relevant safety standards. Inovance Technology and Authorized Distributors can provide recommendations related to the AC drive to ensure long term safe operation.

The installer of the AC Drive is responsible for complying with all relevant regulations for wiring, circuit fuse protection, earthing, accident prevention and electromagnetic (EMC regulations). In particular fault discrimination for preventing fire risk and solid earthing practices must be adhered to for electrical safety (also for good EMC performance). Within the European Union, all machinery in which this product is used must comply with required directives.

Electrical Installation - Safety

Electrical shock risk is always present within an AC Drive including the output cable leading to the motor terminals. Where dynamic brake resistors are fitted external to the AC Drive, care must be taken with regards to live contact with the brake resistors, terminals which are at high DC voltage and potentially lethal. Cables from the AC Drive to the dynamic brake resistors should be double insulated as DC voltages are typically 600 to 700 VDC.

Mains power supply isolation switch should be fitted to the AC Drive. The mains power supply must be disconnected via the isolation switch before any cover of the AC Drive can be removed or before any servicing work is undertaken stored charge in the DC bus capacitors of the PWM AC drive is potentially lethal after the AC supply has been disconnected. The AC supply must be isolated at least 10 minutes before any work can be undertaken as the stored charge will have been discharged through the internal bleed resistor fitted across the DC bus capacitors.

Whenever possible, it is good practice to check DC bus voltage with a VDC meter before accessing the AC drive bridge. Where the AC Drive input is connected to the mains supply with a plug and socket, then upon disconnecting the plug and socket, be aware that the plug pins may be exposed and internally connected to DC bus capacitors (via the internal bridge rectifier in reversed bias). Wait 10 minutes to allow stored charge

in the DC bus capacitors to be dissipated by the bleed resistors before commencing work on the AC Drive.

Electrical Shock Hazard

Ensure the protective earthing conductor complies with technical standards and local safety regulations. Because the leakage current exceeds 3.5 mA in all models, IEC 61800-5-1 states that either the power supply must be automatically disconnected in case of discontinuity of the protective earthing conductor or a protective earthing conductor with a cross-section of at least 10 mm^2 (Cu) or 16 mm^2 (Al) must be used. Failure to comply may result in death or serious injury.

When using an earth leakage circuit breaker, use a residual current operated protective device (RCD) of type B (breaker which can detect both AC and DC). Leakage current can cause unprotected components to operate incorrectly. If this is a problem, lower the carrier frequency, replace the components in question with parts protected against harmonic current, or increase the sensitivity amperage of the leakage breaker to at least 200 mA per drive.

Factors in determining leakage current:

- Size of the AC drive
- AC drive carrier frequency
- Motor cable type and length
- EMI/RFI filter

Approvals

Certification marks on the product nameplate indicate compliance with the corresponding certificates and standards.

Certification	Mark	Directives		Standard
CE	CE	EMC directives	2014/30/EU	EN 12015 EN 12016
		LVD directives	2014/35/EU	EN 61800-5-1
		RoHS directives	2011/65/EU	EN 50581

Note

- The above EMC directives are complied with only when the EMC electric installation requirements are strictly observed.
- Machines and devices used in combination with this drive must also be CE certified and marked. The integrator who integrates the drive with the CE mark into other devices has the responsibility of ensuring compliance with CE standards and verifying that conditions meet European standards.

  The installer of the drive is responsible for complying with all relevant regulations for wiring, circuit fuse protection, earthing, accident prevention and electromagnetic (EMC regulations). In particular fault discrimination for preventing fire risk and solid earthing practices must be adhered to for electrical safety (also for good EMC practice).
- For more information on certification, consult our distributor or sales representative.

Introduction

1. Basic Functions

Function	Description	Remarks
Common Running Functions		
Full collective selective	In automatic running or attendant state, this function enables the elevator to respond both car calls and hall calls. Passengers at any service floor can call the elevator by pressing the up call button and down call button.	FE-00 (Collective selective mode)
Service floor	The standard program supports 40 floors. The service of more than 40 floors is supported by the customized program.	-
Door open time setting	The system automatically determines different door open time for door open for call, command, protection, or delay according to the set door open holding time.	Set in group Fb
Door open holding	In automatic running state, passengers can press the door open button in the car to delay door close to facilitate goods to be moved in or out.	Fb-14 (Door open holding time at such signal input)
Door machine service floor setting	You can set the required service floors of the door machines.	Fb-02, Fb-03, Fb-04, Fb-05, Fb-18 and Fb-19
Door pre-close by the door close button	During door open holding in automatic running state, passengers can press the door close button to close the door in advance, which improves the efficiency.	-
Floor number display setting	The system supports display of floor numbers in combinations of numbers and letters, which meets the requirements of special conditions.	Set in group FE
Light curtain signal judgment	If the door is blocked by stuff during door close, the light curtain acts and the elevator opens the door. This function is invalid in fire emergency state.	-
Auxiliary operation box	An optional auxiliary operation box that has the same functions as the main operation box is available.	-
Independent control of the front door and back door	When there are two doors for a car, automatic control on the two doors depends on your requirements.	-
Repeat door close	If the door lock is not applied after the elevator performs door close for a certain time, the elevator automatically opens the door and then closes the door again.	Fb-08 (Door close protection time)
Independent command	When the main and auxiliary operation boxes are configured, they can independently control door open/close according to the commands in automatic running state.	-
Voice announcement	The elevator automatically announces information such as the running direction and next arriving floor during running.	MCTC-CHM required
Auto-leveling	The systems implements automatic accurate leveling based on the floor pulse counting and up/down leveling feedback signals.	-
Response at acceleration	The system allows the elevator to automatically respond to calls from the service floors during acceleration.	-
Down collective selective control	In automatic running or attendant state, the elevator responds only to hall down calls besides car calls.	-

Function	Description	Remarks
Idle elevator returning to base floor	In automatic running state, the elevator automatically returns to the set parking floor and waits for passengers if there is no car call or hall call within the set time.	F9-00 (Idle time before returning to base floor)
Landing at another floor	If the door open time exceeds the door open protection time but the door open limit signal is still inactive, the elevator closes the door and then automatically runs to the next landing floor; the system reports fault Err55.	-
Forced door close	When the door fails to close within the set time due to the action of the light curtain or safety edge, the elevator enters the forced door close state, closes the door slowly, and gives a prompt tone.	-
Cancellation of wrong calls	Passengers can press the button consecutively twice to cancel wrong calls.	-
Service floor setting	You can enable or disable the system service for certain floors flexibly based on actual requirements.	F6-05, F6-06, F6-35
Time-based floor service	You can flexibly set the time periods and corresponding service floors or select the service floors by using the service floor switchover switch.	-
Independent running	The elevator does not respond to any call, and the door needs to be closed manually. In the case of group control, the elevator runs independently out of the group control system.	Signal input: CCB JP23
Attendant running	In attendant state, the running of the elevator is controlled by the attendant.	Signal input: CCB JP21
Low-speed self-rescue	When the elevator is in non-inspection state and stops at non-leveling area, the elevator automatically runs to the leveling area at low speed if the safety requirements are met, and then opens the door.	-
Door control function	You can set whether the system keeps outputting commands after door open limit and door close limit based on the type of the door machine.	-
Car arrival gong	After the elevator arrives at the destination floor, the CTB gives a prompt tone.	-
Hall arrival forecast indicator	When the elevator will arrive at the destination floor soon, the hall arrival forecast indicator becomes ON.	HCB output
Hall arrival gong	After the elevator will arrive at the destination floor soon, the system outputs the hall arrival gong.	HCB output
Hall I/O extension function	If the hall I/O terminals are not sufficient, more terminals can be provided by using an MCTC-KZ-G1 board.	-
Car I/O extension function	If the car I/O terminals are not sufficient, more terminals can be provided by using an MCTC-KZ-G1 board.	-
Button stuck check	The system can automatically identify whether a hall call button is stuck and cancel the stuck call, preventing the condition that the elevator cannot close and run due to stuck hall calls.	FE-32 Bit4
Automatic startup torque compensation	The system automatically implements startup torque compensation based on the current car load, achieving smooth startup and improving the riding comfort.	F8-01 (Pre-torque selection)
Direct travel ride	The system automatically calculates and generates the running curves based on the distance, enabling the elevator to directly stop at the leveling position without creeping.	

Function	Description	Remarks
Automatic generation of optimum curve	The system automatically calculates the optimum speed curve compliant with the human-machine function principle based on the distance, without being limited by the number of curves or short floor.	
Service suspension output	When the elevator cannot respond to hall calls, the corresponding terminal outputs the service suspension signal.	-
Running times recording	In automatic running state, the system automatically records the running times of the elevator.	Recorded in F9-11 and F9-12
Running time recording	The system automatically records the accumulative power-on time, working hours, and working days of the elevator.	Recorded in F9-09
Automatic door open upon door lock abnormality	If the system detects that the door lock circuit is abnormal during door open/close, the elevator automatically opens and closes the door again, and reports a fault after the set door open/close times is reached.	
VIP service	The elevator first directly runs to the VIP floor and provides services for special persons.	-
Disability service	When the elevator is waiting at the leveling position, if there is a call at this floor from the disability operation box, the door open holding time is prolonged. It is the same for the back door.	Fb-15 (Special door open holding time)
Full-load direct running	When the car is full-loaded in automatic running state, the elevator does not respond to hall calls from the passing floors. These halls calls, however, can still be registered, and will be executed at next time of running (in the case of single elevator) or by another elevator (in the case of parallel/group control).	-
Overload protection	When the car load exceeds the elevator rated load, the elevator alarms and stops running.	-
Fault data recording	The system automatically records detailed information of faults, which helps improve the efficiency of maintenance and repair.	Groups FC, E0 to E9
Inspection-related Functions		
Simple maintenance keypad	The 3-button keypad on the MCB provides the functions such as commissioning the running floors and door open/close.	-
Operation box commissioning	The operation panel can be connected to the system in the car for elevator commissioning, which improves the commissioning efficiency.	-
Shaft auto-tuning	Shaft auto-tuning is required before first-time automatic running. During shaft auto-tuning, the elevator runs from the bottom floor to the top floor at the inspection speed and automatically records all position signals in the shaft.	F1-11 (Auto-tuning mode)
User-defined parameter display	You can view the parameters that are modified and different from the default setting.	FP-02
Inspection running	After entering the inspection state, the system cancels automatic running and related operations. You can press the up or down call button to make the elevator jog at the inspection speed.	-
Motor auto-tuning	With simple parameter setting, the system can obtain the motor parameters no matter whether the motor is with-load or without load.	-

Function	Description	Remarks
Floor position intelligent 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 over travel top terminal or bottom terminal with use of the slow-down switches.	-
Dual-speed for inspection	Considering inaccurate running control at high inspection speed but long running time at low inspection speed, the system provides the dual-speed curve for inspection, which greatly improves the efficiency at inspection.	-
Test running	The test running includes the fatigue test of a new elevator, car call floor test, hall call test, and tests such as hall call response forbidden, door open/close forbidden, terminal floor limit switch shielded, and overload signal shielded.	-
Fire Emergency and Security Functions		
Returning to base floor at fire emergency	After receiving a fire emergency signal, the elevator does not respond to any call but directly runs to the fire emergency floor and waits.	F6-03 and F8-12 (Fire emergency floor)
Firefighter running	After the elevator enters the firefighter running mode, door open/close is implemented by the jog operation (optional) by using the door open and close buttons rather than automatically. In addition, the elevator responds to only car calls and only one call can be registered once.	F6-44
Security floor	After the security floor function is enabled, the security floor is used at 10:00 p.m. to 6:00 a.m, and the elevator runs to the security floor first every time, stops and opens the door, and then runs to the destination floor.	F6-13
Elevator lock	In automatic running state, when the elevator lock switch acts or the set elevator time is reached, the elevator returns to the elevator lock floor after responding to all car calls, stops running, and turns off the lamp and fan in the car.	F6-04 (Elevator lock floor)
Troubleshooting based on fault level	Faults are classified into different levels based on the severity. Different levels of faults are rectified using different methods.	-
Runaway prevention	The system detects the running state of the elevator in real time. If the elevator speed exceeds the limit, the system immediately stops running of the elevator.	-
Automatic identification of power failure	The system automatically identifies power failure and outputs the relay signal for emergency evacuation automatic switchover to implement emergency evacuation at power failure.	Y6 especially used for emergency evacuation switchover
Automatic running mode switchover at power failure	For the synchronous motor, when the power supply is interrupted, the system can perform automatic switchover between shorting stator braking mode and controller drive mode, implementing quick and stable self-rescue. Shorting stator braking mode: Upon power failure, UPS is used, the motor stator is shorted, and the brake is automatically released, making the car move slowly under the effect of the weighing difference between the car and the counterweight.	F6-45 (Emergency evacuation function selection)
Running direction self-identification at power failure	When the power supply is interrupted, the system can automatically identify the current car load and determine the running direction.	F6-45 (Emergency evacuation function selection)

Function	Description	Remarks
Base floor verification	After detecting a position abnormality, the system runs the elevator to each floor until reaching the terminal floor for verification, guaranteeing system security.	
Passenger unloading first upon fault	The system automatically determines the fault level. If the safety running conditions are met, the elevator first runs to the leveling position to unload passengers.	
Interference degree judgment	The system judges the degree of communication interference.	Viewed in FA-24
Earthquake protection	When the earthquake detection device acts and inputs a signal to the system, the elevator lands at the nearest floor and stops running. After the earthquake signal becomes inactive and the fault is reset manually, the elevator restores to normal running.	-
Current cancellation in ramp mode	For the PMSM, after the elevator decelerates to stop, the holding current of the motor is cancelled in ramp mode, preventing abnormal noise during current cancellation.	F2-17
Independent working power supply	The NICE3000new system supports not only three-phase 380 VAC but also single-phase 220 VAC to meet different applications of the power supply system (such as 220 V UPS)	-
Automatic voltage identification	The system detects the bus voltage and automatically adjusts the running speed of the elevator to adapt to the situation of insufficient power from power supply (such as emergency UPS).	-
Parallel/Group Control and Other Functions		
Parallel control	The system supports parallel control of two elevators and provides multiple scheduling algorithms to meet requirements of different customers.	-
Dispersed waiting	In parallel/group control, the elevators can wait at different floors.	Set in F6-09
Parallel/Group control exit	If the parallel/group control exit switch of a certain elevator in a parallel/group control system is valid or the time for exiting the parallel/group control is reached, the elevator exits parallel/group control and runs independently. This does not affect normal running of the parallel/group control system.	-
Parallel/Group control automatic exit	If an elevator in the parallel/group control system cannot respond to calls in time due to faults, the elevator automatically exits the parallel/group control system and runs independently. This does not affect normal running of the parallel/group control system.	-
Anti-nuisance function	The system automatically judges the number of passengers in the car and compares it with the number of registered car calls. If there are excessive car calls, the system determines that it is nuisance and cancels all car calls. In this case, passengers need to register correct car calls again.	F8-08 (Anti-nuisance function)
Prompt of non-door zone stop	The system gives a prompt when the elevator stops at a non-door zone area due to faults.	-
Full-load indication	When the elevator is full-loaded, a full-load indication is displayed on the HCBs and the elevator directly runs to the desired floors.	-
Energy-saving Functions		
Car energy-saving	If there is no running command within the set time, the system automatically cuts off the power supply to the lamp and fan in the car.	F9-01 (Time for fan and lamp to be turned off)

Function	Description	Remarks
Energy-saving running with standby power supply	When the normal power supply is interrupted and the emergency power supply is used, the system reduces the running speed of the elevator in the prerequisite of guaranteeing the smooth running curve.	-
Arrival gong disabled at night	Within the set time period, the arrival gong is disabled.	F5-33 Bit4

2. Optional Functions

Function	Description	Remarks
Door pre-open	During normal stop, when the elevator speed is smaller than 0.2 m/s and the door zone signal is active, the system shorts the door lock by means of the shorting door lock circuit contactor and outputs the door open signal, implementing door pre-open. This improves the elevator use efficiency.	MCTC-SCB required
Micro-leveling	After landing at a floor, the elevator may move upward or downward due to the load change and the car door is not aligned with the ground, which is inconvenient for in and out of passengers and goods. In this case, the system allows the elevator to run to the leveling position in the door open state at the leveling speed.	MCTC-SCB required
Power failure emergency evacuation	For the elevator configured with standby power supply, the system uses the standby power supply to implement low-speed self-rescue in the case of power failure.	MCTC-ARD-C required
Onsite commissioning	The system can control and monitor running of elevators by using the NEMS software.	-
Commissioning by mobile phone	The mobile phone can be connected to the controller through the external WiFi module, and you can commission and monitor the elevator, and upload and download parameters by using the cell phone.	Special WiFi and mobile phone commissioning software required
Community monitoring	The control system can be connected to the terminal in the monitoring room. By using the NEMS software, you can view the floor position, running direction, and fault state of the elevator.	NEMS, accessories, and MCTC-MIB required
IC card	Passengers need to use the IC card to go to floors that require authorization.	IC card required
STO function	When a fault occurs in the safety circuit, the STO card acts immediately to cut the output current of the controller and stop the motor output torque.	Special STO card and MCTC-JCB-A2
Equipment-roomless monitoring function	With the monitoring board MCTC-MB-A2, users can view the running status of the elevator and perform commissioning outside the shaft and burning.	MCTC-MB-A2 required

3. List of Options

If any optional in the following table is required, specify it in your order.

Name	Model	Function	Remark
External braking unit	MDBUN	It is provided for the modes of 37 kW and above.	-

Name	Model	Function	Remark
PG card	MCTC-PG-A2	It is used to adapt to the push-pull and open-collector incremental encoders.	-
	MCTC-PG-D	It is used to adapt to the UVW differential encoder and applied to synchronous motor. It requires 5 V power supply.	-
	MCTC-PG-E	It is used to adapt to the SIN/COS encoder.	-
	MCTC-PG-F1	It is used to adapt to the absolute encoder (Heidenhain Endat).	
Car top board (CTB)	MCTC-CTB	The MCTC-CTB is the car control board of the NICE3000new. It has 8 DIs, 1 AI and 8 relay outputs (10 for customized model). It can communicate with the CCB and HCB simultaneously.	-
Hall call board (HCB)	MCTC-HCB	The HCB receives the passenger calls and displays the floor where the elevator is located and the running direction. It can also be used as car display board.	-
Car call board (CCB)	MCTC-CCB	The MCTC-CCB is another interface for passengers to interact with the control system. It mainly collects the car calls and outputs the call indicator state.	
Group control board (GCB)	MCTC-GCB-A	The MCTC-GCB is used together with the control system to implement group control of a maximum of 8 elevators.	-
I/O extension card	MCTC-KZ-G1	The MCTC-KZ-G1 is used when the terminals on the MCB or HCB are insufficient.	
Residential monitoring board	MCTC-MIB-A	This board communicates with the PC installed with the monitoring software in the monitoring room, helping users to query the running status, current floor, and fault information of the elevator.	-
External LED operation panel	MDKE	It is the external LED display and operation panel.	It provides the RJ45 interface for connecting to the controller.
LED operator	MDKE6	It is the external LED display and operation panel.	It can be used for copying parameter.
Extension cable	MDCAB	It is a standard 8-core network cable and can be connected to MDKE and MDKE6.	The cable length is 3 m in the standard configuration.
Door pre-open module	MCTC-SCB	The elevator car fluctuates at in and out of passengers and goods. This function allows the elevator car to restore to the leveling position at re-leveling speed with door open.	-
Monitoring board	MCTC-MIB	This board communicates with the PC installed with the NEMS software in the monitoring room, helping users to query the running status, current floor, and fault information of the elevator.	-
Automatic rescue device	MCTC-ARD-C	If an emergency power supply is used, the system uses the emergency power supply to implement self-rescue at low speed at power failure.	-

Chapter 1 Product Information

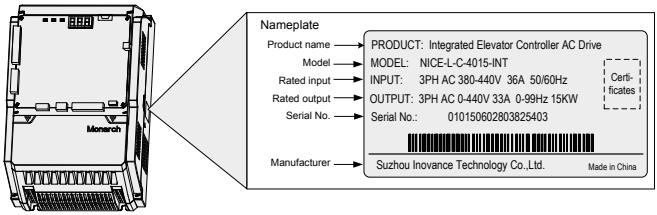
1.1 Acceptance

After receiving the product, unpack the packing box and check:

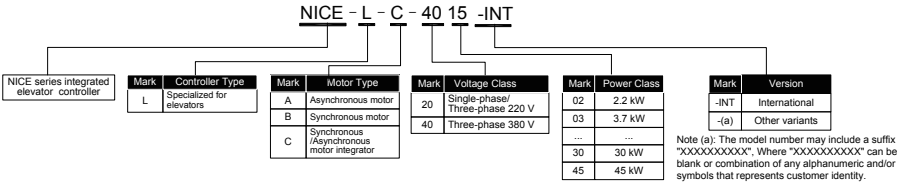
- Whether the nameplate model and controller ratings are consistent with your order. The box contains the controller, certificate of conformity, user manual and warranty card.
- Whether the controller is damaged during transportation. If you find any omission or damage, contact your supplier or us immediately.

1.2 Designation Rule and Nameplate

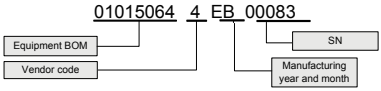
Figure 1-1 Designation rule and nameplate of the controller



Controller model



Manufacturing SN



1.3 Ratings

Table 1-1 Ratings of the NICE3000^{new}

Controller Model	Power Capacity (kVA)	Input Current (A)	Output Current (A)	Motor Power (kW)
Single-phase 220 V, range: 220–240 V, 50/60 Hz				
NICE-L-C-2002	2.0	9.2	5.2	1.1

Controller Model	Power Capacity (kVA)	Input Current (A)	Output Current (A)	Motor Power (kW)
NICE-L-C-2003	2.9	13.3	7.5	1.5
220-NICE-L-C-4007	3.9	17.9	10.3	2.2
220-NICE-L-C-4011	5.9	25.3	15.5	3.7
220-NICE-L-C-4015	7.3	31.3	19	4.0
220-NICE-L-C-4018	8.6	34.6	22.5	5.5
220-NICE-L-C-4018F				
220-NICE-L-C-4022	10.6	42.6	27.7	11
220-NICE-L-C-4022F				
220-NICE-L-C-4030	13.1	52.6	34.6	15
220-NICE-L-C-4030F				
Three-phase 220 V, range: 220–240 V, 50/60 Hz				
NICE-L-C-2002	4.0	11.0	9.6	2.2
NICE-L-C-2003	5.9	17.0	14.0	3.7
220-NICE-L-C-4007	7.0	20.5	18.0	4.0
220-NICE-L-C-4011	10.0	29.0	27.0	5.5
220-NICE-L-C-4015	12.6	36.0	33.0	7.5
220-NICE-L-C-4018	15.0	41.0	39.0	11.0
220-NICE-L-C-4018F				
220-NICE-L-C-4022	18.3	49.0	48.0	15.0
220-NICE-L-C-4022F				
220-NICE-L-C-4030	23.0	62.0	60.0	18.5
220-NICE-L-C-4030F				
Three-phase 380 V, range: 380–440 V, 50/60 Hz				
NICE-L-C-4002	4.0	6.5	5.1	2.2
NICE-L-C-4003	5.9	10.5	9.0	3.7
NICE-L-C-4005	8.9	14.8	13.0	5.5
NICE-L-C-4007	11.0	20.5	18.0	7.5
NICE-L-C-4011	17.0	29.0	27.0	11.0
NICE-L-C-4015	21.0	36.0	33.0	15.0
NICE-L-C-4018F	24.0	41.0	39.0	18.5
NICE-L-C-4022F	30.0	49.5	48.0	22.0
NICE-L-C-4030F	40.0	62.0	60.0	30.0
NICE-L-C-4037F	57.0	77.0	75.0	37.0
NICE-L-C-4045	69.0	93.0	91.0	45.0
NICE-L-C-4055	85.0	113.0	112.0	55.0
NICE-L-C-4075	114.0	157.5	150.0	75.0
NICE-L-C-4090	134.0	180.0	176.0	90.0
NICE-L-C-4110	160.0	214.0	210.0	110.0
NICE-L-C-4132	192.0	256.0	253.0	132.0
NICE-L-C-4160	231.0	307.0	304.0	160.0

1.4 Technical Specifications

Table 1-2 NICE3000^{new} technical specifications

Item		Specification
Power supply	Phases, voltage, frequency	200 V: single-phase 220 to 240 V, 50/60 Hz
		400 V: three-phase 380 V, 400 V, 415 V, 440 V, 460 V; 50/60Hz
	Voltage range	-15% to +10%
	Frequency range	-5% to +5%
	Instantaneous voltage dip allowed	200 V: Continuous running at above 150 VAC; Undervoltage protection after 15 ms running at reduction from rated input to below 150 VAC 400 V: Continuous running at above 300 VAC; Undervoltage protection after 15 ms running at reduction from rated input to below 300 VAC
Basic features	Standard floors	40
	Elevator speed	≤ 4.00 m/s
	Number of elevators in group control	≤ 8
	Communication method	CANbus
	Functions	See the function list in “Introduction”.
Drive features	Motor control mode	Feedback vector control (FVC) PG card required
	Startup torque	According to the load, maximum of 200%
	Speed adjustment range	1:1000 (FVC)
	Speed stability accuracy	±0.05% (FVC, 25±10°C)
	Torque limit	200% of rated torque
	Torque control accuracy	±5%
	Frequency range	0 to 99 Hz
	Frequency accuracy	±0.1%
	Frequency reference minimum unit	0.01 Hz/99 Hz
	Output frequency minimum unit (for calculation)	0.01 Hz
	No-load startup compensation	When the elevator load is unknown, the system outputs a proper torque to start the motor smoothly based on the elevator running direction, minimizing the instantaneous rollback and improving the riding comfort.
	Braking torque	150% (external braking resistor), built-in braking unit
	Acceleration/Deceleration time	0.1s to 8s
	Carrier frequency	2 to 16 kHz
	Power supply from battery	At power failure, the elevator runs to the nearest leveling area at low speed with power supply from the battery.

Item		Specification
PG interface	PG car types	Open-collector, push-pull, SIN/COS, Endat absolute
	PG card signal frequency-division output	OA, OB orthogonal
Input/Output signal	Optocoupler input control power	Isolated 24 VDC
	Low-voltage optocoupler isolated input	24 DIs, optocoupler control signal is isolated 24 VDC power input
	High-voltage optocoupler isolated input	4 DIs
	Relay output	6 normally-open contacts, single-pole single-throw 5A contact switching capacity, contact load (resistance): 5 A, 250 VAC, or 5 A, 28 VDC
	USB interface	Commissioning with mobile phone
	CAN communication port	2 (CTB communication, parallel control or group control)
	Modbus communication	2 (HCB communication, community monitoring or IoT)
	Analog input terminal	1 single-end or differential input, input voltage range: -10 V to +10 V, accuracy 0.1%
Protection functions (To be continued)	Motor overload protection	Motor protection curve set in parameters
	AC drive overload protection	60s for 150% of rated current, 10s for 200% of rated current
	Short-circuit protection	Controller protection at occurrence of overcurrent due to any two phases of UVW are short-circuited
	Input phase loss protection	Output disabled at input phase loss
	Output phase loss protection	Output disabled at output phase loss
	Overvoltage threshold	Bus voltage 800 V(380 V models), 400 V (220 V models)
	Undervoltage threshold	Bus voltage 350 V(200 V models), 150 V (220 V models)
	Instantaneous power failure compensation	Above 15 ms protection
	Heatsink overheat	Protection with thermistor
	Stall prevention	Protection at speed deviation exceeding 15% of the rated speed during running
	Pulse encoder fault	PG card wire-breaking
	Braking unit protection	Automatic detection and protection at braking unit abnormality
	IGBT protection	Overcurrent, short-circuit, overheat protection
	Current sensor protection	Self-check at power-on
	Protection at input voltage excessive	Detection of voltage exceeding 725 V for 400 V models, and exceeding 360 V for 200 V models
	Protection of output short-circuited to ground	Output disabled when any phase is short-circuited to ground during running
	Output imbalance protection	Output disabled when imbalance between the UVW phases is detected
	Braking resistor short-circuit protection	Detection during braking
	Speed abnormality protection	Speed detection by encoder, protection at different running stages (acceleration, deceleration, and constant speed)
	Running time limit	Protection when the running time at a certain floor exceeds the limit

Item		Specification
Protection functions (Continued)	Leveling switch fault protection	Protection at fault of leveling switch
	EEPROM fault	Self-check at power-on
Display	Keypad	3-digit LED display, providing certain commissioning functions
	Operating panel	5-digit LED display, viewing and modifying most parameters and monitoring system state
	Mobile phone commissioning	Viewing and changing system state
Environment	Ambient temperature	-10°C to 40°C (de-rated if the ambient temperature is above 40°C, maximum temperature: 50°C)
	Humidity	Maximum relative humidity 95%, non-condensing
	Vibration	< 5.9 m/s2 (0.6g)
	Storage temperature	-–20°C to 60°C (temperature during transportation)
	Location	Indoor (no corrosive gas or dust)
	Pollution degree	PD2
	Power supply system	TN/TT
	Altitude	Below 1000 m (de-rated 1% for each 100 m higher)
Structure	Ingress protection	IP20
	Cooling method	Forced air cooling
	Mounting method	Cabinet installation

1.5 Selection of Braking Resistor

Table 1-3 Braking component selection

Controller Model	Power of Applicable Motor (kW)	Max. Resistance (Ω)	Min. Resistance (Ω)	Power of Braking Resistor (W)	Braking Unit
Single-phase 220 V, range:220 to 240 V					
NICE-L-C-2002	1.1	145.0	125.0	300	Built-in
NICE-L-C-2003	1.5	105.0	90.0	450	
220-NICE-L-C-4007	2.2	72.0	63.0	600	
220-NICE-L-C-4011	3.7	43.0	37.0	1100	
220-NICE-L-C-4015	4.0	40.0	35.0	1200	
220-NICE-L-C-4018	5.5	29.0	25.0	1600	
220-NICE-L-C-4018F					
220-NICE-L-C-4022	11.0	18.0	16.0	3500	Built-in
220-NICE-L-C-4022F					
220-NICE-L-C-4030	15.0	13.0	13.0	4500	
220-NICE-L-C-4030F					
Three-phase 220 V, range: 220 to 240 V					
NICE-L-C-2002	2.2	72.0	65.0	600	Built-in
NICE-L-C-2003	3.7	54.0	50.0	1100	
220-NICE-L-C-4007	4.0	40.0	35.0	1200	

Controller Model	Power of Applicable Motor (kW)	Max. Resistance (Ω)	Min. Resistance (Ω)	Power of Braking Resistor (W)	Braking Unit
220-NICE-L-C-4011	5.5	29.0	25.0	1600	Built-in
220-NICE-L-C-4015	7.5	26.0	22.0	2500	
220-NICE-L-C-4018	11.0	14.5	13.0	3500	
220-NICE-L-C-4018F					
220-NICE-L-C-4022	15.0	13.0	12.5	4500	
220-NICE-L-C-4022F					
220-NICE-L-C-4030	18.5	12.5	12.0	5500	
220-NICE-L-C-4030F					
220-NICE-L-C-4037	22.0	7.5	6.0	6500	MDBUN-60-2T
220-NICE-L-C-4037F					
220-NICE-L-C-4045	30.0	5.5	4.5	9000	MDBUN-90-2T
220-NICE-L-C-4055	37.0	4.5	3.5	11000	MDBUN-60-2Tx2
Three-phase 380 V, range: 380 to 440 V					
NICE-L-C-4002	2.2	290	230	600	Built-in
NICE-L-C-4003	3.7	170	135	1100	
NICE-L-C-4005	5.5	115	90	1600	
NICE-L-C-4007	7.5	85	65	2500	
NICE-L-C-4011	11	55	43	3500	
NICE-L-C-4015	15	43	35	4500	
NICE-L-C-4018	18.5	34.0	25	5500	
NICE-L-C-4018F					
NICE-L-C-4022	22	24	22	6500	
NICE-L-C-4022F					
NICE-L-C-4030	30	20	16	9000	
NICE-L-C-4030F					
NICE-L-C-4037	37	16.0	13	11000	MDBUN-60-T
NICE-L-C-4037F					
NICE-L-C-4045	45	14.0	11	13500	MDBUN-60-T
NICE-L-C-4055	55	12.0	10	16500	MDBUN-90-T
NICE-L-C-4075	75	16×2	13×2	12000×2	MDBUN-60-Tx2
NICE-L-C-4090	90	14×2	13×2	13500×2	MDBUN-60-Tx2
NICE-L-C-4110	110	12×2	9×2	18000×2	MDBUN-90-Tx2
NICE-L-C-4132	132	13.5×3	10.5×3	14000×3	MDBUN-90-Tx3
NICE-L-C-4160	160	12×3	9×3	18000×3	MDBUN-90-Tx3

Note	
	1. The preceding configuration takes the synchronous motor as an example. The asynchronous motor has poor energy transfer efficiency, and you can reduce the power of the braking resistor or increase the resistance of the braking resistor. 2. It is recommended that you select the braking resistor closest to the minimum resistance. 3. “x 2” indicates that two sets are required. Take NICE-L-C-4110 as an example: “9x2, 18000x2, MDBUN-90-Tx2” indicates that two sets of (9 Ω, 15000 W) braking resistor + MDBUN-90-T braking unit are connected in parallel to the controller. “x3” indicates that three sets are required.

1.6 Selection of MCTC-PG Cards

Four PG card models are available, MCTC-PG-A2, MCTC-PG-D, MCTC-PG-E and MCTC-PG-F1 for different encoder types, as described in the following table.

Table 1-4 Selection of the MCTC-PG card models

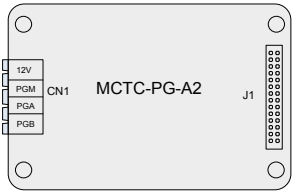
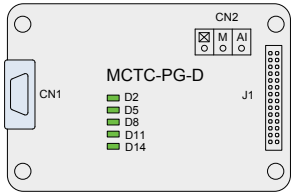
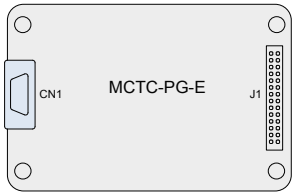
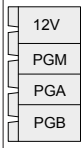
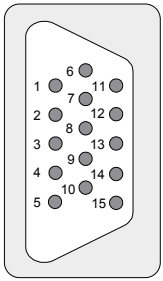
Encoder Type	Adaptable PG Card	Appearance
Push-pull encoder Open-collector incremental encoder	MCTC-PG-A2	
UVW encoder	MCTC-PG-D	
SIN/COS encoder	MCTC-PG-E	
Absolute encoder (Endat)	MCTC-PG-F1	

Table 1-5 Definitions of the CN1 terminals of different MCTC-PG card models

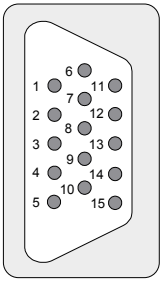
MCTC-PG-A2		MCTC-PG-D						MCTC-PG-E						MCTC-PG-F1					
1	15V	1	A+	6	NC	11	W+	1	B-	6	A-	11	C-	1	B-	6	A-	11	CLK-
2	PGM	2	A-	7	U+	12	W-	2	NC	7	COM	12	D+	2	NC	7	GND	12	DATA+
3	PGA	3	B+	8	U-	13	VCC	3	Z+	8	B+	13	D-	3	NC	8	B+	13	DATA-
4	PGB	4	B-	9	V+	14	COM	4	Z-	9	VCC	14	NC	4	NC	9	5V (Up)	14	NC
		5	NC	10	V-	15	NC	5	A+	10	C+	15	NC	5	A+	10	CLK+	15	5V (Sensor)



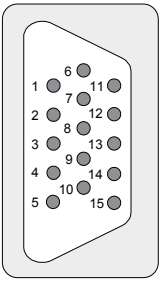
CN1



CN1



CN1



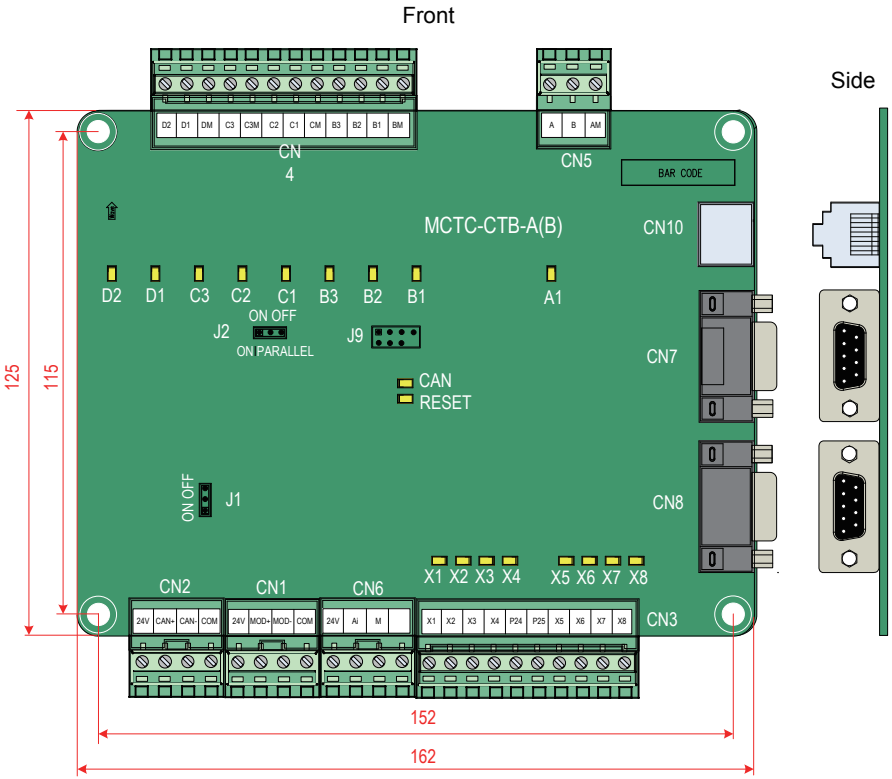
CN1

1.7 Optional Parts

1.7.1 CTB Board (MCTC-CTB)

The car top board (MCTC-CTB) is the elevator car control board of the NICE3000^{new}. It includes 8 DI terminals, 1 AI terminal, and 9 relay output terminals (standard: 7).

Figure 1-1 Appearance, structure and installation method of the CTB



1.7.2 Display Board (MCTC-HCB)

Table 1-6 Display board selection

No.	Name	Feature	Dimensions (mm)
No hall call display			
1	MCTC-HCB-B	No hall call display	70*84*20
Dot-matrix display board			
2	MCTC-HCB-F	Red character, horizontal display	70*144*21

No.	Name	Feature	Dimensions (mm)
3	MCTC-HCB-G1 MCTC-HCB-G2 MCTC-HCB-G4	Large-area display, both horizontal and vertical display supported G1: red character G2: orange character G4: blue character	65*157*22
4	MCTC-HCB-G3	Large-area display, vertical, red character	136*160*14
5	MCTC-HCB-H MCTC-HCB-H1 MCTC-HCB-H2 MCTC-HCB-H3 MCTC-HCB-S3	H: red character, vertical display H1: blue character, vertical display H: orange character, vertical display H3: red character, vertical display, with waterproof cover S3: white character (HCB-H series)	144*70*21
6	MCTC-HCB-J MCTC-HCB-J2	J: red character, vertical display J2: Orange character, vertical display	144*70*18
7	MCTC-HCB-O1	Orange character, vertical display	137*79*11
8	MCTC-HCB-Q1	Mini dot-matrix Q1: red character Q2: orange character	74*67*10
9	MCTC-HCB-R1 MCTC-HCB-R2 MCTC-HCB-R3	Ultrathin display board R1: red character R2: orange character R3: blue character	144*70*10
10	MCTC-HCB-R4	Ultrathin display board, red character	150*70*8.5
11	MCTC-HCB-R5	Ultrathin display board, red character	144*70*10
12	MCTC-HCB-XG	High-density dot-matrix display, orange character	100*70*10
13	MCTC-HCB-XG-VX	High-density dot-matrix display, orange character, vertical (with arrival indicator VX: vertical display HX: Horizontal display	105*70*10 70*105*10
14	MCTC-HCB-SL	Ultra-long display board, red character	245*55*15
15	MCTC-HCB-Y1	Specialized for parallel control, orange character	133*130*10
16	MCTC-HCB-LW01	High-density display, white character	144*70*10
17	MCTC-HCB-HS3(F) MCTC-HCB-HS5(F) MCTC-HCB-HS6(F)	Square dot-matrix display, both horizontal/vertical supported HS3(F): blue character in black background HS5(F): white character in black background HS6(F): yellow character in black background	173*118*8.8
18	MCTC-HCB-HS3(Y) MCTC-HCB-HS5(Y) MCTC-HCB-HS6(Y)	Round dot-matrix display, both horizontal/ vertical supported HS5(Y): white character in black background HS6(Y): yellow character in black background	173*118*8.8
Segment display board			
19	MCTC-HCB-D2	Ultrathin segment LCD, white blue character background	144*70*10

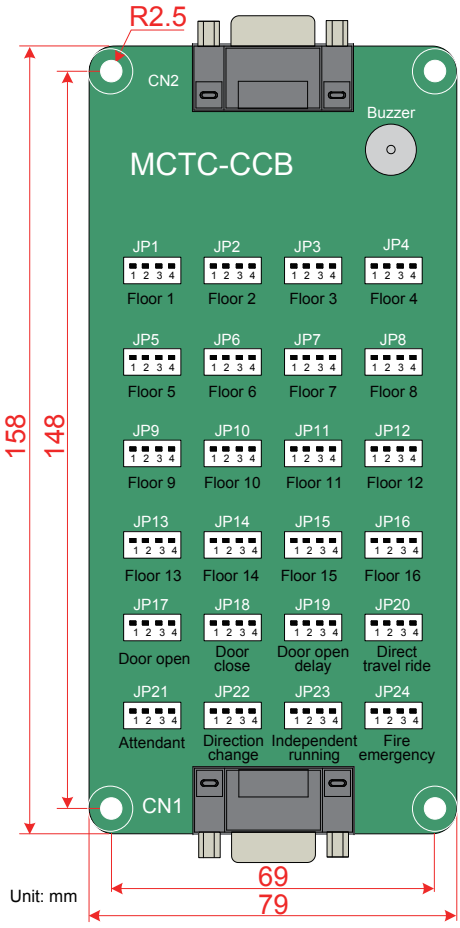
No.	Name	Feature	Dimensions (mm)
20	MCTC-HCB-U1 MCTC-HCB-U2 MCTC-HCB-U3	Segment LCD display U1: white character in blue background U2: white character in black background U3: yellow character in black background	144*80*17
21	MCTC-HCB-U1B	Segment LCD display, white character in blue background	160*75*9
22	MCTC-HCB-V1 MCTC-HCB-V4	6.4-inch segment LCD display V1: white character in blue background (vertical) V4: white character in black background (vertical)	185*131*18
	MCTC-HCB-V2 MCTC-HCB-V3	6.4-inch segment LCD display V2: white character in blue background (horizontal) V3: white character in black background (horizontal)	131*185*18
23	MCTC-HCB-Z1	Specialized for parallel control, white character in blue background	135*129*16
24	MCTC-HCB-P1	7-segment display board, red character	144*70*18
25	MCTC-HCB-D3A MCTC-HCB-D5A MCTC-HCB-D6A	Ultrathin segment LED display D3A: blue character in black background D5A: white character in black background D6A: yellow character in black background	130*72*7
26	MCTC-HCB-D3B MCTC-HCB-D5B MCTC-HCB-D6B	Ultrathin segment LED display D3B: blue character in black background D5B: white character in black background D6B: yellow character in black background	130*72*7
27	MCTC-HCB-V3A MCTC-HCB-V5A MCTC-HCB-V6A	Ultrathin segment LED display, vertical V3A: blue character in black background V5A: white character in black background V6A: yellow character in black background	173*118*8.8
28	MCTC-HCB-V3B MCTC-HCB-V5B MCTC-HCB-V6B	Ultrathin segment LED display, horizontal V3B: blue character in black background V5B: white character in black background V6B: yellow character in black background	118*173*8.8
True-color display board			
29	MCTC-HCB-T1	4.3-inch true-color LCD display	145*85*18
30	MCTC-HCB-T2	7-inch true-color LCD display	188*113*28 113*188*28
	MCTC-HCB-T5	7-inch true-color LCD display inside car	
31	MCTC-HCB-T3	9.7-inch true-color LCD display	250*194*32 194*250*32
	MCTC-HCB-T6	9.7-inch true-color voice LCD display inside car	

Note	For details, refer to the MCTC-HCB Series Display Board Selection Guide (data code: 19010482).

1.7.3 CCB Board (MCTC-CCB)

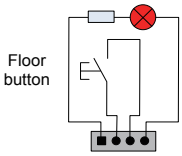
The car call board (MCTC-CCB) is another interface between users and the control system. Each CCB comprises 24 inputs and 22 outputs, including 16 floor buttons and 8 functional signals. The CCB mainly collects button calls and outputs signals of the button call indicators. The need for 40-floor use can be implemented through cascaded connection. CN2 is an input connector and CN1 is a cascaded output connector.

Figure 1-2 Appearance, dimensions, and installation method of the CCB



The following table describes the input and output terminals of the CCB.

Table 1-7 Input and output terminals of the CCB

No.	Interface	Pins 2 and 3	Pins 1 and 4	Remarks
1	JP1	Floor 1 button input	Floor 1 display output	Floor button indicator  For CCB2, the input signal of JPn corresponds to floor (16+n) button input.
2	JP2	Floor 2 button input	Floor 2 display output	
3	JP3	Floor 3 button input	Floor 3 display output	
4	JP4	Floor 4 button input	Floor 4 display output	
5	JP5	Floor 5 button input	Floor 5 display output	
6	JP6	Floor 6 button input	Floor 6 display output	
7	JP7	Floor 7 button input	Floor 7 display output	
8	JP8	Floor 8 button input	Floor 8 display output	
9	JP9	Floor 9 button input	Floor 9 display output	
10	JP10	Floor 10 button input	Floor 10 display output	
11	JP11	Floor 11 button input	Floor 11 display output	
12	JP12	Floor 12 button input	Floor 12 display output	
13	JP13	Floor 13 button input	Floor 13 display output	
14	JP14	Floor 14 button input	Floor 14 display output	
15	JP15	Floor 15 button input	Floor 15 display output	
16	JP16	Floor 16 button input	Floor 16 display output	
17	JP17	Door open button input	Door open display output	Invalid for CCB2. JP17 is used for back door open.
18	JP18	Door close button input	Door close display output	
19	JP19	Door open delay button input	Door open delay display output	
20	JP20	Direct travel ride input	Non-door zone stop output	
21	JP21	Attendant input	Reserved	
22	JP22	Direction change input	Reserved	
23	JP23	Independent running input	Reserved	
24	JP24	Fire emergency input	Reserved	
Note: Pins 1 and 2 are positive of power supply. The pin with white dot mark or that is rectangular is pin 1.				

Note	
	• Perform wiring strictly according to the terminal marks and ensure that the button is inserted securely. • The MCTC-CCB has the same interfaces on both ends, and do not make wrong connection when connecting multiple boards in series.

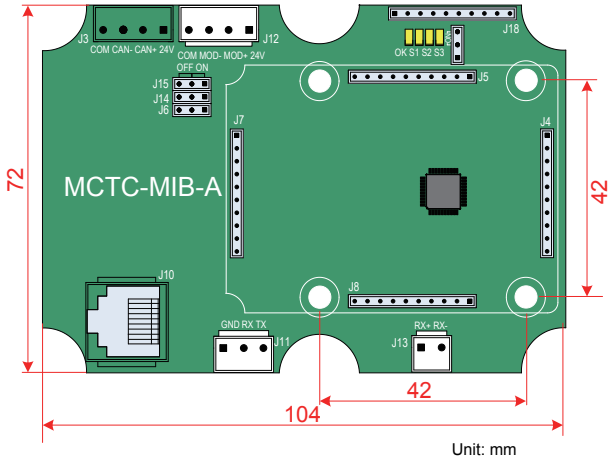
1.7.4 Community Monitoring Board (MCTC-MIB-A)

The MCTC-MIB-A is used to query information such as elevator running state, current floor, and faults, and send the information to the monitoring room via communication. Users can monitor and control the elevator by using the PC installed with the monitoring software in the monitoring room.

The MCTC-MIB-A provides an RS485 port, an RS232 port, corresponding signal indicators and RJ45 interface for connecting operation panel. The RS232 port is connected to the controller or PC host computer, according to the parameter setting. The RS485 port is connected to the RS485 port of other MCTC-MIB-A.

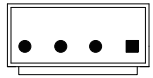
The following figure shows the appearance and dimensions of the MCTC-MIB-A

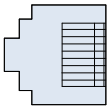
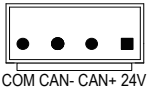
Figure 1-3 Appearance and dimensions of MCTC-MIB-A



The following table describes the input and output terminals of MCTC-MIB-A.

Table 1-8 Input and output terminals of MCTC-MIB-A

Mark		Terminal Name	Function Description	Terminal Arrangement
J12	+24V/COM	External 24 VDC power supply	Connect to 24 V power supply.	
	MOD+/MOD-	RS485 communication port	Connect to the community monitoring board in the monitoring room via RS485 communication	
J11	TX/RX	RS232 communication port	Used to disable the burning program, communicate with the host computer, and communicate with the controller.	
	GND	GND terminal		
J14/J15		Termination resistor	The board in the monitoring room is connected to position 1, and that in the equipment room is connected to position 2 (by default).	

Mark	Terminal Name	Function Description	Terminal Arrangement
J4/J7	GSM mode	Connect to the GSM module for exchanging short messages.	
J5/J8	Zigbee module	Reserved	
J1	Burning jumper	Short ON to enter download mode.	
J10	Operation panel interface	Connect to the operation panel.	
J3	Reserved	-	
J13	Reserved	-	
J6	Reserved	-	
OK	Power indicator	This indicator blinks when the power to the board and MCU running are normal.	
S1	Controller communication indicator	This indicator blinks when communication with the controller is normal.	
S2	RS485 networking indicator	This indicator blinks when the RS485 communication network is normal.	
S3	Host computer communication indicator	This indicator blinks when communication with the host computer is normal.	

Chapter 2 System Commissioning

2.1 Use of the Commissioning Tools

The NICE3000^{new} supports three commissioning tools, as listed in the following table.

Tool	Function Description	Remark
Onboard 3-button keypad	It is used to enter the shaft commissioning commands and view floor information.	Standard
LED operation panel	It is used to view and modify parameters related to elevator drive and control.	Optional
Mobile phone commissioning software	Install a WiFi module is connected to the MCB, and users can use the mobile phone installed with the commissioning software to commission the elevator, and upload and download parameters.	Optional

The following part describes the commonly used keypad and LED operation panel in detail.

2.1.1 Use of the Onboard Keypad

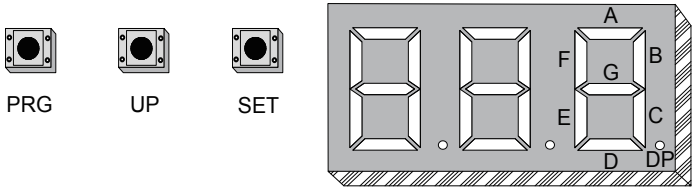
Buttons and Display

The onboard keypad consists of three 7-segment LEDs and three buttons. You can view information about the controller and enter simple commands on the keypad.

CAUTION	The keypad is exposed, and pay attentions to the following points during use: 1. Wear insulated gloves when performing operations on the keypad to prevent electric shock or damage to the controller components due to electrostatic discharge. 2. Do not use a metal or sharp tool to press the button to prevent the short circuit fault or damage to the components on the MCB.

The following figure shows the appearance of the keypad.

Figure 2-1 Appearance of the keypad

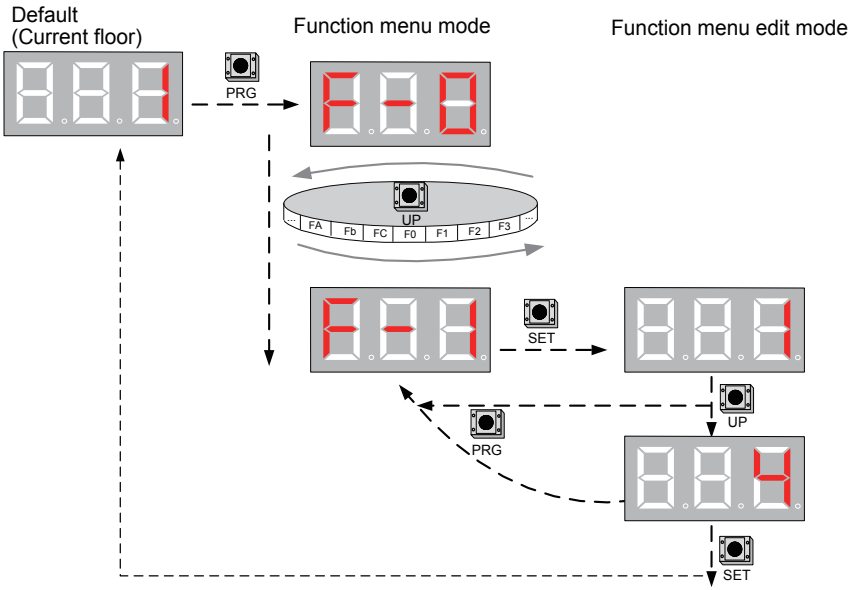


As shown in the preceding figure, the three buttons are PRG, UP, and SET. The functions of the three buttons are described in the following table.

Button	Function
PRG	Press this button in any state to exit the current operation and enter the function menu mode (that is, display the current function group number).
UP	Press this button to increase the function group number or data. In group F6 menu, this button is used to input the door open command.
SET	Enter the function menu edit mode; confirm and save the current operation. In group F6 menu, this button is used to input the door close command.

The following figure shows the setting of increasing the called floor to 5.

Figure 2-2 Setting the called floor



Menu Description

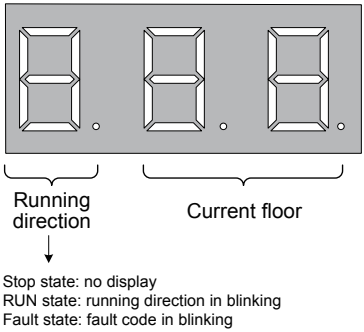
The function menus displayed on the keypad are described as follows:

1. F-0: display of floor and running direction

   The F0 menu is displayed on the keypad by default upon power-on. The first LED indicates the running direction, while the last two LEDs indicate the current floor number of the elevator.

   When the elevator stops, the first LED has no display. When the elevator runs, the first LED blinks to indicate the running direction.

   When a system fault occurs, the 7-segment LEDs automatically display the fault code and blink. If the fault is reset automatically, the F0 menu is displayed.



2. F-1: command input of the running floor

   After you enter the F1 menu, the 7-segment LEDs display the bottom floor (F6-01). You can press the UP button to set the destination floor within the range of lowest to top and then press the SET button to save the setting. The elevator runs to the destination floor, and the display switches over to the F0 menu at the same time.

3. F-2: fault reset and fault code display

   After you enter the F-2 menu, the 7-segment LEDs display “0”. You can press the UP button to change the setting to 1 or 2.

   Display “1”: If you select this value and press the SET button, the system fault is reset. Then, the display automatically switches over to the F0 menu.

   Display “2”: If you select this value and press the SET button, the 7-segment LEDs display the 11 fault codes and occurrence time circularly. You can press the PRG button to exit.

4. F-3: time display

   After you enter the F-3 menu, the 7-segment LEDs display the current system time circularly.

5. F-4: contract number display

   After you enter the F-4 menu, the 7-segment LEDs display the user’s contract number.

6. F-5: running times display

   After you enter the F-5 menu, the 7-segment LEDs display the elevator running times circularly.

7. F-6: door open/close control

   After you enter the F6 menu, the 7-segment LEDs display “1-1”, and the UP and SET buttons respectively stand for the door open button and door close button. You can press the PRG button to exit.

8. F-7: shaft auto-tuning command input

   After you enter the F-7 menu, the 7-segment LEDs display “0”. You can select 0 or 1 here, where “1” indicates the shaft auto-tuning command available.

   After you select “1” and press the SET button, shaft auto-tuning is implemented if the conditions are met. Meanwhile, the display switches over to the F0 menu. After shaft auto-tuning is complete, F-7 is back to “0” automatically. If shaft auto-tuning conditions are not met, fault code “E35” is displayed.

9. F-8: test function

   After you enter the F-8 menu, the 7-segment LEDs display “0”. The setting of F-8 is described as follows:

1	Hall call forbidden
2	Door open forbidden
3	Overload forbidden
4	Limit switches disabled
6	Entering slip experiment state
7	UCMP manual detection
8	Manual detection of braking force
9	Balance coefficient detection
10	Slip amount test

   The procedure of balance coefficient detection is as follows:

   Step 1. Set F-8 to 9. The HCB at hall displays “ ⊙ ”, and the keypad automatically displays the last balance coefficient “XXP” (“P” indicates percentage). The elevator automatically runs to the bottom floor and opens the door, and the keypad displays “0.0P” in blinking state. Put a weight inside the car, and manually enter the load (for example, 40.0, indicating 40.0%).

   Step 2. Hold down SET; the keypad displays the floor number, and the system starts to detect the balance coefficient. The elevator automatically runs to the top floor and then back to the bottom floor; “OP”

is displayed.

Step 3. Remove the weight. Hold down SET, and the elevator runs to the top floor and then to the bottom floor. The keypad displays the balance coefficient “XXP” in blinking state. Detection is completed.

To adjust the coefficient “XX”, hold down SET, and increase or decrease the load. Press PRG to exit the detection.

Note	During the balance coefficient detection, car call and hall call are shielded. Press SET to switch the up and down directions. If the elevator is not in normal running state, the system will exit balance coefficient detection. If the detection result is abnormal, that is, 0 percent is displayed, the difference between no-load current and with-load current is small or the car weight exceeds the counterweight.

The slip amount test procedure is as follows:

Step 1. Set F-8 to 10. The HCB at hall displays “⊙”, and the elevator automatically runs to the bottom floor.

Step 2. The elevator automatically runs to the top floor and then to the bottom floor. The keypad displays the slip amount “⌐XXX” and “⌙XXX” (unit: cm) for 10s, and then displays “E88”, indicating the test is completed.

Step 3. Press PRG to exit the slip amount test.

Note	During the slip amount test, car call and hall call are shielded. If the elevator is not in normal running state, the system will exit slip amount test.

After setting F-8, press SET to save the setting. The keypad displays “E88”, indicating the elevator is in test state. When you press PRG to exit, F8 is back to 0 automatically.

10. F9: reserved

11. FA: auto-tuning

After you enter the FA menu, the 7-segment LEDs display “0”. The setting range of FA is 1 and 2, as follows:

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

After the setting is complete, press the SET button. Then the 7-segment LEDs display “TUNE”, and the elevator enters the auto-tuning state.

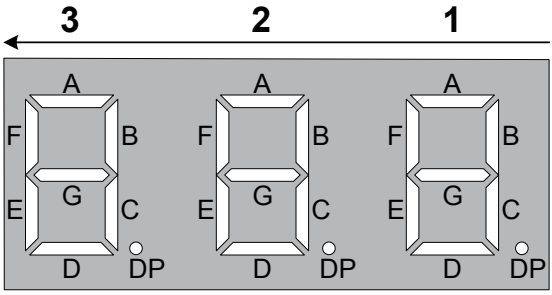
After confirming that the elevator meets the safe running conditions, press the SET button again to start auto-tuning.

After auto-tuning is complete, the 7-segment LEDs display the present angle for 2s, and then switch over to the F0 menu.

You can press the PRG button to exit the auto-tuning state.

12. Fb: CTB state display

After you enter the Fb menu, the 7-segment LEDs display the input/output state of the CTB. The following figure shows the meaning of each segment of the LEDs.



	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

13. FC: elevator direction change (same as the function of F2-10)

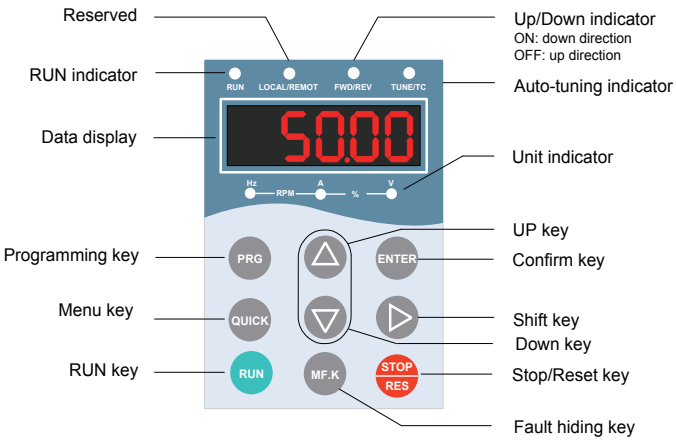
    0: Direction unchanged

    1: Direction reversed

2.1.2 Use of the LED Operation Panel

The LED operation panel is connected to the RJ45 interface of the controller by using an 8-core flat cable. You can modify the parameters, monitor the working status and start or stop the controller by operating the operation panel. The following figure shows the LED operation panel.

Figure 2-3 Diagram of the LED operation panel

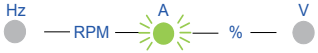


2

Function Indicators

: ON, : OFF, : blinking

Indicator		Indication
RUN	RUN	OFF indicates the STOP status.
	RUN	ON indicates the RUNNING status.
LOCAL/REMOT	-	Reserved
FWD/REV	FWD/REV	OFF indicates elevator in up direction.
	FWD/REV	ON indicates elevator in down direction.

Indicator		Indication
TUNE/TC		OFF: no meaning
		ON indicates in auto-tuning state.
		Blinking: no meaning
		Hz for frequency
		A for current
		V for voltage
		RPM for motor speed
		Percentage

Descriptions of Keys

Key	Name	Function
	Programming	Enter or exit the Level I menu. Return to the previous menu.
	Enter	Enter the menu interfaces level by level. Confirm the parameter setting.
	Up	When navigating a menu, it moves the selection up through the screens available. When editing a parameter value, it increases the displayed value.
	Down	When navigating a menu, it moves the selection down through the screens available. When editing a parameter value, it decreases the displayed value.
	Shift	Select the displayed parameters in turn in the stop or running state. Select the digit to be modified when modifying a parameter value
	Run	Start the controller in the operation panel control mode. Note: It is inactive when the controller is in distance control mode.
	Stop/Reset	Stop the controller when it is in the RUN state. Perform a reset operation when the AC drive is in the FAULT state.
	Menu	Enter or exit Level-I quick menu.

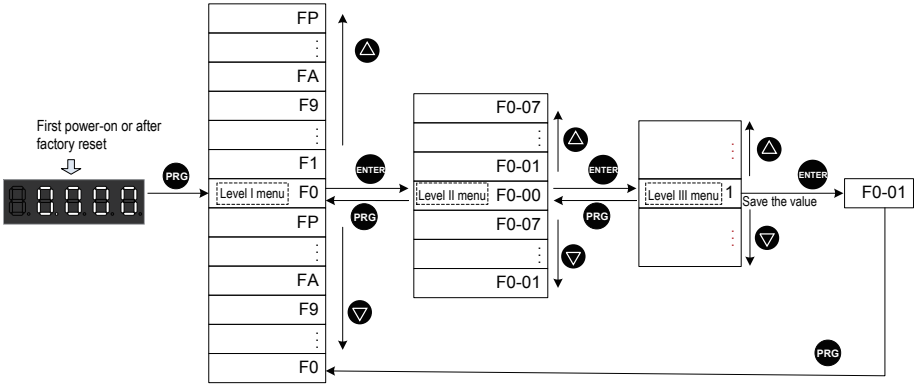
Key	Name	Function
MF.K	Fault hiding	Display or hide the fault information in the fault state, which facilitates parameter viewing.

Overall Arrangement of Parameters

The NICE3000^{new} operating panel has three levels of menu:

- Level I: parameter group
- Level II: parameter
- Level III: function parameter value

Figure 2-4 Three-level menu structure



2.2 System Commissioning

2.2.1 Safety Check Before Commissioning

The elevator needs to be commissioned after being installed; the correct commissioning guarantees safe and normal running of the elevator. Before performing electric commissioning, check whether the electrical part and mechanical part are ready for commissioning to ensure safety. At least two persons need to be onsite during commissioning so that the power supply can be cut off immediately when an abnormality occurs.

1. Check mechanical safety.

   Check that the shaft is unobstructed, there is no person in the shaft, inside or on top of the car, and the conditions for elevator safe running are met.

2. Check electrical wiring.

□√	No.	Item
□	1	The power supply R, S, T cables are wired correctly and securely.
□	2	The UVW cables between the controller and the motor are wired correctly and securely.
□	3	The controller (cabinet) and motor are grounded correctly.
□	4	The safety circuit is conducted, and the emergency stop buttons and switches in the cabinet and in the equipment room can be enabled.
□	5	The door lock circuit is conducted. The door lock circuit is disconnected when the car door or any hall door opens.

3. Check electrical safety.

□√	No.	Item
□	1	The line voltage of the user power supply is within 380 to 440 VAC, and the phase unbalance degree does not exceed 3%.
□	2	The total lead-in wire gauge and total switch capacity meet the requirements.
□	3	There is no inter-phase or to-ground short circuit in the R, S, T power supply.
□	4	There is no inter-phase or to-ground short circuit in the U, V, W phases of the controller. There is no inter-phase or to-ground short circuit in the U, V, W phases of the motor.
□	5	There is no short circuit to ground on the output side of the transformer.
□	6	There is no inter-phase or to-ground short circuit in the 220 V power supply.
□	7	The 24 V power supply has no short circuit between positive and negative or to-ground short circuit.
□	8	The CANbus/Modbus communication cable has no short circuit with the 24 V power supply or short circuit to ground.

4. Check the rotary encoder.

□√	No.	Item
□	1	The encoder is installed reliably with correct wiring.
□	2	The encoder signal cables and strong-current circuit are laid in different ducts to prevent interference.
□	3	The encoder cables are preferably directly connected to the control cabinet. If the cable is not long enough and an extension cable is required, the extension cable must be a shielded cable and preferably welded to the original encoder cables by using the soldering iron.
□	4	The shield of the encoder cables is grounded on the end connected to the controller (only one end is grounded to prevent interference).

2.2.2 Commissioning at Inspection Speed

The NICE3000^{new} supports two major control modes:

- Sensorless vector control (SVC): applicable to inspection speed running for commissioning and fault judgment running during maintenance of the asynchronous motor
- Feedback vector control (FVC): applicable to normal elevator running, achieving good driving performance and running efficiency in the prerequisite of correct motor parameters

Parameters Related to Motor Auto-tuning

Parameter No.	Parameter Name	Description
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 encoder
F1-12	Encoder resolution	0 to 10000
F1-01 to F1-05	Motor rated power Motor rated voltage Motor rated current Motor rated frequency Motor rated speed	These parameters are model dependent, and you need to manually input them according to the nameplate.
F0-01	Command source selection	0: Operation panel control 1: Distance control
F0-01	Command source selection	0: Operation panel control 1: Distance control
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

Motor Auto-tuning Flowcharts

1. Synchronous motor auto-tuning

   a. Synchronous motor with-load auto-tuning (motor connected with car)

Operation	Para. No.	Parameter Name	Default	Commissioning
Start				
Enter inspection state		Turn the Automatic/Inspection switch to the Inspection position.		
		X9 indicator is OFF, indicating that the elevator enters inspection state.		
Select command source	F0-01	Command source selection	1	1
		0: Operation panel control 1: Distance control		
Set motor type	F1-25	Motor type	1	1
		0: Asynchronous motor 1: Synchronous motor		
Set motor parameters		Motor Nameplate		
		Be sure that motor parameters are set correctly. Otherwise, faults will occur.		
	F1-01	Rated motor power	Model dependent	
		Unit: kW		
	F1-02	Rated motor voltage	Model dependent	
		Unit: V		
	F1-03	Rated motor current	Model dependent	
		Unit: A		
	F1-04	Rated motor frequency	Model dependent	
		Unit: Hz		
	F1-05	Rated motor speed	Model dependent	
		Unit: RPM		
Set encoder parameters	F1-00	Encoder type	0	
		0: SIN/COS encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder Set F1-00 according to the actual encoder type.		
	F1-12	Encoder pulses per revolution	2048	
		Set this parameter according to the encoder nameplate.		

Operation	Para. No.	Parameter Name	Default	Commissioning
Set auto-tuning mode	F1-11	Auto-tuning mode	0	1
		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 After setting F1-11 to 1, press ENTER on the operation panel. If the operation panel displays “TUNE”, the system enters motor auto-tuning state. If the operation panel displays “F1-12”, the system fails to enter motor auto-tuning state. You need to check: 1. Whether the elevator is inspection state. 2. Whether the MCB displays faults to be rectified 3. Whether F0-01 is set to 1		
Perform auto-tuning		Hold down the inspection UP/DOWN button during auto-tuning. After auto-tuning is completed, the controller automatically stops output, and then you can release the button.		
Auto-tuning completed		1. After auto-tuning is completed, the keypad on the MCB displays the learnt encoder angle for 3s. 2. Ensure that the value deviation of F1-06 is within ±5° through multiple times of auto-tuning. 3. F1-08 is 0 or 8 generally, and remains the same in multiple times of auto-tuning.		

b. Synchronous motor no-load auto-tuning (motor disconnected from car)

Operation	Para. No.	Parameter Name	Default	Commissioning
Start				
Enter inspection state		Turn the Automatic/Inspection switch to the Inspection position.		
		X9 indicator is OFF, indicating that the elevator enters inspection state.		
Select command source	F0-01	Command source selection	1	0
		0: Operation panel control 1: Distance control		
Set motor type	F1-25	Motor type	1	1
		0: Asynchronous motor 1: Synchronous motor		

Operation	Para. No.	Parameter Name	Default	Commissioning
Set motor parameters		Motor Nameplate		
		Be sure that motor parameters are set correctly. Otherwise, faults will occur.		
	F1-01	Rated motor power	Model dependent	
		Unit: kW		
	F1-02	Rated motor voltage	Model dependent	
		Unit: V		
	F1-03	Rated motor current	Model dependent	
		Unit: A		
	F1-04	Rated motor frequency	Model dependent	
		Unit: Hz		
	F1-05	Rated motor speed	Model dependent	
		Unit: RPM		
Set encoder parameters	F1-00	Encoder type	0	
		0: SIN/COS encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder Set F1-00 according to the actual encoder type.		
	F1-12	Encoder pulses per revolution	2048	
		Set this parameter according to the encoder nameplate.		
Set auto-tuning mode	F1-11	Auto-tuning mode	0	2
		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 After setting F1-11 to 1, press ENTER on the operation panel. If the operation panel displays “TUNE”, the system enters motor auto-tuning state. If the operation panel displays “F1-12”, the system fails to enter motor auto-tuning state. You need to check: 1. Whether the elevator is inspection state. 2. Whether the MCB displays faults to be rectified 3. Whether F0-01 is set to 0		

Operation	Para. No.	Parameter Name	Default	Commissioning
Perform auto-tuning		1. Release the brake manually. 2. Press RUN on the operation panel to start auto-tuning. After auto-tuning is completed, the controller stops output automatically.		
Auto-tuning completed		1. After auto-tuning is completed, the keypad on the MCB displays the learnt encoder angle for 3s. 2. Ensure that the value deviation of F1-06 is within ±5° through multiple times of auto-tuning. 3. F1-08 is 0 or 8 generally, and remains the same in multiple times of auto-tuning.		
Restore F0-01 to 1	F0-01	Command source selection	1	1
		After auto-tuning is completed, F0-01 must be restored to 1. Otherwise, the elevator cannot run.		

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

a. Synchronous motor auto-tuning learns encoder initial angle, motor wiring mode, stator resistance, shaft-D and shaft-Q inductance, and motor back EMF.

b. Perform three or more times of auto-tuning; compare the obtained values of F1-06 (Encoder initial angle), and the value deviation of F1-06 shall be within ±5°.

c. Each time the encoder, encoder cable connection or motor wiring sequence is changed, perform motor auto-tuning again.

d. You can modify F1-06 manually. The modification, however, takes effect only after power-on again. Therefore, after you replace the MCB, you can directly set F1-06 to the original value rather than performing motor auto-tuning; then, the controller can start to run after power-off and power on again.

2

2. Asynchronous motor auto-tuning

a. Asynchronous motor with-load auto-tuning (motor connected with car)

Operation	Para. No.	Parameter Name	Default	Commissioning
Start				
Enter inspection state		Turn the Automatic/Inspection switch to the Inspection position.		
		X9 indicator is OFF, indicating that the elevator enters inspection state.		
Select command source	F0-01	Command source selection	1	0
		0: Operation panel control 1: Distance control		
Set motor type	F1-25	Motor type	1	0
		0: Asynchronous motor 1: Synchronous motor		

Operation	Para. No.	Parameter Name	Default	Commissioning
Set motor parameters		Motor Nameplate		
		Be sure that motor parameters are set correctly. Otherwise, faults will occur.		
	F1-01	Rated motor power	Model dependent	
		Unit: kW		
	F1-02	Rated motor voltage	Model dependent	
		Unit: V		
	F1-03	Rated motor current	Model dependent	
		Unit: A		
	F1-04	Rated motor frequency	Model dependent	
		Unit: Hz		
	F1-05	Rated motor speed	Model dependent	
		Unit: RPM		
Set encoder parameters	F1-00	Encoder type	0	2
		0: SIN/COS encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder Set F1-00 according to the actual encoder type.		
	F1-12	Encoder pulses per revolution	2048	
		Set this parameter according to the encoder nameplate.		
Set auto-tuning mode	F1-11	Auto-tuning mode	0	1
		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 After setting F1-11 to 1, press ENTER on the operation panel. If the operation panel displays “TUNE”, the system enters motor auto-tuning state. If the operation panel displays “F1-12”, the system fails to enter motor auto-tuning state. You need to check: 1. Whether the elevator is inspection state. 2. Whether the MCB displays faults to be rectified 3. Whether F0-01 is set to 0		

Operation	Para. No.	Parameter Name	Default	Commissioning
Perform auto-tuning		Press RUN on the operation panel to start auto-tuning.		
		1. During with-load auto-tuning, the motor does not rotate, but there is current noise. The auto-tuning process lasts about several tens of seconds.		
		2. After auto-tuning is completed, the controller stops output automatically.		
		3. Five parameters F1-14 to F1-18 are obtained.		
Auto-tuning completed				
Restore F0-01 to 1	F0-01	Command source selection	1	1
		After auto-tuning is completed, F0-01 must be restored to 1. Otherwise, the elevator cannot run.		

b. Asynchronous motor no-load auto-tuning

Operation	Para. No.	Parameter Name	Default	Commissioning
Start				
Enter inspection state		Turn the Automatic/Inspection switch to the Inspection position.		
		X9 indicator is OFF, indicating that the elevator enters inspection state.		
Select command source	F0-01	Command source selection	1	0
		0: Operation panel control 1: Distance control		
Set motor type	F1-25	Motor type	1	0
		0: Asynchronous motor 1: Synchronous motor		
Set motor parameters		Motor Nameplate		
		Be sure that motor parameters are set correctly. Otherwise, faults will occur.		
	F1-01	Rated motor power	Model dependent	
		Unit: kW		
	F1-02	Rated motor voltage	Model dependent	
		Unit: V		
	F1-03	Rated motor current	Model dependent	
		Unit: A		
	F1-04	Rated motor frequency	Model dependent	
		Unit: Hz		
	F1-05	Rated motor speed	Model dependent	
		Unit: RPM		

Operation	Para. No.	Parameter Name	Default	Commissioning
Set encoder parameters	F1-00	Encoder type	0	2
		0: SIN/COS encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder Set F1-00 according to the actual encoder type.		
	F1-12	Encoder pulses per revolution	2048	
		Set this parameter according to the encoder nameplate.		
Set auto-tuning mode	F1-11	Auto-tuning mode	0	2
		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 After setting F1-11 to 1, press ENTER on the operation panel. If the operation panel displays “TUNE”, the system enters motor auto-tuning state. If the operation panel displays “F1-12”, the system fails to enter motor auto-tuning state. You need to check: 1. Whether the elevator is inspection state. 2. Whether the MCB displays faults to be rectified 3. Whether F0-01 is set to 0		
Perform auto-tuning		1. Release the brake manually. 2. Press RUN on the operation panel to start auto-tuning. After auto-tuning is completed, the controller stops output automatically. Five parameters F1-14 to F1-18 are obtained.		
Auto-tuning completed				
Restore F0-01 to 1	F0-01	Command source selection	1	1
		After auto-tuning is completed, F0-01 must be restored to 1. Otherwise, the elevator cannot run.		

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

The sequence of encoder phases A and B must be correct. If the sequence is incorrect, fault E38 is reported. To solve the problem, exchange phases A and B of the encoder.

Angle-free Auto-tuning

Related parameters

Parameter No.	Parameter Name	Value
F1-25	Motor type	1: Synchronous motor
F1-00	Encoder type	0: SIN/COS encoder 1: UVW encoder 3: Endat absolute encoder
F1-12	Encoder resolution	0 to 10000
F1-01 to F1-05	Motor rated power Motor rated voltage Motor rated current Motor rated frequency Motor rated speed	These parameters are model dependent, and you need to manually input them according to the nameplate.
F0-01	Command source selection	1: Distance control
F1-22	Angle-free auto-tuning selection	2: Half automatic, angle-free auto-tuning at first-time running after power-on and power-off, only in inspection state 6: Full automatic, angle-free auto-tuning at first-time running after power-on and power-off, both in inspection and automatic states

2.2.3 Shaft Auto-tuning

1. Make preparations for shaft auto-tuning.
   1) Check that the shaft switches act properly, including final limit switches, limit switches, slow-down switches, and leveling sensors.
   2) Check that the acting sequence of the leveling sensors is correct.
      Generally, one leveling sensor is installed. If multiple leveling sensors are installed, check that the acting sequence is correct. Take the situation with three sensors as an example:
      Acting sequence of sensors at inspection up: up leveling sensor → door zone sensor → down leveling sensor
      Acting sequence of sensors at inspection down: down leveling sensor → door zone sensor → up leveling sensor
   3) Check CANbus communication state. If fault E51 is not reported and the COP indicator on the MCB is steady ON, it indicates that CANbus communication between the MCB and the CTB is normal. If CANbus communication is abnormal, rectify fault E51 according to the solution described in Chapter 9.
   4) Set the related parameters.

Parameter No.	Parameter Name	Setting Range	Default	Remarks
F0-04	Rated elevator speed	0.250 to 8.000 m/s	1.600 m/s	-
F6-00	Top floor of the elevator	F6-01 to 56	9	Set it to the actual number of floors (number of actually installed leveling plates).
F6-01	Bottom floor of the elevator	1 to F6-00	1	-

Note	Shaft auto-tuning is required each time F0-04 is changed. Otherwise, the elevator running will be abnormal.

2. Check that the conditions for shaft auto-tuning have been met.
   1) The elevator is in the inspection state.
   2) The elevator is at the leveling position of the bottom floor.
   3) The down slow-down switch 1 signal input to the MCB is active.
   4) The NICE3000^{new} is not in the fault state. If there is a fault, press STOP RES to reset the fault.

Note	When there are only two floors, the elevator needs to run to below the bottom leveling position, that is, at least one leveling sensor is below the leveling plate. This is the prerequisite for successful shaft auto-tuning.

3. Perform shaft auto-tuning.

   When the preceding conditions are met, start shaft auto-tuning by using any of the following methods:
   1) Set F1-11 to 3 on the operation panel.
   2) Set F-7 to 1 on the keypad of the MCB.

   After shaft auto-tuning starts, the elevator runs at the inspection speed set in F3-11 and stops after reaching the leveling plate of the top floor. Then, the keypad on the MCB displays the present floor number (top floor), indicating that shaft auto-tuning is successful.

   If fault E35 is reported during the process, it indicates that shaft auto-tuning fails. You need to rectify the fault according to the solution described in Chapter 5, and perform shaft auto-tuning again.

2.2.4 Door Machine Controller Commissioning

The procedure of door machine controller commissioning is as follows:

1. Check that F7-05 (Door open forbidden) is 0 (No).
2. Check whether the door machine controller wiring is correct and secure and that the power voltage is proper.
3. Commission the door machine controller, and check whether the input and output of the door machine controller are normal in terminal control mode.
   1) Check that the door open/close output is normal:
      Short BM/B1 on the CTB, and door 1 opens; short BM/B2, and door 1 closes. If the door acts abnormally after you short BM/B1 or BM/B2 on the CTB, check:
      a. Whether cable connection between the CTB and the door machine controller is correct
      b. Whether the function setting of door open/close input terminals is correct
      c. Whether door machine controller commissioning fails. If yes, perform commissioning again.
   2) Check whether the door open/close limit signal feedback from the door machine controller is normal.
      Observe the X terminal signal indicators on the CTB and judge whether feedback from the door machine controller is normal, according to the following table.

Table 2-1 Judging door open/close limit

	Door State	State of X3 Signal Indicator	State of X5 Signal Indicator
Door open/close limit signal set to NO	At door open limit	Steady ON	Steady OFF
	During door open/close	Steady OFF	Steady OFF
	At door close limit	Steady OFF	Steady ON
Door open/close limit signal set to NC	At door open limit	Steady OFF	Steady ON
	During door open/close	Steady ON	Steady ON
	At door close limit	Steady ON	Steady OFF

If the states of X3 and X5 signal indicators are inconsistent with the actual door state or keeps unchanged, check:

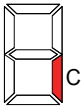
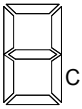
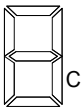
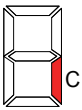
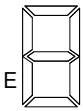
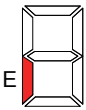
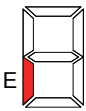
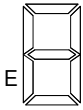
a. Whether cable connection between the CTB and the door machine controller is correct

b. Whether the function setting of door open/close output terminals is correct

c. Whether door machine controller commissioning fails. If yes, perform commissioning again.

4. After door machine controller commissioning is completed, check whether the setting of F5-25 Bit2/Bit4 is consistent with the actual NO/NC feature of door open/close limit signals.

Table 2-2 Checking consistency between F5-25 and actual door open/close limit signals

Signal	Signal State Monitoring		Signal State Judging	Re-set F5-25 Bit2/Bit4?
	At Door Open Limit	At Door Close Limit		
Door open limit signal (Segment C of LED1 in F5-35)			Normal	Not required
			Abnormal	Set F5-25 Bit2 to the opposite state: If the original value is 0, change it to 1. If the original value is 1, change it to 0.
Door close limit signal (Segment E of LED1 in F5-35)			Normal	Not required
			Abnormal	Set of F5-25 Bit4 to the opposite state: If the original value is 0, change it to 1. If the original value is 1, change it to 0.

2.2.5 HCB Installation and Setting

This section describes HCB installation and setting of the single-door independent elevator system. Details on HCB installation setting of parallel elevator system and opposite door elevator system, refer to sections are not described here.

HCB installation

1. Install an HCB for each service floor (non-service floors do not require the HCB), as shown in Figure 2-5.

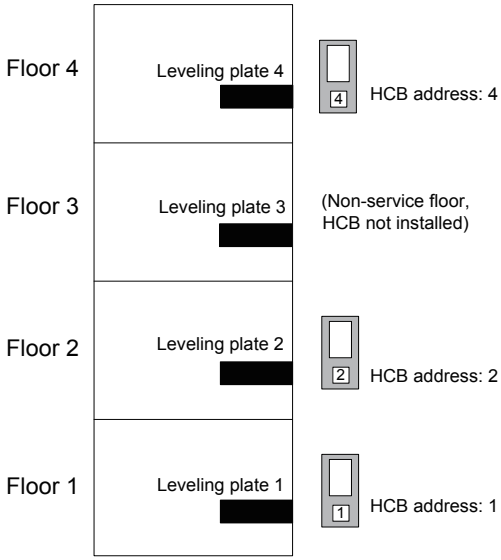
2. The HCB communicates with the MCB via Modbus. All HCBs are connected in parallel and then connected to the MCB.

HCB address setting

1. Set an address for each HCB. Otherwise, the HCB cannot be used.
2. The address of each HCB must be unique. HCBs with the same address cannot be used. For details on how to set the address, see the description of the corresponding HCB in section 4.4.
3. Set the address based on the floor leveling plate No.

From the bottom floor, set the address of the HCB for the floor where the Nth leveling plate is located to N, as shown in the following figure.

Figure 2-5 HCB installation and address setting



After completing HCB installation and address setting, you can call the elevator by using the HCB to start normal-speed running.

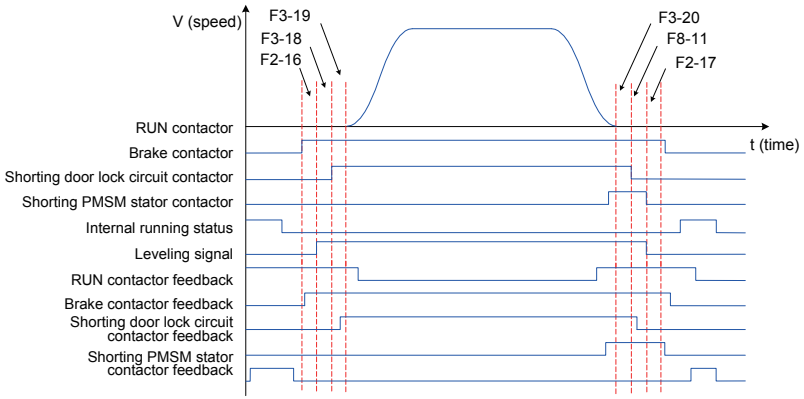
Note	When the HCB is installed inside the car, its address must be set to 0.

2.2.6 Riding Comfort Adjustment

The riding comfort is an important factor of the elevator's overall performance. Improper installation of mechanical parts and improper parameter settings will cause discomfort. Enhancing the riding comfort mainly involves adjustment of system control and the elevator's mechanical construction.

Performance adjustment of system control

Figure 2-6 Running time sequence



1. Riding comfort adjustment at elevator startup and stop

   The parameter setting related to riding comfort adjustment at elevator startup and stop is described in the following table.

2

Parameter No.	Parameter Name	Setting Range	Default
F2-00	Speed loop proportional gain Kp1	0–100	40
F2-01	Speed loop integral time Ti1	0.01–10.00s	0.60s
F2-03	Speed loop proportional gain Kp2	0–100	35
F2-04	Speed loop integral time Ti2	0.01–10.00s	0.80s

   1) Adjustment to abnormal motor startup

      F2-00, F2-01, F2-03 and F2-04 are used to adjust the speed dynamic response characteristics of the motor.

      - To achieve a faster system response, increase the proportional gain and reduce the integral time. However, too large proportional gain or too small integral time may lead to system oscillation.
      - Decreasing the proportional gain and 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 fault E33 or instable leveling at stop.

      The default setting is proper for most large-power motors, and you need not modify these parameters. These parameters need to be adjusted only for small-power motors (P ≤ 5.5 kW) because they may have oscillation. To eliminate oscillation, do as follows:

      Decrease the proportional gain first (between 10 and 40) to ensure that the system does not oscillate, and then reduce the integral time (between 0.1 and 0.8) to ensure that the system has quick response but small overshoot.

2) Adjustment to elevator startup

a. Adjustment for no-load-cell startup

The parameter setting related to riding comfort adjustment for no-load-cell startup is described in the following table.

Parameter No.	Parameter Name	Setting Range	Default	Remarks
F8-01	Pre-torque selection	0: Pre-torque invalid 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Both load cell and automatic pre-torque compensation effective	2	The no-load-cell startup function is enabled when F8-01 is set to 2.
F2-11	Position lock current coefficient	0.20%–50.0%	15%	These are position lock parameters, and are valid only when F8-01 is 2.
F2-12	Position lock speed loop Kp	0.00–2.00	0.5	
F2-13	Position lock speed loop Ki	0.00–2.00	0.6	

When no-load-cell pre-torque compensation is used (F8-01 = 2), no analog load cell is required, and the controller quickly compensates the torque based on slight rotation change of the encoder at startup.

The default setting of F2-11 to F2-13 is proper for most large-power motors, and you need not modify these parameters. For the small-power motor (P ≤ 5.5 kW), the motor may have oscillation or noise at with-load startup, and passengers in the car may have a strong feeling of car lurch. To eliminate car lurch, do as follows:

Decrease the value of F2-11 (between 5 and 15) to eliminate motor oscillation.

Decrease the values of F2-12 and F2-13 (between 0.1 and 0.8) to reduce the motor noise and improve riding comfort at startup.

b. Adjustment for load cell startup

The parameter setting related to riding comfort adjustment for load cell startup is described in the following table.

Parameter No.	Parameter Name	Setting Range	Default	Remarks
F8-01	Pre-torque selection	0: Pre-torque invalid 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Both load cell and automatic pre-torque compensation effective	2	When a load cell is used, set F8-01 to 1.
F8-02	Pre-torque offset	0.0%–100.0%	50.0%	These are pre-torque regulating parameters.
F8-03	Drive gain	0.00–2.00	0.60	
F8-04	Brake gain	0.00–2.00	0.60	

When an analog load cell is used (F8-01 = 1 in this case), the controller identifies the braking or driving state according to the load cell signal and automatically calculates the required torque compensation value. F8-03 and F8-04 are used to adjust elevator startup when the analog load cell is used. The method of adjusting the two parameters are as follows:

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

More details about these parameters are as follows:

- F8-02 (Pre-torque offset) is actually the elevator balance coefficient, namely, the percentage 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) or F8-04 (Brake gain) scales the elevator's present pre-torque coefficient when the motor runs at the drive or brake side. If the gain set is higher, then the calculated value of startup pre-torque compensation is higher.

The motor's driving state and braking state are defined as follows:

- Motor driving state: full-load up, no-load down
- Motor braking state: full-load down, no-load up

c. Adjustment for load cell startup and automatic compensation

Parameter No.	Parameter Name	Setting Range	Default	Description
F8-01	Pre-torque selection	0: Pre-torque invalid 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Both load cell and automatic pre-torque compensation effective	2	If the riding comfort varies under different loads due to poor load cell linearity when a load cell is used, set this parameter to 3.
F8-02	Pre-torque offset	0.0%–100.0%	50.0%	These are load cell pre-torque regulating parameters.
F8-03	Drive gain	0.00–2.00	0.60	
F8-04	Brake gain	0.00–2.00	0.60	
F2-11	Position lock current coefficient	0.20%–50.0%	15%	There are automatic pre-torque compensation regulating parameters.
F2-12	Position lock speed loop Kp	0.00–2.00	0.5	
F2-13	Position lock speed loop Ki	0.00–2.00	0.6	

When F8-01 = 3, that is, both load cell and automatic pre-torque compensation are effective, the controller identifies the braking or driving state according to the load cell signal, and automatically calculates the required torque compensation value.

The controller quickly corrects the torque compensation value based on small rotation of the encoder at the moment of startup.

For the adjustment method, see the above descriptions of "Adjustment for no-load-cell startup" and "Adjustment for load cell startup".

3) Handling of rollback at elevator startup and stop

The parameter setting related to rollback at elevator startup and stop is described in the following table.

Parameter No.	Parameter Name	Setting Range	Default
F3-19	Brake release delay	0.000–2.000s	0.600s
F8-11	Brake apply delay	0.200–1.500s	0.200s

The system retains the zero-speed torque current output within the time set in F3-19 from the

moment when the system sends the brake release command; this is to prevent rollback. If there is obvious rollback at elevator startup, increase F3-19 properly.

The system retains the zero-speed torque current output within the time set in F8-11 from the moment when the system sends the brake apply command; this is to prevent rollback. If there is obvious rollback at elevator startup, increase F8-11 properly.

4) Handling of current noise at motor startup and stop

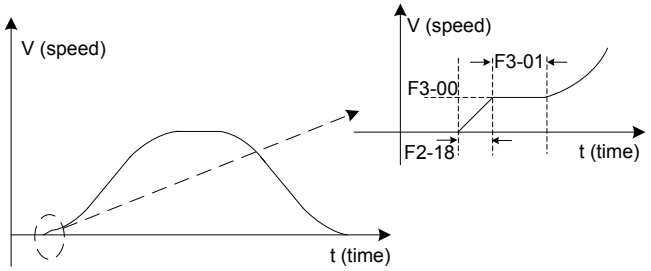
During elevator startup or stop, certain motors may generate noise when the current is applied before the brake is released or the current is removed after the brake is applied. To reduce motor noise, increase F2-16 or F2-17 properly.

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

5) Adjustment at large mechanical static friction

Parameter No.	Parameter Name	Setting Range	Default
F2-18	Startup acceleration time	0.000–1.500 s	0.000s
F3-00	Startup speed	0.000–0.030 m/s	0.000 m/s
F3-01	Startup holding time	0.000–0.500 s	0.000s

Figure 2-7 Startup timing sequence for eliminating static friction

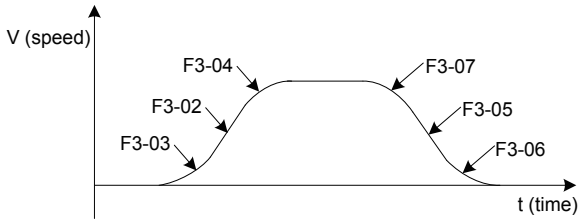


Bad riding comfort due to static friction may often exist in villa elevators. When there is large friction between the guide shoes and the guide rails, large static friction generates at the moment of startup, leading to bad riding comfort. Make the system starts up at the specified speed by setting these parameters to eliminate friction and improve riding comfort.

2. Riding comfort adjustment to the running curve

Parameter No.	Parameter Name	Setting Range	Default
F3-02	Acceleration rate	0.200–1.500 s^2	0.600 /s^2
F3-03	Acceleration start jerk time	0.300–4.000 s	2.500s
F3-04	Acceleration end jerk time	0.300–4.000 s	2.500s
F3-05	Deceleration rate	0.200–1.500 /s^2	0.600 /s^2
F3-06	Deceleration end jerk time	0.300–4.000 s	2.500s
F3-07	Deceleration start jerk time	0.300–4.000 s	2.500s

Figure 2-8 Running curve



F3-02, F3-03, and F3-04 are used to set the running curve during which the elevator accelerates from startup to the maximum speed. If the acceleration process is too short causing bad riding comfort, decrease the value of F3-02 and increase the values of F3-03 and F3-04 to make the acceleration curve smoother. If the acceleration process is too long, increase the value of F3-02 and decrease the values of F3-03 and F3-04.

Adjust F3-05, F3-06, and F3-07 similarly to make the deceleration process appropriate.

Adjustment of mechanical construction

The following table describes the mechanical factors affecting the riding comfort.

The mechanical construction affecting the riding comfort involves installation of the guide rail, guide shoe, steel rope, and brake, balance of the car, and resonance caused by the car, guild rail and motor. For asynchronous motor, abrasion or improper installation of the gearbox may arouse poor riding comfort.

No.	Mechanical Factor	Description
1	Guide rail	Installation of the guide rail mainly involves: • Verticality and surface flatness of the guide rail • Smoothness of the guide rail connection • Parallelism between two guide rails (including guide rails on the counterweight side)
2	Guide shoe	Tightness of the guide shoes (including the one on the counterweight side) also influences the riding comfort. The guide shoes must not be too loose or tight.
3	Steel rope	The drive from the motor to the car totally depends on the steel rope. Large flexibility of the steel rope with irregular resistance during the car running may cause curly oscillation of the car. In addition, unbalanced stress of multiple steel ropes may cause the car to jitter during running.
4	Brake	The riding comfort during running may be influenced 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 the guide rail. As a result, the guide shoes will rub with the guide rail during running, affecting the riding comfort.
6	Gearbox	For asynchronous motor, abrasion or improper installation of the gearbox may also affect the riding comfort.
7	Resonance	Resonance is an inherent character of a physical system, 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 car weight or counterweight and adding resonance absorbers at connections of the components (for example, place rubber blanket under the motor).

2.2.7 Leveling Accuracy Adjustment

There are two leveling accuracy adjustment methods, described as follows:

1. All-floor adjustment

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

F4-00 is used to adjust the car stop position at all floors. The setting of F4-00 is effective to all floors.

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

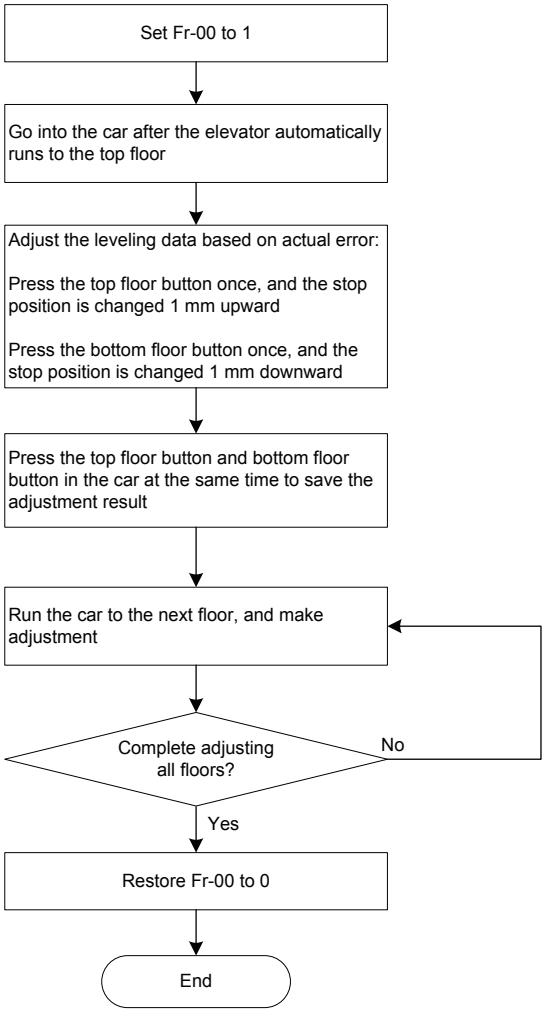
3. Single-floor adjustment

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

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Fr-00	Leveling adjustment function	0: Disabled 1: Enabled	0	-	★
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	★

The flowchart of single-floor leveling accuracy adjustment is shown in the following figure.

Figure 2-9 Single-floor leveling accuracy adjustment



More descriptions of the above adjustment steps are as follows:

1) Ensure that shaft auto-tuning is completed successfully, and the elevator runs properly at normal speed.
2) After you set Fr-00 to 1, the elevator shields hall calls, automatically runs to the top floor, and keeps the door open after arrival.
3) During adjustment, the car display board displays “00” or the value after adjustment. Positive value: up arrow + value, negative value: down arrow + value, adjustment range: ±30 mm
4) After you save the adjustment result, the car display board displays the present floor.
5) Note that if a certain floor need not adjustment, you also need to save the data once. Otherwise, you cannot register the car call.

Chapter 3 System Functions

3.1 Parallel/Group Control

Background

The NICE3000^{new} supports parallel control of 2 elevators and group control of 2 to 8 elevators, achieving high efficiency and energy saving.

Description

Parallel control of 2 elevators is implemented by directly using the CAN communication port.

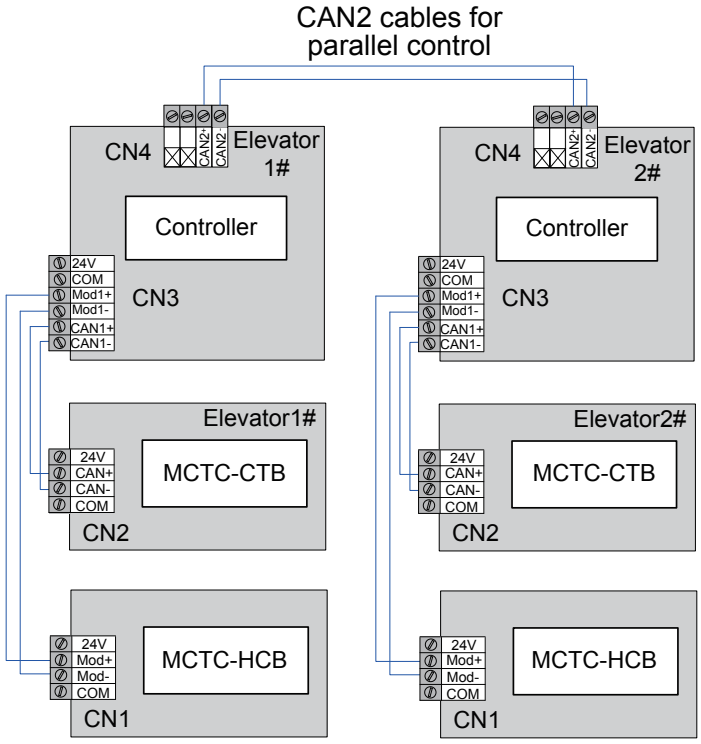
Group control of multiple elevators is implemented by together use of a group control board MCTC-GCB-A.

3.1.1 Parallel Control

Parallel control of 2 elevators is implemented by directly using connector CN4 of the CAN communication port.

Wiring

Figure 3-1 Wiring of parallel control by CN4



1. User floor: actual floor of the building

   Physical floor: floor which either elevator stops at and provides service for or floor installed with the leveling plate.

2. For the same physical floor, the leveling plate must be installed for both the elevators. Even if one elevator need not 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.

3. The HCB addresses should be set according to physical floors. Parallel running can be implemented only when the HCB address set for one elevator is the same as that for the other elevator in terms of the same floor.

4. The top floor (F6-00) and bottom floor (F6-01) of each elevator should be set based on the corresponding physical floors of this elevator.

Related Parameters

Parameter No.	Parameter Name	Setting Range	Setting in Parallel Control	Remarks
F6-07	Number of elevators in parallel/group mode	1–8	1–8	-
F6-08	Elevator No.	1–8	Master: 1 Slave: 2	-
F6-09	Program control selection 2	-	Bit3 = 1: Parallel/ group control implemented at CAN2	Set Bit3 to 1 when the CAN2 communication port CN4 is used for parallel control.

Example:

Assume that there are two elevators in parallel mode:

Elevator 1# has one underground user floor and four overground user floors, but stops only at floor B1, floor 1, floor 2, and floor 3.

Elevator 2# has four overground user floors ,but stops only at floor 1, floor 3, and floor 4.

Figure 3-2 Floor diagram of two elevators in parallel control

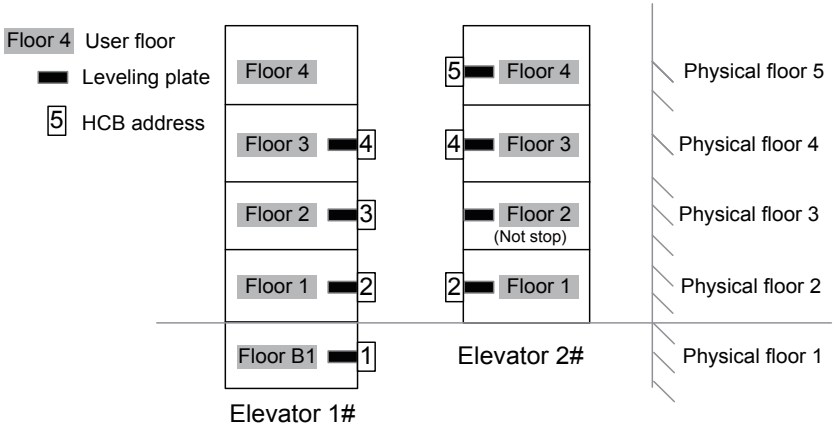


Table 3-1 Parameter setting and HCB addresses of two elevators

		Elevator 1		Elevator 2	
Number of elevators in parallel/ group mode (F6-07)		2		2	
Elevator No. (F6-08)		1		2	
Actual floor	Physical floor	HCB address	HCB display	HCB address	HCB display
B1	1	1	FE-01 = 1101		
1	2	2	FE-02 = 1901	2	FE-02 = 1901
2	3	3	FE-03 = 1902	Non-stop floor, no hall call, but leveling plate required	FE-03 = 1902
3	4	4	FE-04 = 1903	4	FE-04 = 1903
4	5	No hall call	No hall call	5	FE-05 = 1904
Bottom floor (F6-01)		1		2	
Top floor (F6-00)		4		5	
Service floor (F6-05)		65535		65531 (not stop at physical floor 3)	

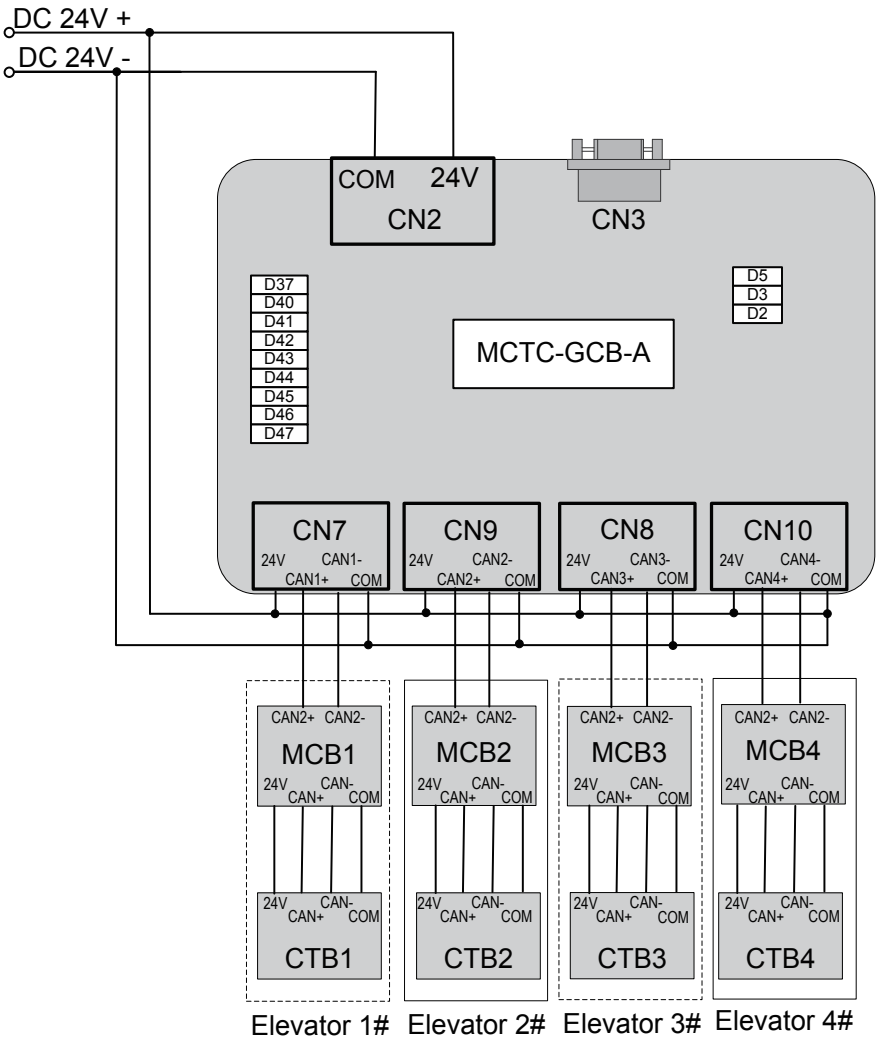
3.1.2 Group Control

A GCB (MCTC-GCB-A) is additionally required to implement group control of more than two elevators.

1. A single GCB supports group control of a maximum of 4 elevators.
2. If group control of more than 4 elevators is required, two GCBs need to be installed. This scheme is customized. For details, consult us.

Wiring

Figure 3-3 Wiring of group control



Note	For more details on the MCTC-GCB, see the description in "NICE3000^{new} Integrated Elevator Controller Advanced User Guide".

Related Parameters

Parameter No.	Parameter Name	Setting Range	Setting in Group Control	Remarks
F6-07	Number of elevators in parallel/group mode	1–8	1–8	Set the value as the actual number of elevators in group control.
F6-08	Elevator No.	1–8	1–8	Value “1”: elevator 1# Value “2”: elevator 2# By analog.
F6-09	Program control selection 2	-	Bit1 = 0: Group control by MCTC-GCB-A	-
		-	Bit4 = 1: Group control in compatibility with NICE3000	Set Bit4 to 1 when the NICE3000 is involved in group control.

You need not set the CTB address for group control.

3.2 Opposite Door Control

Background

This function is used to control two elevator doors.

Description

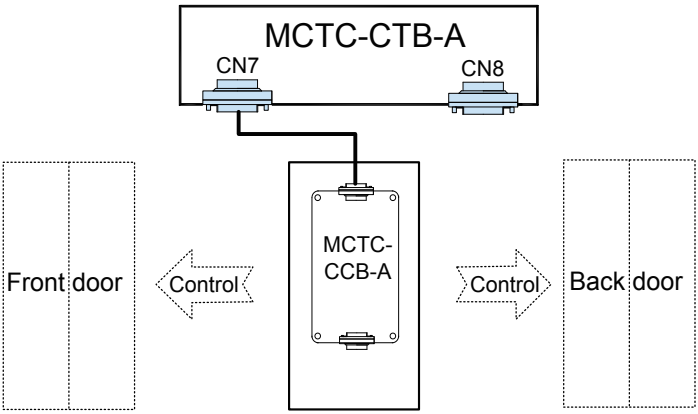
The NICE3000^{new} supports four opposite door control modes: mode 1, mode 2, mode 3, and mode 4, as described in the following table.

Table 3-2 Opposite door control modes

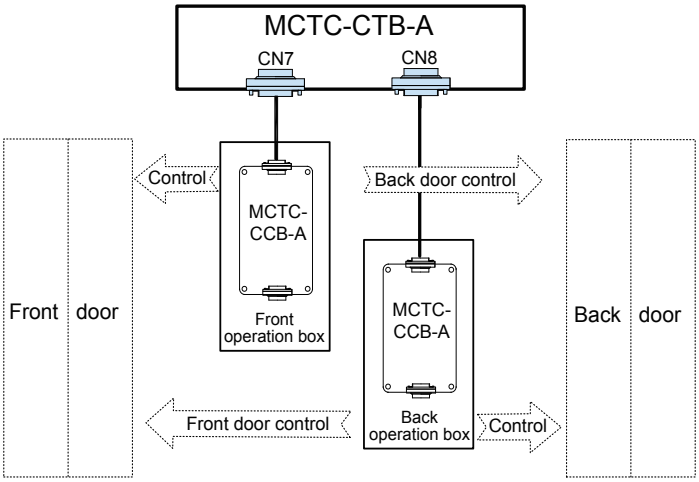
Type	Door Control Mode	Description
Mode 1	Simultaneous control	The front door and back door acts simultaneously upon arrival for hall calls and car calls.
Mode 2	Hall call independent, car call simultaneous	Hall call: The corresponding door opens upon arrival for hall calls from this door. Car call: The front door and back door act simultaneously upon arrival for car calls.
Mode 3	Hall call independent, car call manual control	Hall call: The corresponding door opens upon arrival for hall calls from this door. Car call: Upon arrival for car calls, the door to open is selected between the front door and back door by using the door switchover switch. There are two door open states for car call: only front door open and only back door open.
Mode 4	Hall call independent, car call independent	Hall call: The corresponding door opens upon arrival for hall calls from this door. Car call: The corresponding door opens upon arrival for car calls from this door.

Wiring

Figure 3-4 CCB wiring



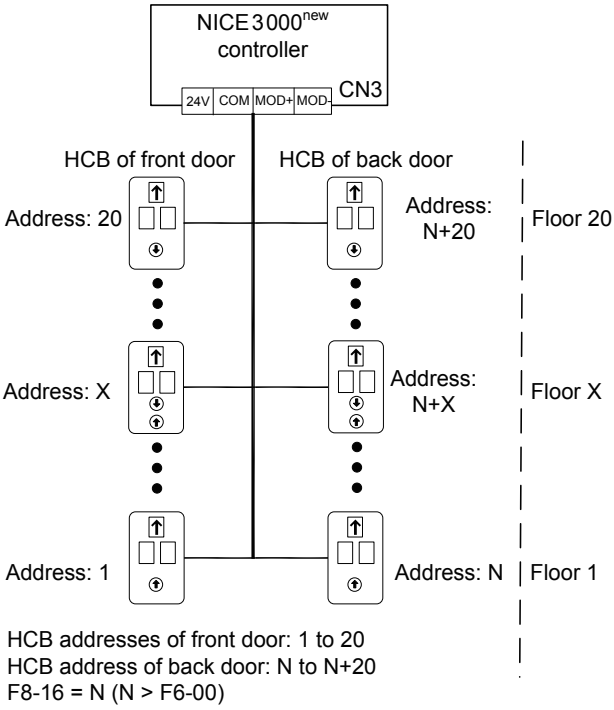
Single operation box



Double operation boxes

HCB setting

Figure 3-5 HCB setting diagram



Related Parameters

<table>
<tr><th rowspan="2">Type</th><th rowspan="2">Door Control Mode</th><th colspan="2">Parameter Setting</th><th rowspan="2">Service Floor</th><th rowspan="2">HCB Address Setting</th><th rowspan="2">Operation Box CCB Wiring</th></tr>
<tr><th>Mode Selection</th><th>Other Parameters</th></tr>
<tr><td>Mode 1</td><td>Simultaneous control</td><td>FC-04 = 0</td><td>Fb-00 = 2,
F8-16 = N
(N > F6-00)</td><td>20</td><td rowspan="4">HCB address of front door: 1–20
HCB address of back door: N to N+20</td><td rowspan="4">The CCB of front door is connected to CN7 on the CTB.
The CCB of back door is connected to CN8 on the CTB.</td></tr>
<tr><td>Mode 2</td><td>Hall call independent, car call simultaneous</td><td>FC-04 = 1</td><td>Same as mode 1</td><td>20</td></tr>
<tr><td>Mode 3</td><td>Hall call independent, car call manual control</td><td>FC-04 = 2
F6-40 Bit4 = 1</td><td>Same as mode 1</td><td>20</td></tr>
<tr><td>Mode 4</td><td>Hall call independent, car call independent</td><td>FC-04 = 3</td><td>Same as mode 1</td><td>20</td></tr>
<tr><td colspan="7">In mode 3, the car door to open is controlled as follows:
• Control by button
Connect the button to JP16 on the CCB, and set F6-40 Bit2 to 1.When the button indicator is steady ON, only the front door opens; when the button indicator is steady OFF, only the back door opens
• Control by switch
Connect the switch to JP20 on the CCB, and set F6-40 Bit15 to 1. When JP20 is ON, only the front door opens; when JP20 is OFF, only the back door opens.</td></tr>
</table>

3.3 Unintended Car Movement Protection (UCMP)

Background

The elevator car landing at a certain floor may move unexpectedly, with floor door unlocked and car door open, if the motor or any component of the drive control system fails. A device is required to prevent or stop the movement, guaranteeing safety.

To prevent failure of the motor brake that guarantees safe running, periodically detect whether the braking force of the brake meets the requirements and detect the braking force of the control system.

Description

- UCMP detection
- Braking force detection

A door pre-open module MCTC-SCB-A/A1/C/D is required for the UCMP function.

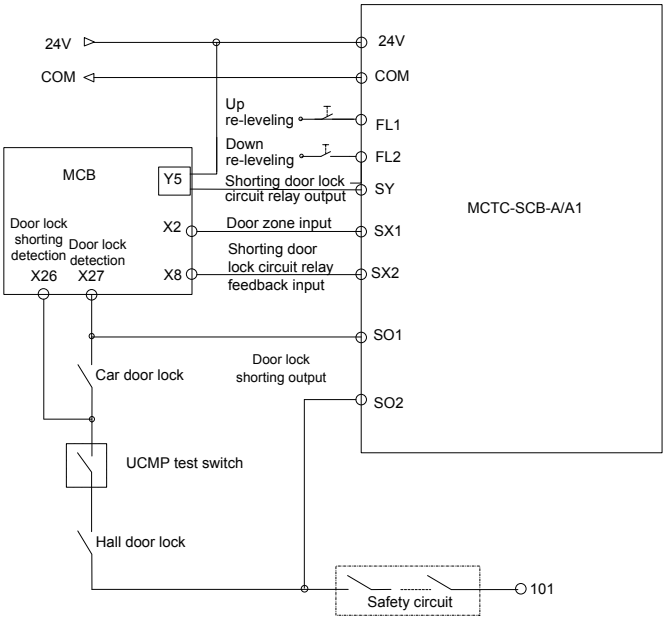
Item	Synchronous motor	Asynchronous motor
	Without auxiliary brake	Having auxiliary brake
Model	MCTC-SCB-A [1] or MCTC-SCB-A1 [1]	MCTC-SCB-C or MCTC-SCB-D [2]

1) CE certificated
2) Only the MCTC-SCB-D can be used for opposite door control.

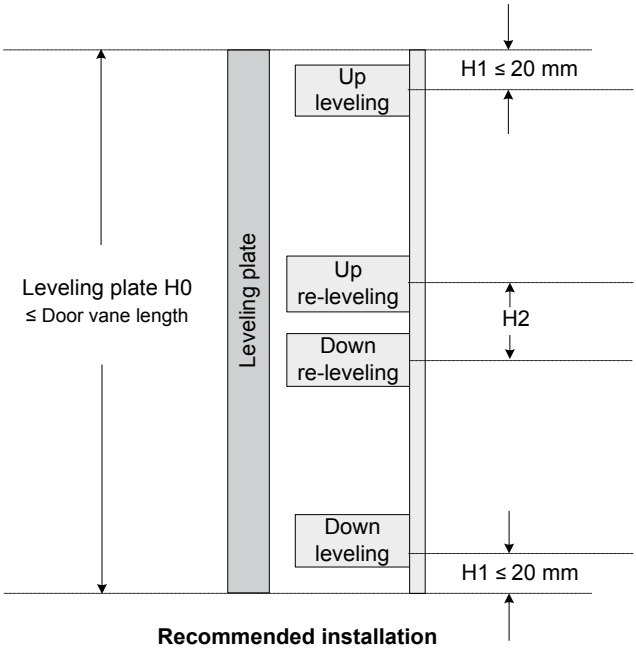
3.3.1 UCMP Detection

Wiring

Figure 3-6 UCMP wiring for motor without auxiliary brake



Without auxiliary brake (single door)

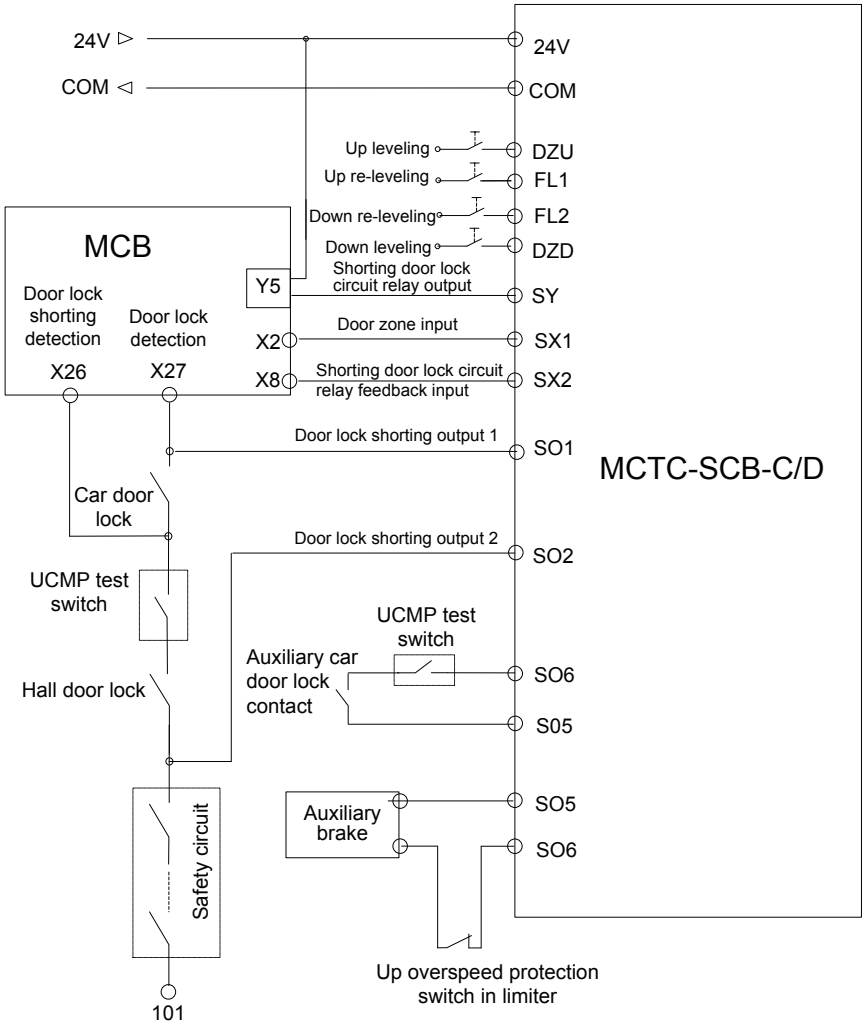


Recommended installation of Monarch UCMP sensor

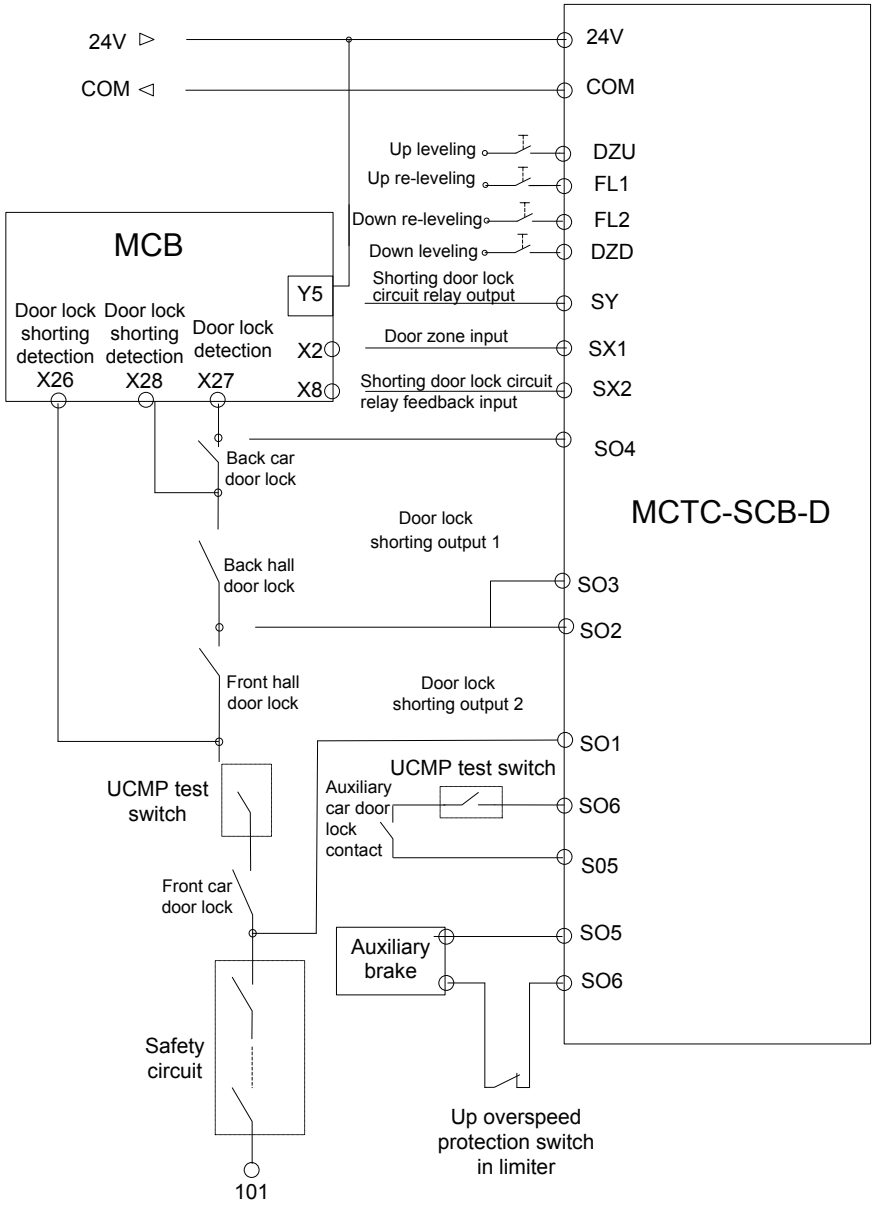
The requirements for installing sensors are as follows:

1. H1 ≤ 20 mm, H2 = 60 mm
2. Leveling plate length < 300 mm. leveling plate of 300 mm is recommended.
3. Two door zone sensors are required. The length of leveling plate is determined by the actual door open area (door vane length).
4. The door zone sensor must be a normally open type.

Figure 3-7 UCMP wiring for motor with auxiliary brake



(With auxiliary brake, single door)



(With auxiliary brake, double door)

Note	The leveling sensors for up door zone and down door zone must be normally open type when the SCB-C or SCB-D is used.

Related Parameters

Parameter No.	Parameter Name	Setting Range
F-8	Test function	7: UCMP manual detection
F3-24	Program function selection	1: Slip experiment 2: UCMP manual detection
F5-01	X1 function selection	01/33: Up leveling signal NO/NC (MCTC-SCB-A/A1)
		01: Up leveling signal NO (MCTC-SCB-C/D)
F5-03	X3 function selection	02/34: 02/34: Down leveling signal NO/NC (MCTC-SCB-A/A1)
		02: Down leveling signal NO (MCTC-SCB-C/D)
F5-02	X2 function selection	03: Door zone signal NO
F5-08	X8 function selection	22: Shorting door lock circuit relay feedback NO
F5-30	Y5 function selection	03: Shorting door lock circuit relay output

The test procedure is as follows:

1. Switch the system to inspection state, and ensure that the elevator is in door zone with door lock enabled.
2. Set F-8 on the keypad to 7 (or set F3-24 on the operating panel to 2), and “E88” is displayed, indicating the UCMP detection function is enabled. Disconnect the door lock circuit.
3. Hold down the inspection up or down button. The shorting door lock circuit relay outputs, shorting the door lock; the elevator enters the inspection running state.
4. The elevator runs out of the door zone (door zone signal becomes invalid). The UCMP module cancels door lock circuit shorting, and the system reports E65 (UCMP fault). The elevator stops running.

Note	
	Setting F-8 to 7 or F3-24 to 2 does not take effect if either of the conditions (in inspection state, within door zone, door lock disabled) is not met. F-8 or F3-24 automatically restores to the default value after a running or power failure. In UCMP detection mode, the elevator accelerates in linear mode to the inspection speed according to the acceleration rate set in F3-08. E65 cannot be automatically reset, even after power-on and power-off. It can only be reset in inspection state.

3.3.2 Braking Force Detection

Wiring

Not required.

Related Parameters

Parameter No.	Parameter Name	Setting Range	Default	Description
F2-32	Torque output duration	1 to 10s	5	When it is set to 0, the system uses the default value 5.
F2-33	Torque limit	1 to 150% rated motor torque	110	When it is set to 0, the system uses the value 80% of rated motor torque. The default value is 110%.
F2-34	Threshold of pulses for judging braking force abnormal	1 to 100 encoder feedback pulses	0	When the torque reaches a constant value, the system starts to detect the pulse change of the encoder in real time. If the pulses exceeds the threshold set in this parameter, the system considers that the braking force is abnormal. When it is set to 0, the system uses the value 30.
F2-35	Threshold of slip distance excessive	1° to 20° motor rotating mechanical angle	0	The system detects whether the slip distance is excessive in the entire process. When the slip distance exceeds the threshold set in this parameter, the system blocks the output immediately. When it is set to 0, the system uses the value 20°.
F-8	Test function	8: Manual detection of braking force	0	The braking force detection is enable by setting the keypad.
F7-09	Braking force detection result	0: No operation 1: Qualified 2: Unqualified	0	/
F7-10	Countdown of braking force detection period	0 to 1440	1440	It automatically restores to 1140 after becoming 0.

1. Manual detection

   Conditions:

   - The system is in inspection state (inspection switch is turned on).
   - The elevator is within door zone, with door locked.

   Procedure:

   1) Set F-8 to 8 on the keypad.
   2) The system enters the test state, and the keypad displays “E88”.
   3) The shorting PMSM stator contactor and RUN contact have output, and the brake contactor has no output.
   4) The system outputs torque based on the braking force parameters and starts the test.
   5) When the keypad display “E88” disappears, the test is completed. The operating panel displays the test result in F7-09. If F7-09 = 2, the keypad prompts E66 immediately, indicating braking force unqualified. In this case, the elevator stops running. Fault E66 cannot be reset.

2. Automatic detection:

   After judging that the braking force detection conditions are met, the system automatically enters the

test state, and repeats steps 4 to 7 in manual detection.

Fault E66 cannot be reset after power-off and power-on again, and can be reset automatically only after the braking force detection is passed.

3. Countdown function:

   The system determines whether Condition 1 is met after the time exceeds 12 hours. If braking force detection has been performed, F7-10 restores to 24 hours; if braking force detection is not performed, the system enters Condition 2 forcibly and starts detection.

   In automatic detection, the HCB does not display the fault, and the keypad displays “E88”. The system registers hall calls but do not respond to them. After detection is completed, the system restores to normal running state, responds to the hall calls registered earlier, and clears floor numbers of car calls. During the process, the system does not allow door open or close.

4. Braking force detection conditions:

   Condition 1: If the energy-saving time threshold or three minutes is exceeded when there is no hall call, the system starts automatic detection.

   Condition 2: After judging that the remaining time of F7-10 is equal to or smaller than 10 minutes, the system tweets the buzzer for 30s (buzzer tweet cannot be turned off in F8-19 Bit13), reserves hall call, and cancels car call. At this moment, the system allows door open/close and starts automatic detection after door close.

3.4 Automatic Emergency Evacuation at Power Failure

Background

Passengers may be trapped in the car for a long time if power failure suddenly happens during use of the elevator. An emergency evacuation device needs to be configured in the system to solve the problem.

There are two emergency evacuation methods, described as follows:

Automatic Emergency Evaucautin Method	Priniple
Emergency evacuation by controller drive	After the mains power supply shuts down, the standby power supply is used to provide power to the system. The controller drives the motor, which runs the car to the leveling area to let passengers out.
Emergency evacuation by shorting stator braking	After the mains power supply shuts down, the standby power supply is used to provide power to the system. The controller shorts the motor stator and releases the brake, making the car move slowly under the effect of the weighing difference between the car and the counterweight to the leveling area to let passengers out.

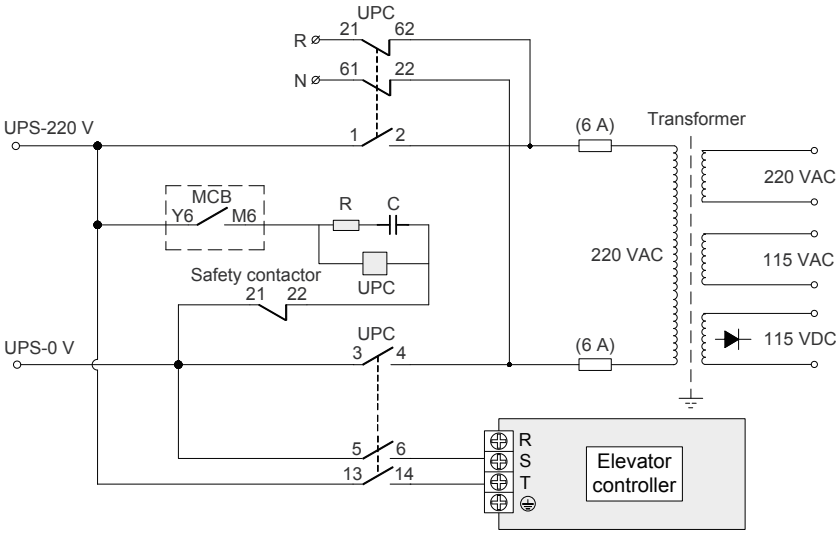
There are two standby power supply modes in the industry.

Standby Power Supply	Description
Uninterrupted power supply (UPS)	The 220 V UPS provides power supply to the main unit and the drive control circuit. The UPS RUN contactor and UPS control circuit must be added in the control cabinet.
Automatic rescue device (ARD) for elevator emergency evacuation	The ARD supplies power to the main circuit and control circuit. The ARD uses the battery is used as the standby power supply. Only the input terminal for emergency evacuation signal feedback must be reserved in the control cabinet, without adding other costs. The ARD itself has a control system which can diagnose the mains power supply status and performs emergency evacuation running. Note: ARDs of different brands may have different control and output wiring; during use, refer to the corresponding user manual for the ARD.

3.4.1 220 V UPS

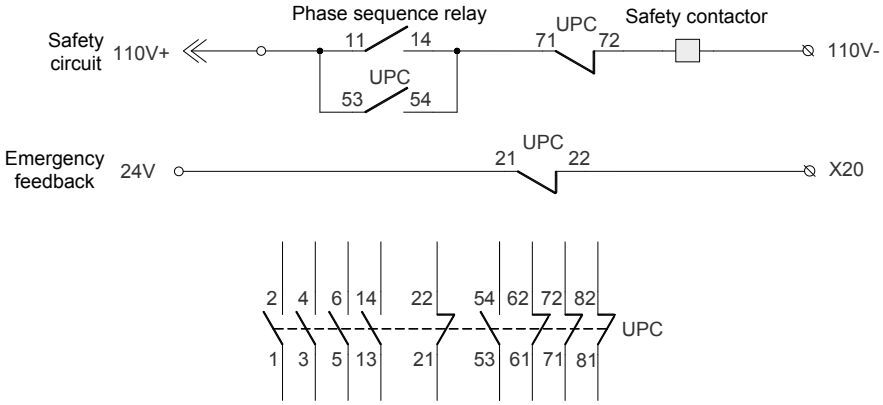
Wiring

The following figure shows the emergency 220 V UPS circuit.



The following figure shows various contacts of the contactors.

Figure 3-8 Various contacts of the contactors



Related Parameters

The parameter setting related to emergency evacuation by controller drive is described in the following table.

Parameter No.	Parameter Name	Value	Remarks
F8-10	Emergency evacuation operation mode at power failure	1: UPS	-
F5-20 (X20)	X20 function selection	59 (UPS valid signal)	Assume that X20 is used as the NC input of emergency evacuation signal
F5-31 (Y6)	Y6 function selection	13 (Emergency evacuation automatic switchover)	Only Y6 can be used for emergency evacuation output.

The parameter setting related to emergency evacuation by shorting stator braking is described in the following table.

Parameter No.	Parameter Name	Value	Remarks
F8-10	Emergency evacuation operation mode at power failure	0: Motor not running	-
F5-20 (X20)	X20 function selection	59 (UPS valid signal)	Assume that X20 is used as the NC input of emergency evacuation signal
F5-31 (Y6)	Y6 function selection	13 (Emergency evacuation automatic switchover)	Only Y6 can be used for emergency evacuation output.
F6-45	Bit15 (Shorting stator braking function)	1 (Enabled)	Enable the function of shorting stator braking.

The UPS power is recommended in the following table.

Table 3-3 Recommended UPS power for each power class

UPS Power	Controller Power
1 kVA (700 W to 800 W)	P ≤ 5.5 kW
2 kVA (1400 W to 1600 W)	5.5 kW < P ≤ 11 kW
3 kVA (2100 W to 2400 W)	15 kW ≤ P ≤ 22 kW

3.4.2 ARD

Wiring

Figure 3-9 Wiring of three-phase (380 V) elevator ARD

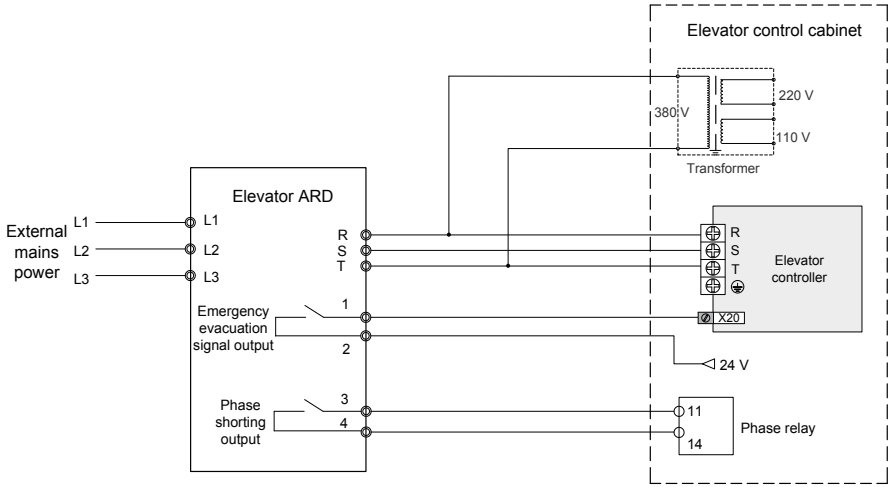
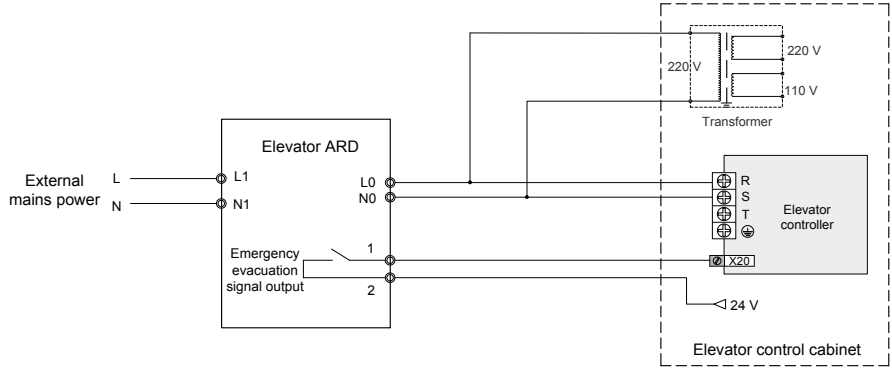


Figure 3-10 Wiring of single-phase (220 V) elevator ARD



Related Parameters

The parameter setting related to emergency evacuation by controller drive is described in the following table.

Parameter No.	Parameter Name	Value	Remarks
F8-10	Emergency evacuation operation mode at power failure	1: UPS	-
F5-20 (X20)	X20 function selection	27 (Emergency evacuation signal)	Assume that X20 is used as the NO input of emergency evacuation signal.

Note	3. Select an ARD with the nominal output power equal to or larger than the motor rated power. 4. For the 380 V elevator ARD, only two phases are used for emergency evacuation output, and you need to ensure that wiring to the controller is correct; the output is single-phase 380 V, and you need to ensure that the transformer meets the requirements on the input side.

Other parameters related to emergency evacuation

Parameter No.	Parameter Name	Setting Range
F3-22	Acceleration rate at emergency evacuation	0.100 to 1.300 m/s2
F6-48	Emergency evacuation switching speed	0.010 to 0.630 m/s
F6-49	Evacuation parking floor	0 to F6-00
F8-09	Emergency evacuation operation speed at power failure	0.05 m/s

3.5 STO Function

Background

The safe torque off (STO) function, used in the system without contactor in the elevator control cabinet and improving the safety level up to SIL3, disconnects the safety circuit, and prevents motor motion to ensure elevator running safety.

Description

The controller must support the STO function and a STO card is required to implement the STO function, as described in the following table.

Name	Model	Description
Special elevator controller	Customized	Special NICE3000new with the STO function
STO card	MCTC-JCB-A2	STO card used together with the drive board

The following figure shows the connection between the NICE3000^{new} and the STO card.

Figure 3-11 Connection between NICE3000^{new} and STO card

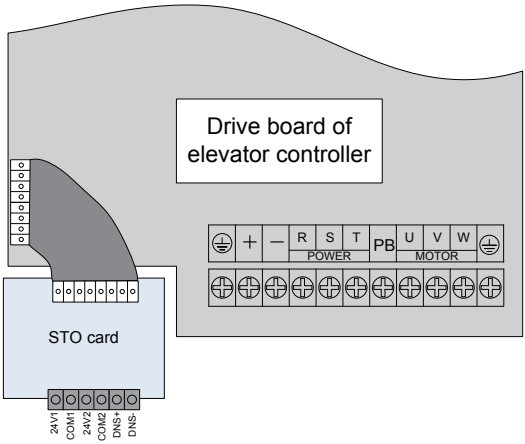


Table 3-4 STO pin definitions

Pin	Signal	Mark	Voltage	Description
1	STOA	24V1	0 V/24 V	STO channel A input
2	GND_STOA	COM1	0 V	Reference ground of STO channel A input
3	STOB	24V2	0 V/24 V	STO channel B input
4	GND_STOB	COM2	0 V	Reference ground of STO channel A input
5	DNS+	DNS+	0 V/24 V	STO feedback positive
6	DNS-	DNS-	0 V	STO feedback negative

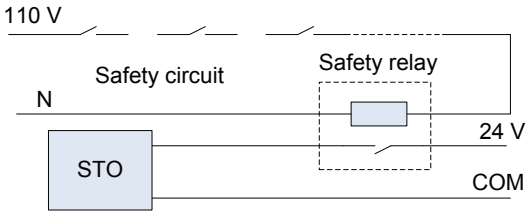
STOA and STOB are two channels of STO, each of which can stop cabinet output. The dual-channel redundancy design meets SIL3 safety level.

DNS+ and DNS- are STO feedback, and are connected to the monitor controller for detecting whether the STO circuit is damaged.

3.5.1 Safety Circuit of 110 V

The STO function takes the place of the RUN contactor, and is wired in the same way as the RUN contactor. A safety relay is used to adapt the 24 V input of the STO card to the 110 V power of common safety circuit.

Figure 3-12 STO wiring under 110 V safety circuit

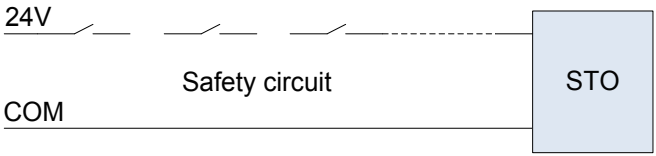


The RUN contactor is replaced with a safety relay and a STO card. The feedback terminals DNS+ and DNS- of the STO card are connected to the DI terminals of the MCB, and the power flows from DNS+ to DNS- (similar to a single-direction switch).

3.5.2 Safety Circuit of 24 V

If the safety circuit is 24 V, the STO card can be directly connected to the safety circuit, as shown in the following figure.

Figure 3-13 STO wiring under 24 V safety circuit



The STO card replaces the RUN contactor.

Chapter 4 Parameter Description

4.1 Introduction

The parameter attributes correspond to the operating panel as follows:

- Parameter group.: level I menu
- Parameter No.: level II menu
- Parameter value: level III menu

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

Item	Definition
Parameter No.	Indicates the parameter number.
Parameter name	Indicates the name of the parameter.
Setting range	Indicates the setting range of the parameter.
Default	Indicates the default setting of the parameter at factory.
Unit	Indicates the measurement unit of the parameter.
Property	Indicates whether the parameter can be modified (including the modification conditions).
Page	Indicates the page number of detailed description of this parameter in Chapter 8.

The modification property of the parameters includes three types, described as follows:

- " ☆ ": The parameter can be modified when the controller is in either stop or running state.
- " ★ ": The parameter cannot be modified when the controller is in the running state.
- "●": The parameter is the actually measured value and cannot be modified.

The system automatically restricts the modification property of all parameters to prevent mal-function.

4.2 Parameter Groups

On the operation panel, press PRG and then △ or ▽, and you can view the parameter groups.

The parameter groups 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	Elevator function parameters
F5	Terminal function parameters	FF	Factory parameters (reserved)
F6	Basic elevator parameters	FP	User parameters
F7	Test function parameters	Fr	Leveling adjustment parameters
F8	Enhanced function parameters	E0 to E9	Fault recording parameters
F9	Time parameters	FJ	Factory parameters (reserved)

4.3 Parameter Table

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Group F0: Basic parameters					
F0-00	Control mode	0: Sensorless vector control (SVC) 1: Feedback vector control (FVC) 2: Voltage/Frequency (V/F) control	1	-	★
F0-01	Command source selection	0: Operation panel control 1: Distance control	1	-	★
F0-02	Running speed under operation panel control	0.050 to F0-04	0.050	m/s	☆
F0-03	Maximum running speed	0.250 to F0-04	1.600	m/s	★
F0-04	Rated elevator speed	0.250 to 4.000	1.600	m/s	★
F0-02 is used to set the running speed in the operation panel control mode. F0-03 is used to set the actual maximum running speed of the elevator. The value must be smaller than the elevator rated speed (F0-04). For example: If the rated elevator speed F0-04 = 1.750 m/s, and the maximum speed required during running is1.600 m/s, set F0-03 to 1.600 m/s. F0-04 is used to set the nominal rated speed of the elevator. The value of this parameter is dependent on the elevator mechanism and traction motor.					
F0-05	Rated elevator load	300 to 9999	1000	kg	★
F0-06	Maximum frequency	F1-04 to 99.00	50.00	Hz	★
F0-07	Carrier frequency	0.5 to 16.0	6.0	kHz	★
Group F1: Motor parameters					
F1-00	Encoder type	0: SIN/COS encoder 1: UVW encoder 2: ABZ incremental encoder 3: Endat absolute encoder	0	-	★
F1-01	Motor rated power	0.7 to 75.0	Model dependent	kW	★
F1-02	Motor rated voltage	0 to 600	Model dependent	V	★
F1-03	Motor rated current	0.00 to 655.00	Model dependent	A	★
F1-04	Motor rated frequency	0.00 to F0-06	Model dependent	Hz	★
F1-05	Motor rated speed	0 to 3000	Model dependent	RPM	★
F1-06	Encoder initial angle (synchronous motor)	0.0 to 359.9	0	°	★
F1-07	Encoder angle at power-off (synchronous motor)	0.0 to 359.9	0	°	★
F1-08	Synchronous motor wiring mode	0 to 15	0	-	★
F1-09	Current filter time (synchronous motor)	0.0 to 359.9	0	-	★
F1-10	Encoder verification selection	0 to 65535	0	-	★

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	-	★
1: static for asynchronous motor, and rotating for synchronous motor 3: group Fr parameters not cleared 4: group Fr parameters cleared					
F1-12	Encoder resolution	0 to 10000	2048	PPR	★
F1-13	Encoder wire-breaking detection time	0 to 10.0	2.1	s	★
It is used to set the time that a wire-break fault lasts before being detected. After the elevator starts running at non-zero speed, if there is no encoder signal input within the time set in this parameter, the system prompts the encoder fault and stops running. When the value is smaller than 0.5s, this function is disabled.					
F1-14	Stator resistance (asynchronous motor)	0.000 to 30.000	Model dependent	Ω	★
F1-15	Rotor resistance (asynchronous motor)	0.000 to 30.000	Model dependent	Ω	★
F1-16	Leakage inductance (asynchronous motor)	0.00 to 300.00	Model dependent	mH	★
F1-17	Mutual inductance (asynchronous motor)	0.1 to 3000.0	Model dependent	mH	★
F1-18	Magnetizing current (asynchronous motor)	0.01 to 300.00	Model dependent	A	★
F1-19	Axis Q inductance (torque)	0.00 to 650.00	3.00	mH	★
F1-20	Axis D inductance (excitation)	0.00 to 650.00	3.00	mH	★
F1-21	Back EMF	0 to 65535	0	-	★
F1-22	Angle-free auto-tuning selection	Bit1 = 1, Bit2 = 0: Half automatic, Bit1 = 1, Bit2 = 1: Full automatic, angle auto-tuning at first-time running after power-on and power-off, both in inspection and automatic states	0	-	★
F1-22 = 2: Half automatic, It is angle-free auto-tuning at first-time running after power-on and power-off, only in inspection state. Note that if auto-tuning is not completed during inspection but the system powers off, the system prompts Err19 after it powers on and the elevator enters the normal state. F1-22 = 6: Full automatic It is angle auto-tuning at first-time running after power-on and power-off, both in inspection and automatic states					
F1-25	Motor type	0: Asynchronous motor 1: Synchronous motor	1	-	★

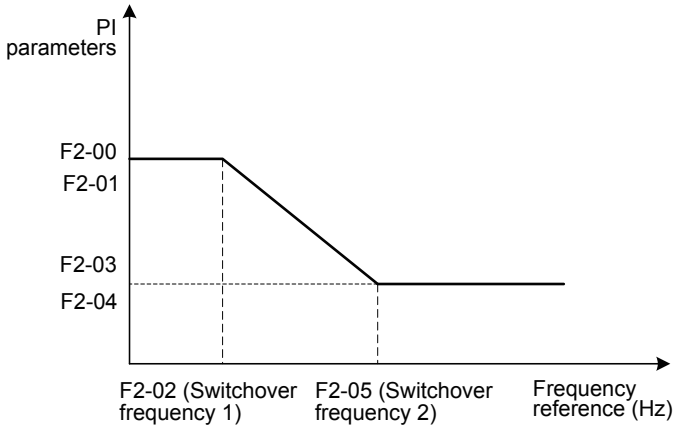
Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Group F2: Vector control parameters					
F2-00	Speed loop proportional gain Kp1	0 to 100	40	-	★
F2-01	Speed loop integral time Ti1	0.01 to 10.00	0.60	s	★
F2-02	Switchover frequency 1	0.00 to F2-05	2.00	Hz	★
F2-03	Speed loop proportional gain Kp2	0 to 100	35	-	★
F2-04	Speed loop integral time Tp2	0.01 to 10.00	0.80	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 the value of F2-02 (Switchover frequency 1).

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

If the running frequency is between F2-02 and F2-05, the speed loop PI parameters are obtained from the weighted average value of the two groups of PI parameters (F2-00, F2-01 and F2-03, F2-04), as shown in Figure 4-1.

Figure 4-1 Relationship between running frequencies and PI parameters



The speed dynamic response characteristics 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 and reduce the integral time. Be aware that this may lead to system oscillation.

The recommended adjustment method is as follows:

The default setting meets the requirements of most applications. If the default setting cannot meet the requirements (especially when the motor power is very small), the default speed loop proportional gain may be a little large, and the motor oscillates at startup.

In this case, decrease the proportional gain first to ensure that the system does not oscillate, and then reduce the integral time to ensure that the system has quick response but small overshoot.

If both F2-02 (Switchover frequency 1) and F2-05 (Switchover frequency 2) are 0, only F2-03 and F2-04 are valid.

F2-06	Current loop Kp1 (torque)	10 to 500	60	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F2-07	Current loop Kp1 (torque)	10 to 500	30	-	★
These two parameters are regulation parameters for the torque axis current loop. These parameters are used as the torque axis current regulator in vector control. The best values of the parameters matching the motor characteristics are obtained by means of motor auto-tuning. You need not modify them generally.					
F2-08	Torque upper limit	0.0 to 200.0	200.0	%	★
F2-10	Elevator running direction	0: Direction unchanged 1: Direction reversed	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 adaptable motor. F2-10 is used to set the elevator running direction. You can modify this parameter to reverse the running direction (without changing the wiring of the motor). When you perform inspection running for the first time after motor auto-tuning is successful, check whether the actual motor running direction is consistent with the inspection command direction. If not, change the motor running direction by setting F2-10 to consistent with the inspection command direction. Pay attention to the setting of this parameter when restoring the default setting					
F2-11	Position lock current coefficient	2.0 to 50.0	15.0	%	★
F2-12	Position lock speed loop Kp	0.00 to 2.00	0.50	-	★
F2-13	Position lock speed loop Ki	0.00 to 2.00	0.60	-	★
These parameters are used to adjust automatic pre-torque compensation in the case of no-load-cell. The no-load-cell startup function is enabled when F8-01 is set to 2 or 3. Decrease the values of these parameters in the case of car lurch at startup, and increase the values in the case of rollback at startup.					
F2-16	Torque acceleration time	1 to 500	1	ms	★
F2-17	Torque deceleration time	1 to 3000	350	ms	★
Group F3: Running control parameters					
F3-00	Startup speed	0.000 to 0.050	0.000	m/s	★
F3-01	Startup holding time	0.000 to 5.000	0.000	s	★
They are used to set the acceleration time and holding time of the startup speed. The parameters may reduce the terrace feeling at startup due to static friction between the guide rail and the guide shoes.					
F3-02	Acceleration rate	0.200 to 1.500	0.700	m/s2	★
F3-03	Acceleration start jerk time	0.300 to 4.000	1.500	s	★
F3-04	Acceleration end jerk time	0.300 to 4.000	1.500	s	★
F3-02, F3-03, and F3-04 are used to set the running curve during acceleration of the elevator. F3-02 is the acceleration rate of the elevator speed curve(uniform acceleration segment) . F3-03 is the time for the rate to increase from 0 to the value set in F3-02 in the speed curve (start jerk segment). The larger the value is, the smoother the jerk is. F3-04 is the time for the rate to decrease from the value set in F3-02 to 0 in the speed curve (end jerk segment). The larger the value is, the smoother the jerk is.					
F3-05	Deceleration rate	0.200 to 1.500	0.700	m/s2	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-06	Deceleration end jerk time	0.300 to 4.000	1.500	s	★
F3-07	Deceleration start jerk time	0.300 to 4.000	1.500	s	★

They are used to set the running curve during deceleration of the elevator.

F3-05 is the acceleration rate of the elevator speed curve(uniform deceleration segment) .

F3-06 is the time for the rate to increase from 0 to the value set in F3-05 in the speed curve (end jerk segment). The larger the value is, the smoother the jerk is.

F3-07 is the time for the rate to decrease from the value set in F3-05 to 0 in the speed curve (start jerk segment). The larger the value is, the smoother the jerk is.

Figure 4-2 Running speed curve

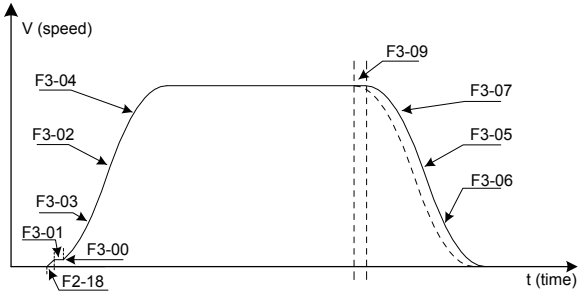
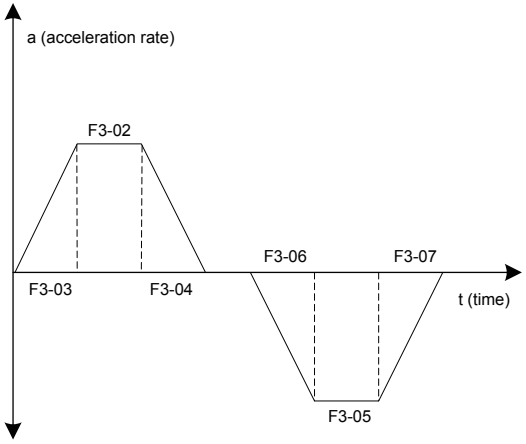
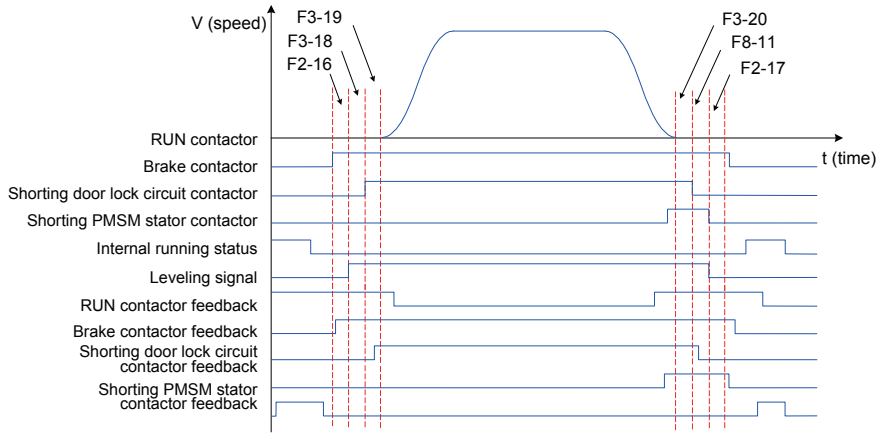


Figure 4-3 Acceleration rate curve



F3-08	Special deceleration rate	0.200 to 1.500	0.900	m/s2	★
F3-09	Pre-deceleration distance	0 to 90.0	0.0	mm	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-08 is used to set the deceleration rate in elevator slow-down, inspection, and shaft auto-tuning. This parameter is not used during normal running. It is used only when the elevator position is abnormal or the slow-down signal is abnormal. The system automatically detects the speed when the elevator reaches a slow-down switch. 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, preventing over travel top terminal or over travel bottom terminal. F3-09 is used to set the pre-deceleration distance of the elevator in distance control, as shown in Figure 4-2. This function is to eliminate the effect of encoder signal loss or leveling signal delay.					
F3-10	Re-leveling speed	0.020 to 0.080	0.040	m/s	★
It is used to set the elevator speed during re-leveling. This parameter is valid only when the pre-open module (MCTC-SCB-A) is added to implement the re-leveling function (set in FE-32).					
F3-11	Inspection speed	0.100 to 0.630	0.250	m/s	★
It is used to set the elevator speed during inspection and shaft auto-tuning.					
F3-12	Position of up slow-down 1	0.00 to 300.00	0.00	m	★
F3-13	Position of down slow-down 1	0.00 to 300.00	0.00	m	★
F3-14	Position of up slow-down 2	0.00 to 300.00	0.00	m	★
F3-15	Position of down slow-down 2	0.00 to 300.00	0.00	m	★
F3-16	Position of up slow-down 3	0.00 to 300.00	0.00	m	★
F3-17	Position of down slow-down 3	0.00 to 300.00	0.00	m	★
F3-18	Zero-speed control time at startup	0.200 to 1.000	0.200	s	★
F3-19	Brake release delay	0.000 to 2.000	0.600	s	★
F3-20	Zero-speed control time at end	0.000 to 1.000	0.300	s	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F3-18 to F3-20 set the time related to the zero-speed holding current output and braking action delay. F3-18 specifies the time from output of the RUN contactor to output of the brake contactor, during which the controller performs excitation on the motor and outputs zero-speed current with large startup torque. F3-19 specifies the time from the moment when the system sends the brake release command to the moment when the brake is completely released, during which the system retains the zero-speed torque current output. F3-20 specifies the zero-speed output time when the running curve ends. Figure 4-4 Running time sequence  Note: The system holds the zero-speed torque current output within the time set in F8-11 from the moment when the brake release command is output, preventing car jerk or rollback.					
F3-21	Low-speed re-leveling speed	0.080 to F3-11	0.100	m/s	★
It is used to set the elevator speed of returning to the leveling position at normal non-leveling stop.					
F3-22	Acceleration rate at emergency evacuation	0.100 to 1.300	0.300	m/s2	★
F3-23	Deceleration time delay of slow-down switch	0.00 to 10.00	0	s	★
F3-24	Slip experiment function	0: Reserved 1: Slip experiment 2: UCMP manual test	0	-	★
Group F4: Floor parameters					
F4-00	Leveling adjustment	0 to 60	30	mm	★
F4-00 is used to adjust the leveling accuracy at elevator stop. If over-leveling occurs at all floors during elevator stop, decrease the value of this parameter properly. If under-leveling occurs at all floors during elevator stop, increase the value of this parameter properly. This parameter takes effect to leveling of all floors. Therefore, if leveling at a single floor is inaccurate, adjust the position of the leveling plate. The NICE3000new has the advanced distance control algorithm and adopts many methods to ensure reliability of direct travel ride. Generally you need not modify this parameter.					
F4-01	Current floor	F6-01 to F6-00	1	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
It indicates the current floor of the elevator car. The system automatically changes the value of this parameter during running, and corrects it at leveling position (door open limit) after the up slow-down and down slow-down switches act. At non-bottom floor and top-floor leveling, you can also manually modify this parameter, but the value must be consistent with the actual current floor.					
F4-02	High byte of current floor position	0 to 65535	1	Pulses	●
F4-03	Low byte of current floor position	0 to 65535	34464	Pulses	•
F4-02 and F4-03 indicate the absolute pulses of the current position of the elevator car relative to the bottom leveling position The position data of the NICE3000new in the shaft is 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.					
F4-04	Length 1 of leveling plate	0 to 65535	0	Pulses	★
F4-05	Length 2 of leveling plate	0 to 65535	0	Pulses	★
F4-06	High byte of floor height 1	0 to 65535	0	Pulses	★
F4-07	Low byte of floor height 1	0 to 65535	0	Pulses	★
F4-08	High byte of floor height 2	0 to 65535	0	Pulses	★
F4-09	Low byte of floor height 2	0 to 65535	0	Pulses	★
F4-10	High byte of floor height 3	0 to 65535	0	Pulses	★
F4-11	Low byte of floor height 3	0 to 65535	0	Pulses	★
F4-12	High byte of floor height 4	0 to 65535	0	Pulses	★
F4-13	Low byte of floor height 4	0 to 65535	0	Pulses	★
F4-14	High byte of floor height 5	0 to 65535	0	Pulses	★
F4-15	Low byte of floor height 5	0 to 65535	0	Pulses	★
F4-16	High byte of floor height 6	0 to 65535	0	Pulses	★
F4-17	Low byte of floor height 6	0 to 65535	0	Pulses	★
F4-18	High byte of floor height 7	0 to 65535	0	Pulses	★
F4-19	Low byte of floor height 7	0 to 65535	0	Pulses	★
F4-20	High byte of floor height 8	0 to 65535	0	Pulses	★
F4-21	Low byte of floor height 8	0 to 65535	0	Pulses	★
F4-22	High byte of floor height 9	0 to 65535	0	Pulses	★
F4-23	Low byte of floor height 9	0 to 65535	0	Pulses	★
F4-24	High byte of floor height 10	0 to 65535	0	Pulses	★
F4-25	Low byte of floor height 10	0 to 65535	0	Pulses	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Floor height 11 to floor height 37					
F4-80	High byte of floor height 38	0 to 65535	0	Pulses	★
F4-81	Low byte of floor height 38	0 to 65535	0	Pulses	★
F4-82	High byte of floor height 39	0 to 65535	0	Pulses	★
F4-83	Low byte of floor height 39	0 to 65535	0	Pulses	★
Group F5: Terminal function parameters					
F5-00	Attendant/Automatic switchover time	3 to 200	3	s	★
F5-01	X1 function selection	01/33: Up leveling signal NO/NC 03/35: Door zone signal NO/NC 02/34: Down leveling signal NO/NC 04/36: Safety circuit feedback NO/NC 05/37: Door lock circuit feedback NO/NC 06/38: RUN contactor feedback NO/NC 07/39: Brake contactor feedback NO/NC 22/54: Shorting door lock circuit contactor feedback NO/NC 08/40: Inspection signal NO/NC 09/41: Inspection up signal NO/NC 10/42: Inspection down signal NO/NC 12/44: Up limit signal NO/NC 13/45: Down limit signal NO/NC 16/48: Up slow-down 1 signal NO/NC 17/49: Down slow-down 1 signal NO/NC 18/50: Up slow-down 2 signal NO/NC 19/51: Down slow-down 2 signal NO/NC 82/114: Door lock 2 shorting NO/NC 86/118: Door lock bypass input NO/NC Value for NC setting of a signal = Value for NO setting of this parameter + 32 Others: 00: Invalid ... (To be continued)	33	-	★
F5-02	X2 function selection		35	-	★
F5-03	X3 function selection		34	-	★
F5-04	X4 function selection		4	-	★
F5-05	X5 function selection		5	-	★
F5-06	X6 function selection		38	-	★
F5-07	X7 function selection		39	-	★
F5-08	X8 function selection		22	-	★
F5-09	X9 function selection		40	-	★
F5-10	X10 function selection		09	-	★
F5-11	X11 function selection		10	-	★
F5-12	X12 function selection		44	-	★
F5-13	X13 function selection		45	-	★
F5-14	X14 function selection		48	-	★
F5-15	X15 function selection		49	-	★
F5-16	X16 function selection		50	-	★
F5-17	X17 function selection		51	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-18	X18 function selection	...(Continued) 11/43: Fire emergency signal NO/NC14/46: Overload signal NO/NC15/47: Full-load signal NO/NC 20/52: Up slow-down 3 signal NO/NC 21/53: Down slow-down 3 signal NO/NC 22/54: shorting door lock circuit relay feedback NO/NC 23/55: Firefighter running signal NO/NC ... (to be continued)... 24/56: Door machine 1 light curtain signal NO/NC 25/57: Door machine 2 light curtain signal NO/NC 26/58: Brake travel switch 1 NO/NC 27/59: Emergency evacuation signal NO/NC 28/60: Elevator lock signal NO/NC 29/61: Safety circuit 2 feedback NO/NC 30/62: PMSM self-lock feedback NO/NC 31/63: Door lock circuit 2 feedback NO/NC 32/64: Reserved 65/97: Door machine 1 safety edge signal NO/NC 66/98: Door machine 2 safety edge signal NO/NC 67/99: Motor overheat signal NO/NC 68/100: Earthquake signal NO/NC 69/101: Back door forbidden signal NO/NC 70/102: Light-load signal NO/NC 71/103: Half-load signal NO/NC 72/104: Fire emergency floor switchover signal NO/NC 76/108: Door machine 1 open input NO/NC 77/109: Door machine 2 open input NO/NC 78/110: Brake travel switch 2 input NO/NC 79/111: External fault input NO/NC ... (To be continued)	00	-	★
F5-19	X19 function selection		00	-	★
F5-20	X20 function selection		00	-	★
F5-21	X21 function selection		00	-	★
F5-22	X22 function selection		00	-	★
F5-23	X23 function selection		00	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-24	X24 function selection	... (Continued) 80/112: Terminal floor verification signal NO/NC 81/113: Door lock 1 shorting NO/NC (End)	00	-	★
F5-25	CTB input type	0 to 511	320	-	★

Bit of F5-25	CTB Input Signal
Bit0	Used to set NO/NC feature of door 1 light curtain signal
Bit2	Used to set NO/NC feature of door 1 open limit signal
Bit4	Used to set NO/NC feature of door 1 close limit signal

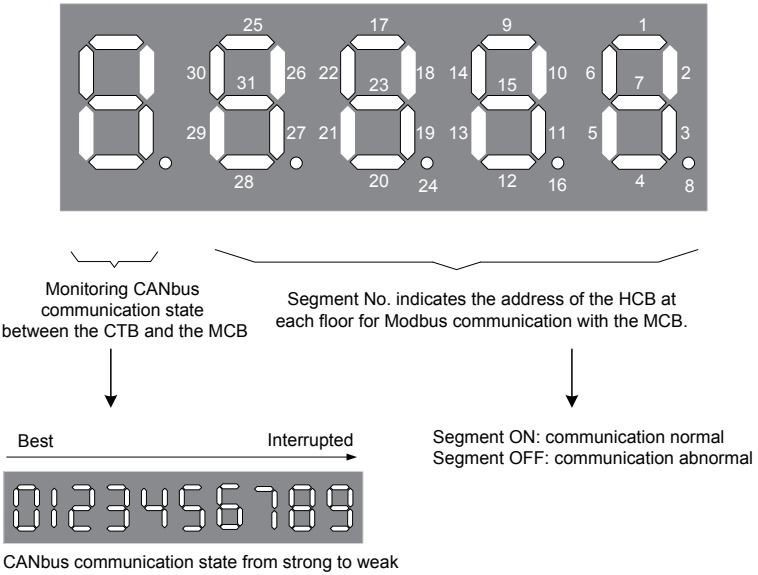
F5-26	Y1 function selection	00: No function 01: RUN contactor control 02: Brake contactor control 03: Shorting door lock circuit relay output 04: Fire emergency floor arrival feedback Others: 00: Invalid 05: Door machine 1 open 06: Door 1 close 07: Door 2 open 08: Door 2 close 09: Brake and RUN contactors healthy 10: Fault state 11: Running monitor 12: Shorting PMSM stator contactor 13: Emergency evacuation automatic switchover 14: System healthy 15: Emergency buzzer control 16: Higher-voltage startup of brake 17: Elevator running in up direction 18: Lamp/Fan running 19: Medical sterilization 20: Non-door zone stop 21: Electric lock 22: Non-service state 23: Emergency evacuation completed	1	-	★
F5-27	Y2 function selection		2	-	★
F5-28	Y3 function selection		3	-	★
F5-29	Y4 function selection		4	-	★
F5-30	Y5 function selection		0	-	★
F5-31	Y6 function selection		0	-	★
F5-32	Communication state display	-	-	-	●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

It is used to monitor the state of CANbus communication with the CTB and Modbus communication with the HCB.

When you enter the menu of F5-32, the LEDs on the operation panel indicate the current HCB communication state.

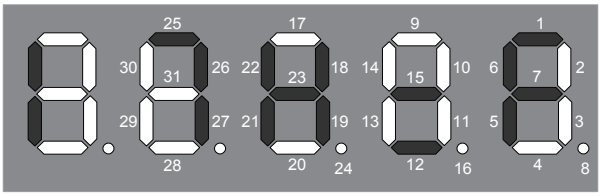
Figure 4-5 F5-32 communication state monitoring



CANbus communication state from strong to weak

For example, if the LEDs are shown as the following figure, it indicates that Modbus communication of addresses 1, 5, 6, 7, 12, 15, 16, 18, 19, 21, 22, 23, 25, 26 and 27 is abnormal, and Modbus communication of other addresses is normal. CANbus communication state displayed by the LED is 3, indicating normal communication.

Figure 4-6 Example of LED display indicating the communication state



Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F5-33	Terminal program control	Bit3: Elevator fire emergency requirement for Hong Kong Bit4: Arrival gong disabled at night Bit6: Door lock disconnected at inspection switched over to normal running Bit7: Fault code not displayed on the keypad Bit8: Door open command cancelled immediately at door open limit Bit9: Car stop and zero-speed torque holding at abnormal brake feedback	0	-	★

It is used to select the elevator functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

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

Bit	Function	Description	Default
Bit3	Elevator fire emergency requirement for Hong Kong	If it is enabled, the fire emergency functions in F6-44 applied to Hong Kong become enabled automatically.	0
Bit4	Arrival gong disabled at night	The arrival gong is disabled from 22:00 p.m. to 7:00 a.m.	0
Bit6	Door lock disconnected at inspection switched over to normal running	The door lock is additionally disconnected once when the inspection state is switched over to the normal running state.	0
Bit7	Fault code not displayed on the keypad	The keypad does not blink to display the fault code.	0
Bit8	Door open command cancelled immediately at door open limit	The system immediately cancels the door open command after receiving the door open limit.	0
Bit9	Car stop and zero-speed torque holding at abnormal brake feedback	When the brake feedback is abnormal, the elevator arrives at the door-zone position and stops. The door keeps closed, and the system holds torque output as long as possible. After the system is overloaded, there is no torque output, and the elevator may fall in this case. Be cautious of using this function.	0

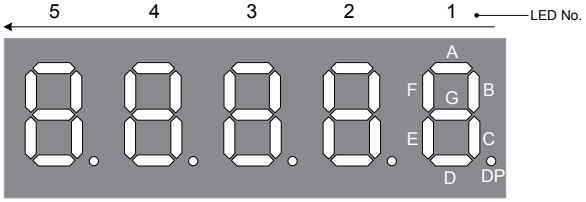
F5-34	Terminal state display	Monitoring of I/O terminals on MCB	-	-	●
F5-35	Terminal state display	Monitoring of I/O terminals on CTB, CCB and HCB	-	-	●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

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

The segments of the five LEDs displayed are defined as follows.

Figure 4-7 Monitoring of all I/O terminals



Note:
1. Segments of LEDs 2 to 5 are marked in the same way as those of LED 1.

2. Segment ON: signal active
Segment OFF: signal inactive

F5-34 Terminal state display

	1	2	3	4	5
A	-	Inspection signal	Up slow-down 1 signal	Door machine 1 light curtain	Reserved
B	Up leveling signal	Inspection up signal	Down slow-down 1 signal	Door machine 2 light curtain	RUN contactor output
C	Down leveling signal	Inspection down signal	Up slow-down 2 signal	Brake contactor feedback 2	Brake contactor output
D	Door zone signal	Fire emergency signal	Down slow-down 2 signal	UPS input	Shorting door lock circuit contactor control
E	Safety circuit feedback 1	Up limit signal	Up slow-down 3 signal	Elevator lock input	Fire emergency floor arrival signal
F	Door lock circuit feedback 1	Down limit signal	Down slow-down 3 signal	Safety circuit feedback 2	-
G	RUN contactor feedback	Overload signal	Shorting door lock circuit contactor feedback	PMSM self-lock feedback	-
DP	Brake contactor feedback 1	Full-load signal	Firefighter running signal	Door lock circuit feedback 2	-

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

F5-35 Terminal state display

	1	2	3	4	5
A	Door 1 light curtain	Door open button	Door 1 open output	Door open button display	System light curtain state 1
B	Door 2 light curtain	Door close button	Door 1 close output	Door close button display	System light curtain state 2
C	Door 1 open limit	Door open delay button	Door lock signal	Door open delay button display	Hall call elevator lock input
D	Door 2 open limit	Direct travel ride signal	Door 1 open output	Non-door zone stop	Hall call fire emergency input
E	Door 1 close limit	Attendant signal	Door 2close output	Reserved	Full-load signal
F	Door 2 close limit	Direction change signal	Door lock signal	Buzzer output	Overload signal
G	Full-load signal	Independent running signal	Up arrival gong	Reserved	-
DP	Overload signal	Firefighter operation signal	Down arrival gong	Energy saving sign	-

F5-36	Load cell input selection	0: MCB digital input 1: CTB digital input 2: CTB analog input 3: MCB analog input	1	-	★
F5-37	X25 function selection	0: Invalid 4: Safety circuit signal 5: Door lock circuit signal 1 6: Door lock circuit signal 2 7: Door lock 1 shorting (front door) 8: Door lock 2 shorting (back door)	0	-	★
F5-38	X26 function selection		0	-	★
F5-39	X27 function selection		0	-	★
F5-40	X28 function selection		0	-	★
Group F6: Basic elevator parameters					
F6-00	Top floor of the elevator	F6-01 to 40	9	-	★
F6-01	Bottom floor of the elevator	1 to F6-00	1	-	★
These two parameters are used to set the top floor and bottom floor of the elevator, determined by the number of actually installed leveling plates.					
F6-02	Parking floor	F6-01 to F6-00	1	-	★
F6-03	Fire emergency floor	F6-01 to F6-00	1	-	★
F6-04	Elevator lock floor	F6-01 to F6-00	1	-	★
When the idle time of the elevator exceeds the value set in F9-00, the elevator returns to the parking floor set in F6-02 automatically. After the fire emergency signal is active, the elevator returns to the fire emergency floor set in F6-03. F6-04 is used to set the elevator lock floor. In the automatic running state, if the elevator lock switch is turned on or the set elevator lock time is reached, the elevator cancels all registered hall calls and responds to all registered car calls, returns to the elevator lock floor, stops automatic running, and closes the lamp and fan in the car; after the door closes, the elevator cancels hall call display.					
F6-05	Service floors 1 (floors 1–16)	0 to 65535	65535	-	★

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

These parameters are used to set the service floors among floors 1–40. F6-05 (Service floors 1) corresponds to floors 1–16. F6-06 (Service floors 2) corresponds to floors 17–32. F6-35 (Service floors 3) corresponds to floors 33–40.

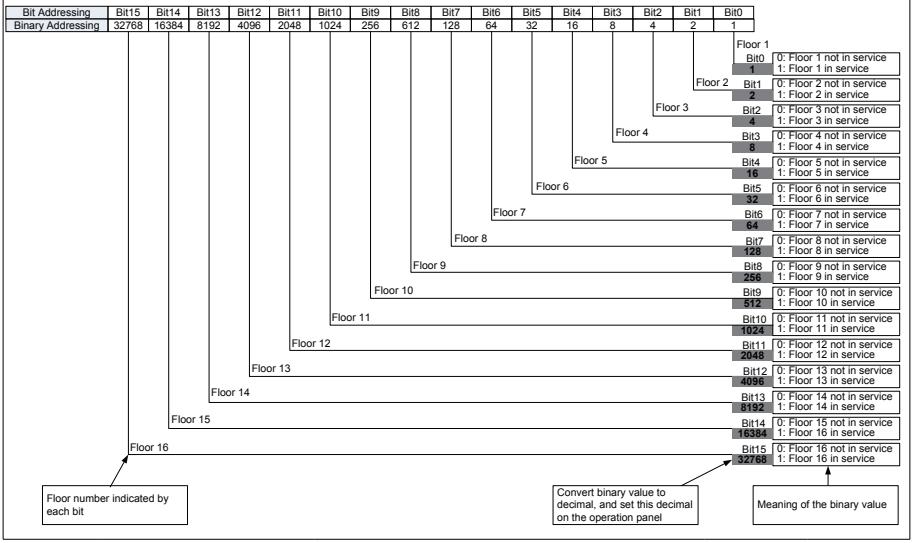
These parameters are set in the similar way.

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

F6-05 is enabled through bit addressing.

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

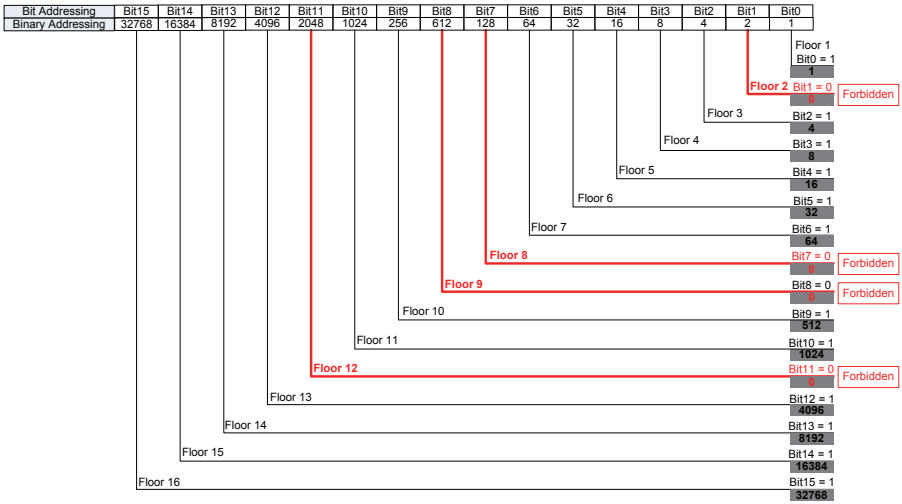
Figure 4-8 Converting binary value of F6-05 to decimal



Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

Example:

If floors 2, 8, 9, and 12 of a 16-floor elevator need to be forbidden, and all other floors are in service, we need to set Bit1, Bit7, Bit8, and Bit11 corresponding to floors 2, 8, 9, and 12 to 0, and set the other bits to 1, as shown in the following figure.



Convert the binary value to decimal:

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

Then, enter “63101” for F6-05 on the operation panel.

F6-07	Number of elevators in parallel/group mode	1 to 8	1	-	★
F6-08	Elevator No.	1 to 8	1	-	★
F6-09	Elevator program control	Bit0: Dispersed waiting Bit2: Reserved Bit3: Parallel/Group control implemented at CAN2 Bit4: Group control in compatibility with NICE3000 Bit6: Clear floor number and display direction in advance Bit8: Unidirectional hall call (single hall call button) Bit 9: Not detecting analog wire breaking Bit10: Cancellation of ERR30 judgment at re-leveling Bit14: Time interval detection of safety circuit 2 and door lock circuit 2 (1.5s)	0	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

F6-09 is used to select the elevator functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

The functions defined by the binary bits of F6-09 are described in the following table.

Bit	Function	Description	Default
Bit0	Dispersed waiting	In single elevator or parallel/group mode, if this function is enabled, an idle elevator will not return to the base floor. In group mode, this function is used together with the group control board to implement dispersed waiting.	0
Bit3	Parallel/Group control implemented at CAN2	This function is enabled when the parallel/group mode is implemented at CAN2 on the MCB.	0
Bit4	Group control in compatibility with NICE3000	This function is used when the NICE3000 is involved in the group control system. The setting of this bit must be the same as that for all the other elevators in the group.	0
Bit6	Clear floor number and display direction in advance	The displayed floor number is cleared before the elevator reaches the destination floor. If the elevator needs to change the direction, the changed direction is displayed in advance.	0
Bit8	Single hall call button	It is applied to applications where there is only one hall call button.	0
Bit9	Not detecting analog wire breaking	The system does not detect analog wire breaking during normal running.	0
Bit10	Err30 judgment at re-leveling cancellation	It indicates Err30 judgment when re-leveling is cancelled.	0
Bit14	Time interval detection of safety circuit 2 and door lock circuit 2	If the states of safety circuits 1 and 2 or the states of door lock circuits 1 and 2 are inconsistent, the system will prohibit running. After the states restore normal, the system is powered on again and starts running.	0

F6-10	Leveling sensor filter time	10 to 50	14	ms	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-11	Elevator function selection	Bit1: Disabling returning to base floor for verification Bit2: Cancelling auto sequential arrange of hall call floor addresses to be displayed Bit5: Current detection valid at startup for synchronous motor Bit6: Reversing MCB lamp output Bit7: Door open valid at non-door zone in the inspection state Bit8: Door open and close once after inspection turned to normal Bit10: Buzzer not tweet upon re-leveling Bit11: Super short floor function Bit12: Fault auto reset Bit13: E53 fault auto reset Bit14: Up slow-down not reset for super short floor Bit15: Down slow-down not reset for super short floor	8448	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

F6-11 is used to select the elevator functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

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

Bit	Function	Description	Default
Bit1	Disabling returning to base floor for verification	The function of returning to base floor for verification due to large deviation of the car position is disabled.	0
Bit2	Cancelling auto sequential arrange of hall call floor addresses to be displayed	If the display of a floor in group FE is set to 1, the following floors to be displayed are automatically arranged in the ascending order.	0
Bit5	Current detection valid at startup for synchronous motor	The controller performs output current detection when the synchronous motor is started up. If the current is abnormal, the output will be locked and the running will be forbidden.	0
Bit6	Reversing MCB lamp output	After this function is enabled, the MCB lamp output logic is reversed.	0
Bit7	Door open valid at non-door zone in the inspection state	In the inspection state, you can open/close the door by pressing the door open/close button at the non-door zone.	0
Bit8	Door open and close once after inspection turned to normal	The elevator door opens and closes once after the system turns from first-time inspection to normal running.	1
Bit10	Buzzer not tweet upon re-leveling	The buzzer inside the car does not tweet upon re-leveling.	0
Bit11	Super short floor function	The controller cannot perform shaft auto-tuning if the floor height is less than 500 mm. After this function is enabled, shaft auto-tuning can be performed normally.	0
Bit12	Fault auto reset	The controller automatically resets the faults once every hour.	0
Bit13	E53 fault auto reset	When Err53 is reported, if the conditions of door open limit valid and door lock release are satisfied, the controller resets Err53 automatically. A maximum of three times of auto reset is allowed.	1
Bit14	Up slow-down not reset for super short floor	If this function is enabled, the up slow-down 1 signal does not reset floor display. The down slow-down 1 signal still resets floor display. This is valid only when the super short floor function is enabled.	0
Bit15	Down slow-down not reset for super short floor	If this function is enabled, the down slow-down 1 signal does not reset floor display. The up slow-down 1 signal still resets floor display. This is valid only when the super short floor function is enabled.	0

F6-12	VIP floor	0 to F6-00	0	-	★
F6-12 is used to set the VIP floor.					
F6-13	Security floor	0 to F6-00	0	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-13 is used to set the security floor of the elevator. If 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 runs to the target floor. The elevator can be made to stop at the security floor in the following two ways: Fd-07/Fd-08 is set to 5/37 (Security signal). If the security signal is active, the elevator enters the security state. The night security floor function is enabled (FE-32 Bit5 = 2), the elevator enters the security state from 22:00 p.m. to 6:00 a.m.					
F6-14	Start time of down collective selective 1	00.00 to 23.59	00.00	HH.MM	☆
F6-15	End time of down collective selective 1	00.00 to 23.59	00.00	HH.MM	☆
F6-16	Start time of down collective selective 2	00.00 to 23.59	00.00	HH.MM	☆
F6-17	End time of down collective selective 2	00.00 to 23.59	00.00	HH.MM	☆
F6-18	Start time of time-based floor service 1	00.00 to 23.59	00.00	HH.MM	☆
F6-19	End time of time-based floor service 1	00.00 to 23.59	00.00	HH.MM	☆
F6-20	Service floor 1 of time-based floor service 1	0 to 65535	65535	-	☆
F6-21	Service floor 2 of time-based floor service 1	0 to 65535	65535	-	☆
F6-22	Start time of time-based floor service 2	00.00 to 23.59	00.00	HH.MM	☆
F6-23	End time of time-based floor service 2	00.00 to 23.59	00.00	HH.MM	☆
F6-24	Service floor 1 of time-based floor service 2	0 to 65535	65535	-	☆
F6-25	Service floor 2 of time-based floor service 2	0 to 65535	65535	-	☆
F6-26	Peak 1 start time	00.00 to 23.59	00.00	HH.MM	☆
F6-27	Peak 1 end time	00.00 to 23.59	00.00	HH.MM	☆
F6-28	Peak 1 floor	F6-01 to F6-00	1	-	★
F6-29	Peak 2 start time	00.00 to 23.59	00.00	HH.MM	☆
F6-30	Peak 2 end time	00.00 to 23.59	00.00	HH.MM	☆
F6-31	Peak 2 floor	F6-01 to F6-00	1	-	★
F6-35	Service floor 3	0 to 65535	65535	-	☆
F6-36	Service floor 3 of time-based floor service 1	0 to 65535	65535	-	☆
F6-37	Service floor 3 of time-based floor service 2	0 to 65535	65535	-	☆
F6-38	Elevator lock start time	00.00 to 23.59	00.00	HH.MM	☆
F6-39	Elevator lock end time	00.00 to 23.59	00.00	HH.MM	☆

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
The elevator can switch to the locked state in the following two ways: F6-40 Bit5 = 1, to enable the timed elevator lock function. F6-38 and F6-39 are used to set the elevator lock time period, during which the elevator is in locked state. Fd-07 = 1/33, to enable the hall elevator lock switch					
F6-40	Program control selection 1	Bit0: Disability function Bit1: Soft limit function Bit2: JP16 input used as back door selection Bit3: JP16 input used as the back door open signal Bit4: Opening only one door of opposite doors under manual control Bit5: Timed elevator lock Bit6: Manual door Bit9: Disabling reverse floor number clear Bit10: Displaying next arriving floor number Bit11: Responding to car calls first Bit12: Car call assisted command in single door used as disability function Bit13: Folding command used as disability function and back door function Bit14: Car call command folding Bit15: JP20 used for switchover to back door	0	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

F6-40 is used to select program control functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

The functions defined by the binary bits of F6-40 are described in the following table.

Bit	Function	Description	Default
Bit0	Disability function	It is used to enable or disable the disability function.	0
Bit1	Soft limit function	When the up slow-down and down leveling signals are active and the up leveling signal is inactive, the system considers that the up limit is performed. It is the same for the down limit signal.	0
Bit2	JP16 input used as back door selection	This function is enabled if the opposite door function is used. When JP16 has input, the elevator opens only the back door. When IP16 has no input, the elevator opens only the front door.	0
Bit3	JP16 input used as the back door open signal	JP16 is used for the input of the back door open signal.	0
Bit4	Opening only one door of opposite doors under manual control	This function is enabled only in the opposite door control mode 2 (hall call independent, opposite-door manual control). In this case, only one door opens each time while the other door must stay in the door close limit state. In group Fd, the HCB-B extended input includes “Single/Double door selection”. If this input is active, both doors open if there is a car call.	0
Bit5	Timed elevator lock	F6-38/F6-39 is valid only when this function is enabled.	0
Bit6	Manual door	This function is used for the elevator with manual door.	0
Bit7	Reserved	-	0
Bit8	Reserved	-	0
Bit9	Disabling reverse floor number clear	The system clears all the current car calls every time the elevator changes the direction by default. When this function is enabled, the function of clearing reverse floor numbers is disabled.	0
Bit10	Displaying next arriving floor number	The next floor to be arrived at is displayed during elevator running.	0
Bit11	Responding to car calls first	The system responds to hall calls only after executing all car calls.	0
Bit12	Car call assisted command in single door used as disability function	You can set the auxiliary command terminal (CN8) on the CTB for input of the disability calls (folding command not required).	0
Bit13	Folding command used as disability function and back door function	It is valid only when the function of Bit14 is enabled. Bit13 = 1: Disability Bit13 = 0: Back door	0
Bit14	Car call command folding	Function disabled: CN7 is used for front door calls or ordinary calls, and CN8 is used for back door calls or disability calls. Function enabled: For CN7 and CN8, inputs 1 to 16 are used for front door calls or ordinary calls, and inputs 17 to 32 are used for back door calls or disability calls.	0
Bit15	JP20 used for switchover to back door	JP20 is used for input of switchover between the front door and the back door.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-41	Program control selection 2	Bit2: Inspection to stop due to slow-down 1 Bit4: Buzzer tweet during door open delay Bit6: Cancelling door open delay Bit8: Elevator lock at door open Bit9: Display available at elevator lock Bit10: Elevator lock in the attendant state Bit11: Blinking at arrival (within the time set in F6-47) Bit12: Door re-open during door open delay Bit13: Door re-open after car call of the present floor	0	-	★

F6-41 is used to select program control functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

The functions defined by the binary bits of F6-41 are described in the following table.

Bit	Function	Description	Default
Bit0	Reserved	-	0
Bit1	Reserved	-	0
Bit2	Inspection to stop due to slow-down 1	During inspection running, if the slow-down 1 acts, the system decelerates to stop.	0
Bit3	Reserved	-	0
Bit4	Buzzer tweet during door open delay	The buzzer will tweet when the door open delay time set in Fb-14 is reached.	0
Bit5	Reserved	-	0
Bit6	Cancelling door open delay	Door open delay is cancelled when the door open delay button is pressed again.	0
Bit7	Reserved	-	0
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, hall calls are displayed normally.	0
Bit10	Elevator lock in the attendant state	The elevator is locked properly in the attendant state.	0
Bit11	Blinking at arrival	The car display blinks when the elevator arrives at a floor. The blinking advance time is set in F6-47.	0
Bit12	Door re-open during door open delay	The door re-opens if the door open delay input is active during door close.	0
Bit13	Door re-open after car call of the present floor	The door re-opens if the car call of the present floor is valid during door close.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-42	Program control selection 3	Bit1: Cancelling door open/close command at delay after door open/close limit Bit2: Not judging door lock state at door close output Bit3: Door close command output during running Bit4: Returning to base floor for verification at first-time power-on Bit5: Clearing calls immediately at elevator lock Bit6: Electric lock NC output Bit7: E50 fault detection cancellation Bit8: Cancellation of door open/close limit fault detection Bit9: Cancellation of scrolling fault subcode display Bit10: Door open energy-saving Bit11: Independent switch for getting away from parallel control	0	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

F6-42 is used to select program control functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

The functions defined by the binary bits of F6-42 are described in the following table.

Bit	Function	Description	Default
Bit0	Reserved	-	0
Bit1	Cancelling door open/ close command at delay after door open/close limit	Bit1 = 1: The door open/close command is cancelled at the delay of 1s after door open/close limit.	0
Bit2	Not judging door lock state at door close output	On 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 need not judge the door lock state.	0
Bit3	Door close command output during running	The door close command is output continuously during the elevator running.	0
Bit4	Returning to base floor for verification at first-time power-on	The elevator runs to the bottom floor for verification at power-on for the first time.	0
Bit5	Clearing calls immediately at elevator lock	Bit5 = 1: After the elevator lock signal becomes active, the elevator clears all car calls and hall calls and lands at the elevator base floor. Bit5 = 0: After the elevator lock signal becomes active, the elevator clears hall calls and responds to all registered car calls, and then lands at the elevator base floor.	0
Bit6	Electric lock NC output	The electric lock has no outputs at door open and has output at door close.	0
Bit7	E50 fault detection cancellation	Bit7 = 1: Fault E50 not detected	0
Bit8	Cancellation of door open/ close limit fault detection	The door open/close limit signal is not detected.	0
Bit9	Cancellation of fault subcode scrolling display	The keypad will not display the fault subcode in scrolling mode.	0
Bit10	Door open energy-saving	In waiting with door open state, the system closes the lamp and fan within the time in F9-01 after door open limit.	0
Bit11	Independent running switch for getting away from parallel control	Valid: When this signal is active, and the independent running switch is turned on, the elevator disconnects from parallel control and works in normal running state. Invalid: The elevator disconnects from parallel control and enters VIP running state.	1

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-43	Attendant function selection	Bit0: Calls cancelled after entering attendant state Bit1: Not responding to hall calls Bit2: Attendant/Automatic state switchover Bit3: Door close at jogging Bit4: Automatic door close Bit5: Buzzer tweeting at intervals in attendant state Bit6: Buzzer tweeting at intervals in attendant state Bit7: Car call button blinking to prompt	128	-	★

F6-43 is used to select the attendant-related elevator functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

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

Bit	Function	Description	Default
Bit0	Calls cancelled after entering attendant state	All car calls and hall calls are cancelled after the system enters the attendant state for the first time.	0
Bit1	Not responding to hall calls	The car blinks inside, prompting there is a hall call, but the system does not respond.	0
Bit2	Attendant/Automatic state switchover	If this function is enabled, the setting of F5-00 is valid.	0
Bit3	Door close at jogging	The elevator door closes after the attendant presses the door close button manually.	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 attendant state	When the hall call floor and the car call floor are different, the buzzer tweets 2.5s at intervals.	0
Bit6	Continuous buzzer tweeting in attendant state	When the hall call floor and the car call floor are different, the buzzer tweets continuously.	0
Bit7	Car call button blinking to prompt	When the hall call input is active, the car call button for the corresponding floor blinks to give a prompt.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F6-44	Fire emergency function selection	Bit3: Arrival gong output in inspection or fire emergency state Bit4: Multiple car calls registered in fire emergency state Bit5: Retentive at power failure in fire emergency state Bit6: Closing door by holding down the door close button Bit8: Door close at car call registering Bit9: Displaying hall calls in fire emergency state Bit10: Firefighter forced running Bit11: Exiting firefighter state upon arrival at fire emergency floor Bit12: Not clearing car calls at reverse door open in firefighter running state Bit14: Opening door by holding down the door open button Bit15: Automatic door open at fire emergency floor	16456	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

F6-44 is used to select the fire emergency-related functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

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

Bit	Function	Description	Default
Bit0 to Bit2	Reserved	-	0
Bit3	Arrival gong output in inspection or fire emergency state	The arrival gong is output in the inspection or fire emergency state.	0
Bit4	Multiple car calls registered in 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 fire emergency state	In the fire emergency state, the current system and car state will be memorized at power failure and be resumed after the system is powered on again.	0
Bit6	Closing door 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 be switched over to door open automatically.	0
Bit7	Reserved	-	0
Bit8	Door close at car call registering	The elevator enters the door close process automatically if a car call is registered.	0
Bit9	Displaying hall calls in fire emergency state	Hall calls are displayed in the fire emergency state.	0
Bit10	Firefighter forced running	JP22 is used for firefighter forced running input. In the firefighter running state, when the JP22 input switch and the door close button are enabled simultaneously, the buzzer tweets and the system outputs the door close signal. If the door lock is not enabled within 10s, the system outputs the shorting door lock circuit contactor signal, and the elevator starts running (used together with SCB-A).	0
Bit11	Exiting firefighter state upon arrival at fire emergency floor	The system can exit the firefighter state only after the elevator arrives at the fire emergency floor.	0
Bit12	Not clearing car calls at reverse door open in firefighter running state	In the firefighter running state, the car calls that have been registered are not cleared at reverse door open.	0
Bit13	Reserved	-	0
Bit14	Opening door 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 be switched over to door close automatically.	0
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	Bit0 to Bit1: Direction determine mode (00: Automatically calculating direction; 01: Load direction determining; 10: Direction of nearest landing floor) Bit2: Stopping at evacuation parking floor Bit4: Compensation at startup Bit8: Emergency running time protection Bit10: Emergency buzzer output Bit12: Shorting stator braking mode switched over to controller drive Bit13: Mode of shorting stator braking mode switched over to controller drive Bit14: Emergency evacuation exit mode Bit15: Shorting stator braking function	0	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

F6-45 is used to select the attendant-related elevator functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

When F6-45 Bit2 = 1, the elevator stops at the emergency evacuation parking floor set in F6-49.

When F6-45 Bit2 = 0, the elevator stops at the nearest landing floor.

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

Bit	Function	Description	Default
Bit0	Direction determine mode	0 Automatically calculating direction; 0 Load direction determining (based on load cell data or half-load signal); 1 Direction of nearest landing floor	0
Bit1		0 Automatically calculating direction; 1 Load direction determining (based on load cell data or half-load signal); 0 Direction of nearest landing floor	0
Bit2	Stopping at evacuation parking floor	During evacuation running, the elevator arrives at the evacuation parking floor set in F6-49 (it must be a non-zero value and is a service floor). Otherwise, the elevator stops at the nearest floor.	0
Bit3	Reserved	-	0
Bit4	Compensation at startup	The non-load-cell startup is still valid in the process of evacuation running.	0
Bit5	Reserved	-	0
Bit6	Reserved	-	0
Bit7	Reserved	-	0
Bit8	Emergency running time protection	If the elevator does not arrive at the required floor after 50s emergency evacuation running time, E33 is reported. In this case, the function of switching over shorting stator braking mode to controller drive based on the time setting cannot be implemented.	0
Bit9	Reserved	-	0
Bit10	Emergency buzzer output	The buzzer tweets at intervals in the emergency evacuation running state.	0
Bit11	Reserved	-	0
Bit12	Shorting stator braking mode switched over to controller drive	It enables the function of switching over shorting stator braking mode to controller drive.	0
Bit13	Mode of shorting stator braking mode switched over to controller drive	0 Time setting If the time of the shorting stator braking mode exceeds 50s, the controller starts to drive the elevator.	0
		1 Speed setting If the speed is still smaller than the value of F6-48 after 10s in the shorting stator braking mode, the controller starts to drive the elevator.	
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.	0
		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 function	When this function is enabled (Bit15 = 1), the setting of related parameters becomes effective.	0

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
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	-	★
F6-47	Blinking advance time	0.0 to 15.0	1.0	s	☆
F6-48	Emergency evacuation switching speed	0.010 to 0.630	0.010	m/s	★
F6-49	Evacuation parking floor	0 to F6-00	0	-	★
F6-50	Parallel floor offset	0 to 40	0	-	★
F6-50 is used to when the bottom floors of two elevators in parallel control are different. This parameter supports direct parallel control without adjusting the top and bottom floors or shaft-auto-tuning again.					
F6-51	Static current	0.00 to 655.00	0	A	★
Group F7: Test function parameters					
F7-00	Car call floor registered	0 to F6-00	0	-	☆
F7-01	Up call floor registered	0 to F6-00	0	-	☆
F7-02	Down call floor registered	0 to F6-00	0	-	☆
These parameters are used to set the destination floors at elevator commissioning or repairing. They can be respectively used as the car call button, hall call up button and hall call down button. They remain valid after the commissioning command is input, and become invalid until they are set to 0 or the system suffers power failure.					
F7-03	Random running times	0 to 60000	0	-	☆
F7-04	Hall call forbidden	0: No 1: Yes	0	-	☆
F7-05	Door open forbidden	0: No 1: Yes	0	-	☆
F7-06	Overload function	0: Disabled 1: Enabled	0	-	☆
F7-07	Limit switch forbidden	0: No 1: Yes	0	-	☆
F7-08	Time interval of random running	0 to 1000	0	s	☆
F7-09	Braking force detection result	0: No operation 1: Qualified 2: Unqualified	0	-	●
F7-10	Countdown of braking force detection period	0 to 1440	1440	min	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F7-09 indicates the braking force detection result. When F7-09 is 2, the system prompts fault E66. Users need to check the brake and check that the detection result is qualified, and then reset this fault. F7-10 indicates the countdown of braking force detection period.					

F7-10 Value	System Action
1440 min (24 h)	-
720 min (12 h)	The system automatically starts countdown if the elevator stop time exceeds the energy-saving time threshold.
1430 min (10 min before 0)	The system clears car call and does not respond to hall call, automatically closes the door, and keeps buzzer output for 30s, and forces a braking force detection.

Group F8: Enhanced function parameters					
F8-00	Load for load cell auto-tuning	0 to 100	0	%	★
F8-01	Pre-torque selection	0: Pre-torque invalid 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Both load cell and automatic pre-torque compensation effective	2	-	★
F8-01 is used to set the pre-torque compensation mode at startup of the elevator. The values are as follows: 0: Pre-torque invalid Load cell auto-tuning is allowed. 1: Load cell pre-torque compensation With a load cell, the system implements the pre-torque compensation function. 2: Automatic pre-torque compensation The system automatically adjusts the compensated torque at startup without a load cell. 3: Both load cell and automatic pre-torque compensation effective The controller identifies the braking or driving state according to the load cell signal, and automatically calculates the required torque compensation value. The controller quickly corrects the torque compensation value based on small rotation of the encoder at the moment of startup. If a load cell is used, the system outputs the torque matching the load in advance to ensure the riding comfort at startup. The output torque is limited by F2-08 (Torque upper limit). When the load torque is greater than the set torque upper limit, the output torque of the system is the torque upper limit.					
F8-02	Pre-torque offset	0.0 to 100.0	50.0	%	★
F8-03	Drive gain	0.00 to 2.00	0.60	-	★
F8-04	Brake gain	0.00 to 2.00	0.60	-	★
F8-05	Current car load	0 to 255	0	-	●
F8-06	Car no-load load	0 to 255	0	-	★
F8-07	Car full-load load	0 to 255	100	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F8-08	Anti-nuisance function	0: Anti-nuisance function disabled 1: Nuisance judged by load cell 2: Nuisance judged by light curtain 4: Nuisance judged by light-load signal	0	-	☆
It is the criteria for judging whether nuisance exists. The values are as follows: 0: Anti-nuisance function disabled 1: Nuisance judged by load cell A load cell is required. The system judges whether nuisance exists by comparing the load cell data and the number of car calls. 2: Nuisance judged by light curtain The system determines that nuisance exists when the light curtain does not act 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 nuisance exists when the number of car calls is greater than a certain value. When the system determines that the elevator is in the nuisance state, it cancels all car calls. In this case, call calls need to be registered again.					
F8-09	Emergency evacuation operation speed at power failure	0.020 to F3-11	0.050	m/s	★
F8-10	Emergency evacuation operation mode at power failure	0: Motor not running 1: UPS 2: 48 V battery power supply	0	-	★
F8-11	Brake apply delay	0.200 to 1.500	0.600	s	★
F8-12	Fire emergency floor 2	0 to F6-00	0	-	★
F8-14	HCB communication rate	Bit4: Energy saving of HCB communication	0	-	☆
F8-16	Start address of hall call auxiliary command	0 to 40	0	-	☆
F8-16 is used to set the HCB start address of the back door in opposite door mode. HCB address of back door = HCB address of front door at the same floor + F8-16					
F8-17	Hall call address check	0 to 1	0	-	☆
Group F9: Time parameters					
F9-00	Idle time before returning to base floor	0 to 240	10	min	☆
F9-01	Time for fan and lamp to be turned off	0 to 240	2	min	☆
F9-02	Motor running time limit	0 to 45	45	s	★
F9-02 is used to set the running time limit of the motor. In normal running state, if the continuous motor running time in the same direction between two adjacent floors exceeds the setting of this parameter but no leveling signal is received, the system will perform protection. This parameter is mainly used for over-time protection in the case of steel rope slipping on the traction sheave. If this parameter is set to a value smaller than 3s, it becomes invalid.					
F9-03	Clock: year	2000 to 2100	Current year	YYYY	☆

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
F9-04	Clock: month	1 to 12	Current month	MM	☆
F9-05	Clock: day	1 to 31	Current day	DD	☆
F9-06	Clock: hour	0 to 23	Current hour	HH	☆
F9-07	Clock: minute	0 to 59	Current minute	MM	☆
F9-09	Accumulative running time	0 to 65535	0	h	●
F9-11	High byte of running times	0 to 9999	0	-	●
F9-12	Low byte or running times	0 to 9999	0	-	●
F9-09 to F9-12 are used to view the actual accumulative running time and running times of the elevator. Running times of the elevator = F9-11 x 10000 + F9-12.					
F9-13	Maintenance notification period	0 to 99	0	day	★
It is the forced maintenance notification function. When this parameter 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 of this parameter, the elevator enters the parking state and the system reports Err08, notifying that the elevator must be maintained and cannot run. Maintenance personnel need to power off and maintain the elevator, and then the system clears the value to 0 and starts counting again. If this parameter is set to 0, this function is disabled.					
Group FA: Keypad setting parameters					
FA-00	Keypad display selection	0: Reversed display of physical floor 1: Positive display of physical floor 2: Reversed display of hall call floor 3: Positive display of hall call floor	3	-	☆
FA-01	Display in running state	1 to 65535	65535	-	☆
FA-02	Display in stop state	1 to 65535	65535	-	☆
FA-03	Current encoder angle	0.0 to 359.9	0.0	Degree (°)	●
FA-05	MCB board software	0 to 65535	0	-	●
FA-06	Drive board software	0 to 65535	0	-	●
FA-07	Heatsink temperature	0 to 100	0	°C	●
FA-11	Pre-torque current	0.0 to 200.0	0	%	●
FA-12	Logic information	0 to 65535	0	-	●
FA-13	Curve information	0 to 65535	0	-	●
FA-14	Set speed	0.000 to 4.000	0	m/s	●
FA-15	Feedback speed	0.000 to 4.000	0	m/s	●
FA-16	Bus voltage	0 to 999.9	0	V	●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FA-17	Present position	0.0 to 300.0	0	m	●
FA-18	Output current	0.0 to 999.9	0	A	●
FA-19	Output frequency	0.00 to 99.99	0	Hz	●
FA-20	Torque current	0.0 to 999.9	0	A	●
FA-21	Output voltage	0 to 999.9	0	V	●
FA-22	Output torque	0 to 100	0	%	●
FA-23	Output power	0.00 to 99.99	0	kW	●
FA-24	Communication interference	0 to 65535	0	-	●
FA-26	Input state 1	0 to 65535	0	-	●
FA-27	Input state 2	0 to 65535	0	-	●
FA-28	Input state 3	0 to 65535	0	-	●
FA-30	Input state 5	0 to 65535	0	-	●
FA-31	Output state 1	0 to 65535	0	-	●
FA-32	Output state 2	0 to 65535	0	-	●
FA-33	Car input state	0 to 65535	0	-	●
FA-34	Car output state	0 to 65535	0	-	●
FA-35	Hall sate	0 to 65535	0	-	●
FA-36	System state 1	0 to 65535	0	-	●
FA-37	System state 2	0 to 65535	0	-	●
FA-38	Maximum floor running time	0 to 200	0	s	●
It is used to set the time for the elevator to run from the bottom floor to the top floor at normal speed. The smaller of FA-38+10s and F9-02 is used as the threshold for motor running protection. If the time that the leveling signal keeps unchanged exceeds the threshold, the system prompts fault E30 and stops running.					
FA-46	Hall call communication state 1	0 to 65535 (floors 1 to 16)	0	-	●
FA-47	Hall call communication state 2	0 to 65535 (floors 17 to 32)	0	-	●
FA-48	Hall call communication state 3	0 to 65535 (floors 33 to 40)	0	-	●
FA-50	Extension hall call communication state 1	0 to 65535 (floors 1 to 16)	0	-	●
FA-51	Extension hall call communication state 2	0 to 65535 (floors 17 to 32)	0	-	●
FA-52	Extension hall call communication state 3	0 to 65535 (floors 33 to 40)	0	-	●
FA-58	Version display	0: No equipment room monitoring 1: Having equipment room extension board 2: Having car extension board	0	-	☆
FA-59	Extension board software version	0 to 65535	0	-	●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Group Fb: Door function parameters					
Fb-00	Number of door machine(s)	1 to 2	1	-	★
Fb-01	CTB software	00 to 999	0	-	●
Fb-02	Door machine 1 service floors 1 (floors 1–16)	0 to 65535	65535	-	☆
Fb-03	Door machine 1 service floors 2 (floors 17–32)	0 to 65535	65535	-	☆
Fb-04	Door machine 2 service floors 1 (floors 1 to 16)	0 to 65535	65535	-	☆
Fb-05	Door machine 2 service floors 2 (floors 17 to 32)	0 to 65535	65535	-	☆
These parameters are used to set the service floors of door machine 1 and door machine 2. The setting method is the same as that for F6-05.					
Fb-06	Door open protection time	5 to 99	10	s	☆
Fb-07	Arrival gong output delay	0 to 1000	0	ms	☆
Fb-08	Door close protection time	5 to 99	15	s	☆
Fb-09	Door open/close protection times	0 to 20	0	-	☆
Fb-10	Door state of standby elevator	0: Closing the door as normal at base floor 1: Waiting with door open at base floor 2: Waiting with door open at each floor	0	-	☆
Fb-11	Door open holding time for hall call	1 to 1000	5	s	☆
Fb-12	Door open holding time for car call	1 to 1000	3	s	☆
Fb-13	Door open holding time at base floor	1 to 1000	10	s	☆
Fb-14	Door open delay	10 to 1000	30	s	☆
Fb-15	Special door open holding time	10 to 1000	30	s	☆
Fb-16	Manual door open holding time	1 to 60	5	s	☆
Fb-17	Holding time for forced door close	5 to 180	120	s	☆
Fb-18	Door machine 1 service floors 3 (floors 33–40)	0 to 65535	65535	-	☆
Fb-19	Door machine 2 service floors 3 (floors 33–40)	0 to 65535	65535	-	☆
Fb-20	Door lock waiting time of manual door	0 to 60	0	-	☆
Fb-24	UCMP detection program version	0 to 65535	1	-	●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Group FC: Protection function parameters					
FC-00	Program control for protection function	Bit0: Short circuit to ground detection at power-on Bit2: Decelerating to stop at valid light curtain Bit9: Mode without door open/ close limit	0	-	★

FC-00 is used to set program control related to protection functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

The functions defined by the binary bits of FC-00 are described in the following table.

Bit	Function	Description	Default
Bit0	Short circuit to ground detection at power-on	Whether the motor is short circuited to ground is detected at power-on. If the motor is short circuited to ground, the controller blocks the output immediately, and reports the fault.	0
Bit1	Reserved	-	0
Bit2	Ramp to stop at valid light curtain	During normal-speed running, the elevator decelerates to stop immediately after the light curtain acts, and then runs to the registered destination floor after the light curtain restores. This function is mainly 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 door open/close limit. The system determines that door open limit is implemented 3s after the door open command is output and door close limit is implemented 3s after the door close command is output.	0

FC-01	Program control 2 for protection function	Bit0: Overload protection Bit1: Canceling protection at output phase loss Bit2: Canceling over-modulation function Bit4: Light curtain judgment at door close limit Bit5: Canceling SPI communication judgment Bit14: Canceling protection at input phase loss	65	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

FC-01 is used to set program control related to protection functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

The functions defined by the binary bits of FC-01 are described in the following table.

Bit	Function	Description	Default
Bit0	Overload protection	It sets whether to implement overload protection.	1
Bit1	Canceling protection at output phase loss	It sets whether to implement protection at output phase loss.	0
Bit4	Light curtain judgment at door close limit	At door close limit, the door re-opens if the light curtain is valid.	0
Bit5	Canceling SPI communication judgment	It sets whether to implement wire-breaking detection on SPI communication between the MCB and the drive board.	0
Bit6 to Bit8	Reserved	-	0
Bit14	Canceling protection at input phase loss	It sets whether to implement protection at input phase loss.	0

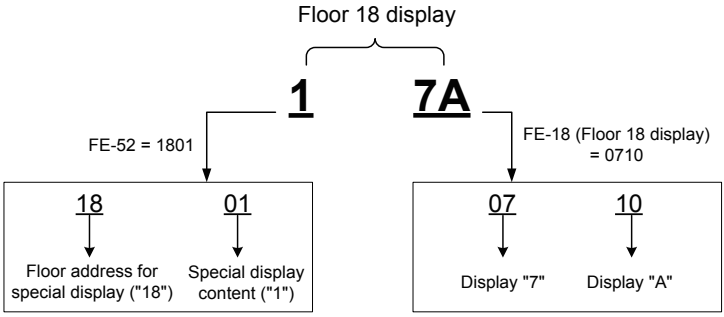
FC-02	Overload protection coefficient	0.50 to 10.00	1.00	-	★
FC-03	Overload pre-warning coefficient	50 to 100	80	%	★
FC-04	Opposite door selection	0: Simultaneous control 1: Hall call independent, car call simultaneous 2: Hall call independent, car call manual control 3: Hall call independent, car call independent	0	-	★
FC-11	Logic information of designated fault	0 to 9999	0	-	●
FC-12	Curve information of designated fault	0 to 65535	0	-	●
FC-13	Set speed upon designated fault	0 to 1231	0	MM.DD	●
FC-14	Feedback speed upon designated fault	0 to 23.59	0	HH.MM	●
FC-15	Bus voltage upon designated fault	0 to 9999	0	-	●
FC-16	Current position upon designated fault	0 to 65535	0	-	●
FC-17	Output current upon designated fault	0 to 1231	0	MM.DD	●
FC-18	Output frequency upon designated fault	0 to 23.59	0	HH.MM	●
FC-19	Torque current upon designated fault	0 to 9999	0	-	●
FC-20	1st fault code	0 to 65535	0	-	●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
FC-21	1st fault subcode	0 to 1231	0	MM.DD	●
FC-22	1st fault month and day	0 to 23.59	0	HH.MM	●
FC-23	1st fault hour and minute	0 to 9999	0	-	●
FC-24	2nd fault code	0 to 65535	0	-	●
FC-25	2nd fault subcode	0 to 1231	0	MM.DD	●
FC-26	2nd fault month and day	0 to 23.59	0	HH.MM	●
FC-27	2nd fault hour and minute	0 to 9999	0	-	●
FC-28	3rd fault code	0 to 65535	0	-	●
FC-29	3rd fault subcode	0 to 1231	0	MM.DD	●
FC-30	3rd fault month and day	0 to 23.59	0	HH.MM	●
FC-31	3rd fault hour and minute	0 to 9999	0	-	●
FC-32	4th fault code	0 to 65535	0	-	●
FC-33	4th fault subcode	0 to 1231	0	MM.DD	●
FC-34	4th fault month and day	0 to 23.59	0	HH.MM	●
... ...					
FC-207	60th fault code	0 to 9999	0	-	●
FC-208	60th fault subcode	0 to 65535	0	-	●
FC-209	60th fault month and day	0 to 1231	0	MM.DD	●
FC-210	60th fault hour and minute	0 to 23.59	0	HH.MM	●
Group Fd: Communication parameters					
Fd-00	Baud rate	0: 9600 1: 38400	1	bps	★
Fd-02	Local address	0 to 127	1	-	★
Fd-03	Communication response delay	0 to 20	0	ms	★
Fd-04	Communication timeout	0 to 60.0	0.0	s	★
Fd-05	Re-leveling stop delay	0.00 to 2.00	0.00	s	★
Fd-05 is used to set the delay from the moment when the elevator receives the leveling signal to the moment when it starts to decelerate to stop.					
Fd-07	HCB:JP1 input	0: Reserved 1: Elevator lock signal 2: Fire emergency signal 3: Present floor forbidden	1	-	★
Fd-08	HCB:JP2 input	4: VIP floor signal 5: Security floor signal 6 Door close button signal 7: Second fire emergency floor signal	2	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Fd-09	HCB:JP1 output	0: Invalid 1: Up arrival indicator 2: Down arrival indicator	1	-	★
Fd-10	HCB:JP2 output	3: Fault output 4: Non-door zone stop output 5: Non-service state output 6: Door close button indicator output	2	-	★
Fd-11	Extension board 1 X1 input	0: No function 1: Fire emergency signal NO 2: Overload signal NO 3: Full-load signal NO 4: Firefighter running signal NO 5: Door machine 1 light curtain signal NO 6: Door machine 2 light curtain signal NO 7: Brake travel switch 1 NO 8: UPS enabled NO 9: Elevator lock signal NO 10: Safety circuit 2 NO 11: Synchronous motor self-lock feedback NO 12: Safety circuit 2 feedback NO 13: Door machine 1 safety edge signal NO 14: Door machine 2 safety edge signal NO 15: Motor overheat signal NO # 16: Earthquake signal NO 17: Back door forbidden signal NO # 18: Light-load signal NO # 19: Half-load signal NO # 20: Fire emergency floor switchover signal NO 21: Virtual floor signal NO 22: Door machine 1 open input NO 23: Door machine 2 open input NO 24: Brake travel switch 2 input NO 25: External fault signal NO 26: Terminal floor signal NO 27: Door 2 selection NO 28: Single/Double door selection NO Value for NC setting of a signal = Value for NO setting of this parameter + 32	0	-	★
Fd-12	Extension board 1 X2 input		0	-	★
Fd-13	Extension board 1 X3 input		0	-	★
Fd-14	Extension board 1 X4 input		0	-	★
Fd-15	Extension board 1 X5 input		0	-	★
Fd-16	Extension board 1 X6 input		0	-	★
Fd-17	Extension board 1 X7 input		0	-	★
Fd-18	Extension board 1 X8 input		0	-	★
Fd-19	Extension board 1 X9 input		0	-	★
Fd-20	Extension board 1 X10 input		0	-	★
Fd-21	Extension board 2 X1 input		0	-	★
Fd-22	Extension board 2 X2 input		0	-	★
Fd-23	Extension board 2 X3 input		0	-	★
Fd-24	Extension board 2 X4 input		0	-	★
Fd-25	Extension board 2 X5 input		0	-	★
Fd-26	Extension board 2 X6 input		0	-	★
Fd-27	Extension board 2 X7 input		0	-	★
Fd-28	Extension board 2 X8 input		0	-	★
Fd-29	Extension board 2 X9 input		0	-	★
Fd-30	Extension board 2 X10 input		0	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Fd-31	Extension board 1 Y1 output	0: No function 1: Door machine 1 open 2: Door machine 1 close 3: Door machine 2 open 4: Door machine 2 close 5: Brake and RUN contactors healthy (contactors abnormal if E37 and E36 are reported) 6: Fault state 7: Running monitor 8: PMSM self-lock 9: System healthy 10: Emergency buzzer control 11: Higher-voltage startup of brake 12: Elevator running in up direction 13: Lamp/Fan running 14: Medical sterilization # 15: Non-door zone stop # 16: Electric lock # 17: Non-service state 18: Emergency evacuation completed 19: Fire emergency (return to fire emergency floor and firefighter running) 20: Emergency at power failure 21: Door lock active 22: Running at night	0	-	★
Fd-32	Extension board 1 Y2 output		0	-	★
Fd-33	Extension board 1 Y3 output		0	-	★
Fd-34	Extension board 1 Y4 output		0	-	★
Fd-35	Extension board 1 Y5 output		0	-	★
Fd-36	Extension board 1 Y6 output		0	-	★
Fd-37	Extension board 1 Y7 output		0	-	★
Fd-38	Extension board 1 Y8 output		0	-	★
Fd-39	Extension board 1 Y9 output		0	-	★
Fd-40	Extension board 1 Y10 output		0	-	★
Fd-41	Extension board 2 Y1 output		0	-	★
Fd-42	Extension board 2 Y2 output		0	-	★
Fd-43	Extension board 2 Y3 output		0	-	★
Fd-44	Extension board 2 Y4 output		0	-	★
Fd-45	Extension board 2 Y5 output		0	-	★
Fd-46	Extension board 2 Y6 output		0	-	★
Fd-47	Extension board 2 Y7 output		0	-	★
Fd-48	Extension board 2 Y8 output		0	-	★
Fd-49	Extension board 2 Y9 output		0	-	★
Fd-50	Extension board 2 Y10 output		0	-	★
Group FE: Elevator function parameters					
FE-00	Collective selective mode	0: Full collective selective 1: Down collective selective 2: Up collective selective	0	-	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
It is used to set the collective selective mode of the 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 responds to down hall calls but does not respond to up hall calls. 2: Up collective selective. The elevator responds to hall up calls but does not respond to hall down calls.					
FE-01	Floor 1 display	The two high digits indicate the display code of the ten's digit, and the two low digits indicate the display code of the unit's digit. 00...09: Display "0"..."9" 01: Display "1" 10: Display "A" 11: Display "B" 12: Display "G" 13: Display "H" 14: Display "L" 15: Display "M" 16: Display "P" 17: Display "R" 18: Display "-" 19: No display 20: Display "12" 21: Display "13" 22: Display "23" 23: Display "C" 24: Display "D" 25: Display "E" 26: Display "F" 27: Display "I" 28: Display "J" 29: Display "K" 30: Display "N" 31: Display "O" 32: Display "Q" 33: Display "S" 34: Display "T" 35: Display "U" 36: Display "V" 37: Display "W" 38: Display "X" 39: Display "Y" 40: Display "Z" 41: Display "15" 42: Display "17" 43: Display "19"	1901	-	☆
FE-02	Floor 2 display		1902	-	☆
FE-03	Floor 3 display		1903	-	☆
FE-04	Floor 4 display		1904	-	☆
FE-05	Floor 5 display		1905	-	☆
FE-06	Floor 6 display		1906	-	☆
FE-07	Floor 7 display		1907	-	☆
FE-08	Floor 8 display		1908	-	☆
FE-09	Floor 9 display		1909	-	☆
FE-10	Floor 10 display		0100	-	☆
FE-11	Floor 11 display		0101	-	☆
FE-12	Floor 12 display		0102	-	☆
FE-13	Floor 13 display		0103	-	☆
FE-14	Floor 14 display		0104	-	☆
FE-15	Floor 15 display		0105	-	☆
Floor 16 to floor 30 display			...		
FE-31	Floor 31 display		0301	-	☆
FE-35	Floor 32 display		0302	-	☆
FE-36	Floor 33 display		0303	-	☆
FE-37	Floor 34 display		0304	-	☆
FE-38	Floor 35 display		0305	-	☆
FE-39	Floor 36 display		0306	-	☆
FE-40	Floor 37 display		0307	-	☆
FE-41	Floor 38 display		0308	-	☆
FE-42	Floor 39 display		0309	-	☆
FE-43	Floor 40 display		0400	-	☆
FE-52	Highest digit selection 1		0	-	☆
FE-53	Highest digit selection 2		0	-	☆
FE-54	Highest digit selection 3		0	-	☆
FE-55	Highest digit selection 4		0	-	☆
FE-56	Highest digit selection 5		0	-	☆

<table>
<tr><th>Parameter No.</th><th>Parameter Name</th><th>Setting Range</th><th>Default</th><th>Unit</th><th>Property</th></tr>
<tr><td colspan="6">
FE-52 to FE-56 are used to set special floor display.
When the 2-digit display cannot meet the requirement, you can add the third-digit display by setting these parameters as follows:
1. Set the two high digits for indicating the floor address that requires special display, and set the two low digits for indicating the display content.
For example, if floor 18 needs to be displayed as “17A”, set FE-18 to 0710 (displaying “7A”) and then set the FE-52 to 1801 (displaying “1”).
Figure 4-9 Setting floor 18 display to “17A”


2. Set F8-14 Bit0 to 1.
3. Power off the system and power it on again.
</td></tr>
<tr><td>FE-32</td><td>Elevator function selection 1</td><td>Bit2: Re-leveling function
Bit3: Door pre-open function
Bit4: Stuck hall call cancellation
Bit5: Night security floor function
Bit6: Down collective selective peak service
Bit7: Parallel/Group control peak service
Bit8: Time-based service floor function
Bit9: VIP function
Bit11: Car call deletion
Bit12: Hall call deletion</td><td>34816</td><td>-</td><td>☆</td></tr>
</table>

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

FE-32 is used to select the elevator functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

The functions defined by the binary bits of FE-32 are described in the following table.

Bit	Function	Description	Default
Bit0 to Bit1	Reserved	-	0
Bit2	Re-leveling function	The elevator performs re-leveling at a low speed with door open. An external shorting door lock circuit contactor needs to be used together.	0
Bit3	Door pre-open function	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 by means of the shorting door lock circuit contactor and outputs the door open signal, implementing door pre-open. This improves the elevator use efficiency.	0
Bit4	Stuck hall call cancellation	The system automatically identifies the state of the 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 and opens the door, and then runs to the destination floor.	0
Bit6	Down collective selective peak service	The peak service at down collective selective is used.	0
Bit7	Parallel/Group control peak service	The peak service is used.	0
Bit8	Time-based service floor function	For details, see the description of related parameters in group F6.	0
Bit9	VIP function	The VIP function is used.	0
Bit10	Reserved	-	0
Bit11	Car call deletion	A call can be deleted by pressing the button twice consecutively.	1
Bit12	Hall call deletion		0

FE-33	Elevator function selection	Bit1: Door open holding at open limit Bit2: Door close command not output upon door close limit Bit4: Auto reset for RUN and brake contactor stuck Bit5: Slow-down switch stuck detection Bit7: Forced door close Bit15: Opposite door independent control	36	-	☆

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property

FE-33 is used to select the elevator functions. Each bit of the parameter defines a function, as described in the following table.

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. For details on how to view and set this parameter, see the descriptions in section 8.21.1.

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

Bit	Function	Description	Default
Bit1	Door open holding at open limit	The system still outputs the door open command upon door open limit.	0
Bit2	Door close command not output upon door close limit	The system stops outputting the door close command upon door close limit.	1
Bit4	Auto reset for RUN and brake contactor stuck	If the feedback of the RUN and brake contactors is abnormal, faults Err36 and Err37 are reported, and you need to manually reset the system. With this function, the system resets automatically after the fault symptom disappears. A maximum of three auto reset times are supported.	0
Bit5	Slow-down switch stuck detection	The system detects the state of slow-down switches. Once detecting that a slow-down switch is stuck, the system instructs the elevator to slow down immediately and reports a corresponding fault.	1
Bit7	Forced door close	If the door still does not close within the time set in Fb-17 in automatic state, the system outputs the forced door close signal; at this moment, the light curtain becomes invalid and the buzzer tweets.	0
Bit15	Opposite door independent control	-	0

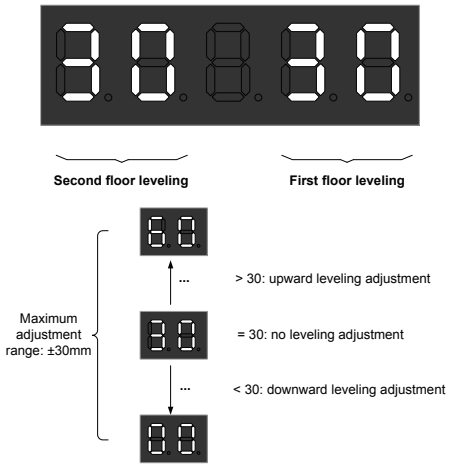
Group FF: Factory parameters					
Group FJ: Factory parameters					
Group FP: User parameters					
FP-00	User password	0: No password 01 to 65535	0	-	☆
FP-01	Parameter update	0: No operation 1: Restore default setting (except group F1) 2: Clear fault records 3: Clear shaft parameters	0	-	★
FP-02	User-defined parameter display	0: Invalid 1: Valid	0	-	☆
FP-05	Contract No. 2	0 to 65535	0	-	☆
FP-06	Contract No. 1	0 to 65535	5555	-	☆
Group Fr: Leveling adjustment parameters					
Fr-00	Leveling adjustment function	0: Disabled 1: Enabled	0	-	★
Fr-01	Leveling adjustment record 1	0 to 60060	30030	mm	★
~	~	0 to 60060	30030	mm	★

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
Fr-20	Leveling adjustment record 20	0 to 60060	30030	mm	★

Fr-01 to Fr-20 record the leveling adjustment values. Each parameter records the adjustment information of two floors, and therefore, the adjustment information of 40 floors can be recorded totally.

The method of viewing the record is shown in the following figure.

Figure 4-10 Viewing the leveling adjustment record



As shown in the preceding figure, the left two LEDs and the right two LEDs respectively show the adjustment bases of the first floor and second floor. If the value is larger than 30, it is upward leveling adjustment; if the value is smaller than 30, it is downward leveling adjustment. The default value “30” indicates that there is no leveling adjustment. The maximum adjustment range is ±30 mm.

The leveling adjustment method is as follows:

Ensure that shaft auto-tuning is completed successfully, and the elevator runs properly at normal speed.

Set Fr-00 to 1 to enable the car leveling adjustment function. Then, the elevator shields hall calls, automatically runs to the top floor, and keeps the door open after arrival. If the elevator is at the top floor, it directly keeps the door open.

Go into the car, press the top floor button on the CCB once, and the leveling position is changed 1 mm upward; press the bottom floor button on the CCB once, and the leveling position is changed 1 mm downward. The value is displayed on the car display board.

Positive value: up arrow + value, negative value: down arrow + value, adjustment range: ±30 mm

After completing adjustment for the present floor, press the top floor button and bottom floor button at the same time to save the adjustment result. The car display restores to the normal state. If the leveling position of the present floor need not be adjusted, press the top floor button and bottom floor button at the same time to exit the leveling adjustment state. Then, car calls can be registered.

Press the door close button, and press the button for the next floor. The elevator runs to the next floor and keeps the door open after arrival. Then, you can perform leveling adjustment.

After completing adjustment for all floors, set Fr-00 to 0 to disable the leveling adjustment function. Otherwise, the elevator cannot be used.

Group E0: 1st fault details

The system prompts and records faults. The keypad displays the fault code and subcode in scrolling mode, for example, “ E22-101

E0-00	1st fault code	0 to 9999	0		●
E0-01	1st fault subcode	0 to 65535	0		●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
E0-02	Month and day of 1st fault	0 to 1231	0	MM.DD	●
E0-03	Time of 1st fault	0 to 23.59	0	HH.MM	●
E0-04	Logic information upon 1st fault	0 to 65535	0		●
E0-05	Curve information upon 1st fault	0 to 65535	0		●
E0-06	Speed reference upon 1st fault	0.000 to 4.000	0	m/s	●
E0-07	Speed feedback upon 1st fault	0.000 to 4.000	0	m/s	●
E0-08	Bus voltage upon 1st fault	0 to 999.9	0	V	●
E0-09	Position upon 1st fault	0.0 to 300.0	0	m	●
E0-10	Output current upon 1st fault	0.0 to 999.9	0	A	●
E0-11	Output frequency upon 1st fault	0.00 to 99.99	0	Hz	●
E0-12	Torque current upon 1st fault	0.0 to 999.9	0	A	●
E0-13	Output voltage upon 1st fault	0 to 999.9	0	V	●
E0-14	Output torque upon 1st fault	0 to 200.0	0	%	●
E0-15	Output power upon 1st fault	0.00 to 99.99	0	kW	●
E0-16	Communication interference upon 1st fault	0 to 65535	0		●
E0-17	Encoder interference upon 1st fault	0 to 65535	0		●
E0-18	Input state 1 upon 1st fault	0 to 65535	0		●
E0-19	Input state 2 upon 1st fault	0 to 65535	0		●
E0-20	Input state 3 upon 1st fault	0 to 65535	0		●
E0-21	Input state 4 upon 1st fault	0 to 65535	0		●
E0-22	Input state 5 upon 1st fault	0 to 65535	0		●
E0-23	Output state 1 upon 1st fault	0 to 65535	0		●
E0-24	Output state 2 upon 1st fault	0 to 65535	0		●
E0-25	Car input state upon 1st fault	0 to 65535	0		●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
E0-26	Car output state upon 1st fault	0 to 65535	0		●
E0-27	Hall states upon 1st fault	0 to 65535	0		●
E0-28	System state 1 upon 1st fault	0 to 65535	0		●
E0-29	System state 2 upon 1st fault	0 to 9999	0		●
…					
E9-00	10th fault code	0 to 9999	0		●
E9-01	10th fault subcode	0 to 65535	0		●
E9-02	Month and day of 10th fault	0 to 1231	0	MM.DD	●
E9-03	Time of 10th fault	0 to 23.59	0	HH.MM	●
E9-04	Logic information upon 10th fault	0 to 65535	0		●
E9-05	Curve information upon 10th fault	0 to 65535	0		●
E9-06	Speed reference upon 10th fault	0.000 to 4.000	0	m/s	●
E9-07	Speed feedback upon 10th fault	0.000 to 4.000	0	m/s	●
E9-08	Bus voltage upon 10th fault	0 to 999.9	0	V	●
E9-09	Position upon 10th fault	0.0 to 300.0	0	m	●
E9-10	Output current upon 10th fault	0.0 to 999.9	0	A	●
E9-11	Output frequency upon 10th fault	0.00 to 99.99	0	Hz	●
E9-12	Torque current upon 10th fault	0.0 to 999.9	0	A	●
E9-13	Output voltage upon 10th fault	0 to 999.9	0	V	●
E9-14	Output torque upon 10th fault	0 to 200.0	0	%	●
E9-15	Output power upon 10th fault	0.00 to 99.99	0	kW	●
E9-16	Communication interference upon 10th fault	0 to 65535	0		●
E9-17	Encoder interference upon 10th fault	0 to 65535	0		●
E9-18	Input state 1 upon 10th fault	0 to 65535	0		●
E9-19	Input state 2 upon 10th fault	0 to 65535	0		●
E9-20	Input state 3 upon 10th fault	0 to 65535	0		●

Parameter No.	Parameter Name	Setting Range	Default	Unit	Property
E9-21	Input state 4 upon 10th fault	0 to 65535	0		●
E9-22	Input state 5 upon 10th fault	0 to 65535	0		●
E9-23	Output state 1 upon 10th fault	0 to 65535	0		●
E9-24	Output state 2 upon 10th fault	0 to 65535	0		●
E9-25	Car input state upon 10th fault	0 to 65535	0		●
E9-26	Car output state upon 10th fault	0 to 65535	0		●
E9-27	Hall states upon 10th fault	0 to 65535	0		●
E9-28	System state 1 upon 10th fault	0 to 65535	0		●
E9-29	System state 2 upon 10th fault	0 to 65535	0		•

Chapter 5 Troubleshooting

5.1 Description of Fault Levels

The NICE3000^{new} has almost 70 pieces of alarm information and protective functions. It monitors various input signals, running conditions and feedback signals. If a fault occurs, the system implements the relevant protective function and displays the fault code.

The controller is a complicated electronic control system and the displayed fault information is graded into five levels according to the severity. The faults of different levels are handled according to the following table.

Table 5-1 Fault levels

Category	Action	Remarks
Level 1	1. Display the fault code. 2. Output the fault relay action command.	1A: The elevator running is not affected on any condition.
Level 2	1. Display fault code. 2. Output the fault relay action command. 3. Continue normal running of the elevator.	2A: The parallel/group control function is disabled.
		2B: The door pre-open/re-leveling function is disabled.
Level 3	1. Display the fault code. 2. Output the fault relay action command. 3. Stop output and apply the brake immediately after stop.	3A: In low-speed running, the elevator stops at special deceleration rate, and cannot restart.
		3B: In low-speed running, the elevator does not stop. In normal-speed running, the elevator stops, and then can start running at low speed after a delay of 3s.
Level 4	1. Display the fault code. 2. Output the fault relay action command. 3. In distance control, the elevator decelerates to stop and cannot run again.	4A: In low-speed running, the elevator stops under special deceleration rate, and cannot restart.
		4B: In low-speed running, the elevator does not stop. In normal-speed running, the elevator stops, and then can start running at low speed after a delay of 3s.
		4C: In low-speed running, the elevator does not stop. In normal-speed running, the elevator stops, and then can start running at low speed after a delay of 3s.
Level 5	1. Display the fault code. 2. Output the fault relay action command. 3. 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. In normal-speed running, the elevator stops, and then can start running at low speed after a delay of 3s.

5.2 Fault Codes and Troubleshooting

If a fault is reported, the system performs corresponding processing based on the fault level. Handle the fault according to the possible causes described in the following table.

Table 5-2 Fault codes and troubleshooting

Fault Code	Name	Possible Causes	Solution	Level
 Err02	Overcurrent during acceleration	The main circuit output is grounded or short circuited.	• Check whether the motor cables and PE cable are connected incorrectly. • Check whether the shorting PMSM stator contactor causes short circuit at the controller output side. • Check whether the motor cables have damaged jacket.	5A
		Motor auto-tuning is performed improperly.	Set motor parameters correctly according to the motor nameplate, and perform motor auto-tuning again.	
		The encoder signal is incorrect.	• Check whether encoder pulses per revolution (PPR) is set correctly. • Check whether the encoder signal is interfered with, whether the encoder cable runs through the duct independently, whether the cable 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 reliably by observing whether the encoder is stable during normal-speed running. • Check whether the encoder wirings are correct. For asynchronous motor, perform SVC and compare the current to judge whether the encoder works properly.	
		The motor phase sequence is incorrect.	Replace any two of motor UVW cables.	
		The deceleration rate is too short.	Reduce the acceleration rate.	

Fault Code	Name	Possible Causes	Solution	Level
 Err03	Overcurrent during deceleration	The main circuit output is grounded or short circuited.	• Check whether the motor cables and PE cable are connected incorrectly. • Check whether the shorting PMSM stator contactor causes short circuit at the controller output side. • Check whether the motor cables have damaged jacket.	5A
		Motor auto-tuning is performed improperly.	Set motor parameters correctly according to the motor nameplate, and perform motor auto-tuning again.	
		The encoder signal is incorrect.	• Check whether encoder pulses per revolution (PPR) is set correctly. • Check whether the encoder signal is interfered with, whether the encoder cable runs through the duct independently, whether the cable 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 reliably by observing whether the encoder is stable during normal-speed running. • Check whether the encoder wirings are correct. For asynchronous motor, perform SVC and compare the current to judge whether the encoder works properly.	
		The deceleration curve is too steep.	Reduce the deceleration rate.	
 Err04	Overcurrent at constant speed	The main circuit output is grounded or short circuited.	• Check whether the motor cables and PE cable are connected incorrectly. • Check whether the shorting PMSM stator contactor causes short circuit at the controller output side. • Check whether the motor cables have damaged jacket.	5A
		Motor auto-tuning is performed improperly.	Set motor parameters correctly according to the motor nameplate, and perform motor auto-tuning again.	
		The encoder signal is incorrect.	• Check whether encoder pulses per revolution (PPR) is set correctly. • Check whether the encoder signal is interfered with, whether the encoder cable runs through the duct independently, whether the cable 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 reliably by observing whether the encoder is stable during normal-speed running. • Check whether the encoder wirings are correct. For asynchronous motor, perform SVC and compare the current to judge whether the encoder works properly.	

Fault Code	Name	Possible Causes	Solution	Level
 Err05	Overvoltage during acceleration	The input voltage is too high.	• Check whether the input voltage is too high. • Observe whether the bus voltage is too high (normal: 540 to 580 V for 380 voltage input).	5A
		The resistance of the braking resistor is excessive, or the braking unit fails.	• Check for 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: a. Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable. b. Check whether the resistance is proper based on the recommendation and select a proper braking resistor. If the resistance of the braking resistor is proper and overvoltage occurs each time when the elevator reaches the target speed, decrease the values of F2-01 or F2-04 to reduce the curve following error and prevent overvoltage due to system overshoot.	
		The acceleration rate is too short.	Reduce the acceleration rate.	
 Err06	Overvoltage during deceleration	The input voltage is too high.	• Check whether the input voltage is too high. • Observe whether the bus voltage is too high (normal: 540 to 580 V for 380 voltage input).	5A
		The resistance of the braking resistor is excessive, or the braking unit fails.	• Check for 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: a. Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable. b. Check whether the resistance is proper based on the recommendation and select a proper braking resistor. If the resistance of the braking resistor is proper and overvoltage occurs each time when the elevator reaches the target speed, decrease the values of F2-01 or F2-04 to reduce the curve following error and prevent overvoltage due to system overshoot.	
		The deceleration rate is too short.	Reduce the deceleration rate.	

Fault Code	Name	Possible Causes	Solution	Level
 Err07	Overvoltage at constant speed	The input voltage is too high.	• Check whether the input voltage is too high. • Observe whether the bus voltage is too high (normal: 540 to 580 V for 380 voltage input).	5A
		The resistance of the braking resistor is excessive, or the braking unit fails.	• Check for 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: a. Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable. b. Check whether the resistance is proper based on the recommendation and select a proper braking resistor. If the resistance of the braking resistor is proper and overvoltage occurs each time when the elevator reaches the target speed, decrease the values of F2-01 or F2-04 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.	1. Power-off and maintain the elevator. 2. Disable the maintenance notification function by setting F9-13 to 0. 3. Contact us or our agent directly.	5A
 Err09	Undervoltage	Instantaneous power failure occurs on the input power supply.	• Check whether the power fails during running. • Check whether wiring of all power input cables is secure.	5A
		The input voltage is too low.	Check whether the external power voltage is too low.	
		The drive control board fails.	Contact our agent or Inovance directly..	

Fault Code	Name	Possible Causes	Solution	Level
 Err10	Controller overload	The mechanical resistance is too large.	• 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 whether the balance coefficient is proper.	
		The encoder feedback signal is abnormal.	Check whether the encoder feedback signal and parameter setting are correct, and whether the initial angle of the encoder for the PMSM is correct.	
		Motor auto-tuning is not performed properly (the elevator running current is higher than the normal in this case).	Check the motor parameter setting and perform motor auto-tuning again. If this fault is reported when the slip experiment is carried on, perform the slip experiment by using the function set in F3-24.	
		The motor phase sequence is incorrect.	Replace any two phases of motor UVW cables.	
		A controller of a small power class is used.	The current reaches above the rated AC drive current when the elevator car without load is in constant speed running.	
 Err11	Motor overload	The mechanical resistance is too large.	• 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 whether the balance coefficient is proper.	
		Motor auto-tuning is not performed properly (the elevator running current is higher than the normal in this case).	Check the motor parameter setting and perform motor auto-tuning again. If this fault is reported when the slip experiment is carried on, perform the slip experiment by using the function set in F3-24.	
		The motor phase sequence is incorrect.	Replace any two phases of motor UVW cables.	
		A motor of a small power class is used.	The current reaches above the rated motor current when the elevator car without load is in constant speed running.	
 Err12	Power supply phase loss	The power input phases are not symmetric.	• Check whether any phase of the three-phase power supply is lost. • Check whether the three phases of power supply are balanced. • Check whether the power voltage is normal, and adjust the power voltage. • Set FC-01 bit 14 to 1 to cancel detection of this fault for 220 V models.	5A
		The drive control board fails.	Contact us or our agent directly.	

Fault Code	Name	Possible Causes	Solution	Level
 Err13	Power output phase loss	The output wiring of the main circuit is loose.	• Check whether the motor wiring is secure. • Check whether the RUN contactor on the output side is normal.	5A
		The motor is damaged.	Eliminate the motor fault.	
 Err14	IGBT overheat	The ambient temperature is too high.	Reduce the ambient temperature.	5A
		The fan is damaged.	Replace the damaged fan.	
		The air filter is clogged.	• Clear the air filter. • Check whether the installation clearance of the controller satisfies the requirement.	
 Err15	Output abnormal	Subcode 1: The braking resistor is short-circuited.	• Check that wiring of the braking resistor and braking unit is correct, without short circuit. • Check whether the main contactor works properly and whether there is arch or stuck problem.	5A
		Subcode 2: The braking IGBT is short-circuited.	Contact us or our agent directly.	
 Err16	Current control fault	Subcode 1: The current deviation is too large.	• Check whether the input voltage is low (often in temporary power supply). • Check whether cable connection between the controller and the motor is secure. • Check whether the RUN contactor works properly.	5A
		Subcode 2: The speed deviation is too large.		
		Subcode 3: The speed deviation is too large.	• Check the circuit of the encoder: • Check whether encoder pulses per revolution (PPR) is set correctly. • Check whether the encoder signal is interfered with. • Check whether the encoder cable runs through the duct independently, whether the cable 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 reliably by observing whether the encoder is stable during normal-speed running. • Check whether the motor parameters are correct, and perform motor auto-tuning again. • Increase the torque upper limit in F2-08.	

Fault Code	Name	Possible Causes	Solution	Level
 Err17	Encoder interference during motor auto-tuning	Subcode 1: Reserved.	-	5A
		Subcode 2: The SIN/COS encoder signal is abnormal.	Serious interference exists in the C, D, and Z signals of the SIN/COS encoder. Check whether the encoder cable is laid separately from the power cables, and whether system grounding is reliable. Check whether the PG card is wired correctly.	
		Subcode 3: The UVW encoder signal is abnormal.	Serious interference exists in the U, V, and W signals of the UVW encoder. Check whether the encoder c cable is laid separately from the power cables, and whether system grounding is reliable. Check whether the PG card is wired correctly.	
 Err18	Current detection fault	The drive control board fails.	Contact us or our agent directly.	5A
 Err19	Motor auto-tuning fault	Subcode 1: Learning the stator resistance fails.	Check whether the motor wiring is correct.	5A
		Subcode 5: Learning the magnetic pole position fails.		
		Subcode 8: The synchronous motor static auto-tuning mode is selected, but the encoder is not SIN/COS.	Select another auto-tuning mode or use a SIN/COS encoder.	
		Subcode 9: CD signal fluctuation is large in synchronous motor static auto-tuning.	Hardware interference exists. Check whether grounding is correct.	
		Subcode 12: Leaning the encoder zero-position angle fails in synchronous motor angle-free auto-tuning.	Obtain the encoder zero-point angle in inspection state, and then perform half-automatic angle-free auto-tuning under normal-speed running.	

Fault Code	Name	Possible Causes	Solution	Level
 Err20	Speed feedback incorrect	Subcode 1: The encoder signal is not detected during synchronous motor no-load auto-tuning.	• Check whether the encoder signal circuit is normal. • Check whether the PG card is normal. • Check whether the brake is released.	5A
		Subcode 4: Z signal is not detected during synchronous motor auto-tuning.	• Check whether the encoder signal circuit is normal. • Check whether the PG card is normal.	
		Subcode 5: The cables of the SIN/COS encoder break.		
		Subcode 7: The cables of the UVW encoder break.		
		Subcode 14: Z signal is lost during normal running.		
		Subcode 2, Subcode 8: reserved	-	
		Subcode 3, Subcode 15: The phase sequence of the motor is incorrect.	• Exchange any two phases of the motor UVW cables. • Check whether the brake is released in synchronous motor with-load auto-tuning mode.	
		Subcode 9: The speed deviation is too large.	The angle of the synchronous motor is abnormal. Perform motor auto-tuning again. KP The position lock speed loop Kp value is excessive. Decrease this value. The speed loop proportional gain is small or integral time is large. Increase the proportional gain or decrease the integral time properly. Check whether the motor phase sequence is correct.	
		Subcode 12: The encoder AB signals are lost at startup.	• Check whether the brake is released. • Check whether AB signal cables of the encoder break. If the motor cannot be started at the slip experiment, perform the slip experiment by using the function set in F3-24.	
		Subcode 13: The encoder AB signals are lost during running.	AB signals of the encoder become lost suddenly. Check: • Whether encoder wiring is correct • Whether strong interference exists • Whether the motor is stuck due to sudden power failure of the brake during running.	
		Subcode 19: The signals of the SIN/COS encoder are seriously interfered with during running.	The encoder analog signals are seriously interfered with during motor running, or encoder signals are in poor contact. You need to check the encoder circuit.	
		Subcode 55: The signals of the SIN/COS encoder are seriously interfered with or CD signals are incorrect during motor auto-tuning.	The encoder analog signals are seriously interfered with during motor auto-tuning, or encoder CD signals are in wrong sequence.	

Fault Code	Name	Possible Causes	Solution	Level
 Err21	Parameter setting incorrect	Subcode 2: The maximum frequency is smaller than the motor rated frequency.	Increase the value of F0-06 to larger than the motor rated frequency.	5A
		Subcode 3: The encoder type is incorrect.	Set the encoder type as UVW when a SIN/COS, absolute or ABZ encoder is used. Check that F1-00 is set according to the actual encoder type.	
 Err22	Leveling signal abnormal	Subcode 101: The leveling signal is stuck.	• Check whether the leveling and door zone sensors work properly. • Check whether the installation verticality and depth of the leveling plates meet the requirements. • Check whether the leveling signal input points of the MCB are normal.	1A
		Subcode 102: The leveling signal is lost.		
		Subcode 103: The leveling position deviation is too large in elevator auto-running state.	Check whether the steel rope slips.	
 Err23	Motor short-circuit to ground	Subcodes 1, 2, 3: Short circuit to ground exists.	Check whether the three-phase output of the AC drive is grounded.	5A
		Subcode 4: Inter-phase short-circuit exists.	Check whether there is inter-phase short-circuit 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, 103: The storage data of the MCB is abnormal.	Contact us or our agent directly.	4A
 Err26	Earthquake signal	Subcode 101: The earthquake signal is active and the duration exceeds 2s.	Check that the earthquake signal is consistent with the parameter setting (NC, NO) of the MCB.	3B
 Err27	Customized model fault	-	-	-
 Err28	Maintenance fault	-	-	-
 Err29	Shorting PMSM stator contactor feedback abnormal	Subcode 101: Shorting PMSM stator contactor feedback to the MCB is abnormal.	• Check that the signal feature (NO, NC) of the feedback contact on the contactor is correct. • Check that the contactor and corresponding feedback contact act correctly. • Check the coil circuit of the shorting PMSM stator contactor.	5A
		Subcode 102: Shorting PMSM stator contactor feedback to the I/O extension board is abnormal.		

Fault Code	Name	Possible Causes	Solution	Level
 Err30	Elevator position abnormal	Subcodes 101, 102: In the normal-speed running or re-leveling running mode, the leveling signal has no change within a certain time period.	• Check whether the leveling signal cables are connected reliably and whether the signal copper wires may touch the ground or be short circuited with other signal cables. • Check whether the distance between two floors is too large or the re-leveling time set in F3-21 is too short, causing over long re-leveling running time.	4A
 Err31	DPRAM abnormal (NICE3000)	DPRAM read/writing is abnormal.	Contact us or our agent directly to replace the MCB.	-
 Err32	CPU abnormal (NICE3000)	The CPU is abnormal.	• Check jumpers J9 and J10 on the MCB to see whether only two pins on the right in J9 are shorted. • Contact us or our agent directly to replace the MCB.	-
 Err33	Elevator speed abnormal	Subcode 101: The detected running speed during normal-speed running exceeds the limit.	• Check whether the parameter setting and wiring of the encoder are correct. • Check the setting of motor nameplate parameters. Perform motor auto-tuning again.	5A
		Subcode 102: The speed exceeds the limit during inspection or shaft auto-tuning.	Decrease the inspection speed or perform motor auto-tuning again.	
		Subcode 103: The speed exceeds the limit in shorting stator braking mode.	• Check whether the shorting PMSM stator function is enabled. • Check whether the motor phase sequence is correct.	
		Subcodes 104, 105: The speed exceeds the limit during emergency running.	• Check whether the emergency power capacity meets the requirements. • Check whether the emergency running speed is set properly.	
		Subcode 106: The speed deviation detected by the MCB is too large.	• Check wiring of the encoder. • Check whether SPI communication between the MCB and drive board is normal.	
 Err34	Logic fault	Logic of the MCB is abnormal.	Contact us or our agent directly to replace the MCB.	5A

Fault Code	Name	Possible Causes	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 is invalid.	Check that the down slow-down switch is valid, and that F4-01 (Current floor) is set to the bottom floor number.	4C
		Subcode 102: The system is not in the inspection state (inspection switch not turned on) when shaft auto-tuning is performed.	Check that the inspection switch is turned to inspection state.	
		Subcode 103: It is judged upon power-on that shaft auto-tuning is not performed.	Perform shat auto-tuning again.	
		Subcode 104, 113, 114: In distance control mode, it is judged at running startup that shaft auto-tuning is not performed.		
		Subcode 105: The elevator running direction and the pulse change are inconsistent.	Check whether the elevator running direction is consistent with the pulse change in F4-03: F4-03 increases in up direction and decreases in down direction. If not, change the value of F2-10 to ensure consistency.	
		Subcodes 106, 107, 109: =The plate pulse length sensed at up/down leveling is abnormal.	• Check that NO/NC state of the leveling sensor is set correctly. • Check whether the leveling plates are inserted properly and whether there is strong power interference if the leveling sensor signal blinks.	
		Subcodes 108, 110: No leveling signal is received within 45s continuous running.	• Check whether wiring of the leveling sensor is correct. • Check whether the floor distance is too large, causing running time-out. Increase the speed set in F3-11 and perform shaft auto-tuning again to ensure that learning the floors can be completed within 45s.	
		Subcodes 111, 115: The stored floor height is smaller than 50 cm.	Enable the super short floor function if the floor distance is less than 50 cm. If the floor distance is normal, check installation of the leveling plate for this floor and check the sensor.	
		Subcode 112: The floor when auto-tuning is completed is not the top floor.	Check whether the setting of F6-00 (Top floor of the elevator) is correct and whether the leveling plate is absent.	

Fault Code	Name	Possible Causes	Solution	Level
 Err36	RUN contactor feedback abnormal	Subcode 101: The feedback of the RUN contactor is active, but the contactor has no output.	• Check whether the feedback contact of the contactor acts properly. • Check the signal feature (NO, NC) of the feedback contact.	5A
		Subcode 102: The controller outputs the RUN signal but receives no RUN feedback.		
		Subcode 104: When both feedback signals of the RUN contactor are enabled, their states are inconsistent.		
		Subcode 105: The RUN contactor is active before re-leveling begins.		
		Subcode 103: The current of the asynchronous motor from acceleration to constant-speed running is too small (≤ 0.1 A).	• Check whether the output cables UVW of the controller are connected properly. • Check whether the control circuit of the RUN contactor coil is normal.	

Fault Code	Name	Possible Causes	Solution	Level
 Err37	RUN contactor feedback abnormal	Subcode 101: The output of the brake contactor is inconsistent with the feedback.	• Check whether the brake contactor opens and closes properly. • Check that the signal feature (NO, NC) of the feedback contact on the brake contactor is set correctly. • Check whether the feedback circuit of the brake contactor is normal.	5A
		Subcode 102: When both feedback signals of the brake contactor are enabled, their states are inconsistent.	• Check whether the signal feature (NO, NC) of the multi-way contacts is set correctly. • Check whether the states of the multi-way feedback contacts are consistent.	
		Subcode 103: The output of the brake contactor is inconsistent with the brake travel switch 1 feedback.	• Check whether the signal feature (NO, NC) of the brake travel switch 1/2 feedback is set correctly. • Check whether the circuit of the brake travel switch 1/2 feedback is normal.	
		Subcode 106: The output of the brake contactor is inconsistent with the brake travel switch 2 feedback.		
		Subcode 105: The brake contactor feedback is valid before the brake contactor opens.	Check whether the feedback contact of the brake contactor mal-functions.	
		Subcode 104: When both feedback signals of brake travel switch 1 are enabled, their states are inconsistent.	• Check whether the signal feature (NO, NC) of the brake travel switch 1/2 feedback is set correctly. • Check whether the states of the multi-way feedback contacts are consistent.	
		Subcode 107: When both feedback signal of brake travel switch 2 are enabled, their states are inconsistent.		
		Subcode 108: The output of the brake contactor is inconsistent with the feedback signal of brake travel switch 1 on the I/O extension board.	• Check whether the signal feature (NO, NC) of the brake travel switch 1/2 feedback on the I/O extension board is set correctly. • Check whether the circuit of the brake travel switch 1/2 feedback is normal.	
		Subcode 109: The output of the brake contactor is inconsistent with the feedback signal of brake travel switch 2 on the I/O extension board.		

Fault Code	Name	Possible Causes	Solution	Level
 Err38	Encoder signal abnormal	Subcode 101: The pulses in F4-03 does not change within the time threshold in of F1-13.	• Check whether the encoder is used correctly. • Check whether the brake works properly.	5A
		Subcode 102: F4-03 increases in down direction.	• Check whether parameter setting and wiring of the encoder are correct. • Check whether system grounding and signal grounding are reliable. • Check whether the motor phase sequence is correct.	
		Subcode 103: F4-03 decreases in up direction.		
		Subcode 104: The SVC is used in distance control mode.	Set F0-00 (Control mode) to 1 (Feedback vector control) in distance control mode.	
		Subcode 105: The up limit switch acts when the elevator runs in down direction.	Check whether wiring of the up and down limit switches are normal.	
		Subcode 106: The down limit switch acts when the elevator runs in in up direction.		
		Subcode 107: The up slow-down switch acts in down direction, and the down slow-down switch acts in up direction.	Check whether wiring of the up/down slow-down switch is correct.	
 Err39	Motor overheat	Subcode 101: The motor overheat relay input remains valid for a certain time.	• Check whether the parameter setting (NO, NC) is correct. • Check whether the thermal protection relay socket is normal. • Check whether the motor is used properly and whether it is damaged. • Improve cooling conditions of the motor.	3A
 Err40	Reserved	-	-	4B
 Err41	Safety circuit disconnected	Subcode 101: The safety circuit signal becomes off.	• Check the safety circuit switches and their states. • Check whether the external power supply is normal. • Check whether the safety circuit contactor acts properly. • Confirm the signal feature (NO, NC) of the feedback contact of the safety circuit contactor.	5A

Fault Code	Name	Possible Causes	Solution	Level
 Err42	Door lock disconnected during running	Subcodes 101, 102: The door lock circuit feedback is invalid during the elevator running.	• Check whether the hall door lock and the car door lock are in good contact. • Check whether the door lock contactor acts properly. • Check the signal feature (NO, NC) of the feedback contact on the door lock contactor. • Check whether the external power supply is normal.	5A
 Err43	Up limit signal abnormal	Subcode 101: The up limit switch acts when the elevator is running in the up direction.	• Check the signal feature (NO, NC) of the up limit switch. • Check whether the up limit switch is in good contact. • Check whether the limit switch is installed at a relatively low position and acts even when the elevator arrives at the terminal floor normally.	4A
 Err44	Down limit signal abnormal	Subcode 101: The down limit switch acts when the elevator is running in the down direction.	• Check the signal feature (NO, NC) of the down limit switch. • Check whether the down limit switch is in good contact. • Check whether the limit switch is installed at a relatively high position and thus acts even when the elevator arrives at the terminal floor normally.	4A
 Err45	Slow-down switch abnormal	Subcode 101: The down slow-down distance is insufficient during shaft auto-tuning.	• Check whether the up and down slow-down switches are in good contact. • Check the signal feature (NO, NC) of the up and down slow-down switches. • Ensure that the obtained slow-down distance satisfies the slow-down requirement at the elevator speed.	4B
		Subcode 102: The up slow-down distance is insufficient during shaft auto-tuning.		
		Subcode 103: The slow-down switch is stuck or abnormal during normal running.		
		Subcode 106: The up and down slow-down switches 2 act improperly in shaft auto-tuning.	• Check whether the up/down slow-down switch 2 is wired correctly. • Check the signal feature (NO, NC) of the up and down slow-down switches 2.	
		Subcode 107: The up and down slow-down switches 3 act improperly in shaft auto-tuning.	• Check whether the up/down slow-down switch 3 is wired correctly. • Check the signal feature (NO, NC) of the up and down slow-down switches 3.	

Fault Code	Name	Possible Causes	Solution	Level
 Err46	Re-leveling abnormal	Subcode 101: The leveling signal is inactive during re-leveling.	Check whether the leveling signal is normal.	2B
		Subcode 102: The re-leveling running speed exceeds 0.1 m/s.	Check whether the encoder is used properly.	
 Err47	Shorting door lock circuit relay abnormal	Subcode 101: During re-leveling or pre-open running, the shorting door lock circuit contactor outputs for continuous 2s, but the feedback is invalid and the door lock is disconnected.	• Check the signal feature (NO, NC) of the feedback contact on the shorting door lock circuit contactor. • Check whether the shorting door lock circuit contactor acts properly.	2B
		Subcode 102: During re-leveling or pre-open running, the shorting door lock circuit contactor has no output, but the feedback is valid for continuous 2s.		
		Subcode 106: The feedback from the shorting door circuit relay is valid before re-leveling.		
		Subcode 103: During re-leveling or pre-open running, the output time of the shorting door lock circuit contactor is larger than 15s.	• Check whether the leveling and re-leveling signals are normal. • Check whether the re-leveling speed is set too small.	
 Err48	Door open fault	Subcode 101: The consecutive times that the door does not open to the limit reaches the setting in Fb-09.	• Check whether the door machine 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 open to the limit reaches the setting in Fb-09.	• Check whether the door machine system works properly. • Check whether the CTB output is normal. • Check whether the door close limit signal and door lock signal are normal.	5A
 Err50	Consecutive loss of leveling signal	Subcode 101: Leveling signal stuck is detected for three consecutive times.	• Check whether the leveling and door zone sensors work properly. • Check the installation verticality and depth of the leveling plates. • Check the leveling signal input points of the MCB. • Check whether the steel rope slips.	5A
		Subcode 102: Leveling signal loss is detected for three consecutive times.		

Fault Code	Name	Possible Causes	Solution	Level
 Err51	CAN communication abnormal	Subcode 101: Feedback data of CANbus communication with the CTB remains incorrect.	• Check the communication cable connection. • Check the power supply of the CTB. • Check whether the 24 V power supply of the controller is normal. • Check whether there is strong-power interference on communication.	1A
 Err52	HCB communication abnormal	Subcode 101: Feedback data of Modbus communication with the HCB remains incorrect.	• Check the communication cable connection. • Check whether the 24 V power supply of the controller is normal. • Check whether the HCB addresses are repeated. • Check whether there is strong-power interference on communication.	1A
 Err53	Door lock fault	Subcode 101: The door lock feedback signal remains active 3s after door open output.	• Check whether the door lock circuit is normal. • Check whether the door lock feedback is correct.	5A
		Subcode 102: The states of the door lock multi-way feedback contacts are inconsistent, or the states of door lock 1 and door lock 2 are inconsistent.		
		Subcode 105: Door lock 1 shorting signal is active upon shorting door lock circuit relay output 3s after door open.		
		Subcode 106: Door lock 2 shorting signal is active upon shorting door lock circuit relay output 3s after door open.		
		Subcode 104: The higher-voltage and low-voltage door lock signals are inconsistent.	When the higher-voltage and low-voltage door lock signals are detected at the same time, the time when the MCB receives the two signals has a deviation of above 1.5s. This subcode is reset at power-off and power-on again.	
		Subcode 107: The door lock shorting input is selected but the feedback signal remains off or disconnected.	Check whether the signal cable of door lock shorting feedback is not connected or breaks.	
 Err54	Overcurrent at inspection startup	Subcode 102: The current at startup for inspection exceeds 120% of the rated current.	• Reduce the load. • Check whether the motor phase sequence is correct. • Change FC-00 Bit1 to 1 to cancel the startup current detection function.	5A

Fault Code	Name	Possible Causes	Solution	Level
 Err55	Stop at another landing floor	Subcode 101: During automatic running of the elevator, the door open limit is not received within the time threshold in Fb-06.	Check the door open limit signal at the present floor.	1A
 Err56	Door open/close signal fault	Subcode 101: The door open limit signal is active during running.	• Check the door open and close NO/NC setting in F5-25. • Check wiring of the door open and close signals.	5A
		Subcode 102: The door close limit signal is active during running.		
		Subcode 103: Both the door open and close signals are active.		
		Subcode 104: The door close limit signal keeps active at 3s after door open. This fault subcode is detected after the door lock bypass is set.	Check whether the door open/close limit signals keep active.	
 Err57	Serial peripheral interface (SPI) communication abnormal	Subcodes 101, 102: The SPI communication is abnormal.	Check the wiring between the control board and the drive board.	5A
		Subcode 103: The MCB does not match the AC drive.	Contact our agent or Inovance directly.	
 Err58	Shaft position switches abnormal	Subcode 101: The up slow-down switch and down slow-down switch are disconnected simultaneously.	• Check whether the signal feature (NO, NC) of the slow-down switches and limit switches are consistent with the parameter setting of the MCB. • Check whether malfunction of the slow-down switches and limit switches exists.	4B
		Subcode 102: The up limit feedback and down limit feedback are disconnected simultaneously.		
 Err59	Reserved	-	-	-
 Err60	Reserved	-	-	-

Fault Code	Name	Possible Causes	Solution	Level
 Err61	Reserved	-	-	-
 Err62	Analog input cable broken	Subcode 101: The analog input cable breaks.	• Check whether F5-36 is set correctly. • Check whether the analog input cable of the CTB or MCB is connected incorrectly or broken. • Adjust the load cell switch function.	3B
 Err63	Special fault	-	Contact our agent or Inovance directly.	
 Err64	External fault	Subcode 101: The external fault signal keeps active for 2s.	• Check the NO/NC setting of external faults • Check the input state of the external fault signal.	5A
 Err65	UCMP detection abnormal	This fault is reported when the UCMP function is enabled or accidental car movement occurs.	Check that the motor brake is applied completely and the car will not move accidentally.	5A
 Err66	Braking force detection abnormal	The braking force detected is insufficient.	Detect the brake clearance.	5A
 Err74	STO fault	Subcode 1: STO fault	• Check whether the safety circuit is disconnected. • Check whether the door lock circuit is disconnected. • Check whether Y1 output is active. • Check whether the STO card is normal.	5A

Note	
	Fault Err41 is not recorded in the elevator stop state. Fault Err42 is reset automatically when the door lock circuit is shorted or 1s after the fault occurs in the door zone. If faults Err51, Err52, and E57 persist, they are recorded once every one hour.

Chapter 6 Inspection and Maintenance

The influence of the ambient temperature, humidity, dust and vibration will cause aging of components inside the controller, which may cause potential faults or reduce the service life of the controller. Therefore, it is necessary to carry out routine and periodic inspection.

More frequent inspection is required if the equipment is used in harsh environments, such as:

- High ambient temperature
- Frequent startup and stop
- Fluctuations in the AC power supply or load
- Excessive vibrations or impact
- Dust, metal dust, salt, sulfuric acid, chlorine atmospheres
- Poor storage conditions

Check the following items daily to avoid deterioration in performance or product failure. Copy this checklist and sign the “checked” column after each inspection.

Inspection Item	Inspection Points	Correction	Checked
Motor	Check whether abnormal oscillation or noise exists.	• Check the mechanical connection. • Check the power phases of the motor. • Tighten all loose screws.	
Cooling fan	Check whether the cooling fans of the controller and the motor work abnormally.	• Check running of the cooling fan of the controller. • Check running of the cooling fan of the controller. • Check whether the air filter is clogged. • Check whether the ambient temperature is within the allowable range.	
Installation environment	Check whether the cabinet and cable duct are abnormal.	• Check whether insulation of the input and output cables is damaged. • Check whether there is shock to the supporting bracket. • Check whether the copper bar and terminals are loose and corroded.	
Load	Check whether the controller output current exceeds the controller rating and motor rating for a certain time.	• Check for setting of motor parameters. • Check for excessive load. • Check for mechanical vibration (< 0.6 g on normal condition).	
Input voltage	Check the main power supply and the control voltage.	• Adjust the input voltage to the allowable range. • Check for starting of heavy load.	

Revision History

Date	Version	Change Description
June 2017	A00	First issue.
November 2018	A01	Updated logo.

INOVANCE Warranty Agreement

1) Inovance provides an 18-month free warranty to the equipment itself from the date of manufacturing for the failure or damage under normal use conditions.
2) Within the warranty period, maintenance will be charged for the damage caused by the following reasons:
   a. Improper use or repair/modification without prior permission
   b. Fire, flood, abnormal voltage, natural disasters and secondary disasters
   c. Hardware damage caused by dropping or transportation after procurement
   d. Operations not following the user instructions
   e. Damage out of the equipment (for example, external device factors)
3) The maintenance fee is charged according to the latest Maintenance Price List of Inovance.
4) If there is any problem during the service, contact Inovance's agent or Inovance directly.
5) Inovance reserves the rights for explanation of this agreement.

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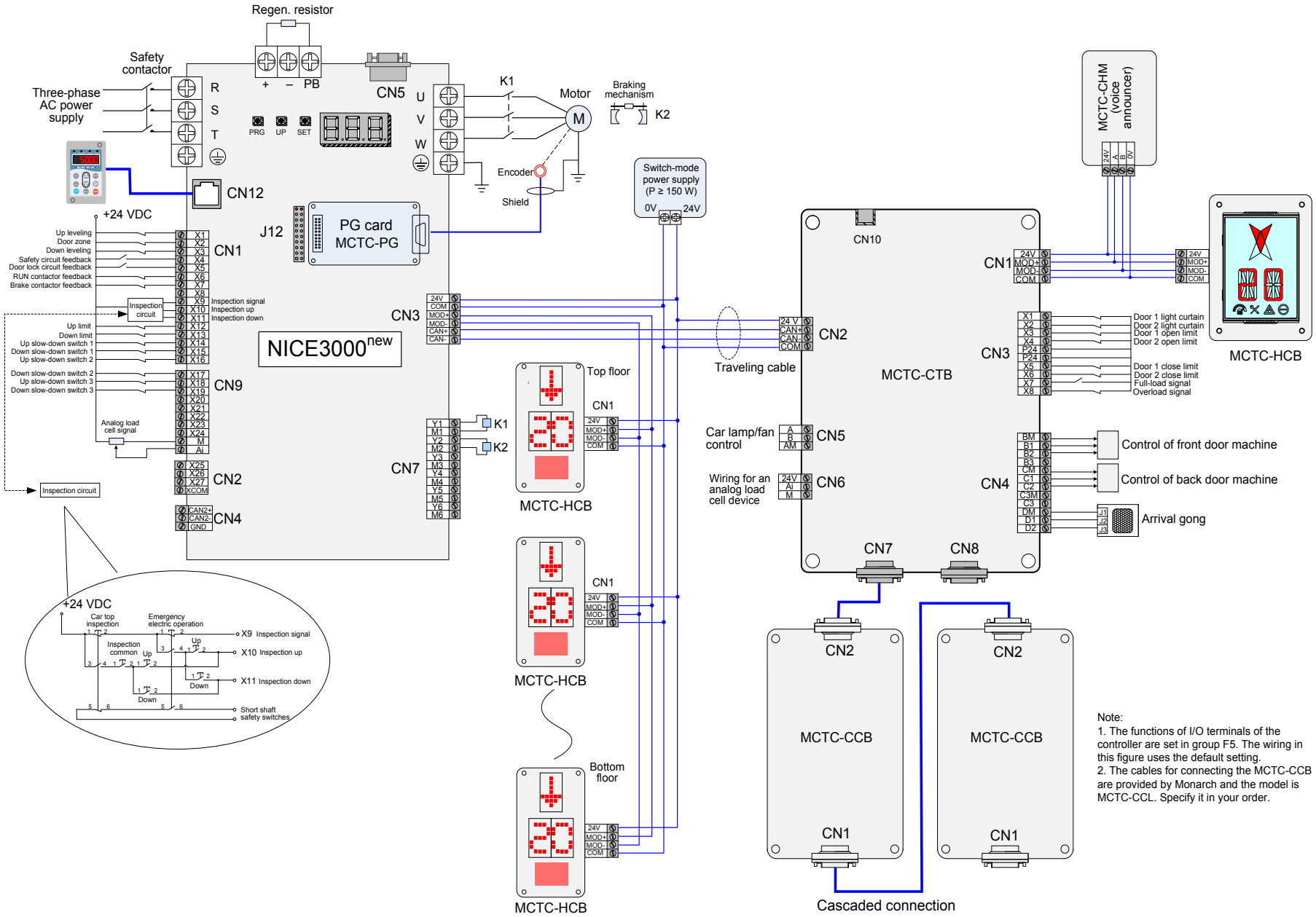

Note:
1. The functions of I/O terminals of the controller are set in group F5. The wiring in this figure uses the default setting.
2. The cables for connecting the MCTC-CCB are provided by Monarch and the model is MCTC-CCL. Specify it in your order.

Standard wiring diagram of the NICE3000[new] control system

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