Monarch

NICE5000
Integrated Elevator Controller
User Manual

NICE 5000

Integrated Elevator Controller

Suzhou MONARCH Control Technology Co., Ltd.

V0.0

Data code:19010314

Preface

Thank you for purchasing the NICE5000 integrated elevator controller.

The NICE5000 is a new-generation integrated elevator controller independently developed and manufacturered by Suzhou MONARCH Control Technology Co., Ltd., by optimizing the NICE3000 controller based on a large number of applications and combining new industrial features.

The NICE5000 has the following advantages:

1. It supports high-performance vector control and open-loop low speed running. It can drive both AC asynchronous motor and permanent magnetic synchronous motor (PMSM), and implement switchover between the two types of motors easily by modifying only one parameter.
2. It supports direct parallel control and group control of two elevators, and supports the CANbus and Modbus communication protocols for remote monitoring, which reduces the required quantity of travling cables.
3. It supports a maximum of 56 floors and is widely applied to elevators used in the residence, office buildings, shopping centers, and hospitals.

This manual describes the correct use of the NICE5000, including product features, safety information and precautions, installation, parameter setting, commissioning, and maintenance & inspection. Read and understand the manual before using the product, and keep it carefully for reference to future maintenance.

The personnel who involve in system installation, commissioning, and maintenance must receive necessary safety and use training, understand this manual thoroughly, and have related experience before performing operations.

Notes
• The drawings in the manual are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions. • The drawings in the manual are shown for description only and may not match the product you purchased. • The instructions are subject to change, without notice, due to product upgrade, specification modification as well as efforts to increase the accuracy and convenience of the manual. • Contact our agents or customer service center if you need a new user manual or have problems during the use. • Email: UM@inovance.cn

Introduction

1. Product overview

The NICE5000 integrates functions of the elevator controller and high-performance vector control AC drive. With the controller as the core, the elevator drive control system is constructed.

2. Product features

The NICE5000 has the following major features:

- More advanced technology

1) Integration of drive and control, which makes system configuration simpler and reduces peripheral wiring and the cost
2) Distance-based direct travel ride, N curves generated automatically, bringing good riding comfort
3) Support for parallel control of two elevators
4) No-load-cell startup for various types of encoders, ensuring smooth startup
5) Drive for both synchronous and asynchronous motors
6) High-performance vector control, achieving good motor performance and riding comfort
7) Use of CANbus and Modbus communication, reducing the quantity of traveling cables
8) Remote monitoring, making the states of elevators connected to the network be viewed clearly

- Easier use

1) Compact structure, requiring only a small equipment room or even no equipment room
2) Parameters easy to memorize, support for commissioning inside the car, making commissioning convenient
3) Multiple commissioning tools, including keypad, operation panel, host computer monitoring software, making inspection, commissioning and maintenance of the elevator easy

- Safer running

1) Multiple security protections, compliant with the GB-7588-2003 standard, CE certificated
2) Passing the EU MP lab test, proved to be compliant with the EMC requirements
3) Professional drive manufacturing process, electrical components moisture-proof, dustproof, and anti-oxidation
4) Lightning absorption and anti-mains voltage fluctuation design for the circuit
5) Password security with corresponding operation rights, implementing protection of elevator operations

6) Redundancy of hardware and software, handling of fault signals with highest priority, preventing accident hazard

7) Support for open-loop low speed running

- More friendly operation

1) Easy operation and maintenance

2) Built-in real-time clock, which provides time-based services, facilitating intelligent floor service management

3) Detailed fault records

4) Flexible modular optional parts

3. Function list of the NICE5000

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.
Down collective selective control	In automatic running or attendant state, the elevator responds only to hall down calls besides car calls.
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.
Door open holding	In automatic running state, passengers can press the door open button in the car to delay door open to facilitate goods to be moved in or out.
Door machine service floor setting	Users can set the required service floors of the door machines.
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.
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.
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.
Floor number display setting	The system supports display of floor numbers in combinations of numbers and letters, which meets the requirements of special conditions.
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.
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.
Leveling accuracy adjustment	The leveling accuracy can be adjusted by setting parameters.
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.
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.
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 E55.
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.
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.
Attendant running	In attendant state, the running of the elevator is controlled by the attendant.
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.
Periodic self-check in standby state	The systems perform self-check on the elevator periodically and records error information within the set time, ensuring reliability and security of elevator running.
Waiting floor indicator	When the elevator arrives at a floor, the hall indicator of this floor becomes ON, indicating that the elevator has arrived.
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 MCTC-HCB-B outputs a signal to turn on hall arrival forecast indicator.
Hall arrival gong	After the elevator will arrive at the destination floor soon, the MCTC-HCB-B outputs a signal to turn on the hall arrival gong.

Hall I/O extension function	If the hall I/O terminals are not sufficient, more terminals can be provided by using an HCB-B board.
Car I/O extension function	If the car I/O terminals are not sufficient, more terminals can be provided by using an HCB-B 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.
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.
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.
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.
Running time recording	The system automatically records the accumulative power-on time, working hours, and working days of the elevator.
Switchover of parking floor	The main parking floor can be switched over by operating the related switch or the switchover time is reached.
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.
Specified elevator preferred	The specified elevator is preferred to respond to calls of specified floors.
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.
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 rated elevator load, the elevator alarms and stops running.
Elevator abnormality protection	The system performs protection in time at abnormality, guaranteeing elevator safety.

Fault data recording	The system automatically records detailed information of faults, which helps improve the efficiency of maintenance and repair.
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.
Easy setting for commissioning and maintenance	Commissioning and maintenance can be carried out only with easy setting: motor auto-tuning, slow-down switch detection and shaft detection, automatic detection of elevator states, abnormality record, and periodic self-check
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.
User-defined parameter display	You can view the parameters that are modified and different from the default setting.
Inspection function selection	The system provides multiple inspection functions for users to select.
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.
Inertia identification	The system automatically identifies the elevator inertia at startup and produces compensation, achieving smooth running.
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.
Indication state test	Whether indications of system states can be tested.
Test function selection	The system provides multiple test functions for users to select, improving test, acceptance, and maintenance efficiency.
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.
Firefighter operation	After the elevator enters the firefighter operation 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.
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.
Elevator lock	In automatic running state, when the elevator lock switch acts or the set elevator time is reached, the elevator cancels all registered calls, returns to the elevator lock floor, stops running, and turns off the lamp and fan in the car.
Forced stop at floor	When a floor is specified as the forced stop floor, the elevator stops at this floor at each time running.
Operation rights restricted based on levels	The system provides multiple levels of security passwords, each corresponding to different operation rights, improving elevator operation security.
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.
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, EPS 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.
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.
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.
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.
Independent working power supply	The NICE5000 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 EPS).
Intelligent distribution of emergency power supply (EPS)	This function is optional for the group control elevator system configured with the EPS device. When the EPS is used, the system automatically selects the elevator that is proper to run based on the preset parameters. After the normal power supply restores, the system restores normal running. This function prevents power overload due to simultaneous running of multiple elevators when the EPS is insufficient. Note: This function is not the standard function. If it is used, software modification and peripheral parts are required.
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.
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.
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.
Interface for intelligent residential management	The system provides an interface for intelligent residential management to perform remote monitoring on the state of elevators in the residential district.
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.
Energy-saving running with standby power supply	When the normal power supply is interrupted and the EPS 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.
Energy-saving of idle door machine	After the car lamp is turned off, the system does not output the door close command, which reduces power consumption of the door machine.

4. Optional functions

Function	Description	Remark
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 EPS, the system uses the EPS to implement low-speed self-rescue in the case of power failure.	EPS required
Onsite commissioning	The system can control and monitor running of elevators by using the NEMS software.	NEMS software required
Residential 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
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
IC card	Passengers need to use the IC card to go to floors that require authorization.	IC card required

Contents

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Safety Information and Precautions

Chapter 1 Safety Information and Precautions

In this manual, the notices are graded based on the degree of danger:

- ⚠DANGER indicates that failure to comply with the notice will result in severe personal injury or even death.
- ⚠CAUTION indicates that failure to comply with the notice will result in minor or moderate personal injury or equipment damage.

In addition, **NOTE** appearing in other chapters indicates that an unintended result or situation may occur if the notice is not complied with.

The notices in this manual you have to observe are aimed at guaranteeing your personal safety, as well as to prevent damage to the controller or the parts connected to it. Read this chapter carefully so that you have a thorough understanding and perform all operations by following the notices in this chapter. The equipment is allowed to be operated by electrical engineers that are qualified by the factory or agent and have received processional training. Monarch will assume no liability or responsibility for any injury or loss caused by improper operation.

1.1 Safety Precautions

Use Stage	Safety Grade	Precautions
During installation	⚠DANGER	• Do not install the equipment if you find water seepage, component missing or damage upon unpacking. • Do not install the equipment if the packing list does not conform to the product you received. • Install the equipment on incombustible objects such as metal, and keep it away from combustible materials. Failure to comply may result in a fire. • Do not loosen the fixed screws of the components, especially the screws with red mark.
	⚠CAUTION	• Handle the equipment with care during transportation to prevent damage to the equipment. • Do not use the equipment with damaged or missing components. Failure to comply will result in personal injury. • Do not touch the components with your hands. Failure to comply will result in static electricity damage. • Do not drop wire end or screw into the controller. Failure to comply will result in damage to the controller. • Install the controller in places free of vibration and direct sunlight.

Use Stage	Safety Grade	Precautions
At wiring	⚠DANGER	• Wiring must be performed only by qualified personnel under instructions described in this manual. Failure to comply may result in unexpected accidents. • A circuit breaker must be used to isolate the power supply and the controller. Failure to comply may result in a fire. • Ensure that the power supply is cut off before wiring. Failure to comply may result in electric shock. • Tie the controller to ground properly according to the standard. Failure to comply may result in electric shock.
	⚠CAUTION	• Never connect the power cables to the output terminals (U, V, W) of the controller. Pay attention to the marks of the wiring terminals and ensure correct wiring. Failure to comply will result in damage to the controller. • Ensure that the cabling satisfies the EMC requirements and the local codes. Use wire sizes recommended in the manual. Failure to comply may result in accidents. • Never connect the regen. resistor between the DC bus terminals (+) and (-). Failure to comply may result in a fire. • Use the shielded cable for the encoder, and ensure that the shield is reliably grounded at one end. • Use a twisted cable with twisted distance of 20−30 mm as the communication cable, and ensure that the shield is reliably grounded.
During running	⚠DANGER	• All peripheral devices must be connected properly according to the circuit wiring instructions provided in this manual. Failure to comply will result in accidents • Cover the controller properly before power-on to prevent electric shock. • Do not open the controller's cover after power-on. Failure to comply may result in electric shock. • Do not touch the controller and peripheral circuits with wet hand. Failure to comply may result in electric shock. • Do not touch any I/O terminal of the controller. Failure to comply may result in electric shock. • The controller performs safety detection on external strong power circuits automatically at the beginning of power-on. Do not touch the U, V, W terminals of the controller or the motor terminals at the moment. Failure to comply may result in electric shock. • Do not touch the fan or the discharging resistor to check the temperature. Failure to comply will result in personal burnt. • Signal detection must be performed only by qualified personnel during operation. Failure to comply will result in personal injury or damage to the controller.

Use Stage	Safety Grade	Precautions
During running	⚠CAUTION	• Check that the following requirements are met: - The voltage class of the power supply is consistent with the rated voltage class of the controller. - The input terminals (R, S, T) and output terminals (U, V, W) are properly connected. - No short-circuit exists in the peripheral circuit. - The wiring is secured. • Failure to comply will result in damage to the controller. • For synchronous motor, ensure that motor auto-tuning is performed successfully. Perform trial running before resuming the steel rope so as to make the motor run properly. • Do not perform the voltage resistance test on any part of the controller because such test has been done in the factory. Failure to comply will result in accidents. • Do not touch the rotating part of the motor during the motor auto-tuning or running. Failure to comply will result in accidents. • Do not change the default settings of the controller. Failure to comply may result in damage to the controller. • Avoid objects falling into the controller when it is running. Failure to comply will result in damage to the controller. • Do not start/stop the controller by turning on or off the contactor. Failure to comply will result in damage to the controller.
During maintenance	⚠DANGER	• Do not repair or maintain the controller at power-on. Failure to comply will result in electric shock. • Repair or maintain the controller when its voltage is lower than 36 VAC, about 10 minutes after the controller is powered off. Otherwise, the residual voltage in the capacitor may result in personal injury. • Do not allow unqualified personnel to repair or maintain the controller. Failure to comply will result in personal injury or damage to the controller. • Set the parameters again after the controller is replaced. All the pluggable components must be plugged or removed only after power-off.

1.2 General Precautions

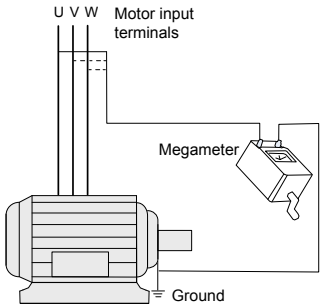
1. Requirement on the residual current device (RCD)

   The controller generates high leakage current during running, which flows through the protective earthing conductor. Thus install a type- B RCD at primary side of the power supply. When selecting the RCD, you should consider the transient and steady-state leakage current to ground that may be generated at startup and during running of the

controller. You can select a specialized RCD with the function of suppressing high harmonics or a general-purpose RCD with relatively large residual current.

2. Motor insulation test

   Perform the insulation test when the motor is used for the first time, or when it is reused after being stored for a long time, or in a regular check-up, in order to prevent the poor insulation of motor windings from damaging the controller. The motor must be disconnected from the controller during the insulation test. A 500-V mega-Ohm meter is recommended for the test. Ensure that the insulation resistance is not less than 5 MΩ.



3. Thermal protection of motor

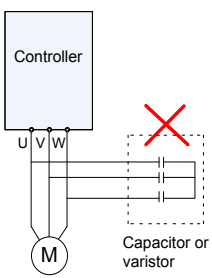
   If the rated capacity of the motor selected does not match that of the controller, especially when the rated power of the controller is greater than that of the motor, adjust the motor protection parameters on the operation panel of the controller or install a thermal relay for the motor circuit for protection.

4. Motor heat and noise

   The output of the controller is pulse width modulation (PWM) wave with certain harmonic wave, and therefore, the motor temperature rise, noise, and vibration are slightly greater than those at running with the mains frequency.

5. Voltage-sensitive device or capacitor on the output side of the controller

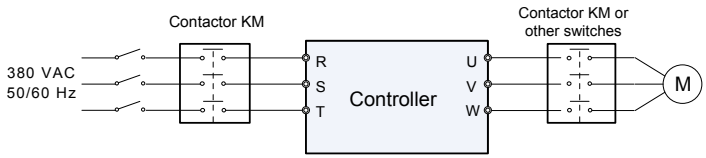
- The controller outputs PWM waves, and therefore, do not install the capacitor for improving power factor or lightning protection voltage-sensitive resistor on the output side of the controller. Otherwise, the controller may suffer transient overcurrent or even be damaged.



6. Switch (contactor) on the input and output sides of the controller

   If a contactor is installed between the power supply and the input side of the controller, DO NOT use it to start or stop the controller. However, if there is a need to use the contactor to start or to stop the controller, make sure the time interval between switching is at least one hour. If the interval between switching is shorter than one hour, this will reduce the service life of the capacitor inside the controller.

   If a switch such as contactor is installed between the output side of the controller and the motor, operate the switch only when the controller has no output. Otherwise, modules inside the controller may be damaged.



7. Use outside the rated voltage

   The controller must not be used outside the allowable voltage range specified in this manual. Otherwise, components inside the controller may be damaged. If required, use a corresponding voltage step-up or step-down device.

8. Surge suppressor

   The controller has a built-in voltage dependent resistor (VDR) for suppressing the surge voltage generated when the inductive loads (electromagnetic contactor, electromagnetic relay, solenoid valve, electromagnetic coil and electromagnetic brake) around the controller are switched on or off. If the inductive loads generate very high surge voltage, use a surge suppressor for the inductive load or use a surge suppressor together with a diode..

Note

Do not connect the surge suppressor on the output side of the controller.

9. Altitude and de-rating

   In places where the altitude is above 1000 m and the cooling effect reduces due to thin air, it is necessary to de-rate the controller. Contact Monarch for technical support.

10. Special usage

    If wiring that is not described in this manual, such as common DC bus is applied, contact the agent or Monarch for technical support.

11. Disposal

    The electrolytic capacitors on the main circuits and PCB may explode when they are burnt. Poisonous gas is generated when the plastic parts are burnt. Treat them as ordinary industrial waste.

12. Adaptable motor

    The controller is adaptable to squirrel-cage asynchronous motor or AC PMSM. Select a proper controller according to motor nameplate.

    The default parameters configured inside the controller are squirrel-cage asynchronous motor parameters. It is still necessary to perform motor auto-tuning or modify the default values based on actual conditions. Otherwise, the running effect and protection performance will be affected. For PMSM, motor auto-tuning must be performed.

13. Precautions on selecting residual-current circuit breaker (RCCB)

    Tripping may be caused if an improper RCCB is selected when the controller drives the motor. This is because the output wave of the controller has high harmonics and the motor cable and the cable connecting the controller and the motor produce leakage current, which is much larger than the current when the motor runs at the mains frequency.

    Thus, it is necessary to determine the proper RCCB sensitivity based on the general leakage current of the cables and the motor. The leakage current is dependent on the motor capacity, cable length, insulation class and wiring method. Generally, the leakage current on the output side of the controller is three times of the current when the motor runs at the mains frequency.

2

Product Information

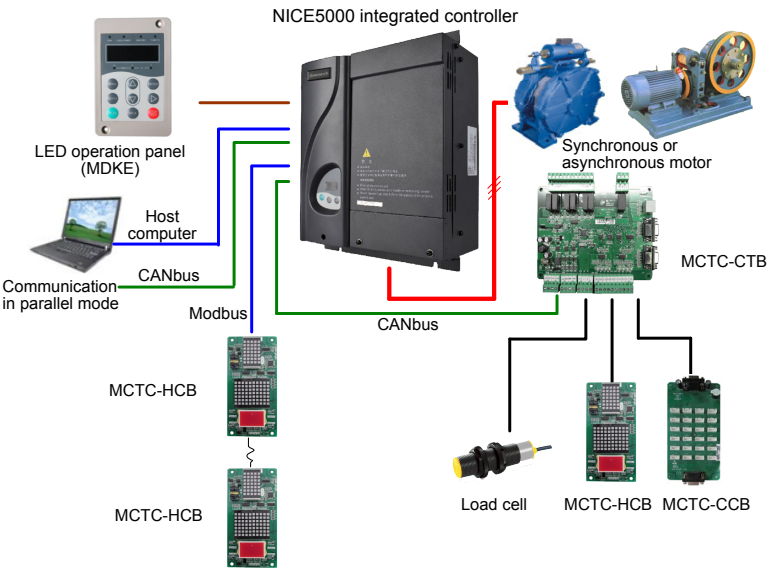
Chapter 2 Product Information

2.1 System Configuration of the NICE5000

The NICE5000 series integrated elevator control system mainly includes the integrated elevator controller, car top board (MCTC-CTB), hall call board (MCTC-HCB), and car call board (MCTC-CCB).

The following figure shows the system components.

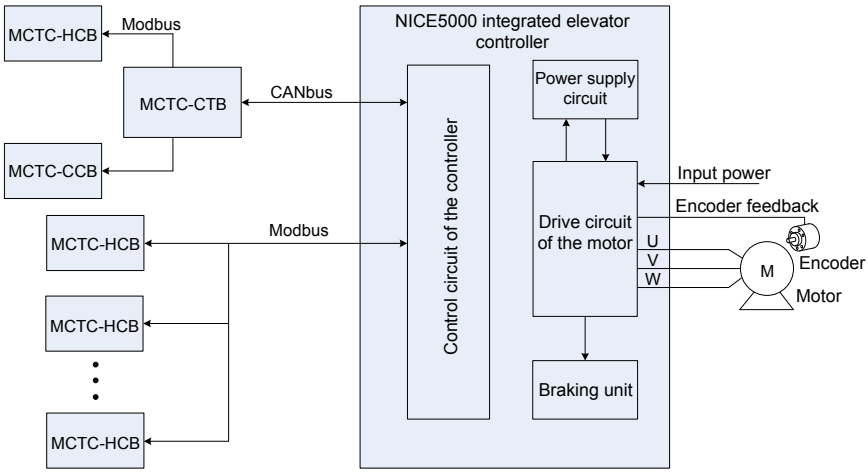
Figure 2-1 System components of the NICE5000



1. It controls the motor based on feedback signals from the encoder, and records information of all position switches in the shaft by pulse, implementing accurate leveling and direct travel ride and guaranteeing running safety.
2. It implements information collection and control of car-related components by means of CANbus communication with the MCTC-CTB.
3. It registers and displays hall calls of all floors with easy address setting by means of Modbus communication with the MCTC-HCB.

The following figure shows the system structure of the NICE5000.

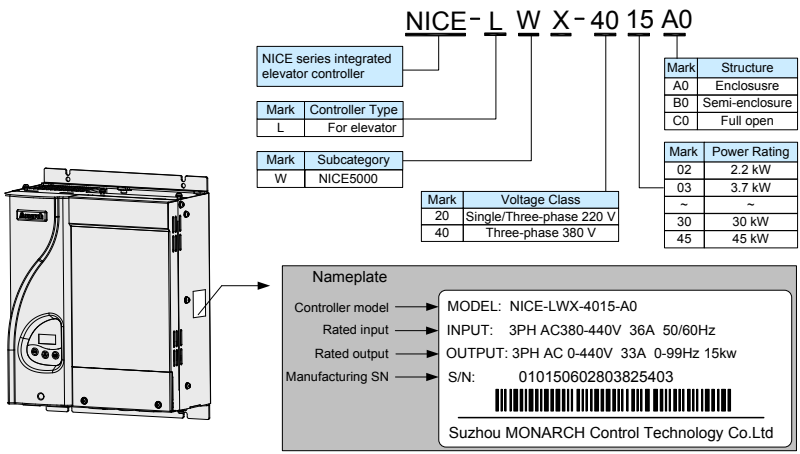
Figure 2-2 System structure of the NICE5000



2.2 Designation Rules and Model Description

2.2.1 Designation Rules and Nameplate

Figure 2-3 Designation rules and nameplate of the NICE5000



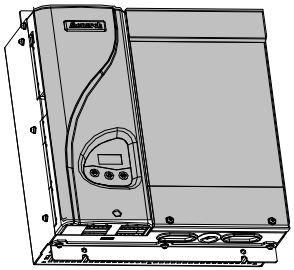
The NICE5000 can drive both the AC asynchronous motor and PMSM. When encoder is used, select a PG card matching the encoder type.

The structure in the controller model indicates the degree to which the PCB is enclosed by

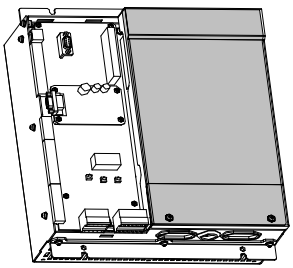
the shell.

The NICE5000 has three structures, as shown in the following figure.

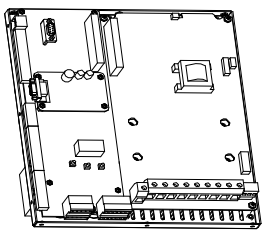
Figure 2-4 NICE5000 structures



NICE-LWX-4015-A0



NICE-LWX-4015-B0



NICE-LWX-4015-C0

2.3 Models

Table 2-1 NICE5000 models

Controller Model	Power Capacity (kVA)	Input Current (A)	Output Current (A)	Motor Power (kW)
Three-phase 220 V, range: -15% to 20%				
NICE-LWX -2002-A/B/C0	4.0	11.0	9.6	2.2
NICE-LWX -2003-A/B/C0	5.9	17.0	14.0	3.7
220-NICE-LWX-4007-A/B/C0	7.0	20.5	18.0	4.0
220-NICE-LWX-4011-A/B/C0	10.0	29.0	27.0	5.5
220-NICE-LWX-4015-A/B/C0	12.6	36.0	33.0	7.5
220-NICE-LWX-4018-A/B/C0	15.0	41.0	39.0	11.0
220-NICE-LWX-4022-A/B/C0	18.3	49.0	48.0	15.0
220-NICE-LWX-4030-A/B/C0	23.0	62.0	60.0	18.5
Single-phase 220 V, range: -15% to 20%				
NICE-LWX -2002-A/B/C0	2.0	9.2	5.2	1.1
NICE-LWX -2003-A/B/C0	2.9	13.3	7.5	1.5

Controller Model	Power Capacity (kVA)	Input Current (A)	Output Current (A)	Motor Power (kW)
220-NICE-LWX-4007-A/B/C0	3.9	17.9	10.3	2.2
220-NICE-LWX-4011-A/B/C0	5.9	25.3	15.5	3.7
220-NICE-LWX-4015-A/B/C0	7.3	31.3	19	4.0
220-NICE-LWX-4018-A/B/C0	8.6	34.6	22.5	5.5
220-NICE-LWX-4022-A/B/C0	10.6	42.6	27.7	11
220-NICE-LWX-4030-A/B/C0	13.1	52.6	34.6	15
Three-phase 380 V, range: -15% to 20%				
NICE-LWX-4002-A/B/C0	4.0	6.5	5.1	2.2
NICE-LWX-4003-A/B/C0	5.9	10.5	9.0	3.7
NICE-LWX-4005-A/B/C0	8.9	14.8	13.0	5.5
NICE-LWX-4007-A/B/C0	11.0	20.5	18.0	7.5
NICE-LWX-4011-A/B/C0	17.0	29.0	27.0	11.0
NICE-LWX-4015-A/B/C0	21.0	36.0	33.0	15.0
NICE-LWX-4018-A/B/C0	24.0	41.0	39.0	18.5
NICE-LWX-4022-A/B/C0	30.0	49.5	48.0	22.0
NICE-LWX-4030-A/B/C0	40.0	62.0	60.0	30.0
NICE-LWX-4037-A/B/C0	57.0	77.0	75.0	37.0
NICE-LWX-4045-A/B/C0	69.0	93.0	91.0	45.0
NICE-LWX-4055-A/B/C0	85.0	113.0	112.0	55.0
NICE-LWX-4075-A/B/C0	114.0	157.5	150.0	75.0
NICE-LWX-4090-A/B/C0	134.0	180.0	176.0	90.0
NICE-LWX-4110-A/B/C0	160.0	214.0	210.0	110.0
NICE-LWX-4132-A/B/C0	192.0	256.0	253.0	132.0
NICE-LWX-4160-A/B/C0	231.0	307.0	304.0	160.0

Note

1. In terms of single-phase and three-phase 220 VAC, NICE-LWX-2002-A/B/C0 and NICE-LWX-2003-A/B/C0 are specially designed for 220 VAC. The other models that are marked by prefixing "220-" are modified from the three-phase 380 VAC models.

2. Same models are available for single-phase 220 VAC and three-phase 220 VAC. Pay attentions to the power class of the adaptable motor during the use.

3. The models of rated 220 VAC apply to European 240 VAC supply system, and the models of 380 VAC apply to European 440 VAC supply system.

2.4 Technical Specifications

Table 2-2 Technical specifications of the NICE5000

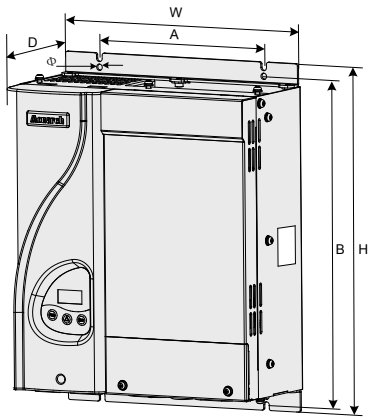
Item		Specification
Basic specifications	Maximum frequency	99 Hz
	Carrier frequency	2–16 kHz, adjusted automatically based on the load features
	Motor control mode	• Sensorless vector control (SVC) • Closed-loop vector control (CLVC) • Voltage/Frequency (V/F) control
	Startup torque	0.5 Hz: 180% (SVC) 0 Hz: 200% (CLVC)
	Speed adjustment range	• 1:100 (SVC) • 1:1000 (CLVC) • 1:50 (V/F)
	Speed stability accuracy	• ±0.5% (SVC) • ±0.05% (CLVC)
	Torque control accuracy	±5% (CLVC)
	Overload	60s for 150% of the rated current, 1s for 200% of the rated current
	Motor auto-tuning	With-load auto-tuning; no-load auto-tuning
	Distance control	Direct travel ride mode in which the leveling position can be adjusted flexibly
	Acceleration/ Deceleration curve	N curves generated automatically
	Slow-down	New reliable slow-down function, automatically identifying the position of the slow-down shelf
	Shaft auto-tuning	32-bit data, recording the position in the shaft accurately
	Leveling adjustment	Flexible and easy leveling adjustment function
	Startup torque compensation	Load cell startup pre-torque compensation No-load-cell startup pre-torque self-adaption
	Real-time clock	Real-time clock for time-based floor service, peak service and automatic password
	Test function	Easy to implement multiple elevators commissioning functions.
	Fault protection	Solutions to different levels of elevator faults
	Intelligent management	Remote monitoring, user management, and group control adjustment

Item		Specification
Basic specifications	Security check of peripheral devices after power-on	Security check of peripheral devices, such as grounding and short circuit, after power-on
	Status monitor	Monitoring the state of feedback signals to ensure that the elevator works properly
I/O feature	Digital input (DI)	20 x DI Input specification: 24 V, 5 mA
		3 heavy-current detection input terminals of safety circuit and door lock circuit Input specification: 95−125 V
	Analog input (AI)	AI (voltage range: –10 V to +10 V)
	Communication port	2 CANbus communication ports 1 Modbus communication port
	Output terminal block	6 relay outputs The terminals can be allocated with different functions.
	Encoder interface	Supporting different encoders by using an optional PG card
Operation and display	Keypad	3-digit LED display, implementing certain commissioning functions
	LED operation panel	5-digit LED display, querying/modifying most parameters and monitoring the system state
	Host computer monitoring software	Connecting the control system and the host computer, convenient for querying/motoring the system state.
Environment	Altitude	Below 1000 m (de-rated 1% for each 100 m higher)
	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	Maximum vibration: 5.9 m/s2
	Storage temperature	–20°C to 60°C
	IP level	IP20
	Pollution degree	PD2
	Power distribution system	TN, TT

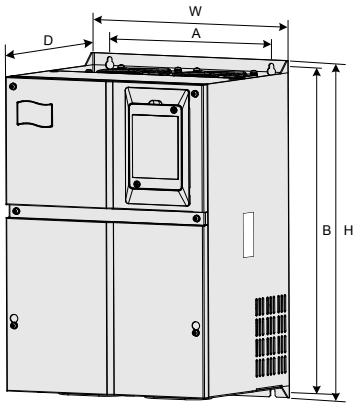
2.5 Physical Appearance and Mounting Dimensions

The following figure shows the physical appearance and mounting dimensions of the NICE5000.

Figure 2-5 Physical appearance and mounting dimensions of the NICE5000



2.2 kW < P ≤ 30 kW



30 kW < P ≤ 160 kW

Table 2-3 Mounting dimensions of the NICE5000

Controller Model	A (mm)	B (mm)	H (mm)	W (mm)	D (mm)	Φ (mm)	Weight (kg)
Single/Three-phase 20 V, range: -15% to 20%							
NICE-LWX -2002-A/B/C0	190	336	356	240	135	6.5	6.6
NICE-LWX -2003-A/B/C0							
220-NICE-LWX-4007-A/B/C0							
220-NICE-LWX-4011-A/B/C0	190	336	356	273	140	6.5	9.1
220-NICE-LWX-4015-A/B/C0							
220-NICE-LWX-4018-A/B/C0	300	339	361	410	172	7	19.1
220-NICE-LWX-4022-A/B/C0							
220-NICE-LWX-4030-A/B/C0							
Three-phase 380 V, range: -15% to 20%							
NICE-LWX -4002-A/B/C0	190	336	356	240	135	6.5	6.6
NICE-LWX-4003-A/B/C0							
NICE-LWX-4005-A/B/C0							
NICE-LWX-4007-A/B/C0							
NICE-LWX-4011-A/B/C0	190	336	356	273	140	6.5	9.1
NICE-LWX-4015-A/B/C0							

Controller Model	A (mm)	B (mm)	H (mm)	W (mm)	D (mm)	Φ (mm)	Weight (kg)
NICE-LWX-4018-A/B/C0	300	339	361	410	172	7	19.1
NICE-LWX-4022-A/B/C0							
NICE-LWX-4030-A/B/C0							
NICE-LWX-4037-A/B/C0	260	580	600	385	265	10	32
NICE-LWX-4045-A/B/C0							
NICE-LWX-4055-A/B/C0							
NICE-LWX-4075-A/B/C0	343	678	700	473	307	10	47
NICE-LWX-4090-A/B/C0							
NICE-LWX -4110-A/B/C0	449	903	930	579	380	10	90
NICE-LWX -4132-A/B/C0							
NICE-LWX -4160-A/B/C0							

Note

For the models of other higher power classes (such as above 160 kW) that are still not often applied onsite, the preceding table does not list the mounting dimensions. If you need such models, directly contact Monarch.

2.6 Optional Parts

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

Table 2-4 Optional parts of the NICE5000

Name	Model	Function	Remark
External braking unit	MDBUN	It is provided for the NICE5000 of 37 kW and above.	For details, see section 3.7 "Selection of Braking Components".
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 ECN413/1313)	

Name	Model	Function	Remark
Car top board (CTB)	MCTC-CTB	The MCTC-CTB is the car control board of the NICE5000. It has 8 DIs, 1 AI and 9 relay outputs (7 as standard configuration). 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.	A number of HCB models are available. For details, see section 3.4.
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 alls and outputs the call indicator state.	-
External LED operation panel	MDKE	It is the external LED display and operation panel.	It provides the RJ45 interface for connecting to the controller.
Extension cable	MDCAB	It is a standard 8-core network cable and can be connected to MDKE.	The cable length is 3 m in the standard configuration.

2.7 Selection of Adaptable Motor

The main counters of the electrical relationship between the controller and the motor are voltage and current.

1. In general elevator applications, the input mains voltage is 380 V, and the motor voltage can only be equal to or smaller than 380 V. Thus, when selecting the NICE5000, you can take only the current of the motor into consideration.
2. When the NICE5000 is designed, large safety allowance is reserved for the main power module. The controller can run properly within the nominal output current. During stable running, the maximum output torque is 150% of the rated torque and can reach up to 200% of the rated torque for a short time.

Therefore, for the motor with the rated voltage of 380 V, you can select the controller of the same power class. As long as the rated current of the motor is smaller than 1.1 times of the controller output current, the controller of the same power class can also be used.

Generally speaking, select an adaptable motor based on the output current of the controller and ensure that the rated current of the motor is equal to or smaller than the output current of the controller. For technical specifications of the controller, see section 2.4.

3

Mechanical and Electrical Installation

Chapter 3 Mechanical and Electrical Installation

3.1 NICE5000 Integrated Elevator Controller

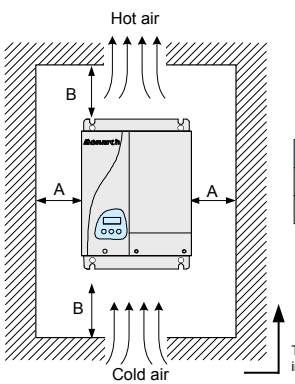
3.1.1 Installation Environment Requirements

Item	Requirements
Ambient temperature	-10°C to 50°C
Heat dissipation	Install the controller on the surface of an incombustible object, and ensure that there is sufficient space around for heat dissipation. Install the controller vertically on the support using screws.
Mounting location	Free from direct sunlight, high humidity and condensation
	Free from corrosive, explosive and combustible gas
	Free from oil dirt, dust and metal powder
Vibration	Less than 0.6 g
Protective enclosure	The controllers of plastic housing are whole-unit built-in products and need to be installed in the final system. The final system must have the required fireproof cover, electrical protective cover and mechanical protective cover, and satisfy the regional laws & regulations and related IEC requirements.

3.1.2 Installation Clearance Requirements

The clearance that needs to be reserved varies with the power class of the NICE5000, as shown in the following figure.

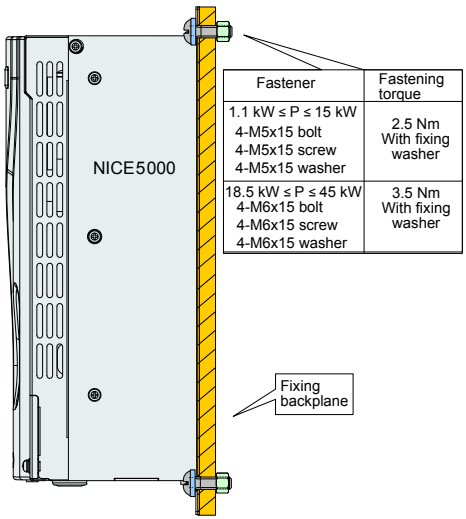
Figure 3-1 Clearance around the NICE5000 for installation



Power Class	Clearance Requirements	
1.1-18.5 kW	A ≥ 10 mm	B ≥ 100 mm
22-45 kW	A ≥ 50 mm	B ≥ 100 mm

The NICE5000 is installed vertically upward on the support with screws fixed into the four mounting holes, as shown in the following figure.

Figure 3-2 Diagram of mounting holes



The controller is generally installed in the control cabinet of the elevator equipment room. Pay attention to the following points when designing the control cabinet:

1. The temperature inside the cabinet must not rise to 10°C higher than the temperature outside the cabinet.

2. A closed control cabinet must be configured with a fan (or other air cooling device such as air conditioner) to ensure air circulation.

3. The air from the fan must not blow directly to the drive unit because this easily causes dust adhesion and further a fault on the drive unit.

4. A vent must be available at bottom of the control cabinet to form bottom-up air flow, which prevents heat island effect on the surface of components or partial thermal conductivity effect.

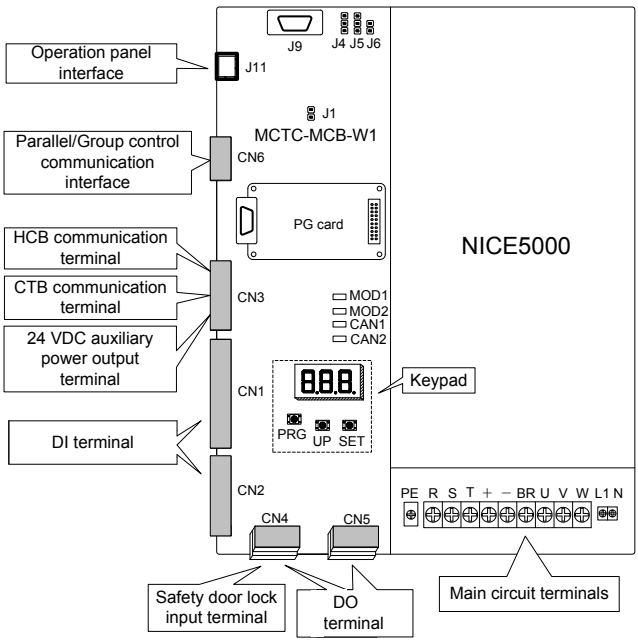
5. If the fan cannot meet the cooling requirements, install an air conditioner in the cabinet or in the equipment room. Note that the temperature inside the cabinet must not be too low; otherwise, condensation may occur, causing short-circuit of components.

6. For special environment where the temperature is high but cannot be reduced effectively, de-rate the controller during use.

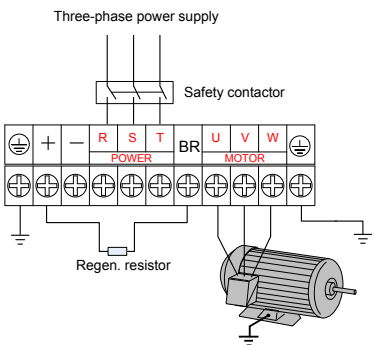
3.2 Electrical Installation

The following figure shows terminal arrangement of the NICE5000.

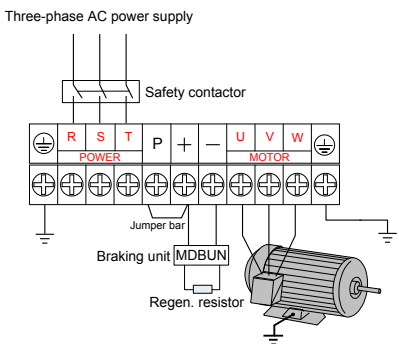
Figure 3-3 Terminal arrangement of the NICE5000



■ Main Circuit Wiring



For models of below 37 kW



For models of 37 kW and above

■ Description of Main Circuit Terminals

Table 3-1 Description of main circuit terminals

Terminal	Name	Description
R, S, T	Three-phase power input terminals	Provide three-phase power supply.
(+), (-)	Positive and negative terminals of DC bus	Connect the external braking unit and energy feedback unit for models of 37 kW and above.
(+), BR (P)	Terminals for connecting regen. resistor	Connect the regen. resistor for models of below 37 kW. Connect the DC reactor for models of 37 kW and above. At delivery, the (+) and P terminals are shorted with the jumper bar. If you need not connect the DC reactor, do not remove the jumper bar.
U, V, W	Controller output terminals	Connect the three-phase motor.
PE	Grounding terminal	Must be grounded.
L1, N	EPS interface	It is the interface for the inverted 220 V power supply to the drive control board when the 48 VDC EPS is used.

Precautions about wiring of the main circuit terminals are as follows:

- Select the regen. resistor according to the recommended values in the regen. resistor selection table.
- The circuit on the output side must not be short-circuited or grounded.
- U, V, W cables of the controller must run through the grounding metal pipe and be laid separately or vertically with the control circuit signal cable.
- If the motor cable is too long, electrical resonance will be generated due to the impact of distributed capacitance, thus damaging the motor insulation or generating higher leakage current, causing the controller to trip in overcurrent protection.
- The grounding terminal of the main circuit must be tied to the ground reliably with the short and thick PE conductor. The multi-strand copper cable above 4 mm^2 is recommended, and the grounding resistance must be larger than 4 Ω. Do not connect this terminal to the neutral conductor of the power supply.
- The requirements for the PE conductor are as follows:
  - 1) The grounding terminal of the main circuit must be tied to ground reliably, with the grounding resistance smaller than 0.1 Ω.
  - The impedance of the PE conductor/cable must be able to bear the probable maximum short-circuit current when a fault occurs.
  - Use a yellow/green cable as the PE conductor.
  - Select the size of the PE conductor according to the following table.

Cross-sectional Area of a Phase Conductor (S)	Min. Cross-sectional Area of Protective Conductor (Sp)
$S \leq 16\ mm^2$	S
$16\ mm^2 < S \leq 35\ mm^2$	$16\ mm^2$
$35\ mm^2 < S$	S/2

■ Description of Control Circuit Terminals

Table 3-2 Description of control circuit terminals

Mark	Code	Terminal Name	Function Description	Terminal Arrangement
CN1	X1 to X12	DI	Optocoupler isolation Input voltage range: 10–30 VDC Input impedance: 4.7 kΩ Input current limit: 5 mA Functions set in F5-01 to F5-20, slow-down switch connected to a terminal among X1 to X8	CN1 X1 X2 X3 X4 X5 X6 X7 X8 X9 X10
CN2	X13 to X20			CN2 X13 X14 X15 X16 X17 X18 X19 X20 M AI
	AI	AI	Input voltage range: -10 to 10 VDC Used for the analog load cell device	
	M			
CN3	+24V	24 VDC power supply	24 VDC power supply for the MCB, used for the input, output, and communication circuits	CN3 M24 MCM Mod1 Mod1 CAN1 CAN1
	COM			
	Mod1+	Modbus communication terminal	HCB serial communication terminal	
	Mod1-			
	CAN1+	CANbus communication terminal	CTB CAN communication terminal	
	CAN1-			
CN4	Y5-M5 Y6-M6	Relay output	Normally-open (NO), maximum current and voltage rating: 5 A, 250 VAC Function set in F5-36 and F5-37	CN4 Y5 M5 Y6 M6 X29 X30 X31 XCOM
	X29, X30, X31-XCOM	DI	Safety circuit and door lock circuit higher-voltage input terminals Input voltage range: 95–125 VAC Function set in F5-29 to F5-31	

Mark	Code	Terminal Name	Function Description	Terminal Arrangement
CN5	Y1-M1 to Y4-M4	Relay output	Normally-open (NO), maximum current and voltage rating: 5 A, 250 VAC Function set in F5-32 to F5-35	CN5 Y1 M1 Y2 M2 Y3 M3 Y4 M4
CN6	CAN2+ CAN2-	Standby CANbus communication terminal	CAN communication for parallel control	CN6 CAN2+ CAN2-

Table 3-3 Description of indicators on the MCB

Mark	Terminal Name	Function Description
Mod2	Standby communication indicator	This indicator blinks (green) when the communication is normal.
CAN2	Standby communication indicator	This indicator is steady on (green) when communication for parallel/group control is normal, and blinks when the running in parallel/group mode is normal.
Mod1	HCB communication indicator	When communication between the MCB and the HCB is normal, this indicator is on (green).
CAN1	CTB communication indicator	When communication between the MCB and the CTB is normal, this indicator is on (green).
X1 to X20	Input signal indicator	This indicator is on when the external input is active.
Y1 to Y6	Output signal indicator	This indicator is on when the system output is active.

Note

Do not short J6 during normal use. Other jumpers are used for updating programs, and do not short them if unnecessary.

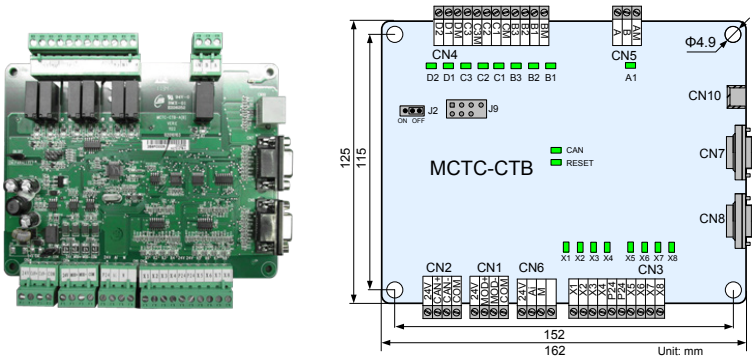
3.3 CTB Board (MCTC-CTB)

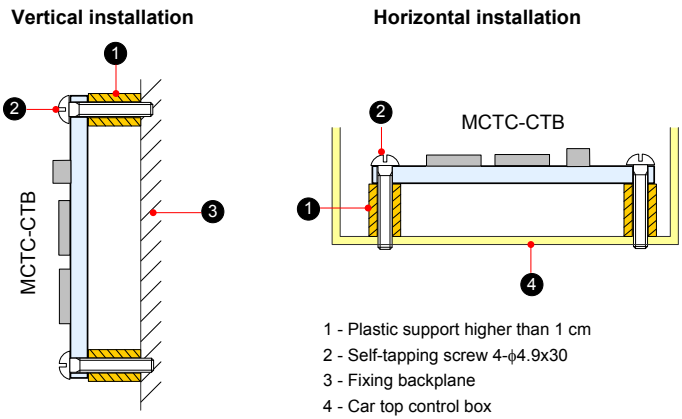
3.3.1 Dimensions and Installation

The car top board (MCTC-CTB) is the elevator car control board of the NICE5000. It consists of 8 DI terminals, 1 AI terminal, and 9 relay output terminals (standard: 7). It communicates with the MCTC-CCB and MCTC-HCB through Modbus.

The following figure shows the appearance and structure and installation method of the CTB.

Figure 3-4 Appearance, structure and installation method of the CTB



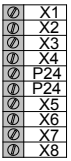
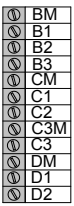
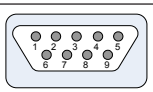


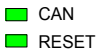
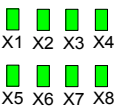
1 - Plastic support higher than 1 cm
2 - Self-tapping screw 4-ϕ4.9x30
3 - Fixing backplane
4 - Car top control box

3.3.2 Wiring of CTB Terminals

Table 3-4 Wiring description of CTB terminals

Mark		Terminal Name	Function Description	Terminal Arrangement
CN2	+24V/COM	External 24 VDC power supply	24 VDC power supply for the entire CTB	24V, CAN+, CAN-, COM — CN2
	CAN+/CAN-	CANbus communication interface	Connecting the MCB for CANbus communication	
CN1	+24V/COM	24 VDC power supply	24 VDC power supply for the HCB	24V, MOD+, MOD-, COM — CN1
	MOD+/ MOD-	Modbus communication	Connecting the HCB for Modbus communication	

Mark		Terminal Name	Function Description	Terminal Arrangement
CN6	Ai-M	Load cell signal input	0–10 VDC	
CN3	P24	24 VDC power supply	DI common terminal	
	X1	Light curtain 1	DI terminal 1. Photocoupler isolation, unipolarity input 2. Input impedance: 3.3 kΩ	
	X2	Light curtain 2		
	X3	Door open limit 1		
	X4	Door open limit 2		
	X5	Door close limit 1		
	X6	Door close limit 2		
	X7	Full-load signal (100%)		
	X8	Overload signal (110%)		
CN4	B1-BM	Door open signal 1	Relay output terminal Contact drive capacity: 30 VDC, 1 A	
	B2-BM	Door close signal 1		
	B3-BM	Forced door close 1		
	C1-CM	Door open signal 2		
	C2-CM	Door close signal 2		
	C3-C3M	Forced door close 2		
	D1-DM	Up arrival signal		
	D2-DM	Down arrival signal		
CN5	A-AM (NC contact) B-AM (NO contact)	Car fan and lamp control	Relay output terminal Contact drive capacity: 250 VAC, 3 A or 30 VDC, 1 A	
CN7/CN8		DB9-pin interface for communication with the CCB	Connecting the MCTC-CCB	 CN7/CN8
CN10		RJ45 interface	Connecting the external operation panel	
J2		CTB address jumper in parallel control	Setting the CTB addresses: Short OFF or do not connect the terminal for a single elevator and master elevator in parallel control. Short ON for the slave elevator in parallel control.	

Mark	Terminal Name	Function Description	Terminal Arrangement
CAN	CANbus communication indicator	This indicator blinks when communication between the CTB and the MCB is normal, and is steady on when a communication fault occurs.	
RESET	CANbus communication fault indicator	This indicator blinks and the CANbus communication indicator is steady on when a fault occurs during communication between the CTB and the MCB.	
X1 to X8	DI indicator	This indicator is on (green) when the external input is active.	
A1, B1 to B3, C1 to C3, D1 to D2	Relay output indicator	This indicator is on (green) when the system output is active.	
J9	Reserved	It is factory reserved. Do not short it randomly. Otherwise, the controller may not be used properly.	-

Note

- To prevent external interference on communication, you are advised to use the shielded twisted pair as communication cables and lay them parallel.
- Connect cables to the terminals according to the terminal marks, and fix the cables.

3.4 Display Board (MCTC-HCB)

As an important interface between users and the control system, the MCTC-HCB receives hall calls and displays the current floor and running direction for the hall. This board can also be used as car display board.

Monarch provides many types of display boards. The following part describes only a few common types. If the types available cannot meet your requirements, you can use a parallel-serial conversion board (HCB-B) to make the board provided match your own. For any further requirement, contact us.

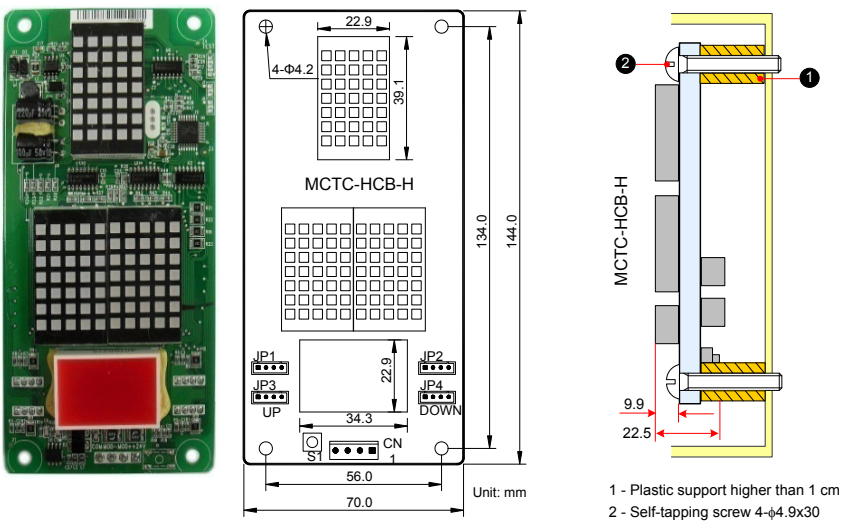
The common types to be described are listed in the following table.

Table 3-5 Common HCB types

Type	Description	Size (mm)
MCTC-HCB-H	Dot-matrix display board (red)	144 x 70 x 18
MCTC-HCB-R1	Ultrathin dot-matrix display board (red)	144 x 70 x 10
MCTC-HCB-D2	Ultrathin segment LCD display board (blue background white display)	144 x 70 x 10
MCTC-HCB-D5	Ultrathin segment LCD display board (black background white display)	136.5 x 76 x 9.3
MCTC-HCB-U1	4.3-inch segment LCD display board (blue background white display)	143.5 x 79.2 x 9.4
MCTC-HCB-V1	6.4-inch segment LCD display board (blue background white display)	131 x 184.6 x 14.2
MCTC-HCB-B	No-display hall call board	70 x 84 x 20

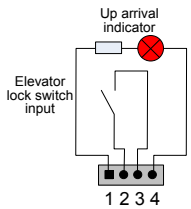
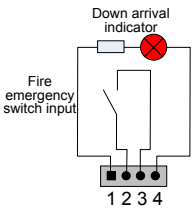
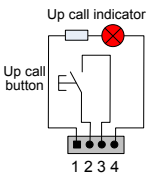
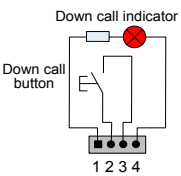
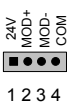
3.4.1 MCTC-HCB-H (Dot-Matrix Display Board)

Figure 3-5 Appearance, dimensions, and installation method of HCB-H



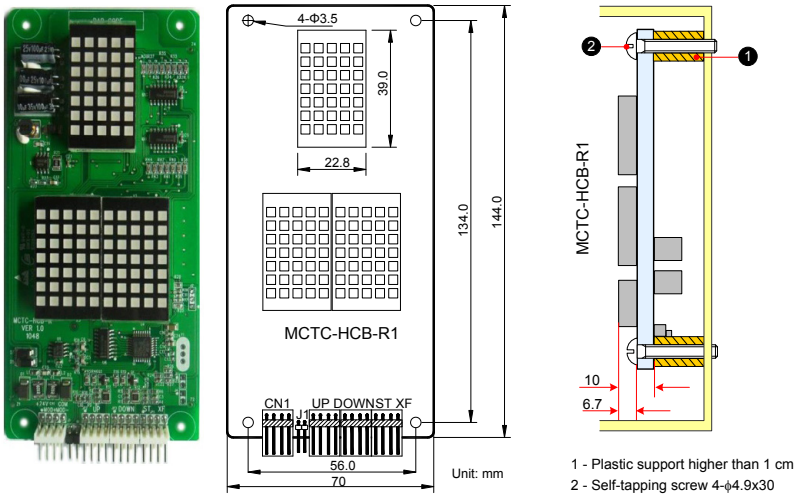
The following table describes the input and output terminals of HCB-H.

Table 3-6 Input and output terminals of HCB-H

Terminal Name	Function	Terminal Wiring
JP1	Interface for the elevator lock switch and up arrival indicator Pins 2 and 3 are for switch input. Pins 1 and 4 are output of the up arrival indicator (24 VDC output, load capacity: 40 mA).	
JP2	Interface for the fire emergency switch and down arrival indicator Pins 2 and 3 are for switch input. Pins 1 and 4 are output of the down arrival indicator (24 VDC output, load capacity: 40 mA).	
JP3	Interface for the up call button and indicator Pins 2 and 3 are for up call input. Pins 1 and 4 are power supply for the up call indicator (24 VDC output, load capacity: 40 mA).	
JP4	Interface for the down call button and indicator Pins 2 and 3 are for down call input. Pins 1 and 4 are power supply for the down call indicator (24 VDC output, load capacity: 40 mA).	
S1	Button for setting the floor address. Hold down the button to adjust the floor address (range 0–56). After you stop pressing, the address number blinks three times and the setting is successful.	
CN1	Modbus communication and power supply terminal Pins 2 and 3 are for Modbus communication. Pins 1 and 4 are for DC power supply.	

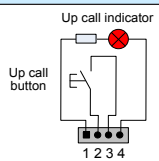
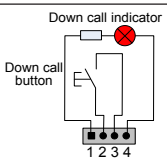
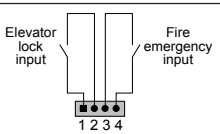
3.4.2 MCTC-HCB-R1 (Ultrathin Dot-Matrix Display Board)

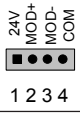
Figure 3-6 Appearance, dimensions, and installation method of HCB-R1



The following table describes the input and output terminals.

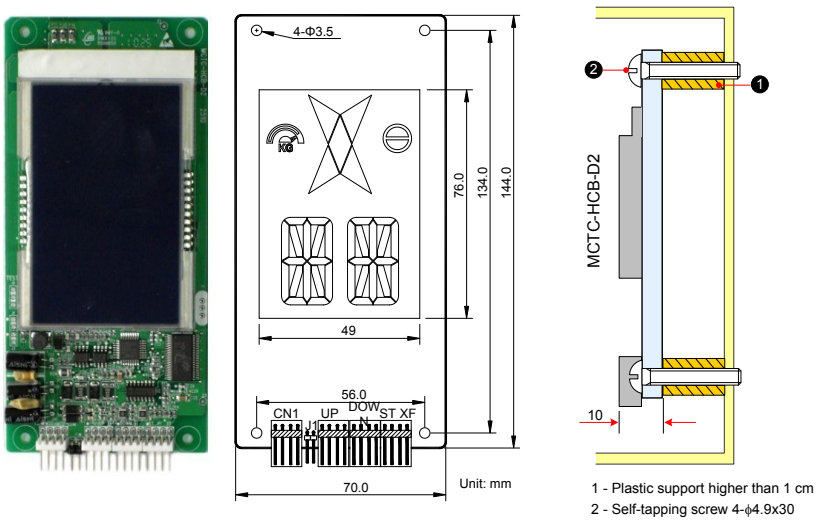
Table 3-7 Input and output terminals of HCB-R1

Terminal Name	Function	Terminal Wiring
UP	Interface for the up call button and indicator Pins 2 and 3 are for up call input. Pins 1 and 4 are power supply for the up call indicator (24 VDC output, load capacity: 40 mA).	
DOWN	Interface for the down call button and indicator Pins 2 and 3 are for down call input. Pins 1 and 4 are power supply for the down call indicator (24 VDC output, load capacity: 40 mA).	
XF/ST	Interface for the fire emergency and elevator lock switches Pins 1 and 2 are for elevator lock input. Pins 3 and 4 are for fire emergency input.	
J1	Terminal for setting the floor address. Short J1, and press the UP button or DOWN button to set the floor address (range 0–56). After the jumper cap is removed, the address is automatically stored.	

Terminal Name	Function	Terminal Wiring
CN1	Modbus communication and power supply terminal Pins 2 and 3 are for Modbus communication. Pins 1 and 4 are for DC power supply.	

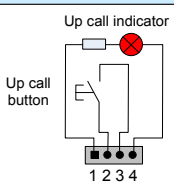
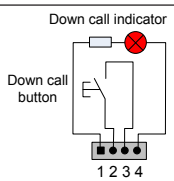
3.4.3 MCTC-HCB-D2 (Ultrathin Segment LCD Display Board)

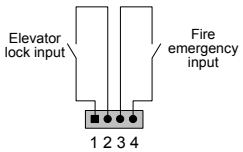
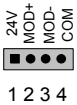
Figure 3-7 Appearance, dimensions, and installation method of HCB-D2



The following table describes the input and output terminals of HCB-D2.

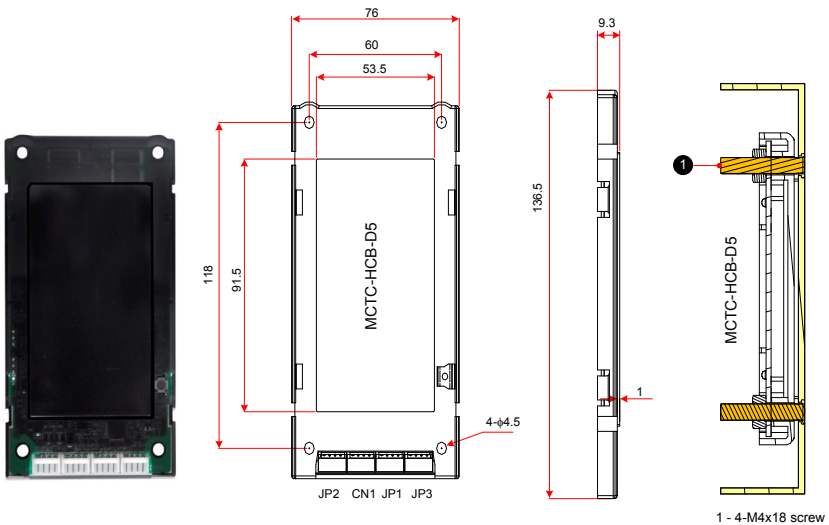
Table 3-8 Input and output terminals of HCB-D2

Terminal Name	Function	Terminal Wiring
UP	Interface for the up call button and indicator Pins 2 and 3 are for up call input. Pins 1 and 4 are power supply for the up call indicator (24 VDC output, load capacity: 40 mA).	
DOWN	Interface for the down call button and indicator Pins 2 and 3 are for down call input. Pins 1 and 4 are power supply for the down call indicator (24 VDC output, load capacity: 40 mA).	

Terminal Name	Function	Terminal Wiring
XF/ST	Interface for the fire emergency and elevator lock switch Pins 1 and 2 are for elevator lock input. Pins 3 and 4 are for fire emergency input.	
J1	Terminal for setting the floor address Short J1, and press the UP button or DOWN button to set the floor address (range 0–56). After the jumper cap is removed, the address is automatically stored.	
CN1	Modbus communication and power supply terminal Pins 2 and 3 are for Modbus communication. Pins 1 and 4 are for power supply.	

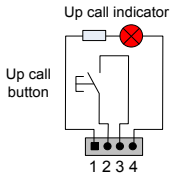
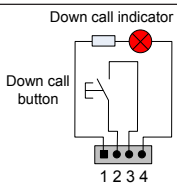
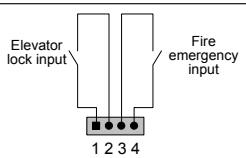
3.4.4 MCTC-HCB-D5 (Ultrathin Segment LCD Display Board)

Figure 3-8 Appearance, dimensions, and installation method of HCB-D5



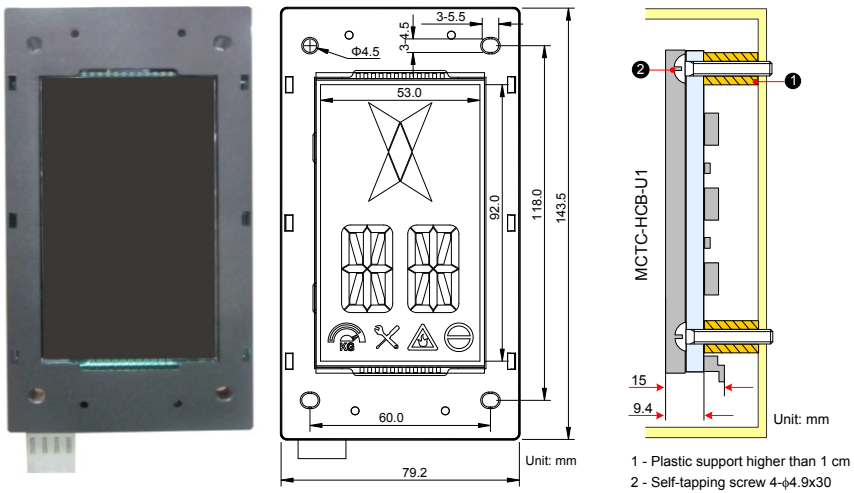
The following table describes the input and output terminals of HCB-D5.

Table 3-9 Input and output terminals of HCB-D5

Terminal Name	Function	Terminal Wiring
JP2	Interface for the up call button and indicator Pins 2 and 3 are for up call input. Pins 1 and 4 are power supply for the up call indicator (24 VDC output, load capacity: 40 mA).	
JP3	Interface for the down call button and indicator Pins 2 and 3 are for down call input. Pins 1 and 4 are power supply for the down call indicator (24 VDC output, load capacity: 40 mA).	
JP1	Interface for the fire emergency and elevator lock switch Pins 1 and 2 are for elevator lock input. Pins 3 and 4 are for fire emergency input.	
S1	Button for setting the floor address. Hold down the button to adjust the floor address (range 0–56). After you stop pressing, the address number blinks three times and the setting is successful.	
CN1	Modbus communication and power supply terminal. Pins 2 and 3 are for Modbus communication. Pins 1 and 4 are for power supply.	

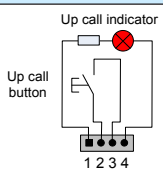
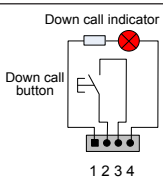
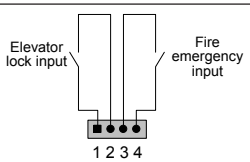
3.4.5 MCTC-HCB-U1 (4.3-inch Segment LCD Display Board)

Figure 3-9 Appearance, dimensions, and installation method of HCB-U1



The following table describes the input and output terminals of HCB-U1.

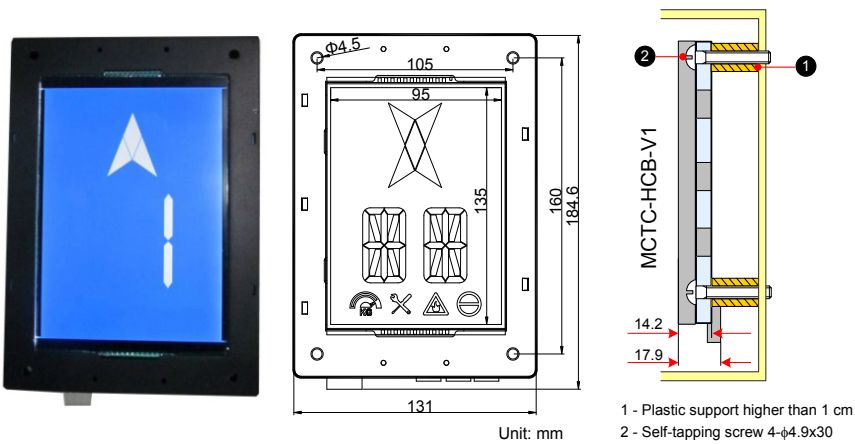
Table 3-10 Input and output terminals of HCB-U1

Terminal Name	Function	Terminal Wiring
J1	Interface for the up call button and indicator Pins 2 and 3 are for up call input. Pins 1 and 4 are power supply for the up call indicator (24 VDC output, load capacity: 40 mA).	
J2	Interface for the down call button and indicator Pins 2 and 3 are for down call input. Pins 1 and 4 are power supply for the down call indicator (24 VDC output, load capacity: 40 mA).	
J3	Interface for the fire emergency and elevator lock switches Pins 1 and 2 are for elevator lock input. Pins 3 and 4 are for fire emergency input.	

Terminal Name	Function	Terminal Wiring
S1	Button for setting the floor address. Hold down the button to adjust the floor address (range: 0−56). After you stop pressing, the address number blinks three times, and therefore the setting is successful.	 S1
CN1	Modbus communication and power supply terminal Pins 2 and 3 are for Modbus communication. Pins 1 and 4 are for DC power supply.	

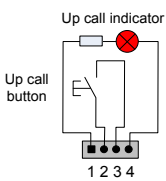
3.4.6 MCTC-HCB-V1 (6.4-inch Segment LCD Display Board)

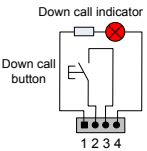
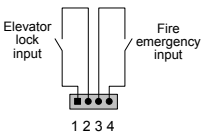
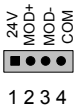
Figure 3-10 Appearance, dimensions, and installation method of HCB-V1



The following table describes the input and output terminals of HCB-V1.

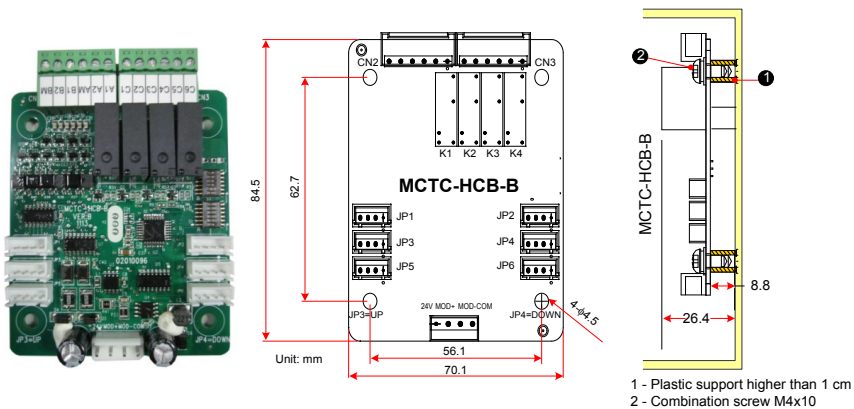
Table 3-11 Input and output terminals of HCB-V1

Terminal Name	Function	Terminal Wiring
J1	Interface for the up call button and indicator Pins 2 and 3 are for up call input. Pins 1 and 4 are power supply for the up call indicator (24 VDC output, load capacity: 40 mA).	

Terminal Name	Function	Terminal Wiring
J2	Interface for the down call button and indicator Pins 2 and 3 are for down call input. Pins 1 and 4 are power supply for the down call indicator (24 VDC output, load capacity: 40 mA).	
J3	Interface for the fire emergency and elevator lock switch Pins 1 and 2 are for elevator lock input. Pins 3 and 4 are for fire emergency input.	
S1	Button for setting the floor address. Hold down the button to adjust the floor address (range: 0−56). After you stop pressing, the address number blinks three times, and therefore the setting is successful.	
CN1	Modbus communication and power supply terminal Pins 2 and 3 are for Modbus communication. Pins 1 and 4 are for DC power supply.	

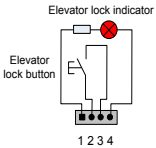
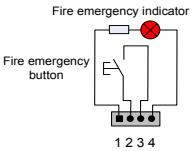
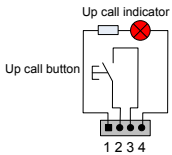
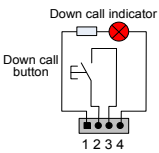
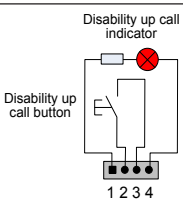
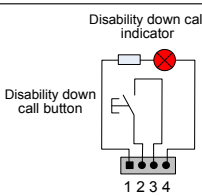
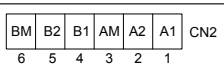
3.4.7 MCTC-HCB-B (No Display Hall Call Board)

Figure 3-11 Appearance, dimensions, and installation method of HCB-B



The following table describes the input and output terminals of HCB-B.

Table 3-12 Input and output terminals of HCB-B

Terminal Name	Function	Terminal Wiring
JP1	Interface for the elevator lock switch Pins 2 and 3 are for switch input. Pins 1 and 4 are for output of the elevator lock indicator.	
JP2	Interface for the fire emergency switch Pins 2 and 3 are for switch input. Pins 1 and 4 are for output of the fire emergency indicator.	
JP3	Interface for the up call button and indicator Pins 2 and 3 are for up call input. Pins 1 and 4 are power supply for the up call indicator.	
JP4	Interface for the down call button and indicator Pins 2 and 3 are for down call input. Pins 1 and 4 are power supply for the down call indicator.	
JP5	Interface for the disability up call button and indicator Pins 2 and 3 are for up call input. Pins 1 and 4 are power supply for the up call indicator.	
JP6	Interface for the disability down call button and indicator Pins 2 and 3 are for down call input. Pins 1 and 4 are power supply for the down call indicator.	
CN1	Modbus communication and power supply terminal Pins 2 and 3 are for Modbus communication. Pins 1 and 4 are for DC power supply.	
CN2	Relay output For the definition of the pins, see Table 3-13.	

The HCB-B provides four relay outputs, K1, K2, K3, and K4, provided by CN2 terminals.

Table 3-13 Relay output and pin definition of CN2

Relay	CN2 Pin	Common	Function Description
K1	A1	AM	Up arrival indicator
K2	A2	AM	Down arrival indicator
K3	B1	BM	Up arrival gong
K4	B2	BM	Down arrival gong

The DIP switch S1 is used to set the floor address of the HCB-B, as described in the following table.

Table 3-14 Floor address setting by S1

S1	Floor Address Setting, Range: 0–63
S1.1	Floor address selection Bit0
S1.2	Floor address selection Bit1
S1.3	Floor address selection Bit2
S1.4	Floor address selection Bit3
S1.5	Floor address selection Bit4
S1.6	Floor address selection Bit5

The DIP switch S2 is used to select the function of the HCB-B, as described in the following table.

Table 3-15 S2 description

S2	Function
S2.1	Modbus termination resistor setting
S2.2	HCB-B function selection
S2.3	HCB-B function selection
S2.4	For test
S2.5	HCB-B function selection
S2.6	HCB-B function selection

The HCB-B provides nine functions, which can be set according to the following table.

Table 3-16 Function setting of the HCB-B

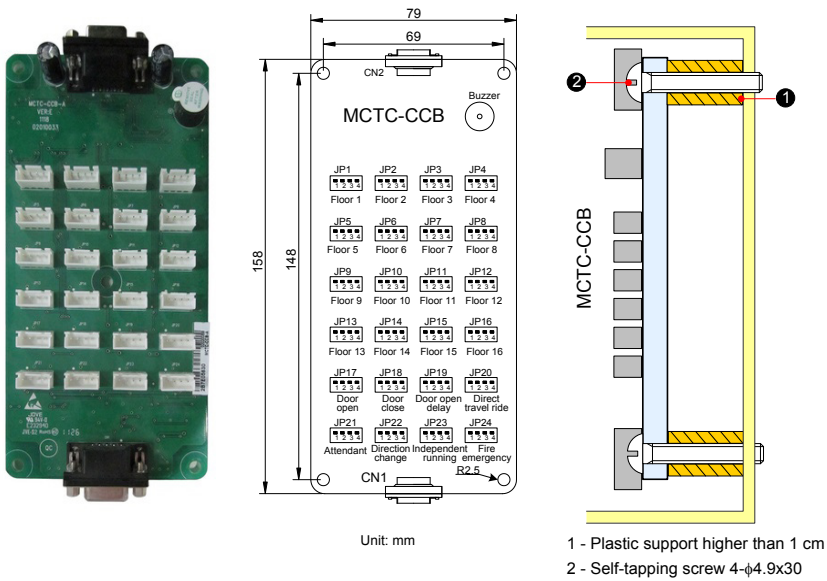
HCB-B Function	S2.6	S2.5	S2.3	S2.2
1. HCB-B function	OFF	OFF	ON	OFF
2. Binary output	OFF	OFF	OFF	ON
3. 7-segment function	OFF	OFF	OFF	OFF

HCB-B Function	S2.6	S2.5	S2.3	S2.2
4. BCD output	OFF	ON	OFF	OFF
5. Binary output with letter	OFF	ON	OFF	ON
6. Disability function output	OFF	ON	ON	OFF
7. In-car extension output	OFF	ON	ON	ON
8. In-car output based on physical floor (binary output)	ON	OFF	OFF	ON
9. Indication by hall arrival gong and indicator	ON	OFF	OFF	OFF

3.5 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 31-floor use can be implemented through cascaded connection. CN2 is an input connector and CN1 is a cascaded output connector.

Figure 3-12 Appearance, dimensions, and installation method of the CCB



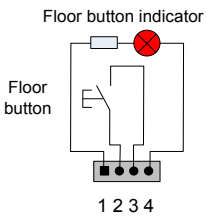
Unit: mm

1 - Plastic support higher than 1 cm

2 - Self-tapping screw 4-ϕ4.9x30

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

Table 3-17 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	 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.
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.				

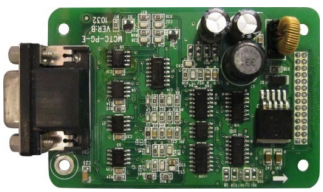
Note

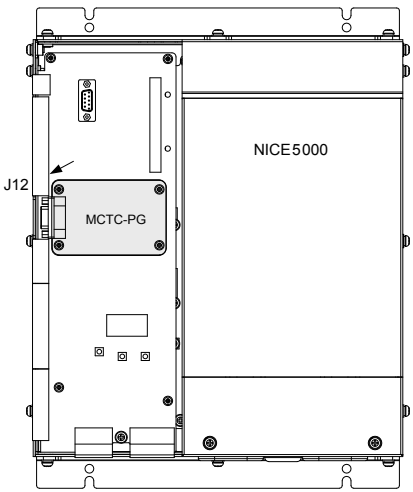
- Perform wiring strictly according to the terminal marks and ensure that the button is inserted securely.
- The MCTC-CCB has the same interfaces on both ends, and do not make wrong connection when connecting multiple boards in series.

3.6 Selection and Use of the MCTC-PG Card

The NICE5000 can implement CLVC only with use of the MCTC-PG card. The following figures show the appearance of the MCTC-PG card and its installation on the controller. Directly insert the J1 terminal of the MCTC-PG card into the J12 terminal of the controller.

Figure 3-13 Appearance of the MCTC-PG card and its installation on the controller

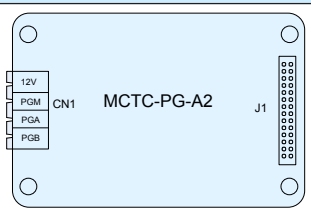
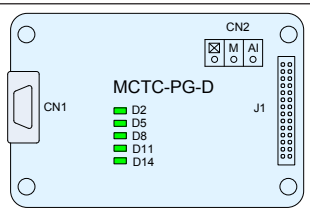


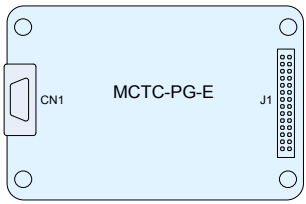
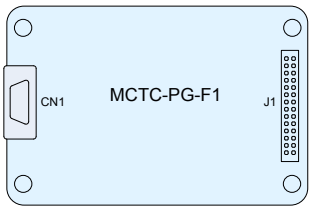


3.6.1 Selection of the MCTC-PG Card

Monarch provides four PG card models, MCTC-PG-A2, MCTC-PG-D, MCTC-PG-E and MCTC-PG-F1 for different encoder types, as described in the following table.

Table 3-18 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	

Encoder Type	Adaptable PG Card	Appearance
SIN/COS encoder	MCTC-PG-E	
Absolute encoder (ECN413/1313)	MCTC-PG-F1	

3.6.2 Terminal Wiring and Description of the MCTC-PG Card

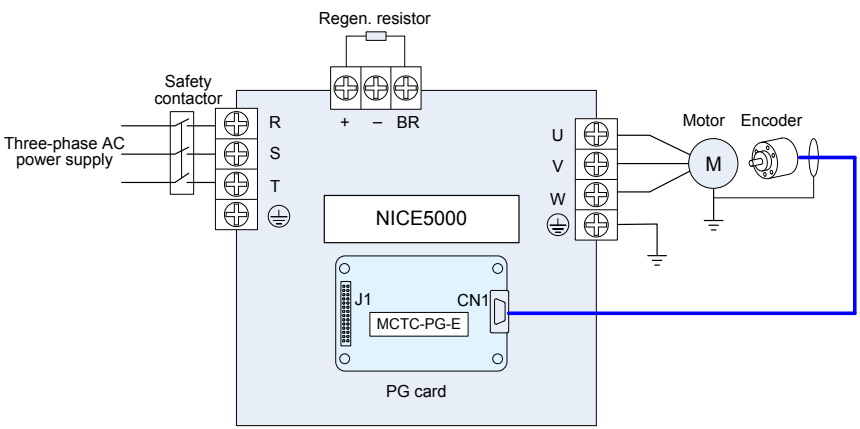
The MCTC-PG card is connected to the controller and the encoder as follows:

The J1 terminal and CN1 terminal of the MCTC-PG card are respectively connected to the J12 terminal of the MCB on the controller and the encoder of the motor.

Different MCTC-PG card models are connected to the MCB in the same way. The connection method to the encoder depends on the CN1 terminal of the model.

The following figure shows the wiring between MCTC-PG-E and the controller.

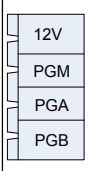
Figure 3-14 Wring between MCTC-PG-E and the controller



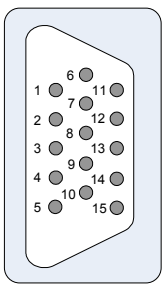
The following table defines the CN1 terminals of different MCTC-PG card models.

Table 3-19 Definitions of the CN1 terminals of different MCTC-PG card models

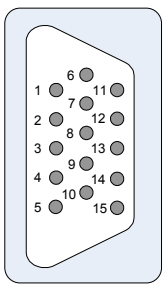
MCTC-PG-A2		MCTC-PG-D						MCTC-PG-E						MCTC-PG-F1					
1	15V	1	A+	6	NC	11	W+	1	B-	6	A-	11	C-	1	B-	6	A-	11	CLK-
2	PGM	2	A-	7	U+	12	W-	2	NC	7	COM	12	D+	2	NC	7	GND	12	DATA+
3	PGA	3	B+	8	U-	13	VCC	3	Z+	8	B+	13	D-	3	NC	8	B+	13	DATA-
4	PGB	4	B-	9	V+	14	COM	4	Z-	9	VCC	14	NC	4	NC	9	5V (Up)	14	NC
		5	NC	10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



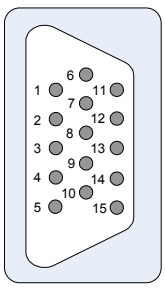
CN1



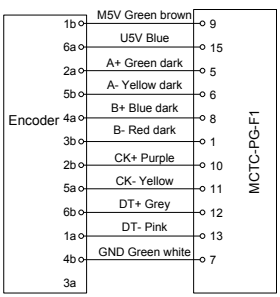
CN1



CN1



CN1



3.6.3 Precautions on Connecting the MCTC-PG Card

1. The cable from the MCTC-PG card to the encoder must be separated from the cables of the control circuit and the power circuit. Parallel cabling in close distance is forbidden.
2. The cable from the MCTC-PG card to the encoder must be a shielded cable. The shield must be connected to the PE on the controller side. To minimize interference, single-end grounding is suggested.
3. The cable from the MCTC-PG card to the encoder must run through the duct separately and the metal shell is reliably grounded.

3.7 Selection of Braking Components

The NICE5000 models of 30 kW and below have a built-in braking unit, and you only need to connect an external regen. resistor between BR and + terminals. For models above 30 kW, you need to install a braking unit and a regen. resistor externally.

Select the regen. resistor based on the configuration listed in the following table.

Table 3-20 Regen. resistor selection for the NICE5000 models

Controller Model	Power of Adaptable Motor (kW)	Max. Resistor (Ω)	Min. Resistance (Ω)	Power of Regen. Resistor (W)	Braking Unit
Single-phase 220 V, range: -15% to 20% (de-rated)					
NICE-LWX -2002-A/B/C0	1.1	145.0	125.0	300	Built-in
NICE-LWX -2003-A/B/C0	1.5	105.0	90.0	450	
220-NICE-LWX-4007-A/B/C0	2.2	72.0	63.0	600	
220-NICE-LWX-4011-A/B/C0	3.7	43.0	37.0	1100	
220-NICE-LWX-4015-A/B/C0	4.0	40.0	35.0	1200	
220-NICE-LWX-4018-A/B/C0	5.5	29.0	25.0	1600	
220-NICE-LWX-4022-A/B/C0	11.0	18.0	16.0	3500	
220-NICE-LWX-4030-A/B/C0	15.0	13.0	13.0	4500	
Three-phase 220 V, range: -15% to 20%					
NICE-LWX-2002-A/B/C0	2.2	72.0	65.0	600	Built-in
NICE-LWX-2003-A/B/C0	3.7	54.0	50.0	1100	
220-NICE-LWX-4007-A/B/C0	4.0	40.0	35.0	1200	
220-NICE-LWX-4011-A/B/C0	5.5	29.0	25.0	1600	
220-NICE-LWX-4015-A/B/C0	7.5	26.0	22.0	2500	
220-NICE-LWX-4018-A/B/C0	11.0	14.5	13.0	3500	
220-NICE-LWX-4022-A/B/C0	15.0	13.0	12.5	4500	
220-NICE-LWX-4030-A/B/C0	18.5	12.5	12.0	5500	
220-NICE-LWX-4037-A/B/C0	22.0	7.5	6.0	6500	MDBUN-60-2T
220-NICE-LWX-4045-A/B/C0	30.0	5.5	4.5	9000	MDBUN-90-2T

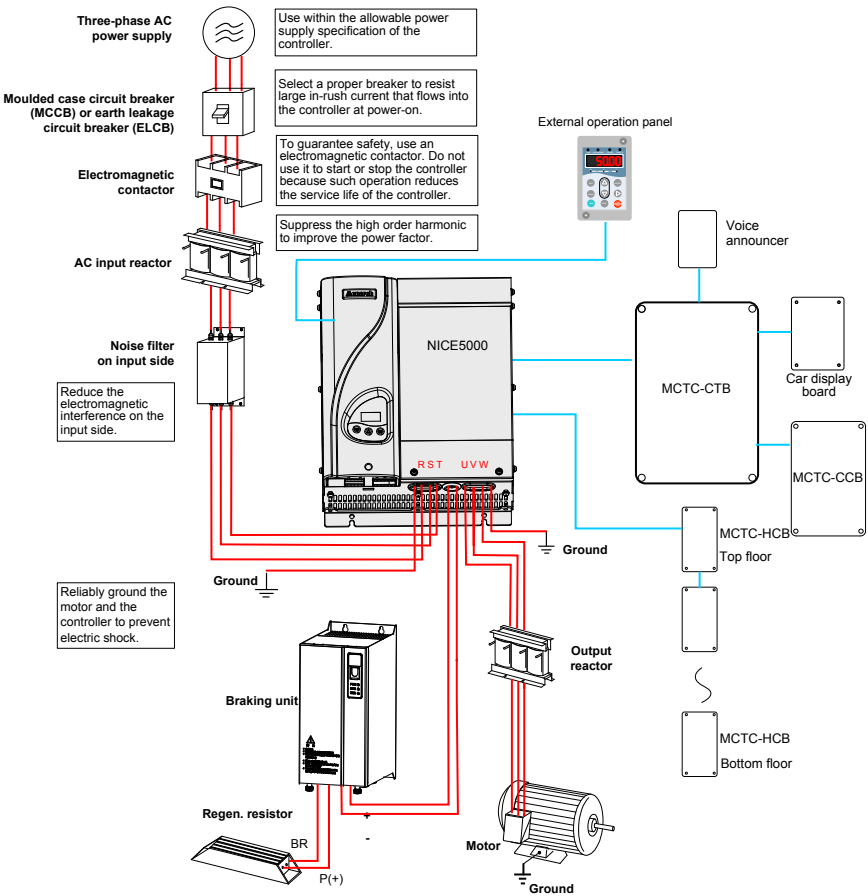
Controller Model	Power of Adaptable Motor (kW)	Max. Resistor (Ω)	Min. Resistance (Ω)	Power of Regen. Resistor (W)	Braking Unit
220-NICE-LWX-4055-A/B/C0	37.0	4.5	3.5	11000	MDBUN-60-2T x 2
Three-phase 380 V, range: -15% to 20%					
NICE-LWX-4002-A/B/C0	2.2	290	230	600	Built-in
NICE-LWX-4003-A/B/C0	3.7	170	135	1100	
NICE-LWX-4005-A/B/C0	5.5	115	90	1600	
NICE-LWX-4007-A/B/C0	7.5	85	65	2500	
NICE-LWX-4011-A/B/C0	11	55	43	3500	
NICE-LWX-4015-A/B/C0	15	43	35	4500	
NICE-LWX-4018-A/B/C0	18.5	34.0	25	5500	
NICE-LWX-4022-A/B/C0	22	24	22	6500	
NICE-LWX-4030-A/B/C0	30	20	16	9000	
NICE-LWX-4037-A/B/C0	37	16.0	13	11000	MDBUN-60-T
NICE-LWX-4045-A/B/C0	45	14.0	11	13500	MDBUN-60-T
NICE-LWX-4055-A/B/C0	55	12.0	10	16500	MDBUN-90-T
NICE-LWX-4075-A/B/C0	75	16 x 2	14 x 2	12000 x 2	MDBUN-60-T x 2
NICE-LWX-4090-A/B/C0	90	14 x 2	13 x 2	13500 x 2	MDBUN-60-T x 2
NICE-LWX-4110-A/B/C0	110	12 x 2	9 x 2	18000 x 2	MDBUN-90-T x 2
NICE-LWX-4132-A/B/C0	132	13.5 x 3	10.5 x 3	14000 x 3	MDBUN-90-T x 3
NICE-LWX-4160-A/B/C0	160	12 x 3	9 x 3	18000 x 3	MDBUN-90-T x 3

Note

- 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 regen. resistor or increase the resistance of the regen. resistor.
- It is recommended that you select the regen. resistor closest to the minimum resistance.
- "x 2" indicates that two sets are required. Take NICE-LWX-4110 as an example: "9 x 2, 18000 x 2, MDBUN-90-T x 2" indicates that two sets of (9 Ω, 18000 W) regen. resistor + MDBUN-90-T braking unit are connected in parallel to the controller. "x 3" indicates that three sets are required.

3.8 Selection of Peripheral Electrical Devices

3.8.1 Connection to Peripheral Electrical Devices



1. Do not install the capacitor or surge suppressor on the output side of the controller. Otherwise, it may cause faults to the controller or damage to the capacitor and surge suppressor.
2. Inputs/Outputs (main circuit) of the controller contain harmonics, which may interfere with the communication device connected to the controller. Therefore, install an anti-interference filter to minimize the interference.
3. Select the peripheral devices based on actual applications as well as by referring to section 3.8.2.

The following table describes the peripheral electrical devices.

Table 3-21 Description of peripheral electrical devices

Part	Mounting Location	Function Description
Circuit breaker	Forefront of controller power input side	Cut off the power supply of the controller and provide short-circuit protection.
Safety contactor	Between circuit breaker and the controller input side	Apply/Cut off the power supply of the controller. The close/open of the contactor is controlled by the external safety circuit.
AC input reactor	Controller input side	Improve the power factor of the input side. Eliminate the higher harmonics on the input side to provide effective protection on the rectifier bridge. Eliminate the input current unbalance due to unbalance between the power phases.
AC output reactor	Between the controller output side and the motor, close to the controller	If the distance between the controller and the motor is greater than 100 m, install an AC output reactor.

3.8.2 Selection of Peripheral Electrical Devices

Proper cable specification and cabling greatly improves anti-interference capability and safety of the system, facilitating installation and commissioning and enhancing system running stability.

The following table describes the specifications of peripheral electrical devices for selection.

Table 3-22 Specification of peripheral electrical devices for selection

Controller Model	MCCB (A)	Contactor (A)	Cable of Main Circuit (mm²)	Cable of Control Circuit (mm²)	Grounding Cable (mm²)
Single-phase 220 V, range: -15% to 20%					
NICE-LWX-2002-A/B/C0	16	12	1	0.75	1
NICE-LWX-2003-A/B/C0	20	18	2.5	0.75	2.5
220-NICE-LWX-4007-A/B/C0	25	18	4	0.75	4
220-NICE-LWX-4011-A/B/C0	40	25	6	0.75	6
220-NICE-LWX-4015-A/B/C0	50	32	6	0.75	6
220-NICE-LWX-4018-A/B/C0	50	38	6	0.75	6
220-NICE-LWX-4022-A/B/C0	63	50	10	0.75	10
220-NICE-LWX-4030-A/B/C0	80	65	16	0.75	16
Three-phase 220 V, range: -15% to 20%					
NICE-LWX-2002-A/B/C0	16	12	1.5	0.75	1.5
NICE-LWX-2003-A/B/C0	25	18	2.5	0.75	2.5
220-NICE-LWX-4007-A/B/C0	32	25	4	0.75	4

Controller Model	MCCB (A)	Contactor (A)	Cable of Main Circuit (mm²)	Cable of Control Circuit (mm²)	Grounding Cable (mm²)
220-NICE-LWX-4011-A/B/C0	40	32	6	0.75	6
220-NICE-LWX-4015-A/B/C0	50	38	6	0.75	6
220-NICE-LWX-4018-A/B/C0	63	40	10	0.75	10
220-NICE-LWX-4022-A/B/C0	80	50	10	0.75	10
220-NICE-LWX-4030-A/B/C0	100	65	16	0.75	16
Three-phase 380 V, range: -15% to 20%					
NICE-LWX-4002-A/B/C0	10	9	0.75	0.75	0.75
NICE-LWX-4003-A/B/C0	16	12	1.5	0.75	1.5
NICE-LWX-4005-A/B/C0	25	18	2.5	0.75	2.5
NICE-LWX-4007-A/B/C0	32	25	4	0.75	4
NICE-LWX-4011-A/B/C0	40	32	6	0.75	6
NICE-LWX-4015-A/B/C0	50	38	6	0.75	6
NICE-LWX-4018-A/B/C0	63	40	10	0.75	10
NICE-LWX-4022-A/B/C0	80	50	10	0.75	10
NICE-LWX-4030-A/B/C0	100	65	16	0.75	16
NICE-LWX-4037-A/B/C0	100	80	25	0.75	16
NICE-LWX-4045-A/B/C0	160	95	35	0.75	16

Note

To prevent the strong power from interfering with the weak power, the strong-power cables must be separated from the weak-power cables during cabling in the shaft. Grounding cables must be used to separate strong-power and weak-power traveling cables. "Strong power" refers to the voltage of 36 V and above.

The PVC insulation copper lead cable is recommended under 40□C ambient temperature in steady state.

3.9 Electrical Wiring Diagram of the NICE5000 Control System

Figure 3-15 Electrical wiring diagram of the NICE5000 control system

See the last page of this chapter.

3.10 Installation of Shaft Position Signals

In elevator control, to implement landing accurately and running safely, the car position needs to be identified based on shaft position signals.

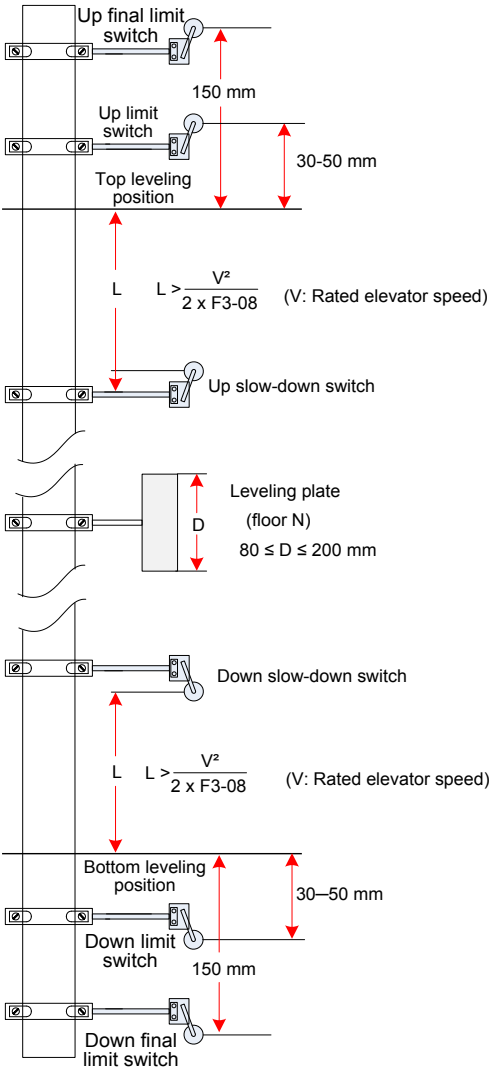
These shaft position signals include the leveling switches, up/down slow-down switches, up/down limit switches, and up/down final limit switches.

These shaft position signals are directly transmitted by the shaft cables to the MCB of the

controller. For the electrical wiring method, refer to Figure 3-15.

The following figure shows the arrangement of shaft position signals in the shaft.

Figure 3-16 Arrangement of shaft position signals



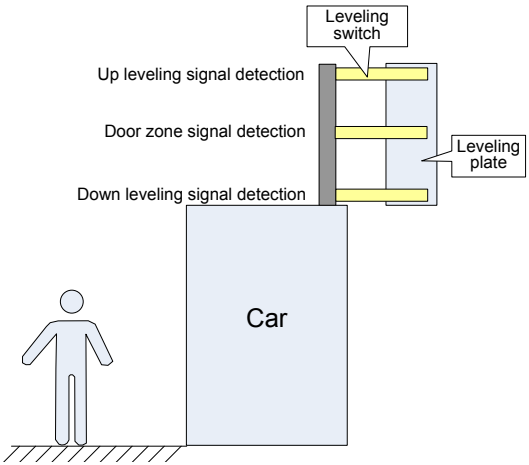
3.10.1 Installation of Leveling Signals

Leveling signals comprise the leveling switch and leveling plate and are directly connected to the input terminal of the controller. It is used to enable the car to land at each floor accurately.

The leveling switches are generally installed on the top of the car. The NICE5000 system supports the installation of 1−2 leveling switches. The leveling plate is installed on the guide rail in the shaft. A leveling plate needs to be installed at each floor. Ensure that leveling plates at all floors are mounted with the same depth and verticality.

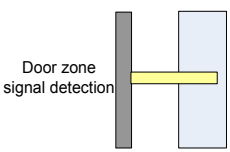
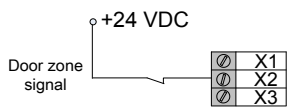
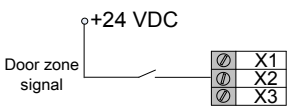
The following figure shows the installation of leveling signals

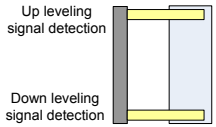
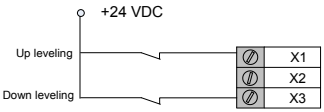
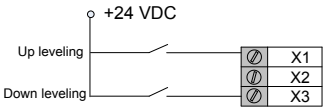
Figure 3-17 Installation of leveling signals



The following table describes the installation requirements of leveling switches

Table 3-23 Installation requirements of leveling switches

Number of Leveling Switches	Installation Method	Connecting to Input Terminals of Controller	Setting of Function Code
1			F5-01 = 0 F5-02 = 35
			F5-01 = 0 F5-02 = 03

<table>
<tr><th>Number of Leveling Switches</th><th>Installation Method</th><th>Connecting to Input Terminals of Controller</th><th>Setting of Function Code</th></tr>
<tr><td rowspan="2">2</td><td rowspan="2"> 
</td><td> 
</td><td>F5-01 = 33
F5-02 = 34</td></tr>
<tr><td> 
</td><td>F5-01 = 01
F5-02 = 02</td></tr>
</table>

Note

- When installing leveling plates, ensure that the plates at all floors are mounted with the same depth and verticality. Otherwise, the leveling accuracy will be affected. The recommended length of the plate is 80–200 mm.
- More leveling input signals need to be added if the door pre-open function is used. In this case, you need to increase the length of the plate properly. For details on the door pre-open module, contact the local agent or Monarch.

3.10.2 Installation of Slow-Down Switches

The slow-down switch is one of the key protective components of the NICE5000, protecting the elevator from over travel top terminal or over travel bottom terminal at maximum speed when the elevator position becomes abnormal.

The NICE5000 system supports a maximum of three pairs of slow-down switches. The slow-down switch 1, slow-down switch 2 and slow-down switch 3 are installed from the two ends of the shaft to the middle floor one by one. Generally, only one pair of slow-down switches is required for the low-speed elevator. Two or three pairs of slow-down switches are required for the high-speed elevator.

The slow-down distance L indicates the distance from the slow-down switch to the leveling plate at the terminal floor. The calculating formula is as follows:

$$L > \frac{V^2}{2 \times F3\text{-}08}$$

In the formula:

"L" indicates the slow-down distance;

"V" indicates the F0-04 (Rated elevator speed);

"F3-08" indicates the special deceleration rate.

The default value of F3-08 (Special deceleration rate) is 0.9 m/s^2. The slow-down distances calculated based on different rated elevator speeds are listed in the following table:

Table 3-24 Slow-down distances based on different rated elevator speeds

Rated Elevator Speed (m/s)	0.25	0.4	0.5	0.63	0.75	1	1.5	1.6	1.75	2	2.5	3	3.5	4
Distance of Slow-down 1 (m)	0.2	0.2	0.2	0.2	0.4	0.7	1.5	1.7	2.0	2.0	2.0	2.0	2.0	2.0
Distance of Slow-down 2 (m)	None									2.5	4.0	4.0	4.0	4.0
Distance of Slow-down 3 (m)	None											6	8	11

- "V" indicates the elevator speed, and precautions on the actual installation distance are as follows:
- V < 1 m/s: The actual installation distances of the slow-down switches should be close to the values recommended in this table.
- 1 m/s ≤ V ≤ 2 m/s: The actual installation distances of the slow-down switches are allowed to have an error within ±0.1 m based on the values recommended in this table.
- 2 m/s < V ≤ 4 m/s: The actual installation distances of the slow-down switches are allowed to have an error within ±0.3 m based on the values recommended in this table.

Note

- The slow-down distances above are calculated on the basis of the default special deceleration rate 0.9 m/s^2.
- Increasing the special deceleration rate does not affect safety. However, decreasing the special deceleration rate may bring safety hazard. If any change is in need, re-calculate the slow-down distance by using the above formula.

3.10.3 Installation of Limit Switches

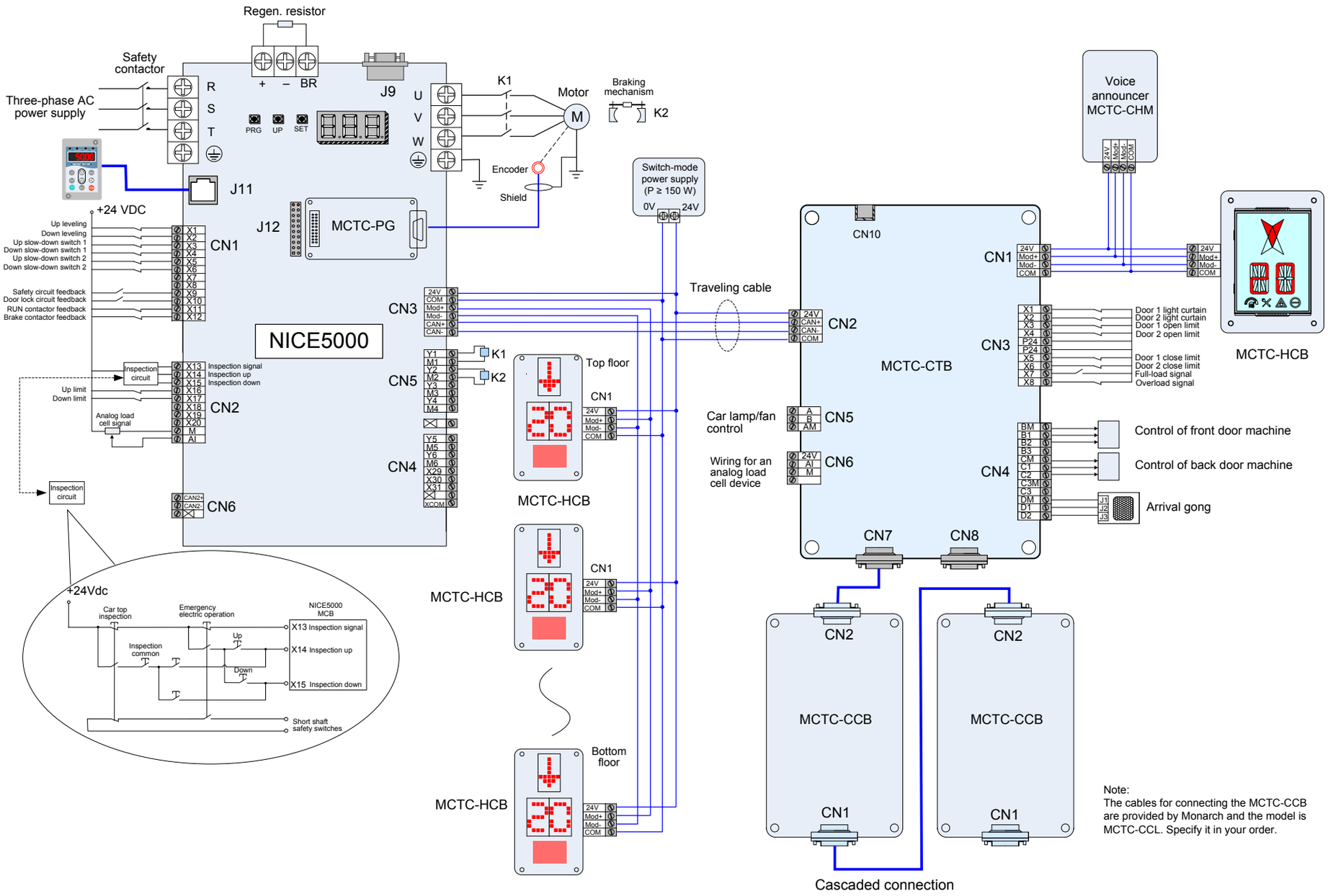
The up limit switch and down limit switch protect the elevator from over travel top/bottom terminal when the elevator does not stop at the leveling position of the terminal floor.

- The up limit switch needs to be installed 30−50 mm away from the top leveling position. The limit switch acts when the car continues to run upward 30−50 mm from the top leveling position.
- The down limit switch needs to be installed 30−50 mm away from the bottom leveling position. The limit switch acts when the car continues to run downward 30−50 mm from the bottom leveling position.

3.10.4 Installation of Final Limit Switches

- The final limit switch is to protect the elevator from over travel top/bottom terminal when the elevator does not stop completely upon passing the up/down limit switch.
- The up final limit switch is mounted above the up limit switch. It is usually 150 mm away from the top leveling position.
- The down final limit switch is mounted below the down limit switch. It is usually 150 mm away from the bottom leveling position.

Figure 3-15 Electrical wiring diagram of the NICE3000^{new} control system



Note:
The cables for connecting the MCTC-CCB are provided by Monarch and the model is MCTC-CCL. Specify it in your order.

4

Use of the Commissioning Tools

Chapter 4 Use of the Commissioning Tools

The NICE5000 supports three commissioning tools, 3-button keypad on the MCB, LED operation panel, and host computer monitoring software.

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
Host computer monitoring software	It is used to monitor the current elevator state, view and modify all parameters, and upload and download parameters on the PC.	Optional

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

4.1 Use of the Onboard Keypad

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.

Note

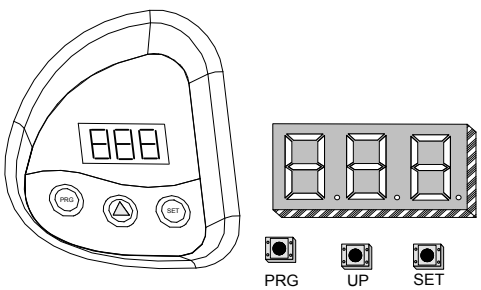
The keypad is exposed on the controllers of the B0 or C0 structure. Pay attentions to the following points during use:

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 4-1 Appearance of the keypad

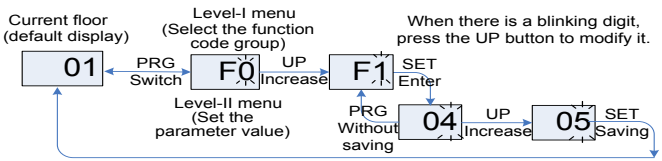


As shown in the preceding figure, the three buttons are PRG, UP, and SET. The functions of the three buttons are described in the following table.

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 4-2 Setting the called floor



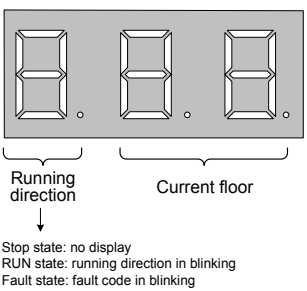
The function code groups displayed on the keypad are described as follows:

1. F0: 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. F1: 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. F2: fault reset and fault code display

   After you enter the F2 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.

4. Display "2": If you select this value and press the SET button, the 7-segment LEDs display the 20 fault codes and occurrence time circularly. You can press the PRG button to exit.

5. F3: time display

   After you enter the F3 menu, the 7-segment LEDs display the current system time circularly.

6. F4: contract number display

   After you enter the F4 menu, the 7-segment LEDs display the user's contract number.

7. F5: running times display

   After you enter the F5 menu, the 7-segment LEDs display the elevator running times circularly.

8. F6: 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.

9. F7: shaft auto-tuning command input

   After you enter the F7 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, F7 is back to "0" automatically.

   If shaft auto-tuning conditions are not met, fault code "E35" is displayed.

10. F8: test function

    After you enter the F8 menu, the 7-segment LEDs display "0". The setting of F8 is described as follows:

    - 1: Hall call forbidden
    - 2: Door open forbidden
    - 3: Overload forbidden
    - 4: Limit switches disabled

    After the setting is complete, press the SET button. Then the 7-segment LEDs display "E88" and blink, prompting that the elevator is being tested. When you press PRG to exit, F8 is back to 0 automatically.

11. F9: reserved

12. FA: auto-tuning

    After you enter the FA menu, the 7-segment LEDs display "0". The setting of FA is as follows:

- 0: No function
- 1: With-load auto-tuning
- 2: No-load auto-tuning
- 3:PMSM parameter identification

    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.

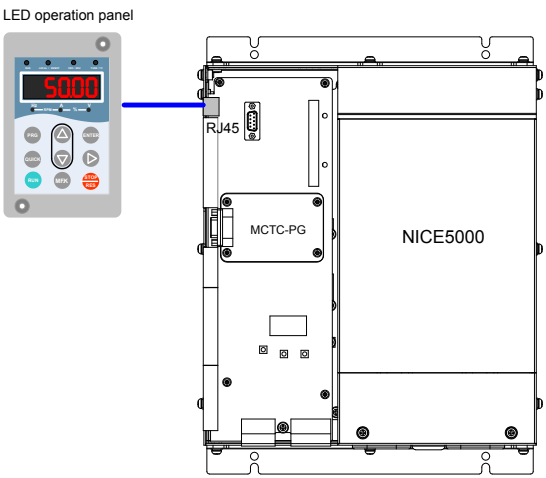
    After auto-tuning is complete, the 7-segment LEDs display the current angle for 2s, and then switch over to the F0 menu.

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

4.2 Use of the LED Operation Panel

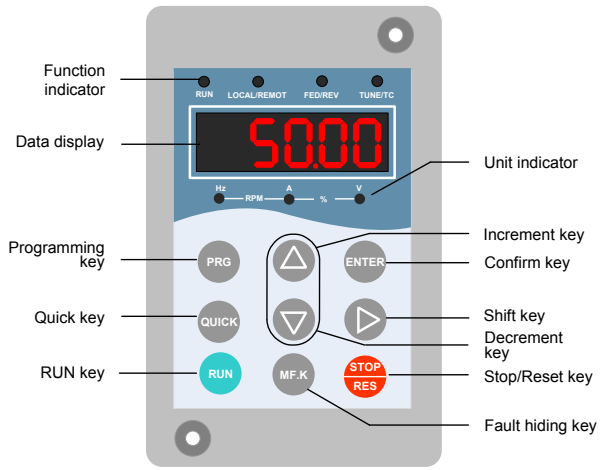
The LED operation panel is connected to the RJ45 interface of the controller by using an 8-core flat cable.

Figure 4-3 Connection between the operation panel and the NICE5000



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 4-4 Diagram of the LED operation panel

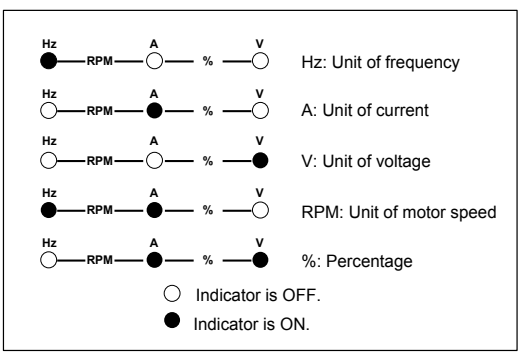


4.2.1 Description of Indicators

- Status Indicators

Indicator	Indication
○ RUN	OFF indicates the controller is in the stop state.
	ON indicates the controller is in the running state.
○ LOCAL/REMOT	Reserved
○ FWD/REV	OFF indicates elevator in up direction.
	ON indicates elevator in down direction.
○ TUNE/TC	ON indicates in auto-tuning state.

- Unit Indicators



- LED Display

  The five-digit LED data display can show the following range of information:

  - Parameter value
  - Monitoring information
  - Fault code

4.2.2 Description of Keys on the Operation Panel

Table 4-1 Description of keys on the operation panel

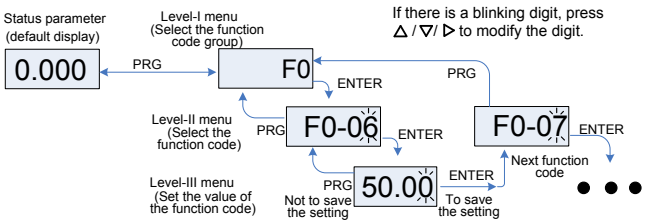
Key	Name	Function
PRG	Programming	Enter or exit Level-I menu.
ENTER	Confirm	Enter the menu interfaces level by level, and confirm the parameter setting.
△	Increment	Increase data or function code.
▽	Decrement	Decrease data or function code.
▷	Shift	Select the displayed parameters in turn in the stop or running state, and select the digit to be modified when modifying parameters.
RUN	Run	Start the controller in the operation panel control mode.
STOP RES	Stop/Reset	Stop the controller when it is in the running state and perform the reset operation when it is in the fault state.
QUICK	Quick	Enter or exit Level-I quick menu.
MF.K	Fault hiding	Press this key to display or hide the fault information in the fault state, which facilitates parameter viewing.

4.2.3 Operation Procedure

The LED operation panel adopts three-level menu.

The three-level menu consists of function code group (Level I), function code (Level II), and function code setting value (level III), as shown in the following figure.

Figure 4-5 Operation procedure on the operation panel

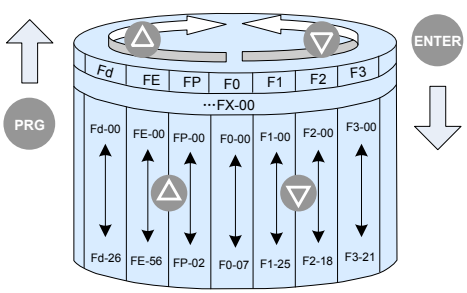


You can return to Level II menu from Level III menu by pressing PRG or ENTER. The difference between the two is as follows:

- After you press ENTER, the system saves the parameter setting first, and then goes back to Level II menu and shifts to the next function code.
- After you press PRG, the system does not save the parameter setting, but directly returns to Level II menu and remains at the current function code.

The following figure shows the shift between the three levels of menus.

Figure 4-6 Shift between the three levels of menus



In Level III menu, if the parameter has no blinking digit, it means that the parameter cannot be modified. This may be because:

- Such a parameter is only readable, such as actually detected parameters and running record parameters.
- Such a parameter cannot be modified in the running state and can only be changed at stop.

5

System Commissioning and Functions

Chapter 5 System Commissioning and Functions

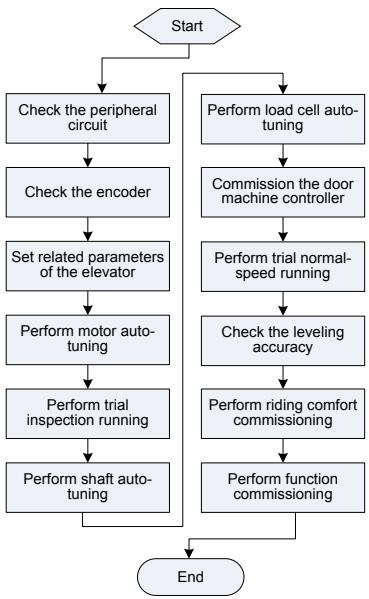
5.1 System Commissioning

⚠ CAUTION

- Ensure that there is no person in the shaft or car before performing commissioning on the elevator.
- Ensure that the peripheral circuit and mechanical installation are ready before performing commissioning.

The following figure shows the commissioning procedure of the system.

Figure 5-1 Commissioning procedure of the system



5.1.1 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 the field mechanical and electric wiring.

Before power-on, check the peripheral wiring to ensure component and personal safety.

The items to be checked include:

1) Whether the component models are matched
2) Whether the safety circuit is conducted and reliable
3) Whether the door lock circuit is conducted and reliable
4) Whether the shaft is unobstructed, and the car has no passenger and meets the conditions for safe running
5) Whether the cabinet and traction motor are well grounded
6) Whether the peripheral circuit is correctly wired according to the drawings of the vendor
7) Whether all switches act reliably
8) Whether there is short-circuit to ground by checking the inter-phase resistance of the main circuit
9) Whether the elevator is set to the inspection state
10) Whether the mechanical installation is complete (otherwise, it will result in equipment damage and personal injury)

2. Check the encoder.

The pulse signal from the encoder is critical to accurate control of the system. Before commissioning, check the following items carefully:

1) The encoder is installed reliably with correct wiring. For details on the encoder wiring, see section 3.6.
2) The signal cable and strong-current circuit of the encoder are laid in different ducts to prevent interference.
3) The encoder cable is 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 shielding cable and preferably welded to the original encoder cable by using the soldering iron.
4) The shielding cable of the encoder cable is grounded on the end connected to the controller (only one end is grounded to prevent interference).

3. Check the power supply before power-on.

1) The inter-phase voltage of the user power supply is within (380 V±15%), and the unbalance degree does not exceed 3%.
2) The power input voltage between terminals 24V and COM on the MCB is within (24 VDC±15%).
3) The total lead-in wire gauge and total switch capacity meet the requirements.

Note

If the input voltage exceeds the allowable value, serious damage will be caused. Distinguish the negative and positive of the DC power supply. Do not run the system when there is input power phase loss.

4. Check the grounding.

1) Check that the resistance between the following points and the ground is close to infinity.

- R, S, T and PE
- U, V, W and PE
- 24V and PE on the MCB
- Motor U, V, W and PE
- +, – bus terminals and PE
- Safety circuit, door lock circuit, and inspection circuit terminals and PE

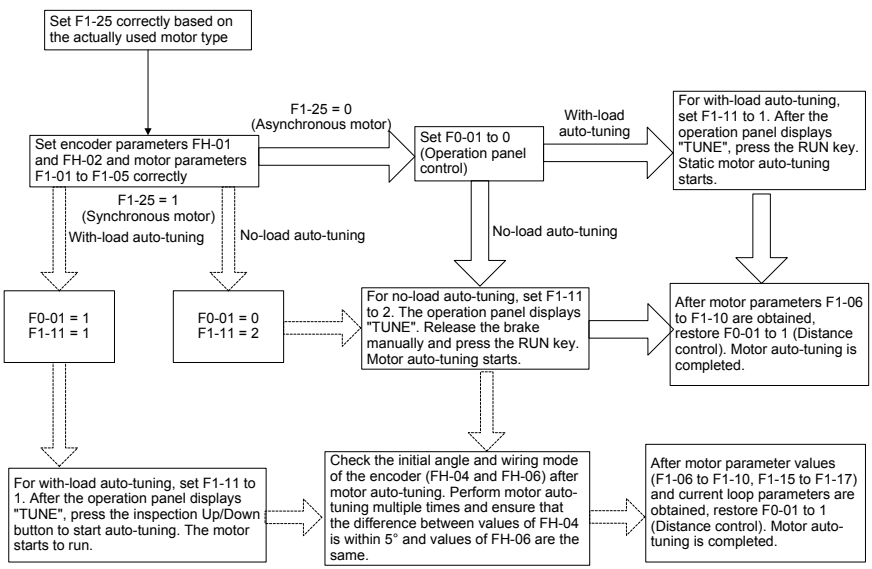
2) Check the grounding terminals of all elevator electrical components and the power supply of the control cabinet

5.1.2 Trial Running

■ **Trial Running at Inspection Speed**

The following figure shows the motor auto-tuning process.

Figure 5-2 Motor auto-tuning process



Switchover between synchronous motor and asynchronous motor is implemented easily by changing F1-25.

Follow the following precautions:

- Ensure that all wiring and installation meet the safety specifications.
- Set F1-25 (Motor type) and set motor parameters in group F1 (F1-01 to F1-05) correctly. Incorrect setting will result in auto-tuning failure.
- Set FH-01 (Encoder type) and FH-02 (Encoder PPR) correctly. Ensure that the motor is in CLVC (F0-00 = 1) and distance control (F0-01 = 1) mode.
- Ensure that the motor wiring is correct (UVW cables of the motor respectively connected to UVW cables of the controller) for with-load auto-tuning. If the motor wiring is incorrect, the motor may jitter or fail to run after the brake is released; in this case, you need to replace any two of the motor UVW cables.
- Reset the current fault and then start auto-tuning, because the system cannot enter the auto-tuning state ("TUNE" is not displayed) when there is a fault.
- Perform motor auto-tuning again if the phase sequence or encoder of the synchronous motor is changed.
- For the synchronous motor, perform three or more times of auto-tuning, compare the obtained values of FH-04 (Encoder initial angle). The value deviation of FH-04 shall be within ±5°, which indicates that the auto-tuning is successful.
- After the auto-tuning is completed, perform trial inspection running. Check whether the current is normal, whether the actual running direction is the same as the set direction. If the running direction is different from the set direction, change the value of F0-05.
- With-load auto-tuning is dangerous (inspection-speed running of many control cabinets is emergency electric running and the shaft safety circuit is shorted). Ensure that there is no person in the shaft in this auto-tuning mode.

More descriptions of motor auto-tuning are as follows:

- For synchronous motor, with-load auto-tuning learns stator resistance, shaft-D and shaft-Q inductance, current loop (including position lock) PI parameters, and encoder initial angle; no-load auto-tuning additionally learns the encoder wiring mode.
- For the asynchronous motor, static auto-tuning learns stator resistance, rotor resistance, and leakage inductance, and automatically calculates the mutual inductance and motor magnetizing current. Complete auto-tuning learns the mutual inductance, motor magnetizing current, and current loop parameters.
- For the synchronous motor, when F1-11 = 3, the controller learns current loop parameters in motor static state, and the brake is not released.
- For the asynchronous motor, F1-11 =3 is the same as F1-11 = 1.
- The controller learns current loop parameters by default during auto-tuning. If the riding comfort is satisfactory, set FA-12 Bit2 to 1 to cancel self-adaptation of current loop PI parameters when performing auto-tuning again.

■ Trial Running at Normal Speed

After ensuring that running at inspection speed is normal, perform shaft auto-tuning, ensure

that the elevator satisfies the safety running requirements, and then perform trial running at normal speed.

To perform shaft auto-tuning, the following conditions must be satisfied:

1. The signals of the encoder and leveling sensors (NC, NO) are correct and the slow-down switches are installed properly and act correctly.
2. When the elevator is at the bottom floor, the down slow-down 1 switch acts.
3. The elevator is in the inspection state. The control mode is distance control and CLVC (F0-00 = 1, F0-01 = 1).
4. The top floor number (F6-00) and bottom floor number (F6-01) are set correctly.
5. The system is not in the fault alarm state. If there is a fault at the moment, press 

to reset the fault.

   Then set F7-26 to 1 on the operation panel or set F7 to 1 on the keypad of the MCB, and start shaft auto-tuning.

Note

For shaft auto-tuning when there are only two floors, the elevator needs to run to below the bottom leveling position, that is, the leveling sensor is disconnected from the leveling plate. There is no such requirement when there are multiple floors.

5.2 Door Machine Controller Commissioning

Correlation of the door machine controller and the elevator controller is that:

- The CTB outputs door open/close command;
- the door machine controller feeds back the door open/close limit signal.

After commissioning and installation of the door machine controller are complete, check:

- Whether the wiring is correct
- Whether the door open/close limit signals are consistent with the default setting

To perform the door machine controller commissioning, do as follows:

1. In the terminal control mode of the door machine controller:

   a. Manually short the door open relay output terminal BM/B1 and the door close relay output terminal BM/B2 on the CTB.

   b. Observe whether the door machine can open and close correspondingly.

   c. If the door machine cannot act properly, check:

   Whether BM/B1 and BM/B2 are wrongly connected to the input terminals of the door machine controller

   Whether commissioning of the door machine controller is complete

2. After ensuring that control of door open/close is normal, check whether the door open/close signal feedback from the door machine controller is normal.

   a. Check the NO/NC states of the door input signals by observing the input indicators on the CTB, as listed in the following table.

   Table 5-1 NO/NC state of the door input signals

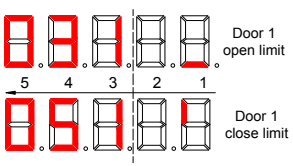
Door State	Signal Input Point	NO Input Signal		NC Input Signal	
		Indicator State	FL-00 Setting	Indicator State	FL-00 Setting
Door open limit	X3 (door open limit 1)	When the signal is active, the corresponding input indicator is ON.	Bit2 = 1	When the signal is active, the corresponding input indicator is OFF.	Bit2 = 0
	X4 (door open limit 2)		Bit4 = 1		Bit4 = 0
Door close limit	X5 (door close limit 1)		Bit3 = 1		Bit3 = 0
	X6 (door close limit 2)		Bit5 = 1		Bit5 = 0

   For details on the setting of FL-00, see the description of FL-00 in Chapter 7.

   b. Check whether the door open/close limit signal received by the system is correct.

   Control the door to the open or close state manually and view the value of FU-26. If the following screen is displayed, it indicates that the door machine controller feeds back the correct door open and close signals.

   Figure 5-3 Door open and close limit monitoring signals



5.3 Riding Comfort

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 the controller output and the elevator's mechanical construction.

■ Controller Output

The parameters that may influence the riding comfort are described in this part.

Function Code	Parameter Name	Setting Range	Default	Description
F2-00	Speed loop proportional gain KP1	0–100	40	F2-00 and F2-01 are the PI regulation parameters when the running frequency is lower than F2-02 (Switchover frequency 1). F2-03 and F2-04 are the PI regulation parameters when the running frequency is higher than F2-02 (Switchover frequency 2). The regulation parameters between F2-02 and F2-04 are the weighted average value of F2-00 & F2-01 and F2-03 & F2-04.
F2-01	Speed loop integral time TI1	0.01–10.00s	0.60s	
F2-02	Switchover frequency 1	0.00 to F2-05	2.00 Hz	
F2-03	Speed loop proportional gain KP2	0–100	35	
F2-04	Speed loop integral time TI2	0.01–10.00s	0.80s	
F2-05	Switchover frequency 2	F2-02 to F0-06	5.00 Hz	

For a faster system response, increase the proportional gain and reduce the integral time. Be aware that a fast system response causes system oscillation.

The recommended regulating 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 set to 0, only F2-03 and F2-04 are valid.

Function Code	Parameter Name	Setting Range	Default	Description
F2-06	Current loop proportional gain	10–500	60	F2-06 and F2-07 are the current loop adjustment parameters in the vector control algorithm.
F2-07	Current loop integral gain	10–500	30	

The optimum values of these two parameters are obtained during motor auto-tuning, and you need not modify them. Appropriate setting of the parameters can restrain jitter during running and have obvious effect on the riding comfort.

Function Code	Parameter Name	Setting Range	Default	Description
F2-20	Current filter time (synchronous motor)	0.00–40.00	0.00	It can reduce the lower-frequency vertical jitter during running.

Function Code	Parameter Name	Setting Range	Default	Description
F2-22	Startup acceleration time	0.000–1.500s	0.000s	It can reduce the terrace feeling at startup caused by the breakout friction of the guide rail.
F3-00	Startup speed	0.000–0.030 m/s	0.000 m/s	
F3-01	Startup holding time	0.000–0.500s	0.000s	
F3-18	Zero-speed control time at startup	0.000–1.000s	0.200s	It specifies the zero speed holding time before brake output.
F3-19	Brake release delay	0.000–2.000s	0.200s 0.600s	It specifies the brake release time.
F3-20	Zero-speed control time at end	0.000–1.000s	0.300s	It specifies the zero speed holding time after the brake is applied.
F3-21	Brake apply delay	0.200–1.500s	0.200s	It specifies the brake apply time.

For details on these parameters, see the running time sequence in Figure 7-3.

The release time of the brakes varies according to the types and the response time of the brakes is greatly influenced by the ambient temperature. A very high brake coil temperature slows the brake responsiveness. Thus, when the riding comfort at startup or stop cannot be improved by adjusting position lock or load cell compensation parameters, appropriately increase the values of F3-19 and F3-21 to check whether the brake release time influences the riding comfort.

Function Code	Parameter Name	Setting Range	Default	Remarks
F2-11	No-load-cell startup	0: Invalid 1: Valid	0	These are position lock regulating parameters when automatic pre-torque compensation is used (F8-01 = 1).
F2-12	Position lock speed Kp	0.00–2.00	0.50	
F2-13	Position lock speed Ki	0.00–2.00	0.60	
F2-14	Position lock current KP1	10–1000	60	
F2-15	Position lock current loop KI1	10–1000	30	

When automatic pre-torque compensation is used (applicable to all types of encoder, but best effect for ERN1387) the system automatically adjusts the compensated torque at startup.

a. Set F2-11 to 1 to enable no-load-cell startup.

b. Gradually increase F2-12 (Position lock current coefficient) but ensure that the motor does not oscillate.

c. Gradually increase F2-13 if increasing F2-12 cannot meet the torque compensation requirement.

d. Large motor noise indicate excessive values of F2-14/F2-15. Decrease their values.

Function Code	Parameter Name	Setting Range	Default	Remarks
F8-01	Pre-torque selection	0: Invalid 1: Load call pre-torque compensation	0	These are pre-torque regulating parameters.
F8-02	Pre-torque offset	0.0%–100.0%	50.0%	
F8-03	Drive gain	0.00–2.00	0.60	
F8-04	Brake gain	0.00–2.00	0.60	

When F8-01 is set to 1 (Load cell pre-torque compensation), the system with a load cell pre-outputs the torque matched the load to ensure the riding comfort of the elevator.

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

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.

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 pro-torque compensation is higher. The controller identifies the braking or driving state according to the load cell signal and automatically calculates the required torque compensation value.

When an analog device is used to measure the load, these parameters are used to adjust the elevator startup. The method of adjusting the startup is as follows:

- In the driving state, increasing the value of F8-03 could reduce the rollback during the elevator startup, but a very high value could cause car lurch at start.
- In the braking state, increasing the value of F8-04 could reduce the jerk in command direction during the elevator startup, but a very high value could cause car lurch at start.

■ Mechanical Construction

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

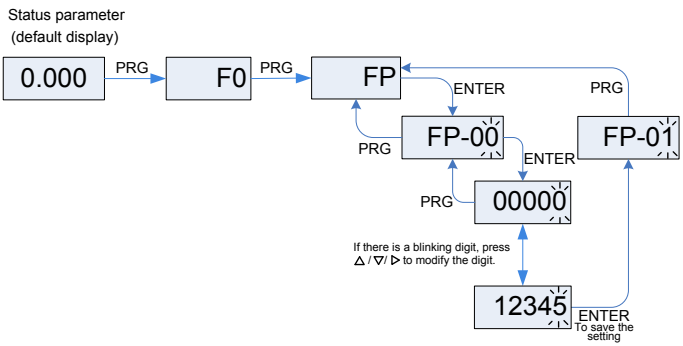
1. Installation of the guide rail mainly involves the verticality and surface flatness of the guide rail, smoothness of the guide rail connection and parallelism between two guide rails (including guide rails on the counterweight side).
2. Tightness of the guide shoes (including the one on the counterweight side) also influences the riding comfort. The guide shoes must not be too loose or tight.
1. 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.

2. The riding comfort during running may be influenced if the brake arm is installed too tightly or released incompletely.
3. 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.
4. For asynchronous motor, abrasion or improper installation of the gearbox may also affect the riding comfort.
5. 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).

5.4 Password Setting

The NICE5000 provides the parameter password protection function. Here gives an example of changing the password into 12345 (indicates the blinking digit), as shown in the following figure.

Figure 5-4 Example of changing the password



- After you set the user password (set FP-00 to a non-zero value), the system requires user password authentication (the system displays "------") when you press PRG. In this case, you can modify the function code parameters only after entering the password correctly.
- For factory parameters (group FF), you also need to enter the factory password.
- Do not try to modify the factory parameters. If these parameters are set improperly, the system may be unstable or abnormal.
- In the password protection unlocked state, you can change the password at any time. The last input number will be the user password.
- If you want to disable the password protection function, enter the correct password and then set FP-00 to 0. If FP-00 is a non-zero value at power-on, the parameters are protected by the password.

- Remember the password you set. Otherwise, the system cannot be unlocked.

5.5 System Functions

5.5.1 Emergency Evacuation at Power Failure

Passengers may be entrapped in the car if power failure suddenly happens during the use of the elevator. The emergency evacuation function at power failure is designed to solve the problem.

The emergency evacuation function is implemented in the following two modes:

1. Emergency power supply (EPS)
2. Shorting PMSM stator

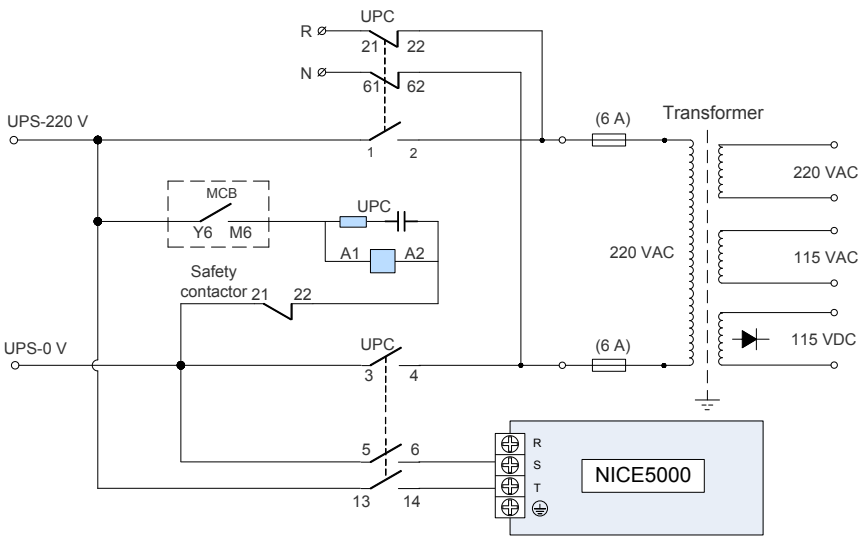
These modes are described in details in the following part.

1. EPS

1) 220 V UPS

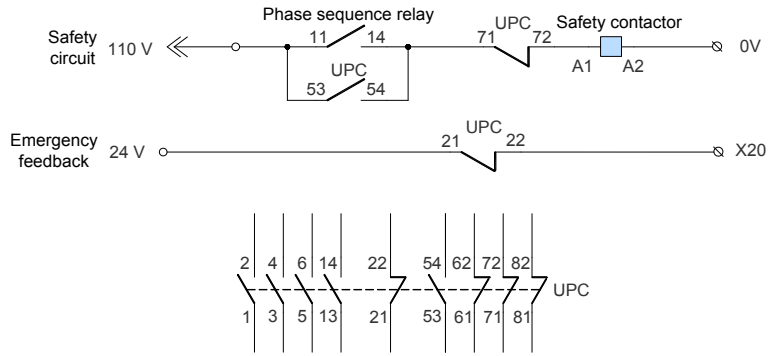
In this scheme, the 220 V UPS supplies power to the main unit and the drive control circuit. The following figure shows the emergency 220 V UPS circuit.

Figure 5-5 220 V UPS circuit



The following figure shows various contacts of the contactors.

Figure 5-6 Various contacts of the contactors



The UPS power is recommended in the following table.

Table 5-2 Recommended UPS power for each power class

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

The following table lists the setting of the related parameters.

Table 5-3 Parameter setting under the 220 V UPS scheme

Function Code	Parameter Name	Setting
F3-12	Low speed emergency evacuation speed	Default
F3-15	Normal speed emergency evacuation speed	Default
F3-16	Acceleration rate at emergency evacuation	Default
F5-20 (X20)	X20 function selection	127
F5-37 (Y6)	Y6 function selection	13
F6-26	Emergency evacuation time limit	Default

For more details, see the descriptions of F3-14.

2) 48 V EPS

In this scheme, the 48 VDC EPS supplies power to the main unit; the 220 V inverted from the 48 VDC supplies power to the drive control circuit and transformer-related brake and door machine circuits.

The following figure shows the emergency 48 V EPS principle diagram.

Figure 5-7 48 V EPS principle diagram

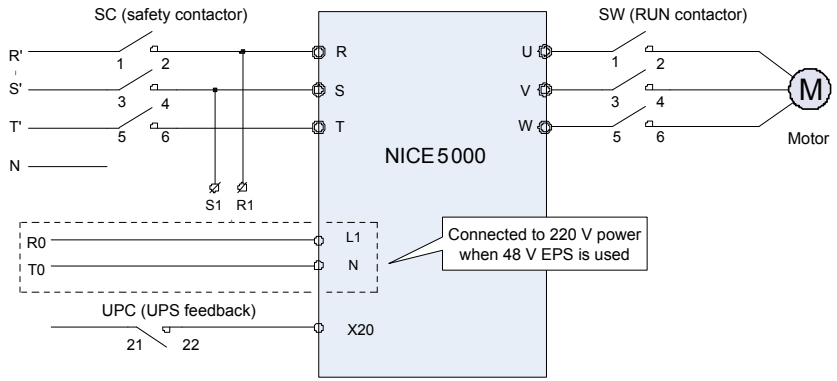
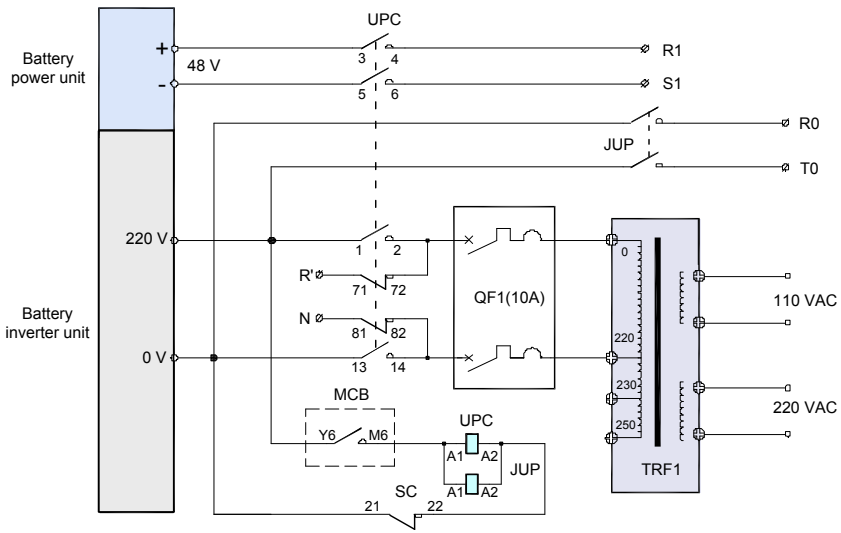


Figure 5-8 48 V EPS circuit



2. Shorting PMSM stator

Shorting PMSM stator means shorting phases UVW of the PMSM, which produces resistance to restrict movement of the elevator car.

In field application, an auxiliary NC contact is usually added to the NO contact of the output contactor to short PMSM UVW phases to achieve the effect. It is feasible in theory but may cause over-current actually.

Due to the poor quality of the contactor and the wiring of adding the auxiliary contact, the residual current of the controller is still high when the outputs UVW are shorted at abnormal stop. This results in an over-current fault and may damage the controller or motor.

Monarch recommends two schemes which have better effect.

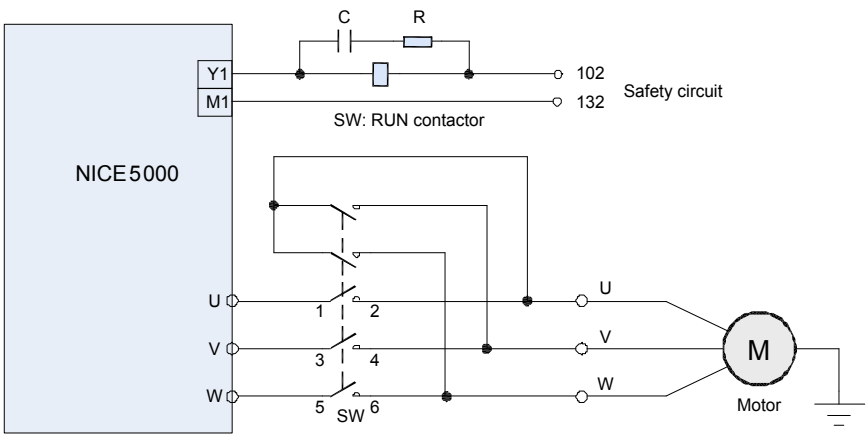
1) Special contactor with shorting PMSM stator function

2) Independent contactor + Relay NC contact

1) Special contactor with shorting PMSM stator function

The MG-BF series contactor produced by Tianjin the Second Relay Factory is used. This contactor provides the shorting PMSM stator function itself, featuring safety, reliability and easy wiring.

Figure 5-9 Wiring when using the special contactor



2) Independent contactor + Relay NC contact

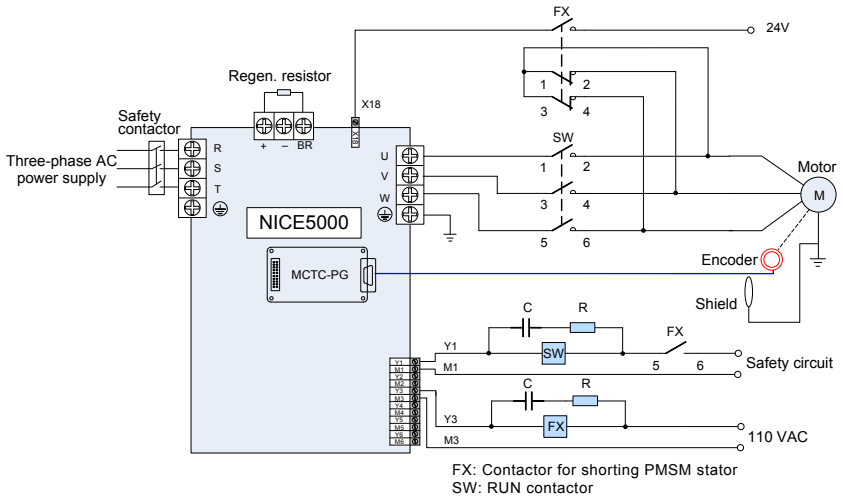
An independent contactor for implementing the shorting PMSM stator function is used.

The shorting PMSM stator function is implemented via the relay NC contact.

On the coil circuit of the RUN contactor, an NO contact of the contactor is connected in serial, to ensure that output short circuit does not occur when the parameter setting is incorrect.

The following figure shows wiring of this scheme.

Figure 5-10 Wiring of the independent contactor + Relay NC contact



The parameter setting in such wiring mode is described in the following table.

Table 5-4 Parameter setting under the shorting PMSM stator scheme

Function Code	Parameter Name	Value	Description
F5-18	X18 function selection	30	Allocate X18 with "Input of shorting PMSM stator feedback signal".
F5-34	Y3 function selection	12	Allocate Y3 with "Output of shorting PMSM stator contactor feedback signal".
F6-10	Elevator function selection 2	-	Bit8 = 0: NC output contactor Bit8 = 1: NO output contactor

5.5.2 Parallel Control of Two Elevators

The NICE5000 supports parallel control of two elevators, which is implemented by using the CANbus communication port for information exchange and processing between the two elevators.

The parallel control function has the following features:

- When hall calls are registered, the system calculates the response time of the elevators in parallel control in real time (based on distance, elevator arrival, door open/close), and responds to all calls in the optimum way, minimizing the passenger waiting time.
- The elevators are configured as the master and slave ones. When they have the same response conditions, the system instructs the master or slave to respond a call based on the random function.
- The parallel control function considers the call response time, elevator use efficiency, and in-car passenger waiting time. It avoids use ratio imbalance of elevators,

implements coordination between elevators to respond to hall calls and improves the elevator use efficiency.

■ Parameter Setting

The NICE5000 parallel control system is compatible with the NICE3000 system.

To use parallel control, connect the CAN2+ and CAN2- terminals of CN6 on the controller to respectively the corresponding terminals on the other one.

If a NICE3000 is used, connect CAN2 terminals on the NICE5000 to the CAN terminals on the NICE3000 (F6-08 for the elevator using the NICE3000 can only be set to 2).

The following table lists the parameter setting of parallel control.

Table 5-5 Parameter setting of parallel control by means of communication ports

Function Code	Parameter Name	Setting Range	Setting in Parallel Control
Fd-00	Number of elevators in parallel mode	1–3	3
F6-08	Elevator No.	1–3	Master elevator: 1 Slave elevator: 2

■ Address Setting of Physical Floors

Physical floor, relative to the NICE control system, is defined by the installation position of the leveling plate.

The floor (such as the ground floor) at which the lowest leveling plate is installed corresponds to physical floor 1.

The top physical floor is the accumulative number of the leveling plates.

In parallel mode, the physical floor numbers of the same floor for two elevators are consistent.

If the floor structures of two elevators are different, physical floors should start with the floor with the lowest position.

The physical floors at the overlapped area of the two elevators are the same.

Even if one elevator does not stop a floor in the overlapped area, a leveling plate should be installed there. You can make the elevator not stop at the floor by setting service floors.

When two elevators are in parallel mode, the addresses of the HCBs 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.

Note

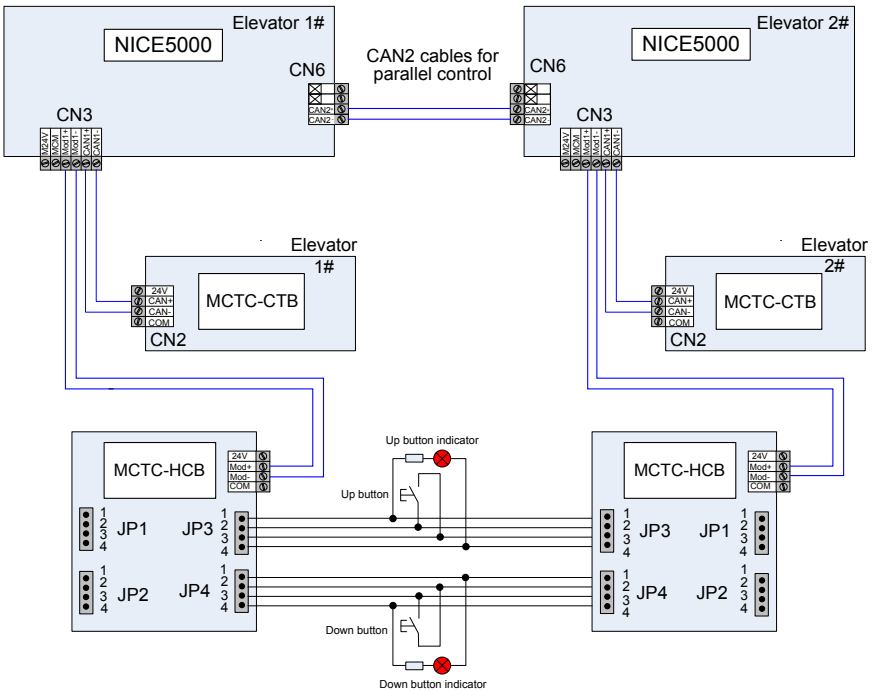
In parallel mode, the top floor (F6-00) and bottom floor (F6-01) of the elevators should be set based on corresponding physical floors.

Assume that there are two elevators in parallel mode. Elevator 1 stops at floor B1, floor 1, floor 2, and floor 3, while elevator 2 stops at floor 1, floor 3, and floor 4. Now, you need to set related parameters and HCB addresses according to the following table.

Table 5-6 Parameter setting and HCB addresses of two elevators

		Elevator 1		Elevator 2	
Number of elevators in parallel/group mode (Fd-00)		2		2	
Elevator No. (Fd-01)		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 but leveling plate required	FE-03 = 1902
3	4	4	FE-04 = 1903	4	FE-04 = 1903
4	5			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)	

Figure 5-11 Wiring when CAN2 (CN6) is used for parallel control



5.5.3 Opposite Door Control

The NICE5000 implements opposite door control through Modbus interface. It supports opposite door control on a maximum of 28 floors.

The following table describes the control modes and related parameter setting.

Table 5-7 Opposite door control modes and parameter setting

Opposite Door Control Mode		Parameter Setting	Function Description
Mode 1	Simultaneous control	Fb-00 = 2 F8-24 = N (N > front door maximum address) Fb-01 = 0	The front door and back door acts simultaneously upon arrival for hall calls and car calls.
Mode 2	Hall call independent, car call simultaneous	Fb-00 = 2 F8-24 = N (N > front door maximum address) Fb-01 = 5 (Bit0, Bit2 = 1)	The corresponding door opens upon arrival for hall calls from this door. The front door and back door act simultaneously upon arrival for car calls.

Opposite Door Control Mode		Parameter Setting	Function Description
Mode 3	Hall call independent, car call manual control	Fb-00 = 2 F8-24 = N (N > front door maximum address) Fb-01 = 325 (Bit0, Bit2, Bit6, Bit8 = 1)	The corresponding door opens upon arrival for halls call from this door. Upon arrival for car calls, the door to open is selected between the front door and back door by using the door switchover switch. Note: The switchover switch can be connected to the HCB-B inside the car or MCB.
Mode 4	Hall call independent, car call independent	Fb-00 = 2 F8-24 = N (N > front door maximum address) Fb-01 = 271 (Bit0, Bit1, Bit2, Bit3, Bit8 = 1)	The corresponding door opens upon arrival for halls call and car calls from this door.

Note

In the fire emergency, inspection, and re-leveling state, the opposite door is under simultaneous control rather than independent control.

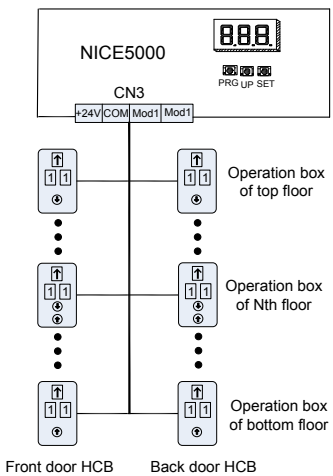
HCB addresses of the front door = actual physical addresses.

HCB address of the back door = F8-24 + 1, F8-24 > maximum HCB address of front door

Take a 20-floor elevator as an example:

HCB addresses of the front door is 1–20; assume that F8-24 is 24 (larger than 20), and HCB addresses of the back door is 25–44.

Figure 5-12 HCB wiring of opposite door control



6

Function Code Table

Chapter 6 Function Code Table

6.1 Function Code Description

1. There are a total of 31 function code groups, each of which includes several function codes. The function codes adopt the three-level menu. The function code group number is Level-I menu; the function code number is Level-II menu; the function code setting is Level-III menu.
2. To improve operation security, users need to enter the passwords for operating group F1, FA, and FH parameters. Their initial passwords are 01000.
3. The meaning of each column in the function code table is as follows:

Function Code	Indicates the function code number.
Parameter Name	Indicates the parameter name of the function code.
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)

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.

6.2 Function Code Groups

On the operation panel, press 

and then  or  , and you can view the function code groups. The function code groups are classified as follows:

Function Code Group	Type	Function Code Group	Type	Function Code Group	Type
F0	Basic parameters	F8	Auxiliary logic parameters	FL	Extension terminal function parameters
F1	Motor parameters	F9	Time parameters	Fr	Leveling adjustment parameters

Function Code Group	Type	Function Code Group	Type	Function Code Group	Type
F2	Vector control parameters	FA	Auxiliary parameters	FU	Monitoring parameters
F3	Running control parameters	Fb	Door function parameters	FF	Factory parameters
F4	Floor parameters	FC	Brief fault information	FP	User parameters
F5	Terminal function parameters	Fd	Parallel control parameters	E0 to E9	Fault details
F6	Elevator logic parameters	FE	Display parameters		
F7	Intelligent commissioning parameters	FH	Close-loop parameters		

6.3 Function Code Table

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Group F0: Basic parameters					
F0-00	Control mode	0: Sensorless vector control (SVC) 1: Closed-loop vector control (CLVC) 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	0.100 to F0-04	1.600	m/s	★
F0-04	Rated elevator speed	0.100–4.000	1.600	m/s	★
F0-05	Elevator running direction	0–1	0	-	★
F0-07	Carrier frequency	2.0–16.0	8.0	kHz	★
Group F1: Motor parameters					
F1-00	Group F1 security password	0–65535	01000	-	★
F1-01	Rated motor power	1.1–132.0	Model dependent	kW	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F1-02	Rated motor voltage	50–600	380	V	★
F1-03	Rated motor current	0.00–655.00	25	A	★
F1-04	Rated motor frequency	0.00–99.00	50	Hz	★
F1-05	Rated motor speed	0–3000	1460	RPM	★
F1-06	Stator resistance	0.000–65.000	0.000	Ω	★
F1-07	Rotor resistance	0.000–65.000	0.000	Ω	★
F1-08	Leakage inductance	0.00–650.00	2.34	mH	★
F1-09	Mutual inductance	0.1–3000.0	66.6	mH	★
F1-10	Magnetizing current	0.01–650.00	10.7	A	★
F1-11	Auto-tuning mode	0: No operation 1: With-load auto-tuning 2: No-load auto-tuning 3: Current loop parameter identification (only for synchronous motor)	0	-	★
F1-12	Angle-free auto-tuning function selection	Bit1: Angle-auto-tuning-free	0	-	★
F1-13	Motor auto-tuning current	30–150	60	%	★
F1-15	Shaft Q inductance (torque)	0.00–650.00	3.00	mH	★
F1-16	Shaft D inductance (excitation)	0.00–650.00	3.00	mH	★
F1-17	Back EMF	0–65535	0	-	★
F1-25	Motor type	0: Asynchronous motor 1: Synchronous motor	1	-	★
Group F2: Vector control parameters					
F2-00	Speed loop proportional gain KP1	0–100	40	-	★
F2-01	Speed loop integral time TI1	0.01–10.00	0.60	s	★
F2-02	Switchover frequency 1	0.00 to F2-05	2.00	Hz	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-03	Speed loop proportional gain KP2	1–100	35	-	★
F2-04	Speed loop integral time TI2	0.01–10.00	0.80	s	★
F2-05	Switchover frequency 2	F2-02 to F0-06	5.00	Hz	★
F2-06	Current loop KP1 (torque)	10–1000	60	-	★
F2-07	Current loop KI1 (torque)	10–1000	30	-	★
F2-08	Torque upper limit	0.0–200.0	150.0	%	★
F2-09	Current loop KP2 (excitation)	10–1000	60	-	★
F2-10	Current loop KI2 (excitation)	10–1000	30	-	★
F2-11	No-load-cell startup	0: Invalid 1: Valid	0	-	★
F2-12	Position lock speed KP	1–100	35	-	☆
F2-13	Position lock speed KI	0.01–10.00	0.8	-	☆
F2-14	Position lock current loop KP1 (torque)	10–1000	60	-	☆
F2-15	Position lock current loop KI1 (torque)	10-1000	30	-	☆
F2-16	Position lock current loop KP2 (excitation)	10–1000	60	-	☆
F2-17	Position lock current loop KI2 (excitation)	10-1000	30	-	☆
F2-18	Torque acceleration time	0–500	1	ms	★
F2-19	Torque deceleration time	0–500	350	ms	★
F2-20	Current filter coefficient	0.00–40.00	0.00	-	★
F2-21	Position lock rollback coefficient	0–9999	0	Pulses	●
F2-22	Startup acceleration time	0.000–1.500	0.000	s	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Group F3: Running control parameters					
F3-00	Startup speed	0.000–0.030	0.000	m/s	★
F3-01	Startup holding time	0.000–0.500	0.15	s	★
F3-02	Acceleration rate	0.300–1.300	0.600	m/s2	★
F3-03	Acceleration start jerk time	0.800–3.000	2.500	s	★
F3-04	Acceleration end jerk time	0.800–3.000	2.500	s	★
F3-05	Deceleration rate	0.300–1.300	0.600	m/s2	★
F3-06	Deceleration end jerk time	0.800–3.000	2.500	s	★
F3-07	Deceleration start jerk time	0.800–3.000	2.500	s	★
F3-08	Special deceleration rate	0.800–1.500	0.900	m/s2	★
F3-09	Pre-deceleration distance	0–50.0	0.0	mm	★
F3-10	Re-leveling speed	0.040–0.080	0.040	m/s	★
F3-11	Inspection speed	0.080–0.630	0.250	m/s	★
F3-12	Low speed emergency evacuation speed	0.080 to F3-11	0.100	m/s	★
F3-13	Base floor verification speed	0.100 to F0-04	0.500	m/s	★
F3-14	Emergency evacuation function selection	0–65535	32	-	★
F3-15	Normal speed emergency evacuation speed	0.080–0.500	0.080	m/s	★
F3-16	Acceleration rate at emergency evacuation	0.500–2.000	0.500	m/s2	★
F3-17	Normal speed emergency evacuation times	0–10	0	-	★
F3-18	Zero-speed control time at startup	0.000–1.000	0.200	s	★
F3-19	Brake release delay	0.000–1.5.000	0.600	s	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-20	Zero-speed control time at end	0.000–1.000	0.300	s	★
F3-21	Brake apply delay	0.200–1.500	0.200s	s	★
Group F4: Floor parameters					
F4-00	Leveling adjustment	0–60	30	mm	★
F4-01	Current floor	F6-01 to F6-00	1	-	★
F4-02	High byte of current floor position	0–65535	0	Pulses	●
F4-03	Low byte of current floor position	0–65535	0	Pulses	●
F4-04	Length 1 of leveling plate	0–65535	0	mm	★
F4-05	Length 2 of leveling plate	0–65535	0	mm	★
F4-06	Leveling delay	0–80	28	ms	★
F4-07	Down leveling adjustment	0–60	30	mm	★
F4-10	High byte of floor height 1	0–65535	0	Pulses	★
F4-11	Low byte of floor height 1	0–65535	0	Pulses	★
F4-12	High byte of floor height 2	0–65535	0	Pulses	★
F4-13	Low byte of floor height 2	0–65535	0	Pulses	★
F4-14	High byte of floor height 3	0–65535	0	Pulses	★
F4-15	Low byte of floor height 3	0–65535	0	Pulses	★
F4-16	High byte of floor height 4	0–65535	0	Pulses	★
F4-17	Low byte of floor height 4	0–65535	0	Pulses	★
F4-18	High byte of floor height 5	0–65535	0	Pulses	★
F4-19	Low byte of floor height 5	0–65535	0	Pulses	★
Floor height 6 to floor height 53					
F4-116	High byte of floor height 54	0–65535	0	Pulses	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F4-117	Low byte of floor height 54	0–65535	0	Pulses	★
F4-118	High byte of floor height 55	0–65535	0	Pulses	★
F4-119	Low byte of floor height 55	0–65535	0	Pulses	★
Group F5: Terminal function parameters					
F5-00	Load cell input selection	0: Invalid 1: CTB digital input 2: CTB analog input 3: MCB analog input	2	-	★
F5-01	X1 function selection	000: Invalid 001: Up leveling signal 002: Down leveling signal 003: Door zone signal 004: Safety circuit feedback signal 005: Door lock circuit feedback signal 006: RUN contactor feedback signal 007: Brake contactor/Brake detection switch feedback signal (allow repeat selection) 108: Inspection signal (only NC) 009: Inspection up signal 010: Inspection down signal 011: Fire emergency signal 112: Up limit signal (only NC) 113: Down limit signal (only NC) 014: Overload signal 015: Full-load signal 116: Up slow-down 1 signal (only NC) 117: Down slow-down 1 signal (only NC) 118: Up slow-down 2 signal (only NC) 119: Down slow-down 2 signal (only NC) (To be continued)	101	-	★
F5-02	X2 function selection		102	-	★
F5-03	X3 function selection		116	-	★
F5-04	X4 function selection		117	-	★
F5-05	X5 function selection		118	-	★
F5-06	X6 function selection		119	-	★
F5-07	X7 function selection		0	-	★
F5-08	X8 function selection		0	-	★
F5-09	X9 function selection		4	-	★
F5-10	X10 function selection		5	-	★
F5-11	X11 function selection		106	-	★
F5-12	X12 function selection		107	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F5-13	X13 function selection	121: Down slow-down 3 signal (only NC)	108	-	★
F5-14	X14 function selection	022: Shorting door lock circuit contactor feedback 023: Firefighter switch signal	9	-	★
F5-15	X15 function selection	024: Door machine 1 light curtain signal 025: Door machine 2 light curtain signal	10	-	★
F5-16	X16 function selection	026: Door machine 1 safety edge signal	112	-	★
F5-17	X17 function selection	127: EPS valid signal 028: Elevator lock signal	113	-	★
F5-18	X18 function selection	029: Door machine 2 safety edge signal 030: Shorting PMSM stator feedback signal	0	-	★
F5-19	X19 function selection	032: Motor overheat signal 033: VIP signal	0	-	★
F5-20	X20 function selection	034: Earthquake signal 035: Security signal	0	-	★
F5-21	X21 function selection	036: Service floor switchover 037: Fire emergency floor switchover	0	-	★
F5-22	X22 function selection	038: Parking floor switchover 039: Down collective selective switch	0	-	★
F5-23	X23 function selection	040: Peak service 041: Fire emergency start signal	0	-	★
F5-24	X24 function selection	042: Back door selection signal 043: Back door forbidden signal	0	-	★
F5-25	X25 function selection	044: Light-load signal 045: Half-load signal 046: Double door control signal	0	-	★
F5-26	X26 function selection	047: Motor input Note: The value is a three-digit number. The hundred's digit indicates the NO/NC type (1: NC, 0: NO), and the lowest two digits indicate the selected function.	0	-	★
F5-27	X27 function selection		0	-	★
F5-28	X28 function selection	(End)	0	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F5-29	X29 function selection	0: Invalid 4: Safety circuit signal 5: Door lock circuit signal	4	-	★
F5-30	X30 function selection		5	-	★
F5-31	X31 function selection		5	-	★
F5-32	Y1 function selection	0: Invalid 1: RUN contactor control 2: Brake contactor control 3: Shorting door lock circuit contactor control 4: Fire emergency floor arrival signal feedback 5: Door machine 1 open 6: Door machine 1 close 7: Door machine 2 open 8: Door machine 2 close 9: 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	1	-	★
F5-33	Y2 function selection		2	-	★
F5-34	Y3 function selection		3	-	★
F5-35	Y4 function selection		4	-	★
F5-36	Y5 function selection		0	-	★
F5-37	Y6 function selection		0	-	★
F5-38	Y7 function selection		0	-	★
F5-39	Y8 function selection		0	-	★
F5-40	Y9 function selection		0	-	★
Group F6: Elevator logic parameters					
F6-00	Top floor of the elevator	F6-01 to 56	9	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-01	Bottom floor of the elevator	1 to F6-00	1	-	★
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	-	★
F6-05	Service floors 1	0–65535	65535	-	★
F6-06	Service floors 2	0–65535	65535	-	★
F6-07	Service floors 3	0–65535	65535	-	★
F6-08	Service floors 4	0–65535	65535	-	★
F6-09	Elevator function selection 1	Bit0: Disability function Bit1: Disabling returning to base floor for verification Bit2: Re-leveling function Bit3: Door pre-open function Bit4: Stuck hall call cancellation Bit5: Peak service Bit6: Down collective selective peak service Bit7: Fault auto reset Bit8: Time-based service floor function Bit9: Disabling reverse floor number clear Bit10: Buzzer not tweet upon re-leveling Bit11: Car call deletion Bit12: Hall call deletion Bit13: Timed elevator lock Bit14: Arrival gong disabled at night Bit15: Reserved	32768	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-10	Elevator function selection 2	Bit0: Door open/close holding at open limit Bit1: Cancelling door open/close command at a delay after door open/close limit Bit2: Cancelling door open/close command cancelled immediately at door open/close limit Bit3: Not judging door lock state at door close output Bit4: Auto reset for RUN and brake contactor stuck Bit5: Forced door close Bit6: Manual door Bit7: Cancelling door lock auto-reset Bit8: NO/NC output selection of shorting PMSM stator contactor Bit9: Door lock circuit contactor output monitoring Bit10: Cancelling overspeed protection Bit11: Car call executed 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: Higher/Low voltage 1.5s time detection	18	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-11	Elevator function selection 3	Bit0: Fire emergency display Bit1: Firefighter operation display Bit2: Direction display at micro-leveling Bit3: Determined direction display in attendant state Bit4: No direction display at automatic stop Bit5: Elevator lock at door open Bit6: Display available at elevator lock Bit7: Elevator lock at any floor hall call Bit8: Clear floor number in advance Bit9: Clear floor number in advance in attendant state Bit10: Displaying next arriving floor number Bit11: Blinking at arrival Bit12: Door re-open during door open delay Bit13: Door re-open after car call of the present floor Bit14: Door re-open at door close limit Bit15: Reserved	0	-	★
F6-12	Blinking advance time	0.0–15.0	2.0	s	☆
F6-13	Parking floor 2 start time	00.00–23.59	0	-	★
F6-14	Parking floor 2 end time	00.00–23.59	0	-	★
F6-15	Parking floor 2	0 to F6-00	0	-	★
F6-16	Fire emergency floor 2	0 to F6-00	0	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-17	Fire emergency function selection 1	Bit0: Fire emergency 1 door 1 valid Bit1: Fire emergency 1 door 2 valid Bit2: Nearest floor for fire emergency Bit3: Opposite door control unchanged Bit4: Reserved Bit5: Retentive at power failure Bit6 to Bit7: Reserved Bit8: Fire emergency indicator blinking at fire emergency 1 Bit9: Fire emergency indicator steady ON at fire emergency 1 Bit10: Fire emergency tone discontinuous prompt at fire emergency 1	1283	-	★
F6-18	Fire emergency function selection 2	Bit0: Fire emergency 2 door 1 valid Bit1: Fire emergency 2door 2 valid Bit2: Entering firefighter operation state automatically Bit3: Firefighter switch Bit4: Fire emergency switch switchover Bit5 to Bit6: Reserved Bit7: Low speed door close Bit8: Fire emergency indicator blinking at fire emergency 2 Bit9: Fire emergency indicator steady ON at fire emergency 2 Bit10: Fire emergency tone prompt at intervals at fire emergency 2 Bit11: Exiting fire emergency at any floor	1291	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-19	Fire emergency function selection 3	Bit0: Nearest call mode Bit1: First call mode Bit2: Last call mode Bit3 to Bit4: Reserved Bit5: Call registered by holding down button Bit6: Closing door by holding down the door close button Bit7: Reserved Bit8: Door close at car call active Bit9: Reserved Bit10: Reserved Bit11: Automatic door open at arrival Bit12: Reserved Bit13: Reserved Bit14: Opening door by holding down the door open button Bit15: Automatic door open after arrival at fire emergency floor	17156	-	★
F6-22	Elevator lock start time	00.00–23.59	00.00	HH.MM	☆
F6-23	Elevator lock end time	00.00–23.59	00.00	HH.MM	☆
F6-24	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	0	-	★
F6-25	Attendant/ Automatic switchover time	0–200	0	s	★
F6-26	Emergency evacuation time limit	30–600	45	s	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-27	Emergency evacuation function selection	Bit0: Door 1 valid Bit1: Door 2 valid Bit2: Emergency evacuation time protection Bit3: Manual control Bit4: Buzzer tweeting Bit5: HCB output Bit6: Shorting stator braking mode switched over to controller drive Bit7: Mode of shorting stator braking mode switched over to controller drive Bit8: Emergency evacuation exit mode	3	-	★
F6-28	Inspection function selection	Bit0: Fire emergency prompt in inspection state Bit1: Door lock disconnected after inspection switched over to normal running Bit2 to Bit4: Reserved Bit5: Door open and close once after inspection turned to normal or first-time power-on	33	-	★
F6-30	VIP function selection	Bit0: VIP1 function Bit1: VIP2 function Bit2: VIP enabled by hall call (at VIP floor) Bit3: VIP enabled by button at VIP floor Bit4: VIP enabled by terminal Bit5: VIP enabled by button at any floor Bit6: VIP enabled by car call Bit7: Security floor auto enable Bit8: Number of VIP car calls limited Bit9: VIP auto exit Bit10 to Bit13: Reserved Bit13: Hall call saved Bit14: Auto door close Bit15: Reserved	0	-	★
F6-31	VIP floor 1	0 to F6-00	0	-	★
F6-32	VIP floor 2	0 to F6-00	0	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-33	VIP auto exit time	0–200	0	s	★
F6-35	Start time of time-based floor service 1	00.00–23.59	00.00	HH.MM	☆
F6-36	End time of time-based floor service 1	00.00–23.59	00.00	HH.MM	☆
F6-37	Service floors 1 of time-based floor service 1	0–65535	65535	-	☆
F6-38	Service floors 2 of time-based floor service 1	0–65535	65535	-	☆
F6-39	Service floors 3 of time-based floor service 1	0–65535	65535	-	☆
F6-40	Service floors 4 of time-based floor service 1	0–65535	65535	-	☆
F6-41	Start time of time-based floor service 2	00.00–23.59	00.00	HH.MM	☆
F6-42	End time of time-based floor service 2	00.00–23.59	00.00	HH.MM	☆
F6-43	Service floors 1 of time-based floor service 2	0–65535	65535	-	☆
F6-44	Service floors 2 of time-based floor service 2	0–65535	65535	-	☆
F6-45	Service floors 3 of time-based floor service 2	0–65535	65535	-	☆
F6-46	Service floor 4 of time-based floor service 2	0–65535	65535	-	☆
F6-47	Start time of time-based floor service 3	00.00–23.59	00.00	HH.MM	☆
F6-48	End time of time-based floor service 3	00.00–23.59	00.00	HH.MM	☆

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-49	Service floors 1 of time-based floor service 3	0–65535	65535	-	☆
F6-50	Service floors 2 of time-based floor service 3	0–65535	65535	-	☆
F6-51	Service floors 3 of time-based floor service 3	0–65535	65535	-	☆
F6-52	Service floors 4 of time-based floor service 3	0–65535	65535	-	☆
Group F7: Intelligent commissioning 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	-	☆
F7-03	Random running times	0–60000	0	-	☆
F7-04	Hall call enabled	0: Yes 1: No	0	-	☆
F7-05	Door open enabled	0: Yes 1: No	0	-	☆
F7-06	Overload function	0: Disabled 1: Enabled	0	-	☆
F7-07	Limit switch	0: Enabled 1: Disabled	0	-	☆
F7-08	Time interval of random running	0–1000	0	s	☆
F7-09	Accumulative energy consumption	0–65535	0	kW	●
F7-10	Accumulative feedback energy	0–65535	0	kW	●
F7-26	Commissioning function selection	0: No operation 1: Shaft auto-tuning	0	-	★
Group F8: Auxiliary logic parameters					
F8-00	Load for load cell auto-tuning	0–100	0	%	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-01	Pre-torque selection	0: Invalid 1: Valid	0	-	★
F8-02	Pre-torque offset	0.0–100.0	50.0	%	★
F8-03	Drive gain	0.00–2.00	0.60	-	★
F8-04	Brake gain	0.00–2.00	0.60	-	★
F8-05	Load cell data	0–255	0	-	●
F8-06	No-load load threshold	0–255	0	-	★
F8-07	Full-load load threshold	0–255	100	-	★
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	-	☆
F8-09	Rated elevator load	300–9999	1000	kg	★
F8-10	Logic program control	Bit13: Hiding uncommon parameters	0	-	★
F8-14	Local address	0–127 0: broadcast address	1	-	★
F8-18	Overload percentage	100–130	110	%	★
F8-19	Full-load percentage	70–110	80	%	★
F8-20	Light-load percentage	10–50	30	%	★
F8-21	Arrival gong advance time	0–10.0	1.0	s	★
F8-22	Delay upon door open limit	0–2000	1000	ms	★
F8-24	Command 2 start address	0–56	0	-	★
Group F9: Time parameters					
F9-00	Idle time before returning to base floor	0–240	10	min	★
F9-01	Time for fan and lamp to be turned off	0–240	2	min	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F9-02	Motor running time limit	0–45	45	s	★
F9-03	Accumulative working hours	0–65535	0	h	●
F9-04	Accumulative running hours	0–65535	0	h	●
F9-05	Accumulative working days	0–65535	0	day	●
F9-06	High byte of running times	0–9999	0	-	●
F9-07	Low byte or running times	0–9999	0	-	●
F9-12	Clock: year	2000–2100	2010	YYYY	☆
F9-13	Clock: month and day	1.01–12.31	301	MM.DD	☆
F9-14	Clock: hour and minute	0–23.59	0	HH.MM	☆
Group FA: Auxiliary parameters					
FA-00	Group FA security password	0–65535	01000	-	●
FA-01	Display in running state	1–65535	65535	-	☆
FA-02	Display in stop state	1–65535	4095	-	☆
FA-03	Product SN	1–7000	5000	-	●
FA-04	Software version 1 (CTB)	0–65535	0	-	●
FA-05	Software version 2 (MCB)	0–65535	0	-	●
FA-06	Software version 3 (drive board software)	0–65535	0	-	●
FA-07	Heatsink temperature	0–100	0	°C	●
FA-09	Protection function selection	Bit0: Overload protection Bit1: Output phase loss protection Bit3: Input phase loss protection	3	-	★
FA-10	Overload protection coefficient	0.50–10.00	1.00	-	★
FA-11	Overload pre-warning coefficient	50–100	80	%	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-15	Program control selection	Bit0: Super short floor function Bit1: Up slow-down not reset for super short floor Bit2: Down slow-down not reset for super short floor Bit3: Cancelling monitoring at leveling and slow-down Bit4: Slow-down stuck detection Bit5: Canceling 45s time limit at shaft auto-tuning Bit6: Leveling adjustment	0	-	★
Group Fb: Door function parameters					
Fb-00	Number of door machine(s)	1–2	1	-	★
Fb-01	Door function selection	0–65535	0	-	●
Fb-02	Service floors 1 of door machine 1	0–65535	65535	-	☆
Fb-03	Service floors 2 of door machine 1	0–65535	65535	-	☆
Fb-04	Service floors 3 of door machine 1	0–65535	65535	-	☆
Fb-05	Service floors 4 of door machine 1	0–65535	65535	-	☆
Fb-06	Service floors 1 of door machine 2	0–65535	65535	-	☆
Fb-07	Service floors 2 of door machine 2	0–65535	65535	-	☆
Fb-08	Service floors 3 of door machine 2	0–65535	65535	-	☆
Fb-09	Service floors 4 of door machine 2	0–65535	65535	-	☆
Fb-10	Door open protection time	5–99	10	s	☆
Fb-11	Forced door close time	5–99	15	s	☆
Fb-12	Door close protection time	5–99	15	s	☆
Fb-13	Door re-open times	0–20	0	-	☆

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-14	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-15	Door open holding time for hall call	1–30	5	s	☆
Fb-16	Door open holding time for car call	1–30	3	s	☆
Fb-17	Door open holding time at base floor	1–30	10	s	☆
Fb-18	Door open delay	10–30000	30	s	☆
Fb-19	Special door open holding time	10–1000	30	s	☆
Fb-20	Manual door open holding time	1–60	10	s	☆
Group FC: Brief fault information					
FC-00	Designated fault	0–99	0	-	☆
FC-01	20th fault code	0–6299	0	-	●
FC-02	20th fault subcode	0–65535	0	-	●
FC-03	20th fault month and day	0–1231	0	MM.DD	●
FC-04	20th fault hour and minute	0–2359	0	HH.MM	●
FC-05	20th fault information	0–65535	0	-	●
FC-06	19th fault code	0–6299	0	-	●
FC-07	19th fault subcode	0–65535	0	-	●
FC-08	19th fault month and day	0–1231	0	MM.DD	●
FC-09	19th fault hour and minute	0–2359	0	HH.MM	●
FC-10	19th fault information	0–65535	0	-	●
FC-11	18th fault code	0–6299	0	-	●
FC-12	18th fault subcode	0–65535	0	-	●
FC-13	18th fault month and day	0–1231	0	MM.DD	●
FC-14	18th fault hour and minute	0–2359	0	HH.MM	●

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FC-15	18th fault information	0–65535	0	-	●
FC-16	17th fault code	0–6299	0	-	●
FC-17	17th fault subcode	0–65535	0	-	●
FC-18	17th fault month and day	0–1231	0	MM.DD	●
FC-19	17th fault hour and minute	0–2359	0	HH.MM	●
FC-20	17th fault information	0–65535	0	-	●
FC-21	16th fault code	0–6299	0	-	●
FC-22	16th fault subcode	0–65535	0	-	●
FC-23	16th fault month and day	0–1231	0	MM.DD	●
FC-24	16th fault hour and minute	0–2359	0	HH.MM	●
FC-25	16th fault information	0–65535	0	-	●
FC-26	15th fault code	0–6299	0	-	●
FC-27	15th fault subcode	0–65535	0	-	●
FC-28	15th fault month and day	0–1231	0	MM.DD	●
FC-29	15th fault hour and minute	0–2359	0	HH.MM	●
FC-30	15th fault information	0–65535	0	-	●
FC-31	14th fault code	0–6299	0	-	●
FC-32	14th fault subcode	0–65535	0	-	●
FC-33	14th fault month and day	0–1231	0	MM.DD	●
FC-34	14th fault hour and minute	0–2359	0	HH.MM	●
FC-35	14th fault information	0–65535	0	-	●
FC-36	13th fault code	0–6299	0	-	●
FC-37	13th fault subcode	0–65535	0	-	●
FC-38	13th fault month and day	0–1231	0	MM.DD	●
FC-39	13th fault hour and minute	0–2359	0	HH.MM	●

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FC-40	13th fault information	0–65535	0	-	●
FC-41	12th fault code	0–6299	0	-	●
FC-42	12th fault subcode	0–65535	0	-	●
FC-43	12th fault month and day	0–1231	0	MM.DD	●
FC-44	12th fault hour and minute	0–2359	0	HH.MM	●
FC-45	12th fault information	0–65535	0	-	●
FC-46	11th fault code	0–6299	0	-	●
FC-47	11th fault subcode	0–65535	0	-	●
FC-48	11th fault month and day	0–1231	0	MM.DD	●
FC-49	11th fault hour and minute	0–2359	0	HH.MM	●
FC-50	11th fault information	0–65535	0	-	●
Group Fd: Parallel control parameters					
Fd-00	Number of elevators in parallel control	1–3	1	-	★
Fd-01	Elevator No.	1–3	1	-	★
Group FE: Display parameters					
FE-01	Floor 1 display	00: Display "0" 01: Display "1"	1901	-	★
FE-02	Floor 2 display	02: Display "2" 03: Display "3"	1902	-	★
FE-03	Floor 3 display	04: Display "4" 05: Display "5" 06: Display "6"	1903	-	★
FE-04	Floor 4 display	07: Display "7" 08: Display "8"	1904	-	★
FE-05	Floor 5 display	09: Display "9" 10: Display "A" 11: Display "B"	1905	-	★
FE-06	Floor 6 display	12: Display "G" 13: Display "H"	1906	-	★
FE-07	Floor 7 display	14: Display "L" (To be continued)	1907	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FE-08	Floor 8 display	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" (End)	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 to FE-52	Floor 13 to floor 52 display		0103 to 0502	-	★
FE-53	Floor 53 display		0503	-	★
FE-54	Floor 54 display		0504	-	★
FE-55	Floor 55 display		0505	-	★
FE-56	Floor 56 display		0506	-	★
FE-61	Highest digit display 1		0	-	★
FE-62	Highest digit display 2		0	-	★
FE-63	Highest digit display 3		0	-	★
FE-64	Highest digit display 4		0	-	★
FE-65	Highest digit display 5		0	-	★
Group FH: Close-loop parameters					
FH-00	Group FH security password	0–65535	01000	-	●
FH-01	Encoder type	0: SIN/COS encoder, absolute encoder 1: UVW encoder 4: ABZ incremental encoder	0	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-02	Encoder pulses per revolution	0–10000	2048	PPR	★
FH-03	Encoder wire-breaking detection time	0–10.0	2.1	s	★
FH-04	Encoder initial angle (synchronous motor)	0.0–359.9	0	Degree (°)	★
FH-05	Encoder current angle (synchronous motor)	0.0–359.9	0.0	Degree (°)	●
FH-06	Wiring mode	0–15	0	-	★
FH-08	Zero drift 1	0–65535	0	-	★
FH-09	Zero drift 2	0–65535	0	-	★
FH-10	Zero drift 3	0–65535	0	-	★
FH-11	Zero drift 4	0–65535	0	-	★
FH-17	Position of up slow-down 1	0.000–300.00	0.00	m	★
FH-18	Position of down slow-down 1	0.000–300.00	0.00	m	★
FH-19	Position of up slow-down 2	0.000–300.00	0.00	m	★
FH-20	Position of down slow-down 2	0.000–300.00	0.00	m	★
FH-21	Position of up slow-down 3	0.000–300.00	0.00	m	★
FH-22	Position of down slow-down 3	0.000–300.00	0.00	m	★
FH-29	Position switch signal delay	0–200	0	ms	★
Group FL: Extension terminal function parameters					
FL-00	CTB input type	0–511	320	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FL-01	HCB-B:JP1 input	0: Invalid 1: Light-load signal 2: Half-load signal 3: Door 2 selection 4: Door 2 restricted 5: Door 1 safety edge 6: Door 2 safety edge 7: Single/Double door selection 8: Fire emergency floor switchover 9: Fire emergency start signal	0	-	★
FL-02	HCB-B:JP2 input		0	-	★
FL-03	HCB-B:JP3 input		0	-	★
FL-04	HCB-B:JP4 input		0	-	★
FL-05	HCB-B:JP5 input		0	-	★
FL-06	HCB-B:JP6 input		0	-	★
FL-07	HCB-B:A1 output	0: Invalid 1: Fault output 2: Non-door zone stop output 3: Non-service state output 4: Fire emergency output 5: Power failure emergency output 6: Door lock valid 7: Night output signal 8: Fire emergency indicator 9: Fire emergency tone	0	-	★
FL-08	HCB-B:A2 output		0	-	★
FL-09	HCB-B:B1 output		0	-	★
FL-10	HCB-B:B2 output		0	-	★
FL-11	HCB-B:C1 output		0	-	★
FL-12	HCB-B:C2 output		0	-	★
FL-13	HCB-B:C3 output		0	-	★
FL-14	HCB-B:C4 output		0	-	★
FL-15	HCB-B:C5 output		0	-	★
FL-16	HCB-B:C6 output		0	-	★
FL-17	HCB:JP1 input	1: Elevator lock signal 2: Fire emergency signal 3: Current floor forbidden 4: VIP floor signal 5: Security floor signal 6: Service floor switchover	1	-	★
FL-18	HCB:JP2 input	7: Parking floor switchover 8: Down collective selective switch 9: Peak service switch 10: Fire emergency floor switchover	2	-	★
FL-19	HCB:JP1 output	0: Invalid 1: Up arrival indicator 2: Down arrival indicator 3: Fault output 4: Non-door zone stop output 5: Non-service state output 6: Buzzer output	1	-	★
FL-20	HCB:JP2 output		2	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Group Fr: Leveling adjustment parameters					
Fr-00	Leveling adjustment function	0: Disabled 1: Enabled	0	-	★
Fr-01 to Fr-28	Leveling adjustment record 1 to 28	00000–60060	30030	mm	★
Group FU: Monitoring parameters					
FU-03	Pre-torque current	0.0–200.0	0.0	%	●
FU-04	Logic information	0–65535	0	-	●
FU-05	Curve information	0–65535	0	-	●
FU-06	Speed reference	0.000–8.000	0	m/s	●
FU-07	Feedback speed	0.000–8.000	0	m/s	●
FU-08	Bus voltage	0–999.9	0	V	●
FU-09	Output voltage	0–999.9	0	V	●
FU-10	Output current	0–655.00	0	A	●
FU-11	Output frequency	0.00–99.99	0	Hz	●
FU-12	Torque current	0.0–200.0	0	%	●
FU-13	Output torque	0–655.00	0	A	
FU-14	Output power	0.00–99.99	0	kW	●
FU-15	Present position	0.00–300.00	0	m	●
FU-16	Communication interference	0–65535	0	-	●
FU-17	Encoder interference	0–65535	0	-	●
FU-18	Input state 1	0–65535	0	-	●
FU-19	Input state 2	0–65535	0	-	●
FU-20	Input state 3	0–65535	0	-	●
FU-22	Input state 5	0–65535	0	-	●
FU-23	Output state 1	0–65535	0	-	●
FU-24	Output state 2	0–65535	0	-	●
FU-25	Output state 3	0–65535	0	-	●
FU-26	Car input state	0–65535	0	-	●
FU-27	Car output state	0–65535	0	-	●
FU-28	Hall sate	0–65535	0	-	●
FU-29	System state 1	0–65535	0	-	●
FU-30	System state 2	0–65535	0	-	●
FU-31	Current car load	0–255	0	-	●

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-32	Nearest landing floor	1–56	0	-	●
FU-33	Destination floor	1–56	0	-	●
FU-34	Stop time	0.0–60.0	0	s	●
FU-35	Deceleration distance	0.0–100.0	0	s	●
FU-49	Mod1 communication state 1	0–65535	0	-	●
FU-50	Mod1 communication state2	0–65535	0	-	●
FU-51	Mod1 communication state 3	0–65535	0	-	●
FU-52	Mod1 communication state 4	0–65535	0	-	●
FU-53	Mod2 communication state 1	0–65535	0	-	●
FU-54	Mod2 communication state 2	0–65535	0	-	●
FU-55	Mod2 communication state 3	0–65535	0	-	●
FU-56	Mod2 communication state 4	0–65535	0	-	●
Group FF: Factory parameters					
Group FP: User parameters					
FP-00	User password	0–65535	0	-	☆
FP-01	Parameter update	0: No operation 1: Restore default settings 2: Clear fault records 3: Restore logic board parameters 4: Restore all parameter setting	0	-	★
FP-02	User-defined parameter display	0: Invalid 1: Valid	0	-	★
Group E0: 1st fault details					
E0-00	1st fault code	0–6299	0	-	●

Function Code	Parameter Name	Setting Range	Default	Unit	Property
E0-01	1st fault subcode	0–65535	0	-	●
E0-02	1st fault month and day	0–1231	0	MM.DD	●
E0-03	1st fault hour and minute	0–2359	0	HH.MM	●
E0-04	1st fault logic information	0–65535	0	-	●
E0-05	1st fault curve information	0–65535	0	-	●
E0-06	Speed reference upon 1st fault	0.000–8.000	0	m/s	●
E0-07	Feedback speed upon 1st fault	0.000–8.000	0	m/s	●
E0-08	Bus voltage upon 1st fault	0–999.9	0	V	●
E0-09	Output voltage upon 1st fault	0–999.9	0	V	●
E0-10	Output current upon 1st fault	0–655.00	0	A	●
E0-11	Output frequency upon 1st fault	0.00–99.99	0	Hz	●
E0-12	Output torque upon 1st fault	0–100	0	%	●
E0-13	Torque current upon 1st fault	0–655.00	0	A	●
E0-14	Output power upon 1st fault	0.00–99.99	0	kW	●
E0-15	Present position upon 1st fault	0.00–300.00	0	m	●
E0-16	Communication interference upon 1st fault	0–65535	0	-	●
E0-17	Encoder interference upon 1st fault	0–65535	0	-	●
E0-18	Input state 1 upon 1st fault	0–65535	0	-	●
E0-19	Input state 2 upon 1st fault	0–65535	0	-	●
E0-20	Input state 3 upon 1st fault	0–65535	0	-	●
E0-21	Input state 4 upon 1st fault	0–65535	0	-	●

Function Code	Parameter Name	Setting Range	Default	Unit	Property
E0-22	Input state 5 upon 1st fault	0–65535	0	-	●
E0-23	Output state 1 upon 1st fault	0–65535	0	-	●
E0-24	Output state 2 upon 1st fault	0–65535	0	-	●
E0-25	Output state 3 upon 1st fault	0–65535	0	-	●
E0-26	Car input state upon 1st fault	0–65535	0	-	●
E0-27	Car output state upon 1st fault	0–65535	0	-	●
E0-28	Hall sate upon 1st fault	0–65535	0	-	●
E0-29	System state 1 upon 1st fault	0–65535	0	-	●
E0-30	System state 2 upon 1st fault	0–65535	0	-	●
E0-31	Car load upon 1st fault	0–255	0	-	●
Group E1 to E9: details of the later 9 faults, defined same as group E0					

7

Description of Function Codes

Chapter 7 Description of Function Codes

Group F0: Basic Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F0-00	Control mode	0: Sensorless vector control (SVC) 1: Closed-loop vector control (CLVC) 2: Voltage/Frequency (V/F) control	1	-	★

It is used to set the control mode of the system.

- 0: Sensorless vector control (SVC)

  It is applicable to low-speed running during no-load commissioning of the asynchronous motor, fault judgment at inspection, and synchronous motor running on special conditions.

- 1: Closed-loop vector control (CLVC)

  It is applicable to normal running in distance control.

- 2: Voltage/Frequency (V/F) control

  It is applicable to equipment detection.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F0-01	Command source selection	0: Operation panel control 1: Distance control	1	-	★

It is used to set the source of running commands and running speed references.

- 0: Operation panel control

  The controller is operated by pressing RUN and STOP RES on the operation panel, and the running speed is set by F0-02 (Running speed under operation panel control). This method is applicable only to the test or motor no-load auto-tuning.

- 1: Distance control

  This method is used in the NICE series integrated elevator controller. During inspection, the elevator runs at the speed set in F3-11. During normal running, the controller automatically calculates the speed and running curve for the elevator based on the distance between the current floor and the target floor within the rated elevator speed, implementing direct travel ride.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F0-02	Running speed under operation panel control	0.050 to F0-04	0.050	m/s	☆

It is used to set the running speed in the operation panel control mode.

Note that this function is enabled only when F0-01 is set to 0 (Operation panel control). You can change the running speed of the elevator by modifying this parameter during running

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F0-03	Maximum running speed	0.100 to F0-04	1.600	m/s	★

It is used to set the actual maximum running speed of the elevator. The value must be smaller than the rated elevator speed.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F0-04	Rated elevator speed	0.100–4.000	1.600	m/s	★

It is used to set the norminal rated speed of the elevator. The value of this parameter is dependent on the elevator mechanism and traction motor.

Note

F0-03 is the actual running speed within the elevator speed range set in F0-04. For example, for a certain elevator, if F0-04 is 1.750 m/s and the actually required maximum running speed is 1.600 m/s, set F0-03 to 1.600 m/s.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F0-05	Elevator running direction	0–1	0	-	★

It is used to set the elevator running direction.

The values are as follows:

- 0: Direction unchanged
- 1: Direction reversed

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 F0-05 to consistent with the inspection command direction.

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

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F0-07	Carrier frequency	2.0–16.0	8.0	kHz	★

It is used to set the carrier frequency of the controller.

The carrier frequency is closely related to the motor noise during running. When it is generally set above 6 kHz, mute running is achieved. It is recommended to set the carrier

frequency to the lowest within the allowable noise, which reduces the controller loss and radio frequency interference.

If the carrier frequency is low, output current has high harmonics, and the power loss and temperature rise of the motor increase.

If the carrier frequency is high, power loss and temperature rise of the motor declines. However, the system has an increase in power loss, temperature rise and interference.

Adjusting the carrier frequency will exert influences on the aspects listed in the following table.

Table 7-1 Influences of carrier frequency adjustment

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

Note

On certain environment conditions (the heatsink temperature is too high), the system will reduce the carrier frequency to provide overheat protection for the controller, preventing the controller from being damaged due to overheat. If the temperature cannot reduce in this case, the controller reports the overheat fault.

Group F1: Motor Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F1-00	Group F1 security password	0–65535	01000	-	●

You are allowed to view and modify group F1 parameters only after entering the security password.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F1-01	Rated motor power	1.1–132.0	Model dependent	kW	★
F1-02	Rated motor voltage	50–600	380	V	★
F1-03	Rated motor current	0.00–655.00	25	A	★
F1-04	Rated motor frequency	0.00–99.00	50	Hz	★
F1-05	Rated motor speed	0–3000	1460	RPM	★

Set these parameters according to the motor nameplate.

Each time F1-01 is changed, F1-06 to F1-10 are restored to the default setting for the

asynchronous motor but keep the same for the PMSM.

Ensure that these motor parameters are set correctly. Incorrect setting affects the motor auto-tuning and the vector control effect.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F1-06	Stator resistance	0.000–65.000	0.000	Ω	★
F1-07	Rotor resistance	0.000–65.000	0.000	Ω	★
F1-08	Leakage inductance	0.00–650.00	2.34	mH	★
F1-09	Mutual inductance	0.1–3000.0	66.6	mH	★
F1-10	Magnetizing current	0.01–650.00	10.7	A	★

These parameters are obtained by means of motor auto-tuning. After the motor auto-tuning is completed successfully, the values of these parameters are updated automatically.

Function Code	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: Current loop parameter identification (only for synchronous motor)	0	-	★

It is used to select the auto-tuning mode.

- 1: With-load auto-tuning

  It is static auto-tuning for the asynchronous motor and rotary auto-tuning for the synchronous motor.

- 2: No-load auto-tuning

  It is complete auto-tuning, by which all motor parameters can be obtained.

- 3: Parameter identification

  When F1-11 is set to 2 (No-load auto-tuning), the motor must be completely disconnected from the load; otherwise, the auto-tuning effect will be affected.

  When "TUNE" is displayed on the operation panel, you need to manually release the brake before starting auto-tuning. For details on the auto-tuning process, see the description in section 5.4.

Function Code	Parameter Name	Setting Range	Default	Min. Unit	Property
F1-12	Angle-free auto-tuning function selection	Bit1: Angle-auto-tuning-free	0	-	★

When Bit1 =1, motor auto-tuning is not required, because the inspection running process at first-time power-on includes the motor auto-tuning process.

Ensure that motor phase sequence and encoder wiring are correct.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F1-13	Motor auto-tuning current	30–150	60	%	★

It sets the maximum current during synchronous motor auto-tuning.

You need not modify it generally.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F1-15	Shaft Q inductance (torque)	0.00–650.00	3.00	mH	★
F1-16	Shaft D inductance (excitation)	0.00–650.00	3.00	mH	★
F1-17	Back EMF	0–65535	0	-	★

These parameters are related to the synchronous motor, and obtained by means of motor auto-tuning.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F1-25	Motor type	0: Asynchronous motor 1: Synchronous motor	1	-	★

It is used to set the motor type.

This parameter must be set correctly before motor auto-tuning; otherwise, the motor auto-tuning cannot be performed.

Group F2: Vector Control Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-00	Speed loop proportional gain KP1	0–100	40	-	★
F2-01	Speed loop integral time TI1	0.01–10.00	0.60	s	★
F2-02	Switchover frequency 1	0.00 to F2-05	2.00	Hz	★

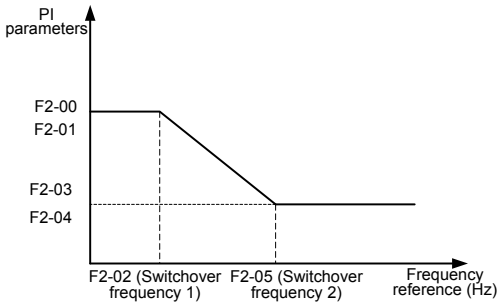
F2-00 and F2-01 are PI regulation parameters when the running frequency is smaller than the value of F2-02 (Switchover frequency 1).

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-03	Speed loop proportional gain KP2	1–100	35	-	★
F2-04	Speed loop integral time TI2	0.01–10.00	0.80	s	★
F2-05	Switchover frequency 2	F2-02 to F0-06	5.00	Hz	★

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 7-1.

Figure 7-1 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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-06	Current loop KP1 (torque)	10–1000	60	-	★
F2-07	Current loop KI1 (torque)	10–1000	30	-	★

They are regulation parameters for the torque axis current loop.

These parameters are used as the torque axis current regulator in vector control. The most appropriate values of the parameters matching the motor characteristics are obtained by means of motor auto-tuning. You need not modify them generally.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-08	Torque upper limit	0.0–200.0	150.0	%	★

It is used to set the torque upper limit of the motor. The value 100% corresponds to the rated output torque of the adaptable motor.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-09	Current loop KP2 (excitation)	10–1000	60	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-10	Current loop KI2 (excitation)	10–1000	30	-	★

They are parameters of the excitation axis current regulator.

These parameter are obtained by means of motor auto-tuning. You need not modify them.

They take effect only in field weakening, and have little effect on improvement of motor running.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-11	No-load-cell startup	0: Invalid 1: Valid	0	-	★

It sets whether to perform automatic pre-torque compensation when there is no load cell.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-12	Position lock speed KP	1–100	35	-	☆
F2-13	Position lock speed KI	0.01–10.00	0.8	-	☆

These parameters are speed loop parameters when the no-load-startup function is used.

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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-14	Position lock current loop KP1 (torque)	10–1000	60	-	☆
F2-15	Position lock current loop KI1 (torque)	10-1000	30	-	☆

They are regulation parameters for the torque axis in the case of no-load-cell.

The most appropriate values of these parameters matching the motor characteristics are obtained by means of motor auto-tuning. You need not modify them generally.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-16	Position lock current loop KP2 (excitation)	10–1000	60	-	☆
F2-17	Position lock current loop KI2 (excitation)	10-1000	30	-	☆

They are regulation parameters for the excitation axis current loop in the case of no-load-cell.

These parameter are obtained by means of motor auto-tuning. You need not modify them.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-18	Torque acceleration time	0–500	1	ms	★
F2-19	Torque deceleration time	0–500	350	ms	★

These two parameters are used to set the acceleration time and deceleration time of the torque current.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-20	Current filter coefficient	0.00–40.00	0.00	-	★

It is used to set the current filter time, which suppress the periodic vertical jitter. Increase the value in ascending order of 3 to achieve the optimum effect.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-21	Position lock rollback coefficient	0–9999	0	Pulses	●

It set the rollback pulses at startup.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F2-22	Startup acceleration time	0.000–1.500	0.000	s	★

It is used to set the acceleration time of the startup speed. It is used with F3-00. For details, see Figure 7-2.

Group F3: Running Control Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-00	Startup speed	0.000–0.030	0.000	m/s	★
F3-01	Startup holding time	0.000–0.500	0.15	s	★

These two parameters are used to set the startup speed and startup speed holding time.

The parameters may reduce the terrace feeling at startup due to static friction between the guide rail and the guide shoes.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-02	Acceleration rate	0.300–1.300	0.600	m/s^2	★
F3-03	Acceleration start jerk time	0.800–3.000	2.500	s	★
F3-04	Acceleration end jerk time	0.800–3.000	2.500	s	★

These parameters are used to set the running curve during acceleration of the elevator.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-05	Deceleration rate	0.300–1.300	0.600	m/s^2	★
F3-06	Deceleration end jerk time	0.800–3.000	2.500	s	★
F3-07	Deceleration start jerk time	0.800–3.000	2.500	s	★

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

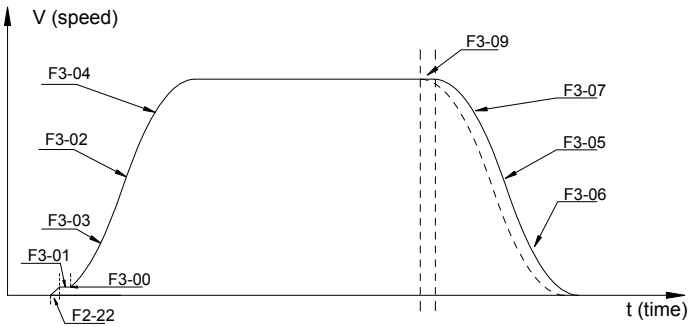
F3-02 (F3-05) is the acceleration rate (deceleration rate) in the straight-line acceleration

process (deceleration process) of the S curve.

F3-03 (F3-07) is the time for the rate to increase from 0 to the value set in F3-02 (F3-05) in the end jerk segment of the S curve. The larger the value is, the smoother the jerk is.

F3-04 (F3-06) is the time for the rate to decrease from the value set in F3-02 (F3-05) to 0 in the start jerk segment of the S curve. The larger the value is, the smoother the jerk is.

Figure 7-2 Setting the running curve



Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-08	Special deceleration rate	0.800–1.500	0.900	m/s2	★

It 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, preventing over travel top terminal or over travel bottom terminal.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-09	Pre-deceleration distance	0–50.0	0.0	mm	★

It is used to set the pre-deceleration distance of the elevator in distance control, as shown in Figure 7-2.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-10	Re-leveling speed	0.040–0.080	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 F6-09 Bit2 = 1).

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-11	Inspection speed	0.080–0.630	0.250	m/s	★

It is used to set the elevator speed during inspection and shaft auto-tuning.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-12	Low speed emergency evacuation speed	0.080 to F3-11	0.100	m/s	★

It is used to set the elevator speed ruing low speed emergency evacuation.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-13	Base floor verification speed	0.100 to F0-04	0.500	m/s	★

It is used to set the elevator speed for base floor verification.

It is valid when the function of returning to base floor for verification at too large pulse deviation is enabled (F6-09 Bit1 = 1).

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-14	Emergency evacuation function selection	0–65535	32	-	★

It is used to select the emergency evacuation-related functions. Each bit of the function code defines a function, as described in the following table.

Bit	Function	Description							Remarks
Bit0	Emergency evacuation exit mode	1	Shorting stator braking mode Shorting stator braking mode: Upon power failure, EPS 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.						-
		0	EPS						-
Bit1	Low voltage drive	1	48 VDC						-
		0	220 VAC and above						-
Bit2	Normal speed emergency evacuation	1	Allowed						This function is enabled when the EPS capacity is sufficient and the voltage is high enough.
		0	Forbidden						
Bit3	Door open at single leveling signal	1	Allowed						The door opens when a single leveling signal is active.
		0	Forbidden						
Bit4	Direction determine mode	0	Automatically calculating the direction	0	Load direction determining based on half-load signal	1	Landing at nearest floor		-
Bit5		0		1		0			-

Bit	Function	Description		Remarks
Bit6	Stop position	1	Stop at the base floor	-
		0	Stop at nearest landing floor	-
Bit7	Startup compensation	1	Startup torque compensation valid in emergency evacuation running	-
		0	Invalid	-
Bit8 to Bit15: reserved				

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-15	Normal speed emergency evacuation speed	0.080–0.500	0.080	m/s	★
F3-16	Acceleration rate at emergency evacuation	0.500–2.000	0.500	m/s^2	★

It is used to set the acceleration rate at emergency evacuation.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-17	Normal speed emergency evacuation times	0–10	0	-	★

It is used to set the maximum normal speed emergency evacuation times allowed.

This parameter is valid only when normal speed emergency evacuation is allowed (F3-14 Bit2 = 1).

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F3-18	Zero-speed control time at startup	0.000–1.000	0.200	s	★
F3-19	Brake release delay	0.000–1.5.000	0.600	s	★
F3-20	Zero-speed control time at end	0.000–1.000	0.300	s	★
F3-21	Brake apply delay	0.200–1.500	0.200s	s	★

These parameters are used to set the time related to the zero-speed holding current output and braking action delay.

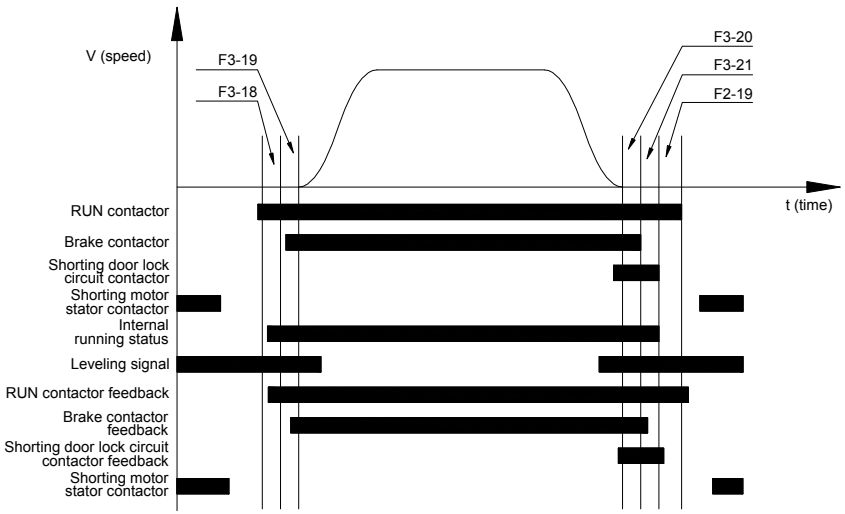
F3-18 (Zero-speed control time at startup) specifies the time from output of the RUN contactor to output of the brake contactor, during which the controller performs excitation on the motor and outputs zero-speed current with large startup torque.

F3-19 (Brake release delay) 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 (Zero-speed control time at end) specifies the zero-speed output time when the running curve ends.

F3-21 (Brake apply delay) specifies the time from the moment when the system sends the brake apply command to the moment when the brake is completely applied, during which the system retains the zero-speed torque current output.

Figure 7-3 Running time sequence



Group F4: Floor Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F4-00	Leveling adjustment	0–60	30	mm	★

It 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.

If the leveling deviations in up direction and down direction are inconsistent, adjust F4-07 additionally.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F4-01	Current floor	F6-01 to F6-00	1	-	★

This parameter 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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F4-02	High byte of current floor position	0–65535	0	Pulses	●
F4-03	Low byte of current floor position	0–65535	0	Pulses	●

These two parameters indicate the absolute pulses of the current position of the elevator car relative to the bottom leveling position.

The position data of the NICE5000 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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F4-04	Length 1 of leveling plate	0–65535	0	mm	★
F4-05	Length 2 of leveling plate	0–65535	0	mm	★

These two parameters respectively indicate the pulses corresponding to the length of the magnetic value and the length between two leveling sensors. They are automatically recorded during shaft auto-tuning.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F4-06	Leveling delay	0–80	28	ms	★

It is used to set the delay time from action of the leveling sensor to the moment of leveling signal active.

You need not modify it generally.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F4-07	Down leveling adjustment	0–60	30	mm	★

It is used to adjust the inaccurate leveling position.

- F4-07 = 30, F4-00 is used for leveling adjustment.
- F4-07 ≠ 30, F4-00 is used for up leveling adjustment, and F4-07 is used for down leveling adjustment.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F4-10	High byte of floor height 1	0–65535	0	Pulses	★
F4-11	Low byte of floor height 1	0–65535	0	Pulses	★
⋯(Floor height 2 to floor height 54)					
F4-118	High byte of floor height 55	0–65535	0	Pulses	★
F4-119	Low byte of floor height 55	0–65535	0	Pulses	★

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

Group F5: Terminal Function Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F5-00	Load cell input selection	0–3	2	-	★

It is used to set the channel of setting the elevator load cell signal. When a load cell device is used, set this parameter correctly first.

The values are as follows:

- 0: Invalid
- 1: CTB digital input
- 2: CTB analog input
- 3: MCB analog input

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F5-01	X1 function selection	0–127	101	-	★
F5-02	X2 function selection		102	-	★
F5-03	X3 function selection		116	-	★
F5-04	X4 function selection		117	-	★
F5-05	X5 function selection		118	-	★
F5-06	X6 function selection		119	-	★
F5-07	X7 function selection		0	-	★
F5-08	X8 function selection		0	-	★
F5-09	X9 function selection		4	-	★
F5-10	X10 function selection		5	-	★
F5-11	X11 function selection		106	-	★
F5-12	X12 function selection		107	-	★
F5-13	X13 function selection		108	-	★
F5-14	X14 function selection		9	-	★
F5-15	X15 function selection		10	-	★
F5-16	X16 function selection		112	-	★
F5-17	X17 function selection		113	-	★
...			..		
F5-28	X28 function selection		0	-	★

These parameters are used to set the functions of input terminals X1 to X24.

Note

Functions 04 (Safety circuit feedback signal), 05 (Door lock circuit feedback signal), 06 (RUN contactor feedback signal), and 07 (Brake contactor feedback signal) can be selected repeatedly.

The hundred's digit indicates the NO/NC type (1: NC, 0: NO), and the lowest two digits indicate the selected function. For example, if X13 is used for inspection signal NC input, set F5-13 to 108; if X14 is used for inspection up signal NO input, set F5-14 to 009.

The NICE5000 only has the first 20 inputs, and X21 to X28 (set by F5-21 to F5-28) are specialized for the NICE7000.

Terminals X1 to X20 are digital inputs, and are allocated with corresponding functions based on the input signals. After the 24 V voltage is input, the corresponding input terminal indicator becomes ON. The functions are described as follows:

00: Invalid

Even if there is signal input to the terminal, the system has no response. You can allocate this function to terminals that are not used to prevent mis-function.

01: Up leveling signal 02: Down leveling signal 03: Door zone signal

The NICE5000 system determines the elevator leveling position based on the leveling sensor signal. The system supports three types of leveling configuration: single door zone sensor, up and down leveling sensors, and door zone sensor plus the up/down leveling sensor.

The following table describes the sequence of received signals for the three types of leveling configurations.

Leveling Configuration			Signal Receiving Sequence	
Up leveling sensor	Down leveling sensor	Door zone sensor	Up direction	Down direction
No	No	Yes	Door zone signal	
Yes	Yes	No	Up leveling signal ---> Down leveling signal	Down leveling signal ---> Up leveling signal
Yes	Yes	Yes	Up leveling signal ---> Door zone signal ---> Down leveling signal	Down leveling signal ---> Door zone signal ---> Up le veling signal

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

04: Safety circuit feedback signal 05: Door lock circuit feedback signal

The safety circuit is important to safe and reliable running of the elevator, and the door lock circuit ensures that the hall door and car door are closed before the elevator starts to run. Valid feedback signals of the safety circuit and door lock circuit are necessary to elevator running.

It is recommended that these signals are set to NO input. If they are set to NC input, the system considers the input active even though there is no input. In this case, the actual state of the safety circuit cannot be detected, which may cause potential safety risks.

06: RUN contactor feedback signal 07: Brake contactor/Brake detection switch feedback signal

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

108: Inspection signal 09: Inspection up signal 10: Inspection down signal

When the Automatic/Inspection switch is set to the Inspection position, the elevator enters the inspection state; in this case, the system cancels all automatic running including the automatic door operations. When the inspection up signal or inspection down signal is valid, the elevator runs at the inspection speed.

11: Fire emergency signal

When the fire emergency switch is turned on, the elevator enters the fire emergency state, and immediately cancels the registered hall calls and car calls. The elevator stops at the nearest floor without opening the door, and then directly runs to the fire emergency floor and automatically opens the door after arrival.

112: Up limit signal 113: Down limit signal

The up limit signal and down limit signal are used as the stop switches at the terminal floor to prevent over travel top terminal or over travel bottom terminal when the elevator runs over the leveling position of the terminal floor but does not stop.

14: Overload signal

When the elevator load exceeds 110% of the rated load during normal use, the elevator enters the overload state. Then the overload buzzer beeps, the overload indicator in the car becomes ON, and the elevator door keeps open. The overload signal becomes invalid when the door lock is applied. If the running with 110% of the rated load is required during inspection, you can set F7-06 to 1 to allow overload running (note that this function has potential safety risks and use it with caution).

It is recommended that the overload signal be set to NC input. If it is set to NO, the system cannot detect the overload state when the overload switch is damaged or the connection is broken, and the elevator running in this case may cause potential safety risks. It is also recommended that the up limit signal, down limit signal, and slow-down signal are set to NC input.

15: Full-load signal

When the elevator load is 80% to 110% of the rated load, the HCB displays the full-load state, and the elevator does not respond to hall calls.

Note

When terminal X on the MCB is used for input of the overload and full-load signals, ensure that F5-36 has been set to 0.

116: Up slow-down 1 signal 117: Down slow-down 1 signal

118: Up slow-down 2 signal 119: Down slow-down 2 signal

120: Up slow-down 3 signal 121: Down slow-down 3 signal

The slow-down signals are used to enable the elevator to stop at the slow-down speed when the car position is abnormal, which is an important method to guarantee elevator safety. The system automatically records the positions of the switches in group FH during shaft auto-tuning.

22: Shorting door lock circuit contactor feedback

It is the feedback signal when the door lock circuit is shorted if the function of door pre-open upon arrival or re-leveling at door open is enabled for the elevator configured with the pre-open module. This is to ensure safety during the elevator running.

23: Firefighter switch signal

It is the firefighter switch signal and is used to enable the firefighter operation mode. After the elevator returns to the fire emergency floor, the elevator enters the firefighter operation state if the firefighter signal is active.

24: Door machine 1 light curtain signal 25: Door machine 2 light curtain signal

26: Door machine 1 safety edge signal 29: Door machine 2 safety edge signal

They are used to detect the light curtain signals of door machine 1 and door machine 2 (if existing).

127: EPS valid signal

It is the emergency running signal at power failure. If it is active, it indicates that the elevator is running for emergency evacuation at power failure. For more details, see section 5.5.1.

28: Elevator lock signal

If this signal is active, the elevator enters the locked state, returns to the elevator lock floor and does not respond to any calls until the signal becomes inactive.

30: Shorting PMSM stator feedback signal

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

32: Motor overheat signal

If this signal remains active for more than 2s, the controller stops output and reports fault Err39 to prompt motor overheat. After this signal becomes inactive, Err39 is reset automatically and the system resumes to normal operation.

33: VIP signal

The elevator enters the VIP service state after this signal is active.

34: Earthquake signal

If this signal remains active for more than 2s, the elevator enters the earthquake stop state, stops at the nearest landing floor and opens the door. Then the elevator starts running again after the earthquake signal becomes inactive.

35: Security signal

If this signal is active, each time the elevator passes the security floor, it opens and closes the door once, and then runs to the destination floor.

36: Service floor switchover

If this signal is active, the time-based service 1 remains valid.

37: Fire emergency floor switchover

The NICE5000 supports two fire emergency floors. Fire emergency floor 1 is the default one. If this signal is active, the elevator stops at fire emergency floor 2.

38: Parking floor switchover

The NICE5000 supports two parking floors. Parking floor 1 is the default one. If this signal is active, the elevator stops at parking floor 2.

Different parking floors can be set for different time periods. For details, see group F6 parameters.

39: Down collective selective switch

The system starts the down collective selective function when the start time set in group Fd is reached or this signal is active.

40: Peak service

Within the peak service time set in group Fd, the system starts the peak service when the number of car calls at the peak service floor exceeds 3 or this signal is active.

41: Fire emergency start signal

In this firefighter operation state, the elevator starts running when this signal is active.

It is used when there are special requirements for fire emergency running.

42: Back door selection signal 43: Back door forbidden signal

When opposite door control is used, these two signals are used to allow or forbid door 2.

44: Light-load signal45: Half-load signal

It is used for allocation of elevators in parallel or group mode and nuisance judgment in the anti-nuisance function.

46: Double door control signal

In opposite door control, if the back door is not forbidden, both doors open if this signal is active.

47: Motor input

The group control system allocate calls to elevators in energy-saving principle when standby power supply is used.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F5-29	X29 function selection	0: Invalid 4: Safety circuit signal 5: Door lock circuit signal	4	-	★
F5-30	X30 function selection		5	-	★
F5-31	X31 function selection		5	-	★

These parameters are used to set the functions of heavy-current detection input terminals X29 to X31.

The functions 0, 4, and 5 can be repeatedly allocated to terminals. If X29 to X31 are not used, cancel the setting of these parameters.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F5-32	Y1 function selection	0–22	1	-	★
F5-33	Y2 function selection		2	-	★
F5-34	Y3 function selection		3	-	★
F5-35	Y4 function selection		4	-	★
F5-36	Y5 function selection		0	-	★
F5-37	Y6 function selection		0	-	★
F5-38	Y7 function selection		0		
F5-39	Y8 function selection		0		
F5-40	Y9 function selection		0		

These parameters are used to set the functions of output terminals Y1 to Y9.

Note that Y7 to Y9 are specialized for the NICE7000, and share a common point.

00: Invalid

The terminal has no function.

01: RUN contactor control 02: Brake contactor control 03: Shorting door lock circuit contactor control

The terminal with one of these functions controls whether the contactor is opened or closed.

04: Fire emergency floor arrival signal feedback

In the fire emergency state, the system sends the feedback signal for monitoring after the elevator stops at the fire emergency floor.

05: Door machine 1 open 06: Door machine 1 close 07: Door machine 2 open
08: Door machine 2 close

The terminal with one of these functions is used to control open and close of door 1 or 2.

09: Brake and RUN contactors healthy

When the brake and RUN contactors operate properly, the system sends the feedback signal for monitoring.

10: Fault state

The terminal with the function has output when the system is in the level-3, level-4 or level-5 fault state.

11: Running monitor

The terminal with the function has output when the controller is running.

12: Shorting PMSM stator contactor

When the shorting PMSM stator contactor is applied in synchronous motor, the terminal with the function is used to control whether the contactor is closed or opened. For details, see

section 5.5.1.

13: Emergency evacuation automatic switchover

When detecting that the bus voltage declines to a certain value after power failure occurs on the mains supply, the controller outputs this signal and uses the EPS for temporary power supply, implementing emergency evacuation running.

Only Y6 can be allocated with this function because the controller needs to depend on its residual power to drive the relay at power failure of the mains supply.

14: Controller healthy

The terminal with the function has output when the controller operates properly.

15: Emergency buzzer control

The terminal with the function has output when the system is in the emergency evacuation running state. The buzzer tweets to prompt.

16: Higher-voltage startup of brake

This function is used for the brake that keeps the release state with voltage reduction. The terminal with this function keeps the output for a certain time to release the brake, and then the voltage is reduced to keep the brake release state.

17: Elevator running in up direction

The terminal with the function has output when the elevator runs in the up direction.

18: Lamp/Fan running

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

19: Medical sterilization

It is used to control the output of the ultraviolet sterilizing lamp signal. After the elevator stops running and the lamp/fan stops operating, the medical sterilization output is started.

20: Non-door zone stop

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

21: Electric lock

It is used to control applying and releasing of the electric lock in the case of manual door.

22: Non-service state

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

Group F6: Elevator Logic Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-00	Top floor of the elevator	F6-01 to 56	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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-02	Parking floor	F6-01 to F6-00	1	-	★

When the idle time of the elevator exceeds the value set in F9-00, the elevator returns to the parking floor automatically.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-03	Fire emergency floor	F6-01 to F6-00	1	-	★

When entering the state of returning to the fire emergency floor, the elevator returns to this floor.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-04	Elevator lock floor	F6-01 to F6-00	1	-	★

When entering the elevator lock state, the elevator returns to this floor.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-05	Service floors 1	0–65535	65535	-	★
F6-06	Service floors 2	0–65535	65535	-	★
F6-07	Service floors 3	0–65535	65535	-	★
F6-08	Service floors 4	0–65535	65535	-	★

These parameters are used to set the service floors among floors 1–56.

- Service floors 1: floors 1–16
- Service floors 2: floors 17–32
- Service floors 3: floors 33–48
- Service floors 4: floors 49–56

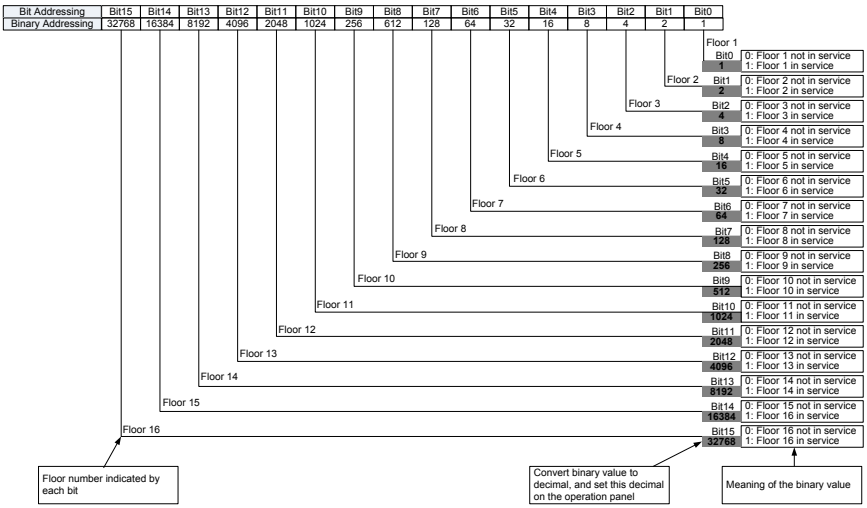
Whether service floors of a parameter are allowed is indicated by a 16-bit binary number. The 16 bits respectively correspond to 16 floors from low to high. If a bit is set to 1, the elevator will respond to calls of this floor; if this bit is set to 0, the elevator will not respond to calls of this floor.

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

F6-05 is enabled through bit addressing.

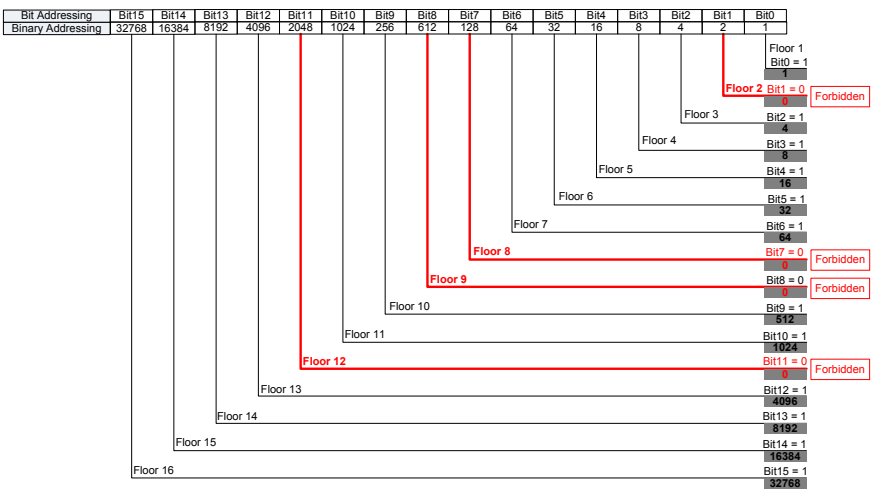
The 16 bits of the function code respectively correspond to 16 floors. If a bit is set to 1, the elevator will respond to calls of this floor; if this bit is set to 0, the elevator will not respond to calls of this floor.

Figure 7-4 Converting binary value of F6-05 to decimal



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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-09	Elevator function selection 1	0–65535	32816	-	★
F6-10	Elevator function selection 2	0–65535	18	-	★
F6-11	Elevator function selection 3	0–65535	0	-	★

These parameters are used to select the required elevator functions. Each bit of the function code 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.

The functions defined by the binary bits are described in the following table.

Bit	Function	Description	Default
F6-09 Elevator function selection 1			
Bit0	Disability function	It is used to enable or disable the disability function.	0
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	Re-leveling function	If the floor height is large or the car load is heavy, there is a deviation between the car position and the floor sill at arrival. If this function is enabled, the elevator shorts the door lock signal through the door lock circuit contactor, and performs re-leveling at a low speed with door open. The door pre-open module needs to be used together for this function.	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. It requires use of a door pre-open module.	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	Peak service	When there are a large number of calls at a floor in a certain period, the elevator returns to this floor and waits.	0
Bit6	Down collective selective peak service	This function is similar to the peak service except that the elevator responds to only down calls during the peak period.	0
Bit7	Fault auto reset	The controller automatically resets the faults once every hour.	0

Bit	Function	Description	Default
Bit8	Time-based service floor function	It is used to enable the function of responding to different floor calls during different time periods. For details, see the description of F6-35 to F6-52.	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	Buzzer not tweet upon re-leveling	The buzzer inside the car does not tweet upon re-leveling.	0
Bit11	Car call deletion	A car call can be deleted by pressing the corresponding button twice consecutively (at an interval of 0.5s). If the call is being executed, it cannot be deleted.	1
Bit12	Hall call deletion	A hall call can be deleted by pressing the hall call button twice consecutively (at an interval of 0.5s).	0
Bit13	Timed elevator lock	It is used to enable the timed elevator lock service. The elevator lock time is set in F6-22.	0
Bit14	Arrival gong disabled at night	The arrival gong is disabled from 22:00 p.m. to 7:00 a.m.	0
Bit15	Reserved	-	0
F6-10 Elevator function selection 2			
Bit0	Door open/close holding at open limit	The system still outputs the door open/close command upon door open/close limit.	0
Bit1	Cancelling door open/close command at a delay after door open/close limit	The door open/close command is cancelled at a delay after door open/close limit. The delay time is set in F8-22.	1
Bit2	Cancelling door open/close command cancelled immediately at door open/close limit	The system immediately cancels the door open/close command after receiving the door open/close limit.	0
Bit3	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
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.	1

Bit	Function	Description	Default
Bit5	Forced door close	If the door still does not close within the time set in Fb-11 in automatic state, the system outputs the forced door close signal; at this moment, the light curtain becomes invalid and the buzzer tweets. When the door lock is disconnected, this function is invalid.	0
Bit6	Manual door	This function is used in applications where door open and close are carried out manually. After this function is enabled, normal door open/close detection is invalid, and the system re-defines the door lock judgment method to control door open/close.	0
Bit7	Cancelling door lock auto-reset	Generally, 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. If this function is enabled, the controller does not reset Err53 automatically.	0
Bit8	NO/NC output selection of shorting PMSM stator contactor	Bit8 = 0: NC output contactor (recommended) The shorting PMSM stator contactor closes during running and opens at stop. Bit8 = 1: NO output contactor The shorting PMSM stator contactor opens during running and closes at stop.	0
Bit9	Door lock circuit contactor output monitoring	This function is enabled when the door pre-open module is used.	0
Bit10	Cancelling overspeed protection	If this function is enabled, the controller does not detect the overspeed fault (Err56).	0
Bit11	Car call executed 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	The auxiliary command terminal (CN8) on the CTB can be set 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

Bit	Function	Description	Default
Bit15	Higher/Low voltage 1.5s time detection	This function can be enabled when both higher voltage and low voltage detections are performed on the door lock circuit or safety circuit. When the time interval between higher voltage and low voltage detection exceeds 1.5s, the controller reports the door lock fault.	0
F6-11 Elevator function selection 3			
Bit0	Fire emergency display	There is hall call display after the elevator enters the fire emergency state and returns to the fire emergency floor.	0
Bit1	Firefighter operation display	There is hall call display when the elevator is in firefighter operation state.	0
Bit2	Direction display at micro-leveling	The adjustment direction is displayed during micro-leveling adjustment.	0
Bit3	Determined direction display in attendant state	The determined direction is displayed at stop in attendant state, even if there is no call.	0
Bit4	No direction display at automatic stop	There is no direction display at automatic stop.	0
Bit5	Elevator lock at door open	In the elevator lock state, the elevator keeps the door open at the elevator lock floor.	0
Bit6	Display available at elevator lock	In the elevator lock state, hall calls are displayed normally.	0
Bit7	Elevator lock at any floor hall call	The system enters the elevator lock state or returns to the fire emergency floor at a hall call from any floor.	0
Bit8	Clear floor number in advance	The displayed floor number is cleared before the elevator reaches the destination floor.	0
Bit9	Clear floor number in advance in attendant state	The displayed floor number is cleared before the elevator reaches the destination floor in attendant running state.	
Bit10	Displaying next arriving floor number	The next floor to be arrived at is displayed during elevator running.	0
Bit11	Blinking at arrival	The car display blinks when the elevator arrives at a floor. The blinking advance time is set in F6-12.	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
Bit14	Door re-open at door close limit	The door re-opens if the door open signal is active at door close limit.	0
Bit15	Reserved	-	0

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-12	Blinking advance time	0.0–15.0	2.0	s	☆

It is used to set the blinking advance time when the elevator arrives the floor required by the car call.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-13	Parking floor 2 start time	00.00–23.59	0	-	★
F6-14	Parking floor 2 end time	00.00–23.59	0	-	★
F6-15	Parking floor 2	0 to F6-00	0	-	★

The elevator returns to the floor set in F6-15 if idle during the time period set in F6-13 to F6-14.

Parking floor 2 can also be enabled by using the parking floor switchover switch.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-16	Fire emergency floor 2	0 to F6-00	0	-	★

Fire emergency floor 2 set in this parameter is enabled by using the fire emergency floor switchover switch.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-17	Fire emergency function selection 1	0–65535	1283	-	★
F6-18	Fire emergency function selection 2	0–65535	1291	-	★
F6-19	Fire emergency function selection 3	0–65535	17156	-	★

These parameters are used to select the required fire emergency functions. Each bit of the function code 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.

The functions defined by the binary bits are described in the following table.

Bit	Function	Description	Default
F6-17 Fire emergency function selection 1			
Bit0	Fire emergency 1 door 1 valid	In fire emergency state, the elevator under opposite door control opens the corresponding door.	1
Bit1	Fire emergency 1 door 2 valid		1
Bit2	Nearest floor for fire emergency	The elevator arrives at the nearest landing floor and uses it as the fire emergency floor.	0
Bit3	Opposite door control unchanged	Opposite door control in fire emergency state is the same as that during normal running	0

Bit	Function	Description	Default
Bit4	Reserved	-	0
Bit5	Retentive at power failure	In fire emergency state, the controller records the system and current car states at power failure and restores these state after power-on again.	0
Bit6 to Bit7	Reserved	-	0
Bit8	Fire emergency indicator blinking at fire emergency 1	These functions control the fire emergency indicator and tone in fire emergency state. The following conditions are required to implement the functions: Install the HCB-B. Set the functions of the HCB-B output terminals in group FL parameters. Connect the fire emergency components to the corresponding output terminals.	1
Bit9	Fire emergency indicator steady ON at fire emergency 1		0
Bit10	Fire emergency tone discontinuous prompt at fire emergency 1		1
F6-18 Fire emergency function selection 2			
Bit0	Fire emergency 2 door 1 valid	In firefighter operation state, the elevator under opposite door control opens the corresponding door.	1
Bit1	Fire emergency 2door 2 valid		1
Bit2	Entering firefighter operation state automatically	Upon door open limit after the elevator returns to the fire emergency floor, the elevator automatically enters the firefighter operation state.	0
Bit3	Firefighter switch	Upon door open limit after the elevator returns to the fire emergency floor, the elevator enters the firefighter operation state only after the firefighter switch input inside the car is active.	1
Bit4	Fire emergency switch switchover	After the fire emergency switch is active, the elevator returns to the fire emergency floor and opens the door. Then, the fire emergency switch becomes inactive and active again (within 500 ms), the elevator enters the firefighter operation state.	0
Bit5 to Bit6	Reserved	-	0
Bit7	Low speed door close	It is used to implement low speed door close in fire emergency state.	0

Bit	Function	Description	Default
Bit8	Fire emergency indicator blinking at fire emergency 2	These functions control the fire emergency indicator and tone in firefighter state. The following conditions are required to implement the functions: Install the HCB-B. Set the functions of the HCB-B output terminals in group FL parameters. Connect the fire emergency components to the corresponding output terminals.	1
Bit9	Fire emergency indicator steady ON at fire emergency 2		0
Bit10	Fire emergency tone prompt at intervals at fire emergency 2		1
Bit11	Exiting firefighter operation state at any floor	If this signal is active, the elevator can exit the firefighter operation state at any floor.	0
F6-19 Fire emergency function selection 3			
Bit0	Nearest call mode	The elevator responds to the call from the floor nearest to the current floor first. In addition, the call in the same direction takes precedence over the call with the same distance. Multiple calls can be registered. This mode has the highest priority.	0
Bit1	First call mode	The elevator responds to the call firstly registered in fire emergency state. This call can be cancelled by pressing the button twice. This mode has the medium priority.	0
Bit2	Last call mode	Only one car call can be registered in firefighter operation state. The later one overwrites the previous one. This mode has the lowest priority.	1
Bit3 to Bit4	Reserved	-	0
Bit5	Call registered by holding down button	The car call is registered only when you holding down the button and release it after door close limit.	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 active	In the fire emergency state, the elevator automatically closes the door when there is a car call.	1
Bit9	Reserved	-	0
Bit10	Reserved	-	0
Bit11	Automatic door open at arrival	In firefighter operation state, the elevator automatically opens the door at arrival.	0

Bit	Function	Description	Default
Bit12	Reserved	-	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.	1
Bit15	Automatic door open after arrival at fire emergency floor	The elevator automatically opens the door after arrival at the fire emergency floor.	0

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-22	Elevator lock start time	00.00–23.59	00.00	HH.MM	☆
F6-23	Elevator lock end time	00.00–23.59	00.00	HH.MM	☆

Within the time period set in these parameters, the elevator automatically runs to the elevator lock floor and enters the elevator lock state.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-24	Attendant function selection	0–65535	0	-	★

It is used to select the attendant-related elevator functions. Each bit of the function code 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.

The functions defined by the binary bits 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

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-25	Attendant/Automatic switchover time	0–200	0	s	★

It is used to set the switchover time from the attendant state to the automatic state. When the value of this parameter is smaller than 5, this function is disabled,

If there is a hall call at current floor in attendant state, the system automatically switches over to the automatic (normal) state after the time set in this parameter. After this running is completed, the system automatically restores to the attendant state (F6-24 Bit2 must be set to 1).

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-26	Emergency evacuation time limit	30–600	45	s	★

It sets the allowed emergency evacuation time.

If the time exceeds this value, the controller reports Err31.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-27	Emergency evacuation function selection	0–65535	3	-	★

It is used to select the emergency evacuation-related functions. Each bit of the function code 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.

The functions defined by the binary bits are described in the following table.

Bit	Function	Description	Default
Bit0	Door 1 valid	In emergency evacuation state, the elevator under opposite door control opens the corresponding door.	1
Bit1	Door 2 valid		1
Bit2	Emergency evacuation time protection	When the emergency evacuation time exceeds F6-26, the controller reports fault Err31, and switchover from shorting stator braking mode to controller drive based on time limit cannot be performed.	0
Bit3	Manual control	The system automatically switches over to EPS and enters the inspection state. You need to press the inspection up and down buttons at the same time to perform emergency evacuation running.	0
Bit4	Buzzer tweeting	The buzzer tweets at intervals in the emergency evacuation state.	0
Bit5	HCB output	The HCB-B needs to installed additionally. Set the terminal with the emergency evacuation function, and the terminal will output the corresponding signal in the emergency evacuation state.	0

Bit	Function	Description		Default
Bit6	Shorting stator braking mode switched over to controller drive	It enables the function of switching over shorting stator braking mode to controller drive.		0
Bit7	Mode of shorting stator braking mode switched over to controller drive	0	If the time of the shorting stator braking mode exceeds 30s, the controller starts to drive the elevator.	0
		1	If the speed is still smaller than 0.005 m/s after 3s in the shorting stator braking mode, the controller starts to drive the elevator.	
Bit8	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.	

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-28	Inspection function selection	0–65535	33	-	★

It is used to select the inspection-related functions. Each bit of the function code 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.

The functions defined by the binary bits are described in the following table.

Bit	Function	Description	Default
Bit0	Fire emergency prompt in inspection state	If the fire emergency signal is active in inspection state, the controller outputs the arrival gong at intervals, giving a prompt to the inspection operator.	1
Bit1	Door lock disconnected after 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
Bit2 to Bit4	Reserved	-	0
Bit5	Door open and close once after inspection turned to normal or first-time power-on	The elevator door opens and closes once after the system turns from inspection to normal running or during first-time power-on.	1

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-30	VIP function selection	0–65535	0	-	★

It is used to select the elevator VIP function. Each bit of the function code 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.

The functions defined by the binary bits are described in the following table.

Bit	Function	Description	Default
Bit0	VIP1 function	If this function is enabled, the system enters VIP running when the VIP input is active and F6-31 is a non-zero value.	1
Bit1	VIP2 function	If this function is enabled (function in Bit7 is disabled), the system enters VIP running when the security input is active and F6-32 is a non-zero value.	0
Bit2	VIP enabled by hall call (at VIP floor)	When there is a hall call at the VIP floor, the system enters VIP running. If there are hall calls at both VIP floor 1 and VIP floor 2, the system responds to the hall call at VIP floor 2 first.	0
Bit3	VIP enabled by button at VIP floor	If you hold down the door open button for 3s upon door open limit after the elevator arrives at the VIP floor, the system enters VIP running.	0
Bit4	VIP enabled by terminal	After the terminal for VIP hall call becomes ON, the system enters VIP running.	0
Bit5	VIP enabled by button at any floor	If you hold down the door open button for 3s upon door open limit after the elevator arrives at any floor, the system enters VIP running.	0
Bit6	VIP enabled by car call	When there is a car call at the VIP floor, the system enters VIP running and does not respond to hall calls.	0
Bit7	Security floor auto enable	If this function is enabled, VIP floor 2 set in F6-32 is used as the security floor during 22:00 to 6:00. The elevator runs to the security floor first every time, stops and opens the door, and then runs to the destination floor.	0
Bit8	Number of VIP car calls limited	If this function is enabled, only one car call can be selected simultaneously in the VIP state.	0
Bit9	VIP auto exit	If this function is enabled, the system exits VIP running after the VIP auto exit time set in F6-33 is reached.	0
Bit10 to Bit13	Reserved	-	0
Bit13	Hall call saved	During VIP running, the system saves the hall call but does not respond to it.	0
Bit14	Auto door close	If this function is enabled, the elevator automatically closes the door after the door open holding time is reached. If this function is disabled, door close is implemented by pressing the door close button.	1
Bit15	Reserved	-	0

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-31	VIP floor 1	0 to F6-00	0	-	★

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-32	VIP floor 2	0 to F6-00	0	-	★

They are used to set the VIP floors.

These parameters are valid only when F6-30 Bit0 and Bit = 1.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-33	VIP auto exit time	0–200	0	s	★

When F6-30 Bit9 = 1, the system exits VIP running after the time set in this parameter is reached.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-35	Start time of time-based floor service 1	00.00–23.59	00.00	HH.MM	☆
F6-36	End time of time-based floor service 1	00.00–23.59	00.00	HH.MM	☆
F6-37	Service floors 1 of time-based floor service 1	0–65535	65535	-	☆
F6-38	Service floors 2 of time-based floor service 1	0–65535	65535	-	☆
F6-39	Service floors 3 of time-based floor service 1	0–65535	65535	-	☆
F6-40	Service floors 4 of time-based floor service 1	0–65535	65535	-	☆
F6-41	Start time of time-based floor service 2	00.00–23.59	00.00	HH.MM	☆
F6-42	End time of time-based floor service 2	00.00–23.59	00.00	HH.MM	☆
F6-43	Service floors 1 of time-based floor service 2	0–65535	65535	-	☆
F6-44	Service floors 2 of time-based floor service 2	0–65535	65535	-	☆
F6-45	Service floors 3 of time-based floor service 2	0–65535	65535	-	☆
F6-46	Service floor 4 of time-based floor service 2	0–65535	65535	-	☆
F6-47	Start time of time-based floor service 3	00.00–23.59	00.00	HH.MM	☆
F6-48	End time of time-based floor service 3	00.00–23.59	00.00	HH.MM	☆
F6-49	Service floors 1 of time-based floor service 3	0–65535	65535	-	☆

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F6-50	Service floors 2 of time-based floor service 3	0–65535	65535	-	☆
F6-51	Service floors 3 of time-based floor service 3	0–65535	65535	-	☆
F6-52	Service floors 4 of time-based floor service 3	0–65535	65535	-	☆

These parameters define the time periods of three groups of time-based services and corresponding service floors.

- Service floors 1: floors 1–16
- Service floors 2: floors 17–32
- Service floors 3: floors 33–48
- Service floors 4: floors 49–56

In the time period of time-based service, the elevator responds to the service floors set by the related time-based service parameters, but ignores the service floors set by F6-05, F6-06, F6-07, and F6-09.

The setting of time-based service floors is the same as that of service floors in F6-05.

Note

During the time-based floor service period, the settings of F6-05, F6-06 and F5-35 are invalid.

If the time periods of the three time-based services are overlapped, the system implements the service according to the priority: Service 1 > Service 2 > Service 3.

Group F7: Intelligent Commissioning Parameters

This group of parameters is specialized for elevator commissioning.

All the settings are not saved and restore to the default setting after power-off.

Follow the instructions for normal-speed commissioning:

1. Before the commissioning, ensure that the shaft is unobstructed and the related parameters have been set properly.
2. Run the elevator to the middle floor of the shaft at the inspection speed so as to prevent wrong running direction.
3. Perform single-floor command commissioning and then perform multi-floor command commissioning.
4. After the commissioning is complete, check that the parameters in this group are set properly.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-00	Car call floor registered	0 to F6-00	0	-	☆

Function Code	Parameter Name	Setting Range	Default	Unit	Property
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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-03	Random running times	0–60000	0	-	☆

It is used to set the random running times of the system.

The NICE5000 has the random automatic running function. If the setting of F7-03 is greater than 60000, the system keeps implementing random automatic running until you set F7-03 to 0.

You can set the time interval between two times of random running in F7-08.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-04	Hall call enabled	0: Yes 1: No	0	-	☆

It is used to enable the hall call function.

0: Yes (hall call allowed)

1: No (hall call forbidden)

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-05	Door open enabled	0: Yes 1: No	0	-	☆

It is used to enable the door open function.

0: Yes (door open allowed)

1: No (door open forbidden)

Note

Continuous running of the elevator without door open accelerates overheating of the controller module. Long-time use in such mode may cause overheat protection, and therefore, use the function with caution.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-06	Overload function	0: Disabled 1: Enabled	0	-	☆

It is used to enable the overload function.

Note

This function is used only in the heavy-load test. Once the test is complete, prohibit overload running immediately.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-07	Limit switch	0: Enabled 1: Disabled	0	-	☆

It is used to enable the limit switch function.

Note

The limit switch is disabled only in the test of the final limit switch. Use the function with caution.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-08	Time interval of random running	0–1000	0	s	☆

It is used to set the time interval between two times of random running.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-09	Accumulative energy consumption	0–65535	0	kW	●
F7-10	Accumulative feedback energy	0–65535	0	kW	●

These parameters record the energy consumed during elevator running and the feedback energy from the energy feedback unit.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F7-26	Commissioning function selection	0: No operation 1: Shaft auto-tuning	0	-	★

It is used to set whether to perform shaft auto-tuning.

Group F8: Auxiliary Logic Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-00	Load for load cell auto-tuning	0–100	0	%	★

It is used to set the load for load cell auto-tuning.

To perform load cell auto-tuning, do as follows:

1. Ensure that F2-11 is set to 0 and F5-36 is set to 2 or 3 to make the system allow load cell auto tuning.

2. Stop the elevator at any floor, with the car in the no-load state. Set F8-00 to 0 and press ENTER.

3. Put N% load in the car. Then set F8-00 to N and press ENTER.

   For example, if you put 500 kg load in the elevator with rated load of 1000 kg, set F8-00 to 50.

After the load-cell auto-tuning is completed, the corresponding no-load and full-load data will be recorded in F8-06 and F8-07. You can also manually input the data according to the actual situation.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-01	Pre-torque selection	0: Invalid 1: Valid	0	-	★

It is used to set the pre-torque compensation mode at startup of the elevator.

When pre-torque compensation is used together with the load cell, 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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-02	Pre-torque offset	0.0–100.0	50.0	%	★

It is used to set the pre-torque offset. It is actually the balance coefficient of the elevator, indicating the percentage of the car load to the rated load when the counterweight and the car weight are balanced.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-03	Drive gain	0.00–2.00	0.60	-	★
F8-04	Brake gain	0.00–2.00	0.60	-	★

These two parameters are used to set the pre-torque gain when the elevator runs on the drive side or the brake side.

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

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 controller identifies the braking or driving state according to the load cell signal and automatically calculates the required torque compensation value.

When an analog device is used to measure the load, these parameters are used to adjust the riding comfort at elevator startup. The method of adjusting the startup is as follows:

- In the driving state, increasing the value of F8-03 could reduce the rollback during the elevator startup, but a very high value could cause car lurch at start.
- In the braking state, increasing the value of F8-04 could reduce the jerk in command direction during the elevator startup, but a very high value could cause car lurch at start.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-05	Car load	0–255	0	-	●

This parameter is readable and reflects the load situation in the car. The value is sampled by the NICE5000 by using a load cell.

If F5-00 < 2, F8-05 = 0.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-06	No-load load threshold	0–255	0	-	★
F8-07	Full-load load threshold	0–255	100	-	★

These two parameters respectively specify the car no-load and full-load thresholds. Generally, the system automatically determines the values after load-cell auto-tuning. Adjust them properly according to requirements.

Example:

If the load cell data is 25 and 175 respectively at no-load and full-load, the system determines that the normal load range is 25–175.

Set F8-18, F8-19, and F8-20 respectively to 30%, 80%, and 110%.

When F8-05 is 70 [30% x (175-25) + 25 = 70), 145, and 190, the system determines that the elevator is in light-load, full-load, and overload state.

Note

If F8-06 = F8-07, the full-load and overload functions become invalid.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-08	Anti-nuisance function	0, 1, 2, 4	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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-09	Rated elevator load	300–9999	1000	kg	★

It is used to set the rated elevator load. This parameter is used for the anti-nuisance function.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-10	Logic program control	0–65535	0	-	★

It is used to select the elevator functions. Each bit of the function code 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.

The functions defined by the binary bits are described in the following table.

Bit	Function	Description	Default
Bit13	Hiding uncommon parameters	If this function is enabled, the operation panel does not display the following uncommon parameters: F1-12 to F1-24 F4-08 to F4-119 F7-08 to F7-10 F9-12 to F9-14 FA-12 to FA-14 Fb-01 FH-21 to FH-29 Fr-01 to Fr-28	0

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-14	Local address	0–127 0: broadcast address	1	-	★

It is used to set the communication address of the elevator.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-18	Overload percentage	100–130	110	%	★
F8-19	Full-load percentage	70–110	80	%	★
F8-20	Light-load percentage	10–50	30	%	★

These parameters set the percentages for judging overload, full-load, and light-load.

For details, see the descriptions of F8-06 and F8-07.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-21	Arrival gong advance time	0–10.0	1.0	s	★

It is used to set the advance time of the arrival gong prompt.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-22	Delay upon door open limit	0–2000	1000	ms	★

It is used to set the door open holding time upon door open limit.

It is used together with F6-10 Bit2.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F8-24	Command 2 start address	0–56	0	-	★

It is used to set the start address of the door 2 HCBs when Mod1 is used as the door 2 communication interface.

For details, see section 5.5.3

Group F9: Time Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F9-00	Idle time before returning to base floor	0–240	10	min	★

It is used to set the idle time of the elevator before returning to the base floor.

When the idle time of the elevator exceeds the setting of this parameter, the elevator returns to the base floor.

If this parameter is set to 0, it becomes invalid.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F9-01	Time for fan and lamp to be turned off	0–240	2	min	★

It is used to set the time that fan and lamp stays ON before being turned off automatically.

If there is no running command in the automatic running state, the system turns off the fan and lamp automatically after the time set in this parameter.

If this parameter is set to 0, it becomes invalid.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F9-02	Motor running time limit	0–45	45	s	★

It 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.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F9-03	Accumulative working hours	0–65535	0	h	●
F9-04	Accumulative running hours	0–65535	0	h	●
F9-05	Accumulative working days	0–65535	0	day	●

These parameters record the accumulative running and working time.

The working time counts the time since use, regardless of running or stop.

The running time counts only the elevator running time.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F9-06	High byte of running times	0–9999	0	-	●
F9-07	Low byte or running times	0–9999	0	-	●

Running times of the elevator = F9-06 x 10000 + F9-07.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
F9-12	Clock: year	2000–2100	2010	YYYY	☆
F9-13	Clock: month and day	1.01–12.31	301	MM.DD	☆
F9-14	Clock: hour and minute	0–23.59	0	HH.MM	☆

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

Group FA: Auxiliary Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-00	Group FA security password	0–65535	01000	-	●

You are allowed to view and modify group FA parameters only after entering the security password.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-01	Display in running state	1–65535	65535	-	☆

It is used to set the running parameters displayed on the operation panel when the elevator is in the running state.

FA-01 includes 16 binary bits, each defining a parameter. A total of 16 parameters can be can be displayed during running.

The 16 binary bits correspond to the running parameters listed in the following table.

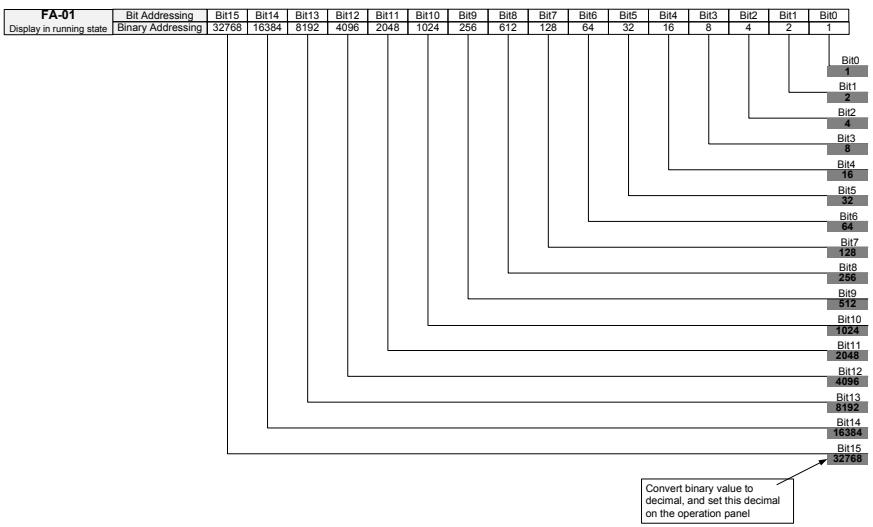
Bit	Parameter Name	Default	Bit	Parameter Name	Default
Bit0	Speed reference	1	Bit8	Output frequency	1
Bit1	Logic information	1	Bit9	Output torque	1
Bit2	Curve information	1	Bit10	Torque current	1
Bit3	Pre-torque current	1	Bit11	Output power	1
Bit4	Feedback speed	1	Bit12	Present position	1
Bit5	Bus voltage	1	Bit13	Communication interference	1
Bit6	Output voltage	1	Bit14	Encoder interference	1
Bit7	Output current	1	Bit15	Car load	1

The method of setting FA-01 is as follows:

If a bit is set to 1, the parameter indicated by this bit is displayed; if this bit is set to 0, the parameter is not displayed.

Convert the sum of binary values of all 16 bits to decimal, and then set the decimal on the operation panel.

Figure 7-5 Converting binary value of FA-01 to decimal



By default, all 16 parameters are displayed; therefore, the value set on the operation panel is:

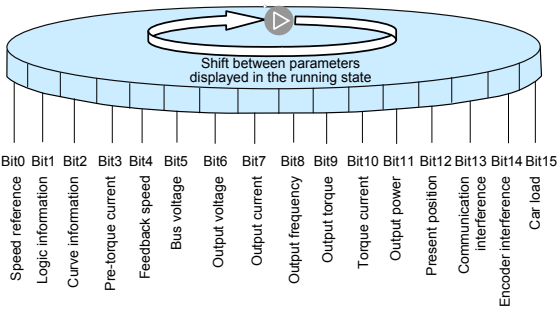
1 + 2 + 4 + ...32768 = 65535

The method of viewing FA-01 is as follows:

In the running state, the display of FA-01 is a decimal value. You can press to view the

parameter indicated by each bit circularly.

Figure 7-6 Shift between parameters displayed in the running state



Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-02	Display in stop state	1–65535	4095	-	☆

It is used to set the running parameters displayed on the operation panel when the elevator is in the stop state.

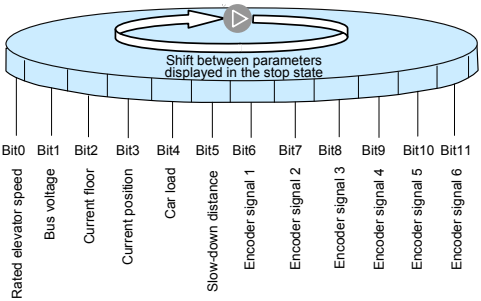
FA-02 includes 16 binary bits, each defining a parameters. A total of 16 parameters can be can be displayed at stop.

The 16 binary bits correspond to the parameters listed in the following table.

Bit	Parameter Name	Default	Bit	Parameter Name	Default
Bit0	Rated elevator speed	1	Bit8	Encoder signal 3	1
Bit1	Bus voltage	1	Bit9	Encoder signal 4	1
Bit2	Current floor	1	Bit10	Encoder signal 5	1
Bit3	Current position	1	Bit11	Encoder signal 6	1
Bit4	Car load	1	Bit12	Reserved	0
Bit5	Slow-down distance	1	Bit13	Reserved	0
Bit6	Encoder signal 1	1	Bit14	Reserved	0
Bit7	Encoder signal 2	1	Bit15	Reserved	0

The method of setting and viewing FA-02 is similar to that of FA-01.

Figure 7-7 Shift between parameters displayed in the stop state



Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-03	Product SN	1–7000	5000	-	●

It displays the product SN.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-04	Software version 1 (CTB)	0–65535	0	-	●
FA-05	Software version 2 (MCB)	0–65535	0	-	●
FA-06	Software version 3 (drive board software)	0–65535	0	-	●

These two parameters respectively display the program version number of the CTB, logic control board and the drive control board.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-07	Heatsink temperature	0–100	0	°C	•

It displays the current temperature of the heatsink.

Normally, the heatsink temperature is below 40°C. When the heatsink temperature is too high, the system lowers the carrier frequency automatically to reduce heating. When the heatsink temperature rises to a certain value, the system reports the module overheat fault and stops running.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-09	Protection function selection	0–65535	3	-	★

It is used to select the controller protection functions.

Each bit of the function code 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.

The functions defined by the binary bits are described in the following table.

Bit	Function	Description
Bit0	Overload protection	When the motor load or controller load exceeds a certain threshold, the system performs protection and reports the motor overload or controller overload fault.
Bit1	Output phase loss protection	After detecting phase loss on the output side, the system performs protection and reports the fault.
Bit3	Input phase loss protection	After detecting phase loss on the input side, the system performs protection and reports the fault.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-10	Overload protection coefficient	0.50–10.00	1.00	-	★

After detecting that the output current exceeds (FC-10 x Rated motor current) and the duration lasts the time specified in the inverse time lag curve, the system outputs fault Err11 indicating motor overload.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-11	Overload pre-warning coefficient	50–100	80	%	★

After detecting that the output current exceeds (FA-11 x Rated motor current) and the duration lasts the time specified in the inverse time lag curve, the system outputs a pre-warning signal.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FA-15	Program control selection	0–65535	0	-	★

It is used to select the elevator functions.

Each bit of the function code 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.

The functions defined by the binary bits are described in the following table.

Bit	Function	Description	Default
Bit0	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
Bit1	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
Bit2	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

Bit	Function	Description	Default
Bit3	Cancelling monitoring at leveling and slow-down	During normal running, the system keeps comparing the position at action of the leveling/slow-down signal with the position obtained through shaft auto-tuning. If the deviations is too large, the system reports the related fault. If this function is enabled, the system will not detect the deviation or report the fault.	0
Bit4	Slow-down stuck detection	After detecting that the slow-down signal is stuck, the system reports fault Err45.	0
Bit5	Canceling 45s time limit at shaft auto-tuning	The shaft auto-tuning time is not restricted by the motor 45s running time limit.	0
Bit6	Leveling adjustment	If this function is enabled, adjustment in group Fr parameters is valid.	0

Group Fb: Door Function Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-00	Number of door machine(s)	1–2	1	-	★

It is used to set the number of door machine(s).

Set this parameter based on actual conditions.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-01	Door function selection	0–65535	0	-	●

It selects the door control and display functions. Each bit of the function code defines a function, as described in the following table.

Bit	Function	Setting		Bit	Function	Setting	
Bit0	Hall call button display	1	Independent for front door and back door	Bit1	Car call button display	1	Independent for front door and back door
		0	Consistent for front door and back door			0	Consistent for front door and back door
Bit2	Hall call door open mode	1	Corresponding door open	Bit3	Car call door open mode	1	Corresponding door open
		0	Both doors open			0	Both doors open
Bit8	Door open button display	1	Independent for front door and back door	Bit9	Door close button display	1	Independent for front door and back door
		0	Consistent for front door and back door			0	Consistent for front door and back door

Bit	Function	Setting		Bit	Function	Setting	
Bit10	Door open by button	1	Corresponding door open	Bit11	Door close by button	1	Corresponding door open
		0	Both doors open			0	Both doors open
Bit6	Front/ Back door switchover by switch	1	Valid	Bit13	Door mutual exclusive	1	Only one door open on any condition
		0	Invalid			0	Both doors open
Bit14	Light curtain judgment	1	Independent for front door and back door				
		0	Consistent for front door and back door				

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-02	Service floors 1 of door machine 1	0–65535	65535	-	☆
Fb-03	Service floors 2 of door machine 1	0–65535	65535	-	☆
Fb-04	Service floors 3 of door machine 1	0–65535	65535	-	☆
Fb-05	Service floors 4 of door machine 1	0–65535	65535	-	☆
Fb-06	Service floors 1 of door machine 2	0–65535	65535	-	☆
Fb-07	Service floors 2 of door machine 2	0–65535	65535	-	☆
Fb-08	Service floors 3 of door machine 2	0–65535	65535	-	☆
Fb-09	Service floors 4 of door machine 2	0–65535	65535	-	☆

These parameters are used to set the service floors of door machine 1 and door machine 2.

- Service floors 1: floors 1–16
- Service floors 2: floors 17–32
- Service floors 3: floors 33–48
- Service floors 4: floors 49–56

The setting method is the same as that for F6-05.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-10	Door open protection time	5–99	10	s	☆

It is used to set the door open protection time.

After outputting the door open command, if the system does not receive the door open limit signal after the time set in this parameter, the system re-opens the door. When the door open/close times reach the value set in Fb-13, the system reports fault Err48.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-11	Forced door close time	5–99	15	s	☆

If the forced door close function is enabled, when there is no door close signal after the time set in this parameter is reached, the system enters the forced door close state and sends a forced door close signal.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-12	Door close protection time	5–99	15	s	☆

It is used to set the door close protection time.

After outputting the door close command, if the system does not receive the door close limit signal after the time set in this parameter, the system re-closes the door. When the door open/close times reach the value set in Fb-13, the system reports fault Err49.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-13	Door re-open times	0–20	0	-	☆

It is used to set the door re-open/re-close times allowed when door open/close is abnormal.

Note

If this parameter is set to 0, it indicates that door re-open is not supported; in this case, the elevator keeps opening/closing the door if it does not receive the door open/close limit signal.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-14	Door state of standby elevator	0–2	0	-	☆

It is used to set the door state when the elevator is in stop and standby state.

The values are as follows:

- 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

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-15	Door open holding time for hall call	1–30	5	s	☆

It is used to set the door open holding time when there is a hall call. The elevator closes the door immediately after receiving a door close command.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-16	Door open holding time for car call	1–30	3	s	☆

It is used to set the door open holding time when there is a car call. The elevator closes the door immediately after receiving a door close command.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-17	Door open holding time at base floor	1–30	10	s	☆

It is used to set the door open holding time after the elevator arrives at the base floor. The elevator closes the door immediately after receiving a door close command.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-18	Door open delay	10–30000	30	s	☆

It is used to set the door open holding time when there is door open delay input. The elevator closes the door immediately after receiving a door close command.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-19	Special door open holding time	10–1000	30	s	☆

It is used to set the door open holding time when there is a disability call.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fb-20	Manual door open holding time	1–60	10	s	☆

It is used to set the door open limit delay in the case of manual door. This parameter is valid when the manual door function is used.

Group FC: Brief Fault Information

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FC-00	Designated fault	0–99	0	-	☆

It is used to designate the fault to be monitored.

The designated fault code is saved in parameters of group E9, and will not be overwritten.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FC-01	20th fault code	0–6299	0	-	●
FC-02	20th fault subcode	0–65535	0	-	●
FC-03	20th fault month and day	0–1231	0	MM.DD	●
FC-04	20th fault hour and minute	0–2359	0	HH.MM	●
FC-05	20th fault information	0–65535	0	-	●
…					
FC-46	11th fault code	0–6299	0	-	●

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FC-47	11th fault subcode	0–65535	0	-	●
FC-48	11th fault month and day	0–1231	0	MM.DD	●
FC-49	11th fault hour and minute	0–2359	0	HH.MM	●
FC-50	11th fault information	0–65535	0	-	●

These parameters record the first 10 faults of the elevator among the last 20 faults.

The fault code is a 4-digit number. The two high digits indicate the floor where the car is located when the fault occurs, and the two low digits indicate the fault code. For example, the FC-46 is 0835, indicating that when the 11th fault (Err35) occurs, the car is near floor 8.

The fault subcode is used to locate the causes of the fault. The specific fault time is recorded in month, day, hour and minute.

Group Fd: Parallel Control Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fd-00	Number of elevators in parallel control	1–3	1	-	★
Fd-01	Elevator No.	1–3	1	-	★

These parameters are used to set the number of elevators and elevator No. in parallel control mode.

The NICE5000 supports a maximum of three elevators through CAN interface, and is compatible with one NICE3000 system in the parallel control system.

Group FE: Display Parameters

Function Code	Parameter Name	Setting Range		Default	Unit	Property
FE-01	Floor 1 display	00: Display "0" 01: Display "1" 02: Display "2" 03: Display "3" 04: Display "4" 05: Display "5" 06: Display "6" 07: Display "7" 08: Display "8" 09: Display "9" 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 to FE-52	Floor 13 to floor 52 display			0103–0502	-	★
FE-53	Floor 53 display			0503	-	★
FE-54	Floor 54 display			0504	-	★
FE-55	Floor 55 display			0505	-	★
FE-56	Floor 56 display			0506	-	★
FE-61	Highest digit display 1			0	-	★
FE-62	Highest digit display 2			0	-	★
FE-63	Highest digit display 3			0	-	★
FE-64	Highest digit display 4			0	-	★
FE-65	Highest digit display 5			0	-	★

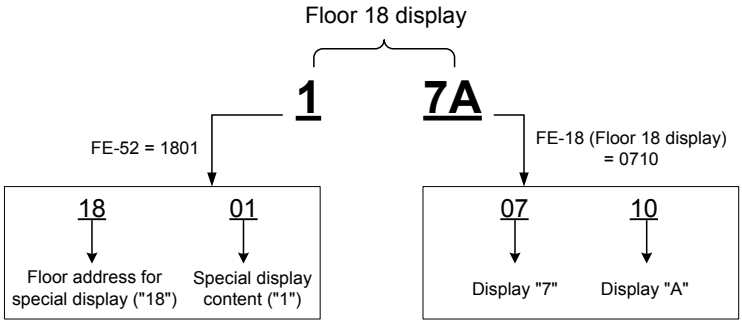
These parameters are used to set the display of each floor.

The setting range of FE-01 to FE-56 is 0000–9999, where 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.

When the 2-digit display cannot meet the requirement, add the third-digit display by setting FE-61 to FE-65. In the values of these parameters, the two high digits indicate the floor address that requires special display, and the two low digits indicate the display content.

For example, if floor 18 needs to be displayed as "17A", set FE-18 to 0710 (display "7A"),

and then set the highest digit display, that is, FE-52 to 1801 (indicating that the highest digit display of floor address 18 is "1").



Group FF: Factory Parameters

The factory parameters are not described here.

Group FH: Close-Loop Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-00	Group FH security password	0–65535	01000	-	●

You are allowed to view and modify group FH parameters only after entering the security password.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-01	Encoder type	0: SIN/COS encoder, absolute encoder 1: UVW encoder 4: ABZ incremental encoder	0	-	★

It is used to set the encoder type matching the motor.

Set it to 0 when the ERN1387/1313/413 encoder is used for the synchronous motor.

Set it to 0 when a UVW incremental encoder is used.

Set it to 4 when the ABA applicable to the asynchronous motor is used.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-02	Encoder pulses per revolution	0–10000	2048	PPR	★

It is used to set the pulses per revolution of the encoder (according to the encoder nameplate).

This parameter is critical to CLVC. Set the encoder nominal value in this parameter. Otherwise, the elevator may not run properly.

When the feedback pulses received by the system is data after frequency division by other equipment, set the frequency-division value rather than the encoder nominal value in this parameter.

For example, if the encoder PPR is 8192 and is sent to the system after 1/4 frequency division, set this parameter to 2048 (8192/4 = 2048).

F0-04 (Rated elevator speed), F1-05 (Rated motor rotational speed), and FH-02 (Encoder pulses per revolution) determine whether the elevator can run properly. If any of these parameters is changed, shaft auto-tuning must be performed again.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-03	Encoder wire-breaking detection time	0–10.0	2.1	s	★

This parameter 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 reports fault Err20 and stops running.

When the value is smaller than 1s, this function is disabled.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-04	Encoder initial angle (synchronous motor)	0.0–359.9	0	Degree (°)	★
FH-05	Encoder current angle (synchronous motor)	0.0–359.9	0.0	Degree (°)	●

These parameters respectively display the encoder initial angle and current actual angle.

They are valid only to synchronous motor.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-06	Wiring mode	0–15	0	-	★

It sets the motor wiring mode. It is automatically updated after motor auto-tuning.

If the value is a even number, the UVW phase sequence is correct.

If the value is an odd number, the UVW phase sequence is incorrect.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-08	Zero drift 1	0–65535	0	-	★
FH-09	Zero drift 2	0–65535	0	-	★
FH-10	Zero drift 3	0–65535	0	-	★
FH-11	Zero drift 4	0–65535	0	-	★

These parameters specify the zero drift of the .

The ABCD analog signals of the SIN/COS encoder may not be sine or symmetric along with the 0 axis due to characteristics of different types of encoder or effect of the sampling circuit, causing incorrect calculation of certain variables and reducing the control effect.

The system automatically performs zero drift detection on the SIN/COS encoder ABCD analog signals.

If the encoder needs to be replaced after motor auto-tuning, manually clear the zero drift values first.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-17	Position of up slow-down 1	0.000–300.00	0.00	m	★
FH-18	Position of down slow-down 1	0.000–300.00	0.00	m	★
FH-19	Position of up slow-down 2	0.000–300.00	0.00	m	★
FH-20	Position of down slow-down 2	0.000–300.00	0.00	m	★
FH-21	Position of up slow-down 3	0.000–300.00	0.00	m	★
FH-22	Position of down slow-down 3	0.000–300.00	0.00	m	★

These parameters specify the positions of all slow-down switches relative to the top and bottom leveling positions.

For the installation positions of the slow-down switches, see the description of section 3.10.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FH-29	Position switch signal delay	0–200	0	ms	★

It is used to set the delay from receiving the shaft position switch signal to responding.

Group FL: Extension Terminal Function Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FL-00	CTB input type	0–511	320	-	★

It is used to define the input signal type (NO/NC) of the CTB by binary bit. Each bit of the function code defines a signal, as described in the following table.

If a bit is set to 1, the signal indicated by this bit is NO input; if this bit is set to 0, this signal is NC input.

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

Bit	Parameter Name	Default	Bit	Parameter Name	Default
Bit0	Door 1 light curtain	0	Bit5	Door 2 close limit	0
Bit1	Door 2 light curtain	0	Bit6	Full-load signal (digital)	1
Bit2	Door 1 open limit	0	Bit7	Overload signal (digital)	0
Bit3	Door 2 open limit	0	Bit8	Light-load signal (digital)	1
Bit4	Door 1 close limit	0	0: NC input; 1: NO input		

Convert the binary value to decimal 320, and set it on the operation panel.

Note that the latest CTB-D has nine input terminals, but the wiring is not affected when the NICE5000 is connected to the CTB of the earlier version.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FL-01	HCB-B:JP1 input	0: Invalid 1: Light-load signal 2: Half-load signal 3: Door 2 selection 4: Door 2 restricted 5: Door 1 safety edge 6: Door 2 safety edge 7: Single/Double door selection 8: Fire emergency floor switchover 9: Fire emergency start signal	0	-	★
FL-02	HCB-B:JP2 input		0	-	★
FL-03	HCB-B:JP3 input		0	-	★
FL-04	HCB-B:JP4 input		0	-	★
FL-05	HCB-B:JP5 input		0	-	★
FL-06	HCB-B:JP6 input		0	-	★

These parameters are used to set the functions of input terminals on the HCB-B board.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FL-07	HCB-B:A1 output	0: Invalid 1: Fault output 2: Non-door zone stop output 3: Non-service state output 4: Fire emergency output 5: Power failure emergency output 6: Door lock valid 7: Night output signal 8: Fire emergency indicator 9: Fire emergency tone	0	-	★
FL-08	HCB-B:A2 output		0	-	★
FL-09	HCB-B:B1 output		0	-	★
FL-10	HCB-B:B2 output		0	-	★
FL-11	HCB-B:C1 output		0	-	★
FL-12	HCB-B:C2 output		0	-	★
FL-13	HCB-B:C3 output		0	-	★
FL-14	HCB-B:C4 output		0	-	★
FL-15	HCB-B:C5 output		0	-	★
FL-16	HCB-B:C6 output		0	-	★

These parameters are used to set the functions of output terminals on the HCB-B board.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FL-17	HCB:JP1 input	1: Elevator lock signal 2: Fire emergency signal 3: Current floor forbidden 4: VIP floor signal 5: Security floor signal	1	-	★
FL-18	HCB:JP2 input	6: Service floor switchover 7: Parking floor switchover 8: Down collective selective switch 9: Peak service switch 10: Fire emergency floor switchover	2	-	★

These parameters are used to set the functions of input terminals on the HCB.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FL-19	HCB:JP1 output	0: Invalid 1: Up arrival indicator 2: Down arrival indicator 3: Fault output 4: Non-door zone stop output 5: Non-service state output 6: Buzzer output	1	-	★
FL-20	HCB:JP2 output		2	-	★

These parameters are used to set the functions of output terminals on the HCB.

The setting is effective to HCBs at all floors.

Group Fr: Leveling Adjustment Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fr-00	Leveling adjustment function	0: Disabled 1: Enabled	0	-	★

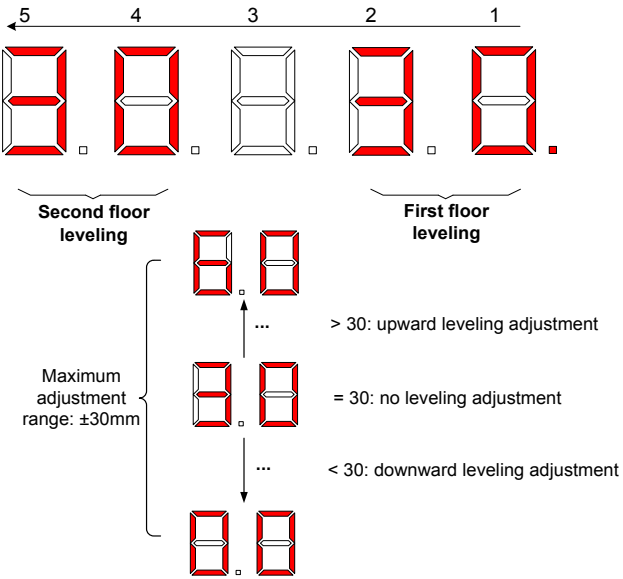
This parameter is used to enable the leveling adjustment function.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Fr-01	Leveling adjustment record 1	00000–60060	30030	mm	★
Fr-02	Leveling adjustment record 2		30030	mm	★
...			...		
Fr-28	Leveling adjustment record 28		30030	mm	★

These parameters are used to record the leveling adjustment values. Each parameter records the adjustment information of two floors, and therefore, the adjustment information of 56 floors can be recorded totally.

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

Figure 7-8 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 floor 1 and floor 2. 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:

1. Ensure that shaft auto-tuning is completed successfully, and the elevator runs properly at normal speed.
2. 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.
3. Go into the car, press the top floor button, and the leveling position is changed 1 mm upward; press the bottom floor button, and the leveling position is changed 1 mm downward. The value is displayed in the car.

   Positive value: up arrow + value, negative value: down arrow + value, adjustment range: ±30 mm
4. After completing adjustment for the current floor, press the top floor button and bottom floor button in the car at the same time to save the adjustment result. The car display

restores to the normal state. If the leveling position of the current floor need not be adjusted, press the top floor button and bottom floor button in the car at the same time to exit the leveling adjustment state. Then, car calls can be registered.

5. 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.
6. After completing adjustment for all floors, set Fr-00 to 0 to disable the leveling adjustment function. Otherwise, the elevator cannot be used.

Pay attention to the following precautions during the operation:

1. Each time shaft auto-tuning is performed, all leveling adjustment parameters can be cleared or reserved.

   a. If you set F7-26 to 1 on the operation panel or F7 to 1 on the keypad, all leveling adjustment parameters are reserved.

   b. If you set F7-26 to 2 on the operation panel or F7 to 2 on the keypad, all leveling adjustment parameters are reserved.
2. When the re-leveling function is used, the leveling adjustment function is automatically shielded and cannot be used.
3. Set FA-15 Bit6 to 1 to allow leveling adjustment.

Group FU: Monitoring Parameters

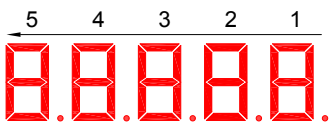
Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-03	Pre-torque current	0.0–200.0	0.0	%	●

It displays the percentage of pre-torque current to the rated current (positive/negative display, indicating driving or braking).

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-04	Logic information	0–65535	0	-	●

It displays the elevator status parameters.

Figure 7-9 Elevator state display



The LEDs are defined in the following table.

Table 7-2 LED display of the elevator state

5		4		3		2		1	
Elevator state				Car state		Door 2 State		Door 1 State	
00	Inspection state	8	Elevator lock	0	Waiting	0	Waiting state	0	Waiting state
01	Shaft auto-tuning	09	Idle elevator parking	1	To stop	1	Door open state	1	Door open state
02	Micro-leveling	10	Re-leveling at inspection speed	2	Running	2	Door open limit	2	Door open limit
03	Returning to base floor at fire emergency	11	Emergency evacuation operation			3	Door close state	3	Door close state
04	Firefighter operation	12	Motor auto-tuning			4	Door close limit	4	Door close limit
05	Fault state	13	Keypad control						
06	Attendant operation	14	Base floor verification						
07	Automatic running								

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-05	Curve information	0–65535	0	-	●

It displays the system running curve information. LEDs 5, 4 and 3 have no display, while LEDs 2 and 1 show the running curve information.

5	4	3	2		1	
No Display			Curve Information			
-			00	Standby state	08	Stable-speed running segment
			01	Zero-speed start segment	09	Deceleration start segment
			02	Zero-speed holding segment	10	Linear deceleration segment
			03	Reserved	11	Deceleration end segment
			04	Startup speed stage	12	Zero speed at stop
			05	Acceleration start segment	13	Current stop stage
			06	Linear acceleration segment	14	Reserved
			07	Acceleration end segment	15	Stop data processing

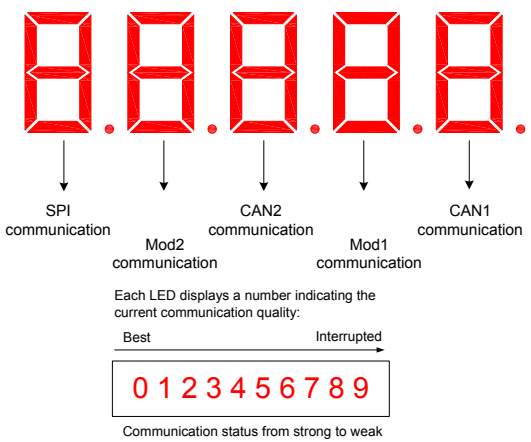
Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-06	Speed reference	0.000–8.000	0	m/s	●

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-07	Feedback speed	0.000–8.000	0	m/s	●
FU-08	Bus voltage	0–999.9	0	V	●
FU-09	Output voltage	0–999.9	0	V	●
FU-10	Output current	0–655.00	0	A	●
FU-11	Output frequency	0.00–99.99	0	Hz	●
FU-12	Torque current	0.0–200.0	0	%	●
FU-13	Output torque	0–655.00	0	A	●
FU-14	Output power	0.00–99.99	0	kW	●
FU-15	Present position	0.00–300.00	0	m	●

These parameters display the current performance state of the system (the output torque and output power supports positive/negative display).

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-16	Communication interference	0–65535	0	-	●

It displays the current communication quality of the system, as described in the following table.



Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-17	Encoder interference	0–65535	0	-	●

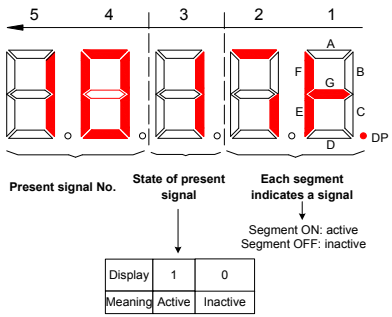
It displays the present encoder interference.

This parameter is defined in the same way as FU-16.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-18	Input state 1	0–65535	0	-	●
FU-19	Input state 2	0–65535	0	-	●
FU-20	Input state 3	0–65535	0	-	●
FU-22	Input state 5	0–65535	0	-	●
FU-23	Output state 1	0–65535	0	-	●
FU-24	Output state 2	0–65535	0	-	●
FU-25	Output state 3	0–65535	0	-	●
FU-26	Car input state	0–65535	0	-	●
FU-27	Car output state	0–65535	0	-	●
FU-28	Hall sate	0–65535	0	-	●
FU-29	System state 1	0–65535	0	-	●
FU-30	System state 2	0–65535	0	-	●

The following figure shows an example of the displayed input states.

Figure 7-10 Example of input state display



According to the preceding figure, the currently viewed signal 10 (Inspection down) is 1 (Active); besides signal 10, signals 4 (Safety circuit feedback), 5 (Door lock circuit feedback), 6 (RUN contactor feedback), 7 (Brake contactor feedback), and 8 (Inspection signal) are active.

LED No.	Segment	FU-18 Input state 1		FU-19 Input state 2		FU-20 Input state 3		FU-22 Input state 5	
		No.	Signal	No.	Signal	No.	Signal	No.	Signal
1	A	0	Reserved	16	Up slow-down 1 signal	32	Motor overheat signal	0	Reserved
	B	1	Up leveling signal	17	Down slow-down 1 signal	33	VIP signal	1	Reserved
	C	2	Down leveling signal	18	Up slow-down 2 signal	34	Earthquake signal	2	Reserved
	D	3	Door zone signal	19	Down slow-down 2 signal	35	Security signal	3	Reserved
	E	4	Safety circuit feedback	20	Up slow-down 3 signal	36	Service floor switchover	4	Higher-voltage safety circuit signal
	F	5	Door lock circuit feedback	21	Down slow-down 3 signal	37	Fire emergency floor switchover	5	Higher-voltage door lock circuit signal
	G	6	RUN contactor feedback	22	Shorting door lock circuit contactor feedback	38	Parking floor switchover	6	Reserved
	DP	7	Brake contactor feedback	23	Firefighter operation signal	39	Down collective selective switch	7	Reserved
2	A	8	Inspection signal	24	Door machine 1 light curtain	40	Peak service switch	8	Reserved
	B	9	Inspection up	25	Door machine 2 light curtain	41	Fire emergency start signal	9	Reserved
	C	10	Inspection down	26	Brake contactor feedback 2	42	Back door selection	10	Reserved
	D	11	Fire emergency signal	27	EPS input	43	Back door forbidden	11	Reserved
	E	12	Up limit signal	28	Elevator lock input	44	Light-load signal	12	Reserved
	F	13	Down limit signal	29	Safety circuit 2 signal	45	Half-load signal	13	Reserved
	G	14	Overload signal	30	Shorting PMSM stator contactor feedback	46	Double door control signal	14	Reserved
	DP	15	Full-load signal	31	Reserved	47	Motor input	15	Reserved

LED No.	Segment	FU-23 Output state 1		FU-24 Output state 2		FU-25 Output state 3		FU-26 Car input state	
		No.	Signal	No.	Signal	No.	Signal	No.	Signal
1	A	0	Reserved	16	Higher-voltage startup of brake	Reserved	Reserved	0	Door 1 light curtain
	B	1	RUN contactor control	17	Elevator running in up direction			1	Door 2 light curtain
	C	2	Brake contactor control	18	Lamp/Fan running			2	Door 1 open limit
	D	3	Shorting door lock circuit contactor control	19	Medical sterilization			3	Door 2 open limit
	E	4	Fire emergency floor arrival signal feedback	20	Non-door zone stop			4	Door 1 close limit
	F	5	Door machine 1 open	21	Electric lock			5	Door 2 close limit
	G	6	Door machine 1 close	22	Non-service state			6	Full-load input
	DP	7	Door machine 2 open	23	Reserved			7	Overload input
2	A	8	Door machine 2 close	24	Reserved			8	Light-load input
	B	9	Reserved	25	Reserved			9	Reserved
	C	10	Fault state	26	Reserved			10	Reserved
	D	11	Running monitor	27	Reserved			11	Reserved
	E	12	Running monitor	28	Reserved			12	Reserved
	F	13	Shorting PMSM stator contactor	29	Reserved			13	Reserved
	G	14	Reserved	30	Reserved			14	Reserved
	DP	15	Emergency buzzer control	31	Reserved			15	Reserved

LED No.	Segment	FU-27 Car output state		FU-28 Hall sate		FU-29 System state 1		FU-30 System state 2	
		No.	Signal	No.	Signal	No.	Signal	No.	Signal
1	A	0	Lamp/Fan running	0	Reserved	0	Door open 1 button	0	Up direction display
	B	1	Door 1 open	1	Elevator lock signal	1	Door close 1 button	1	Down direction display
	C	2	Door 1 close	2	Fire emergency signal	2	Door open delay 1	2	Running state
	D	3	Forced door close 1	3	Current floor forbidden	3	Direct travel ride switch	3	System full-load
	E	4	Door 2 open	4	VIP signal	4	Attendant switch	4	System overload
	F	5	Door 2 close	5	Security signal	5	Direction change switch	5	System half-load
	G	6	Forced door close 2	6	Service floor switchover	6	Independent running switch	6	System light-load
	DP	7	Up arrival gong	7	Parking floor switchover	7	Fire emergency 2 switch	7	Commissioning valid
2	A	8	Down arrival gong	8	Down collective selective switch	8	Door open 2 button	8	Maintenance valid
	B	9	Reserved	9	Peak service switch	9	Door close 2 button	9	Peak service enabled
	C	10	Reserved	10	Fire emergency floor switchover	10	Door open delay 2	10	Reserved
	D	11	Reserved	11	Reserved	11	Reserved	11	Reserved
	E	12		12		12		12	
	F	13		13		13		13	
	G	14		14		14		14	
	DP	15		15		15		15	

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-31	Car load	0–255	0	-	●

It displays the current car load.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-32	Nearest landing floor	1–56	0	-	●
FU-33	Destination floor	1–56	0	-	●

These parameters display the nearest floor that the elevator can land and the destination floor.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-34	Stop time	0.0–60.0	0	s	●

It displays the time required for this running. "60" is displayed at stop.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-35	Deceleration distance	0.0–100.0	0	s	●

It displays the deceleration distance from the rated elevator speed to zero speed under the current setting of deceleration parameters (deceleration speed and time).

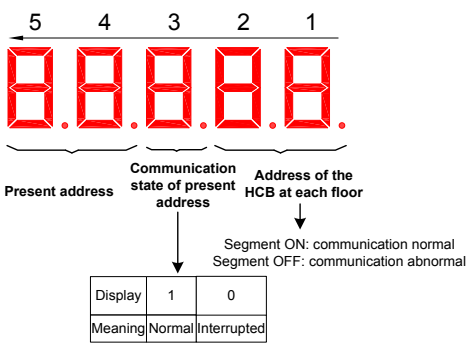
Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-49	Mod1 communication state 1	0–65535	0	-	●
FU-50	Mod1 communication state2	0–65535	0	-	●
FU-51	Mod1 communication state 3	0–65535	0	-	●
FU-52	Mod1 communication state 4	0–65535	0	-	●

These parameter display the Mod1 communication state between the HCB of all floors and the MCB.

Each parameter specify different floor addresses:

- State 1: floors 1–16
- State 2: floors 17–32
- State 3: floors 33–48
- State 4: floors 49–56

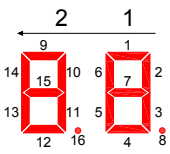
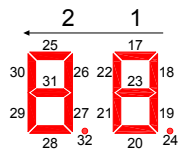
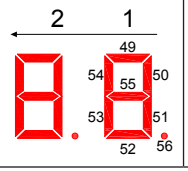
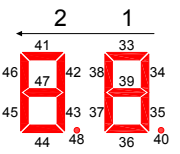
Figure 7-11 Viewing Mod1 communication state between HCBs and MCB



As shown in the preceding figure, LEDs 5, 4, and 3 indicate whether communication of the present viewed address is normal or interrupted.

LEDs 1 and 2 indicate the communication states of 16 addresses, where each segment indicates one address, and segment ON means normal and segment OFF means interrupted.

The addresses indicated by segments of LEDs 1 and 2 for FU-49 to FU-52 are listed in the following table.

Function Code	FU-49	FU-50	FU-51	FU-52
LEDs 1 and 2				

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FU-53	Mod2 communication state 1	0–65535	0	-	●
FU-54	Mod2 communication state 2	0–65535	0	-	●
FU-55	Mod2 communication state 3	0–65535	0	-	●
FU-56	Mod2 communication state 4	0–65535	0	-	●

These parameter display the Mod2 communication state between the HCB of all floors and the MCB.

Mod2 is used for opposite door control and disability calls.

Mod2 is defined in the similar way as Mod1.

Group FP: User Parameters

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FP-00	User password	0–65535	0	-	☆

It is used to set the user password.

If it is set to any non-zero number, the password protection function is enabled. After a password has been set and taken effect, you must enter the correct password in order to enter the menu. If the entered password is incorrect, you cannot view or modify parameters.

If FP-00 is set to 00000, the previously set user password is cleared, and the password protection function is disabled.

Remember the password that you set. If the password is set incorrectly or forgotten, contact Monarch to replace the control board.

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FP-01	Parameter update	0–4	0	-	★

It is used to set processing on the parameters.

The values are as follows:

- 0: No operation
- 1: Restore default settings
- 2: Clear fault records
- 3: Restore logic board parameters
- 4: Restore all parameter setting

Function Code	Parameter Name	Setting Range	Default	Unit	Property
FP-02	User-defined parameter display	0: Invalid 1: Valid	0	-	★

It is used to set whether to display the parameters that are modified.

When it is set to 1, the parameters that are different from the default setting are displayed.

Groups E: Fault Details

Function Code	Parameter Name	Setting Range	Default	Unit	Property
Group E0: 1st fault information					
E0-00	1st fault code	0–6299	0	-	●
E0-01	1st fault subcode	0–65535	0	-	●
E0-02	1st fault month and day	0–1231	0	MM.DD	●
E0-03	1st fault hour and minute	0–2359	0	HH.MM	●
E0-04	1st fault logic information	0–65535	0	-	●
E0-05	1st fault curve information	0–65535	0	-	●
E0-06	Speed reference upon 1st fault	0.000–8.000	0	m/s	●
E0-07	Feedback speed upon 1st fault	0.000–8.000	0	m/s	●
E0-08	Bus voltage upon 1st fault	0–999.9	0	V	●
E0-09	Output voltage upon 1st fault	0–999.9	0	V	●
E0-10	Output current upon 1st fault	0–655.00	0	A	●
E0-11	Output frequency upon 1st fault	0.00–99.99	0	Hz	●
E0-12	Output torque upon 1st fault	0–100	0	%	●
E0-13	Torque current upon 1st fault	0–655.00	0	A	●
E0-14	Output power upon 1st fault	0.00–99.99	0	kW	●
E0-15	Present position upon 1st fault	0.00–300.00	0	m	●

Function Code	Parameter Name	Setting Range	Default	Unit	Property
E0-16	Communication interference upon 1st fault	0–65535	0	-	●
E0-17	Encoder interference upon 1st fault	0–65535	0	-	●
E0-18	Input state 1 upon 1st fault	0–65535	0	-	●
E0-19	Input state 2 upon 1st fault	0–65535	0	-	●
E0-20	Input state 3 upon 1st fault	0–65535	0	-	●
E0-21	Input state 4 upon 1st fault	0–65535	0	-	●
E0-22	Input state 5 upon 1st fault	0–65535	0	-	●
E0-23	Output state 1 upon 1st fault	0–65535	0	-	●
E0-24	Output state 2 upon 1st fault	0–65535	0	-	●
E0-25	Output state 3 upon 1st fault	0–65535	0	-	●
E0-26	Car input state upon 1st fault	0–65535	0	-	●
E0-27	Car output state upon 1st fault	0–65535	0	-	●
E0-28	Hall sate upon 1st fault	0–65535	0	-	●
E0-29	System state 1 upon 1st fault	0–65535	0	-	●
E0-30	System state 2 upon 1st fault	0–65535	0	-	●
E0-31	Car load upon 1st fault	0–255	0	-	●
Group E1 to E9: details of the later 9 faults					

Group E0 to E9 display the details of the last 10 faults.

The parameters are defined in the same way as group FU parameters.

Each time a new fault occurs, the details of this fault are recorded in group E0, and the previous fault is recorded in group E1. When group E is full, more faults are recorded in group FC.

When a fault is designated in FC-00, E9 is used to record details of this designated fault and not counted here.

8

Troubleshooting

Chapter 8 Maintenance and Troubleshooting

8.1 Maintenance

8.1.1 Routine Maintenance

⚠ DANGER
Never perform wiring at power-on. Cut off all power supplies and wait for at least ten minutes so that the residual voltage on capacitors can discharge safely.

The influence of the ambient temperature, humidity, dust and vibration will cause the aging of the 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 maintenance.

Routine maintenance involves checking:

- Whether abnormal noise exists during motor running
- Whether the motor vibrates excessively
- Whether the installation environment of the controller changes
- Whether the cooling fan works properly
- Whether the controller overheats

Routine cleaning involves:

- Keep the controller clean all the time.
- Remove the dust, especially metal powder on the surface of the controller, to prevent the dust from entering the controller.
- Clear the oil stain on the cooling fan of the controller.

8.1.2 Periodic Inspection

Perform periodic inspection on the items that are difficult to check during running. Periodic inspection involves:

- Check and clean the air filter periodically.
- Check whether the screws become loose.
- Check whether the controller is corroded.
- Check whether the wiring terminals have arc signs.
- Carry out the main circuit insulation test.

Note

Before measuring the insulating resistance with megameter (500 VDC megameter recommended), disconnect the main circuit from the controller. Do not use the insulating resistance meter to test the insulation of the control circuit. The high voltage test need not be performed again because it has been completed before delivery.

8.1.3 Replacement of Vulnerable Components

Vulnerable components of the controller include the cooling fan and filter electrolytic capacitor. Their service life is related to the operating environment and maintenance.

The service life of the two components is listed in the following table.

Table 8-1 Service life of cooling fan and filter electrolytic capacitor

Component	Service Life	Possible Damage Cause	Judging Criteria
Fan	2 to 3 years	• Bearing worn • Blade aging	• Check whether there is crack on the blade. • Check whether there is abnormal vibration noise upon startup.
Electrolytic capacitor	4 to 5 years	• Input power supply in poor quality • High ambient temperature • Frequent load jumping • Electrolytic aging	• Check whether there is liquid leakage. • Check whether the safety valve has projected. • Measure the static capacitance. • Measure the insulating resistance.

The service life is obtained based on the following conditions:

Ambient temperature: average 30°C per year

Load rate: below 80%

Running time: less than 20 hours per day

8.1.4 Storage of the Controller

For storage of the controller, pay attention to the following two aspects:

1. Pack the controller with the original packing box provided by Monarch.
2. Long-term storage degrades the electrolytic capacitor. Thus, the controller must be energized once every 2 years, each time lasting at least 5 hours. The input voltage must be increased slowly to the rated value with the regulator.

8.2 Description of Fault Levels

The NICE5000 has almost 60 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 8-2 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 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.

Note

A, B, and C are fault sub-category.

Low-speed running involves inspection, emergency evacuation, shaft auto-tuning, re-leveling, motor auto-tuning, base floor verification, and running in operation panel control.

Normal-speed running involves automatic running, returning to base floor in fire emergency state, firefighter operation, attendant operation, elevator lock, and elevator parking.

8.3 Fault Information and Troubleshooting

If an alarm is reported, the system performs corresponding processing based on the fault level. You can handle the fault according to the possible causes described in the following table.

Table 8-3 Fault codes and troubleshooting

Fault Code	Name	Possible Causes	Solution	Level
Err02	Overcurrent during acceleration	• The main circuit output is grounded or short circuited. • Motor auto-tuning is performed improperly. • The load is too heavy. • The encoder signal is incorrect. • The EPS running feedback signal is incorrect.	• Check whether the RUN contactor at the controller output side is normal. • Check: - Whether the power cable jacket is damaged - Whether the power cable is possibly short circuited to ground - Whether the power cable is connected reliably • Check the insulation of motor power terminals, and check whether the motor winding is short-circuited or grounded. • Check whether shorting PMSM stator causes controller output short circuit. • Check whether motor parameters comply with the nameplate. • Perform motor auto-tuning again. • Check whether the brake keeps released before the fault occurs and whether the brake is stuck mechanically. • Check whether the balance coefficient is correct. • Check whether the encoder wirings are correct. For asynchronous motor, perform SVC and compare the current to judge whether the encoder works properly. (To be continued)	5A
Err03	Overcurrent during deceleration	• The main circuit output is grounded or short circuited. • Motor auto-tuning is performed improperly. • The load is too heavy. • The deceleration rate is too short. • The encoder signal is incorrect.		5A

Fault Code	Name	Possible Causes	Solution	Level
Err04	Overcurrent at constant speed	• The main circuit output is grounded or short circuited. • Motor auto-tuning is performed properly. • The load is too heavy. • The encoder is seriously interfered with.	• Check - Whether the encoder is installed reliably - Whether the rotating shaft is connected to the motor shaft reliably - Whether the encoder is stable during normal-speed running • Check whether EPS feedback is valid in the non-EPS running state (E02). • Check whether the acceleration/ deceleration rate is too high (E02, E03).	5A
Err05	Overvoltage during acceleration	• The input voltage is too high. • The regeneration power of the motor is too high. • The braking resistance is too large, or the braking unit fails. • The acceleration rate is too short.	• Adjust the input voltage. Observe whether the bus voltage is normal and whether it rises too quickly during running. • Check for the balance coefficient. • Select a proper regen. resistor and check whether the resistance is too large based on the recommended braking resistance table in chapter 3. • Check: - Whether the cable connecting the regen. resistor is damaged - Whether the cooper wire touches the ground - Whether the connection is reliable	5A
Err06	Overvoltage during deceleration	• The input voltage is too high. • The braking resistance is too large, or the braking unit fails. • The deceleration rate is too short.		5A
Err07	Overvoltage at constant speed	• The input voltage is too high. • The braking resistance is too large, or the braking unit fails.		5A

Fault Code	Name	Possible Causes	Solution	Level
Err08	Pre-charge relay not close at power-on	• The external power supply is not stable. • A hardware fault occurs.	• Check that the external power supply is stable and that the power input cables are connected securely. • Do not power on the device again when power-off is incomplete. • Contact the agent or Monarch if the cause is hardware fault.	5A
Err09	Undervoltage	• Instantaneous power failure occurs on the input power supply. • The input voltage is too low. • The drive control board fails.	• Eliminate external power supply faults and check whether the power fails during running. • Check whether the wiring of all power input cables is secure. • Contact the agent or Monarch.	5A
Err10	Controller overload	• The brake circuit is abnormal. • The load is too heavy. • The encoder feedback signal is abnormal. • The motor parameters are incorrect. • A fault occurs on the motor power cables.	• Check the brake circuit and power input. • Reduce the load. • Check whether the encoder feedback signal and setting are correct, and whether the initial angle of the encoder for the PMSM is correct. • Check the motor parameter setting and perform motor auto-tuning. • Check the power cables of the motor (refer to the solution of Err02).	4A
Err11	Motor overload	• FC-02 is set improperly. • The brake circuit is abnormal. • The load is too heavy.	• Adjust the parameter (FC-02 can be set to the default value). • Refer to the solution of Err10.	3A
Err12	Power supply phase loss	• The power input phases are not symmetric. • The drive control board fails.	• Check whether the three phases of power supply are balanced and whether the power voltage is normal. If not, adjust the power input. • Contact the agent or Monarch.	4A

Fault Code	Name	Possible Causes	Solution	Level
Err13	Power output phase loss	• The output wiring of the main circuit is loose. • The motor is damaged.	• Check the wiring. • Check whether the contactor on the output side is normal. • Eliminate the motor fault.	4A
Err14	Module overheat	• The ambient temperature is too high. • The fan is damaged. • The air filter is blocked.	• Lower the ambient temperature. • Clear the air filter. • Replace the damaged fan. • Check whether the installation clearance of the controller satisfies the requirement.	5A
Err16	Current control fault	1: The excitation current deviation is too large. 2: The torque current deviation is too large. 3: The torque limit is exceeded for a very long time.	1, 2, 3: • Check the circuit of the encoder. • The output MCCB becomes OFF. • The values of the current loop parameters are too small. • Perform motor auto-tuning again if the zero-point position is incorrect. • Reduce the load if it is too heavy.	5A
Err17	Reference signal of the encoder incorrect	2: The deviation between the Z signal position and the absolute position is too large. 3: The deviation between the absolute position angle and the accumulative angle exceeds 70°.	2, 3: • Check whether the encoder runs properly. • Check whether the encoder wiring is correct and reliable. • Check whether the PG card wiring is correct. • Check whether the grounding of the control cabinet and the motor is normal.	5A
Err18	Current detection fault	The drive control board fails.	Contact the agent or Monarch.	5A

Fault Code	Name	Possible Causes	Solution	Level
Err19	Motor auto-tuning fault	101, 102: The motor auto-tuning times out.	101, 102: • Enter the motor parameters correctly. • Check the motor wiring and whether phase loss occurs on the contactor at the output side. • Check the encoder wiring and ensure that the encoder PPR is set properly. • Check whether the inspection button is released before the PMSM with-load auto-tuning is finished.	5A
Err20	Speed feedback incorrect	1: AB signals are lost during auto-tuning. 4: Z signal cannot be detected during auto-tuning. 5: The CD signal cables of the SIN/COS encoder break. 7: The UVW cables of the UVW encoder break. 8: Reserved. 9: Overspeed occurs or the speed deviation is too large. 10/11: AB signals or CD signals of the SIN/COS encoder are interfered with. 12: The detected speed is 0 at torque limit. 13: AB signals are lost during running. 14: Z signal is lost during running. 19: The AB analog signal cables break during low-speed running. 55: CD signal error or serious Z signal interference occurs during auto-tuning.	1 to 19: • Check that the setting of F1-00, F1-12, and F1-25 for the synchronous motor is correct. • Check that there is no mechanical stuck. • Check that the brake has been released during running. 55: Check that the grounding is reliable and eliminate interference problems.	5A

Fault Code	Name	Possible Causes	Solution	Level
Err22	Leveling signal abnormal	101: The leveling position deviation is too large in elevator auto-running state.	101: • 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.	1A
Err24	RTC clock fault	101: The RTC clock information of the MCB is abnormal.	101: • Replace the clock battery. • Replace the MCB.	3B
Err25	Storage data abnormal	101, 102: The storage data of the MCB is abnormal.	101, 102: Contact the agent or Monarch.	4A
Err26	Earthquake signal	101: The earthquake signal is active and the duration exceeds 2s.	101: Check that the earthquake signal is consistent with the parameter setting (NC, NO) of the MCB.	3B
Err29	Shorting PMSM stator feedback abnormal	101: The shorting PMSM stator feedback is abnormal.	101: • Check that the state (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
Err30	Elevator position abnormal	101, 102: In the normal-speed running or re-leveling running mode, the running time is smaller than the smaller of F9-02.	101, 102: • 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, causing too long re-leveling running time. • Check whether signal loss exists in the encoder circuits.	4A

Fault Code	Name	Possible Causes	Solution	Level
Err31	Emergency running abnormal	1: Overspeed occurs during inspection or shaft auto-tuning. 2: The running speed exceeds 1.15 times of the maximum speed (F0-03). 3: The speeds during shorting motor stator braking mode and emergency running exceed 1/2 of the rated speed.	1: Decrease the inspection speed or perform motor auto-tuning again. 2: • Check that the encoder is normal. • Set the motor nameplate parameters correctly • Perform motor auto-tuning again. 3: • Check that the shorting PMSM stator contactor function is enabled. • Check that the EPS capacity is proper. • Check that the emergency running speed is set properly.	
Err33	Elevator speed abnormal	101: The detected running speed during normal-speed running exceeds the limit. 102: The speed exceeds the limit during inspection or shaft auto-tuning. 103: The speed exceeds the limit in shorting stator braking mode. 104: The speed exceeds the limit during emergency running. 105: The emergency running time protection function is enabled (set in Bit8 of F6-45), and the running time exceeds 50s, causing the timeout fault.	101: • Check whether the encoder is used properly. • Check the setting of motor nameplate parameters. Perform motor auto-tuning again. 102: Attempt to decrease the inspection speed or perform motor auto-tuning again. 103: Check whether the shorting PMSM stator function is enabled. 104, 105: • Check whether the emergency power capacity meets the requirements. • Check whether the emergency running speed is set properly.	5A
Err34	Logic fault	Logic of the MCB is abnormal.	Contact the agent or Monarch.	5A

Fault Code	Name	Possible Causes	Solution	Level
Err35	Shaft auto-tuning data abnormal	1, 10: Pulse verification is incorrect or shaft auto-tuning is not performed. 2: The pulses are smaller than the base value; the pulse direction may be incorrect. 3, 4: The leveling plate is too large; the pulse direction may be incorrect. 5: No leveling signal is received within 45s shaft auto-tuning. 7: The leveling signal remains active within 45s shaft auto-tuning. 8: The floor height learned by shaft auto-tuning is too short. 9: The current floor is not top floor before shaft auto-tuning ends; the position of the up slow-down switch may be incorrect. 11: Pulse verification is incorrect. 12: The directions of up and down leveling signals are reversed. 101: When shaft auto-tuning is started, the elevator is not at the bottom floor or the down slow-down is invalid. 102: The system is not in the inspection state when shaft auto-tuning is performed. 103: It is judged upon power-on that shaft auto-tuning is not performed.	1.10: Perform shat auto-tuning again. 2, 3, 4, 5, 7, 11: • 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 F0-05 to ensure consistency. • Check that NO/NC setting 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. 5: Check whether the running times out: No leveling signal is received when the running time exceeds F9-02. 8: 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. 9: Check whether the setting of F6-00 (Top floor of the elevator) is smaller than the actual condition. 12: Check that the up and down leveling signals are set correctly. 101: Check that the next slow-down switch is valid, and that F4-01 (Current floor) is set to 1. 102: Check that the inspection switch is in inspection state. 103: Perform shaft auto-tuning.	4C

Fault Code	Name	Possible Causes	Solution	Level
Err36	RUN contactor feedback abnormal	101, 102: The feedback of the RUN contactor is active, but the contactor has no output. 103: The controller outputs the RUN signal but receives no RUN feedback within 2s. 104: When both feedback signals of the RUN contactor are enabled, their states are inconsistent.	101, 102, 103, 104: • Check whether the feedback contact of the contactor acts properly. • Check the signal feature (NO, NC) of the feedback contact.	5A
Err37	Brake contactor feedback abnormal	101: The output of the brake contactor is inconsistent with the feedback. 102: When both feedback signals of the brake contactor are enabled, their states are inconsistent.	101, 102: • Check whether the brake coil and feedback contact are correct. • Check the signal feature (NO, NC) of the feedback contact. • Check whether the control circuit of the brake contactor coil is normal.	5A
Err38	Encoder signal abnormal	1: SVC is used for non-inspection running in distance control. 2: In non auto-leveling or shaft auto-tuning state, the elevator runs in the opposite direction for more than 10 cm (subcode 2 reported for up direction, subcode 3 for down direction). 3: In non auto-leveling or shaft auto-tuning state of CLVC, the running time exceeds FH-03 and the F4-03 does not change.	1 to 4: • Check whether the encoder is used correctly. • Check whether the motor running direction is correct. • Check whether the system grounding and signal grounding are reliable. • Check whether wiring between the encoder and the PG card is correct.	5A
Err39	Motor overheat	101: The motor overheat relay input remains valid for a certain time.	101: • Check whether the thermal protection relay is normal. • Check whether the motor is used properly and whether it is damaged. • Improve cooling conditions of the motor.	3A

Fault Code	Name	Possible Causes	Solution	Level
Err40	Elevator running reached	The set elevator running time is reached.	Check the related parameter, or contact the agent or Monarch.	4B
Err41	Safety circuit disconnected	101: The safety circuit signal becomes OFF.	101: • 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
Err42	Door lock disconnected during running	101: The door lock circuit feedback is invalid during the elevator running.	101: • 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	101: The up limit switch acts when the elevator is running in the up direction.	101: • 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.	4C

Fault Code	Name	Possible Causes	Solution	Level
Err44	Down limit signal abnormal	101: The down limit switch acts when the elevator is running in the down direction.	101: • 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.	4C
Err45	Slow-down switch position abnormal	1: The up slow-down 1 is abnormal. 2: The up slow-down 1 is stuck. 3: The up slow-down 2 is abnormal. 4: The up slow-down 2 is stuck. 5: The up slow-down 3 is abnormal. 6: The up slow-down 3 is stuck. 7: The down slow-down 1 is abnormal. 8: The down slow-down 1 is stuck. 9: The down slow-down 2 is abnormal. 10: The down slow-down 2 is stuck. 11: The down slow-down 3 is abnormal. 12: The down slow-down 3 is stuck. 13: The up slow-down position during shaft auto-tuning is smaller than S = V x V/2a + V x 0.3 + 0.1. 14: The down slow-down position during shaft auto-tuning is smaller than S = V x V/2a + V x 0.3 + 0.1.	1 to 14: • Check the positions of the slow-down switches. • Check whether the up slow-down and the down slow-down are in good contact.	4B

Fault Code	Name	Possible Causes	Solution	Level
Err46	Re-leveling abnormal	101: The leveling signal is inactive during re-leveling.	101: Check whether the leveling signal is normal.	2B
Err47	Shorting door lock circuit contactor abnormal	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. 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. 103: During re-leveling or pre-open running, the output time of the shorting door lock circuit contactor is larger than 15s.	101, 102: • 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. 103: • Check whether the leveling and re-leveling signals are normal. • Check whether the re-leveling speed is set too low.	2B
Err48	Door open fault	101: The consecutive times that the door does not open to the limit reaches the setting in Fb-13.	101: • Check whether the door machine system works properly. • Check whether the CTB is normal. • Check whether the door open limit signal is normal.	5A
Err49	Door close fault	101: The consecutive times that the door does not open to the limit reaches the setting in Fb-13.	101: • Check whether the door machine system works properly. • Check whether the CTB is normal. • Check whether the door lock acts properly.	5A

Fault Code	Name	Possible Causes	Solution	Level
Err51	CAN communication abnormal	101: Feedback data of CANbus communication with the CTB remains incorrect.	101: • 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 strong-power interference on communication exists.	1A
Err52	HCB communication abnormal	101: Feedback data of Modbus communication with the HCB remains incorrect.	101: • 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 strong-power interference on communication exists.	1A
Err53	Door lock fault	101: The door lock feedback signal remains active for more than 3s during door open. 102: The multiple door lock feedback signal states are inconsistent for more than 2s.	101: • Check whether the door lock circuit is normal. • Check whether the feedback contact of the door lock contactor acts properly. • Check whether the system receives the door open limit signal when the door lock signal is valid. 102: Check whether when the hall door lock signal and the car door lock signal are detected separately, the detected states of the hall door locks and car door lock are inconsistent.	5A
Err55	Stop at another landing floor	101: During automatic running of the elevator, the door open time exceeds the limit set in Fb-10.	101: Check the door open limit signal at the present floor.	1A

Fault Code	Name	Possible Causes	Solution	Level
Err57	Serial peripheral interface (SPI) communication abnormal	The SPI communication is abnormal. No correct data is received with 2s of DSP communication.	101, 102: Check the wiring between the control board and the drive board. 103: Contact the agent or Monarch.	5A
Err58	Shaft position switches abnormal	1: • The up slow-down and down slow-down are disconnected simultaneously. • The up limit feedback and down limit feedback are disconnected simultaneously.	1: • Check whether the states (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
Err60	Leveling signal abnormal	1: The up and down leveling signals are lost. 2: The up leveling signal and door zone signals are lost. 3: The down leveling signal and door zone signals are lost. 4: All the up and down leveling signals and door zone signals are lost.	1 to 4: Check whether the leveling signals and related parameters are set correctly.	3B
Err61	Leveling signal abnormal	1: The door zone signal is stuck. 2: The up and down leveling signals are stuck. 3: The up leveling signal and door zone signals are stuck. 4: The down leveling signal and door zone signals are stuck. 5: All the up and down leveling signals and door zone signals are stuck.	1 to 5: Check whether the leveling signals and related parameters are set correctly.	3A

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 Err57 persist, they are recorded once every one hour.
- Except the fault code and level, the number (such as 1, 101) indicates the fault subcode.

9

EMC

Chapter 9 EMC

9.1 Definition of Terms

1. EMC

   Electromagnetic compatibility (EMC) describes the ability of electronic and electrical devices or systems to work properly in the electromagnetic environment and not to generate electromagnetic interference that influences other local devices or systems.

   In other words, EMC includes two aspects: The electromagnetic interference generated by a device or system must be restricted within a certain limit; the device or system must have sufficient immunity to the electromagnetic interference in the environment.

2. First environment

   Environment that includes domestic premises, it also includes establishments directly connected without intermediate transformers to a low-voltage power supply network which supplies buildings used for domestic purposes

3. Second environment

   Environment that includes all establishments other than those directly connected to a low-voltage power supply network which supplies buildings used for domestic purposes

4. Category C1 Controller

   Power Drive System (PDS) of rated voltage less than 1 000 V, intended for use in the first environment

5. Category C2 Controller

   PDS of rated voltage less than 1 000 V, which is neither a plug in device nor a movable device and, when used in the first environment, is intended to be installed and commissioned only by a professional

6. Category C3 Controller

   PDS of rated voltage less than 1 000 V, intended for use in the second environment and not intended for use in the first environment

7. Category C4 Controller

   PDS of rated voltage equal to or above 1 000 V, or rated current equal to or above 400 A, or intended for use in complex systems in the second environment

9.2 Introduction to EMC Standard

9.2.1 Installation Environment

The system manufacturer using the controller is responsible for compliance of the system with the European EMC directive. Based on the application of the system, the integrator must ensure that the system complies with standard EN 61800-3: 2004 Category C2, C3 or C4.

The system (machinery or appliance) installed with the controller must also have the CE mark. The system integrator is responsible for compliance of the system with the EMC directive and standard EN 61800-3: 2004 Category C2.

⚠WARNING

If applied in the first environment, the controller may generate radio interference. Besides the CE compliance described in this chapter, users must take measures to avoid such interference, if necessary.

9.2.2 Requirements on Satisfying the EMC Directive

1. The controller requires an external EMC filter. The recommended filter models are listed in Table 9-1. The cable connecting the filter and the controller should be as short as possible and be not longer than 30 cm. Furthermore, install the filter and the controller on the same metal plate, and ensure that the grounding terminal of the controller and the grounding point of the filter are in good contact with the metal plate.
2. Select the motor and the control cable according to the description of the cable in section 9.4.
3. Install the controller and arrange the cables according to the cabling and grounding in section 9.4.
4. Install an AC reactor to restrict the current harmonics. For the recommended models, see Table 9-2.

9.3 Selection of Peripheral EMC Devices

9.3.1 Installation of EMC Input Filter on Power Input Side

An EMC filter installed between the controller and the power supply can not only restrict the interference of electromagnetic noise in the surrounding environment on the controller, but also prevents the interference from the controller on the surrounding equipment.

The NICE5000 controller satisfies the requirements of category C2 only with an EMC filter installed on the power input side. The installation precautions are as follows:

- Strictly comply with the ratings when using the EMC filter. The EMC filter is category I electric apparatus, and therefore, the metal housing ground of the filter should be in good contact with the metal ground of the installation cabinet on a large area, and requires good conductive continuity. Otherwise, it will result in electric shock or poor EMC effect.
- The grounds of the EMC filter and the PE conductor of the controller must be tied to the same common ground. Otherwise, the EMC effect will be affected seriously.
- The EMC filter should be installed as closely as possible to the power input side of the controller.

The following table lists the recommended manufacturers and models of EMC filters for the NICE5000 controller. Select a proper one based on actual requirements.

Table 9-1 Recommended manufacturers and models of EMC filter

Controller Model	Power Capacity (kVA)	Rated Input Current (A)	AC Input Filter Model (Changzhou Jianli)	AC Input Filter Model (Schaffner)
Three-phase 380 V				
NICE-LWX -4002-A/B/C0	4.0	6.5	DL-10EBK5	FN 3258-7-44
NICE-LWX -4003-A/B/C0	5.9	10.5	DL-16EBK5	FN 3258-16-33
NICE-LWX -4005-A/B/C0	8.9	14.8	DL-16EBK5	FN 3258-16-33
NICE-LWX -4007-A/B/C0	11.0	20.5	DL-25EBK5	FN 3258-30-33
NICE-LWX -4011-A/B/C0	17.0	29.0	DL-35EBK5	FN 3258-30-33
NICE-LWX -4015-A/B/C0	21.0	36.0	DL-50EBK5	FN 3258-42-33
NICE-LWX -4018-A/B/C0	24.0	41.0	DL-50EBK5	FN 3258-42-33
NICE-LWX -4022-A/B/C0	30.0	49.5	DL-50EBK5	FN 3258-55-34
NICE-LWX -4030-A/B/C0	40.0	62.0	DL-65EBK5	FN 3258-75-34
NICE-LWX -4037-A/B/C0	57.0	77.0	DL-80EBK5	FN 3258-100-35
NICE-LWX -4045-A/B/C0	69.0	93.0	DL-100EBK5	FN 3258-100-35
NICE-LWX -4055-A/B/C0	85.0	113.0	DL-130EBK5	FN3258-130-35
Three-phase 220 V				
NICE-LWX -2002-A/B/C0	4.0	11.0	DL-16EBK5	FN 3258-7-44
NICE-LWX -2003-A/B/C0	5.9	17.0	DL-25EBK5	FN 3258-7-44
220-NICE-LWX-4007-A/B/C0	17.0	29.0	DL-35EBK5	FN 3258-7-44
220-NICE-LWX-4011-A/B/C0	21.0	36.0	DL-50EBK5	FN 3258-16-33
220-NICE-LWX-4015-A/B/C0	24.0	41.0	DL-50EBK5	FN 3258-16-33
220-NICE-LWX-4018-A/B/C0	30.0	40.0	DL-50EBK5	FN 3258-30-33
220-NICE-LWX-4022-A/B/C0	40.0	49.0	DL-50EBK5	FN 3258-30-33
220-NICE-LWX-4030-A/B/C0	57.0	61.0	DL-65EBK5	FN 3258-42-33
Single-phase 220 V				
NICE-LWX -2002-A/B/C0	2.3	13.2	DL-20TH1	FN2090-20-06
NICE-LWX -2003-A/B/C0	3.4	17.0	DL-20TH1	FN2090-20-06
220-NICE-LWX-4007-A/B/C0	9.8	29.0	DL-30TH1	FN2090-30-08
220-NICE-LWX-4011-A/B/C0	12.1	36.0	DL-40K3	-
220-NICE-LWX-4015-A/B/C0	13.9	41.0	DL-50T3	-
220-NICE-LWX-4018-A/B/C0	17.3	40.0	DL-50T3	-
220-NICE-LWX-4022-A/B/C0	23.1	49.0	DL-50T3	-
220-NICE-LWX-4030-A/B/C0	33.0	61.0	DL-70TH1	-

9.3.2 Installation of AC Input Reactor on Power Input Side

An AC input reactor is installed to eliminate the harmonics of the input current. As an optional device, the reactor can be installed externally to meet strict requirements of an application environment for harmonics. The following table lists the recommended manufacturers and models of input reactors.

Table 9-2 Recommended manufacturers and models of AC input reactors

Controller Model	Power Capacity (kVA)	Rated Input Current (A)	AC Input Reactor Model (Inovance)
Three-phase 380 V			
NICE-LWX -4002-A/B/C0	4.0	6.5	MD-ACL-7-4T-222-2%
NICE-LWX -4003-A/B/C0	5.9	10.5	MD-ACL-10-4T-372-2%
NICE-LWX -4005-A/B/C0	8.9	14.8	MD-ACL-15-4T-552-2%
NICE-LWX -4007-A/B/C0	11.0	20.5	MD-ACL-30-4T-113-2%
NICE-LWX -4011-A/B/C0	17.0	29.0	MD-ACL-30-4T-113-2%
NICE-LWX -4015-A/B/C0	21.0	36.0	MD-ACL-40-4T-153-2%
NICE-LWX -4018-A/B/C0	24.0	41.0	MD-ACL-50-4T-183-2%
NICE-LWX -4022-A/B/C0	30.0	49.5	MD-ACL-50-4T-183-2%
NICE-LWX -4030-A/B/C0	40.0	62.0	MD-ACL-80-4T-303-2%
NICE-LWX -4037-A/B/C0	57.0	77.0	MD-ACL-80-4T-303-2%
NICE-LWX -4045-A/B/C0	69.0	93.0	MD-ACL-120-4T-453-2%
NICE-LWX -4055-A/B/C0	85.0	113.0	MD-ACL-120-4T-453-2%
Three-phase 220 V			
NICE-LWX -2002-A/B/C0	4.0	11.0	MD-ACL-15-4T-222-2%
NICE-LWX -2003-A/B/C0	5.9	17.0	MD-ACL-30-4T-222-2%
220-NICE-LWX -4007-A/B/C0	17.0	29.0	MD-ACL-30-4T-113-2%
220-NICE-LWX -4011-A/B/C0	21.0	36.0	MD-ACL-50-4T-113-2%
220-NICE-LWX -4015-A/B/C0	24.0	41.0	MD-ACL-50-4T-153-2%
220-NICE-LWX -4018-A/B/C0	30.0	40.0	MD-ACL-50-4T-183-2%
220-NICE-LWX -4022-A/B/C0	40.0	49.0	MD-ACL-50-4T-183-2%
220-NICE-LWX -4030-A/B/C0	57.0	61.0	MD-ACL-80-4T-303-2%
Single-phase 220 V			
NICE-LWX -2002-A/B/C0	2.3	13.2	Consult the manufacturer.
NICE-LWX -2003-A/B/C0	3.4	17.0	Consult the manufacturer.
220-NICE-LWX -4007-A/B/C0	9.8	29.0	Consult the manufacturer.
220-NICE-LWX -4011-A/B/C0	12.1	36.0	Consult the manufacturer.

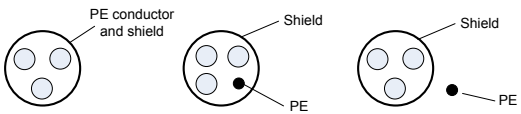
Controller Model	Power Capacity (kVA)	Rated Input Current (A)	AC Input Reactor Model (Inovance)
220-NICE-LWX -4015-A/B/C0	13.9	41.0	Consult the manufacturer.
220-NICE-LWX -4018-A/B/C0	17.3	40.0	Consult the manufacturer.
220-NICE-LWX -4022-A/B/C0	23.1	49.0	Consult the manufacturer.
220-NICE-LWX -4030-A/B/C0	33.0	61.0	Consult the manufacturer.

9.4 Shielded Cable

9.4.1 Requirements for the Shielded Cable

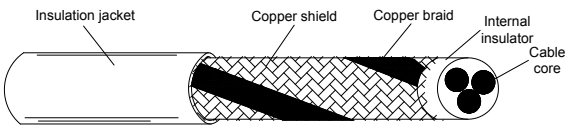
The shielded cable must be used to satisfy the EMC requirements. Shielded cables are classified into three-conductor cable and four-conductor cable. If conductivity of the cable shield is not sufficient, add an independent PE cable, or use a four-conductor cable, of which one phase conductor is PE cable.

The three-conductor cable and four-conductor cable are shown in the following figure.

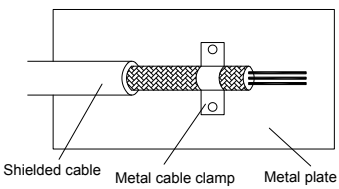


The motor cable and PE shielded conducting wire (twisted shielded) should be as short as possible to reduce electromagnetic radiation and external stray current and capacitive current of the cable.

To suppress emission and conduction of the radio frequency interference effectively, the shield of the shielded cable is cooper braid. The braided density of the cooper braid should be greater than 90% to enhance the shielding efficiency and conductivity, as shown in the following figure.

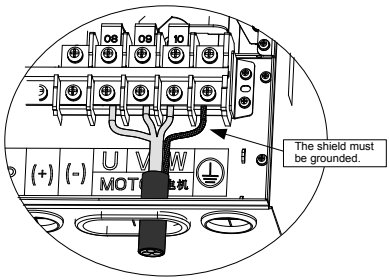


It is recommended that all control cables be shielded. The grounding area of the shielded cable should be as large as possible. A suggested method is to fix the shield on the metal plate using the metal cable clamp so as to achieve good contact, as shown in the following figure.



The following figure shows the grounding method of the shielded cable.

Figure 9-1 Grounding of the shielded cable



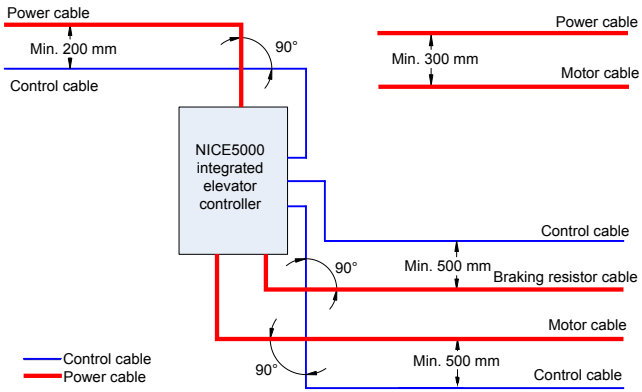
9.4.2 Installation Precautions of the Shielded Cable

- Symmetrical shielded cable is recommended. The four-conductor shielded cable can also be used as an input cable.
- The motor cable and PE shielded conducting wire (twisted shielded) should be as short as possible to reduce electromagnetic radiation and external stray current and capacitive current of the cable. If the motor cable is over 100 meters long, an output filter or reactor is required.
- It is recommended that all control cables be shielded.
- It is recommended that a shielded cable be used as the output power cable of the controller; the cable shield must be well grounded. For devices suffering from interference, shielded twisted pair (STP) cable is recommended as the lead wire and the cable shield must be well grounded.

9.4.3 Cabling Requirement

1. The motor cables must be laid far away from other cables, with recommended distance larger than 0.5 m. The motor cables of several controllers can be laid side by side.
2. It is recommended that the motor cables, power input cables and control cables be laid in different ducts. To avoid electromagnetic interference caused by rapid change of the output voltage of the controller, the motor cables and other cables must not be laid side by side for a long distance.
3. If the control cable must run across the power cable, make sure they are arranged at an angle of close to 90°. Other cables must not run across the controller.
4. The power input and output cables of the controller and weak-current signal cables (such as control cable) should be laid vertically (if possible) rather than in parallel.
5. The cable ducts must be in good connection and well grounded. Aluminium ducts can be used to improve electric potential.
6. The filter and controller should be connected to the cabinet properly, with spraying protection at the installation part and conductive metal in full contact.
7. The motor should be connected to the system (machinery or appliance) properly, with spraying protection at the installation part and conductive metal in full contact.

Figure 9-2 Cabling diagram



9.5 Solutions to Common EMC Interference Problems

The controller generates very strong interference. Although EMC measures are taken, the interference may still exist due to improper cabling or grounding during use. When the controller interferes with other devices, adopt the following solutions.

Interference Type	Solution
Leakage protection switch tripping	• Connect the motor housing to the PE of the controller. • Connect the PE of the controller to the PE of the mains power supply. • Add a safety capacitor to the power input cable. • Add magnetic rings to the input drive cable.
Controller interference during running	• Connect the motor housing to the PE of the controller. • Connect the PE of the controller to the PE of the mains voltage. • Add a safety capacitor to the power input cable and wind the cable with magnetic rings. • Add a safety capacitor to the interfered signal port or wind the signal cable with magnetic rings. • Connect the equipment to the common ground.

Interference Type	Solution
Communication interference	• Connect the motor housing to the PE of the controller. • Connect the PE of the controller to the PE of the mains voltage. • Add a safety capacitor to the power input cable and wind the cable with magnetic rings. • Add a matching resistor between the communication cable source and the load side. • Add a common grounding cable besides the communication cable. • Use a shielded cable as the communication cable and connect the cable shield to the common grounding point.
I/O interference	• Enlarge the capacitance at the low-speed DI. A maximum of 0.11 uF capacitance is suggested. • Enlarge the capacitance at the AI. A maximum of 0.22 uF is suggested.

Monarch Warranty Agreement

1. The warranty period of the product is 18 months from date of manufacturing. During the warranty period, if the product fails or is damaged under the condition of normal use by following the instructions, Inovance will be responsible for free maintenance.
2. Within the warranty period, maintenance will be charged for the damages caused by the following reasons:

   a. Improper use or repair/modification without prior permission

   b. Fire, flood, abnormal voltage, other disasters and secondary disaster

   c. Hardware damage caused by dropping or transportation after procurement

   d. Improper operation

   e. Damage out of the equipment (for example, external device)
3. If there is any failure or damage to the product, please correctly fill out the Product Warranty Card in detail.
4. The maintenance fee is charged according to the latest Maintenance Price List of Monarch.
5. The Product Warranty Card is not re-issued. Please keep the card and present it to the maintenance personnel when asking for maintenance.
6. If there is any problem during the service, contact Monarch's agent or Monarch directly.
7. This agreement shall be interpreted by Suzhou MONARCH Control Technology Co., Ltd.

Service Department, Suzhou MONARCH Control Technology Co., Ltd.

Address: No.16, Youxiang Road, Yuexi Town, Wuzhong District, Suzhou, P.R.China

P.C.: 215104

Website: http://www.szmctc.cn

Monarch Product Warranty Card

<table>
<tr><td rowspan="3">Customer information</td><td colspan="2">Address:</td></tr>
<tr><td>Company name:

P.C.:</td><td>Contact person:

Tel. or Email:</td></tr>
<tr><td rowspan="3">Product information</td><td colspan="2">Product model:</td></tr>
<tr><td colspan="2">Series No. (Attach here):</td></tr>
<tr><td colspan="2">Name of supplier:</td></tr>
<tr><td>Failure information (eg. fault code)</td><td colspan="2">(Maintenance time and content):

Maintenance person:</td></tr>
</table>

Monarch

NICE 5000

Integrated Elevator Controller

Monarch

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