Monarch
by INOVANCE

FORWARD, ALWAYS PROGRESSING



# NICE3000$^{new}$ Series

# Integrated Elevator Controller

## User Guide

Industrial Automation | Intelligent Elevator | New Energy Vehicle | Industrial Robot | Rail Transit

Data code 19010569 B00

# Preface

Thank you for purchasing the NICE3000$^{new}$ integrated elevator controller.

The controller is a world-leading intelligent control system that integrates computer, automatic control, network communication, and motor vector drive technologies. Monarch is a proprietary elevator product brand of Inovance.

It has the following major features:

**Advanced Technology**

- Distance-based direct travel ride, curves generated automatically
- Group control of up to 8 elevators based on the fuzzy control theory
- Multi-CPU redundancy control and integration of advanced CANbus, Modbus, and IoT communication technologies
- Built-in real-time clock, which provides time-based services for intelligent management
- Flexible emergency rescue schemes
- Automatic identification of short floor
- UCMP and braking force detection

**Ease of Use**

- Compact structure for small machine room or machine-room-less design
- Easy functional parameter setting for convenient commissioning
- Keypad equipped for easy inspection, maintenance and commissioning
- Load cell auto-tuning with any weight
- Multiple commissioning tools, including PC host computer software, operation panel, and Monarch APP
- Automatic balance coefficient detection and slip amount test

**Greater Safety and Reliability**

- Multiple safety protections in line with the GB/T7588.1/2-2020 standard
- Fault-tolerant design
- Troubleshooting to minimize accidents (including elevator bottom-clashing or top-hitting) to ensure safe running
- Advanced drive system, high adaptability to varied environmental conditions and great resistance to power grid fluctuation, dust, heat and thunder impacts

- Dual-chip control of running and brake functions

**Riding Comfort**

- No-load-cell technology or special load cell compensation device for startup compensation
- High-performance vector control for excellent motor performance and riding comfort

**Cost-efficiency**

- High integration into the compact structure for reduced peripheral wiring, great cost-efficiency and reliability
- Use of CANbus and Modbus communication for fewer traveling cables
- Flexible modular optional parts
- Parallel connection easily implemented using two wires (no need for extra group control board)

This guide covers the product information, system components, options selection, functions and parameters, faults handling, and certifications and standards.

## First-time Use

For new users, read and keep the guide carefully. In case of any questions, do not hesitate to contact the technical support personnel of Inovance.

## Acquisition

The guide is subject to change without notice. The latest version of the guide is available by:

- contacting our distributors
- visiting *www.inovance.com* for downloads

# Revision History

| Date | Version | Change Description |
|---|---|---|
| January 2023 | B00 | Update customized functions and relevant parameters. |
| June 2022 | A04 | Update the phase number, voltage and frequency of the input power supply in the technical specification table. |
| January 2021 | A03 | Make minor corrections. |
| November 2018 | A01 | Update logo. |
| August 2017 | A00 | First issue. |

# Contents


Preface ..... 1

Safety Instructions ..... 4

Chapter 1 Product Information ..... 11

1.1 Model Number and Nameplate ..... 11

1.2 Ratings ..... 12

1.3 Technical Specifications ..... 13

1.4 Components ..... 18

1.4.1 Plastic Structure ..... 18

1.4.2 Sheet Metal Structure ..... 20

Chapter 2 System Overview ..... 21

2.1 System Configuration ..... 21

2.2 System Schematic Diagram ..... 22

2.3 System Components ..... 22

2.4 List of Options ..... 26

Chapter 3 Selection of Options ..... 29

3.1 Selection of the Cable, Circuit Breaker and Contactor ..... 29

3.2 Selection of the AC Input Reactor ..... 30

3.2.1 Designation Rule ..... 31

3.2.2 Outline Dimensions ..... 32

3.3 Selection of the EMC Filter ..... 36

3.3.1 Standard EMC Filter ..... 37

3.3.2 Simple EMC Filter ..... 39

3.4 Braking Components ..... 40

3.4.1 Selection of Braking Resistor Resistance ..... 40

3.4.2 Selection of Braking Resistor Power ..... 41

3.4.3 Selection Guide of the Braking Resistor ..... 42

3.4.4 Braking Unit ..... 44

3.5 Selection of the AC Output Reactor ..... 44

3.5.1 Recommended AC Output Reactor Models ..... 45

3.5.2 Designation Rule ..... 46

3.5.3 Outline Dimensions ..... 47
3.6 Selection of the Dv/dt Reactor ..... 52
3.7 Selection of the Common-Mode Filter ..... 53
3.8 Group Control Board MCTC-GCB-A ..... 54
3.9 I/O Expansion Board MCTC-KZ-G1 ..... 57
3.10 Elevator Monitoring Board MCTC-KZ-B0S ..... 60
3.10.1 Monitoring of Multiple Elevators (F05 = 2 or F0-05 = 2) ..... 64
3.10.2 Monitoring of Single Elevator (F05 = 1 or F0-05 = 1) ..... 65
Chapter 4 Mechanical Design ..... 67
4.1 Installation Dimensions ..... 67
4.1.1 Plastic Structure Type ..... 67
4.1.2 Sheet Metal Structure Type ..... 69
4.2 Mounting Clearance Requirements ..... 71
Chapter 5 Safety Check Before Commissioning ..... 73
5.1 Mechanical Safety Check ..... 73
5.2 Electrical Wiring Check ..... 73
5.3 Electrical Safety Check ..... 73
5.4 Rotary Encoder Check ..... 74
Chapter 6 Commissioning Tools ..... 75
6.1 Use of the Commissioning Tools ..... 75
6.2 Use of the Onboard Keypad ..... 75
6.3 Use of the LED Operation Panel ..... 81
Chapter 7 System Commissioning ..... 84
7.1 Commissioning Flowchart ..... 84
7.2 Commissioning Procedure ..... 84
7.2.1 Inspection Before Power-on ..... 84
7.2.2 Power-on ..... 84
7.2.3 Operating Panel Connection ..... 85
7.2.4 Parameter Setting ..... 86
7.2.5 Motor Auto-tuning ..... 90
7.2.6 Trial Run at Inspection Speed ..... 92
7.2.7 Car Top Commissioning ..... 93

7.2.8 Shaft Auto-tuning ..... 96
7.2.9 Trial Run at Normal Speed ..... 99
7.2.10 HCB Commissioning (Optional) ..... 100
Chapter 8 Function List ..... 102
8.1 Basic Functions ..... 102
8.2 Optional Functions ..... 107
Chapter 9 System Functions ..... 108
9.1 Parallel/Group Control ..... 108
9.1.1 Parallel Control ..... 108
9.1.2 Group Control ..... 110
9.2 Opposite Door Control ..... 112
9.3 Automatic Emergency Evacuation at Power Failure ..... 117
9.4 220 V UPS ..... 118
9.5 ARD ..... 120
9.6 Flood Operation ..... 121
9.7 Generator-Powered Operation ..... 122
9.8 Brake Release for Evacuation ..... 124
Chapter 10 Parameter List ..... 126
10.1 Introduction ..... 126
10.2 Parameter Groups ..... 126
10.3 Parameter Table ..... 127
Chapter 11 Troubleshooting ..... 189
11.1 Description of Fault Levels ..... 189
11.2 Fault Codes and Troubleshooting ..... 189
Chapter 12 Inspection and Maintenance ..... 211
Chapter 13 CE Certification and Standards Compliance ..... 212
13.1 Important Notes on EU Standards Compliance ..... 212
13.2 CE Low Voltage Directive Compliance ..... 212
13.3 EMC Directive Compliance ..... 213

# Safety Instructions

## Safety Precautions

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

## Safety Levels and Definitions

| | |
|---|---|
|   | indicates that failure to comply with the notice will result in severe personal injuries or even death. |
|   | indicates that failure to comply with the notice may result in severe personal injuries or even death. |
|   | indicates that failure to comply with the notice may result in minor personal injuries or damage to the equipment. |

## Safety Instructions

| Unpacking |
|---|
|   |
| ◆ Check whether the packing is intact and whether there is damage, water seepage, damp, and deformation.<br>◆ Unpack the package by following the package sequence. Do not hit the package with force.<br>◆ Check whether there are damage, rust, or injuries on the surface of the equipment or equipment accessories.<br>◆ Check whether the number of packing materials is consistent with the packing list. |




- Do not install the equipment if you find damage, rust, or indications of use on the equipment or accessories.
- Do not install the equipment if you find water seepage, component missing or damage upon unpacking.
- Do not install the equipment if you find the packing list does not conform to the equipment you received.

**Storage and Transportation**




- Store and transport this equipment based on the storage and transportation requirements for humidity and temperature.
- Avoid transporting the equipment in environments such as water splashing, rain, direct sunlight, strong electric field, strong magnetic field, and strong vibration.
- Avoid storing this equipment for more than three months. Long-term storage requires stricter protection and necessary inspections.
- Pack the equipment strictly before transportation. Use a sealed box for long-distance transportation.
- Never transport this equipment with other equipment or materials that may harm or have negative impacts on this equipment.




- Use professional loading and unloading equipment to carry large-scale or heavy equipment.
- When carrying this equipment with bare hands, hold the equipment casing firmly with care to prevent parts falling. Failure to comply may result in personal injuries.
- Handle the equipment with care during transportation and mind your step to prevent personal injuries or equipment damage.
- Never stand or stay below the equipment when the equipment is lifted by hoisting equipment.

## Installation




- Thoroughly read the safety instructions and user guide before installation.
- Do not modify this equipment.
- Do not rotate the equipment components or loosen fixed bolts (especially those marked in red) on equipment components.
- Do not install this equipment in places with strong electric or magnetic fields.
- When this equipment is installed in a cabinet or final equipment, protection measures such as a fireproof enclosure, electrical enclosure, or mechanical enclosure must be provided. The IP rating must meet IEC standards and local laws and regulations.




- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed by only professionals.
- Installation, wiring, maintenance, inspection, or parts replacement must be performed by only experienced personnel who have been trained with necessary electrical information.
- Installation personnel must be familiar with equipment installation requirements and relevant technical materials.
- Before installing equipment with strong electromagnetic interference, such as a transformer, install an electromagnetic shielding device for this equipment to prevent malfunctions.

| Wiring |
| --- |
| DANGER<br>◆ Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed by only professionals.<br>◆ Never perform wiring at power-on. Failure to comply will result in an electric shock.<br>◆ Before wiring, cut off all equipment power supplies. Wait at least 10 minutes before further operations because residual voltage exists after power-off.<br>◆ Make sure that the equipment is well grounded. Failure to comply will result in an electric shock.<br>◆ During wiring, follow the proper electrostatic discharge (ESD) procedures, and wear an antistatic wrist strap. Failure to comply will result in damage to internal equipment circuits. |
| WARNING<br>◆ Never connect the power cable to output terminals of the equipment. Failure to comply may cause equipment damage or even a fire.<br>◆ When connecting a drive with the motor, make sure that the phase sequences of the drive and motor terminals are consistent to prevent reverse motor rotation.<br>◆ Wiring cables must meet diameter and shielding requirements. The shielding layer of the shielded cable must be reliably grounded at one end.<br>◆ After wiring, make sure that no screws are fallen and cables are exposed in the equipment. |

## Power-on




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

## Operation




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




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

## Maintenance




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




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

## Repair




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




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

## Disposal




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

## Safety Signs

■ Description of safety signs in the user guide



Read the user guide before installation and operation.



Reliably ground the system and equipment.



Danger!



High temperature!



Prevent personal injuries caused by machines.



High voltage!




Wait 10 minutes before further operations.

■ Description of safety signs on the equipment

For safe equipment operation and maintenance, comply with safety signs on the equipment, and do not damage or remove the safety labels. The following table describes the safety signs.

| Safety Sign | Description |
|---|---|
|  | ◆ Read the user guide before installation and operation. Failure to comply will result in an electric shock.<br>◆ Do not remove the cover at power-on or within 10 minutes after power-off.<br>◆ Before maintenance, inspection, and wiring, cut off input and output power, and wait at least 10 minutes until the power indicator is off. |

# Chapter 1 Product Information

## 1.1 Model Number and Nameplate

NICE ① - L ② - C ③ 40 ④ 15 ⑤ N ⑥ -INT ⑦

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ① | **Product Series**<br>NICE series integrated elevator controller | ③ | **Motor Type**<br>A: Asynchronous motor<br>B: Synchronous motor<br>C: Synchronous/ Asynchronous motor integrator | ⑤ | **Power Class**<br>03: 3.7 kW<br>...<br>30: 30 kW<br>45: 45 kW | ⑦ | **Version**<br>-INT: International<br>-(a): Other variants |
| ② | **Cotroller Type**<br>L: Specialized for elevators | ④ | **Voltage Class**<br>20: Single-phase/ Three-phase 220 V<br>40: Three-phase 380 V | ⑥ | **N**<br>Compliance with New China National Standards | | |

NOTE

-(a): The model number may include a suffix "XXXXXXXXXX", where "XXXXXXXXXX" can be blank or combination of any alphanumeric and/or symbols that represents customer identity.

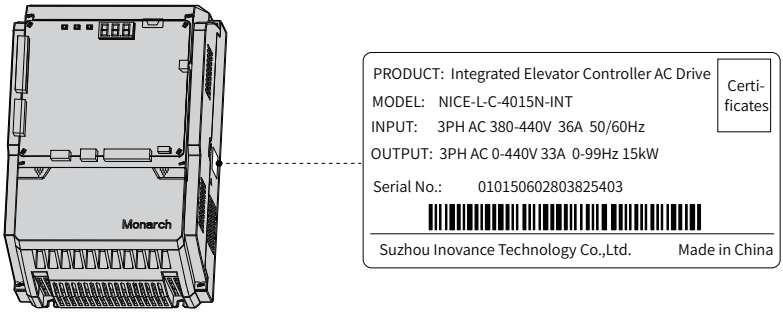



Figure 1-1 Nameplate

01015064 4 EB 00083
① ② ③ ④

| | |
|---|---|
| ① Equipment BOM | ③ Manufacturing year and month |
| ② Vendor code | ④ SN |

## 1.2 Ratings

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

| Controller Model | Power Capacity (kVA) | Input Current (A) | Output Current (A) | Motor Power (kW) |
|---|---|---|---|---|
| Single-phase 220 V, range: 220 V to 240 V, 50 Hz/60 Hz | | | | |
| NICE-L-C-2003 | 2.9 | 13.3 | 7.5 | 1.5 |
| 220-NICE-L-C-4007 | 3.9 | 17.9 | 10.3 | 2.2 |
| 220-NICE-L-C-4011 | 5.9 | 25.3 | 15.5 | 3.7 |
| 220-NICE-L-C-4015 | 7.3 | 31.3 | 19 | 4.0 |
| 220-NICE-L-C-4018 | 8.6 | 34.6 | 22.5 | 5.5 |
| 220-NICE-L-C-4018F | | | | |
| 220-NICE-L-C-4022 | 10.6 | 42.6 | 27.7 | 11 |
| 220-NICE-L-C-4022F | | | | |
| 220-NICE-L-C-4030 | 13.1 | 52.6 | 34.6 | 15 |
| 220-NICE-L-C-4030F | | | | |
| Three-phase 220 V, range: 220 V to 240 V, 50 Hz/60 Hz | | | | |
| NICE-L-C-2003 | 5.9 | 17.0 | 14.0 | 3.7 |
| 220-NICE-L-C-4007 | 7.0 | 20.5 | 18.0 | 4.0 |
| 220-NICE-L-C-4011 | 10.0 | 29.0 | 27.0 | 5.5 |
| 220-NICE-L-C-4015 | 12.6 | 36.0 | 33.0 | 7.5 |
| 220-NICE-L-C-4018 | 15.0 | 41.0 | 39.0 | 11.0 |
| 220-NICE-L-C-4018F | | | | |
| 220-NICE-L-C-4022 | 18.3 | 49.0 | 48.0 | 15.0 |
| 220-NICE-L-C-4022F | | | | |
| 220-NICE-L-C-4030 | 23.0 | 62.0 | 60.0 | 18.5 |
| 220-NICE-L-C-4030F | | | | |
| Three-phase 380 V, range: 380 V to 440 V, 50 Hz/60 Hz | | | | |
| NICE-L-C-4003N-INT | 5.9 | 10.5 | 9.0 | 3.7 |
| NICE-L-C-4005N-INT | 8.9 | 14.8 | 13.0 | 5.5 |
| NICE-L-C-4007N-INT | 11.0 | 20.5 | 18.0 | 7.5 |

| Controller Model | Power Capacity (kVA) | Input Current (A) | Output Current (A) | Motor Power (kW) |
|---|---|---|---|---|
| NICE-L-C-4011N-INT | 17.0 | 29.0 | 27.0 | 11.0 |
| NICE-L-C-4015N-INT | 21.0 | 36.0 | 33.0 | 15.0 |
| NICE-L-C-4018N-INT | 24.0 | 41.0 | 39.0 | 18.5 |
| NICE-L-C-4022N-INT | 30.0 | 49.5 | 48.0 | 22.0 |
| NICE-L-C-4030N-INT | 40.0 | 62.0 | 60.0 | 30.0 |
| NICE-L-C-4037N-INT | 57.0 | 77.0 | 75.0 | 37.0 |
| NICE-L-C-4045N-INT | 69.0 | 93.0 | 91.0 | 45.0 |
| NICE-L-C-4055F | 85.0 | 113.0 | 112.0 | 55.0 |
| NICE-L-C-4075F | 114.0 | 157.5 | 150.0 | 75.0 |
| NICE-L-C-4090F | 134.0 | 180.0 | 176.0 | 90.0 |
| NICE-L-C-4110F | 160.0 | 214.0 | 210.0 | 110.0 |
| NICE-L-C-4132F | 192.0 | 256.0 | 253.0 | 132.0 |
| NICE-L-C-4160F | 231.0 | 307.0 | 304.0 | 160.0 |

## 1.3 Technical Specifications

**Table 1-2 NICE3000$^{new}$ controller technical specifications**

| Item | | Specification |
|---|---|---|
| Power supply | Phases, voltage, frequency | 200 V class: single-phase 180 VAC to 240 VAC, 50 Hz/60 Hz |
| | | 380 V class: three-phase 330 VAC to 440 VAC, 50 Hz/60 Hz |
| | | 480 V class: three-phase 440 VAC to 500 VAC, 50 Hz/60 Hz |
| | Voltage range | -15% to +10% |
| | Frequency range | -5% to +5% |
| | Instantaneous voltage dip allowed | 200 V:<br>Continuous running at above 150 VAC;<br>Undervoltage protection after 15 ms running at reduction from rated input to below 150 VAC<br>400 V:<br>Continuous running at above 300 VAC;<br>Undervoltage protection after 15 ms running at reduction from rated input to below 300 VAC |

| Item | | Specification |
|---|---|---|
| Basic features | Standard floors | 48 |
| | Elevator speed | ⩽ 10.00 m/s |
| | Number of elevators in group control | ⩽ 8 |
| | Communication method | CANbus |
| | Functions | See "Chapter 8 Function List" on Page 102. |
| Drive features | Motor control mode | Feedback vector control (FVC)<br>PG card required |
| | Startup torque | According to the load, maximum of 200% |
| | Speed adjustment range | 1:1000 (FVC) |
| | Speed stability accuracy | ±0.05% (FVC, 25±10°C ) |
| | Torque limit | 200% of rated torque |
| | Torque control accuracy | ±5% |
| | Frequency range | 0 Hz to 99 Hz |
| | Frequency accuracy | ±0.1% |
| | Frequency reference minimum unit | 0.01 Hz/99 Hz |
| | Output frequency minimum unit (for calculation) | 0.01 Hz |
| Drive features | No-load startup compensation | When the elevator load is unknown, the system outputs a proper torque to start the motor smoothly based on the elevator running direction, minimizing the instantaneous rollback and improving the riding comfort. |
| | Braking torque | 150% (external braking resistor), built-in braking unit |
| | Acceleration/ Deceleration time | 0.1s to 8s |
| | Carrier frequency | 2 kHz to 16 kHz |
| | Power supply from battery | At power failure, the elevator runs to the nearest leveling area at low speed with power supply from the battery. |
| PG interface | PG card types | Open-collector, push-pull, SIN/COS, Endat absolute |
| | PG card signal frequency-division output | OA, OB orthogonal |

| Item | | Specification |
|---|---|---|
| Input/ Output signal | Optocoupler input control power | Isolated 24 VDC |
| | Low-voltage optocoupler isolated input | 24 DIs, optocoupler control signal is isolated 24 VDC power input |
| | High-voltage optocoupler isolated input | 4 DIs |
| | Relay output | 6 normally-open contacts, single-pole single-throw 5A contact switching capacity, contact load (resistance): 5 A, 250 VAC, or 5 A, 28 VDC |
| | USB interface | Commissioning with mobile phone |
| | CAN communication port | 2 (CTB communication, parallel control or group control) |
| | Modbus communication | 2 (HCB communication, community monitoring or IoT) |
| | Analog input terminal | 1 single-end or differential input, input voltage range: -10 V to +10 V, accuracy 0.1% |

| Item | | Specification |
|---|---|---|
| Protection functions | Motor overload protection | Motor protection curve set in parameters |
| | AC drive overload protection | 60s for 150% of rated current, 2s for 200% of rated current |
| | Short-circuit protection | Controller protection at occurrence of overcurrent due to any two phases of UVW are short-circuited |
| | Input phase loss protection | Output disabled at input phase loss |
| | Output phase loss protection | Output disabled at output phase loss |
| | Overvoltage threshold | Bus voltage 800 V(380 V models), 400 V (220 V models) |
| | Undervoltage threshold | Bus voltage 350 V(200 V models), 150 V (220 V models) |
| | Instantaneous power failure compensation | Above 15 ms protection |
| | Heatsink overheat | Protection with thermistor |
| | Stall prevention | Protection at speed deviation exceeding 15% of the rated speed during running |
| | Pulse encoder fault | PG card wire-breaking |
| | Braking unit protection | Automatic detection and protection at braking unit abnormality |
| | IGBT protection | Overcurrent, short-circuit, overheat protection |
| | Current sensor protection | Self-check at power-on |
| | Protection at input voltage excessive | Detection of voltage exceeding 725 V for 400 V models, and exceeding 360 V for 200 V models |

| Item | | Specification |
|---|---|---|
| Protection functions | Protection of output short-circuited to ground | Output disabled when any phase is short-circuited to ground during running |
| | Output imbalance protection | Output disabled when imbalance between the UVW phases is detected |
| | Braking resistor short-circuit protection | Detection during braking |
| | Speed abnormality protection | Speed detection by encoder, protection at different running stages (acceleration, deceleration, and constant speed) |
| | Running time limit | Protection when the running time at a certain floor exceeds the limit |
| | Leveling switch fault protection | Protection at fault of leveling switch |
| | EEPROM fault | Self-check at power-on |
| Display | Keypad | 3-digit LED display, providing certain commissioning functions |
| | Operating panel | 5-digit LED display, viewing and modifying most parameters and monitoring system state |
| | Mobile phone commissioning | Viewing and changing system state |
| Environment | Ambient temperature | -10°C to 40°C (de-rated if the ambient temperature is above 40°C , maximum temperature: 50°C ) |
| | Humidity | Maximum relative humidity 95%, non-condensing |
| | Vibration | < 5.9 $m/s^2$ (0.6g) |
| | Storage temperature | -–20°C to 60°C (temperature during transportation) |
| | Location | Indoor (no corrosive gas or dust) |
| | Pollution degree | PD2 |
| | Power supply system | TN/TT |
| | Altitude | Below 1000 m (de-rated 1% for each 100 m higher) |
| Structure | Ingress protection | IP20 |
| | Cooling method | Forced air cooling |
| | Mounting method | Cabinet installation |

# 1.4 Components

## 1.4.1 Plastic Structure

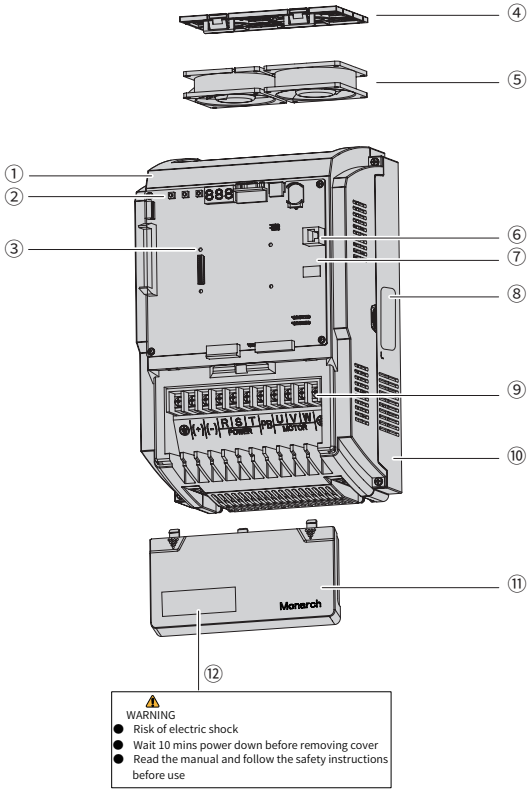



**Figure 1-2 Component view of the plastic structure (NICE-L-C-4003N-INT to NICE-L-C-4015N-INT)**

| No. | Name | No. | Name |
|---|---|---|---|
| ① | Equipment bar code | ⑦ | Control board |
| ② | Keypad | ⑧ | Nameplate |
| ③ | Holes for fixing the PG card ×4 | ⑨ | Main circuit and grounding terminal |
| ④ | Fan cover | ⑩ | Enclosure |
| ⑤ | Cooling fan | ⑪ | Terminal cover |
| ⑥ | Interface for external operating panel | ⑫ | Warning sign |

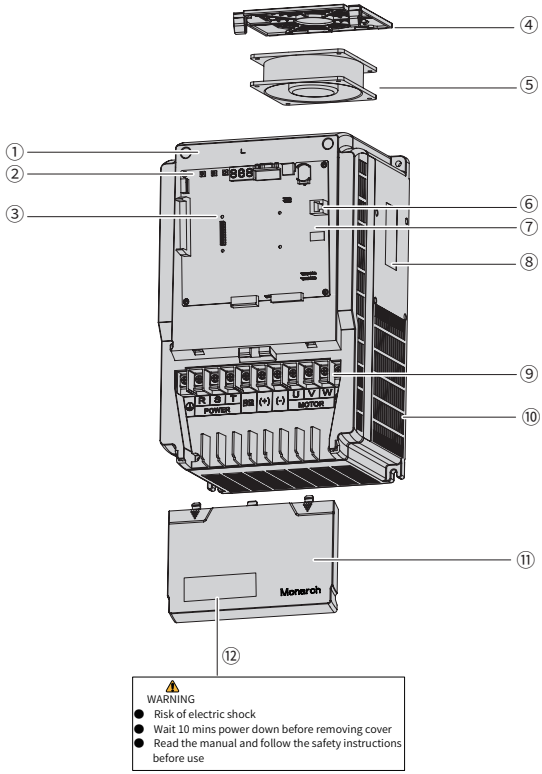



**Figure 1-3 Component view of the plastic structure (NICE-L-C-4018N-INT to NICE-L-C-4037N-INT)**

| No. | Name | No. | Name |
|---|---|---|---|
| ① | Equipment bar code | ⑦ | Control board |
| ② | Keypad | ⑧ | Nameplate |
| ③ | Holes for fixing the PG card ×4 | ⑨ | Main circuit and grounding terminal |
| ④ | Fan cover | ⑩ | Enclosure |
| ⑤ | Cooling fan | ⑪ | Terminal cover |
| ⑥ | Interface for external operating panel | ⑫ | Warning sign |

### 1.4.2 Sheet Metal Structure

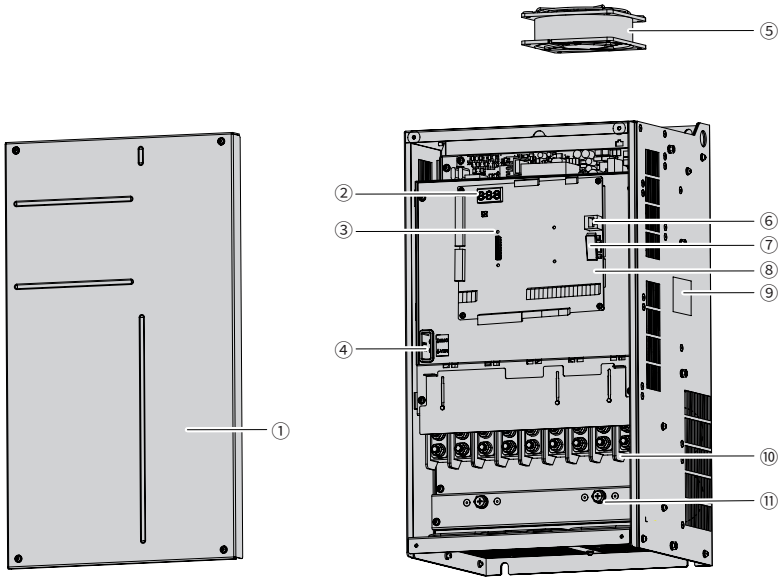



**Figure 1-4 Component view of the sheet metal structure (NICE-L-C-4045N-INT to NICE-L-C-4055F)**

| No. | Name | No. | Name |
|---|---|---|---|
| ① | Front plate | ⑦ | Software programming interface |
| ② | Keypad | ⑧ | Control board |
| ③ | Holes for fixing the PG card | ⑨ | Nameplate |
| ④ | Grounding screws for safety capacitor and voltage dependent resistor | ⑩ | Main circuit and cable connection terminal |
| ⑤ | Fan | ⑪ | Grounding screw |
| ⑥ | Interface for external operating panel | - | - |

# Chapter 2 System Overview

The integrated elevator controller is at the core of the elevator control system, integrating the functional features for both elevator control and the high- performance vector control. It mainly includes the integrated elevator controller, car top board (MCTC-CTB), hall call board (MCTC-HCB), car call board (MCTC-CCB), and optional advance door opening module and remote monitoring system.

## 2.1 System Configuration

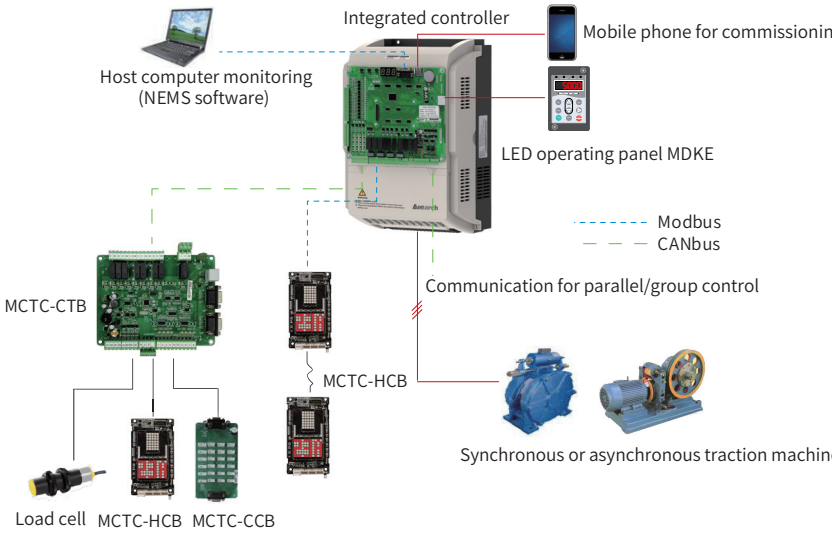



**Figure 2-1 System components**

The controller controls the motor based on feedback signals from the encoder, and records information of all position switches in the shaft by pulse. This helps ensure accurate leveling, direct travel ride, and running safety.

MCTC-CTB controls and collects information about car-related components and communicates by means of CANbus with the controller.

MCTC-HCB registers and displays hall calls of all floors with easy address setting and communicates by means of Modbus with the controller.

## 2.2 System Schematic Diagram

The following figure shows the system working principle.

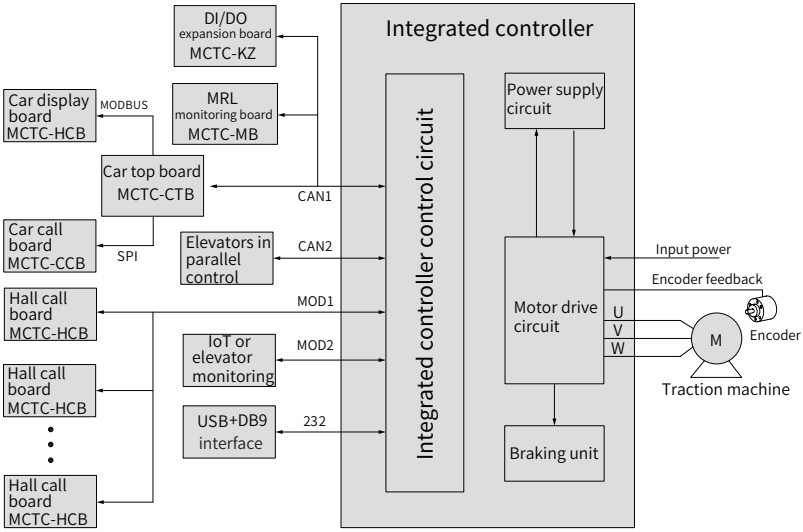



**Figure 2-2 System schematic diagram**

## 2.3 System Components

When using the product, install electrical components on both input and output sides to ensure system safety and stability.

The following figure shows the recommended system configuration.

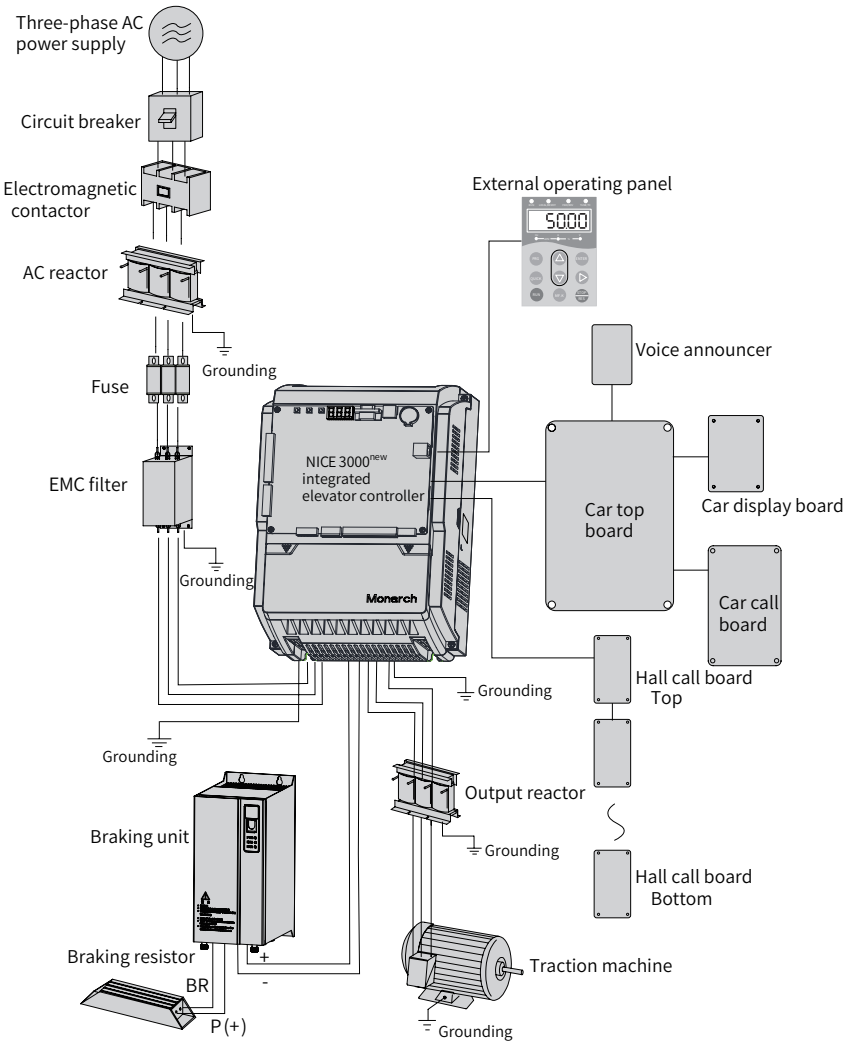



**Figure 2-3 Peripheral components connnection**

**Table 2-1 Peripheral components details**

| Name | Mounting location | Description |
|---|---|---|
| Circuit breaker | Between power supply and controller input side | Short circuit protection: Cut off power supply when overcurrent occurs on downstream devices. |
| | | Residual current protection: Provide protection against potential leakage current during controller running to prevent electric shock and even a fire (Use recommended RCD brands like CHINT and SCHNEIDER). |
| Electromagnetic contactor | Between air switch and controller input side | Switch on/off the power supply of the controller. Do not start or stop the controller frequently through the contactor (less than twice per minute) nor use it to directly start the controller. |
| AC reactor | Controller input side | Improve the power factor of the input side.<br>Eliminate the harmonics of the input side effectively and prevent other devices from being damaged due to distortion of the voltage waveform.<br>Eliminate the input current unbalance due to power supply inter-phase unbalance. |
| Fuse | Between power supply and controller input side | Provide protection against short circuit and protect downstream semiconductor components. |
| EMC filter | Controller input side | Reduce conduction and radiation interference generated by the controller.<br>Decrease conduction interference from the power supply to the controller and improve the anti-interference capacity of the controller. |
| Braking resistor | F-type models below 75 kW | F-type models 75 kW and below<br>Consume regenerative energy during motor deceleration. |
| Braking unit | F-type models 75 kW and above | Use Inovance MDBUN and recommended braking resistor.<br>Consume regenerative energy during motor deceleration. |

| Name | Mounting location | Description |
|---|---|---|
| Output reactor | Between controller output side and the motor, close to the controller | There are generally a lot of harmonics on the controller output side. When the motor is far from the controller, there is much distributed capacitance in the circuit and certain harmonics may cause resonance in the circuit, bringing about the following two impacts:<br>Degrade the motor insulation performance and damage the motor in the long run.<br>Generate large leakage current and cause frequent controller protection trips.<br>If the distance between the controller and the motor is greater than 100 m, install an AC output reactor. |
| Dv/dt reactor | On the controller output side, close to the controller | Provide motor insulation protection and reduce the bearing current. |
| Common mode filter | On the controller output side, close to the controller | Reduce the bearing current. |
| Motor | Controller output side | Select a proper motor according to recommendations. |
| DC reactor | For F-type models of 30 kW and above, DC reactor is the standard option. | Improve the power factor of the input side. Improve efficiency and thermal stability of the controller.<br>Eliminate the impact of input side harmonics on the controller and reduce conduction and radiation interference generated by the controller. |



NOTE

- Do not install the capacitor or surge suppressor on the output side of the controller. Otherwise, it may cause controller faults or damage the capacitor and surge suppressor.
- Inputs/Outpus (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.

## 2.4 List of Options

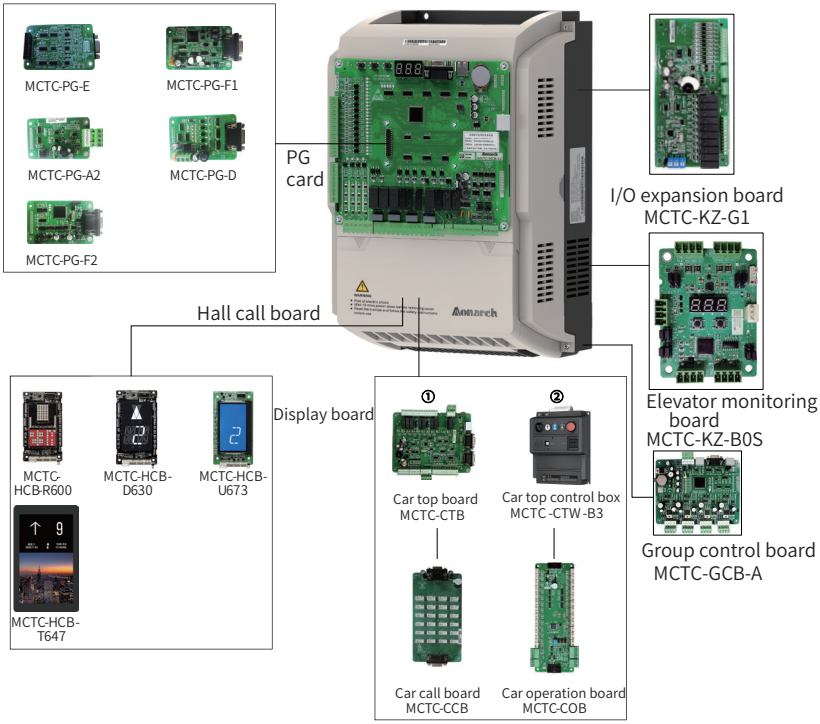



Figure 2-4 Options connection

Table 2-2 List of options

| Name | Model | Function |
|---|---|---|
| External braking unit | MDBUN | It is provided for the models above 75 kW |

| Name | Model | Function |
|---|---|---|
| PG card | MCTC-PG-A2 | Incremental encoder with push-pull/ open-collector encoder output |
| | MCTC-PG-D | Compatible with 5 V UVW/ABZ differential encoders |
| | MCTC-PG-E | Compatible with SIN/COS encoders (model: ERN1387/Weton SC53) |
| | MCTC-PG-F1 | Compatible with absolute encoders (Endat: ECN413/1313) |
| | MCTC-PG-F2 | Absolute encoder (Weton EA53) |
| Car top board (CTB) | MCTC-CTB | The MCTC-CTB is the car control board of the NICE3000$^{new}$. It has 8 DIs, 1 AI and 7 relay outputs (9 relay outputs for customization). It can communicate with the CCB and HCB simultaneously. |
| Car display board (HCB) | MCTC-HCB | The HCB receives the passenger calls and displays the floor where the elevator is located and the running direction. It can also be used as car display board. |
| Car call board (CCB) | MCTC-CCB | The MCTC-CCB is another interface for passengers to interact with the control system. It mainly collects the car calls and outputs the call indicator state. |
| Integrated car top control wiring box | MCTC-CTW-B3 | It integrates the car top interface board, car top board (CTB), car top inspection, intercom and lighting. |
| Car operating board | MCTC-COB | It is an RS485 communication board, used in conjunction with the car top inspection box. It integrates 24 button inputs and 20 button indicator outputs. In addition, it has a voice intercom interface and supports expansion card. |
| Group control board | MCTC-GCB-A | It is used together with the integrated controller to implement group control of up to 8 elevators. |
| I/O expansion card | MCTC-KZ-G1 | When the input/output terminals of the MCB or HCB are insufficient, this card can be used to provide more terminals. |

| Name | Model | Function |
|---|---|---|
| Elevator monitoring board | MCTC-KZ-B0S | It is used to check information (elevator running state, current floor, faults and so on), and send it to the monitoring room. Users can monitor and control the elevator by using the PC installed with the monitoring software. |
| External LED operating panel | MDKE | The external LED operating panel is connected through an RJ45 interface. |
| Extension cable | MDCAB | It is a standard 8-conductor cable and can be connected to MDKE and MDKE6. The standard cable length is 3 m. |

# Chapter 3 Selection of Options

## 3.1 Selection of the Cable, Circuit Breaker and Contactor

See the following table for I/O cable, circuit breaker, and electromagnetic contactor selection.

**Table 3-1 Recommended peripheral component selection of the NICE3000new integrated elevator controller**

| Controller Model | UL certified Bussmann FWH Fuse | Circuit Breaker (A) | Contactor (A) | Main Circuit Cables ($mm^2$) | Control Cable ($mm^2$) | Grounding Cable ($mm^2$) |
|---|---|---|---|---|---|---|
| Single-phase 220 V, range: 220 V to 240 V, 50 Hz/60 Hz | | | | | | |
| NICE-L-C-2003 | FWH-35B | 20 | 18 | 2.5 | 0.75 | 2.5 |
| 220-NICE-L-C-4007 | FWH-35B | 25 | 18 | 2.5 | 0.75 | 2.5 |
| 220-NICE-L-C-4011 | FWH-40B | 40 | 25 | 4 | 0.75 | 4 |
| 220-NICE-L-C-4015 | FWH-50B | 50 | 32 | 6 | 0.75 | 6 |
| 220-NICE-L-C-4018 | FWH-60B | 50 | 38 | 6 | 0.75 | 6 |
| 220-NICE-L-C-4018F | | | | | | |
| 220-NICE-L-C-4022 | FWH-70B | 63 | 50 | 10 | 0.75 | 10 |
| 220-NICE-L-C-4022F | | | | | | |
| 220-NICE-L-C-4030 | FWH-80B | 80 | 65 | 16 | 0.75 | 16 |
| 220-NICE-L-C-4030F | | | | | | |
| Three-phase 220 V, range of 220 V to 240 V, 50 Hz/60 Hz | | | | | | |
| NICE-L-C-2003 | FWH-35B | 25 | 18 | 2.5 | 0.75 | 2.5 |
| 220-NICE-L-C-4007 | FWH-35B | 32 | 25 | 2.5 | 0.75 | 2.5 |
| 220-NICE-L-C-4011 | FWH-45B | 40 | 32 | 4 | 0.75 | 4 |
| 220-NICE-L-C-4015 | FWH-60B | 50 | 38 | 6 | 0.75 | 6 |
| 220-NICE-L-C-4018 | FWH-70B | 63 | 40 | 10 | 0.75 | 10 |
| 220-NICE-L-C-4018F | | | | | | |
| 220-NICE-L-C-4022 | FWH-80B | 80 | 50 | 10 | 0.75 | 10 |
| 220-NICE-L-C-4022F | | | | | | |
| 220-NICE-L-C-4030 | FWH-125B | 80 | 65 | 16 | 0.75 | 16 |
| 220-NICE-L-C-4030F | | | | | | |
| Three-phase 380 V, range of 380 V to 440 V, 50 Hz/60 Hz | | | | | | |
| NICE-L-C-4003N-INT | FWH-35B | 16 | 12 | 2.5 | 0.75 | 2.5 |
| NICE-L-C-4005N-INT | FWH-35B | 25 | 18 | 2.5 | 0.75 | 2.5 |
| NICE-L-C-4007N-INT | FWH-35B | 32 | 25 | 2.5 | 0.75 | 2.5 |
| NICE-L-C-4011N-INT | FWH-45B | 40 | 32 | 4 | 0.75 | 4 |

| Controller Model | UL certified Bussmann FWH Fuse | Circuit Breaker (A) | Contactor (A) | Main Circuit Cables ($mm^2$) | Control Cable ($mm^2$) | Grounding Cable ($mm^2$) |
|---|---|---|---|---|---|---|
| NICE-L-C-4015N-INT | FWH-60B | 50 | 38 | 6 | 0.75 | 6 |
| NICE-L-C-4018N-INT | FWH-70B | 63 | 40 | 10 | 0.75 | 10 |
| NICE-L-C-4022N-INT | FWH-80B | 80 | 50 | 10 | 0.75 | 10 |
| NICE-L-C-4030N-INT | FWH-100B | 100 | 65 | 16 | 0.75 | 16 |
| NICE-L-C-4037N-INT | FWH-125B | 100 | 80 | 25 | 0.75 | 16 |
| NICE-L-C-4045N-INT | FWH-150B | 160 | 95 | 35 | 0.75 | 16 |
| NICE-L-C-4055F | FWH-200B | 160 | 115 | 50 | 0.75 | 25 |
| NICE-L-C-4075F | FWH-275A | 225 | 170 | 70 or 2 × 25 | 0.75 | 35 |
| NICE-L-C-4090F | FWH-300A | 250 | 205 | 95 or 2 × 35 | 0.75 | 50 |
| NICE-L-C-4110F | FWH-350A | 315 | 245 | 120 or 2 × 50 | 0.75 | 60 |
| NICE-L-C-4132F | FWH-400A | 350 | 300 | 120 or 2 × 50 | 0.75 | 60 |
| NICE-L-C-4160F | FWH-500A | 400 | 300 | 150 | 0.75 | 75 |

## 3.2 Selection of the AC Input Reactor

The AC input reactor is an option used to reduce the harmonics of the input current. It can be installed externally in applications with strict harmonics requirements. The recommended Inovance AC input reactor models are listed in the following table.

Table 3-2 Recommended AC input reactor models

| Controller Model | Rated Input Current (A) | Inovance AC Input Reactor Model |
|---|---|---|
| Three-phase 380 V, range: 380 V to 440 V | | |
| NICE-L-C-4003N-INT | 10.5 | MD-ACL-10-2.8-4T-4% |
| NICE-L-C-4005N-INT | 14.8 | MD-ACL-15-1.9-4T-4% |
| NICE-L-C-4007N-INT | 20.5 | MD-ACL-20-1.4-4T-4% |
| NICE-L-C-4011N-INT | 29.0 | MD-ACL-30-0.93-4T-4% |
| NICE-L-C-4015N-INT | 36.0 | MD-ACL-40-0.7-4T-4% |
| NICE-L-C-4018N-INT | 41.0 | MD-ACL-50-0.56-4T-4% |
| NICE-L-C-4022N-INT | 49.5 | MD-ACL-50-0.56-4T-4% |
| NICE-L-C-4030N-INT | 62.0 | MD-ACL-60-0.24-4T-2% |
| NICE-L-C-4037N-INT | 77.0 | MD-ACL-90-0.16-4T-2% |
| NICE-L-C-4045N-INT | 93.0 | MD-ACL-120-0.12-4T-2% |
| NICE-L-C-4055F | 113.0 | MD-ACL-150-0.095-4T-2% |
| NICE-L-C-4075F | 157.5 | MD-ACL-200-0.07-4T-2% |
| NICE-L-C-4090F | 180.0 | MD-ACL-250-0.056-4T-2% |
| NICE-L-C-4110F | 214.0 | MD-ACL-250-0.056-4T-2% |
| NICE-L-C-4132F | 240.0 | MD-ACL-330-0.042-4T-2% |
| NICE-L-C-4160F | 287.0 | MD-ACL-330-0.042-4T-2% |

### 3.2.1 Designation Rule

$$\underset{①}{\text{MD-ACL}} - \underset{②}{50} - \underset{③}{0.56} - \underset{④}{4T} - \underset{⑤}{4\%}$$

| | | |
|---|---|---|
| ① **Product Name**<br>MD-ACL: Inovance AC input reactor | ③ **Inductance**<br>0.56: 0.56 mH | ⑤ **Voltage Drop**<br>4% |
| ② **Rated Current**<br>50: 50 A | ④ **Rated Voltage**<br>4T: 380 V | |

### 3.2.2 Outline Dimensions

#### 1 Dimensions of AC input reactor 7 A to 10 A

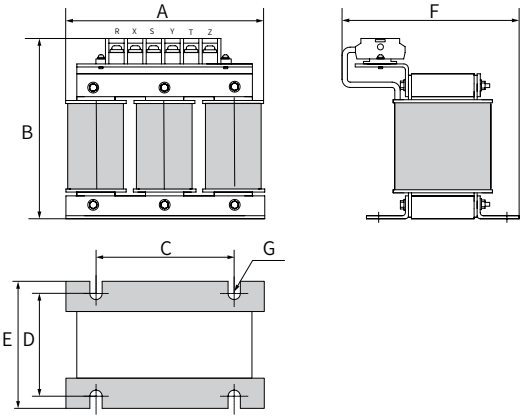



Figure 3-1 Dimensions of AC input reactor 7 A to 10 A

Table 3-3 Dimensions of AC input reactor 7 A to 10 A (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 7 | 155max | 175max | 95±0.5 | 61±2.0 | 76±2.0 | 110max | Φ6 × 15 |
| 10 | 155max | 175max | 95±0.5 | 80±2.0 | 95±2.0 | 130max | Φ6 × 15 |

## 2 Dimensions of AC input reactor 15 A to 50 A

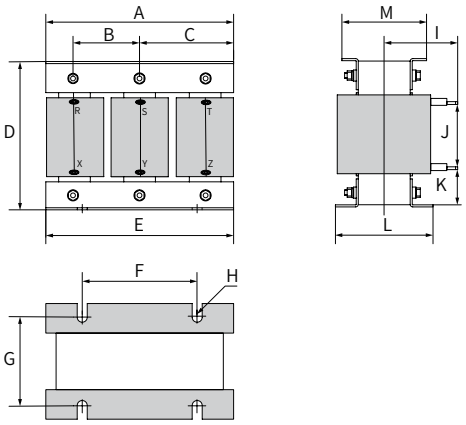



Figure 3-2 Dimensions of AC input reactor 15 A to 50 A

Table 3-4 Dimensions of AC input reactor 15 A to 50 A (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 195max | 64 | 94 | 165max | 188 | 120±1 | 97±2 | Φ8.5 × 20 | 100±10 | 75±5 | 35±5 | 125max | 100max |
| 20 | 195max | 64 | 94 | 165max | 188 | 120±1 | 97±2 | Φ8.5 × 20 | 100±10 | 75±5 | 35±5 | 125max | 100max |
| 30 | 195max | 64 | 94 | 165max | 188 | 120±1 | 102±2 | Φ8.5 × 20 | 100±10 | 75±5 | 35±5 | 130max | 105max |
| 40 | 195max | 64 | 94 | 165max | 188 | 120±1 | 102±2 | Φ8.5 × 20 | 100±10 | 75±5 | 35±5 | 130max | 105max |
| 50 | 195max | 64 | 94 | 185max | 188 | 120±1 | 107±2 | Φ8.5 × 20 | 105±10 | 85±5 | 45±5 | 135max | - |

### 3 Dimensions of 60 A AC input reactor

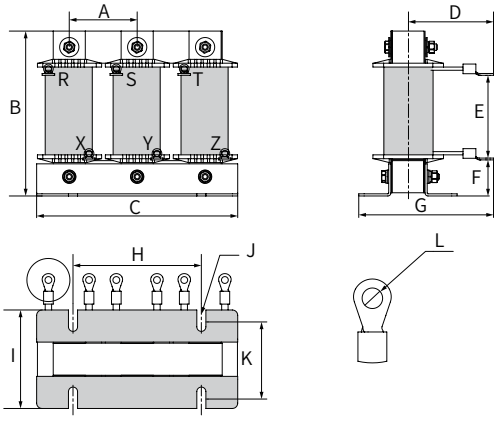



Figure 3-3 Dimensions of 60 A AC input reactor

Table 3-5 Dimensions of 60 A AC input reactor (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60 | 64 | 160 | 195 | 80±10 | 75±5 | 35±5 | 135 | 120±1 | 92±2 | Φ8.5 × 20 | 72±2 | Φ6.4 |

### 4 Dimensions of AC input reactor 90 A to 120 A

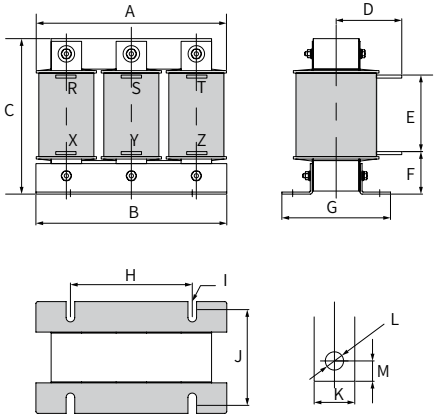



Figure 3-4 Dimensions of AC input reactor 90 A to 120 A

Table 3-6 Dimensions of AC input reactor 90 A to 120 A (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90 | 195 | 188±1 | 160 | - | - | - | 150 | 120±1 | Φ8.5 × 20 | 72±2 | - | - | - |
| 120 | 195 | 188±1 | 160 | 78±10 | 79±5 | 40±5 | 135 | 120±1 | Φ8.5 × 20 | 92±2 | 20 | Φ9 | 10 |

## 5 Dimensions of AC input reactor 150 A to 330 A

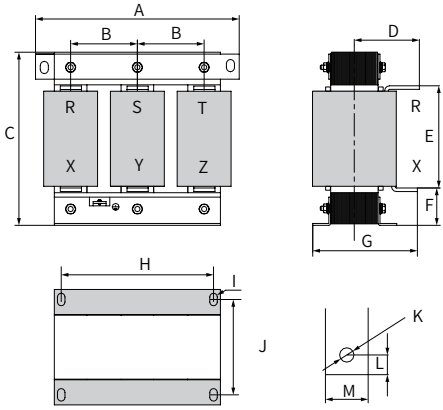



Figure 3-5 Dimensions of AC input reactor 150 A to 330 A

Table 3-7 Dimensions of AC input reactor 150 A to 330 A (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 150 | 250 | 81±5 | 230 | 92±10 | 145±5 | 38±5 | 155 | 182±1 | Φ11 × 18 | 76±2 | Φ11 | 13 | 25 |
| 200 | 250 | 81±5 | 230 | 102±10 | 145±5 | 40±5 | 175 | 182±1 | Φ11 × 18 | 96±2 | Φ11 | 13 | 25 |
| 250 | 250 | 81±5 | 260 | 102±10 | 160±5 | 50±5 | 175 | 182±1 | Φ11 × 18 | 96±2 | Φ11 | 13 | 25 |
| 330 | 290 | 95±5 | 275 | 107±10 | 160±5 | 60±5 | 180 | 214±1 | Φ11 × 18 | 100±2 | Φ12 | 15 | 30 |

### 6 AC input reactor 490 A to 660 A

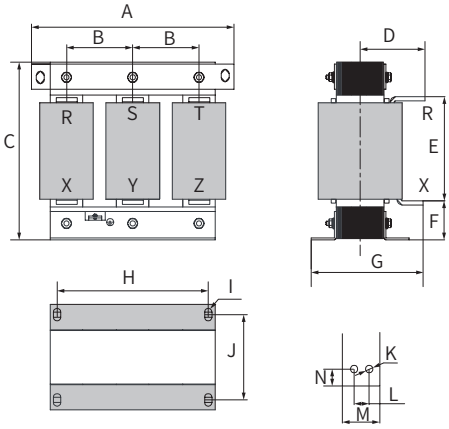



Figure 3-6 Dimensions of AC input reactor 490 A to 660 A

Table 3-8 Dimensions of AC input reactor 490 A to 660 A (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 490 | 320 | 106±1 | 305 | 137±10 | 198±5 | 60±5 | 220 | 243±1 | Φ12 × 20 | 122±2 | Φ12 | 22 | 50 | 23 |
| 660 | 320 | 106±1 | 305 | 145±10 | 203±5 | 50±5 | 240 | 243±1 | Φ12 × 20 | 137±2 | Φ12 | 22 | 50 | 23 |

NOTE

The dimensions provided here are for reference only. Actual product may vary.

## 3.3 Selection of the EMC Filter

NOTE

- Select a cable as short as possible to connect the filter and the controller. The cable length must be less than 30 cm.
- Make sure to connect the filter and the controller to the same grounding reference surface for reliable grounding of the filter. Otherwise, the desired filtering effect will not be achieved.

### 3.3.1 Standard EMC Filter

Standard EMC filters meet the emission requirements of category C2 specified in EN61800-3 and EN12015. The filter must be grounded reliably and the cable connecting the filter and the controller must be shorter than 30 cm. See""Table 2-1 Peripheral components details" on Page 24.

The following figure shows the appearance of the filter.



SCHAFFNER FN3258 filter



SCHAFFNER FN3359 filter



JIANLI filter

**Figure 3-7 Standard EMC filter appearance**

SCHAFFNER and JIANLI filters are recommended, as listed in the following table.

Table 3-9 Recommended manufacturers and models for EMC input filter

| Controller Model | Power capacity (kVA) | Rated input current (A) | AC input filter model (JIANLI) | AC input filter model (SCHAFFNER) |
|---|---|---|---|---|
| Single-phase 220 V, range: 220 V to 240 V | | | | |
| NICE-L-C-2003 | 3.2 | 13.3 | DL-20TH1 | FN 2090-20-06 |
| 220-NICE-L-C-4007 | 4.5 | 17.9 | DL-25EBK5 | FN 3258-30-33 |
| 220-NICE-L-C-4011 | 6.7 | 25.3 | DL-35EBK5 | FN 3258-30-33 |
| 220-NICE-L-C-4015 | 7.6 | 31.3 | DL-35EBK5 | FN 3258-42-33 |
| 220-NICE-L-C-4018 | 10 | 34.6 | DL-50EBK5 | FN 3258-42-33 |
| 220-NICE-L-C-4018F | | | | |
| 220-NICE-L-C-4022 | 18 | 42.6 | DL-50EBK5 | FN 3258-55-34 |
| 220-NICE-L-C-4022F | | | | |
| 220-NICE-L-C-4030 | 20 | 52.6 | DL-65EBK5 | FN 3258-55-34 |
| 220-NICE-L-C-4030F | | | | |
| Three-phase 220 V, range: 220 V to 240 V | | | | |
| NICE-L-C-2003 | 6.9 | 17 | DL-25EBK5 | FN 3258-30-33 |
| 220-NICE-L-C-4007 | 7.6 | 20.5 | DL-25EBK5 | FN 3258-30-33 |
| 220-NICE-L-C-4011 | 10.2 | 29 | DL-35EBK5 | FN 3258-30-33 |
| 220-NICE-L-C-4015 | 13.5 | 36 | DL-50EBK5 | FN 3258-42-33 |
| 220-NICE-L-C-4018 | 19.5 | 41 | DL-50EBK5 | FN 3258-42-33 |
| 220-NICE-L-C-4018F | | | | |
| 220-NICE-L-C-4022 | 25 | 49 | DL-50EBK5 | FN 3258-55-34 |
| 220-NICE-L-C-4022F | | | | |
| 220-NICE-L-C-4030 | 28.5 | 62 | DL-65EBK5 | FN 3258-75-34 |
| 220-NICE-L-C-4030F | | | | |
| Three-phase 380 V, range: 380 V to 440 V | | | | |
| NICE-L-C-4003N-INT | 8 | 10.5 | DL-16EBK5 | FN 3258-16-44 |
| NICE-L-C-4005N-INT | 11.5 | 14.8 | DL-16EBK5 | FN 3258-16-44 |
| NICE-L-C-4007N-INT | 15 | 20.5 | DL-25EBK5 | FN 3258-30-33 |
| NICE-L-C-4011N-INT | 22 | 29 | DL-35EBK5 | FN 3258-30-33 |
| NICE-L-C-4015N-INT | 29.7 | 36 | DL-50EBK5 | FN 3258-42-33 |
| NICE-L-C-4018N-INT | 37.6 | 41 | DL-50EBK5 | FN 3258-42-33 |
| NICE-L-C-4022N-INT | 45 | 49.5 | DL-50EBK5 | FN 3258-55-34 |
| NICE-L-C-4030N-INT | 53 | 62 | DL-65EBK5 | FN 3258-75-34 |
| NICE-L-C-4037N-INT | 40.8 | 77 | DL-80EBK5 | FN 3258-100-35 |
| NICE-L-C-4045N-INT | 52 | 93 | DL-100EBK5 | FN 3258-100-35 |
| NICE-L-C-4055F | 62.5 | 113 | DL-130EBK5 | FN 3258-130-35 |
| NICE-L-C-4075F | 83 | 157.5 | DL-160EBK5 | FN 3258-180-40 |

| Controller Model | Power capacity (kVA) | Rated input current (A) | AC input filter model (JIANLI) | AC input filter model (SCHAFFNER) |
|---|---|---|---|---|
| NICE-L-C-4090F | 97.5 | 180 | DL-200EBK5 | FN 3258-180-40 |
| NICE-L-C-4110F | 120 | 214 | DL-250EBK5 | FN 3270H-250-99 |
| NICE-L-C-4132F | 231 | 256 | DL-300EBK3 | FN 3270H-320-99 |
| NICE-L-C-4160F | 280 | 307 | DL-400EBK3 | FN 3270H-320-99 |

### 3.3.2 Simple EMC Filter

#### 1 Model Selection

The simple EMC filter effectively attenuates radio frequency noise from the power line and running controller. For the equipment using a residual current device (RCD), the simple EMC filter fixed at the input side of the controller can also help control the possible RCD malfunction.

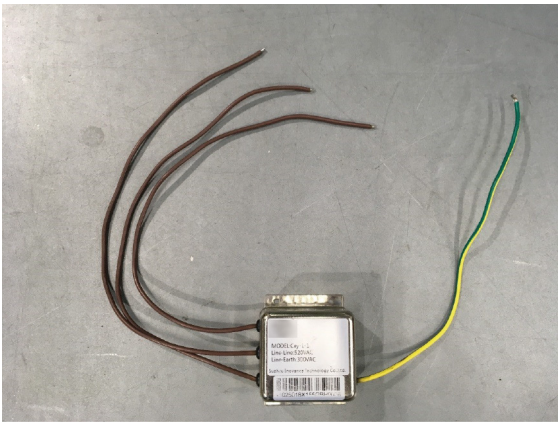


Figure 3-8 Simple filter

#### 2 Dimensions

Ground the simple filter reliably and ensure that the cable connecting the filter and the controller is shorter than 30 cm. Its grounding terminal must be connected to the PE terminal of the controller, and the grounding cable must be as short as possible (below 30 cm).

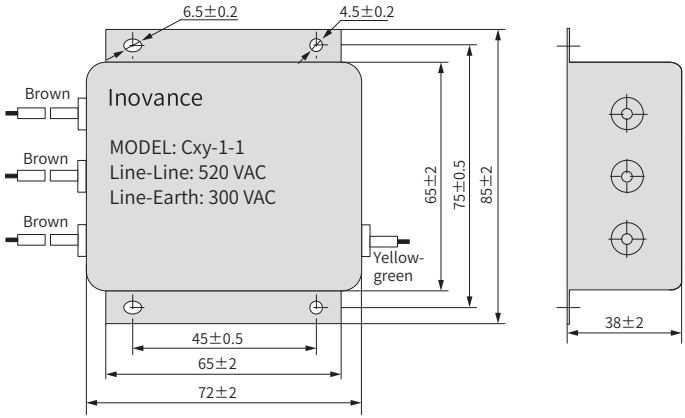
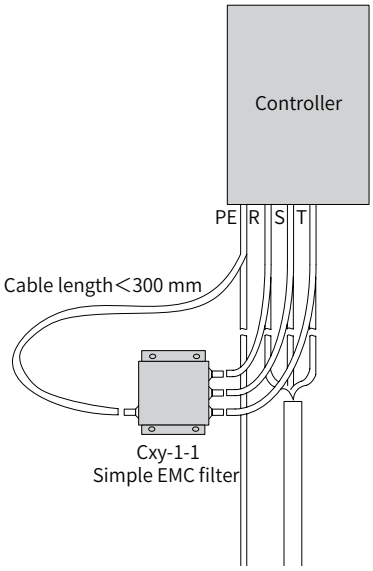



**Figure 3-9 Outline dimensions of the simple filter (unit: mm)**

**3 Installation**




## 3.4 Braking Components

### 3.4.1 Selection of Braking Resistor Resistance

During braking, almost all regenerative energy of the motor is consumed by the braking resistor. The resistance is calculated by the equation:

$$U \times U/R = Pb$$

- U: Braking voltage for stable system braking (The U value varies with the system. The default braking voltage of the NICE3000new is 760 V, which can be adjusted by F9-08.)
- Pb: Braking power.

### 3.4.2 Selection of Braking Resistor Power

In theory, power of the braking resistor is the same as the braking power. However, consideration must be given to the derating factor K. The following equation can be used:

$$K \times Pr = Pb \times D$$

- K: Set to approximately 50%
- Pr: Power of the braking resistor
- D: Braking frequency (percentage of the regenerative process out of the whole motor working process)

From the two equations, it can be deduced that:

$$K \times Pr = Pb \times D = U \times U/R \times D$$

$$Pr = (U \times U \times D)/(R \times K)$$

You can then calculate the power of the braking resistor.

K is the derating factor of the braking resistor. A low K ensures that the braking resistor does not overheat. You can increase K properly in case of good heat dissipation of the braking resistor. Make sure that K does not exceed 50%. Otherwise, the braking resistor will overheat, which may cause fire.

The braking frequency D may vary with the actual applications. The following table shows the typical values.

**Table 3-10 Typical values of braking frequency in different applications**

| Application | Elevator | Winding and unwinding | Centrifugal fan | Occasional braking load | General application |
|---|---|---|---|---|---|
| Braking frequency | 20% to 30% | 20% to 30% | 50% to 60% | 5% | 10% |

### 3.4.3 Selection Guide of the Braking Resistor

Table 3-11 Selection of braking components of the NICE3000$^{new}$ controller

| Controller Model | Motor power (kW) | Max. resistance (Ω) | Min. resistance (Ω) | Power (W) | Braking unit |
|---|---|---|---|---|---|
| Single-phase 220, range: 220 V to 240 V | | | | | |
| NICE-L-C-2003 | 1.5 | 105 | 90 | 450 | Built-in |
| 220-NICE-L-C-4007 | 2.2 | 72 | 63 | 600 | |
| 220-NICE-L-C-4011 | 3.7 | 43 | 37 | 1100 | |
| 220-NICE-L-C-4015 | 4 | 40 | 35 | 1200 | |
| 220-NICE-L-C-4018 | 5.5 | 29 | 25 | 1600 | |
| 220-NICE-L-C-4018F | | | | | |
| 220-NICE-L-C-4022 | 11 | 18 | 16 | 3500 | |
| 220-NICE-L-C-4022F | | | | | |
| 220-NICE-L-C-4030 | 15 | 13 | 13 | 4500 | |
| 220-NICE-L-C-4030F | | | | | |
| Three-phase 220 V, range: 220 V to 240 V | | | | | |
| NICE-L-C-2003 | 3.7 | 54 | 50 | 1100 | Built-in |
| 220-NICE-L-C-4007 | 4 | 40 | 35 | 1200 | |
| 220-NICE-L-C-4011 | 5.5 | 29 | 25 | 1600 | |
| 220-NICE-L-C-4015 | 7.5 | 26 | 22 | 2500 | |
| 220-NICE-L-C-4018 | 11 | 14.5 | 13 | 3500 | |
| 220-NICE-L-C-4018F | | | | | |
| 220-NICE-L-C-4022 | 15 | 13 | 12.5 | 4500 | |
| 220-NICE-L-C-4022F | | | | | |
| 220-NICE-L-C-4030 | 18.5 | 12.5 | 12 | 5500 | |
| 220-NICE-L-C-4030F | | | | | |

| Controller Model | Motor power (kW) | Max. resistance (Ω) | Min. resistance (Ω) | Power (W) | Braking unit |
|---|---|---|---|---|---|
| Three-phase 380 V, range: 380 V to 440 V | | | | | |
| NICE-L-C-4003N-INT | 3.7 | 170 | 135 | 1100 | Built-in |
| NICE-L-C-4005N-INT | 5.5 | 115 | 90 | 1600 | |
| NICE-L-C-4007N-INT | 7.5 | 85 | 65 | 2500 | |
| NICE-L-C-4011N-INT | 11 | 55 | 43 | 3500 | |
| NICE-L-C-4015N-INT | 15 | 43 | 35 | 4500 | |
| NICE-L-C-4018N-INT | 18.5 | 34 | 25 | 5500 | |
| NICE-L-C-4022N-INT | 22 | 24 | 22 | 6500 | |
| NICE-L-C-4030N-INT | 30 | 20 | 16 | 9000 | |
| NICE-L-C-4037N-INT | 37 | 16 | 13 | 11000 | |
| NICE-L-C-4045N-INT | 45 | 14 | 11 | 13500 | |
| NICE-L-C-4055F | 55 | 12 | 10 | 16500 | |
| NICE-L-C-4075F | 75 | 16 × 2 | 13 × 2 | 13500 × 2 | |
| NICE-L-C-4090F | 90 | 14 × 2 | 13 × 2 | 18000 × 2 | MDBUN-60-T × 2 |

NOTE

- This algorithm takes the synchronous motor as an example. The asynchronous motor has a low transfer efficiency, so you can properly reduce the power of the braking resistor or increase its resistance.
- It is recommended to select the lowest possible resistance within the range. "×2" indicates that two sets of corresponding accessories are required. For example, "13×2, 18000×2, MDBUN-60-T×2" in NICE-L-C-4090 indicates that two groups of braking resistors (13 Ω, 18000 W) and MDBUN-60-T braking units must be connected in parallel to the controller.
- For controllers with power above 90 kW, it is recommended to use with Inovance MD050. For more information, see MD050N Series Active Front End (AFE) User Guide at www.inovance.com.

### 3.4.4 Braking Unit

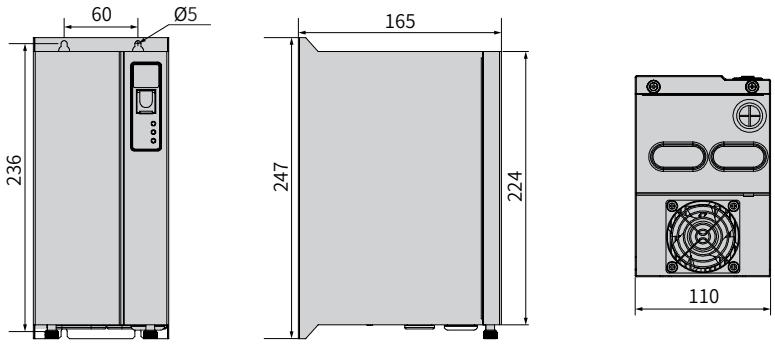



**Figure 3-10 Braking unit outline and installation dimensions (unit: mm)**

Installation dimensions of the MDBUN series braking unit:

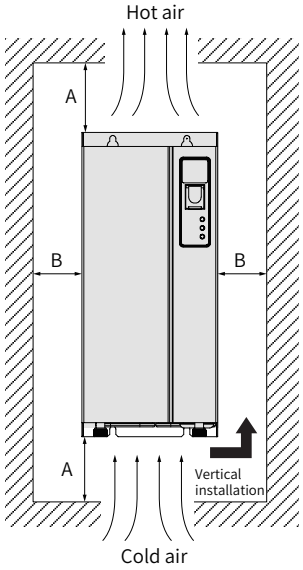



**Figure 3-11 Mounting clearances of the braking unit (unit: mm)**

## 3.5 Selection of the AC Output Reactor

You can configure an AC output reactor on the controller output side as the case may be. The transmission cable between the controller and the motor shall not be too long. Otherwise, its large distributed capacitance may result in harmonic current.

Install an AC output reactor when the output cables are too long. When the cable length

is greater than or equal to a value shown in the following table, install an AC output reactor close to the controller.

**Table 3-12 Minimum cable length for AC output reactor configuration**

| Controller power (kW) | Rated voltage (V) | Min. cable length for output reactor configuration (m) |
|---|---|---|
| 4 | 200 to 500 | 50 |
| 5.5 | 200 to 500 | 70 |
| 7.5 | 200 to 500 | 100 |
| 11 | 200 to 500 | 110 |
| 15 | 200 to 500 | 125 |
| 18.5 | 200 to 500 | 135 |
| 22 | 200 to 500 | 150 |
| ⩾ 30 | 280 to 690 | 150 |

### 3.5.1 Recommended AC Output Reactor Models

**Table 3-13 Recommended manufacturer and models of the AC output reactor**

| Controller Model | Rated output current (A) | Inovance AC output reactor model |
|---|---|---|
| **Single-phase 220 V, range: 220 V to 240 V** | | |
| NICE-L-C-2003 | 7.5 | MD-OCL-10-0.7-4T-1% |
| 220-NICE-L-C-4007 | 10.3 | MD-OCL-15-0.47-4T-1% |
| 220-NICE-L-C-4011 | 15.5 | MD-OCL-20-0.35-4T-1% |
| 220-NICE-L-C-4015 | 19.0 | MD-OCL-20-0.35-4T-1% |
| 220-NICE-L-C-4018 | 22.5 | MD-OCL-30-0.23-4T-1% |
| 220-NICE-L-C-4018F | | |
| 220-NICE-L-C-4022 | 27.7 | MD-OCL-30-0.23-4T-1% |
| 220-NICE-L-C-4022F | | |
| 220-NICE-L-C-4030 | 34.6 | MD-OCL-40-0.18-4T-1% |
| 220-NICE-L-C-4030F | | |
| **Three-phase 220 V, range: 220 V to 240 V** | | |
| NICE-L-C-2003 | 14.0 | MD-OCL-15-0.47-4T-1% |
| 220-NICE-L-C-4007 | 18.0 | MD-OCL-20-0.35-4T-1% |
| 220-NICE-L-C-4011 | 27.0 | MD-OCL-30-0.23-4T-1% |
| 220-NICE-L-C-4015 | 33.0 | MD-OCL-40-0.18-4T-1% |
| 220-NICE-L-C-4018 | 39.0 | MD-OCL-40-0.18-4T-1% |
| 220-NICE-L-C-4018F | | |

| Controller Model | Rated output current (A) | Inovance AC output reactor model |
|---|---|---|
| 220-NICE-L-C-4022 | 48.0 | MD-OCL-50-0.14-4T-1% |
| 220-NICE-L-C-4022F | | |
| 220-NICE-L-C-4030 | 60.0 | MD-OCL-60-0.12-4T-1% |
| 220-NICE-L-C-4030F | | |
| **Three-phase 380 V, range: 380 V to 440 V** | | |
| NICE-L-C-4003N-INT | 9.0 | MD-OCL-10-0.7-4T-1% |
| NICE-L-C-4005N-INT | 13.0 | MD-OCL-15-0.47-4T-1% |
| NICE-L-C-4007N-INT | 18.0 | MD-OCL-20-0.35-4T-1% |
| NICE-L-C-4011N-INT | 27.0 | MD-OCL-30-0.23-4T-1% |
| NICE-L-C-4015N-INT | 33.0 | MD-OCL-40-0.18-4T-1% |
| NICE-L-C-4018N-INT | 39.0 | MD-OCL-50-0.14-4T-1% |
| NICE-L-C-4022N-INT | 48.0 | MD-OCL-50-0.14-4T-1% |
| NICE-L-C-4030N-INT | 60.0 | MD-OCL-60-0.12-4T-1% |
| NICE-L-C-4037N-INT | 75.0 | MD-OCL-80-0.087-4T-1% |
| NICE-L-C-4045N-INT | 91.0 | MD-OCL-120-0.058-4T-1% |
| NICE-L-C-4055F | 112.0 | MD-OCL-120-0.058-4T-1% |
| NICE-L-C-4075F | 150.0 | MD-OCL-150-0.047-4T-1% |
| NICE-L-C-4090F | 176.0 | MD-OCL-200-0.035-4T-1% |
| NICE-L-C-4110F | 210.0 | MD-OCL-250-0.028-4T-1% |
| NICE-L-C-4132F | 253.0 | MD-OCL-330-0.021-4T-1% |
| NICE-L-C-4160F | 304.0 | MD-OCL-330-0.021-4T-1% |

### 3.5.2 Designation Rule

MD-OCL ① - 50 ② - 0.14 ③ - 4T ④ - 1% ⑤

| | | |
|---|---|---|
| ① **Product Name**<br>MD-OCL: Inovance AC output reactor | ③ **Inductance**<br>0.14: 0.14 mH | ⑤ **Voltage Drop**<br>1% |
| ② **Rated Current**<br>50: 50 A | ④ **Rated Voltage**<br>4T: 380 V | |

### 3.5.3 Outline Dimensions

#### 1 Dimensions of AC output reactors 5 A to 10 A

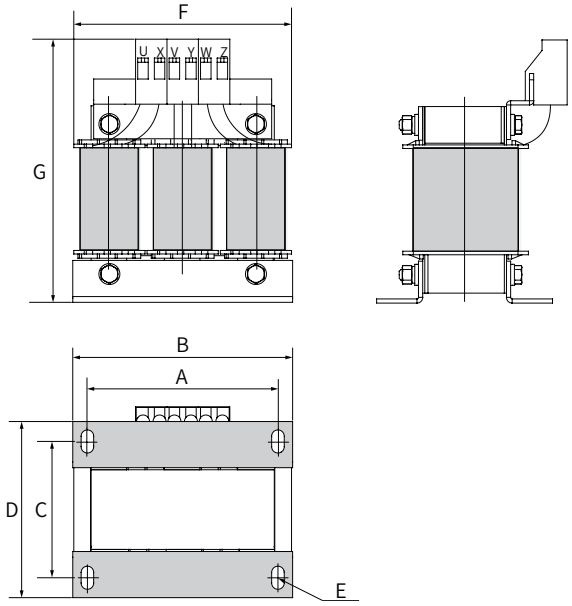



Figure 3-12 Dimensions of AC output reactors 5 A to 10 A

Table 3-14 Dimensions of AC output reactors 5 A to 10 A (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 5 | 91±1 | 105±1 | 65±2 | 84±2 | 4 × Φ6 × 11 | 110max | 130max |
| 7 | | | | | | | |
| 10 | | | | | | | |

## 2 Dimensions of 15 A AC output reactor

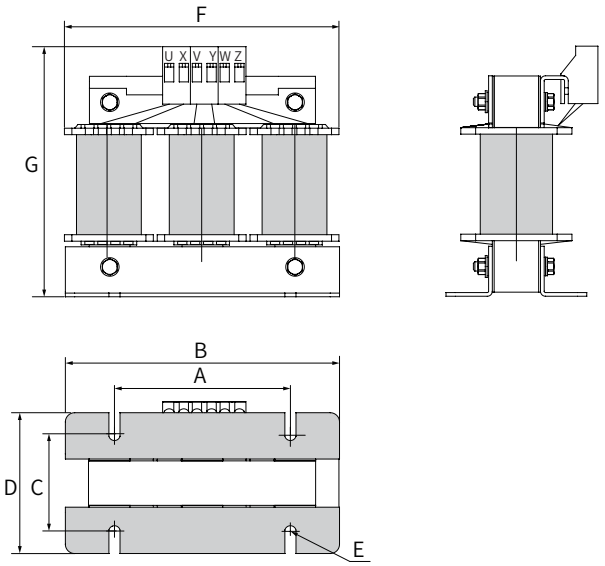



Figure 3-13 Dimensions of 15 A AC output reactor

Table 3-15 Dimensions of 15 A AC output reactor (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 15 | 95±1 | 148±1 | 61±2 | 76±2 | 4 × Φ6 × 15 | 155max | 140max |

### 3 Dimensions of 20 A AC output reactor

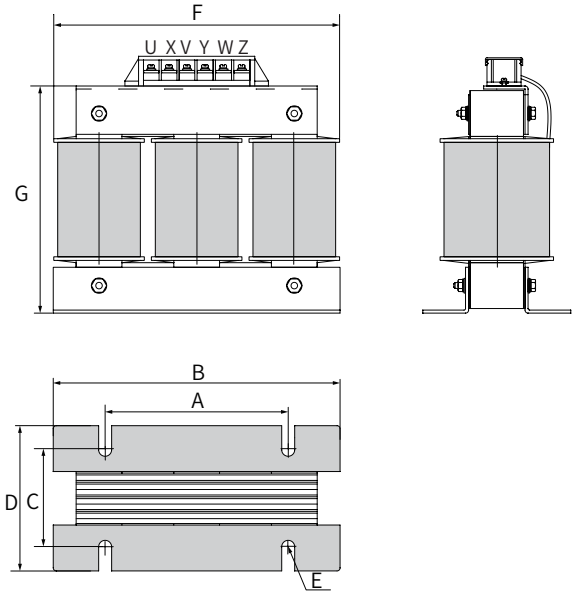



Figure 3-14 Dimensions of 20 A AC output reactor (unit: mm)

Table 3-16 Dimensions of 20 A AC output reactor (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 20 | 95±1 | 148±1 | 61±2 | 76±2 | 4 × Φ6 × 15 | 155max | 165max |

## 4 Dimensions of AC output reactors 50 A to 120 A

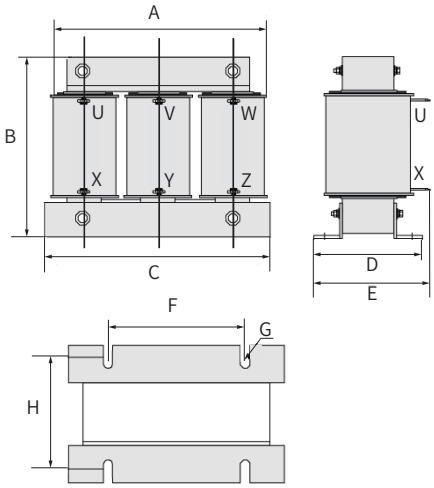



Figure 3-15 Dimensions of AC output reactors 50 A to 120 A

Table 3-17 Dimensions of AC output reactors 50 A to 120 A (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 50 | 155 | 130 | 148 | 95 | 135 | 95 | 6 × 15 | 80 |
| 60 | 195 | 165 | 188 | 92 | 130 | 120 | 8.5 × 20 | 72 |
| 80 | 195 | 165 | 188 | 92 | 130 | 120 | 8.5 × 20 | 72 |
| 90 | 195 | 165 | 188 | 92 | 130 | 120 | 8.5 × 20 | 72 |
| 120 | 195 | 165 | 188 | 112 | 140 | 120 | 8.5 × 20 | 92 |

## 5 Dimensions of AC output reactors 150 A to 250 A

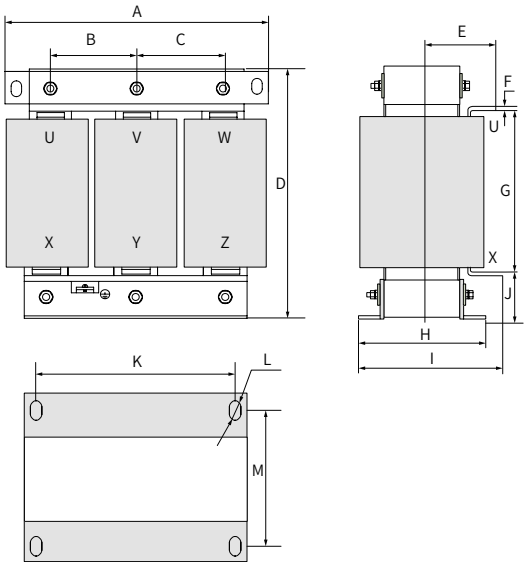



Figure 3-16 Dimensions of AC output reactors 150 A to 250 A

Table 3-18 Dimensions of AC output reactors 150 A to 250 A (unit: mm)

| Rated Current (A) | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 150 | 250 | 81 | 81 | 230 | 97 | 5 | 140 | 113 | 170 | 42 | 182 | 11 × 18 | 87 |
| 200 | 250 | 81 | 81 | 230 | 102 | 5 | 140 | 123 | 175 | 42 | 182 | 11 × 18 | 97 |
| 250 | 250 | 81 | 81 | 230 | 102 | 5 | 140 | 123 | 175 | 42 | 182 | 11 × 18 | 97 |

### 6 Dimensions of AC output reactors 330 A to 660 A

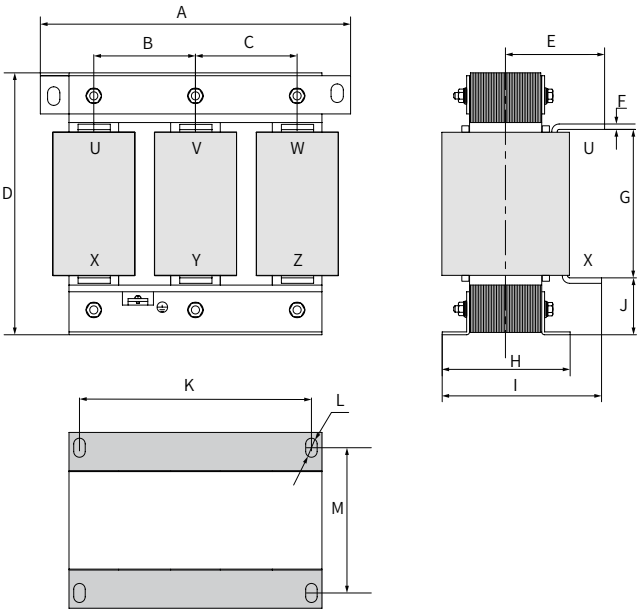



**Figure 3-17 Dimensions of AC output reactors 330 A to 660 A**

**Table 3-19 Dimensions of AC output reactors 330 A to 660 A (unit: mm)**

| Rated Current (A) | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 330 | 290 | 95 | 95 | 250 | 110 | 5 | 155 | 132 | 190 | 45 | 214 | 11 × 18 | 106 |
| 490 | 320 | 106 | 106 | 320 | 132 | 8 | 190 | 142 | 220 | 52 | 243 | 12 × 20 | 113 |
| 660 | 320 | 106 | 106 | 320 | 140 | 8 | 195 | 158 | 240 | 50 | 243 | 12 × 20 | 113 |

NOTE

The dimensions provided here are for reference only. Actual product may vary.

## 3.6 Selection of the Dv/dt Reactor

A dv/dt reactor is installed on the output side to reduce large dv/dt, protect the motor windings from insulation breakdown and reduce motor temperature for longer service life. It also helps reduce interference on surrounding devices.

Table 3-20 Model selection of the dv/dt reactor (Schaffner)

| Reactor | Rated current at 40°C (A) | Motor rated power (kW) | Rated inductance (mH) | Power loss (W) | I/O terminal | | | Total (kg) |
|---|---|---|---|---|---|---|---|---|
| | | | | |  |  |  | |
| RWK 305-4-KL | 4 | 1.5 | 1.47 | 22 | KL | - | - | 1.2 |
| RWK 305-7.8-KL | 7.8 | 3 | 0.754 | 25 | KL | - | - | 1.2 |
| RWK 305-10-KL | 10 | 4 | 0.588 | 30 | KL | - | - | 1.8 |
| RWK 305-14-KL | 14 | 5.5 | 0.42 | 34 | KL | - | - | 2.2 |
| RWK 305-17-KL | 17 | 7.5 | 0.346 | 38 | KL | - | - | 2.5 |
| RWK 305-24-KL | 24 | 11 | 0.245 | 45 | KL | - | - | 2.5 |
| RWK 305-32-KL | 32 | 15 | 0.184 | 55 | KL | - | - | 3.9 |
| RWK 305-45-KL | 45 | 22 | 0.131 | 60 | KL | - | - | 6.1 |
| RWK 305-60-KL | 60 | 30 | 0.098 | 65 | KL | - | - | 6.1 |
| RWK 305-72-KL | 72 | 37 | 0.082 | 70 | KL | - | - | 6.1 |
| RWK 305-90-KL | 90 | 45 | 0.065 | 75 | KL | - | - | 7.4 |
| RWK 305-110-KL | 110 | 55 | 0.053 | 90 | KL | - | - | 8.2 |
| RWK 305-124-KS | 124 | 55 | 0.047 | 110 | - | KS | - | 8.2 |
| RWK 305-143-KS | 143 | 75 | 0.041 | 115 | - | KS | - | 10.7 |
| RWK 305-156-KS | 156 | 75 | 0.038 | 120 | - | KS | - | 10.7 |
| RWK 305-170-KS | 170 | 90 | 0.035 | 130 | - | KS | - | 10.7 |
| RWK 305-182-KS | 182 | 90 | 0.032 | 140 | - | KS | - | 16 |
| RWK 305-230-KS | 230 | 132 | 0.026 | 180 | - | KS | - | 22 |
| RWK 305-280-KS | 280 | 160 | 0.021 | 220 | - | KS | - | 29 |
| RWK 305-330-KS | 330 | 160 | 0.018 | 240 | - | KS | - | 32 |
| RWK 305-400-S | 400 | 200 | 0.015 | 330 | - | - | S | 34 |
| RWK 305-500-S | 500 | 250 | 0.012 | 340 | - | - | S | 35 |
| RWK 305-600-S | 600 | 355 | 0.01 | 380 | - | - | S | 37 |
| RWK 305-680-S | 680 | 400 | 0.009 | 410 | - | - | S | 38 |
| RWK 305-790-S | 790 | 450 | 0.007 | 590 | - | - | S | 43 |
| RWK 305-910-S | 910 | 500 | 0.006 | 740 | - | - | S | 49 |
| RWK 305-1100-S | 1100 | 630 | 0.005 | 760 | - | - | S | 66 |

## 3.7 Selection of the Common-Mode Filter

The common-mode filter is installed on the output side (close to the controller) to reduce the bearing current and interference on the surrounding devices. The following figure shows installation of the common-mode filter.

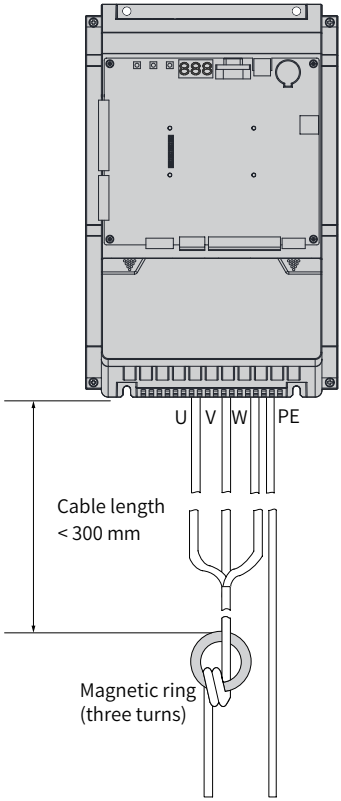



**Figure 3-18 Installation of the common-mode filter**

**Table 3-21 Common-mode filter model selection**

| Manufacturer model | Code | Dimensions (Outer diameter × Inner diameter × Thickness) (mm) |
|---|---|---|
| DY644020H | 11013031 | 64 × 40 × 20 |
| DY805020H | 11013032 | 80 × 50 × 20 |
| DY1207030H | 11013033 | 120 × 70 × 30 |

## 3.8 Group Control Board MCTC-GCB-A

A single GCB (standard program) supports group control of 4 elevators, with a maximum of 48 floors.

Combination of two GCBs (customized program) supports group control of 5 to 8 elevators, with a maximum of 48 floors. For details on the customized program, contact us.

## 1 Outline dimensions

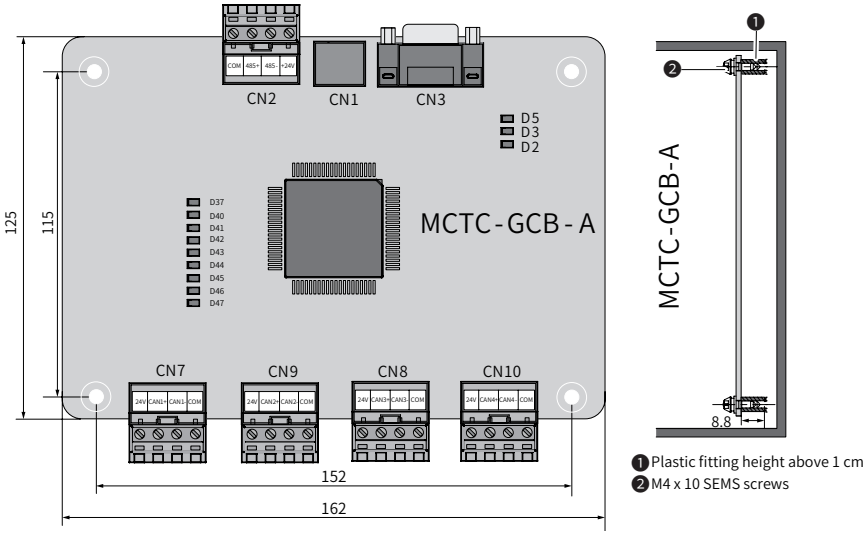
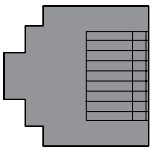
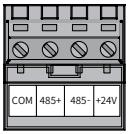
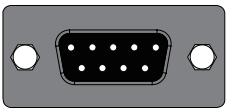



Figure 3-19 MCTC-GCB-A installation dimensions (unit: mm)

## 2 Terminal description

Table 3-22 MCTC-GCB-A terminal description

| Terminal symbol | | Terminal Name | Function description | Layout |
|---|---|---|---|---|
| CN1 | - | Operating panel terminal | Operating panel connection |  |
| CN2 | +24V/COM | 24 VDC voltage output | External 24 V power supply for the GCB |   |
| | MOD+/MOD- | Modbus communication terminals | LCD display and function expansion | |
| CN3 | - | RS232 interface | Communication with the host computer or IE card |  |

| Terminal symbol | | Terminal Name | Function description | Layout |
|---|---|---|---|---|
| CN7 | +24V/COM | External 24 VDC power supply | 24 VDC power supply for the corresponding CAN communication module |  |
| | CAN1+/ CAN1- | CANbus communication terminals | CANbus communication between the GCB and the MCB of elevator 1 in group control | |
| CN9 | +24V/COM | External 24 VDC power supply | 24 VDC power supply for the corresponding CAN communication module |  |
| | CAN2+/ CAN2- | CANbus communica tion terminals | CANbus communication between the GCB and the MCB of elevator 2 in group control | |
| CN8 | +24V/COM | External 24 VDC power supply | 24 VDC power supply for the corresponding CAN communication module |  |
| | CAN3+/ CAN3- | CANbus communica tion terminals | CANbus communication between the GCB and the MCB of elevator 3 in group control | |
| CN10 | +24V/COM | External 24 VDC power supply | 24 VDC power supply for the corresponding CAN communication module |  |
| | CAN4+/ CAN4- | CANbus communica tion terminals | CANbus communication between the GCB and the MCB of elevator 4 in group control | |

## 3.9 I/O Expansion Board MCTC-KZ-G1

The expansion board (MCTC-KZ-G1) has one RS485 interface, one CANbus communication interface and ten DI/DO terminals. The board is connected to CAN1 bus of the MCB through the CAN port. The CAN1 bus supports up to two expansion boards, with one in the machine room and the other on the car top. You can set the expansion board addresses using the DIP switches on the MCTC-KZ-G1. When all switches are OFF, it indicates car top expansion board. When K1 is set to ON (1) and others are set to OFF, it indicates machine room expansion board. Set the functions of expansion board terminals in Fd-11 to Fd-50.

**1 Outline dimensions**

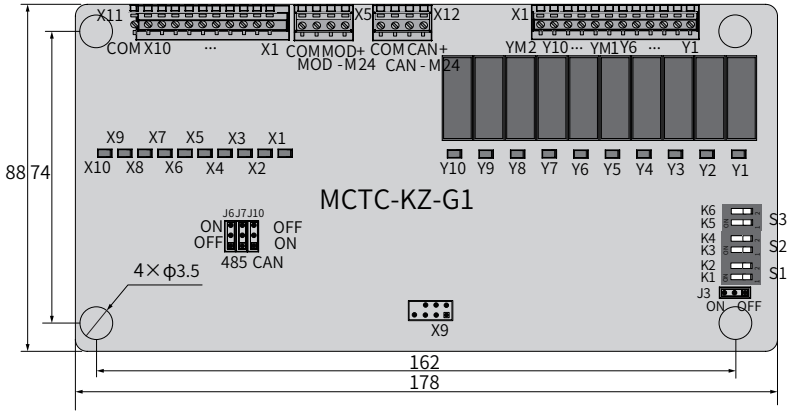
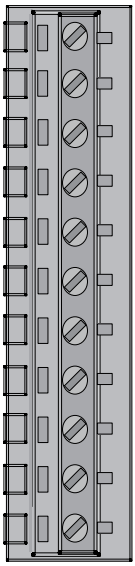
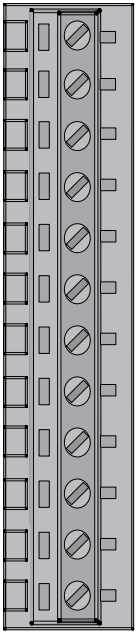
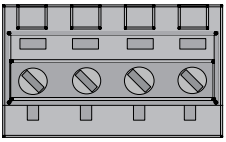
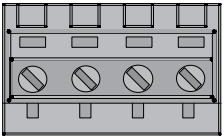


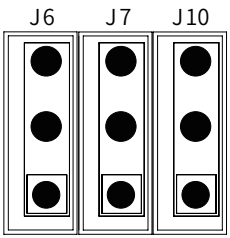
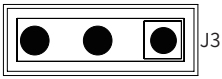
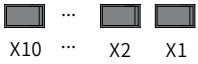
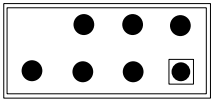

**Figure 3-20 Outline dimensions of MCTC-KZ-G1 (unit: mm)**

## 2 Terminal description

Table 3-23 Description of MCTC-KZ-G1 terminals

| Terminal symbol | | Terminal Name | Function description | Layout |
|---|---|---|---|---|
| Terminal X11 | X1 | Digital input 1 | DI:<br>◆ Rated voltage: 30 V<br>◆ Rated current: 5 mA |  |
| | X2 | Digital input 2 | | |
| | X3 | Digital input 3 | | |
| | X4 | Digital input 4 | | |
| | X5 | Digital input 5 | | |
| | X6 | Digital input 6 | | |
| | X7 | Digital input 7 | | |
| | X8 | Digital input 8 | | |
| | X9 | Digital input 9 | | |
| | X10 | Digital input 10 | | |
| | M24V | External 24 V power output | | |

| Terminal symbol | | Terminal Name | Function description | Layout |
|---|---|---|---|---|
| Terminal X1 | Y1 | Relay output Y1 | Relay output terminals: Contact current capacity: 250 VAC, 5 A |  |
| | Y2 | Relay output Y2 | | |
| | Y3 | Relay output Y3 | | |
| | Y4 | Relay output Y4 | | |
| | Y5 | Relay output Y5 | | |
| | Y6 | Relay output Y6 | | |
| | YM1 | Reference ground of relay outputs Y1 to Y6 | | |
| | Y7 | Relay output Y7 | | |
| | Y8 | Relay output Y8 | | |
| | Y9 | Relay output Y9 | | |
| | Y10 | Relay output Y10 | | |
| | YM2 | Reference ground of relay outputs Y7 to Y10 | | |
| Terminal X12 | +24V/COM | External 24 VDC power supply | Connected with the external 24 V power supply |  |
| | CAN+/ CAN- | Reserved CAN communication interface | Connected to the MCB for CAN communication | |
| Terminal X5 | +24V/COM | 24 VDC voltage output | Connected with the external 24 V power supply |  |
| | MOD+/ MOD- | RS485 communication interface with the MCB | Reserved when the expansion board is placed on the top of the car. When installing the expansion board in the machine room, expand one hall call for the rear door to control the through- type door of 40 floors. | |

| Terminal symbol | Terminal Name | Function description | Layout |
|---|---|---|---|
| J6/J7 | Modbus termination resistor jumper | Connect the termination resistor to the ON position of J6/J7 when using Modbus communication |  |
| J10 | CAN termination resistor jumper | Connect the termination resistor to the ON position of J10 when using CAN communication | |
| J3 | Reserved | Factory reserved |  |
| S1/S2/S3 | Address DIP switch | Used to set the expansion board address When all switches are OFF, it indicates car top expansion board. When K1 is set to ON and others are set to OFF, it indicates machine room expansion board. |  |
| X1 to X10 | DI indicator | Lights up (green) when corresponding external input signal is active. |  |
| Y1 to Y10 | Relay output indicator | Lights up (green) when corresponding system output is active. |  |
| Terminal X9 | Reserved | Do not short them randomly. Otherwise, the system may not work properly. |  |

## 3.10 Elevator Monitoring Board MCTC-KZ-B0S

MCTC-KZ-B0S is one accessory of an integrated elevator controller. It provides customer equipment with a unified interface for remote access to the controller. Customer equipment can be IoT monitoring equipment, elevator monitoring equipment, AGV equipment, visitor linkage equipment and so on. The main functions are:

- Open slave protocol for the customer equipment (master) to obtain elevator states and parameters, and control functions (such as car/hall call registration, function

enable, door open/close, remote elevator lock, and remote fire emergency control.)

- Configurable master protocol for the customer equipment (slave) to receive the data sent from the MCTC-KZ-B0S according to the configured frequency and parameters.
- Integration with the functions of elevator monitoring board MCTC-MIB-A.
- Compatible with the MNK IoT module protocol, open protocol, and elevator monitoring protocol at the same time for multiple devices to be connected.

## 1 Outline dimensions

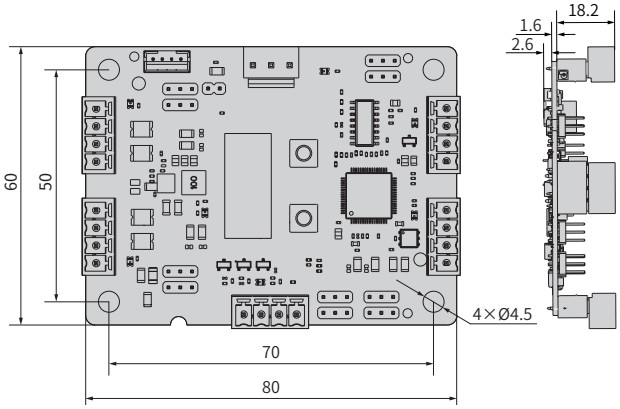



Figure 3-21 Outline dimensions of MCTC-KZ-B0S (unit: mm)

## 2 Terminal description

The terminal arrangement of the MCTC-KZ-B0S is shown in the following figure.

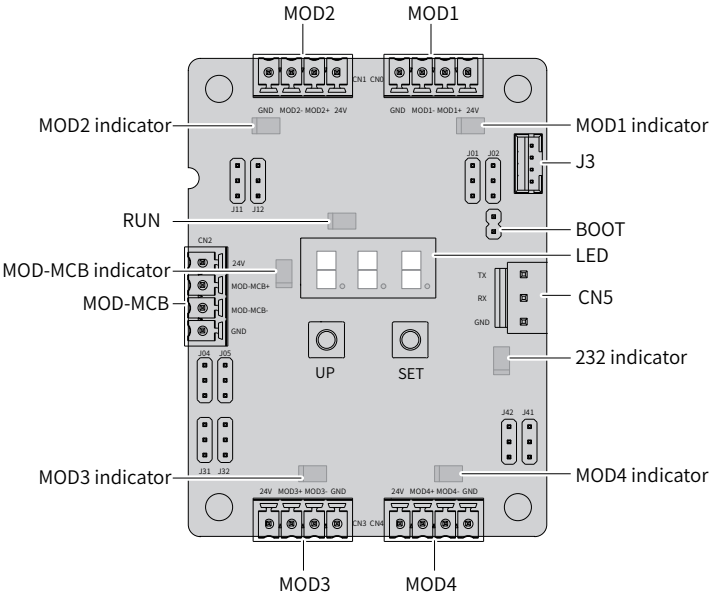



**Figure 3-22 Terminals on the MCTC-KZ-B0S**

The following table describes each terminal on the MCTC-KZ-B0S.

**Table 3-24 Description of MCTC-KZ-B0S terminals**

| Type | Silkscreen | Description |
|---|---|---|
| Human-machine interface (HMI) | UP | Keys and LEDs, used for setting and viewing certain parameters |
| | SET | |
| | LEDs | |
| | RS232 indicator | Communication indicators, indicating the status of corresponding terminals |
| | MOD1 indicator | |
| | MOD2 indicator | |
| | MOD-MCB indicator | |
| | MOD3 indicator | |
| | MOD4 indicator | |
| | RUN | Running status indicator, flashes when the system is powered on |

| Type | Silkscreen | Description |
|---|---|---|
| Communication terminal | MOD1 | Customer equipment communication port, with port protocol not configurable |
| | MOD2 | Customer equipment communication port, with port protocol configurable |
| | MOD3 | Customer equipment communication port, with port protocol configurable |
| | MOD4 | Customer equipment communication port, with port protocol configurable |
| | MCTC-MCB | Controller communication port, connected to the MOD2 port of the MCTC-MCB |
| | CN5 | Connection with the external PC when the MCTC-KZ- B0S is used as the elevator monitoring board and connected to the PC |
| | BOOT | BOOT pin |
| | J3 | Tooling port, used for programming and mobile phone app connection |

The following table describes the status of each indicator.

| Terminal name | Status | Description |
|---|---|---|
| Running status indicator (RUN) | Flashing | The system is working properly. |
| | Steady ON/OFF | The system is not powered on or working improperly. |
| Communication indicators | Flashing | Port communication is normal. |
| | Steady ON | Port communication is abnormal. (There is data but the data is wrong.) |
| | Steady OFF | Port communication is abnormal (The equipment is not connected or the communication link is unavailable, resulting in a lack of data). |



NOTE

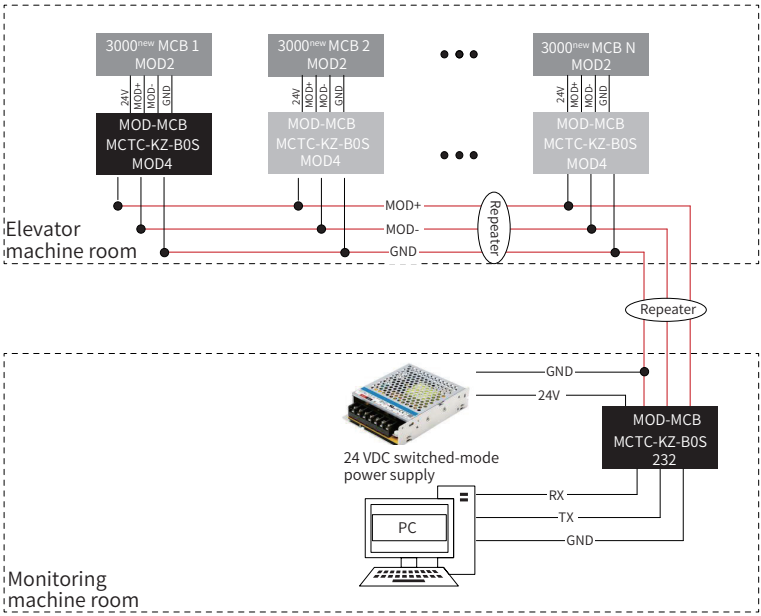
When an open master protocol is set for a port, data is being sent if the corresponding indicator flashes continuously.

### 3.10.1Monitoring of Multiple Elevators (F05 = 2 or F0-05 = 2)

**1 Parameter setting**

| Elevator No. | Address | Controller Parameter | B0S Parameter | PC end B0S Parameter | PC Host Computer |
|---|---|---|---|---|---|
| 1 | 1 | Fd-02 = 1 | F05 = 0, MODn = 4 (n = 2, 3, 4) | F05 = 2<br>F06 = N | Baud rate: 38400 bps |
| 2 | 2 | Fd-02 = 2 | F05 = 0, MODn = 4 (n = 2, 3, 4) | | |
| 3 | 3 | Fd-02 = 3 | F05 = 0, MODn = 4 (n = 2, 3, 4) | | |
| … | … | … | F05 = 0, MODn = 4 (n = 2, 3, 4) | | |
| N | N | Fd-02 = N | F05 = 0, MODn = 4 (n = 2, 3, 4) | | |

**2 System wiring for the MCTC-KZ-B0S functions**




- Cable: RS485 bus (especially red long cables shown in the figure) must be shielded multi-conductor stranded wire. Use cables of item No. 15041138 (need to order separately) to connect the RS232 port in the monitoring machine room.
- Networking: It is recommended to connect several MCTC-KZ-B0S boards to RS485 bus in a hand in hand manner. The branch line connection will reduce the signal

quality and cables must be as short as possible.

- Repeater: The number of MCBs monitored is related to the networking mode and bus length. You can use an isolated RS485 repeater with surge and electrostatic discharge (ESD) protection to enhance signal strength.
- Termination resistor: For the MCTC-KZ-B0S on the two ends of the bus (MCTC-KZ-B0S with black background shown in the figure), pins 2 and 3 of the bus connection port are jumped (pins 1 and 2 by default, NO). The intermediate MCTC- KZ-B0S boards keep default settings.
- Power supply for the MCTC-KZ-B0S in the monitoring machine room: Normally, red cables shown in the figure are thousands of meters long. Direct use of these cables will cause a 24 V voltage drop in the machine room and interference. It is recommended to provide an independent switched-mode power supply.

Detailed operations:

1. Set Fd-02 of elevator 1, F05 of connected MCTC-KZ-B0S, and corresponding MOD port protocol to 1, 0, and 4 respectively.
2. Set Fd-02 of elevator 2, F05 of connected MCTC-KZ-B0S, and corresponding MOD port protocol to 2, 0, and 4 respectively.
3. Repeat step 2, and set all controller and MCTC-KZ-B0S parameters. (The values of FdD-02 are 1 to N in an array and values should not be repeated again.)
4. Set F05 and F06 of the MCTC-KZ-B0S connected to PC (N is the number of elevators monitored) to 2 and N respectively.
5. Set the communication baud rate to 38400 bps using the host computer software.

### 3.10.2Monitoring of Single Elevator (F05 = 1 or F0-05 = 1)

**1 System wiring**




**2 Parameter setting**

| Parameter | Value | Description |
|---|---|---|
| F05 | 1 | Select B0S as the elevator monitoring board |

**3 Host computer communication**

Set the baud rate to 38400 bps and you cannot change it.



NOTE

After monitoring of a single elevator (F05 = 1 or F0-05 = 1) is selected, the protocols defined by MOD1 to MOD4 will be invalid. The MOD-MCB and 232 ports of the MCTC-KZ-B0S are con- nected to the controller MCB and PC host computer respectively. If you want to use both open protocol and elevator monitoring functions, see *"3.10.1 Monitoring of Multiple Elevators (F05 = 2 or F0-05 = 2)" on Page 64*.

# Chapter 4 Mechanical Design

## 4.1 Installation Dimensions

### 4.1.1 Plastic Structure Type

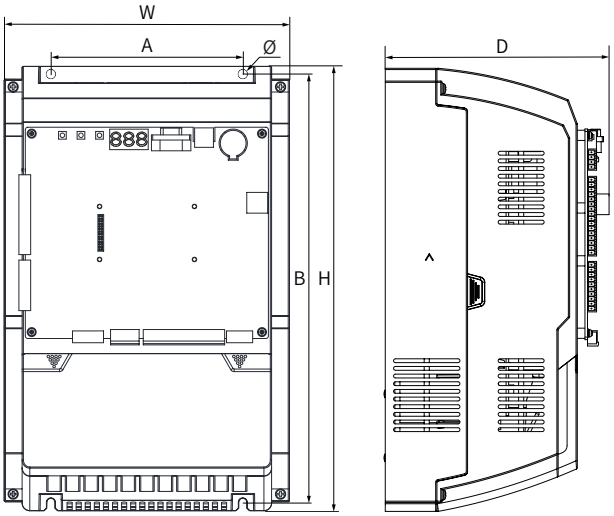



Figure 4-1 Outline and installation dimensions of models 3.7 kW to 15 kW

Table 4-1 Installation dimensions of models 3.7 kW to 15 kW

| Product model | Outline dimensions (mm) | | | Hole Distance (mm) | | Hole Diameter (mm) |
|---|---|---|---|---|---|---|
| | Height (H) | Width (W) | Depth (D) | A | B | |
| NICE-L-C-2003 | 347 | 223 | 143 | 150 | 334.5 | Φ6.5 |
| 220-NICE-L-C-4007 | 347 | 223 | 172.5 | 150 | 334.5 | Φ6.5 |
| 220-NICE-L-C-4011 | | | | | | |
| 220-NICE-L-C-4015 | | | | | | |
| NICE-L-C-4003N-INT | 347 | 223 | 143 | 150 | 334.5 | Φ6.5 |
| NICE-L-C-4005N-INT | | | | | | |
| NICE-L-C-4007N-INT | 347 | 223 | 173.5 | 150 | 334.5 | Φ6.5 |
| NICE-L-C-4011N-INT | | | | | | |
| NICE-L-C-4015N-INT | | | | | | |

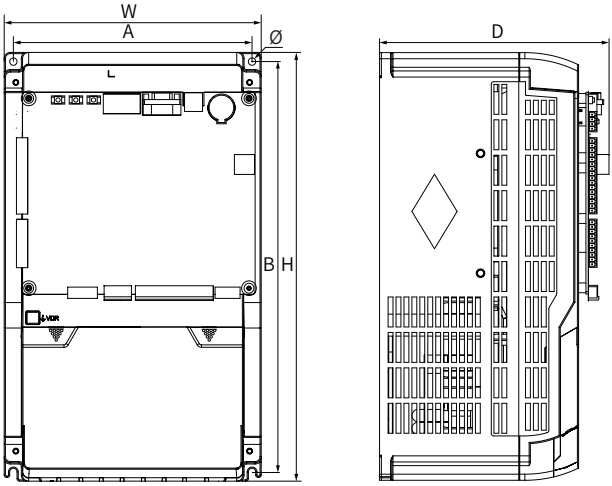



**Figure 4-2 Outline and installation dimensions of F-type models 18.5 kW to 37 kW**

**Table 4-2 Installation dimensions of F-type models 18.5 kW to 37 kW**

| Product model | Outline dimensions (mm) | | | Hole Distance (mm) | | Hole Diameter (mm) |
|---|---|---|---|---|---|---|
| | Height (H) | Width (W) | Depth (D) | A | B | |
| 220-NICE-L-C-4018F | 350 | 210 | 188 | 195 | 335 | Φ6 |
| 220-NICE-L-C-4022F | | | | | | |
| 220-NICE-L-C-4030F | 400 | 250 | 211.5 | 230 | 380 | Φ7 |
| NICE-L-C-4018N-INT | 350 | 210 | 188 | 195 | 335 | Φ6 |
| NICE-L-C-4022N-INT | | | | | | |
| NICE-L-C-4030N-INT | 400 | 250 | 211.5 | 230 | 380 | Φ7 |
| NICE-L-C-4037N-INT | | | | | | |

### 4.1.2 Sheet Metal Structure Type

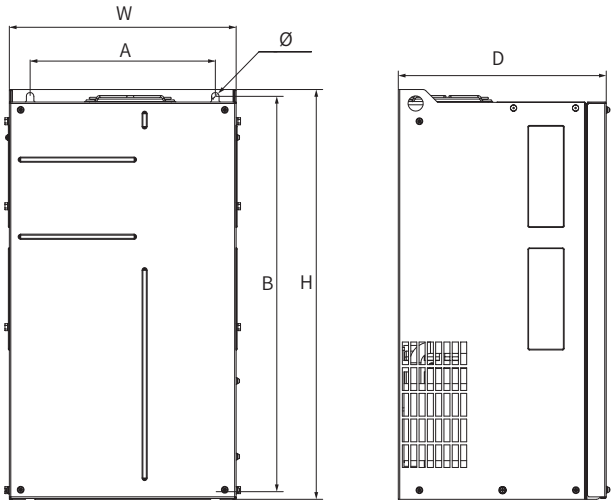



Figure 4-3 Outline and installation dimensions of F-type models 45 kW to 55 kW

Table 4-3 Installation dimensions of F-type models 45 kW to 55 kW

| Product model | Outline dimensions (mm) | | | Hole Distance (mm) | | Hole Diameter (mm) |
|---|---|---|---|---|---|---|
| | Height (H) | Width (W) | Depth (D) | A | B | |
| NICE-L-C-4045N-INT | 542 | 300 | 275.3 | 245 | 523 | Φ10 |
| NICE-L-C-4055F | | | | | | |

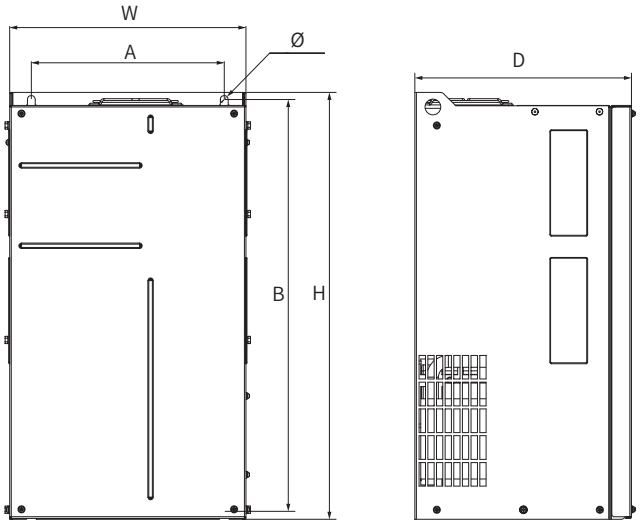



**Figure 4-4 Outline and installation dimensions of F-type models 75 kW to 110 kW**

**Table 4-4 Installation dimensions of F-type models 75 kW to 110 kW**

| Product model | Outline dimensions (mm) | | | Hole Distance (mm) | | Hole Diameter (mm) |
|---|---|---|---|---|---|---|
| | Height (H) | Width (W) | Depth (D) | A | B | |
| NICE-L-C-4075F | 580 | 338 | 323.4 | 270 | 560 | Φ10 |
| NICE-L-C-4090F | | | | | | |
| NICE-L-C-4110F | | | | | | |

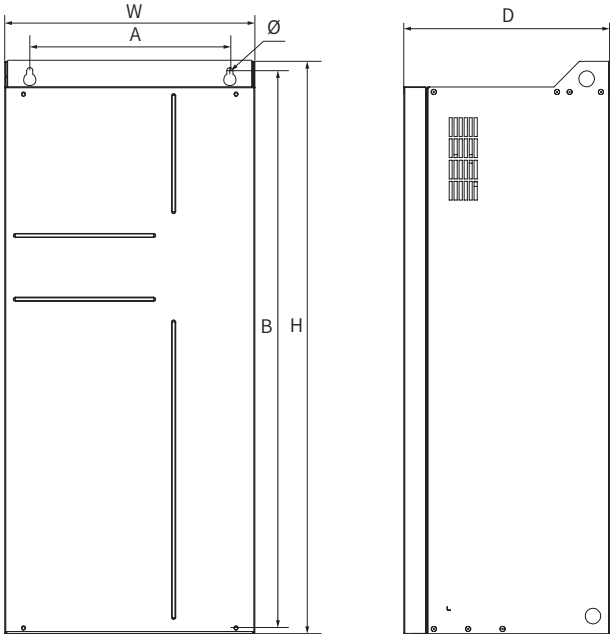



**Figure 4-5 Outline and installation dimensions of F-type models 132 kW to 160 kW**

**Table 4-5 Installation dimensions of F-type models 132 kW to 160 kW**

| Product model | Outline dimensions (mm) | | | Hole Distance (mm) | | Hole Diameter (mm) |
|---|---|---|---|---|---|---|
| | Height (H) | Width (W) | Depth (D) | A | B | |
| NICE-L-C-4132F | 915 | 400 | 329.1 | 320 | 890 | Φ10 |
| NICE-L-C-4160F | | | | | | |

## 4.2 Mounting Clearance Requirements

The mounting clearance is different based on the power ratings. The following figure shows details.

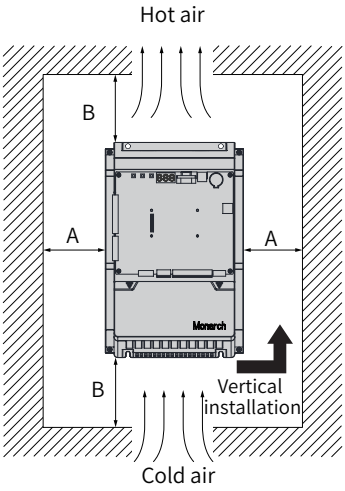



**Figure 4-6 Mounting clearance**

**Table 4-6 Mounting clearance**

| Power Rating | Space | |
|---|---|---|
| 3.7 kW to 15 kW | A ⩾ 10 mm | B ⩾ 100 mm |
| 18.5 kW to 55 kW | A ⩾ 50 mm | B ⩾ 100 mm |

The heat is dissipated upward from bottom to top, as shown in the following figure.

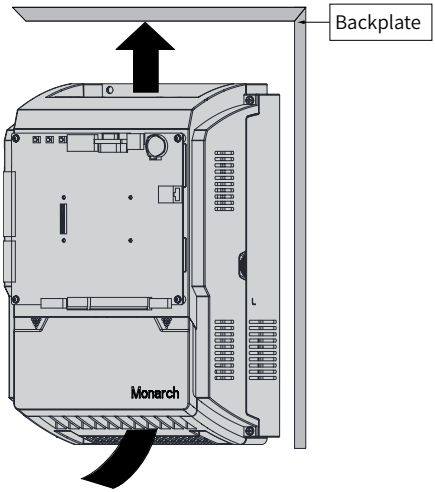



**Figure 4-7 Heat dissipation**

# Chapter 5 Safety Check Before Commissioning

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

## 5.1 Mechanical Safety Check

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

## 5.2 Electrical Wiring Check

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

## 5.3 Electrical Safety Check

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

## 5.4 Rotary Encoder Check

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

# Chapter 6 Commissioning Tools

## 6.1 Use of the Commissioning Tools

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

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

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

## 6.2 Use of the Onboard Keypad

### 1 Buttons and Display

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

| Caution | |
|---|---|
|  | The keypad is exposed, and pay attentions to the following points during use:<br>◆ Wear insulated gloves when performing operations on the keypad to prevent electric shock or damage to the controller components due to electrostatic discharge.<br>◆ 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.

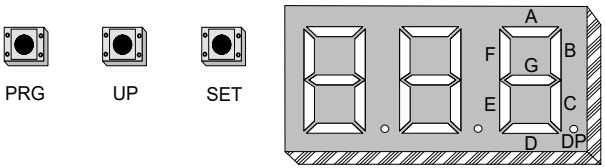



Figure 6-1 Appearance of the keypad

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.<br>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.<br>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.

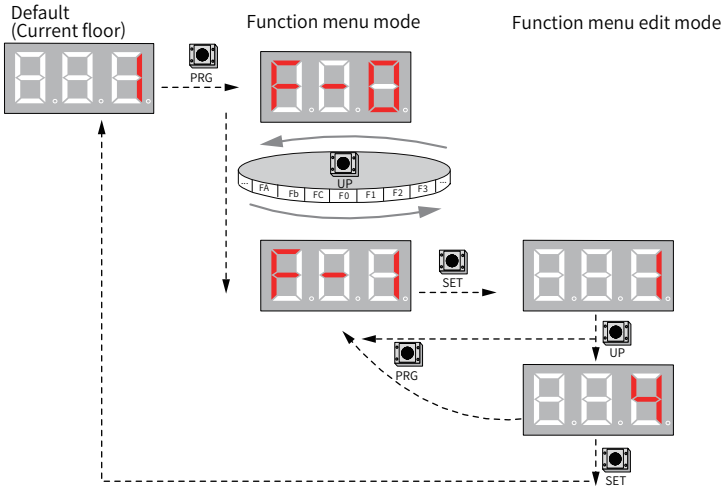



Figure 6-2 Setting the called floor

## 2 Menu Description

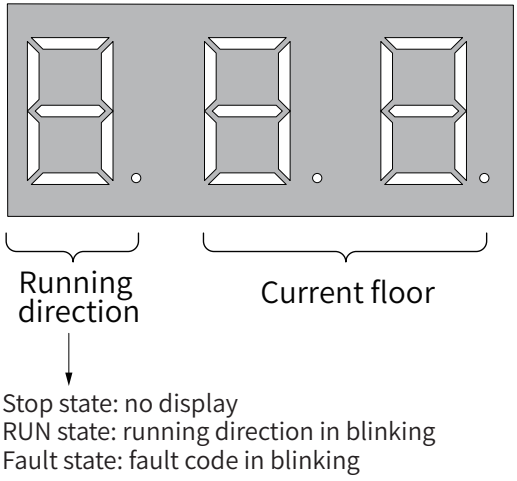
The function menus displayed on the keypad are described as follows:

■ F-0: display of floor and running direction

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

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

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




■ F-1: command input of the running floor

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

■ F-2: fault reset and fault code display

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

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

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

■ F-3: time display

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

■ F-4: contract number display

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

■ F-5: running times display

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

■ F-6: door open/close control

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

■ F-7: shaft auto-tuning command input

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

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

■ F-8: test function

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

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

The procedure of balance coefficient detection is as follows:

**Step 1**

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

**Step 2**

Hold down SET; the keypad displays the floor number, and the system starts to detect the balance coefficient. The elevator automatically runs to the top floor and then back to the bottom floor; "OP" is displayed.

**Step 3**

Remove the weight. Hold down SET, and the elevator runs to the top floor and then to

the bottom floor. The keypad displays the balance coefficient "XXP" in blinking state. Detection is completed.

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

NOTE

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

■ FA: auto-tuning

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

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

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

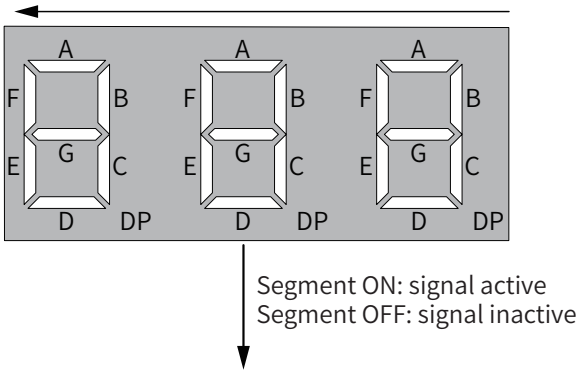
After confirming that the elevator meets the safe running conditions, press the SET button again to start auto-tuning.

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

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

■ Fb: CTB state display

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




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

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

0: Direction unchanged

1: Direction reversed

## 6.3 Use of the LED Operation Panel

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

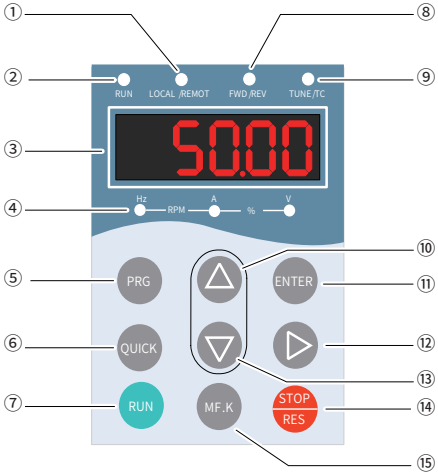



Figure 6-3 Diagram of the LED operation panel

Table 6-1 LED operation panel layout

| No. | Name | No. | Name |
|---|---|---|---|
| ① | Command source indicator | ⑨ | Auto-tuning indicator |
| ② | Running indicator | ⑩ | Up key |
| ③ | Data display | ⑪ | Confirm key |
| ④ | Unit indicator | ⑫ | Shift key |
| ⑤ | Programming key | ⑬ | Down key |
| ⑥ | Menu key | ⑭ | Stop/Reset key |
| ⑦ | Run key | ⑮ | Fault handling key |
| ⑧ | Up/Down indicator | - | - |

Table 6-2 Description of keys

| Key | Name | Function |
|---|---|---|
| PRG | Programming | Enter or exit the Level I menu.<br>Return to the previous menu. |
| ENTER | Enter | Enter the menu interfaces level by level.<br>Confirm the parameter setting. |
| △ | Up | When navigating a menu, it moves the selection up through the screens available.<br>When editing a parameter value, it increases the displayed value. |
| ▽ | Down | When navigating a menu, it moves the selection down through the screens available.<br>When editing a parameter value, it decreases the displayed value. |
| ▷ | Shift | Select the displayed parameters in turn in the stop or running state.<br>Select the digit to be modified when modifying a parameter value |
| RUN | Run | Start the controller in the operation panel control mode.<br>Note: It is inactive when the controller is in distance control mode. |
| STOP RES | Stop/Reset | Stop the controller when it is in the RUN state.<br>Perform a reset operation when the AC drive is in the FAULT state. |
| QUICK | Menu | Enter or exit Level-I quick menu. |
| MF.K | Fault handling | Display or hide the fault information in the fault state, which facilitates parameter viewing. |

## 1 Function Indicators

: ON, : OFF, : blinking

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

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

## 2 Overall Arrangement of Parameters

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

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

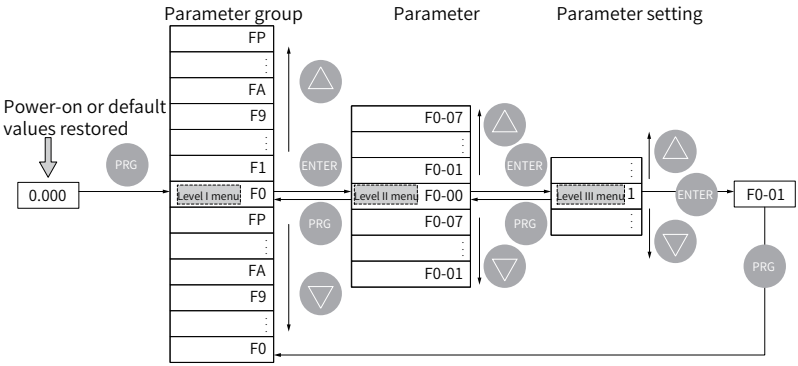
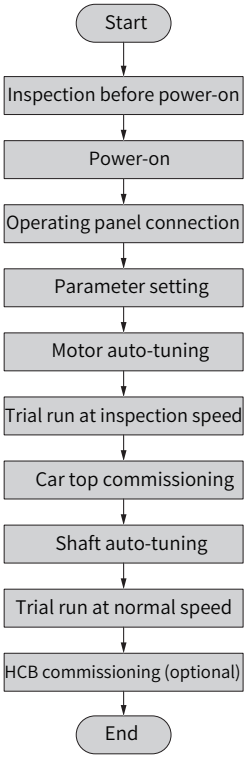



Figure 6-4 Three-level menu structure

# Chapter 7 System Commissioning

## 7.1 Commissioning Flowchart




## 7.2 Commissioning Procedure

### 7.2.1 Inspection Before Power-on

Before commissioning, check the mechanical and electrical parts to ensure that the conditions are ripe for field system commissioning.

During commissioning, at least two operators are working at the same time. Cut off the power supply immediately if any abnormality occurs.

### 7.2.2 Power-on

1. Turn off the main switch in the power distribution box.
2. Check the display of the controller MCB. The power is on with some indicators on and LED display.

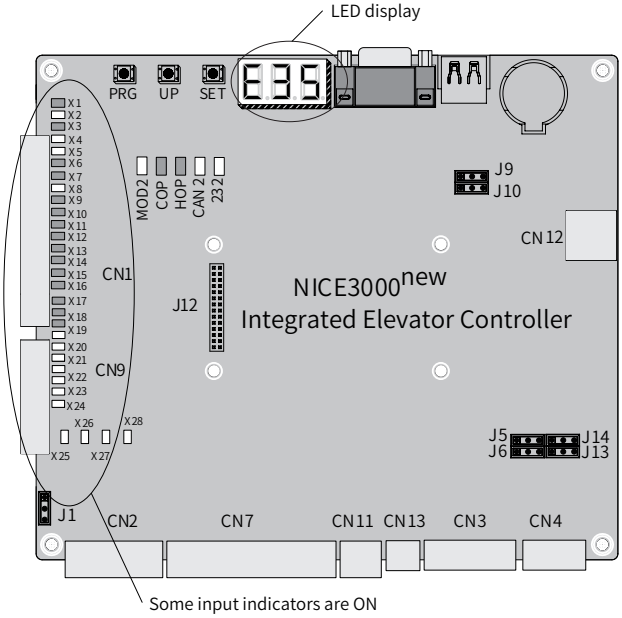



**Figure 7-1 MCB display at normal power-on**

NOTE

If Err35, Err51 or Err52 are displayed at power-on, the system can remain unaffected and continue its operation. They will be reset automatically in the end or reset manually through setting F-2 to 1 on the keypad.

### 7.2.3 Operating Panel Connection

Connect the LED operating panel to the RJ45 port of the integrated controller using an 8-conductor flat cable. The connection is shown in the following figures.

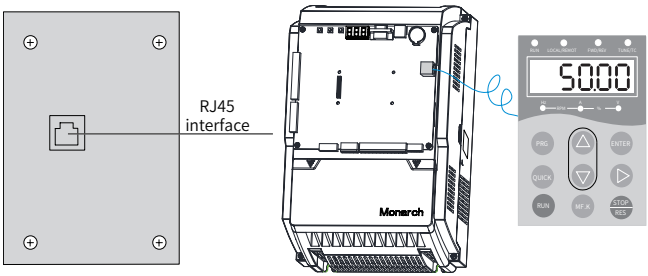



**Figure 7-2 Operating panel connection**

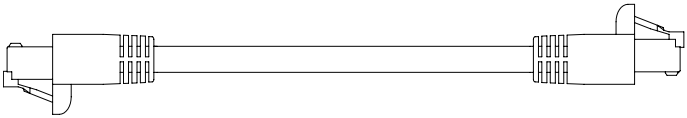


**Figure 7-3 The 8-conductor flat cable**

### 7.2.4 Parameter Setting

The procedure of the parameter settings is as follows:

1. DI/DO parameters Setting

   1) Low-voltage DI setting

   Set parameters F5-01 to F5-24 based on the functions of DI X1 to X24. For example, when X1 is connected to the NO switch for up leveling signal input, set F5-01 to 01.

| Parameter | Name | Range | Default |
|---|---|---|---|
| F5-01 | X1 function selection | 01/33: Up leveling signal NO/NC<br>03/35: Door zone signal NO/NC<br>02/34: Down leveling signal NO/NC<br>04/36: Safety circuit feedback NO/NC<br>05/37: Door lock circuit feedback NO/NC<br>06/38: Running contactor feedback NO/NC<br>07/39: Brake contactor feedback NO/NC<br>22/54: Shorting door lock circuit contactor feedback NO/NC<br>08/40: Inspection signal NO/NC<br>09/41: Inspection up signal NO/NC<br>10/42: Inspection down signal NO/NC<br>12/44: Up limit signal NO/NC<br>13/45: Down limit signal NO/NC<br>16/48: Up slow-down 1 signal NO/NC<br>17/49: Down slow-down 1 signal NO/NC<br>18/50: Up slow-down 2 signal NO/NC<br>19/51: Down slow-down 2 signal NO/NC<br>82/114: Door lock 2 shorting NO/NC<br>86/118: Door lock bypass input NO/NC<br><br>Others:<br>00: Invalid<br>11/43: Fire emergency signal NO/NC<br>14/46: Overload signal NO/NC15/47: Full-load signal NO/NC<br>20/52: Up slow-down 3 signal NO/NC<br>21/53: Down slow-down 3 signal NO/NC<br>22/54: shorting door lock circuit relay feedback NO/NC<br>... (To be continued) | 1 |
| F5-02 | X2 function selection | | 3 |
| F5-03 | X3 function selection | | 2 |
| F5-04 | X4 function selection | | 118 |
| F5-05 | X5 function selection | | 0 |
| F5-06 | X6 function selection | | 38 |
| F5-07 | X7 function selection | | 39 |
| F5-08 | X8 function selection | | 30 |
| F5-09 | X9 function selection | | 40 |
| F5-10 | X10 function selection | | 116 |
| F5-11 | X11 function selection | | 10 |
| F5-12 | X12 function selection | | 44 |
| F5-13 | X13 function selection | | 45 |
| F5-14 | X14 function selection | | 48 |
| F5-15 | X15 function selection | | 49 |
| F5-16 | X16 function selection | | 50 |
| F5-17 | X17 function selection | | 51 |
| F5-18 | X18 function selection | | 00 |
| F5-19 | X19 function selection | | 00 |
| F5-20 | X20 function selection | | 00 |
| F5-21 | X21 function selection | | 00 |
| F5-22 | X22 function selection | | 00 |
| F5-23 | X23 function selection | | 00 |
| F5-24 | X24 function selection | | 00 |

| Parameter | Name | Range | Default |
|---|---|---|---|
| F5-24 | X24 function selection | ... (Continued)<br>23/55: Firefighter running signal NO/NC<br>24/56: Door operator 1 light curtain signal NO/NC<br>25/57: Door operator 2 light curtain signal NO/NC<br>26/58: Brake travel switch 1 NO/NC<br>27/59: Emergency evacuation signal NO/NC<br>28/60: Elevator lock signal NO/NC<br>29/61: Safety circuit 2 feedback NO/NC<br>30/62: PMSM self-lock feedback NO/NC<br>31/63: Door lock circuit 2 feedback NO/NC<br>32/64: Reserved<br>65/97: Door operator 1 safety edge signal NO/NC<br>66/98: Door operator 2 safety edge signal NO/NC<br>7/99: Motor overheat signal NO/NC<br>68/100: Earthquake signal NO/NC<br>69/101: Back door forbidden signal NO/NC<br>71/103: Half-load signal NO/NC<br>72/104: Fire emergency floor switchover signal NO/NC<br>76/108: Door operator 1 open input NO/NC<br>77/109: Door operator 2 open input NO/NC<br>78/110: Brake travel switch 2 input NO/NC<br>79/111: External fault input NO/NC<br>80/112: Terminal floor verification signal NO/NC<br>81/113: Door lock 1 shorting NO/NC<br>82/114: Door lock 1 shorting NO/NC<br>86/118: Door lock bypass input NO/NC<br>128/160: Ramp-stop signal input NO/NC<br>129/161: ARD low power input NO/NC<br>130/162: Fault reset input NO/NC<br>134/166: Altering three-phase 380 V motor for single-phase 220 V input NO/NC<br>384/426: Flood signal input NO/NC<br>385/417: Communication input signal NO/NC (NO value recommended)<br>386/418: Power supply with generator signal NO/NC<br>387/419: Re-operation signal (NO value recommended)<br><br>(Value for NC setting of a signal = Value for NO setting of this parameter + 32) | 00 |

2) High-voltage DI input setting

Set parameters F5-37 to F5-40 based on the functions of DI X25 to X28.

| Parameter | Name | Range | Default |
|---|---|---|---|
| F5-37 | X25 function selection | 0: Disabled<br>4: Safety circuit signal<br>5: Door lock circuit signal 1 (high-voltage input detection point, multiple selection allowed)<br>6: Door lock circuit signal 2 (high-voltage input detection point, multiple selection allowed)<br>7: Door lock 1 shorting<br>8: Door lock 2 shorting | 0 |
| F5-38 | X26 function selection | | 0 |
| F5-39 | X27 function selection | | 0 |
| F5-40 | X28 function selection | | 0 |

3) DO setting

Set parameters F5-26 to F5-31 based on relay output Y1 to Y6.

| Parameter | Name | Range | Default |
|---|---|---|---|
| F5-26 | Y1 function selection | 00: No function<br>01: Running contactor control<br>02: Brake contactor control<br>03: Shorting door lock circuit relay output<br>04: Fire emergency floor arrival feedback<br>Others:<br>05: Door operator 1 open<br>06: Door 1 close<br>07: Door 2 open<br>08: Door 2 close<br>09: Brake and running contactors healthy<br>10: Fault state<br>11: Running monitor<br>12: Shorting PMSM stator contactor<br>13: Emergency evacuation automatic switchover<br>14: System healthy<br>15: Emergency buzzer control<br>16: Higher-voltage startup of brake<br>17: Elevator running in up direction<br>18: Lighting/fan running<br>... (To be continued) | 1 |
| F5-27 | Y2 function selection | | 2 |
| F5-28 | Y3 function selection | | 12 |
| F5-29 | Y4 function selection | | 4 |
| F5-30 | Y5 function selection | | 0 |
| F5-31 | Y6 function selection | | 0 |

| Parameter | Name | Range | Default |
|---|---|---|---|
| F5-31 | Y6 function selection | ... (Continued)<br>19: Medical sterilization<br>20: Non-door zone stop<br>21: Electric lock<br>22: Non-service state<br>23: Emergency evacuation completed<br>64: Communication signal output for generator-powered operation | 0 |



NOTE

The commissioning in this user guide are all based on the default settings as an example.

2. Elevator Speed Setting

1) Set the rated elevator speed F0-04. Refer to the speed on the motor nameplate.
2) F0-03 is used to set the actual maximum running speed of the elevator. The value must not be larger than the rated elevator speed (F0-04).

| Parameter | Name | Range | Default |
|---|---|---|---|
| F0-03 | Running speed | 0.250 to F0-04 | 1.600 m/s |
| F0-04 | Rated speed | 0.250 to 4.000 | 1.600 m/s |

3. Top Floor Setting

The parameters are to set the top floor of the elevator, determined by the number of leveling plates installed.

| Parameter | Name | Range | Default |
|---|---|---|---|
| F6-00 | Top floor of the elevator | F6-01 to 48 | 9 |
| F6-01 | Bottom floor of the elevator | 1 to F6-00 | 1 |

4. Motor Parameters Setting

Set motor parameters group F1 according to the motor nameplate.

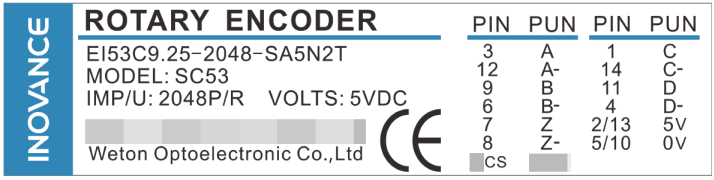
For PMSM, set F1-25 to 1.

| Parameter | Name | Range | Default |
|---|---|---|---|
| F1-25 | Motor type | 0: Asynchronous motor<br>1: Synchronous motor | 1 |
| F1-01 | Rated power | 0.7 to 75.0 | 5.0 kW |
| F1-02 | Rated voltage | 0 to 600 | 380 V |

| Parameter | Name | Range | Default |
|---|---|---|---|
| F1-03 | Rated current | 0.00 to 655.00 | 12.00 A |
| F1-04 | Rated frequency | 0.00 to max. frequency | 19.00 Hz |
| F1-05 | Rated speed | 0 to 3000 | 95 r/min |

5. Encoder Parameters Setting

Set the encoder type and PPR according to the encoder nameplate.




1) The preceding figure shows a Sin/Cos encoder. Set F1-00 to 0.
2) For the encoder with 2048 ppr, set F1-12 to 2048.

| Parameter | Name | Range | Default |
|---|---|---|---|
| F1-00 | Encoder type | 0: SIN/COS encoder<br>1: UVW encoder<br>2: ABZ encoder<br>3: Endat absolute encoder | 0 |
| F1-12 | Encoder pulses per revolution | 0 ppr to 10000 ppr | 2048 |

6. Command Source Setting

Set F0-01 to 1 to select the distance control mode.

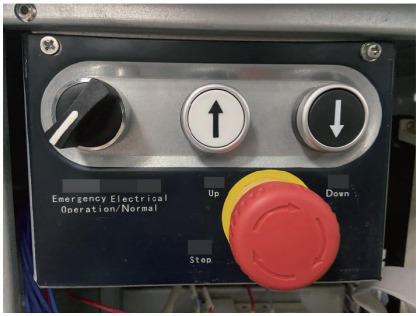
| Parameter | Name | Range | Default |
|---|---|---|---|
| F0-01 | Command source selection | 0: Operation panel control<br>1: Distance control | 1 |

### 7.2.5 Motor Auto-tuning

| Danger | |
|---|---|
|  | To guarantee safe elevator running:<br>◆ Never start the elevator when the safety circuit is shorted. Failure to comply will result in severe personal injuries or even death.<br>◆ Before emergency electrical operation, confirm that nobody is in the shaft. Failure to comply may result in safety accidents. |

The procedure of the motor auto-tuning is as follows:

1. Set the switch to Emergency Electric Operation. Check that the X9 indicator on the MCB becomes OFF and the elevator enters the EEO state.




2. Auto-tuning preparation

   1) Check the equation and motor parameters: N=60 × f/P, where f is F1-04 (rated frequency), N is F1-05 (rated speed), P is the number of pole pairs (number of poles/2, mostly a positive integer).

   2) Set F1-11 to 1 and select with-load auto-tuning. Press PRG and the operating panel displays "TUNE", indicating that the motor enters auto-tuning state.

3. Keep pressing the Up/Down button for the auto-tuning process. The running contactor closes and the motor has vibration noise due to excitation. After 3s to 5s, the brake contactor closes and no fault is reported if the motor stops automatically with 2 or 3 rotations. With the encoder measured angle displayed by the LED for about 3s on the MCB, the auto-tuning is completed successfully and the controller automati- cally stops output. You can release the buttons now. If the fault code is displayed, it shows the auto-tuning fails. Clear the fault first before performing auto-tuning again.

4. Repeat step 3 (at least 3 times) and ensure that the encoder measured angles have a difference within ±5° .

5. Finally, reset Emergency Electric Operation to Normal.

| Parameter | Name | Range | Default |
|---|---|---|---|
| F1-11 | Auto-tuning mode | 0: No operation<br>1: With-load auto-tuning<br>2: No-load auto-tuning<br>3: Shaft auto-tuning 1<br>4: Shaft auto-tuning 2<br>5: Synchronous motor static auto-tuning | 1 |
| F5-09 | X9 function selection | 0 to 127<br>116: EEO NC input | 116 |

### 7.2.6 Trial Run at Inspection Speed

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

The following table shows the related parameters.

| Parameter | Name | Range | Default |
|---|---|---|---|
| F2-10 | Elevator running direction | 0: Running direction unchanged<br>1: Running direction reversed | 0 |
| F3-25 | Elevator speed in the EEO state | 0.100 to 0.300 | 0.250 m/s |

Do as follows to enable this function:

1. After the motor auto-tuning is completed, turn the switch to Emergency Electric Operation for EEO running test.
2. Press Up or Down button to check whether the running direction of the elevator is consistent with that of the motor. If not, change F2-10 to 1 to reverse the running direction of the elevator, and then repeat.

### 7.2.7 Car Top Commissioning

| Caution | |
|---|---|
|  | ◆ During car top commissioning, ensure that car top inspection is enabled to guarantee safety.<br>◆ The MCTC-CTB is high level active by default. |

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

| F5-25 bits | Name | CTB input signal setting |
|---|---|---|
| bit0 | Door 1 light curtain | Used to set NO/NC feature of door 1 light curtain signal |
| bit2 | Door 1 open limit | Used to set NO/NC feature of door 1 open limit signal |
| bit4 | Door 1 close limit | Used to set NO/NC feature of door 1 close limit signal |

This section takes the single-door elevator system as an example to describe the commissioning. The related signals include light curtain 1, door 1 open/close limit signal, and door 1 open/close output signal. And the light curtain and door open/ close limit signals are of NC state. The following table shows the related signals.

**Table 7-1 Car top commissioning-related signals**

| CTB terminals | Definition |
|---|---|
| P24 | Common for X1 to X8 inputs |
| X1 | Light curtain 1 input |
| X3 | Door 1 open limit input |
| X5 | Door 1 close limit input |
| BM | Common for door 1 output |
| B1 | Door 1 open output |
| B2 | Door 1 close output |

The procedure of the car top commissioning is as follows:

1. Light curtain commissioning

Light curtain commissioning is performed to check whether the inputs/outputs and NC/NO settings of light curtains are correct.

1) Check whether light curtains are installed properly and securely.
2) Check the status of X1 signals indicator on the CTB to ensure that light curtains work normally. See the following table for the light curtain judgment:

**Table 7-2 Light curtain judgment**

| | Blocking state | X1 signal indicator |
|---|---|---|
| Light curtain signal set to NO | Unblocked | Steady OFF |
| | Blocked | Steady ON |
| Light curtain signal set to NC | Unblocked | Steady ON |
| | Blocked | Steady OFF |

3) Check bit0 of F5-25. If the light curtains is not blocked, LED segment A will be OFF (light curtain signal inactive). It indicates that the NO/NC settings are cor- rect. If LED segment A is ON (light curtain signal active) shown in the following figure, set bit0 of F5-25 to the opposite state. That is, if the original value of bit0 is 0, change it to 1 and 0 if the original value of bit0 is 1.

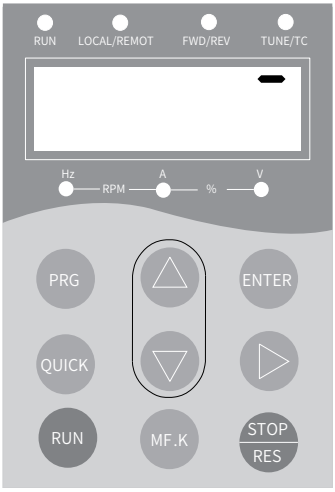



**Figure 7-4 Light curtain signal valid display (segment A)**

4) Light curtain commissioning is completed.

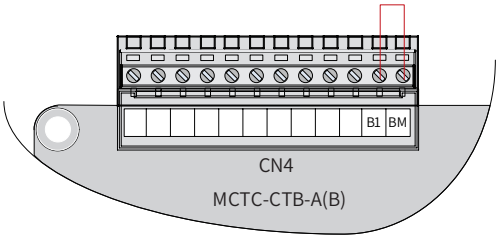
2. Door operator controller commissioning

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

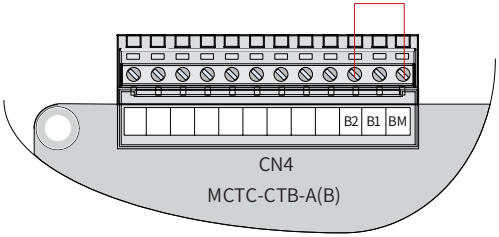
■ Check whether F7-05 is 0, the default value. If yes, it indicates that the door operator allows door open (You may choose to skip this step).

■ Check whether the door open/close output of the door operator controller is normal.

1) Short BM-B1 terminal of CTB CN4, and it indicates normal output control of door operator controller 1 if door 1 opens.




2) Short BM-B2 terminal of CTB CN4, and it indicates normal output control of door operator controller 1 if door 1 closes.



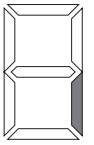
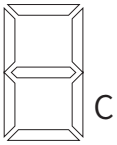
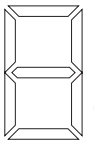
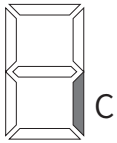
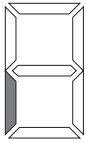
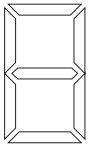

3) Observe the X3 and X5 terminal signal indicators on the CTB and judge whether door open/close limit feedback from the door operator controller is normal. See the following table for the judgment method.

**Table 7-3 Door open/close limit feedback judgment**

| | Door state | X3 signal indicator | X5 signal indicator |
|---|---|---|---|
| Door open/close limit signal set to NO | At door open limit | Steady ON | Steady OFF |
| | During door open/ close | Steady OFF | Steady OFF |
| | At door close limit | Steady OFF | Steady ON |
| Door open/close limit signal set to NC | At door open limit | Steady OFF | Steady ON |
| | During door open/ close | Steady ON | Steady ON |
| | At door close limit | Steady ON | Steady OFF |

4) Check F5-25 bit2 and bit4 to make sure their settings are consistent with open/ close limit signal NO/NC states. The following table shows details about the consistency check.

Table 7-4 Consistency check

| Signal | Signal state monitoring | | Signal state judging | Whether to reset bit2/ bit4 |
|---|---|---|---|---|
| | At door open limit | At door close limit | | |
| Door open limit signal (segment C) |  |  | Normal | No |
| |  |  | Abnormal | Set bit2 to the opposite state:<br>If the original value is 0, change it to 1.<br>If the original value is 1, change it to 0. |
| Door close limit signal (segment E) |  |  | Normal | No |
| |  |  | Abnormal | Set bit4 to the opposite state:<br>If the original value is 0, change it to 1.<br>If the original value is 1, change it to 0. |

### 7.2.8 Shaft Auto-tuning

#### 1 Checks Before Shaft Auto-tuning

The operator is responsible for performing checks including but not limited to those listed in the following table in accordance with the recognized technical rules in the country of installation and with applicable regional guidelines. Tick after each check of the item.

| ☑ | No. | Item |
|---|---|---|
| ☐ | 1 | Ensure that the shaft switches act properly, including final limit switches, limit switches, slow-down switches, and leveling switches. |
| ☐ | 2 | Ensure that leveling switches operate in the correct sequence. Generally, one leveling switch is installed. If multiple leveling switches are installed, check that the acting sequence is correct. For example, if three leveling switches are installed:<br>Acting sequence for EEO up: up leveling switch → door zone switch → down leveling switch.<br>Acting sequence for EEO down: down leveling switch → door zone switch → up leveling switch. |
| ☐ | 3 | Ensure that CAN communication between the MCB and CTB is normal (CAN1 indicator flashing and Err51 not reported). If CAN communication is abnormal, refer to Err51 solutions in *"11.2 Fault Codes and Troubleshooting" on Page 189*. |

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

**2 Conditions**

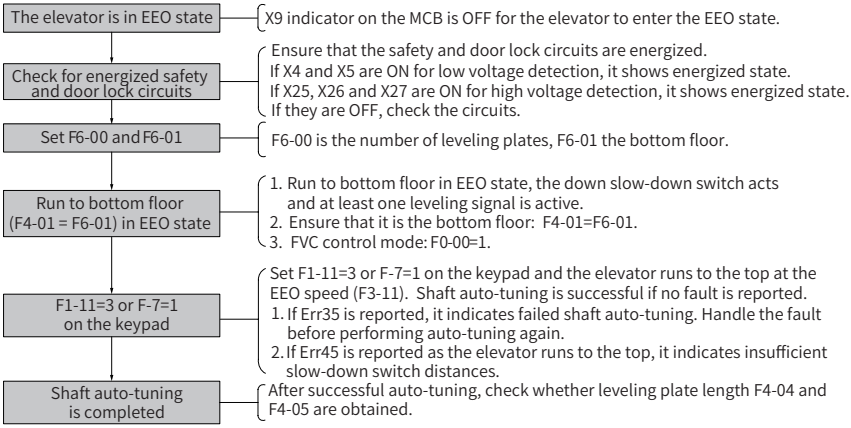
- The elevator is in EEO state.
- The elevator runs to a position below the leveling position of the bottom floor (at least one leveling switch is disconnected from the leveling plate) and the down slow-down switch 1 signal input to the MCB is active (for two landing floors only).
- The system is not in the fault state. If there is a fault, press STOP RES to reset the fault

### 3 Related Parameters

The following table shows the related parameters.

| Parameter | Name | Range | Default | Notes |
|---|---|---|---|---|
| F0-04 | Rated speed | 0.250 to 4.000 | 1.600 m/s | - |
| F6-00 | Top floor of the elevator | F6-01 to 48 | 9 | Actual number of floors + 1 - Bottom floor |
| F6-01 | Bottom floor of the elevator | 1 to F6-00 | 1 | - |
| F3-26 | Shaft auto- tuning speed | 0.250 to 0.630 | 0.250 m/s | - |

### 4 Operation Steps




NOTE

Precautions for shaft auto-tuning of two-floor elevators:
When the elevator runs down to the bottom floor at inspection speed, the leveling switch needs to be completely detached from the leveling plate.
Perform shaft auto-tuning again in following conditions:

- The positions of leveling plates or slow-down switches are adjusted on site.
- F0-04 (Rated speed), F6-00 (Top floor of the elevator), or F6-01 (Bottom floor of the elevator) is modified.
- Each time the MCB or equipment is replaced, perform motor auto-tuning again.

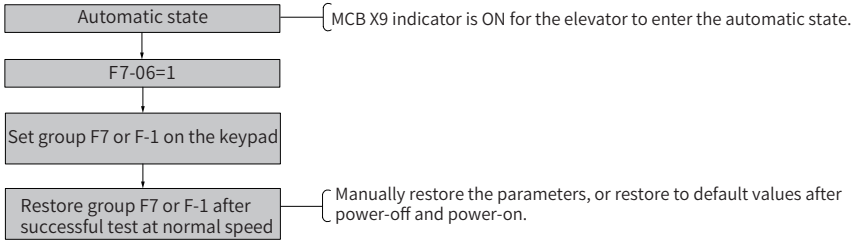
### 7.2.9 Trial Run at Normal Speed

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

Parameters in group F7 (set using the LED operating panel) are used in this test. F7-00 can be used as the car call button and set to any floor.

| Parameter | Name | Description | Notes |
|---|---|---|---|
| F7-00 | Register the car call | Set the car call floor | Same as F-1 on the keypad |
| F7-01 | Register the hall up call | Set the hall up call floor | - |
| F7-02 | Register the hall down call | Set the hall down call floor | - |
| F7-03 | Random running times | Set the random running times | - |
| F7-04 | Hall call | 0: Hall call enabled<br>1: Hall call disabled | Set F-8 on the keypad to 1: hall call disabled |
| F7-05 | Door open | 0: Door open enabled<br>1: Door open disabled | Set F-8 on the keypad to 2: door open disabled |
| F7-06 | Overload function | 0: Overload disabled<br>1: Overload enabled | Set F-8 on the keypad to 3: overload disabled |
| F7-07 | Limit function | 0: Limit function enabled<br>1: Limit function disabled | Set F-8 on the keypad to 4: limit switch disabled |
| F7-08 | Random running interval | Interval between two random runnings | - |

Operation steps are as follows:




After the trial run is completed, power off and then get power back on. Then restore parameters F7-00 to F7-07 to 0.

NOTE

- Parameters F7-00 to F7-08 can automatically change back to default values after power-off and power-on.
- After shaft auto-tuning is completed, running at normal speed may fail as the full- load/overload function is not commissioned. You can set F7-07 to 1 or set F-8 to 3 on the keypad to enable system overload before normal-speed running.

### 7.2.10HCB Commissioning (Optional)

The HCB address and the leveling plate are in a one-to-one relationship. It means that the address is numbered according to the leveling plate numbered from bottom to top on the same floor. If a leveling plate is installed on a non-service floor, an address must be reserved for this floor.

The procedure of HCB commissioning is as follows:

1. Install an HCB for each service floor. The non-service floors do not require the HCB.
2. Take MCTC-HCB-R600 as an example to set the HCB address. Short CN5 and adjust the floor address through the up/down buttons. Press CN2 to add 1 and CN3 to subtract 1.

A long press for 3s keeps increasing or decreasing the address until reaching the required value: 1 to 56 (HCB address), 0/D2/D3/D4 (CCB address) and DH (HCB-B without address display). Disconnect CN5 and the set address is automatically saved after flashing for three times.

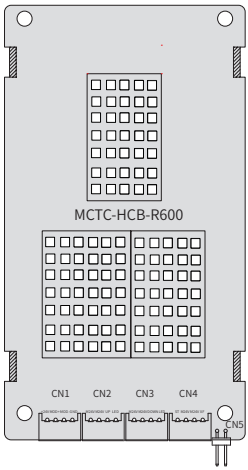



Figure 7-5 MCTC-HCB-R600

NOTE

The HCB address is the same as the number of leveling plates on the same floor. For exam- ple, the HCB address is set to N for the floor where the Nth leveling plate is located. If a lev- eling plate is installed on a non-service floor, an address must be reserved for this floor.

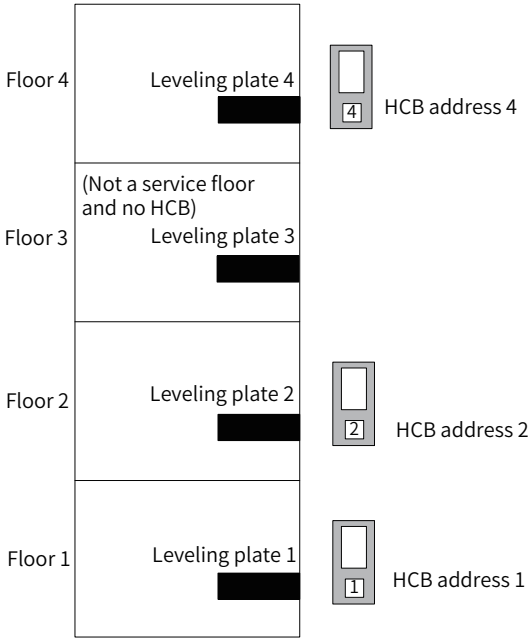



**Figure 7-6 HCB installation and address setting**

3. After setting an address for each HCB, you can call the elevator by using the HCB to start normal-speed running.

NOTE

- Set a unique address for each HCB. Otherwise, the HCB cannot be used.
- When the display board is used inside the car, its address must be set to 0.

# Chapter 8 Function List

## 8.1 Basic Functions

| Function | Description | Remarks |
|---|---|---|
| **Common Running Functions** | | |
| Full collective selective | In automatic running or attendant state, this function enables the elevator to respond both car calls and hall calls. Passengers at any service floor can call the elevator by pressing the up call button and down call button. | FE-00 (Collective selective mode) |
| Service floor | The standard program supports 40 floors. The service of more than 40 floors is supported by the customized program. | - |
| Door open time setting | The system automatically determines different door open time for door open for call, command, protection, or delay according to the set door open holding time. | Set in group Fb |
| Door open holding | In automatic running state, passengers can press the door open button in the car to delay door close to facilitate goods to be moved in or out. | Fb-14 (Door open holding time at such signal input) |
| Door operator service floor setting | You can set the required service floors of the door operators. | Fb-02, Fb-03, Fb-04, Fb-05, Fb-18 and Fb-19 |
| Door pre-close by the door close button | During door open holding in automatic running state, passengers can press the door close button to close the door in advance, which improves the efficiency. | - |
| Floor number display setting | The system supports display of floor numbers in combinations of numbers and letters, which meets the requirements of special conditions. | Set in group FE |
| Light curtain signal judgment | If the door is blocked by stuff during door close, the light curtain acts and the elevator opens the door. This function is invalid in fire emergency state. | - |
| Auxiliary operation box | An optional auxiliary operation box that has the same functions as the main operation box is available. | - |
| Independent control of the front door and back door | When there are two doors for a car, automatic control on the two doors depends on your requirements. | - |
| Repeat door close | If the door lock is not applied after the elevator performs door close for a certain time, the elevator automatically opens the door and then closes the door again. | Fb-08 (Door close protection time) |
| Independent command | When the main and auxiliary operation boxes are configured, they can independently control door open/close according to the commands in automatic running state. | - |
| Voice announcement | The elevator automatically announces information such as the running direction and next arriving floor during running. | MCTC-CHM required |
| Auto-leveling | The systems implements automatic accurate leveling based on the floor pulse counting and up/down leveling feedback signals. | - |
| Response at acceleration | The system allows the elevator to automatically respond to calls from the service floors during acceleration. | - |
| Down collective selective control | In automatic running or attendant state, the elevator responds only to hall down calls besides car calls. | - |
| Idle elevator returning to base floor | In automatic running state, the elevator automatically returns to the set parking floor and waits for passengers if there is no car call or hall call within the set time. | F9-00 (Idle time before returning to base floor) |

| Function | Description | Remarks |
|---|---|---|
| Landing at another floor | If the door open time exceeds the door open protection time but the door open limit signal is still inactive, the elevator closes the door and then automatically runs to the next landing floor; the system reports fault Err55. | - |
| Forced door close | When the door fails to close within the set time due to the action of the light curtain or safety edge, the elevator enters the forced door close state, closes the door slowly, and gives a prompt tone. | - |
| Cancellation of wrong calls | Passengers can press the button consecutively twice to cancel wrong calls. | - |
| Service floor setting | You can enable or disable the system service for certain floors flexibly based on actual requirements. | F6-05, F6-06, F6-35 |
| Time-based floor service | You can flexibly set the time periods and corresponding service floors or select the service floors by using the service floor switchover switch. | - |
| Independent running | The elevator does not respond to any call, and the door needs to be closed manually. In the case of group control, the elevator runs independently out of the group control system. | Signal input: CCB JP23 |
| Attendant running | In attendant state, the running of the elevator is controlled by the attendant. | Signal input: CCB JP21 |
| Low-speed self-rescue | When the elevator is in non-inspection state and stops at non-leveling area, the elevator automatically runs to the leveling area at low speed if the safety requirements are met, and then opens the door. | - |
| Door control function | You can set whether the system keeps outputting commands after door open limit and door close limit based on the type of the door operator. | - |
| Car arrival gong | After the elevator arrives at the destination floor, the CTB gives a prompt tone. | - |
| Hall arrival forecast indicator | When the elevator will arrive at the destination floor soon, the hall arrival forecast indicator becomes ON. | HCB output |
| Hall arrival gong | After the elevator will arrive at the destination floor soon, the system outputs the hall arrival gong. | HCB output |
| Hall I/O extension function | If the hall I/O terminals are not sufficient, more terminals can be provided by using an<br>MCTC-KZ-G1 board. | - |
| Car I/O extension function | If the car I/O terminals are not sufficient, more terminals can be provided by using an MCTC-KZ-G1 board. | - |
| Button stuck check | The system can automatically identify whether a hall call button is stuck and cancel the stuck call, preventing the condition that the elevator cannot close and run due to stuck hall calls. | FE-32 bit4 |
| Automatic startup torque compensation | The system automatically implements startup torque compensation based on the current car load, achieving smooth startup and improving the riding comfort. | F8-01 (Pre-torque selection) |
| Direct travel ride | The system automatically calculates and generates the running curves based on the distance, enabling the elevator to directly stop at the leveling position without creeping. | |
| 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. | |

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

| Function | Description | Remarks |
|---|---|---|
| Dual-speed for inspection | Considering inaccurate running control at high inspection speed but long running time at low inspection speed, the system provides the dual-speed curve for inspection, which greatly improves the efficiency at inspection. | - |
| Test running | The test running includes the fatigue test of a new elevator, car call floor test, hall call test, and tests such as hall call response forbidden, door open/close forbidden, terminal floor limit switch shielded, and overload signal shielded. | - |
| **Fire Emergency and Security Functions** | | |
| Returning to base floor at fire emergency | After receiving a fire emergency signal, the elevator does not respond to any call but directly runs to the fire emergency floor and waits. | F6-03 and F8-12 (Fire emergency floor) |
| Firefighter running | After the elevator enters the firefighter running mode, door open/close is implemented by the jog operation (optional) by using the door open and close buttons rather than automatically. In addition, the elevator responds to only car calls and only one call can be registered once. | F6-44 |
| Security floor | After the security floor function is enabled, the security floor is used at 10:00 p.m. to 6:00 a.m, and the elevator runs to the security floor first every time, stops and opens the door, and then runs to the destination floor. | F6-13 |
| Elevator lock | In automatic running state, when the elevator lock switch acts or the set elevator time is reached, the elevator returns to the elevator lock floor after responding to all car calls, stops running, and turns off the light and fan in the car. | F6-04 (Elevator lock floor) |
| Troubleshooting based on fault level | Faults are classified into different levels based on the severity. Different levels of faults are rectified using different methods. | - |
| Runaway prevention | The system detects the running state of the elevator in real time. If the elevator speed exceeds the limit, the system immediately stops running of the elevator. | - |
| Automatic identification of power failure | The system automatically identifies power failure and outputs the relay signal for emergency evacuation automatic switchover to implement emergency evacuation at power failure. | Y6 especially used for emergency evacuation switchover |
| Automatic running mode switchover at power failure | For the synchronous motor, when the power supply is interrupted, the system can perform automatic switchover between shorting stator braking mode and controller drive mode, implementing quick and stable self-rescue.<br>Shorting stator braking mode: Upon power failure, UPS is used, the motor stator is shorted, and the brake is automatically released, making the car move slowly under the effect of the weighing difference between the car and the counterweight. | F6-45 (Emergency evacuation function selection) |
| Running direction self-identification at power failure | When the power supply is interrupted, the system can automatically identify the current car load and determine the running direction. | F6-45 (Emergency evacuation function selection) |
| Base floor verification | After detecting a position abnormality, the system runs the elevator to each floor until reaching the terminal floor for verification, guaranteeing system security. | |
| Passenger unloading first upon fault | The system automatically determines the fault level. If the safety running conditions are met, the elevator first runs to the leveling position to unload passengers. | |
| Interference degree judgment | The system judges the degree of communication interference. | Viewed in FA-24 |

| Function | Description | Remarks |
|---|---|---|
| Earthquake protection | When the earthquake detection device acts and inputs a signal to the system, the elevator lands at the nearest floor and stops running. After the earthquake signal becomes inactive and the fault is reset manually, the elevator restores to normal running. | - |
| Current cancellation in ramp mode | For the PMSM, after the elevator decelerates to stop, the holding current of the motor is cancelled in ramp mode, preventing abnormal noise during current cancellation. | F2-17 |
| Independent working power supply | The NICE3000new system supports not only three-phase 380 VAC but also single-phase 220 VAC to meet different applications of the power supply system (such as 220 V UPS) | - |
| Automatic voltage identification | The system detects the bus voltage and automatically adjusts the running speed of the elevator to adapt to the situation of insufficient power from power supply (such as emergency UPS). | - |
| **Parallel/Group Control and Other Functions** | | |
| Parallel control | The system supports parallel control of two elevators and provides multiple scheduling algorithms to meet requirements of different customers. | - |
| Dispersed waiting | In parallel/group control, the elevators can wait at different floors. | Set in F6-09 |
| Parallel/group control exit | If the parallel/group control exit switch of a certain elevator in a parallel/group control system is valid or the time for exiting the parallel/group control is reached, the elevator exits parallel/group control and runs independently. This does not affect normal running of the parallel/group control system. | - |
| Parallel/group control automatic exit | If an elevator in the parallel/group control system cannot respond to calls in time due to faults, the elevator automatically exits the parallel/group control system and runs independently. This does not affect normal running of the parallel/group control system. | - |
| Anti-nuisance function | The system automatically judges the number of passengers in the car and compares it with the number of registered car calls. If there are excessive car calls, the system determines that it is nuisance and cancels all car calls. In this case, passengers need to register correct car calls again. | F8-08 (Anti-nuisance function) |
| Prompt of non-door zone stop | The system gives a prompt when the elevator stops at a non-door zone area due to faults. | - |
| Full-load indication | When the elevator is full-loaded, a full-load indication is displayed on the HCBs and the elevator directly runs to the desired floors. | - |
| **Energy-saving Functions** | | |
| Car energy-saving | If there is no running command within the set time, the system automatically cuts off the power supply to the light and fan in the car. | F9-01 (Time for fan and light to be turned off) |
| Energy-saving running with standby power supply | When the normal power supply is interrupted and the emergency power supply is used, the system reduces the running speed of the elevator in the prerequisite of guaranteeing the smooth running curve. | - |
| Arrival gong disabled at night | Within the set time period, the arrival gong is disabled. | F5-33 bit4 |

## 8.2 Optional Functions

| Function | Description | Remarks |
|---|---|---|
| Door pre-open | During normal stop, when the elevator speed is smaller than 0.2 m/s and the door zone signal is active, the system shorts the door lock by means of the shorting door lock circuit contactor and outputs the door open signal, implementing door pre-open. This improves the elevator use efficiency. | MCTC-SCB required |
| Micro-leveling | After landing at a floor, the elevator may move upward or downward due to the load change and the car door is not aligned with the ground, which is inconvenient for in and out of passengers and goods. In this case, the system allows the elevator to run to the leveling position in the door open state at the leveling speed. | MCTC-SCB required |
| Power failure emergency evacuation | For the elevator configured with standby power supply, the system uses the standby power supply to implement low-speed self-rescue in the case of power failure. | MCTC-ARD-C required |
| Onsite commissioning | The system can control and monitor running of elevators by using the NEMS software. | - |
| Commissioning by mobile phone | The mobile phone can be connected to the controller through the external WiFi module, and you can commission and monitor the elevator, and upload and download parameters by using the cell phone. | Special WiFi and mobile phone commissioning software required |
| Community monitoring | The control system can be connected to the terminal in the monitoring room. By using the NEMS software, you can view the floor position, running direction, and fault state of the elevator. | NEMS, accessories, and MCTC-MIB required |
| IC card | Passengers need to use the IC card to go to floors that require authorization. | IC card required |
| STO function | When a fault occurs in the safety circuit, the STO card acts immediately to cut the output current of the controller and stop the motor output torque. | Special STO card and MCTC-JCB-A2 |
| Equipment-roomless monitoring function | With the monitoring board MCTC-MB-A2, users can view the running status of the elevator and perform commissioning outside the shaft and burning. | MCTC-MB-A2 required |
| Flood operation | Flood into the shaft is frequent especially in areas easily affected by heavy rain, causing undesired safety hazards and damages to equipment. The flood operation function is activated when the system detects active flood signal. | - |
| Generator-powered operation | For elevator groups equipped with the generator as a backup power, the system automatically switches to the generator for power supply during the mains power outages. | - |
| Brake release for evacuation | When certain faults occur, the system releases brake, leads the car to the door zone by adjusting the car load/ counterweight balanceBrake release for evacuation, and then opens the door. | - |

# Chapter 9 System Functions

## 9.1 Parallel/Group Control

### 1 Background

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

### 2 Description

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

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

### 9.1.1 Parallel Control

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

### 1 Wiring

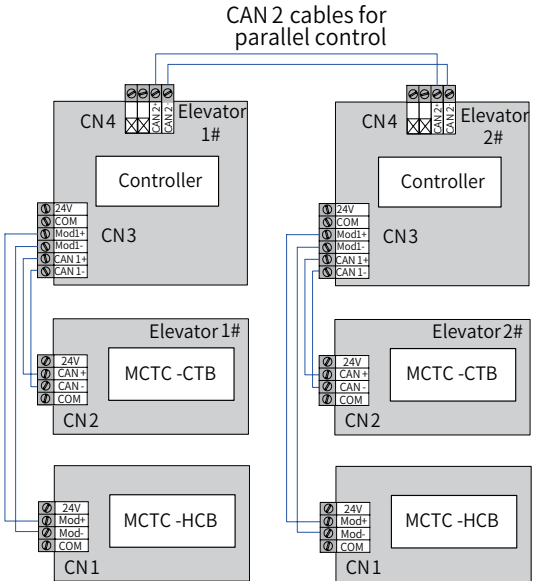



Figure 9-1 Wiring of parallel control by CN4

1. User floor: actual floor of the building

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

2. For the same physical floor, the leveling plate must be installed for both the elevators. Even if one elevator need not stop at a certain floor, the leveling plate must be installed at this floor for this elevator. You can set the service floors of this elevator so that it does not stop at this floor.

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

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

**2 Related Parameters**

| Parameter No. | Parameter Name | Setting Range | Setting in Parallel Control | Remarks |
|---|---|---|---|---|
| F6-07 | Number of elevators in parallel/group mode | 1 to 8 | 1 to 8 | - |
| F6-08 | Elevator No. | 1 to 8 | Master: 1<br>Slave: 2 | - |
| F6-09 | Program control selection 2 | - | bit3 = 1: Parallel/ group control implemented at CAN2 | Set bit3 to 1 when the CAN2 communication port CN4 is used for parallel control. |

Example:

Assume that there are two elevators in parallel mode:

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

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

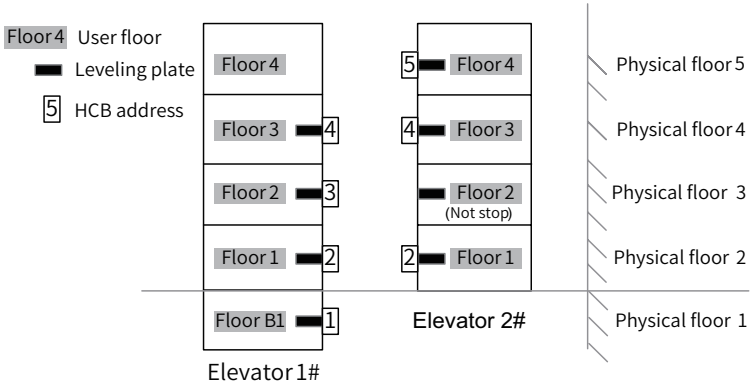



**Figure 9-2 Floor diagram of two elevators in parallel control**

**Table 9-1 Parameter setting and HCB addresses of two elevators**

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

### 9.1.2 Group Control

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

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

## 1 Wiring

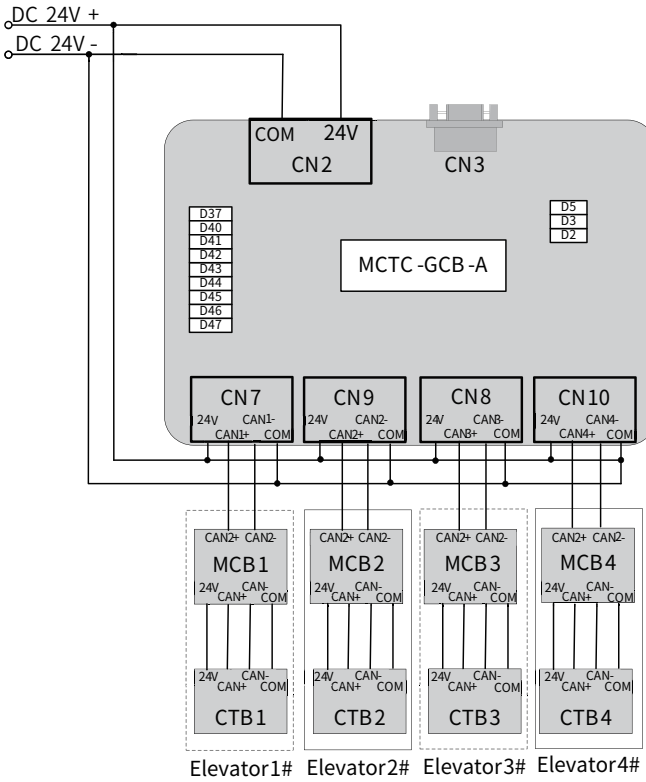



Figure 9-3 Wiring of group control

NOTE

For more details on the MCTC-GCB, see *"3.8 Group Control Board MCTC-GCB-A" on Page 54*.

**2 Related Parameters**

| Parameter No. | Parameter Name | Setting Range | Setting in Group Control | Remarks |
|---|---|---|---|---|
| F6-07 | Number of elevators in parallel/group mode | 1 to 8 | 1 to 8 | Set the value as the actual number of elevators in group control. |
| F6-08 | Elevator No. | 1 to 8 | 1 to 8 | Value "1": elevator 1#<br>Value "2": elevator 2#<br>By analog. |
| F6-09 | Program control selection 2 | - | bit1 = 0: Group control by MCTC-GCB-A | - |
| | | - | bit4 = 1: Group control in compatibility with NICE3000 | Set bit4 to 1 when the NICE3000 is involved in group control. |

You need not set the CTB address for group control.

## 9.2 Opposite Door Control

**1 Background**

This function is used to control two elevator doors.

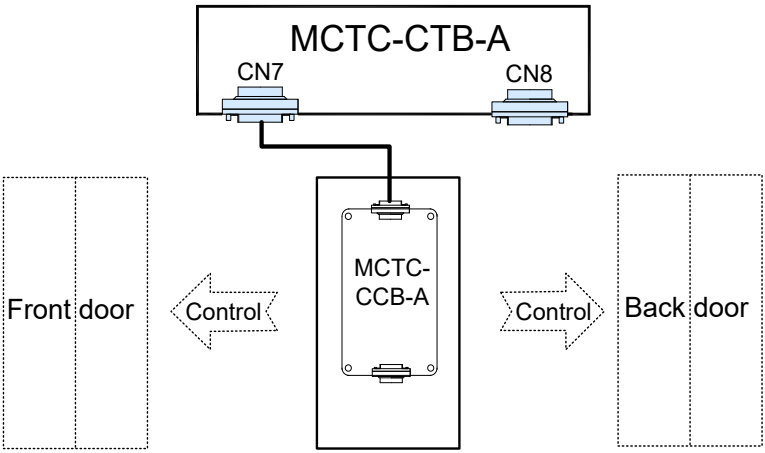
**2 Description**

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

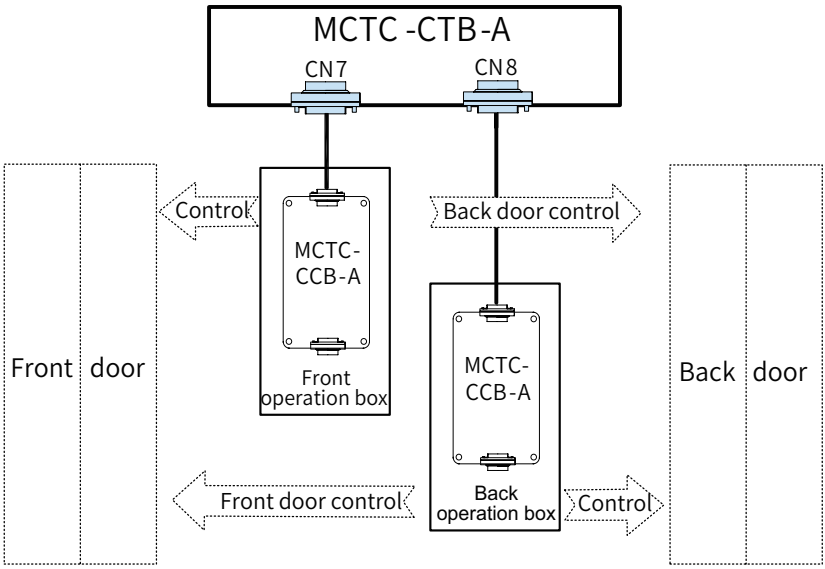
Table 9-2 Opposite door control modes

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

**3 Wiring**




**Single operation box**




**Double operation boxes**

**Figure 9-4 CCB wiring**

**4 HCB setting**

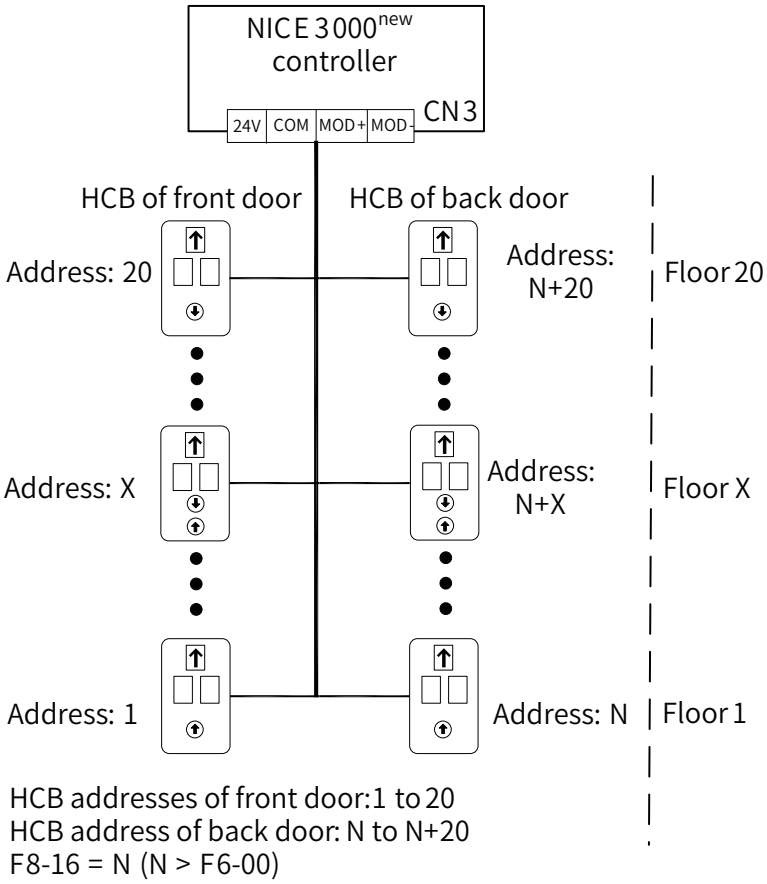



**Figure 9-5 HCB setting diagram**

## 5 Related Parameters

| Type | Door Control Mode | Parameter Setting | | Service Floor | HCB Address Setting | Operation Box CCB Wiring |
|---|---|---|---|---|---|---|
| | | Mode Selection | Other Parameters | | | |
| Mode 1 | Simultaneous control | FC-04 = 0 | Fb-00 = 2,<br>F8-16 = N<br>(N > F6-00) | 20 | HCB address of front door: 1 to 20<br>HCB address of back door: N to N+20 | The CCB of front door is connected to CN7 on the CTB.<br>The CCB of back door is connected to CN8 on the CTB. |
| Mode 2 | Hall call independent, car call simultaneous | FC-04 = 1 | Same as mode 1 | 20 | | |
| Mode 3 | Hall call independent, car call manual control | FC-04 = 2<br>F6-40 bit4 = 1 | Same as mode 1 | 20 | | |
| Mode 4 | Hall call independent, car call independent | FC-04 = 3 | Same as mode 1 | 20 | | |

In Mode 3, the car door to open is controlled as follows:

◆ Control by button
Connect the button to JP16 on the CCB, and set F6-40 bit2 to 1. When the button indicator is steady ON, only the front door opens; when the button indicator is steady OFF, only the back door opens

◆ Control by switch
Connect the switch to JP20 on the CCB, and set F6-40 bit15 to 1. When JP20 is ON, only the front door opens; when JP20 is OFF, only the back door opens.

## 9.3 Automatic Emergency Evacuation at Power Failure

### Background

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

There are two emergency evacuation methods, described as follows:

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

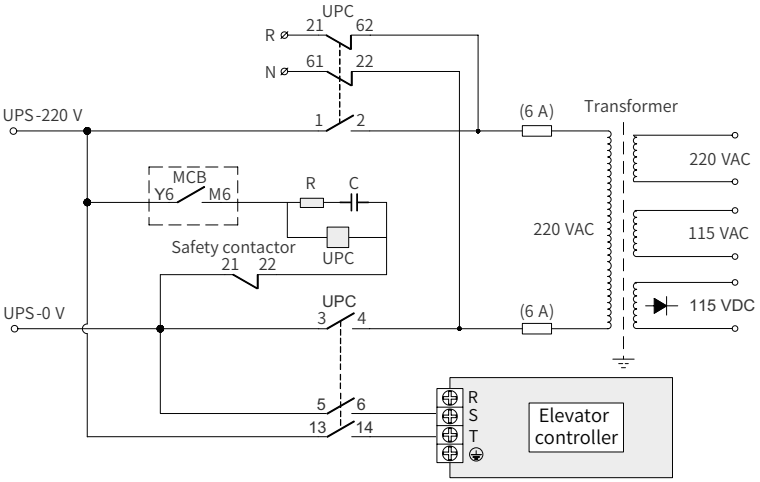
There are two standby power supply modes in the industry.

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

## 9.4 220 V UPS

### 1 Wiring

The following figure shows the emergency 220 V UPS circuit.




The following figure shows various contacts of the contactors.

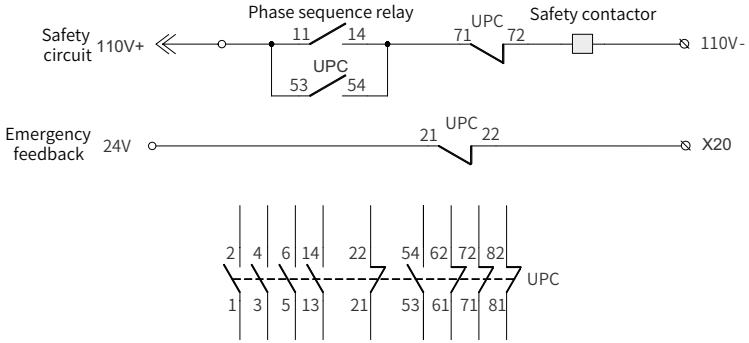



**Figure 9-6 Various contacts of the contactors**

## 2 Related Parameters

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

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

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

| Parameter No. | Parameter Name | Value | Remarks |
|---|---|---|---|
| F8-10 | Emergency evacuation operation mode at power failure | 0: Motor not running | - |
| F5-20 (X20) | X20 function selection | 59 (UPS valid signal) | Assume that X20 is used as the NC input of emergency evacuation signal. |
| F5-31 (Y6) | Y6 function selection | 13 (Emergency evacuation automatic switchover) | Only Y6 can be used for emergency evacuation output. |
| F6-45 | bit15 (Shorting stator braking function) | 1 (Enabled) | Enable the function of shorting stator braking. |

The UPS power is recommended in the following table.

**Table 9-3 Recommended UPS power for each power class**

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

## 9.5 ARD

### 1 Wiring

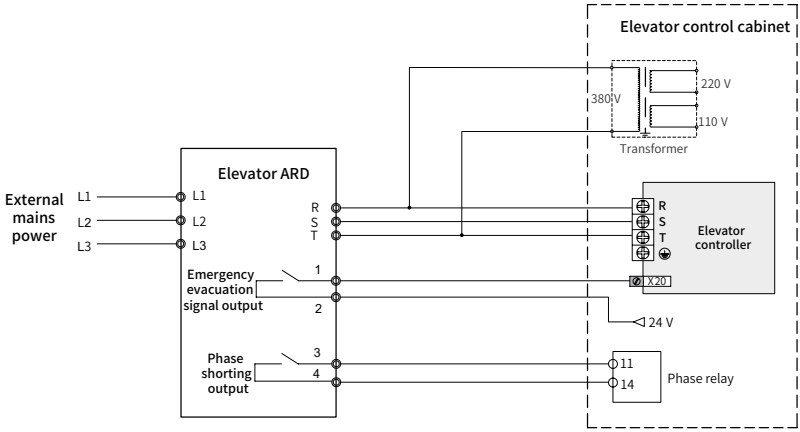



Figure 9-7 Wiring of three-phase (380 V) elevator ARD

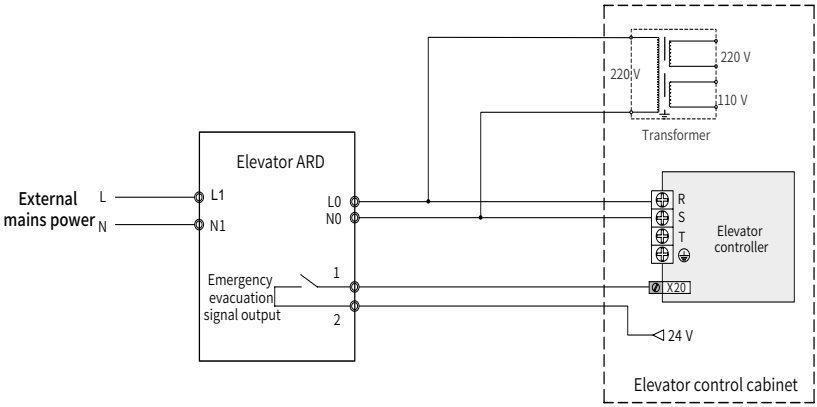



Figure 9-8 Wiring of single-phase (220 V) elevator ARD

### 2 Related Parameters

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

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



NOTE

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

Other parameters related to emergency evacuation

| Parameter No. | Parameter Name | Setting Range |
|---|---|---|
| F3-22 | Acceleration rate at emergency evacuation | 0.100 to 1.300 $m/s^2$ |
| F6-48 | Emergency evacuation switching speed | 0.010 to 0.630 m/s |
| F6-49 | Evacuation parking floor | 0 to F6-00 |
| F8-09 | Emergency evacuation operation speed at power failure | 0.05 m/s |

## 9.6 Flood Operation

**1 Function Description**

Flood into the shaft is frequent especially in areas easily affected by rain, causing undesired safety hazards and damages to equipment. The flood operation function is activated when the system detects active flood signal.

**2 Flood base floor selection**

If L2-01 > F6-01, the flood base floor is set by L2-01;

If L2-01 ⩽ F6-01, the flood base floor is a middle floor or the top floor by setting L2-00 bit2 to 1 or 0 respectively.

**3 Activating**

The flood signal is active for more than 1s.

**4 Resetting**

When the elevator system inspection is completed, select the emergency electrical

operation and maintains it for more than 2s;

It is allowed to choose whether to carry out flood operation or firefighting first.

**5 Logic of elevator running with flood**

- The car lower than the flood base floor in a down travel ride: the elevator decelerating to stop, returning upward to the leveling floor, opening the door after arriving at the door zone, and then heading for the flood base floor.
- The car lower than the flood base floor in a up travel ride: the elevator stopping at the nearest floor, opening the door, and then heading for the flood base floor.
- The car higher than the flood base floor: the elevator stopping at the nearest floor, opening the door, and then heading for the flood base floor.
- The door is kept open or closed according to the value of L2-00 bit3. Door open/close are set by F6-41 bit8 during elevator lock.
- Flood is warned throughout the flood operation, and fault Err91-600 is reported after the car arrives at the flood base floor.

**6 Relevant parameters**

| Parameter No. | Parameter Name | Range | Default value |
|---|---|---|---|
| L2-00 | Function selection | bit0 = 1: Flood operation function enabled<br>bit1 = 0: Firefighting first<br>bit1 = 1: Flood operation first<br>bit2 = 0: Middle floor set as the flood base floor<br>bit2 = 1: Top floor set as the flood base floor<br>bit3 = 0: Door open holding at flood signal<br>bit3 = 1: Door close holding at flood signal | 0 |
| L2-01 | Flood base floor | 0 to F6-00 | 0 |
| F5-XX | MCB low-voltage input selection | Flood signal: 384/416 (NO/NC) | - |

## 9.7 Generator-Powered Operation

**1 Function description**

For elevator groups equipped with the generator as a backup power, the system automatically switches to the generator for power supply during the mains power outages. It is possible that all elevators cannot be supplied due to insufficient generator capacity in some applications.

**2 Operation logic**

1. All elevators stops at active generator-powered operation signal;

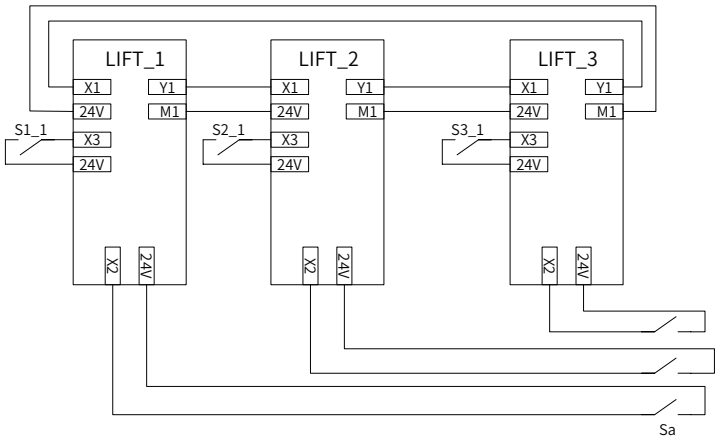
2. Returning to leveling floor: After the period set by L2-04, all elevators returning to the leveling floor in a sequence of elevator numbers set by L2-06;
3. Returning to base floor: After finishing returning to the leveling floor, all elevators returning to the base floor in a sequence of elevator numbers set by L2-06;
4. After all elevators finishing returning to the base floor, only the elevator allowed for re-operation will continue to run whereas others stop;
5. Signals may fail to be transmitted to the next single elevator when the communication cable breaks between elevators. In this case, the elevator returns to the leveling floor after a period of L2-05 × ((L2-06) − 1), and never returns to the base floor;
6. Re-operation: After all elevators return to the base floor, use L2-02 bit4 to designate the elevator for re-operation with power supplied by the generator.

   The current elevator can re-operate in that case by setting L2-02 bit4 to 0. Generally, only one elevator in a elevator network powered by a group of generators can operate again. If the generator capacity is large enough to power up multiple elevators for re-operation, elevator grouping is recommended.

   The value of L2-05 must be sufficient for the last elevator to finish returning to the leveling floor. Make sure there is only one elevator running at a time.

**3 Wiring**

Loop connection is adopted in digital communications among elevators x N: Elevator 1 output signal is connected to the elevator 2 input signal, elevator 2 output signal to the elevator 3 input signal, and so on. Elevator N output signal is connected to the elevator 1 input signal. Fault Err90-600 is reported once the communication between elevators interrupts for more than 12 hours.



The figure above is an example of loop connection wiring among three elevators. Y1 (64) output of Elevator 1 is connected to the X1 (385/417) input of Elevator 2, Y1 (64) output of Elevator 2 to the X1 (385/417) input of Elevator 3, and Y1 (64) output of Elevator 3 to the X1 (385/417) input of Elevator 1. All X2 (386/418) inputs on the MCB is controlled by the generator (Sa), and should be activated when the generator works.

When L2-02 bit4 is set to 1, the current elevator re-operates after all elevators return to the base floor regardless of the state of S1_1 (387/419). When L2-02 bit4 is set to 0, S1_1 is closed, allowing Elevator 1 to re-operate. This rule applies to other elevators, too.

**4 Relevant parameters**

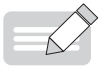
| Parameter No. | Parameter Name | Range | Default value |
|---|---|---|---|
| L2-02 | Generator-powered operation function selection | bit0: Generator-powered operation enabled<br>bit1: Elevators communicaton signal (bit1 = 0 valid only, supporting digital communication)<br>bit2: Reserved<br>bit3: Reserved<br>bit4: The elevator allowed for re-operation<br>bit5: Door open holding upon elevator return to base floor<br>bit6: Lighting/fan shut upon elevator return to base floor<br>bit7: Car/hall call display disabled upon elevator return to base floor | 0 |
| L2-04 | Delay for re-leveling after generator on | 5 to 200s | 60 |
| L2-05 | Delay for re-leveling upon wire breaking | 60 to 2400s | 120 |
| L2-06 | Elevator number for generator-powered operation | 1 to 100 | 2 |
| F5-01 to F5-24 | MCB DI function selection | 385/417: Elevator-to-elevator communication inputs in generator-powered operation NO/NC (NO value recommended)<br>386/418: Generator-powering signal NO/NC<br>387/419: Re-operation input NO/NC (NO value recommended) | - |
| F5-26 to F5-31 | MCB output terminal | 64: Elevator-to-elevator communication outputs in generator-powered operation | - |

## 9.8 Brake Release for Evacuation

### 1 Function description

If elevators enter the fault state without being at the leveling position, passengers may be trapped therein. This function is enabled to avoid such an accident.

When certain faults occur, the system releases brake, leads the car to the door zone by adjusting the car load/counterweight balance, and then opens the door.



NOTE

- Only applications using synchronous motor is supported.
- This function is forbidden in the presence of faults Err26/29/30/33/36/37/65/66, and fault Err22 with fault subcode 9/10/12/13.

### 2 Relevant parameters

| Parameter No. | Parameter Name | Range | Default value |
|---|---|---|---|
| A1-00 | User function selection 0 | bit15: Brake release for evacuation at fault enabled | 0 |
| A1-01 | User function selection 1 | bit10 = 0: Battery-powered brake release for evacuation supported only<br>bit10 = 1: Mains-powered brake release for evacuation supported | 0 |
| A1-23 | Maximum running time of brake release for evacuation | 10 to 300 | 60 |

# Chapter 10 Parameter List

## 10.1 Introduction

The parameter attributes correspond to the operating panel as follows:

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

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

| Item | Definition |
|---|---|
| Parameter No. | Indicates the parameter number. |
| Parameter name | Indicates the name of the parameter. |
| Setting range | Indicates the setting range of the parameter. |
| Default | Indicates the default setting of the parameter at factory. |
| Unit | Indicates the measurement unit of the parameter. |
| Property | Indicates whether the parameter can be modified (including the modification conditions). |

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.

## 10.2 Parameter Groups

On the operation panel, press 

and then  or , and you can view the parameter groups.

The parameter groups are classified as follows:

| Param. Group | Description | Param. Group | Description |
|---|---|---|---|
| F0 | Basic parameters | F1 | Motor parameters |
| F2 | Vector control parameters | F3 | Running control parameters |
| F4 | Floor parameters | F5 | Terminal function parameters |

| Param. Group | Description | Param. Group | Description |
|---|---|---|---|
| F6 | Basic elevator parameters | F7 | Test function parameters |
| F8 | Enhanced function parameters | F9 | Time parameters |
| FA | Keypad setting parameters | Fb | Door function parameters |
| FC | Protection function parameters | Fd | Communication parameters |
| FE | Elevator function parameters | FF | Factory parameters (reserved) |
| FJ | Factory parameters (reserved) | FP | User parameters |
| Fr | Leveling adjustment parameters | E0 to E9 | Fault recording parameters |
| L0 to L7 | Extensive scheme parameters | A1 | Customized user parameters |

## 10.3 Parameter Table

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

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F1-02 | Motor rated voltage | 0 to 600 | Model dependent | V | ★ |
| F1-03 | Motor rated current | 0.00 to 655.00 | Model dependent | A | ★ |
| F1-04 | Motor rated frequency | 0.00 to F0-06 | Model dependent | Hz | ★ |
| F1-05 | Motor rated speed | 0 to 3000 | Model dependent | RPM | ★ |
| F1-06 | Encoder initial angle (synchronous motor) | 0.0 to 359.9 | 0 | ° | ★ |
| F1-07 | Encoder angle at power-off (synchronous motor) | 0.0 to 359.9 | 0 | ° | ★ |
| F1-08 | Synchronous motor wiring mode | 0 to 15 | 0 | - | ★ |
| F1-09 | Current filter time (synchronous motor) | 0.0 to 359.9 | 0 | - | ★ |
| F1-10 | Encoder verification selection | 0 to 65535 | 0 | - | ★ |
| F1-11 | Auto-tuning mode | 0: No operation<br>1: With-load auto-tuning<br>2: No-load auto-tuning<br>3: Shaft auto-tuning 1<br>4: Shaft auto-tuning 2<br>5: Synchronous motor static auto-tuning | 0 | - | ★ |
| 1: static for asynchronous motor, and rotating for synchronous motor<br>3: group Fr parameters not cleared<br>4: group Fr parameters cleared | | | | | |
| F1-12 | Encoder resolution | 0 to 10000 | 2048 | PPR | ★ |
| F1-13 | Encoder wire-breaking detection time | 0 to 10.0 | 2.1 | s | ★ |
| It is used to set the time that a wire-break fault lasts before being detected.<br>After the elevator starts running at non-zero speed, if there is no encoder signal input within the time set in this parameter, the system prompts the encoder fault and stops running.<br>When the value is smaller than 0.5s, this function is disabled. | | | | | |
| F1-14 | Stator resistance (asynchronous motor) | 0.000 to 30.000 | Model dependent | Ω | ★ |
| F1-15 | Rotor resistance (asynchronous motor) | 0.000 to 30.000 | Model dependent | Ω | ★ |
| F1-16 | Leakage inductance (asynchronous motor) | 0.00 to 300.00 | Model dependent | mH | ★ |
| F1-17 | Mutual inductance (asynchronous motor) | 0.1 to 3000.0 | Model dependent | mH | ★ |
| F1-18 | No-load current (asynchronous motor) | 0.01 to 300.00 | Model dependent | A | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| F1-19 | Shaft Q inductance (torque) | 0.00 to 650.00 | 3.00 | mH | ★ |
| F1-20 | Shaft D inductance (excitation) | 0.00 to 650.00 | 3.00 | mH | ★ |
| F1-21 | Back EMF | 0 to 65535 | 0 | - | ★ |
| F1-22 | Auto-tuning function selection | bit1 = 1, bit2 = 0: Half automatic,<br>bit1 = 1, bit2 = 1: Full automatic, angle auto-tuning at first-time running after power-on and power-off, both in inspection and automatic states | 0 | - | ★ |
| F1-22 = 2: Half automatic,<br>It is angle-free auto-tuning at first-time running after power-on and power-off, only in inspection state.<br>Note that if auto-tuning is not completed during inspection but the system powers off, the system prompts Err19 after it powers on and the elevator enters the normal state.<br>F1-22 = 6: Full automatic<br>It is angle auto-tuning at first-time running after power-on and power-off, both in inspection and automatic states | | | | | |
| F1-25 | Motor type | 0: Asynchronous motor<br>1: Synchronous motor | 1 | - | ★ |
| **Group F2: Vector control parameters** | | | | | |
| F2-00 | Speed loop proportional gain Kp1 | 0 to 100 | 40 | - | ★ |
| F2-01 | Speed loop integral time Ti1 | 0.01 to 10.00 | 0.60 | s | ★ |
| F2-02 | Switchover frequency 1 | 0.00 to F2-05 | 2.00 | Hz | ★ |
| F2-03 | Speed loop proportional gain Kp2 | 0 to 100 | 35 | - | ★ |
| F2-04 | Speed loop integral time Ti2 | 0.01 to 10.00 | 0.80 | s | ★ |
| F2-05 | Switchover frequency 2 | F2-02 to F0-06 | 5.00 | Hz | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| F2-00 and F2-01 are PI regulation parameters when the running frequency is smaller than the value of F2-02 (Switchover frequency 1).<br>F2-03 and F2-04 are PI regulation parameters when the running frequency is larger than the value of F2-05 (Switchover frequency 2).<br>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 the figure below. | | | | | |

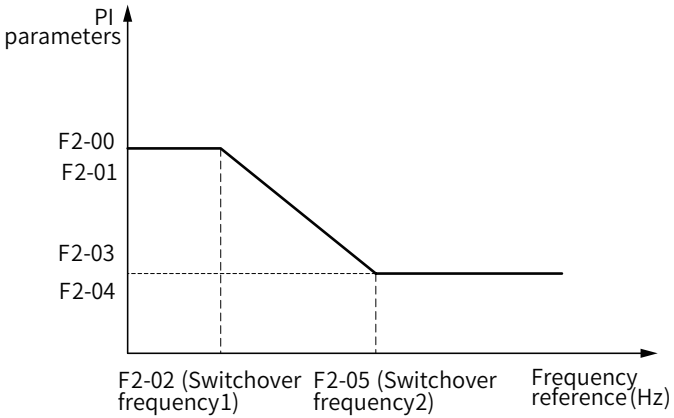



**Figure 10-1 Relationship between running frequencies and PI parameters**

The speed dynamic response characteristics in vector control can be adjusted by setting the proportional gain and integral time of the speed regulator.

To achieve a faster system response, increase the proportional gain and reduce the integral time. Be aware that this may lead to system oscillation.

The recommended adjustment method is as follows:

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

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

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

| | | | | | |
|---|---|---|---|---|---|
| F2-06 | Current loop proportional gain Kp | 10 to 500 | 60 | - | ★ |
| F2-07 | Current loop integral gain Ki | 10 to 500 | 30 | - | ★ |
| These two parameters are regulation parameters for the torque axis current loop.<br>These parameters are used as the torque axis current regulator in vector control. The best values of the parameters matching the motor characteristics are obtained by means of motor auto-tuning. You need not modify them generally. | | | | | |
| F2-08 | Torque upper limit | 0.0 to 200.0 | 200.0 | % | ★ |
| F2-10 | Elevator running direction | 0: Direction unchanged<br>1: Direction reversed | 0 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F2-08 is used to set the torque upper limit of the motor. The value 100% corresponds to the rated output torque of the adaptable motor.<br>F2-10 is used to set the elevator running direction.<br>You can modify this parameter to reverse the running direction (without changing the wiring of the motor).<br>When you perform inspection running for the first time after motor auto-tuning is successful, check whether the actual motor running direction is consistent with the inspection command direction. If not, change the motor running direction by setting F2-10 to consistent with the inspection command direction.<br>Pay attention to the setting of this parameter when restoring the default setting | | | | | |
| F2-11 | Position lock current coefficient | 2.0 to 50.0 | 15.0 | % | ★ |
| F2-12 | Position lock speed loop Kp | 0.00 to 2.00 | 0.50 | - | ★ |
| F2-13 | Position lock speed loop Ti | 0.00 to 2.00 | 0.60 | - | ★ |
| These parameters are used to adjust automatic pre-torque compensation in the case of no-load-cell. The no-load-cell startup function is enabled when F8-01 is set to 2 or 3.<br>Decrease the values of these parameters in the case of car lurch at startup, and increase the values in the case of rollback at startup. | | | | | |
| F2-16 | Torque acceleration time | 1 to 500 | 1 | ms | ★ |
| F2-17 | Torque deceleration time | 1 to 3000 | 350 | ms | ★ |
| **Group F3: Running control parameters** | | | | | |
| F3-00 | Startup speed | 0.000 to 0.050 | 0.000 | m/s | ★ |
| F3-01 | Startup speed holding time | 0.000 to 5.000 | 0.000 | s | ★ |
| They are used to set the acceleration time and holding time of the startup speed.<br>The parameters may reduce the terrace feeling at startup due to static friction between the guide rail and the guide shoes. | | | | | |
| F3-02 | Acceleration rate | 0.200 to 1.500 | 0.700 | $m/s^2$ | ★ |
| F3-03 | Acceleration start jerk time | 0.300 to 4.000 | 1.500 | s | ★ |
| F3-04 | Acceleration end jerk time | 0.300 to 4.000 | 1.500 | s | ★ |
| F3-02, F3-03, and F3-04 are used to set the running curve during acceleration of the elevator.<br>F3-02 is the acceleration rate of the elevator speed curve(uniform acceleration segment) .<br>F3-03 is the time for the rate to increase from 0 to the value set in F3-02 in the speed curve (start jerk segment). The larger the value is, the smoother the jerk is.<br>F3-04 is the time for the rate to decrease from the value set in F3-02 to 0 in the speed curve (end jerk segment). The larger the value is, the smoother the jerk is. | | | | | |
| F3-05 | Deceleration rate | 0.200 to 1.500 | 0.700 | $m/s^2$ | ★ |
| F3-06 | Deceleration end jerk time | 0.300 to 4.000 | 1.500 | s | ★ |
| F3-07 | Deceleration start jerk time | 0.300 to 4.000 | 1.500 | s | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

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

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

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

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

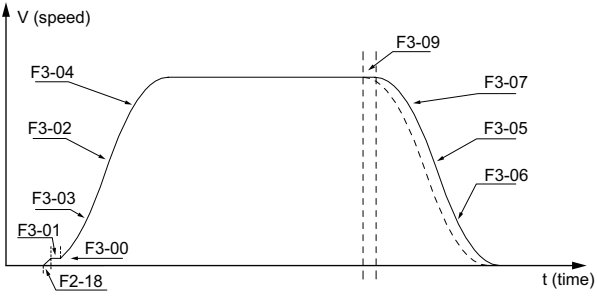



**Figure 10-2 Running speed curve**

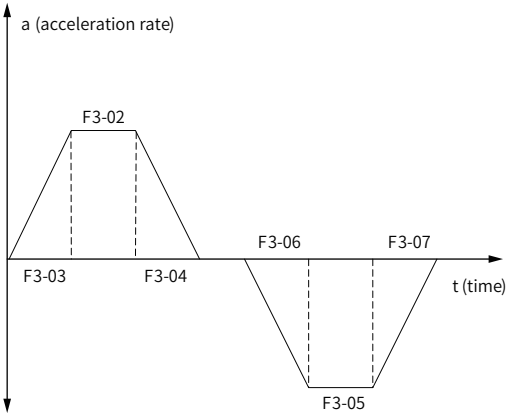
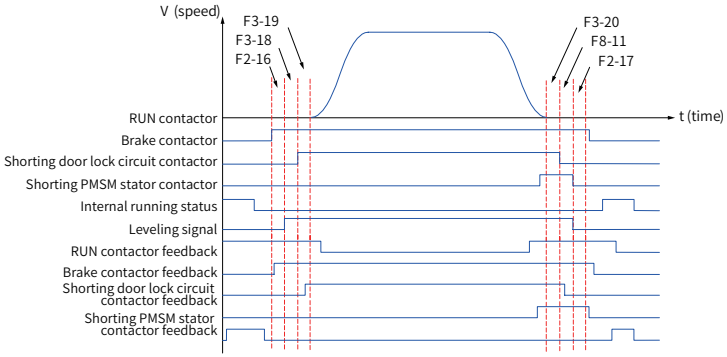



**Figure 10-3 Acceleration rate curve**

| | | | | | |
|---|---|---|---|---|---|
| F3-08 | Special deceleration rate | 0.200 to 1.500 | 0.900 | $m/s^2$ | ★ |
| F3-09 | Pre-deceleration distance | 0 to 90.0 | 0.0 | mm | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F3-08 is used to set the deceleration rate in elevator slow-down, inspection, and shaft auto-tuning.<br>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.<br>The system automatically detects the speed when the elevator reaches a slow-down switch. If the detected speed or position is abnormal, the system enables the elevator to slow down at the special deceleration rate set in F3-08, preventing over travel top terminal or over travel bottom terminal.<br>F3-09 is used to set the pre-deceleration distance of the elevator in distance control, as shown in Figure 9-2. This function is to eliminate the effect of encoder signal loss or leveling signal delay. | | | | | |
| F3-10 | Re-leveling speed | 0.020 to 0.080 | 0.040 | m/s | ★ |
| It is used to set the elevator speed during re-leveling. This parameter is valid only when the pre-open module (MCTC-SCB-A) is added to implement the re-leveling function (set in FE-32). | | | | | |
| F3-11 | Inspection speed | 0.100 to 0.630 | 0.250 | m/s | ★ |
| It is used to set the elevator speed during inspection and shaft auto-tuning. | | | | | |
| F3-12 | Position of up slow-down 1 | 0.00 to 300.00 | 0.00 | m | ★ |
| F3-13 | Position of down slow-down 1 | 0.00 to 300.00 | 0.00 | m | ★ |
| F3-14 | Position of up slow-down 2 | 0.00 to 300.00 | 0.00 | m | ★ |
| F3-15 | Position of down slow-down 2 | 0.00 to 300.00 | 0.00 | m | ★ |
| F3-16 | Position of up slow-down 3 | 0.00 to 300.00 | 0.00 | m | ★ |
| F3-17 | Position of down slow-down 3 | 0.00 to 300.00 | 0.00 | m | ★ |
| F3-18 | Zero-speed control time at startup | 0.200 to 1.000 | 0.200 | s | ★ |
| F3-19 | Brake release delay | 0.000 to 2.000 | 0.600 | s | ★ |
| F3-20 | Zero-speed control time at end | 0.000 to 1.000 | 0.300 | s | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F3-18 to F3-20 set the time related to the zero-speed holding current output and braking action delay.<br>F3-18 specifies the time from output of the running 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.<br>F3-19 specifies the time from the moment when the system sends the brake release command to the moment when the brake is completely released, during which the system retains the zero-speed torque current output.<br>F3-20 specifies the zero-speed output time when the running curve ends.<br><br><br>**Figure 10-4 Running time sequence**<br>Note: The system holds the zero-speed torque current output within the time set in F8-11 from the moment when the brake release command is output, preventing car jerk or rollback. | | | | | |
| F3-21 | Low-speed re-leveling speed | 0.080 to F3-11 | 0.100 | m/s | ★ |
| It is used to set the elevator speed of returning to the leveling position at normal non-leveling stop. | | | | | |
| F3-22 | Acceleration rate at emergency evacuation | 0.100 to 1.300 | 0.300 | $m/s^2$ | ★ |
| F3-23 | Deceleration delay of slow-down switch | 0.00 to 10.00 | 0 | s | ★ |
| F3-24 | Slip experiment function | 0: No test<br>1: Slip experiment | 0 | - | ★ |
| **Group F4: Floor parameters** | | | | | |
| F4-00 | Leveling adjustment | 0 to 60 | 30 | mm | ★ |
| F4-00 is used to adjust the leveling accuracy at elevator stop.<br>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.<br>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.<br>The NICE3000new has the advanced distance control algorithm and adopts many methods to ensure reliability of direct travel ride. Generally you need not modify this parameter. | | | | | |
| F4-01 | Current floor | F6-01 to F6-00 | 1 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| It indicates the current floor of the elevator car.<br>The system automatically changes the value of this parameter during running, and corrects it at leveling position (door open limit) after the up slow-down and down slow-down switches act. At non-bottom floor and top-floor leveling, you can also manually modify this parameter, but the value must be consistent with the actual current floor. | | | | | |
| F4-02 | High byte of current floor position | 0 to 65535 | 1 | Pulses | ● |
| F4-03 | Low byte of current floor position | 0 to 65535 | 34464 | Pulses | ● |
| F4-02 and F4-03 indicate the absolute pulses of the current position of the elevator car relative to the bottom leveling position<br>The position data of the NICE3000new in the shaft is recorded in pulses. Each position is expressed by a 32-bit binary number, where the high 16 bits indicate the high byte of the floor position, and the low 16 bits indicate the low byte of the floor position. | | | | | |
| F4-04 | Length 1 of leveling plate | 0 to 65535 | 0 | Pulses | ★ |
| F4-05 | Length 2 of leveling plate | 0 to 65535 | 0 | Pulses | ★ |
| F4-06 | High byte of floor height 1 | 0 to 65535 | 0 | Pulses | ★ |
| F4-07 | Low byte of floor height 1 | 0 to 65535 | 0 | Pulses | ★ |
| F4-08 | High byte of floor height 2 | 0 to 65535 | 0 | Pulses | ★ |
| F4-09 | Low byte of floor height 2 | 0 to 65535 | 0 | Pulses | ★ |
| F4-10 | High byte of floor height 3 | 0 to 65535 | 0 | Pulses | ★ |
| F4-11 | Low byte of floor height 3 | 0 to 65535 | 0 | Pulses | ★ |
| F4-12 | High byte of floor height 4 | 0 to 65535 | 0 | Pulses | ★ |
| F4-13 | Low byte of floor height 4 | 0 to 65535 | 0 | Pulses | ★ |
| F4-14 | High byte of floor height 5 | 0 to 65535 | 0 | Pulses | ★ |
| F4-15 | Low byte of floor height 5 | 0 to 65535 | 0 | Pulses | ★ |
| F4-16 | High byte of floor height 6 | 0 to 65535 | 0 | Pulses | ★ |
| F4-17 | Low byte of floor height 6 | 0 to 65535 | 0 | Pulses | ★ |
| F4-18 | High byte of floor height 7 | 0 to 65535 | 0 | Pulses | ★ |
| F4-19 | Low byte of floor height 7 | 0 to 65535 | 0 | Pulses | ★ |
| F4-20 | High byte of floor height 8 | 0 to 65535 | 0 | Pulses | ★ |
| F4-21 | Low byte of floor height 8 | 0 to 65535 | 0 | Pulses | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F4-22 | High byte of floor height 9 | 0 to 65535 | 0 | Pulses | ★ |
| F4-23 | Low byte of floor height 9 | 0 to 65535 | 0 | Pulses | ★ |
| F4-24 | High byte of floor height 10 | 0 to 65535 | 0 | Pulses | ★ |
| F4-25 | Low byte of floor height 10 | 0 to 65535 | 0 | Pulses | ★ |
| Floor height 11 to floor height 37 | | | | | |
| F4-80 | High byte of floor height 38 | 0 to 65535 | 0 | Pulses | ★ |
| F4-81 | Low byte of floor height 38 | 0 to 65535 | 0 | Pulses | ★ |
| F4-82 | High byte of floor height 39 | 0 to 65535 | 0 | Pulses | ★ |
| F4-83 | Low byte of floor height 39 | 0 to 65535 | 0 | Pulses | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| Group F5: Terminal function parameters | | | | | |
| F5-00 | Attendant/Automatic switchover time | 3 to 200 | 3 | s | ★ |
| F5-01 | X1 function selection | 01/33: Up leveling signal NO/NC<br>02/34: Down leveling signal NO/NC<br>03/35: Door zone signal NO/NC<br>04/36: Safety circuit feedback NO/NC<br>05/37: Door lock circuit 1 feedback NO/NC<br>06/38: Running contactor feedback NO/NC<br>07/39: Brake contactor feedback NO/NC<br>08/40: Inspection signal NO/NC<br>09/41: Inspection up signal NO/NC<br>10/42: Inspection down signal NO/NC<br>11/43: Fire emergency signal NO/NC<br>12/44: Up limit signal NO/NC<br>13/45: Down limit signal NO/NC<br>14/46: Overload signal NO/NC<br>15/47: Full-load signal NO/NC<br>16/48: Up slow-down 1 signal NO/NC<br>17/49: Down slow-down 1 signal NO/NC<br>18/50: Up slow-down 2 signal NO/NC<br>19/51: Down slow-down 2 signal NO/NC<br>20/52: Up slow-down 3 signal NO/NC<br>21/53: Down slow-down 3 signal NO/NC<br>22/54: Shorting door lock circuit relay feedback NO/NC<br>23/55: Firefighter running signal NO/NC<br>24/56: Door operator 1 light curtain signal NO/NC<br>25/57: Door operator 2 light curtain signal NO/NC<br>26/58: Brake travel switch 1 NO/NC<br>27/59: Emergency evacuation signal NO/NC<br>... (To be continued) | 33 | - | ★ |
| F5-02 | X2 function selection | | 35 | - | ★ |
| F5-03 | X3 function selection | | 34 | - | ★ |
| F5-04 | X4 function selection | | 4 | - | ★ |
| F5-05 | X5 function selection | | 5 | - | ★ |
| F5-06 | X6 function selection | | 38 | - | ★ |
| F5-07 | X7 function selection | | 39 | - | ★ |
| F5-08 | X8 function selection | | 22 | - | ★ |
| F5-09 | X9 function selection | | 40 | - | ★ |
| F5-10 | X10 function selection | | 09 | - | ★ |
| F5-11 | X11 function selection | | 10 | - | ★ |
| F5-12 | X12 function selection | | 44 | - | ★ |
| F5-13 | X13 function selection | | 45 | - | ★ |
| F5-14 | X14 function selection | | 48 | - | ★ |
| F5-15 | X15 function selection | | 49 | - | ★ |
| F5-16 | X16 function selection | | 50 | - | ★ |
| F5-17 | X17 function selection | | 51 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F5-18 | X18 function selection | ...(Continued) | 00 | - | ★ |
| F5-19 | X19 function selection | 28/60: Elevator lock signal NO/NC | 00 | - | ★ |
| F5-20 | X20 function selection | 29/61: Safety circuit 2 feedback NO/NC | 00 | - | ★ |
| F5-21 | X21 function selection | 30/62: Shorting motor stator feedback NO/NC | 00 | - | ★ |
| F5-22 | X22 function selection | | 00 | - | ★ |
| F5-23 | X23 function selection | 31/63: Door lock circuit 2 feedback NO/NC | 00 | - | ★ |
| F5-24 | X24 function selection | 65/97: Door operator 1 safety edge signal NO/NC<br>66/98: Door operator 2 safety edge signal NO/NC<br>67/99: Motor overheat signal NO/NC<br>68/100: Seismic signal NO/NC<br>69/101: Rear door forbidden signal NO/NC<br>71/103: Half-load signal NO/NC<br>72/104: Fire emergency floor switchover signal NO/NC<br>76/108: Door operator 1 open input NO/NC<br>77/109: Door operator 2 open input NO/NC<br>78/110: Brake travel switch 2 input NO/NC<br>79/111: External fault NO/NC<br>80/112: Terminal floor signal NO/NC<br>81/113: Door lock 1 shorting NO/NC<br>82/114: Door lock 2 shorting NO/NC<br>86/118: Door lock bypass input NO/NC<br>128/160: Ramp-stop signal input NO/NC<br>129/161: ARD low battery input NO/NC<br>130/162: Fault reset input NO/NC<br>134/166: Altering three-phase 380 V motor for single-phase 220 V input NO/NC<br>384/426: Flood signal input NO/NC<br>385/417: Communication input signal NO/NC (NO value recommended)<br>386/418: Generator-powered operation signal NO/NC<br>387/419：Re-operation signal NO/NC (NO value recommended)<br>Value for NC setting of a signal = Value for NO setting of this parameter + 32 | 00 | - | ★ |

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

| Bit | CTB Input Signal |
|---|---|
| bit0 | Door 1 light curtain |
| bit1 | Door 2 light curtain |
| bit2 | Door 1 open limit |
| bit3 | Door 2 open limit |
| bit4 | Door 1 close limit |
| bit5 | Door 2 close limit |
| bit6 | Full-load signal |
| bit7 | Overload signal |
| bit8 | Light-load signal |
| bit9 | Up leveling |
| bit10 | Down leveling |
| bit11 | Door operator overheat |
| bit12 | Inspection signal |
| bit13 | Inspection up signal |
| bit14 | Inspection down signal |
| bit15 | Reserved |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| F5-26 | Y1 function selection | 00: No function<br>01: Running contactor control<br>02: Brake contactor control<br>03: Shorting door lock circuit relay output<br>04: Fire emergency floor arrival feedback<br>Others:<br>05: Door 1 open<br>06: Door 1 close<br>07: Door 2 open<br>08: Door 2 close<br>09: Brake and running contactors healthy<br>10: Fault state<br>11: Running<br>12: Shorting motor stator contactor control<br>13: Emergency evacuation/ Automatic state switchover<br>14: System healthy<br>15: Emergency buzzer control<br>16: Higher-voltage startup of brake<br>17: Elevator running in up direction<br>18: Lighting/fan running<br>19: Medical sterilization<br>20: Non-door zone stop<br>21: Manual door electric lock<br>22: Non-service state<br>23: Emergency evacuation completed<br>64: Communication signal output for generator-powered operation | 1 | - | ★ |
| F5-27 | Y2 function selection | | 2 | - | ★ |
| F5-28 | Y3 function selection | | 3 | - | ★ |
| F5-29 | Y4 function selection | | 4 | - | ★ |
| F5-30 | Y5 function selection | | 0 | - | ★ |
| F5-31 | Y6 function selection | | 0 | - | ★ |
| F5-32 | Communication status display | - | - | - | ● |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

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

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

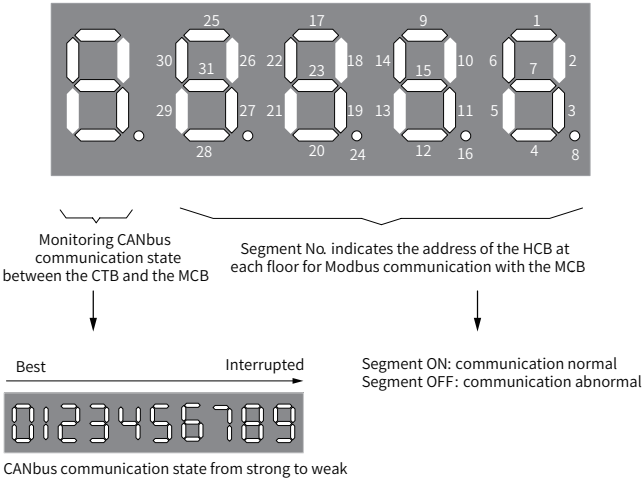



**Figure 10-5 F5-32 communication state monitoring**

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

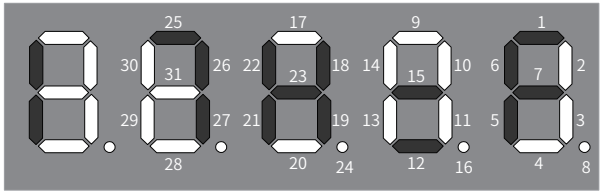



**Figure 10-6 Example of LED display indicating the communication state**

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| F5-33 | Program control selection | bit3: Elevator fire emergency requirement for Hong Kong<br>bit4: Arrival gong disabled at night<br>bit6: Door lock disconnected at inspection switched over to normal running<br>bit7: Fault code not displayed on the keypad<br>bit8: Door open command cancelled immediately at door open limit<br>bit9: Car stop and zero-speed torque holding at abnormal brake feedback | 0 | - | ★ |

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

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

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

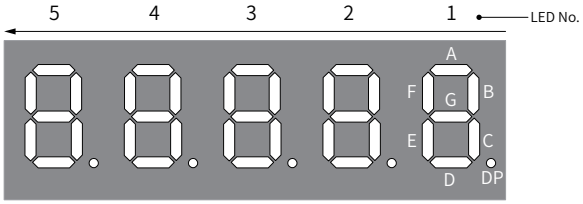
| Bit | Function | Description | Default |
|---|---|---|---|
| bit3 | Elevator fire emergency requirement for Hong Kong | If it is enabled, the fire emergency functions in F6-44 applied to Hong Kong become enabled automatically. | 0 |
| bit4 | Arrival gong disabled at night | The arrival gong is disabled from 22:00 p.m. to 7:00 a.m. | 0 |
| bit6 | Door lock disconnected at inspection switched over to normal running | The door lock is additionally disconnected once when the inspection state is switched over to the normal running state. | 0 |
| bit7 | Fault code not displayed on the keypad | The keypad does not blink to display the fault code. | 0 |
| bit8 | Door open command cancelled immediately at door open limit | The system immediately cancels the door open command after receiving the door open limit. | 0 |
| bit9 | Car stop and zero-speed torque holding at abnormal brake feedback | When the brake feedback is abnormal, the elevator arrives at the door-zone position and stops. The door keeps closed, and the system holds torque output as long as possible. After the system is overloaded, there is no torque output, and the elevator may fall in this case. Be cautious of using this function. | 0 |

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

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

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

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




Note:
1. Segments of LEDs 2 to 5 are marked in the same way as those of LED 1.
2. Segment ON: signal active
   Segment OFF: signal inactive

**Figure 10-7 Monitoring of all I/O terminals**

| F5-34 Terminal state display | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| A | - | Inspection signal | Up slow-down 1 signal | Door operator 1 light curtain | Reserved |
| B | Up leveling signal | Inspection up signal | Down slow-down 1 signal | Door operator 2 light curtain | Running contactor output |
| C | Down leveling signal | Inspection down signal | Up slow-down 2 signal | Brake contactor feedback 2 | Brake contactor output |
| D | Door zone signal | Fire emergency signal | Down slow-down 2 signal | UPS input | Shorting door lock circuit contactor control |
| E | Safety circuit feedback 1 | Up limit signal | Up slow-down 3 signal | Elevator lock input | Fire emergency floor arrival signal |
| F | Door lock circuit feedback 1 | Down limit signal | Down slow-down 3 signal | Safety circuit feedback 2 | - |
| G | Running contactor feedback | Overload signal | Shorting door lock circuit contactor feedback | PMSM self-lock feedback | - |
| DP | Brake contactor feedback 1 | Full-load signal | Firefighter running signal | Door lock circuit feedback 2 | - |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

**F5-35 Terminal state display**

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

| | | | | | |
|---|---|---|---|---|---|
| F5-36 | Load cell input selection | 0: MCB digital input<br>1: CTB digital input<br>2: CTB analog input<br>3: MCB analog input | 1 | - | ★ |
| F5-37 | X25 function selection | 0: Invalid<br>4: Safety circuit signal<br>5: Door lock circuit signal 1<br>6: Door lock circuit signal 2<br>7: Door lock 1 shorting (front door)<br>8: Door lock 2 shorting (back door) | 0 | - | ★ |
| F5-38 | X26 function selection | | 0 | - | ★ |
| F5-39 | X27 function selection | | 0 | - | ★ |
| F5-40 | X28 function selection | | 0 | - | ★ |
| **Group F6: Basic elevator parameters** | | | | | |
| F6-00 | Top floor of the elevator | F6-01 to 48 | 9 | - | ★ |
| F6-01 | Bottom floor of the elevator | 1 to F6-00 | 1 | - | ★ |
| These two parameters are used to set the top floor and bottom floor of the elevator, determined by the number of actually installed leveling plates. | | | | | |
| F6-02 | Parking floor | F6-01 to F6-00 | 1 | - | ★ |
| F6-03 | Fire emergency floor | F6-01 to F6-00 | 1 | - | ★ |
| F6-04 | Elevator lock floor | F6-01 to F6-00 | 1 | - | ★ |
| When the idle time of the elevator exceeds the value set in F9-00, the elevator returns to the parking floor set in F6-02 automatically.<br>After the fire emergency signal is active, the elevator returns to the fire emergency floor set in F6-03.<br>F6-04 is used to set the elevator lock floor. In the automatic running state, if the elevator lock switch is turned on or the set elevator lock time is reached, the elevator cancels all registered hall calls and responds to all registered car calls, returns to the elevator lock floor, stops automatic running, and closes the light and fan in the car; after the door closes, the elevator cancels hall call display. | | | | | |
| F6-05 | Service floors 1 (floors 1–16) | 0 to 65535 | 65535 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-06 | Service floors 2 (floors 17–32) | 0 to 65535 | 65535 | - | ★ |
| F6-35 | Service floors 3 (floors 33-48) | 0 to 65535 | 65535 | - | ★ |

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

These parameters are set in the similar way.

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

F6-05 is enabled through bit addressing.

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

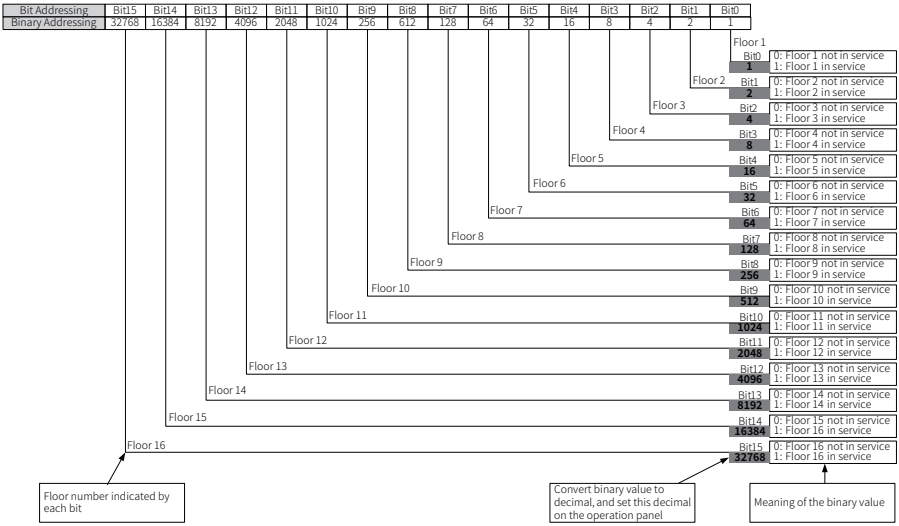
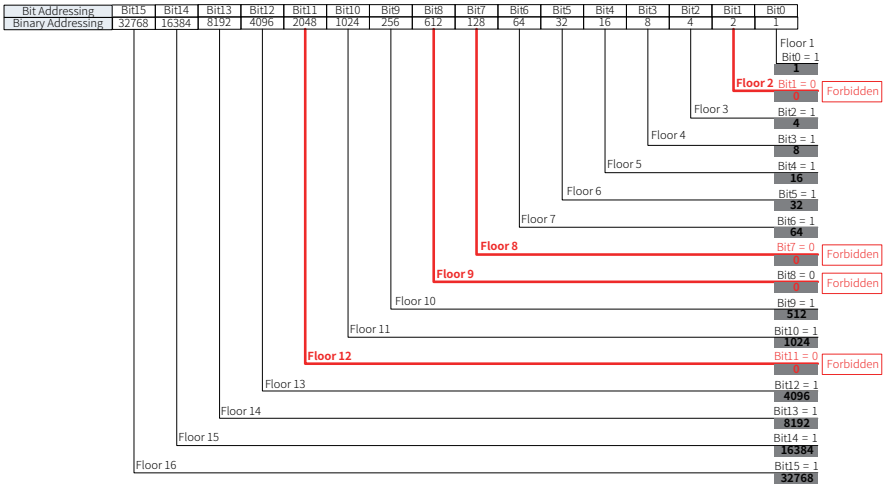



**Figure 10-8 Converting binary value of F6-05 to decimal**

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| Example:<br>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.<br><br><br>Convert the binary value to decimal:<br>1 + 4 + 8 + 16 + 32 + 64 + 512 + 1024 + 4096 + 8192 + 16384 + 32768 = 63101<br>Then, enter "63101" for F6-05 on the operation panel. | | | | | |
| F6-07 | Number of elevators in parallel/group mode | 1 to 8 | 1 | - | ★ |
| F6-08 | Elevator No. | 1 to 8 | 1 | - | ★ |
| F6-09 | Elevator program control | bit0: Dispersed waiting<br>bit2: Reserved<br>bit3: Parallel/Group control implemented at CAN2<br>bit4: Group control in compatibility with NICE3000<br>bit6: Clear floor number and display direction in advance<br>bit8: Unidirectional hall call (single hall call button)<br>bit 9: Not detecting analog wire breaking<br>bit10: Cancellation of ERR30 judgment at re-leveling<br>bit14: Time interval detection of safety circuit 2 and door lock circuit 2 (1.5s) | 0 | - | ★ |

<table>
<tr><th>Param. No.</th><th>Parameter Name</th><th>Setting Range</th><th>Default</th><th>Unit</th><th>Pro-perty</th></tr>
<tr><td colspan="6">F6-09 is used to select the elevator functions. Each bit of the parameter defines a function, as described in the following table.<br>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.<br>The functions defined by the binary bits of F6-09 are described in the following table.
<table>
<tr><th>Bit</th><th>Function</th><th>Description</th><th>Default</th></tr>
<tr><td>bit0</td><td>Dispersed waiting</td><td>In single elevator or parallel/group mode, if this function is enabled, an idle elevator will not return to the base floor.<br>In group mode, this function is used together with the group control board to implement dispersed waiting.</td><td>0</td></tr>
<tr><td>bit3</td><td>Parallel/Group control implemented at CAN2</td><td>This function is enabled when the parallel/group mode is implemented at CAN2 on the MCB.</td><td>0</td></tr>
<tr><td>bit4</td><td>Group control in compatibility with NICE3000</td><td>This function is used when the NICE3000 is involved in the group control system. The setting of this bit must be the same as that for all the other elevators in the group.</td><td>0</td></tr>
<tr><td>bit6</td><td>Clear floor number and display direction in advance</td><td>The displayed floor number is cleared before the elevator reaches the destination floor.<br>If the elevator needs to change the direction, the changed direction is displayed in advance.</td><td>0</td></tr>
<tr><td>bit8</td><td>Single hall call button</td><td>It is applied to applications where there is only one hall call button.</td><td>0</td></tr>
<tr><td>bit9</td><td>Not detecting analog wire breaking</td><td>The system does not detect analog wire breaking during normal running.</td><td>0</td></tr>
<tr><td>bit10</td><td>Err30 judgment at re-leveling cancellation</td><td>It indicates Err30 judgment when re-leveling is cancelled.</td><td>0</td></tr>
<tr><td>bit14</td><td>Time interval detection of safety circuit 2 and door lock circuit 2</td><td>If the states of safety circuits 1 and 2 or the states of door lock circuits 1 and 2 are inconsistent, the system will prohibit running. After the states restore normal, the system is powered on again and starts running.</td><td>0</td></tr>
</table></td></tr>
<tr><td>F6-10</td><td>Leveling switch filter time</td><td>10 to 50</td><td>14</td><td>ms</td><td>★</td></tr>
</table>

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-11 | Elevator function selection | bit1: Disabling returning to base floor for verification at excessive pulses<br>bit2: Cancelling auto sequential arrange of hall call floor addresses to be displayed<br>bit5: Current detection valid at startup for synchronous motor<br>bit6: Reversing MCB light output<br>bit7: Door open valid at non-door zone in the inspection state<br>bit8: Door open and close once after inspection turned to normal<br>bit10: Buzzer not tweet upon re-leveling<br>bit11: Super short floor function<br>bit12: Fault auto reset<br>bit13: E53 fault auto reset<br>bit14: Up slow-down not reset for super short floor<br>bit15: Down slow-down not reset for super short floor | 8450 | - | ★ |

<table>
<tr><th>Param. No.</th><th>Parameter Name</th><th>Setting Range</th><th>Default</th><th>Unit</th><th>Pro-perty</th></tr>
<tr><td colspan="6">F6-11 is used to select the elevator functions. Each bit of the parameter defines a function, as described in the following table.<br>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.<br>The functions defined by the binary bits of F6-11 are described in the following table.
<table>
<tr><th>Bit</th><th>Function</th><th>Description</th><th>Default</th></tr>
<tr><td>bit1</td><td>Disabling returning to base floor for verification at excessive pulses</td><td>The function of returning to base floor for verification due to large deviation of the car position is disabled.</td><td>1</td></tr>
<tr><td>bit2</td><td>Cancelling auto sequential arrange of hall call floor addresses to be displayed</td><td>If the display of a floor in group FE is set to 1, the following floors to be displayed are automatically arranged in the ascending order.</td><td>0</td></tr>
<tr><td>bit5</td><td>Current detection valid at startup for synchronous motor</td><td>The controller performs output current detection when the synchronous motor is started up. If the current is abnormal, the output will be locked and the running will be forbidden.</td><td>0</td></tr>
<tr><td>bit6</td><td>Reversing MCB lamp output</td><td>After this function is enabled, the MCB lamp output logic is reversed.</td><td>0</td></tr>
<tr><td>bit7</td><td>Door open valid at non-door zone in the inspection state</td><td>In the inspection state, you can open/close the door by pressing the door open/close button at the non-door zone.</td><td>0</td></tr>
<tr><td>bit8</td><td>Door open and close once after inspection turned to normal</td><td>The elevator door opens and closes once after the system turns from first-time inspection to normal running.</td><td>1</td></tr>
<tr><td>bit10</td><td>Buzzer not tweet upon re-leveling</td><td>The buzzer inside the car does not tweet upon re-leveling.</td><td>0</td></tr>
<tr><td>bit11</td><td>Super short floor function</td><td>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.</td><td>0</td></tr>
<tr><td>bit12</td><td>Fault auto reset</td><td>The controller automatically resets the faults once every hour.</td><td>0</td></tr>
<tr><td>bit13</td><td>E53 fault auto reset</td><td>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.</td><td>1</td></tr>
<tr><td>bit14</td><td>Up slow-down not reset for super short floor</td><td>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.</td><td>0</td></tr>
<tr><td>bit15</td><td>Down slow-down not reset for super short floor</td><td>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.</td><td>0</td></tr>
</table>
</td></tr>
<tr><td>F6-12</td><td>VIP floor</td><td>0 to F6-00</td><td>0</td><td>-</td><td>★</td></tr>
<tr><td colspan="6">F6-12 is used to set the VIP floor.</td></tr>
<tr><td>F6-13</td><td>Security floor</td><td>0 to F6-00</td><td>0</td><td>-</td><td>★</td></tr>
</table>

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-13 is used to set the security floor of the elevator.<br>If the security signal is active or it is during the night security period, the elevator runs to the security floor first every time, opens and closes the door once, and then runs to the target floor.<br>The elevator can be made to stop at the security floor in the following two ways:<br>◆ Fd-07/Fd-08 is set to 5/37 (Security signal). If the security signal is active, the elevator enters the security state.<br>◆ The night security floor function is enabled (FE-32 bit5 = 2), the elevator enters the security state from 22:00 p.m. to 6:00 a.m. | | | | | |
| F6-14 | Start time of down collective selective 1 | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-15 | End time of down collective selective 1 | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-16 | Start time of down collective selective 2 | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-17 | End time of down collective selective 2 | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-18 | Start time of time-based floor service 1 | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-19 | End time of time-based floor service 1 | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-20 | Service floors of time-based service 1 (floor 1-16) | 0 to 65535 | 65535 | - | ☆ |
| F6-21 | Service floors of time-based service 1 (floor 17-32) | 0 to 65535 | 65535 | - | ☆ |
| F6-22 | Start time of time-based floor service 2 | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-23 | End time of time-based floor service 2 | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-24 | Service floors of time-based service 2 (floor 1-16) | 0 to 65535 | 65535 | - | ☆ |
| F6-25 | Service floors of time-based service 2 (floor 17-32) | 0 to 65535 | 65535 | - | ☆ |
| F6-26 | Peak 1 start time for parallel/ group control | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-27 | Peak 1 end time for parallel/ group control | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-28 | Peak 1 floor | F6-01 to F6-00 | 1 | - | ★ |
| F6-29 | Peak 2 start time for parallel/ group control | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-30 | Peak 2 end time for parallel/ group control | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-31 | Peak 2 floor | F6-01 to F6-00 | 1 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-36 | Service floor of time-based service 1 (floor 33-48) | 0 to 65535 | 65535 | - | ☆ |
| F6-37 | Service floor of time-based service 2 (floor 33-48) | 0 to 65535 | 65535 | - | ☆ |
| F6-38 | Elevator lock start time | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| F6-39 | Elevator lock end time | 00.00 to 23.59 | 00.00 | HH.MM | ☆ |
| The elevator can switch to the locked state in the following two ways:<br>◆ F6-40 bit5 = 1, to enable the timed elevator lock function.<br>◆ F6-38 and F6-39 are used to set the elevator lock time period, during which the elevator is in locked state.<br>◆ Fd-07 = 1/33, to enable the hall elevator lock switch | | | | | |
| F6-40 | Program control selection 1 | bit0: Disability function<br>bit1: Soft limit function<br>bit2: JP16 input used as back door selection<br>bit3: JP16 input used as the back door open signal<br>bit4: Opening only one door of opposite doors under manual control<br>bit5: Timed elevator lock<br>bit6: Manual door<br>bit9: Disabling reverse floor number clear<br>bit10: Displaying next arriving floor number<br>bit11: Responding to car calls first<br>bit12: Car call assisted command in single door used as disability function<br>bit13: Folding command used as disability function and back door function<br>bit14: Car call command folding<br>bit15: JP20 used for switchover to back door | 0 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

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

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

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Disability function | It is used to enable or disable the disability function. | 0 |
| bit1 | Soft limit function | When the up slow-down and down leveling signals are active and the up leveling signal is inactive, the system considers that the up limit is performed. It is the same for the down limit signal. | 0 |
| bit2 | JP16 input used as back door selection | This function is enabled if the opposite door function is used. When JP16 has input, the elevator opens only the back door. When IP16 has no input, the elevator opens only the front door. | 0 |
| bit3 | JP16 input used as the back door open signal | JP16 is used for the input of the back door open signal. | 0 |
| bit4 | Opening only one door of opposite doors under manual control | This function is enabled only in the opposite door control mode 2 (hall call independent, opposite-door manual control). In this case, only one door opens each time while the other door must stay in the door close limit state.<br>In group Fd, the HCB-B extended input includes "Single/Double door selection". If this input is active, both doors open if there is a car call. | 0 |
| bit5 | Timed elevator lock | F6-38/F6-39 is valid only when this function is enabled. | 0 |
| bit6 | Manual door | This function is used for the elevator with manual door. | 0 |
| bit7 | Reserved | - | 0 |
| bit8 | Reserved | - | 0 |
| bit9 | Disabling reverse floor number clear | The system clears all the current car calls every time the elevator changes the direction by default. When this function is enabled, the function of clearing reverse floor numbers is disabled. | 0 |
| bit10 | Displaying next arriving floor number | The next floor to be arrived at is displayed during elevator running. | 0 |
| bit11 | Responding to car calls first | The system responds to hall calls only after executing all car calls. | 0 |
| bit12 | Car call assisted command in single door used as disability function | You can set the auxiliary command terminal (CN8) on the CTB for input of the disability calls (folding command not required). | 0 |
| bit13 | Folding command used as disability function and back door function | It is valid only when the function of bit14 is enabled.<br>bit13 = 1: Disability<br>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.<br>Function enabled: For CN7 and CN8, inputs 1 to 16 are used for front door calls or ordinary calls, and inputs 17 to 32 are used for back door calls or disability calls. | 0 |
| bit15 | JP20 used for switchover to back door | JP20 is used for input of switchover between the front door and the back door. | 0 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-41 | Program control selection 2 | bit2: Inspection to stop due to slow-down 1<br>bit4: Buzzer tweet during door open delay<br>bit6: Cancelling door open delay<br>bit8: Elevator lock at door open<br>bit9: Display available at elevator lock<br>bit10: Elevator lock in the attendant state<br>bit11: Blinking at arrival (within the time set in F6-47)<br>bit12: Door re-open during door open delay<br>bit13: Door re-open after car call of the present floor | 0 | - | |

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

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

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Reserved | - | 0 |
| bit1 | Reserved | - | 0 |
| bit2 | Inspection to stop due to slow-down 1 | During inspection running, if the slow-down 1 acts, the system decelerates to stop. | 0 |
| bit3 | Reserved | - | 0 |
| bit4 | Buzzer tweet during door open delay | The buzzer will tweet when the door open delay time set in Fb-14 is reached. | 0 |
| bit5 | Reserved | - | 0 |
| bit6 | Cancelling door open delay | Door open delay is cancelled when the door open delay button is pressed again. | 0 |
| bit7 | Reserved | - | 0 |
| bit8 | Elevator lock at door open | In the elevator lock state, the elevator keeps the door open at the elevator lock floor. | 0 |
| bit9 | Display available at elevator lock | In the elevator lock state, hall calls are displayed normally. | 0 |
| bit10 | Elevator lock in the attendant state | The elevator is locked properly in the attendant state. | 0 |
| bit11 | Blinking at arrival | The car display blinks when the elevator arrives at a floor. The blinking advance time is set in F6-47. | 0 |
| bit12 | Door re-open during door open delay | The door re-opens if the door open delay input is active during door close. | 0 |
| bit13 | Door re-open after car call of the present floor | The door re-opens if the car call of the present floor is valid during door close. | 0 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| F6-42 | Program control selection 3 | bit1: Cancelling door open/close command at delay after door open/close limit<br>bit2: Not judging door lock state at door close output<br>bit3: Door close command output during running<br>bit4: Enabling returning to base floor for verification upon power-on<br>bit5: Clearing calls immediately at elevator lock<br>bit6: Electric lock NC output<br>bit7: E50 fault detection cancellation<br>bit8: Cancellation of door open/close limit fault detection<br>bit9: Cancellation of scrolling fault subcode display<br>bit10: Door open energy-saving<br>bit11: Independent switch for getting away from parallel control | 18448 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

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

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

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Reserved | - | 0 |
| bit1 | Cancelling door open/close command at delay after door open/close limit | bit1 = 1: The door open/close command is cancelled at the delay of 1s after door open/close limit. | 0 |
| bit2 | Not judging door lock state at door close output | On normal conditions, the system determines that the door is completely closed only when the door close limit signal is active and the door lock is applied.<br>If this function is enabled, the system need not judge the door lock state. | 0 |
| bit3 | Door close command output during running | The door close command is output continuously during the elevator running. | 0 |
| bit4 | Returning to base floor for verification upon power-on | The elevator runs to the bottom floor for verification at power-on for the first time. | 1 |
| bit5 | Clearing calls immediately at elevator lock | bit5 = 1: After the elevator lock signal becomes active, the elevator clears all car calls and hall calls and lands at the elevator base floor.<br>bit5 = 0: After the elevator lock signal becomes active, the elevator clears hall calls and responds to all registered car calls, and then lands at the elevator base floor. | 0 |
| bit6 | Electric lock NC output | The electric lock has no outputs at door open and has output at door close. | 0 |
| bit7 | E50 fault detection cancellation | bit7 = 1: Fault E50 not detected | 0 |
| bit8 | Cancellation of door open/close limit fault detection | The door open/close limit signal is not detected. | 0 |
| bit9 | Cancellation of fault subcode scrolling display | The keypad will not display the fault subcode in scrolling mode. | 0 |
| bit10 | Door open energy-saving | In waiting with door open state, the system closes the lamp and fan within the time in F9-01 after door open limit. | 0 |
| bit11 | Independent running switch for getting away from parallel control | Valid: When this signal is active, and the independent running switch is turned on, the elevator disconnects from parallel control and works in normal running state.<br>Invalid: The elevator disconnects from parallel control and enters VIP running state. | 1 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-43 | Attendant function selection | bit0: Calls cancelled after entering attendant state<br>bit1: Not responding to hall calls<br>bit2: Attendant/Automatic state switchover<br>bit3: Door close at jogging<br>bit4: Automatic door close<br>bit5: Buzzer tweeting at intervals in attendant state<br>bit6: Buzzer tweeting at intervals in attendant state<br>bit7: Car call button blinking to prompt | 128 | - | ★ |

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

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

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Calls cancelled after entering attendant state | All car calls and hall calls are cancelled after the system enters the attendant state for the first time. | 0 |
| bit1 | Not responding to hall calls | The car blinks inside, prompting there is a hall call, but the system does not respond. | 0 |
| bit2 | Attendant/Automatic state switchover | If this function is enabled, the setting of F5-00 is valid. | 0 |
| bit3 | Door close at jogging | The elevator door closes after the attendant presses the door close button manually. | 0 |
| bit4 | Automatic door close | It is the same as the normal state. After the door open holding time is reached, the door closes automatically. | 0 |
| bit5 | Buzzer tweeting at intervals in attendant state | When the hall call floor and the car call floor are different, the buzzer tweets 2.5s at intervals. | 0 |
| bit6 | Continuous buzzer tweeting in attendant state | When the hall call floor and the car call floor are different, the buzzer tweets continuously. | 0 |
| bit7 | Car call button blinking to prompt | When the hall call input is active, the car call button for the corresponding floor blinks to give a prompt. | 0 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-44 | Fire emergency function selection | bit3: Arrival gong output in inspection or fire emergency state<br>bit4: Multiple car calls registered in fire emergency state<br>bit5: Retentive at power failure in fire emergency state<br>bit6: Closing door by holding down the door close button<br>bit8: Door close at car call registering<br>bit9: Displaying hall calls in fire emergency state<br>bit10: Firefighter forced running<br>bit11: Exiting firefighter state upon arrival at fire emergency floor<br>bit12: Not clearing car calls at reverse door open in firefighter running state<br>bit14: Opening door by holding down the door open button<br>bit15: Automatic door open at fire emergency floor | 16456 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

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

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

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 to bit2 | Reserved | - | 0 |
| bit3 | Arrival gong output in inspection or fire emergency state | The arrival gong is output in the inspection or fire emergency state. | 0 |
| bit4 | Multiple car calls registered in fire emergency state | Multiple car calls can be registered in the fire emergency state. If this function is disabled, only one car call can be registered. | 0 |
| bit5 | Retentive at power failure in fire emergency state | In the fire emergency state, the current system and car state will be memorized at power failure and be resumed after the system is powered on again. | 0 |
| bit6 | Closing door by holding down the door close button | In the fire emergency state, the door close process can be completed only by holding down the door close button until the door close limit is reached. Otherwise, it will be switched over to door open automatically. | 0 |
| bit7 | Reserved | - | 0 |
| bit8 | Door close at car call registering | The elevator enters the door close process automatically if a car call is registered. | 0 |
| bit9 | Displaying hall calls in fire emergency state | Hall calls are displayed in the fire emergency state. | 0 |
| bit10 | Firefighter forced running | JP22 is used for firefighter forced running input.<br>In the firefighter running state, when the JP22 input switch and the door close button are enabled simultaneously, the buzzer tweets and the system outputs the door close signal. If the door lock is not enabled within 10s, the system outputs the shorting door lock circuit contactor signal, and the elevator starts running (used together with SCB-A). | 0 |
| bit11 | Exiting firefighter state upon arrival at fire emergency floor | The system can exit the firefighter state only after the elevator arrives at the fire emergency floor. | 0 |
| bit12 | Not clearing car calls at reverse door open in firefighter running state | In the firefighter running state, the car calls that have been registered are not cleared at reverse door open. | 0 |
| bit13 | Reserved | - | 0 |
| bit14 | Opening door by holding down the door open button | In the fire emergency state, the door open process can be completed only by holding down the door open button until the door open limit is reached. Otherwise, it will be switched over to door close automatically. | 0 |
| bit15 | Automatic door open at fire emergency floor | The door opens automatically after the elevator arrives at the fire emergency floor. | 0 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-45 | Emergency evacuation function selection | bit0 to bit1: Direction determine mode<br>(00: Automatically calculating direction; 01: Load direction determining; 10: Direction of nearest landing floor)<br>bit2: Stopping at evacuation parking floor<br>bit4: Compensation at startup<br>bit8: Emergency running time protection<br>bit10: Emergency buzzer output<br>bit12: Shorting stator braking mode switched over to controller drive<br>bit13: Mode of shorting stator braking mode switched over to controller drive<br>bit14: Emergency evacuation exit mode<br>bit15: Shorting stator braking function | 0 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

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

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

When F6-45 bit2 = 1, the elevator stops at the emergency evacuation parking floor set in F6-49.

When F6-45 bit2 = 0, the elevator stops at the nearest landing floor.

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Direction determine mode | 0 Automatically calculating direction; 1 Direction of nearest landing floor | 0 |
| bit1 | | 0 Automatically calculating direction; 1 Load direction determining (based on load cell data or half-load signal) | 0 |
| bit2 | Stopping at evacuation parking floor | During evacuation running, the elevator arrives at the evacuation parking floor set in F6-49 (it must be a non-zero value and is a service floor). Otherwise, the elevator stops at the nearest floor. | 0 |
| bit3 | Reserved | - | 0 |
| bit4 | Compensation at startup | The non-load-cell startup is still valid in the process of evacuation running. | 0 |
| bit5 | Reserved | - | 0 |
| bit6 | Reserved | - | 0 |
| bit7 | Reserved | - | 0 |
| bit8 | Emergency running time protection | If the elevator does not arrive at the required floor after 50s emergency evacuation running time, E33 is reported. In this case, the function of switching over shorting stator braking mode to controller drive based on the time setting cannot be implemented. | 0 |
| bit9 | Reserved | - | 0 |
| bit10 | Emergency buzzer output | The buzzer tweets at intervals in the emergency evacuation running state. | 0 |
| bit11 | Reserved | - | 0 |
| bit12 | Shorting stator braking mode switched over to controller drive | It enables the function of switching over shorting stator braking mode to controller drive. | 0 |
| bit13 | Mode of shorting stator braking mode switched over to controller drive | 0 Time setting<br>If the time of the shorting stator braking mode exceeds 50s, the controller starts to drive the elevator.<br>1 Speed setting<br>If the speed is still smaller than the value of F6-48 after 10s in the shorting stator braking mode, the controller starts to drive the elevator. | 0 |
| bit14 | Emergency evacuation exit mode | 0 The system exits emergency evacuation when receiving the door open limit signal from the elevator that arrives at the destination floor.<br>1 The system exits emergency evacuation when receiving the door close limit signal from the elevator that arrives at the destination floor. | 0 |
| bit15 | Shorting stator braking function | When this function is enabled (bit15 = 1), the setting of related parameters becomes effective. | 0 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-46 | VIP function selection | bit0: VIP enabled by hall call (at VIP floor)<br>bit1: VIP enabled by terminal<br>bit8: Number of VIP car calls limited | 0 | - | ★ |
| F6-47 | Blinking advance time | 0.0 to 15.0 | 1.0 | s | ☆ |
| F6-48 | Emergency evacuation switching speed | 0.010 to 0.630 | 0.010 | m/s | ★ |
| F6-49 | Evacuation parking floor | 0 to F6-00 | 0 | - | ★ |
| F6-50 | Parallel floor offset | 0 to 40 | 0 | - | ★ |
| F6-50 is used to when the bottom floors of two elevators in parallel control are different. This parameter supports direct parallel control without adjusting the top and bottom floors or shaft-auto-tuning again. | | | | | |
| F6-51 | Static current | 0.00 to 655.00 | 0 | A | ★ |
| F6-52 | Program function selection 4 | bit0: Door lock monitoring signal using door close limit signal<br>bit1: Communication SCB enabled<br>bit2: CAN communication with AFE supported<br>bit3: Door lock opened twice to switch from pit inspection to normal operation<br>bit4: Terminal floor verification speed limit of 0.3 m/s<br>bit5: CTB DI function selection enabled<br>bit6: CTB leveling signal input active<br>bit7: Door operator overheat detection<br>bit8: CTB safety edge input selection<br>bit9: Light curtain fault handling<br>bit10: Braking force detection disabled<br>bit11: UCMP disabled<br>bit12: Shorting door lock circuit relay output upon arrival disabled<br>bit13: Pulse multiplication setting<br>bit15: Forced pit inspection through communication | 3072 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

| Bit | Function | Description | Default |
|---|---|---|---|
| bit1 | Communication SCB enabled | The communication SCB is put to use. | 0 |
| bit2 | CAN communication with AFE supported | The AFE communication is enabled. | 0 |
| bit3 | Devices reset outside of shaft | To enable this function, set F6-52 bit3 to 1 and use the pit interface board for pit inspection.<br>This function is used to switch from inspection state to normal state by opening the door lock twice. | 0 |
| bit4 | Inspection speed limit at terminal floors | When this function is enabled, the car stops 2 m away from the top/bottom terminal floors first, then running at a speed of no bigger than 0.3 m/s. | 0 |
| bit5 | CTB DI function selection enabled | CTB DI inputs are defined by Fb-50 to Fb-73. When bit5 = 1, F5-25 is defined as invalid. | 0 |
| bit6 | CTB leveling signal input active | Up/Down leveling signals are transmitted through CAN communication on the CTB. | 0 |
| bit7 | Door operator overheat detection | The door operator overheat detection is enabled. | 0 |
| bit8 | CTB safety edge input selection | Set F6-52 bit8 to 1 to enable CTB safety edge input selection. | 0 |
| bit9 | Light curtain fault handling | Disable the light curtain fault handling by setting bit9. The light curtain is considered abnormal if no action is detected after car calls for 5 consecutive times, then forced door close will be output accompanied by buzzer prompt. The light curtain returns to normal after it acts.<br>This function is disabled by set F6-52 bit9 to 1. | 0 |
| bit10 | Braking force detection disabled | Set bit10 to 1 to disable the braking force detection. | 0 |
| bit11 | UCMP disabled | Set bit11 to 1 to disable UCMP. | 0 |
| bit12 | Shorting door lock circuit relay output upon arrival | Set F6-52 bit12 to 1 to disable the automatic output of shorting door lock circuit relay upon arrival. | 0 |
| bit13 | Pulse multiplication setting | When E35 is reported at some applications of the asychronous motor during shaft auto-tuning, the asychronous motor pulse multiplication can be modified. | 0 |
| bit15 | Forced inspection at interrupted communication | Enable the forced inspection at interrupted communication. After the inspection on communication is enabled, the elevator is forced into inspection state for interrupted communication on car top board, which keeps running during emergency electrical operation. | 0 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| F6-55 | Program function selection 5 | bit0: Door operator using MOD serial communication<br>bit1: Reserved<br>bit2: Door operator using CAN serial communication<br>bit3: Reserved<br>bit4: Light curtain using MOD serial communication<br>bit5: Light curtain using CAN communication<br>bit11: Communication encoder functions enabled<br>bit12: Communication encoder factory number verification<br>bit13: Communication encoder contract number binding enabled<br>bit14: Delayed communication encoder contract number binding enabled | 0 | - | ★ |
| **Group F7: Test function parameters** | | | | | |
| F7-00 | Car call floor registered | 0 to F6-00 | 0 | - | ☆ |
| F7-01 | Up hall call floor registered | 0 to F6-00 | 0 | - | ☆ |
| F7-02 | Down hall call floor registered | 0 to F6-00 | 0 | - | ☆ |
| These parameters are used to set the destination floors at elevator commissioning or repairing. They can be respectively used as the car call button, hall call up button and hall call down button. They remain valid after the commissioning command is input, and become invalid until they are set to 0 or the system suffers power failure. | | | | | |
| F7-03 | Random running times | 0 to 60000 | 0 | - | ☆ |
| F7-04 | Hall call forbidden | 0: No<br>1: Yes | 0 | - | ☆ |
| F7-05 | Door open forbidden | 0: No<br>1: Yes | 0 | - | ☆ |
| F7-06 | Overload function | 0: Disabled<br>1: Enabled | 0 | - | ☆ |
| F7-07 | Limit switch forbidden | 0: No<br>1: Yes | 0 | - | ☆ |
| F7-08 | Time interval of random running | 0 to 1000 | 0 | s | ☆ |
| **Group F8: Enhanced function parameters** | | | | | |
| F8-00 | Load for load cell auto-tuning | 0 to 100 | 0 | % | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| F8-01 | Pre-torque selection | 0: Pre-torque invalid<br>1: Load cell pre-torque compensation<br>2: Automatic pre-torque compensation<br>3: Both load cell and automatic pre-torque compensation effective | 2 | - | ★ |

F8-01 is used to set the pre-torque compensation mode at startup of the elevator.

The values are as follows:

◆ 0: Pre-torque invalid

Load cell auto-tuning is allowed.

◆ 1: Load cell pre-torque compensation

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

◆ 2: Automatic pre-torque compensation

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

◆ 3: Both load cell and automatic pre-torque compensation effective

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

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

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

| | | | | | |
|---|---|---|---|---|---|
| F8-02 | Pre-torque offset | 0.0 to 100.0 | 50.0 | % | ★ |
| F8-03 | Drive gain | 0.00 to 2.00 | 0.60 | - | ★ |
| F8-04 | Brake gain | 0.00 to 2.00 | 0.60 | - | ★ |
| F8-05 | Current car load | 0 to 255 | 0 | - | ● |
| F8-06 | Car no-load load | 0 to 255 | 0 | - | ★ |
| F8-07 | Car full-load load | 0 to 255 | 100 | - | ★ |
| F8-08 | Anti-nuisance function | 0: Anti-nuisance function disabled<br>1: Nuisance judged by load cell<br>2: Nuisance judged by light curtain<br>4: Nuisance judged by light-load signal | 0 | - | ☆ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| It is the criteria for judging whether nuisance exists.<br>The values are as follows:<br>◆ 0: Anti-nuisance function disabled<br>◆ 1: Nuisance judged by load cell<br>A load cell is required. The system judges whether nuisance exists by comparing the load cell data and the number of car calls.<br>◆ 2: Nuisance judged by light curtain<br>The system determines that nuisance exists when the light curtain does not act after the elevator stops at arrival for three consecutive times.<br>◆ 4: Nuisance judged by light-load signal<br>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.<br>When the system determines that the elevator is in the nuisance state, it cancels all car calls. In this case, call calls need to be registered again. | | | | | |
| F8-09 | Emergency evacuation operation speed at power failure | 0.020 to F3-11 | 0.050 | m/s | ★ |
| F8-10 | Power supply mode for emergency evacuation operation | 0: Motor not running<br>1: UPS<br>2: 48 V battery power supply | 0 | - | ★ |
| F8-11 | Brake release delay | 0.200 to 1.500 | 0.600 | s | ★ |
| F8-12 | Fire emergency floor 2 | 0 to F6-00 | 0 | - | ★ |
| F8-14 | HCB communication setting | bit4: Energy saving of HCB communication | 0 | - | ☆ |
| F8-16 | Start address of hall call auxiliary command | 0 to 40 | 0 | - | ☆ |
| F8-16 is used to set the HCB start address of the back door in opposite door mode.<br>HCB address of back door = HCB address of front door at the same floor + F8-16 | | | | | |
| F8-17 | Hall call address check | 0 to 1 | 0 | - | ☆ |
| F8-19 | Reserved | bit10: Multiple emergency evacuation | 0 | - | ★ |
| **Group F9: Time parameters** | | | | | |
| F9-00 | Idle time before returning to base floor | 0 to 240 | 10 | min | ☆ |
| F9-01 | Car energy-saving time | 0 to 240 | 2 | min | ☆ |
| F9-02 | Motor running time limit | 0 to 45 | 45 | s | ★ |
| F9-02 is used to set the running time limit of the motor.<br>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.<br>This parameter is mainly used for over-time protection in the case of steel rope slipping on the traction sheave.<br>If this parameter is set to a value smaller than 3s, it becomes invalid. | | | | | |
| F9-03 | Clock: year | 2000 to 2100 | Current year | YYYY | ☆ |

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

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

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| FA-58 | Version displaying selection | 0: No equipment room monitoring<br>1: Having equipment room extension board<br>2: Having car extension board | 0 | - | ☆ |
| FA-59 | Main firmware version | 0 to 655.35 | 0 | - | ● |
| **Group Fb: Door function parameters** | | | | | |
| Fb-00 | Number of door operator(s) | 1 to 2 | 1 | - | ★ |
| Fb-01 | CTB firmware version | 00 to 999 | 0 | - | ● |
| Fb-02 | Door operator 1 service floors (floors 1-16) | 0 to 65535 | 65535 | - | ☆ |
| Fb-03 | Door operator 1 service floors (floors 17-32) | 0 to 65535 | 65535 | - | ☆ |
| Fb-04 | Door operator 2 service floors (floors 1-16) | 0 to 65535 | 65535 | - | ☆ |
| Fb-05 | Door operator 2 service floors (floors 17-32) | 0 to 65535 | 65535 | - | ☆ |
| These parameters are used to set the service floors of door operator 1 and door operator 2.<br>The setting method is the same as that for F6-05. | | | | | |
| Fb-06 | Door open protection time | 5 to 99 | 10 | s | ☆ |
| Fb-07 | Arrival gong output delay | 0 to 1000 | 0 | ms | ☆ |
| Fb-08 | Door close protection time | 5 to 99 | 15 | s | ☆ |
| Fb-09 | Door open/close protection times | 0 to 20 | 0 | - | ☆ |
| Fb-10 | Door state of standby elevator | 0: Closing the door as normal at base floor<br>1: Waiting with door open at base floor<br>2: Waiting with door open at each floor | 0 | - | ☆ |
| Fb-11 | Door open holding time for hall call | 1 to 1000 | 5 | s | ☆ |
| Fb-12 | Door open holding time for car call | 1 to 1000 | 3 | s | ☆ |
| Fb-13 | Door open holding time at base floor | 1 to 1000 | 10 | s | ☆ |
| Fb-14 | Door open delay | 10 to 1000 | 30 | s | ☆ |
| Fb-15 | Special door open holding time | 10 to 1000 | 30 | s | ☆ |
| Fb-16 | Manual door open holding time | 1 to 60 | 5 | s | ☆ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| Fb-17 | Holding time for forced door close | 5 to 180 | 120 | s | ☆ |
| Fb-18 | Door operator 1 service floors (floors 33-48) | 0 to 65535 | 65535 | - | ☆ |
| Fb-19 | Door operator 2 service floors (floors 33-48) | 0 to 65535 | 65535 | - | ☆ |
| Fb-20 | Manually operated door lock waiting time | 0 to 60 | 0 | - | ☆ |
| Fb-27 | Door open duration at fault | 0 to 60000 | 60 | s | ☆ |
| Fb-28 | Door open/close protection time at fault | 0 to 60000 | 60 | s | ☆ |
| Fb-29 | Time for exiting emergency evacuation upon door close limit | 3 to 999 | 15 | s | ☆ |
| Fb-30 | UPS power-on duration | 0 to 600 | 10 | s | ☆ |
| Fb-35 | VIP state holding time | 0.00 to 600.00 | 30.00 | s | ☆ |
| Fb-42 | Time for detecting stuck hall calls | 1 to 60 | 60 | s | ☆ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| Fb-50 to Fb-73 | CTB DI function selection | 0/100: Invalid NO/NC<br>1/101: Door 1 light curtain NO/NC<br>2/102: Door 2 light curtain NO/NC<br>3/103: Door 1 open limit NO/NC<br>4/104: Door 2 open limit NO/NC<br>5/105: Door 1 close limit NO/NC<br>6/106: Door 2 close limit NO/NC<br>7/107: Full load NO/NC<br>8/108: Overload NO/NC<br>9/109: No load NO/NC<br>10/110: Up leveling NO/NC<br>11/111: Down leveling NO/NC<br>12/112: Door operator 1 overheat NO/NC<br>13/113: Inspection switch NO/NC<br>14/114: Inspection up NO/NC<br>15/115: Inspection down NO/NC<br>16/116: Door 1 safety edge NO/NC<br>17/117: Door 2 safety edge NO/NC<br>19/119: Door operator 2 overheat NO/NC<br>20/120: Car maintenance NO/NC<br>212/312: Direct travel ride input NO/NC<br>213/313: Attendant input NO/NC<br>214/314: Direction change input NO/NC<br>215/315: Independent running NO/NC<br>216/316: Firefighter NO/NC<br>217/317: Reserved<br>218/318: IC card input NO/NC<br>219/319: Fan switch NO/NC<br>220/320: Ramp stop NO/NC<br>221/321: Floor lock cancellation input NO/NC | 0 | - | ★ |
| **Group FC: Protection function parameters** | | | | | |
| FC-00 | Program control for protection function | bit0: Short circuit to ground detection at power-on<br>bit2: Decelerating to stop at valid light curtain<br>bit9: Mode without door open/close limit | 0 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

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

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

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Short circuit to ground detection at power-on | Whether the motor is short circuited to ground is detected at power-on. If the motor is short circuited to ground, the controller blocks the output immediately, and reports the fault. | 0 |
| bit1 | Reserved | - | 0 |
| bit2 | Ramp to stop at valid light curtain | During normal-speed running, the elevator decelerates to stop immediately after the light curtain acts, and then runs to the registered destination floor after the light curtain restores. This function is mainly used in the case of manual door. | 0 |
| bit9 | Mode without door open/close limit | In this mode, the door open/close limit signal is not required, and the system automatically judges door open/close limit. The system determines that door open limit is implemented 3s after the door open command is output and door close limit is implemented 3s after the door close command is output. | 0 |

| | | | | | |
|---|---|---|---|---|---|
| FC-01 | Program control 2 for protection function | bit0: Overload protection<br>bit1: Canceling protection at output phase loss<br>bit2: Canceling over-modulation function<br>bit4: Light curtain judgment at door close limit<br>bit5: Canceling SPI communication judgment<br>bit14: Canceling protection at input phase loss | 65 | - | ★ |

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

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

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Overload protection | It sets whether to implement overload protection. | 1 |
| bit1 | Canceling protection at output phase loss | It sets whether to implement protection at output phase loss. | 0 |
| bit4 | Light curtain judgment at door close limit | At door close limit, the door re-opens if the light curtain is valid. | 0 |
| bit5 | Canceling SPI communication judgment | It sets whether to implement wire-breaking detection on SPI communication between the MCB and the drive board. | 0 |
| bit6 to bit8 | Reserved | - | 0 |
| bit14 | Canceling protection at input phase loss | It sets whether to implement protection at input phase loss. | 0 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| FC-02 | Overload protection coefficient | 0.50 to 10.00 | 1.00 | - | ★ |
| FC-03 | Overload pre-warning coefficient | 50 to 100 | 80 | % | ★ |
| FC-04 | Through-type door function | ◆ 0: Simultaneous control<br>◆ 1: Hall call independent, car call simultaneous<br>◆ 2: Hall call independent, car call manual control<br>◆ 3: Hall call independent, car call independent | 0 | - | ★ |
| FC-11 | 11st fault code | 0 to 9999 | 0 | - | ● |
| FC-12 | 11st fault subcode | 0 to 65535 | 0 | - | ● |
| FC-13 | 11st fault month and day | 0 to 1231 | 0 | MM.DD | ● |
| FC-14 | 11st fault hour and minute | 0 to 23.59 | 0 | HH.MM | ● |
| FC-15 | 12nd fault code | 0 to 9999 | 0 | - | ● |
| FC-16 | 12nd fault subcode | 0 to 65535 | 0 | - | ● |
| FC-17 | 12nd fault month and day | 0 to 1231 | 0 | MM.DD | ● |
| FC-18 | 12nd fault hour and minute | 0 to 23.59 | 0 | HH.MM | ● |
| FC-19 | 13rd fault code | 0 to 9999 | 0 | - | ● |
| FC-20 | 13rd fault subcode | 0 to 65535 | 0 | - | ● |
| FC-21 | 13rd fault month and day | 0 to 1231 | 0 | MM.DD | ● |
| FC-22 | 13rd fault hour and minute | 0 to 23.59 | 0 | HH.MM | ● |
| FC-23 | 14th fault code | 0 to 9999 | 0 | - | ● |
| FC-24 | 14th fault subcode | 0 to 65535 | 0 | - | ● |
| FC-25 | 14th fault month and day | 0 to 1231 | 0 | MM.DD | ● |
| FC-26 | 14th fault hour and minute | 0 to 23.59 | 0 | HH.MM | ● |
| FC-27 | 15th fault code | 0 to 9999 | 0 | - | ● |
| FC-28 | 15th fault subcode | 0 to 65535 | 0 | - | ● |
| FC-29 | 15th fault month and day | 0 to 1231 | 0 | MM.DD | ● |
| FC-30 | 15th fault hour and minute | 0 to 23.59 | 0 | HH.MM | ● |
| FC-31 | 16th fault code | 0 to 9999 | 0 | - | ● |
| FC-32 | 16th fault subcode | 0 to 65535 | 0 | - | ● |
| FC-33 | 16th fault month and day | 0 to 1231 | 0 | MM.DD | ● |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| FC-34 | 16th fault hour and minute | 0 to 23.59 | 0 | HH.MM | ● |
| ... ... | | | | | |
| FC-207 | 60th fault code | 0 to 9999 | 0 | - | ● |
| FC-208 | 60th fault subcode | 0 to 65535 | 0 | - | ● |
| FC-209 | 60th fault month and day | 0 to 1231 | 0 | MM.DD | ● |
| FC-210 | 60th fault hour and minute | 0 to 23.59 | 0 | HH.MM | ● |
| **Group Fd: Communication parameters** | | | | | |
| Fd-00 | Baud rate | 0: 9600<br>1: 38400 | 1 | bps | ★ |
| Fd-02 | Local address | 0 to 127 | 1 | - | ★ |
| Fd-03 | Communication response delay | 0 to 20 | 0 | ms | ★ |
| Fd-04 | Communication timeout | 0 to 60.0 | 0.0 | s | ★ |
| Fd-05 | Re-leveling stop delay | 0.00 to 2.00 | 0.00 | s | ★ |
| Fd-05 is used to set the delay from the moment when the elevator receives the leveling signal to the moment when it starts to decelerate to stop. | | | | | |
| Fd-07 | HCB:JP1 input | 0: Reserved<br>1: Elevator lock signal<br>2: Fire emergency signal<br>3: Present floor forbidden<br>4: VIP floor signal<br>5: Security floor signal<br>6 Door close button signal<br>7: Second fire emergency floor signal | 1 | - | ★ |
| Fd-08 | HCB:JP2 input | | 2 | - | ★ |
| Fd-09 | HCB:JP1 output | 0: Invalid<br>1: Up arrival gong<br>2: Down arrival gong<br>3: Fault output<br>4: Non-door zone stop output<br>5: Non-service state output<br>6: Door close button indicator output | 1 | - | ★ |
| Fd-10 | HCB:JP2 output | | 2 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| Fd-11 | Extension board 1 X1 input | 00: No function<br>1/33: Fire emergency signal NO/NC<br>2/34: Overload signal NO/NC<br>3/35: Full-load signal NO/NC<br>4/36: Firefighter running signal NO/NC<br>5/37: Door operator 1 light curtain signal NO/NC<br>6/38: Door operator 2 light curtain signal NO/NC<br>7/39: Brake travel switch 1 NO/NC<br>8/40: UPS enabled NO/NC<br>9/41: Elevator lock signal NO/NC<br>10/42: Safety circuit 2 NO/NC<br>11/43: PMSM motor self-lock feedback NO/NC<br>12/44: Door lock circuit NO/NC<br>13/45: Door operator 1 safety edge signal NO/NC<br>14/46: Door operator 2 safety edge signal NO/NC<br>15/47: Motor overheat signal NO/NC<br>16/48: Seismic signal NO/NC<br>17/49: Rear door forbidden signal NO/NC<br>18/50: Light-load signal NO/NC<br>19/51: Half-load signal NO/NC<br>20/52: Fire emergency floor switchover signal NO/NC<br>21/53: Dummy floor signal NO/NC<br>22/54: Door operator 1 open input NO/NC<br>23/55: Door operator 2 open input NO/NC<br>24/56: Brake travel switch 2 input NO/NC<br>25/57: External fault signal NO/NC<br>26/58: Terminal floor signal NO/NC<br>27/59: Door 1/2 selection NO/NC<br>28/60: Single/Double door selection NO/NC<br><br>Value for NC setting of a signal = Value for NO setting of this parameter + 32 | 0 | - | ★ |
| Fd-12 | Extension board 1 X2 input | | 0 | - | ★ |
| Fd-13 | Extension board 1 X3 input | | 0 | - | ★ |
| Fd-14 | Extension board 1 X4 input | | 0 | - | ★ |
| Fd-15 | Extension board 1 X5 input | | 0 | - | ★ |
| Fd-16 | Extension board 1 X6 input | | 0 | - | ★ |
| Fd-17 | Extension board 1 X7 input | | 0 | - | ★ |
| Fd-18 | Extension board 1 X8 input | | 0 | - | ★ |
| Fd-19 | Extension board 1 X9 input | | 0 | - | ★ |
| Fd-20 | Extension board 1 X10 input | | 0 | - | ★ |
| Fd-21 | Extension board 2 X1 input | | 0 | - | ★ |
| Fd-22 | Extension board 2 X2 input | | 0 | - | ★ |
| Fd-23 | Extension board 2 X3 input | | 0 | - | ★ |
| Fd-24 | Extension board 2 X4 input | | 0 | - | ★ |
| Fd-25 | Extension board 2 X5 input | | 0 | - | ★ |
| Fd-26 | Extension board 2 X6 input | | 0 | - | ★ |
| Fd-27 | Extension board 2 X7 input | | 0 | - | ★ |
| Fd-28 | Extension board 2 X8 input | | 0 | - | ★ |
| Fd-29 | Extension board 2 X9 input | | 0 | - | ★ |
| Fd-30 | Extension board 2 X10 input | | 0 | - | ★ |

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

It is used to set the collective selective mode of the system.

The values are as follows:

◆ 0: Full collective selective. The elevator responds to both up and down hall calls.

◆ 1: Down collective selective. The elevator responds to down hall calls but does not respond to up hall calls.

◆ 2: Up collective selective. The elevator responds to hall up calls but does not respond to hall down calls.

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

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| FE-56 | Highest digit selection 5 | --- (Continued)<br>35: Display "U"<br>36: Display "V"<br>37: Display "W"<br>38: Display "X"<br>39: Display "Y"<br>40: Display "Z"<br>41: Display "15"<br>42: Display "17"<br>43: Display "19" | 0 | - | ☆ |

FE-52 to FE-56 are used to set special floor display.

When the 2-digit display cannot meet the requirement, you can add the third-digit display by setting these parameters as follows:

1. Set the two high digits for indicating the floor address that requires special display, and set the two low digits for indicating the display content.

   For example, if floor 18 needs to be displayed as "17A", set FE-18 to 0710 (displaying "7A") and then set the FE-52 to 1801 (displaying "1").

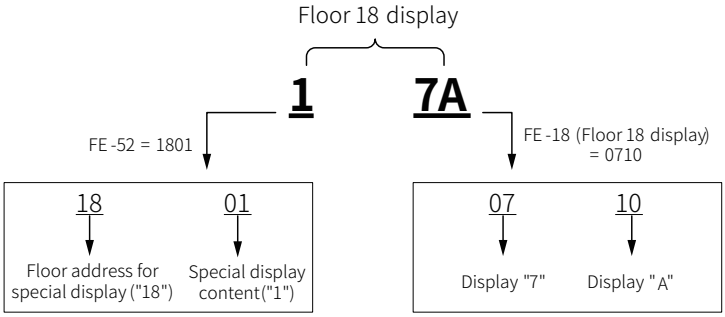



**Figure 10-9 Setting floor 18 display to "17A"**

2. Set F8-14 bit0 to 1.
3. Power off the system and power it on again.

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| FE-32 | Elevator function selection 1 | bit2: Re-leveling function<br>bit3: Door pre-open function<br>bit4: Stuck hall call cancellation<br>bit5: Night security floor function<br>bit6: Down collective selective peak service<br>bit7: Parallel/Group control peak service<br>bit8: Time-based service floor function<br>bit9: VIP function<br>bit11: Car call deletion<br>bit12: Hall call deletion | 34816 | - | ☆ |

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

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

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 to bit1 | Reserved | - | 0 |
| bit2 | Re-leveling function | The elevator performs re-leveling at a low speed with door open. An external shorting door lock circuit contactor needs to be used together. | 0 |
| bit3 | Door pre-open function | During normal stop, when the elevator speed is smaller than a certain value and the door zone signal is active, the system shorts the door lock by means of the shorting door lock circuit contactor and outputs the door open signal, implementing door pre-open. This improves the elevator use efficiency. | 0 |
| bit4 | Stuck hall call cancellation | The system automatically identifies the state of the hall call buttons. If the state is abnormal, the system cancels the stuck hall call. | 0 |
| bit5 | Night security floor function | From 10:00 p.m to 6:00 a.m., the elevator runs to the security floor first every time, stops and opens the door, and then runs to the destination floor. | 0 |
| bit6 | Down collective selective peak service | The peak service at down collective selective is used. | 0 |
| bit7 | Parallel/Group control peak service | The peak service is used. | 0 |
| bit8 | Time-based service floor function | For details, see the description of related parameters in group F6. | 0 |
| bit9 | VIP function | The VIP function is used. | 0 |
| bit10 | Reserved | - | 0 |
| bit11 | Car call deletion | A call can be deleted by pressing the button twice consecutively. | 1 |
| bit12 | Hall call deletion | | 0 |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|
| FE-33 | Elevator function selection 2 | bit1: Door open holding at open limit<br>bit2: Door close command not output upon door close limit<br>bit4: Auto reset for running and brake contactor stuck<br>bit5: Slow-down switch stuck detection<br>bit7: Forced door close<br>bit15: Opposite door independent control | 36 | - | ☆ |

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

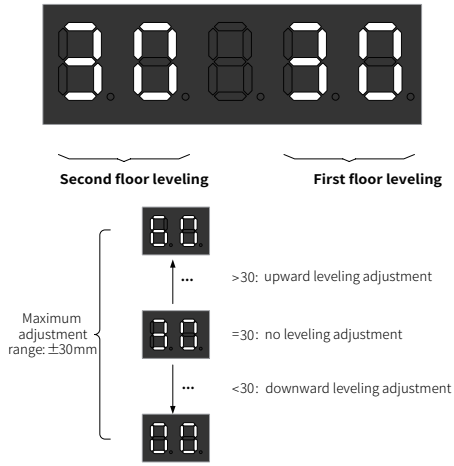
If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

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

| Bit | Function | Description | Default |
|---|---|---|---|
| bit1 | Door open holding at open limit | The system still outputs the door open command upon door open limit. | 0 |
| bit2 | Door close command not output upon door close limit | The system stops outputting the door close command upon door close limit. | 1 |
| bit4 | Auto reset for running and brake contactor stuck | If the feedback of the running and brake contactors is abnormal, faults Err36 and Err37 are reported, and you need to manually reset the system.<br>With this function, the system resets automatically after the fault symptom disappears. A maximum of three auto reset times are supported. | 0 |
| bit5 | Slow-down switch stuck detection | The system detects the state of slow-down switches. Once detecting that a slow-down switch is stuck, the system instructs the elevator to slow down immediately and reports a corresponding fault. | 1 |
| bit7 | Forced door close | If the door still does not close within the time set in Fb-17 in automatic state, the system outputs the forced door close signal; at this moment, the light curtain becomes invalid and the buzzer tweets. | 0 |
| bit15 | Opposite door independent control | - | 0 |

| Group FF: Factory parameters | | | | | |
|---|---|---|---|---|---|
| **Group FJ: Factory parameters** | | | | | |
| **Group FP: User parameters** | | | | | |
| FP-00 | User password | 0: No password<br>01 to 65535 | 0 | - | ☆ |
| FP-01 | Parameter update | 0: No operation<br>1: Restore default setting (except group F1)<br>2: Clear fault records<br>3: Clear shaft parameters | 0 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| FP-02 | User-defined parameter display | 0: Invalid<br>1: Valid | 0 | - | ☆ |
| FP-05 | Contract No. 2 | 0 to 65535 | 0 | - | ☆ |
| FP-06 | Contract No. 1 | 0 to 65535 | 5555 | - | ☆ |
| **Group Fr: Leveling adjustment parameters** | | | | | |
| Fr-00 | Leveling adjustment function | 0: Disabled<br>1: Enabled | 0 | - | ★ |
| Fr-01 | Leveling adjustment record 1 | 0 to 60060 | 30030 | mm | ★ |
| ~ | ~ | 0 to 60060 | 30030 | mm | ★ |
| Fr-24 | Leveling adjustment record 24 | 0 to 60060 | 30030 | mm | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| Fr-01 to Fr-24 record the leveling adjustment values. Each parameter records the adjustment information of two floors, and therefore, the adjustment information of 48 floors can be recorded totally.<br>The method of viewing the record is shown in the following figure.<br><br><br>**Figure 10-10 Viewing the leveling adjustment record**<br>As shown in the preceding figure, the left two LEDs and the right two LEDs respectively show the adjustment bases of the first floor and second floor. If the value is larger than 30, it is upward leveling adjustment; if the value is smaller than 30, it is downward leveling adjustment. The default value "30" indicates that there is no leveling adjustment. The maximum adjustment range is ±30 mm.<br>The leveling adjustment method is as follows:<br>◆ Ensure that shaft auto-tuning is completed successfully, and the elevator runs properly at normal speed.<br>◆ 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.<br>◆ Go into the car, press the top floor button on the CCB once, and the leveling position is changed 1 mm upward; press the bottom floor button on the CCB once, and the leveling position is changed 1 mm downward. The value is displayed on the car display board.<br>◆ Positive value: up arrow + value, negative value: down arrow + value, adjustment range: ±30 mm<br>◆ After completing adjustment for the present floor, press the top floor button and bottom floor button at the same time to save the adjustment result. The car display restores to the normal state. If the leveling position of the present floor need not be adjusted, press the top floor button and bottom floor button at the same time to exit the leveling adjustment state. Then, car calls can be registered.<br>◆ 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.<br>After completing adjustment for all floors, set Fr-00 to 0 to disable the leveling adjustment function. Otherwise, the elevator cannot be used. | | | | | |
| **Group E0: 1st fault details** | | | | | |
| The system prompts and records faults. The keypad displays the fault code and subcode in scrolling mode, for example, E2-101. | | | | | |
| E0-00 | 1st fault code | 0 to 9999 | 0 | | ● |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| E0-01 | 1st fault subcode | 0 to 65535 | 0 | | ● |
| E0-02 | Month and day of 1st fault | 0 to 1231 | 0 | MM.DD | ● |
| E0-03 | Time of 1st fault | 0 to 23.59 | 0 | HH.MM | ● |
| E0-04 | Logic information upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-05 | Curve information upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-06 | Speed reference upon 1st fault | 0.000 to 4.000 | 0 | m/s | ● |
| E0-07 | Speed feedback upon 1st fault | 0.000 to 4.000 | 0 | m/s | ● |
| E0-08 | Bus voltage upon 1st fault | 0 to 999.9 | 0 | V | ● |
| E0-09 | Current position upon 1st fault | 0.0 to 300.0 | 0 | m | ● |
| E0-10 | Output current upon 1st fault | 0.0 to 999.9 | 0 | A | ● |
| E0-11 | Output frequency upon 1st fault | 0.00 to 99.99 | 0 | Hz | ● |
| E0-12 | Torque current upon 1st fault | 0.0 to 999.9 | 0 | A | ● |
| E0-13 | Output voltage upon 1st fault | 0 to 999.9 | 0 | V | ● |
| E0-14 | Output torque upon 1st fault | 0 to 200.0 | 0 | % | ● |
| E0-15 | Output power upon 1st fault | 0.00 to 99.99 | 0 | kW | ● |
| E0-16 | Communication interference upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-17 | Encoder interference upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-18 | Input state 1 upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-19 | Input state 2 upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-20 | Input state 3 upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-21 | Input state 4 upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-22 | Input state 5 upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-23 | Output state 1 upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-24 | Output state 2 upon 1st fault | 0 to 65535 | 0 | | ● |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| E0-25 | Car input state upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-26 | Car output state upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-27 | Hall states upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-28 | System state 1 upon 1st fault | 0 to 65535 | 0 | | ● |
| E0-29 | System state 2 upon 1st fault | 0 to 9999 | 0 | | ● |
| … | | | | | |
| E9-00 | 10th fault code | 0 to 9999 | 0 | | ● |
| E9-01 | 10th fault subcode | 0 to 65535 | 0 | | ● |
| E9-02 | Month and day of 10th fault | 0 to 1231 | 0 | MM.DD | ● |
| E9-03 | Time of 10th fault | 0 to 23.59 | 0 | HH.MM | ● |
| E9-04 | Logic information upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-05 | Curve information upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-06 | Speed reference upon 10th fault | 0.000 to 4.000 | 0 | m/s | ● |
| E9-07 | Speed feedback upon 10th fault | 0.000 to 4.000 | 0 | m/s | ● |
| E9-08 | Bus voltage upon 10th fault | 0 to 999.9 | 0 | V | ● |
| E9-09 | Current position upon 10th fault | 0.0 to 300.0 | 0 | m | ● |
| E9-10 | Output current upon 10th fault | 0.0 to 999.9 | 0 | A | ● |
| E9-11 | Output frequency upon 10th fault | 0.00 to 99.99 | 0 | Hz | ● |
| E9-12 | Torque current upon 10th fault | 0.0 to 999.9 | 0 | A | ● |
| E9-13 | Output voltage upon 10th fault | 0 to 999.9 | 0 | V | ● |
| E9-14 | Output torque upon 10th fault | 0 to 200.0 | 0 | % | ● |
| E9-15 | Output power upon 10th fault | 0.00 to 99.99 | 0 | kW | ● |
| E9-16 | Communication interference upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-17 | Encoder interference upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-18 | Input state 1 upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-19 | Input state 2 upon 10th fault | 0 to 65535 | 0 | | ● |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| E9-20 | Input state 3 upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-21 | Input state 4 upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-22 | Input state 5 upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-23 | Output state 1 upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-24 | Output state 2 upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-25 | Car input state upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-26 | Car output state upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-27 | Hall states upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-28 | System state 1 upon 10th fault | 0 to 65535 | 0 | | ● |
| E9-29 | System state 2 upon 10th fault | 0 to 65535 | 0 | | ● |
| Group L2: Standard case parameters | | | | | |
| L2-00 | Flood operation function selection | 0 to 65535 | 0 | - | ★ |

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Flood operation function enabled | When water seeps into the pit, the elevator automatically heads to the water base floor and suspends services. | 0 |
| bit1 | Flood operation/ Firefighter priority | bit1 = 0: Firefighting first, with no response to the flood signal. Only after the firefighter state is completed will the elevator head for the flood base floor at the flood signal.<br>bit1 = 1: Flood operation first | 0 |
| bit2 | Flood base floor selection | bit2 = 0: Middle floor set as the flood base floor<br>bit2 = 1: Top floor set as the flood base floor | 0 |
| bit3 | Door open/close selection at flood base floor | bit3 = 0: Door open holding at flood base floor<br>bit3 = 1: Door close holding at flood base floor | 0 |

| | | | | | |
|---|---|---|---|---|---|
| L2-01 | Flood base floor | 0 to F6-00 | 0 | floor | ★ |
| If the floor set by L2-01 is higher than the bottom floor, it is the water base floor. Otherwise, the water base floor will be set by L2-00 bit2. | | | | | |
| L2-02 | Generator-powered operation function selection | - | - | - | |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Generator-powered operation enabled | When water seeps into the pit, the elevator automatically heads to the water base floor and suspends services. | 0 |
| bit1 | Signal source of generator | bit1 can be set to 0 only | 0 |
| bit2 | Reserved | - | 0 |
| bit3 | Reserved | - | 0 |
| bit4 | Re-operation allowed upon arriving at base floor | bit4 = 0: Re-operation controlled by digital inputs<br>bit4 = 1: The elevator allowed for re-operation | 0 |
| bit5 | Door open/close selection upon arriving at base floor | bit5 = 0: Door open holding<br>bit5 = 1: Door close holding | 0 |
| bit6 | Energy savings upon arriving at base floor | bit6 = 1: Lamp and fan shut down as soon as the elevator arrives at the base floor | 0 |
| bit7 | Car/hall call display selection upon arriving at base floor | bit7 = 1: Car calls and hall calls display cancelled upon arriving at the base floor | 0 |

| | | | | | |
|---|---|---|---|---|---|
| L2-04 | Delay for re-leveling after generator on | 5 to 200 | 60 | s | ★ |
| Elevator 1 starts re-leveling after L2-04 is registered over power supply by generator. | | | | | |
| L2-05 | Delay for re-leveling upon wire breaking | 60 to 2400 | 120 | s | ☆ |
| If the communication among elevators is interrupted, each elevator automatically carries out re-leveling after a time of L2-05 × (Elevator No. − 1). | | | | | |
| L2-06 | Elevator number for generator-powered operation | 1 to 100 | 2 | | ☆ |
| There is and can only be one value set to 0 in the system, and elevator numbers must be different from each other. | | | | | |
| **Group A1: Customized user parameters** | | | | | |
| A1-00 | Customized function selection 0 | 0 to 65535 | 0 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Property |
|---|---|---|---|---|---|

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | No light curtain judgment for re-leveling operation | Bit0 = 0: Light curtain is judged for re-leveling operation<br>Bit0 = 1: Light curtain is not judged for re-leveling operation | 0 |
| bit1 | Door open/close allowed during inspection | When bit1 is set to 1, door open/close are allowed at door zone during inspection. | 0 |
| bit2 | No re-leveling at single leveling signal | In schemes for only two door zone signals, the elevator returns to the leveling position if one door zone signal is missing when door close. If bit2 = 1 and registered calls exist, the elevator directly responds to the registered calls without returning to the leveling position. | 0 |
| bit3 | Re-leveling witout call cancellation | When bit3 is set to 1, the elevator enters the re-leveling state without cancelling calls, and new registration is allowed. | 0 |
| bit5 | Enabling ramp-stop function | When bit5 is set to 1, the ramp-stop button is pressed during running to trigger Err82-102, causing the elevator to stop in the leveling position. | 0 |
| bit6 | Door open holding upon ramp-stop | When bit6 is set to 1, the elevator stops in the leveling position for ramp-stop and then keeps the door opening. | 0 |
| bit7 | ARD low battery handling | When bit7 is set to 1, the system reports Err81-103 when receiving ARD low battery signal, causing the elevator to stop at the nearest floor. | 0 |
| bit8 | Door open holding at ARD low battery | When bit8 is set to 1, the door keeps opening after the elevator stops in the nearest leveling position. | 0 |
| bit9 | Enabling car call restricting with password | When this function is enabled, input passwords to gain access to floors of car call restricting according to A1-11 to A1-14. | 0 |
| bit10 | Door open at single leveling signal during emergency evacuation | When the elevator stops in the door zone during emergency evacuation, the door is allowed to open after one leveling signal is missing. | 0 |
| bit11 | Terminal floor verification required after evacuation | An emergency stop due to the mains power outages may cause the car to miss the floor. When this function is enabled, the terminal floor varification is carried out after the evacuation is completed and the mains power recovers. | 0 |
| bit12 | Reserved | - | 0 |
| bit13 | Outputs active for some faults | When bit13 is set to 1, fault output DO is active when Er r2/3/4/5/6/7/9/10/11/12/13/15/16/20/29/36/37/38/53 is reported. | 0 |
| bit14 | Independent control of lighting/fan | Enable this bit to enter the independent control of the car lighting/fan outputs. | 0 |
| bit15 | Enabling brake release for evacuation at fault | See "9.8 Brake Release for Evacuation" on Page 125 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| A1-01 | Customized function selection 1 | 0 to 65535 | 0 | - | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|

| Bit | Function | Description | Default |
|---|---|---|---|
| bit0 | Buzzer prompt for fire emergency | When the elevator returns to the base floor at firefighting or enters the firefighter state, the buzzer inside the car outputs periodically. | 0 |
| bit1 | Buzzer prompt for car call registration | When this function is enabled, the buzzer inside the car sounds once for the registered car call. | 0 |
| bit2 | Car call button blinking for corresponding hall call registration | The car call button blinks for the hall call of the corresponding floor registered in the elevator running direction. | 0 |
| bit3 | X-input IC card supported | When this function is enabled, if active X-input IC card inputs are detected atop the car, call calls can be registered within the time set by A1-22. | 0 |
| bit4 | Car calls registration limited by IC card in attendant mode | When bit4 is set to 1, the car call registration entails activating digital signals of the IC card. | 0 |
| bit5 | Protection of floor missing | This function is enabled to rectify the wrong floor caused by elevator emergency stop and steal rope slip. | |
| bit6 | MT-reform without parameter intiation | When bit6 is set to 1, parameters are not initiated during MT reform for 1 min. | 0 |
| bit7 | Door open holding at leveling upon earthquake | The door keeps opening during earthquake. | 0 |
| bit8 | Response to hall call without re-powering lighting/fan | For elevators with only hall calls being registered after the lighting/fan is turned off, the lighting/fan is off when the elevator runs in response to the registered hall call, and turned on again after the corresponding floor with the hall call is reached. | 0 |
| bit9 | CTB-A/CTB-A2 lighting output using front door open output terminal | For elevators with one single door, CTB-A/CTB-A2 use the front door open signal as the lighting output. | |
| bit11 | Car buttons stuck handling | If a car call button is stuck for more than 1 min, it will not be responded to by the system;<br>If the door open/close button is stuck for more than 1 min, the system will report Err82 of 3B fault level. | 0 |

| | | | | | |
|---|---|---|---|---|---|
| A1-06 | CAN communication quality with door operator | 0 to 999 | 0 | - | ● |
| Ones: CAN communication interrupted with the front door operator<br>Tens: CAN communication interrupted with the rear door operator<br>The intensity of interruption is evaluated in the ascending order of 0 to 9. | | | | | |
| A1-11 | Password of car call restricting floor 1 | 0 to 65535 | 0 | - | ☆ |
| A1-12 | Floor 1 of car call restricting | 0 to F6-00 | 0 | floor | ★ |
| A1-13 | Password of car call restricting floor 2 | 0 to 65535 | 0 | - | ☆ |
| A1-14 | Floor 2 of car call restricting | 0 to F6-00 | 0 | floor | ★ |

| Param. No. | Parameter Name | Setting Range | Default | Unit | Pro-perty |
|---|---|---|---|---|---|
| A1-15 | Door open limit holding time before exiting emergency evacuation | 1 to 1000 | 5 | s | ☆ |
| When the exiting of emergency evacuation upon door open limit function is selected, the emergency evacuation is quitted after the door opens to the limit for the time set by A1-15. | | | | | |
| A1-19 | Delay time of detecting shorting stator contactor | 0 to 3.000 | 0 | s | ★ |
| Be prudent to use this parameter. | | | | | |
| A1-20 | Light energy-saving time | 0 to 240 | 2 | Min | ☆ |
| The lighting is switched off after the time set be A1-20 under the independent control of lighting/fan. | | | | | |
| A1-21 | Anti-nuisance times of judging light curtain | 3 to 8 | 3 | - | ☆ |
| After enabling the light curtain anti-nuisance function, if there is no light curtain after numbers set by A1-21 of door open during responding to car calls, car calls registration will be cancelled. | | | | | |
| A1-22 | Registering time of X-input IC card | 1 to 60 | 5 | s | ☆ |
| When the car call registration limitation is enabled and inputs of the CTB DI-type IC card are active, car calls can be registered within the time set by A1-22. | | | | | |
| A1-23 | Maximum time of releasing brake for emergency evacuation | 10 to 300 | 60 | s | ☆ |
| If the time of brake release for evacuation exceeds the value set by A1-23, the evacuation fails. | | | | | |
| A1-25 | Floor for floor lock | 0 to F6-00 | 0 | - | ☆ |
| A1-26 | Maximum running speed with single-phase 220 V | 0 to 1/3 × F0-04 | 0 | m/s | ★ |
| The maximum running speed after model reform from the three-phase 380 V to the single-phase 220 V. | | | | | |

# Chapter 11 Troubleshooting

## 11.1 Description of Fault Levels

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

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

**Table 11-1 Fault levels**

| Category | Action | Remarks |
|---|---|---|
| Level 1 | 1. Display the fault code.<br>2. Output the fault relay action command. | 1A: The elevator running is not affected on any condition. |
| Level 2 | 1. Display fault code.<br>2. Output the fault relay action command.<br>3. Continue normal running of the elevator. | 2A: The parallel/group control function is disabled. |
| | | 2B: The door pre-open/re-leveling function is disabled. |
| Level 3 | 1. Display the fault code.<br>2. Output the fault relay action command.<br>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.<br>2. Output the fault relay action command.<br>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.<br>2. Output the fault relay action command.<br>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. |

## 11.2 Fault Codes and Troubleshooting

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

Table 11-2 Fault codes and troubleshooting

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

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

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

| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err05 | Overvoltage during acceleration | The input voltage is too high. | ◆ Check whether the input voltage is too high.<br>◆ Observe whether the bus voltage is too high (normal: 540 to 580 V for 380 voltage input). | 5A |
| | | The resistance of the braking resistor is excessive, or the braking unit fails. | ◆ Check for the balance coefficient.<br>◆ Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper:<br>a. Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable.<br>b. Check whether the resistance is proper based on the recommendation and select a proper braking resistor.<br>If the resistance of the braking resistor is proper and overvoltage occurs each time when the elevator reaches the target speed, decrease the values of F2-01 or F2-04 to reduce the curve following error and prevent overvoltage due to system overshoot. | |
| | | The acceleration rate is too short. | Reduce the acceleration rate. | |
|  Err06 | Overvoltage during deceleration | The input voltage is too high. | ◆ Check whether the input voltage is too high.<br>◆ Observe whether the bus voltage is too high (normal: 540 to 580 V for 380 voltage input). | 5A |
| | | The resistance of the braking resistor is excessive, or the braking unit fails. | ◆ Check for the balance coefficient.<br>◆ Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper:<br>a. Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable.<br>b. Check whether the resistance is proper based on the recommendation and select a proper braking resistor.<br>If the resistance of the braking resistor is proper and overvoltage occurs each time when the elevator reaches the target speed, decrease the values of F2-01 or F2-04 to reduce the curve following error and prevent overvoltage due to system overshoot. | |
| | | The deceleration rate is too short. | Reduce the deceleration rate. | |

| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err07 | Overvoltage at a constant speed | The input voltage is too high. | ◆ Check whether the input voltage is too high.<br>◆ Observe whether the bus voltage is too high (normal: 540 to 580 V for 380 voltage input). | 5A |
| | | The resistance of the braking resistor is excessive, or the braking unit fails. | ◆ Check for the balance coefficient.<br>◆ Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper:<br>a. Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable.<br>b. Check whether the resistance is proper based on the recommendation and select a proper braking resistor.<br>If the resistance of the braking resistor is proper and overvoltage occurs each time when the elevator reaches the target speed, decrease the values of F2-01 or F2-04 to reduce the curve following error and prevent overvoltage due to system overshoot. | |
|  Err08 | Maintenance notification fault | The elevator is not maintained within the notification period. | ◆ Power-off and maintain the elevator.<br>◆ Disable the maintenance notification function by setting F9-13 to 0.<br>◆ Contact us or our agent directly. | 5A |
|  Err09 | Undervoltage | Instantaneous power failure occurs on the input power supply. | ◆ Check whether the power fails during running.<br>◆ Check whether wiring of all power input cables is secure. | 5A |
| | | The input voltage is too low. | Check whether the external power voltage is too low. | |
| | | The drive control board fails. | Contact our agent or Inovance directly.. | |

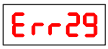
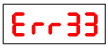
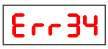
| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err10 | Controller overloaded | The mechanical resistance is too large. | ◆ Check whether the brake is released, and whether the brake power supply is normal.<br>◆ Check whether the guide shoes are too tight. | 5A |
|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

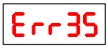
| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err13 | Phase loss on the output side | The output wiring of the main circuit is loose. | ◆ Check whether the motor wiring is secure.<br>◆ Check whether the running contactor on the output side is normal. | 5A |
| | |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

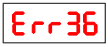
| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err17 | Encoder interference during motor auto-tuning | Subcode 1: Reserved. | - | 5A |
| | | Subcode 2: The SIN/COS encoder signal is abnormal. | Serious interference exists in the C, D, and Z signals of the SIN/COS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

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

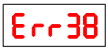
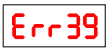
| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err21 | Incorrect parameter setting | Subcode 2: The maximum frequency is smaller than the motor rated frequency. | Increase the value of F0-06 to larger than the motor rated frequency. | 5A |
| | | Subcode 3: The encoder type is incorrect. | Set the encoder type as UVW when a SIN/COS, absolute or ABZ encoder is used. Check that F1-00 is set according to the actual encoder type. | |
|  Err22 | Leveling signal abnormal | Subcode 101: The leveling signal is stuck. | ◆ Check whether the leveling and door zone sensors work properly.<br>◆ Check whether the installation verticality and depth of the leveling plates meet the requirements.<br>◆ Check whether the leveling signal input points of the MCB are normal. | 1A |
| | | Subcode 102: The leveling signal is lost. | | |
| | | Subcode 103: The leveling position deviation is too large in elevator auto-running state. | Check whether the steel rope slips. | |
|  Err23 | Short-circuit fault | Subcodes 1, 2, 3: Short circuit to ground exists. | Check whether the three-phase output of the AC drive is grounded. | 5A |
| | | Subcode 4: Inter-phase short-circuit exists. | Check whether there is inter-phase short-circuit in the three-phase output of the AC drive. | |
|  Err24 | RTC clock fault | Subcode 101: The RTC clock information of the MCB is abnormal. | ◆ Replace the clock battery.<br>◆ Replace the MCB. | 3B |
|  Err25 | Data storage error | Subcodes 101, 102, 103: The storage data of the MCB is abnormal. | Contact us or our agent directly. | 4A |
|  Err26 | Seismic signal | Subcode 101: The seismic signal is active. | Check the earthquake sensor and the wiring. | 3A |
|  Err27 | Equipment fault | - | - | - |
|  Err28 | Maintenance fault | - | - | - |

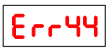
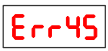
| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err29 | Shorting motor stator contactor feedback abnormal | Subcode 101: Shorting PMSM stator contactor feedback to the MCB is abnormal. | ◆ Check that the signal feature (NO, NC) of the feedback contact on the contactor is correct.<br>◆ Check that the contactor and corresponding feedback contact act correctly.<br>◆ Check the coil circuit of the shorting PMSM stator contactor. | 5A |
| | | Subcode 102: Shorting PMSM stator contactor feedback to the I/O extension board is abnormal. | | |
|  Err30 | Elevator position error | Subcodes 101, 102: In the normal-speed running or re-leveling running mode, the leveling signal has no change within a certain time period. | ◆ Check whether the leveling signal cables are connected reliably and whether the signal copper wires may touch the ground or be short circuited with other signal cables.<br>◆ Check whether the distance between two floors is too large or the re-leveling time set in F3-21 is too short, causing over long re-leveling running time. | 4A |
|  Err33 | Elevator speed fault | Subcode 101: The detected running speed during normal-speed running exceeds the limit. | ◆ Check whether the parameter setting and wiring of the encoder are correct.<br>◆ Check the setting of motor nameplate parameters. Perform motor auto-tuning again. | 5A |
| | | Subcode 102: The speed exceeds the limit during inspection or shaft auto-tuning. | Decrease the inspection speed or perform motor auto-tuning again. | |
| | | Subcode 103: The speed exceeds the limit in shorting stator braking mode. | ◆ Check whether the shorting PMSM stator function is enabled.<br>◆ Check whether the motor phase sequence is correct. | |
| | | Subcodes 104, 105: The speed exceeds the limit during emergency running. | ◆ Check whether the emergency power capacity meets the requirements.<br>◆ Check whether the emergency running speed is set properly. | |
| | | Subcode 106: The speed deviation detected by the MCB is too large. | ◆ Check wiring of the encoder.<br>◆ Check whether SPI communication between the MCB and drive board is normal. | |
|  Err34 | Logic fault | Logic of the MCB is abnormal. | Contact us or our agent directly to replace the MCB. | 5A |

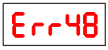
| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err35 | Shaft auto-tuning data abnormal | Subcode 101: When shaft auto-tuning is started, the elevator is not at the bottom floor or the down slow-down switch is invalid. | Check that the down slow-down switch is valid, and that F4-01 (Current floor) is set to the bottom floor number. | 4C |
| | | Subcode 102: The system is not in the inspection state (inspection switch not turned on) when shaft auto-tuning is performed. | Check that the inspection switch is turned to inspection state. | |
| | | Subcode 103: It is judged upon power-on that shaft auto-tuning is not performed. | Perform shat auto-tuning again. | |
| | | Subcode 104, 113, 114: In distance control mode, it is judged at running startup that shaft auto-tuning is not performed. | | |
| | | Subcode 105: The elevator running direction and the pulse change are inconsistent. | Check whether the elevator running direction is consistent with the pulse change in F4-03: F4-03 increases in up direction and decreases in down direction. If not, change the value of F2-10 to ensure consistency. | |
| | | Subcodes 106, 107, 109: =The plate pulse length sensed at up/down leveling is abnormal. | ◆ Check that NO/NC state of the leveling sensor is set correctly.<br>◆ Check whether the leveling plates are inserted properly and whether there is strong power interference if the leveling sensor signal blinks. | |
| | | Subcodes 108, 110: No leveling signal is received within 45s continuous running. | ◆ Check whether wiring of the leveling sensor is correct.<br>◆ Check whether the floor distance is too large, causing running time-out. Increase the speed set in F3-11 and perform shaft auto-tuning again to ensure that learning the floors can be completed within 45s. | |
| | | Subcodes 111, 115: The stored floor height is smaller than 50 cm. | Enable the super short floor function if the floor distance is less than 50 cm.<br>If the floor distance is normal, check installation of the leveling plate for this floor and check the sensor. | |
| | | Subcode 112: The floor when auto-tuning is completed is not the top floor. | Check whether the setting of F6-00 (Top floor of the elevator) is correct and whether the leveling plate is absent. | |

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

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

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

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

| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err46 | Re-leveling fault | Subcode 101: The leveling signal is inactive during re-leveling. | Check whether the leveling signal is normal. | 2B |
| | | Subcode 102: The re-leveling running speed exceeds 0.1 m/s. | Check whether the encoder is used properly. | |
|  Err47 | Shorting door lock circuit relay fault | Subcode 101: During re-leveling or pre-open running, the shorting door lock circuit contactor outputs for continuous 2s, but the feedback is invalid and the door lock is disconnected. | ◆ Check the signal feature (NO, NC) of the feedback contact on the shorting door lock circuit contactor.<br>◆ Check whether the shorting door lock circuit contactor acts properly. | 2B |
| | | Subcode 102: During re-leveling or pre-open running, the shorting door lock circuit contactor has no output, but the feedback is valid for continuous 2s. | | |
| | | Subcode 106: The feedback from the shorting door circuit relay is valid before re-leveling. | | |
| | | Subcode 103: During re-leveling or pre-open running, the output time of the shorting door lock circuit contactor is larger than 15s. | ◆ Check whether the leveling and re-leveling signals are normal.<br>◆ Check whether the re-leveling speed is set too small. | |
|  Err48 | Door open fault | Subcode 101: The consecutive times that the door does not open to the limit reaches the setting in Fb-09. | ◆ Check whether the door operator system works properly.<br>◆ Check whether the CTB output is normal.<br>◆ Check whether the door open limit signal and door lock signal are normal. | 5A |
|  Err49 | Door close fault | Subcode 101: The consecutive times that the door does not open to the limit reaches the setting in Fb-09. | ◆ Check whether the door operator system works properly.<br>◆ Check whether the CTB output is normal.<br>◆ Check whether the door close limit signal and door lock signal are normal. | 5A |
|  Err50 | Consecutive loss of leveling signal | Subcode 101: Leveling signal stuck is detected for three consecutive times. | ◆ Check whether the leveling and door zone sensors work properly.<br>◆ Check the installation verticality and depth of the leveling plates.<br>◆ Check the leveling signal input points of the MCB.<br>◆ Check whether the steel rope slips. | 5A |
| | | Subcode 102: Leveling signal loss is detected for three consecutive times. | | |

| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err51 | CAN communication fault | CAN communication with the door operator is interrupted.<br>Subcode 110: Abnormal communication with front door operator<br>Subcode 111: Abnormal communication with rear door operator | Check the wiring between the operator and the CAN device. | 3B |
|  Err52 | HCB communication fault | Subcode 101: Feedback data of Modbus communication with the HCB remains incorrect. | ◆ Check the communication cable connection.<br>◆ Check whether the 24 V power supply of the controller is normal.<br>◆ Check whether the HCB addresses are repeated.<br>◆ Check whether there is strong-power interference on communication. | 1A |
|  Err53 | Door lock fault | Subcode 101: The door lock feedback signal remains active 3s after door open output. | ◆ Check whether the door lock circuit is normal.<br>◆ Check whether the door lock feedback is correct. | 5A |
| | | Subcode 102: The states of the door lock multi-way feedback contacts are inconsistent, or the states of door lock 1 and door lock 2 are inconsistent. | | |
| | | Subcode 105: Door lock 1 shorting signal is active upon shorting door lock circuit relay output 3s after door open. | | |
| | | Subcode 106: Door lock 2 shorting signal is active upon shorting door lock circuit relay output 3s after door open. | | |
| | | Subcode 104: The higher-voltage and low-voltage door lock signals are inconsistent. | When the higher-voltage and low-voltage door lock signals are detected at the same time, the time when the MCB receives the two signals has a deviation of above 1.5s.<br>This subcode is reset at power-off and power-on again. | |
| | | Subcode 107: The door lock shorting input is selected but the feedback signal remains off or disconnected. | Check whether the signal cable of door lock shorting feedback is not connected or breaks. | |

| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err54 | Overcurrent at inspection startup | Subcode 102: The current at startup for inspection exceeds 120% of the rated current. | ◆ Reduce the load.<br>◆ Check whether the motor phase sequence is correct.<br>◆ Change FC-00 bit1 to 1 to cancel the startup current detection function. | 5A |
|  Err55 | Stop at another landing floor | Subcode 101: During automatic running of the elevator, the door open limit is not received within the time threshold in Fb-06. | Check the door open limit signal at the present floor. | 1A |
|  Err56 | Door open/close limit signal fault | Subcode 101: The door open limit signal is active during running. | • Check the door open and close NO/NC setting in F5-25.<br>• Check wiring of the door open and close signals. | 5A |
| | | Subcode 102: The door close limit signal is active during running. | | |
| | | Subcode 103: Both the door open and close signals are active. | | |
| | | Subcode 104: The door close limit signal keeps active at 3s after door open. This fault subcode is detected after the door lock bypass is set. | Check whether the door open/close limit signals keep active. | |
|  Err57 | Serial peripheral interface (SPI) communication fault | Subcodes 101, 102: The SPI communication is abnormal. | Check the wiring between the control board and the drive board. | 5A |
| | | Subcode 103: The MCB does not match the AC drive. | Contact our agent or Inovance directly. | |
|  Err58 | Shaft position switches abnormal | Subcode 101: The up slow-down switch and down slow-down switch are disconnected simultaneously. | ◆ Check whether the signal feature (NO, NC) of the slow-down switches and limit switches are consistent with the parameter setting of the MCB.<br>◆ Check whether malfunction of the slow-down switches and limit switches exists. | 4B |
| | | Subcode 102: The up limit feedback and down limit feedback are disconnected simultaneously. | | |
|  Err59 | Reserved | - | - | - |
|  Err60 | Reserved | - | - | - |

| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err61 | Reserved | - | - | - |
|  Err62 | Analog input cable broken | Subcode 101: The analog input cable breaks. | ◆ Check whether F5-36 is set correctly.<br>◆ Check whether the analog input cable of the CTB or MCB is connected incorrectly or broken.<br>◆ Adjust the load cell switch function. | 3B |
|  Err63 | Special fault | - | Contact our agent or Inovance directly. | |
|  Err64 | External fault | Subcode 101: The external fault signal keeps active for 2s. | ◆ Check the NO/NC setting of external faults<br>◆ Check the input state of the external fault signal. | 5A |
|  Err65 | UCMP detection abnormal | This fault is reported when the UCMP function is enabled or accidental car movement occurs. | Check that the motor brake is applied completely and the car will not move accidentally. | 5A |
|  Err66 | Braking force detection abnormal | The braking force detected is insufficient. | Detect the brake clearance. | 5A |
|  Err81 | User fault | Subcode 101:<br>AC drive overheat pre-warning | See Err14 | 3B |
| | | Subcode 102:<br>Ramp stop | Check whether the ramp stop signal inputs are healthy. | 3B |
| | | Subcode 103:<br>ARD low battery | ◆ Subcode 101 is reported when ARD low battery or abnormal ARD low battery signal is detected.<br>◆ Check the ARD and the signal line. | 3B |
|  Err82 | Door open/close button stuck | Subcode 101:<br>Door open button of front door stuck | Check the door button in question. | 3B |
| | | Subcode 102:<br>Door close button of front door stuck | | 3B |
| | | Subcode 103:<br>Door open button of rear door stuck | | 3B |
| | | Subcode 104:<br>Door close button of rear door stuck | | 3B |

| Fault Code | Name | Possible Causes | Solution | Level |
|---|---|---|---|---|
|  Err90 | 1A-level fault of extensive functions | Subcode 600:<br>Elevator-to-elevator communication signal lines broken | ◆ This subcode is reported when wiring between the Elevator Y1 (64) and the Elevator X1 (385/417) is broken (judged every 12h).<br>◆ Check the wiring. | 1A |
|  Err91 | 3B-level fault of extensive functions | Subcode 600:<br>Flood into elevator | ◆ Check whether there is flood in the shaft;<br>◆ Check whether the flood sensor functions properly;<br>◆ Check whether the signal is properly wired. | 3B |

NOTE

◆ Fault Err41 is not recorded in the elevator stop state.

◆ Fault Err42 is reset automatically when the door lock circuit is shorted or 1s after the fault occurs in the door zone.

◆ If faults Err51, Err52, and E57 persist, they are recorded once every one hour.

# Chapter 12 Inspection and Maintenance

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

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

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

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

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

# Chapter 13 CE Certification and Standards Compliance

## 13.1 Important Notes on EU Standards Compliance



**Figure 13-1 CE mark**

- The CE marking certifies that a product has met EU health, safety, and environmental requirements, which ensure consumer safety. Manufacturers in the European Union (EU) and abroad must meet CE marking requirements where applicable in order to market their products in Europe. European standards include the Machinery Directive, the Low Voltage Directive and the EMC Directive.
- It is required for products manufactured anywhere in the world that are then marketed in the EU .
- The NICE3000$^{new}$ controller is labeled with the CE marking based on the Low Voltage Directive and EMC Directive.

  Low Voltage Directive: 2014/35/ EU

  EMC Directive: 2014/30/EU
- Machines and devices used in combination with this controller muast also be CE certified and labeled.
- It is the responsibility of the end user of the controller to ensure the machines the controller to be used for comply with the CE standards and to affix the CE marking.

## 13.2 CE Low Voltage Directive Compliance

This controller has been tested according to EN 61800-5-1, and it complies with the Low Voltage Directive.

To ensure that machines or devices that the product is installed in as a whole comply with the Low Voltage Directive, be sure to meet these requirements as described below.

- Installation site

Mount the controller in places below pollution degree 2 and overvoltage category 3 in accordance with IEC60664.

- Fuse connection on the input side

To prevent accidents caused by short circuit, install fuse on the input side and the fuse must comply with the UL standard.

For input current and output current of the controller, refer to "1.2 Ratings" on Page 12.

- Prevention of foreign objects

The controller must be installed in a cabinet of an end-user system. The system must be equipped with a fireproof enclosure providing both electrical and mechanical protection. The installation must conform to local laws and regulations as well as relevant IEC standards.

- Grounding

If using an controller of the 400 V class, tie the neutral point of the controller power supply to ground.

## 13.3 EMC Directive Compliance

Electromagnetic compatibility (EMC) means that a device is compatible with (no interference is caused by) its electromagnetic (EM) environment and it does not emit levels of EM energy that cause electromagnetic interference (EMI) in other devices in the vicinity. The electromagnetic interference generated by a device or system must be restricted within a certain limit. Also, the device or system must have sufficient immunity to the electromagnetic interference in the environment.

The controller complies with the EMC Directive and standards EN12015:2014 and EN12016:2013 only when meeting the following requirements.

- A built-in EMC filter must be installed on input side of the controller. The shielded cable is used on output side. The filter is reliably grounded and the shield layer of the output cables is fully grounded. For selection of EMC filters, refer to "3.3 Selection of the EMC Filter" on Page 36.
- The controller and the motor must be connected with shielded cables. For cable selection and installation, see "7.1 Solutions to Current Leakage" on page 91. of the NICE3000$^{new}$ Series Integrated Elevator Controller System Design and Selection Guide.
- Install the controller and arrange the cables according to sthe recommended cabling method. See "7.4 Cabling Requirements" on page 93 of the NICE3000$^{new}$ Series Integrated Elevator Controller System Design and Selection Guide.
- A common-mode filter is installed if necessary. For details, refer to "3.7 Selection of the Common-Mode Filter" on Page 53.
- When the controller is installed in the elevator system, the elevator manufacturer is responsible for compliance with the EMC Directive (2014/30/ EU) and standards EN12015:2014 and EN12016:2013.

The integrator of the system installed with the controller is responsible to ensure that the whole system complies with the EMC Directive (2014/30/EU) and EN61800-3: 2004 +A1:2012.



NOTE

The controller may cause radio interference for use in the First Environment that includes domestic premises and establishments directly connected without intermediate transform- ers to a low-voltage supply (of electricity) network which supplies buildings used for domestic purposes. Besides the CE compliance described in this chapter, take measures to avoid the radio interference if required.

Copyright © Shenzhen Inovance Technology Co., Ltd.

19010569B00

**Shenzhen Inovance Technology Co., Ltd.**

**www.inovance.com**

**Add.:** Inovance Headquarters Tower, High-tech Industrial Park, Guanlan Street, Longhua New District, Shenzhen
**Tel:** (0755) 2979 9595 **Fax:** (0755) 2961 9897

**Suzhou Inovance Technology Co., Ltd.**

**www.inovance.com**

**Add.:** No. 16 Youxiang Road, Yuexi Town, Wuzhong District, Suzhou 215104, P.R. China
**Tel:** (0512) 6637 6666 **Fax:** (0512) 6285 6720